Appendix B: GSE HD Textured Data Sheet

These product specifications meet or exceed GRI GM13.

Product Specifications

TESTED PROPERTY	TEST METHOD	FREQUENCY	MINIMUM AVERAGE VALUE 30 mil	40 mil	60 mil	80 mil	100 mil
Thickness, (minimum average) mil (mm)	ASTM D 5994	every roll	30 (0.75)	40 (1.00)	60 (1.50)	80 (2.00)	100 (2.50)
Lowest individual reading (-10%)			27 (0.69)	36 (0.91)	54 (1.40)	72 (1.80)	90 (2.30)
Density, g/cm³	ASTM D 1505	200,000 lb	0.94	0.94	0.94	0.94	0.94
Tensile Properties (each direction)	ASTM D 6693, Type IV	20,000 lb					
Strength at Break, lb/in-width (N/mm)	Dumbell, 2 ipm		66 (11)	75 (13)	115 (20)	155 (27)	230 (40)
Strength at Yield, lb/in-width (N/mm)			68 (11)	90 (15)	132 (23)	177 (31)	225 (39)
Elongation at Break, %	G.L. 2.0 in (51 mm)		100	100	100	100	100
Elongation at Yield, %	G.L. 1.3 in (33 mm)		12	12	12	12	12
Tear Resistance, lb (N)	ASTM D 1004	45,000 lb	24 (106)	32 (142)	45 (200)	60 (266)	75 (333)
Puncture Resistance, lb (N)	ASTM D 4833	45,000 lb	65 (289)	95 (422)	130 (578)	160 (711)	190 (845)
Carbon Black Content, % (Range)	ASTM D 1603*/4218	20,000 lb	2.0 - 3.0	2.0 - 3.0	2.0 - 3.0	2.0 - 3.0	2.0 - 3.0
Carbon Black Dispersion	ASTM D 5596	45,000 lb	Note(1)	Note(1)	Note(1)	Note(1)	Note(1)
Asperity Height, mil (mm)	ASTM D 7466	second roll	16 (0.40)	18 (0.45)	18 (0.45)	18 (0.45)	18 (0.45)
Notched Constant Tensile Load(2), hr	ASTM D 5397, Appendix	200,000 lb	1,000	1,000	1,000	1,000	1,000
Oxidative Induction Time, min	ASTM D 3895, 200°C; O_2, 1 atm	200,000 lb	>140	>140	>140	>140	>140
TYPICAL ROLL DIMENSIONS							
Roll Length(3), ft (m)	Double-Sided Textured		830 (253)	700 (213)	520 (158)	400 (122)	330 (101)
	Single-Sided Textured		840 (256)	650 (198)	420 (128)	320 (98)	250 (76)
Roll Width(3), ft (m)			22.5 (6.9)	22.5 (6.9)	22.5 (6.9)	22.5 (6.9)	22.5 (6.9)
Roll Area, ft² (m²)	Double-Sided Textured		18,675 (1,735)	15,750 (1,463)	11,700 (1,087)	9,000 (836)	7,425 (690)
	Single-Sided Textured		18,900 (1,755)	14,625 (1,359)	9,450 (878)	7,200 (669)	5,625 (523)

NOTES:
- (1)Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
- (2)NCTL for GSE HD Textured is conducted on representative smooth membrane samples.
- (3)Roll lengths and widths have a tolerance of ± 1%.
- GSE HD Textured Double-Sided is available in rolls weighing approximately 4,000 lb (1,800 kg) and Single-Sided weighing approximately 3,000 lb (1,360 kg).
- All GSE geomembranes have dimensional stability of ±2% when tested according to ASTM D 1204 and LTB of <-77°C when tested according to ASTM D 746.
- *Modified

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Appendix C: GSE Green Smooth Data Sheet

These product specifications meet or exceed GRI GM13.

Product Specifications

TESTED PROPERTY	TEST METHOD	FREQUENCY	MINIMUM AVERAGE VALUE 30 mil	40 mil	60 mil	80 mil	100 mil
Thickness, (minimum average) mil (mm)	ASTM D 5199	every roll	30 (0.75)	40 (1.00)	60 (1.50)	80 (2.00)	100 (2.50)
Lowest individual reading (-10%)			27 (0.69)	36 (0.91)	54 (1.40)	72 (1.80)	90 (2.30)
Density, g/cm³	ASTM D 1505	200,000 lb	0.94	0.94	0.94	0.94	0.94
Tensile Properties (each direction)	ASTM D 6693, Type IV Dumbell, 2 ipm	20,000 lb					
Strength at Break, lb/in-width (N/mm)			120 (21)	152 (26)	243 (42)	327 (57)	410 (71)
Strength at Yield, lb/in-width (N/mm)			66 (11)	84 (14)	132 (23)	177 (30)	212 (37)
Elongation at Break, %	G.L. 2.0 in (51 mm)		700	700	700	700	700
Elongation at Yield, %	G.L. 1.3 in (33 mm)		13	13	13	13	13
Tear Resistance, lb (N)	ASTM D 1004	45,000 lb	21 (93)	28 (124)	42 (186)	58 (257)	73 (324)
Puncture Resistance, lb (N)	ASTM D 4833	45,000 lb	65 (289)	85 (378)	125 (556)	160 (711)	195 (867)
Carbon Black Content[1], % (Range)	ASTM D 1603*/4218	20,000 lb	2.0 - 3.0	2.0 - 3.0	2.0 - 3.0	2.0 - 3.0	2.0 - 3.0
Carbon Black Dispersion	ASTM D 5596	45,000 lb	Note[2]	Note[2]	Note[2]	Note[2]	Note[2]
Notched Constant Tensile Load, hr	ASTM D 5397, Appendix	200,000 lb	1,000	1,000	1,000	1,000	1,000
Oxidative Induction Time, min	ASTM D 3895, 200°C; O_2, 1 atm	200,000 lb	>140	>140	>140	>140	>140
TYPICAL ROLL DIMENSIONS							
Roll Length[3], ft (m)			1,120 (341)	870 (265)	560 (171)	430 (131)	340 (104)
Roll Width[3], ft (m)			22.5 (6.9)	22.5 (6.9)	22.5 (6.9)	22.5 (6.9)	22.5 (6.9)
Roll Area, ft² (m²)			25,200 (2,341)	19,575 (1,819)	12,600 (1,171)	9,675 (899)	7,650 (711)

NOTES:

- [1]GSE Green may have an overall ash content greater than 3.0% due to the green layer. These values apply to the black layer only.
- [2]Dispersion only applies to near spherical agglomerates. 9 of 10 views shall he Category 1 or 2. No more than 1 view from Category 3.
- [3]Roll lengths and widths have a tolerance of ± 1%.
- GSE Green is available in rolls weighing approximately 3,900 lb (1,769 kg).
- All GSE geomembranes have dimensional stability of ±2% when tested according to ASTM D 1204 and LTB of <-77°C when tested according to ASTM D 746.
- *Modified.

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Appendix C: GSE Green Textured Data Sheet

These product specifications meet or exceed GRI GM13.

Product Specifications

TESTED PROPERTY	TEST METHOD	FREQUENCY	MINIMUM AVERAGE VALU				
			30 mil	40 mil	60 mil	80 mil	100 mil
Thickness, (minimum average) mil (mm)	ASTM D 5994	every roll	30 (0.75)	40 (1.00)	60 (1.50)	80 (2.00)	100 (2.50)
Lowest individual reading (-10%)			27 (0.69)	36 (0.91)	54 (1.40)	72 (1.80)	90 (2.30)
Density, g/cm³	ASTM D 1505	200,000 lb	0.94	0.94	0.94	0.94	0.94
Tensile Properties (each direction)	ASTM D 6693, Type IV	20,000 lb					
Strength at Break, lb/in-width (N/mm)	Dumbell, 2 ipm		66 (11)	75 (13)	115 (20)	155 (27)	230 (40)
Strength at Yield, lb/in-width (N/mm)			68 (11)	90 (15)	132 (23)	177 (31)	225 (39)
Elongation at Break, %	G.L. 2.0 in (51 mm)		100	100	100	100	100
Elongation at Yield, %	G.L. 1.3 in (33 mm)		12	12	12	12	12
Tear Resistance, lb (N)	ASTM D 1004	45,000 lb	24 (106)	32 (142)	45 (200)	60 (266)	75 (333)
Puncture Resistance, lb (N)	ASTM D 4833	45,000 lb	65 (289)	95 (422)	130 (578)	160 (711)	190 (845)
Carbon Black Content[1], % (Range)	ASTM D 1603*/4218	20,000 lb	2.0 - 3.0	2.0 - 3.0	2.0 - 3.0	2.0 - 3.0	2.0 - 3.0
Carbon Black Dispersion	ASTM D 5596	45,000 lb	Note[2]	Note[2]	Note[2]	Note[2]	Note[2]
Asperity Height, mil (mm)	ASTM D 7466	second roll	16 (0.40)	18 (0.45)	18 (0.45)	18 (0.45)	18 (0.45)
Notched Constant Tensile Load[3], hr	ASTM D 5397, Appendix	200,000 lb	1,000	1,000	1,000	1,000	1,000
Oxidative Induction Time, min	ASTM D 3895, 200°C; O_2, 1 atm	200,000 lb	>140	>140	>140	>140	>140
TYPICAL ROLL DIMENSIONS							
Roll Length[4], ft (m)	Double-Sided Textured		830 (253)	700 (213)	520 (158)	400 (122)	330 (101)
	Single-Sided Textured		840 (256)	650 (198)	420 (128)	320 (98)	250 (76)
Roll Width[4], ft (m)			22.5 (6.9)	22.5 (6.9)	22.5 (6.9)	22.5 (6.9)	22.5 (6.9)
Roll Area, ft² (m²)	Double-Sided Textured		18,675 (1,735)	15,750 (1,463)	11,700 (1,087)	9,000 (836)	7,425 (690)
	Single-Sided Textured		18,900 (1,755)	14,625 (1,359)	9,450 (878)	7,200 (669)	5,625 (523)

NOTES:

- [1]GSE Green Textured may have an overall ash content greater than 3.0% due to the green layer. These values apply to the black layer only.
- [2]Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
- [3]NCTL for Green Textured is conducted on representative smooth membrane samples.
- [4]Roll lengths and widths have a tolerance of ± 1%.
- GSE Green Textured Double-Sided is available in rolls weighing approximately 4,000 lb (1,800 kg) and Single-Sided weighing approximately 3,000 lb (1,360 kg).
- All GSE geomembranes have dimensional stability of ±2% when tested according to ASTM D 1204 and LTB of <-77°C when tested according to ASTM D 746
- *Modified

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Appendix D: GSE White Smooth Data Sheet

These product specifications meet or exceed GRI GM13.

Product Specifications

TESTED PROPERTY	TEST METHOD	FREQUENCY	MINIMUM AVERAGE VALUE				
			30 mil	40 mil	60 mil	80 mil	100 mil
Thickness, (minimum average) mil (mm) Lowest individual reading (-10%)	ASTM D 5199	every roll	30 (0.75) 27 (0.69)	40 (1.00) 36 (0.91)	60 (1.50) 54 (1.40)	80 (2.00) 72 (1.80)	100 (2.50) 90 (2.30)
Density, g/cm³	ASTM D 1505	200,000 lb	0.94	0.94	0.94	0.94	0.94
Tensile Properties (each direction) Strength at Break, lb/in-width (N/mm) Strength at Yield, lb/in-width (N/mm) Elongation at Break, % Elongation at Yield, %	ASTM D 6693, Type IV Dumbell, 2 ipm G.L. 2.0 in (51 mm) G.L. 1.3 in (33 mm)	20,000 lb	 120 (21) 66 (11) 700 13	 152 (26) 84 (14) 700 13	 243 (42) 132 (23) 700 13	 327 (57) 177 (30) 700 13	 410 (71) 212 (37) 700 13
Tear Resistance, lb (N)	ASTM D 1004	45,000 lb	21 (93)	28 (124)	42 (186)	58 (257)	73 (324)
Puncture Resistance, lb (N)	ASTM D 4833	45,000 lb	65 (289)	85 (378)	125 (556)	160 (711)	195 (867)
Carbon Black Content[1], % (Range)	ASTM D 1603*/4218	20,000 lb	2.0 - 3.0	2.0 - 3.0	2.0 - 3.0	2.0 - 3.0	2.0 - 3.0
Carbon Black Dispersion	ASTM D 5596	45,000 lb	Note[2]	Note[2]	Note[2]	Note[2]	Note[2]
Notched Constant Tensile Load, hr	ASTM D 5397, Appendix	200,000 lb	1,000	1,000	1,000	1,000	1,000
Oxidative Induction Time, min	ASTM D 3895, 200°C; O_2, 1 atm	200,000 lb	>140	>140	>140	>140	>140
TYPICAL ROLL DIMENSIONS							
Roll Length[3], ft (m)			1,120 (341)	870 (265)	560 (171)	430 (131)	340 (104)
Roll Width[3], ft (m)			22.5 (6.9)	22.5 (6.9)	22.5 (6.9)	22.5 (6.9)	22.5 (6.9)
Roll Area, ft² (m²)			25,200 (2,341)	19,575 (1,819)	12,600 (1,171)	9,675 (899)	7,650 (711)

NOTES:

- [1]GSE White may have an overall ash content greater than 3.0% due to the white layer. These values apply to the black layer only
- [2]Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
- [3]Roll lengths and widths have a tolerance of ±1%.
- GSE White is available in rolls weighing approximately 3,900 lb (1,769 kg).
- All GSE geomembranes have dimensional stability of ±2% when tested according to ASTM D 1204 and LTB of <-77°C when tested according to ASTM D 746
- *Modified.

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Appendix D: GSE White Textured Data Sheet

These product specifications meet or exceed GRI GM13.

Product Specifications

TESTED PROPERTY	TEST METHOD	FREQUENCY	MINIMUM AVERAGE VALUE 30 mil	40 mil	60 mil	80 mil	100 mil
Thickness, (minimum average) mil (mm)	ASTM D 5994	every roll	30 (0.75)	40 (1.00)	60 (1.50)	80 (2.00)	100 (2.50)
Lowest individual reading (-10%)			27 (0.69)	36 (0.91)	54 (1.40)	72 (1.80)	90 (2.30)
Density, g/cm³	ASTM D 1505	200,000 lb	0.94	0.94	0.94	0.94	0.94
Tensile Properties (each direction)	ASTM D 6693, Type IV	20,000 lb					
Strength at Break, lb/in-width (N/mm)	Dumbell, 2 ipm		66 (11)	75 (13)	115 (20)	155 (27)	230 (40)
Strength at Yield, lb/in-width (N/mm)			68 (11)	90 (15)	132 (23)	177 (31)	225 (39)
Elongation at Break, %	G.L. 2.0 in (51 mm)		100	100	100	100	100
Elongation at Yield, %	G.L. 1.3 in (33 mm)		12	12	12	12	12
Tear Resistance, lb (N)	ASTM D 1004	45,000 lb	24 (106)	32 (142)	45 (200)	60 (266)	75 (333)
Puncture Resistance, lb (N)	ASTM D 4833	45,000 lb	65 (289)	95 (422)	130 (578)	160 (711)	190 (845)
Carbon Black Content[1], % (Range)	ASTM D 1603*/4218	20,000 lb	2.0 - 3.0	2.0 - 3.0	2.0 - 3.0	2.0 - 3.0	2.0 - 3.0
Carbon Black Dispersion	ASTM D 5596	45,000 lb	Note[2]	Note[2]	Note[2]	Note[2]	Note[2]
Asperity Height, mil (mm)	ASTM D 7466	second roll	16 (0.40)	18 (0.45)	18 (0.45)	18 (0.45)	18 (0.45)
Notched Constant Tensile Load[3], hr	ASTM D 5397, Appendix	200,000 lb	1,000	1,000	1,000	1,000	1,000
Oxidative Induction Time, min	ASTM D 3895, 200°C; O_2, 1 atm	200,000 lb	>140	>140	>140	>140	>140
TYPICAL ROLL DIMENSIONS							
Roll Length[4], ft (m)	Double-Sided Textured		830 (253)	700 (213)	520 (158)	400 (122)	330 (101)
	Single-Sided Textured		840 (256)	650 (198)	420 (128)	320 (98)	250 (76)
Roll Width[4], ft (m)			22.5 (6.9)	22.5 (6.9)	22.5 (6.9)	22.5 (6.9)	22.5 (6.9)
Roll Area, ft² (m²)	Double-Sided Textured		18,675 (1,735)	15,750 (1,463)	11,700 (1,087)	9,000 (836)	7,425 (690)
	Single-Sided Textured		18,900 (1,755)	14,625 (1,359)	9,450 (878)	7,200 (669)	5,625 (523)

NOTES:

- [1]GSE White may have an overall ash content greater than 3.0% due to the white layer. These values apply to the black layer only.
- [2]Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
- [3]NCTL for GSE White Textured is conducted on representative smooth membrane samples.
- [4]Roll lengths and widths have a tolerance of ± 1%.
- GSE White Textured Double-Sided is available in rolls weighing approximately 4,000 lb (1,800 kg) and Single-Sided weighing approximately 3,000 lb (1,360 kg).
- All GSE geomembranes have dimensional stability of ±2% when tested according to ASTM D 1204 and LTB of <-77°C when tested according to ASTM D 746.
- *Modified.

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Appendix E: GSE Conductive Smooth Data Sheet

These product specifications meet or exceed GRI GM13.

Product Specifications

TESTED PROPERTY	TEST METHOD	FREQUENCY	MINIMUM AVERAGE VALUE			
			40 mil	60 mil	80 mil	100 mil
Thickness, (minimum average) mil (mm)	ASTM D 5199	every roll	40 (1.00)	60 (1.50)	80 (2.00)	100 (2.50)
Lowest individual reading (-10%)			36 (0.91)	54 (1.40)	72 (1.80)	90 (2.30)
Density, g/cm³	ASTM D 1505	200,000 lb	0.94	0.94	0.94	0.94
Tensile Properties (each direction)	ASTM D 6693, Type IV	20,000 lb				
Strength at Break, lb/in-width (N/mm)	Dumbell, 2 ipm		152 (26)	243 (42)	327 (57)	410 (71)
Strength at Yield, lb/in-width (N/mm)			84 (14)	132 (23)	177 (30)	212 (37)
Elongation at Break, %	G.L. 2.0 in (51 mm)		700	700	700	700
Elongation at Yield, %	G.L. 1.3 in (33 mm)		13	13	13	13
Tear Resistance, lb (N)	ASTM D 1004	45,000 lb	28 (124)	42 (186)	58 (257)	73 (324)
Puncture Resistance, lb (N)	ASTM D 4833	45,000 lb	85 (378)	125 (556)	160 (711)	195 (867)
Carbon Black Content[1], % (Range)	ASTM D 1603*/4218	20,000 lb	2.0 - 3.0	2.0 - 3.0	2.0 - 3.0	2.0 - 3.0
Carbon Black Dispersion	ASTM D 5596	45,000 lb	Note[2]	Note[2]	Note[2]	Note[2]
Notched Constant Tensile Load, hr	ASTM D 5397, Appendix	200,000 lb	1,000	1,000	1,000	1,000
Oxidative Induction Time, min	ASTM D 3895, 200°C; O_2, 1 atm	200,000 lb	>140	>140	>140	>140
TYPICAL ROLL DIMENSIONS						
Roll Length[3], ft (m)			870 (265)	560 (171)	430 (131)	340 (104)
Roll Width[3], ft (m)			22.5 (6.9)	22.5 (6.9)	22.5 (6.9)	22.5 (6.9)
Roll Area, ft² (m²)			19,575 (1,819)	12,600 (1,171)	9,675 (899)	7,650 (711)

NOTES:

- [1]GSE Conductive may have an overall ash content greater than 3.0%. These values apply to the non-conductive black layers.
- [2]Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
- [3]Roll lengths and widths have a tolerance of ± 1%.
- GSE Conductive is available in rolls weighing approximately 3,900 lb (1,769 kg)
- All GSE geomembranes have dimensional stability of ±2% when tested according to ASTM D 1204 and LTB of <-77°C when tested according to ASTM D 746.
- *Modified.

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Appendix E: GSE Conductive Textured (Single-Sided) Data Sheet

These product specifications meet or exceed GRI GM13.

Product Specifications

TESTED PROPERTY	TEST METHOD	FREQUENCY	MINIMUM AVERAGE VALUE 40 mil	60 mil	80 mil	100 mil
Thickness, (minimum average) mil (mm)	ASTM D 5994	every roll	40 (1.00)	60 (1.50)	80 (2.00)	100 (2.50)
Lowest individual reading (-10%)			36 (0.91)	54 (1.40)	72 (1.80)	90 (2.30)
Density, g/cm³	ASTM D 1505	200,000 lb	0.94	0.94	0.94	0.94
Tensile Properties (each direction)	ASTM D 6693, Type IV	20,000 lb				
Strength at Break, lb/in-width (N/mm)	Dumbell, 2 ipm		75 (13)	115 (20)	155 (27)	230 (40)
Strength at Yield, lb/in-width (N/mm)			90 (15)	132 (23)	177 (31)	225 (39)
Elongation at Break, %	G.L. 2.0 in (51 mm)		100	100	100	100
Elongation at Yield, %	G.L. 1.3 in (33 mm)		12	12	12	12
Tear Resistance, lb (N)	ASTM D 1004	45,000 lb	32 (142)	45 (200)	60 (266)	75 (333)
Puncture Resistance, lb (N)	ASTM D 4833	45,000 lb	95 (422)	130 (578)	160 (711)	190 (845)
Carbon Black Content[1], % (Range)	ASTM D 1603*/4218	20,000 lb	2.0 - 3.0	2.0 - 3.0	2.0 - 3.0	2.0 - 3.0
Carbon Black Dispersion	ASTM D 5596	45,000 lb	Note[2]	Note[2]	Note[2]	Note[2]
Asperity Height, mil (mm)	ASTM D 7466	second roll	18 (0.45)	18 (0.45)	18 (0.45)	18 (0.45)
Notched Constant Tensile Load[3], hr	ASTM D 5397, Appendix	200,000 lb	1,000	1,000	1,000	1,000
Oxidative Induction Time, min	ASTM D 3895, 200°C; O_2, 1 atm	200,000 lb	>140	>140	>140	>140
TYPICAL ROLL DIMENSIONS						
Roll Length[4], ft (m)			650 (198)	420 (128)	320 (98)	250 (76)
Roll Width[4], ft (m)			22.5 (6.9)	22.5 (6.9)	22.5 (6.9)	22.5 (6.9)
Roll Area, ft², (m²), ft			14,625 (1,359)	9,450 (878)	7,200 (669)	5,625 (523)

NOTES:

- [1] GSE Conductive Textured may have an overall ash content greater than 3.0%. These values apply to the non-conductive black layers.
- [2] Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
- [3] NCTL for GSE Conductive Textured is conducted on representative smooth membrane samples.
- [4] Roll lengths and widths have a tolerance of ± 1%.
- GSE Conductive Textured Single-Sided is available in rolls weighing approximately 3,000 lb (1,360 kg).
- All GSE geomembranes have dimensional stability of ±2% when tested according to ASTM D 1204 and LTB of <-77°C when tested according to ASTM D 746.
- *Modified.

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Appendix F: GSE Conductive White Smooth Data Sheet

These product specifications meet or exceed GRI GM13.

Product Specifications

TESTED PROPERTY	TEST METHOD	FREQUENCY	MINIMUM AVERAGE VALUE 40 mil	60 mil	80 mil	100 mil
Thickness, (minimum average) mil (mm)	ASTM D 5199	every roll	40 (1.00)	60 (1.50)	80 (2.00)	100 (2.50)
Lowest individual reading (-10%)			36 (0.91)	54 (1.40)	72 (1.80)	90 (2.30)
Density, g/cm³	ASTM D 1505	200,000 lb	0.94	0.94	0.94	0.94
Tensile Properties (each direction)	ASTM D 6693, Type IV	20,000 lb				
Strength at Break, lb/in-width (N/mm)	Dumbell, 2 ipm		152 (26)	243 (42)	327 (57)	410 (71)
Strength at Yield, lb/in-width (N/mm)			84 (14)	132 (23)	177 (30)	212 (37)
Elongation at Break, %	G.L. 2.0 in (51 mm)		700	700	700	700
Elongation at Yield, %	G.L. 1.3 in (33 mm)		13	13	13	13
Tear Resistance, lb (N)	ASTM D 1004	45,000 lb	28 (124)	42 (186)	58 (257)	73 (324)
Puncture Resistance, lb (N)	ASTM D 4833	45,000 lb	85 (378)	125 (556)	160 (711)	195 (867)
Carbon Black Content[1], % (Range)	ASTM D 1603*/4218	20,000 lb	2.0 - 3.0	2.0 - 3.0	2.0 - 3.0	2.0 - 3.0
Carbon Black Dispersion	ASTM D 5596	45,000 lb	Note[2]	Note[2]	Note[2]	Note[2]
Notched Constant Tensile Load, hr	ASTM D 5397, Appendix	200,000 lb	1,000	1,000	1,000	1,000
Oxidative Induction Time, min	ASTM D 3895, 200°C; O_2, 1 atm	200,000 lb	>140	>140	>140	>140
TYPICAL ROLL DIMENSIONS						
Roll Length[3], ft (m)			870 (265)	560 (171)	430 (131)	340 (104)
Roll Width[3], ft (m)			22.5 (6.9)	22.5 (6.9)	22.5 (6.9)	22.5 (6.9)
Roll Area, ft² (m²)			19,575 (1,819)	12,600 (1,171)	9,675 (899)	7,650 (711)

NOTES:

- [1]GSE Conductive White may have an overall ash content greater than 3.0% due to the white and conductive outer layers. These values apply to the non-conductive black layers.
- [2]Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
- [3]Roll lengths and widths have a tolerance of ± 1%.
- GSE Conductive White is available in rolls weighing approximately 3,900 lb (1,769 kg).
- All GSE geomembranes have dimensional stability of ±2% when tested according to ASTM D 1204 and ITB of <-77°C when tested according to ASTM D 746
- *Modified

MQA GEO R01/18/10

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Appendix F: GSE Conductive White Textured (Single-Sided) Data Sheet

These product specifications meet or exceed GRI GM13.

Product Specifications

TESTED PROPERTY	TEST METHOD	FREQUENCY	MINIMUM AVERAGE VALUE 40 mil	60 mil	80 mil	100 mil
Thickness, (minimum average) mil (mm)	ASTM D 5994	every roll	40 (1.00)	60 (1.50)	80 (2.00)	100 (2.50)
Lowest individual reading (-10%)			36 (0.91)	54 (1.40)	72 (1.80)	90 (2.30)
Density, g/cm³	ASTM D 1505	200,000 lb	0.94	0.94	0.94	0.94
Tensile Properties (each direction)	ASTM D 6693, Type IV	20,000 lb				
Strength at Break, lb/in-width (N/mm)	Dumbell, 2 ipm		75 (13)	115 (20)	155 (27)	230 (40)
Strength at Yield, lb/in-width (N/mm)			90 (15)	132 (23)	177 (31)	225 (39)
Elongation at Break, %	G.L. 2.0 in (51 mm)		100	100	100	100
Elongation at Yield, %	G.L. 1.3 in (33 mm)		12	12	12	12
Tear Resistance, lb (N)	ASTM D 1004	45,000 lb	32 (142)	45 (200)	60 (266)	75 (333)
Puncture Resistance, lb (N)	ASTM D 4833	45,000 lb	95 (422)	130 (578)	160 (711)	190 (845)
Carbon Black Content[1], % (Range)	ASTM D 1603*/4218	20,000 lb	2.0 - 3.0	2.0 - 3.0	2.0 - 3.0	2.0 - 3.0
Carbon Black Dispersion	ASTM D 5596	45,000 lb	Note[2]	Note[2]	Note[2]	Note[2]
Asperity Height, mil (mm)	ASTM D 7466	second roll	18 (0.45)	18 (0.45)	18 (0.45)	18 (0.45)
Notched Constant Tensile Load[3], hr	ASTM D 5397, Appendix	200,000 lb	1,000	1,000	1,000	1,000
Oxidative Induction Time, min	ASTM D 3895, 200°C; O_2, 1 atm	200,000 lb	>140	>140	>140	>140
TYPICAL ROLL DIMENSIONS						
Roll Length[4], ft (m)			650 (198)	420 (128)	320 (98)	250 (76)
Roll Width[4], ft (m)			22.5 (6.9)	22.5 (6.9)	22.5 (6.9)	22.5 (6.9)
Roll Area, ft², (m²), ft			14,625 (1,359)	9,450 (878)	7,200 (669)	5,625 (523)

NOTES:

- [1]GSE Conductive White Textured may have an overall ash content greater than 3.0% due to the white and conductive outer layers. These values apply to the non-conductive black layers.
- [2]Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
- [3]NCTL for GSE Conductive White Textured is conducted on representative smooth membrane samples.
- [4]Roll lengths and widths have a tolerance of ± 1%.
- GSE Conductive White Textured Single-Sided is available in rolls weighing approximately 3,000 lb (1,360 kg).
- All GSE geomembranes have dimensional stability of ±2% when tested according to ASTM D 1204 and LTB of <-77°C when tested according to ASTM D 746
- *Modified.

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Appendix G: GSE UltraFlex Smooth Data Sheet

These product specifications meet or exceed GRI GM17.

Product Specifications

TESTED PROPERTY	TEST METHOD	FREQUENCY	MINIMUM AVERAGE VALUE			
			40 mil	60 mil	80 mil	100 mil
Thickness, (minimum average) mil (mm)	ASTM D 5199	every roll	40 (1.00)	60 (1.50)	80 (2.00)	100 (2.50)
Lowest individual reading (-10%)			36 (0.91)	54 (1.40)	72 (1.80)	90 (2.28)
Density, g/cm³	ASTM D 1505	200,000 lb	0.92	0.92	0.92	0.92
Tensile Properties (each direction) Strength at Break, lb/in-width (N/mm)	ASTM D 6693, Type IV Dumbell, 2 ipm G.L. 2.0 in (51 mm)	20,000 lb	170 (29)	240 (42)	320 (56)	380 (66)
Elongation at Break, %			800	800	800	800
Tear Resistance, lb (N)	ASTM D 1004	45,000 lb	22 (97)	33 (146)	44 (195)	55 (244)
Puncture Resistance, lb (N)	ASTM D 4833	45,000 lb	70 (311)	100 (444)	130 (578)	155 (689)
Carbon Black Content, % (Range)	ASTM D 1603*/4218	20,000 lb	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0
Carbon Black Dispersion	ASTM D 5596	45,000 lb	Note[1]	Note[1]	Note[1]	Note[1]
Oxidative Induction Time, min	ASTM D 3895, 200° C; O_2, 1 atm	200,000 lb	>140	>140	>140	>140
TYPICAL ROLL DIMENSIONS						
Roll Length[2], ft (m)			870 (265)	560 (171)	430 (131)	340 (103)
Roll Width[2], ft (m)			22.5 (6.9)	22.5 (6.9)	22.5 (6.9)	22.5 (6.9)
Roll Area, ft² (m²)			19,575 (1,819)	12,600 (1,171)	9,675 (899)	7,650 (710)

NOTES:

- [1]Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3
- [2]Roll lengths and widths have a tolerance of ±1%.
- GSE UltraFlex is available in rolls weighing approximately 3,900 lb (1,769 kg).
- All GSE geomembranes have dimensional stability of ±2% when tested according to ASTM D 1204 and LTB of <-77°C when tested according to ASTM D 746.
- *Modified.

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Appendix G: GSE UltraFlex Textured Data Sheet

These product specifications meet or exceed GRI GM17.

Product Specifications

TESTED PROPERTY	EST METHOD	FREQUENCY	MINIMUM AVERAGE VALUE			
			40 mil	60 mil	80 mil	100 mil
Thickness, (minimum average) mil (mm)	ASTM D 5994	every roll	40 (1.00)	60 (1.50)	80 (2.00)	100 (2.50)
Lowest individual reading (-10%)			36 (0.91)	54 (1.40)	72 (1.80)	90 (2.28)
Density, g/cm³	ASTM D 1505	200,000 lb	0.92	0.92	0.92	0.92
Tensile Properties (each direction)	ASTM D 6693, Type IV	20,000 lb				
Strength at Break, lb/in-width (N/mm)	Dumbell, 2 ipm		115 (20)	168 (29)	224 (39)	270 (47)
Elongation at Break, %	G.L. 2.0 in (51 mm)		500	500	500	500
Tear Resistance, lb (N)	ASTM D 1004	45,000 lb	25 (111)	38 (169)	50 (222)	60 (266)
Puncture Resistance, lb (N)	ASTM D 4833	45,000 lb	65 (289)	95 (422)	125 (556)	140 (622)
Carbon Black Content, % (Range)	ASTM D 1603*/4218	20,000 lb	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0
Carbon Black Dispersion	ASTM D 5596	45,000 lb	Note[1]	Note[1]	Note[1]	Note[1]
Asperity Height, mil (mm)	ASTM D 7466	second roll	18 (0.45)	18 (0.45)	18 (0.45)	18 (0.45)
Oxidative Induction Time, min	ASTM D 3895, 200° C; O_2, 1 atm	200,000 lb	>140	>140	>140	>140
TYPICAL ROLL DIMENSIONS						
Roll Length[2], ft (m)	Double-Sided Textured		700 (213)	520 (158)	400 (122)	330 (100)
	Single-Sided Textured		650 (198)	420 (128)	320 (98)	250 (76)
Roll Width[2], ft (m)			22.5 (6.9)	22.5 (6.9)	22.5 (6.9)	22.5 (6.9)
Roll Area, ft² (m²)	Double-Sided Textured		15,750 (1,463)	11,700 (1,087)	9,000 (836)	7,425 (689)
	Single-Sided Textured		14,625 (1,359)	9,450 (878)	7,200 (669)	5,625 (522)

NOTES:
- [1] Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
- [2] Roll lengths and widths have a tolerance of ±1%.
- GSE UltraFlex Textured Double-Sided is available in rolls weighing approximately 4,000 lb (1,800 kg) and Single-Sided weighing approximately 3,000 lb (1,360 kg).
- All GSE geomembranes have dimensional stability of ±2% when tested according to ASTM D 1204 and LTB of <-77°C when tested according to ASTM D 746.
- *Modified.

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Appendix H: GSE UltraFlex White Smooth Data Sheet

These product specifications meet or exceed GRI GM17.

Product Specifications

TESTED PROPERTY	TEST METHOD	FREQUENCY	MINIMUM AVERAGE VALUE			
			40 mil	60 mil	80 mil	100 mil
Thickness, (minimum average) mil (mm) Lowest individual reading (-10%)	ASTM D 5199	every roll	40 (1.00) 36 (0.91)	60 (1.50) 54 (1.40)	80 (2.00) 72 (1.80)	100 (2.50) 90 (2.28)
Density, g/cm³	ASTM D 1505	200,000 lb	0.92	0.92	0.92	0.92
Tensile Properties (each direction) Strength at Break, lb/in-width (N/mm) Elongation at Break, %	ASTM D 6693, Type IV Dumbell, 2 ipm G.L. 2.0 in (51 mm)	20,000 lb	170 (29) 800	240 (42) 800	320 (56) 800	380 (66) 800
Tear Resistance, lb (N)	ASTM D 1004	45,000 lb	22 (97)	33 (146)	44 (195)	55 (244)
Puncture Resistance, lb (N)	ASTM D 4833	45,000 lb	70 (311)	100 (444)	130 (578)	155 (689)
Carbon Black Content[1], % (Range)	ASTM D 1603*/4218	20,000 lb	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0
Carbon Black Dispersion	ASTM D 5596	45,000 lb	Note[2]	Note[2]	Note[2]	Note[2]
Oxidative Induction Time, min	ASTM D 3895, 200° C; O_2, 1 atm	200,000 lb	>140	>140	>140	>140
TYPICAL ROLL DIMENSIONS						
Roll Length[3], ft (m)			870 (265)	560 (171)	430 (131)	340 (103)
Roll Width[3], ft (m)			22.5 (6.9)	22.5 (6.9)	22.5 (6.9)	22.5 (6.9)
Roll Area, ft² (m²)			19,575 (1,819)	12,600 (1,171)	9,675 (899)	7,650 (710)

NOTES:

- [1]GSE UltraFlex White may have an overall ash content greater than 3.0% due to the white layer. These values apply to the black layer only.
- [2]Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2 No more than 1 view from Category 3
- [3]Roll lengths and widths have a tolerance of ±1%.
- GSE UltraFlex White is available in rolls weighing approximately 3,900 lb (1,769 kg).
- All GSE geomembranes have dimensional stability of ±2% when tested according to ASTM D 1204 and LTB of <-77°C when tested according to ASTM D 746.
- *Modified.

MQA GEO 801/18.10

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Appendix H: GSE UltraFlex White Textured Data Sheet

These product specifications meet or exceed GRI GM17.

Product Specifications

TESTED PROPERTY	TEST METHOD	FREQUENCY	MINIMUM AVERAGE VALUE			
			40 mil	60 mil	80 mil	100 mil
Thickness, (minimum average) mil (mm)	ASTM D 5994	every roll	40 (1.00)	60 (1.50)	80 (2.00)	100 (2.50)
Lowest individual reading (-10%)			36 (0.91)	54 (1.40)	72 (1.80)	90 (2.28)
Density, g/cm³	ASTM D 1505	200,000 lb	0.92	0.92	0.92	0.92
Tensile Properties (each direction)	ASTM D 6693, Type IV Dumbell, 2 ipm G.L. 2.0 in (51 mm)	20,000 lb				
Strength at Break, lb/in-width (N/mm)			115 (20)	168 (29)	224 (39)	270 (47)
Elongation at Break, %			500	500	500	500
Tear Resistance, lb (N)	ASTM D 1004	45,000 lb	25 (111)	38 (169)	50 (222)	60 (266)
Puncture Resistance, lb (N)	ASTM D 4833	45,000 lb	65 (289)	95 (422)	125 (556)	140 (622)
Carbon Black Content[1], % (Range)	ASTM D 1603*/4218	20,000 lb	2.0-3.0	2.0-3.0	2.0-3.0	2.0-3.0
Carbon Black Dispersion	ASTM D 5596	45,000 lb	Note[2]	Note[2]	Note[2]	Note[2]
Asperity Height, mil (mm)	ASTM D 7466	second roll	18 (0.45)	18 (0.45)	18 (0.45)	18 (0.45)
Oxidative Induction Time, min	ASTM D 3895, 200° C; O_2, 1 atm	200,000 lb	>140	>140	>140	>140
TYPICAL ROLL DIMENSIONS						
Roll Length[3], ft (m)	Double-Sided Textured		700 (213)	520 (158)	400 (122)	330 (100)
	Single-Sided Textured		650 (198)	420 (128)	320 (98)	250 (76)
Roll Width[3], ft (m)			22.5 (6.9)	22.5 (6.9)	22.5 (6.9)	22.5 (6.9)
Roll Area, ft² (m²)	Double-Sided Textured		15,750 (1,463)	11,700 (1,087)	9,000 (836)	7,425 (689)
	Single-Sided Textured		14,625 (1,359)	9,450 (878)	7,200 (669)	5,625 (522)

NOTES:

- [1]GSE UltraFlex White Textured may have an overall ash content greater than 3.0% due to the white layer. These values apply to the black layer only
- [2]Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
- [3]Roll lengths and widths have a tolerance of ±1%.
- GSE UltraFlex White Textured Double-Sided is available in rolls weighing approximately 4,000 lb (1,800 kg) and Single-Sided weighing approximately 3,000 lb (1,360 kg).
- All GSE geomembranes have dimensional stability of ±2% when tested according to ASTM D 1204 and LTB of <-77°C when tested according to ASTM D 746
- *Modified.

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SUBMITTAL COVER SHEET

CONTRACTOR: OP-TECH Environmental Services, Inc.

SUBMITTAL NO.: 008

DATE OF SUBMITTAL: 8/24/11

ADDRESS: 150 Rotterdam Industrial Park

Schenectady, New York

CONTRACT NO.: 137335

MANUFACTURER:

NAME OF PROJECT: Ford Rd. Landfill Remedial Action Phase 1 Construction

SUBMITTAL DESCRIPTION: Ohio #304 stone

REFERENCES:

Specification Section(s) 312000 Paragraph(s) 2.3

Contract Drawing(s)

CONTRACTOR SIGNATURE

BROWN AND CALDWELL REVIEW

BROWN AND CALDWELL

DOCUMENT REVIEW STATUS

STATUS NO:

1 ☒ NO EXCEPTION TAKEN

2 ☐ MAKE CORRECTIONS NOTED RESUBMITTAL NOT REQUIRED

3 ☐ REVISE AND RE-SUBMIT RESUBMITTAL REQUIRED

4 ☐ REJECTED – SEE REMARKS

REVIEWED BY: RWQR TITLE: CERTIFYING ENGINEER

DATE: 8/24/11

REMARKS:

304

SOLAR TESTING LABORATORIES, INC.
Geotechnical and Environmental Engineering, Materials Testing, and Construction Inspection

1125 Valley Belt Road, Brooklyn Heights, Ohio 44131
Phone (216) 741-7007 • Fax (216) 741-7011
www.stlohio.com

MATERIAL ANALYSIS

PROJECT:	KURTZ BROTHERS VARIOUS PROJECTS AND TESTING	**FILE NO.:**	A10019X12
		REPORT NO.:	007
CLIENT:	KURTZ BROTHERS	**DATE:**	6/24/10

On June 23, 2010, a sample of #304 recycled concrete aggregate, identified as New 304 recycled from RKDF, was delivered to our laboratory for a sieve analysis. Following are the test results:

Sieve Size	% Passing	Passing Specifications (ODOT 703.17)
2"	100	100
1"	96	70 – 100
3/4"	89	50 – 90
#4	51	30 – 60
#30	25	9 – 33
#200	5.9	0 – 15

This sample meets Ohio Department of Transportation gradation specification Item 703.17 for a #304 aggregate.

TECHNICIAN: DONALD HOLLENBAUGH

SOLAR TESTING LABORATORIES, INC.

Dennis L. Sanderson

Dennis L. Sanderson
Vice President/General Manager

slh 6/25/10

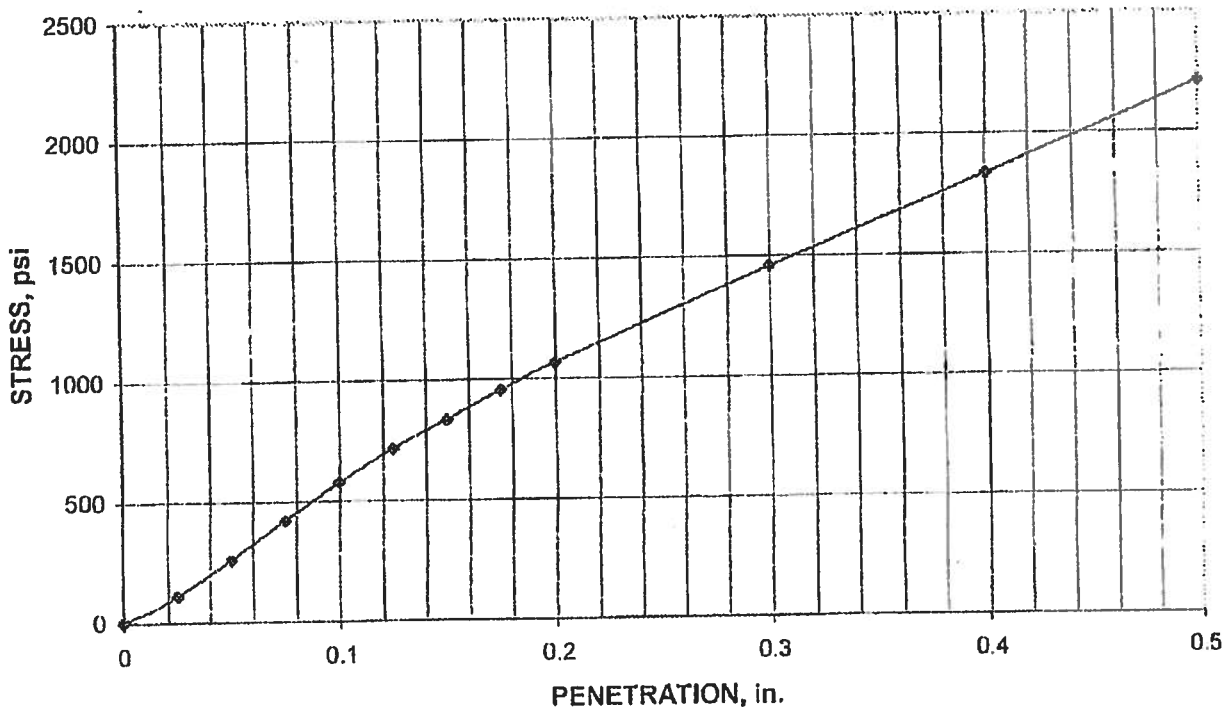
Certified Small Business Enterprise

B

EDP Consultants, Inc.
9375 CHILLICOTHE RD., KIRTLAND, OH, 44094
PHONE 440-256-6500 FAX 440-256-0507

CALIFORNIA BEARING RATIO
ASTM D1883

PROJECT	Kurtz 304 Recycle Comparison Study	SAMPLE INFORMATION	
LOCATION	Independence, Ohio	NUMBER	7791
CLIENT	Kurtz Bros.	LOCATION	---
DATE	December 16, 2009	DEPTH	---
EDP NO.	09382L	DESCRIPTION	Recycled Brick (labeled: ODOT #304)



COMPACTION METHOD	ASTM D698	WET DENSITY, initial, pcf	122.5
SOAKING PERIOD	96+ hours	WET DENSITY, final, pcf	123.7
WATER CONTENT, initial, %	16.5	DRY DENSITY, initial, pcf	105.2
WATER CONTENT, final, top, %	17.1	DRY DENSITY, final, pcf	106.1
WATER CONTENT, final, mid, %	16.2	SURCHARGE, lbs	10
WATER CONTENT, final, btm, %	16.5	SWELL, %	0.0
WATER CONTENT, final, avg, %	16.6	CBR VALUE	57.3
		CBR VALUE, CORRECTED	63.5

SUBMITTAL COVER SHEET

CONTRACTOR: OP-TECH Environmental Services, Inc.

SUBMITTAL NO.: 009 B

DATE OF SUBMITTAL: 9/20/11

ADDRESS: 150 Rotterdam Industrial Park

Schenectady, New York

CONTRACT NO.: 137335

MANUFACTURER:

NAME OF PROJECT: Ford Rd. Landfill Remedial Action Phase 1 Construction

SUBMITTAL DESCRIPTION: Steep Slope Fill

REFERENCES:

Specification Section(s) 312000 Paragraph(s) 2.1B

Contract Drawing(s)

CONTRACTOR SIGNATURE

BROWN AND CALDWELL REVIEW

BROWN AND CALDWELL

DOCUMENT REVIEW STATUS

STATUS NO:

1 ☒ NO EXCEPTION TAKEN

2 ☐ MAKE CORRECTIONS NOTED RESUBMITTAL NOT REQUIRED

3 ☐ REVISE AND RE-SUBMIT RESUBMITTAL REQUIRED

4 ☐ REJECTED – SEE REMARKS

REVIEWED BY: RJaQ TITLE: CERTIFYING ENGINEER

DATE: 9/27/11

REMARKS:

A

STEEP SLOPE

CLC LABS®
325 VENTURE DRIVE • WESTERVILLE, OHIO 43081 • (614) 888-1663 • FAX (614) 888-1330

SUBMITTED BY:
KURTZ BROS., INC. INDEP
SOIL & LANDSCAPE DIVISION
6415 GRANGER ROAD
INDEPENDENCE, OH 44131

ACCOUNT NO.: T911

SUBMITTED FOR:
PO #114051

REPORT DATE: DEC. 17, 2010
REPORT REF.: 423.017

SOIL TEXTURE ANALYSIS REPORT

LAB. NO.	SAMPLE IDENTIFICATION	MECHANICAL ANALYSIS			U.S.D.A. TEXTURE CLASS
		% SAND	% SILT	% CLAY	
617820	CLAY AV	20	32	48	CLAY

Method Used: Conforms to ASTM D 422-63

B

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SUBMITTED BY:
KURTZ BROS., INC. INDEP
SOIL & LANDSCAPE DIVISION
6415 GRANGER ROAD
INDEPENDENCE, OH 44131

ACCOUNT NO.: T911

SUBMITTED FOR:
PO #114051

REPORT DATE: DEC. 17, 2010
REPORT REF.: 423.017

SOIL ANALYSIS REPORT

LAB. NO. : 617820
SAMPLE ID: CLAY AV

TEST	RESULTS	UNITS
pH	7.4	SU
ORGANIC MATTER	2.0	%
TEXTURE CLASSIFICATION	CLAY	

Note: Organic matter reported a loss on ignition at 440°C, on oven dry (105°C) soil passing through a 1/4 inch sieve.

MATERIAL ANALYSIS

PROJECT:	KURTZ BROS. – PEARL ROAD SOIL	**FILE NO.:**	A11054X12
CLIENT:	KURTZ BROS.	**REPORT NO.:**	
		DATE:	9/6/11

On August 24, 2011, a soil sample, identified as Pearl Road, was delivered to this laboratory for a material analysis. Following is the test result:

Organic Content (ASTM D2974): 2.7%

Technician: D. Hollenbaugh

SOLAR TESTING LABORATORIES, INC.

George J. Ata, P.E., President

MATERIAL ANALYSIS

PROJECT:	KURTZ BROS., INC. – PEARL ROAD	**FILE NO.:**	A11054X12
		REPORT NO.:	
CLIENT:	KURTZ BROS., INC	**DATE:**	8/26/11

On August 23, 2011, a sample, identified as Pearl Road Soil, was delivered to our laboratory for a material analysis. Following are the test results:

Sieve Size	Particle Size (mm)	Percent Passing
3/4"	19.000	100.0
1/2"	12.700	93.0
3/8"	9.510	90.7
#4	4.750	84.6
#10	2.000	75.7
#20	0.850	67.3
#40	0.425	57.1
#100	0.150	38.4
#200	0.075	31.8
	0.029	25.9
	0.019	21.4
	0.011	17.8
	0.008	15.6
	0.006	13.8
	0.003	11.2
	0.001	7.6

Percent Gravel:	24.3
Percent Sand:	43.9
Percent Silt:	18.6
Percent Clay:	13.2

TECHNICIAN: DONALD HOLLENBAUGH

SOLAR TESTING LABORATORIES, INC.

MATERIAL ANALYSIS

PROJECT:	KURTZ BROS. – PEARL RD	**FILE NO.:**	A11054X12
CLIENT:	KURTZ BROS	**REPORT NO.:**	
		DATE:	9/15/11

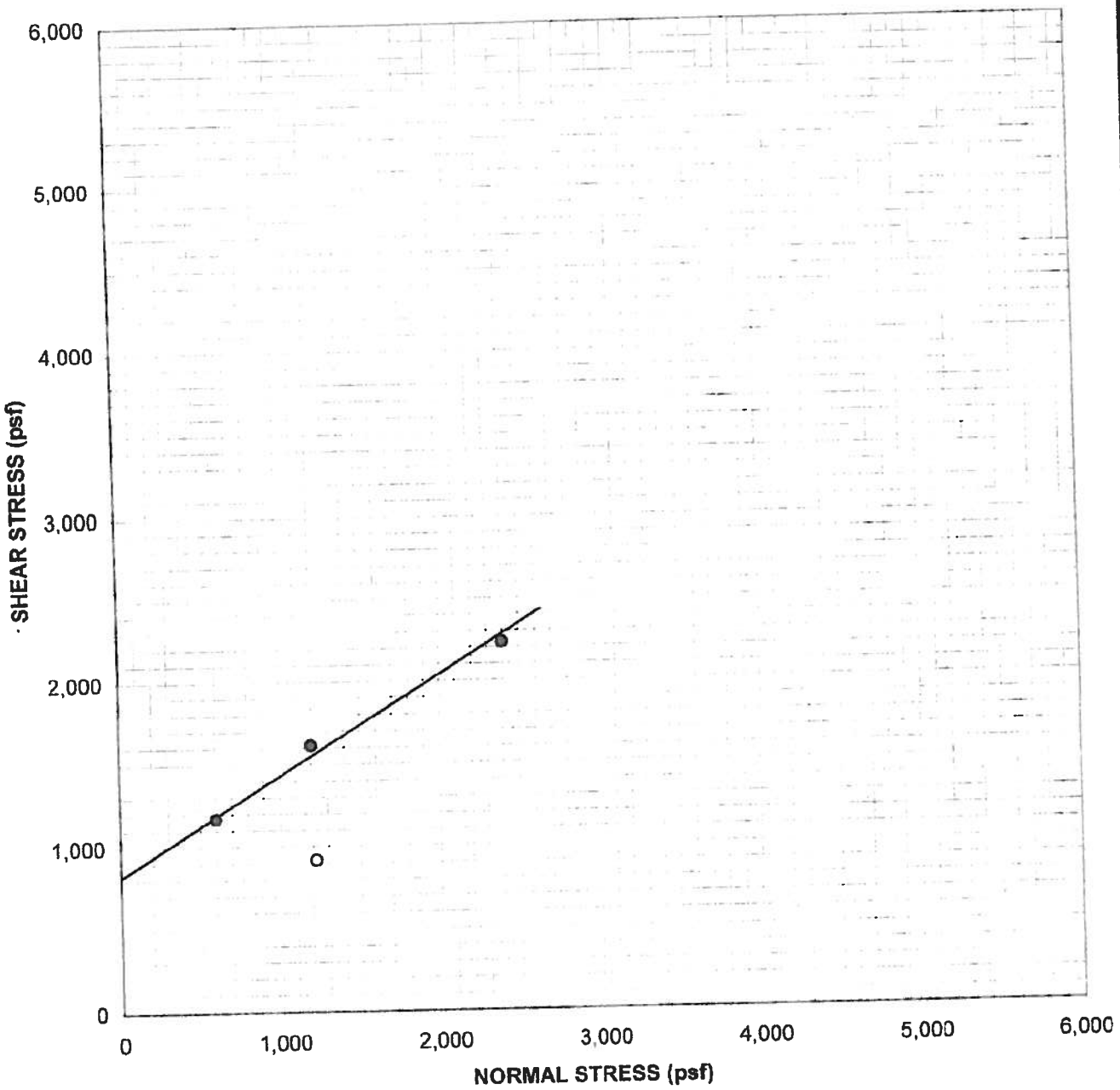
On August 24, 2011, a soil sample was delivered to this laboratory for a material analysis. A direct shear test was performed on this sample using the compaction and confining pressure parameters required in table 2 of the project specifications. See the attachment for the test results. This sample meets the project specifications of note 4 in table 2.

Technician: D. Hollenbaugh

SOLAR TESTING LABORATORIES, INC.

George J. Ata, P.E., President

DIRECT SHEAR TEST RESULTS



COHESION (c) = 822 psf

FRICTION (Ø) = 31.3°

BORING:
SAMPLE NO.:
SAMPLE DEPTH:

MATERIAL DESCRIPTION:
Mottled brn & gray SILTY CLAY, ltl sand, gravel (comp. to 95% of S.P. density @ 2% over opt. moist).

PROJECT NO.: A11054x12

PROJECT: KURTZ BROS.
LOCATION: PEARL ROAD-ELYRIA

CLIENT: KURTZ BROS.

DATE: 9-15-2011

SOLAR TESTING LABORATORIES, INC.

MATERIAL ANALYSIS

PROJECT:	KURTZ BROS. – PEARL ROAD SOIL	**FILE NO.:**	A11054X12
CLIENT:	KURTZ BROS.	**REPORT NO.:**	
		DATE:	9/7/11

On September 5, 2011, a soil sample, identified as Pearl Road, was delivered to this laboratory for a material analysis. Following are the test results:

Atterberg Limits (ASTM 4318)

Liquid Limit: 32

Plastic Limit: 18

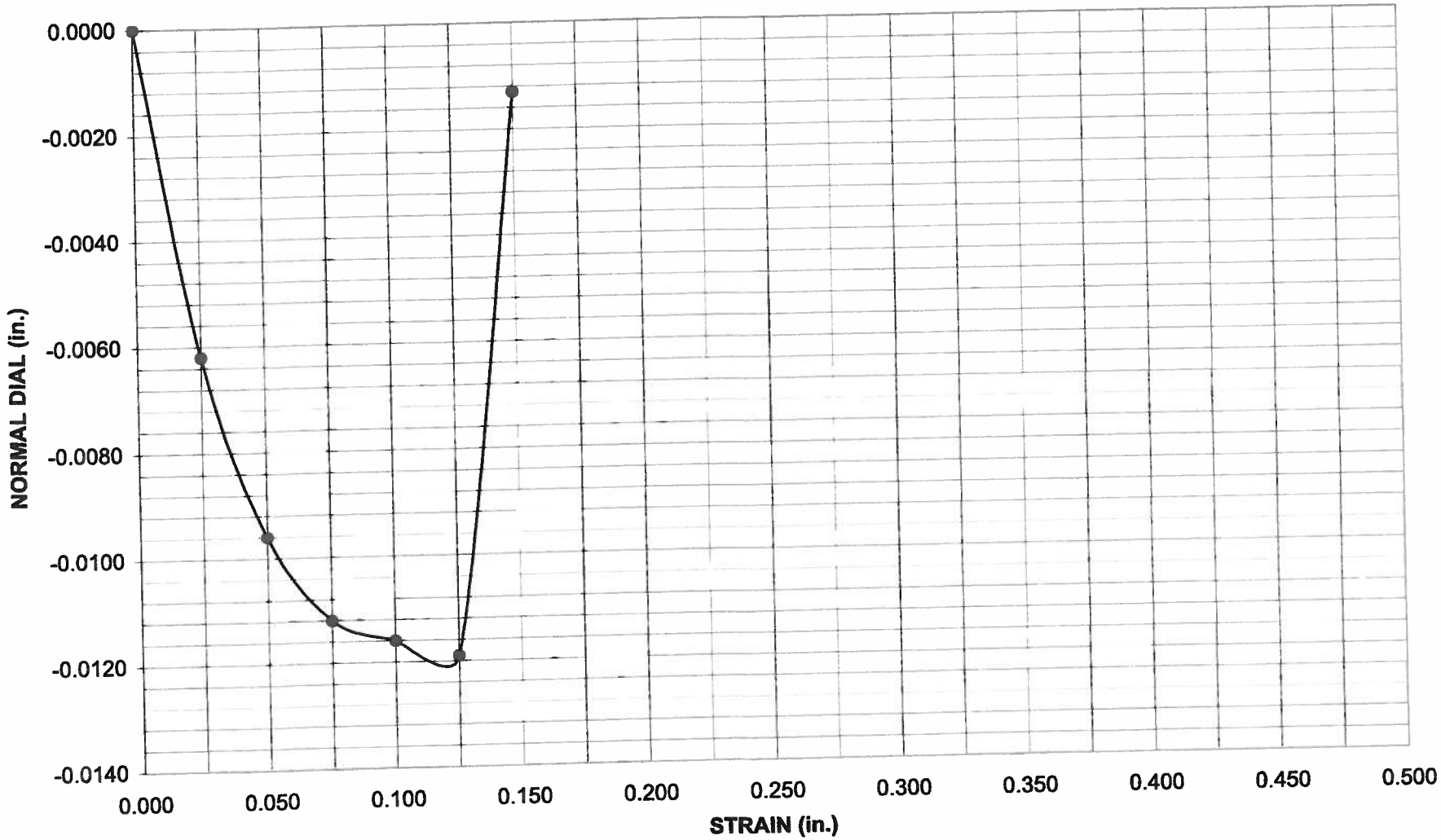
Plasticity Index: 14

Technician: D. Hollenbaugh

SOLAR TESTING LABORATORIES, INC.

George J. Ata, P.E., President

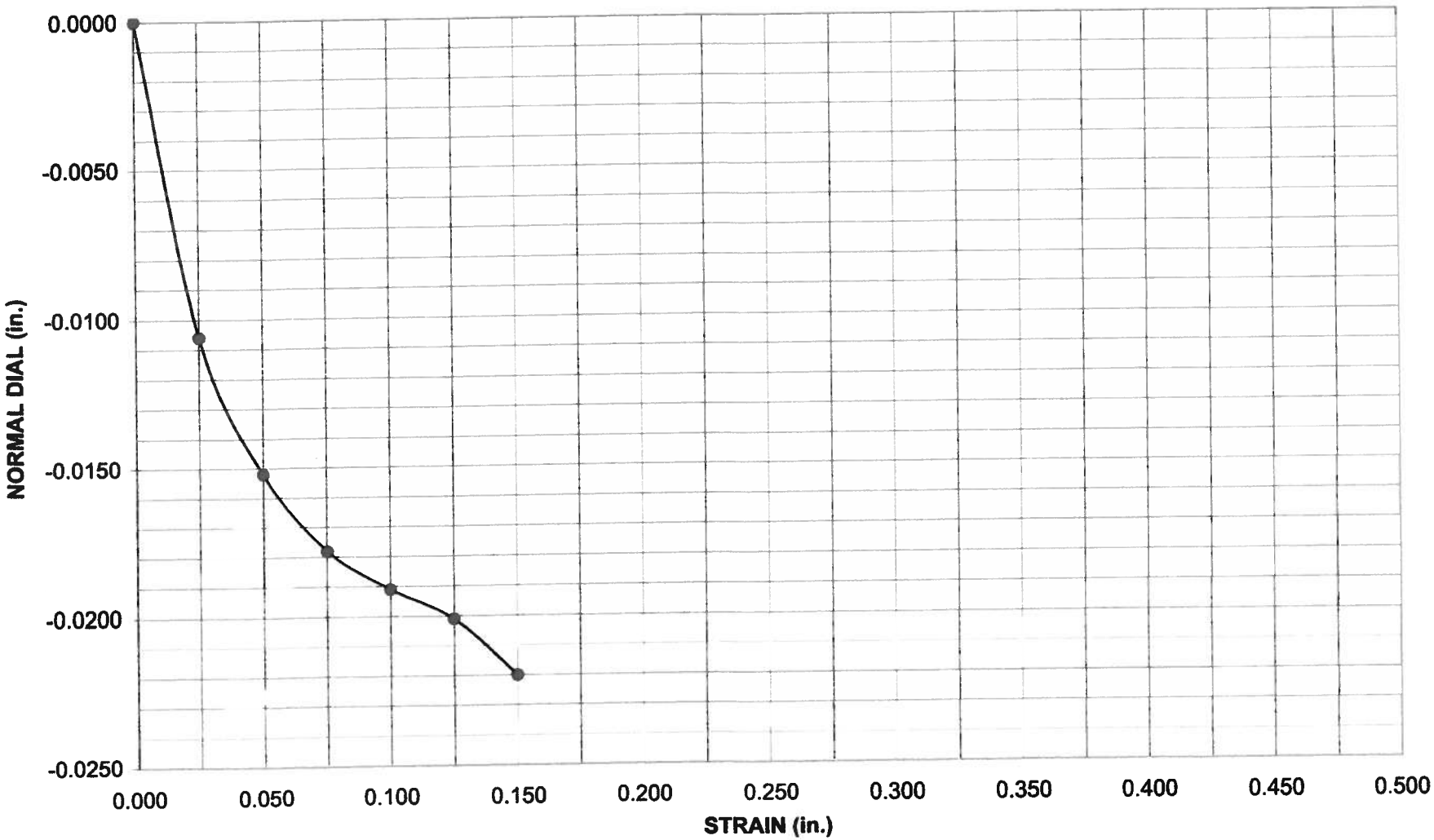
DIRECT SHEAR TEST POINT 1
600 psf NORMAL STRESS
NORMAL DIAL vs. STRAIN



BORING:
SAMPLE NO.:
PROJECT NO.: A11054x12

SOLAR TESTING LABORATORIES, INC.

DIRECT SHEAR TEST POINT 2
1,200 psf NORMAL STRESS
NORMAL DIAL vs. STRAIN

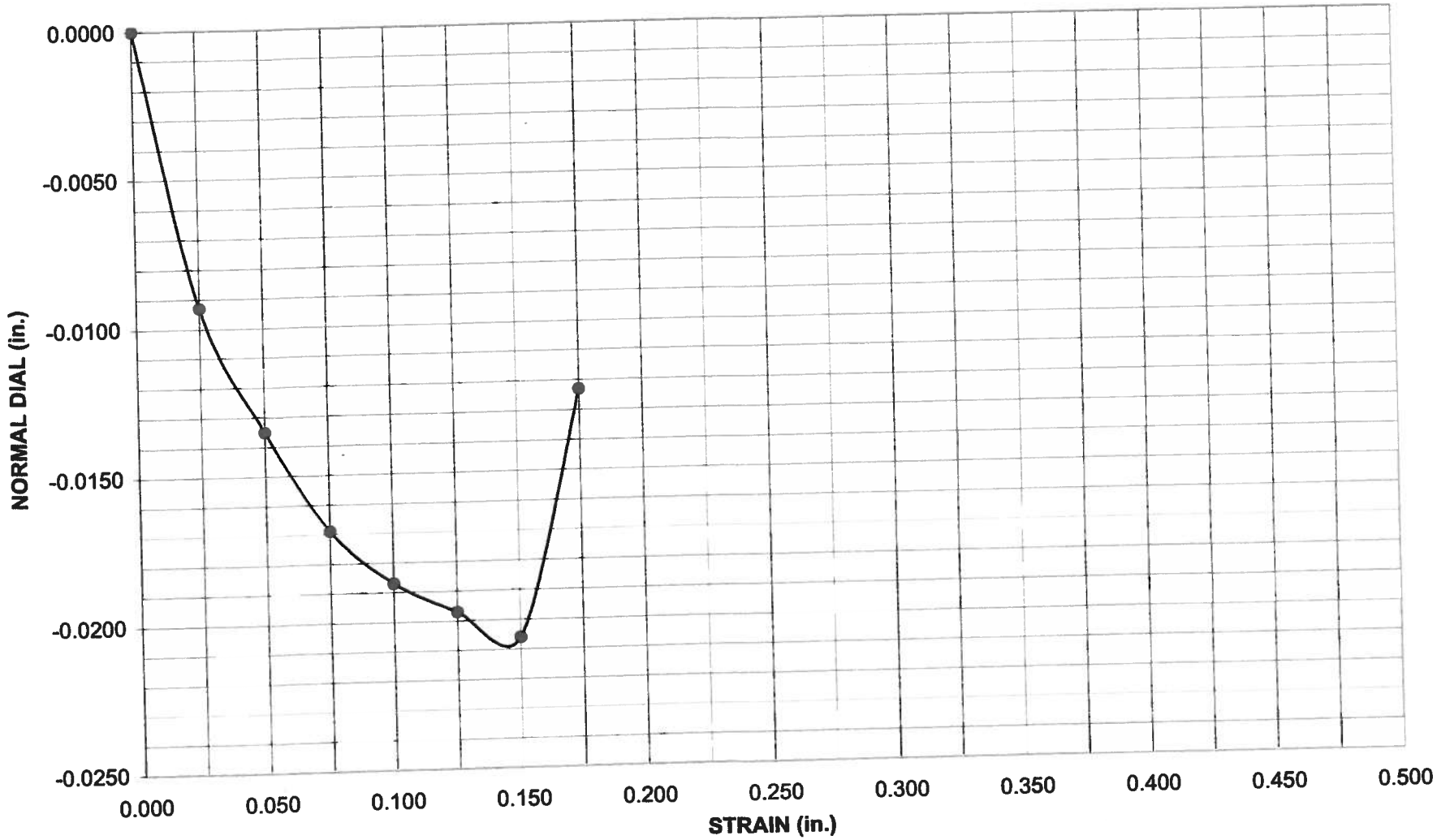


BORING:
SAMPLE NO.:

PROJECT NO.: A11054x12

SOLAR TESTING LABORATORIES, INC.

DIRECT SHEAR TEST POINT 3
2,400 psf NORMAL STRESS
NORMAL DIAL vs. STRAIN

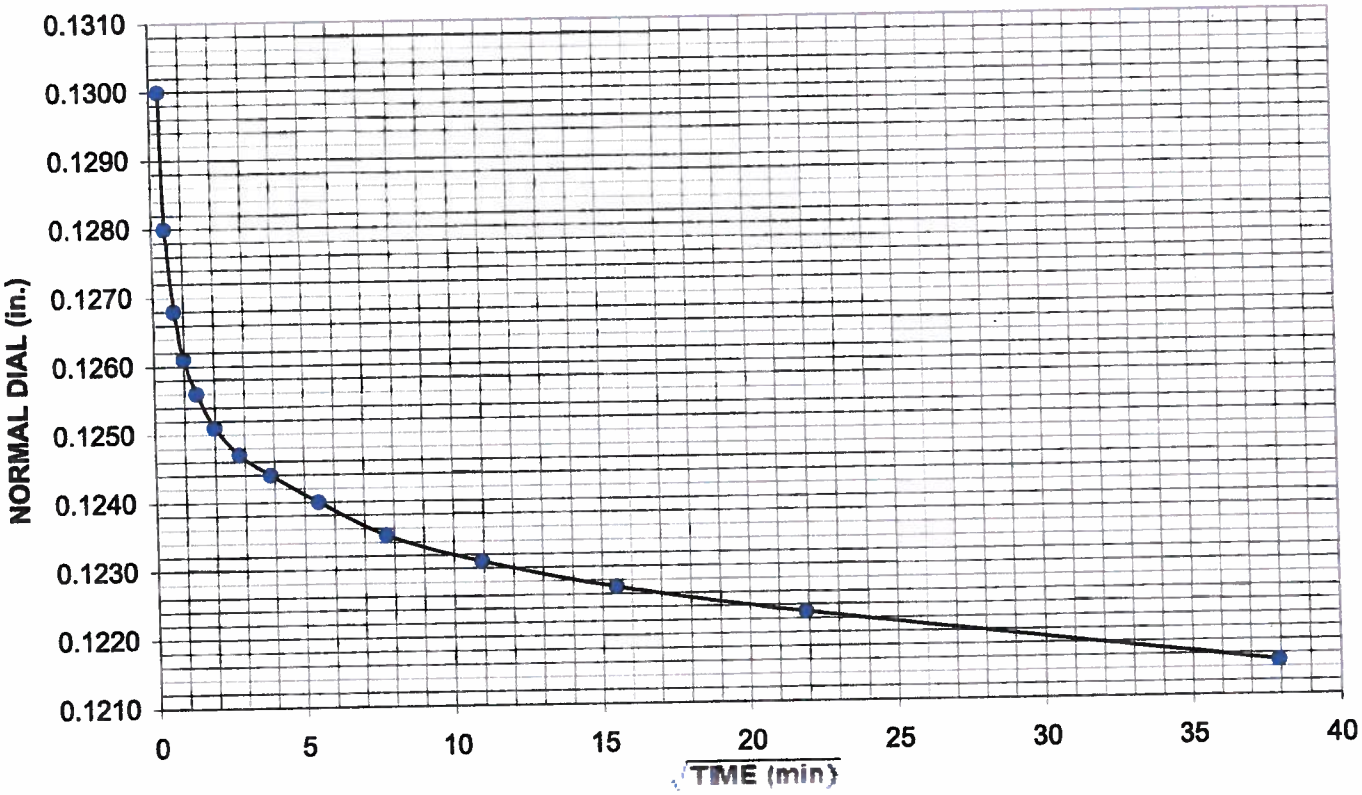


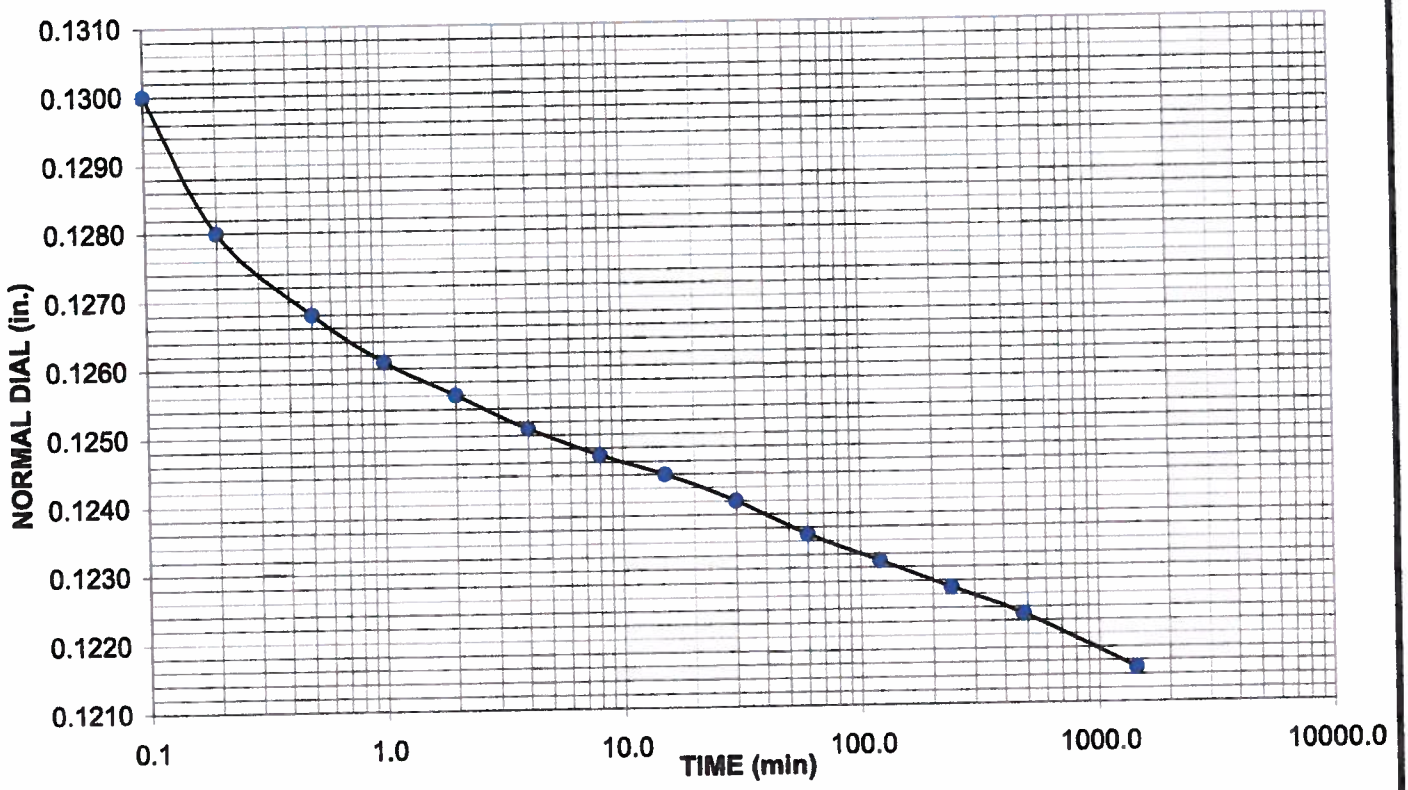
BORING:
SAMPLE NO.:

PROJECT NO.: A11054x12

SOLAR TESTING LABORATORIES, INC.

DIRECT SHEAR TEST POINT 2
1,200 psf NORMAL STRESS
CONSOLIDATION CURVES

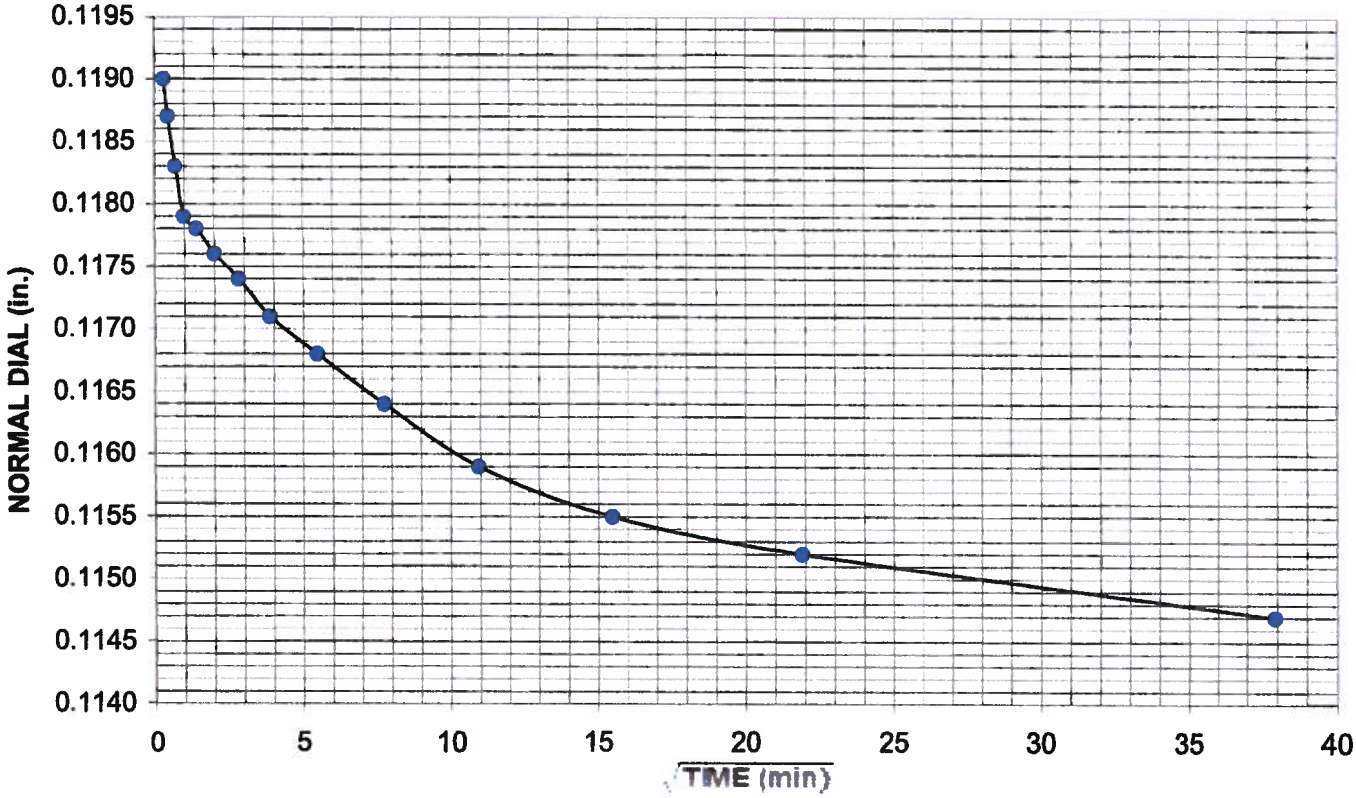


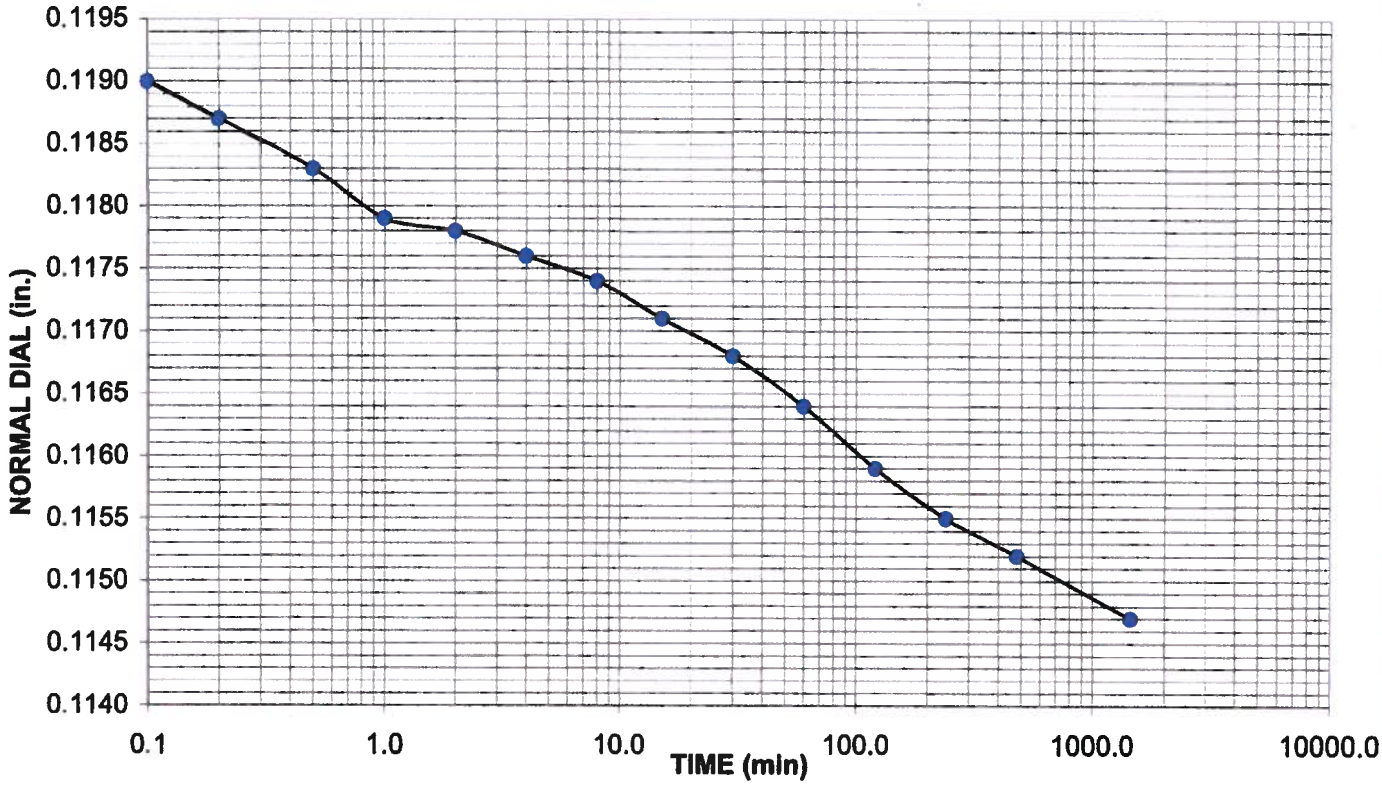


BORING:
SAMPLE NO.:
PROJECT NO.: A11054x12

SOLAR TESTING LABORATORIES, INC.

DIRECT SHEAR TEST POINT 1
600 psf NORMAL STRESS
CONSOLIDATION CURVES

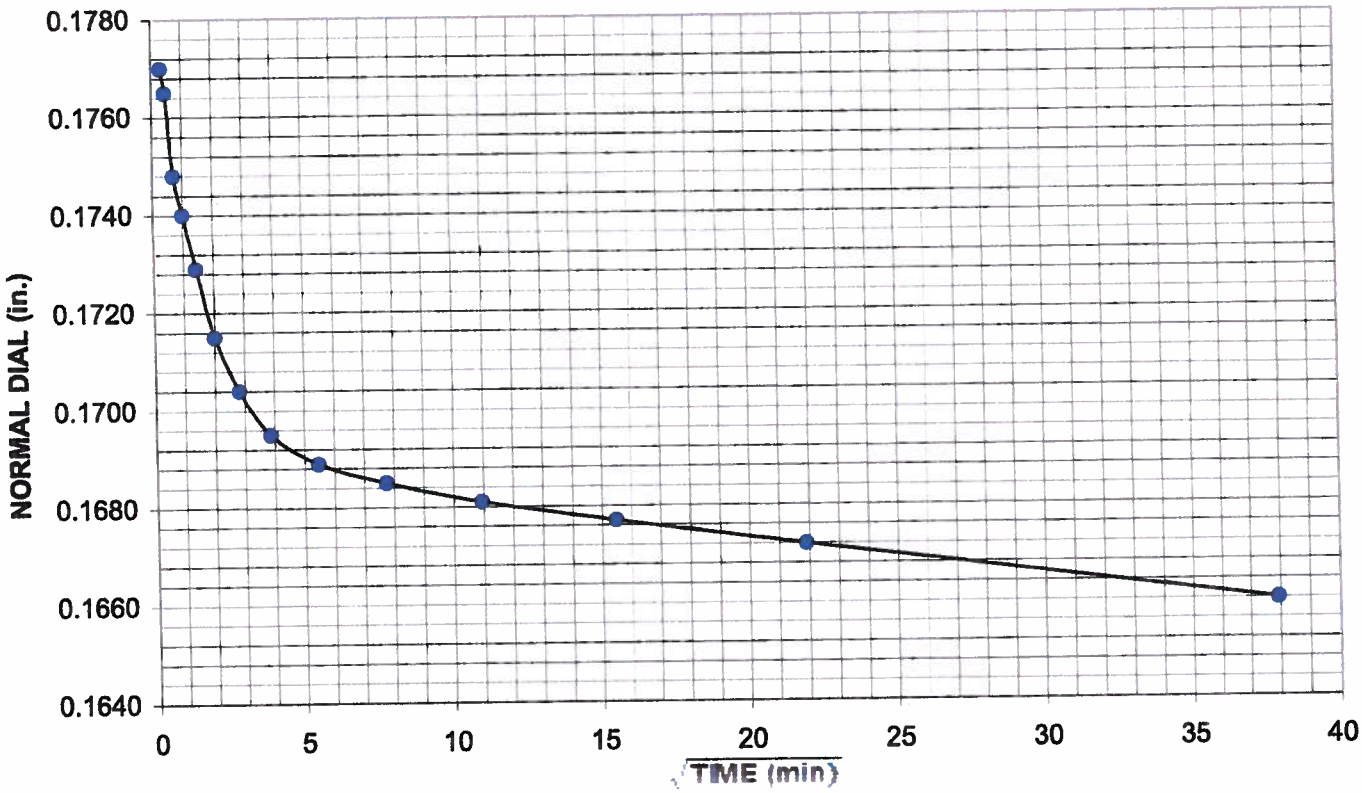


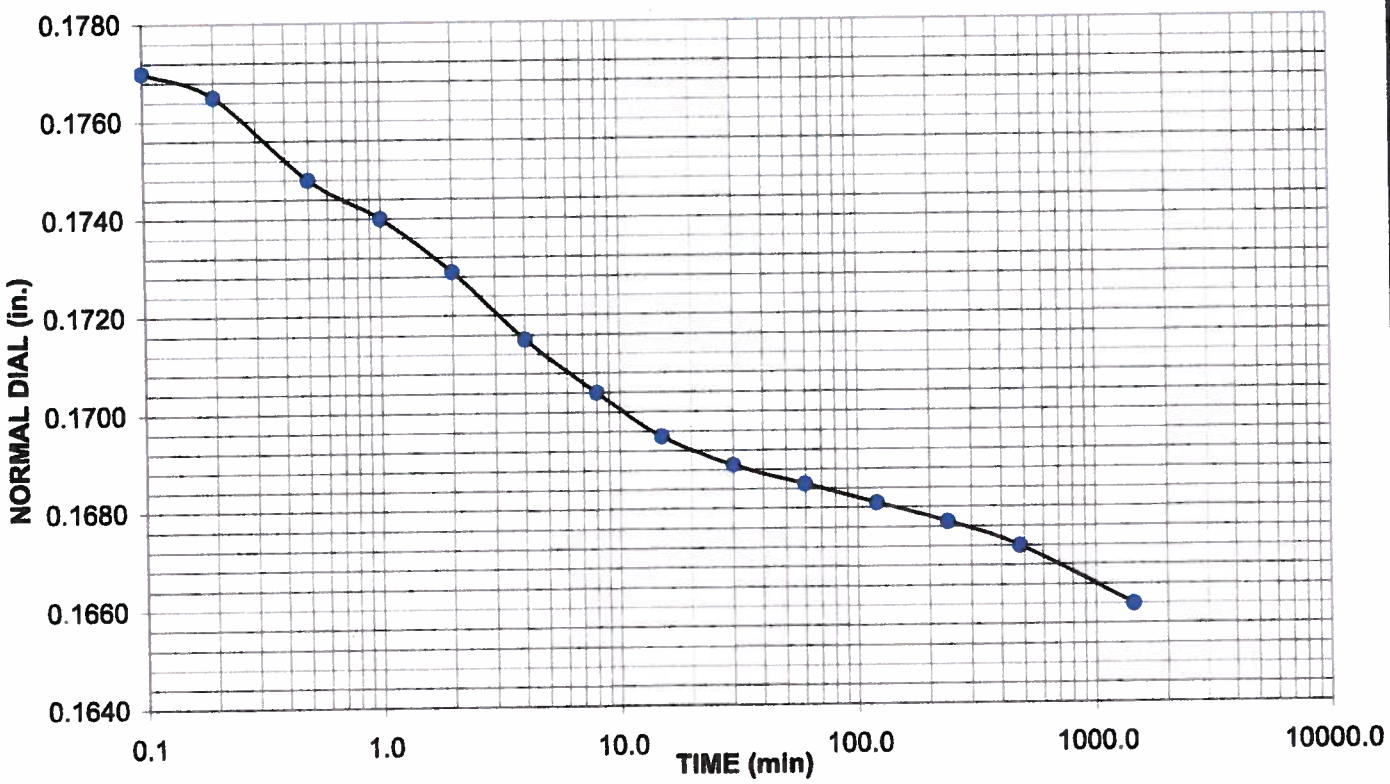


BORING:
SAMPLE NO.:
PROJECT NO.: A11054x12

SOLAR TESTING LABORATORIES, INC.

DIRECT SHEAR TEST POINT 3
2,400 psf NORMAL STRESS
CONSOLIDATION CURVES





BORING:
SAMPLE NO.:
PROJECT NO.: A11054x12

SOLAR TESTING LABORATORIES, INC.

DIRECT SHEAR POINT 1

Test by: DH
Date: 09/15/11

Applied Load
psi
600 psf

Specimen Size
Diameter: 2.50 in.
Height: 1.00 in.
Area: 4.91 sq. in.
Volume: 4.91 cu. in.

Moisture from Trimmings
Tare Number: 1
Tare Weight: 15.12 gm.
Wet Weight + Tare: 75.10 gm.
Dry Weight + Tare: 67.01 gm.
Moisture: 15.6 percent

Weight of Sample and Densities*
Mold 1
Mold Weight 76.27 gm.
Mold + Wet 236.32 gm.
Wet Density: 126.0 pcf
Dry Density: 109.0 pcf
* Based on Moisture from Trimmings

Moisture After
Tare Number: 16
Tare Weight: 31.22 gm.
Wet Weight + Tare: 191.20 gm.
Dry Weight + Tare: 170.00 gm.
Moisture: 15.3 percent

CONSOLIDATION		
Time (min.)	Sq. Root of Time	Normal Dial
0.1	0.32	0.1190
0.2	0.45	0.1187
0.5	0.71	0.1183
1	1.00	0.1179
2	1.41	0.1178
4	2.00	0.1176
8	2.83	0.1174
15	3.87	0.1171
30	5.48	0.1168
60	7.75	0.1164
120	10.95	0.1159
240	15.49	0.1155
480	21.91	0.1152
1440	37.95	0.1147

SHEAR					
Shear Dial	Normal Dial	Proving Ring	Load (lbs.)	Shear Stress psi	Shear Stress psf
0.000	0.1336	0	0	0.00	0
0.025	0.1274	79	24	4.89	704
0.050	0.1240	105	32	6.52	939
0.075	0.1224	118	36	7.33	1,056
0.100	0.1220	130	40	8.15	1,173
0.125	0.1217	126	39	7.95	1,144
0.150	0.1323	120	37	7.54	1,085
0.175	0.1420				
0.200	0.1539				
0.225	0.1630				
0.250	0.1732				
0.275	0.1835				
0.300	0.1900				
0.325	0.1942				
0.350	0.1972				
0.375	0.2001				
0.400	0.2038				
0.425	0.2070				
0.450	0.2112				
0.475					
0.500					

DIRECT SHEAR POINT 2

Test by: DH
Date: 09/15/11

Applied Load

	psi
1,200	psf

Specimen Size

Diameter:	2.50	in.
Height:	1.00	in.
Area:	4.91	sq. in.
Volume:	4.91	cu. in.

Moisture from Trimmings

Tare Number:	1	
Tare Weight:	11.45	gm.
Wet Weight + Tare:	126.25	gm.
Dry Weight + Tare:	110.71	gm.
Moisture:	15.7	percent

Weight of Sample and Densities*

Mold	1	
Mold Weight	76.27	gm.
Mold + Wet	236.26	gm.
Wet Density:	126.0	pcf
Dry Density:	108.9	pcf

* Based on Moisture from Trimmings

Moisture After

Tare Number:	1	
Tare Weight:	32.06	gm.
Wet Weight + Tare:	186.54	gm.
Dry Weight + Tare:	165.98	gm.
Moisture:	15.4	percent

CONSOLIDATION

Time (min.)	Sq. Root of Time	Normal Dial
0.1	0.32	0.1300
0.2	0.45	0.1280
0.5	0.71	0.1268
1	1.00	0.1261
2	1.41	0.1256
4	2.00	0.1251
8	2.83	0.1247
15	3.87	0.1244
30	5.48	0.1240
60	7.75	0.1235
120	10.95	0.1231
240	15.49	0.1227
480	21.91	0.1223
1440	37.95	0.1215

SHEAR

Shear Dial	Normal Dial	Proving Ring	Load (lbs.)	Shear Stress psi	Shear Stress psf
0.000	0.1128	0	0	0.00	0
0.025	0.1022	131	40	8.15	1,173
0.050	0.0976	171	52	10.59	1,525
0.075	0.0950	179	55	11.20	1,613
0.100	0.0937	179	55	11.20	1,613
0.125	0.0927	176	54	11.00	1,584
0.150	0.0908	169	52	10.59	1,525
0.175	0.1040				
0.200	0.1254				
0.225	0.1352				
0.250	0.1476				
0.275	0.1548				
0.300	0.1588				
0.325	0.1668				
0.350	0.1295				
0.375	0.1421				
0.400					
0.425					
0.450					
0.475					
0.500					

DIRECT SHEAR POINT 3

Test by: DH
Date: 07/14/10

Applied Load
psi
2,400 psf

Specimen Size
Diameter: 2.50 in.
Height: 1.00 in.
Area: 4.91 sq. in.
Volume: 4.91 cu. in.

Moisture from Trimmings
Tare Number: 73
Tare Weight: 11.23 gm.
Wet Weight + Tare: 102.67 gm.
Dry Weight + Tare: 90.23 gm.
Moisture: 15.7 percent

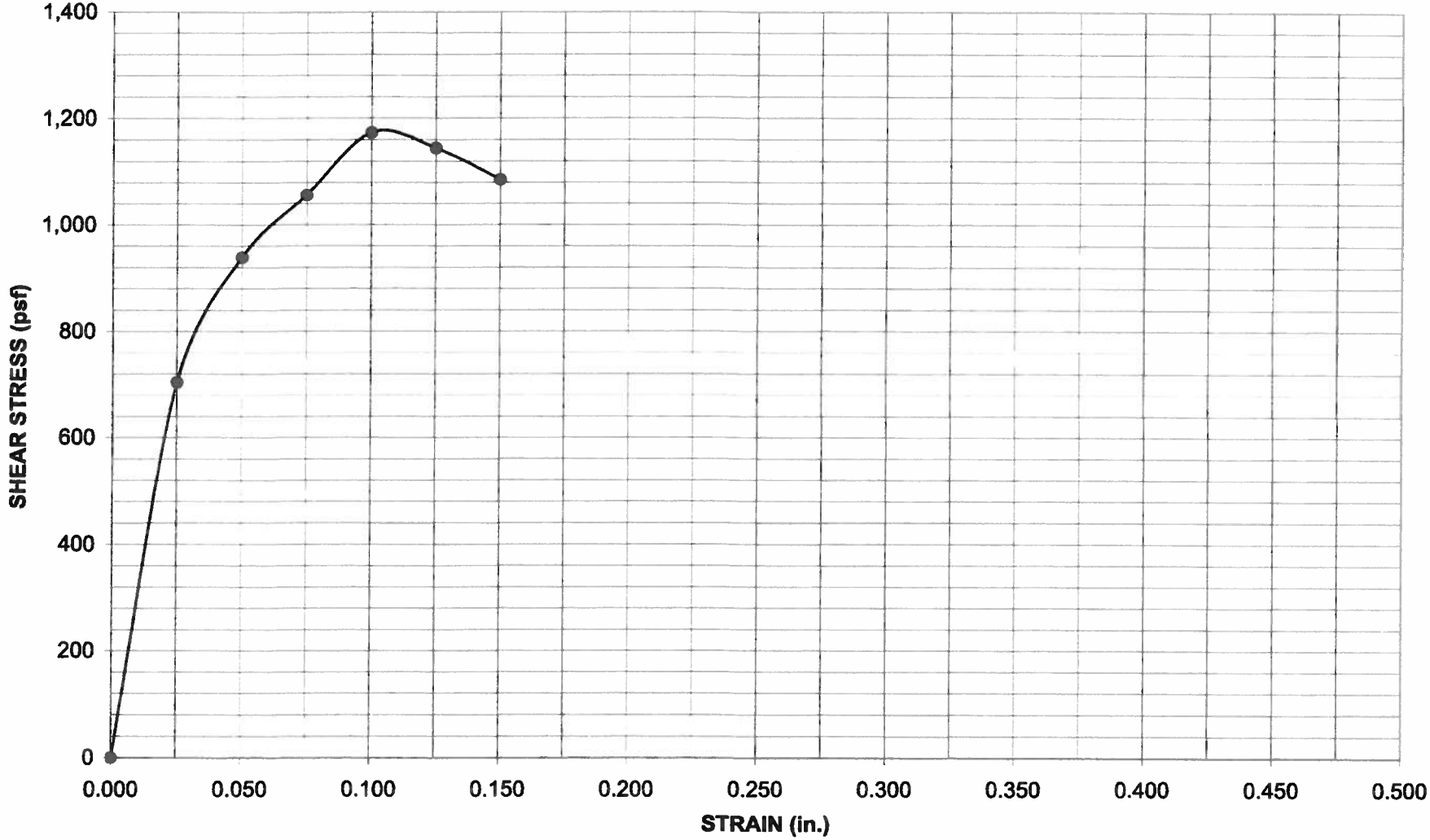
Weight of Sample and Densities*
Mold 1
Mold Weight 76.27 gm.
Mold + Wet 236.74 gm.
Wet Density: 126.3 pcf
Dry Density: 109.2 pcf
* Based on Moisture from Trimmings

Moisture After
Tare Number: Z
Tare Weight: 31.02 gm.
Wet Weight + Tare: 189.99 gm.
Dry Weight + Tare: 168.69 gm.
Moisture: 15.5 percent

CONSOLIDATION		
Time (min.)	Sq. Root of Time	Normal Dial
0.1	0.32	0.1770
0.2	0.45	0.1765
0.5	0.71	0.1748
1	1.00	0.1740
2	1.41	0.1729
4	2.00	0.1715
8	2.83	0.1704
15	3.87	0.1695
30	5.48	0.1689
60	7.75	0.1685
120	10.95	0.1681
240	15.49	0.1677
480	21.91	0.1672
1440	37.95	0.1660

SHEAR					
Shear Dial	Normal Dial	Proving Ring	Load (lbs.)	Shear Stress psi	Shear Stress psf
0.000	0.0975	0	0	0.00	0
0.025	0.0882	162	50	10.19	1,467
0.050	0.0840	199	61	12.43	1,789
0.075	0.0806	223	68	13.85	1,995
0.100	0.0788	240	73	14.87	2,141
0.125	0.0778	250	76	15.48	2,229
0.150	0.0769	248	76	15.48	2,229
0.175	0.0852	246	75	15.28	2,200
0.200	0.0964				
0.225	0.1090				
0.250	0.1204				
0.275	0.1320				
0.300	0.1389				
0.325	0.1424				
0.350	0.1260				
0.375	0.1090				
0.400					
0.425					
0.450					
0.475					
0.500					

DIRECT SHEAR TEST POINT 1
600 psf NORMAL STRESS
STRESS vs. STRAIN



BORING:
SAMPLE NO.:

w_{before} = 15.6%
w_{after} = 15.3%

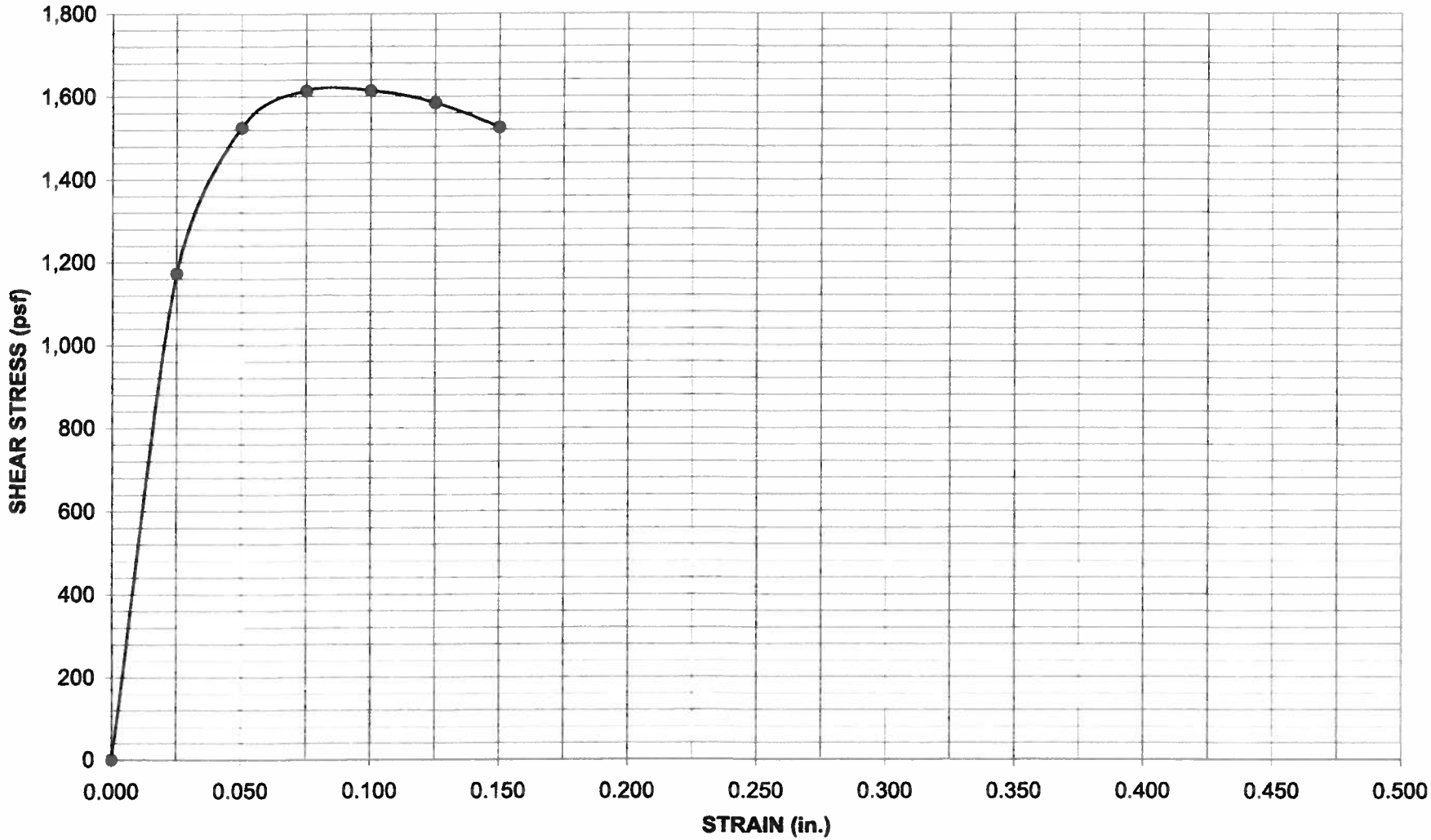
γ_{wet} = 126.0 pcf
γ_{dry} = 109.0 pcf

σ_{max} = 1,173 psf

PROJECT NO.: A11054x12

SOLAR TESTING LABORATORIES, INC.

DIRECT SHEAR TEST POINT 2
1,200 psf NORMAL STRESS
STRESS vs. STRAIN



BORING:
SAMPLE NO.:

w_{before} 15.7%
w_{after} 15.4%

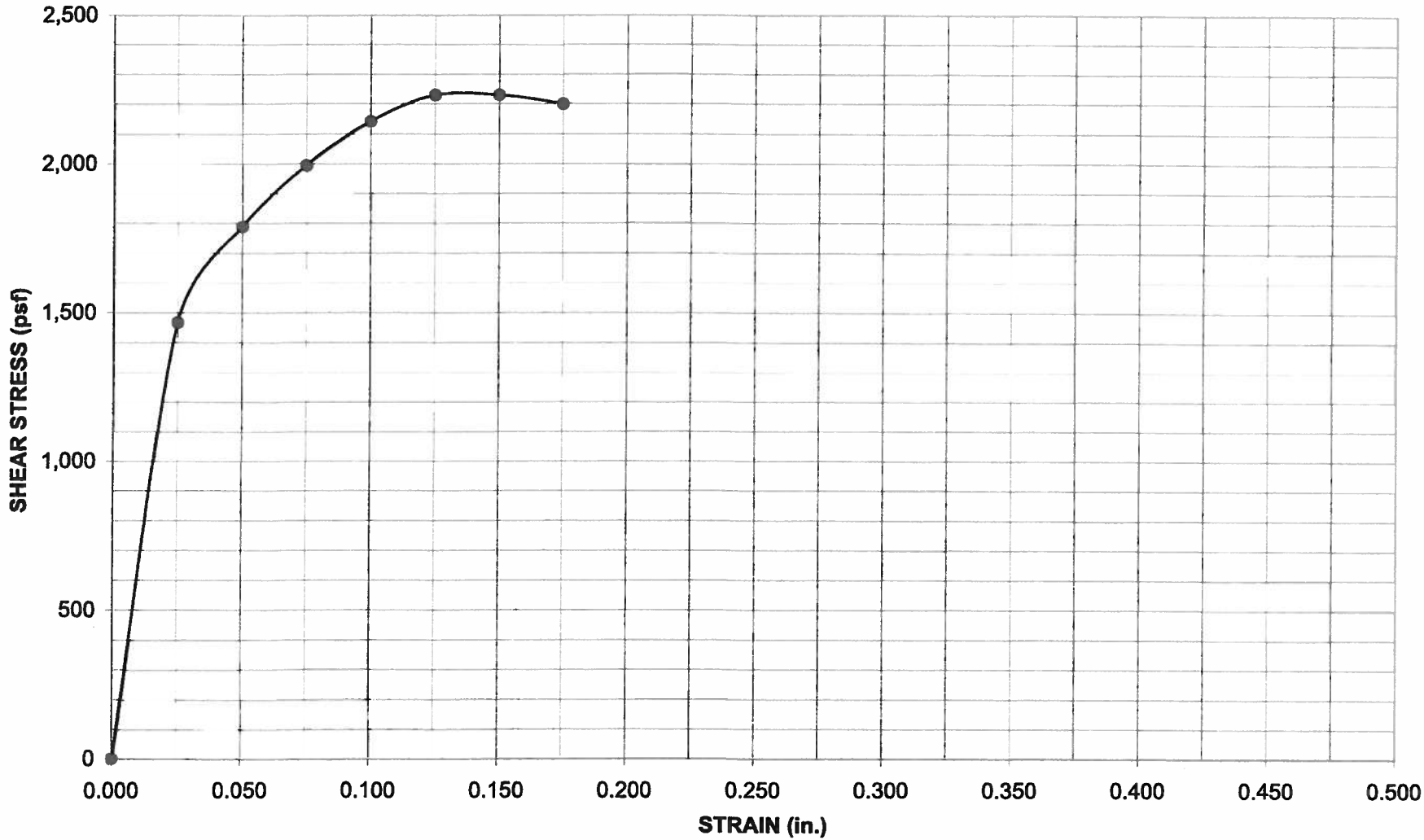
γ_{wet} = 126.0 pcf
γ_{dry} = 108.9 pcf

σ_{max} = 1,613 psf

PROJECT NO.: A11054x12

SOLAR TESTING LABORATORIES, INC.

DIRECT SHEAR TEST POINT 3
2,400 psf NORMAL STRESS
STRESS vs. STRAIN



BORING:
SAMPLE NO.:

w_{before} 15.7%
w_{after} 15.5%

γ_{wet} = 126.3 pcf
γ_{dry} = 109.2 pcf

σ_{max} = 2,229 psf

PROJECT NO.: A11054x12

SOLAR TESTING LABORATORIES, INC.

$T = 5.5^2 = 30.25$

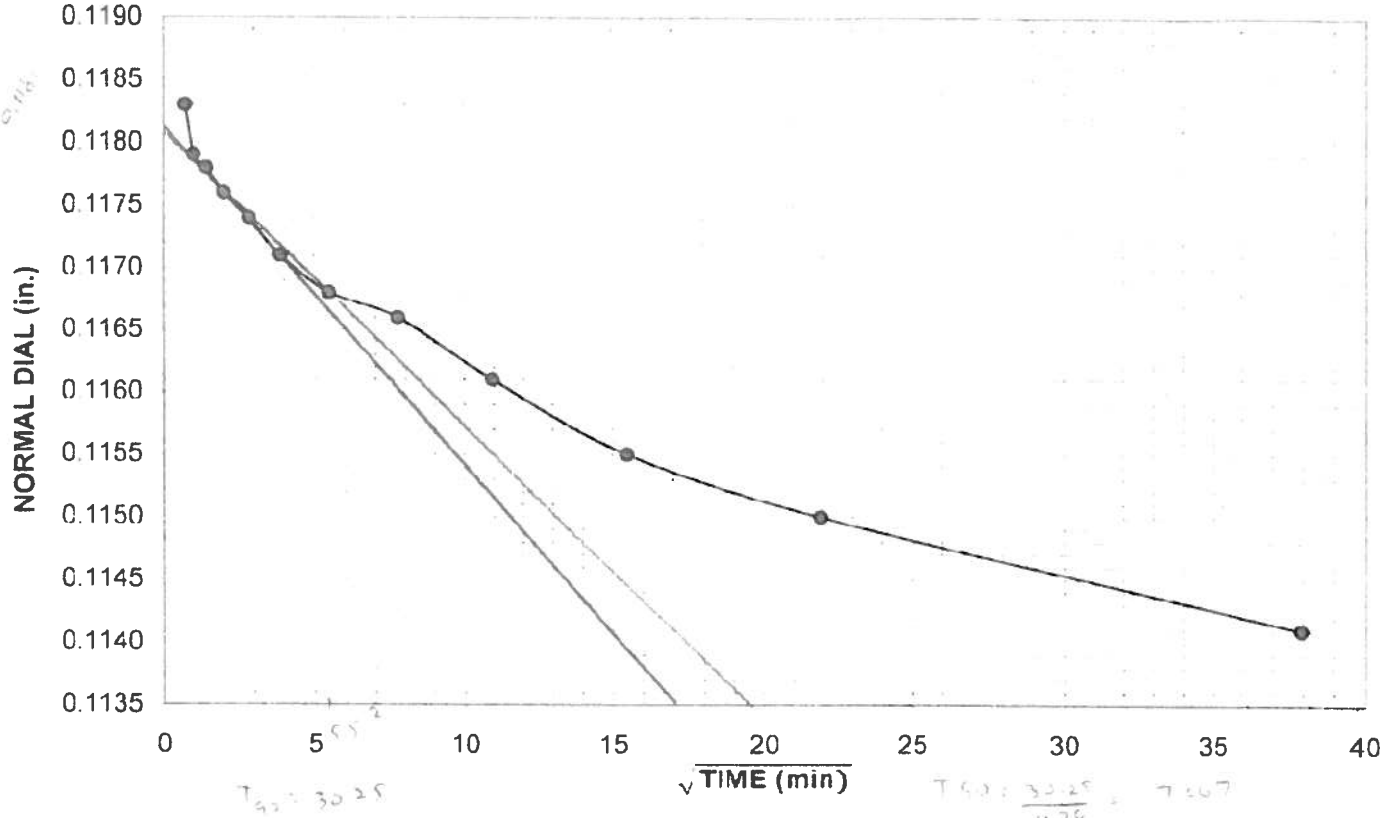
$T_{50} = 30.25 / 4.28 = 7.067$

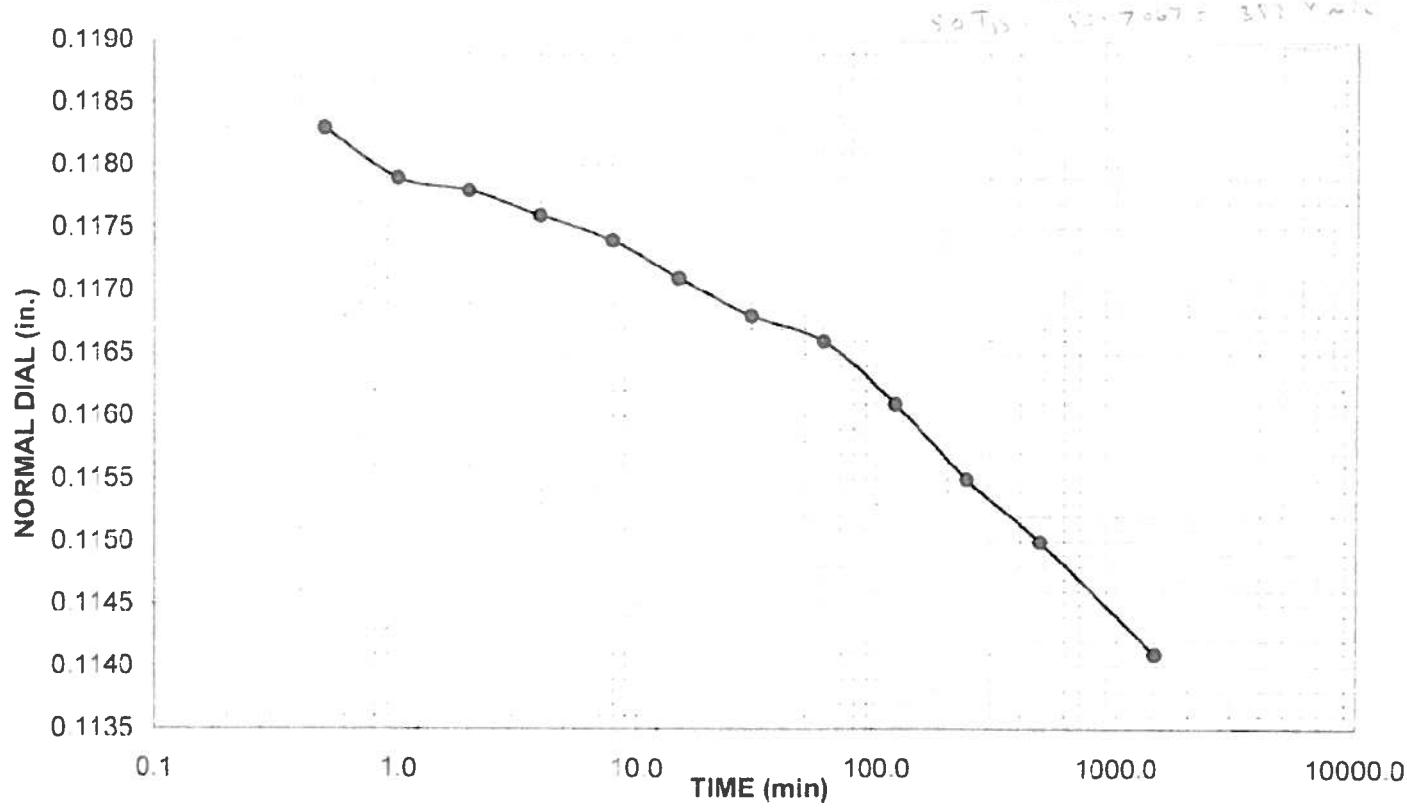
$50 \cdot T_{50} = 7.067 \times 50 = 353.4$ [illegible]

displacement = 0.15 inches

0.15 inches / [illegible] = 0.0004 in/min rate

DIRECT SHEAR TEST POINT 1
600 psf NORMAL STRESS
CONSOLIDATION CURVES

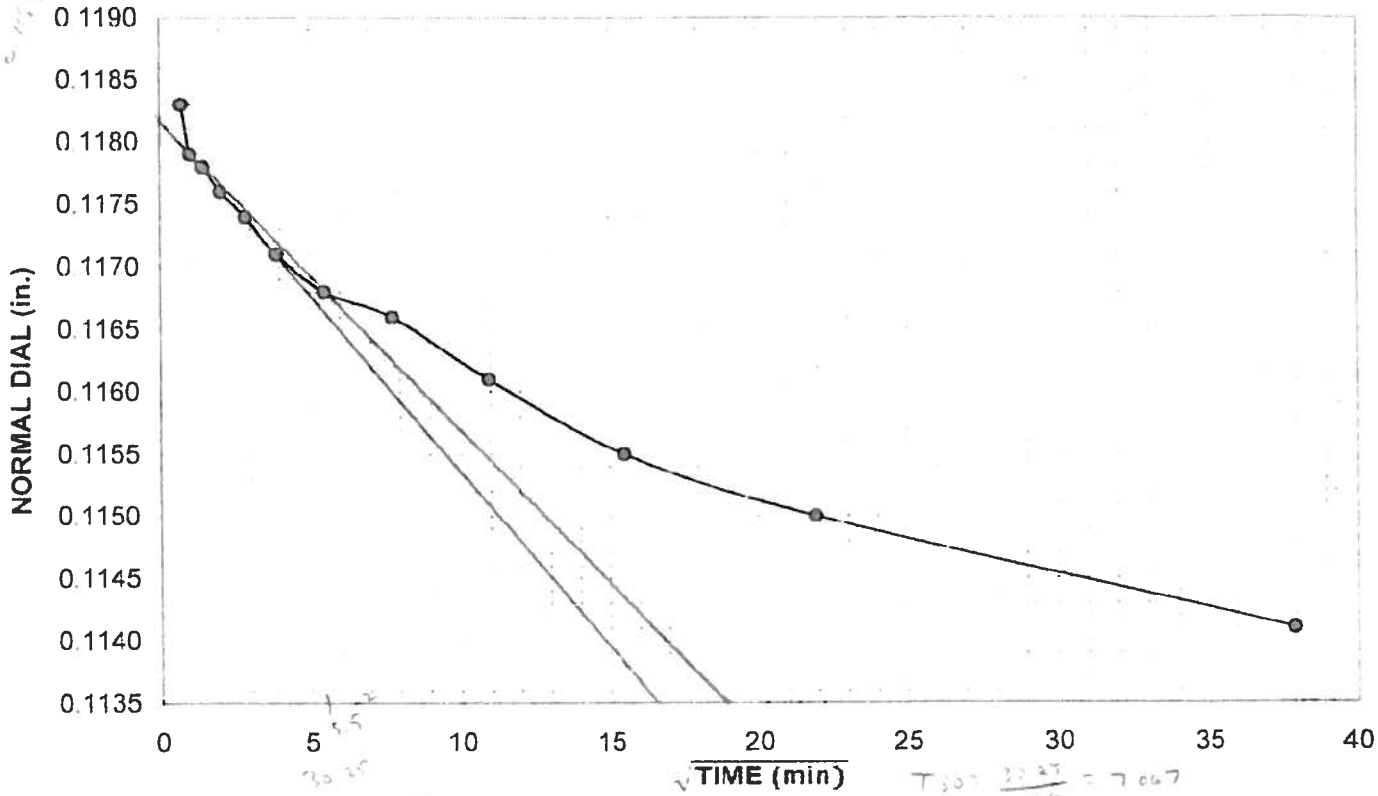


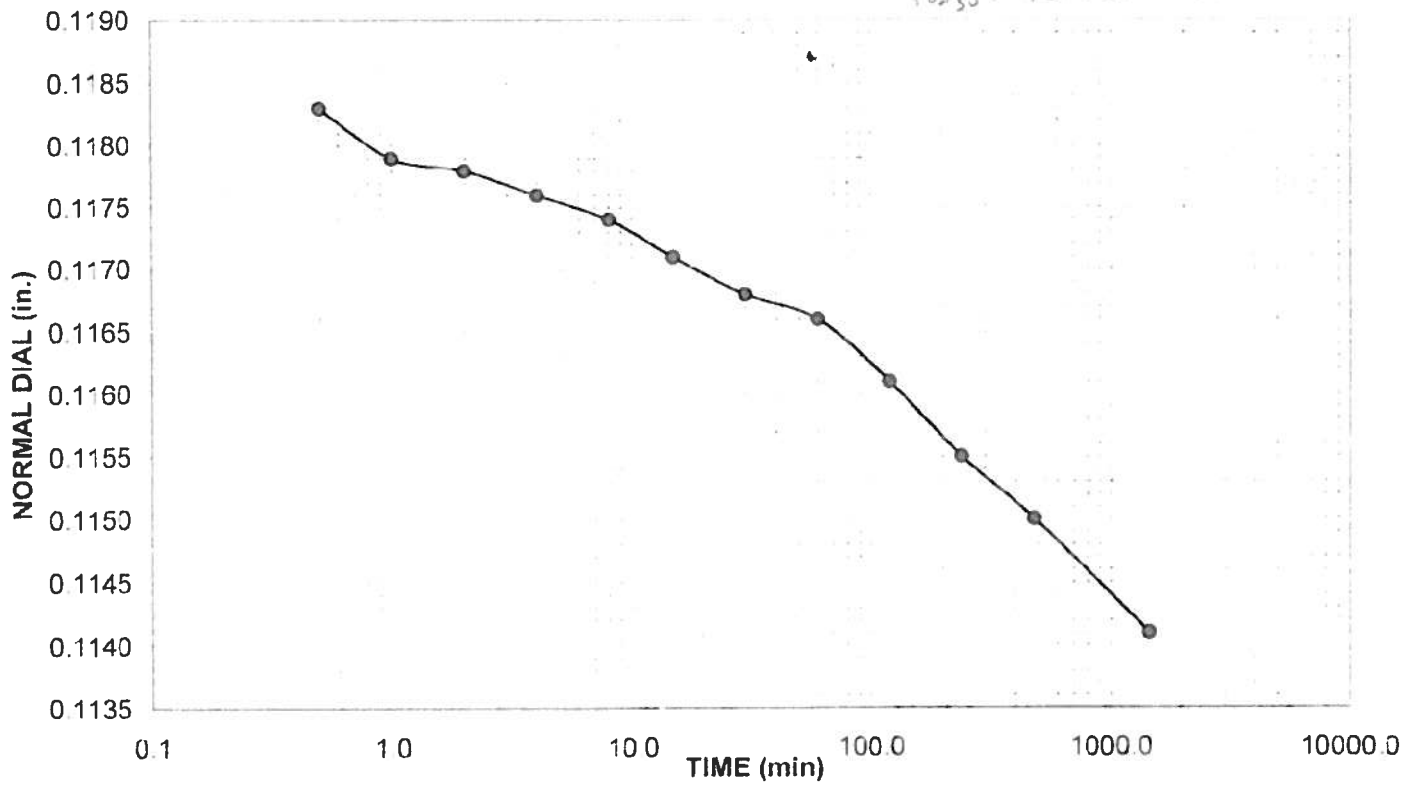


BORING:
SAMPLE NO.:
PROJECT NO.: A11054x12

SOLAR TESTING LABORATORIES, INC.

DIRECT SHEAR TEST POINT 2
1,200 psf NORMAL STRESS
CONSOLIDATION CURVES



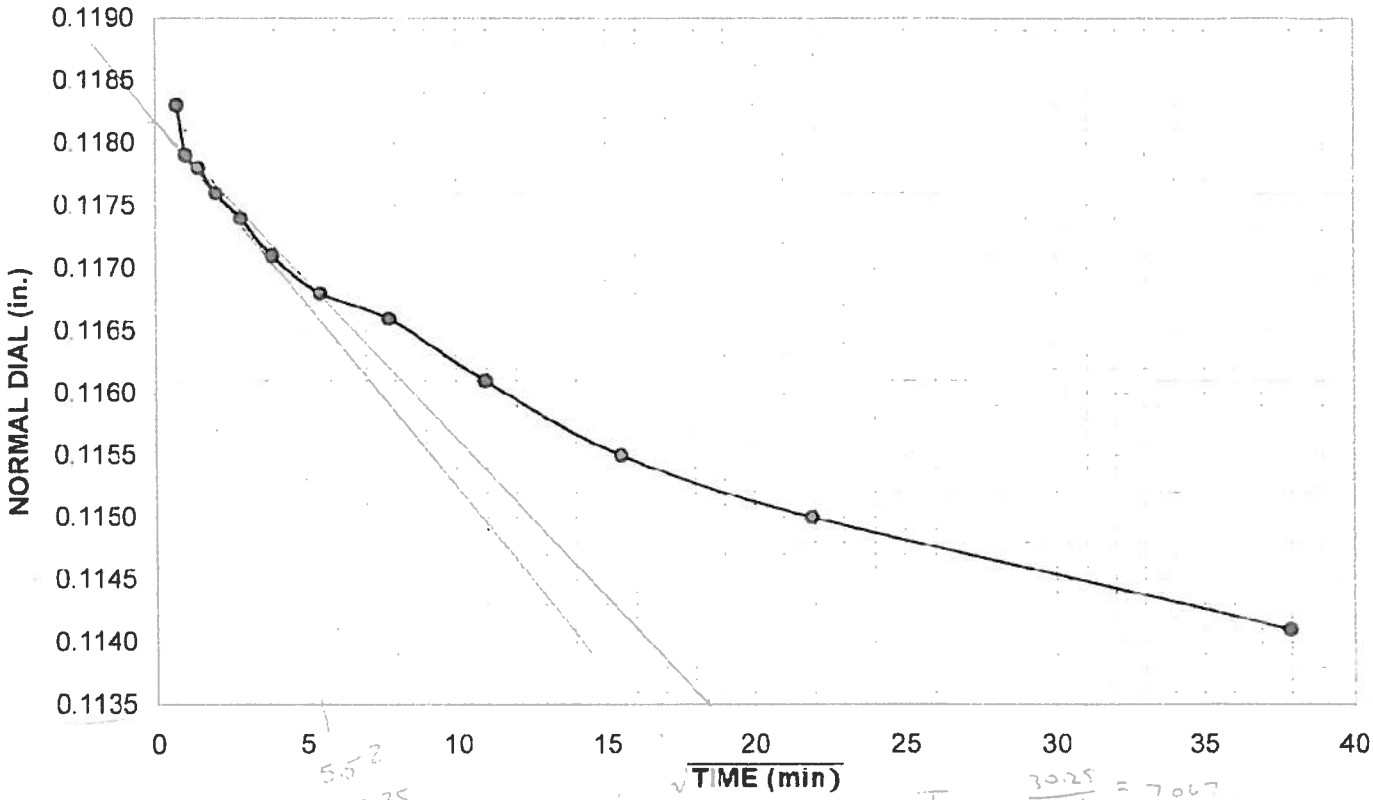


BORING:
SAMPLE NO.:
PROJECT NO : A11054x12

SOLAR TESTING LABORATORIES, INC.

0.1182

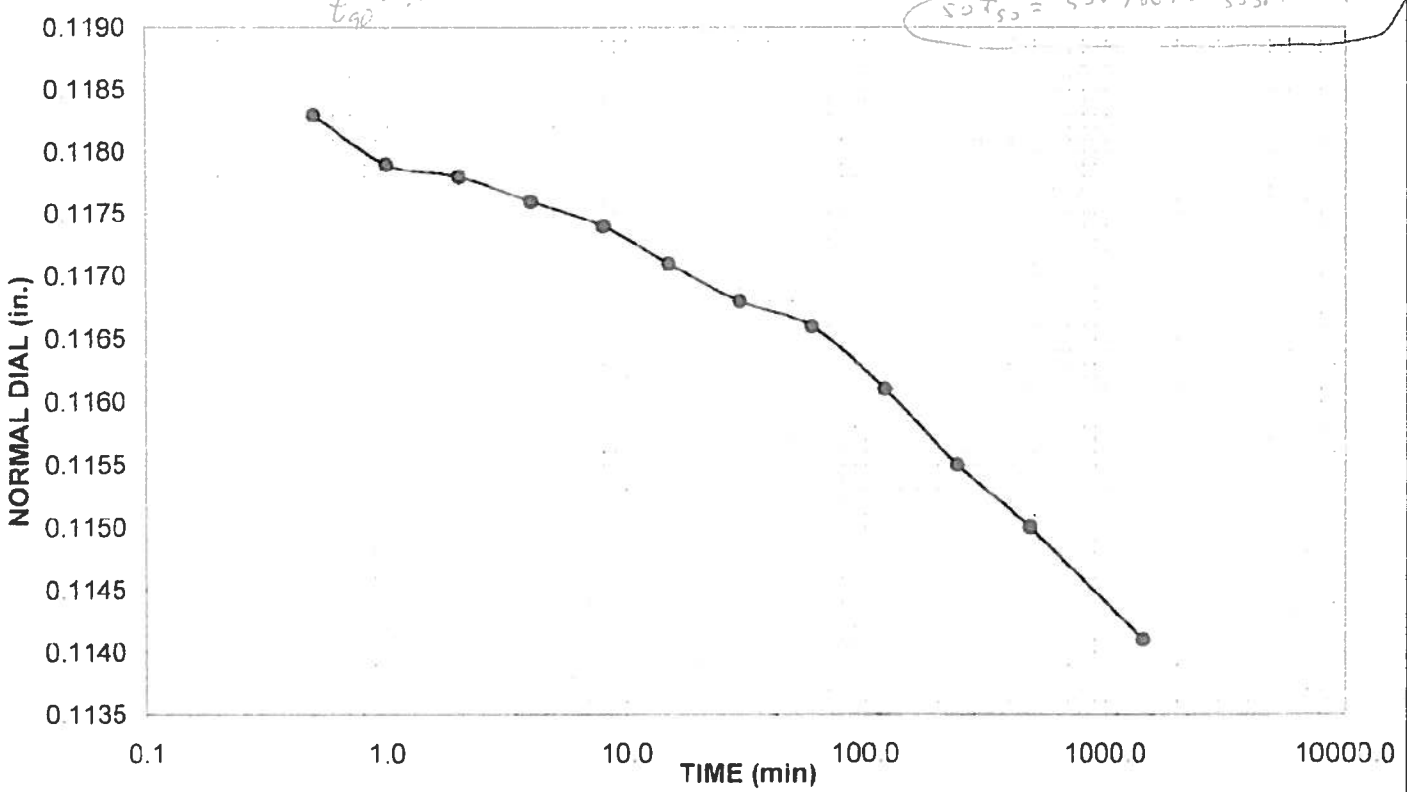
DIRECT SHEAR TEST POINT 3
2,400 psf NORMAL STRESS
CONSOLIDATION CURVES



5.5²
= 30.25
t_{90} = 30.75

$T_{50} = \frac{30.25}{4.28} = 7.067$

$50 T_{50} = 50 \cdot 7.067 = 353.4$ min



BORING:
SAMPLE NO.:
PROJECT NO.: A11054x12

SOLAR TESTING LABORATORIES, INC.

SUBMITTAL COVER SHEET

CONTRACTOR: OP-TECH Environmental Services, Inc.

SUBMITTAL NO.: 010

ADDRESS: 150 Rotterdam Industrial Park

Schenectady, New York

DATE OF SUBMITTAL: 8/24/11

CONTRACT NO.: 137335

MANUFACTURER:

NAME OF PROJECT: Ford Rd. Landfill Remedial Action Phase 1 Construction

SUBMITTAL DESCRIPTION: Ohio #57 stone

REFERENCES:

Specification Section(s) 312000 Paragraph(s)

Contract Drawing(s)

CONTRACTOR SIGNATURE

BROWN AND CALDWELL REVIEW

BROWN AND CALDWELL

DOCUMENT REVIEW STATUS

STATUS NO:

1 ☒ NO EXCEPTION TAKEN

2 ☐ MAKE CORRECTIONS NOTED RESUBMITTAL NOT REQUIRED

3 ☐ REVISE AND RE-SUBMIT RESUBMITTAL REQUIRED

4 ☐ REJECTED – SEE REMARKS

REVIEWED BY: RMAL TITLE: CERTIFYING ENGINEER

DATE: 8/25/11

REMARKS:

57 RECYCLED

MATERIAL ANALYSIS

PROJECT:	KURTZ BROS. - RKDF	**FILE NO.:**	A11054x12
CLIENT:	KURTZ BROS.	**REPORT NO.:**	
		DATE:	7/20/11

On July 19, 2011, a sample of #57 recycled aggregate, identified as from RKDF, was delivered to our laboratory for a sieve analysis. Following are the test results:

#57 RECYCLED AGGREGATE

Sieve Size	% Passing	Passing Specifications (ODOT 703-1)
11/2"	100 ✓	100
1"	84	95 – 100
3/4"	69	
1/2"	43 ✓	25 – 60
3/8"	28	
#4	6 ✓	0 – 10
#8	5 ✓	0 – 5

This sample does not meet Ohio Department of Transportation gradation specifications for a #57 aggregate on the 1" sieve.

TECHNICIAN: DONALD HOLLENBAUGH

SOLAR TESTING LABORATORIES, INC.

George J. Ata, P.E., President

SUBMITTAL COVER SHEET

CONTRACTOR: OP-TECH Environmental Services, Inc.

SUBMITTAL NO.: 011

ADDRESS: 150 Rotterdam Industrial Park

Schenectady, New York

DATE OF SUBMITTAL: 8/25/11

CONTRACT NO.: 137335

MANUFACTURER:

NAME OF PROJECT: Ford Rd. Landfill Remedial Action Phase 1 Construction

SUBMITTAL DESCRIPTION: Ohio #411 stone - recycled

REFERENCES:

Specification Section(s) 312000 Paragraph(s)

Contract Drawing(s)

CONTRACTOR SIGNATURE

BROWN AND CALDWELL REVIEW

BROWN AND CALDWELL

DOCUMENT REVIEW STATUS

STATUS NO:

1 ☒ NO EXCEPTION TAKEN

2 ☐ MAKE CORRECTIONS NOTED RESUBMITTAL NOT REQUIRED

3 ☐ REVISE AND RE-SUBMIT RESUBMITTAL REQUIRED

4 ☐ REJECTED – SEE REMARKS

REVIEWED BY: RMAR TITLE: CERTIFYING ENGINEER

DATE: 8/25/11

REMARKS:

SOLAR TESTING LABORATORIES, INC.
Geotechnical and Environmental Engineering, Materials Testing, and Construction Inspection
1125 Valley Belt Road, Brooklyn Heights, Ohio 44131
Phone: 216-741-7007 ▪ Fax: 216-741-7011
www.stlohio.com

MATERIAL ANALYSIS

PROJECT:	KURTZ BROS., INC. VARIOUS PROJECTS AND TESTING	**FILE NO.:** **REPORT NO.:**	A11054X12 035
CLIENT:	KURTZ BROS., INC.	**DATE:**	8/11/11

On August 10, 2011, a sample of #411 recycled aggregate, identified as from the RKDF site, was delivered to our laboratory for a sieve analysis. Following are the test results:

Sieve Size	% Passing	Passing Specifications (ODOT 703.18)
1 1/2"	100	100
1"	92	75 – 100
3/4"	83	60 – 100
3/8"	60	35 – 75
#4	43	30 – 60
#30	17	7 – 30
#200	3.0	3 – 15

This sample meets Ohio Department of Transportation gradation specification Item 703.18 for a #411 aggregate.

TECHNICIAN: DONALD HOLLENBAUGH

SOLAR TESTING LABORATORIES, INC.

Dennis L. Sanderson
Vice President/General Manager

sez 8/16/11

Certified Small Business Enterprise

SUBMITTAL COVER SHEET

CONTRACTOR: OP-TECH Environmental Services, Inc.

SUBMITTAL NO.: 015a

ADDRESS: 150 Rotterdam Industrial Park
Schenectady, New York

DATE OF SUBMITTAL: 10/5/11

CONTRACT NO.: 137335

MANUFACTURER:

NAME OF PROJECT: Ford Rd. Landfill Remedial Action Phase 1 Construction

SUBMITTAL DESCRIPTION: Low permeability Soil

REFERENCES:

Specification Section(s) 312000 Paragraph(s)

Contract Drawing(s)

CONTRACTOR SIGNATURE

BROWN AND CALDWELL REVIEW

BROWN AND CALDWELL

DOCUMENT REVIEW STATUS

STATUS NO:

1 ☒ NO EXCEPTION TAKEN

2 ☐ MAKE CORRECTIONS NOTED
RESUBMITTAL NOT REQUIRED

3 ☐ REVISE AND RE-SUBMIT
RESUBMITTAL REQUIRED

4 ☐ REJECTED – SEE REMARKS

REVIEWED BY: RMAR TITLE: CERTIFYING ENGINEER

DATE: 10/10/11

REMARKS:

MATERIAL ANALYSIS

PROJECT:	KURTZ BROS. – VARIOUS	**FILE NO.:**	A11054X12
CLIENT:	KURTZ BROS.	**REPORT NO.:**	
		DATE:	8/12/11

On August 9, 2011, a soil sample, identified as Upper Mid, was delivered to this laboratory for a material analysis.

Following are the test results:

Sieve Size	Percent Passing
1"	100.0
3/4"	97.3
#4	96.7
#10	95.5
#20	94.4
#40	93.3
#100	88.7
#200	85.0

ATTERBERG LIMITS		
	RESULTS	SPECIFICATIONS
Liquid Limit	25	<40
Plastic Limit	16	
Plasticity Index	9	<15
AASHTO Soil Classification	A-4	
Unified Soil Classification	CL	

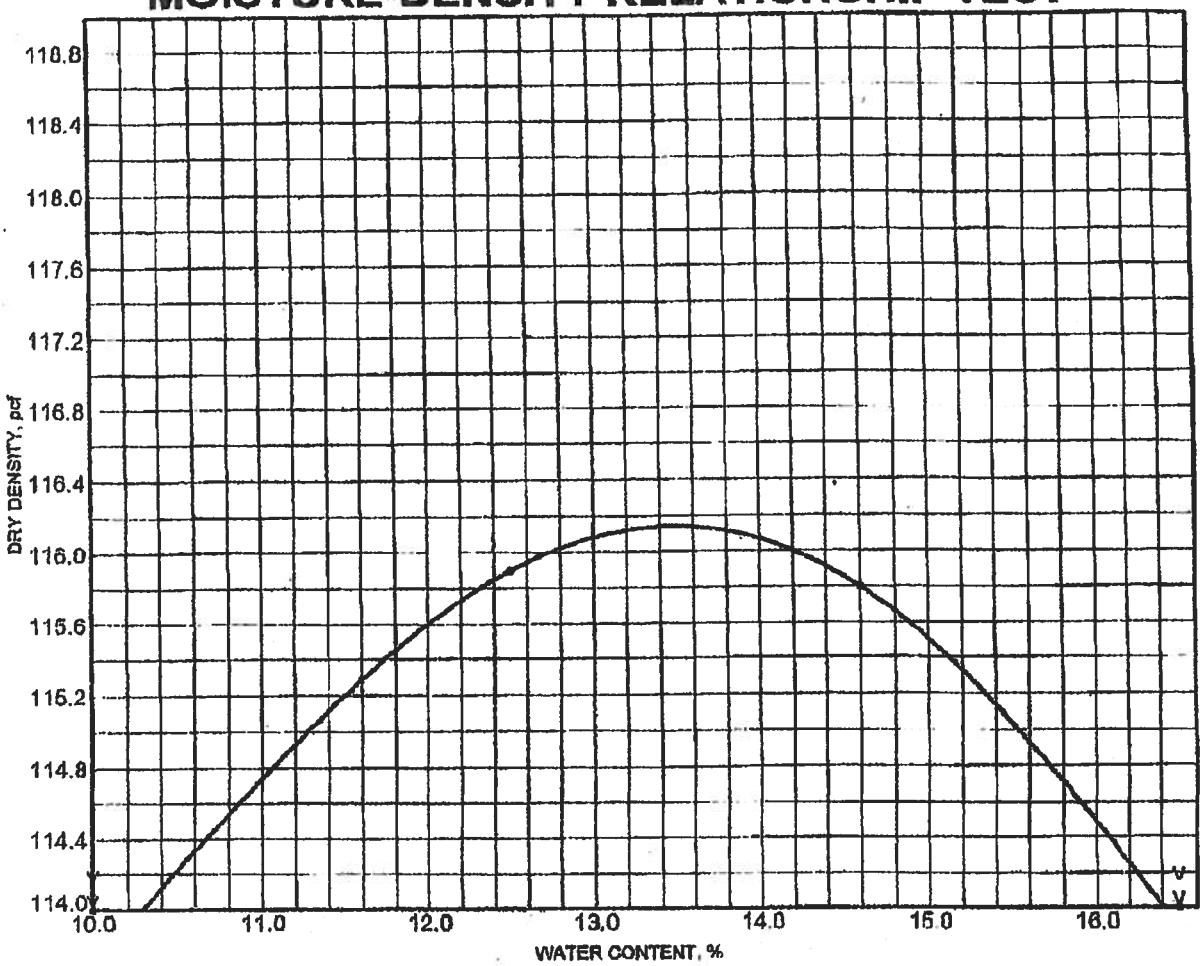
TECHNICIAN: DONALD HOLLENBAUGH

SOLAR TESTING LABORATORIES, INC.

George J. Ata, P.E., President

REPORT NO. 009

MOISTURE-DENSITY RELATIONSHIP TEST



Test Specification ASTM D698 Method A

CLASSIFICATION		Nat. Moist	Sp. G.	LL	PI	% > 3/4 in	% < No.200
USCS	AASHTO						
		17.4					

TEST RESULTS	MATERIAL DESCRIPTION
Maximum Dry Density 116.2 PCF Optimum Water Content 13.6 %	Gray Silt and Clay, little sand, tr gravel
PROJECT NAME WEST CREEK PROJECT NUMBER A11170 x12 LOCATION DATE 8/19/11	SAMPLE LOCATION: KURTZ Upper Mid

Solar Testing Laboratories, Inc.
1125 Valley Belt Road
Brooklyn Heights, Ohio 44131
Telephone: 216-741-7007
Fax: 216-741-7011

Dennis L. Sanderson, VP/General Manager

CURVE # 1

PROJECT:	KURTZ BROS. – VALLEY BELT	**FILE NO.:**	A11054x12
		REPORT NO.:	
CLIENT:	KURTZ BROS.	**REPORT DATE:**	9/27/11
		SAMPLE DATE:	9/15/11
		TEST DATE:	9/23/11

SAMPLE METHOD:	ASTM D5084
SAMPLE LOCATION:	Upper Mid
SAMPLE DESCRIPTION:	Silt and Clay

TEST CONDITIONS

Confining pressure:	90	psi
Upper pressure:	80	psi
Lower pressure:	85	psi
Standpipe area, a:	0.906	cm^2

Remolded to 95% of std. Proctor density @optimum moisture

SAMPLE

Wet specimen weight:	1171.5	gm
Specimen diameter, D:	7.19	cm
Specimen area, A:	40.58	cm^2
Initial specimen height, L:	13.97	cm
Initial specimen volume, cc = AL, V:	566.90	cm^3
Moisture before test	12.5	%

TEST NO.		1	2	3
Initial time	t_1	8:15 A.M.	9:45 A.M.	11:30 A.M.
Final time	t_2	9:45 A.M.	11:30 A.M.	2:00 P.M.
Elapsed time, sec	t	5400	6300	9000
$V_U(t_1)-V_L(t_1)/a$	$h(t_1)$	13.907	4.857	-6.181
$V_U(t_2)-V_L(t_2)/a$	$h(t_2)$	4.857	-6.181	-19.426
| Upper Pressure – Lower Pressure | x 70.37	P_B	351.85	351.85	351.85
Coefficient of Permeability, cm/sec	k	7.24×10^{-7}	7.78×10^{-7}	6.77×10^{-7}
	AVG	7.26×10^{-7}		

Coefficient of Permeability, k where:

$$k = aL \times (\ln [P_B + h(t_1)/P_B + h(t_2)]) / 2At$$

TECHNICIAN: DH

SOLAR TESTING LABORATORIES, INC.

1 flex wall permeability (D5084)
1 std proctor

A11054 upper mid perm 9-15-11 **P.O.# 115074**

MATERIAL ANALYSIS

PROJECT:	KURTZ BROS. – PEARL ROAD SOIL	**FILE NO.:**	A11054X12
CLIENT:	KURTZ BROS.	**REPORT NO.:**	
		DATE:	9/30/11

On September 15, 2011, a soil sample, identified as Upper Mid, was delivered to this laboratory for a material analysis. Following is the test result:

Organic Content (ASTM D2974): 2.4%

Technician: D. Hollenbaugh

SOLAR TESTING LABORATORIES, INC.

George J. Ata, P.E., President

SUBMITTAL COVER SHEET

CONTRACTOR: OP-TECH Environmental Services, Inc.

SUBMITTAL NO.: 020

ADDRESS: 150 Rotterdam Industrial Park
Schenectady, New York

DATE OF SUBMITTAL: 11/2/11

CONTRACT NO.: 137335

MANUFACTURER:

NAME OF PROJECT: Ford Rd. Landfill Remedial Action Phase 1 Construction

SUBMITTAL DESCRIPTION: Seed and mulch

REFERENCES:

Specification Section(s) 329219 Paragraph(s) 1.3

Contract Drawing(s)

CONTRACTOR SIGNATURE

BROWN AND CALDWELL REVIEW

BROWN AND CALDWELL

DOCUMENT REVIEW STATUS

STATUS NO:

1 ☒ EXCEPTION TAKEN SEE NOTE BELOW

2 ☐ MAKE CORRECTIONS NOTED
RESUBMITTAL NOT REQUIRED

3 ☐ REVISE AND RE-SUBMIT
RESUBMITTAL REQUIRED

4 ☐ REJECTED – SEE REMARKS

REVIEWED BY: RJQ TITLE: CERTIFYING ENGINEER

DATE: 11/03/11

REMARKS: No exception taken for seed mix to be used for general areas; steep slope seed mix not included as part of this submittal

Profile

Your Trusted Partner for Soil Solutions

Conwed Fibers® EnviroBlend® with TriFlo™

Hydraulic Mulch — Wood/Cellulose Blend

GREEN DESIGN ENGINEERING™

Description

Conwed Fibers® EnviroBlend® with TriFlo™ is a fully biodegradable, Hydraulic Mulch (HM) composed of 100% recycled Thermally Refined™ wood fibers and 100% recycled paper. The HM is phyto-sanitized, free from plastic netting, and upon application forms an intimate bond with the soil surface to create a porous and absorbent layer that enhances germination and plant growth.

Recommended Applications

- Erosion control and revegetation for mild slopes (≤3H:1V)
- Rough graded slopes
- Enhancement of vegetation establishment

Technical Data

Physical Properties*	Test Method	Units	Minimum Value
Water Holding Capacity	ASTM D7367	%	1000
Material Color	Observed	n/a	Green
Performance Properties*	**Test Method**	**Units**	**Value**
Cover Factor[1]	Large Scale[2]	n/a	0.65 maximum
Percent Effectiveness[3]	Large Scale[2]	%	35 minimum
Environmental Properties*	**Test Method**	**Units**	**Typical Value**
Functional Longevity[4]	ASTM D5339	n/a	Up to 3 months
Ecotoxicity	EPA 2021.0	%	96-hr LC50 > 100%
Biodegradability	ASTM D5338	%	100
Product Composition			**Typical Value**
Thermally Processed Wood Fiber[5] (minimum)			70%
Cellulose Fiber (maximum)			30%
TriFlo			< 1%

* When uniformly applied at a rate of 2000 pounds per acre (2240 kilograms/hectare) under laboratory conditions. 1. Cover Factor is calculated as soil loss ratio of treated surface versus an untreated control surface. 2. Large scale testing conducted at Utah Water Research Laboratory. For specific testing information please contact a Profile technical service representative at 800-825-6262. 3. % Effectiveness = One minus Cover Factor multiplied by 100%. 4. Functional Longevity is the estimated time period, based upon ASTM D5338 testing and field observations, that a material can be anticipated to provide erosion control and agronomic benefits as influenced by composition, as well as site-specific conditions, including but not limited to – temperature, moisture, light conditions, soils, biological activity, vegetative establishment and other environmental factors. 5. Heated within a pressure-lined vessel to a temperature greater than 380 degrees Fahrenheit (193 degrees Celsius) for 6 minutes at a pressure greater than 60 psi (845 kPa) in order to be Thermally Refined™ processed and to achieve phyto-sanitization.

Packaging Data

Properties	Test Method	Units	Nominal Value
Bag Weight	Scale	kg (lb)	22.7 (50)
Bags per Pallet	Observed	#	40

UV and weather-resistant plastic bags. Pallets are weather-proof stretch wrapped with UV resistant pallet cover.

Profile Products
750 Lake Cook Road, Ste. 440
Buffalo Grove, IL 60089
800-508-8681
www.profileproducts.com

To the best of our knowledge, the information contained herein is accurate. However, Profile Products cannot assume any liability whatsoever for the accuracy or completeness thereof. Final determination of the suitability of any information or material for the use contemplated, or its manner of use and whether the suggested use infringes any patents is the sole responsibility of the user.

THE FIRELANDS SUPPLY CO.
HIGHWAY AND LANDSCAPE MATERIALS AND SUPPLIES

21 SOUTH NORWALK RD., P.O. BOX 828
NORWALK, OHIO 44857
OFFICE (419) 668-1802
FAX (419) 663-6455

PURE FIRELANDS "HIGHWAY MEDIAN" LAWN SEED MIXTURE

SEED	KIND OF SEED	GERMINATION
39.20%	FAWN TALL FESCUE	85%
29.55%	PERENNIAL RYEGRASS VNS	90%
25.80%	KENTUCKY BLUEGRASS VNS	80%

00.30% CROP 00.05% WEEDS 05.10% INERT

LOT NO: LG7480-11 TEST DATE: NOV. 2010

SELL BY: FEBRUARY 28, 2012 NET WEIGHT 50 POUNDS

MADE FOR: FIRELANDS SUPPLY CO.
NORWALK, OHIO

PACKAGED BY OHIO SEED PERMIT HOLDER
OLIGER SEED COMPANY 89 HANNA PARKWAY AKRON, OHIO 4431

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Phase II Remedial Action

Send To Printer

Geotextile Product Description Sheet

Skaps GT - 140

4.0 oz Nonwoven Geotextiles

SKAPS **GT-140** is a needle-punched nonwoven geotextile made of 100% polypropylene staple fibers, which are formed into a random [illegible]

SUBMITTAL REVIEW 2

REVIEW IS FOR GENERAL COMPLIANCE WITH CONTRACT DOCUMENTS
NO RESPONSIBILITY IS ASSUMED FOR CORRECTNESS OF DIMENSIONS OR DETAILS.
THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR DEVIATIONS FROM CONTRACT REQUIREMENTS NOT SPECIFICALLY INDICATED ON THIS SUBMITTAL.

☒ NO EXCEPTIONS TAKEN
☐ MAKE CORRECTIONS NOTED
☐ AMEND AND RESUBMIT
☐ REJECTED-SEE REMARKS

Date 6/25/12 By [illegible]

BROWN AND CALDWELL OHIO, LLC

Send To Printer

Geotextile Product Description Sheet
Skaps GT - 140
4.0 oz Nonwoven Geotextiles

SKAPS **GT-140** is a needle-punched nonwoven geotextile made of 100% polypropylene staple fibers, which are formed into a random network for dimensional stability. SKAPS GT-140 resists ultraviolet deterioration, rotting, biological degradation, naturally encountered basics and acids. Polypropylene is stable within a pH range of 2 to 13. SKAPS GT-140 conforms to the physical values listed below:

PROPERTY	TEST METHOD	UNIT	M.A.R.V. (Minimum Average Roll Value)
Weight (Typical)	ASTM D5261	oz/yd^2 (g/m^2)	4.0 (136)
Grab Tensile	ASTM D4632	lbs (kN)	100 (.445)
Grab Elongation	ASTM D4632	%	50
Trapezoid Tear Strength	ASTM D4533	lbs (kN)	50 (.222)
Puncture Resistance	ASTM D4833	lbs (kN)	65 (.289)
Mullen Burst	ASTM D3786	psi (kPa)	215 (1481)
Permittivity*	ASTM D4491	sec^{-1}	2.0
Water Flow*	ASTM D4491	gpm/ft^2 (l/min/m^2)	140 (5689)
A.O.S.*	ASTM D4751	U.S. Sieve (mm)	70 (0.212)
U.V. Resistance	ASTM D4355	%/hrs	70/500

* At the time of manufacturing. Handling, storage, and shipping may change these properties.

PACKAGING

Roll Dimension (W x L) - Ft	12.5/15 x 360
Square Yards per Roll	500/600
Estimated Roll Weight - lbs	146/172

* At the time of manufacturing. Handling may change these properties.

This information is provided for reference purposes only and is not intended as a warranty or guarantee. SKAPS assumes no liability in connection with the use of this information.

Engineered Synthetic Products, Inc.
405 Hood Road - Lilburn, Georgia - 30047
Office: 770-564-1857; Fax: 770-564-1818
www.espgeosynthetics.com

WATER FLOW D4491 gpm/ft^2 140	PERMITTIVITY D4491 sec^{-1} 2.00
177	2.36
177	2.36
177	2.36
177	2.36
177	2.36
177	2.36
177	2.36
177	2.36
177	2.36

SUBMITTAL REVIEW 2

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☒ NO EXCEPTIONS TAKEN ☐ MAKE CORRECTIONS NOTED

☐ AMEND AND RESUBMIT ☐ REJECTED-SEE REMARKS

Date 6/26/12 By RMal

BROWN AND CALDWELL OHIO,LLC

Product : GT140-150

ROLL # ASTM METHOD UNITS TARGET	WEIGHT* D5261 oz/sq yd 4.00	MD TENSILE D4632 lbs. 100	MD ELONG D4632 % 50	XMD TENSILE D4632 lbs 100	XMD ELONG D4632 % 50	MD TRAP D4533 lbs. 50	XMD TRAP D4533 lbs 50	CBR PUNCTURE D6241 lbs. 300	AOS D4751 US Sieve 70	WATER FLOW D4491 gpm/ft^2 140	PERMITTIVITY D4491 sec^{-1} 2.00
010422959	4.39	113	64	124	69	62	68	321	70	177	2.36
010422960	4.16	107	59	113	63	55	59	312	70	177	2.36
010422961	4.16	107	59	113	63	55	59	312	70	177	2.36
010422977	4.30	110	61	119	65	58	65	318	70	177	2.36
010422978	4.30	110	61	119	65	58	65	318	70	177	2.36
010422979	4.30	110	61	119	65	58	65	318	70	177	2.36
010422980	4.02	102	55	106	60	53	56	315	70	177	2.36
010422981	4.02	102	55	106	60	53	56	315	70	177	2.36
010422982	4.02	102	55	106	60	53	56	315	70	177	2.36

* Weight is typical. All other values are MARV.

TENCATE
Mirafi®

Drainage Separation

SUBMITTAL REVIEW 2

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☐ AMEND AND RESUBMIT
☐ REJECTED-SEE REMARKS

Date 6/20/12 By

BROWN AND CALDWELL OHIO,LLC

TENCATE
Mirafi®

Drainage Separation

Mirafi® 180N

Mirafi® 180N is a needlepunched nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. Mirafi® 180N geotextile is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids.

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D4632	N (lbs)	912 (205)	912 (205)
Grab Tensile Elongation	ASTM D4632	%	50	50
Trapezoid Tear Strength	ASTM D4533	N (lbs)	356 (80)	356 (80)
CBR Puncture Strength	ASTM D6241	N (lbs)	2225 (500)	
Apparent Opening Size (AOS) [1]	ASTM D4751	mm (U.S. Sieve)	0.18 (80)	
Permittivity	ASTM D4491	sec^{-1}	1.1	
Flow Rate	ASTM D4491	$l/min/m^2$ ($gal/min/ft^2$)	3870 (95)	
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	

[1] ASTM D 4751: AOS is a Maximum Opening Diameter Value

Physical Properties	Test Method	Unit	Typical Value	
Weight	ASTM D5261	g/m^2 (oz/yd^2)	271 (8.0)	
Thickness	ASTM D5199	mm (mils)	1.8 (72)	
Roll Dimensions (width x length)	--	m (ft)	3.8 x 110 (12.5 x 360)	4.5 x 91 (15 x 300)
Roll Area	--	m^2 (yd^2)	418 (500)	
Estimated Roll Weight	--	kg (lb)	120 (265)	

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Mirafi® is a registered trademark of Nicolon Corporation

Made in USA

TENCATE
materials that make a difference

FGS000351
ETQR30

TENCATE

TENCATE GEOSYNTHETICS
North America

June 20, 2012

JMD Company
P.O. Box 173
5401 Progress Blvd.
Bethel Park, PA 15102

Re: Mirafi 180N

Dear Tony,

Per your project requirements for Mirafi 180N we will hand select rolls to meet your Trap Tear requirement in both directions of 85 lbs. Mirafi 180N has a Permittivity of 1.4 sec^{-1} which exceeds the project specifications of 1.3 to 1.35 sec^{-1}.

Please let me know if you require any additional information.

Regards,

Teri Krock

Teri Krock
Senior Product Manager

365 South Holland Drive
Pendergrass, GA 30567

Tel 706 693 2226
Tel 888 795 0808

Fax 706 693 4400
www.mirafi.com

TENCATE Mirafi

TENCATE

Geotextile Properties

Roll#	Style	Grab Tensile MD ASTM D4632	Elongation MD ASTM D4632	Grab Tensile XMD ASTM D4632	Elongation XMD ASTM D4632	Trap Tear MD ASTM D4533	Trap Tear XMD ASTM D4533	AOS ASTM D4751	Flow Rate ASTM D4491	Permittivity ASTM D4491	CBR
		lbs	%	lbs	%	lbs	lbs	US Std Sieve	gal/min/sf	sec-1	lbs

SUBMITTAL REVIEW 2

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☐ REJECTED-SEE REMARKS

Date 6/26/12 By RLaR

BROWN AND CALDWELL OHIO,LLC

TENCATE

Geotextile Properties

Roll#	Style	Grab Tensile MD ASTM D4632	Elongation MD ASTM D4632	Grab Tensile XMD ASTM D4632	Elongation XMD ASTM D4632	Trap Tear MD ASTM D4533	Trap Tear XMD ASTM D4533	AOS ASTM D4751	Flow Rate ASTM D4491	Permittivity ASTM D4491	CBR
		lbs	%	lbs	%	lbs	lbs	US Std Sieve	gal/min/sf	sec-1	lbs
22661958	180N	250	67	258	91	103	100	80	134	1.80	636
22661959	180N	250	67	258	91	103	100	80	134	1.80	636
22661960	180N	250	67	258	91	103	100	80	134	1.80	636
22674905	180N	238	66	251	85	102	108	80	106	1.40	622
22674907	180N	238	66	251	85	102	108	80	106	1.40	622
22675075	180N	241	72	222	87	115	109	80	138	1.90	612
22675076	180N	241	72	222	87	115	109	80	138	1.90	612
22675079	180N	257	61	223	79	95	112	80	138	1.90	612
22675086	180N	257	61	223	79	95	112	80	138	1.90	612
22675232	180N	232	69	224	83	100	92	80	112	1.50	613

Final "put-up" rolls taken from a single master roll and having identical properties and test data.

Results may only be available for tested rolls.

Unless specified separately in writing, material results apply only to items tested. No portion of this document may be reproduce whole or in part without the expressed written consent ofTC Mirafi. TC Mirafi warrants our products and services to be free from defects in material and workmanship when delivered to TC Mirafi's customers and that our products meet our published specifications.

Order #: 1061758 BOL #: 2111234

MIRAFI 180N Certification

ATTN:TONY BLATNIK
JMD

Proj Name: LANDFILL
Contractor: MARK HAYNES CONSTRUCTION
QTY: 10 ROLLS (SEE ATTACHED)

This is to certify that Mirafi® 180N is a needlepunched nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. Mirafi® 180N is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids. Mirafi® 180N meets Aashto M288 Class 1 for nonwovens used in Subsurface Drainage, Stablization, Separation, and Permanent Erosion Control. Mirafi® 180N is manufactured in the United States and complies to ARRA Section 1605. NTPEP No. GTX-2011-03-012

Mechanical Properties	Test Code	Test Method	Minimum Average Roll Value			
GRAB TENSILE STRENGTH (MD)	GRABMD	ASTM D4632	205	LBS	912.3	N
GRAB TENSILE STRENGTH (CD)	GRABCD	ASTM D4632	205	LBS	912.3	N
ELONGATION (MD)	ELMD	ASTM D4632	50	%		
ELONGATION (CD)	ELCD	ASTM D4632	50	%		
TEAR STRENGTH (MD)	TTMD	ASTM D4533	80	LBS	356	N
TEAR STRENGTH (CD)	TTCD	ASTM D4533	80	LBS	356	N
CBR PUNCTURE	CBR	ASTM D6241	500	LBS	2225	N
APPARENT OPENING SIZE - SIEVE	AOS	ASTM D4751	80	#		
APPARENT OPENING SIZE - MM	AOS2	ASTM D4751	.18	MM		
PERMITTIVITY	PTVY	ASTM D4491	1.4	SEC-1		
WATER FLOW RATE	FLOW	ASTM D4491	95	GPM/FT2	3870.3	L/MIN/M2
UV RESISTANCE @ 500 HOURS	UV	ASTM D4355	70	%		

Certification reflects test results at time of manufacturing and shipment. TenCate Geosynthetics is not responsible for environment or other factors which could alter the physical properties.
CBR Puncture is tested in accordance with ASTM D6241 and replaces Mullen Burst and Pin Puncture.
ASTM D4751, AOS is a Maximum Opening Diameter Value
ASTM D4491 - Tested according to Constant Head procedure.

• • • END OF REPORT • • •

This June 25, 2012

Chris Whitfield, Quality Manager CERT#: 1005429

Unless specified separately in writing, material results apply only to items tested. No portion of this document may be reproduced whole or in part without the expressed written consent of TenCate. TenCate warrants our products and services to be free from defects in material and workmanship when delivered to TenCate's customers and that our products meet our published specifications. Actual test data supplied is for the full width of the tested master roll.

American Association of Laboratory Accreditation Certificate Number: 1291.01 Accreditation #: GAI-LAP-25-1997

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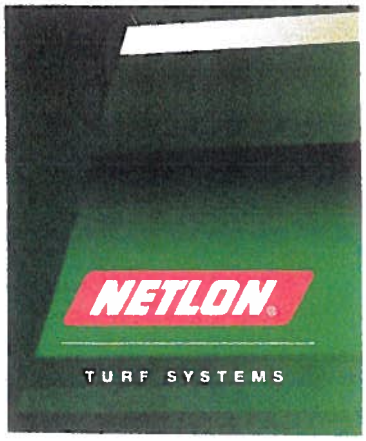
365 South Holland Dr. Tel 706 693 2226 Fax 706 693 2122
Pendergrass, GA 30567 Tel 888 795 0808 www.tencate.com



Netpave® 50 Grass Paving System
design and installation guidance for

Grassed Surfaces

50mm deep Netpave 50 paver cells filled to within 7-10mm of the surface with 60:40 rootzone (see Guideline 5) then seeded or turfed and fertilised

50mm thick consolidated 60:40 rootzone bedding

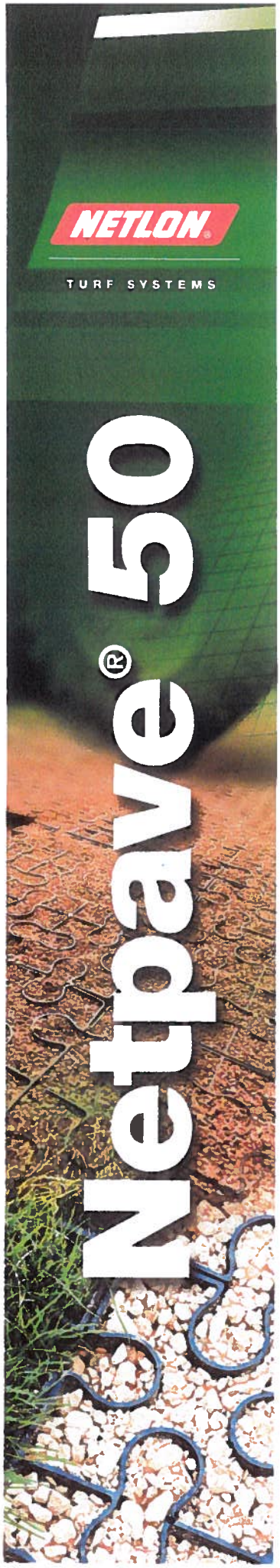
SUBMITTAL REVIEW 3B

REVIEW IS FOR GENERAL COMPLIANCE WITH CONTRACT DOCUMENTS
NO RESPONSIBILITY IS ASSUMED FOR CORRECTNESS OF DIMENSIONS OR DETAILS.
THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR DEVIATIONS FROM CONTRACT REQUIREMENTS NOT SPECIFICALLY INDICATED ON THIS SUBMITTAL.

☒ NO EXCEPTIONS TAKEN
☐ MAKE CORRECTIONS NOTED
☐ AMEND AND RESUBMIT
☐ REJECTED-SEE REMARKS

Date 6/20/12 By [signature]

BROWN AND CALDWELL OHIO,LLC



Netpave® 50 Grass Paving System
design and installation guidance for

Grassed Surfaces

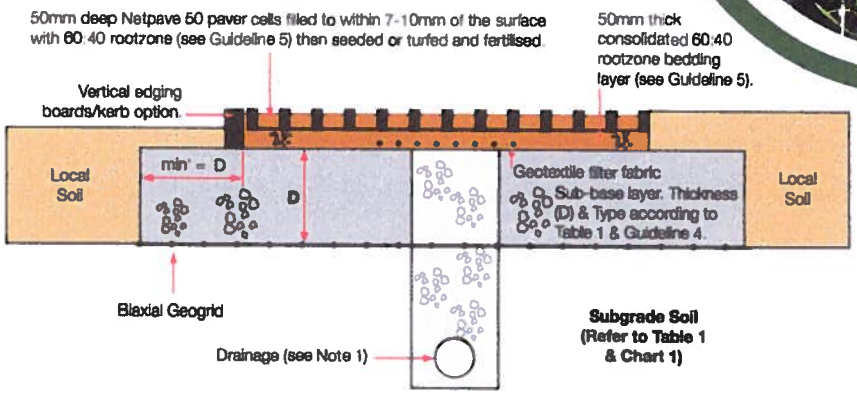


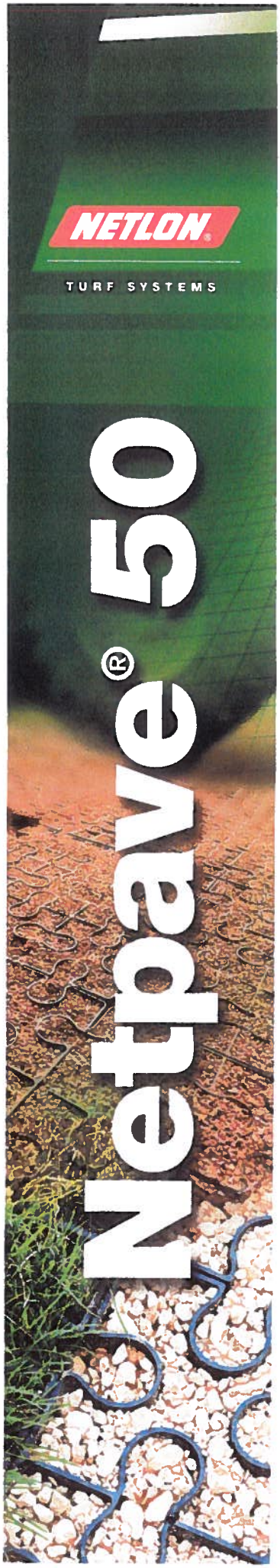
Table 1: Typical Sub-base Thickness (D) Requirements

Application/Load	**CBR (%) strength of subgrade soil** (see Chart 1)	**(D) DoT sub-base thickness (mm)** (see Guideline 4)
Fire truck and occasional HGV access	> 6	125
	4 - 6	175
	2 - 4	275
	1 - 2	475
Light vehicle access and overspill car parking	> 6	100
	4 - 6	150
	2 - 4	225
	1 - 2	350

Paver type	**Netpave 50**	
Specifications	Material	100% recycled polyethylene
	Paver unit size	500mm x 500mm x 50mm (4 per m², pre-connected)
	Weight	6.5kg/m²
	Load bearing capacity	300 tonne/m² (crush resistance)
	Flexure	Flexible throughout the complete structure.
	Connection type	Double interlocking system: 'T' lugs and slots + male - female connectors.
	Colour	Black
	Markers	White mouldings are available to identify areas such as parking bays and routes. These inserts clip into the top of paver cells.
	Chemical resistance	Excellent
	UV resistance	High
Bedding layer	60:40 rootzone (see Guideline 5)	50mm - 70mm thick layer
Paver fill (seed bed)	60:40 rootzone (see Guideline 5)	40mm thick layer
Grass seed/Turf	35g/m² amenity blend low maintenence seed or turf as required.	
Fertiliser	Pre-seeding fertiliser followed up with appropriate spring or autumn fertiliser. (advice available from Netlon Turf Systems)	
Sub-base type	DoT Type 1 or a Porous Sub-base	'D' thickness in mm (Table 1 & Guideline 4)
Sub-base reinforcement	Biaxial Geogrid	see Note 1 & Table 1

continued overleaf

NETLON TURF SYSTEMS
Conwed Plastics NV, Netlon Turf Systems,
Marcel Habetslaan 20, B-3600 Genk Belgium.
Telephone: +32 (0)89-848310 Fax: +32 (0)89-848320
Email: turf.systems@conwedplastics.com
CONWED GLOBAL NETTING SOLUTIONS



Installation Guidelines

1. Place paver units with dimpled face uppermost (flared base down) onto the prepared, well consolidated bedding layer. The leading edge of the pavers should have the fixing lugs exposed for quick and easy installation. No pegging is required. Edging boards or kerbs can be used where required, according to local soil conditions.

2. Connect the pavers using the lugs and slots, progressing over the area in rows. Use protective gloves to avoid abrasions.

3. Pavers can be cut using a hand or power saw to fit around obstructions and contours. Cut pieces which are less than half the original size should be avoided where possible.

4. Fill pavers with the specified proprietry rootzone. Finished levels should be 7-10mm below the top of the cells after settlement. Do not overfill the paver cells. A light vibrating plate can be used to consolidate the pavers and to settle the rootzone infill if required

5. Rootzone must be a free-draining structurally sound sand:compost or sand:soil blend. This is a nominal proprietry blend of 60:40 or 70:30 ratio. Self blending is not recommended.

6. Carry out a normal seeding, fertilising and watering programme. A very light top dressing may be applied to just cover the seed and to provide adequate germination conditions. DO NOT OVERFILL.

7. The surface may be trafficked immediately, but it is preferable to allow the grass to fully establish prior to use.

Note 1: Typical drainage details; 100mm diameter perforated pipe drain laid at minimum gradient 1:100, bedded on gravel in trench backfilled with 'DoT Type A' drainage stone, covered or wrapped with a geotextile fabric and leading to a suitable outfall or soakaway. Drains placed down centre or one edge of access routes up to 5m wide. Wider areas may require additional drains at 5m - 10m centres. Drainage design by specifier based on specific ground conditions on site.

Netlon Turf Systems is part of Conwed Plastics NV. Netpave is a registered trademark.

The information in this document is of an illustrative nature and is supplied without charge. It does not form part of any contract with the user. Final determination of the suitability of any information or material for the use contemplated and the manner of use is the sole responsibility of the user and the user must assume all risk and liability in connection therewith.

NETLON TURF SYSTEMS

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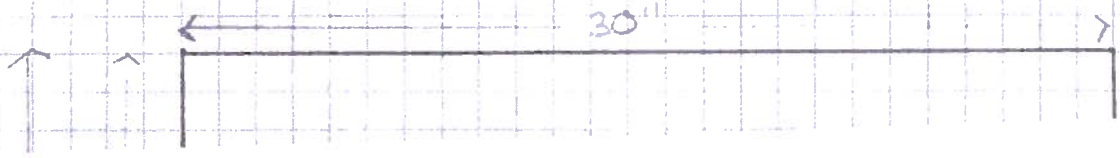
Email: turf systems@conwedplastics.com

CONWED GLOBAL NETTING SOLUTIONS

CONTECH®
CONSTRUCTION PRODUCTS INC.

Project: Ford Road Landfill	Page
Location: Elyria, OH	Date
Product	By
Client:	Checked

material: 16GA, DLT & CMP, 2-2/3 x 1/2



SUBMITTAL REVIEW

4

REVIEW IS FOR GENERAL COMPLIANCE WITH CONTRACT DOCUMENTS
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☒ NO EXCEPTIONS TAKEN
☐ MAKE CORRECTIONS NOTED
☐ AMEND AND RESUBMIT
☐ REJECTED-SEE REMARKS

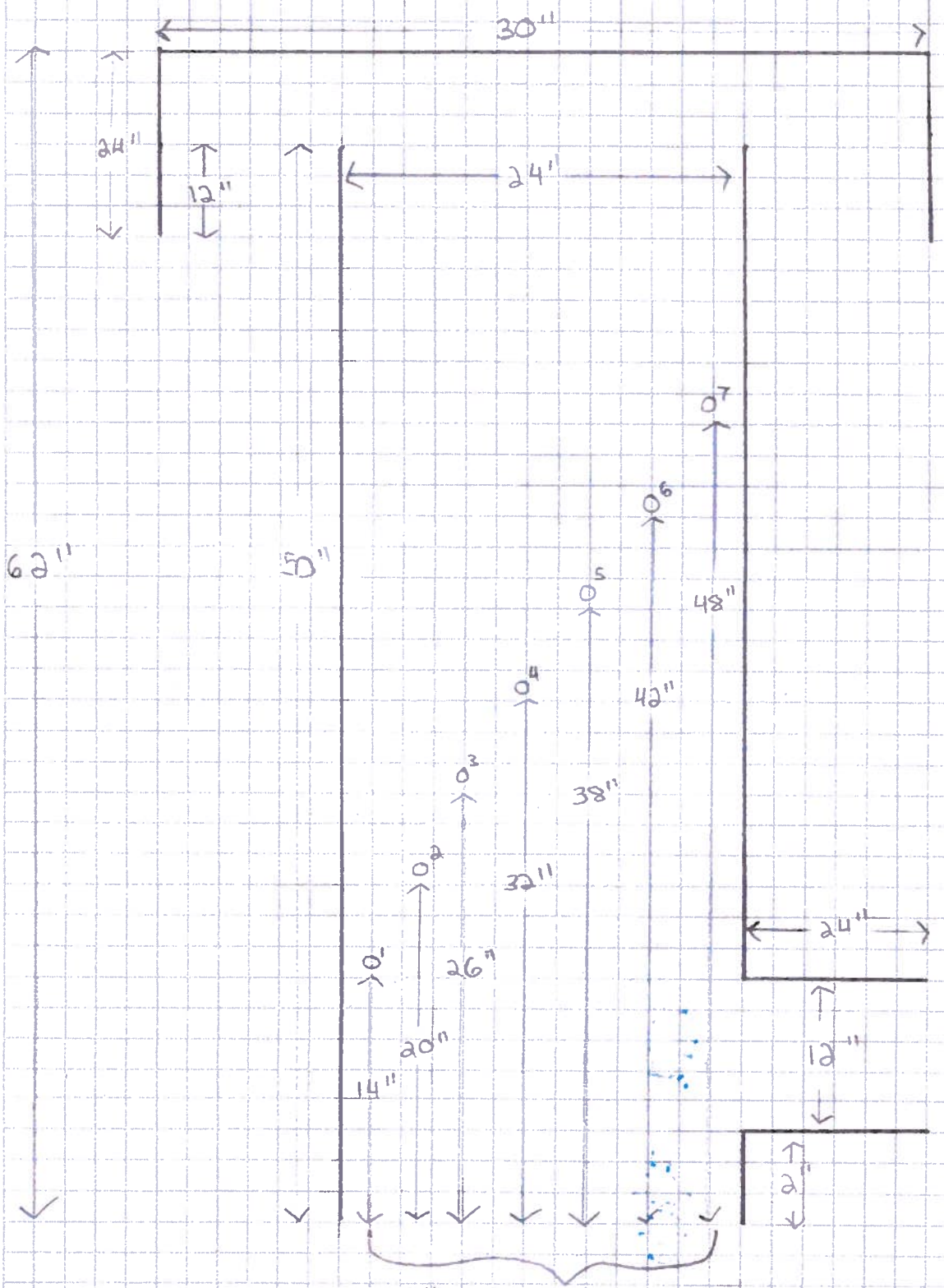
Date 6/14/12 By

BROWN AND CALDWELL OHIO, LLC

CONTECH®
CONSTRUCTION PRODUCTS INC.

Project: Ford Road Landfill	Page: 1 of 2
Location: Elyria, OH	Date:
Product:	By:
Client:	Checked:

material: 16GA, ALT2 CMP, 2-2/3 x 1/2

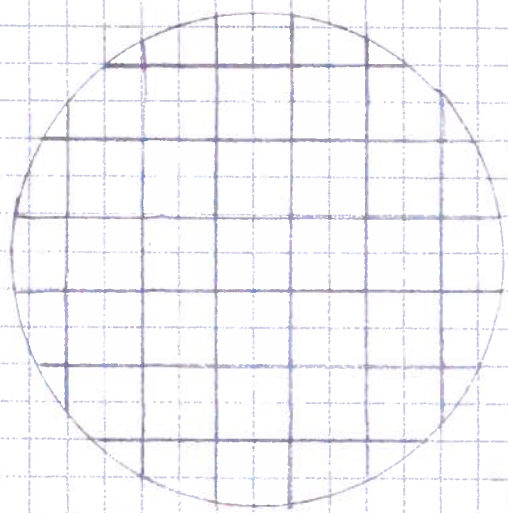


2" Dia Orifice Hole Locations
(7 Rows w/ 8 orifices equal distance around the pipe)

CONTECH®
CONSTRUCTION PRODUCTS INC.

Project: Ford Road Landfill	Page: 2 of 2
Location: Elyria, OH	Date:
Product:	By:
Client:	Checked:

Top View of Anti-Vortex Trash Rack



* Grate to be made from #4 rebar spaced at 4" O.C. each way

Hanson
HEIDELBERGCEMENTGroup

Wagner Quarry
4203 Milan Road
Sandusky, OH 44824
419-625-8141

06/26/2012

413147-#411/617 Limestone

Procedure	Sieve/Test	Average	Unit	#411/617
	1-1/2" (37.5mm)	[illegible]	%	[illegible]

SUBMITTAL REVIEW 5A

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- [ ] MAKE CORRECTIONS NOTED
- [ ] AMEND AND RESUBMIT
- [ ] REJECTED-SEE REMARKS

Date 6/26/12 By RLGR

BROWN AND CALDWELL OHIO,LLC

Wagner Quarry
4203 Milan Road
Sandusky, OH 44824
419-625-8141

06/26/2012

413147-#411/617 Limestone

Procedure	Sieve/Test	Average	Unit	#411/617
	1 1/2" (37.5mm)	100	%	100-100
	1" (25mm)	100	%	75-100
	3/4" (19mm)	93	%	60-100
	1/2" (12.5mm)	71	%	
	3/8" (9.5mm)	62	%	35-75
	#4 (4.75mm)	48	%	30-60
	#8 (2.36mm)	38	%	
	#16 (1.18mm)	29	%	
	#30 (0.6mm)	23	%	7-30
	#40 (0.425mm)	21	%	
	#50 (0.3mm)	19	%	
	#100 (0.15mm)	16	%	
	#200 (75um)	13.1	%	3-15
	Pan	0.0	%	

If you have any questions or need additional information, please contact me by email or phone.

Respectfully Submitted,

Andy Harper
QC Representative
(419) 656-0298
Andrew.Harper@Hanson.com

LAFARGE
AGGREGATES
& CONCRETE

Detail Quality Statistical Summary Report

Period	11/01/2009 - 12/31/2010
Plant	Terminal Dock Resale-30131
Product	AG3029 ODOT 411/617 MH-ODOT 411
Specification	ODOT 411/617

SUBMITTAL REVIEW 5A

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☐ REJECTED-SEE REMARKS

Date 6/28/12 By RUAR

BROWN AND CALDWELL OHIO,LLC

LAFARGE AGGREGATES & CONCRETE

Detail Quality Statistical Summary Report

Period 11/01/2009 - 12/31/2010
Plant Terminal Dock Resale-30131
Product AG3029 ODOT 411/617 MH-ODOT 411
Specification ODOT 411/617

Sieve/Test	Tests	Average	Min	Max	Range	St Dev	Target	Specification	PWS
1 1/2" (37.5mm)	12	100.0	100.0	100.0	0.0	0.00		100-100	100.0
1" (25mm)	12	100.0	100.0	100.0	0.0	0.01		100-100	100.0
3/4" (19mm)	12	93.8	89.9	97.6	7.6	2.30		60-100	100.0
1/2" (12.5mm)	12	77.4	70.6	86.0	15.4	4.64			
3/8" (9.5mm)	12	68.1	60.9	80.0	19.1	5.48		35-75	89.6
#4 (4.75mm)	12	49.3	42.0	63.0	21.0	6.36		30-60	95.3
#8 (2.36mm)	12	36.5	32.0	44.0	12.0	3.94			
#16 (1.18mm)	12	27.4	25.0	31.6	6.6	2.20			
#30 (0.6mm)	12	22.1	20.0	24.8	4.8	1.66		9-30	100.0
#50 (0.3mm)	12	18.5	16.0	21.1	5.1	1.67			
#100 (0.15mm)	12	15.7	13.0	18.6	5.6	1.70			
#200 (75um)	12	13.19	10.90	15.29	4.39	1.351		3-15	91.0
Pan	12	0.00	0.00	0.00	0.00	0.000			
Soundness (NaSO4) Base	1	4.8	4.8	4.8	0.0				
Wash Loss (#200/75um)	10	12.8	10.2	14.6	4.4	1.56			
Unit Wt (Loose)	1	100.9	100.9	100.9	0.0				
Unit Wt (Rodded)	1	113.9	113.9	113.9	0.0				
Total Moisture	9	5.4	3.1	7.0	3.9	1.21			
Absorption	1	3.064	3.064	3.064	0.000				
SPGR (Dry,Gsb)	1	2.571	2.571	2.571	0.000				
SPGR (SSD)	1	2.648	2.648	2.648	0.000				
SPGR (Apparent,Gsa)	1	2.783	2.783	2.783	0.000				
LA Abrasion (B,500)	1	31.5	31.5	31.5	0.0				

SUBMITTAL REVIEW 5A

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☒ NO EXCEPTIONS TAKEN
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☐ REJECTED-SEE REMARKS

Date 8/2/12 By

BROWN AND CALDWELL OHIO, LLC

LAFARGE AGGREGATES & CONCRETE

Detail Quality Statistical Summary Report

Period 08/02/2011 - 08/02/2012
Plant 30131-Terminal Dock Resale
Product ODOT 304-AG3037 ODOT 304 MH
Specification 2012 KPI Target

Sieve/Test	Tests	Average	Min	Max	Range	St Dev	Target	Specification	PWS
2" (50mm)	17	100	100	100	0	0.0	100-100	100-100	100.0
1 1/2" (37.5mm)	17	97	93	100	7	1.8			
1" (25mm)	17	85	76	92	16	5.0	76-96	70-100	99.9
3/4" (19mm)	17	78	65	86	20	6.0	71-93	50-90	97.7
1/2" (12.5mm)	17	64	51	74	23	7.1			
3/8" (9.5mm)	17	57	45	69	24	7.3			
#4 (4.75mm)	17	43	31	54	23	6.9	35-55	30-60	96.3
#8 (2.36mm)	17	32	23	39	16	4.7			
#16 (1.18mm)	17	23	18	29	11	3.1			
#30 (0.6mm)	17	19	15	23	7	2.4	12-24	0-33	100.0
#50 (0.3mm)	17	15	13	20	7	2.2			
#100 (0.15mm)	17	13	10	17	7	2.1			
#200 (75um)	17	10.85	8.27	14.53	6.26	1.791	8-14	0-15	99.0
Pan	17	0.00	0.00	0.00	0.00	0.000			

Hanson
Wagner Quarry
4203 Milan Rd
Sandusky, OH 44870
Phone (419) 625-8141
Fax (419) 625-7150

5B

SUBMITTAL REVIEW

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Date 6/20/12 By RMQ

BROWN AND CALDWELL OHIO,LLC

Type D for the Ford Road Culvert Outlet Channel Only

Hanson

Wagner Quarry
4203 Milan Rd
Sandusky, OH 44870
Phone (419) 625-8141
Fax (419) 625-7150
QC (419) 656-0298
Andrew.Harper@Hanson.Biz

June 19th, 2012

To whom it may concern:

Hanson Aggregates Mideast, Wagner Quarry (P/S#4204A-01) is an ODOT pre-approved supplier meeting all requirements in the S1069 Pre-Qualified Supplier Program.

This letter will serve as notification that ODOT Rip-Rap material from the Wagner Quarry is visually inspected and will conform to ODOT 703.19 (Rock and Aggregate Materials for Item 601) specifications.

Type A -	85% of the total material by weight larger than 18" but less than 30" and at least 50% larger than 24"
Type B -	85% of the total material by weight larger than 12" but less than 24" and at least 50% larger than 18"
Type C -	85% of the total material by weight larger than 6" but less than 18" and at least 50% larger than 12"
Type D -	85% of the total material by weight larger than 3" but less than 12" and at least 50% larger than 6"

If you have any questions or require additional information, please call (419) 656-0298.

Respectfully,

Andrew Harper
Hanson Aggregates
Q.C. Representative

Hanson
Wagner Quarry
4203 Milan Rd
Sandusky, OH 44870
Phone (419) 625-8141
Fax (419) 625-7150

SUBMITTAL REVIEW 5B

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X NO EXCEPTIONS TAKEN SEE COMMENTS
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Date 6/25/12 By RWA

BROWN AND CALDWELL OHIO,LLC

Type C for the Principal Spillway Riprap Outlet Apron Only

Hanson

Wagner Quarry
4203 Milan Rd
Sandusky, OH 44870
Phone (419) 625-8141
Fax (419) 625-7150
QC (419) 656-0298
Andrew.Harper@Hanson.Biz

June 19th, 2012

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Type B - 85% of the total material by weight larger than 12" but less than 24" and at least 50% larger than 18"

Type C - 85% of the total material by weight larger than 6" but less than 18" and at least 50% larger than 12"

Type D - 85% of the total material by weight larger than 3" but less than 12" and at least 50% larger than 6"

If you have any questions or require additional information, please call (419) 656-0298.

Respectfully,

Andrew Harper
Hanson Aggregates
Q.C. Representative

Hanson
Wagner Quarry
4203 Milan Rd
Sandusky, OH 44870
Phone (419) 625-8141

SUBMITTAL REVIEW 5B

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☐ REJECTED-SEE REMARKS

Date 6/25/12 By RMAR

BROWN AND CALDWELL OHIO,LLC

Type D for the ~~Ford Road~~
Sedimentation Basin Rock Check
Dams exterior cover only

Hanson

Wagner Quarry
4203 Milan Rd
Sandusky, OH 44870
Phone (419) 625-8141
Fax (419) 625-7150
QC (419) 656-0298
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June 19th, 2012

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Respectfully,

Andrew Harper
Hanson Aggregates
Q.C. Representative

Hanson
Wagner Quarry
4203 Milan Rd
Sandusky, OH 44870
Phone (419) 625-8141
Fax (419) 625-7150

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Date 6/25/12 By RLAQ

BROWN AND CALDWELL OHIO, LLC

Type B for Downchute Channel Outlet Only

Hanson
Wagner Quarry
4203 Milan Rd
Sandusky, OH 44870
Phone (419) 625-8141
Fax (419) 625-7150
QC (419) 656-0298
Andrew.Harper@Hanson.Biz

June 19th, 2012

To whom it may concern:

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Type B -	85% of the total material by weight larger than 12" but less than 24" and at least 50% larger than 18"
Type C -	85% of the total material by weight larger than 6" but less than 18" and at least 50% larger than 12"
Type D -	85% of the total material by weight larger than 3" but less than 12" and at least 50% larger than 6"

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Respectfully,

Andrew Harper
Hanson Aggregates
Q.C. Representative

Hanson
Wagner Quarry
4203 Milan Rd
Sandusky, OH 44870
Phone (419) 625-8141
Fax (419) 625-7150

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☐ AMEND AND RESUBMIT ☐ REJECTED-SEE REMARKS

Date 6/25/12 By RAR

BROWN AND CALDWELL OHIO,LLC

Type A for the Black River Riprap Face Only

Hanson

Wagner Quarry
4203 Milan Rd
Sandusky, OH 44870
Phone (419) 625-8141
Fax (419) 625-7150
QC (419) 656-0298
Andrew.Harper@Hanson.Biz

June 19th, 2012

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Type D -	85% of the total material by weight larger than 3" but less than 12" and at least 50% larger than 6"

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Respectfully,

Andrew Harper
Hanson Aggregates
Q.C. Representative

Hanson
HEIDELBERGCEMENT Group

06/26/2012

Wagner Quarry
4203 Milan Road
Sandusky, OH 44824
419-625-8141

413110-#8 Limestone

Procedure	Sieve/Test	Average	Unit	OHDOT 8
	1/2" (12.5mm)	100	%	100-100

SUBMITTAL REVIEW 5C

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Date 6/26/12 By RAQ

BROWN AND CALDWELL OHIO, LLC

Wagner Quarry
4203 Milan Road
Sandusky, OH 44824
419-625-8141

06/26/2012

413110-#8 Limestone

Procedure	Sieve/Test	Average	Unit	OHDOT 8
	1/2" (12.5mm)	100	%	100-100
	3/8" (9.5mm)	89	%	85-100
	1/4" (6.3mm)	46	%	
	#4 (4.75mm)	22	%	10-30
	#8 (2.36mm)	5	%	0-10
	#16 (1.18mm)	3	%	0-5
	Pan	0.0	%	

If you have any questions or need additional information, please contact me by email or phone.

Respectfully Submitted,

Andy Harper
QC Representative
(419) 656-0298
Andrew.Harper@Hanson.com

LAFARGE
AGGREGATES
& CONCRETE

Detail Quality Statistical Summary Report

Period	11/01/2009 - 12/31/2010
Plant	Terminal Dock Resale-30131
Product	AG7726 AASHTO No. 8 MH-AASHTO No. 8
Specification	AASHTO No. 8

SUBM[illegible]EW 5C

REVIEW [illegible] PLIANCE
WIT[illegible]
NO RES[illegible]ITY IS ASSUMED FOR
CORRECTNESS OF DIMENSIONS OR DETAILS.
THE CONTRACTOR SHALL ASSUME FULL
RESPONSIBILITY FOR DEVIATIONS FROM
CONTRACT REQUIREMENTS NOT SPECIFICALLY
INDICATED ON THIS SUBMITTAL.

☒ NO EXCEPTIONS TAKEN
☐ MAKE CORRECTIONS NOTED
☐ AMEND AND RESUBMIT
☐ REJECTED-SEE REMARKS

Date 6/28/12 By [signature]

[illegible]ROWN AND CALDWELL OHIO, LLC

LAFARGE AGGREGATES & CONCRETE

Detail Quality Statistical Summary Report

Period 11/01/2009 - 12/31/2010
Plant Terminal Dock Resale-30131
Product AG7726 AASHTO No. 8 MH-AASHTO No. 8
Specification AASHTO No. 8

Sieve/Test	Tests	Average	Min	Max	Range	St Dev	Target	Specification	PWS
1/2" (12.5mm)	24	100.0	99.9	100.0	0.1	0.01		100-100	100.0
3/8" (9.5mm)	24	93.3	87.0	96.6	9.6	2.58		85-100	99.9
1/4" (6.3mm)	17	43.9	31.2	53.0	21.8	6.40			
#4 (4.75mm)	24	15.6	9.7	21.6	11.9	3.31		10-30	95.5
#8 (2.36mm)	24	3.6	2.4	5.1	2.6	0.73		0-10	100.0
#16 (1.18mm)	24	2.7	2.0	3.4	1.4	0.39		0-5	100.0
Pan	24	0.00	0.00	0.00	0.00	0.000			
Soundness (NaSO4) Coarse	2	2.8	1.0	4.6	3.6	2.57		0-12	100.0
Wash Loss (#200/75um)	14	2.1	1.8	2.8	1.0	0.28			
Unit Wt (Loose)	1	83.6	83.6	83.6	0.0				
Unit Wt (Rodded)	1	91.4	91.4	91.4	0.0				
Total Moisture	16	5.4	1.9	7.2	5.3	1.17			
SPGR (SSD)	1	2.549	2.549	2.549	0.000				
SPGR (Apparent,Gsa)	1	2.727	2.727	2.727	0.000				
LA Abrasion (C,500)	1	30.9	30.9	30.9	0.0			0-40	
Shale	5	0.05	0.00	0.23	0.23	0.103			
Absorption	5	4.045	3.940	4.204	0.264	0.1191			
SPGR (Dry,Gsb)	5	2.525	2.446	2.549	0.103	0.0444			

JMD COMPANY

MINE & CONSTRUCTION PRODUCTS SINCE 1902

OHIO DOT PREASSEMBLED SILT FENCE

SUBMITTAL REVIEW 6A

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☐ REJECTED-SEE REMARKS

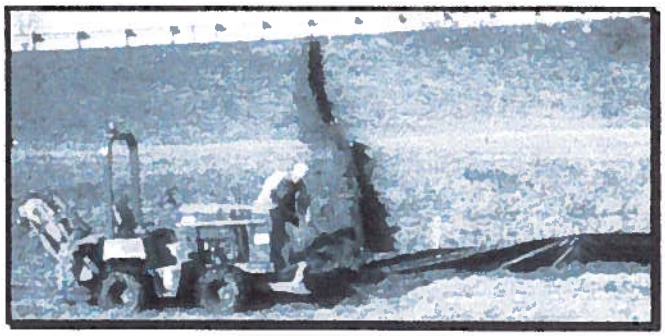
Date 6/20/12 By RuaR

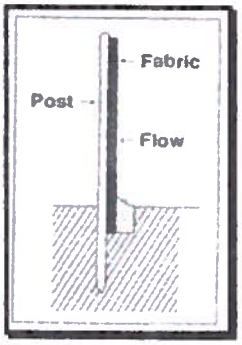
BROWN AND CALDWELL OHIO,LLC

JMD COMPANY

MINE & CONSTRUCTION PRODUCTS SINCE 1902

OHIO DOT PREASSEMBLED SILT FENCE





PRODUCT FEATURES

- Preassembled with hardwood stakes attached for fast installation
- Packaged in bundles for easy transport and storage
- Polypropylene fabric is specially designed to allow water to filter through while retaining silt and other sediment on construction sites
- Protects streams, lakes and other waterways from silt build-up
- Keeps adjoining roadways free of mud and debris
- Available in 30" x 100' rolls

PRODUCT INSTALLATION

1. Dig a 6" wide by 6" deep trench where silt fence is to be installed.
2. Drive posts into the ground on the downside trench edge until the bottom of the 6" unattached flap touches the bottom of the trench. **Posts are to be on the downside of the fabric opposite the flow.**
3. Backfill the trench and tamp.
4. With correct installation, silt and sediment will not flow under the silt fence.

FABRIC SPECIFICATIONS

PROPERTY	TEST METHOD	RESULTS*
FABRIC	-	WOVEN
POLYMER COMPOSITION	-	POLYPROPYLENE
GRAB TENSILE STRENGTH	ASTM D-4632	WARP 125 LBS/FILL 125 LBS
GRAB ELONGATION	ASTM D-4632	WARP 19%/FILL 19%
TRAP TEAR STRENGTH	ASTM D-4533	WARP 80 LBS/FILL 85 LBS
PUNCTURE STRENGTH	ASTM D-4833	120 LBS
MULLEN BURST STRENGTH	ASTM D-3786	280 PSI
UV RESISTANCE	ASTM D-4355	80%
A.O.S.	ASTM D-4751	30 US SIEVE
PERMITTIVITY	ASTM D-4491	10 GPM/FT^2

* RESULTS SHOWN ARE MINIMUM PHYSICAL PROPERTIES.

Hanson
HEIDELBERGCEMENT Group

06/26/2012

Wagner Quarry
4203 Milan Road
Sandusky, OH 44824
419-625-8141

413101-#1&2 Limestone

Procedure	Sieve/Test	Average	Unit	OHDOT 1&2 703.19
	4" (100mm)	100	%	100-100

SUBMITTAL REVIEW 6B

REVIEW IS FOR GENERAL COMPLIANCE WITH CONTRACT DOCUMENTS NO RESPONSIBILITY IS ASSUMED FOR CORRECTNESS OF DIMENSIONS OR DETAILS. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR DEVIATIONS FROM CONTRACT REQUIREMENTS NOT SPECIFICALLY INDICATED ON THIS SUBMITTAL.

X NO EXCEPTIONS TAKEN
☐ MAKE CORRECTIONS NOTED
☐ AMEND AND RESUBMIT
☐ REJECTED-SEE REMARKS

Date 6/26/12 By RMAR

BROWN AND CALDWELL OHIO,LLC

Wagner Quarry
4203 Milan Road
Sandusky, OH 44824
419-625-8141

06/26/2012

413101-#1&2 Limestone

Procedure	Sieve/Test	Average	Unit	OHDOT 1&2 703.19
	4" (100mm)	100	%	100-100
	3 1/2" (90mm)	100	%	90-100
	3" (75mm)	96	%	
	2 1/2" (63mm)	77	%	25-90
	2" (50mm)	50	%	
	1 1/2" (37.5mm)	20	%	0-25
	3/4" (19mm)	3	%	0-10
	Pan	0.0	%	

LAFARGE
AGGREGATES
& CONCRETE

Detail Quality Statistical Summary Report

Period	11/01/2009 - 12/31/2010
Plant	Terminal Dock Resale-30131
Product	AG7097 AASHTO No.1 MH-AASHTO No. 1
Specification	AASHTO 1

SUBMITTAL REVIEW 6B

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Date 6/28/12 By

BROWN AND CALDWELL OHIO,LLC

LAFARGE AGGREGATES & CONCRETE

Detail Quality Statistical Summary Report

Period 11/01/2009 - 12/31/2010
Plant Terminal Dock Resale-30131
Product AG7097 AASHTO No.1 MH-AASHTO No. 1
Specification AASHTO 1

Sieve/Test	Tests	Average	Min	Max	Range	St Dev	Target	Specification	PWS
4" (100mm)	1	100.0	100.0	100.0	0.0			100-100	
3 1/2" (90mm)	1	99.1	99.1	99.1	0.0			90-100	
3" (75mm)	1	95.2	95.2	95.2	0.0				
2 1/2" (63mm)	1	84.7	84.7	84.7	0.0			25-60	
2" (50mm)	1	55.8	55.8	55.8	0.0				
1 1/2" (37.5mm)	1	23.2	23.2	23.2	0.0			0-15	
1" (25mm)	1	9.2	9.2	9.2	0.0				
3/4" (19mm)	1	5.4	5.4	5.4	0.0			0-5	
Pan	1	0.00	0.00	0.00	0.00				
Unit Wt (Loose)	1	81.3	81.3	81.3	0.0				
Unit Wt (Rodded)	1	98.6	98.6	98.6	0.0				

American Excelsior Company®

Earth Science Division

February 12, 2013

To whom it may concern:

I am writing this letter in reference to the attached wattle specifications. The AEC Premier Straw® Wattle – 9in as manufactured by American Excelsior Company meets most of the specifications listed in Table 1 where some are proprietary to the Earth Savers – Wattle. The AEC Premier Straw Wattle has netting mass per unit weight of 0.43 oz/ft and has a mass per unit weight of 2lb/ft. Our straw consists of agricultural straw fibers that are certified weed seed free from the Ohio area which is nearly impossible to find rice straw as listed on the attached specification. Please see the attached Material Specification and Manufacturer's Certification for AEC Premier Straw Wattle for additional information on the sediment control device.

Regards,

Mike Nelson, CPESC, CPSWQ
Technical Services
American Excelsior Company
(715)-236-5644, mnelson@erosionlab.com

SUBMITTAL REVIEW

7

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☐ AMEND AND RESUBMIT ☐ REJECTED-SEE REMARKS

Date 2/12/13 By

BROWN AND CALDWELL OHIO, LLC

American Excelsior Company®
Earth Science Division

Proud Participant in NTPEP and Proud Member of:

AEC PREMIER STRAW® WATTLES MATERIAL SPECIFICATIONS

Materials:

Certified Weed Seed Free Agricultural Straw
Tubular Netting

Typical Wattle Sizes:

Product Name/Nominal Diameter	9.0 in	12.0 in	20.0 in
Minimum Diameter	8.5 in (21.6 cm)	11.5 in (29.2 cm)	19.0 in (48.3 cm)
Length (± 10%)	25.0 ft (7.6 m)	10.0 ft (3.1 m)	10.0 ft (3.1 m)
Weight (± 10%)	50.0 lb (22.7 kg)	30.0 lb (13.6 kg)	60.0 lb (27.2 kg)
Density (± 10%)	4.53 lb/ft^3 (72.63 kg/m^3)	3.82 lb/ft^3 (61.25 kg/m^3)	2.75 lb/ft^3 (44.10 kg/m^3)

Description:

AEC Premier Straw Wattles are tubular products consisting of agricultural straw fibers encased in tubular netting. AEC Premier Straw Wattles may be placed across channel bottoms to reduce flow velocities or on hillslopes to break up slope lengths and slow overland flow. AEC Premier Straw Wattles are available palletized to minimize material handling requirements. AEC Premier Straw Wattles shall be Manufactured in the U.S.A.

Physical Properties:

Fiber: Certified Weed Seed Free Agricultural Straw
Net Configuration: Totally encased

All measurements are based on product at time of manufacture. All measurements are nominal.

MADE IN THE USA

850 Avenue H East • Arlington, Texas 76011
Phone 1-800-777-SOIL • Fax 817-385-3585 • www.Curlex.com

American Excelsior Company®
Earth Science Division

Proud Participant in NTPEP and Proud Member of:

MANUFACTURER'S CERTIFICATION

AEC PREMIER STRAW® WATTLES - Sediment Control Device

Manufacturer:

American Excelsior Company
831 Pioneer Avenue
Rice Lake, WI 54868
1-866-9FIBERS (1-866-934-2377)

Project Information (if applicable):

Name:

Location:

Number:

Statement

We hereby certify that the above referenced material is manufactured to meet or exceed the following specification:

Fiber:	Certified Weed Seed Free Agricultural Straw
Length:	25.0 ft (7.6 m) ± 10% for 9" wattle
	10.0 ft (3.1 m) ± 10% for 12" wattle
	10.0 ft (3.1 m) ± 10% for 20" wattle
Weight:	50.0 lb (22.7 kg) ± 10% for 9" x 25' wattle
	30.0 lb (13.6 kg) ± 10% for 12" x 10' wattle
	60.0 lb (27.2 kg) ± 10% for 20" x 10' wattle
Density:	4.53 lb/ft^3 (72.63 kg/m^3) ± 10% for 9" x 25' wattle
	3.82 lb/ft^3 (61.25 kg/m^3) ± 10% for 12" x 10' wattle
	2.75 lb/ft^3 (44.10 kg/m^3) ± 10% for 20" x 10' wattle
Net Configuration:	Totally encased

All measurements are based on product at time of manufacture. All measurements are nominal.

Rocky Van Gilder – V.P. of Wood Operations

03/25/10
Effective Date

Note: This Certification expires, without notice, if document is updated by American Excelsior Company (AEC). Current Material Specifications and Manufacture's Certifications (MSMC) for AEC products shall be accessed from www.Curlex.com at all times.

MADE IN THE U.S.A.

850 Avenue H East • Arlington, Texas 76011
Phone 1-800-777-SOIL • Fax 817-385-3585 • www.Curlex.com

W1209R0310

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Flexterra® HP-FGM

600% GREATER GERMINATION

SUBMITTAL REVIEW

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Date 6/28/12 By

BROWN AND CALDWELL OHIO, LLC

Flexterra® HP-FGM™

600% GREATER GERMINATION, NEARLY PERFECT EROSION CONTROL, NOW 100% BIODEGRADABLE.

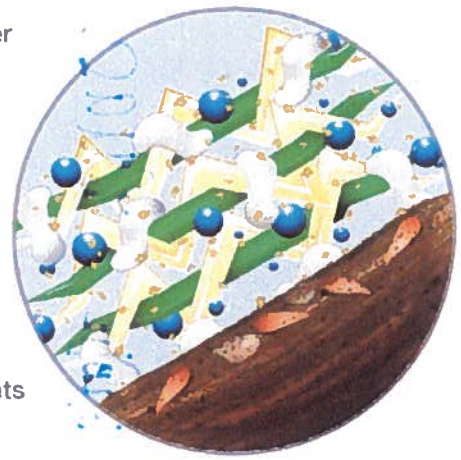
New patent-pending Flexterra® High Performance-Flexible Growth Medium™ (HP-FGM™) takes the near-perfect performance of the original Flexterra FGM to an even higher level. Introduced in 2004, Flexterra FGM rapidly set a new standard of excellence for controlling erosion and establishing vegetation on severe slopes. It outperformed blankets and led the movement toward more cost-effective, environmentally responsible hydraulically applied techniques. Flexterra HP-FGM represents the next generation in Flexible Growth Media and is proven to surpass the original's outstanding performance.

NEW FLEXTERRA HP-FGM DELIVERS:

- The highest germination and growth establishment
- Greater than 99% erosion control effectiveness immediately upon application
- 100% biodegradability
- Greater safety for even the most sensitive aquatic environment because it's non-toxic
- Near-perfect erosion control and denser vegetation while protecting the natural environment

NEW HP TECHNOLOGY: GREENER BY DESIGN

- Revolutionary Micro-Pore particles optimize water and nutrient retention
- *100% recycled* Thermally Refined® wood fibers not only produce the highest yield and coverage per pound, they are also phyto-sanitized, eliminating weed seeds and pathogens
- *100% biodegradable* interlocking man-made fibers help increase wet bond strength
- *100% non-toxic* biopolymers and water absorbents further enhance performance



Profile®

Your Trusted Partner In Soil Solutions

SETTING THE BAR EVEN HIGHER.

> **BETTER EROSION CONTROL**—Flexterra® HP-FGM™ immediately bonds to the soil surface. Its flexible yet stable matrix retains > 99% of soil, vastly reducing turbidity of runoff for up to 18 months. HP also features greater wet bond strength yielding increased resistance to sheet flow.

> **GREATER SEED GERMINATION AND GROWTH**—High Performance matrix outperforms traditional Flexterra FGM with 600% better initial germination and 250% increased biomass due to a combination of optimized water and nutrient retention.

> **SAFER FOR THE ENVIRONMENT**—Unlike rolled erosion control blankets, Flexterra HP-FGM has no nets or threads to endanger wildlife. It uses 100% biodegradable crimped interlocking fibers and 100% recycled and phyto-sanitized wood fibers. Flexterra HP-FGM is 100% safe for aquatic and terrestrial life forms.

> **EARTH-FRIENDLY *and* SUSTAINABLE RESULTS**—Flexterra HP-FGM is a result of Profile's Green Design Engineering,™ creating cost-effective and environmentally superior solutions through the design, manufacture and application of sustainable erosion control and vegetation establishment technologies.

TECHNICAL DATA

PHYSICAL PROPERTIES*	TEST METHOD	UNITS	MINIMUM VALUE
Mass/Unit Area	ASTM D6566[1]	g/m² (oz/yd²)	407 (12)
Thickness	ASTM D6525[1]	mm (in)	5.6 (0.22)
Wet Bond Strength	ASTM D6818[1]	N/m (lb/ft)	131 (9)
Ground Cover	ASTM D6567[1]	%	99
Water-Holding Capacity	ASTM D7367	%	1700
Material Color	Observed	n/a	Green
ENVIRONMENTAL PROPERTIES*	**TEST METHOD**	**UNITS**	**TYPICAL VALUE**
Biodegradability	ASTM D5338	%	100
Functional Longevity[2]	ASTM D5338	n/a	Up to 18 months
Ecotoxicity	EPA 2021.0	%	96-hr LC50 > 100%
Effluent Turbidity	Large Scale[3]	NTU	< 100
PERFORMANCE PROPERTIES*	**TEST METHOD**	**UNITS**	**VALUE**
Cover Factor[4]	Large Scale[3]	n/a	< 0.01
Percent Effectiveness[5]	Large Scale[3]	%	> 99
Cure Time	Observed	hours	0-2
Vegetation Establishment	ASTM D7322[1]	%	> 800
PRODUCT COMPOSITION			**TYPICAL VALUE**
Thermally Processed Wood Fibers[6] (within a pressurized vessel)			80% ± 3%
Cross-Linked Biopolymers and Water Absorbents			10% ± 1%
Crimped, Man-Made Biodegradable Interlocking Fibers			5% ± 1%
Proprietary Mineral Activator			5% ± 1%

* When uniformly applied at a rate of 3900 kg/ha (3500 lbs/ac) under laboratory conditions.

1. ASTM test methods developed for Rolled Erosion Control Products that have been modified to accommodate Hydraulic Erosion Control Products.
2. Functional Longevity is the estimated time period, based upon field observations, that a material can be anticipated to provide erosion control and agronomic benefits as influenced by composition, as well as site-specific conditions, including; but not limited to—temperature, moisture light conditions, soils, biological activity, vegetative establishment and other environmental factors.
3. Large scale testing conducted at Utah Water Research Laboratory. For specific testing information please contact a Profile technical service representative at 866-325-6262.
4. Cover Factor is calculated as soil loss ratio of treated surface versus an untreated control surface.
5. % Effectiveness = One minus Cover Factor multiplied by 100%.
6. Heated to a temperature greater than 193 degrees C (380 degrees F) for 5 minutes at a pressure greater than 345 kPa (50 psi) in order to be Thermally Refined®/Processed and to achieve phyto-sanitization.

GREEN DESIGN ENGINEERING™
EARTH-FRIENDLY SOLUTIONS FOR SUSTAINABLE RESULTS™

Green Design Engineering™ is a holistic approach, combining environmentally beneficial design and ecologically sound products with agronomic and erosion control expertise, to provide the most effective, customized and cost-efficient solutions for erosion control and vegetative establishment.

PS³
PROFILE SOIL SOLUTIONS SOFTWARE

Put Green Design Engineering into action. PS³ is the industry's first and only web-based design and selection tool that integrates erosion and sediment control engineering with agronomic excellence. Log on to www.ProfilePS3.com to find the right solution for any site.

Profile
Your Trusted Partner In Soil Solutions

For technical information or distribution, please call 800-508-8681.
For customer service, call 800-366-1180.

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For warranty information, visit www.profileproducts.com.

750 Lake Cook Road • Suite 440
Buffalo Grove, IL 60089

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IECA

GreenArmor System

A revolutionary green alternative to hard armor.

As the world's most effective Green Design Engineering™ [illegible] alternative to hard armor, the GreenArmor™ System offers a more aesthetically pleasing and environmentally superior means of protecting high-discharge waterways and steep slopes. You can learn about Keys to the System here [illegible] system. You will see that they bring together the most technologically advanced erosion control and revegetation products to provide:

- 30-50% less cost than hard armor
- Twice the erosion resistance of natural vegetation
- Higher-density turf

SUBMITTAL REVIEW BB

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Date 6/28/12 By [illegible]

BROWN AND CALDWELL OHIO,LLC

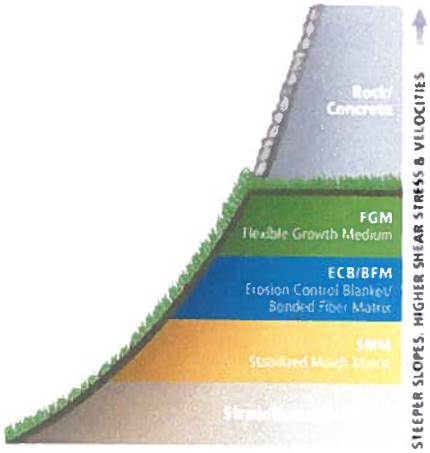
GreenArmor System

A revolutionary green alternative to hard armor.

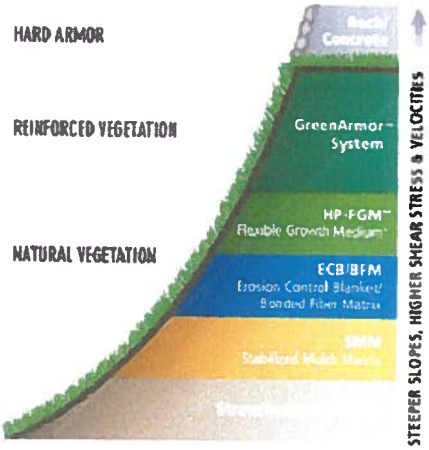
As the world's most effective Green Design Engineering™ (/product/page/green-design-engineering) alternative to hard armor, the GreenArmor™ System offers a more aesthetically pleasing and environmentally superior means of protecting high-discharge waterways and steep slopes. You can learn about Keys to the System here (/proofpoints/keys-greenarmor-system). You will see that they bring together the most technologically advanced erosion control and revegetation products to provide:

- 30-50% less cost than hard armor
- Twice the erosion resistance of natural vegetation
- Higher-density turf
- Unmatched factors of safety

Watch our Video Demonstration (/video/greenarmor-system-installation-video) which shows how the components come together.



Prior to the introduction of turf reinforcement systems, hard armor was used exclusively to accommodate sites where velocities (6-8 ft/sec) and shear stresses (2-3 lb/ft²) exceeded the limits of natural vegetation.



Today, the fully vegetated GreenArmor System raises the limits of vegetation to velocities of 20 ft/sec and shear stresses of 17 lb/ft².

Related Resources

GreenArmor 7010 Specification
(http://ProfileLibrary.info/Serve.aspx?file=154)

GreenArmor 7010 Specification - Spanish
(http://ProfileLibrary.info/Serve.aspx?file=165)

GreenArmor 7020 Specification
(http://ProfileLibrary.info/Serve.aspx?file=150)

GreenArmor 7020 Specification - Spanish
(http://ProfileLibrary.info/Serve.aspx?file=166)

GreenArmor System Brochure
(http://ProfileLibrary.info/Serve.aspx?file=181)

Get In-the-Know

Host or attend a Lunch 'n Learn seminar to learn more about hot industry topics and technology.

Learn More » (/lunch-and-learn)

Additional Resources

Keys to the GreenArmor System (/proofpoints/keys-greenarmor-system)

Combining engineering and agronomic excellence to create the world's most effective Green Design Engineering™ solution.

Learn More » (/proofpoints/keys-greenarmor-system)

Revolutionary System—Unprecedented Results
(/proofpoints/revolutionary-system-unprecedented-results)

The results of a comprehensive evaluation of GreenArmor™ System.

Learn More » (/proofpoints/revolutionary-system-unprecedented-results)

GreenArmor System Installation Video
(/video/greenarmor-system-installation-video)

Learn the proper installation techniques combining Enkamat® Turf Reinforcement Mat with Flexterra® HP-FGM™

Additional Resources

Green Design Engineering
(/product/page/green-design-engineering)

Improving the environment through earth-friendly erosion control.

Learn More » (/product/page/green-design-engineering)

Profile Soil Solutions Software (PS³)
(/resources/profile-soil-solutions-software)

The industry's only resource that integrates the major erosion and sediment control disciplines.

Learn More » (/resources/profile-soil-solutions-software)

Appendix N: Interim O & M Inspection Reports

Learn More » (/video/greenarmor-system-installation-video)

Zinc Coated (Galvanized) Steel Chain Link Fence Fabric

ASTM A 392, Federal specification RR-F-191 Type I, AASHTO M-181 Type I

Tech

1. PRODUCT NAME

Zinc Coated (Galvanized) Steel Chain Link Fence Fabric

2. MANUFACTURER

Merchants Metals Manufacturing Locations:

Whittier, CA 90608

Galvanized after weaving (GAW). The uncoated wire is woven into chain link fence fabric of the appropriate height and mesh size. The coating is produced by passing the woven mesh through a continuous line which includes cleaning of the fabric. After cleaning, the fabric passes through a molten bath of zinc metal to produce the galvanized coating.

sizes less than 1-3/8" are GBW

Sizes: Galvanized fabric is available in mesh sizes from 3/8 in. to 2 in. (10 mm to 50 mm) and in heights from 36 inches to 144 inches (910 mm to 3 650 mm). **See Table 2**

Unless otherwise specified chain link fence fabric woven with a 2 inch (50 mm) mesh and 60 inches (1 520 mm) or less in height is knuckled at

SUBMITTAL REVIEW

REVIEW IS FOR GENERAL COMPLIANCE WITH CONTRACT DOCUMENTS. NO RESPONSIBILITY IS ASSUMED FOR CORRECTNESS OF DIMENSIONS OR DETAILS. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR DEVIATIONS FROM CONTRACT REQUIREMENTS NOT SPECIFICALLY INDICATED ON THIS SUBMITTAL.

☒ NO EXCEPTIONS TAKEN ☐ MAKE CORRECTIONS NOTED

☐ AMEND AND RESUBMIT ☐ REJECTED-SEE REMARKS

Date 10/22/12 By RLLQ

BROWN AND CALDWELL OHIO, LLC

9A

9B

Merchants Metals Spec Tech

Zinc Coated (Galvanized) Steel Chain Link Fence Fabric
ASTM A 392, Federal specification RR-F-191 Type I, AASHTO M-181 Type I

1. PRODUCT NAME

Zinc Coated (Galvanized) Steel Chain Link Fence Fabric

2. MANUFACTURER

Merchants Metals Manufacturing Locations:

Whittier, CA 90608
12482 East Putnam Street
Phone: (800) 336-2396
Fax: (562) 696-9604

New Paris, IN 46553
71347 County Road 23
Phone: (800) 831-4060
Fax: (219) 831-3515

Statesville, NC 28677
165 Fanjoy Road
Phone: (800) 438-7016
Fax: (704) 873-1313

Houston, TX 77093
4801 Langley Road
Phone: (800) 723-3623
Fax: (713) 697-5808

Bladensburg, MD 20710
4301- 46th Street
Phone: (301) 927-4060
Fax: (301) 927-0368

3. PRODUCT DESCRIPTION

Basic Use:
Zinc coated (galvanized) steel chain link fence fabric for commercial, industrial, institutional and recreational applications. Zinc coated fabric is contained in various government specifications for use in prison, road, dock, airport, housing, forestry, and military uses.

Composition and Materials:
Zinc coated steel chain link fence fabric is produced by cold-drawing good commercial grade steel rod into wire of the appropriate diameter. The steel rod from which the wire is drawn is produced by the open hearth, electric furnace or basic oxygen process.

The zinc coating may be applied before weaving into fabric (GBW) or after weaving into fabric (GAW). *Galvanized before weaving (GBW):* The wire is cleaned, passed through a bath of molten zinc, and then woven into chain link fabric. *Galvanized after weaving (GAW):* The uncoated wire is woven into chain link fence fabric of the appropriate height and mesh size. The coating is produced by passing the woven mesh through a continuous line which includes cleaning of the fabric. After cleaning, the fabric passes through a molten bath of zinc metal to produce the galvanized coating.

Zinc used to produce the coating conforms to the requirements of ASTM specification B6.

Standards:
ASTM A 392 *Zinc-Coated Steel Chain Link Fence Fabric*
ASTM F567 *Installation of Chain Link Fence*
ASTM A 817 *Metallic-Coated Wire for Use in Chain Link Fence*
ASTM B6 *Zinc (Slab Zinc)*
Federal specification RR-F-101K/1D Type I, *Fencing, Wire and Post Metal (Chain-Link Fence Fabric)*
American Association of State Highway Transportation Officials M-181 *Chain Link Fence*, Type I

4. TECHNICAL DATA

General:
The manufacturer, if requested, will supply samples and certification that all materials furnished fully comply with the appropriate specifications.

Chain Link Fence Fabric:
The base metal of the chain link fence fabric is composed of commercial quality medium-carbon wire. The weight of zinc coating, wire sizes with allowable variances, and wire breaking strength, as shown in Table 1, conform to ASTM A 817 for the wire size specified. The fabric is zinc coated after weaving (GAW) or before weaving (GBW).

Coating Weight
Zinc-coated (galvanized) steel chain link fence fabric conforming to ASTM A392 and other specifications referenced above is available in two coating classes with the following minimum coating weights:

Class 1 - 1.2 oz/ft^2 (366 g/m^2)
Class 2 - 2.0 oz/ft^2 (610 g/m^2)

GAW is available in either class. GBW is limited to Class 1 due to the limited availability of galvanized wire with a Class 2 coating. Fabric woven with 11 ga wire and fabric with mesh sizes less than 1-3/4" are GBW.

Sizes: Galvanized fabric is available in mesh sizes from 3/8 in. to 2 in. (10 mm to 50 mm), and in heights from 36 inches to 144 inches (910 mm to 3,660 mm). See Table 2.

Unless otherwise specified, chain link fence fabric woven with a 2 inch (50 mm) mesh and 60 inches (1,520 mm) or less in height is knuckled at both selvages; for fabrics 72 inches (1,830 mm) and above the selvages are knuckled at one edge and twisted at the other. All fabrics woven into mesh sizes under 2 in. are knuckled at both selvages.

5. INSTALLATION

Install chain link fence fabric in accordance with ASTM Practice 567.

6. AVAILABILITY AND COST

Availability:
Zinc coated steel chain link fence fabric is available for shipment throughout the United States and worldwide.

Cost:
Material costs may vary depending on specific requirements. Costs may be obtained through all Merchants Metals Service Centers.

7. WARRANTY

Class 2 galvanized steel chain link fence fabric is warranted for 25 years against failure due to rust or corrosion.

8. MAINTENANCE

Periodic inspection is recommended but no routine maintenance is required.

9. TECHNICAL SERVICES

Technical services are available through the Merchants Technical Sales Department.

Phone: (888) 260-1600 (toll free)
Facsimile: (888) 261-3600 (toll free)

or your local Merchants Metals Service Center.

MERCHANTS METALS

Issued: February, 2002

Merchants Metals Spec Tech

Zinc Coated (Galvanized) Steel Chain Link Fence Fabric
ASTM A 392, Federal specification RR-F-191 Type I, AASHTO M-181 Type I

Table 1 – Zinc Coated Wire Characteristics

Nominal Coated Wire Diameter			Allowable Variance		Zinc Coating Weight, min.				Breaking Strength, minimum	
					Class 1		Class 2			
Gage	inch	mm	inch	mm	oz/ft²	g/m²	oz/ft²	g/m²	lbf	Newtons
6	0.192	4.88	±0.005	±0.13	1.20	366	2.00	610	2,170	9,650
9	0.148	3.76	±0.005	±0.13	1.20	366	2.00	610	1,290	5,740
11	0.120	3.05	±0.005	±0.13	1.20	366	—	—	850	3,780

Table 2 – Zinc Coated Chain Link Fabric Characteristics

Recommended Use	Mesh Sizes Available		Nominal Coated Wire Size, gage	Height of Fence Fabric inch (mm)
	inch	mm		
Industrial/Commercial	2"	50	6	36 (910), 42 (1,070), 48 (1,220), 60 (1,520), 72 (1,830), 84 (2,130), 96 (2,440), 108 (2,740), 120 (3,050), 144 (3,660)
			9	36 (910), 42 (1,070), 48 (1,220), 60 (1,520), 72 (1,830), 84 (2,130), 96 (2,440), 108 (2,740), 120 (3,050), 144 (3,660)
			11	36 (910), 42 (1,070), 48 (1,220), 60 (1,520), 72 (1,830), 84 (2,130), 96 (2,440), 108 (2,740), 120 (3,050), 144 (3,660)
Industrial/Security	1"	25	6	36 (910), 42 (1,070), 48 (1,220), 60 (1,520), 72 (1,830), 84 (2,130), 96 (2,440), 108 (2,740), 120 (3,050), 144 (3,660)
			9	36 (910), 42 (1,070), 48 (1,220), 60 (1,520), 72 (1,830), 84 (2,130), 96 (2,440), 108 (2,740), 120 (3,050), 144 (3,660)
Security	1"	26	9	36 (910), 42 (1,070), 48 (1,220), 60 (1,520), 72 (1,830), 84 (2,130), 96 (2,440), 108 (2,740), 120 (3,050), 144 (3,660)
	1"	25	11	36 (910), 42 (1,070), 48 (1,220), 60 (1,520), 72 (1,830), 84 (2,130), 96 (2,440), 108 (2,740), 120 (3,050), 144 (3,660)
	3/4"	19	9	36 (910), 42 (1,070), 48 (1,220), 60 (1,520), 72 (1,830), 84 (2,130), 96 (2,440), 108 (2,740), 120 (3,050), 144 (3,660)
	3/4"	19	11	36 (910), 42 (1,070), 48 (1,220), 60 (1,520), 72 (1,830), 84 (2,130), 96 (2,440), 108 (2,740), 120 (3,050), 144 (3,660)
	5/8"	16	9	36 (910), 42 (1,070), 48 (1,220), 60 (1,520), 72 (1,830), 84 (2,130), 96 (2,440), 108 (2,740), 120 (3,050), 144 (3,660)
	5/8"	16	11	36 (910), 42 (1,070), 48 (1,220), 60 (1,520), 72 (1,830), 84 (2,130), 96 (2,440), 108 (2,740), 120 (3,050), 144 (3,660)
	1/2"	13	9	36 (910), 42 (1,070), 48 (1,220), 60 (1,520), 72 (1,830), 84 (2,130), 96 (2,440), 108 (2,740), 120 (3,050), 144 (3,660)
	1/2"	13	11	36 (910), 42 (1,070), 48 (1,220), 60 (1,520), 72 (1,830), 84 (2,130), 96 (2,440), 108 (2,740), 120 (3,050), 144 (3,660)
	3/8"	10	11	36 (910), 42 (1,070), 48 (1,220), 60 (1,520), 72 (1,830), 84 (2,130), 96 (2,440), 108 (2,740), 120 (3,050), 144 (3,660)
Tennis Court	1-3/4"	44	9	36 (910), 42 (1,070), 48 (1,220), 60 (1,520), 72 (1,830), 84 (2,130), 96 (2,440), 108 (2,740), 120 (3,050), 144 (3,660)
			11	36 (910), 42 (1,070), 48 (1,220), 60 (1,520), 72 (1,830), 84 (2,130), 96 (2,440), 108 (2,740), 120 (3,050), 144 (3,660)

Notes to tables:
(1) Red text indicates conformance with ASTM A-392.
(2) Breaking strength (Table 1) based on a minimum tensile strength of 75,000 psi.
(3) 11 ga fabric available with a Class 1 coating only.
(4) Fabric with mesh size less than 1-3/4" is galvanized before weaving.

Fabrics with other characteristics may be available. Contact the Merchants Metals Technical Sales Department or a Merchants Metals Service Center with specific requests.

Issued February 2002

Technical Sales Department:
Telephone: (888) 260-1600
Facsimile: (888) 261-3600

MERCHANTS METALS

ZINC COATED FRAMEWORK – Lusterguard™ LG-40
ASTM F1043 Group I-C, Federal specification RR-F-191 Class 1 Grade B, AASHTO M-181 Grade 2

Merchants Metals Spec Tech

1. PRODUCT NAME

Galvanized Framework, Lusterguard™, LG-40

2. DISTRIBUTOR

Merchants Metals

Corporate Headquarters:
Houston, TX 77067
515 West Greens Road
Phone: (800) 254-0080
Fax: (281) 876-0465

Merchants Metals Service Centers are located throughout the United States.

3. PRODUCT DESCRIPTION

Basic Use:

Lusterguard™ pipe is used as end, corner or line posts, and rails, for commercial, industrial and institutional installations of chain link fencing. The requirements for this material are contained in various government specifications for use in prison, road, dock, airport, housing, forestry, and military installations.

Lusterguard™ pipe is typically used in installations which incorporate zinc-coated or aluminum-coated steel chain link fence fabric, although it may also be specified for use with other types of fabric, i.e. PVC coated.

Composition and Materials:

Lusterguard™ pipe is manufactured using cold formed steel with a higher yield strength and tensile strength than schedule 40 pipe. The pipe is triple coated to provide and maintain a lustrous appearance in all climates and under the most severe atmospheric conditions.

Standards:

ASTM F1043 *Strength and Protective Coatings on Metal Industrial Chain Link Fence Framework*, Group I-C Heavy Industrial
ASTM F567 *Installation of Chain Link Fence*
Federal specification RR-F-191K/3D *Fencing, Wire and Post Metal (Chain Link Fence Posts, Top Rails, and Braces)*, Class 1, Grade B
AASHTO M-181 *Chain Link Fence*, Grade 2 (American Association of State Highway Transportation Officials), Grade 2
Federal Aviation Administration *AC 150/5370 Item F162*

4. TECHNICAL DATA

General:

The manufacturer or distributor, if requested, will supply samples and certification that all materials furnished fully comply with the appropriate specifications.

Zinc Coated Steel Framework:

The information contained herein for high yield strength/high tensile strength pipe covers the requirements for pipe sizes NPS 1 to NPS 3½, corresponding to fence industry sizes 1-3/8" to 4". Note: The dimensionless designator, NPS is used instead of traditional terms such as nominal diameter, size, and nominal size.)

Yield Strength Requirement:

The yield strength of Lusterguard™ pipe is 50,000 psi (344 MPa), min.

Coating Requirements:

The exterior of Lusterguard™ pipe is triple coated, ensuring the pipe will maintain its appearance. The triple coating consists of a metallic coating of zinc, plus a conversion coating and a clear organic film, conforming to ASTM F1043 Type B coating requirements.

The interior of the pipe is coated with a zinc rich paint conforming to ASTM F1043 Type D coating requirements. This coating provides a high level of corrosion resistance to the interior of the pipe.

Size and Tolerances:

Sizes and other critical physical characteristics of Lusterguard™ LG-40 pipe typically used for fence installations are listed in Table 1.

The weight tolerance of the pipe is ±6% of the nominal weights listed in Table 1.

Mill lengths may range from 18 ft to 24 ft, or posts are available cut-to-length. Post lengths must be noted on purchase orders, plans or specifications.

LG-40 Strength Characteristics

Strength calculations are provided in Table 2. The calculations are based on the specified diameters, wall thicknesses, and minimum specified yield strength. Strength calculations are in inch-pound units only.

Additional information regarding the size of pipe typically used for various heights of fence fabric is found in Table 3.

5. INSTALLATION

Install fence posts in accordance with ASTM Practice 567.

6. AVAILABILITY AND COST

Availability: Lusterguard™ pipe is available for shipment throughout the United States and worldwide.

Cost: Material costs may vary depending on specific requirements. Costs may be obtained through all Merchants Metals Service Centers.

7. MAINTENANCE

Periodic inspection is recommended but no routine maintenance is required.

8. TECHNICAL SERVICES

Technical services are available through the Merchants Technical Sales Department.

Phone: (888) 260-1600 (toll free)
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or your local Merchants Metals Service Center.

Additional information is available on our website: www.merchantsmetals.com

MERCHANTS METALS

Issued: May 2002

Merchants Metals Spec Tech

Lusterguard™ LG-40

ASTM F1043 Group I-C, Federal specification RR-F-191 Class 1 Grade B, AASHTO M-181 Grade 2

Table 1 – LG-40 Pipe – Nominal Dimensions and Weights

Designator			Outside Diameter		Wall Thickness		Weight		
Fence Industry	NPS	Metric	Inch	Mm	Inch	mm	lb/ft	kg/m	
1-3/8	1	25	1.315	33.4	0.104	2.64	1.35	2.0	
1-5/8	1-1/4	32	1.660	42.2	0.111	2.82	1.84	2.7	TOP RAIL
2	1-1/2	0	1.900	48.3	0.120	3.05	2.28	3.4	LINE POST
2-1/2	2	50	2.375	60.3	0.130	3.30	3.12	4.6	
3	2-1/2	65	2.875	73.0	0.160	4.06	4.64	6.9	TERMINAL/ GATE POST
3-1/2	3	80	3.500	88.9	0.160	4.06	5.71	8.5	
4	3-1/2	90	4.000	101.6	0.160	4.06	6.56	9.8	

Table 2 – LG-40 Pipe – Strength Characteristics – Inch/pound units
Based on minimum yield strength of 50,000 psi

NPS	Outside Diameter o.d. Inches	Wall Thickness Inch	Inside Diameter i.d. Inches	Section Modulus Inch²	Maximum Bending Moment lb-inch	Calculated Load (lbs)		
						10 ft * Free Supported	Cantilever Load **	
							4 ft	6 ft
1	1.315	0.104	1.107	0.111	5,555	185	116	77
1¼	1.660	0.111	1.438	0.196	9,810	327	204	136
1½	1.900	0.120	1.660	0.281	14,050	Sizes above 1.660" o.d. are not normally used for top rail	293	195
2	2.375	0.130	2.115	0.488	24,405		508	339
2½	2.875	0.160	2.555	0.878	43,890		914	610
3	3.500	0.160	3.180	1.341	67,040		1,397	931
3½	4.000	0.160	3.680	1.782	89,100		1,856	1,237

* 10 ft Free Supported Calculated Load is representative of top rail for a typical chain link fence installation.
** 4 ft and 6 ft Cantilever Loads represent maximum calculated load applied at the top of the post with the bottom fixed.

Table 3 Post Selection Guide – based on fabric height

Fabric Height	O. D.		Wall Thickness		Weight	
Terminal Posts: End, Corner and Pull	In.	mm	In.	mm	lb/ft	kg/m
Fabric 6 ft (1,830 mm) and under	2.375	60.3	0.130	3.30	3.12	4.6
Fabric over 6 ft (1,830 mm) to 12 ft (3,660 mm)	2.875	73.0	0.160	4.06	4.64	6.9
Line Posts						
Fabric 6 ft (1,830 mm and under)	1.900	48.3	0.120	3.05	2.28	3.4
Fabric over 6 ft (1,830 mm) to 8 ft (2,440 mm)	2.375	60.3	0.130	3.30	3.12	4.6
Fabric over 8 ft (2,440 mm) to 12 ft (3,660 mm)	2.875	73.0	0.160	4.06	4.64	6.9
Rails (Top, bottom, intermediate and brace)						
All Heights	1.660	42.2	0.111	2.82	1.84	2.7

Technical Sales Department:
Telephone: (888) 260-1600
Facsimile: (888) 261-3600

MERCHANTS METALS
The Total Name In Fence

Issued May, 2002

Merchants Metals Spec Tech

Fence Fittings

ASTM F 626, Federal specification RR-F-191, AASHTO M-181

1. PRODUCT NAME

Fence Fittings, Chain Link

2. MANUFACTURER

Merchants Metals
Corporate Headquarters:

Houston, TX 77067
515 West Greens Road
Phone: (800) 254-0080
Fax: (281) 876-0465

Merchants Metals Service Centers are located throughout the United States.

3. PRODUCT DESCRIPTION

Basic Use:
Fence fittings include those items that are routinely used in conjunction with metallic coated chain link fabric and framework to complete a chain link fence installation.

Composition and Materials:
Fence fittings for chain link fence may be manufactured from steel or aluminum alloy. Steel items are galvanized after fabrication.

Standards:
ASTM F626 *Fence Fittings*
ASTM F934 *Standard Colors for Polymer Coated Chain Link Fence Materials*
ASTM A 641 *Zinc-Coated (Galvanized) Carbon Steel Wire*
ASTM A 809 *Aluminum-Coated Aluminized) Carbon Steel Wire*
ASTM A824 *Metallic Coated Steel Marcelled Tension Wire for Use with Chain Link Fence*
ASTM B6 *Zinc (Slab Zinc)*
ASTM B26 *Aluminum-Alloy Sand Castings*
ASTM B85 *Aluminum-Alloy Die Castings*
ASTM B209 *Aluminum and Aluminum Alloy Sheet and Plate*
ASTM B211 *Aluminum and Aluminum-Alloy*
ASTM B221 *Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes and Tubes*
ASTM B429 *Aluminum-Alloy Extruded Structural Steel and Pipe*
Federal specification RR-F-191K/4D Type I, *Fencing, Wire and Post Metal (Fittings)*
American Association of State Highway Transportation Officials M-181 *Chain Link Fence*

4. TECHNICAL DATA

General:
The manufacturer, if requested, will supply samples and certification that all materials furnished fully comply with the appropriate specifications.

All steel materials are galvanized using zinc metal conforming to ASTM B6.

Post and Line Caps
Post caps are fabricated from pressed steel or cast iron and galvanized with a minimum of 1.2 oz/ft^2 (366 g/m^2) of zinc, or from aluminum alloy 360.0 conforming to ASTM B85. Post and line caps are to fit snugly over posts and exclude moisture from inside tubular posts.

Rail and Brace Ends
Rail and brace ends are fabricated from pressed steel or cast iron and galvanized with a minimum of 1.2 oz/ft^2 (366 g/m^2) of zinc, or aluminum alloy 360.0 (ASTM B85), 356.0 or 713.0 (ASTM B26).

Top Rail Sleeves
Top rail sleeves are fabricated to prevent movement along the rail and are made from pressed steel or cast iron galvanized with a minimum of 1.2 oz/ft^2 (366 g/m^2) of zinc, or aluminum alloy 6063-T6 (ASTM B221 or B429). The thickness is 0.051 in. (1.8 mm) of steel or 0.062 in. (1.8 mm), of aluminum alloy, min. Minimum length is 6 in. (152 mm).

Tension and Brace Bands
Tension and brace bands are fabricated from pressed steel or cast iron and galvanized with a minimum of 1.2 oz/ft^2 (366 g/m^2) of zinc, or aluminum alloy 6063-T5, 6063-T6, or 6176-H19 (ASTM B211 or B221).

Tension bands have a minimum material thickness of 14 ga ((0.074 in. (1.88 mm)) and a minimum width of ¾in. (19 mm).

Brace bands have a minimum material thickness of 12 ga ((0.105 in. 2.66 mm)) and a minimum width of ¾in. (19 mm).

Tension bars
Steel tension bars are fabricated from merchant quality steel and galvanized, minimum zinc coating weight 1.2 oz/ft^2 (366 g/m^2).

Steel tension bars used to connect 1-¾ in. (44 mm) and 2 in. (50 mm) mesh fabric to end, gate and corner posts are a minimum $^3/_{16}$ in. (4.8 mm) by ⅝ in. (16 mm) for fabric heights to 5 ft. (1,520 mm) and $^3/_{16}$ in. (16 mm) by ½in. (19 mm) for fabric heights over 5 ft (1,520 mm).

Tension bars used to connect 1 in. mesh fabric to end, gate and corner posts are a minimum ¼in. (6 mm) by ⅜ in. (10 mm).

The minimum length of a tension bar is 2 in. (50 mm) less than the full height of the chain link fabric.

Truss Rod and Tightener
Steel truss rods are fabricated from $^5/_{16}$ in. (8 mm) merchant quality rod. Truss rods and tighteners are galvanized after threading with a minimum of 1.2 oz/ft^2 (366 g/m^2) of zinc and shall withstand 2000 lb (900 kg) of tension.

Barbed Wire Arms
Barbed wire arms are fabricated from pressed steel of cast iron and galvanized with a minimum of 1.2 oz/ft^2 (366 g/m^2) of zinc.

Barbed wire arms are available as various types (see drawing).

5. AVAILABILITY AND COST

Availability:
Chain link fittings are available for shipment throughout the United States and worldwide.

Cost:
Cost may vary depending on specific requirements. Costs may be obtained through all Merchants Metals Service Centers.

6. MAINTENANCE

Periodic inspection is recommended but no routine maintenance is required.

7. TECHNICAL SERVICES

Specifications, drawings and other technical services are available through the Merchants Technical Sales Department.

Phone: (888) 260-1600 (toll free)
Facsimile: (888) 261-3600 (toll free)

or your local Merchants Metals Service Center.

MERCHANTS METALS

Issued: February, 2002

Merchants Metals Spec Tech

Tie Wires

Standard round wire ties are either preformed hook or pig tail at one end and are designed to engage one picket of the chain link fence at the preformed end and wrap around the rail or post a minimum of 180° and wrap around one picket of the chain link fence fabric at least one full turn at the other end to draw up tightly around the post or rail.

Types and Sizes:

(1) Steel. 9 ga ((0.148 ± 0.005 in. (3.76 mm ± 0.13 mm)) tensile strength 55-65 ksi.

Zinc coated: 0.80 oz/ft² (230 g/m²), ASTM A 641 Class 3.

(2) Aluminum: Alloy 1350H19 11 ga (0.120 ± 0.005 in.) (3.05 mm ± 0.13 mm) or

Tie Wires (continued)

9 ga (0.148 ± 0.005 in. (3.76 mm ± 0.13 mm) or 6 ga ((0.192 ± 0.005 in. (4.88 mm ± 0.13 mm)

Hog Rings

Hog rings for attaching fabric to tension wires are :

(1) Steel, 9 ga ((0.148 ± 0.005 in. (3.76 ± 0.13 mm)), zinc coating 0.80 oz/ft² (230 g/m²), ASTM A 641 Class 3 or;

(2) Aluminum alloy 1350-H19, 9 ga ((0.148 ± 0.005in (3.76 ± 0.13 mm)) or 11 ga ((0.120 ± 0.004 in (3.76 ± 0.13 mm))

Tension Wire

Tension wire, 7 ga (0.177 ± 0.005 in. (4.50 ± 0.13 mm) is either zinc or aluminum coated.

Tension Wire (continued):

Type I zinc coated, Class 2, minimum average coating weight 1.2 oz/ft² (366 g/m²)

Type II aluminum coated, minimum average coating weight 0.40 oz/ft² (122 g/m²).

Minimum breaking strength is 1,950 lbf (14,230 N).

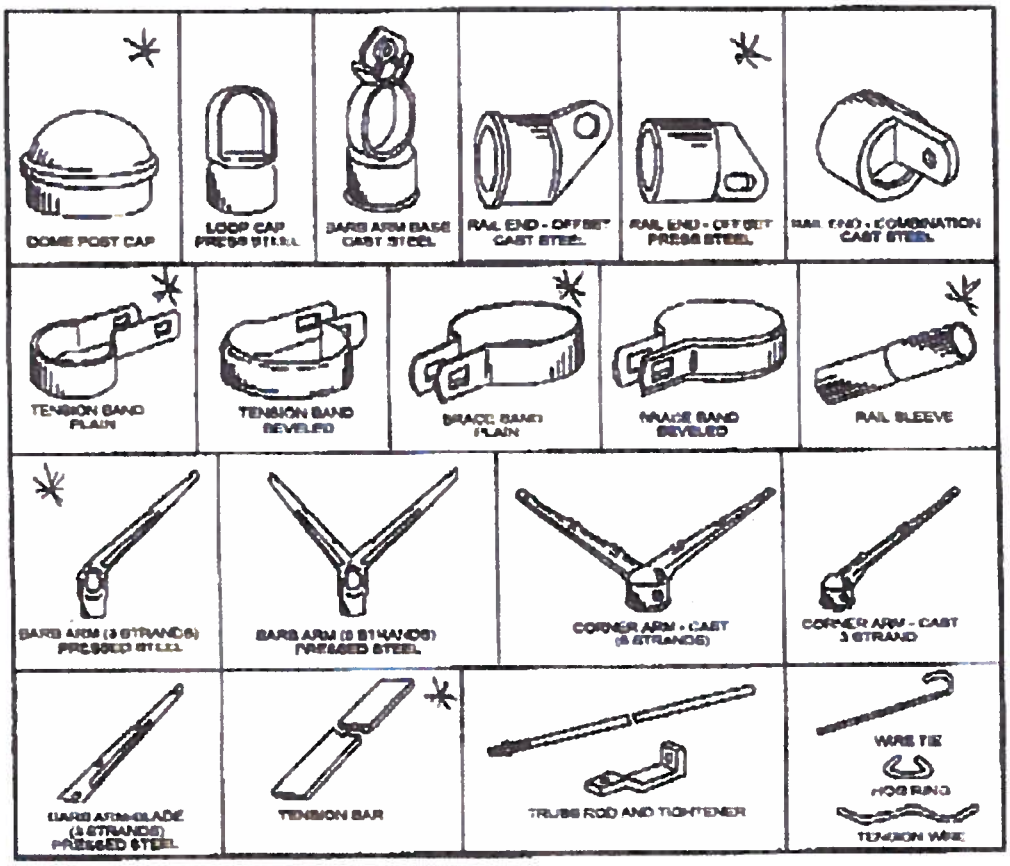
Color Coating of Fittings

Fittings may be color coated with a polymer to match the fabric, when so specified. Standard colors are as contained in ASTM F934.

The thickness of the color coating is from 0.006 to 0.015 in. (0.152 mm to 0.381 mm).

Painted fittings are not acceptable.

Representative Illustrations of Common Chain Link Fence Fittings (not to scale)



Issued February 2002

Technical Sales Department:
Telephone: (888) 260-1600
Facsimile: (888) 261-3600

MERCHANTS METALS

SUBMITTAL REVIEW 10C

REVIEW IS FOR GENERAL COMPLIANCE WITH CONTRACT DOCUMENTS
NO RESPONSIBILITY IS ASSUMED FOR CORRECTNESS OF DIMENSIONS OR DETAILS.
THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR DEVIATIONS FROM CONTRACT REQUIREMENTS NOT SPECIFICALLY INDICATED ON THIS SUBMITTAL.

☒ NO EXCEPTIONS TAKEN
☐ MAKE CORRECTIONS NOTED
☐ AMEND AND RESUBMIT
☐ REJECTED-SEE REMARKS

Date 7/31/12 By RMOQ

BROWN AND CALDWELL OHIO,LLC

JMD COMPANY
Mine and Construction Products

www.jmdcompany.com

5401 Progress Boulevard
P.O. Box 173
Bethel Park, PA 15102
(412) 833-7100
FAX (412) 833-2338

July 30, 2012

C.J. ZAK Company
3541 Deer Creek Trail
Richfield, Ohio 44286

Re: Ford Landfill

Mr. Chris Zak,

J. M. D. Company is pleased to provide the seed for the Ford Landfill project. All seeds shall conform to the Ohio Division of Agriculture specifications and will be noxious weed free. The seed blends shall be:

General Use apply at 180 – 240 lbs. per acre:

11%	Creeping Red Fescue
6%	Top Hat or Keystone Perennial Rye
11%	Kentucky Bluegrass 85/80
23%	Fawn Tall Fescue
49%	Dwarf Turf Type Fescue

Temporary Use apply at 120 lbs. per acre:

33- 1/3%	VNS Perennial Rye
33-1/3%	Fawn Tall Fescue
33- 1/3%	Annual Ryegrass

If you have any questions feel free to contact me at 330-405-6050. Thank you in advance for your loyalty.

Sincerely,

Tony Blatnik, Branch Manager, CPESC

Seed Mix Specification

Slope Mix

Item Code CSCSM06

Recommended Seeding Rates

Hydro Seeded / Broadcast	**Drilled**
18.0 pounds / acre	12.0 pounds / acre
0.41 pounds / 1000 sq. ft.	76 seeds / sq. ft.
114 seeds / sq. ft.	

SUBMITTAL REVIEW

10C

REVIEW IS FOR GENERAL COMPLIANCE WITH CONTRACT DOCUMENTS NO RESPONSIBILITY IS ASSUMED FOR CORRECTNESS OF DIMENSIONS OR DETAILS. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR DEVIATIONS FROM CONTRACT REQUIREMENTS NOT SPECIFICALLY INDICATED ON THIS SUBMITTAL.

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☐ AMEND AND RESUBMIT ☐ REJECTED-SEE REMARKS

Date 6/28/12 By

BROWN AND CALDWELL OHIO,LLC

Seed Mix Specification

Slope Mix Item Code CSCSM06

Recommended Seeding Rates

Hydro Seeded / Broadcast	Drilled
18.0 pounds / acre	12.0 pounds / acre
0.41 pounds / 1000 sq. ft.	76 seeds / sq. ft.
114 seeds / sq. ft.	

Category	% by Weight	% by Seed
Forb	30.00%	49.86%
Grass/Grasslike	70.00%	50.14%

Moisture	Mesic
Light	Prairie/Meadow Sun
Application	Slope Stabilization
Attracts	Butterflies
	Hummingbirds
	Songbirds

Species Name	Common Name	%
Sorghastrum nutans	Indian Grass	16.00%
Festuca rubra	Creeping Red Fescue -1	13.00%
Schizachyrium scoparium	Little Bluestem	13.00%
Elymus canadensis	Nodding Wild Rye	13.00%
Andropogon gerardii	Big Bluestem	9.00%
Panicum virgatum	Switch Grass	6.00%
Chamaecrista fasciculata	Partridge Pea	5.00%
Heliopsis helianthoides	Ox Eye Sunflower	4.00%
Echinacea purpurea	Purple Coneflower	4.00%
Ratibida pinnata	Yellow Coneflower/Grey-Headed Co	4.00%
Rudbeckia triloba	Brown-eyed Susan	3.00%
Rudbeckia hirta	Black-eyed Susan	3.00%
Solidago rigida	Stiff Goldenrod	2.00%
Monarda fistulosa	Wild Bergamot	1.00%
Trifolium pratense	Red Clover (Medium)	1.00%
Aster novae-angliae	New England Aster	1.00%
Asclepias tuberosa	Butterfly Weed	1.00%
Liatris spicata	Dense Blazingstar	1.00%

Ohio Prairie Nursery
PO BOX 174
Hiram, OH 44234
330.569.3380
330.569.7090
www.OhioPrairieNursery.com
info@ohioprairienursery.com

Wagner Quarry
4203 Milan Road
Sandusky, OH 44824
419-625-8141

05/31/2012

413135-#57 Limestone

Procedure	Sieve/Test	Average	Unit	OHDOT 57
	1 1/2" (37.5mm)	100	%	100-100
	1" (25mm)	100	%	95-100
	3/4" (19mm)	86	%	
	1/2" (12.5mm)	40	%	25-60
	3/8" (9.5mm)	20	%	
	#4 (4.75mm)	6	%	0-10
	#8 (2.36mm)	3	%	0-5
	Pan	0.0	%	

If you have any questions or need additional information, please contact me by email or phone.

Respectfully Submitted,

Andy Harper
QC Representative
(419) 656-0298
Andrew.Harper@Hanson.com

SUBMITTAL REVIEW 11A

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Date 6/14/12 By RMaQ

BROWN AND CALDWELL OHIO, LLC

LAFARGE
AGGREGATES
& CONCRETE

Detail Quality Statistical Summary Report

Period	11/01/2009 - 12/31/2010
Plant	Terminal Dock Resale-30131
Product	AG7073 AASHTO No. 57 MH-MH AASHTO #57
Specification	AASHTO 57

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Date 6/28/12 By

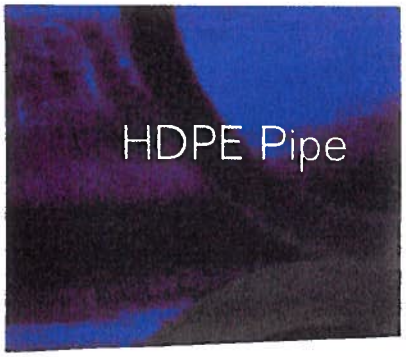
BROWN AND CALDWELL OHIO,LLC

LAFARGE AGGREGATES & CONCRETE

Detail Quality Statistical Summary Report

Period 11/01/2009 - 12/31/2010
Plant Terminal Dock Resale-30131
Product AG7073 AASHTO No. 57 MH-MH AASHTO #57
Specification AASHTO 57

Sieve/Test	Tests	Average	Min	Max	Range	St Dev	Target	Specification	PWS
1 1/2" (37.5mm)	94	100.0	100.0	100.0	0.0	0.00		100-100	100.0
1" (25mm)	94	99.8	98.8	100.0	1.2	0.26		95-100	100.0
3/4" (19mm)	94	80.8	61.0	90.6	29.7	4.62			
1/2" (12.5mm)	94	36.7	14.3	54.5	40.2	7.47		25-60	94.0
3/8" (9.5mm)	94	14.7	3.3	24.2	20.9	4.76			
#4 (4.75mm)	94	4.0	1.2	7.2	6.0	1.25		0-10	100.0
#8 (2.36mm)	93	3.0	1.1	5.1	4.0	0.75		0-5	99.6
Pan	94	0.00	0.00	0.00	0.00	0.000			
Soundness (NaSO4) Coarse	3	2.8	2.0	4.5	2.5	1.47		0-12	100.0
Wash Loss (#200/75um)	33	2.4	1.7	2.9	1.2	0.25			
Unit Wt (Loose)	1	84.6	84.6	84.6	0.0				
Unit Wt (Rodded)	1	94.0	94.0	94.0	0.0				
Total Moisture	87	4.7	1.5	7.7	6.2	1.17			
SPGR (SSD)	1	2.547	2.547	2.547	0.000				
SPGR (Apparent,Gsa)	1	2.699	2.699	2.699	0.000				
LA Abrasion (B,500)	1	30.8	30.8	30.8	0.0			0-40	
Shale	6	0.01	0.00	0.05	0.05	0.020			
Absorption	6	3.447	3.320	3.640	0.320	0.1164			
SPGR (Dry,Gsb)	6	2.531	2.458	2.547	0.089	0.0356			



High-Density Polyethylene Pipe

Introduction

SUBMITTAL REVIEW 11B

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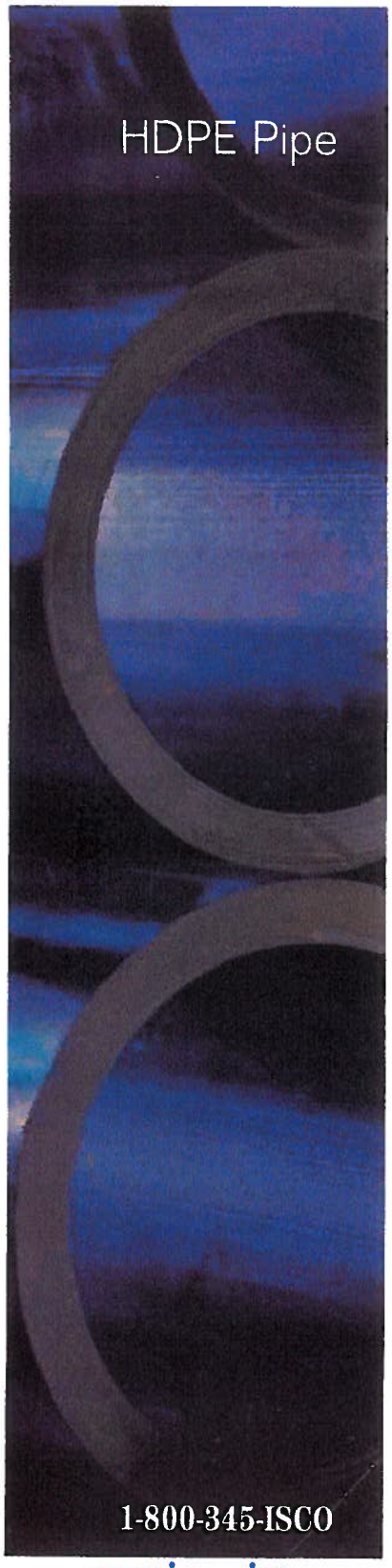
☐ REJECTED-SEE REMARKS

Date 6/14/12 By

BROWN AND CALDWELL OHIO, LLC



www.isco-pipe.com

High-Density Polyethylene Pipe

Introduction

ISCO Industries, LLC is the largest high-density polyethylene pipe distributor in North America. ISCO can serve your needs anywhere in the USA and internationally. ISCO offers a complete package of HDPE piping products. Butt fusion machines are offered for sale or rental. Fusion technicians are available to provide on-site training or assistance to your project. Please call 1-800-345-ISCO for all your HDPE piping needs.

Some of The Characteristics of HDPE Pipe are:

- Economical
- Corrosion Resistant
- Zero Leak-Rate
- Hydraulically Smooth
- Fatigue and Surge Resistant
- Long Design Life
- Tappable
- Chemically Resistant
- Easily Installed
- Small to Large Diameters
- Non-Toxic, Non-Tasting
- Lightweight
- Reliable
- Flexible and Coilable
- Heat Fused
- Mechanically Joined (As Needed)
- Strong and Ductile
- Weather Resistant
- Impact Resistant
- Freeze Resistant
- Durable
- Abrasion Resistant
- Inert
- Self Restrained Pipe (Monolithic)
- Listed and Approved

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Important Standards for High Density Polyethylene (HDPE) Pipe

Standards important for HDPE pipe relate to the resin the pipe is made from and the standards related to manufacturing sizes and tolerances. The American Society of Testing Materials (ASTM) standard for resin from which the pipe is made is ASTM D 3350-05, Standard Specification for Polyethylene Plastics Pipe and Fittings Materials. This standard defines the physical properties of the resin that the pipe is made from.

Pipe dimensions and manufacturing requirements:

ASTM F 714-05 Standard Specification for Polyethylene (PE) Pipe (SDR-PR) Based on Outside Diameter. This standard is used for most large diameter HDPE pipe (4" to 63") applications other than gas pipe.

ASTM D 2513-05 Standard Specification for Thermoplastic Gas Pressure Pipe, Tubing and Fittings. Polyethylene pipe and other plastic for natural gas distribution are described in great detail in this standard.

ASTM D 3035-03a Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter. Most HDPE water tubing (1/2 inch to 3") is made to the dimensions in this standard. While pipe sizes up to 24" are provided, very little large diameter pipe is made to this standard.

Installation Standards:

ASTM D 2321-05 Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity Flow Applications

ASTM D 2774-04 Standard Practice for Underground Installation of Thermoplastic Pressure Piping

ASTM F 1962 Standard Guide for Use of Maxi-Horizontal Directional Drilling for Placement of Polyethylene Pipe or Conduit under Obstacles, Including River Crossings

ASTM F 585-94 Standard Practice for Insertion of Flexible Polyethylene Pipe into Existing Sewers

American Water Works Association Standards

ANSI/AWWA C 901-2005 Polyethylene Pressure Pipe and Tubing, .5 in (13 mm) Through 3 in. (76 mm) for Water Services

ANSI/AWWA C 906-2006 Polyethylene Pipe and Fittings, 4 in (100 mm) Through 63 In (1,575 mm) for Water Distribution

Pipe Joining Standards:

ASTM F 2620 – Standard Practice for Heat Fusion of Polyethylene Pipe and Fittings

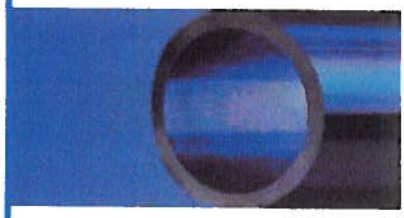
ASTM D 2657 – Standard Practice of Heat Fusion Joining of Polyolefin Pipe and Fittings

ASTM F 1290 – Standard Practice for Electrofusion Joining Polyolefin Pipe and Fittings

Fitting Standards

ASTM D 3261 Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Butt Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing

ASTM F 1055 Standard Specification for Electrofusion Fittings for Outside Diameter Controlled Polyethylene Pipe and Tubing



HDPE Pipe

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HDPE Pipe

Specifications for HDPE Pipe

The physical properties of high-density polyethylene pipe are described using ASTM D 3350-05, "Standard Specification for Polyethylene Plastic Pipe and Fittings Materials". Recently this standard was changed. The two key areas changed are, density and slow crack growth. In the 05 version, the cell classifications for density were increased from four cells to seven cells defining the density ranges for various resins.

New high performance bimodal resins, PE 4710 resins, have higher PENT test values. Slow crack grow properties can now be defined using eight cells.

As of December 2006, most HDPE pipe is made from resin with a cell classification of PE 345464C. The pipe is labeled as PE3408/3608. The physical properties for PE 345464C are:

PROPERTY VALUE		SPECIFICATION	UNIT	NOMINAL VALUE
Material Designation		PPI / ASTM		PE 3408/3608
Cell Classification		ASTM D 3350		345464C
Density	(3)	ASTM D 1505	g/cm3	0.941-943
Melt Index	(4)	ASTM D 1238	gm/ 10 min	0.05 -.11
Flexural Modulus	(5)	ASTM D 790	psi	110,000 to 140,000
Tensile Strength	(4)	ASTM D 638	psi	3,200
Slow Crack Growth				
ESCR		ASTM D 1693	hours in 100% igepal	>5,000
PENT	(6)	ASTM F 1473	hours	>100
HDB @ 73 deg F	(4)	ASTM D 2837	psi	1,600
UV Stabilizer	(C)	ASTM D 1603	%C	2 to 2.5%

The density provided is without carbon black. Typical HDPE pipe has a density of .955 to .957 with carbon black.

Types of Polyethylene Pipe

All polyethylene (PE) is not the same. In ASTM D 3350-05, low density PE is defined as having a density range of 0.919 to 0.925 g/cc; medium density has a range of 0.926 to 0.940 g/cc and high density is defined with a range from 0.941 to 0.955. All densities are without carbon black.

Density influences key properties in polyethylene materials. As the density increases, the tensile strength increases; also chemical resistance increases.

Medium density PE resins have been used for gas distribution. This original selection was made based on superior slow crack growth properties of medium density resins. Medium density pipe is designated as PE 2406 and PE 2708.

Today new bimodal resins are being used in gas distribution because of higher pressure ratings plus superior slow crack growth. These resins are designated PE 3408, PE 3608, PE 3708, PE 3710 and PE 4710.

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Slow Crack Growth

The Pent test is used to determine stress crack resistance for PE resins. The PENT test is conducted in accordance with ASTM F 1473, "Standard Test Method for Notch Tensile Test to Measure the Resistance to Slow Crack Growth of Polyethylene Pipes and Resins". This test uses a solid sample of material which is notched and tested.

The PENT test is a good test of slow crack growth. Scratches and gouges can cause crack propagation. Materials with high PENT numbers are less likely to fail because of slow crack growth.

Traditional PE 3408/3608 resins have PENT test values of about 100 hours. New bimodal resins used to make PE 3710 and PE 4710 pipes have values ranging from 600 hours to several thousand hours.

Physical Properties of PE 4710

HDPE pipe with a designation of PE 4710 is made from resin with a cell classification of PE 445474C or PE 445574C. We suggest using a specification calling for a minimum cell classification of PE 445474 C or higher. Both cell classifications can be used if specified in this way. The pipe is labeled as PE 4710. The physical properties for PE 445474C are provided below:

PROPERTY VALUE		SPECIFICATION	UNIT	NOMINAL VALUE
Material Designation		PPI / ASTM		PE 4710
Cell Classification		ASTM D 3350		445474 C
Density	(4)	ASTM D 1505	g/cm3	0.947-955
Melt Index	(4)	ASTM D 1238	gm/ 10 min	<.15
Flexural Modulus	(5)	ASTM D 790	psi	110,000 to 160,000
Tensile Strength	(5)	ASTM D 638	psi	3500-4000
Slow Crack Growth				
ESCR		ASTM D 1693	hours in 100% igepal	>5,000
PENT	(7)	ASTM F 1473	hours	>500
HDB @ 73 deg F	(4)	ASTM D 2837	psi	1,600
UV Stabilizer	(C)	ASTM D 1603	%C	2 to 2.5 %

The density provided is without carbon black. Typical PE 4710 HDPE pipe has a density of 0.956 to 0.964 with carbon black.

To be called a PE 4710, the pipe and resin has substantiation at 50 years.

HDPE Pipe

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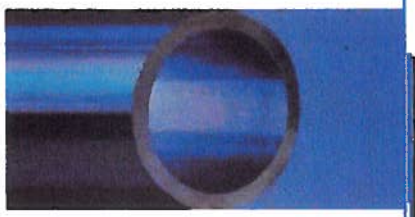

HDPE Pipe

- Items highlighted in Blue indicates standard stocking items that are more readily available.
- Pressures are based on using water at 23°C (73°F).
- Average inside diameter calculated using nominal OD and minimum wall plus 6% for use in estimating fluid flows. Actual ID will vary.
- Service factors should be utilized to compensate for the effect of liquids other than water, and for other temperatures.
- Other piping sizes or DR's may be available upon request.
- Standard Lengths:
  40' for 2"-24"
  50' for 26" and larger
  Coils available for 3/4"-6"(8" by special order)

PE 4710 IPS HDPE Pipe Sizes

Pressure Rating	Nominal Size	1"	1 1/4"	1 1/2"	2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"
	Actual O.D.	1.32"	1.660"	1.90"	2.38"	3.500"	4.50"	5.563"	6.625"	8.625"	10.750"	12.75"	14.00"	16.00"	18.00"
DR 7 (336psi)	Min. wall	0.188"	0.237"	0.271"	0.339"	0.500"	0.643"	0.795"	0.946"	1.232"	1.536"	1.621"	2.000"	2.286"	2.571"
	Average I.D.	0.917"	1.157"	1.325"	1.656"	2.440"	3.137"	3.878"	4.619"	6.013"	7.494"	8.889"	9.760"	11.154"	12.549"
	Weight lb/lf	0.291	0.463	0.607	0.950	2.060	3.402	5.200	7.374	12.498	19.416	27.312	32.930	43.010	54.435
DR 7.3 (320psi)	Min. wall	0.180"	0.227"	0.260"	0.325"	0.479"	0.616"	0.762"	0.908"	1.182"	1.473"	1.747"	1.918"	2.192"	2.466"
	Average I.D.	0.933"	1.178"	1.348"	1.685"	2.484"	3.193"	3.947"	4.701"	6.120"	7.628"	9.047"	9.934"	11.353"	12.773"
	Weight lb/lf	0.281	0.450	0.590	0.920	1.990	3.290	5.022	7.130	12.070	18.750	26.380	31.810	41.550	52.580
DR 9 (252psi)	Min. wall	0.146"	0.184"	0.211"	0.264"	0.389"	0.500"	0.618"	0.736"	0.958"	1.194"	1.417"	1.556"	1.778"	2.000"
	Average I.D.	1.005"	1.269"	1.452"	1.816"	2.676"	3.440"	4.253"	5.064"	6.593"	8.218"	9.747"	10.702"	12.231"	13.760"
	Weight lb/lf	0.235	0.374	0.490	0.770	1.664	2.751	4.204	5.963	10.110	15.700	22.085	26.630	34.780	44.020
DR 11 (202psi)	Min. wall	0.120"	0.151"	0.173"	0.216"	0.318"	0.409"	0.506"	0.602"	0.784"	0.977"	1.159"	1.273"	1.455"	1.636"
	Average I.D.	1.062"	1.340"	1.534"	1.917"	2.825"	3.633"	4.491"	5.348"	6.963"	8.678"	10.293"	11.302"	12.916"	14.531"
	Weight lb/lf	0.200	0.314	0.411	0.642	1.395	2.310	3.523	5.000	8.470	13.160	18.510	22.320	29.150	36.890
DR 13.5 (161psi)	Min. wall	—	—	—	0.176"	0.259"	0.333"	0.412"	0.491"	0.639"	0.796"	0.944"	1.037"	1.185"	1.333"
	Average I.D.	—	—	—	2.002"	2.950"	3.793"	4.689"	5.585"	7.271"	9.062"	10.748"	11.801"	13.487"	15.173"
	Weight lb/lf	—	—	—	0.534	1.160	1.920	2.928	4.152	7.040	10.932	15.380	18.540	24.220	30.651
DR 15.5 (139psi)	Min. wall	—	—	—	0.153"	0.226"	0.290"	0.359"	0.427"	0.556"	0.694"	0.823"	0.903"	1.032"	1.161"
	Average I.D.	—	—	—	2.050"	3.021"	3.885"	4.802"	5.719"	7.445"	9.280"	11.006"	12.085"	13.812"	15.538"
	Weight lb/lf	—	—	—	0.470	1.020	1.687	2.580	3.656	6.197	9.626	13.530	16.310	21.300	26.950
DR 17 (126psi)	Min. wall	—	—	—	0.140"	0.206"	0.265"	0.327"	0.390"	0.507"	0.632"	0.750"	0.824"	0.941"	1.059"
	Average I.D.	—	—	—	2.079"	3.064"	3.939"	4.869"	5.799"	7.549"	9.409"	11.160"	12.254"	14.005"	15.755"
	Weight lb/lf	—	—	—	0.431	0.940	1.550	2.360	3.360	5.690	8.834	12.430	14.983	19.570	24.770
DR 21 (101psi)	Min. wall	—	—	—	—	—	0.214"	0.265"	0.315"	0.411"	0.512"	0.607"	0.667"	0.762"	0.857"
	Average I.D.	—	—	—	—	—	4.046"	5.001"	5.956"	7.754"	9.665"	11.463"	12.587"	14.385"	16.183"
	Weight lb/lf	—	—	—	—	—	1.270	1.940	2.750	4.662	7.242	10.190	12.282	16.042	20.304
DR 26 (81 psi)	Min. wall	—	—	—	—	—	0.173"	0.214"	0.255"	0.332"	0.413"	0.490"	0.538"	0.615"	0.692"
	Average I.D.	—	—	—	—	—	4.133"	5.109"	6.085"	7.922"	9.873"	11.710"	12.858"	14.695"	16.532"
	Weight lb/lf	—	—	—	—	—	1.035	1.582	2.250	3.800	5.910	8.312	10.022	13.090	16.570
DR 32.5 (64 psi)	Min. wall	—	—	—	—	—	0.138"	0.171"	0.204"	0.265"	0.331"	0.392"	0.431"	0.492"	0.554"
	Average I.D.	—	—	—	—	—	4.206"	5.200"	6.193"	8.062"	10.049"	11.918"	13.087"	14.956"	16.826"
	Weight lb/lf	—	—	—	—	—	0.835	1.280	1.811	3.070	4.770	6.710	8.090	10.561	13.370

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www.isco-pipe.com

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Isaac, Richard

From: Mark Haynes Construction, Inc. [haynesco65@yahoo.com]
Sent: Friday, June 29, 2012 3:16 PM
To: Isaac, Richard
Subject: Fw: TONY BLATNIK - JMD

Rick,
Here are the statements from JMD's producer for the Enkamat.

SUBMITTAL REVIEW 12B

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Date 7/2/12 By RLA

BROWN AND CALDWELL OHIO, LLC

Isaac, Richard

From: Mark Haynes Construction, Inc. [haynesco65@yahoo.com]
Sent: Friday, June 29, 2012 3:16 PM
To: Isaac, Richard
Subject: Fw: TONY BLATNIK - JMD

Rick,
Here are the statements from JMD's producer for the Enkamat.

Let us know your thoughts.
Than

Mark Haynes Construction, Inc.
3130 State Route 18
Norwalk, OH 44857
Ph: 419-663-2457
Fx: 419-663-3457
email: haynesco65@yahoo.com

Mark Haynes Construction, Inc. is an equal opportunity employer

----- Forwarded Message -----
From: Tony Blatnik <tblatnik@jmdcompany.com>
To: "'Mark Haynes Construction, Inc.'" <haynesco65@yahoo.com>
Cc: cjzakco@windstream.net
Sent: Friday, June 29, 2012 2:46 PM
Subject: FW: TONY BLATNIK - JMD

From: Laura Girard [mailto:LGirard@profileproducts.com]
Sent: Friday, June 29, 2012 2:36 PM
To: Tony Blatnik
Cc: Steve Zwilling
Subject: RE: TONY BLATNIK - JMD

Tony,
The mass/unit area spec appears to be a summation of the Flexterra and Enkamat mass/unit area (12 oz/sq yd + 12 oz/sq yd), in which case Green Armor does meet the specification.
Resiliency is an index property often used for quality control. Resiliency is indicative of a TRM's ability to retain original configuration after exposure to the stresses that can be exerted during manufacture, shipping, and installation. Resiliency is not generally indicative of field performance. I am not aware of any TRM, including the high performance mats, that meet a 85% minimum resiliency. The Army Corps of Engineers recently put out a sources sought for high performance TRMs for protection from wave overtopping on levees. Not only will the mats be exposed to intense hydraulic conditions but they will be driven on, mowed, etc. In this spec, for the highest performing mats in the industry, they called out a minimum of 70% resiliency.
Please let me know if you have any additional questions.
Sincerely,
Laura Girard

Laura Girard PE, M.S., CPESC, CFM

Technical Services Manager
Profile Products LLC
Office/Mobile: (970) 217-7829
Email: lgirard@profileproducts.com
Skype: profilelaura

http://www.profileproducts.com/

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From: Tony Blatnik [mailto:tblatnik@jmdcompany.com]
Sent: Friday, June 29, 2012 12:06 PM
To: Laura Girard
Subject: FW: TONY BLATNIK - JMD

From: Lori Jackson [mailto:ljackson@jmdcompany.com]
Sent: Friday, June 29, 2012 1:36 PM
To: stevez@profileproducts.com
Cc: tblatnik@jmdcompany.com
Subject: TONY BLATNIK - JMD

Steve – per Tony.

Lori Jackson

P.O. Box 173
5401 Progress Boulevard
Bethel Park, PA 15102
412-833-7100
FAX: 412-833-2338
ljackson@jmdcompany.com

Enkamat 7020

Turf Reinforcement Mat

Description

Enkamat® 7020 is a three-dimensional turf reinforcement mat (TRM) made of continuous monofilaments fused at their intersections. Ninety-five (95%) percent of the Enkamat is open and available for soil, mulch and root interaction, creating one of the most effective turf reinforcement mats available. Enkamat is manufactured from nylon to eliminate the buoyancy factor associated with submerged conditions and provides permanent TRM protection in vegetated channels and slopes.

SUBMITTAL REVIEW 12B

REVIEW IS FOR GENERAL COMPLIANCE WITH CONTRACT DOCUMENTS
NO RESPONSIBILITY IS ASSUMED FOR CORRECTNESS OF DIMENSIONS OR DETAILS.
THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR DEVIATIONS FROM CONTRACT REQUIREMENTS NOT SPECIFICALLY INDICATED ON THIS SUBMITTAL.

☐ NO EXCEPTIONS TAKEN ☐ MAKE CORRECTIONS NOTED

☒ AMEND AND RESUBMIT ☐ REJECTED-SEE REMARKS

Date 6/28/12 By RMaQ

BROWN AND CALDWELL OHIO, LLC

See notes; requirements in Specification Section Table not provided.

Enkamat 7020

Turf Reinforcement Mat

Description

Enkamat® 7020 is a three-dimensional turf reinforcement mat (TRM) made of continuous monofilaments fused at their intersections. Ninety-five (95%) percent of the Enkamat is open and available for soil, mulch and root interaction, creating one of the most effective turf reinforcement mats available. Enkamat is manufactured from nylon to eliminate the buoyancy factor associated with submerged conditions and provides permanent TRM protection in vegetated channels and slopes.

Recommended Applications

- Permanent erosion control for vegetated channels and banks with expected shear stresses ≤ 17 psf.
- Permanent erosion control for moderate to steep slopes (≤0.5H:1V).
- Support and enhance performance of ecosystem plants.
- Substrate for hydraulically applied Flexible Growth Medium™ (FGM) and Bonded Fiber Matrix (BFM) to create the GreenArmor™ System.

Technical Data

Mechanical Properties	Test Method	Units	Roll Value	
			Typical	MARV
Tensile Strength	ASTM D6818	kN/m (lbs/ft)	3.5 (240)	2.6 (175)
Thickness	ASTM D6525	mm (in)	19 (0.75)	15.2 (0.6)
Mass/Unit Area	ASTM D6566	g/m^2 (oz/yd^2)	407 (12.0)	373 (11.0)
UV Stability	ASTM D4355	%	80 @ 2000 hours	
Resiliency	ASTM D6524	%	80	

Performance Properties	Test Method	Units	Typical Roll Value
Permissible Velocity			
30 minute, unvegetated	Flume test[1,2]	m/s (ft/s)	4.9 (16)
60 minute, vegetated	Flume test[1,2]	m/s (ft/s)	6.1 (20)
50 hour, vegetated	Flume test[1]	m/s (ft/s)	4.2 (14)
Permissible Shear Stress			
30 minute, unvegetated	Flume test[1,2]	kN/m^2 (lbs/ft^2)	0.28 (5.8)
60 minute, vegetated	Flume test[1,2]	kN/m^2 (lbs/ft^2)	0.81 (17.0)
50 hour, vegetated	Flume test[1]	kN/m^2 (lbs/ft^2)	0.38 (8.0)
Manning's n Range[3]	Flume test[1]	( )	0.025 — 0.045

1. Flume test performed at independent large scale laboratory — data and details available upon request. 2. Testing performed on GreenArmor™ System 3. Depending on vegetation type and height, use engineering field experience and examine a range of Manning's n values during design.

Packaging Data

Physical Properties	Units	Nominal Value
Dimensions [width x length]	m (ft)	2.4 x 34.3 (8.0 x 112.5)
Roll Area	m^2 (yd^2)	83.6 (100)
Estimated Roll Diameter	cm (in)	0.6 (24)
Estimated Roll Weight	kg (lb)	34 (75)
Color	Observed	Black

Enkamat is a registered trademark of Colbond, Inc. and is manufactured exclusively for distribution by Profile Products in North America.

To the best of our knowledge, the information contained herein is accurate. However, Profile Products cannot assume any liability whatsoever for the accuracy or completeness thereof. Final determination of the suitability of any information or material for the use contemplated, of its manner of use and whether the suggested use infringes any patents is the sole responsibility of the user.

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www.profileproducts.com

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Appendix F: Soil Erosion and Sedimentation Control Inspection Forms

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Phase I Remedial Action

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SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 1 Remedial Action Work

Page 1 of 1

NPDES Number: _____

Date: 09/12/11 Time: 0800 Certified Operator: _____ Operator #: _____

Reason for Inspection: X Weekly Inspection ____ Inspection After Storm Water Runoff

Observations: Silt Fence - In good shape
Drainage Swales - Good shape
Straw Bale Barriers - Good shape

Corrective Actions Taken/Needed: No Corrective actions needed.

Signature: Bill Foster Operator Number: _____

Print Name: Bill Foster

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SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 1 Remedial Action Work

Page 1 of 1

NPDES Number:

Date: 09/19/11 Time: 0830 Certified Operator: Operator #:

Reason for Inspection: X Weekly Inspection ___ Inspection After Storm Water Runoff

Observations: Silt Fence - Good Shape
Drainage Swales - Good Shape
Straw Bale Barriers - Good Shape

Corrective Actions Taken/Needed: No corrective actions needed.

Signature: Bill Foster

Operator Number:

Print Name: Bill Foster

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SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 1 Remedial Action Work

Page 1 of 1

NPDES Number: _____

Date: 01/22/11 Time: 0730 Certified Operator: _____ Operator #: _____

Reason for Inspection: ____ Weekly Inspection X Inspection After Storm Water Runoff

Observations: Silt Fence - Two places need repaired.
Drainage Swales - Need cleaned out
Straw Bale Barriers - Need Replaced.

Corrective Actions Taken/Needed: - Silt Fence was repaired/replaced.
- Drainage Swales were cleaned out + regraded.
- Straw Bale Barriers were replaced.

Signature: Bill Foster Operator Number: _____

Print Name: Bill Foster

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 1 Remedial Action Work

Page 1 of 1

NPDES Number:

Date: 09/26/11 Time: 0900 Certified Operator: Operator #:

Reason for Inspection: X Weekly Inspection ____ Inspection After Storm Water Runoff

Observations: Silt Fence - Good Shape
Drainage Swales - Good shape
Straw Bale Barriers - Good Shape

Corrective Actions Taken/Needed: No Corrective actions needed

Signature: Bill Foster

Operator Number:

Print Name: Bill Foster

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 1 Remedial Action Work

Page 1 of 1

NPDES Number: _____

Date: 09/30/11 Time: 0900 Certified Operator: _____ Operator #: _____

Reason for Inspection: ____ Weekly Inspection X Inspection After Storm Water Runoff

Observations: Silt Fence - Needs maintained
Drainage Swales - Need maintained
Straw Bale Barriers - O.K.

Corrective Actions Taken/Needed: Silt Fence - Repaired/Replaced where needed.
Drainage Swales - Cleaned out + regraded.

Signature: Bill Foster

Operator Number: _____

Print Name: Bill Foster

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SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 1 Remedial Action Work

Page 1 of 1

NPDES Number:

Date: 10/03/11 Time: 0830 Certified Operator: Operator #:

Reason for Inspection: X Weekly Inspection ____ Inspection After Storm Water Runoff

Observations: Silt Fence - O.K.
Drainage Swales - O.K.
Straw Bale Barriers - O.K.

Corrective Actions Taken/Needed: No corrective actions needed.

Signature: Bill Foster

Operator Number:

Print Name: Bill Foster

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 1 Remedial Action Work

Page 1 of 1

NPDES Number:

Date: 10/10/11 Time: 0800 Certified Operator: Operator #:

Reason for Inspection: X Weekly Inspection ____ Inspection After Storm Water Runoff

Observations: Silt Fence - O.K.
Drainage Swales - O.K.
Straw Bale Barriers - O.K.

Corrective Actions Taken/Needed: No corrective actions needed.

Signature: Bill Foster Operator Number:

Print Name: Bill Foster

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SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 1 Remedial Action work

Page 1 of 1

NPDES Number:

Date: 10/11/11 Time: 0900 Certified Operator: Operator #:

Reason for Inspection: ____ Weekly Inspection X Inspection After Storm Water Runoff

Observations: Silt Fence - Needs maintained
Drainage Swales - O.K.
Straw Bale Barriers - O.K.

Corrective Actions Taken/Needed: Silt Fence - Repaired/replaced where needed.

Signature: Bill Foster Operator Number:

Print Name: Bill Foster

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 1 Remedial Action Work

Page 1 of 1

NPDES Number: _____

Date: 10/17/11 Time: 0900 Certified Operator: _____ Operator #: _____

Reason for Inspection: X Weekly Inspection ____ Inspection After Storm Water Runoff

Observations: Silt Fence - O.K.
Drainage swales - O.K.
Straw Bale Barriers - O.K.

Corrective Actions Taken/Needed: No corrective actions needed.

Signature: Bill Foster

Print Name: Bill Foster

Operator Number: _____

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 1 Remedial Action Work

Page 1 of 1

NPDES Number:

Date: 10/24/11 Time: 0930 Certified Operator: Operator #:

Reason for Inspection: X Weekly Inspection X Inspection After Storm Water Runoff

Observations: Silt Fence - A Few places need repaired
Drainage Swales - Need cleaned out + regraded.
Straw Bale Barriers - Need replaced + anchored.

Corrective Actions Taken/Needed: Silt Fence - Repaired
Drainage Swales - Cleaned out + regraded.
Straw Bale Barriers - Replaced + anchored down

Signature: Bill Foster Operator Number:

Print Name: Bill Foster

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 1 Remedial Action Work

Page 1 of 1

NPDES Number:

Date: 10/31/11 Time: 10:30 Certified Operator: Operator #:

Reason for Inspection: X Weekly Inspection ____ Inspection After Storm Water Runoff

Observations: Silt Fence - OK
Straw Bale Barriers - OK
Drainage Swales - OK

Corrective Actions Taken/Needed: Silt Fence - No action needed.
Straw Bale Barriers - No action needed.
Drainage Swales - No action needed.

Signature: Operator Number:

Print Name: Bill Foster

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 1 Remedial Action

Page 1 of 1

NPDES Number: _____

Date: 11/07/11 Time: 09:00 Certified Operator: _____ Operator #: _____

Reason for Inspection: X Weekly Inspection ____ Inspection After Storm Water Runoff

Observations: Silt Fence - OK
Straw Bale Barriers - OK
Drainage Swales - OK

Corrective Actions Taken/Needed: Silt Fence - No action needed
Straw Bale Barriers - No action needed
Drainage Swales - No action needed

Signature: _____ Operator Number: _____

Print Name: Bill Foster

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase I Remedial Action

Page 1 of 1

NPDES Number:

Date: 11/14/11 Time: 0900 Certified Operator: Operator #:

Reason for Inspection: X Weekly Inspection ____ Inspection After Storm Water Runoff

Observations: Silt Fence - Two places need repaired & new silt fence installed @ the top of the restored riverbank.

Drainage Swales - Need addressed prior to shutting down for the winter.

Straw Bale Barriers - O.K.

Corrective Actions Taken/Needed: Silt Fence - Repaired/Replaced where needed.

Drainage Swales - Will be addressed prior to winter shut down.

Straw Bale Barriers - No action needed.

Signature: Bill Foster Operator Number:

Print Name: Bill Foster

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SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description:

Page 1 of 1

FORD ROAD - PHASE I REMEDIAL ACTION

NPDES Number:

Date: 11-21-11 Time: 0900 Certified Operator: Operator #:

Reason for Inspection: X Weekly Inspection ____ Inspection After Storm Water Runoff

Observations: SILT FENCE - GOOD CONDITION

DRAINAGE SWALES - ~~GOOD CONDITION~~ NEED ADDRESSED PRIOR TO SHUTTING DOWN FOR THE WINTER.

STRAW BALE BARRIERS - GOOD CONDITION, NEED REINFORCEMENT PRIOR TO SHUTTING DOWN FOR THE WINTER.

Corrective Actions Taken/Needed: ~~NO CORRECTIVE ACTIONS NEEDED~~. SILT FENCE - NO CORRECTIVE ACTION NEEDED

DRAINAGE SWALES - WILL BE ADDRESSED PRIOR TO SHUTTING DOWN FOR THE WINTER.

STRAW BALE BARRIERS - WILL BE REINFORCED PRIOR TO SHUTTING DOWN FOR THE WINTER.

Signature: Operator Number:

Print Name: NATHAN GWENS

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: FORD RD - PHASE 1 REMEDIAL ACTION WORK

Page 1 of 1

NPDES Number: _____

Date: 11-28-11 Time: 1030 Certified Operator: _____ Operator #: _____

Reason for Inspection: X Weekly Inspection ____ Inspection After Storm Water Runoff

Observations: SILT FENCE - GOOD CONDITION
DRAINAGE SWALES - GOOD CONDITION
STRAW BALE BARRIERS - GOOD CONDITION, WILL BE REINFORCED AT END OF PHASE 1 CONSTRUCTION

Corrective Actions Taken/Needed: NO CORRECTIVE ACTIONS NEEDED

Signature: [signature] Operator Number: _____

Print Name: NATHAN GIVENS

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: FORD RD - PHASE I REMEDIAL ACTION WORK

Page 1 of 1

NPDES Number: _____

Date: 12-1-11 Time: 0930 Certified Operator: _____ Operator #: _____

Reason for Inspection: ____ Weekly Inspection X Inspection After Storm Water Runoff

Observations: SILT FENCE - DOWN IN THREE LOCATIONS

STRAW BALES - TWO BALES WASHED AWAY IN ONE LOCATION

DRAINAGE SWALES - GOOD CONDITION

Corrective Actions Taken/Needed: SILT FENCE - REPAIR / REPLACE BROKEN STAKES

STRAW BALES - REPLACE MISSING BALES

DRAINAGE SWALES - NO CORRECTIVE ACTION REQUIRED

Signature: _____ Operator Number: _____

Print Name: NATHAN GWENS

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd. - Phase 1 Remedial Action

Page 1 of 1

NPDES Number:

Date: 12/05/11 Time: 1000 Certified Operator: Operator #:

Reason for Inspection: X Weekly Inspection ____ Inspection After Storm Water Runoff

Observations: Silt Fence - A Few places need repaired
Straw Bales - O.K.
Drainage Swales - O.K.

Corrective Actions Taken/Needed: Silt Fence - Repaired
Straw Bales - No action needed.
Drainage Swales - No action needed.

Signature: Bill Foster Operator Number:

Print Name: Bill Foster

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 1 Remedial Action

Page 1 of 1

NPDES Number:

Date: 12/08/11 Time: 1000 Certified Operator: Operator #:

Reason for Inspection: ____ Weekly Inspection X Inspection After Storm Water Runoff

Observations: Silt Fence - Needs repaired/replaced in 4 or 5 places
Straw Bales - Need replaced
Drainage Swales - Need cleaned out.

Corrective Actions Taken/Needed: Silt Fence - Repaired/Replaced where needed.
Straw Bales - Replaced w/new straw bales.
Drainage Swales - Cleaned out.

Signature: Bill Foster Operator Number:

Print Name: Bill Foster

Phase II Remedial Action

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SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number: _____

Date: 06/11/12 Time: 1000 Certified Operator: _____ Operator #: _____

Reason for Inspection: X Weekly Inspection ____ Inspection After Storm Water Runoff

Observations: Silt Fence - Needs repaired/replaced in 5 or 6 spots
Straw Bale Barriers - Need replaced in 3 or 4 spots
Drainage Swales - O.K

Corrective Actions Taken/Needed: Silt Fence - Haynes repairs/replaces on 06/12/12
Straw Bale Barriers - Haynes replaces on 06/12/12
Drainage Swales - No Action Needed.

Signature: Bill Foster

Print Name: Bill Foster

Operator Number: _____

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SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number:

Date: 06/18/12 Time: 0900 Certified Operator: Operator #:

Reason for Inspection: X Weekly Inspection X Inspection After Storm Water Runoff

Observations: Silt Fence - Needs repaired in a few sections + needs installed above rip rap.
Straw Bales - In working order
Drainage Swales - In working order.

Corrective Actions Taken/Needed: Silt Fence - repaired + installed silt fence where needed.
Straw Bales - No action Needed
Drainage Swales - No action Needed

Signature: Bill Foster

Print Name: Bill Foster

Operator Number:

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number:

Date: 06/25/12 (Mon) Time: 0900 Certified Operator: Operator #:

Reason for Inspection: X Weekly Inspection ___ Inspection After Storm Water Runoff

Observations: Silt Fence - Needs soil ~~[illegible]~~ clumps removed in numerous areas.
Straw Bale Barriers - In good working order
Drainage Swales - OK. Will need silt cleaned out soon.

Corrective Actions Taken/Needed: Silt Fence - Haynes to fix tomorrows.
Straw Bale Barriers - No action needed
Drainage Swales - No action needed... at this time.

Signature: Bill Foster

Print Name: Bill Foster

Operator Number:

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number:

Date: 07/02/12 Time: 0900 Certified Operator: Operator #:

Reason for Inspection: X Weekly Inspection X Inspection After Storm Water Runoff

Observations: Silt Fence - Few areas that need repaired.
Straw Bales - Seem to be o.k.
Drainage Swales - Drainage Swale from sed pond outlet to river needs cleaned + graded.
Check [redacted] Dams - Seem to be o.k.

Corrective Actions Taken/Needed: Silt Fence - Haynes will repair tomorrow
Straw Bales - No action needed
Drainage Swales - [redacted] Haynes will clean + grade it tomorrow.
Check Dams - No action needed

Signature: Bill Foster

Operator Number:

Print Name: Bill Foster

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number:

Date: 07/05/12 (Thursday) Time: 1000 Certified Operator: Operator #:

Reason for Inspection: ___ Weekly Inspection X Inspection After Storm Water Runoff

Observations: Silt Fence - O.K.
Straw Bales - O.K.
Check Dams - O.K.
Drainage Swales - O.K.

Corrective Actions Taken/Needed: Silt Fence - No need for action
Straw Bales - No need for action
Check Dams - No need for action
Drainage Swales - No need for action

Signature: Bill Foster Operator Number:

Print Name: Bill Foster

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number: _____

Date: 07/16/12 Time: 1300 Certified Operator: _____ Operator #: _____

Reason for Inspection: X Weekly Inspection ____ Inspection After Storm Water Runoff

Observations: Silt Fence - O.K.
Straw Bales - O.K.
Check Dams - O.K.
Drainage Swales - O.K.

Corrective Actions Taken/Needed: Silt Fence - No action needed
Straw Bales - No action needed
Check Dams - No action needed
Drainage Swales - No action needed

Signature: Bill Foster

Operator Number: _____

Print Name: Bill Foster

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SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number:

Date: 07/23/12 Time: 0900 Certified Operator: Operator #:

Reason for Inspection: X Weekly Inspection ____ Inspection After Storm Water Runoff

Observations: Silt Fence - O.K.
Straw Bales - O.K.
Swales - O.K.
Check Dams - O.K.

Corrective Actions Taken/Needed: Silt Fence - No action needed.
Straw Bales - No action needed.
Swales - No action needed.
Check Dams - No action needed.

Signature: BW Foster Operator Number:

Print Name: Bill Foster

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SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number:

Date: 07/20/12 (monday) Time: 1300 Certified Operator: Operator #:

Reason for Inspection: X Weekly Inspection X Inspection After Storm Water Runoff

Observations: Silt Fence - Needs repaired/replaced along the black river in a few location.
Straw Bales - O.K.
Drainage Swales - O.K.
Check Dams - O.K.

Corrective Actions Taken/Needed: Silt Fence - Discussed w/Dave. Haynes to fix tomorrow.
Straw Bales - No action needed.
Drainage Swales - No action needed.
Check Dams - No action needed.

Signature: Bill Foster Operator Number:

Print Name: Bill Foster

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number:

Date: 08/06/17 (Monday) Time: 0900 Certified Operator: Operator #:

Reason for Inspection: X Weekly Inspection ___ Inspection After Storm Water Runoff

Observations: Silt Fence - o.k.
Straw Bales - o.k.
Swales - o.k.
Check Dams - o.k.

Corrective Actions Taken/Needed: Silt Fence - o.k.
Straw Bales - o.k.
Swales - o.k.
Check Dams - o.k.

Signature: Bill Foster

Print Name: Bill Foster

Operator Number:

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number: _____

Date: 08/13/12 (Monday) Time: 0900 Certified Operator: _____ Operator #: _____

Reason for Inspection: X Weekly Inspection ____ Inspection After Storm Water Runoff

Observations: Silt Fence - O.K.
Straw Bales - O.K.
Drainage Swales - O.K.
Check Dams - O.K.

Corrective Actions Taken/Needed: Silt fence - No Action Needed (NAN)
Straw Bales - NAN
Drainage Swales - NAN
Check Dams - NAN

Signature: Bill Foster

Print Name: Bill Foster

Operator Number: _____

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number:

Date: 08/20/12 (Monday) Time: 09 00 Certified Operator: Operator #:

Reason for Inspection: X Weekly Inspection ____ Inspection After Storm Water Runoff

Observations: Silt Fence - o.k.
Straw Bales - O.K.
Check Dams - o.k.
Drainage Swales - o.k.

Corrective Actions Taken/Needed: Silt Fence - No Action Needed
Straw Bales - No Action Needed.
Check Dams - No Action Needed.
Drainage Swales - No Action Needed.

Signature: Bill Foster

Print Name: Bill Foster

Operator Number:

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number:

Date: 08/20/12 Time: 1000 Certified Operator: Operator #:

Reason for Inspection: X Weekly Inspection X Inspection After Storm Water Runoff

Observations: Silt Fence - O.K.
Straw Bales - O.K.
Drainage Swales - O.K.
Check Dams - O.K.

Corrective Actions Taken/Needed: Silt Fence - No Action Needed (NAN)
Straw Bales - NAN
Drainage Swales - NAN
Check Dams - NAN

Signature: Bill Foster

Print Name: Bill Foster

Operator Number:

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number:

Date: 09/04/12 (Tuesday) Time: 1000 Certified Operator: Operator #:

Reason for Inspection: X Weekly Inspection X Inspection After Storm Water Runoff

Observations: Silt Fence - Repairs needed in a few spots
Straw Bales - O.K.
Drainage Swales - O.K.
Check Dams - O.K.

Corrective Actions Taken/Needed: Silt fence - Notified Hayes. Hayes to repair ~~today~~ today/tomorrow.
Straw Bales - No Action Needed (NAN)
Drainage Swales - NAN
Check Dams - NAN

Signature: Bill Foster

Print Name: Bill Foster

Operator Number:

BrownVeatch Caldwell

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SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number: _____

Date: 09/05/12 (Wed) Time: 0900 Certified Operator: _____ Operator #: _____

Reason for Inspection: ____ Weekly Inspection X Inspection After Storm Water Runoff

Observations: Silt Fence - O.K.
Straw Bales - O.K.
Drainage Swales - O.K.
Check Dams - O.K.

Corrective Actions Taken/Needed: Silt Fence - No Action Needed (NAN)
Straw Bales - NAN
Drainage Swales - NAN
Check Dams - NAN

Signature: [signature] Operator Number: _____

Print Name: Bill Foster

Brown Caldwell

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312500-5

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number:

Date: 05/07/12 (Friday) Time: 1000 Certified Operator: Operator #:

Reason for Inspection: ____ Weekly Inspection X Inspection After Storm Water Runoff

Observations: Silt Fence - O.K.
Straw Bales - O.K.
Drainage Swales - O.K.
Check Dams - O.K.

Corrective Actions Taken/Needed: Silt Fence - No Action Needed (NAN)
Straw Bales - NAN
Drainage Swales - NAN
Check Dams - NAN

Signature: Bill Foster

Operator Number:

Print Name: Bill Foster

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number:

Date: (Monday) 09/10/12 Time: 0900 Certified Operator: Operator #:

Reason for Inspection: X Weekly Inspection X Inspection After Storm Water Runoff

Observations: Silt Fence - Few spots need repaired/replaced.
Straw Bales - O.K.
Drainage Swales - O.K.
Check Dams - O.K.

Corrective Actions Taken/Needed: Silt Fence - Hayes to repair/replace today or tomorrow
Straw Bales - No Action Needed (NAN)
Drainage Swales - NAN
Check Dams - NAN

Signature: Bill Foster

Print Name: Bill Foster

Operator Number:

Brown & Caldwell

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SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number:

Date: 09/17/12 (Monday) Time: 0900 Certified Operator: Operator #:

Reason for Inspection: X Weekly Inspection X Inspection After Storm Water Runoff

Observations: Silt Fence - O.K.
Straw Bales - O.K.
Drainage Swales - O.K.
Check Dams - O.K.

Corrective Actions Taken/Needed: Silt Fence - No Action Needed (NAN)
Straw Bales - NAN
Drainage Swales - NAN
Check Dams - NAN

Signature: Bill Foster

Operator Number:

Print Name: Bill Foster

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number:

Date: 09/19/12 (Wed) Time: 0900 Certified Operator: Operator #:

Reason for Inspection: ___ Weekly Inspection X Inspection After Storm Water Runoff

Observations: Silt Fence - O.K.
Straw Bales - O.K.
Drainage Swales - O.K.
Check Dams - O.K.

Corrective Actions Taken/Needed: Silt Fence - No Action Needed (NAN)
Straw Bales - NAN
Drainage Swales - NAN
Check Dams - NAN

Signature: BW FT Operator Number:

Print Name: Bill Foster

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number:

Date: 09/24/12 Time: 0900 Certified Operator: Operator #:

Reason for Inspection: X Weekly Inspection X Inspection After Storm Water Runoff

Observations: Silt Fence - Some spots need repaired/replaced
Straw Bales - O.K.
Drainage Swales - O.K.
Check Dams - O.K.

Corrective Actions Taken/Needed: Silt Fence - Hayes will repair/replace this afternoon or tomorrow morning.
Straw Bales - No Action Needed (NAN)
Drainage Swales - NAN
Check Dams - NAN

Signature: Operator Number:

Print Name: Bill Rose

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number:

Date: 09/27/12 (Thursday) Time: 1000 Certified Operator: Operator #:

Reason for Inspection: ___ Weekly Inspection X Inspection After Storm Water Runoff

Observations: Silt Fence - Few spots need repaired.
Straw Bales - O.K.
Drainage Swales - O.K.
Check Dams - O.K.

Corrective Actions Taken/Needed: Silt Fence - Haynes will repair the silt fence this afternoon.
Straw Bales - No Action Needed (NAN)
Drainage Swales - NAN
Check Dams - NAN

Signature: Bill Foster Operator Number:

Print Name: Bill Foster

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number:

Date: 10/21/12 (Monday) Time: 0900 Certified Operator: Operator #:

Reason for Inspection: X Weekly Inspection ____ Inspection After Storm Water Runoff

Observations: Silt Fence - needs replaced in a couple places along Ford River.
Straw Bales - O.K.
Drainage Swales - O.K.
Check Dams - O.K.

Corrective Actions Taken/Needed: Silt Fence - Haynes will replace this afternoon or tomorrow morning.
Straw Bales - No Action Needed. (NAN)
Drainage Swales - NAN
Check Dams - NAN

Signature: Bill Foster Operator Number:

Print Name: Bill Foster

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SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number:

Date: 10/04/12 (Thursday) Time: 0900 Certified Operator: Operator #:

Reason for Inspection: ___ Weekly Inspection X Inspection After Storm Water Runoff

Observations: Silt fence - O.K.
Straw bales - O.K.
Drainage Swales - O.K.
Check Dams - O.K.

Corrective Actions Taken/Needed: Silt fence - No Action Needed (NAN)
Straw Bales - NAN
Drainage Swales - NAN
Check Dams - NAN

Signature: Bill Foster

Operator Number:

Print Name: Bill Foster

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SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number:

Date: (Tuesday) 10/04/12 Time: 1000 Certified Operator: Operator #:

Reason for Inspection: X Weekly Inspection X Inspection After Storm Water Runoff

Observations: Silt Fence - O.K.

Straw Bales - O.K.

Drainage Swales - O.K.

Check Dams - O.K.

Corrective Actions Taken/Needed: Silt Fence - No Action Needed (NAN)

Straw Bales - NAN

Drainage Swales - NAN

Check Dams - NAN

Signature: Bill Foster

Operator Number:

Print Name: Bill Foster

Preview Calculus

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351500-5

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Fort Hill - Phase 2 Remedial Action

Page 1 of 1

NPDES Number:

Date: (Thursday) 10/11/12 Time: 0900 Certified Operator: Operator #:

Reason for Inspection: ___ Weekly Inspection X Inspection After Storm Water Runoff

Observations: Silt Fence - Some spots need repaired.

Straw Bales - O.K.

Drainage Swales - O.K.

Check Dams - O.K.

Corrective Actions Taken/Needed: Silt Fence - Haynes will be repairing this afternoon.

Straw Bales - No Action Needed (NAN)

Drainage Swales - NAN

Check Dams - NAN

Signature: Bill Foster

Operator Number:

Print Name: Bill Foster

Program Certified

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312500-5

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number:

Date: (Monday) 10/15/12 Time: 0900 Certified Operator: Operator #:

Reason for Inspection: X Weekly Inspection X Inspection After Storm Water Runoff

Observations: Silt Fence - O.K.

Straw Bales - O.K.

Drainage Swales - O.K.

Check Dams - O.K.

Corrective Actions Taken/Needed: Silt Fence - No Action Needed (NAN)

Straw Bales - NAN

Drainage Swales - NAN

Check Dams - NAN

Signature: Bill Foster

Operator Number:

Print Name: Bill Foster

Thompson/Cardinale

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SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number:

Date: (Friday) 10/19/12 Time: 0900 Certified Operator: Operator #:

Reason for Inspection: Weekly Inspection X Inspection After Storm Water Runoff

Observations: Silt Fence - Needs Replaced along riverbank, in a few spots.

Straw Bales - O.K.

Drainage Swales - O.K.

Check Dams - O.K.

Corrective Actions Taken/Needed: Silt Fence - Haynes will replace this afternoon.

Straw Bales - No Action Needed (NAN)

Drainage Swales - NAN

Check Dams - NAN

Signature: Bill Foster

Operator Number:

Print Name: Bill Foster

Engineering Solutions

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812500-6

SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number:

Date: 10/22/12 (Monday) Time: 0900 Certified Operator: Operator #:

Reason for Inspection: X Weekly Inspection ___ Inspection After Storm Water Runoff

Observations: Silt Fence - O.K
Straw Bales - O.K
Drainage Swales - O.K.
Check Dams - O.K.

Corrective Actions Taken/Needed: Silt Fence - No Action Needed (NAN)
Straw Bales - NAN
Drainage Swales - NAN
Check Dams - NAN

Signature: Bill Foster Operator Number:

Print Name: Bill Foster

Approved Submittal

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SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number:

Date: 10/25/12 (Thursday) Time: 0900 Certified Operator: Operator #:

Reason for Inspection: ___ Weekly Inspection X Inspection After Storm Water Runoff

Observations: Silt Fence - o.k.

Straw Bales - o.k.

Drainage Swales - o.k.

Check Dams - o.k.

Corrective Actions Taken/Needed: Silt fence - No Action Needed. (NAN)

Straw Bales - NAN

Drainage Swales - NAN

Check Dams - NAN

Signature: Bill Foster

Operator Number:

Print Name: Bill Foster

Brown Caldwell

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SOIL EROSION AND SEDIMENTATION CONTROL INSPECTION LOG

Project Name or Description: Ford Rd - Phase 2 Remedial Action

Page 1 of 1

NPDES Number:

Date: 01/5/13 (Tuesday) Time: 1000 Certified Operator: Operator #:

Reason for Inspection: ___ Weekly Inspection X Inspection After Storm Water Runoff

Observations: Silt fence - O.K.
Straw Bales - O.K.
Drainage Swales - Need fixed.
Check Dams - O.K.
Steep Slope Soil - Needs Fixed

Corrective Actions Taken/Needed: Silt fence - No Action Necessary (NAN)
Straw Bales - NAN
Drainage Swales - Notified Haynes.
Check Dams - NAN
Steep Slope Soil - Notified Haynes

Signature: Bill Foster

Operator Number:

Print Name: Bill Foster

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Appendix G: Moisture/Density Test Results

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Phase I Remedial Action

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Field Compaction Test Data

Brown AND Caldwell

Project Name: Ford Rd. – Phase 1 Remedial Action Work
Project Number: 141617
Tested By: Bill Foster
Date: 11/03/11 (Thursday)

Gauge Model No. Troxler 3440
Gauge Serial No.
Standard Moisture Content 677 % Change 1.3 (P)
Standard Density Count 2195 % Change 0.5 (P)

Test Information										
Test Number	1	2	3	4	5					
Lift Number	1	2	3	4	5					
Compaction Equipment (type)	CAT CP56	CAT CP56	CAT CP56	CAT CP56	CAT CP56					
Compaction Equipment (weight)										
Number of Passes	≥ 6	≥ 6	≥ 6	≥ 6	≥ 6					
Loose Lift Thickness (inches)	12	12	12	12	12					
Compacted Lift Thickness (inches)	9	9	9	9	9					
Gauge Readings										
Mode/Probe Depth (inches)	6	6	6	6	6					
Wet Density (pcf)	133.0	132.3	131.0	130.0	131.5					
Dry Density (pcf)	113.7	113.4	113.3	112.6	112.8					
Moisture (pcf)	19.2	18.9	17.7	17.4	18.8					
Moisture (%)	16.9	16.7	15.6	15.4	[redacted] ← 16.7					
Laboratory Data										
Proctor Curve No.	LP-1	LP-1	LP-1	LP-1	LP-1					
Max Dry Density (pcf)	117.7	117.7	117.7	117.7	117.7					
Optimum Moisture (%)	14.1	14.1	14.1	14.1	14.1					
Results										
% Compaction	96.6	96.3	96.3	95.7	95.9					
Pass/Fail	Pass	Pass	Pass	Pass	Pass					
Retest Number/Date	—	—	—	—	—					
Comments										

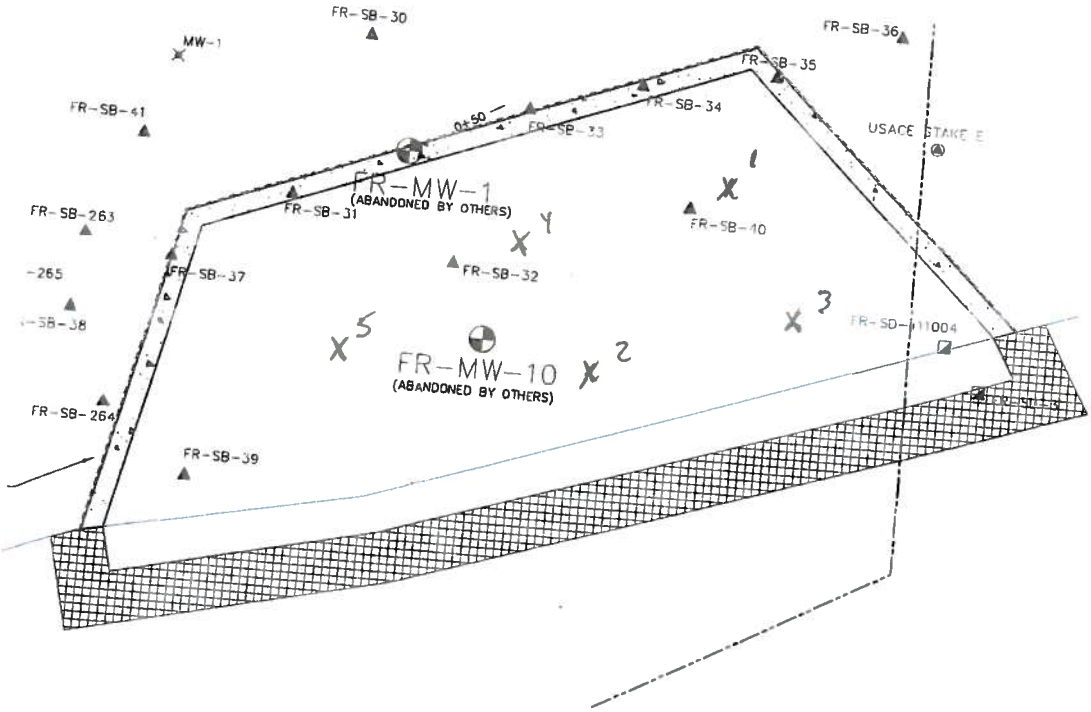
114.6
13.7

Brown AND Caldwell

Daily Field Report

Site:	Ford Rd.	**Date:**	11/03/11 (Thursday)
Project:	Phase 1 Remedial Action Work	**Time In:**	0700
Project No:	141617	**Time Out:**	1800
BC Personnel:	Bill Foster	**Weather:**	55° Cloudy

Low Perm Soil Compaction Test Locations



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

11/03/11 — Date

Field Compaction Test Data

Brown AND Caldwell

Project Name: Ford Rd. – Phase 1 Remedial Action Work
Project Number: 141617
Tested By: Bill Foster
Date: 11/04/11 (Friday)

Gauge Model No. Troxler 3440
Gauge Serial No.
Standard Moisture Content 676 % Change 1.4 (P)
Standard Density Count 2201 % Change 0.8 (P)

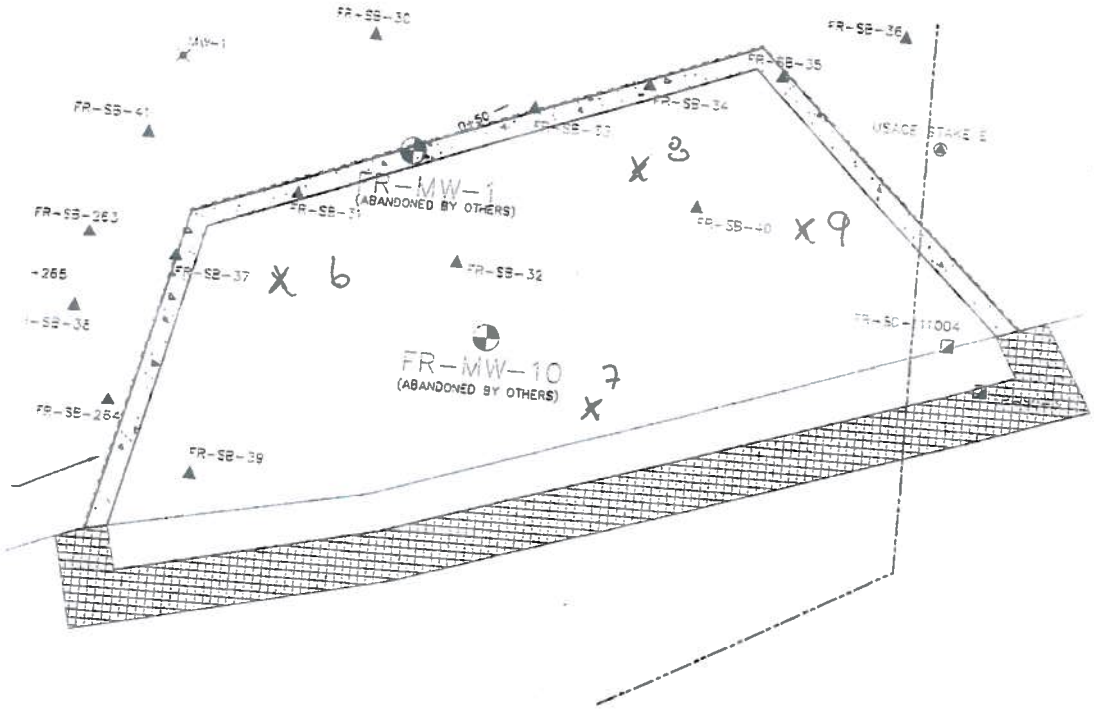
Test Information										
Test Number	6	7	8	9						
Lift Number	6	7	8	9						
Compaction Equipment (type)	CAT CP-56	CAT CP-56	CAT CP56	CAT CP56						
Compaction Equipment (weight)										
Number of Passes	≥ 6	≥ 6	≥ 6	≥ 6						
Loose Lift Thickness (inches)	12	12	12	12						
Compacted Lift Thickness (inches)	9	9	9	9						
Gauge Readings										
Mode/Probe Depth (inches)	6	6	6	6						
Wet Density (pcf)	131.4	132.3	131.2	131.8						
Dry Density (pcf)	112.8	113.5	112.1	113.1						
Moisture (pcf)	18.6	18.8	19.1	18.7						
Moisture (%)	16.5	16.6	17.0	16.5						
Laboratory Data										
Proctor Curve No.	LP-1	LP-1	LP-1	LP-1						
Max Dry Density (pcf)	117.7	117.7	117.7	117.7						
Optimum Moisture (%)	14.1	14.1	14.1	14.1						
Results										
% Compaction	95.8	96.4	95.2	96.1						
Pass/Fail	Pass	Pass	Pass	Pass						
Retest Number/Date										
Comments										

Brown AND Caldwell

Daily Field Report

Site:	Ford Rd.	Date:	11/04/11 (Friday)
Project:	Phase 1 Remedial Action Work	Time In:	0700
Project No:	141617	Time Out:	1700
BC Personnel:	Bill Foster	Weather:	55° Sunny

Low Perm Soil Composition test Locations



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

11/04/11 — Date

Field Compaction Test Data

Brown AND Caldwell

Project Name: Ford Rd. – Phase 1 Remedial Action Work
Project Number: 141617
Tested By: Bill Foster
Date: 11/07/11 (monday)

Gauge Model No. Troxler 3440
Gauge Serial No.
Standard Moisture Content 671 % Change 0.1 (P)
Standard Density Count 2481 % Change -0.4 (P)

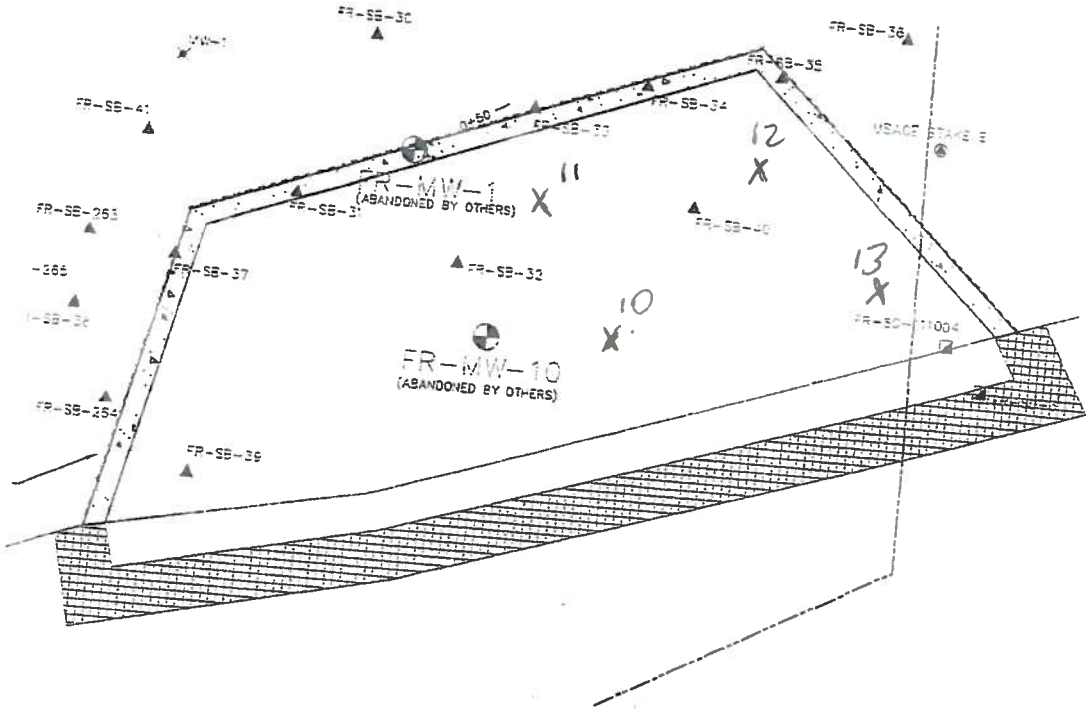
Test Information										
Test Number	10	11	12	13						
Lift Number	10	11	12	13						
Compaction Equipment (type)	CAT CP56	CAT CP56	CAT CP56	CAT CP56						
Compaction Equipment (weight)										
Number of Passes	≥6	≥6	≥6	≥6						
Loose Lift Thickness (inches)	12	12	12	12						
Compacted Lift Thickness (inches)	9	9	9	9						
Gauge Readings										
Mode/Probe Depth (inches)	6	6	6	6						
Wet Density (pcf)	130.9	132.3	131.2	131.3						
Dry Density (pcf)	112.3	113.9	112.1	112.3						
Moisture (pcf)	18.6	18.4	19.1	19.0						
Moisture (%)	16.6	16.2	17.0	16.9						
Laboratory Data										
Proctor Curve No.	LP-1	LP-1	LP-1	LP-1						
Max Dry Density (pcf)	117.7	117.7	117.7	117.7						
Optimum Moisture (%)	14.1	14.1	14.1	14.1						
Results										
% Compaction	95.4	96.8	95.2	95.4						
Pass/Fail	Pass	Pass	Pass	Pass						
Retest Number/Date										
Comments										

Brown AND Caldwell

Daily Field Report

Site:	Ford Rd.	Date:	11/07/11 (Monday)
Project:	Phase 1 Remedial Action Work	Time In:	0700
Project No:	141617	Time Out:	1730
BC Personnel:	Bill Foster	Weather:	65° P. Cloudy

Low Perm Soil Compaction Test Locations



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: Bill Foster

Date: 11/07/11

Field Compaction Test Data

Brown AND Caldwell

Project Name: Ford Rd. - Phase 1 Remedial Action Work
Project Number: 141617
Tested By: Bill Foster
Date: 11/11/11 (Friday)

Gauge Model No. Troxler 3440
Gauge Serial No.
Standard Moisture Content 676 % Change 1.4 (P)
Standard Density Count 2195 % Change 0.5 (P)

Test Information										
Test Number	1	2	3	4	5	6	7	8	9	10
Lift Number	1	2	3	4	5	6	7	8	9	10
Compaction Equipment (type)	CAT CP56	CP56	CP56	CP56	CP56	CP56	CP56	CP56	CP56	CP56
Compaction Equipment (weight)										
Number of Passes	≥ 6	≥ 6	≥ 6	≥ 6	≥ 6	≥ 6	≥ 6	≥ 6	≥ 6	≥ 6
Loose Lift Thickness (inches)	12	12	12	12	12	12	12	12	12	12
Compacted Lift Thickness (inches)	9	9	9	9	9	9	9	9	9	9
Gauge Readings										
Mode/Probe Depth (inches)	6	6	6	6	6	6	6	6	6	6
Wet Density (pcf)	133.0	133.4	132.6	131.2	131.5	131.3	132.1	131.5	131.0	131.2
Dry Density (pcf)	113.9	114.6	114.2	112.1	112.8	112.3	113.9	113.0	112.7	112.3
Moisture (pcf)	19.1	18.8	18.4	19.1	18.7	19.0	18.2	18.5	18.3	18.9
Moisture (%)	16.8	16.4	16.1	17.0	16.6	16.9	16.0	16.4	16.2	16.8
Laboratory Data										
Proctor Curve No.	LP-1	LP-1	LP-1	LP-1	LP-1	LP-1	LP-1	LP-1	LP-1	LP-1
Max Dry Density (pcf)	117.7	117.7	117.7	117.7	117.7	117.7	117.7	117.7	117.7	117.7
Optimum Moisture (%)	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.1
Results										
% Compaction	96.8	97.4	97.0	95.2	95.8	95.4	96.8	96.0	95.8	95.4
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Retest Number/Date										

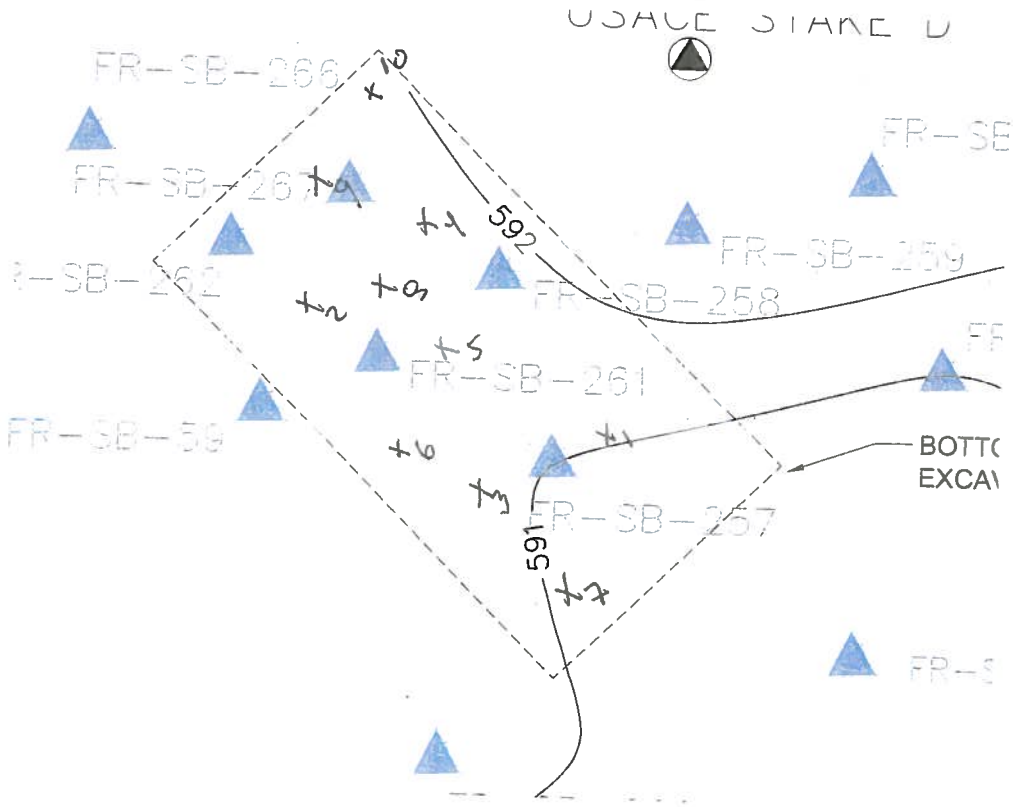
Comments

Brown AND Caldwell

Daily Field Report

Site:	Ford Rd.	Date:	11/16/11 (Friday)
Project:	Phase 1 Remedial Action Work	Time In:	0700
Project No:	141617	Time Out:	1500
BC Personnel:	Bill Foster	Weather:	45° Sunny

South Soil Compaction Test Locations



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster 11/16/11

Signature of CQA Monitor — Date

Field Compaction Test Data

Brown AND Caldwell

Project Name: Ford Rd. – Phase 1 Remedial Action Work
Project Number: 141617
Tested By: Bill Fasto
Date: 11/14/11 (Monday)

Gauge Model No. Troxler 3440
Gauge Serial No.
Standard Moisture Content 677 % Change 6.3 (P)
Standard Density Count 2201 % Change 0.8 (P)

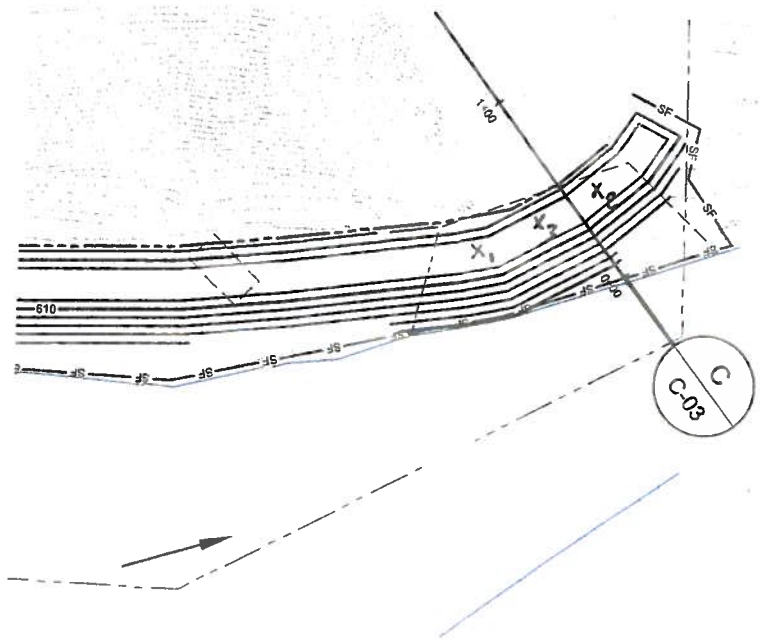
Test Information										
Test Number	1	2	3							
Lift Number	1	2	3							
Compaction Equipment (type)	CAT CP56	CP56	CP56							
Compaction Equipment (weight)										
Number of Passes	≥ 6	≥ 6	≥ 6							
Loose Lift Thickness (inches)	12	12	12							
Compacted Lift Thickness (inches)	9	9	9							
Gauge Readings										
Mode/Probe Depth (inches)	6	6	6							
Wet Density (pcf)	132.6	131.9	131.2							
Dry Density (pcf)	113.9	112.8	112.3							
Moisture (pcf)	18.7	19.1	18.9							
Moisture (%)	16.4	16.9	16.8							
Laboratory Data										
Proctor Curve No.	LP-1	LP-1	LP-1							
Max Dry Density (pcf)	117.7	117.7	117.7							
Optimum Moisture (%)	14.1	14.1	14.1							
Results										
% Compaction	96.8	95.8	95.4							
Pass/Fail	Pass	Pass	Pass							
Retest Number/Date										

Comments

Brown AND Caldwell

Daily Field Report

Site:	Ford Rd.	Date:	11/14/11 (Monday)
Project:	Phase 1 Remedial Action Work	Time In:	0700
Project No:	141617	Time Out:	1730
BC Personnel:	Bill Foster, Nate Givens	Weather:	65° Rainy



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

11/14/11 — Date

Phase II Remedial Action

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Field Compaction Test Data

Brown AND Caldwell

Project Name: Ford Rd. – Phase 2 Remedial Action Work
Project Number: 141617
Tested By: Foster
Date: 06/08/12 (Friday)

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 612 % Change 0.3
Standard Density Count 2125 % Change 0.2

Test Information										
Test Number	1	2	3	4	5	6	7	8	9	10
Lift Number	1	1	2	3	4	5	6	7	8	9
Compaction Equipment (type)	815 B	815 B	815 B	815 B	815 B	815 B	815 B	815 B	815 B	815 B
Compaction Equipment (weight)	44,170	44,170	44,170	44,170	44,170	44,170	44,170	44,170	44,170	44,170
Number of Passes	5	6	6	6	6	6	6	6	6	6
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	129.0	130.5	132.2	129.6	130.1	130.6	129.4	131.4	129.8	130.2
Dry Density (pcf)	110.6	112.6	115.2	113.9	114.0	114.8	114.2	114.6	114.4	112.4
Moisture (pcf)	18.3	17.9	17.0	15.6	16.0	15.8	15.2	16.8	15.4	17.8
Moisture (%)	16.6	15.9	14.7	13.7	14.0	13.8	13.3	14.7	13.5	15.8
Laboratory Data										
Proctor Curve No.	55-7	55-7	55-7	55-7	55-7	55-7	55-7	55-7	55-7	55-7
Max Dry Density (pcf)	116.5	116.5	116.5	116.5	116.5	116.5	116.5	116.5	116.5	116.5
Optimum Moisture (%)	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9
Results										
% Compaction	95.0	96.7	98.9	97.8	97.9	98.5	98.0	98.4	98.2	96.4
Pass/Fail	Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Retest Number/Date	2									

Comments

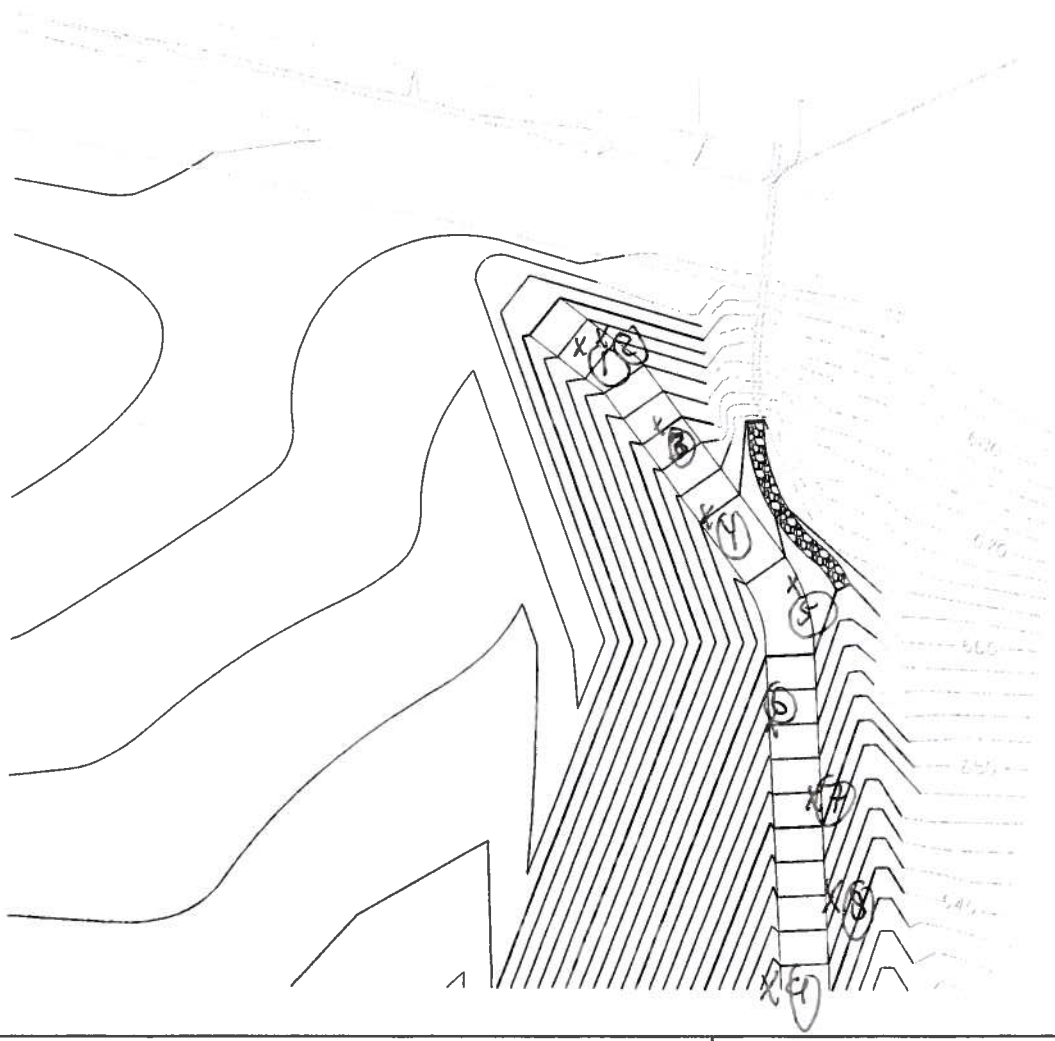
Steep slope → -3% to +2%

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	06/08/12 (Friday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — **Signature of CQA Monitor**

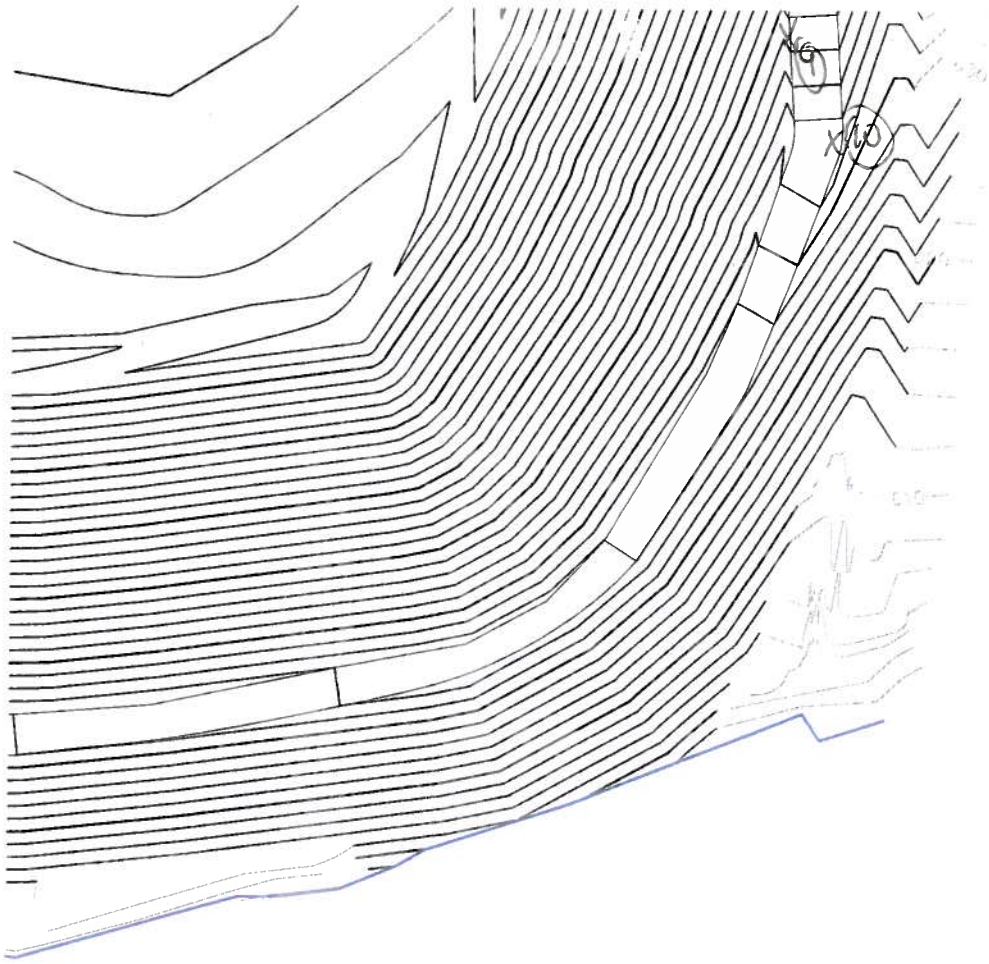
06/08/12 — **Date**

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	06/08/12 (Friday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

06/08/12 — Date

Brown AND Caldwell

Field Compaction Test Data

Project Name:	Ford Rd. – Phase 2 Remedial Action	Gauge Model No.	Troxler 3440
Project Number:	142889	Gauge Serial No.	24585
Tested By:	Bill Foster / Julie McGowan	Standard Moisture Content	611 % Change 0.0
Date:	06/11/12 (Monday)	Standard Density Count	2131 % Change 0.5

Test Information										
Test Number	11	12	13	14	15	16				
Lift Number	6	5	4	3	2	1				
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6	6				
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	134.9	134.5	132.2	131.0	134.2	134.3				
Dry Density (pcf)	119.6	116.6	115.8	113.1	117.4	117.9				
Moisture (pcf)	15.3	17.9	16.3	17.9	16.8	16.3				
Moisture (%)	12.8	15.3	14.1	15.8	14.3	13.8				
Laboratory Data										
Proctor Curve No.	SS-7	SS-7	SS-7	SS-7	SS-7	SS-7				
Max Dry Density (pcf)	116.5	116.5	116.5	116.5	116.5	116.5				
Optimum Moisture (%)	13.9	13.9	13.9	13.9	13.9	13.9				
Results										
% Compaction	102.7	100.1	99.4	97.1	100.8	101.2				
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass				
Retest Number/Date										

Comments

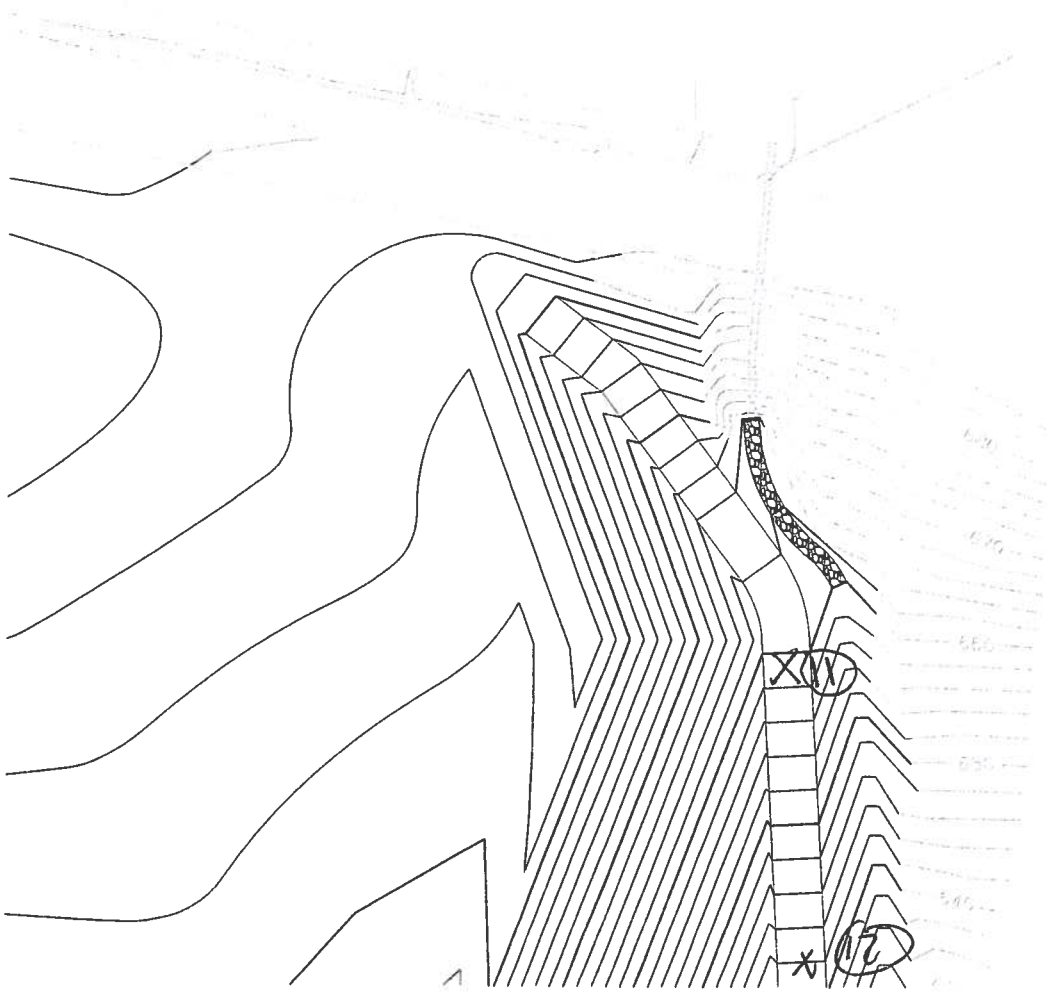
Page ___ of ___

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	06/11/12 (Monday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Foster/McGowan	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

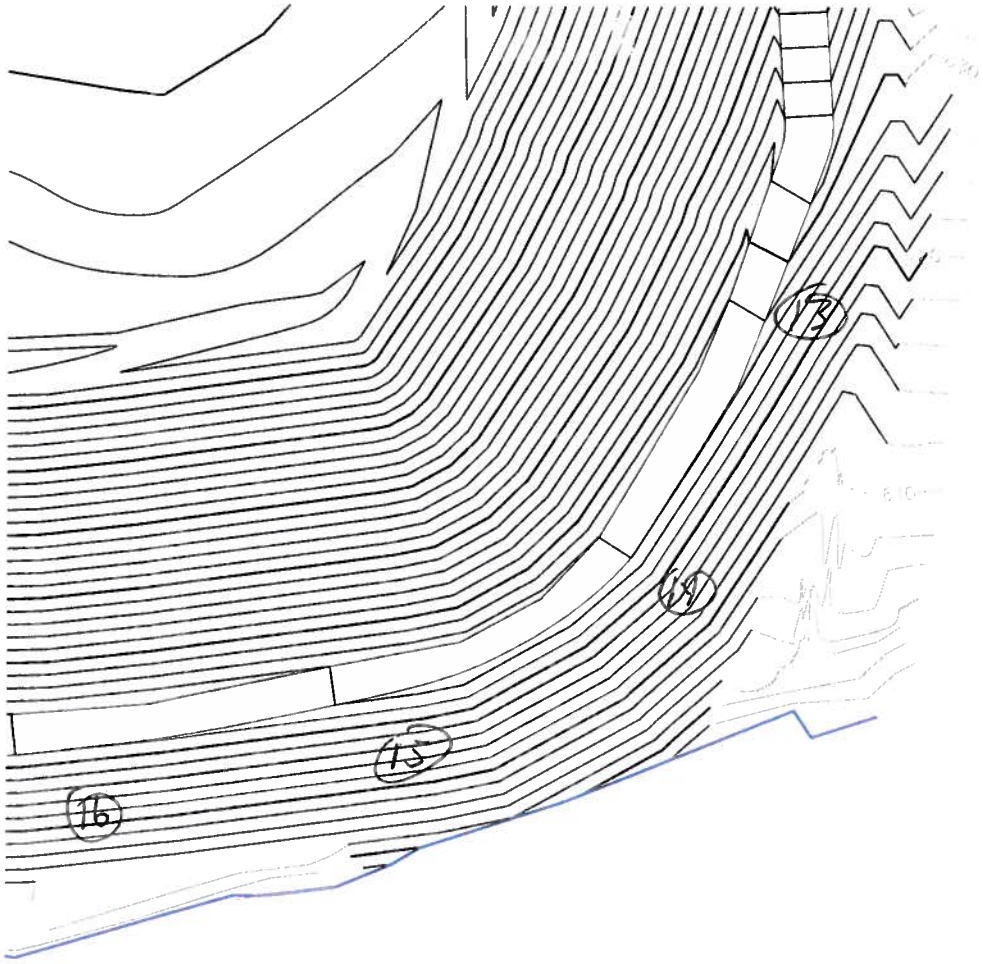
Signature of CQA Monitor **Date**

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	6/11/12
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	JMcGowan / B. Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor **Date**

Brown AND Caldwell

Field Compaction Test Data

Project Name:	Ford Rd. – Phase 2 Remedial Action	Gauge Model No.	Troxler 3440
Project Number:	142889	Gauge Serial No.	24585
Tested By:	Julie McBowan	Standard Moisture Content	613 % Change 0.2%
Date:	06-12-12	Standard Density Count	2133 % Change 0.4%

Test Information										
Test Number	17	18	19	20	21	22	23	24		
Lift Number	5	10?	2	2	3	3	3	7		
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6	6	6	6		
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	131.5	134.4	132.9	130.0	133.4	132.6	134.3	129.8		
Dry Density (pcf)	114.8	117.5	115.0	114.0	115.8	114.9	117.5	114.4		
Moisture (pcf)	16.7	16.9	17.9	16.0	17.6	17.7	16.8	15.4		
Moisture (%)	14.5	14.4	15.6	14.0	15.2	15.4	14.3	13.5		
Laboratory Data										
Proctor Curve No.	SS-7	SS-7	SS-7	SS-7	SS-7	SS-7	SS-7	SS-7		
Max Dry Density (pcf)	116.5	116.5	116.5	116.5	116.5	116.5	116.5	116.5		
Optimum Moisture (%)	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9		
Results										
% Compaction	98.6	100.8	98.7	97.8	99.4	98.6	100.9	98.2		
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass		
Retest Number/Date										

Comments

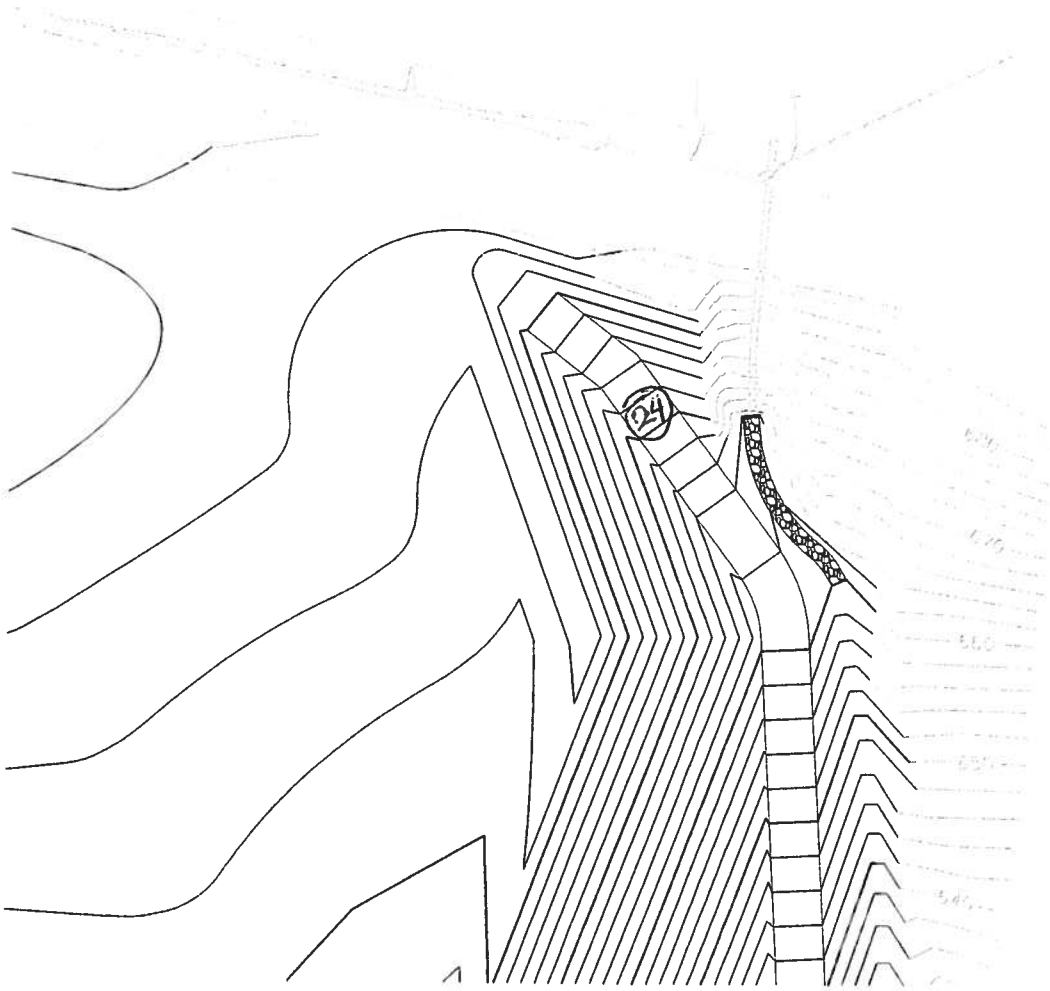
Page ___ of ___

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	06/12/12
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Julie McGowan	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Julie McGowan 06/13/12

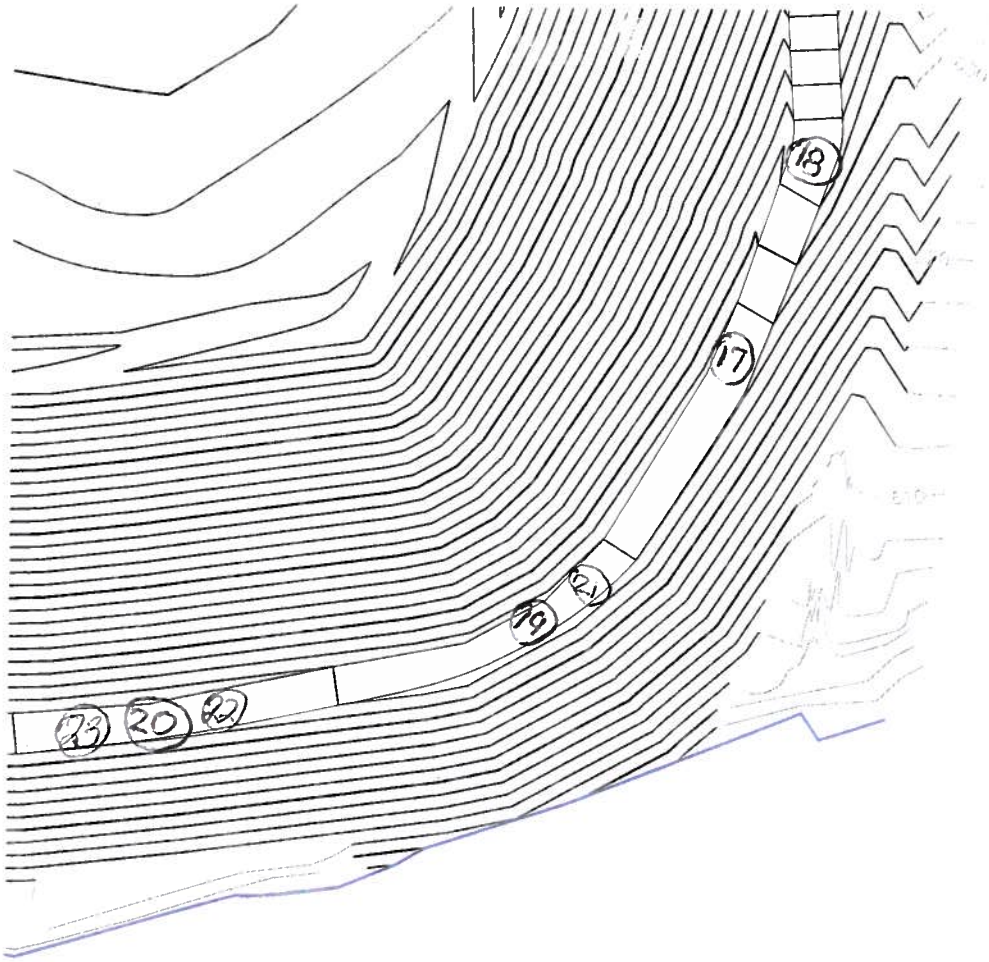
Signature of CQA Monitor Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	06/12/12
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	J McGowan	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Julie McGowan 06/12/12

Signature of CQA Monitor Date

Pond +3-3%, standard
Steep Slope +2-3%, Modified

Brown AND Caldwell

Field Compaction Test Data

Project Name:	Ford Rd. – Phase 2 Remedial Action	Gauge Model No.	Troxler 3440
Project Number:	142889	Gauge Serial No.	24585
Tested By:	Julie McGowan	Standard Moisture Content	608 % Change -0.2%
Date:	6-13-12	Standard Density Count	2108 % Change 0.2%

Test Information										
Test Number	25	26	27	28	29	30	31	32	33	34
Lift Number	4	4	4	4	4	Ditch 1	Ditch 2	Ditch 3	5	5
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6	6	6	6	6	6
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	133.4	131.5	134.2	135.0	129.9	134.0	131.0	134.1	130.2	133.1
Dry Density (pcf)	115.8	114.8	116.1	117.8	112.3	117.2	115.5	118.0	113.1	116.7
Moisture (pcf)	17.6	16.7	18.2	17.2	17.6	16.8	15.5	16.1	17.1	16.4
Moisture (%)	15.2	14.5	15.7	14.6	15.7	14.4	13.5	13.7	15.1	14.1
Laboratory Data										
Proctor Curve No.	SS-7	SS-7	SS-7	SS-7	SS-7	SS-7	SS-9	SS-9	SS-9	SS-9
Max Dry Density (pcf)	116.5	116.5	116.5	116.5	116.5	116.5	118.5	118.5	118.5	118.5
Optimum Moisture (%)	13.9	13.9	13.9	13.9	13.9	13.9	13.4	13.4	13.4	13.4
Results										
% Compaction	99.4	100.6	99.6	101.2	96.4	100.6	97.5	99.9	95.5	98.5
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Retest Number/Date										
Comments										

Brown AND Caldwell

Field Compaction Test Data

Project Name: Ford Rd. - Phase 2 Remedial Action
Project Number: 142889
Tested By: Julie McGowan
Date: 6-13-12

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 608 % Change -0.2%
Standard Density Count 2108 % Change 0.2%

Test Information										
Test Number	35	36	37	38	39	40				
Lift Number	Ditch 4	Ditch 5	Ditch 6	51 (new)	2 (new)	3 (new)				
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6	6				
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	134.1	131.0	128.8	128.6	132.9	132.8				
Dry Density (pcf)	118.0	116.7	112.8	114.7	115.8	116.4				
Moisture (pcf)	16.1	16.4	16.0	13.9	17.1	16.4				
Moisture (%)	13.7	14.1	14.2	12.1	14.8	14.1				
Laboratory Data										
Proctor Curve No.	SS-9	SS-9	SS-9	SS-9	SS-9	SS-9				
Max Dry Density (pcf)	118.5	118.5	118.5	118.5	118.5	118.5				
Optimum Moisture (%)	13.4	13.4	13.4	13.4	13.4	13.4				
Results										
% Compaction	99.8	98.4	95.2	96.8	97.7	98.3				
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass				
Retest Number/Date										

Comments

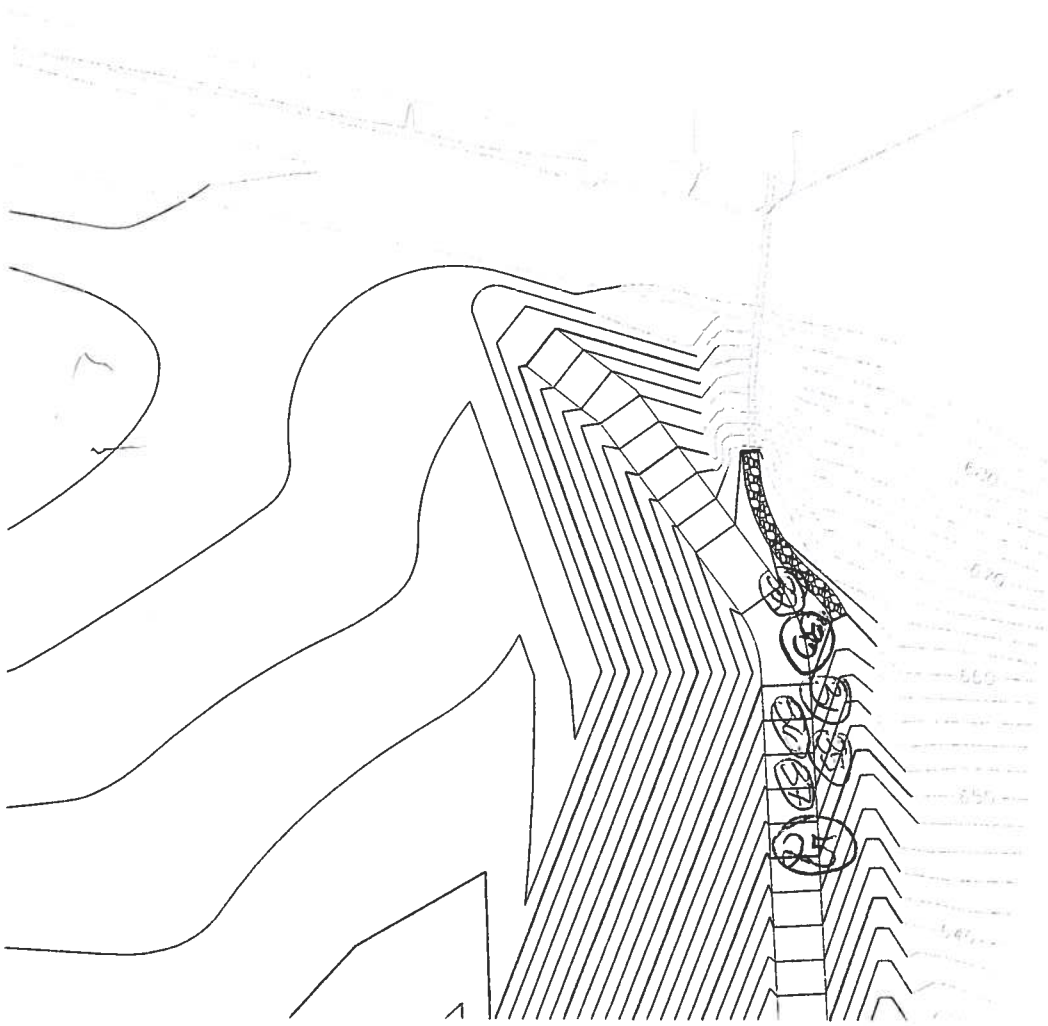
Page ___ of ___

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	6/13/12
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Julie McGowan	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Julie McGowan 6/13/12

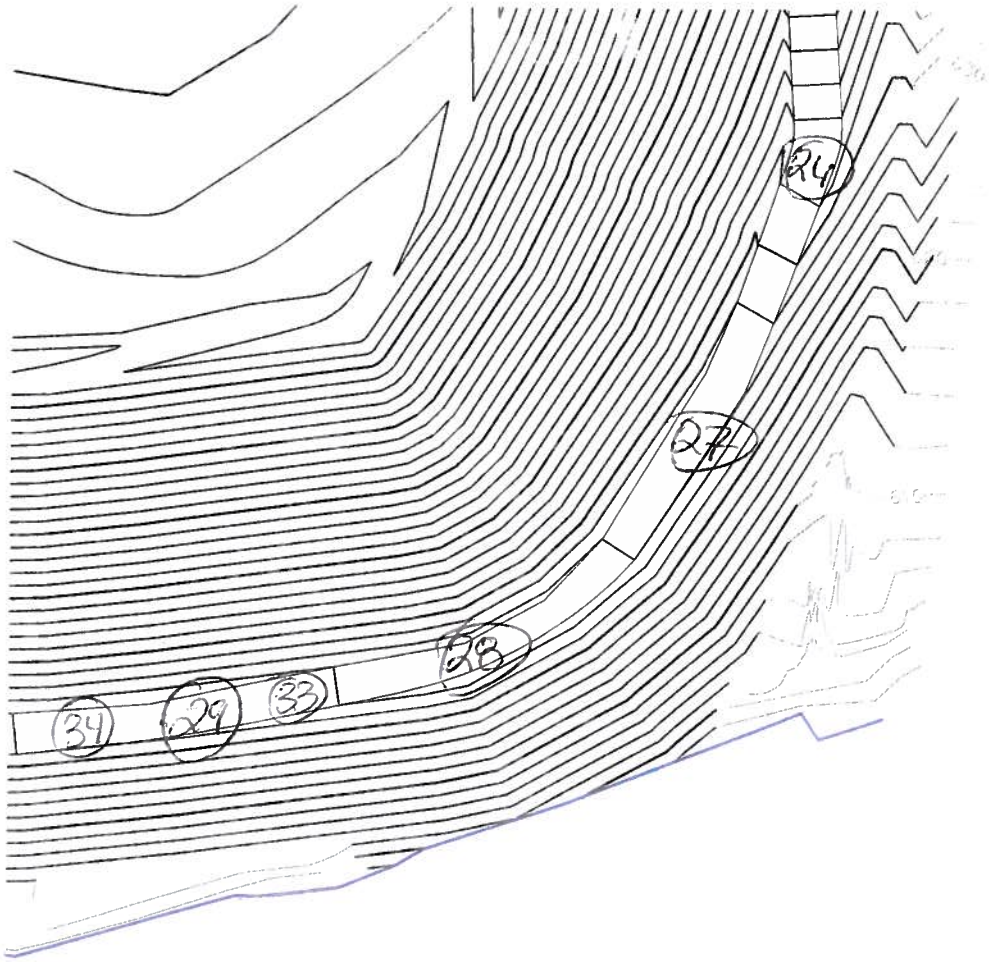
Signature of CQA Monitor Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	6/13/12
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Julie McGowan	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Julie McGowan 6/13/12

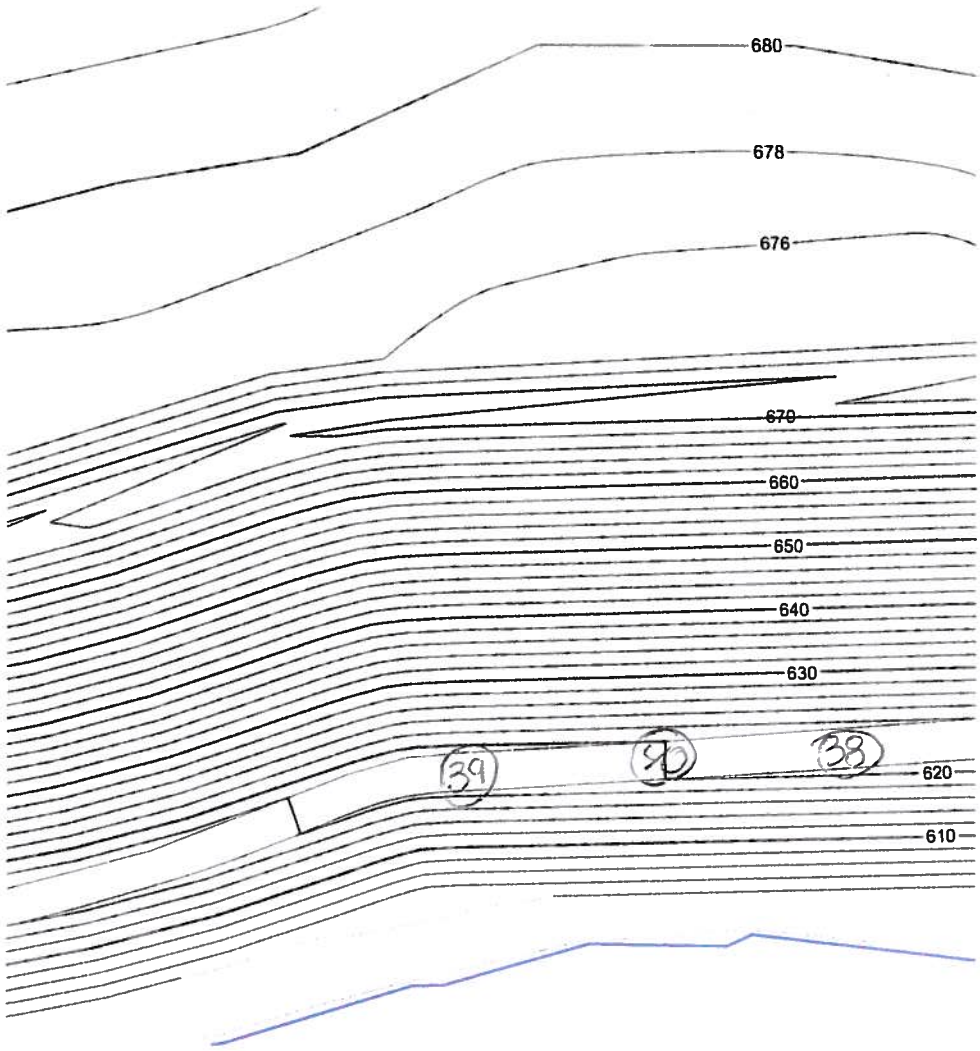
Signature of CQA Monitor Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	06-13-12
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Julie McGowan	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Julie McGowan 6-13-12

Signature of CQA Monitor **Date**

Field Compaction Test Data

Brown AND Caldwell

Project Name: Ford Rd. – Phase 2 Remedial Action
Project Number: 142889
Tested By: Julie McGowan
Date: 6-14-12

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 610 % Change -0.2%
Standard Density Count 214 % Change 0.5%

Test Information										
Test Number	41	42	43	44	45	46	47	48	49	50
Lift Number	Ditch 7	Ditch 8	Ditch 9	Ditch 10	Ditch 11	Ditch 12	Ditch 13	Ditch 14	Ditch 15	Ditch 16
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6	6	6	6	6	6
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	129.9	128.7	129.0	128.6	130.2	131.1	131.2	135.5	135.6	134.0
Dry Density (pcf)	114.9	112.7	113.3	112.6	113.9	114.8	113.8	117.7	119.0	118.3
Moisture (pcf)	15.0	16.0	15.7	16.0	16.3	16.4	17.3	17.7	16.6	15.7
Moisture (%)	13.1	14.2	13.8	14.2	14.3	14.3	15.2	15.1	13.9	13.3
Laboratory Data										
Proctor Curve No.	SS-9	SS-9	SS-9	SS-9	SS-9	SS-9	SS-9	SS-9	SS-9	SS-9
Max Dry Density (pcf)	118.5	118.5	118.5	118.5	118.5	118.5	118.5	118.5	118.5	118.5
Optimum Moisture (%)	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4
Results										
% Compaction	97.0	95.1	95.6	95.0	96.1	96.9	96.1	99.4	105.5	99.8
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Retest Number/Date										

Comments

1717

Field Compaction Test Data

Brown AND Caldwell

Project Name:	Ford Rd. – Phase 2 Remedial Action	Gauge Model No.	Troxler 3440
Project Number:	142889	Gauge Serial No.	24585
Tested By:	Julie McGowan	Standard Moisture Content	6.10 % Change -0.2%
Date:	6-14-12	Standard Density Count	2114 % Change 0.5%

Test Information										
Test Number	51	52	53	54						
Lift Number	11	11	12	12						
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6						
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	130.3	130.8	130.4	130.4						
Dry Density (pcf)	115.1	114.4	115.0	114.3						
Moisture (pcf)	15.3	16.4	15.4	16.2						
Moisture (%)	13.3	14.3	13.4	14.2						
Laboratory Data										
Proctor Curve No.	SS-9	SS-9	SS-9	SS-9						
Max Dry Density (pcf)	118.5	118.5	118.5	118.5						
Optimum Moisture (%)	13.4	13.4	13.4	13.4						
Results										
% Compaction	97.1	96.5	97.0	96.4						
Pass/Fail	Pass	Pass	Pass	Pass						
Retest Number/Date										

Comments

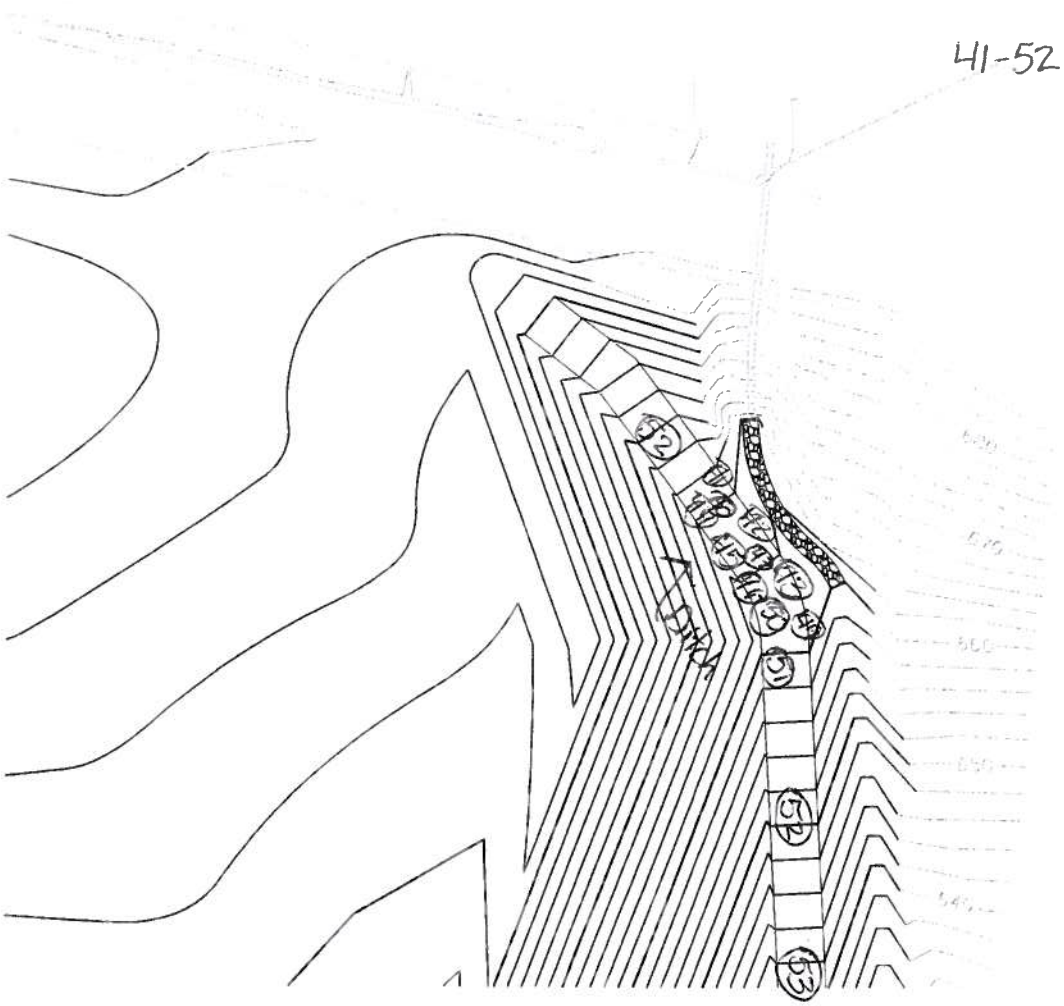
Page ___ of ___

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	**Date:**	6/14/12
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	J McGowan	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Julie McGowan 6/14/12

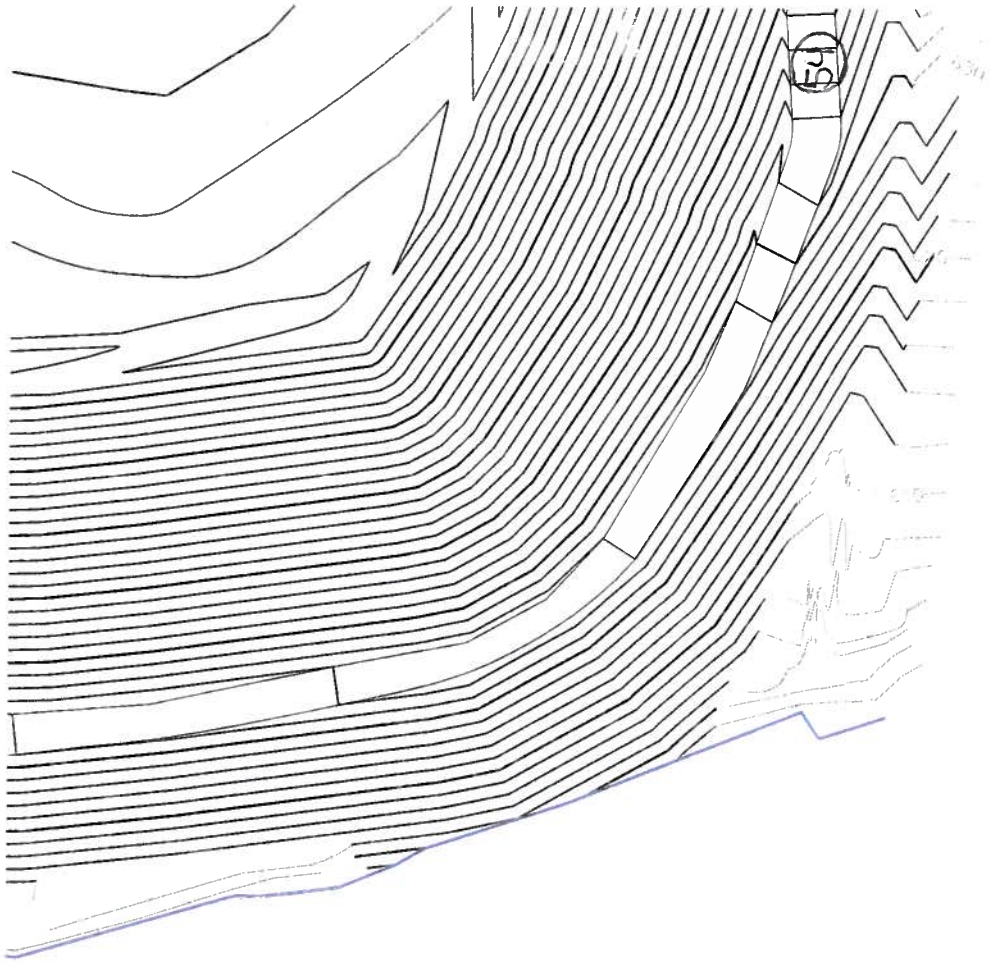
Signature of CQA Monitor **Date**

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	06/14/12
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	J McGowan	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

J McGowan — Signature of CQA Monitor

06/14/12 — Date

Brown AND Caldwell

Field Compaction Test Data

Project Name:	Ford Rd. – Phase 2 Remedial Action	Gauge Model No.	Troxler 3440
Project Number:	142889	Gauge Serial No.	24585
Tested By:	Julie McGowan	Standard Moisture Content	6.18 % Change 0.7
Date:	6-15-12	Standard Density Count	2113 % Change -0.7

Test Information										
Test Number	55	56	57	58	59	60	61	62	63	64
Lift Number	13	13	14	14	15	16	17	18	19	20
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6	6	6	6	6	6
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	129.8	129.9	132.3	129.6	131.9	130.9	131.2	129.8	132.9	132.1
Dry Density (pcf)	115.4	114.4	116.6	112.6	114.6	114.9	114.8	115.4	116.6	115.7
Moisture (pcf)	14.4	15.5	15.6	17.1	17.3	16.0	16.4	14.4	16.3	16.3
Moisture (%)	12.5	13.5	13.4	15.2	15.1	14.0	14.3	12.5	14.0	14.1
Laboratory Data										
Proctor Curve No.	SS-9	SS-9	SS-9	SS-9	SS-9	SS-9	SS-9	SS-9	SS-9	SS-9
Max Dry Density (pcf)	118.5	118.5	118.5	118.5	118.5	118.5	118.5	118.5	118.5	118.5
Optimum Moisture (%)	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4
Results										
% Compaction	97.4	96.6	98.4	95.0	96.7	96.6	96.3	97.7	98.4	97.7
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Retest Number/Date										

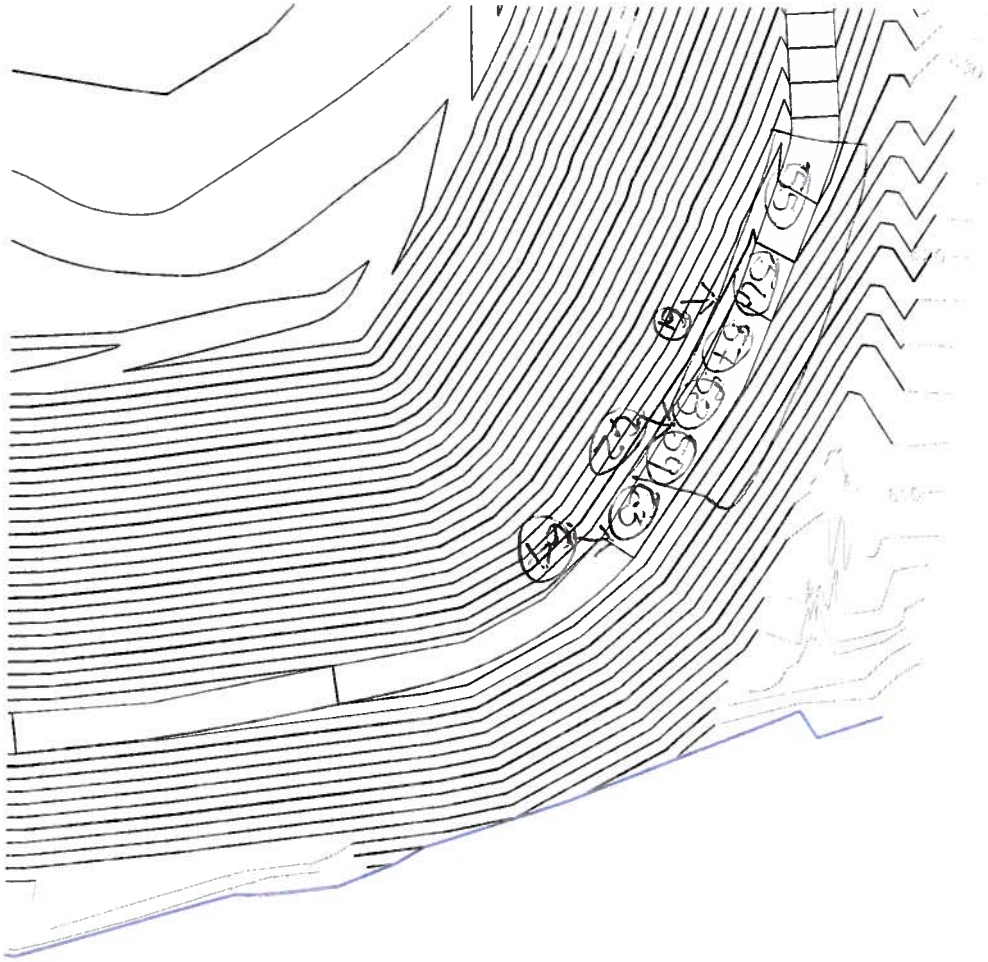
Comments

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	6-15-12
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Julie McKeiran	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Julie McKeiran 6-15-12

Signature of CQA Monitor Date

SED POND EMBANKMENT

Field Compaction Test Data

Brown AND Caldwell

Project Name:	Ford Rd. – Phase 2 Remedial Action	Gauge Model No.	Troxler 3440		
Project Number:	142889	Gauge Serial No.	24585		
Tested By:	Bill Foster	Standard Moisture Content	606	% Change	-1.5
Date:	06/20/17 (Wed)	Standard Density Count	2128	% Change	0.8

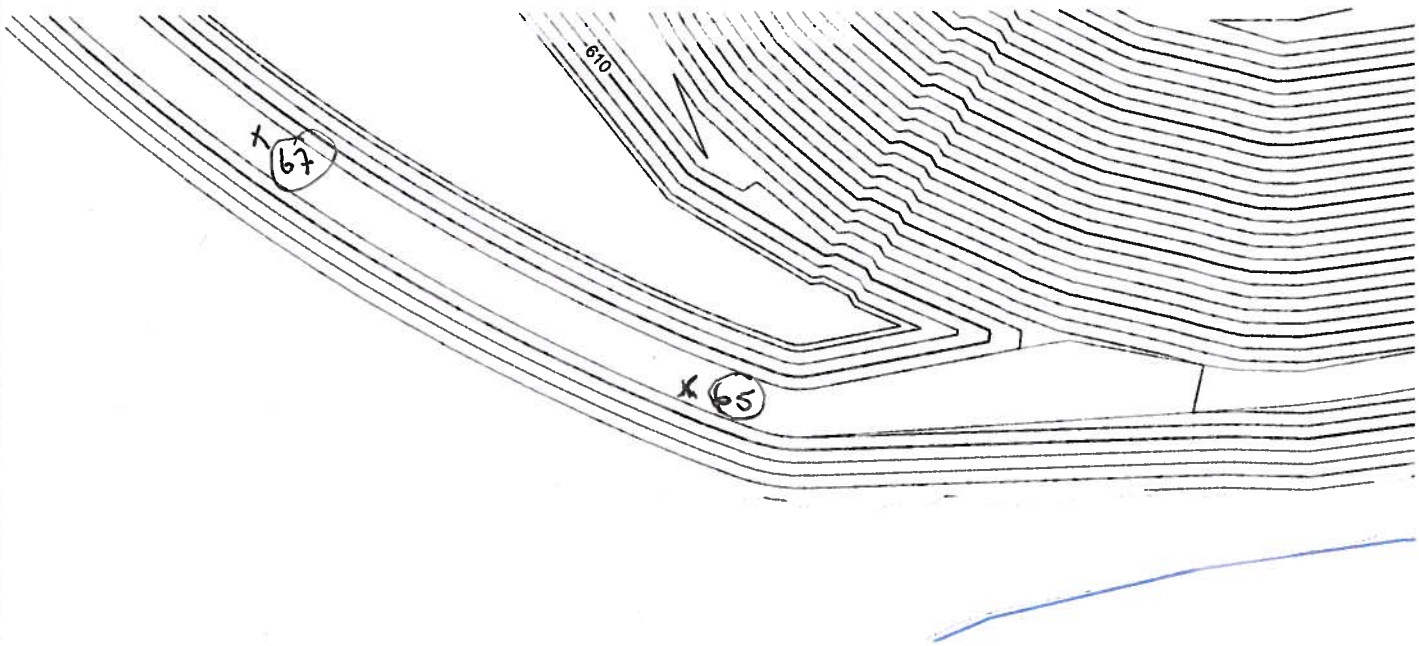
Test Information										
Test Number	65	66	67	68	69	70				
Lift Number	1	1	2	2	3	3				
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6	6				
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	129.5	135.5	134.1	132.7	136.8	133.6				
Dry Density (pcf)	115.9	121.7	120.0	116.9	117.4	118.6				
Moisture (pcf)	13.6	13.8	14.0	15.8	14.4	15.0				
Moisture (%)	11.8	11.4	11.7	13.5	12.3	12.6				
Laboratory Data										
Proctor Curve No.	SP-2	SP-2	SP-2	SP-2	SP-2	SP-2				
Max Dry Density (pcf)	118.1	118.1	118.1	118.1	118.1	118.1				
Optimum Moisture (%)	14.0	14.0	14.0	14.0	14.0	14.0				
Results										
% Compaction	98.1	103.0	101.6	99.0	99.4	100.4				
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass				
Retest Number/Date										
Comments										

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	06/20/12 (Wed)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster 06/20/12

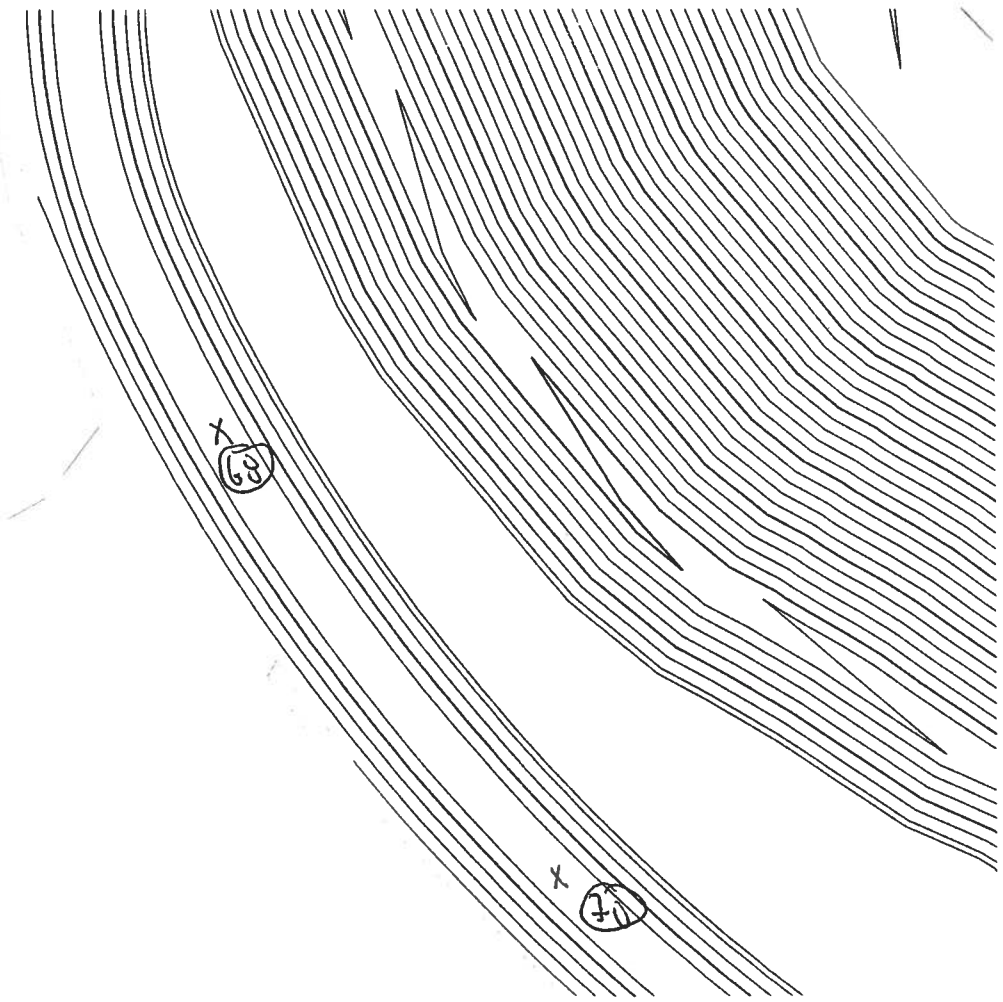
Signature of CQA Monitor — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	06/20/12 (wed)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

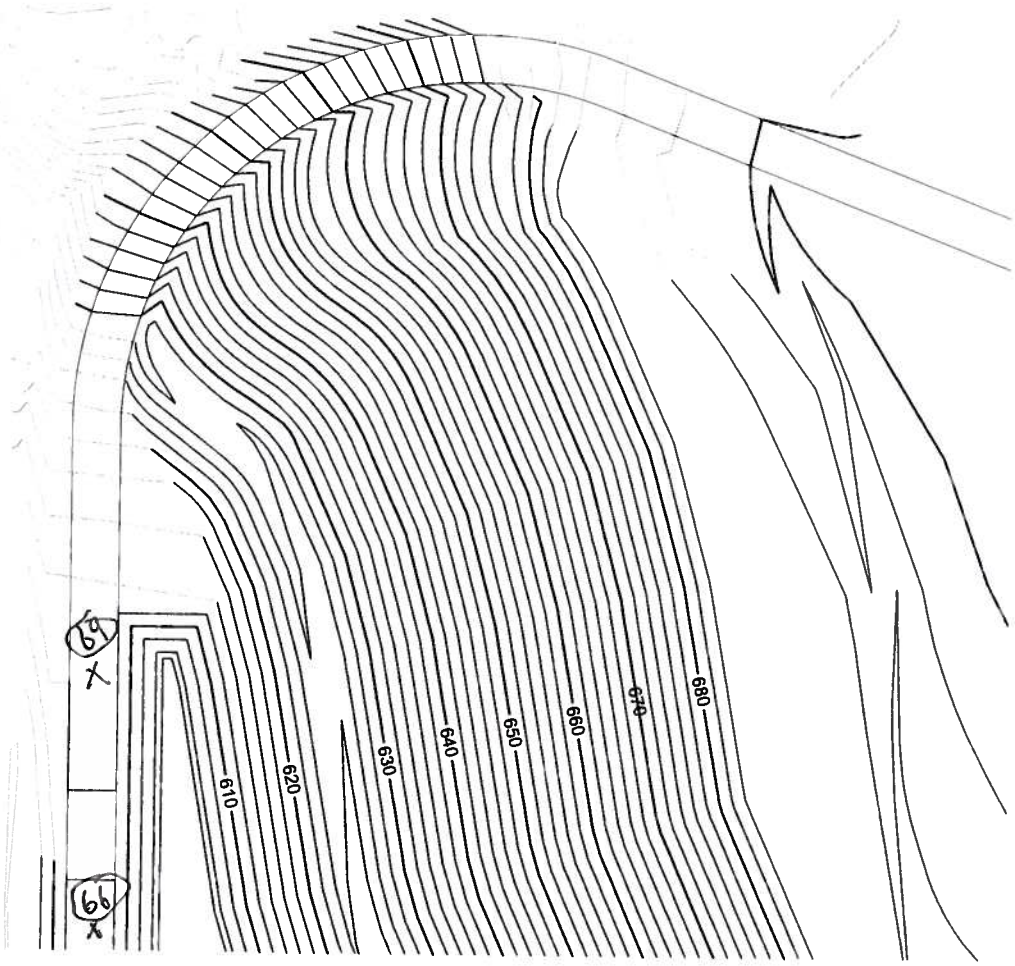
06/20/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	06/20/12 (Wed)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

BN BN — 06/20/12

Signature of CQA Monitor — **Date**

Sed Pond Embankment

Field Compaction Test Data

Brown AND Caldwell

Project Name:	Ford Rd. – Phase 2 Remedial Action	Gauge Model No.	Troxler 3440		
Project Number:	142889	Gauge Serial No.	24585		
Tested By:	Bill Foster	Standard Moisture Content	609	% Change	-1.0
Date:	06/21/12 (Thursday)	Standard Density Count	2125	% Change	0.6

Test Information										
Test Number	71	72	73	74	75					
Lift Number	4	4	5	5	6					
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6					
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	130.6	132.7	132.2	135.2	139.1					
Dry Density (pcf)	114.2	116.3	118.9	121.4	124.4					
Moisture (pcf)	16.4	16.4	13.3	13.8	14.6					
Moisture (%)	14.4	14.1	11.2	11.3	11.8					
Laboratory Data										
Proctor Curve No.	SP-5A	SP-5A	SP-5A	SP-5A	SP-5A					
Max Dry Density (pcf)	118.7	118.7	118.7	118.7	118.7					
Optimum Moisture (%)	14.0	14.0	14.0	14.0	14.0					
Results										
% Compaction	96.2	98.0	100.2	102.3	104.8					
Pass/Fail	Pass	Pass	Pass	Pass	Pass					
Retest Number/Date										

Comments

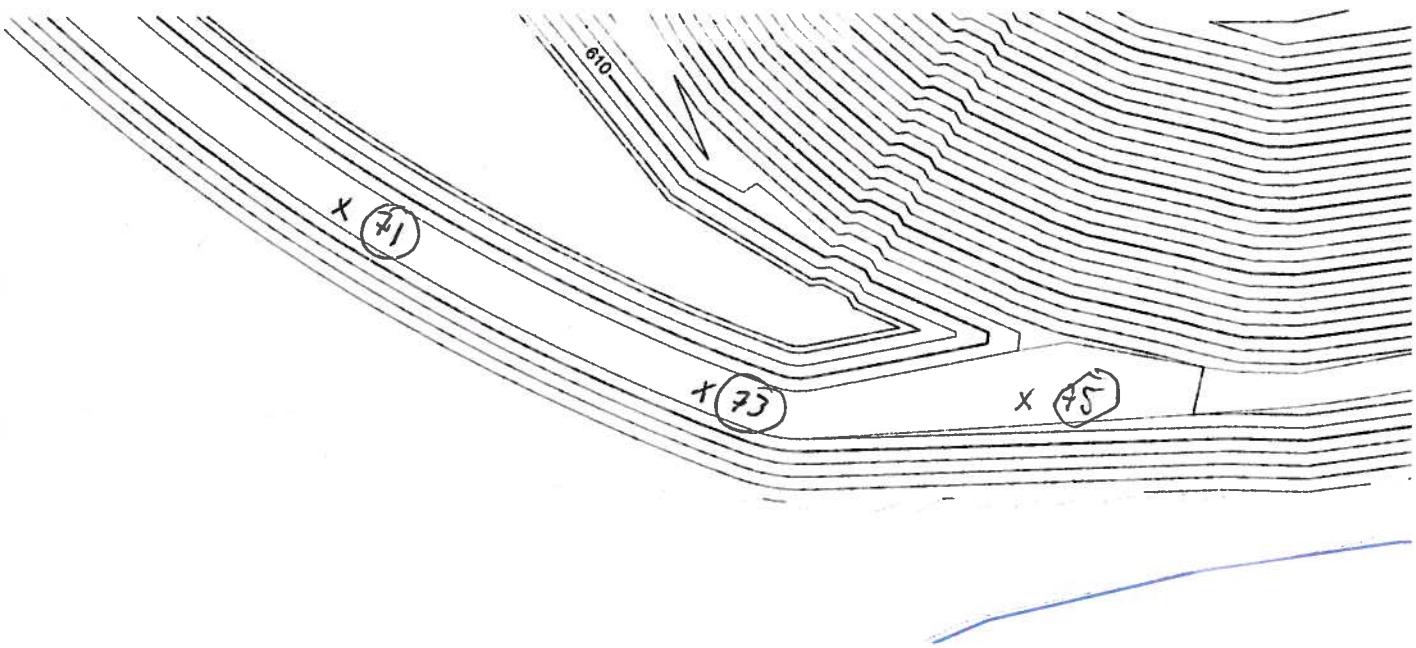
Page ___ of ___

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	06/21/12 (Thursday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

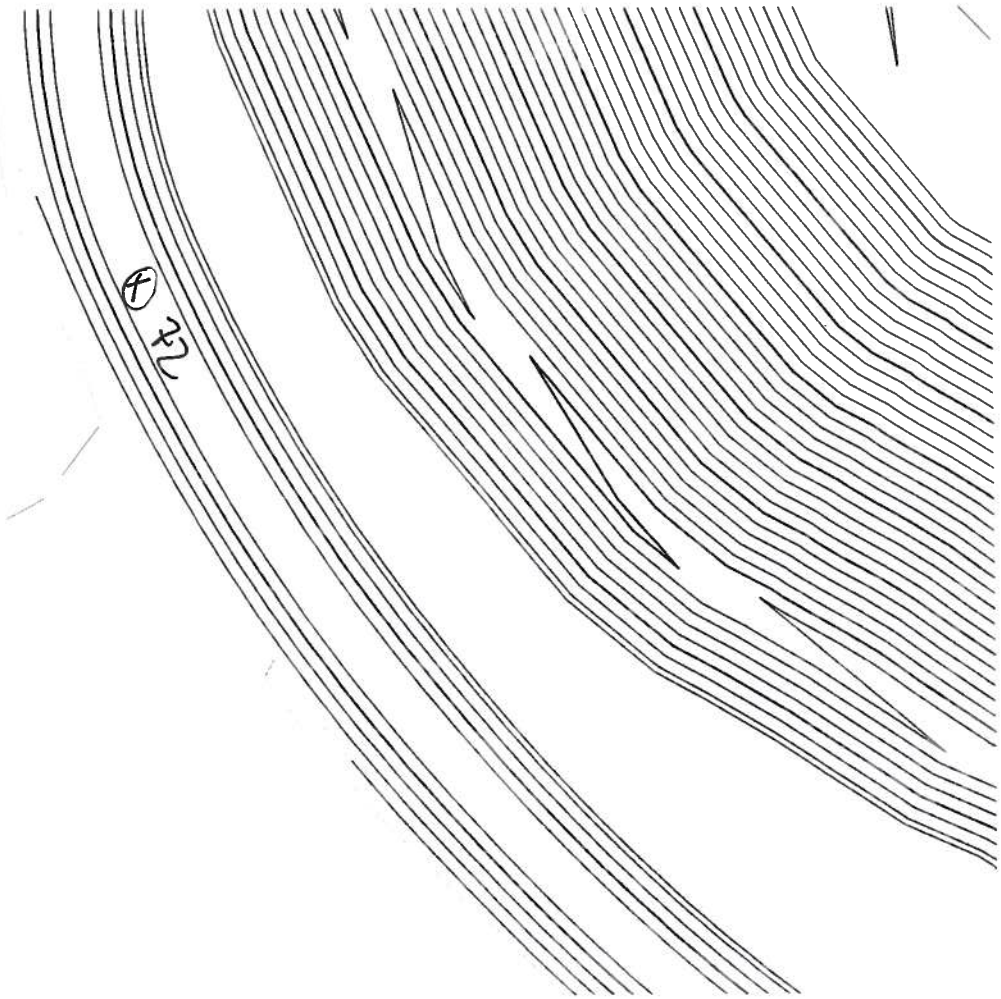
Signature of CQA Monitor: [signature] Date: 06/21/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	06/21/12 (Thursday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

BW [illegible] — Signature of CQA Monitor

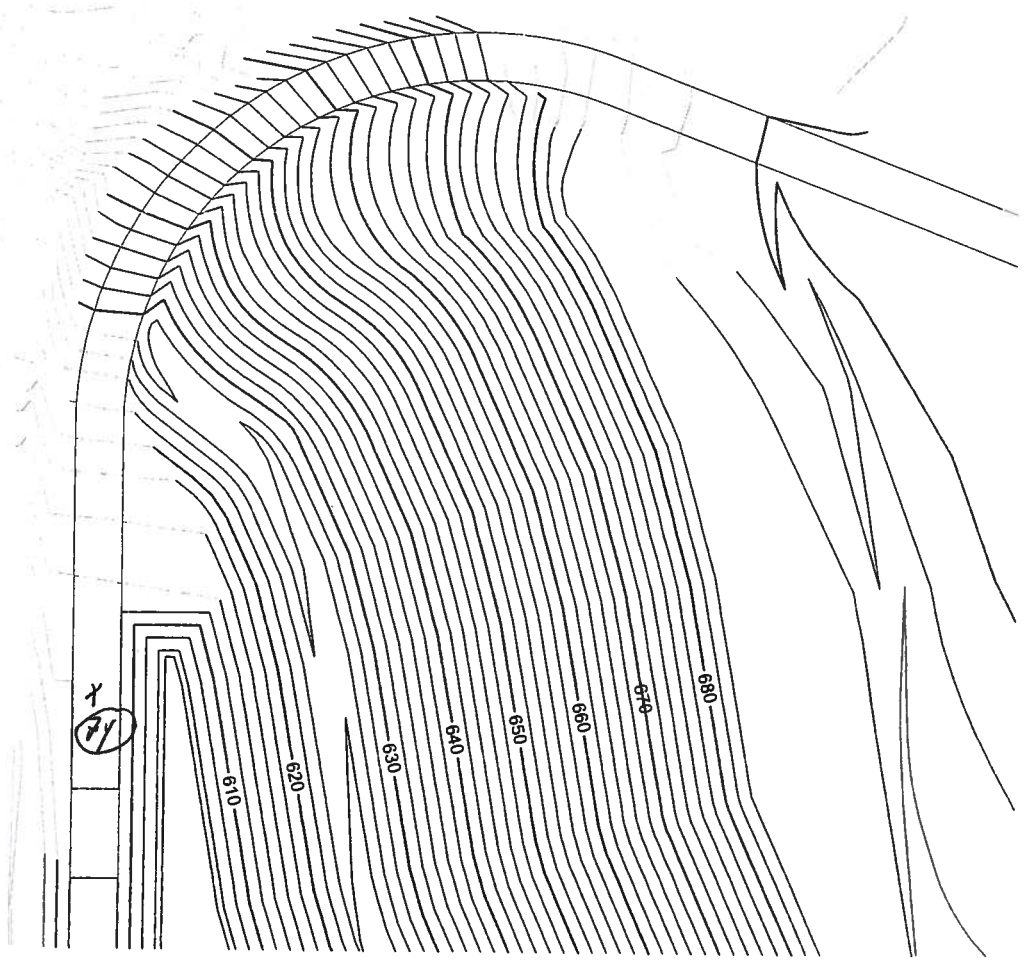
06/21/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	06/21/12 (Thursday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

06/21/12 — Date

Field Compaction Test Data

Brown AND Caldwell

Project Name:	Ford Rd. – Phase 2 Remedial Action	Gauge Model No.	Troxler 3440
Project Number:	142889	Gauge Serial No.	24585
Tested By:	J. McGowan	Standard Moisture Content 609	% Change -1.0
Date:	6/22/18	Standard Density Count 2125	% Change 0.6

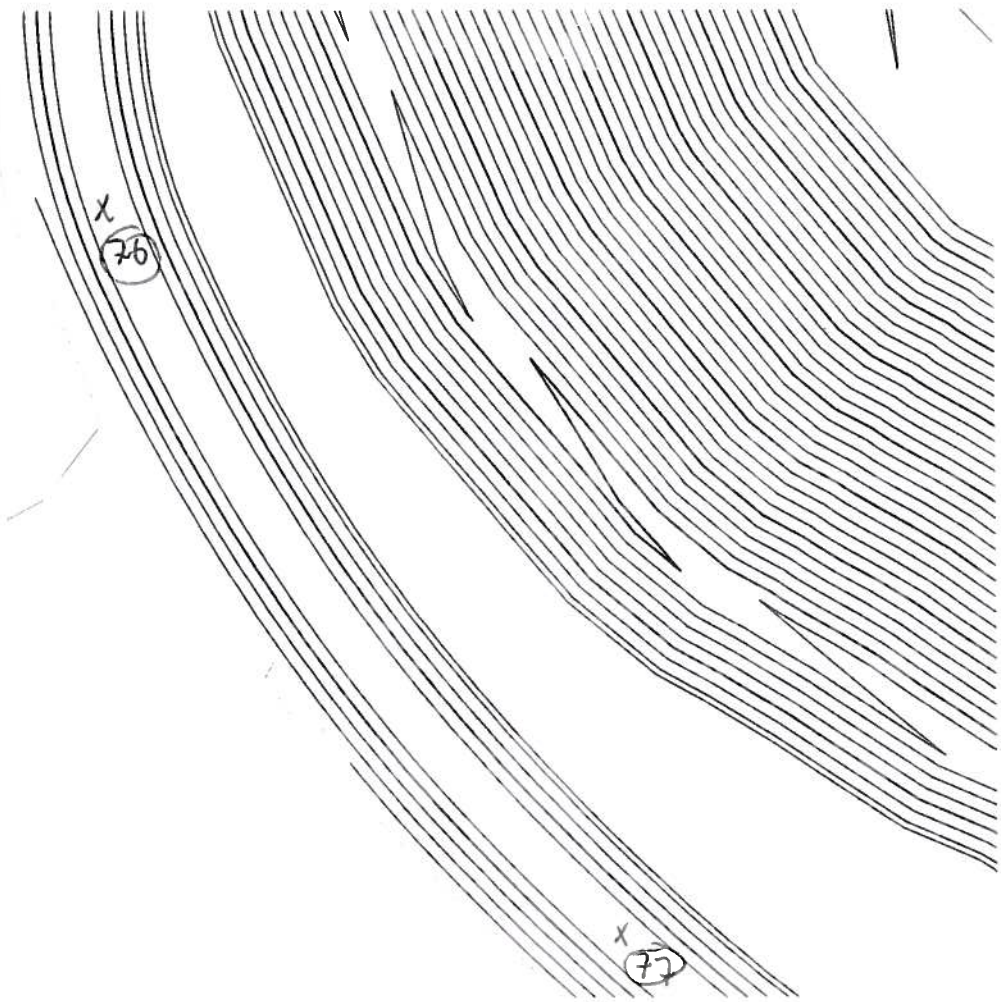
Test Information										
Test Number	76	77	78							
Lift Number	6	7	7							
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6							
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	130.8	130.7	133.2							
Dry Density (pcf)	116.0	115.3	117.0							
Moisture (pcf)	14.7	15.4	16.2							
Moisture (%)	12.7	13.4	13.8							
Laboratory Data										
Proctor Curve No.	SS-1	SS-1	SS-1							
Max Dry Density (pcf)	119.8	119.8	119.8							
Optimum Moisture (%)	13.4	13.4	13.4							
Results										
% Compaction	96.9	96.2	97.6							
Pass/Fail	Pass	Pass	Pass							
Retest Number/Date										
Comments										

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	06/22/12 (Friday
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Julie McGowan	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

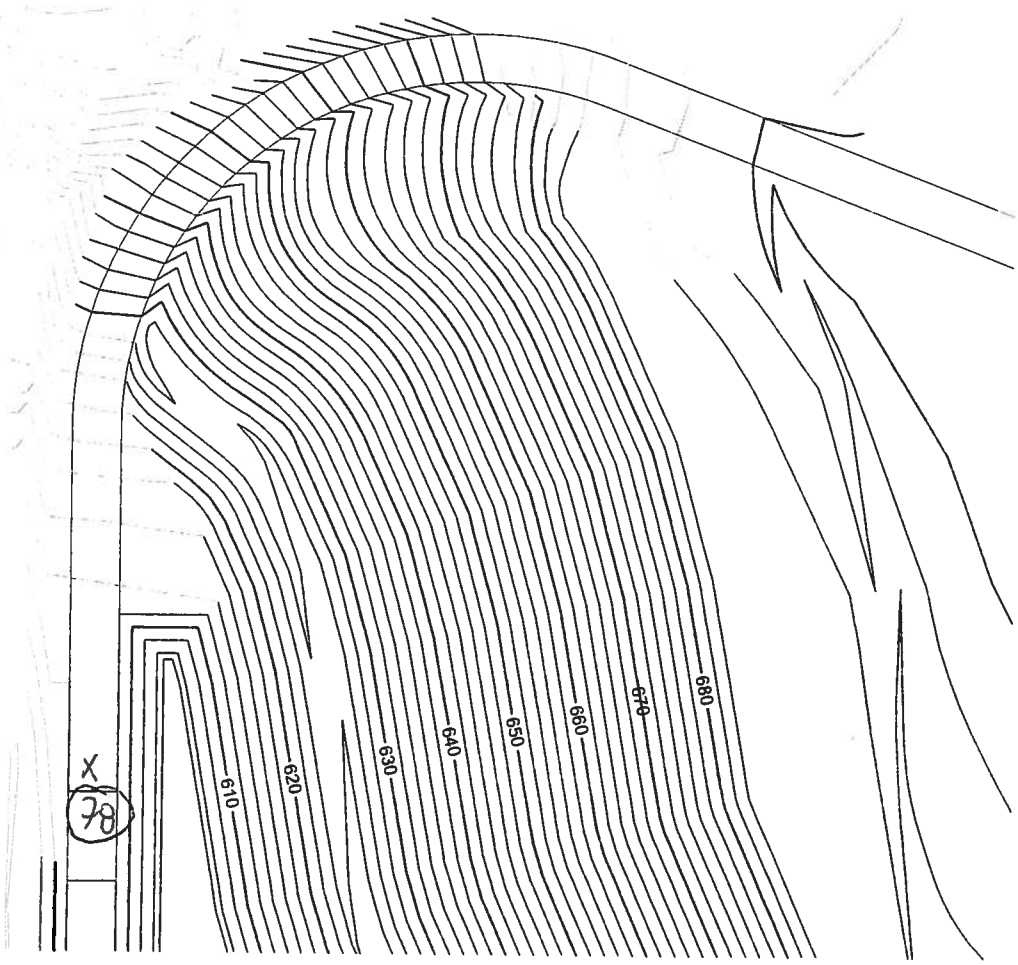
Signature of CQA Monitor: [signature] Date: 06/22/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	06/22/12 (Friday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Julie McBowen	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: Julie Morgan

Date: 06/22/12

81 & 82 STEEP SLOPE FILL -3 to +2

79 & 80 SED POND EMBANKMENT -3 to +3

Field Compaction Test Data

Brown AND Caldwell

Project Name:	Ford Rd. – Phase 2 Remedial Action	Gauge Model No.	Troxler 3440
Project Number:	142889	Gauge Serial No.	24585
Tested By:	Bill Foster	Standard Moisture Content	610 % Change -0.7
Date:	06/25/12 (Monday)	Standard Density Count	2129 % Change 0.6

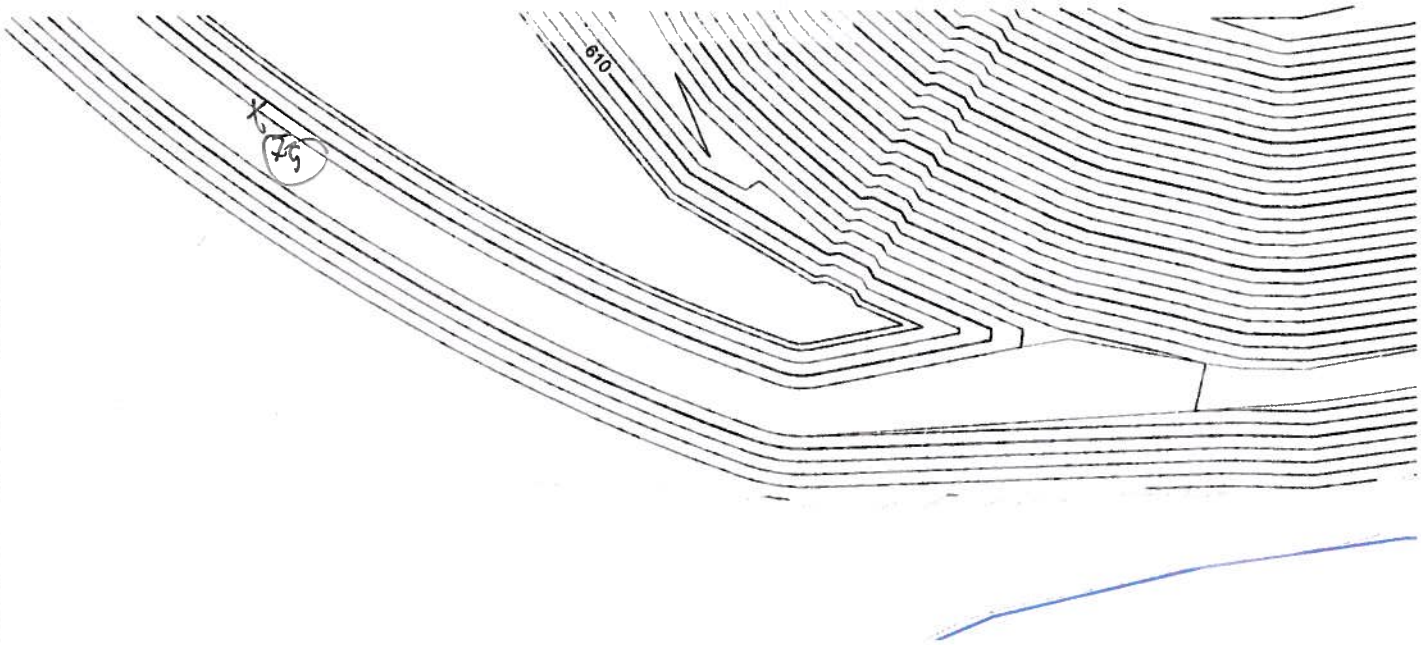
Test Information										
Test Number	79	80	81	82						
Lift Number	8	8	6	6						
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6						
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	133.0	134.1	135.2	133.3						
Dry Density (pcf)	119.0	117.6	120.1	121.0						
Moisture (pcf)	14.0	16.5	15.1	12.3						
Moisture (%)	11.8	14.0	12.6	10.2						
Laboratory Data										
Proctor Curve No.	SS-1	SS-1	SS-11	SS-11						
Max Dry Density (pcf)	119.8	119.8	120.7	120.7						
Optimum Moisture (%)	13.4	13.4	12.3	12.3						
Results										
% Compaction	99.3	98.2	99.5	100.3						
Pass/Fail	Pass	Pass	Pass	Pass						
Retest Number/Date										
Comments										

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	06/25/12 (monday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

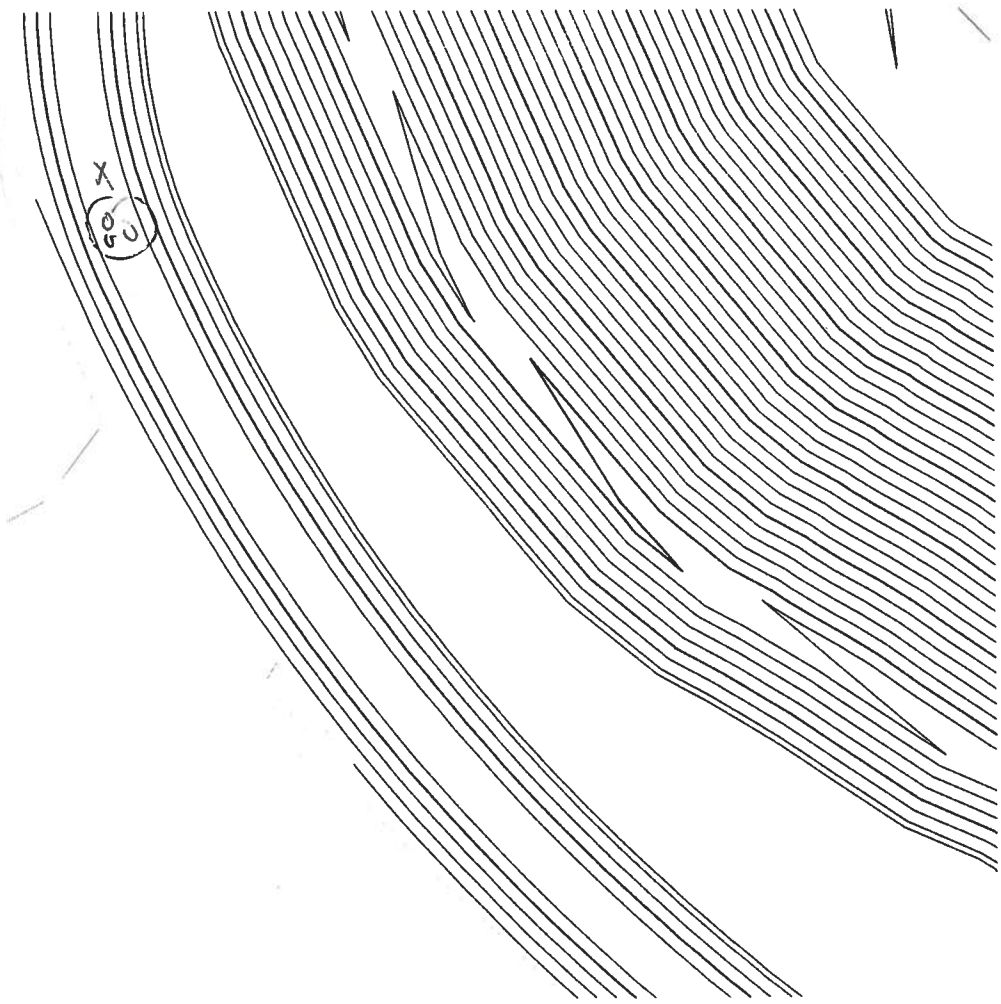
06/25/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	06/25/12 (Monday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

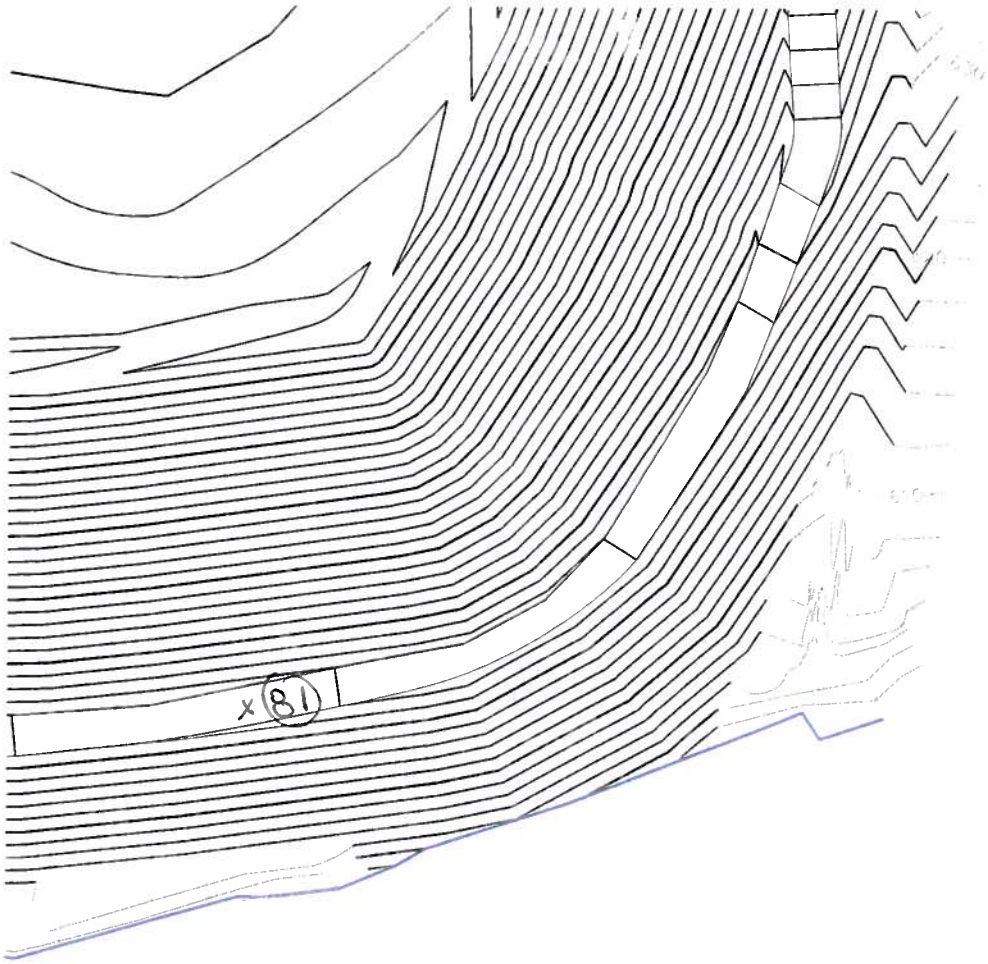
06/25/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	06/25/12 (Monday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

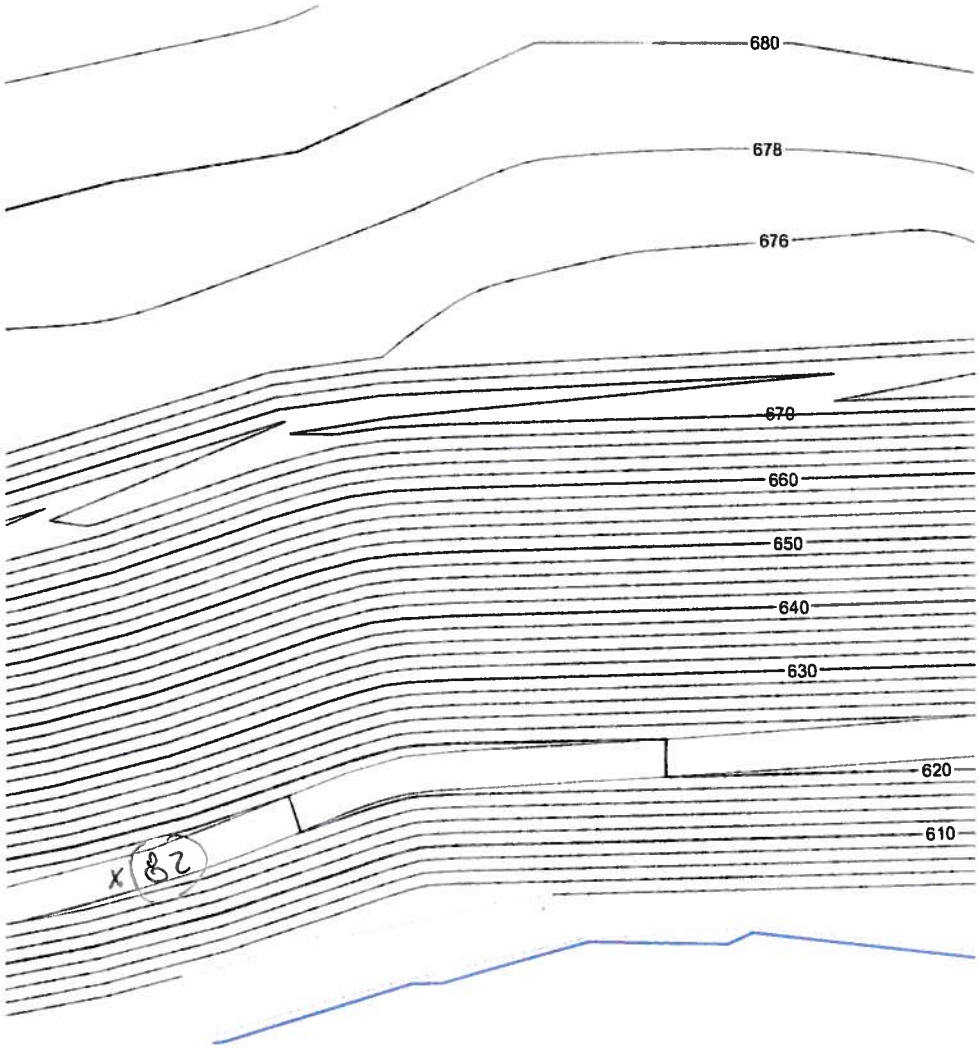
06/25/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	06/25/12 (Monday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

BN Foster — 06/25/12

Signature of CQA Monitor — **Date**

Field Compaction Test Data

Steep slope Fill (-3 → +2)

Brown AND Caldwell

Project Name:	Ford Rd. – Phase 2 Remedial Action	Gauge Model No.	Troxler 3440
Project Number:	142889	Gauge Serial No.	24585
Tested By:	Bill Foster	Standard Moisture Content	606 % Change -1.2
Date:	06/26/12 (Tuesday)	Standard Density Count	2131 % Change 0.6

Test Information										
Test Number	83	84	85	86						
Lift Number	6	6	2	3						
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6						
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	137.6	140.7	139.5	137.5						
Dry Density (pcf)	124.6	127.1	125.2	122.2						
Moisture (pcf)	13.0	13.6	14.3	15.3						
Moisture (%)	10.4	10.7	11.4	12.5						
Laboratory Data										
Proctor Curve No.	55-6	55-6	55-6	55-6						
Max Dry Density (pcf)	127.1	127.1	127.1	127.1						
Optimum Moisture (%)	10.5	10.5	10.5	10.5						
Results										
% Compaction	98.0	100.0	98.5	96.1						
Pass/Fail	Pass	Pass	Pass	Pass						
Retest Number/Date										

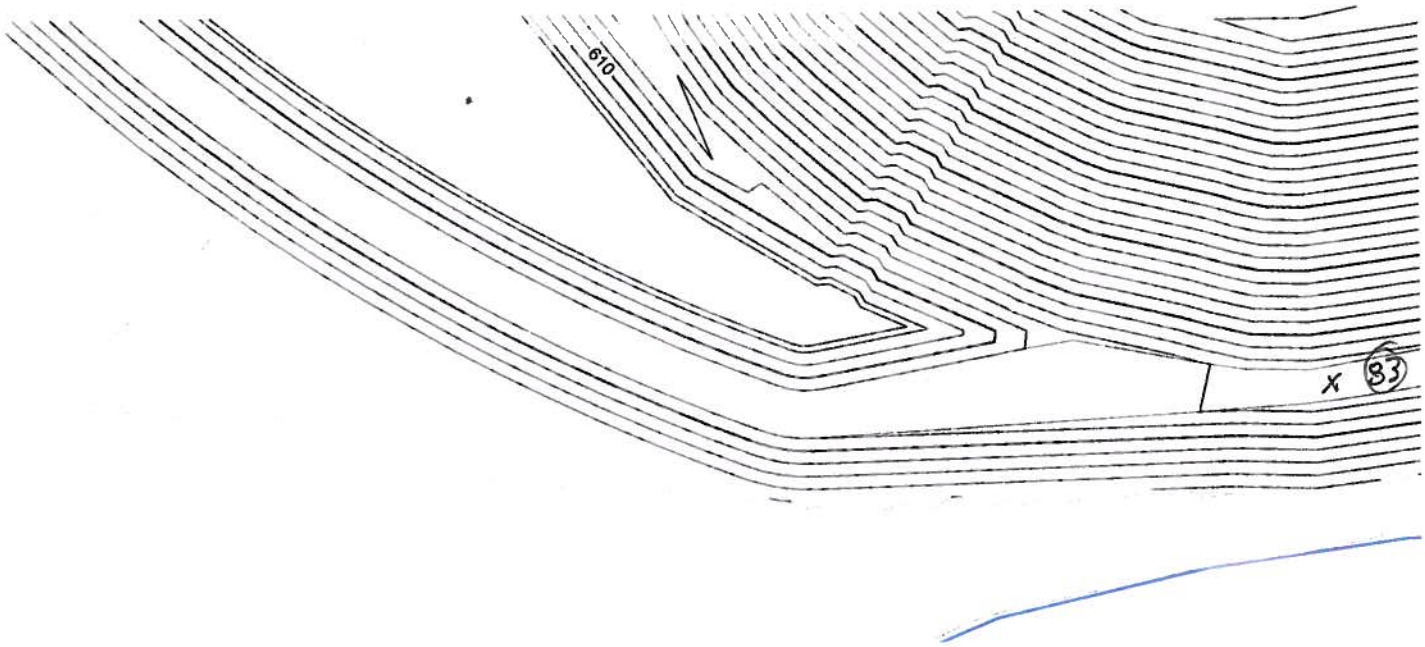
Comments

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	06/26/12 (Tuesday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

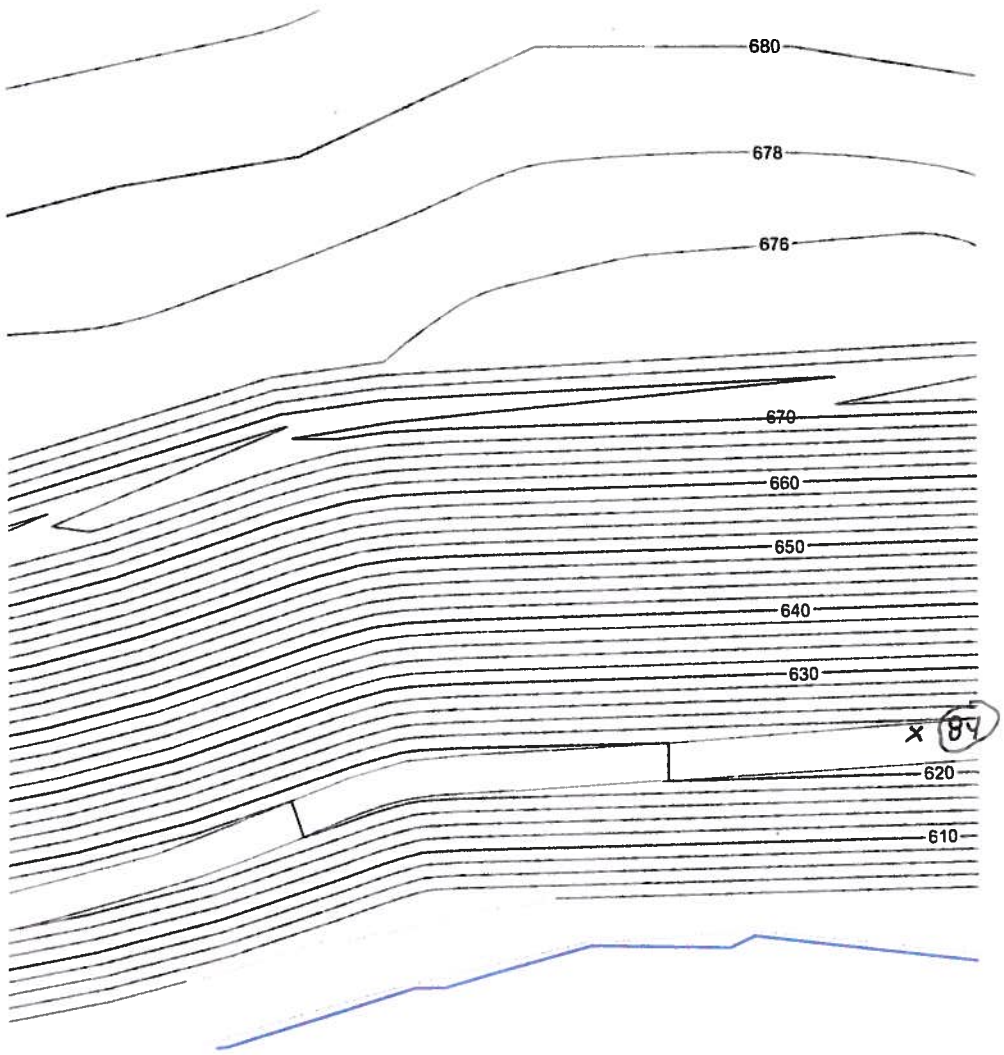
06/26/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	06/26/12 (Tuesday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

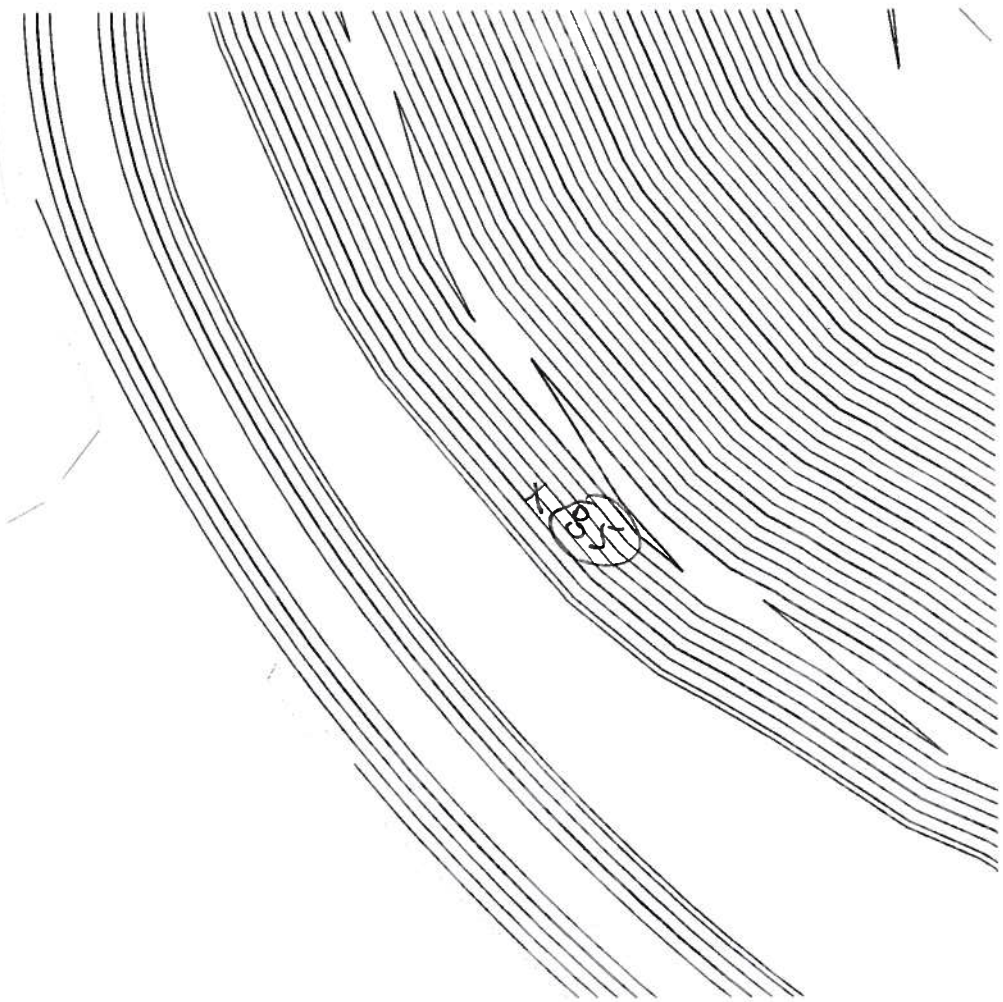
06/26/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	06/26/12 (Tuesday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill [signature] — Signature of CQA Monitor

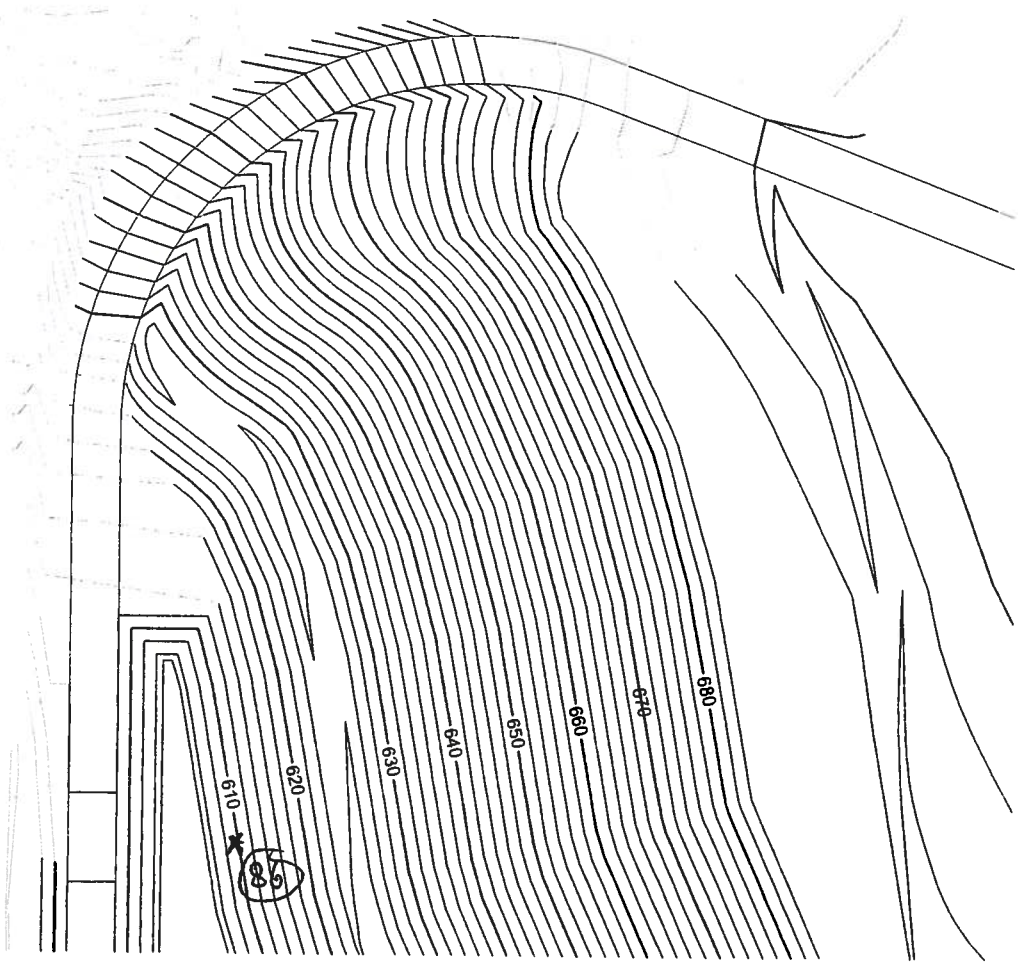
06/26/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	06/26/12 (Tuesday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

06/26/12 — Date

Brown AND Caldwell

Field Compaction Test Data

Project Name:	Ford Rd. – Phase 2 Remedial Action	Gauge Model No.	Troxler 3440
Project Number:	142889	Gauge Serial No.	24585
Tested By:	Bill Foster	Standard Moisture Content	605 % Change -0.9
Date:	06/27/12 (Wed)	Standard Density Count	2123 % Change -0.1

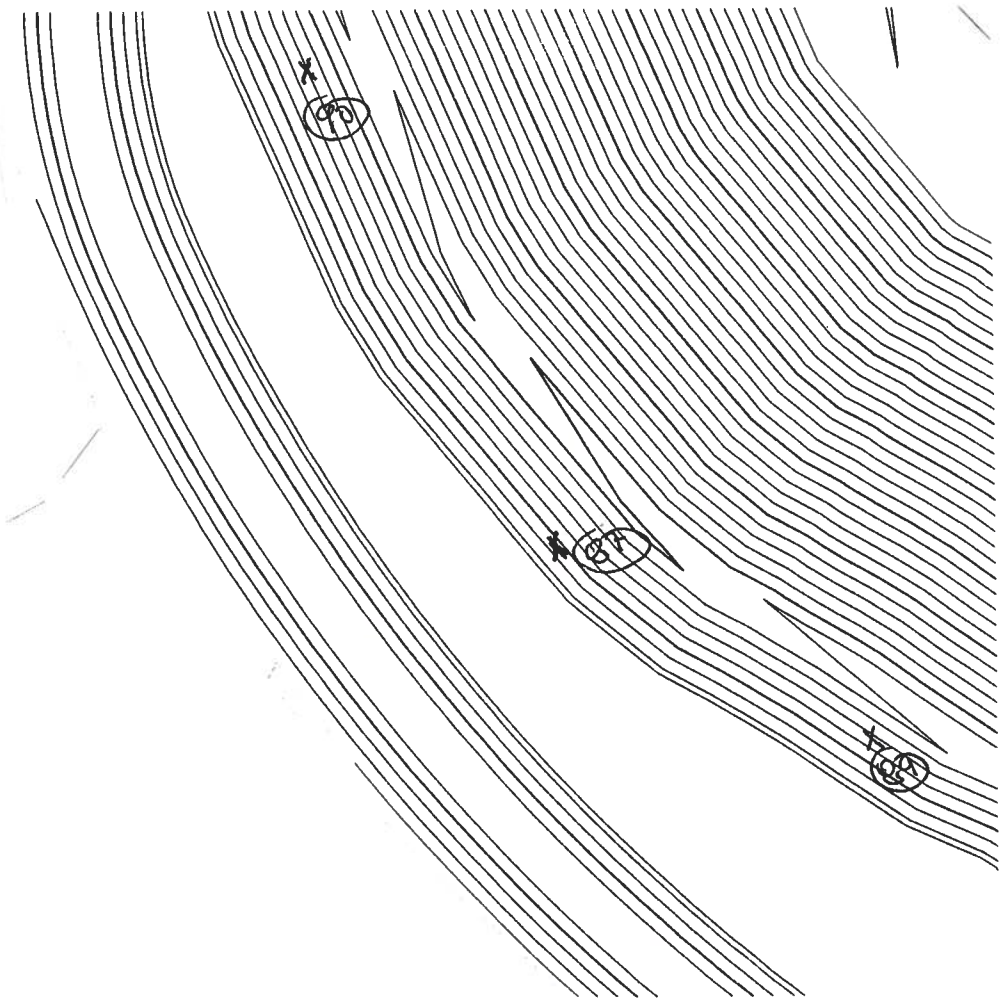
Test Information										
Test Number	87	88	89	90	91	92				
Lift Number	4	5	6	7	7	7				
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6						
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	136.7	136.4	137.1	137.5	135.4	135.5				
Dry Density (pcf)	121.8	122.5	122.0	124.1	121.5	121.0				
Moisture (pcf)	14.9	13.9	15.1	13.4	13.9	14.5				
Moisture (%)	12.2	11.4	12.4	10.8	11.4	12.0				
Laboratory Data										
Proctor Curve No.	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6				
Max Dry Density (pcf)	127.1	127.1	127.1	127.1	127.1	127.1				
Optimum Moisture (%)	10.5	10.5	10.5	10.5	10.5	10.5				
Results										
% Compaction	95.8	96.4	96.0	97.6	95.6	95.2				
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass				
Retest Number/Date										
Comments										

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	06/27/12 (Wed)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

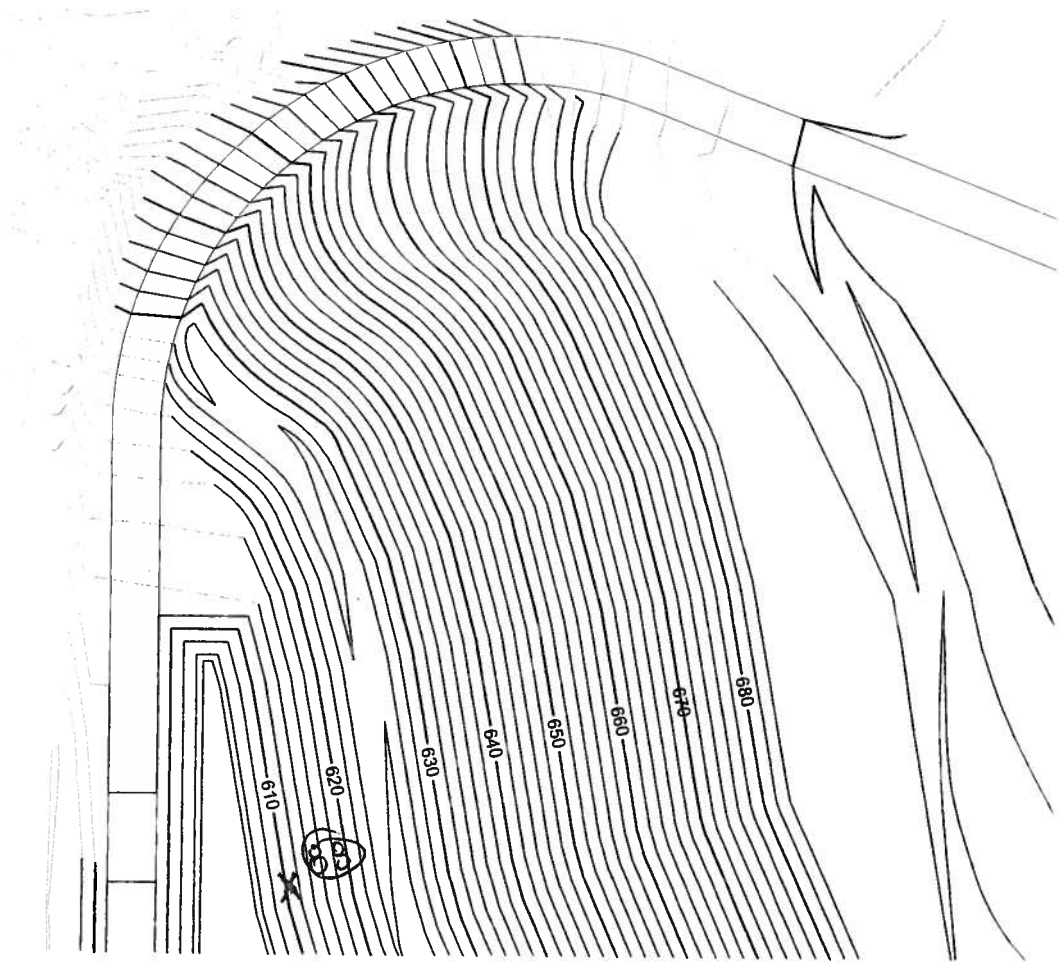
06/27/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	06/27/12 (Wed)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

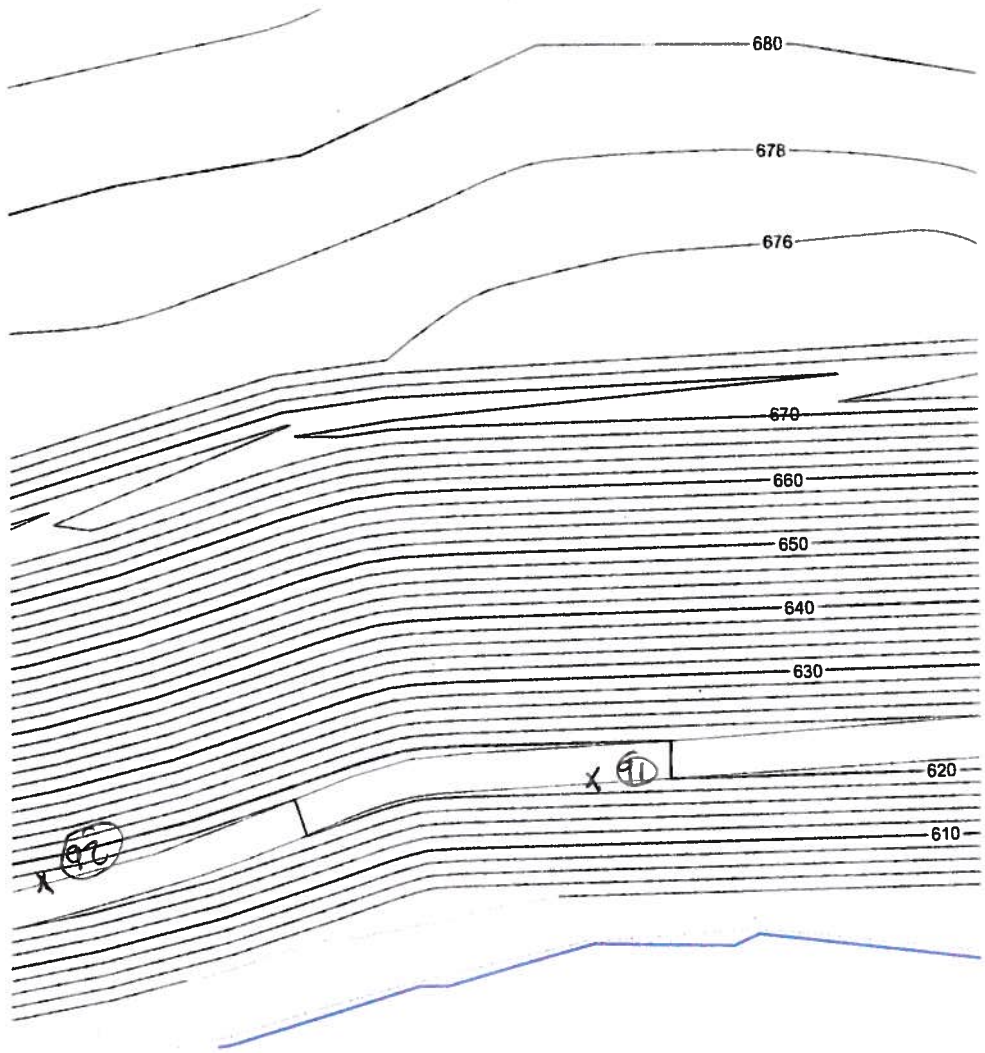
06/27/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	06/27/12 (Wed)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — **Signature of CQA Monitor**

06/27/12 — **Date**

Brown AND Caldwell

Field Compaction Test Data

Project Name: Ford Rd. - Phase 2 Remedial Action
Project Number: 142889
Tested By: Bill Foster
Date: 06/28/12 (Thursday)

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 6.06 % Change -0.12
Standard Density Count 2131 % Change 0.2

Test Information										
Test Number	93	94	95	96	97	98				
Lift Number	8	8	8	8	8	8				
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6	6				
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	136.4	134.6	135.9	142.3	137.6	136.8				
Dry Density (pcf)	119.5	122.2	123.2	129.5	125.1	124.0				
Moisture (pcf)	16.9	12.4	12.7	12.9	12.5	12.8				
Moisture (%)	14.1	10.1	10.3	9.9	10.0	10.3				
Laboratory Data										
Proctor Curve No.	55-6	55-6	55-6	55-6	55-6	55-6				
Max Dry Density (pcf)	127.1	127.1	127.1	127.1	127.1	127.1				
Optimum Moisture (%)	10.5	10.5	10.5	10.5	10.5	10.5				
Results										
% Compaction	94.0	96.2	96.9	101.9	98.4	97.6				
Pass/Fail	Fail	Pass	Pass	Pass	Pass	Pass				
Retest Number/Date	94/06/28/12									

Comments

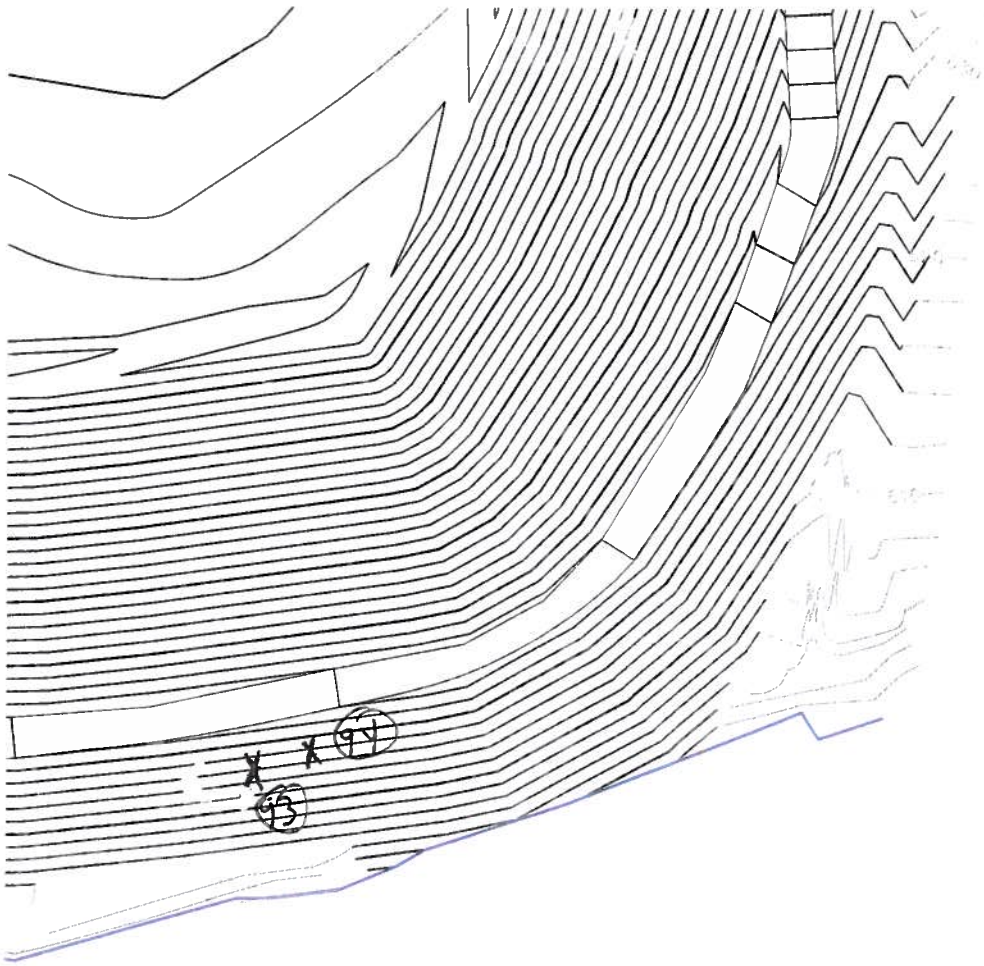
Page ___ of ___

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	06/28/12 (Thursday
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

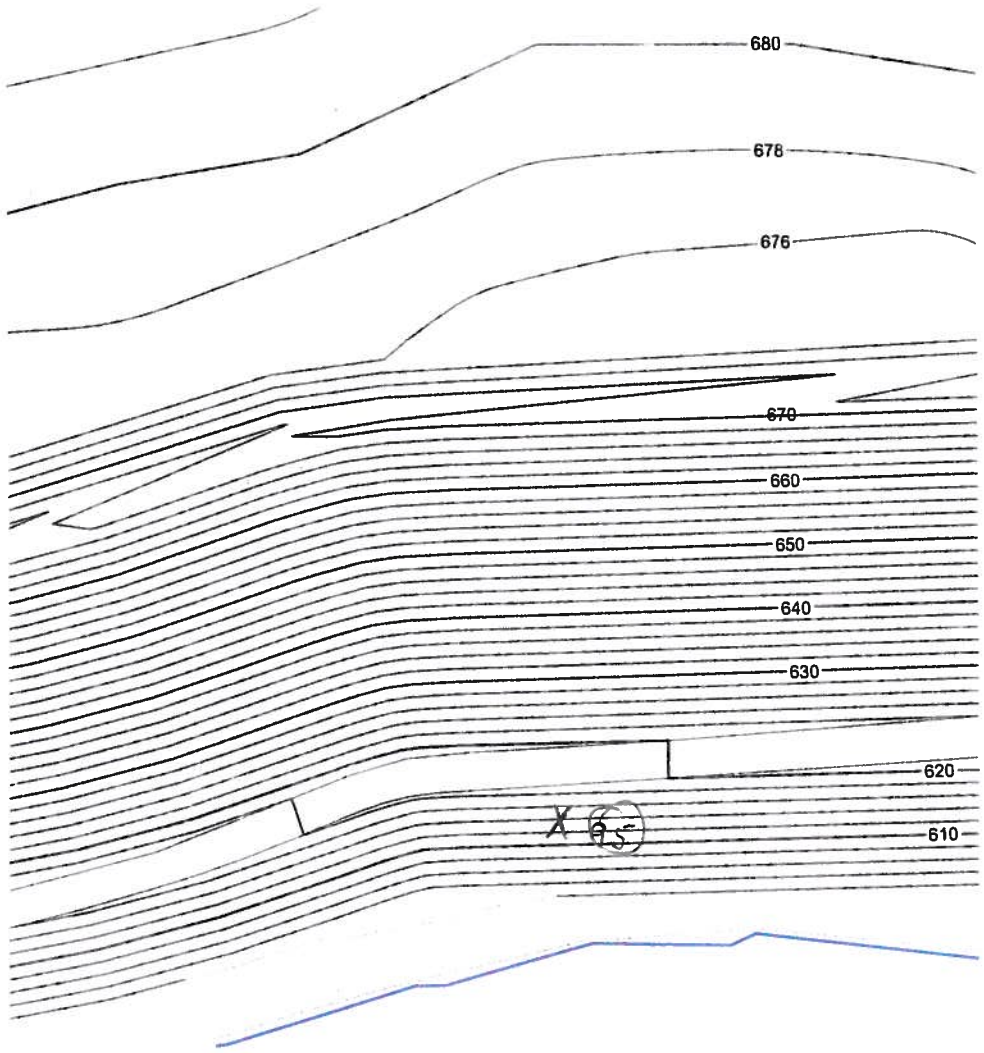
06/28/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	06/28/12 (Thursday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — **Signature of CQA Monitor**

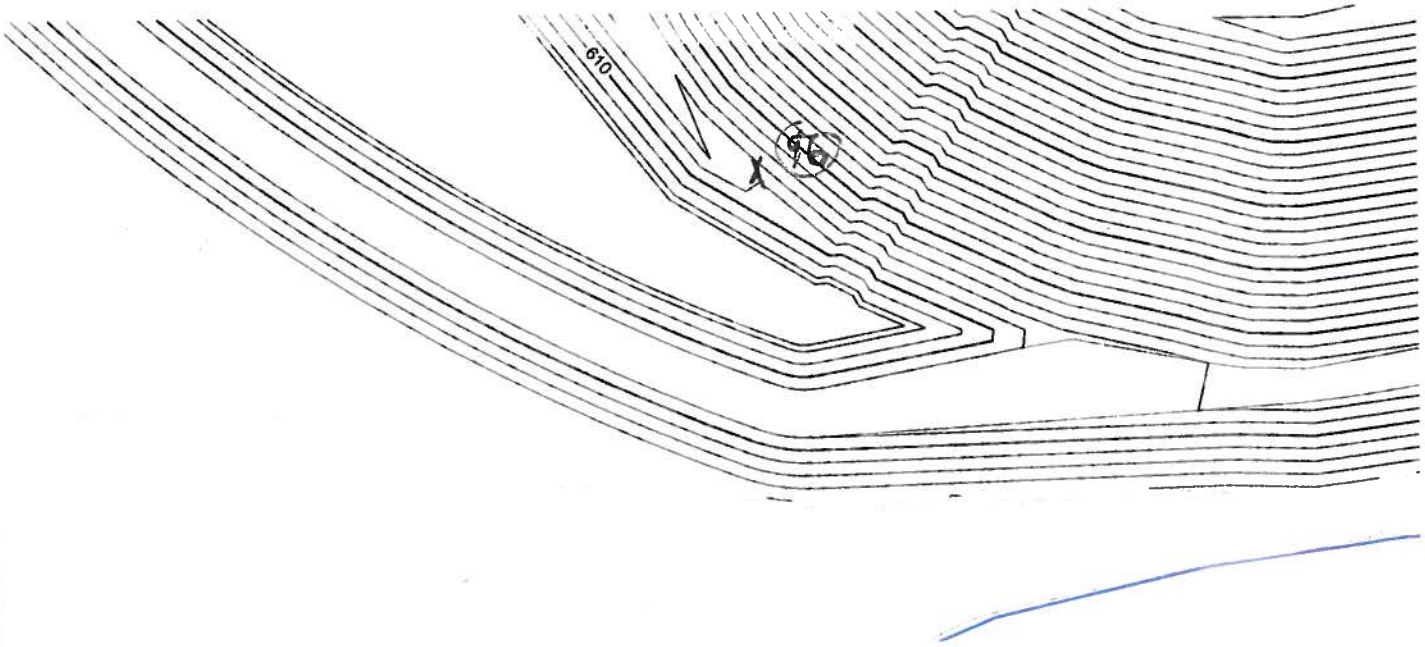
06/28/12 — **Date**

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	06/28/12 (Thursday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — **Signature of CQA Monitor**

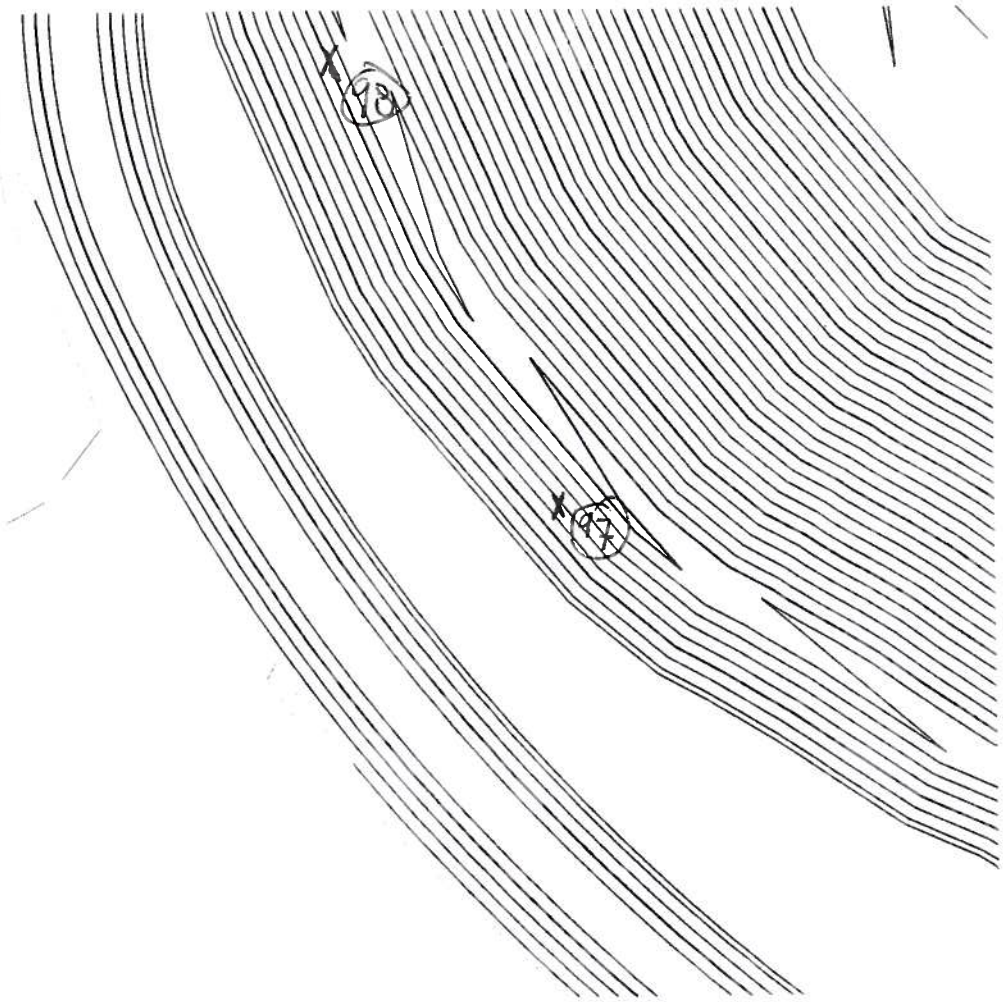
06/28/12 — **Date**

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	06/28/12 (Thursday
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

BW [illegible] — Signature of CQA Monitor

06/28/12 — Date

Brown AND Caldwell

Field Compaction Test Data

Project Name: Ford Rd. – Phase 2 Remedial Action
Project Number: 142889
Tested By: Bill Foster
Date: 06/29/12 (Friday)

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 609 % Change 0.4
Standard Density Count 6128 % Change 0.0

Test Information										
Test Number	99	100	101	102	103					
Lift Number	9	9	9	9	9					
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6					
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	138.9	136.9	137.8	135.0	137.8					
Dry Density (pcf)	125.9	122.2	126.2	122.7	122.8					
Moisture (pcf)	13.0	14.6	11.5	12.3	15.0					
Moisture (%)	10.3	12.0	9.1	10.0	12.2					
Laboratory Data										
Proctor Curve No.	SS-6	SS-6	SS-6	SS-6	SS-6					
Max Dry Density (pcf)	127.1	127.1	127.1	127.1	127.1					
Optimum Moisture (%)	10.5	10.5	10.5	10.5	10.5					
Results										
% Compaction	99.0	96.2	99.3	96.6	96.6					
Pass/Fail	Pass	Pass	Pass	Pass	Pass					
Retest Number/Date										

Comments

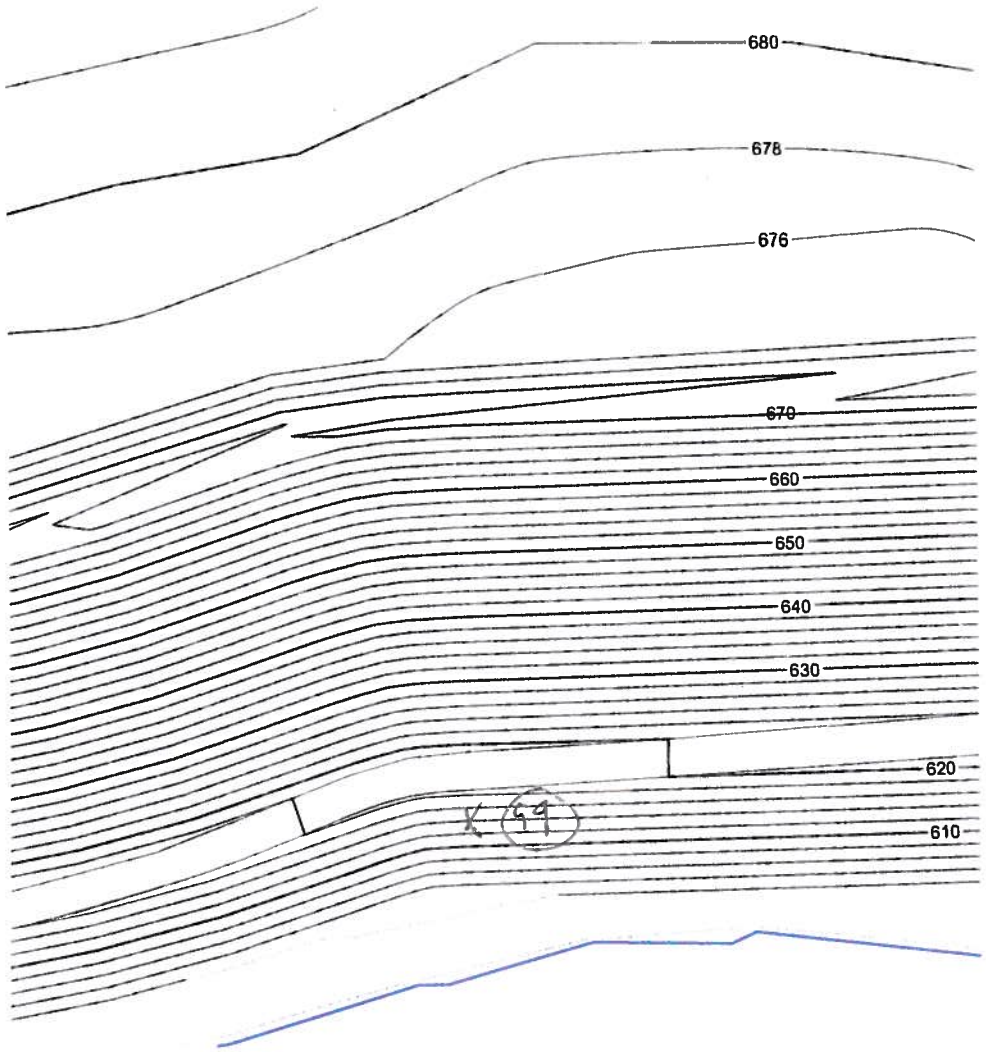
Page ___ of ___

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	06/29/12 (Friday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

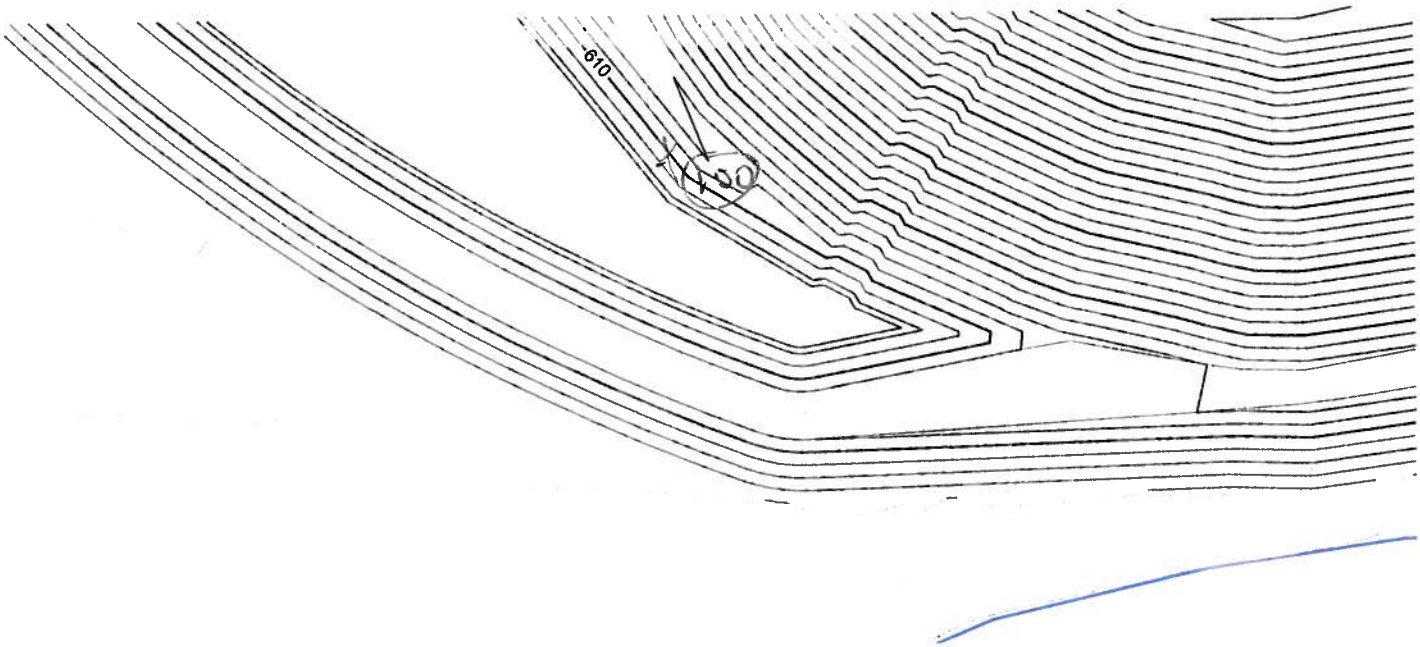
06/29/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	06/29/12 (Friday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

BN Foster — **Signature of CQA Monitor**

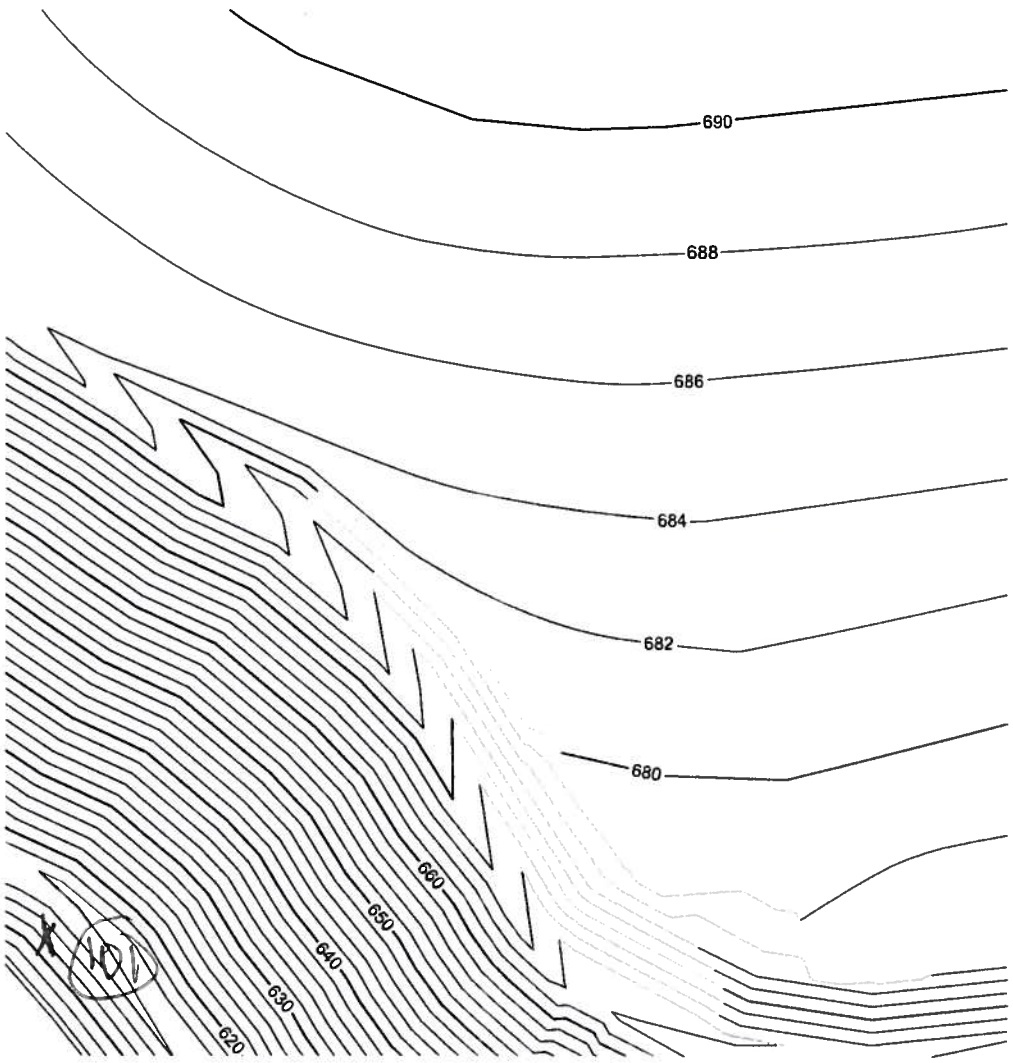
06/29/12 — **Date**

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	**Date:**	06/29/12 (Friday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — **Signature of CQA Monitor**

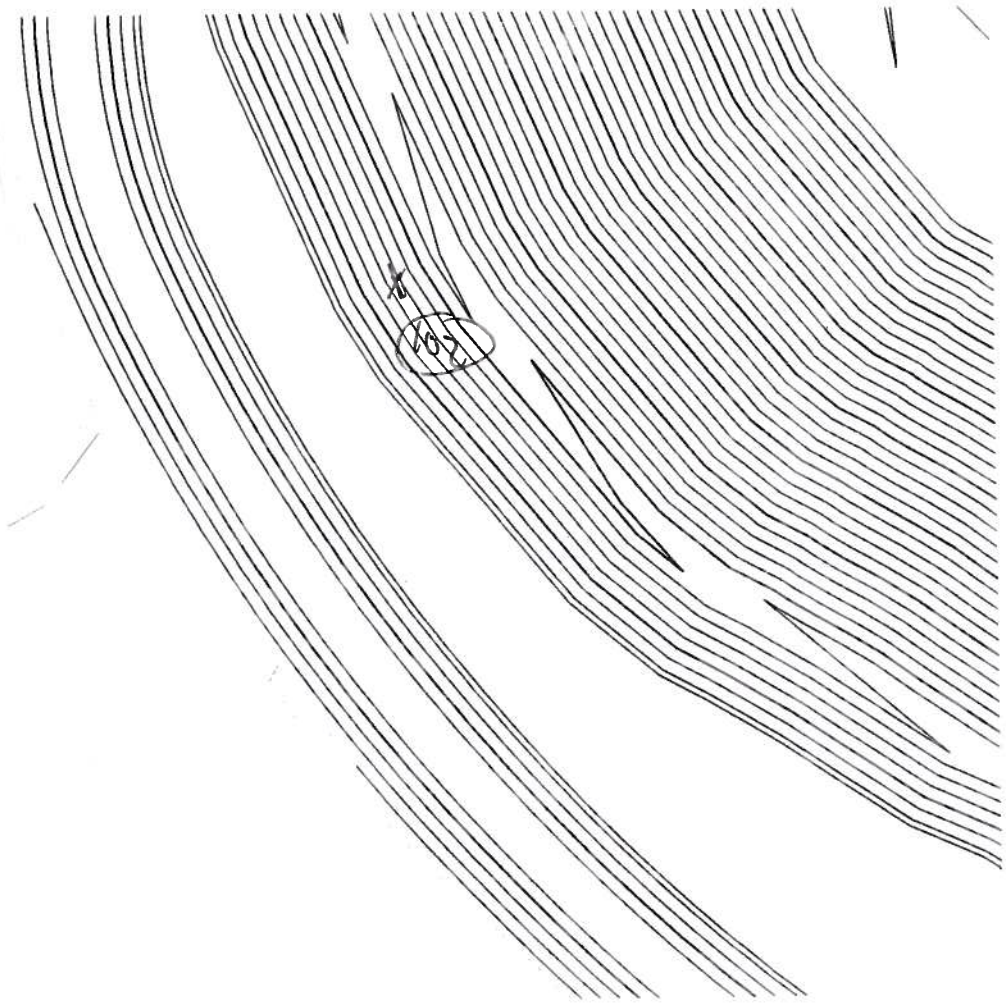
06/29/12 — **Date**

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	06/28/12 (Friday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

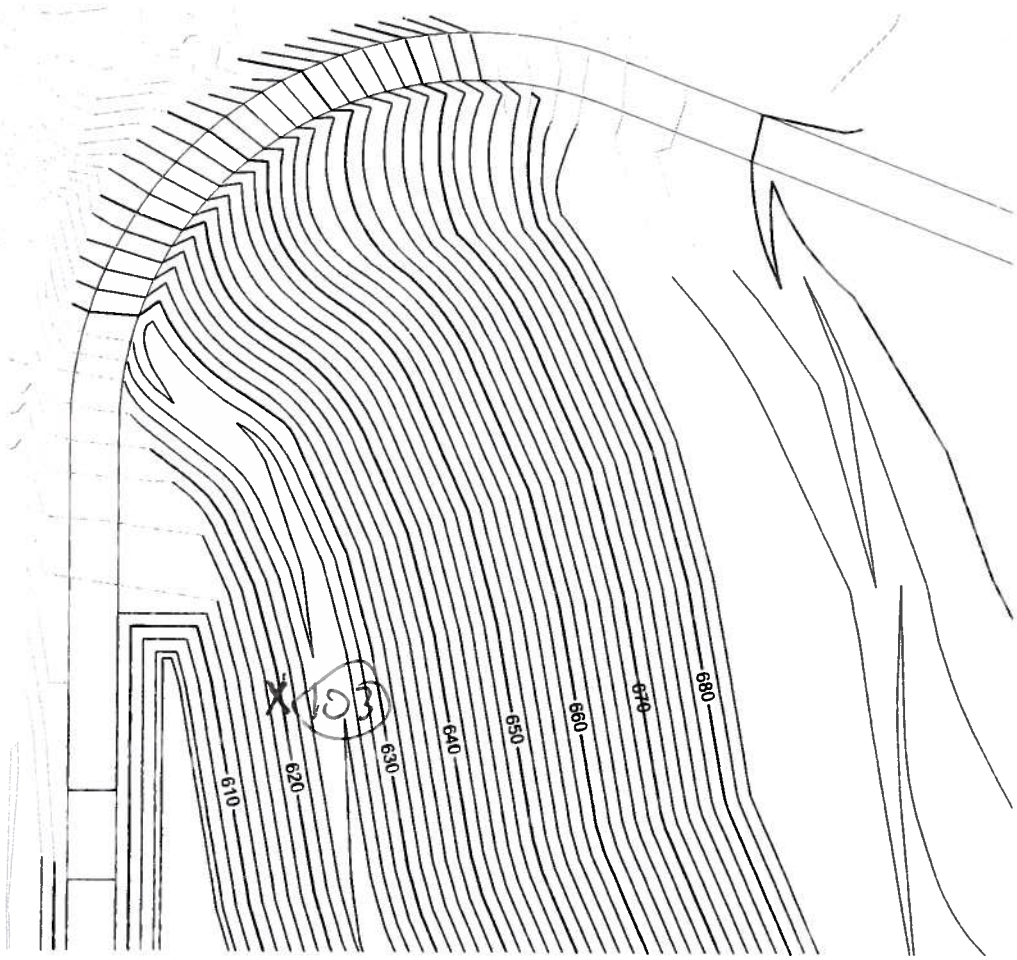
06/28/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	06/28/12 (Friday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

BN Foster — Signature of CQA Monitor

06/29/12 — Date

Aaron Cline 140-326-1435 -3 → +2

Brown AND Caldwell

Field Compaction Test Data

Project Name: Ford Rd. – Phase 2 Remedial Action
Project Number: 142889
Tested By: Bill Foster
Date: 07/02/12 (Monday)

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 604 % Change -0.4
Standard Density Count 2110 % Change -0.9

Test Information										
Test Number	104	105	106	107						
Lift Number	10	10	10	10						
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6						
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	130.7	131.0	131.0	132.1						
Dry Density (pcf)	116.7	115.4	117.8	119.4						
Moisture (pcf)	14.0	15.6	13.2	12.7						
Moisture (%)	12.0	13.5	11.2	10.6						
Laboratory Data										
Proctor Curve No.	SS-8	SS-8	SS-8	SS-8						
Max Dry Density (pcf)	119.9	119.9	119.9	119.9						
Optimum Moisture (%)	12.9	12.9	12.9	12.9						
Results										
% Compaction	97.3	96.3	98.3	99.6						
Pass/Fail	Pass	Pass	Pass	Pass						
Retest Number/Date										

Comments

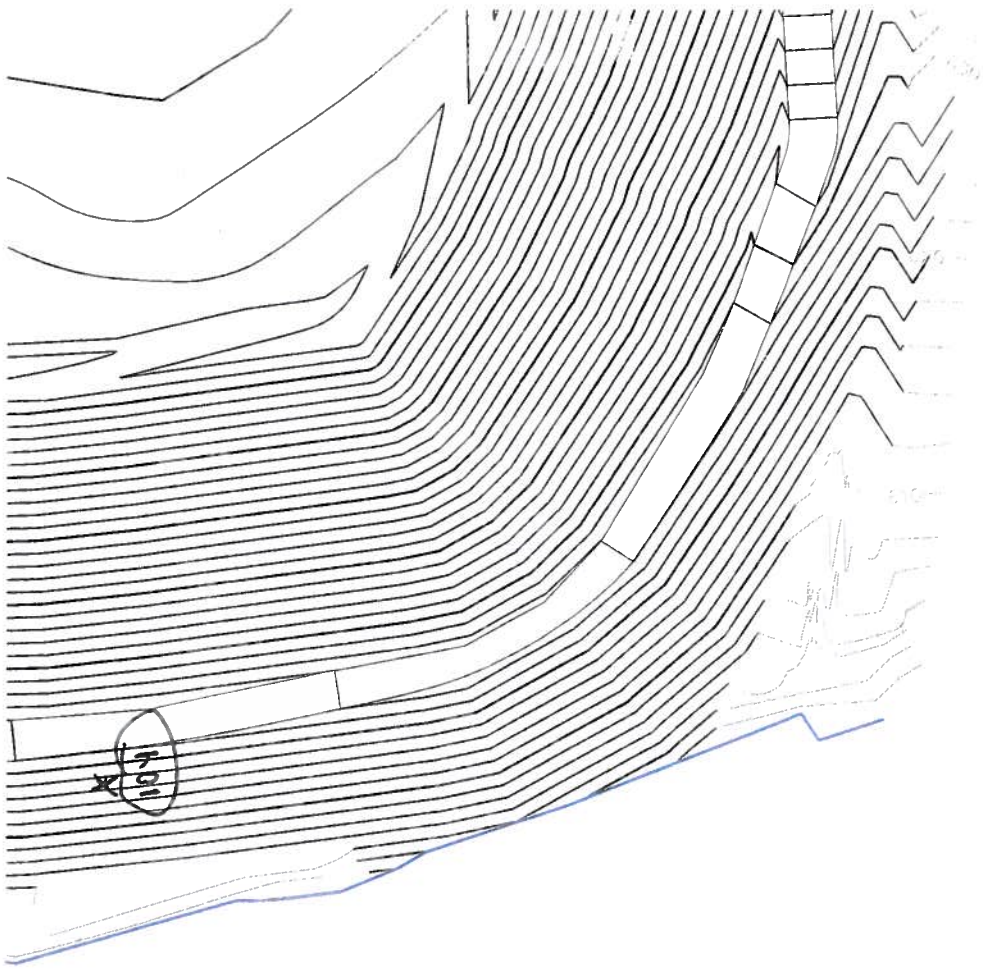
Page ___ of ___

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	07/02/12 (Monday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: [signature]

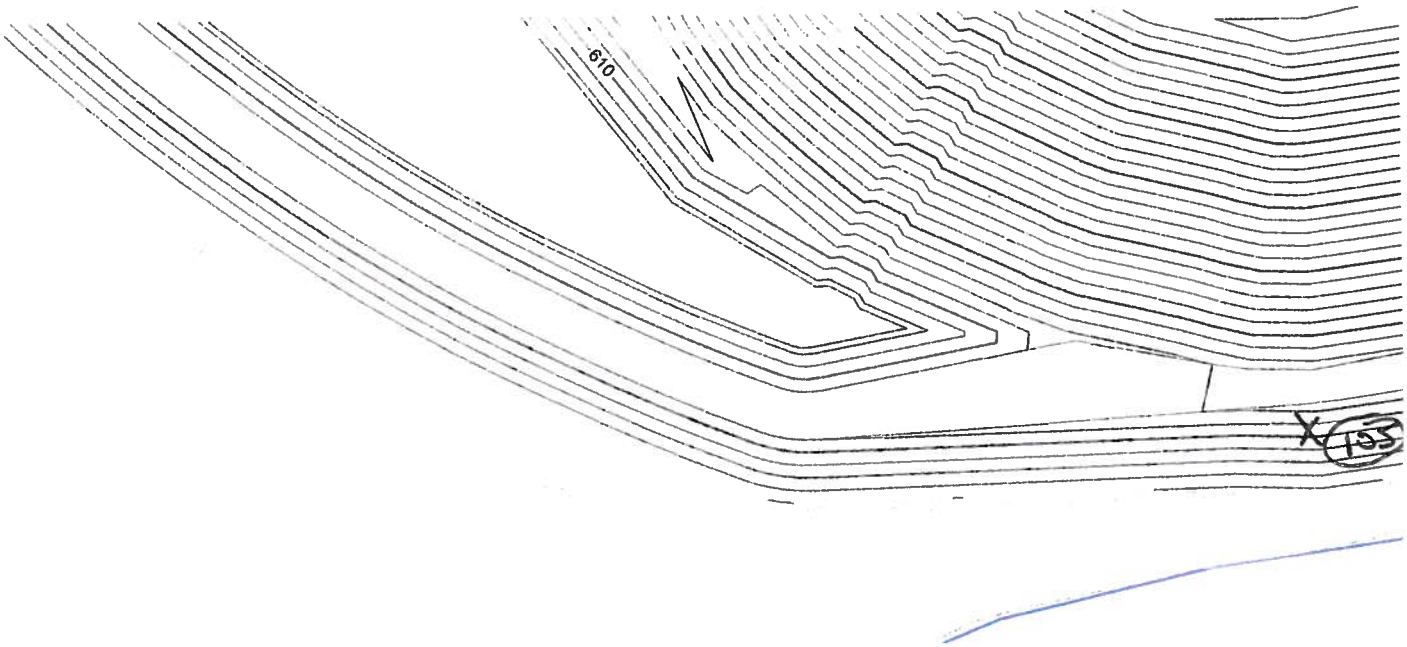
Date: 07/02/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	07/02/12 (Monday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: [signature]

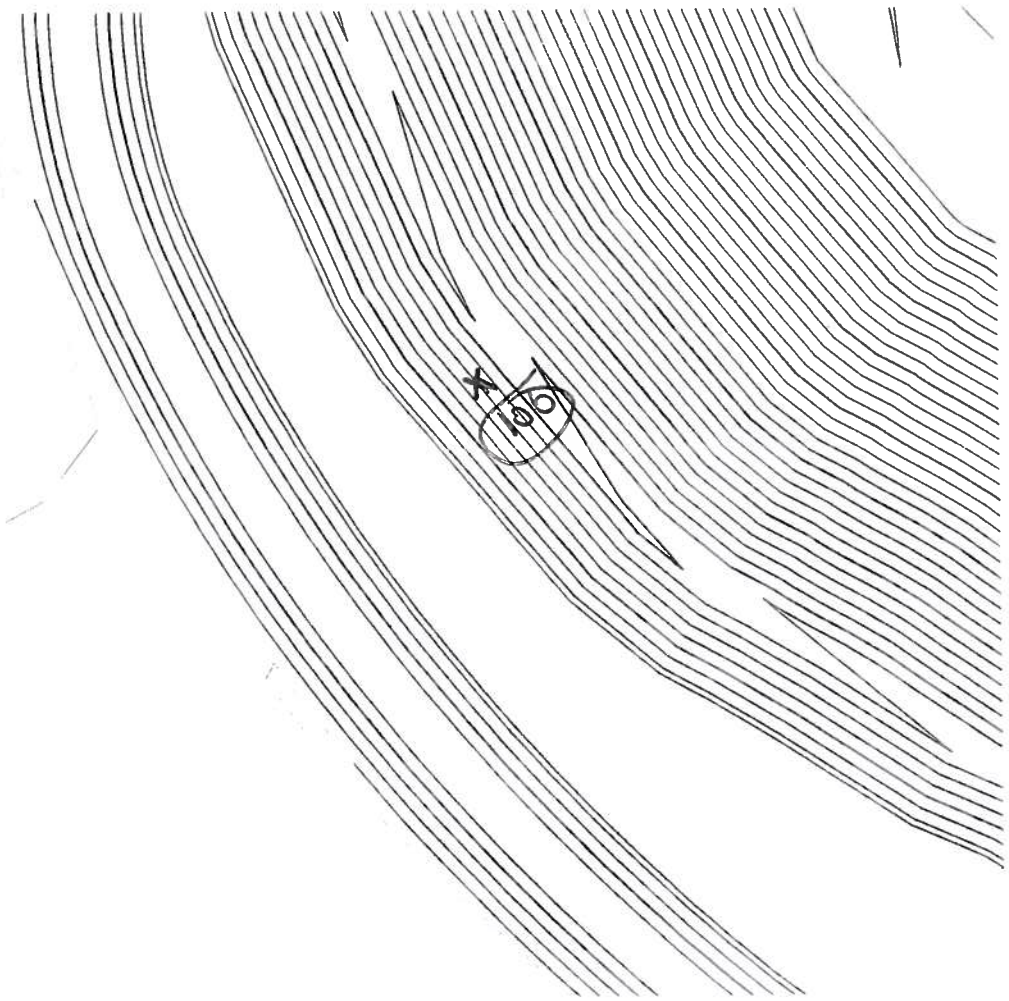
Date: 07/02/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	07/02/12 (Monday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill [illegible] — Signature of CQA Monitor

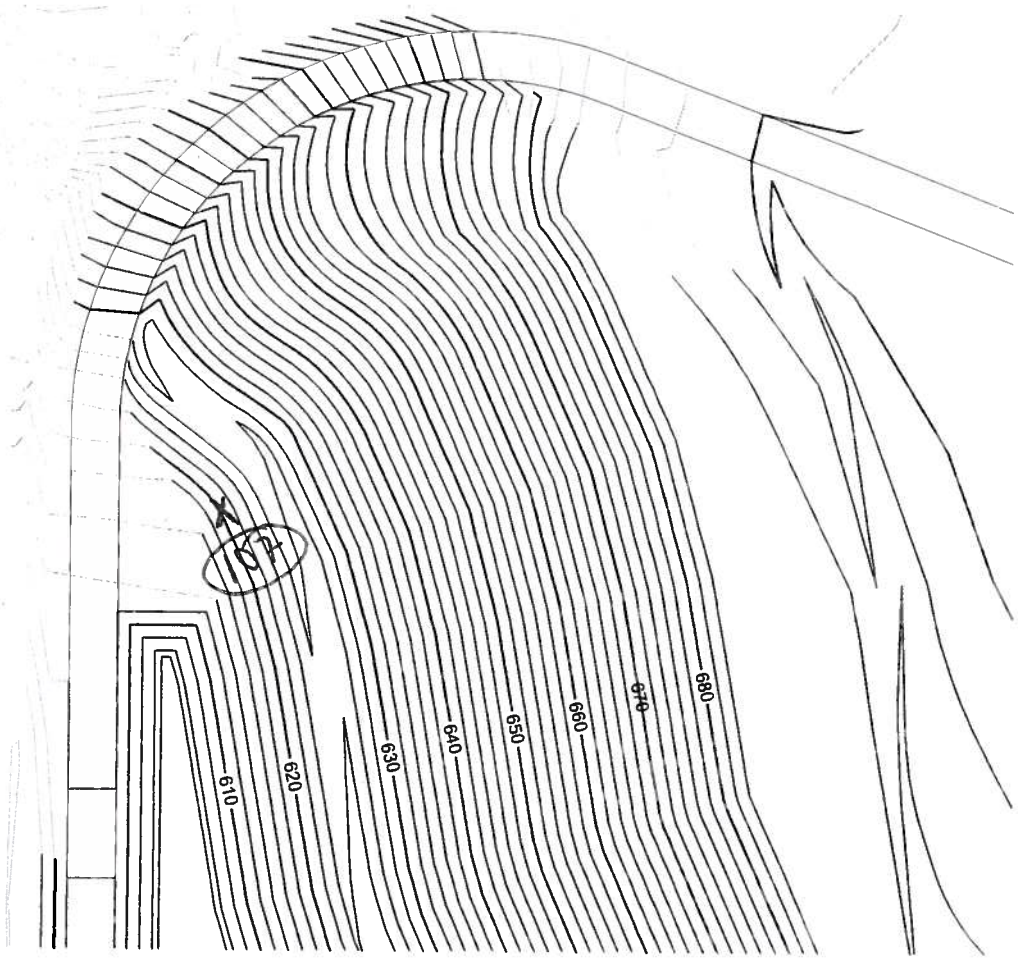
07/02/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	07/02/12 (Monday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: BW

Date: 07/02/12

Brown AND Caldwell

Field Compaction Test Data

Project Name: Ford Rd. - Phase 2 Remedial Action
Project Number: 142889
Tested By: Bill Foster
Date: 07/03/12 (Tuesday)

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 609 % Change 0.5
Standard Density Count 2124 % Change 0.0

Test Information										
Test Number	108	109								
Lift Number	11	11								
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6								
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	137.9	133.0								
Dry Density (pcf)	127.7	118.4								
Moisture (pcf)	14.2	14.6								
Moisture (%)	11.4	12.4								
Laboratory Data										
Proctor Curve No.	55-8	55-8								
Max Dry Density (pcf)	119.9	119.9								
Optimum Moisture (%)	12.9	12.9								
Results										
% Compaction	103.2	98.7								
Pass/Fail	Pass	Pass								
Retest Number/Date										

Comments

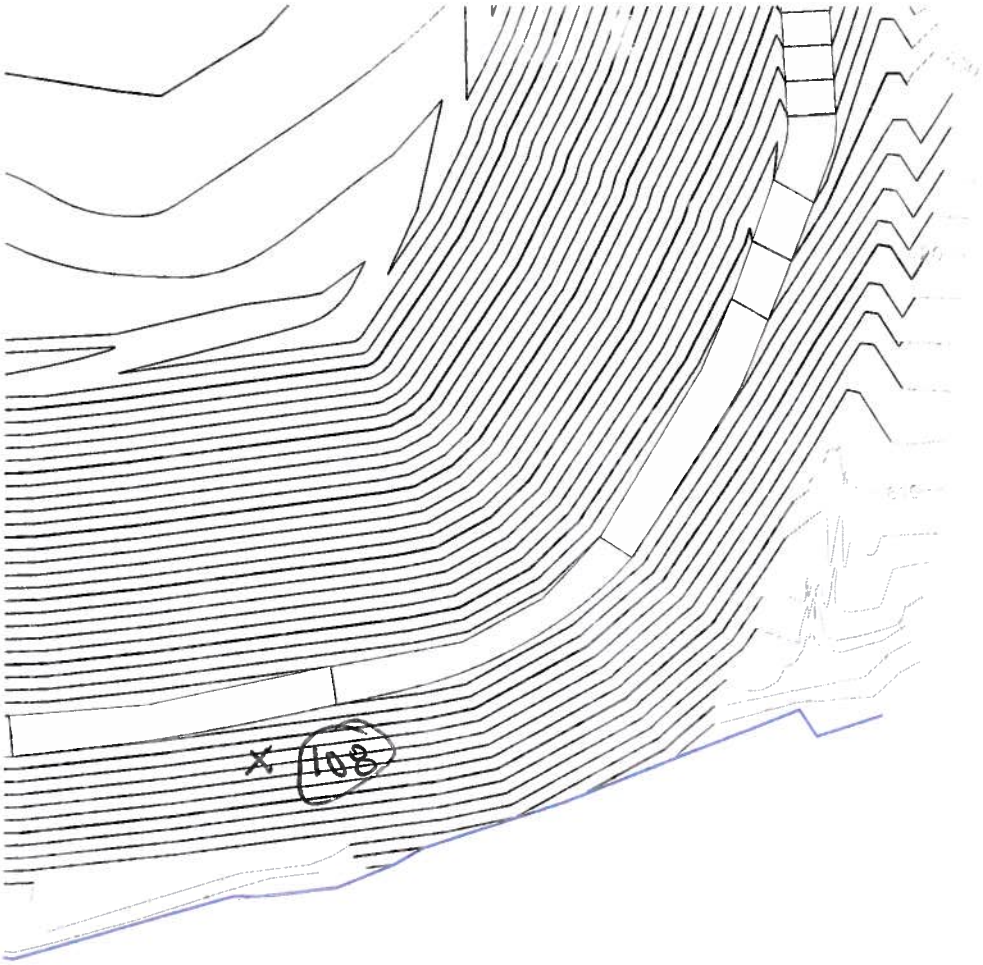
Page ___ of ___

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	07/03/12 (Tuesday
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

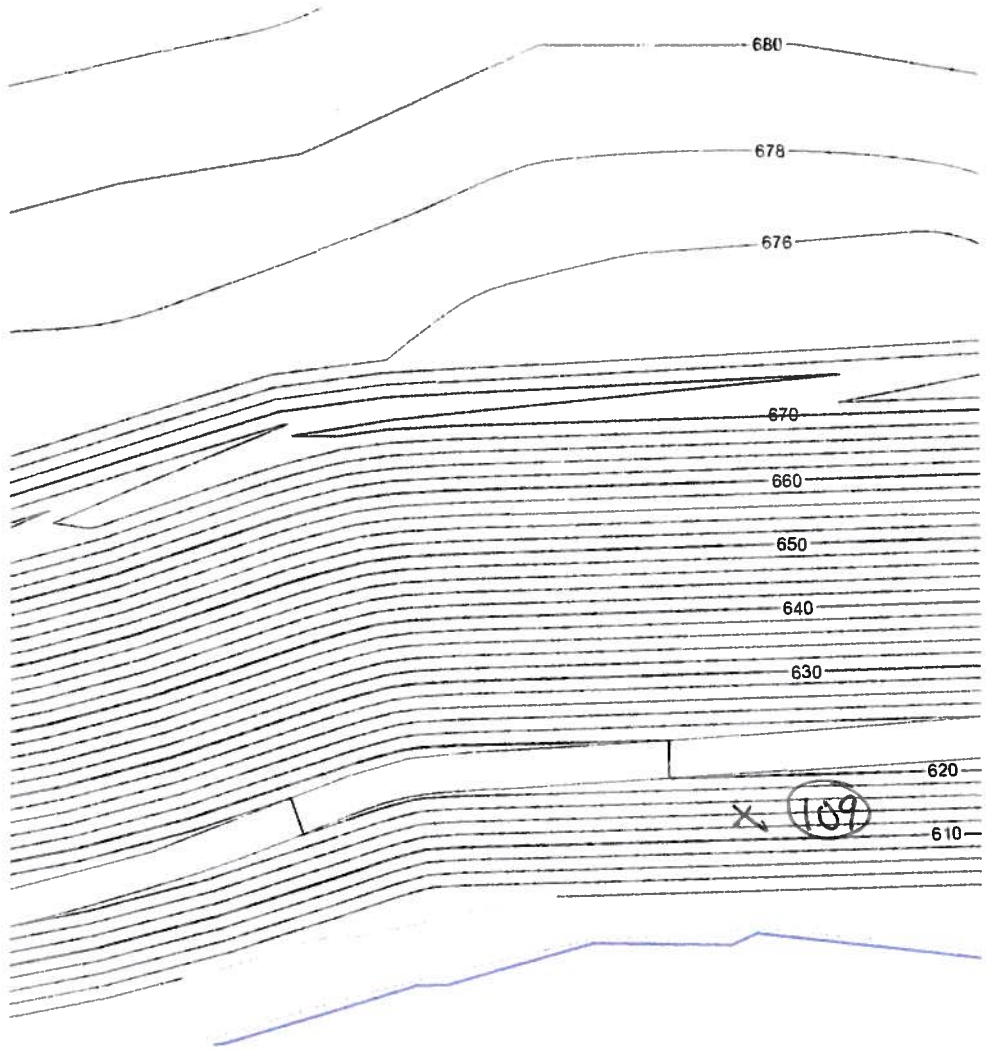
07/03/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	07/03/12 (Tuesday
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

07/03/12 — Date

95% Mod
-3 to +2

Brown AND Caldwell

Field Compaction Test Data

Project Name: Ford Rd. – Phase 2 Remedial Action
Project Number: 142889
Tested By: Foster
Date: 07/05/12 (Friday)

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 612 % Change 0.8
Standard Density Count 2121 % Change -0.1

Test Information										
Test Number	110	111	112	113	114	115	116			
Lift Number	1	2	3	4	5	6	7			
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6	6	6			
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	133.4	133.0	134.2	131.9	132.6	132.0	136.5			
Dry Density (pcf)	117.6	118.2	119.0	117.2	119.2	117.8	121.1			
Moisture (pcf)	15.8	14.9	15.2	14.7	13.4	14.2	15.4			
Moisture (%)	13.4	12.5	12.8	12.5	11.2	12.0	12.7			
Laboratory Data										
Proctor Curve No.	SS-10	SS-10	SS-10	SS-10	SS-10	SS-10	SS-10			
Max Dry Density (pcf)	122.9	122.9	122.9	122.9	122.9	122.9	122.9			
Optimum Moisture (%)	11.6	11.6	11.6	11.6	11.6	11.6	11.6			
Results										
% Compaction	95.7	96.2	96.8	95.4	97.0	95.9	98.5			
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass			
Retest Number/Date										

Comments

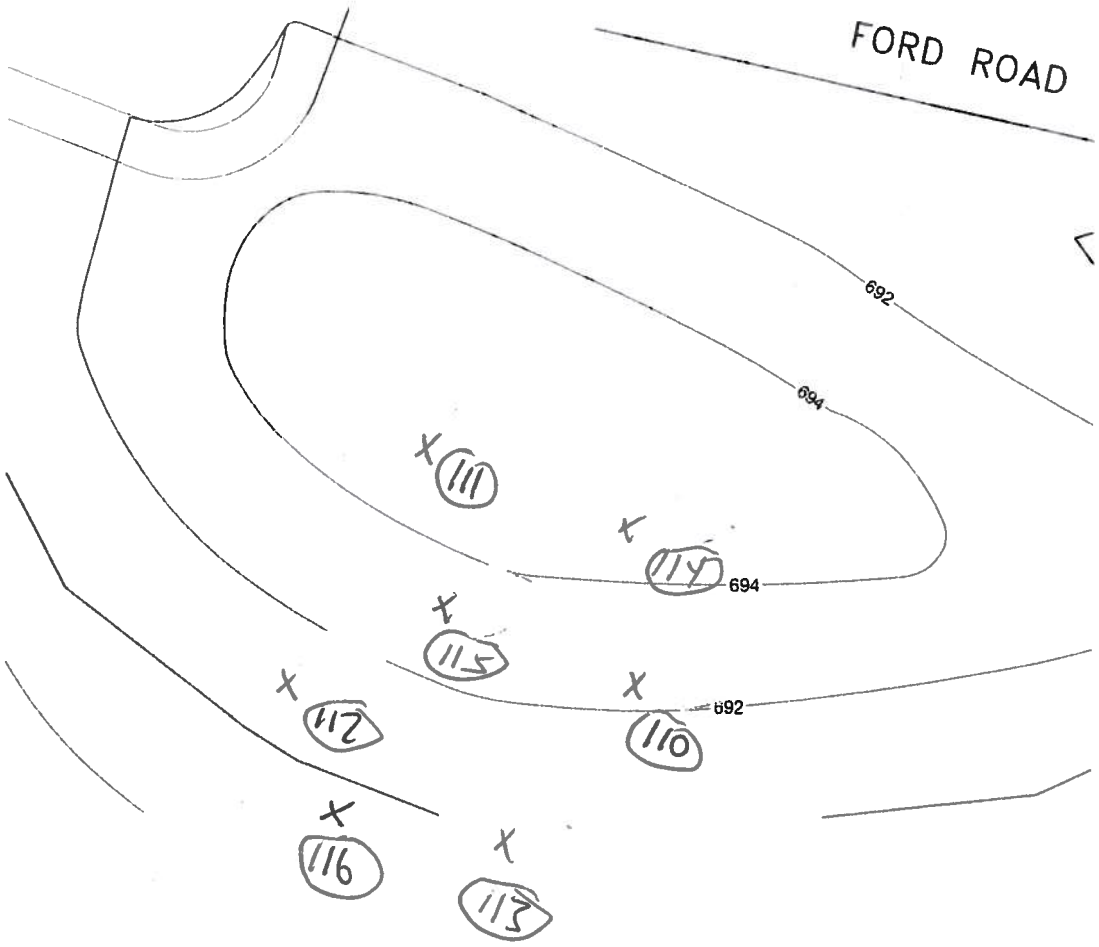
Page ___ of ___

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	**Date:**	07/06/12 (Friday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

07/06/12 — Date

Brown AND Caldwell

Field Compaction Test Data

Project Name: Ford Rd. – Phase 2 Remedial Action
Project Number: 142889
Tested By: J McGowen
Date: 7-9-12

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 1614 % Change 0.9%
Standard Density Count 2112 % Change -0.4%

Test Information										
Test Number	117	118								
Lift Number	8	8								
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes										
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	133.4	135.6								
Dry Density (pcf)	119.5	120.4								
Moisture (pcf)	14.1	15.3								
Moisture (%)	11.8	12.7								
Laboratory Data										
Proctor Curve No.	55-10	55-10								
Max Dry Density (pcf)	122.9	122.9								
Optimum Moisture (%)	11.4	11.4								
Results										
% Compaction	97.2	97.9								
Pass/Fail	Pass	Pass								
Retest Number/Date										

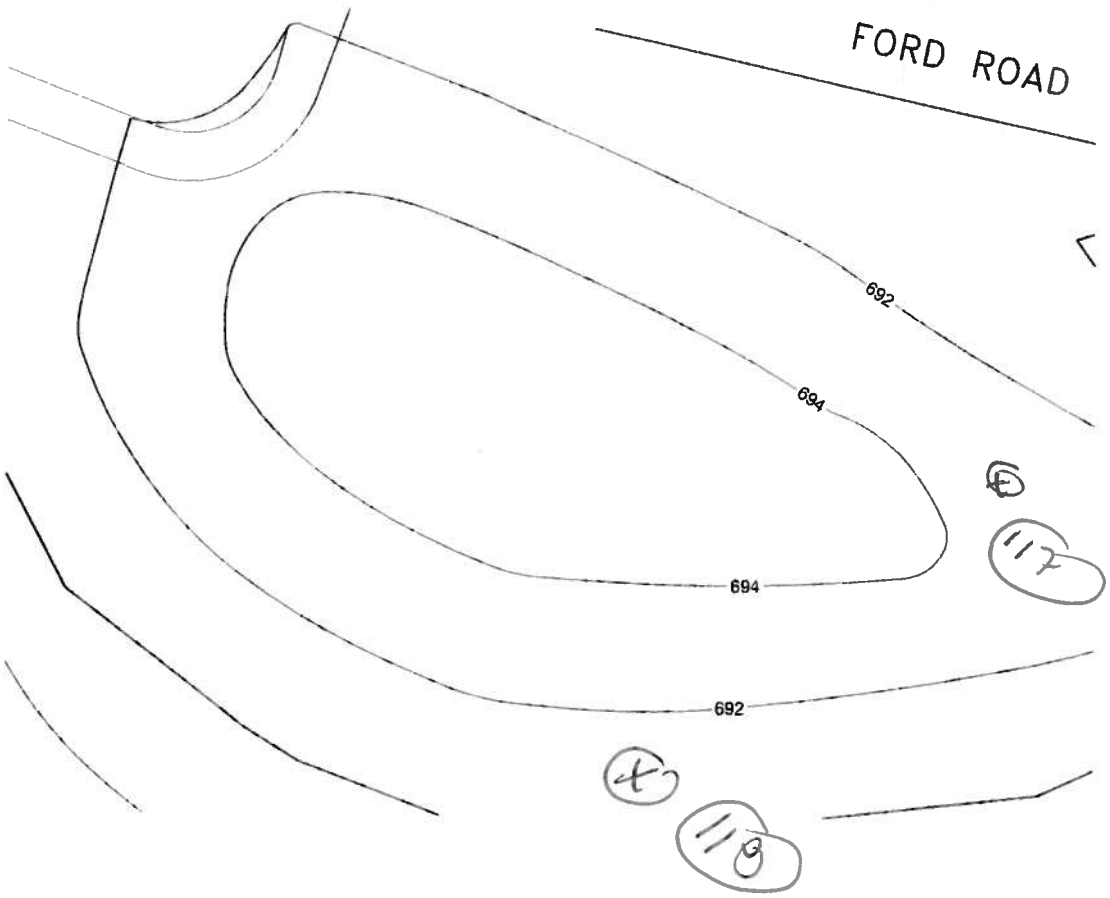
Comments

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	**Date:**	07/02/12 (Monday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	McLaren	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: [signature] Date: 07/02/12

-3 → +2

Field Compaction Test Data

Brown AND Caldwell

Project Name:	Ford Rd. - Phase 2 Remedial Action	Gauge Model No.	Troxler 3440
Project Number:	142889	Gauge Serial No.	24585
Tested By:	Foster	Standard Moisture Content	611 % Change 0.2
Date:	07/10/12 (Tuesday)	Standard Density Count	2121 % Change 0.2

Test Information										
Test Number	119	120	121	122						
Lift Number	11	12	12	12						
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6						
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	6	6	6	6	4	4	4	4	4	4
Wet Density (pcf)	139.0	138.0	139.8	138.6						
Dry Density (pcf)	124.5	123.9	126.0	124.8						
Moisture (pcf)	13.5	14.1	13.8	13.8						
Moisture (%)	10.9	11.4	11.0	11.1						
Laboratory Data										
Proctor Curve No.	SS-6A	SS-6A	SS-6A	SS-6A						
Max Dry Density (pcf)	126.9	126.9	126.9	126.9						
Optimum Moisture (%)	9.8	9.8	9.8	9.8						
Results										
% Compaction	98.1	97.6	99.3	98.3						
Pass/Fail	Pass	Pass	Pass	Pass						
Retest Number/Date										

Comments

Brown AND Caldwell

Soil Testing Locations Field Report

Site: Ford Rd

Project: Phase 2 Remedial Action

Project No: 142889

BC Personnel: Bill Foster

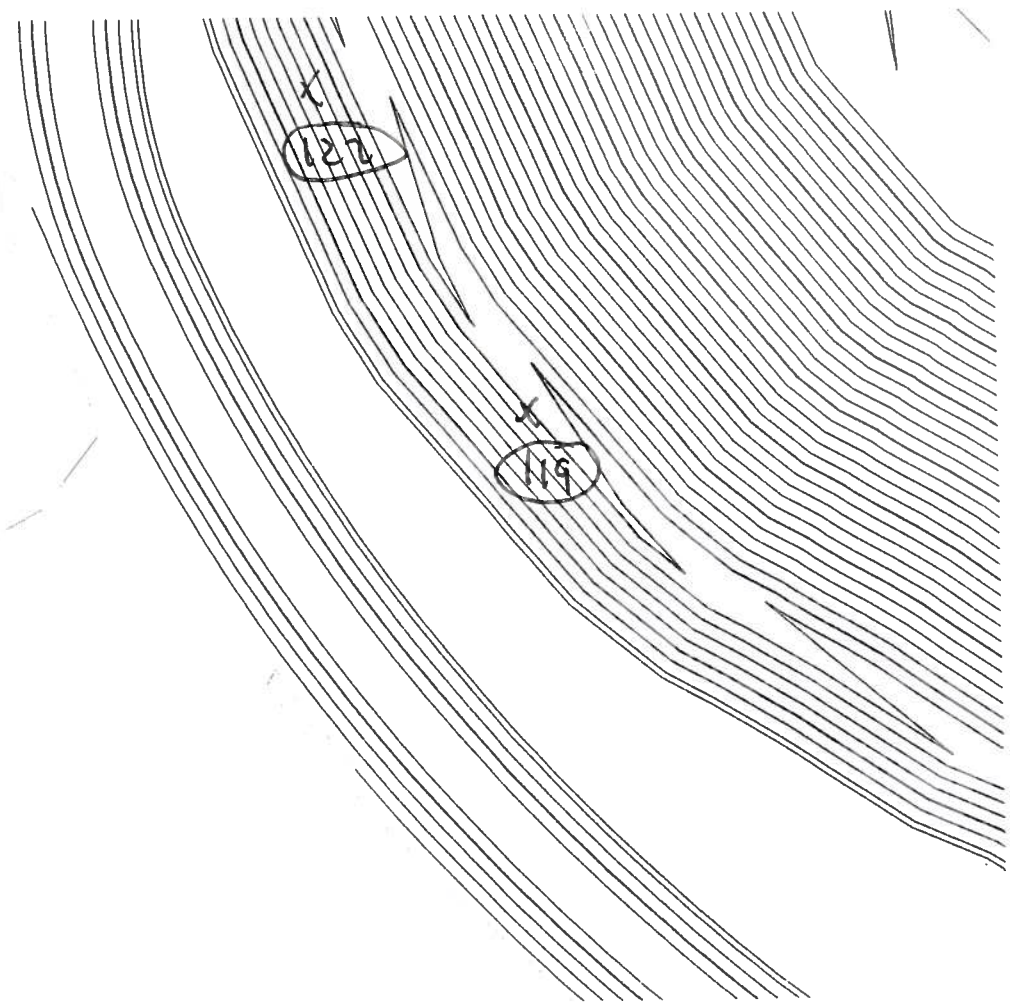
Date: 07/15/12 (Tuesday)

Time In: Same as Daily

Time Out: Same as Daily

Weather: Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

07/15/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site: Ford Rd

Project: Phase 2 Remedial Action

Project No: 142889

BC Personnel: Bill Foster

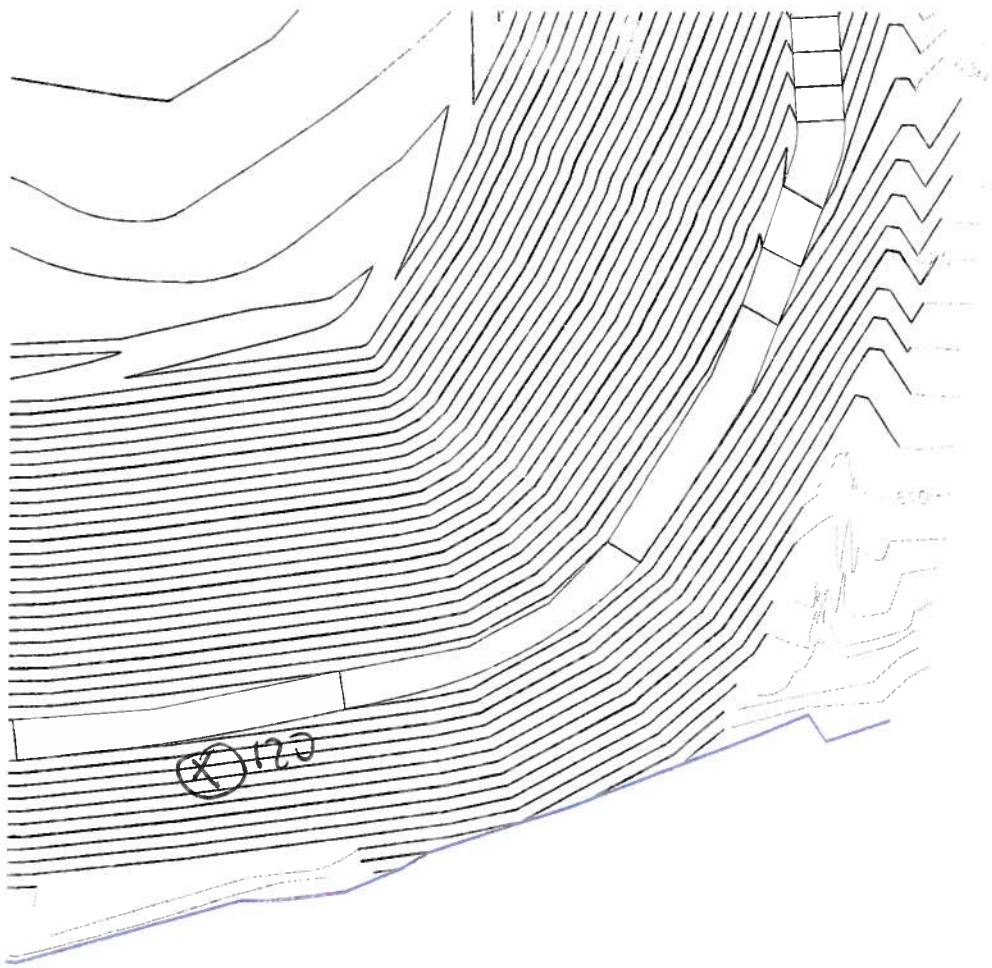
Date: 07/10/12 (Tuesday)

Time In: Same as Daily

Time Out: Same as Daily

Weather: Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster

Signature of CQA Monitor

07/10/12

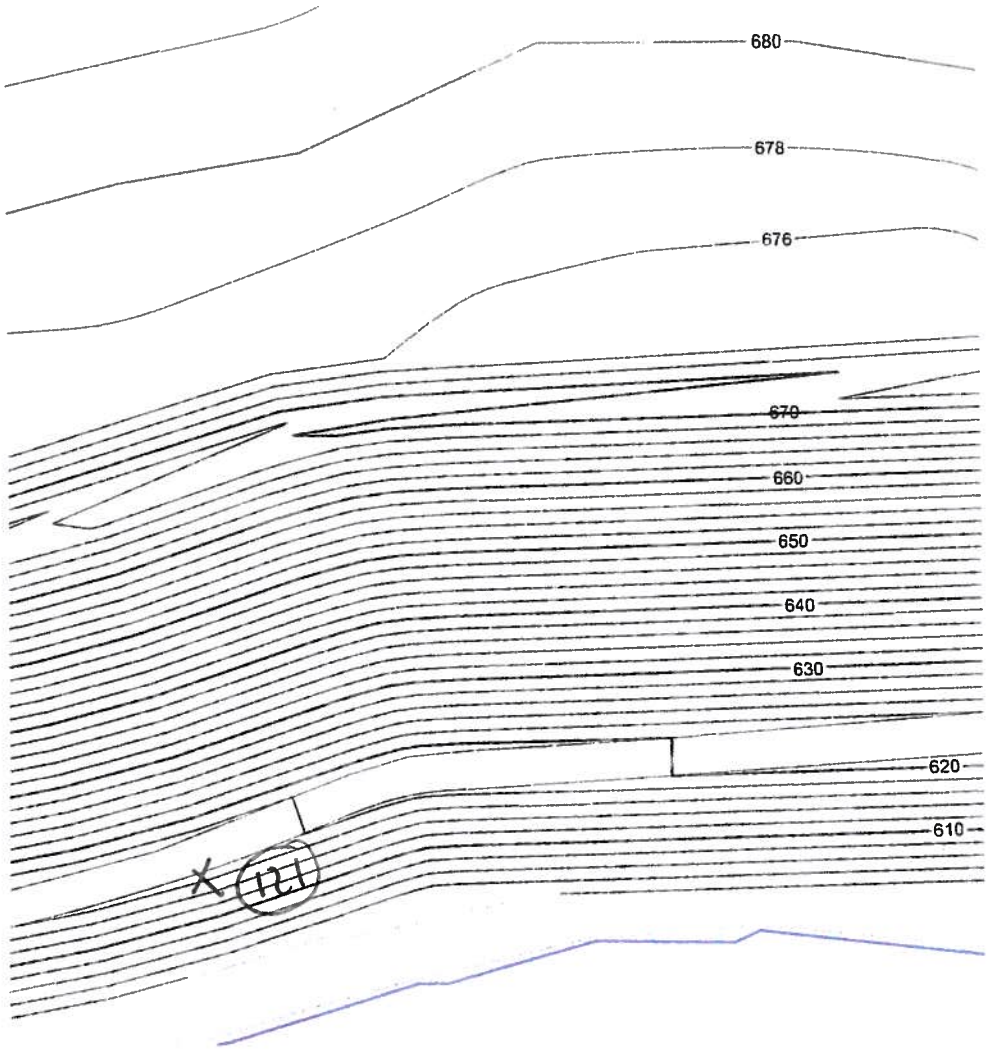
Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	07/10/12 (Tuesday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

07/10/12 — Date

Field Compaction Test Data

-2 to +3

Brown AND Caldwell

Project Name:	Ford Rd. – Phase 2 Remedial Action	Gauge Model No.	Troxler 3440
Project Number:	142889	Gauge Serial No.	24585
Tested By:	Foster / McGowan	Standard Moisture Content	606 % Change -0.9
Date:	07/16/12 (Monday)	Standard Density Count	2117 % Change -0.1

Test Information										
Test Number	123	124	125	126	127	128				
Lift Number	6	7	7	2	3	4				
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6									
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	6	6	6	6	6	6	4	4	4	4
Wet Density (pcf)	135.3	136.0	135.6	137.0	134.6	136.4				
Dry Density (pcf)	120.6	121.6	122.0	123.1	120.2	121.8				
Moisture (pcf)	14.7	14.4	13.6	13.9	14.4	14.6				
Moisture (%)	12.2	11.8	11.1	11.3	12.0	12.0				
Laboratory Data										
Proctor Curve No.	SS-10	SS-10	SS-10	SS-10	SS-10	SS-10				
Max Dry Density (pcf)	122.9	122.9	122.9	122.9	122.9	122.9				
Optimum Moisture (%)	11.6	11.6	11.6	11.6	11.6	11.6				
Results										
% Compaction	98.1	98.9	99.3	100.2	97.8	99.1				
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass				
Retest Number/Date										

Comments

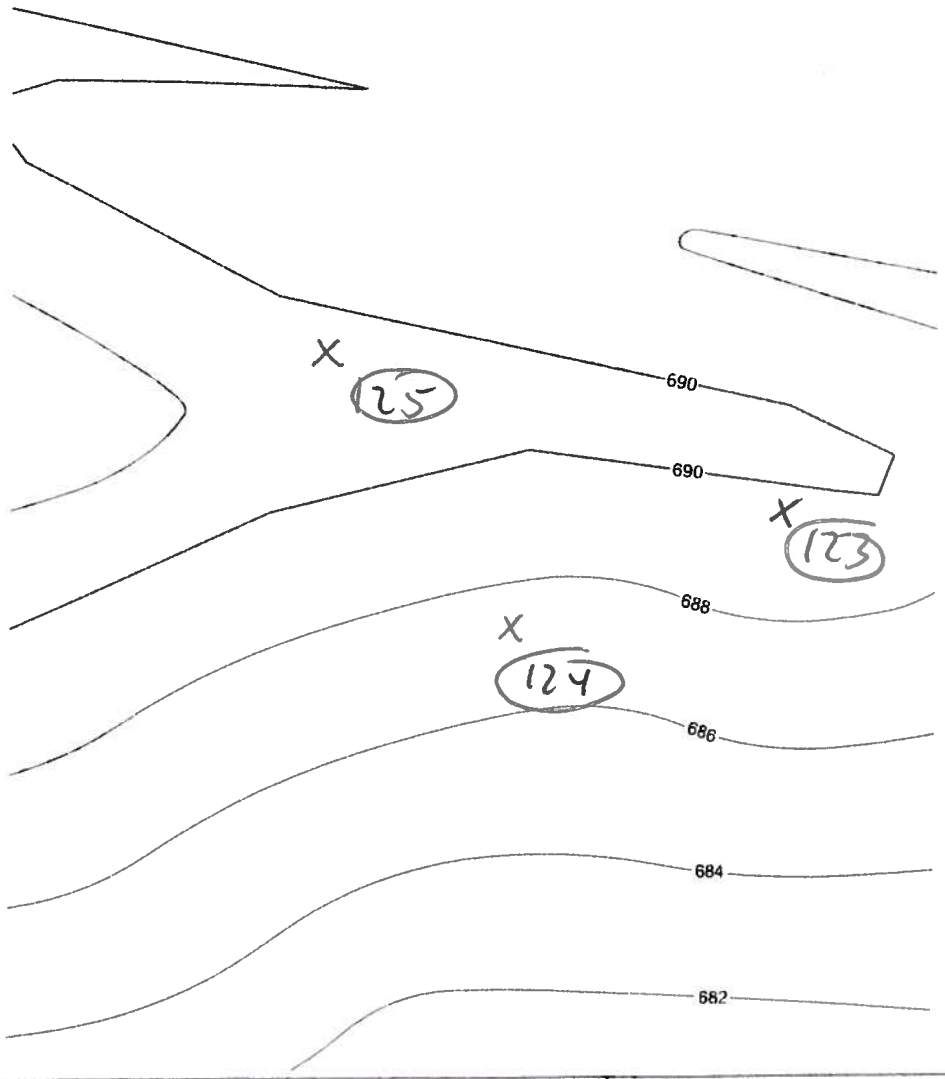
Page ___ of ___

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Foro Rd	Date:	07/16/12 (Monday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

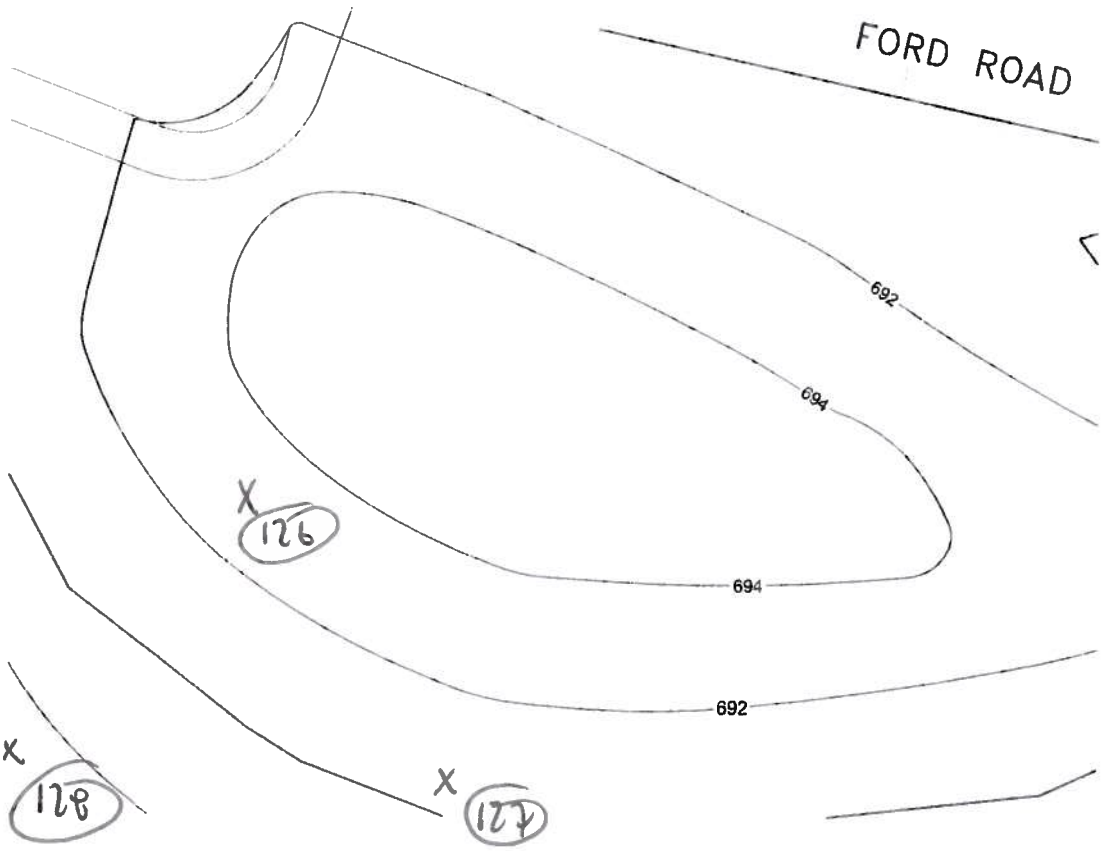
07/16/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	**Date:**	07/16/12 (Monday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

BN [illegible] — **Signature of CQA Monitor**

07/16/12 — **Date**

Brown AND Caldwell

Field Compaction Test Data

Project Name: Ford Rd. - Phase 2 Remedial Action
Project Number: 142889
Tested By: J. McGowan
Date: 7/17/12

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 608 % Change 0.5
Standard Density Count 2097 % Change 1.0

Test Information										
Test Number	129	130	131	132						
Lift Number	1	2	4	3						
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6						
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	131.9	130.	131.0	131.4						
Dry Density (pcf)	120.0	119.5	119.0	118.4						
Moisture (pcf)	11.9	11.8	11.9	13.0						
Moisture (%)	10.0	9.9	10.0	11.0						
Laboratory Data										
Proctor Curve No.	SS-10	SS-10	SS-10	SS-10						
Max Dry Density (pcf)	122.9	122.9	122.9	122.9						
Optimum Moisture (%)	11.6	11.6	11.6	11.6						
Results										
% Compaction	97.6	97.3	96.9	96.3						
Pass/Fail	Pass	Pass	Pass	Pass						
Retest Number/Date										

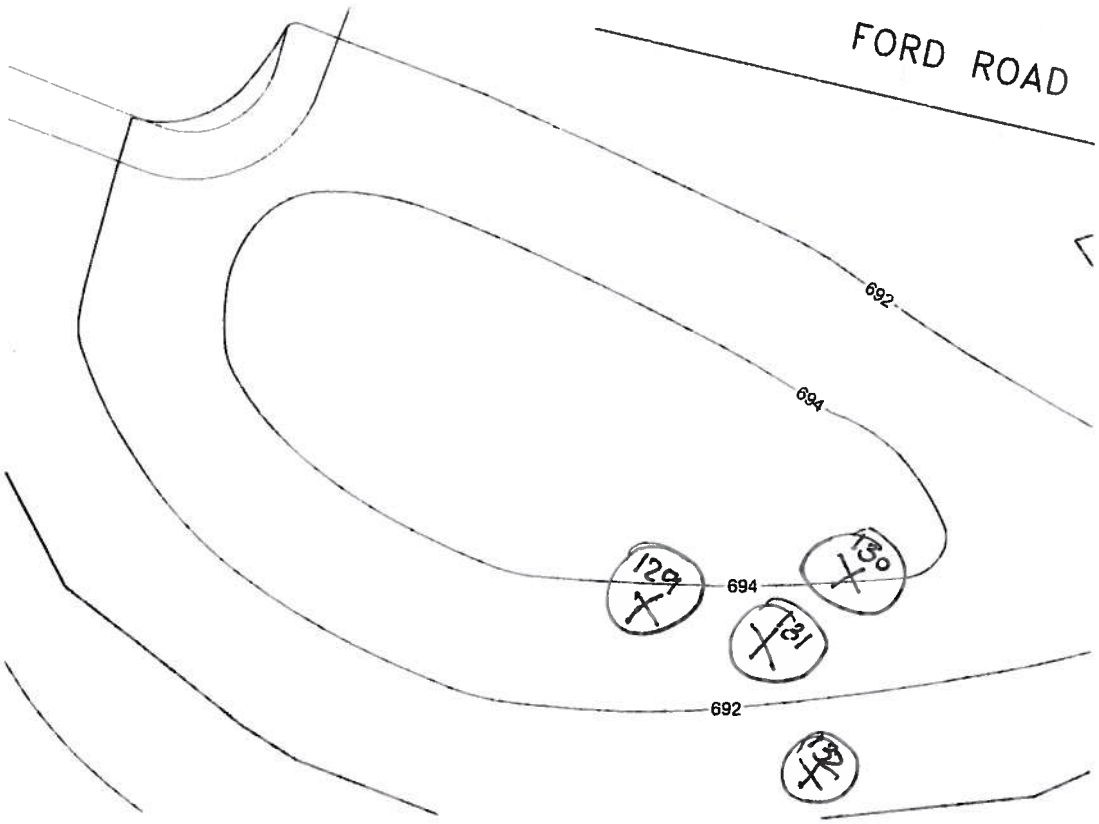
Comments

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	**Date:**	7-18-12
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	J. McGowan	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Julie McGowan 7-18-12

Signature of CQA Monitor — Date

Field Compaction Test Data

Brown AND Caldwell

Project Name: Ford Rd. – Phase 2 Remedial Action
Project Number: 142889
Tested By: Jake McGowan
Date: 7-18-12

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 6006 % Change -0.6
Standard Density Count 2113 % Change 0.1

Test Information										
Test Number	133	134	~~135~~	~~136~~						
Lift Number	4	4	~~4~~	~~4~~						
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6								
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	136.1	138.4								
Dry Density (pcf)	122.5	124.9								
Moisture (pcf)	13.6	13.6								
Moisture (%)	11.1	10.9								
Laboratory Data										
Proctor Curve No.	SS-10	SS-10								
Max Dry Density (pcf)	122.9	122.9								
Optimum Moisture (%)	11.6	11.6								
Results										
% Compaction	99.7	101.6								
Pass/Fail	Pass	Pass								
Retest Number/Date										

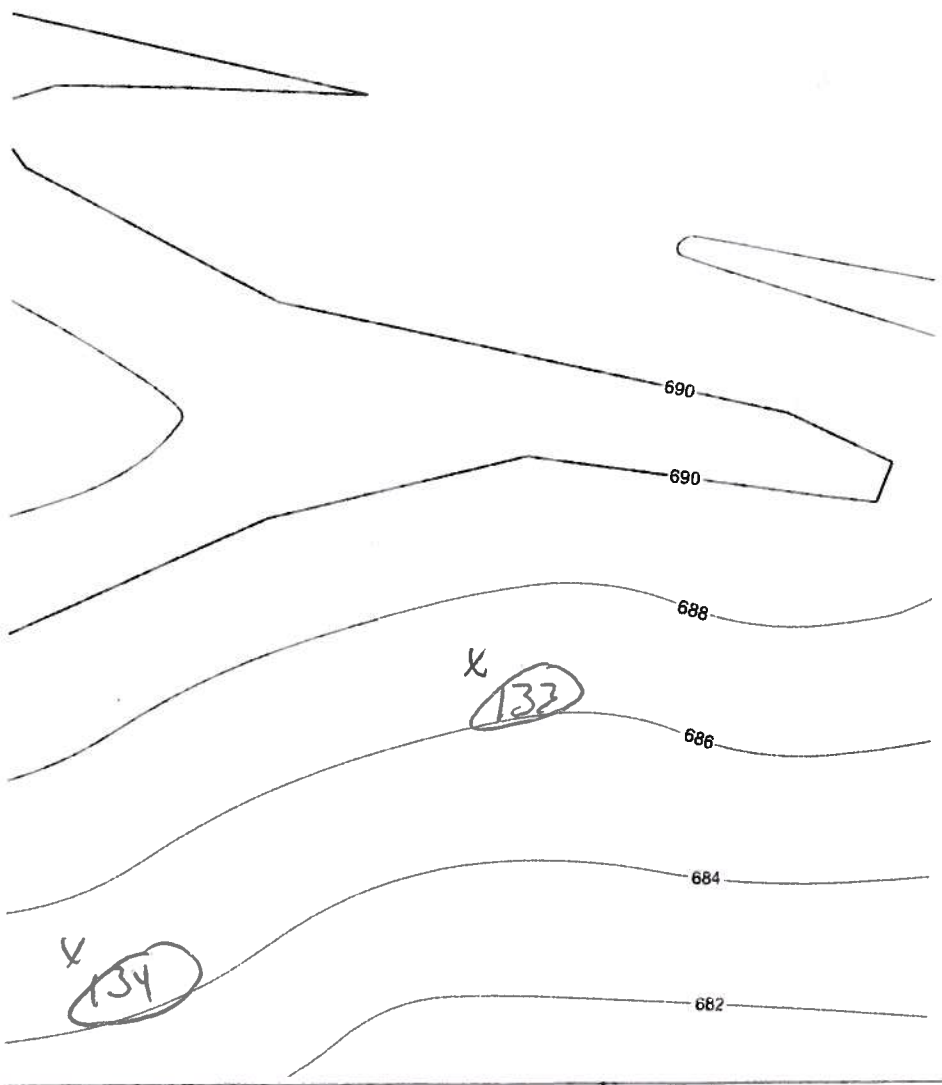
Comments

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	**Date:**	07/18/12
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	[illegible]	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

[illegible] 07/18/12

Signature of COA Monitor **Date**

Field Compaction Test Data

Brown AND Caldwell

Project Name: Ford Rd. – Phase 2 Remedial Action
Project Number: 142889
Tested By: J. McGowan
Date: 7-19-12

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 609 % Change 1.4
Standard Density Count 2097 % Change -0.2

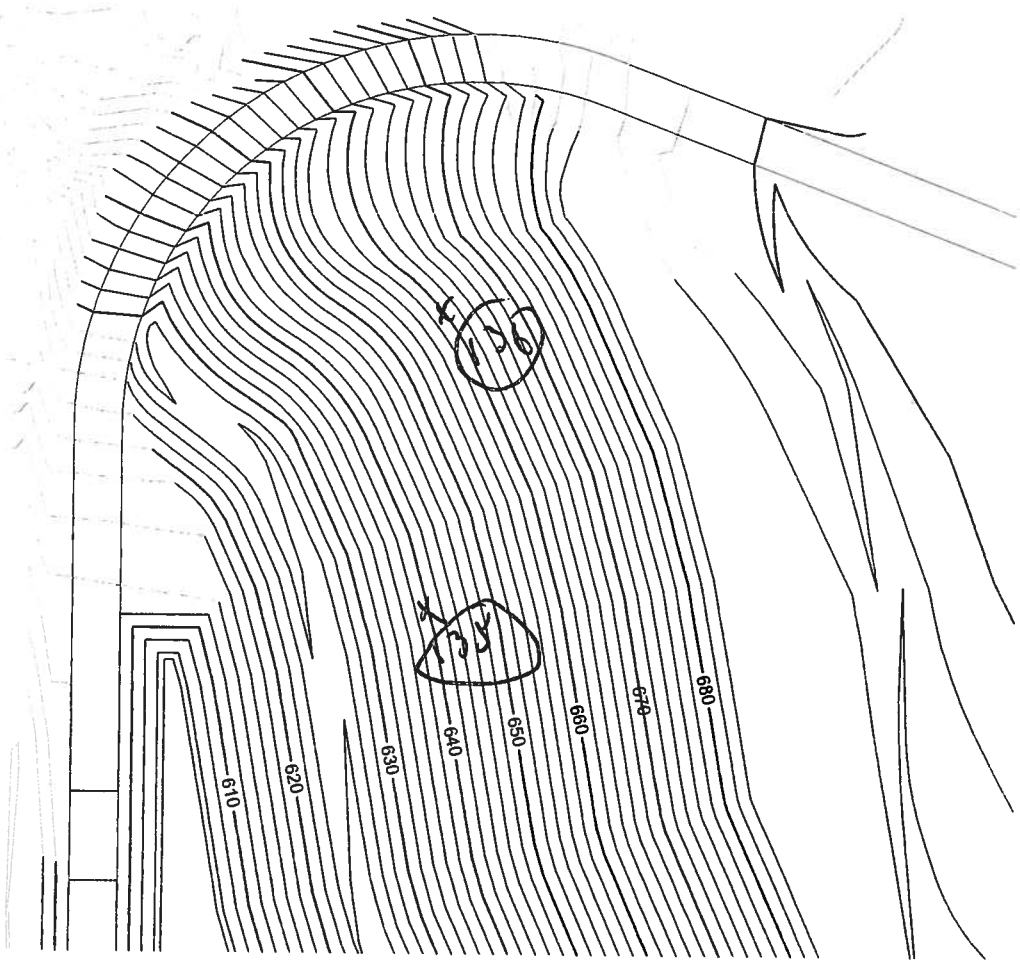
Test Information										
Test Number	135	136								
Lift Number	3	3								
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6								
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	131.0	131.8								
Dry Density (pcf)	114.2	115.0								
Moisture (pcf)	16.9	16.8								
Moisture (%)	14.8	14.6								
Laboratory Data										
Proctor Curve No.	SS-8	SS-8								
Max Dry Density (pcf)	119.9	119.9								
Optimum Moisture (%)	12.9	12.9								
Results										
% Compaction	95.2	95.9								
Pass/Fail	Pass	Pass								
Retest Number/Date										
Comments										

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	07/19/12
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	McGowan	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

John McGowan — Signature of CQA Monitor — Date: 07/19/12

Brown AND Caldwell

Field Compaction Test Data

Project Name: Ford Rd. – Phase 2 Remedial Action
Project Number: 142889
Tested By: Bill Foster
Date: 07/22/12 (Monday)

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 6.09 % Change 1.4
Standard Density Count 2097 % Change -0.2

Test Information										
Test Number	137	138								
Lift Number	14	~~[illegible]~~ 14								
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6								
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	132.4	131.6								
Dry Density (pcf)	116.9	118.1								
Moisture (pcf)	15.5	13.5								
Moisture (%)	13.3	11.4								
Laboratory Data										
Proctor Curve No.	SS-8	SS-8								
Max Dry Density (pcf)	119.9	119.9								
Optimum Moisture (%)	12.9	12.9								
Results										
% Compaction	97.5	98.5								
Pass/Fail	Pass	Pass								
Retest Number/Date										

Comments

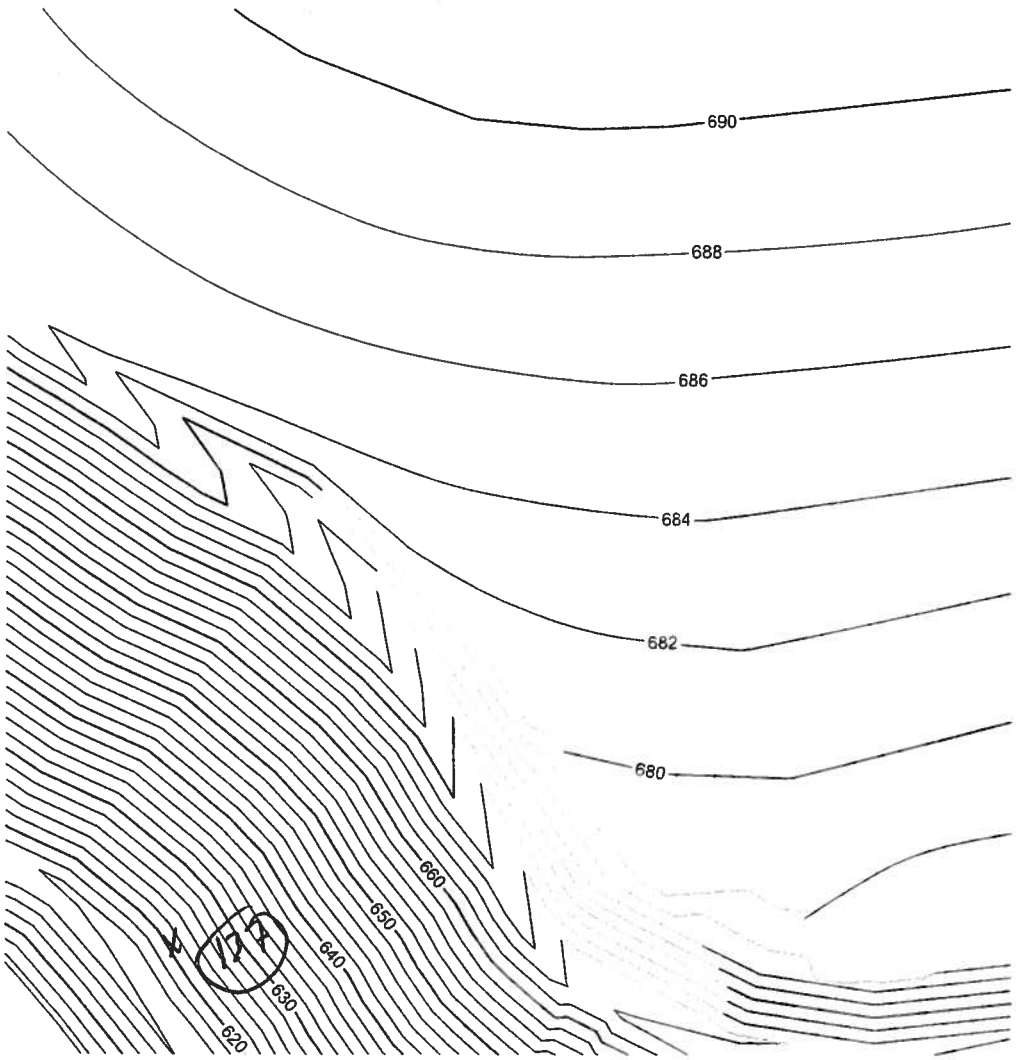
Page ___ of ___

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	07/23/12 (Monday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

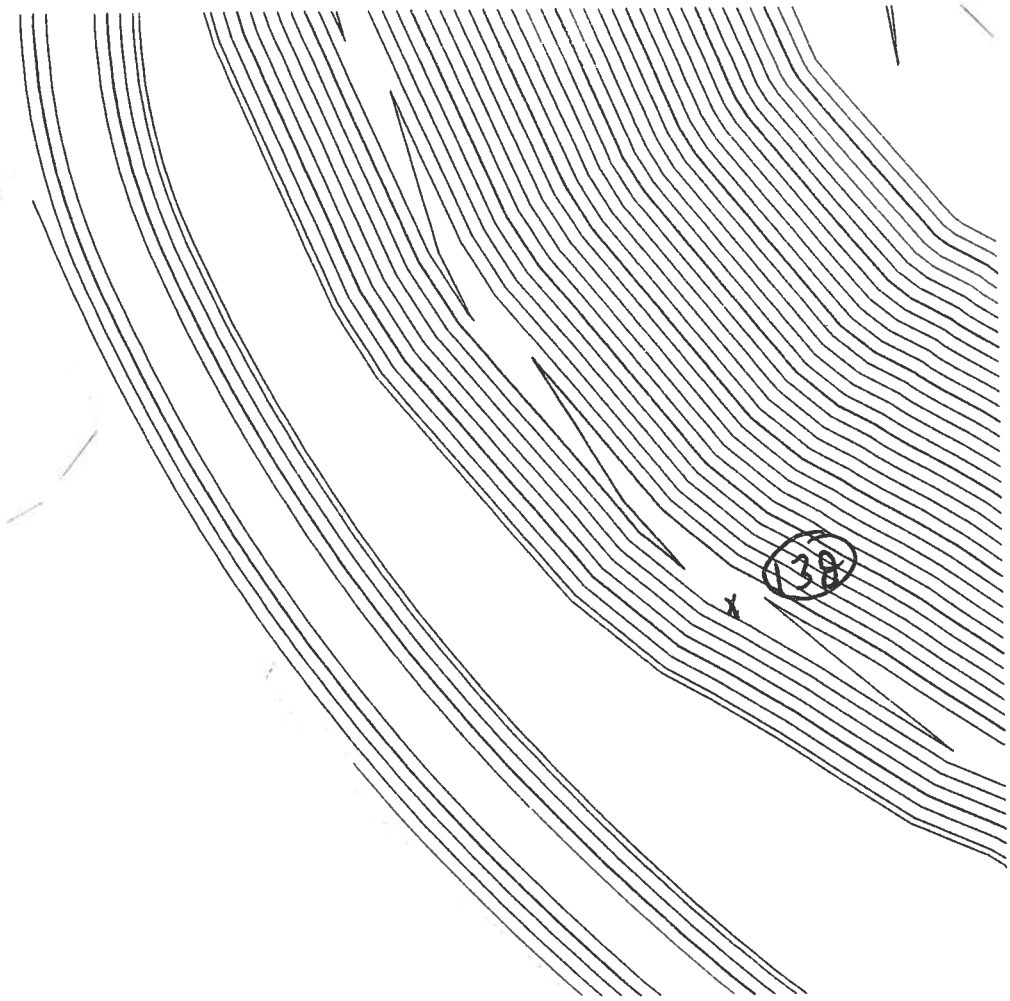
07/23/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	07/23/12 (monday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

BW [illegible] — Signature of CQA Monitor

07/23/12 — Date

(-3 to +2)

Brown AND Caldwell

Field Compaction Test Data

Project Name:	Ford Rd. – Phase 2 Remedial Action	Gauge Model No.	Troxler 3440
Project Number:	142889	Gauge Serial No.	24585
Tested By:	Bill Foster	Standard Moisture Content	606 % Change 0.2
Date:	07/26/12 (Thursday)	Standard Density Count	2119 % Change -0.1

Test Information										
Test Number	139	140	141							
Lift Number	65	65	65							
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6							
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	124.6	123.8	125.0							
Dry Density (pcf)	102.4	104.8	105.6							
Moisture (pcf)	22.2	19.0	19.4							
Moisture (%)	21.7	18.1	18.4							
Laboratory Data										
Proctor Curve No.	55-24	55-24	55-24							
Max Dry Density (pcf)	123.7	123.7	123.7							
Optimum Moisture (%)	10.5	10.5	10.5							
Results										
% Compaction	82.8	84.7	85.4							
Pass/Fail	Fail	Fail	Fail							
Retest Number/Date	143/07/30	145/07/30	142/07/30							

Comments

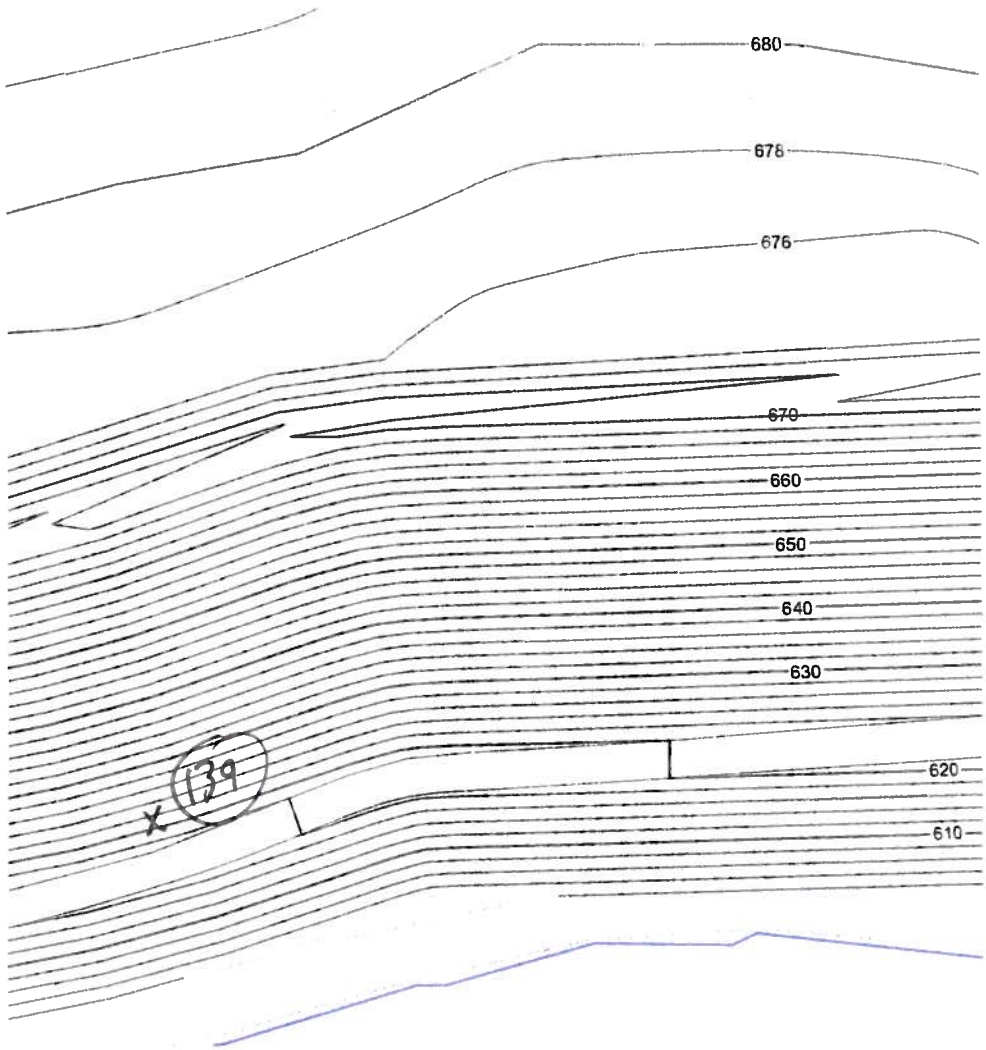
Page ___ of ___

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	07/26/12 (Thursday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

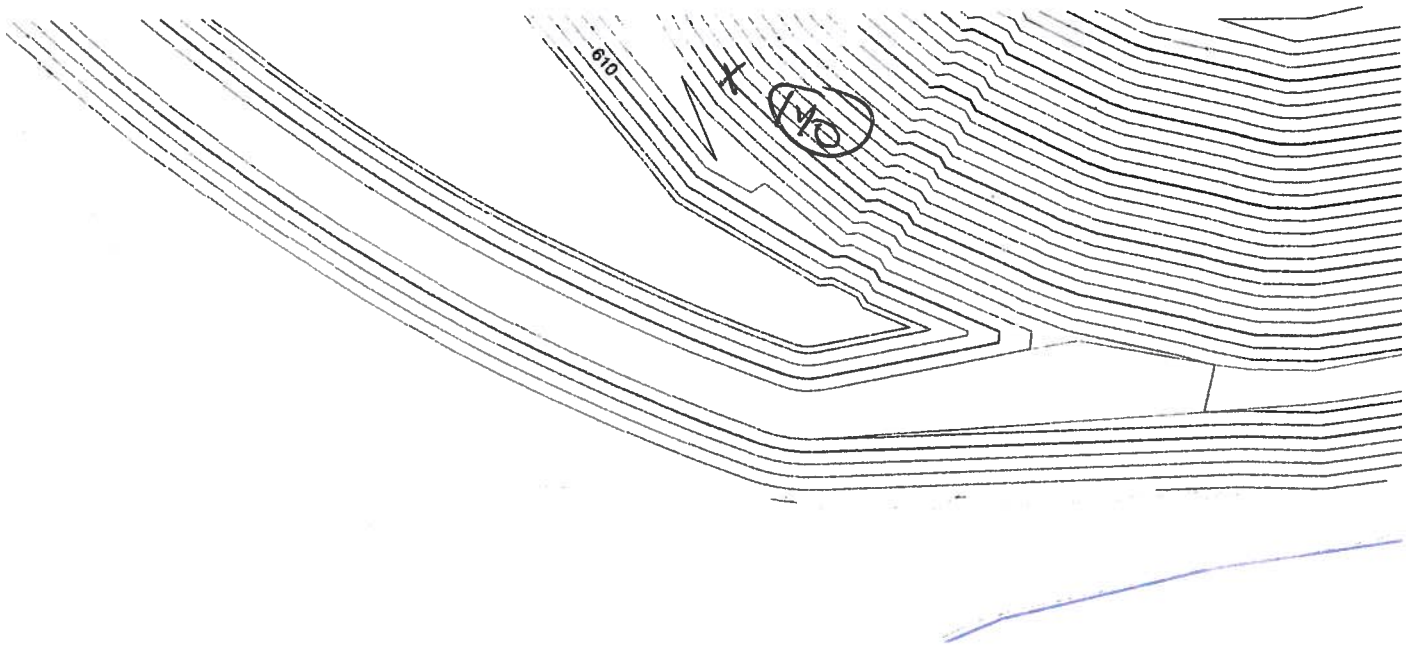
07/26/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	07/26/12 (Thursday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

BW [illegible] — Signature of CQA Monitor

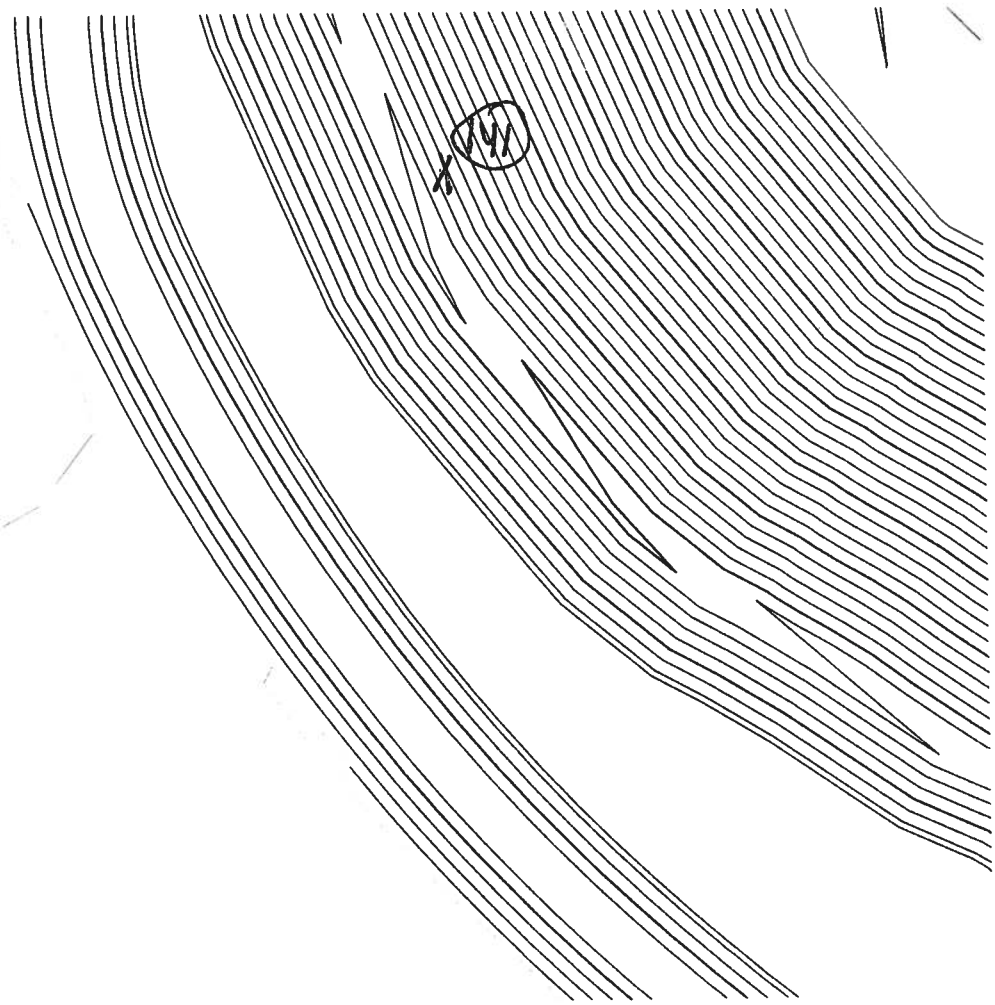
07/26/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	07/26/12 (Thursday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: [signature]

Date: 07/26/12

Brown AND Caldwell

Field Compaction Test Data

Project Name: Ford Rd. - Phase 2 Remedial Action
Project Number: 142889
Tested By: Bill Foster
Date: 07/30/12

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 605 % Change -0.2
Standard Density Count 2125 % Change 0.1

Test Information										
Test Number	142	143	144	145						
Lift Number	15	15	15	15						
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	10	10	10	10						
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	131.3	132.5	129.3	130.5						
Dry Density (pcf)	116.1	117.4	115.1	115.7						
Moisture (pcf)	15.2	15.1	14.4	14.8						
Moisture (%)	13.1	12.9	12.5	12.8						
Laboratory Data										
Proctor Curve No.	55-26	55-26	55-26	55-26						
Max Dry Density (pcf)	121.0	121.0	121.0	121.0						
Optimum Moisture (%)	11.1	11.1	11.1	11.1						
Results										
% Compaction	95.9	97.0	95.1	95.6						
Pass/Fail	Pass	Pass	Pass	Pass						
Retest Number/Date	141/07/26	139/07/26		140/07/26						

Comments

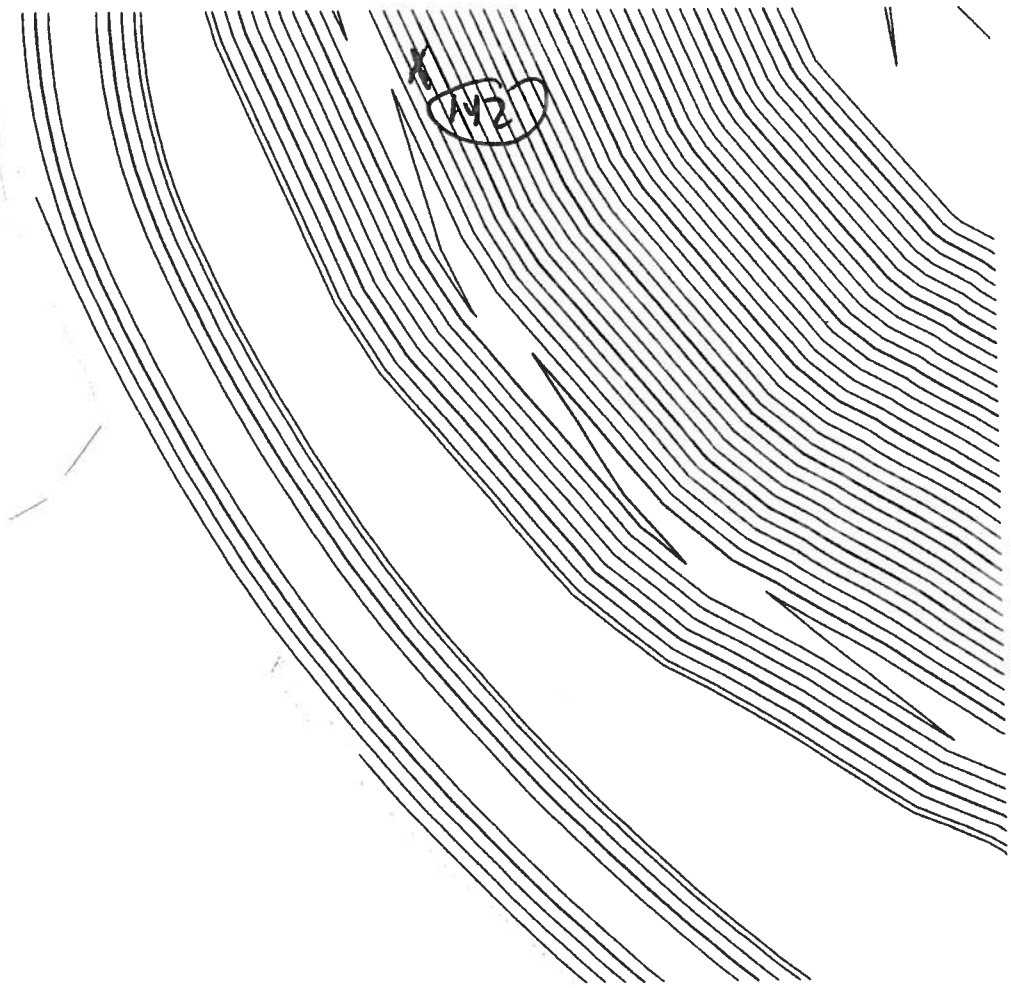
Page ___ of ___

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	07/30/12 (Monday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

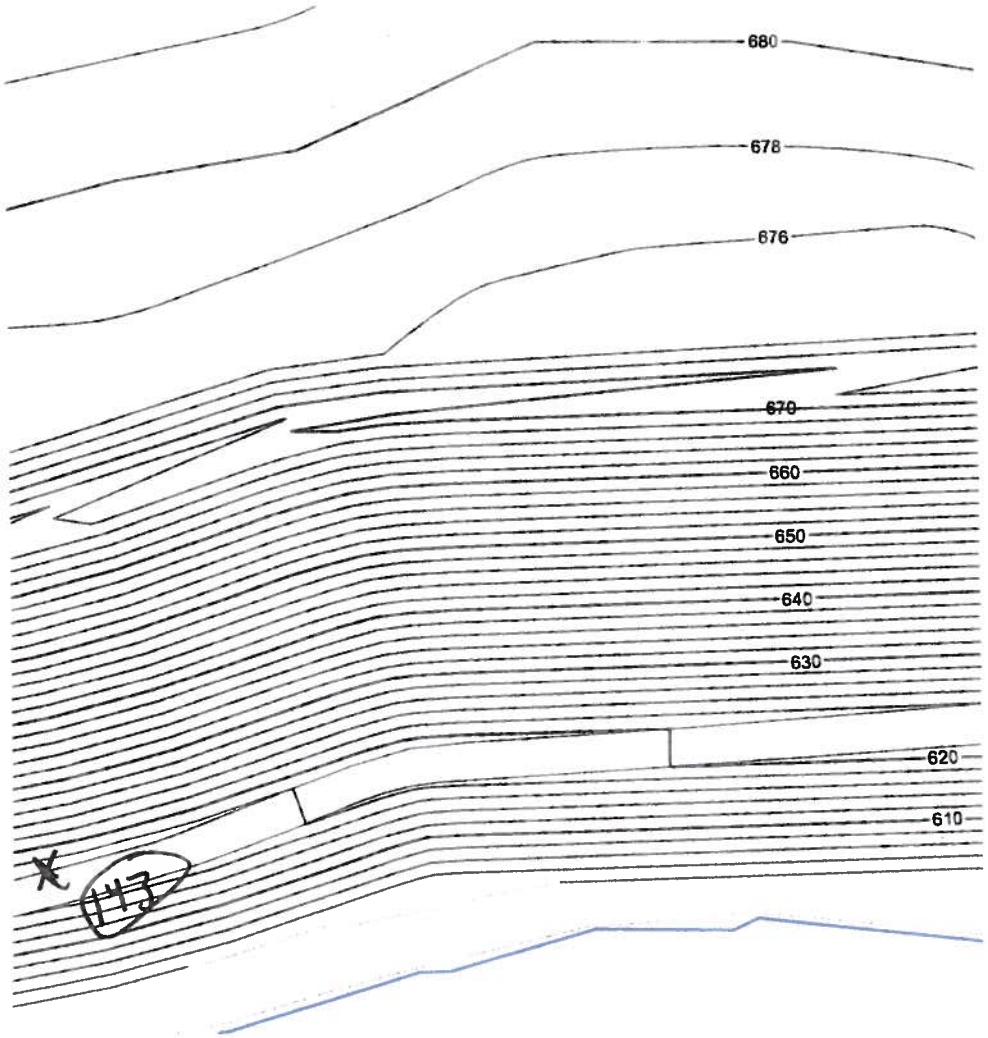
07/30/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	07/30/12 (Monday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

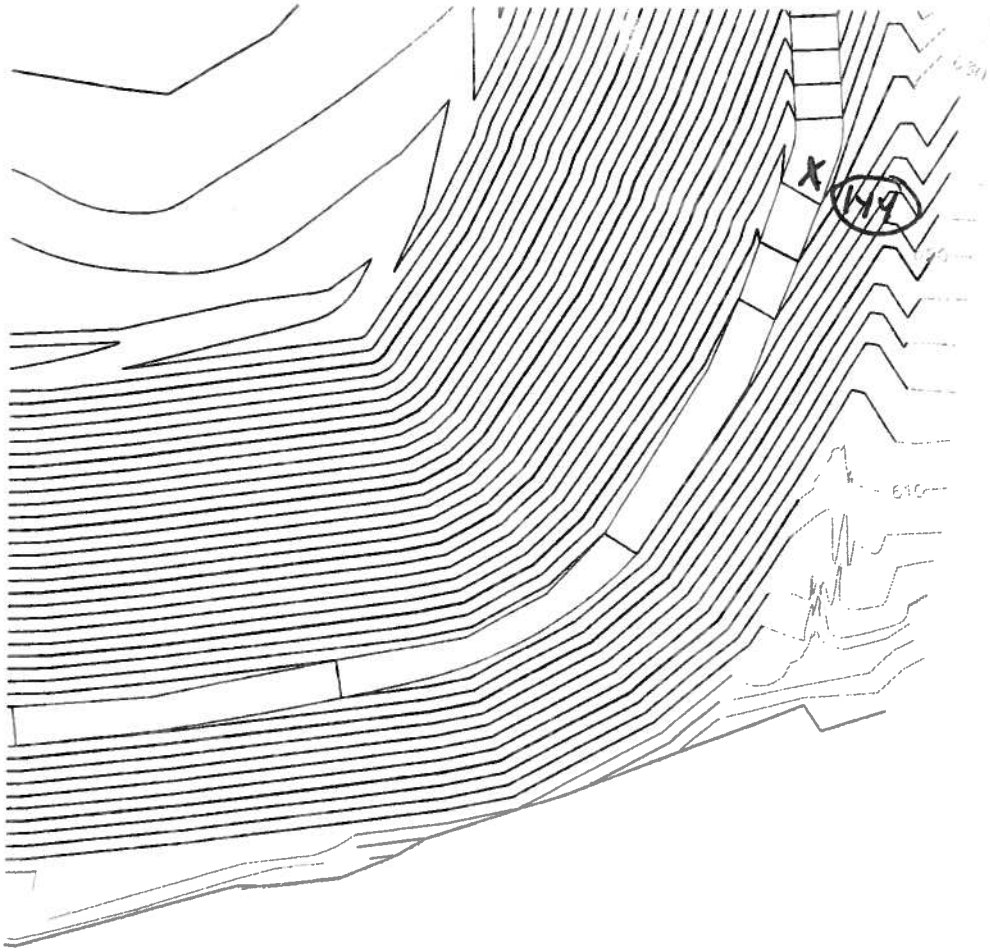
Signature of CQA Monitor: [signature] Date: 07/30/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	07/30/12 (Monday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: BW

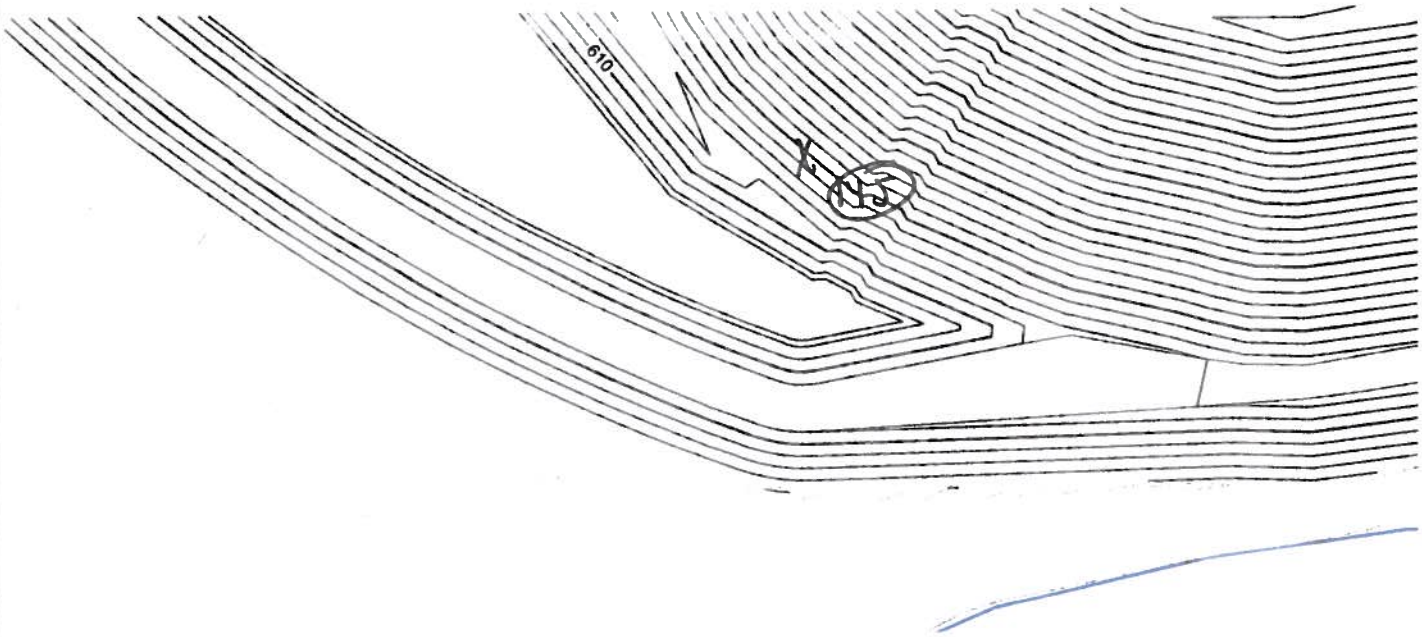
Date: 07/30/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	07/30/12 (Monday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — **Signature of CQA Monitor**

07/30/12 — **Date**

Brown AND Caldwell

Field Compaction Test Data

Project Name: Ford Rd. - Phase 2 Remedial Action
Project Number: 142889
Tested By: Bill Foster
Date: 07/31/12 (Tuesday)

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 612 % Change 0.9
Standard Density Count 2113 % Change -0.4

Test Information										
Test Number	146	147	148	149						
Lift Number	16	16	16	16						
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6						
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	133.1	135.8	132.4	136.9						
Dry Density (pcf)	118.7	122.4	117.6	124.6						
Moisture (pcf)	14.4	13.4	14.8	12.3						
Moisture (%)	12.1	10.9	12.6	9.9						
Laboratory Data										
Proctor Curve No.	55-26	55-26	55-26	55-26						
Max Dry Density (pcf)	121.0	121.0	121.0	121.0						
Optimum Moisture (%)	11.1	11.1	11.1	11.1						
Results										
% Compaction	98.1	101.1	97.2	103.0						
Pass/Fail	Pass	Pass	Pass	Pass						
Retest Number/Date										

Comments

Brown AND Caldwell

Soil Testing Locations Field Report

Site: Ford Rd.

Project: Phase 2 Remedial Action

Project No: 142889

BC Personnel: Bill Foster

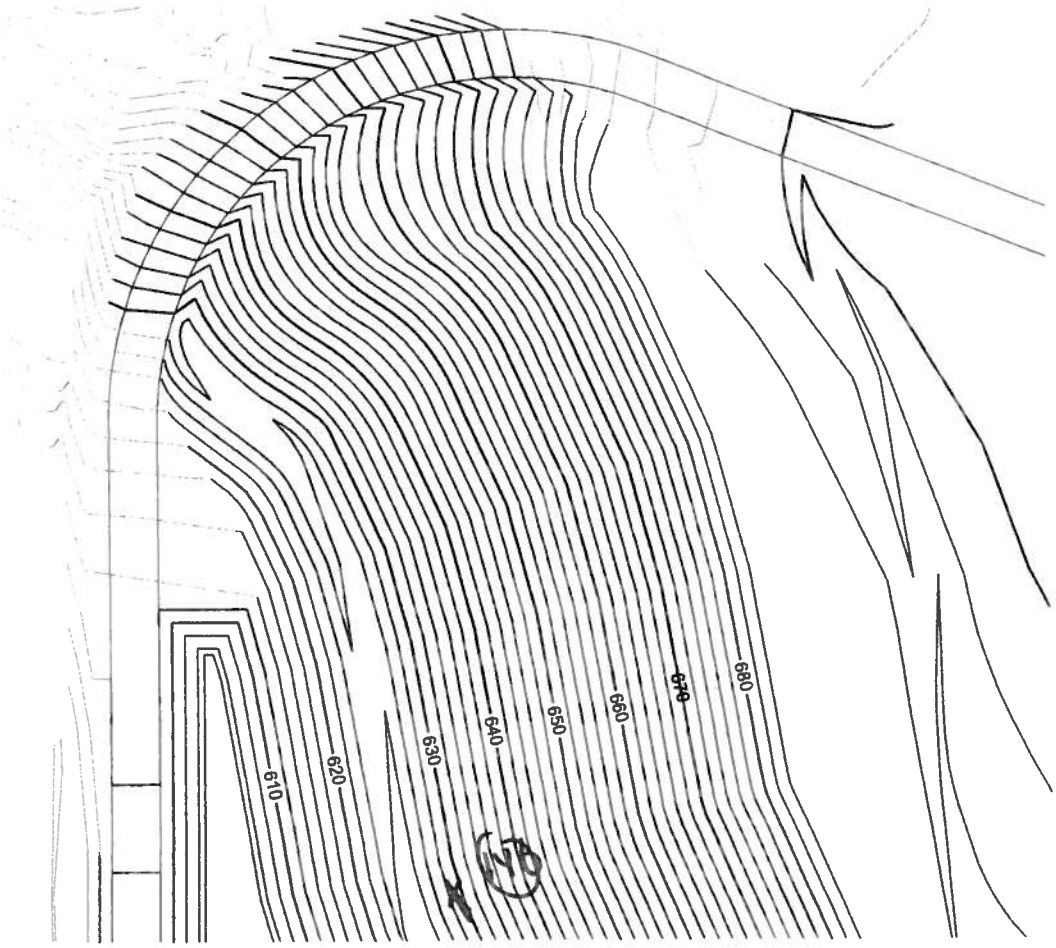
Date: 07/31/12 (Tuesday)

Time In: Same as Daily

Time Out: Same as Daily

Weather: Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: BN Foster

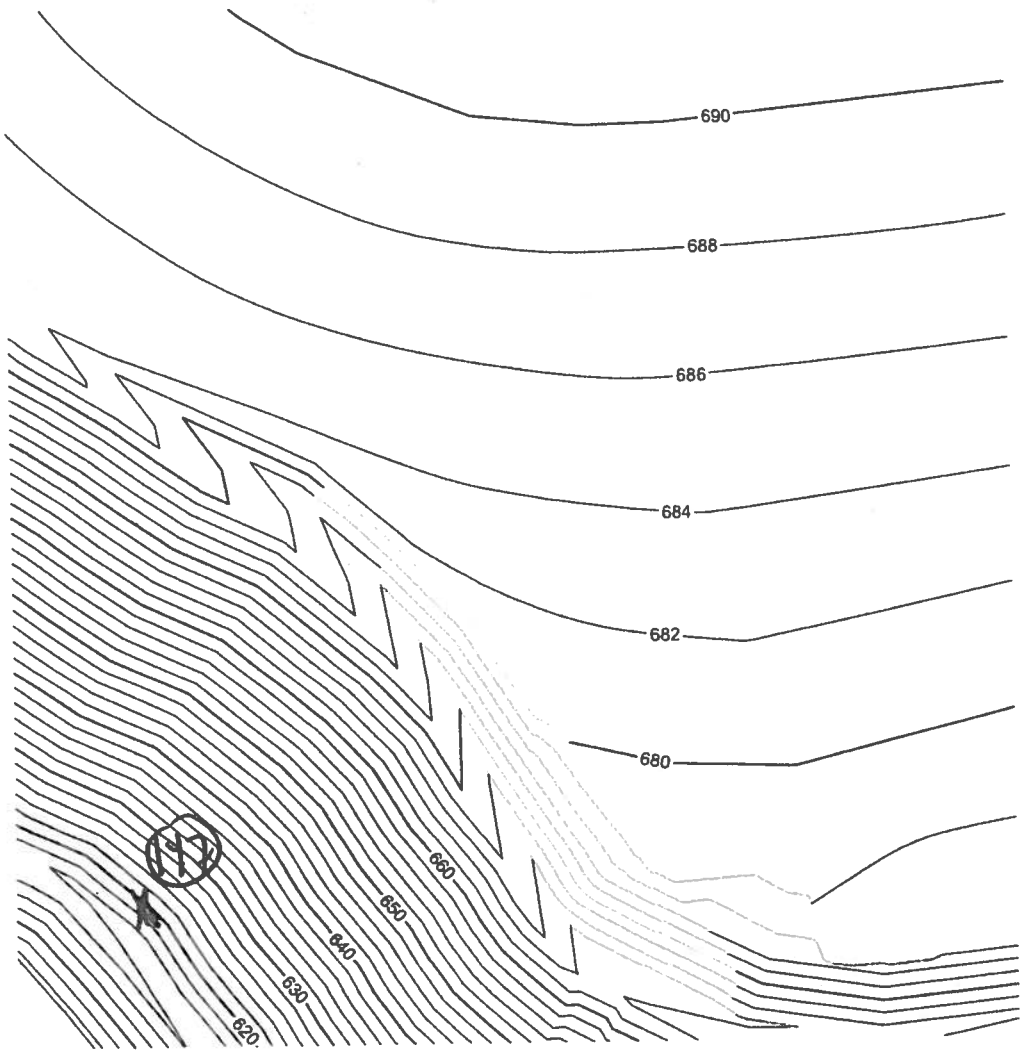
Date: 07/31/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	07/31/12 (Tuesday)
Project	Phase 2 Remedial Action	Time In:	Same as Daily
Project No	142889	Time Out:	Same as Daily
BC Personnel	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: Bill Foster

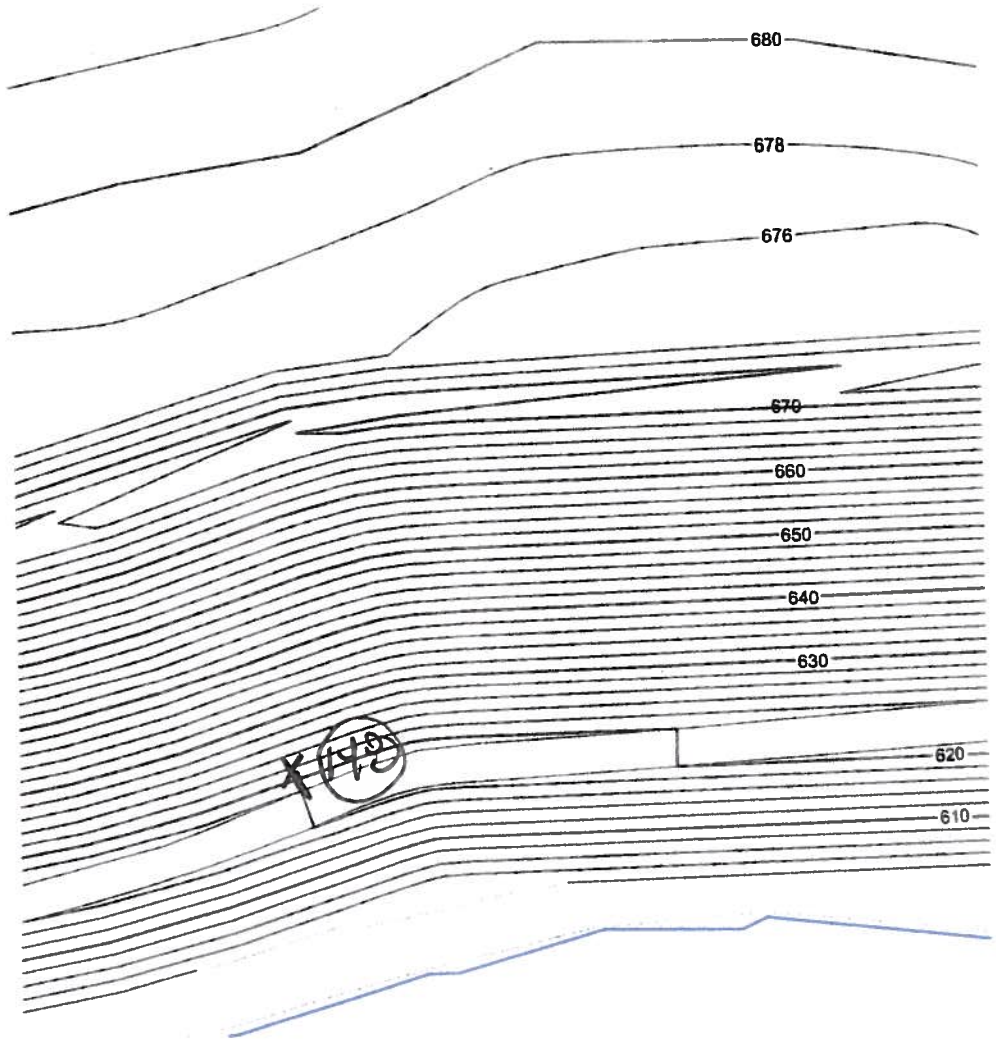
Date: 07/31/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site: Ford Rd.	**Date:** 07/31/12 (Tuesday)
Project: Phase 2 Remedial Action	**Time In:** Same as Daily
Project No: 142889	**Time Out:** Same as Daily
BC Personnel: Bill Foster	**Weather:** Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

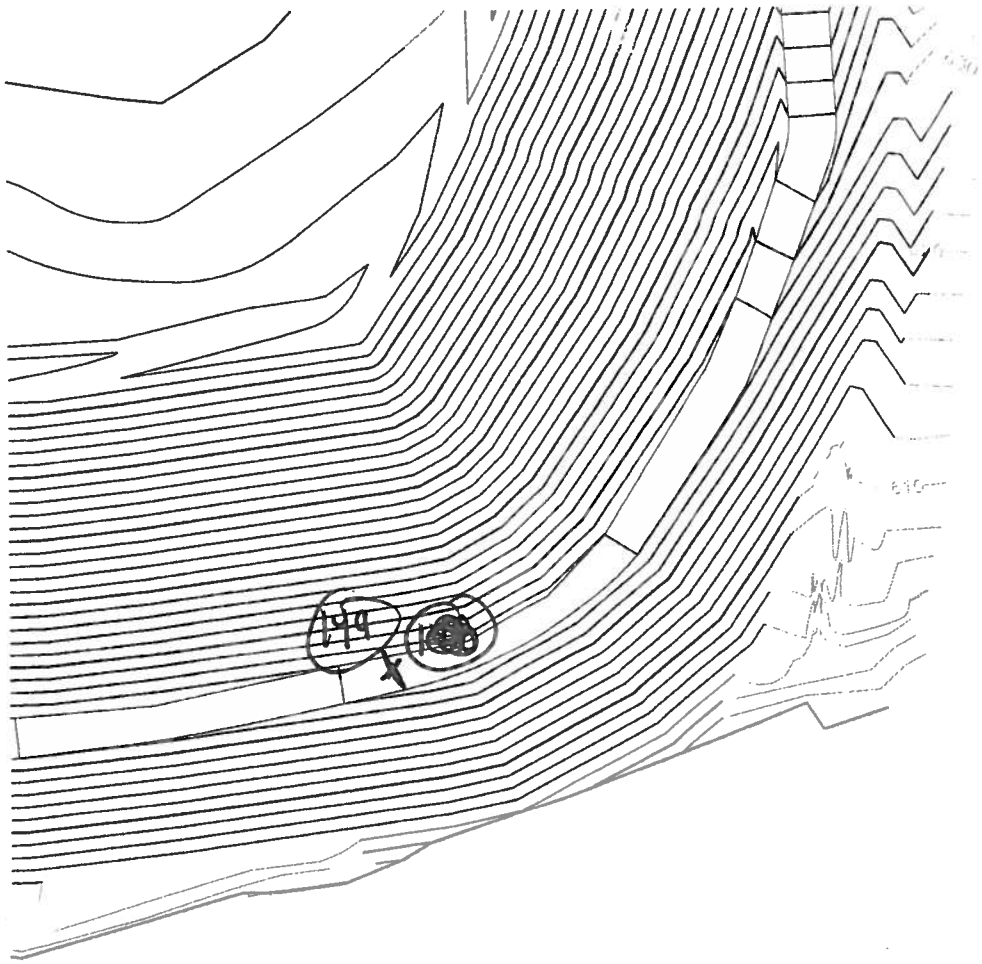
Signature of CQA Monitor: [signature] Date: 07/31/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site: Ford Rd.	Date: 07/31/12 (Tuesday)
Project: Phase 2 Remedial Action	Time In: Same as Daily
Project No: 142889	Time Out: Same as Daily
BC Personnel: Bill Foster	Weather: Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

07/31/12 — Date

Brown AND Caldwell

Field Compaction Test Data

Project Name: Ford Rd. – Phase 2 Remedial Action
Project Number: 142889
Tested By: Bill Foster
Date: 08/01/12 (wed)

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 610 % Change 0.2
Standard Density Count 2116 % Change -0.1

Test Information										
Test Number	150	151	152							
Lift Number	17	17	17							
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6							
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	138.4	133.3	134.1							
Dry Density (pcf)	125.7	122.8	119.4							
Moisture (pcf)	12.8	10.4	14.7							
Moisture (%)	10.2	8.5	12.3							
Laboratory Data										
Proctor Curve No.	55-22	55-22	55-22							
Max Dry Density (pcf)	125.5	125.5	125.5							
Optimum Moisture (%)	10.3	10.3	10.3							
Results										
% Compaction	100.1	97.9	95.1							
Pass/Fail	Pass	Pass	Pass							
Retest Number/Date										
Comments										

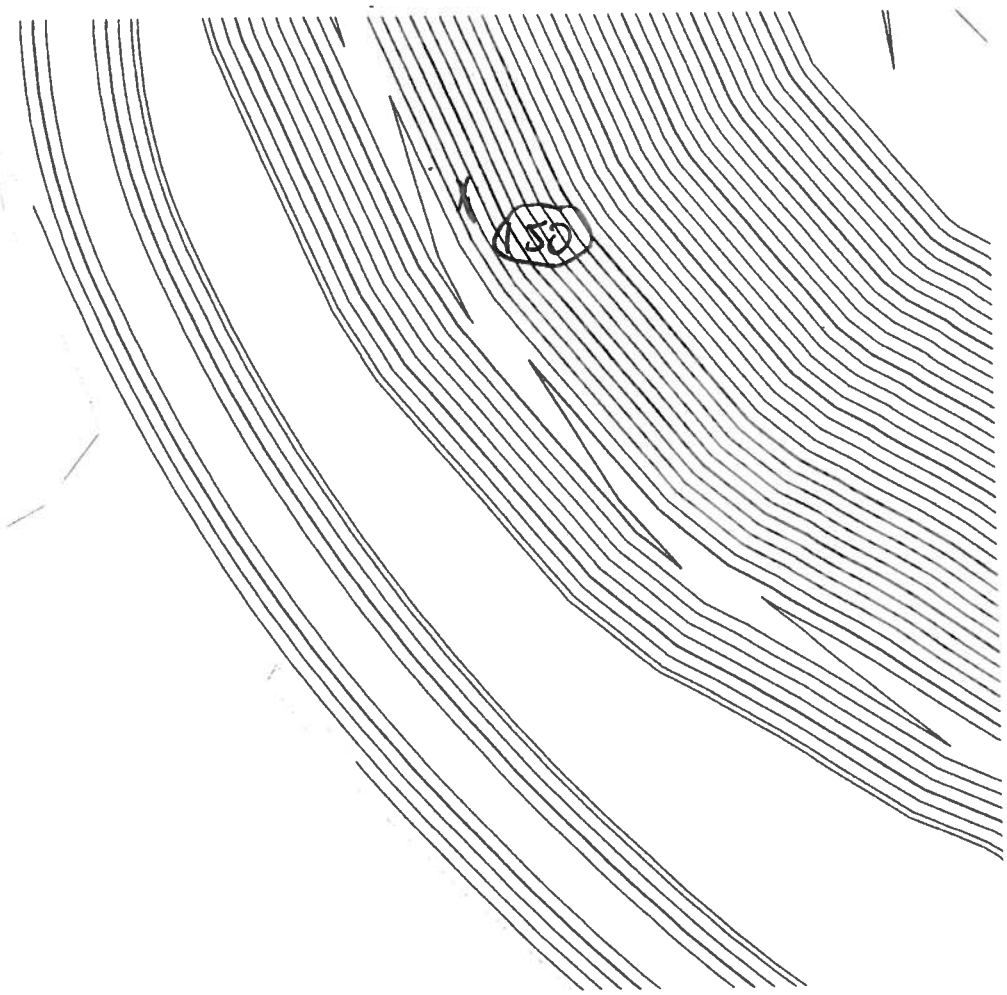
Page ___ of ___

Brown AND Caldwell

Soil Testing Locations Field Report

Site: Ford Rd.	Date: 08/01/12 (wed)
Project: Phase 2 Remedial Action	Time In: Same as Daily
Project No: 142889	Time Out: Same as Daily
BC Personnel: Bill Foster	Weather: Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

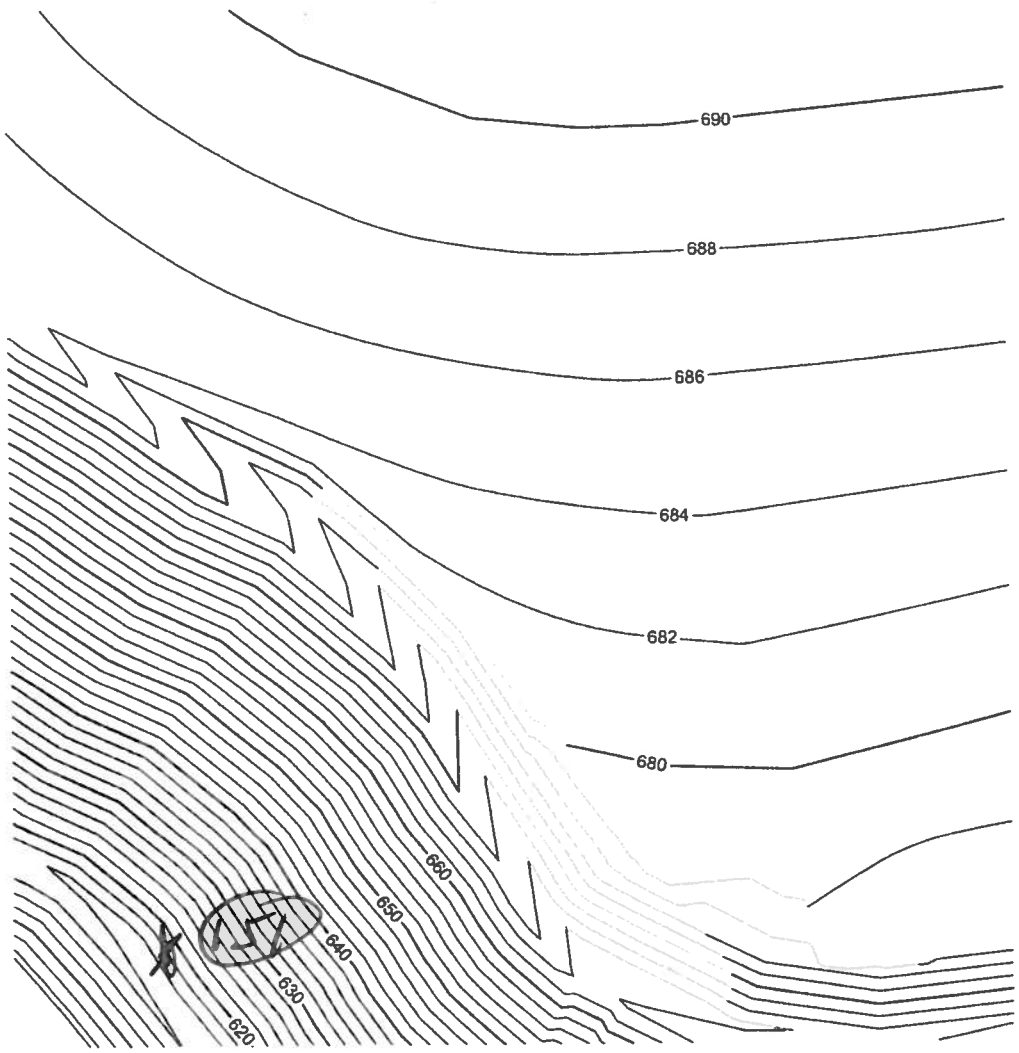
08/01/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	08/01/12 (Wed)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

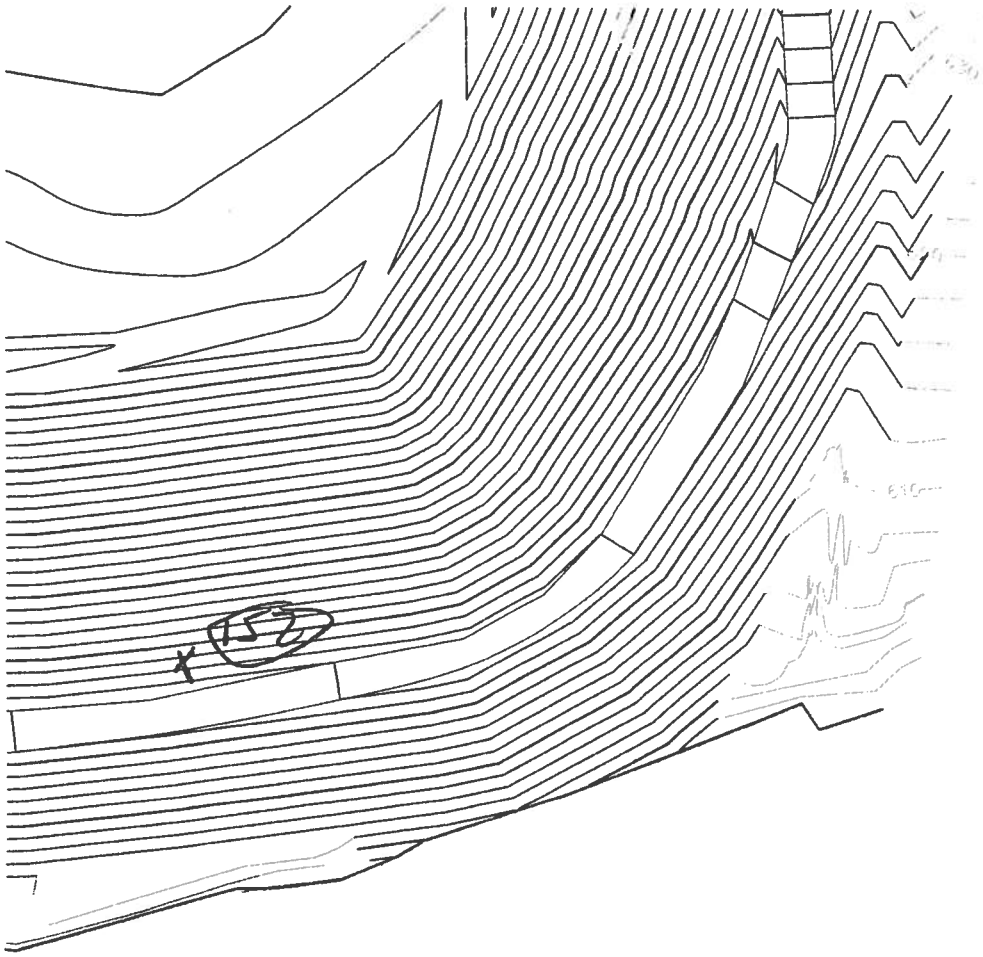
08/01/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	08/01/12 (Wed)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — 08/01/12

Signature of CQA Monitor — Date

(-3% to +2% of optimum)

Brown AND Caldwell

Field Compaction Test Data

Project Name: Ford Rd. - Phase 2 Remedial Action
Project Number: 142889
Tested By: Bill Foster
Date: 08/02/12 (Thursday)

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 615 % Change 0.9
Standard Density Count 2118 % Change 0.1

Test Information										
Test Number	153	154	155	156	157					
Lift Number	17	17	17	17	17					
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6					
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	6	6	6	6	6	4	4	4	4	4
Wet Density (pcf)	137.4	136.0	136.4	134.2	135.7					
Dry Density (pcf)	123.0	121.5	123.6	121.4	121.7					
Moisture (pcf)	14.3	14.5	12.8	12.9	13.9					
Moisture (%)	11.6	11.9	10.3	10.6	11.4					
Laboratory Data										
Proctor Curve No.	55-22	55-22	55-22	55-22	55-22					
Max Dry Density (pcf)	125.5	125.5	125.5	125.5	125.5					
Optimum Moisture (%)	10.3	10.3	10.3	10.3	10.3					
Results										
% Compaction	98.0	96.8	98.5	96.7	97.0					
Pass/Fail	Pass	Pass	Pass	PASS	PASS					
Retest Number/Date										

Comments

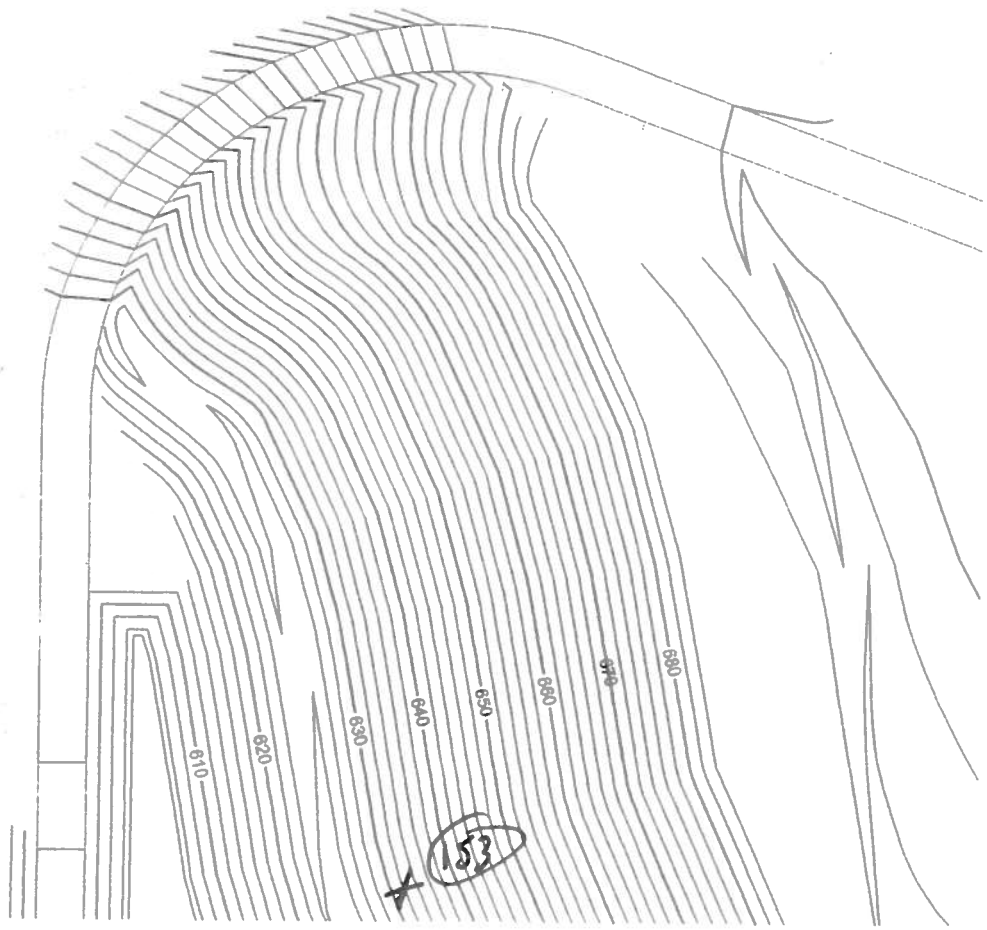
Page ___ of ___

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	08/02/12 (Thursday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster / Nate Givens	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — 08/02/12

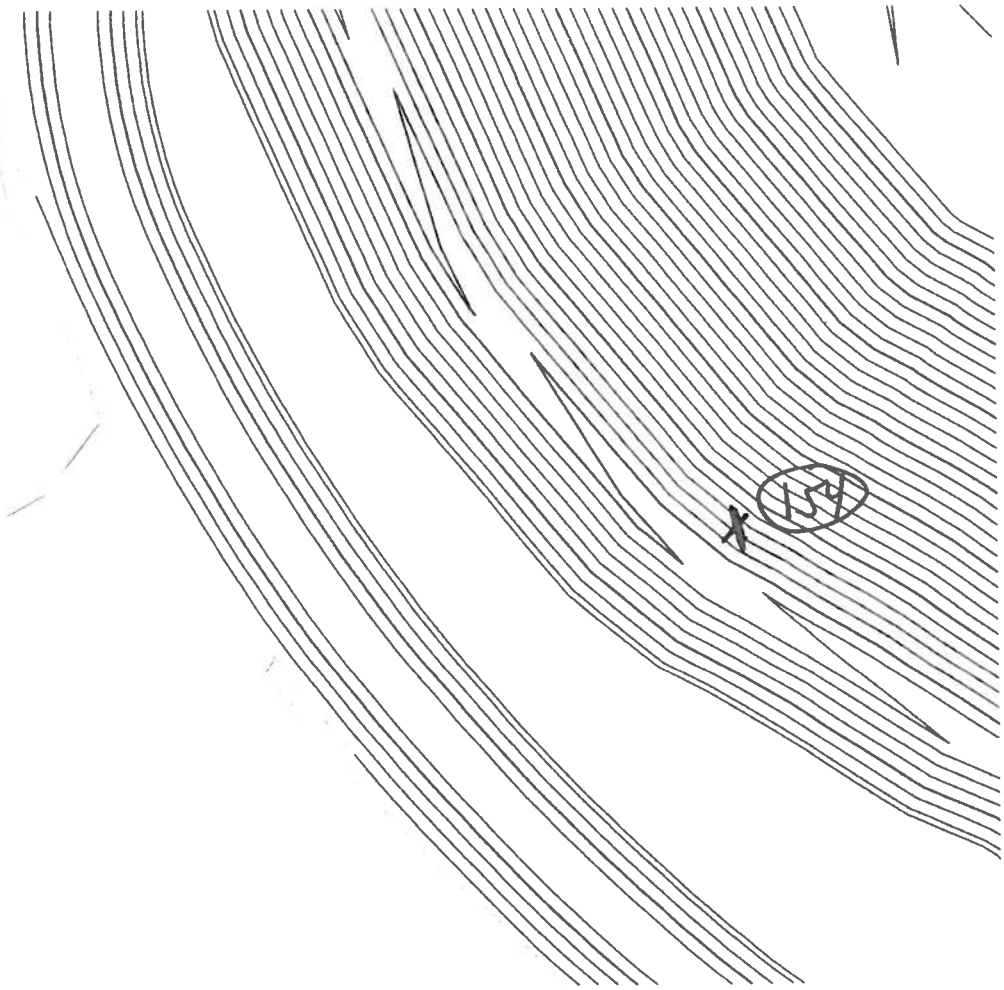
Signature of CQA Monitor — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	08/02/12 (Thursday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster / Nate Givens	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

BN [illegible] — Signature of CQA Monitor

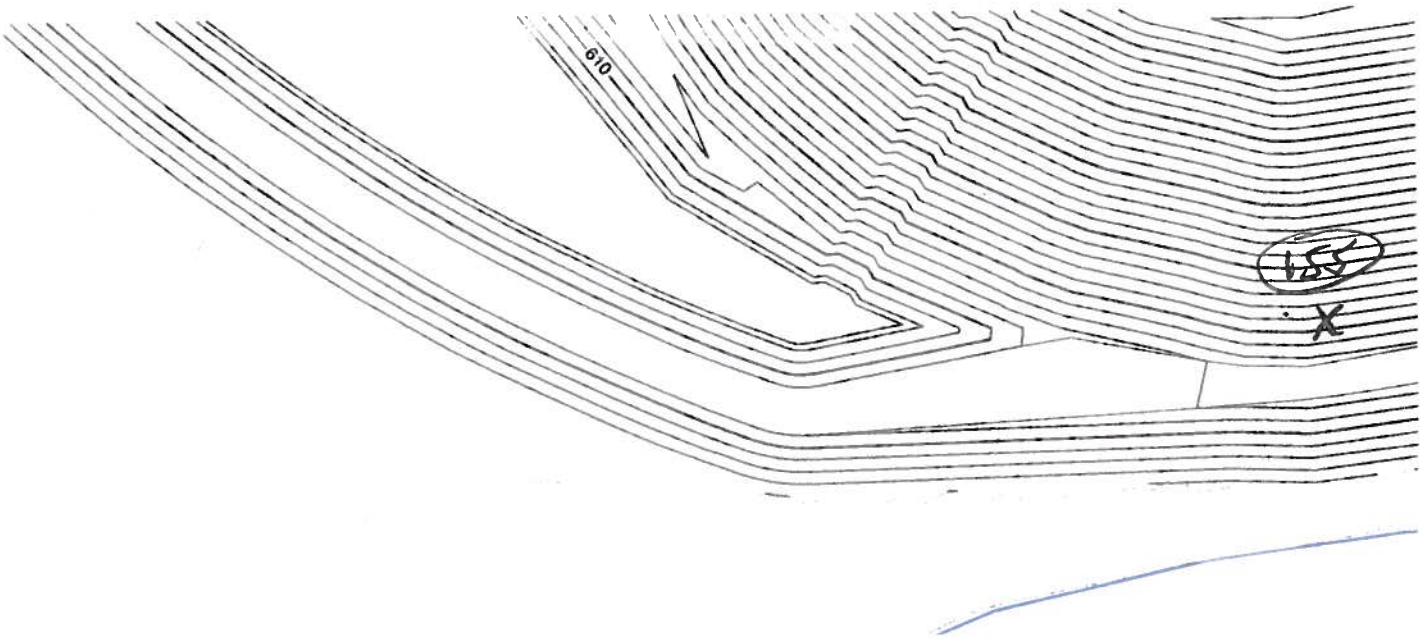
08/02/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	08/02/12 (Thursday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster / Nate Givens	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

08/02/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site: Ford Rd.

Project: Phase 2 Remedial Action

Project No: 142889

BC Personnel: Bill Foster / Nate Givens

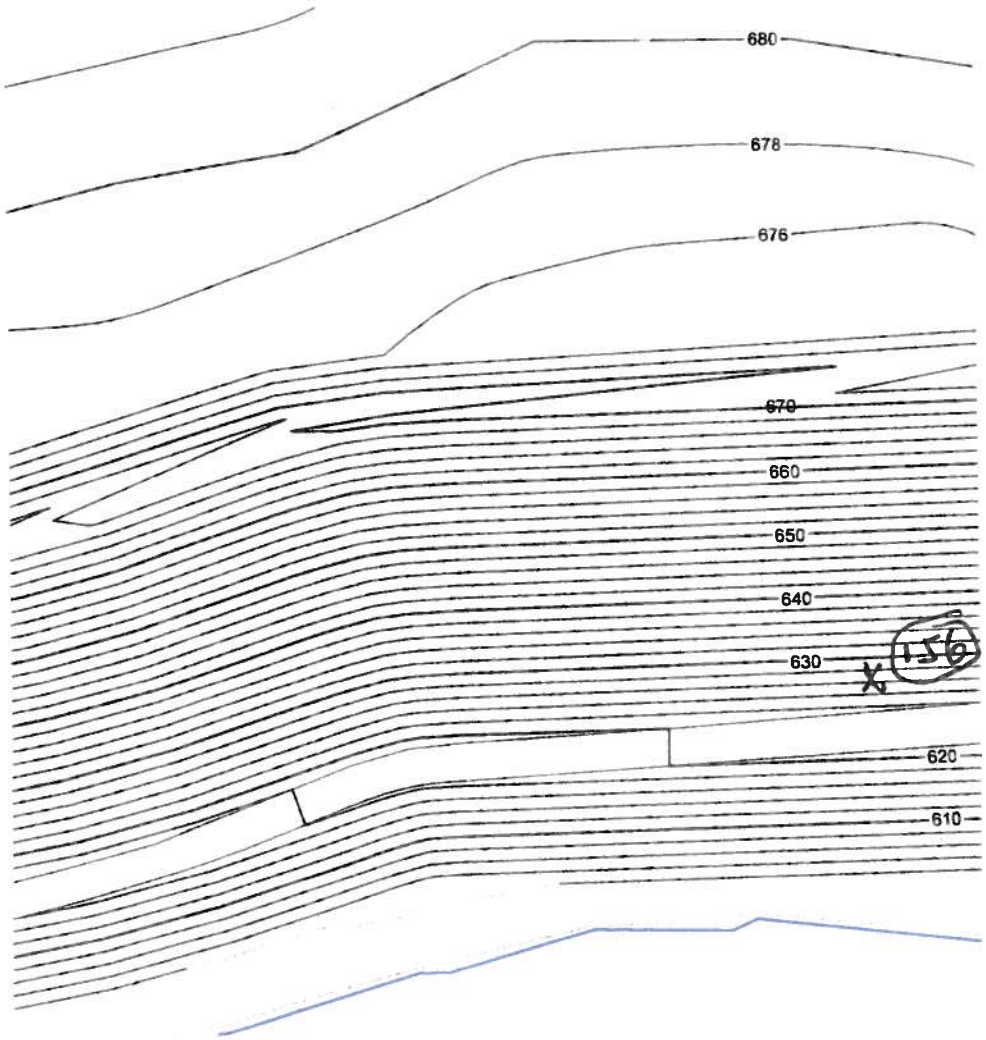
Date: 08/02/12 (Thursday)

Time In: Same as Daily

Time Out: Same as Daily

Weather: Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill [illegible] 08/02/12

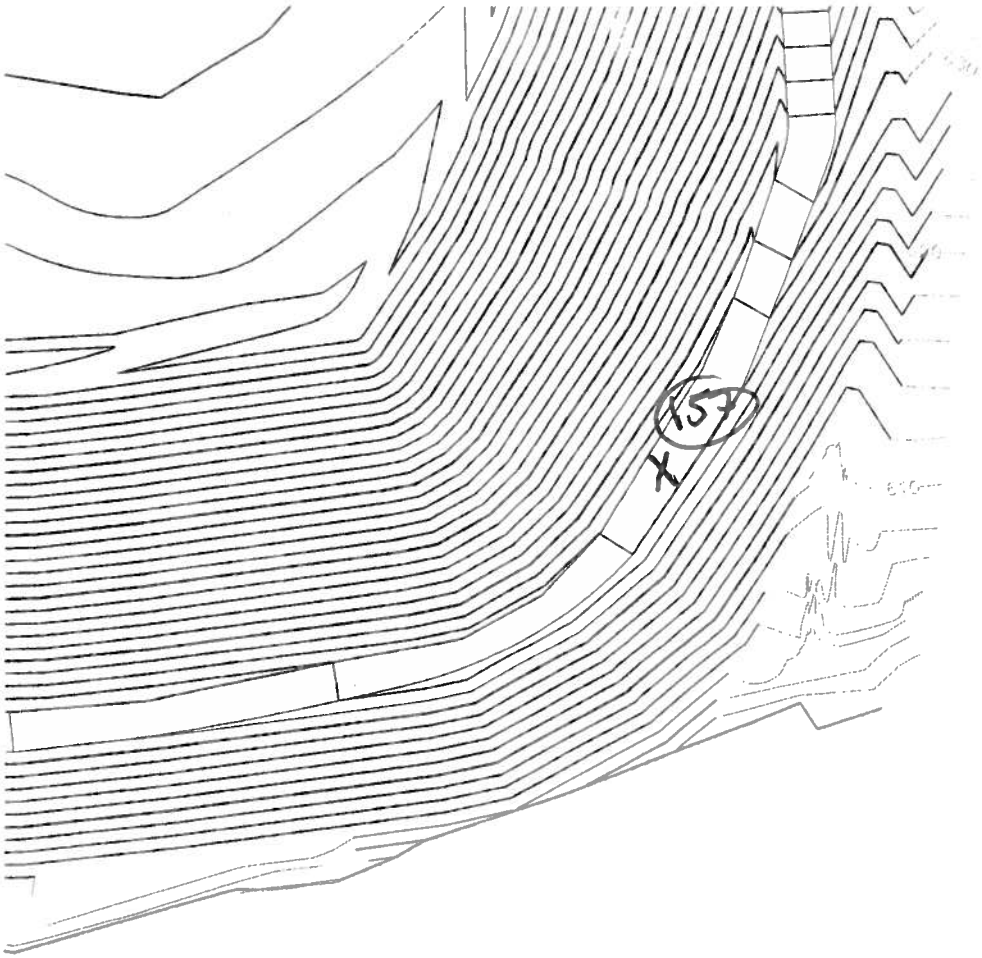
Signature of CQA Monitor — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	08/02/12 (Thursday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster / Nate Givens	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

08/02/12 — Date

(-3% TO +2% OF OPTIMUM)

Field Compaction Test Data

Brown AND Caldwell

Project Name: Ford Rd. - Phase 2 Remedial Action
Project Number: 142889
Tested By: Cowens
Date: 08/03/12 (FRIDAY)

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 610 % Change 0.4
Standard Density Count 2096 % Change -0.7

Test Information										
Test Number	158	159	160	~~161~~	~~162~~					
Lift Number	16									
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6					
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	6	6	6	6	6	4	4	4	4	4
Wet Density (pcf)	133.0	136.5	135.9							
Dry Density (pcf)	120.7	122.7	121.4							
Moisture (pcf)	12.4	13.8	14.5							
Moisture (%)	10.3	11.3	12.0							
Laboratory Data										
Proctor Curve No.	SS-22	SS-22	SS-22							
Max Dry Density (pcf)	125.5	125.5	125.5							
Optimum Moisture (%)	10.3	10.3	10.3							
Results										
% Compaction	96.1	97.7	96.7							
Pass/Fail	PASS	PASS	PASS							
Retest Number/Date										

Comments

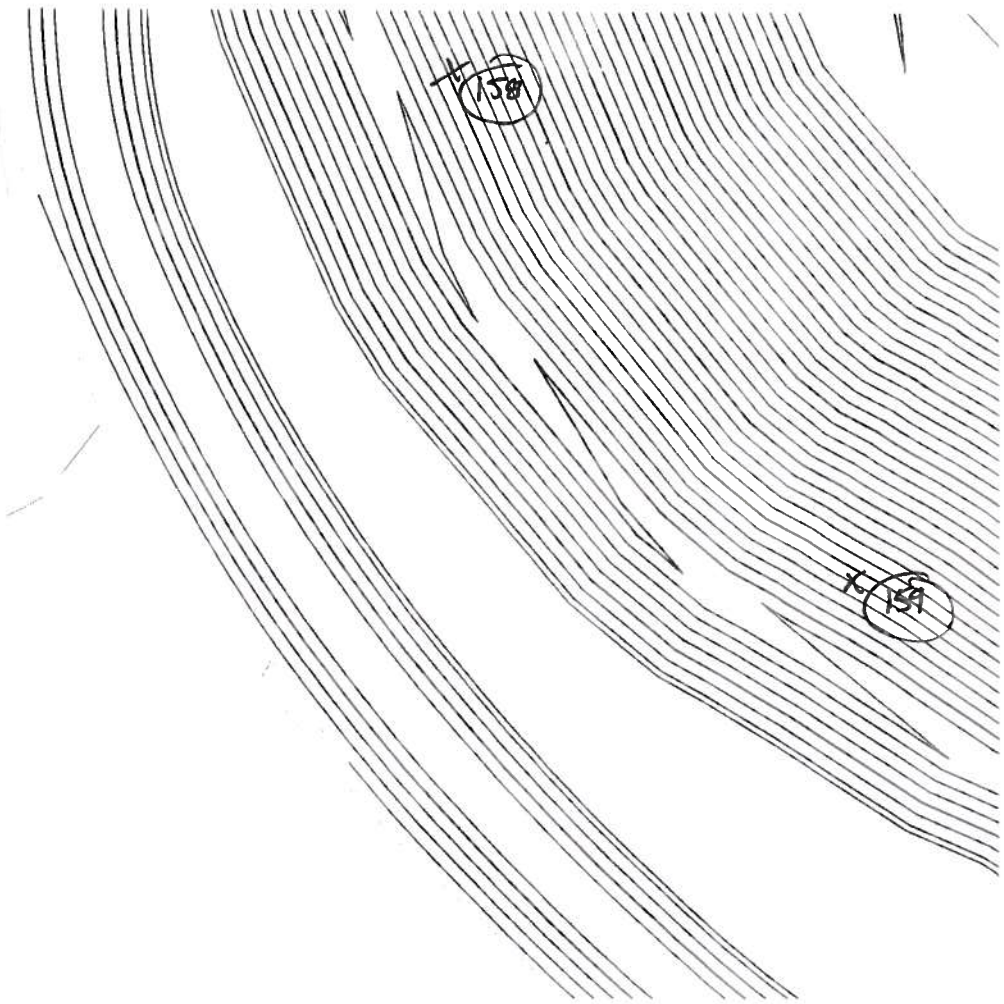
Page ___ of ___

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	08/03/12
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	N. Gurins	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

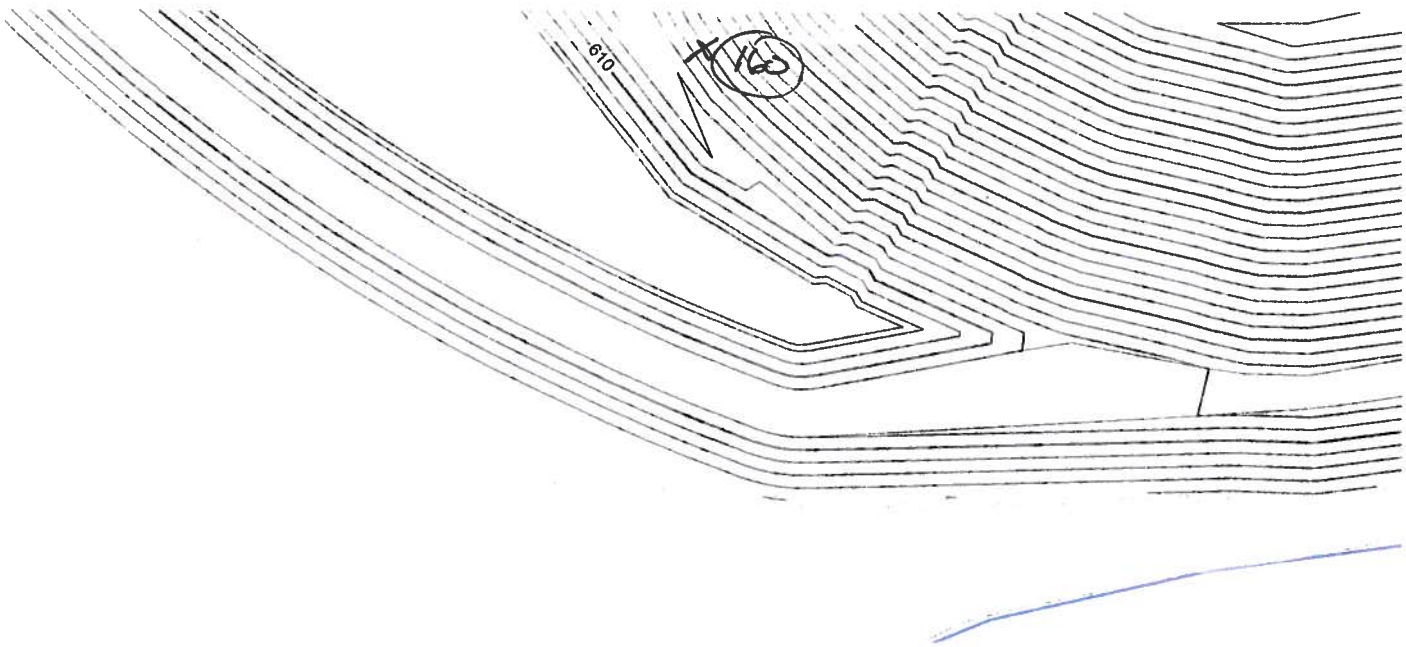
Signature of CQA Monitor — Date: 08/03/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	08/03/12
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Givens	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: [signature] Date: 08/03/12

Field Compaction Test Data

Brown AND Caldwell

Project Name:	Ford Rd. – Phase 2 Remedial Action	Gauge Model No.	Troxler 3440		
Project Number:	142889	Gauge Serial No.	24585		
Tested By:	Bill Foster	Standard Moisture Content	614	% Change	1.0
Date:	08/06/12 (Monday)	Standard Density Count	2131	% Change	1.0

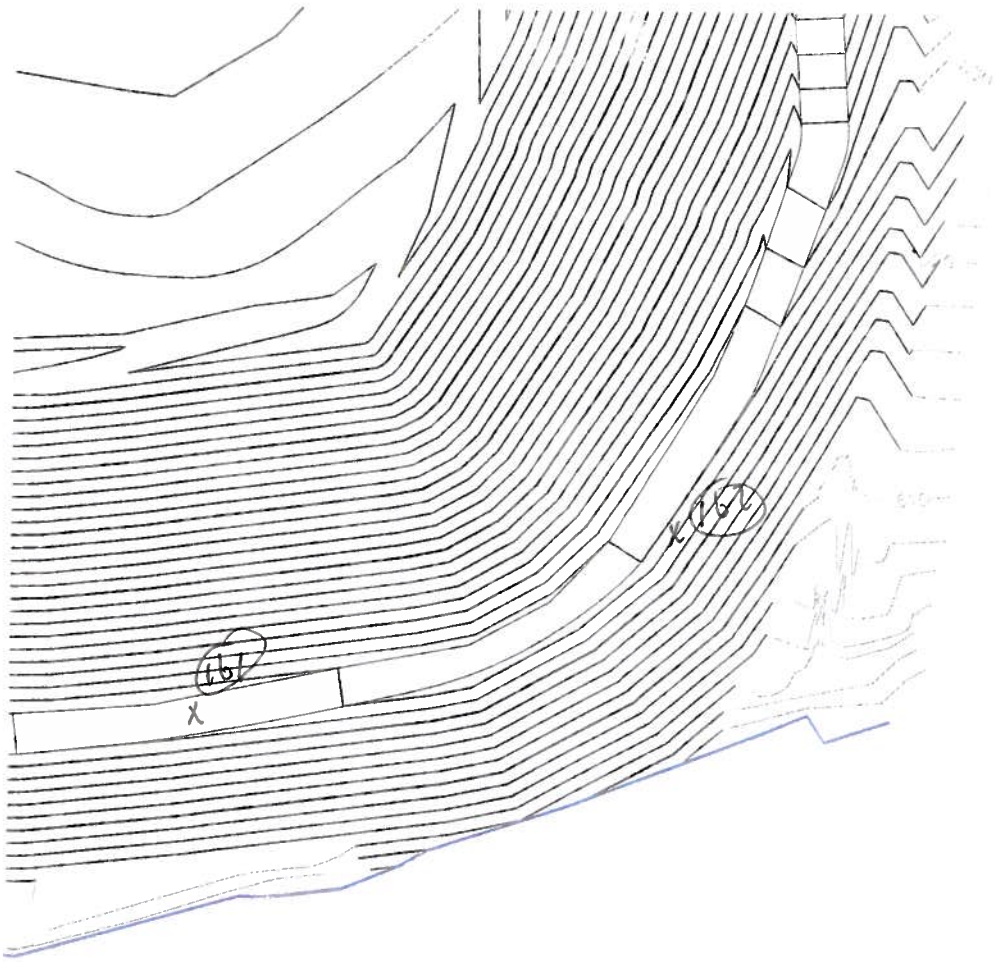
Test Information										
Test Number	161	162								
Lift Number	19	19								
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6								
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	136.1	137.6								
Dry Density (pcf)	124.1	124.8								
Moisture (pcf)	12.0	12.8								
Moisture (%)	9.7	10.3								
Laboratory Data										
Proctor Curve No.	55-22	55-22								
Max Dry Density (pcf)	125.5	125.5								
Optimum Moisture (%)	10.3	10.3								
Results										
% Compaction	98.9	99.4								
Pass/Fail	Pass	Pass								
Retest Number/Date										
Comments										

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	08/06/12 (Monday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

BW [illegible] — Signature of CQA Monitor

08/06/12 — Date

Field Compaction Test Data

Brown AND Caldwell

Project Name: Ford Rd. - Phase 2 Remedial Action
Project Number: 142889
Tested By: Bill Foster
Date: 08/07/12 (Tuesday)

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 614 % Change 1.0
Standard Density Count 2171 % Change 1.0

Test Information										
Test Number	163	164	165							
Lift Number	20	20	20							
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6							
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	136.2	137.4	136.4							
Dry Density (pcf)	123.6	125.2	124.4							
Moisture (pcf)	12.6	12.2	12.0							
Moisture (%)	10.2	9.7	9.6							
Laboratory Data										
Proctor Curve No.	SS-22	SS-22	SS-22							
Max Dry Density (pcf)	125.5	125.5	125.5							
Optimum Moisture (%)	10.3	10.3	10.3							
Results										
% Compaction	98.5	99.8	99.1							
Pass/Fail	Pass	Pass	Pass							
Retest Number/Date										

Comments

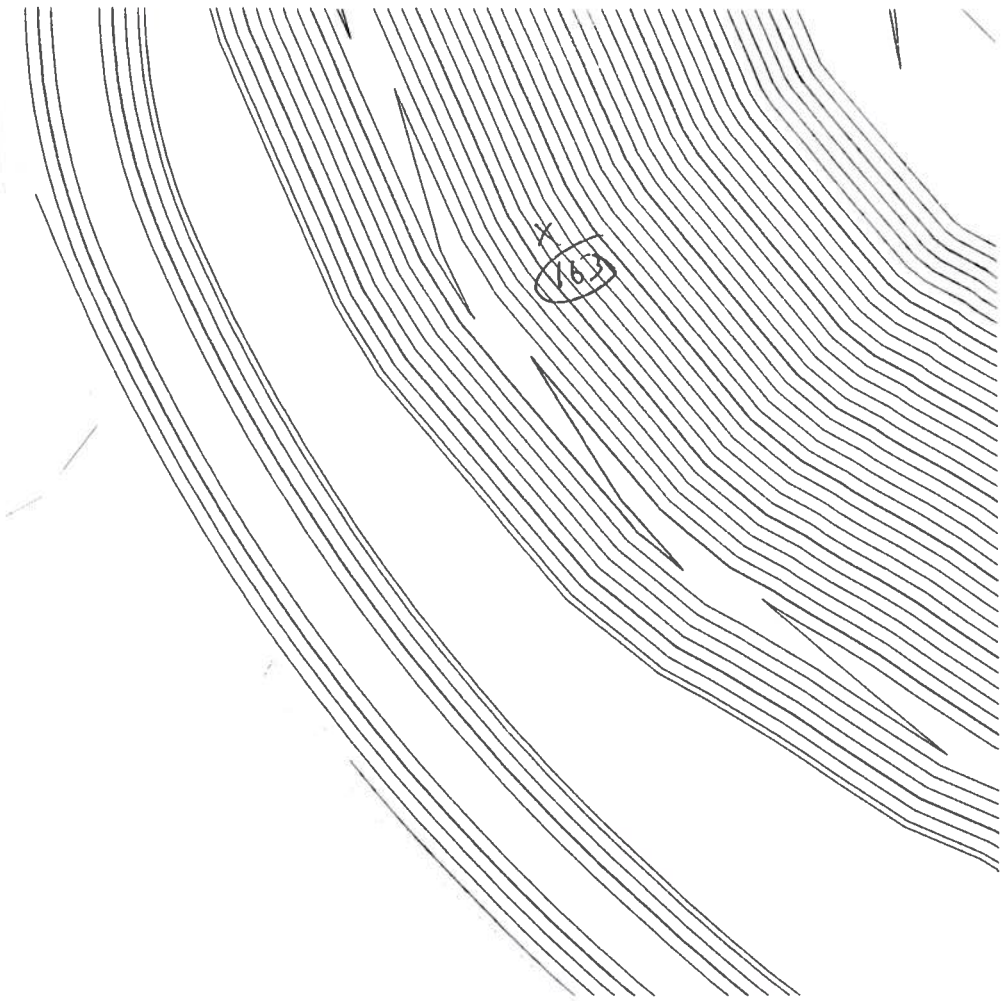
Page ___ of ___

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	08/07/12 (Tues.)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: Bill Foster

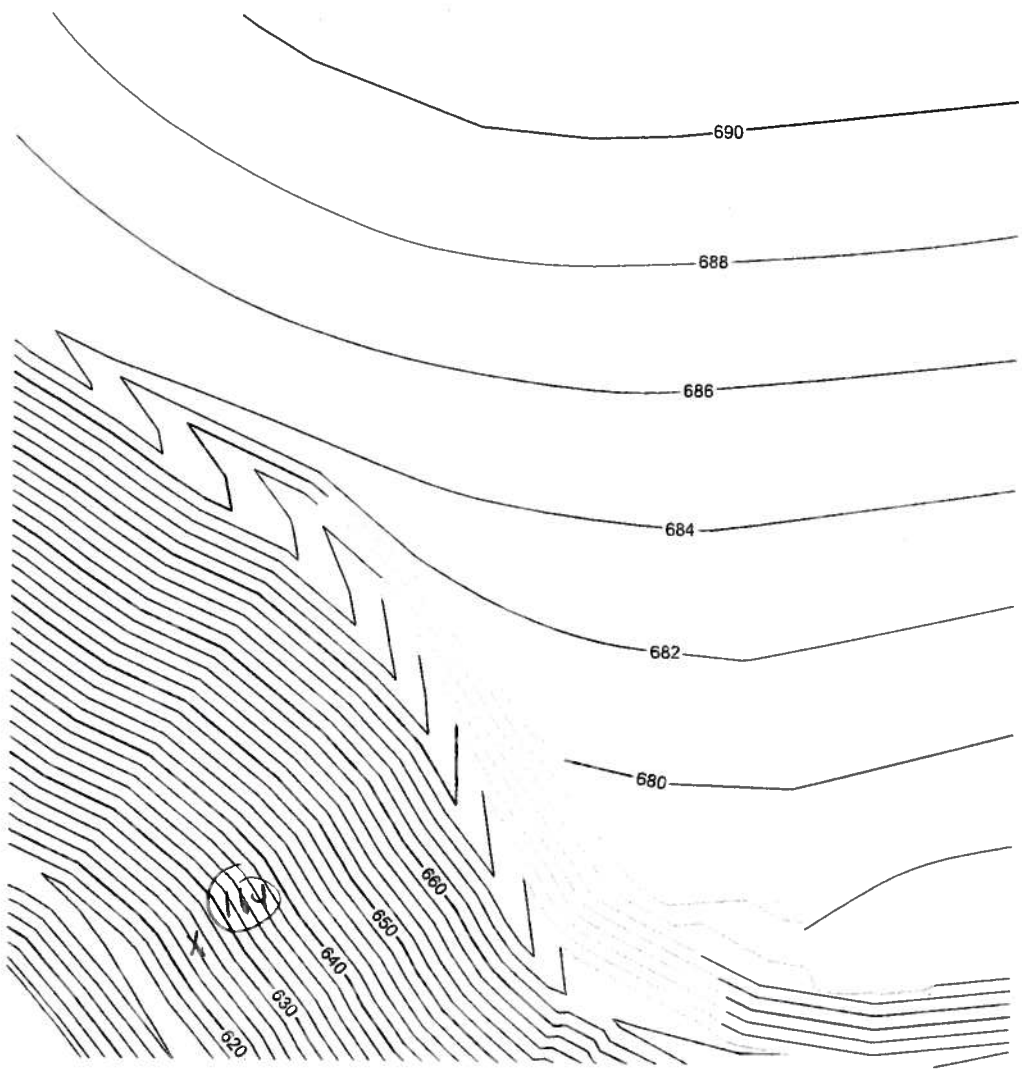
Date: 08/07/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	08/07/12 (Tuesday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

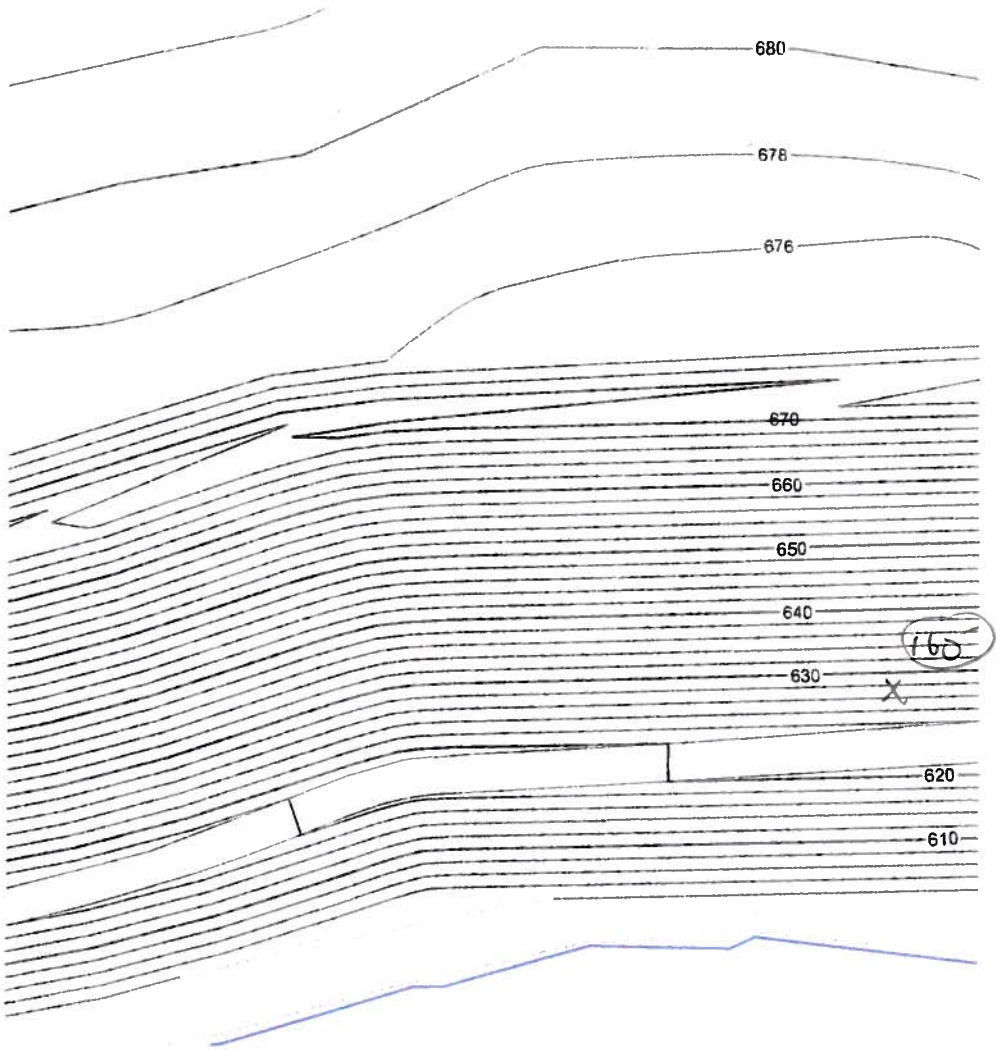
Signature of CQA Monitor: [signature] Date: 08/07/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	08/07/12 (Tuesda
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

08/07/12 — Date

Field Compaction Test Data

Brown AND Caldwell

Project Name:	Ford Rd. – Phase 2 Remedial Action	Gauge Model No.	Troxler 3440
Project Number:	142889	Gauge Serial No.	24585
Tested By:	Bill Foster	Standard Moisture Content	612 % Change -0.1
Date:	08/08/12 (wed)	Standard Density Count	2125 % Change 0.1

Test Information										
Test Number	166	167	168							
Lift Number	21	21	21							
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6							
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	125.8	126.6	126.0							
Dry Density (pcf)	122.4	123.6	123.0							
Moisture (pcf)	13.4	13.0	13.0							
Moisture (%)	10.9	10.5	10.6							
Laboratory Data										
Proctor Curve No.	55-22	55-22	55-22							
Max Dry Density (pcf)	125.5	125.5	125.5							
Optimum Moisture (%)	10.3	10.3	10.3							
Results										
% Compaction	97.5	98.5	98.0							
Pass/Fail	Pass	Pass	Pass							
Retest Number/Date										

Comments

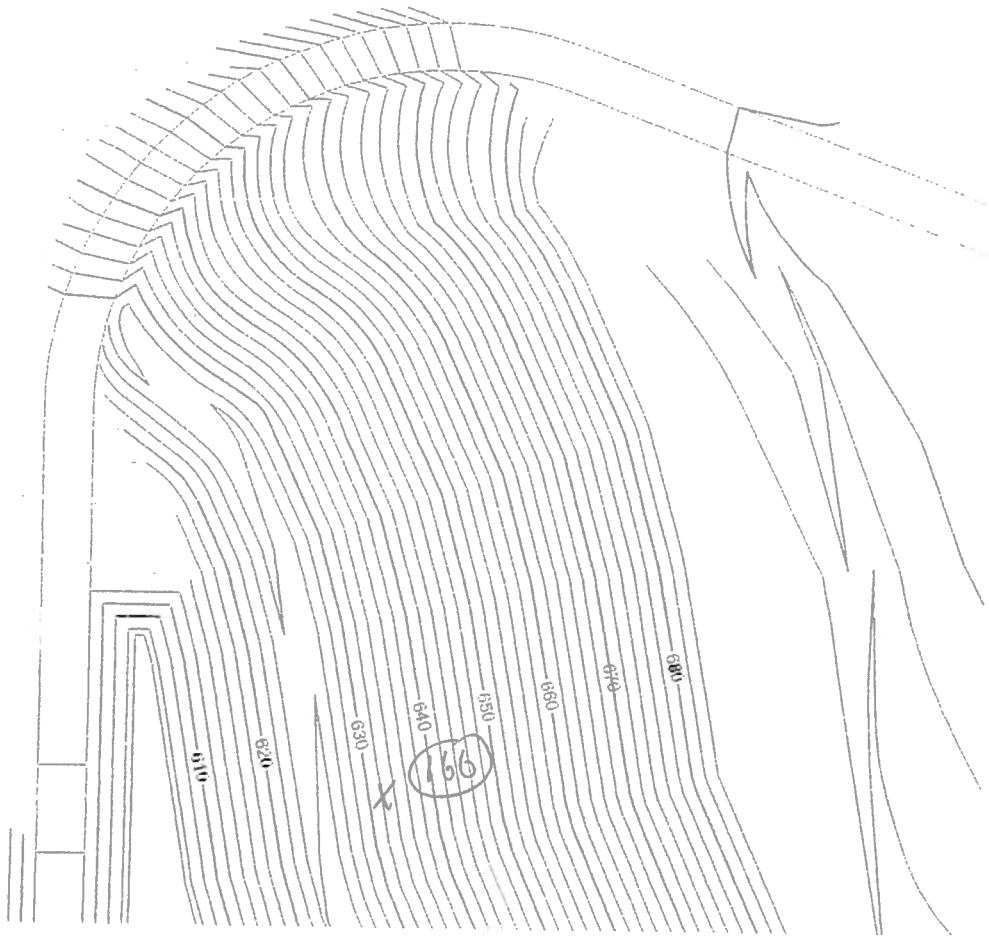
Page ___ of ___

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	08/30/12 (Wed)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142869	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster 08/30/12

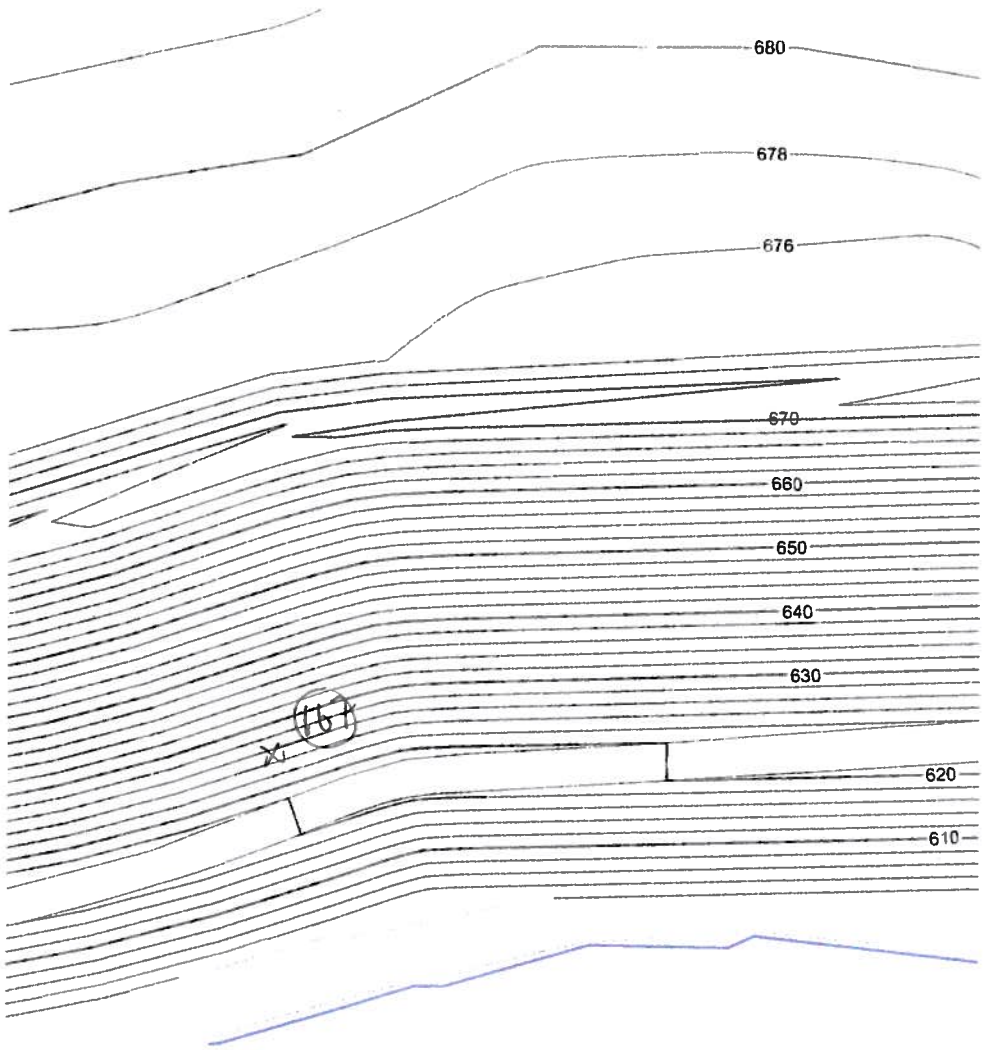
Signature of CQA Monitor Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	08/08/12 (wed)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

BW FT — Signature of CQA Monitor

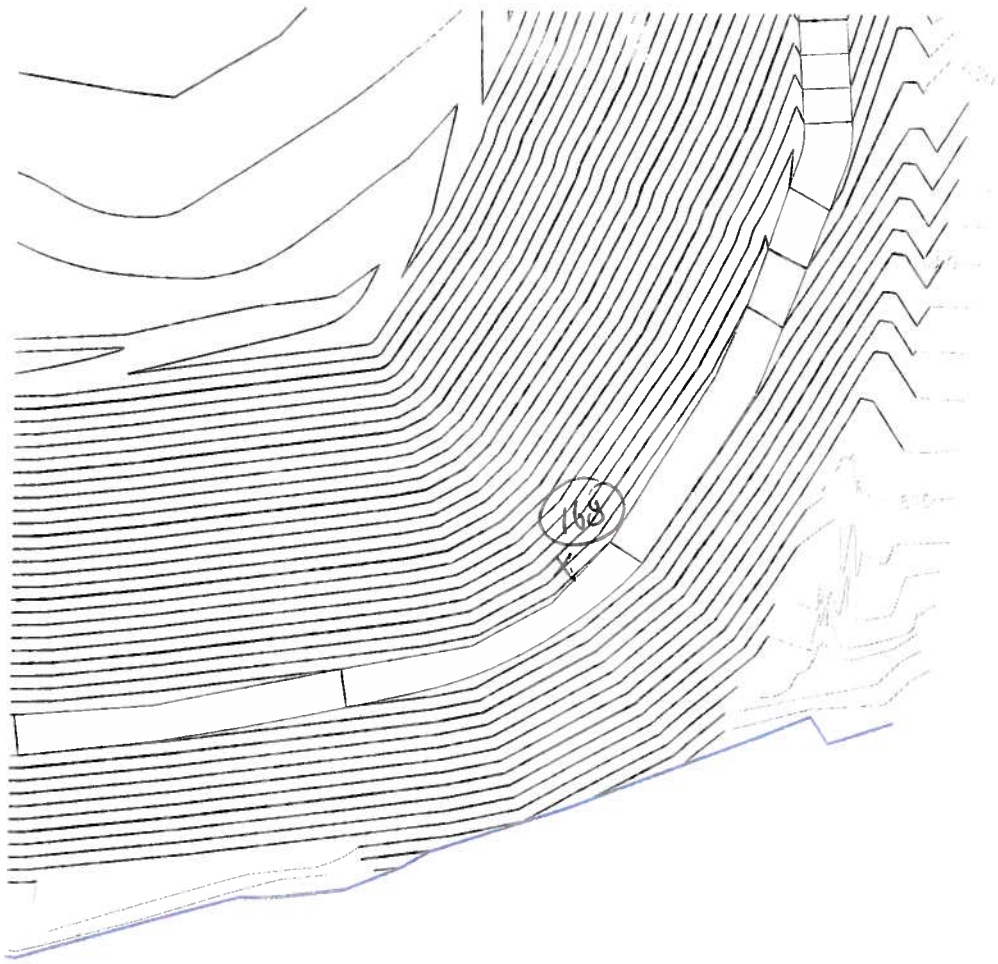
08/08/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	08/08/12 (Wed)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
EC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: Bill Foster

Date: 08/08/12

Field Compaction Test Data

Brown AND Caldwell

Project Name:	Ford Rd. - Phase 2 Remedial Action	Gauge Model No.	Troxler 3440
Project Number:	142889	Gauge Serial No.	24585
Tested By:	Bill Foster	Standard Moisture Content	6.2 % Change -0.1
Date:	08/13/12 (Monday)	Standard Density Count	2125 % Change 0.1

Test Information										
Test Number	169	170	171							
Lift Number	22	22	22							
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6							
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	135.9	135.0	135.6							
Dry Density (pcf)	123.6	122.0	122.4							
Moisture (pcf)	12.3	13.0	13.2							
Moisture (%)	10.0	10.7	10.8							
Laboratory Data										
Proctor Curve No.	55-22	55-22	55-22							
Max Dry Density (pcf)	125.5	125.5	125.5							
Optimum Moisture (%)	10.3	10.3	10.3							
Results										
% Compaction	98.5	97.2	97.5							
Pass/Fail	Pass	Pass	Pass							
Retest Number/Date										

Comments

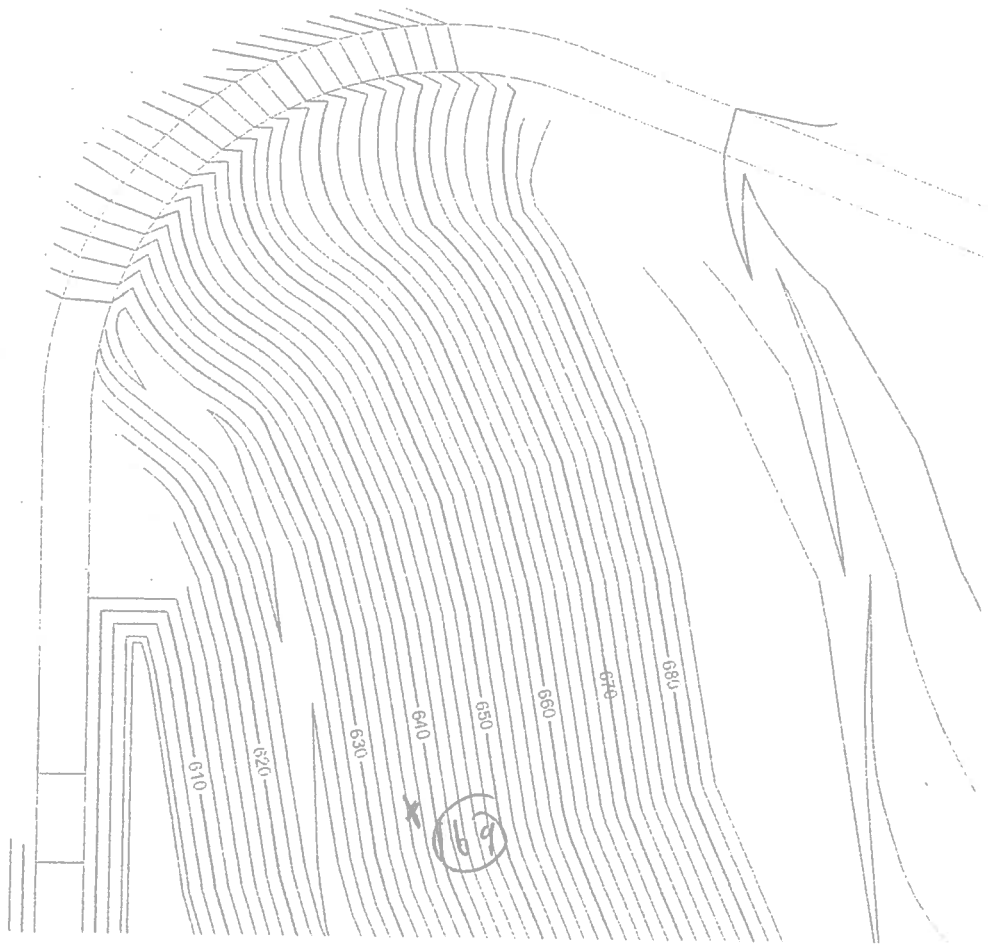
Page ___ of ___

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	08/13/12 (Monday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: [signature]

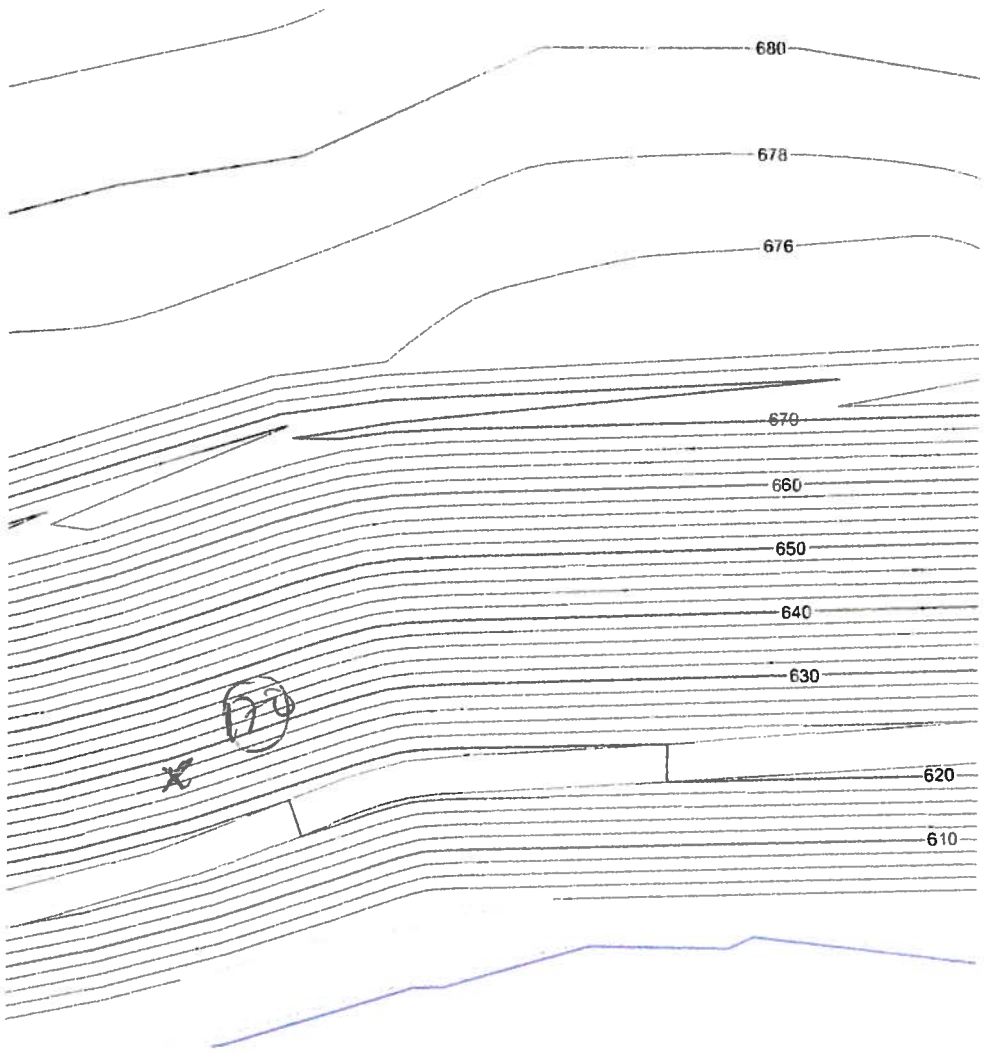
Date: 08/13/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	08/13/12 (Monday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor

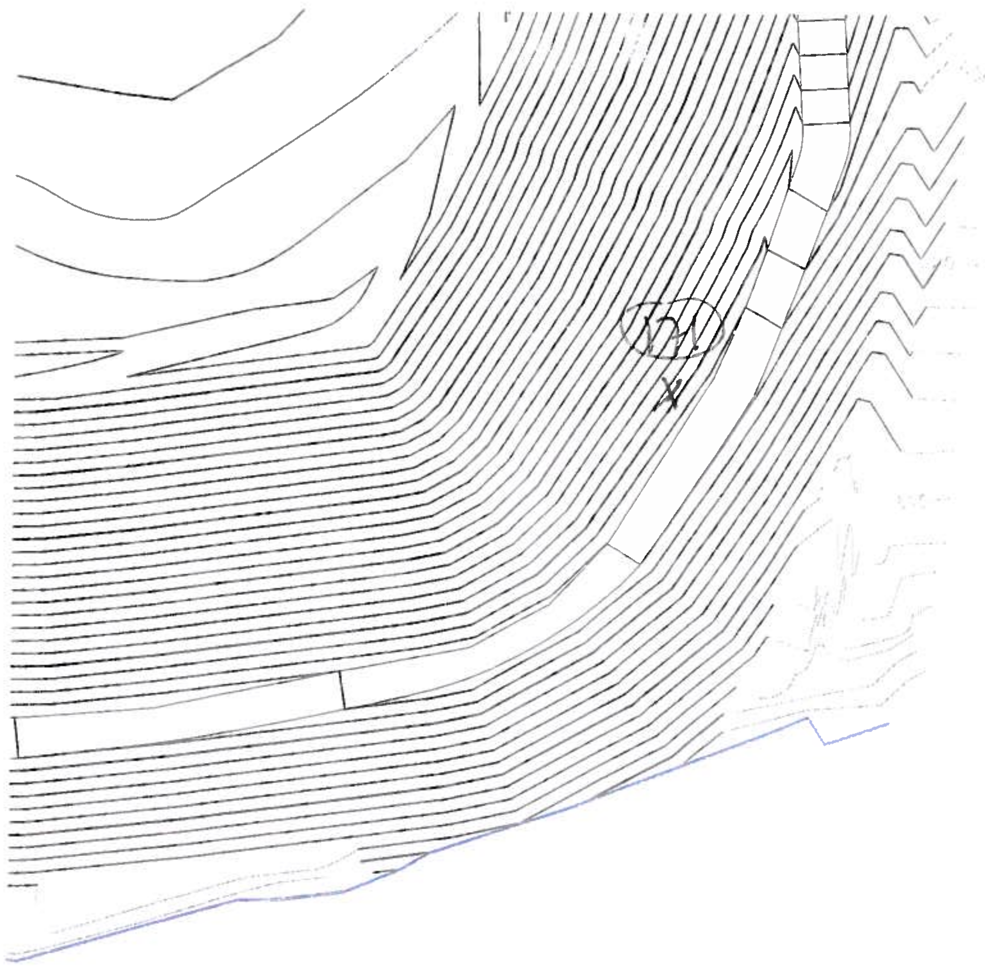
08/13/12
Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	08/13/12 (Monday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

	08/13/12
Signature of CQA Monitor	Date

Field Compaction Test Data

Brown AND Caldwell

Project Name:	Ford Rd. – Phase 2 Remedial Action	Gauge Model No.	Troxler 3440
Project Number:	142889	Gauge Serial No.	24585
Tested By:	JM	Standard Moisture Content	[redacted]6.09 % Change 0.9 [redacted]
Date:	8/15/12	Standard Density Count	[redacted]2107 % Change 0.3 [redacted]

Test Information										
Test Number	172	173	174							
Lift Number	23	23	23	~~24~~	~~24~~					
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6							
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	133.4	132.8	133.1							
Dry Density (pcf)	117.3	118.4	116.8							
Moisture (pcf)	15.6	14.4	16.3							
Moisture (%)	13.3	12.2	13.9							
Laboratory Data										
Proctor Curve No.	SS27	SS27	SS27							
Max Dry Density (pcf)	121.1	121.1	121.1							
Optimum Moisture (%)	11.1	11.1	11.1							
Results										
% Compaction	97.3	97.7	96.5							
Pass/Fail	Pass	Pass	Pass							
Retest Number/Date										

Comments

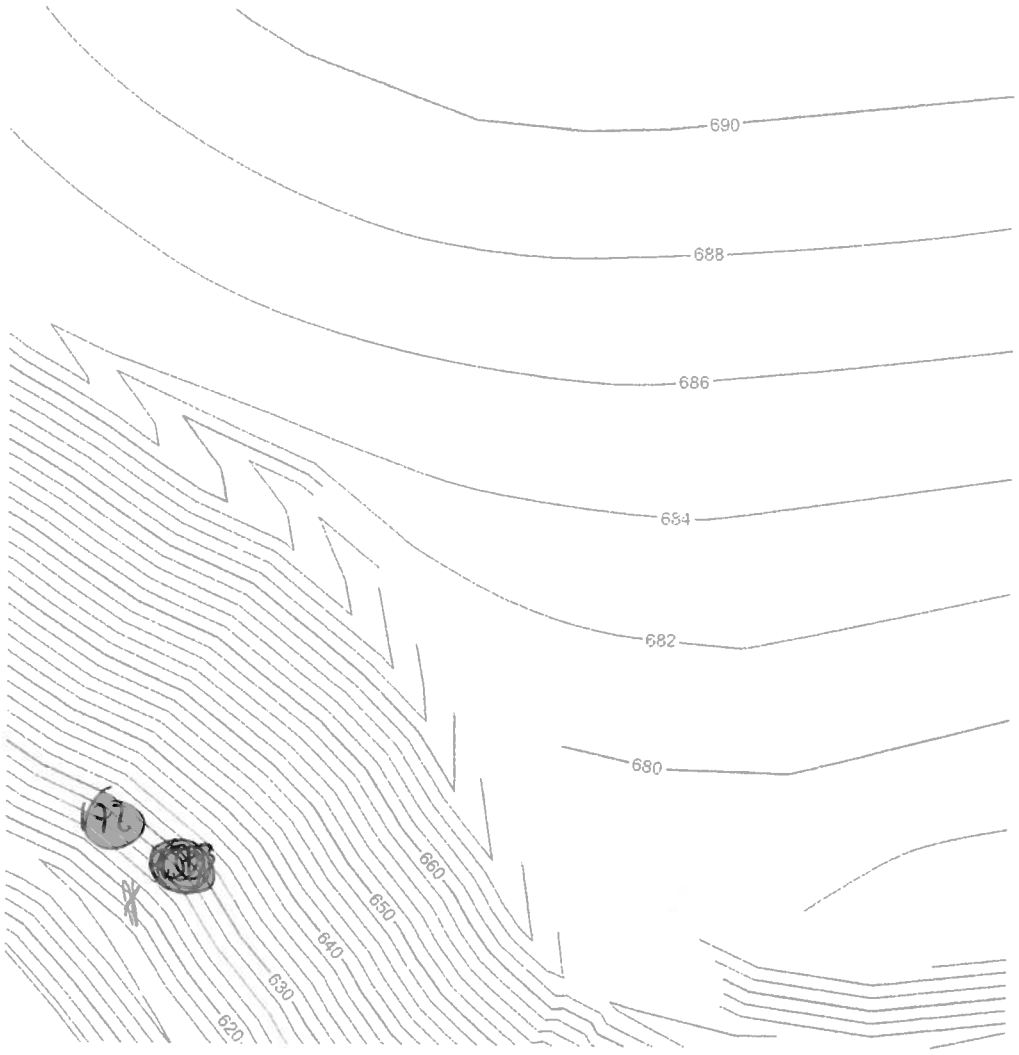
Page ___ of ___

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	08/16/12
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Julie McBurnon	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: [signature] Date: 08/16/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site: Ford Rd.

Project: Phase 2 Remedial Action

Project No: 142889

BC Personnel: Julie McGowan

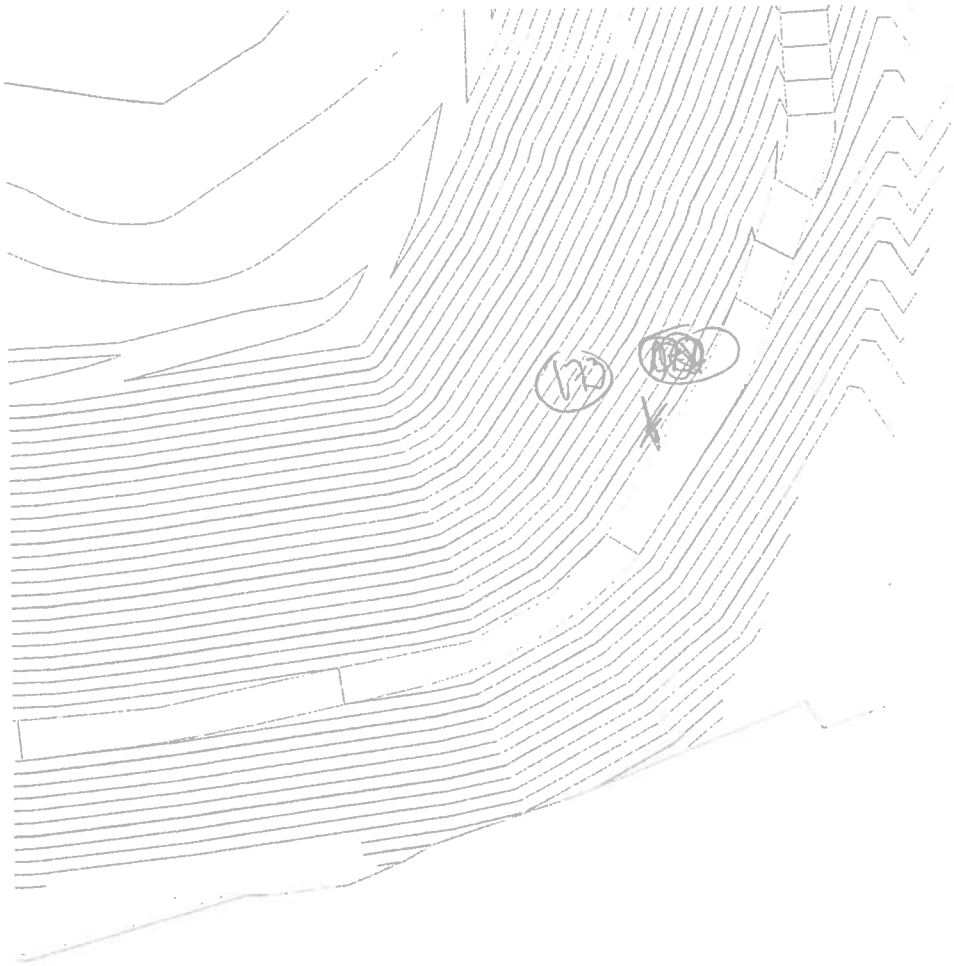
Date: 08/16/12

Time In: Same as Daily

Time Out: Same as Daily

Weather: Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

JM

Signature of CQA Monitor

08/16/12

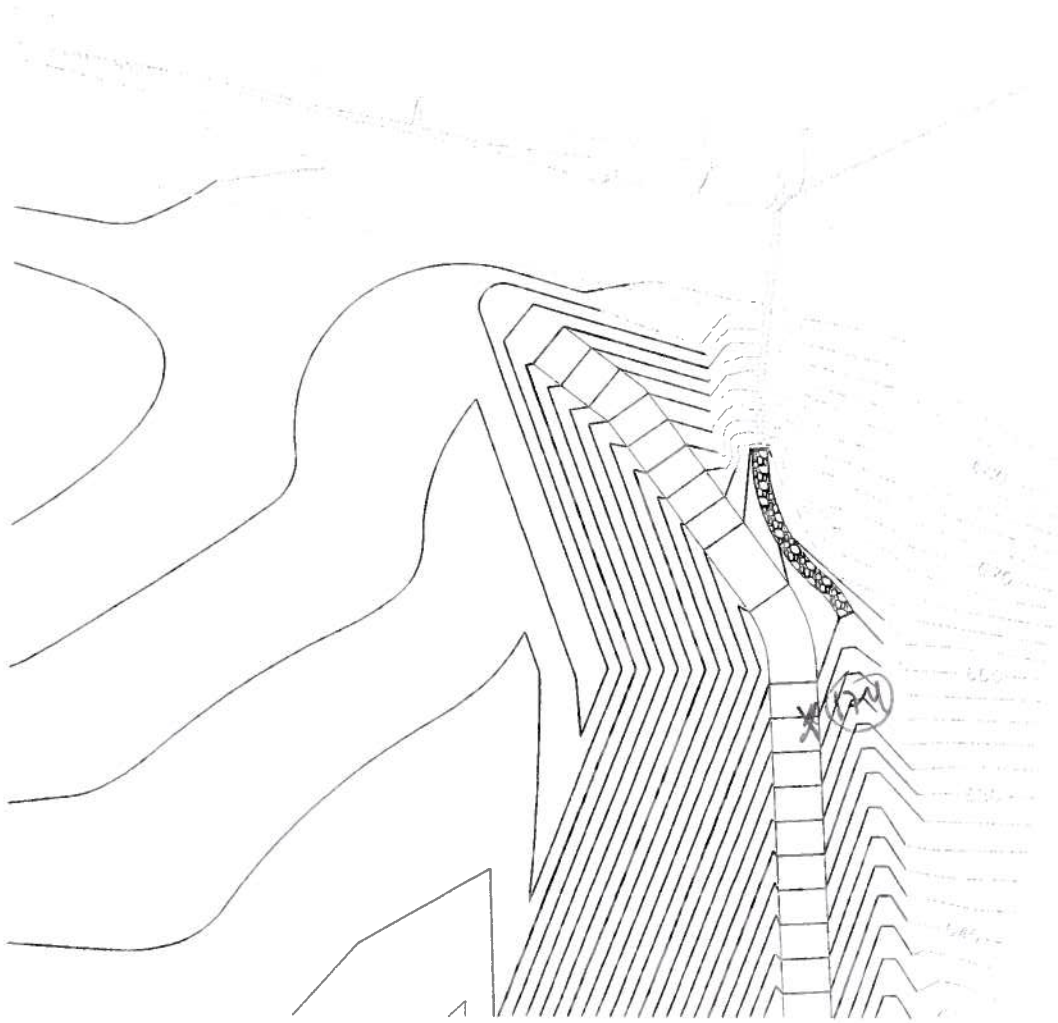
Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	08/16/12
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Julie McGowan	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

JM — Signature of CQA Monitor

08/16/12 — Date

Brown AND Caldwell

Field Compaction Test Data

Project Name: Ford Rd. - Phase 2 Remedial Action
Project Number: 142889
Tested By: J. McGowan
Date: 3/17/12

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 614 % Change 0.3%
Standard Density Count 2106 % Change -0.0%

Test Information										
Test Number	175	176	177	178	179					
Lift Number	24	24	24	25	25					
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6							
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	137.4	136.2	133.5	130.5	134.8					
Dry Density (pcf)	122.1	120.9	117.8	115.6	118.7					
Moisture (pcf)	15.3	15.3	15.5	14.9	16.1					
Moisture (%)	12.5	12.6	13.2	12.9	13.5					
Laboratory Data										
Proctor Curve No.	SS-27	SS-27	SS-27	SS-27	SS-27					
Max Dry Density (pcf)	121.1	121.1	121.1	121.1	121.1					
Optimum Moisture (%)	11.1	11.1	11.1	11.1	11.1					
Results										
% Compaction	100.8	99.8	97.4	95.4	98.0					
Pass/Fail	Pass	Pass	Pass	Pass	Pass					
Retest Number/Date										

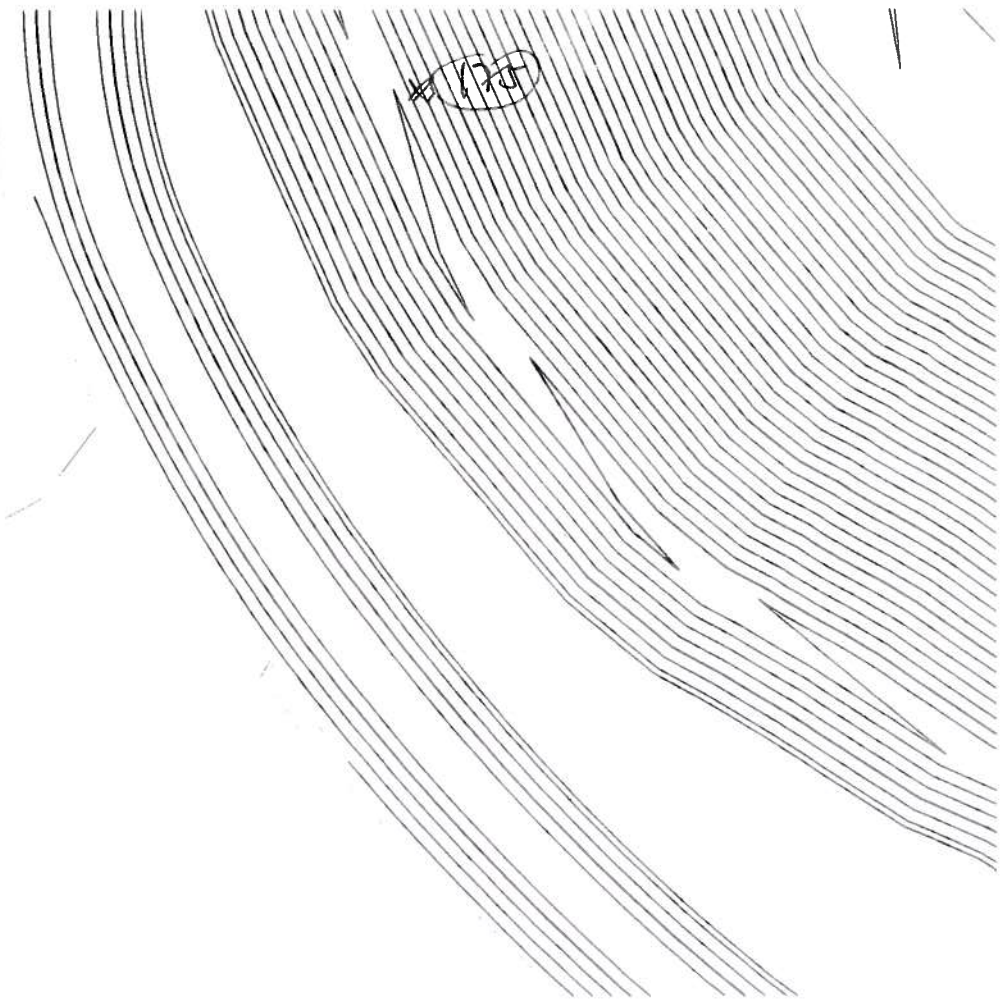
Comments

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	08/17/12
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	J. McBurn	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other

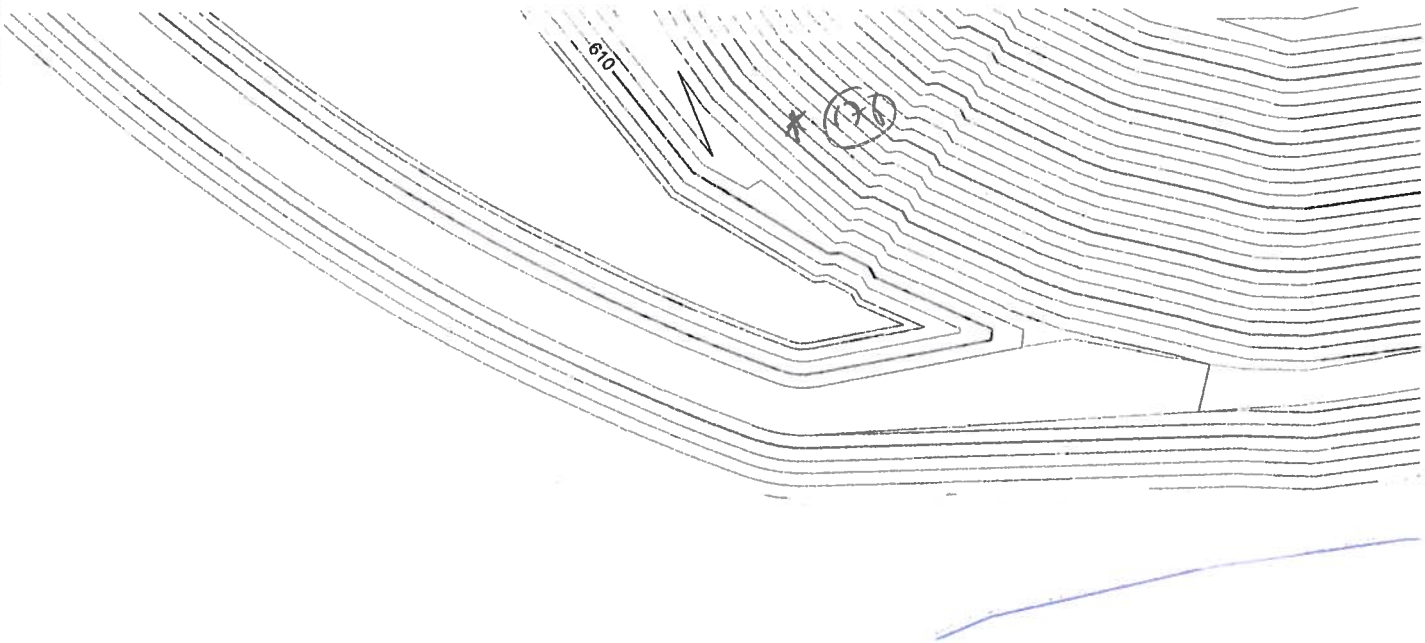
Signature of CQA Monitor: JM Date: 08/17/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	08/17/12
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Julie McGowan	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

JM — **Signature of CQA Monitor**

08/17/12 — **Date**

Brown AND Caldwell

Soil Testing Locations Field Report

Site: Ford Rd

Project: Phase 2 Remedial Action

Project No: 142889

BC Personnel: Jake McBaum

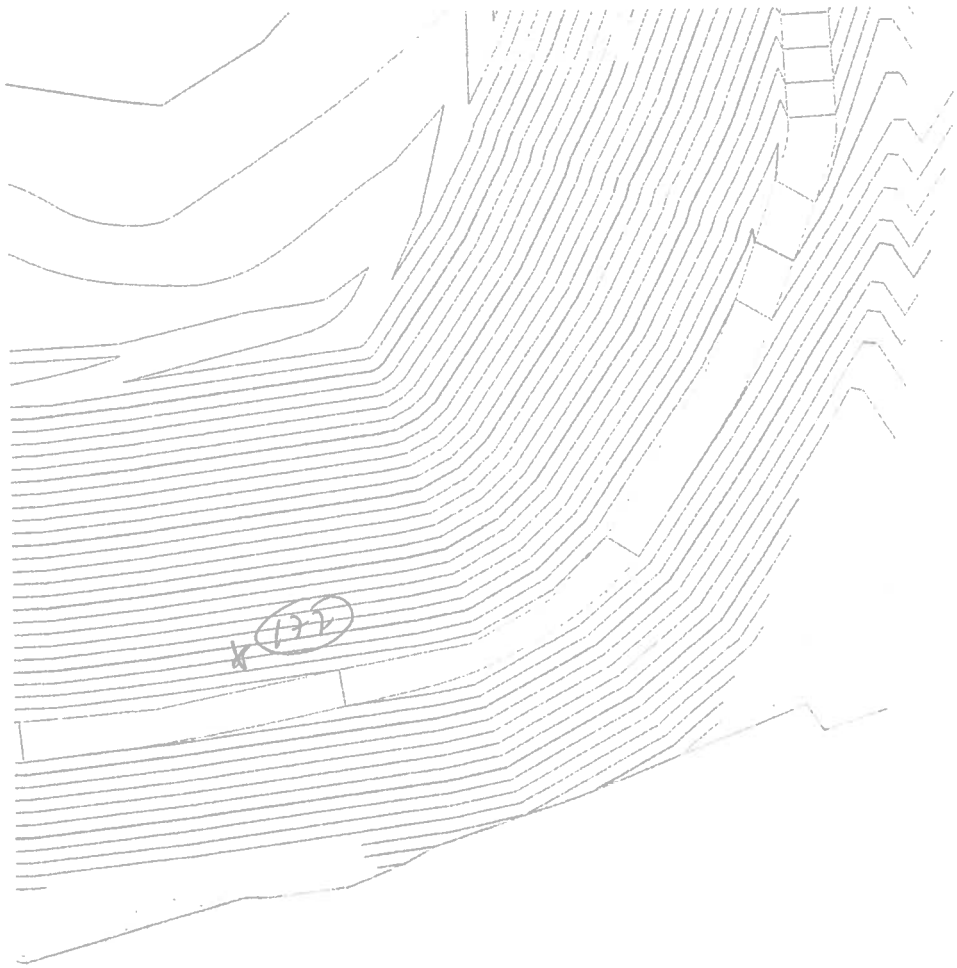
Date: 08/17/12

Time In: Same as Daily

Time Out: Same as Daily

Weather: Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: [signature]

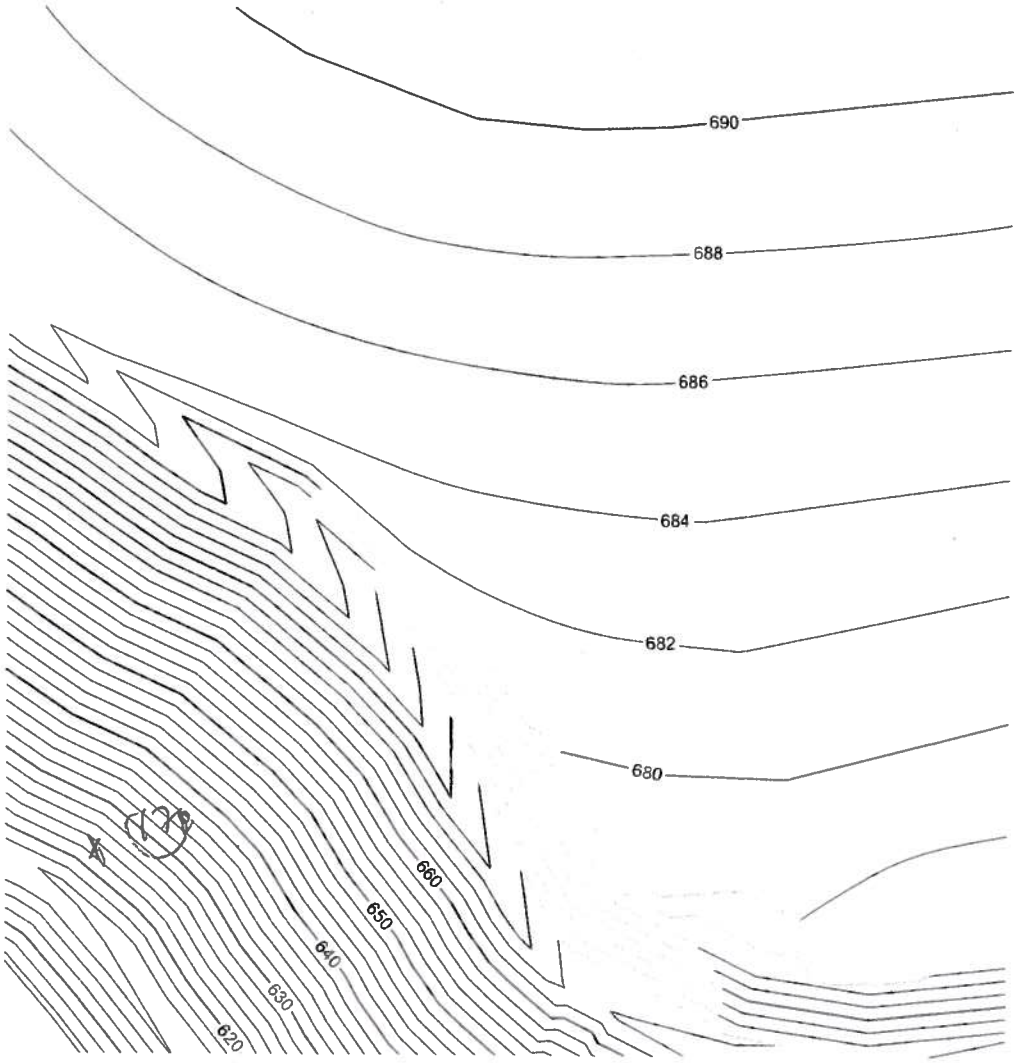
Date: 08/17/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	**Date:**	08/17/12
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	J. McBowen	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

J. M. 08/17/12

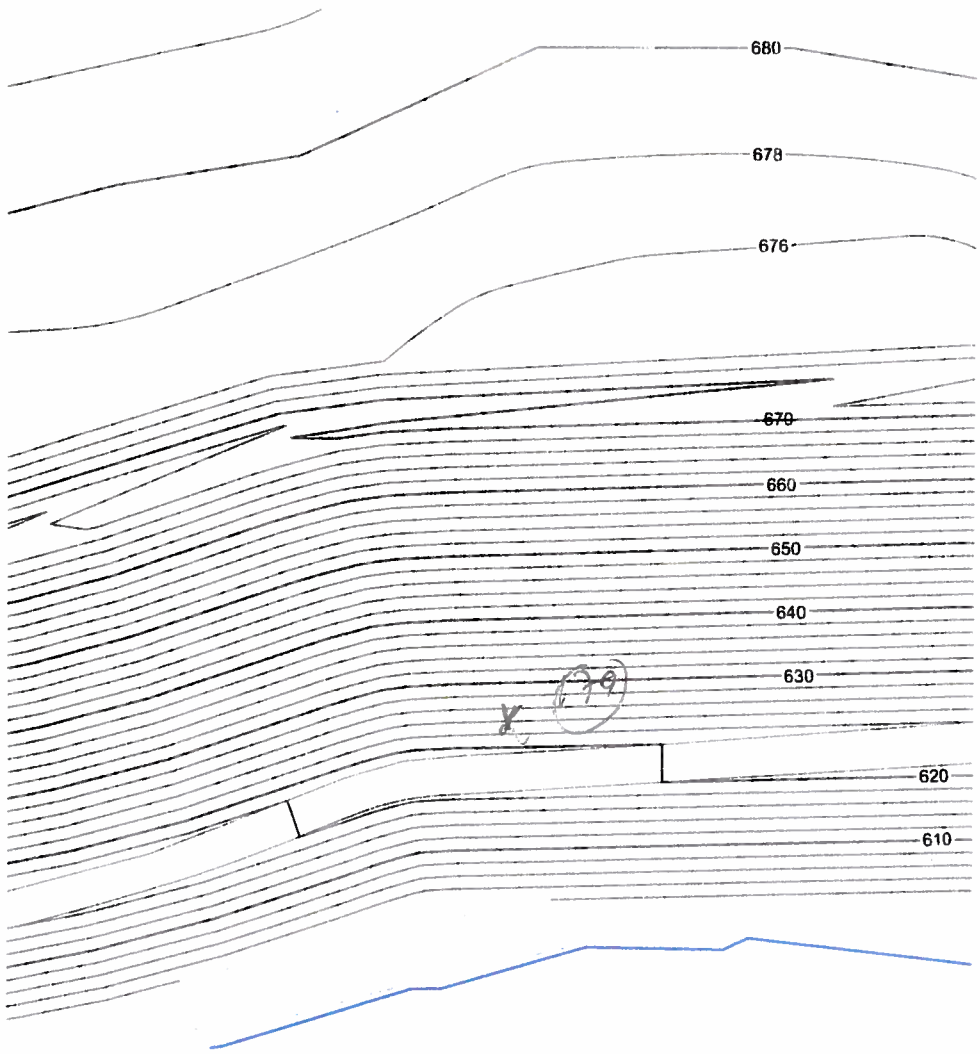
Signature of CQA Monitor — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	08/17/12
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Julie Mcburn	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other

AN — Signature of CQA Monitor

08/17/12 — Date

Field Compaction Test Data

Brown AND Caldwell

Project Name: Ford Rd. – Phase 2 Remedial Action
Project Number: 142889
Tested By: Bill Foster
Date: 08/20/12 (Monday)

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 608 % Change -0.8
Standard Density Count 2086 % Change -0.8

Test Information										
Test Number	180	181	182	183	184	185	186	187		
Lift Number	26	26	26	26	26	26	26	26		
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6	6	6	6		
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	8	8	4	4	8	4	8	4	4
Wet Density (pcf)	132.8	134.7	139.9	131.6	133.2	136.7	133.9	137.7		
Dry Density (pcf)	117.5	122.1	125.1	116.5	119.9	122.2	119.7	123.9		
Moisture (pcf)	15.3	12.2	14.8	15.1	13.3	14.1	14.2	13.8		
Moisture (%)	13.0	10.0	11.8	13.0	11.1	11.5	11.8	11.1		
Laboratory Data										
Proctor Curve No.	55-27	55-27	55-27	55-27	55-27	55-27	55-27	55-27		
Max Dry Density (pcf)	121.1	121.1	121.1	121.1	121.1	121.1	121.1	121.1		
Optimum Moisture (%)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1		
Results										
% Compaction	97.1	100.8	103.3	96.2	99.0	100.9	98.9	102.3		
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass		
Retest Number/Date										

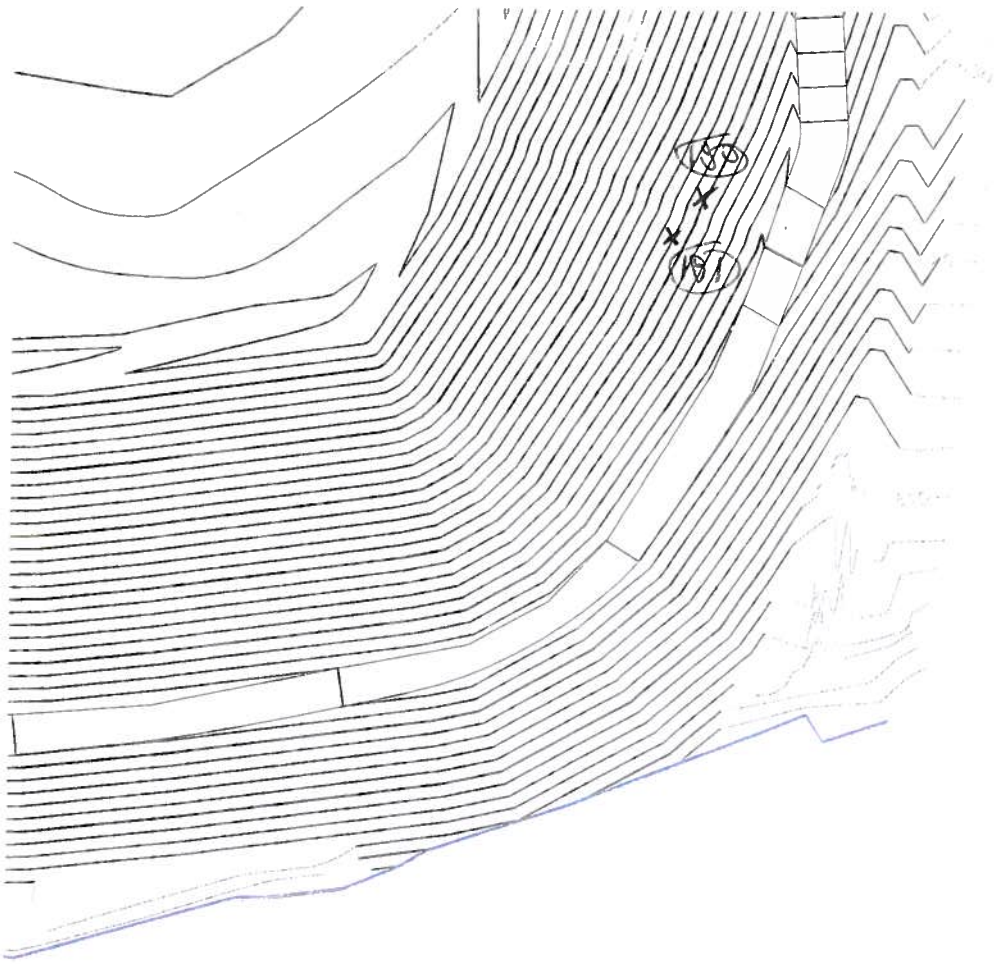
Comments

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	08/20/12 (Monday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

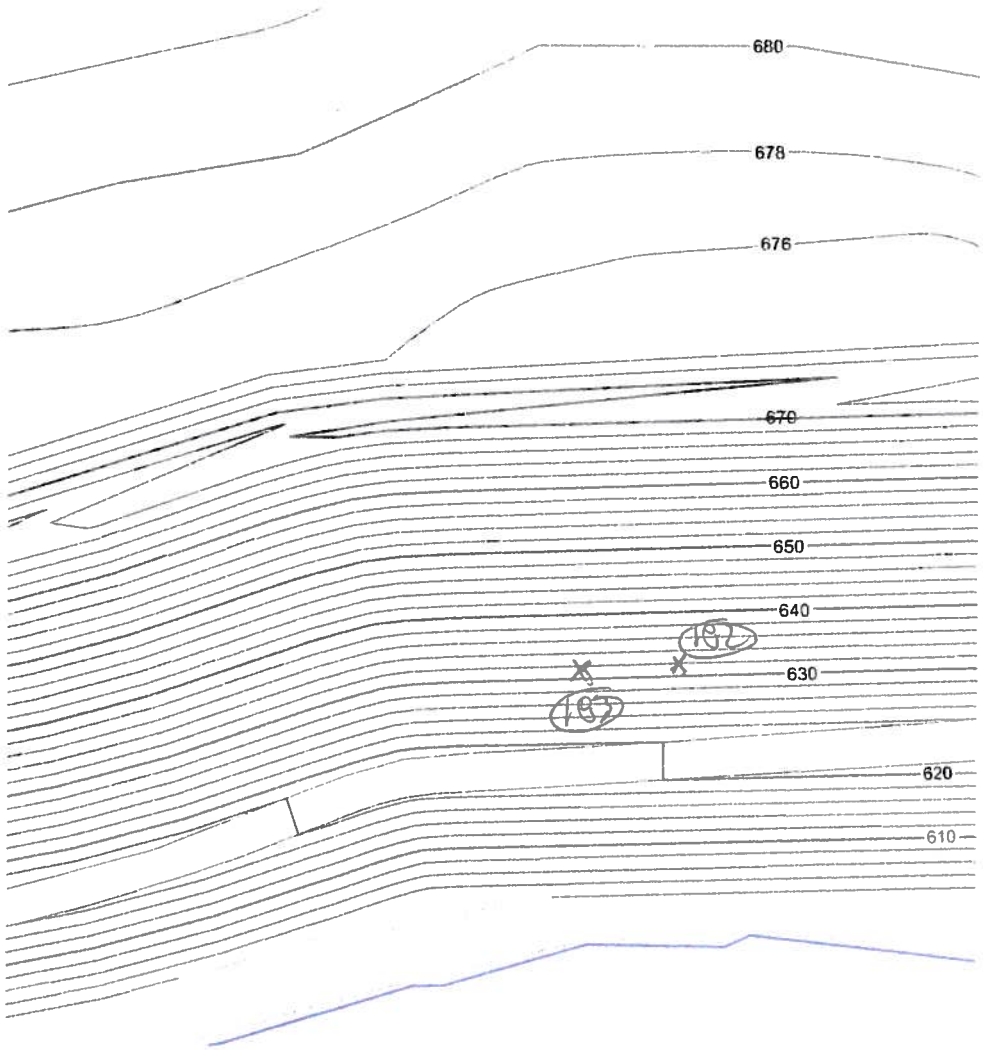
Signature of CQA Monitor: [signature] Date: 08/20/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	08/20/12 (Monday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

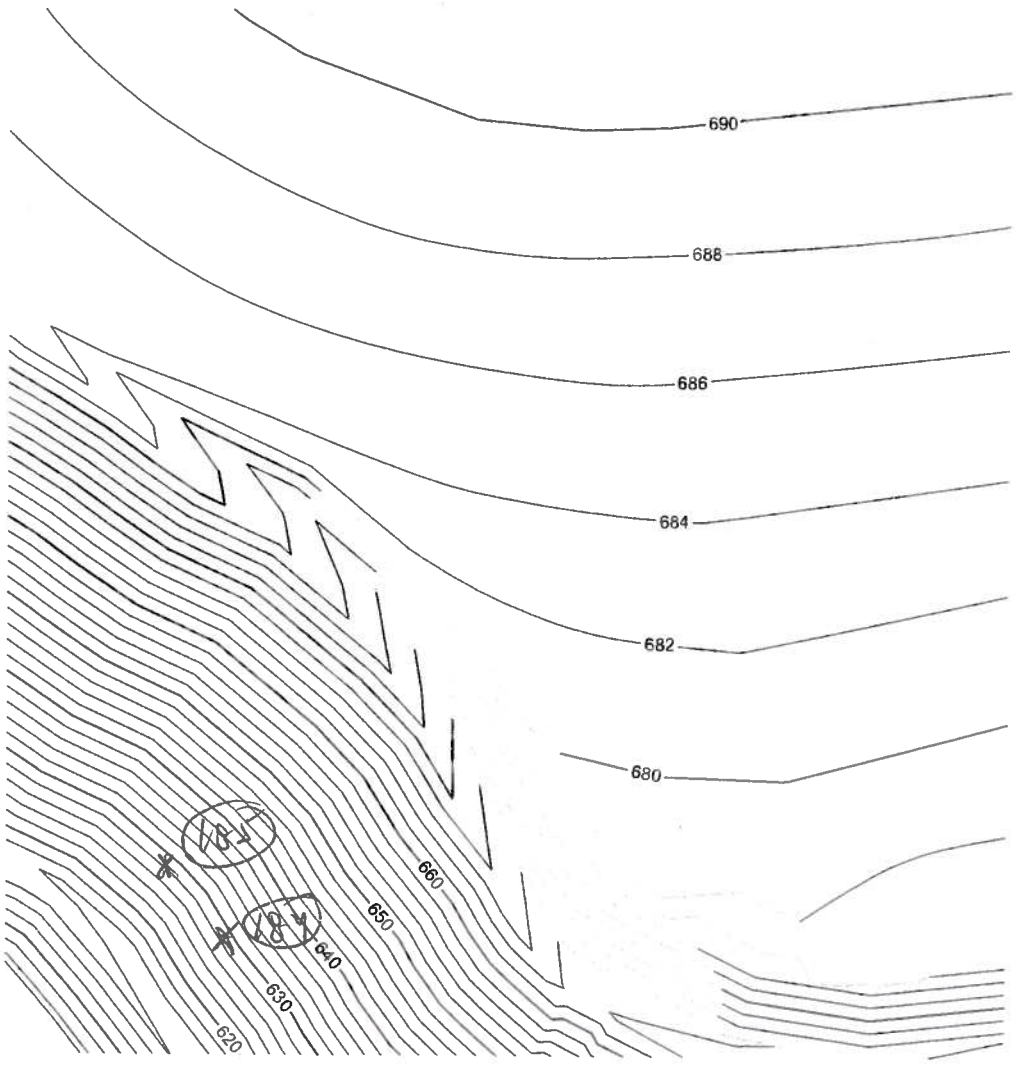
Signature of CQA Monitor — Date: 08/20/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	08/20/12 (Monday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

[signature] 08/20/12

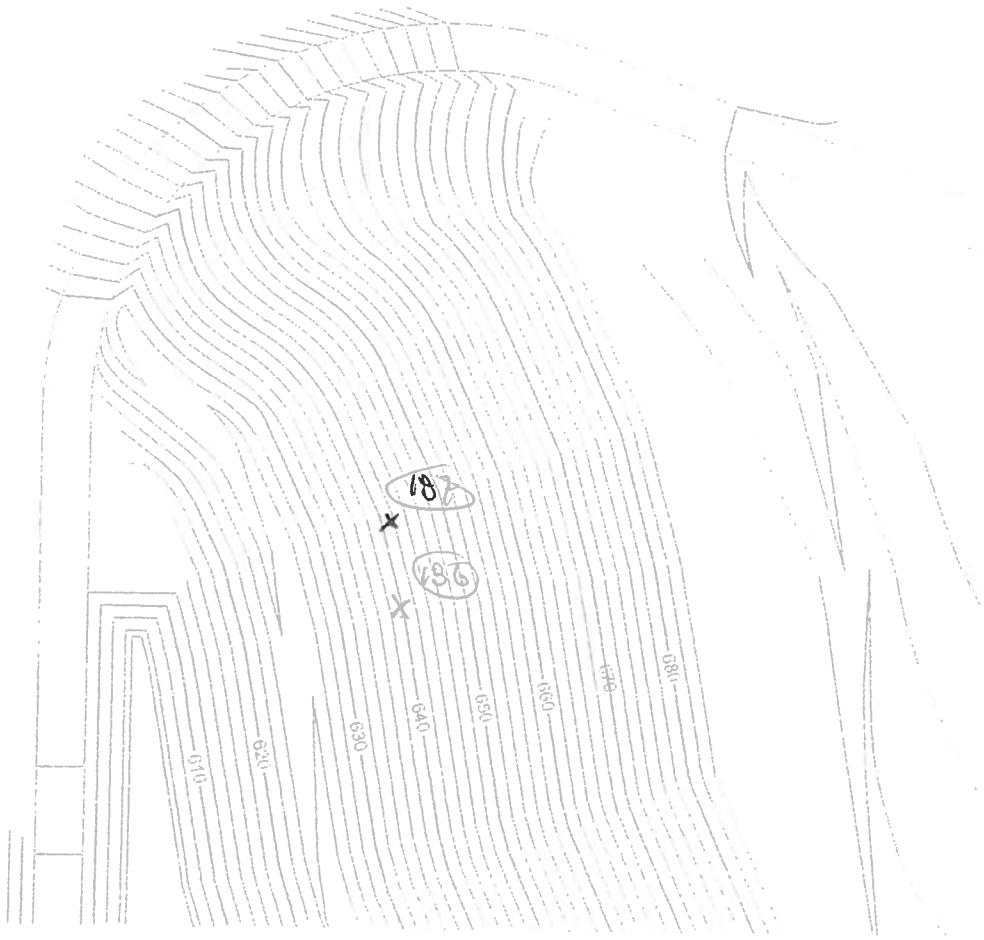
Signature of CQA Monitor — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	08/20/12 (monday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142869	Time Out:	Same as Daily
BC Personnel:	Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill [illegible] 08/20/12

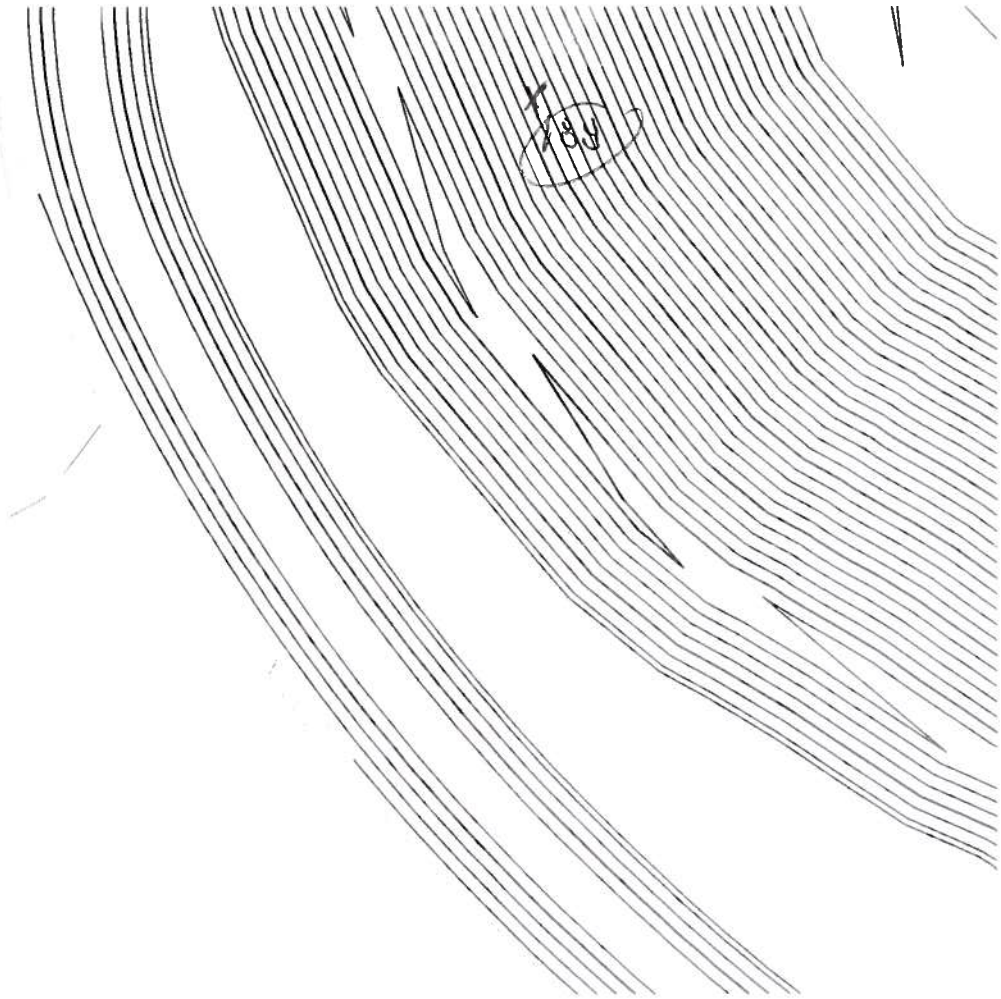
Signature of CQA Monito: Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	08/22/12 (wed)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other

BN [illegible] — Signature of CQA Monitor

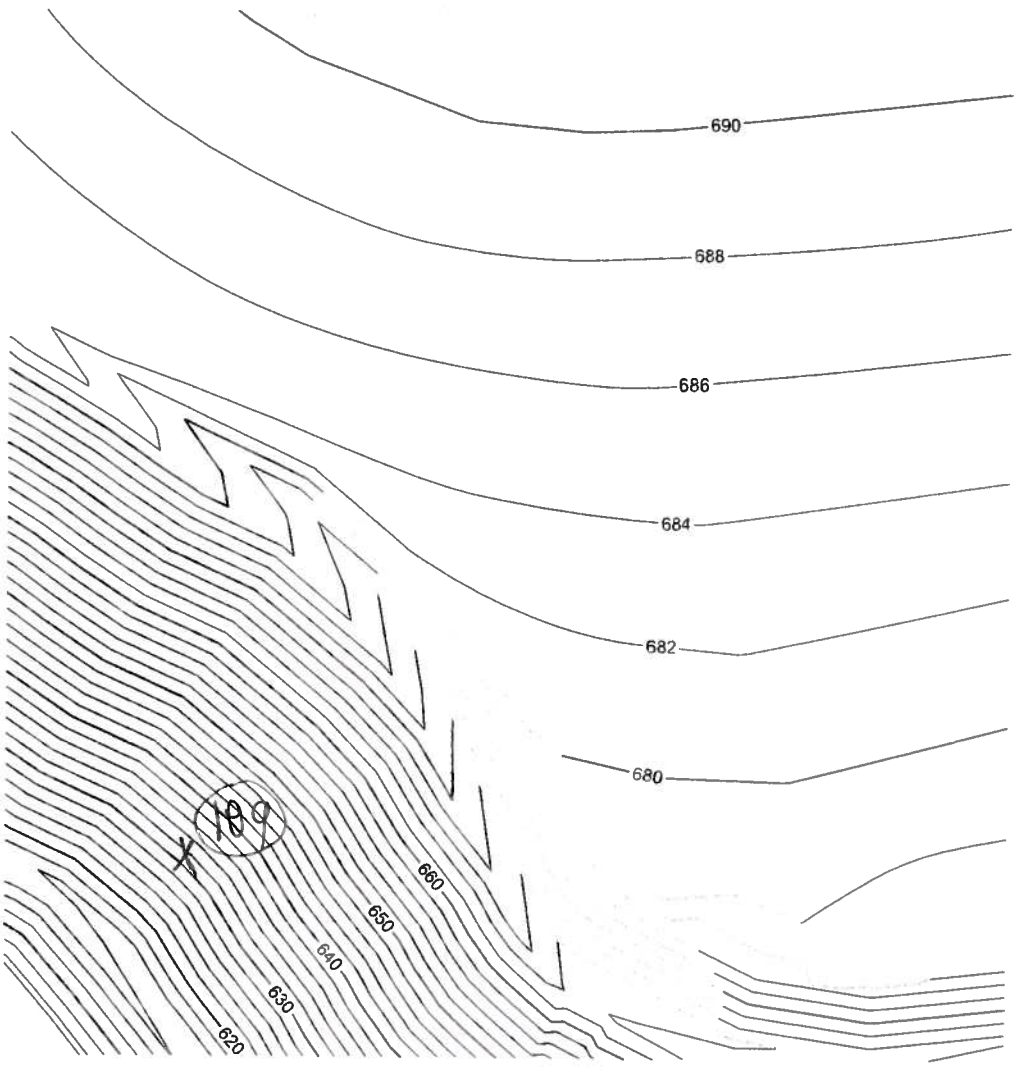
08/22/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	08/22/12 (wed)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

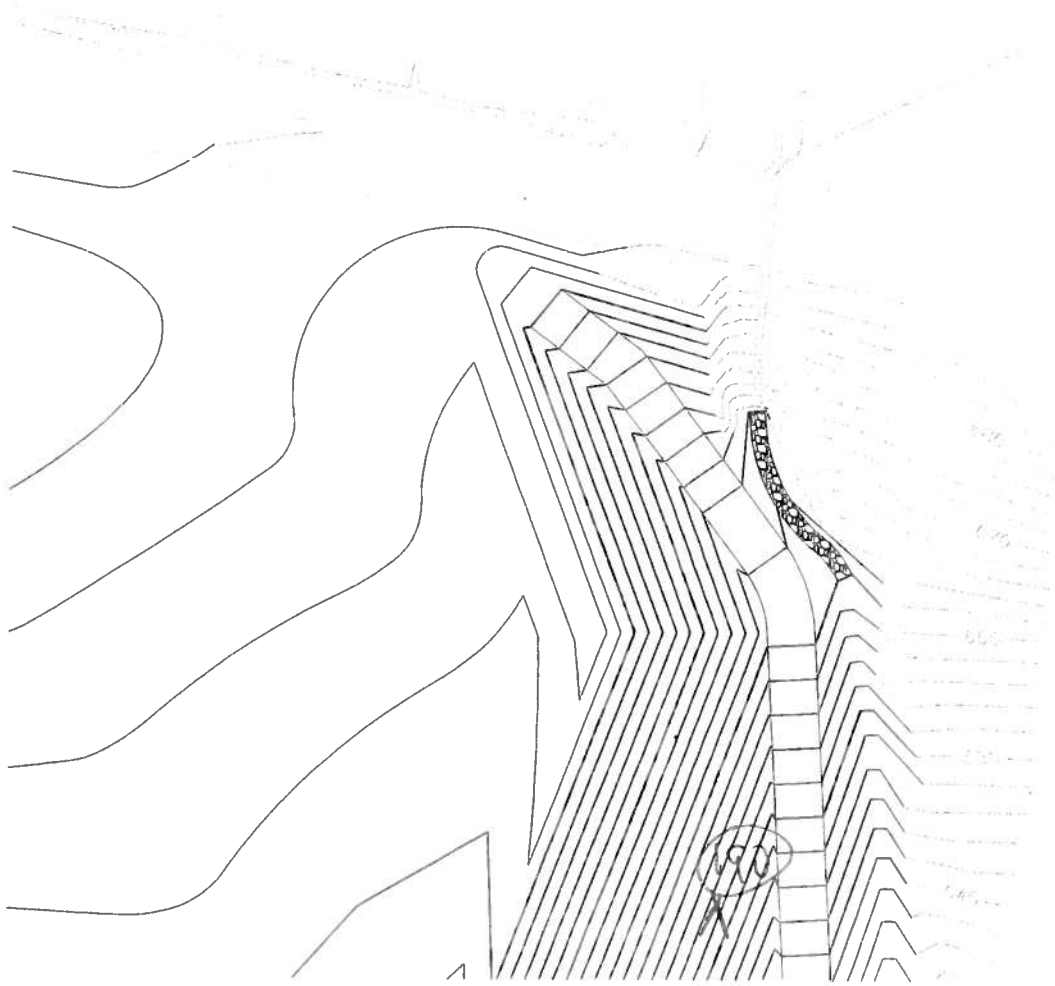
Signature of CQA Monitor: [signature] Date: 08/22/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	08/22/12 (Wed)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: [signature] Date: 08/22/12

Field Compaction Test Data

Brown AND Caldwell

Project Name: Ford Rd. – Phase 2 Remedial Action
Project Number: 142889
Tested By: Bill Foster
Date: 08/22/12 (~~Tuesday~~) (Wed) 08/23/12 (Thursday)

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 612 % Change 0.0
Standard Density Count 2101 % Change -0.8

Test Information	08/22	08/22	08/22	08/23						
Test Number	~~188~~ 188	~~189~~ 189	~~190~~ 190	191	192	193	194	195	~~196~~	
Lift Number	27	27	27	28	28	28	28	28	~~29~~	
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6	6	6	6	~~6~~	
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	132.8	131.7	135.9	139.8	135.5	131.7	134.0	131.4		
Dry Density (pcf)	118.5	117.0	120.3	128.6	120.1	116.0	118.8	118.4		
Moisture (pcf)	14.3	14.7	15.5	11.2	15.5	15.8	15.2	13.1		
Moisture (%)	12.1	12.6	12.9	8.7	12.9	13.6	12.8	11.0		
Laboratory Data										
Proctor Curve No.	SS-27	SS-27	SS-27	SS-23	SS-27	SS-27	SS-27	SS-27		
Max Dry Density (pcf)	121.1	121.1	121.1	127.8	121.1	121.1	121.1	121.1		
Optimum Moisture (%)	11.1	11.1	11.1	~~11.1~~ 9.4	11.1	11.1	11.1	11.1		
Results										
% Compaction	97.8	96.6	99.4	100.6	99.2	95.8	98.1	97.7		
Pass/Fail	Pass	Pass	Pass	PASS	PASS	FAIL	PASS	PASS		
Retest Number/Date						194/08-23-12				

Comments

TEST # 193 FAILED MOISTURE. SCARIFIED SURFACE, RE COMPACTED AND RETESTED.

Brown AND Caldwell

Field Compaction Test Data

Project Name: Ford Rd. - Phase 2 Remedial Action
Project Number: 142889
Tested By: N. Givens
Date: 09/23/12

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 614 % Change 0.3 P
Standard Density Count 2118 % Change 0.8 P

Test Information										
Test Number	196	197	198							
Lift Number	29	29	29							
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6							
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	128.6	137.1	131.8							
Dry Density (pcf)	115.9	124.2	118.8							
Moisture (pcf)	12.7	12.9	13.1							
Moisture (%)	10.9	10.4	11.0							
Laboratory Data										
Proctor Curve No.	SS-27	SS-27	SS-27							
Max Dry Density (pcf)	121.1	121.1	121.1							
Optimum Moisture (%)	11.1	11.1	11.1							
Results										
% Compaction	95.7	102.6	98.1							
Pass/Fail	PASS	PASS	PASS							
Retest Number/Date										

Comments

Page ___ of ___

Brown AND Caldwell

Soil Testing Locations Field Report

Site: Ford Rd

Project: Phase 2 Remedial Action

Project No: 112889

BC Personnel: CLUENS

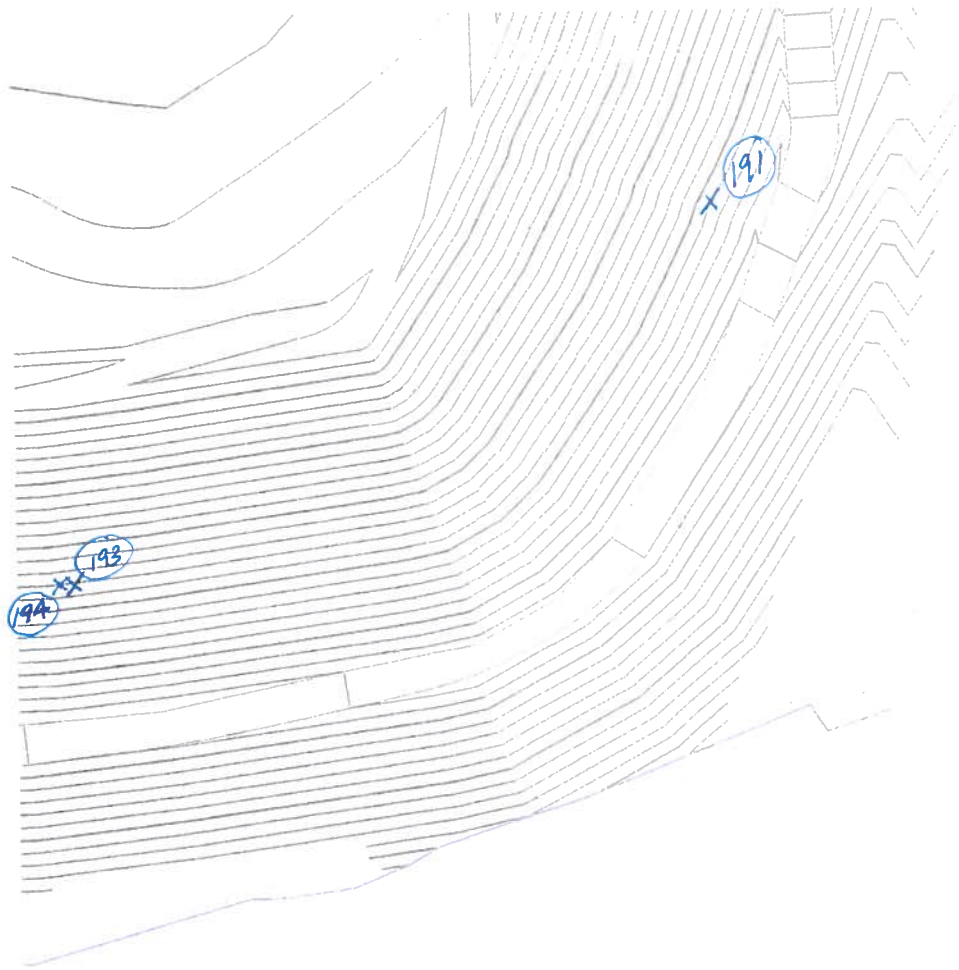
Date: 08/23/12

Time In: Same as Daily

Time Out: Same as Daily

Weather: Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other

Signature of CQA Monitor: [signature]

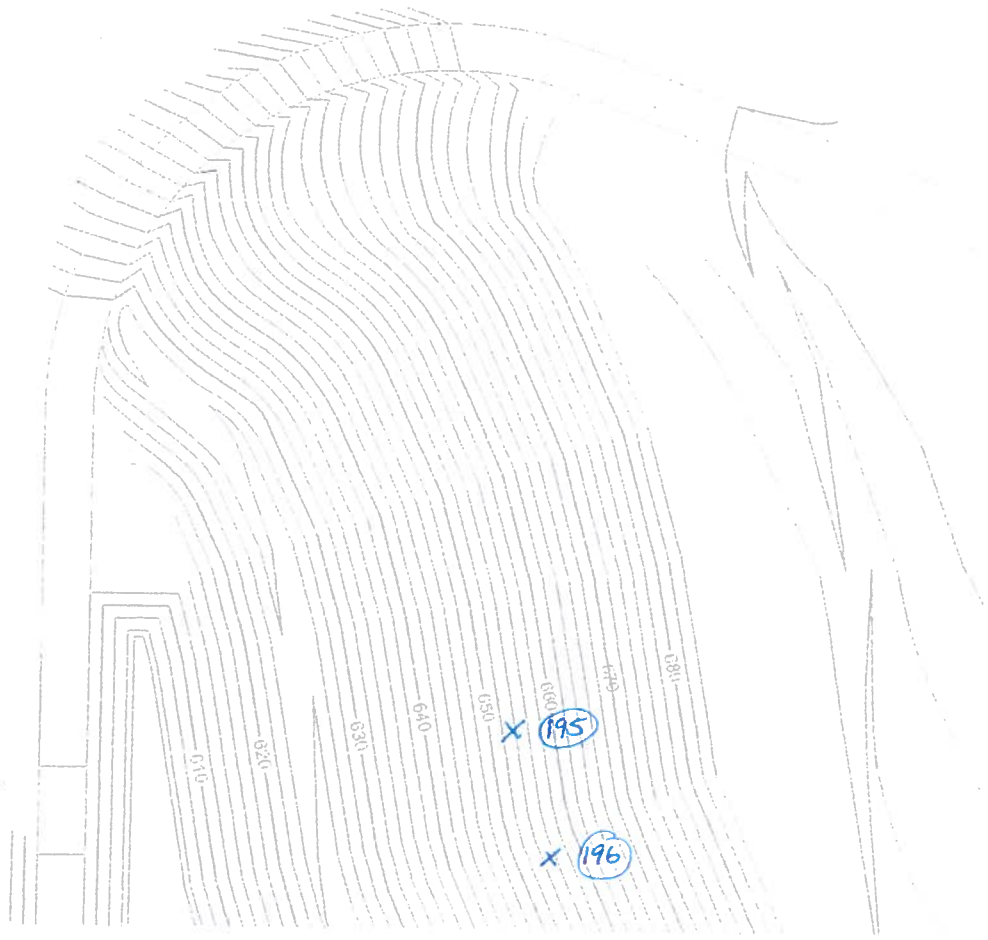
Date: 08/23/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	09/23/12
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	[illegible]	Time Out:	Same as Daily
BC Personnel:	GLUENS	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- Contractor Report
- Field Notes
- Other:

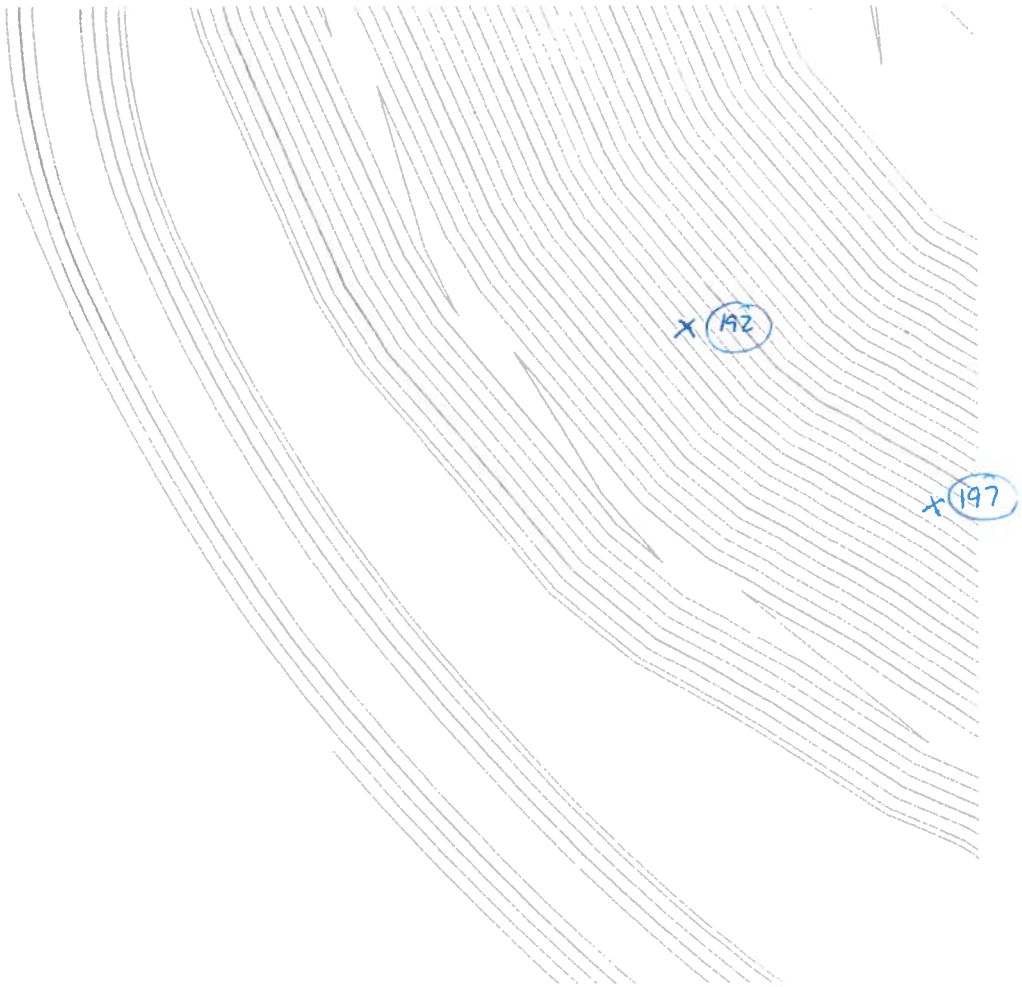
Signature of COA Monitor: [signature] Date: 09/23/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	08/23/12
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	GLUENS	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

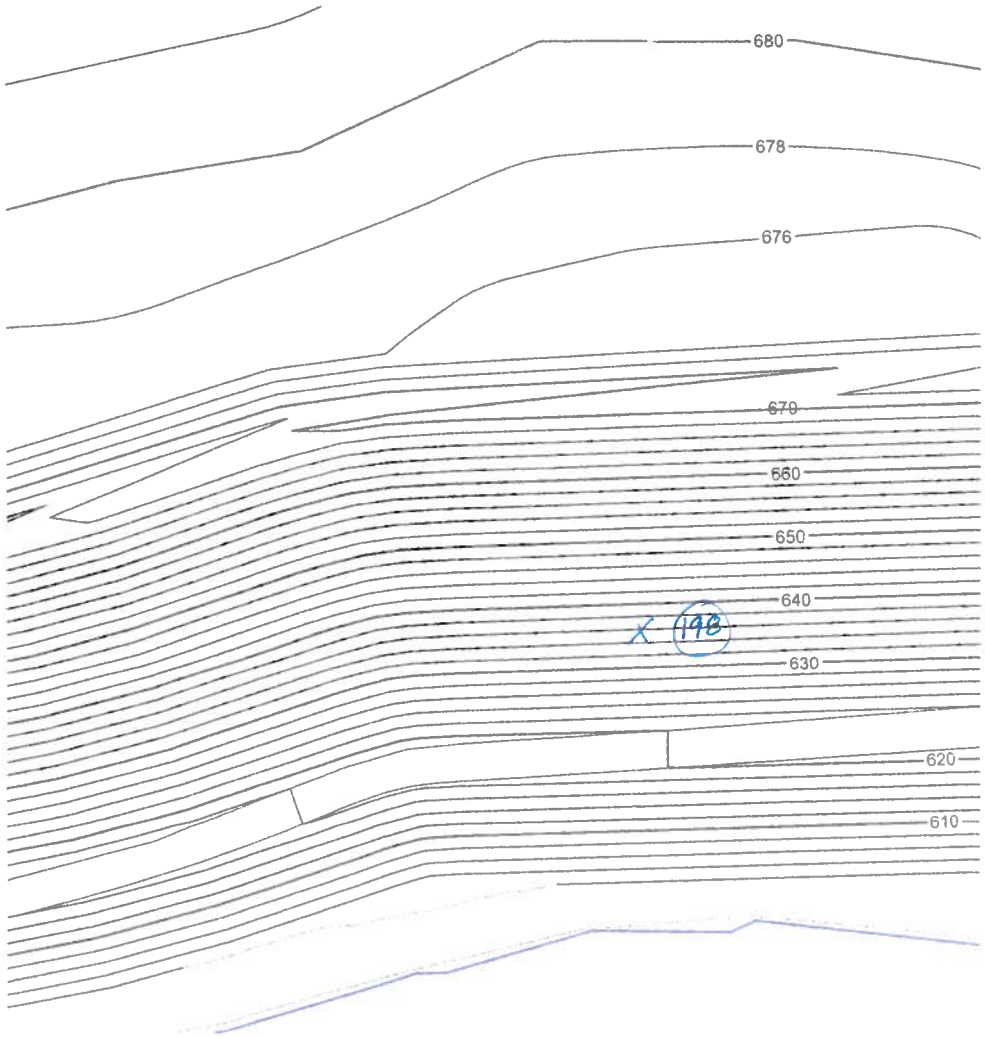
Signature of COA Monitor: [signature] Date: 08/23/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	08/23/12
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	GWENS	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: [signature] Date: 08/23/12

Brown AND Caldwell

Field Compaction Test Data

Project Name:	Ford Rd. – Phase 2 Remedial Action	Gauge Model No.	Troxler 3440
Project Number:	142889	Gauge Serial No.	24585
Tested By:	Foster	Standard Moisture Content	612 % Change -0.1
Date:	08/24/12 (Friday)	Standard Density Count	2125 % Change 0.1

Test Information										
Test Number	199	200	201							
Lift Number	3	3	3							
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6							
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	131.5	131.5	130.5							
Dry Density (pcf)	118.0	118.9	116.3							
Moisture (pcf)	13.5	12.6	14.2							
Moisture (%)	11.4	10.6	12.2							
Laboratory Data										
Proctor Curve No.	55.27	55.27	55.27							
Max Dry Density (pcf)	121.1	121.1	121.1							
Optimum Moisture (%)	11.1	11.1	11.1							
Results										
% Compaction	97.4	98.2	96.0							
Pass/Fail	Pass	Pass	Pass							
Retest Number/Date										

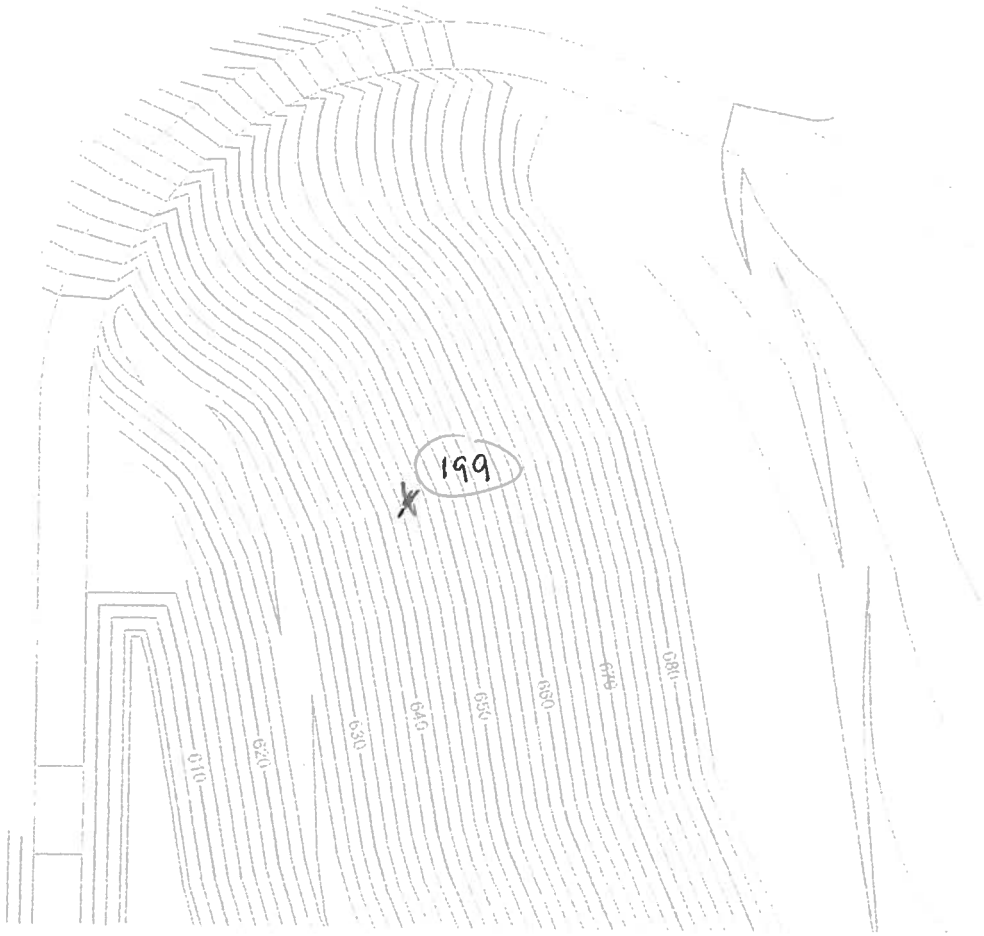
Comments

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford RG	Date:	08/24/12 (Friday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

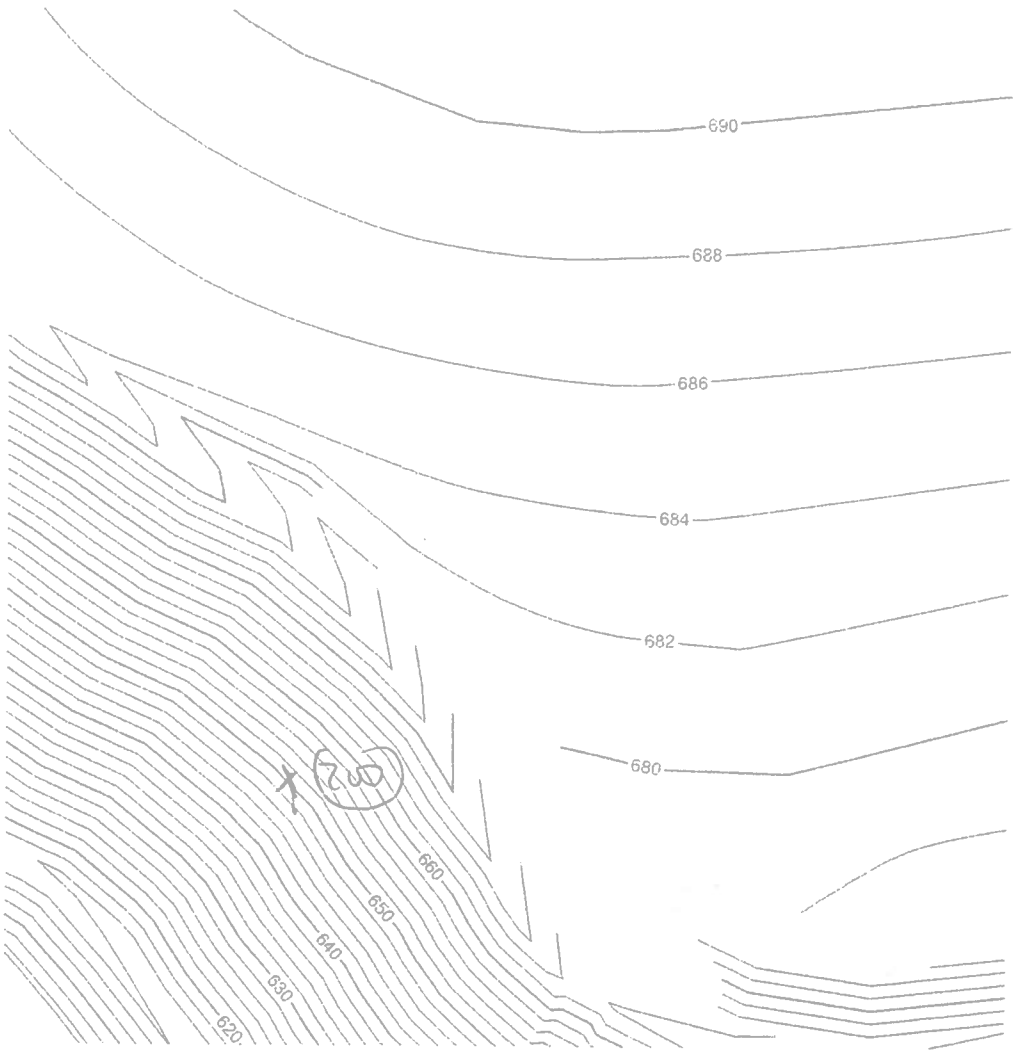
Signature of CQA Monitor: [signature] Date: 08/24/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	08/24/12 (Friday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

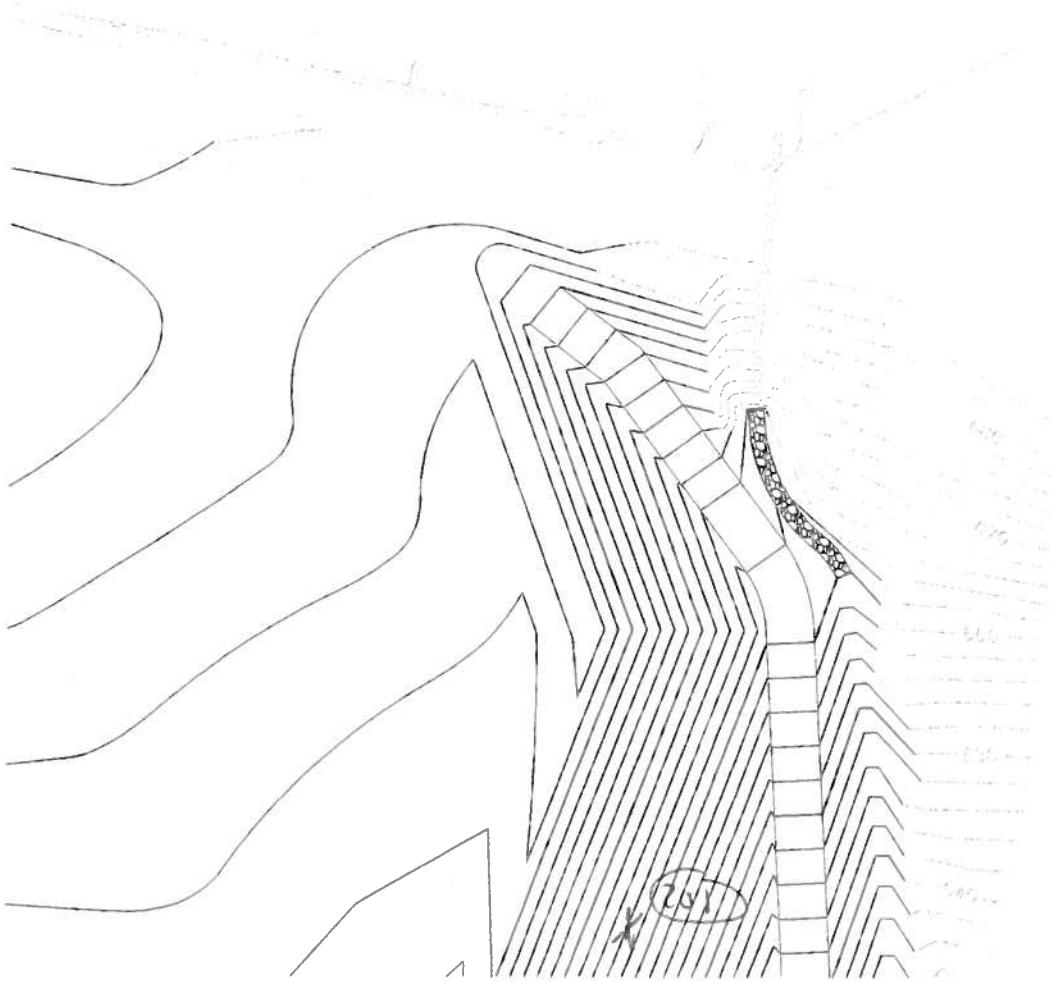
Signature of CQA Monitor: [illegible] Date: 08/24/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	03/24/12 (Friday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: [illegible]

Date: 03/24/12

Field Compaction Test Data

Brown AND Caldwell

Project Name:	Ford Rd. - Phase 2 Remedial Action	Gauge Model No.	Troxler 3440
Project Number:	142889	Gauge Serial No.	24585
Tested By:	Bill Foster	Standard Moisture Content	609 % Change -0.8
Date:	08/28/12 (Tuesday)	Standard Density Count	2130 % Change 0.6

Test Information										
Test Number	202	203	204							
Lift Number	31	31	31							
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6							
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	6	6	6	4	4	4	4	4	4	4
Wet Density (pcf)	131.2	135.0	129.7							
Dry Density (pcf)	117.3	119.8	115.1							
Moisture (pcf)	13.9	15.2	14.6							
Moisture (%)	11.8	12.7	12.7							
Laboratory Data										
Proctor Curve No.	55-27	55-27	55-27							
Max Dry Density (pcf)	121.1	121.1	121.1							
Optimum Moisture (%)	11.1	11.1	11.1							
Results										
% Compaction	96.9	98.9	95.0							
Pass/Fail	Pass	Pass	Pass							
Retest Number/Date										

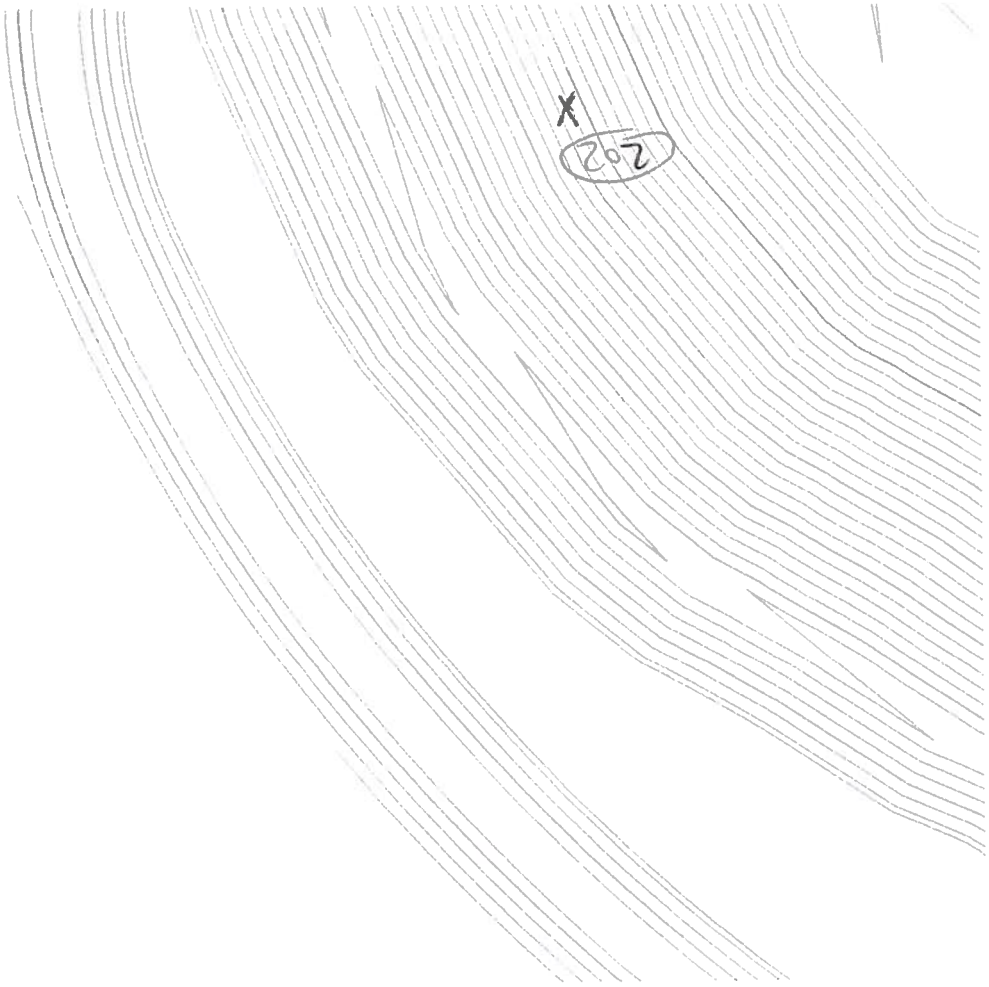
Comments

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	08/28/12 (Tuesday
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

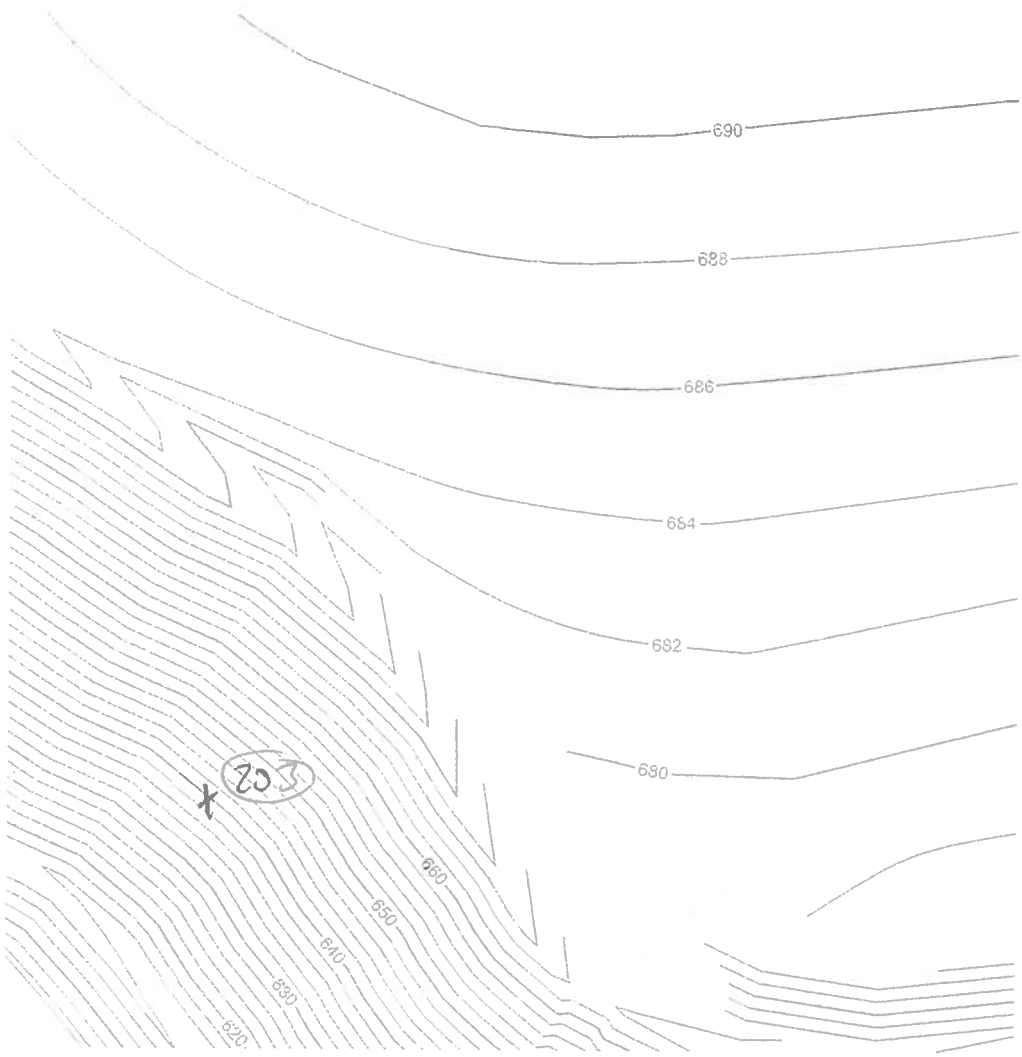
08/28/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	08/28/12 (Tuesday
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other

Bill Foster — Signature of CQA Monitor

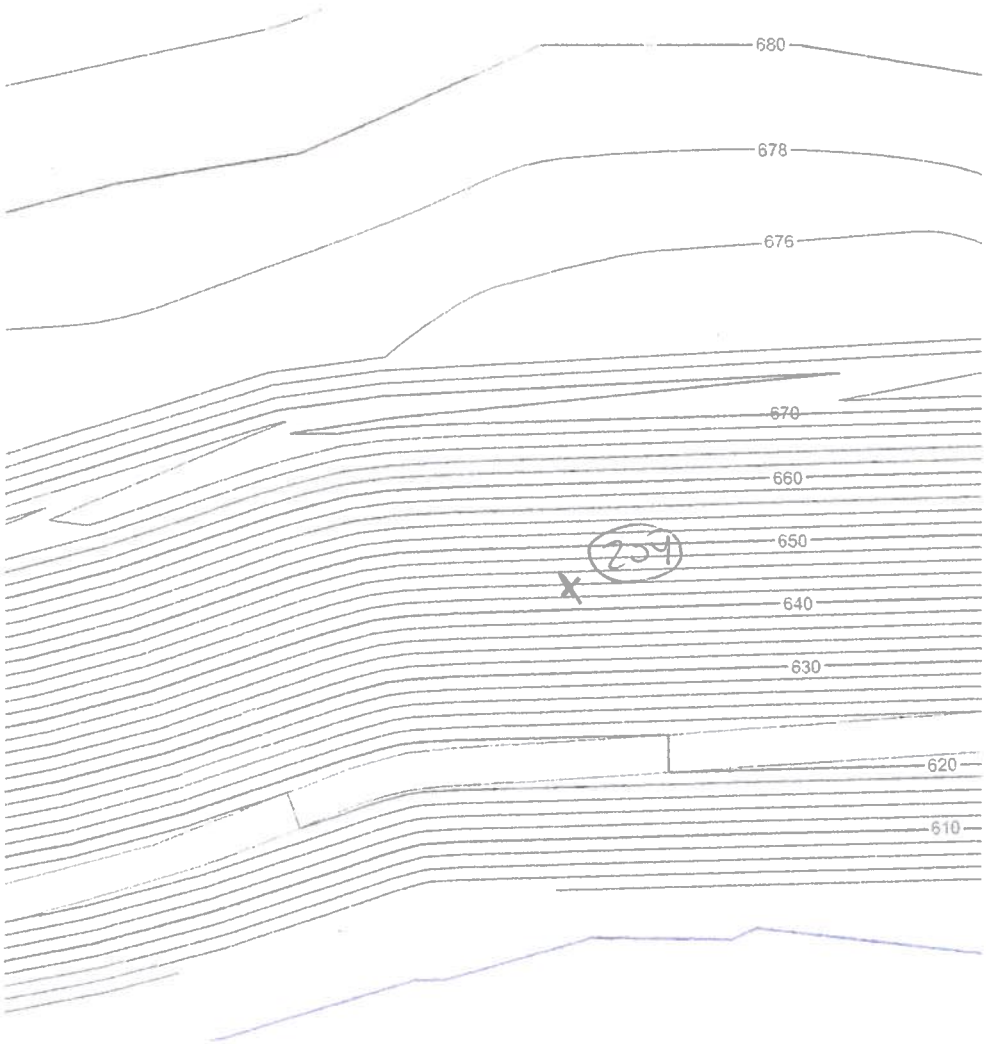
08/28/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	08/20/12 (Tuesday
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142829	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other

Bill Foster — Signature of CQA Monitor

08/20/12 — Date

Brown AND Caldwell

Field Compaction Test Data

Project Name: Ford Rd. – Phase 2 Remedial Action
Project Number: 142889
Tested By: Bill Foster
Date: 08/29/12 (Wed)

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 608 % Change -0.8
Standard Density Count 2120 % Change -0.2

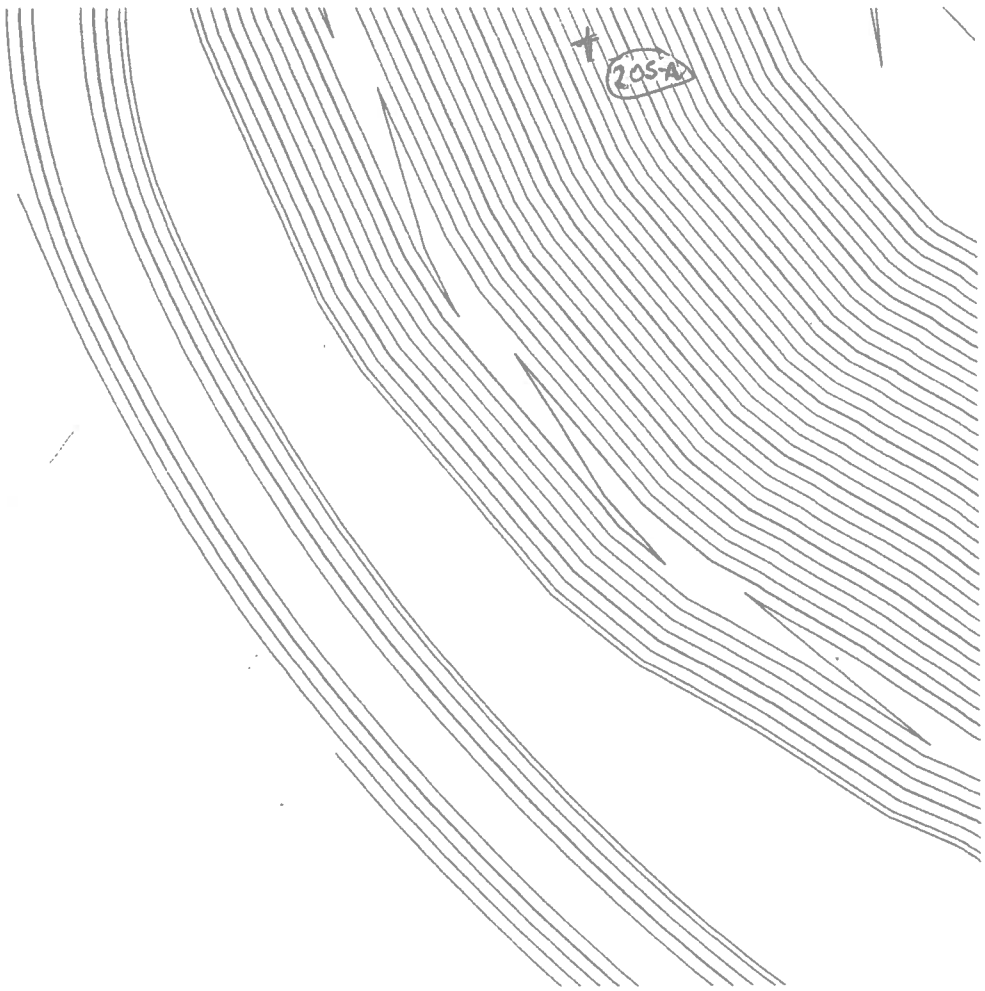
Test Information										
Test Number	205-A	205-B	205-C	205-D						
Lift Number	31	31	31	31						
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6						
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	130.1	130.9	131.4	133.4						
Dry Density (pcf)	118.3	117.8	117.9	119.2						
Moisture (pcf)	11.8	13.1	13.6	14.2						
Moisture (%)	10.0	11.1	11.5	11.9						
Laboratory Data										
Proctor Curve No.	55-24	55-24	55-24	55-24						
Max Dry Density (pcf)	123.7	123.7	123.7	123.7						
Optimum Moisture (%)	10.5	10.5	10.5	10.5						
Results										
% Compaction	95.6	95.3	95.2	96.4						
Pass/Fail	Pass	Pass	Pass	Pass						
Retest Number/Date										
Comments										

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	08/29/12 (Wed)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: Bill Foster

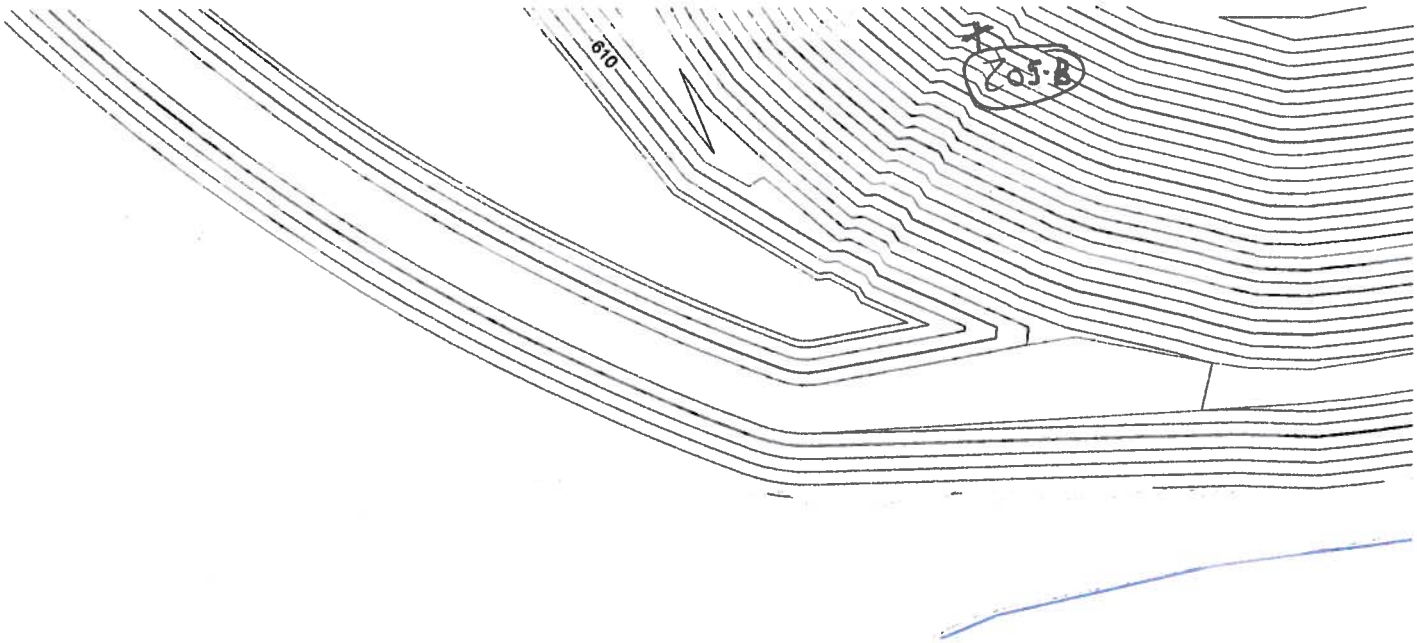
Date: 08/29/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	08/29/12 (wed)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

BN [illegible] — Signature of CQA Monitor

08/29/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site: Ford Rd

Project: Phase 2 Remedial Action

Project No: 1 2889

BC Personnel: Bill Foster

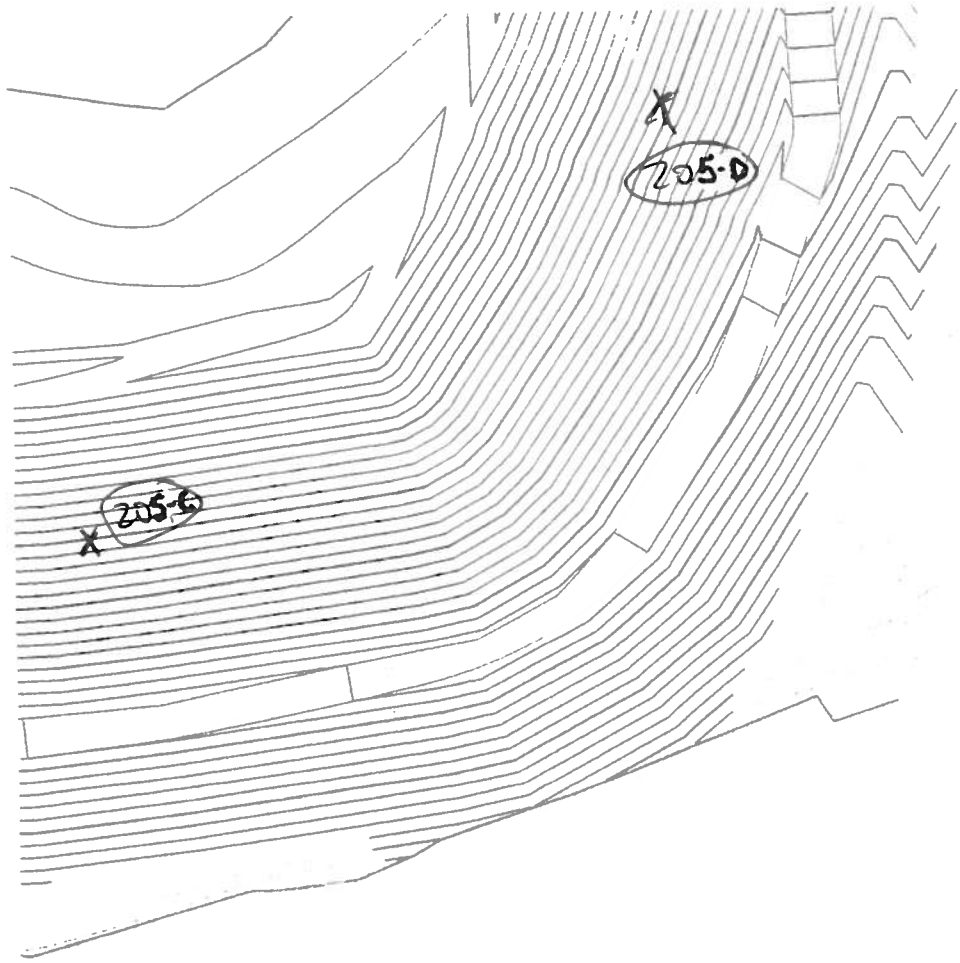
Date: 08/29/12 (wed)

Time In: Same as Daily

Time Out: Same as Daily

Weather: Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other

Signature of CQA Monitor: BW

Date: 08/29/12

Brown AND Caldwell

Field Compaction Test Data

Project Name: Ford Rd. – Phase 2 Remedial Action
Project Number: 142889
Tested By: Bill Foster / Julie McLaran
Date: 08/30/12 (Thursday)

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 612 % Change 0.9%
Standard Density Count 2131 % Change 0.2%

Test Information										
Test Number	206	207	208	209						
Lift Number	32	32	32	32						
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	8						
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	131.9	127.4	130.4	132.1						
Dry Density (pcf)	118.3	112.9	119.2	118.9						
Moisture (pcf)	13.6	14.5	11.3	13.2						
Moisture (%)	11.5	12.9	9.4	11.1						
Laboratory Data										
Proctor Curve No.	SS-24	SS-24	SS-24	SS-24						
Max Dry Density (pcf)	123.7	123.7	123.7	123.7						
Optimum Moisture (%)	10.5	10.5	10.5	10.5						
Results										
% Compaction	95.6	91.2	96.3	96.1						
Pass/Fail	Pass	Fail	Pass	Pass						
Retest Number/Date		209/08/30/12								

Comments

Brown AND Caldwell

Soil Testing Locations Field Report

Site: Ford Rd.

Project: Phase 2 Remedial Action

Project No: 112558

BC Personnel: Bill Foster / Julie McGowan

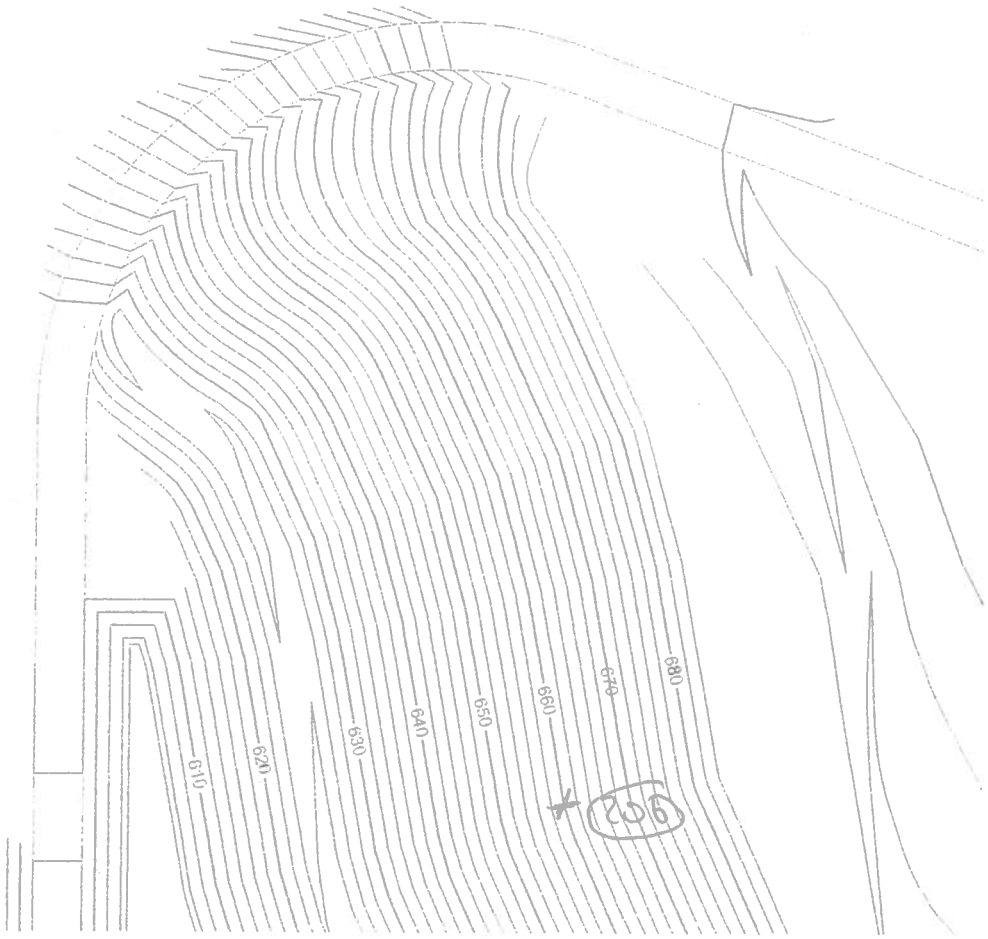
Date: 08/30/12 (Thursday)

Time In: Same as Daily

Time Out: Same as Daily

Weather: Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill F

Signature of CQA Monitor

08/30/12

Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site: Ford Rd

Project: Phase 2 Remedial Action

Project No: 142839

BC Personnel: Bill Foster / Julie McGowan

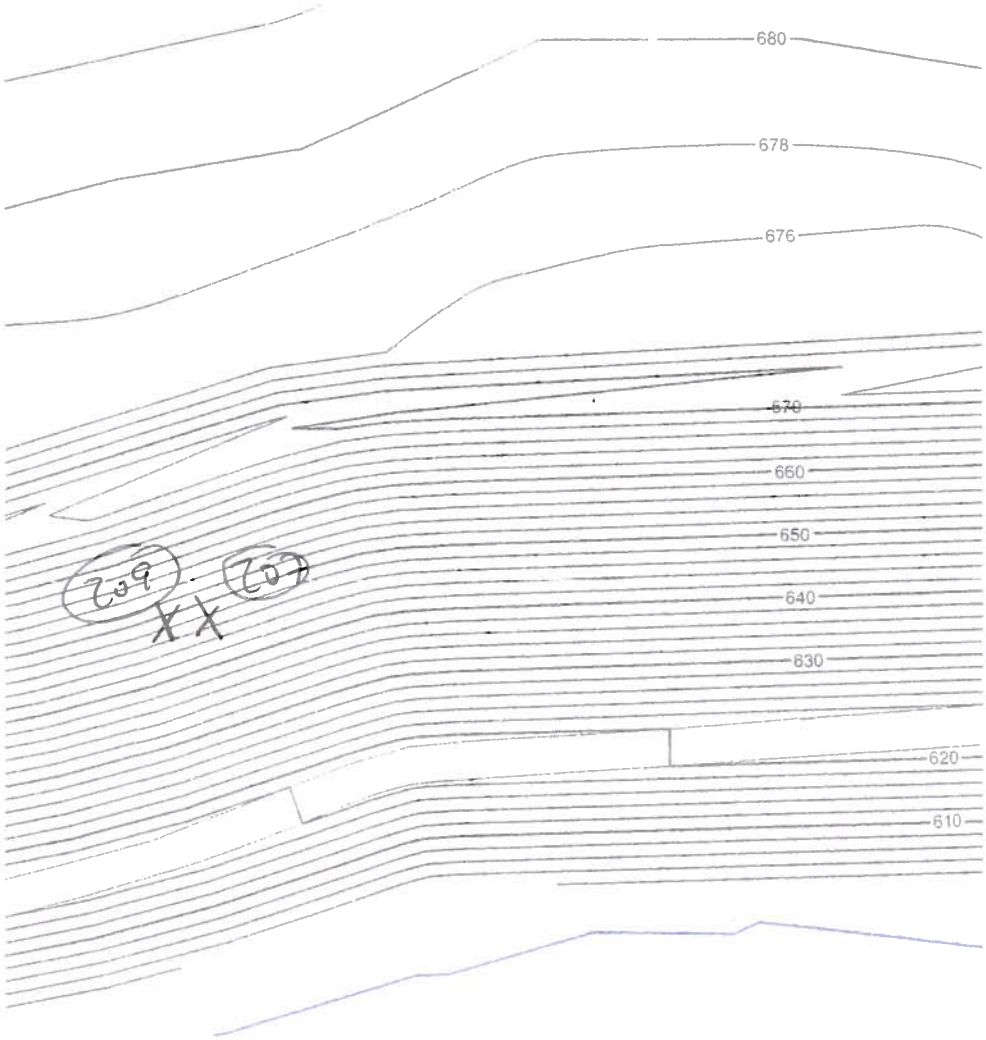
Date: 08/30/12 (Thursday)

Time In: Same as Daily

Time Out: Same as Daily

Weather: Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

BN

Signature of CQA Monitor

08/30/12

Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	08/30/12 (Thursday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster / Julie McGowan	Weather:	Same as Daily

Location of Moisture/Density Test(s):

Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

08/30/12 — Date

Brown AND Caldwell

Field Compaction Test Data

Project Name:	Ford Rd. - Phase 2 Remedial Action	Gauge Model No.	Troxler 3440
Project Number:	142889	Gauge Serial No.	24585
Tested By:	Bill Foster	Standard Moisture Content	607 Change -0.8
Date:	08/31/12 (Friday)	Standard Density Count	2114 Change -0.8

Test Information										
Test Number	210	211	212	213	214	215	216	217	218	
Lift Number	33	33	33	34	34	34	35	35	35	
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6	6	6	6	6	
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	132.5	132.2	136.7	132.6	132.6	134.3	132.4	132.3	132.8	
Dry Density (pcf)	119.0	117.6	121.5	119.5	118.8	121.0	119.7	118.8	120.5	
Moisture (pcf)	13.5	14.6	15.2	13.1	13.8	13.3	12.7	13.5	12.3	
Moisture (%)	11.4	12.4	12.5	11.0	11.6	11.0	10.6	11.4	10.2	
Laboratory Data										
Proctor Curve No.	55-24	55-24	55-24	55-24	55-24	55-24	55-24	55-24	55-24	
Max Dry Density (pcf)	123.7	123.7	123.7	123.7	123.7	123.7	123.7	123.7	123.7	
Optimum Moisture (%)	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	
Results										
% Compaction	96.2	95.1	98.2	96.6	96.0	97.8	96.8	96.0	97.4	
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	
Retest Number/Date										
Comments										

04/0550127

Brown AND Caldwell

Soil Testing Locations Field Report

Site: Ford Rd.

Project: Phase 2 Remedial Action

Project No: 142669

BC Personnel: Bill Foster

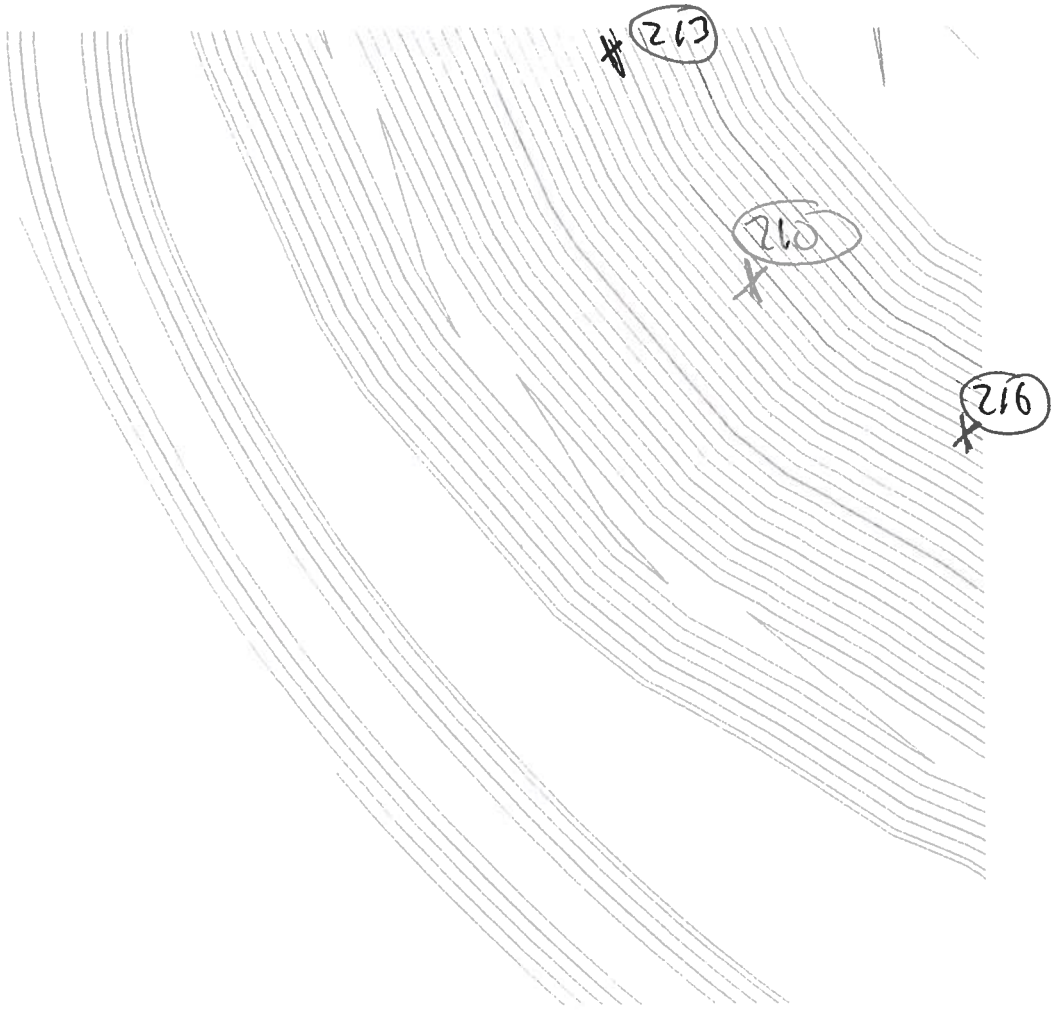
Date: 08/31/12 (Friday)

Time In: Same as Daily

Time Out: Same as Daily

Weather: Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster

Signature of CQA Monitor

08/31/12

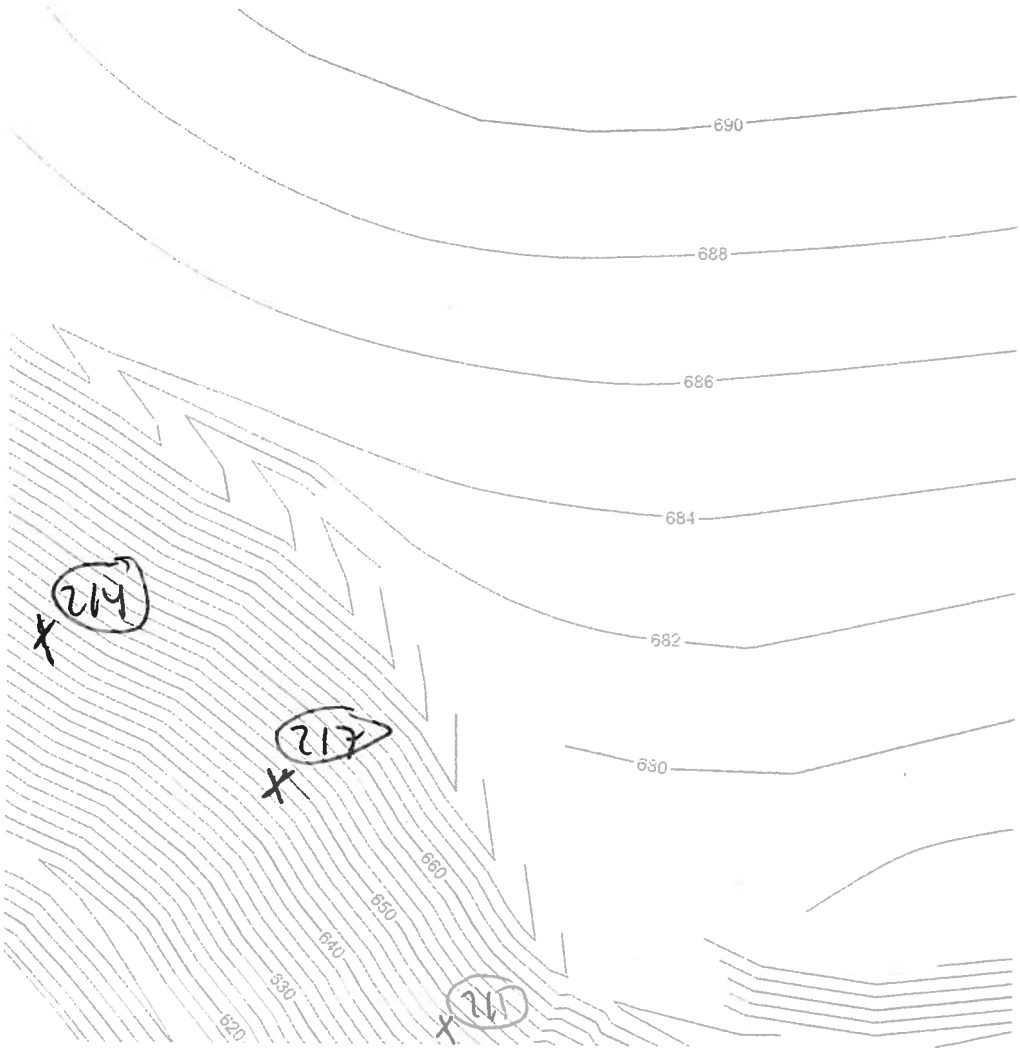
Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	08/31/12 (Friday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

08/31/12 — Date

Soil Testing Locations Field Report

Site: Ford Rd

Project: Phase 2 Removal Action

Project No: [illegible]

BC Personnel: Bill Foster

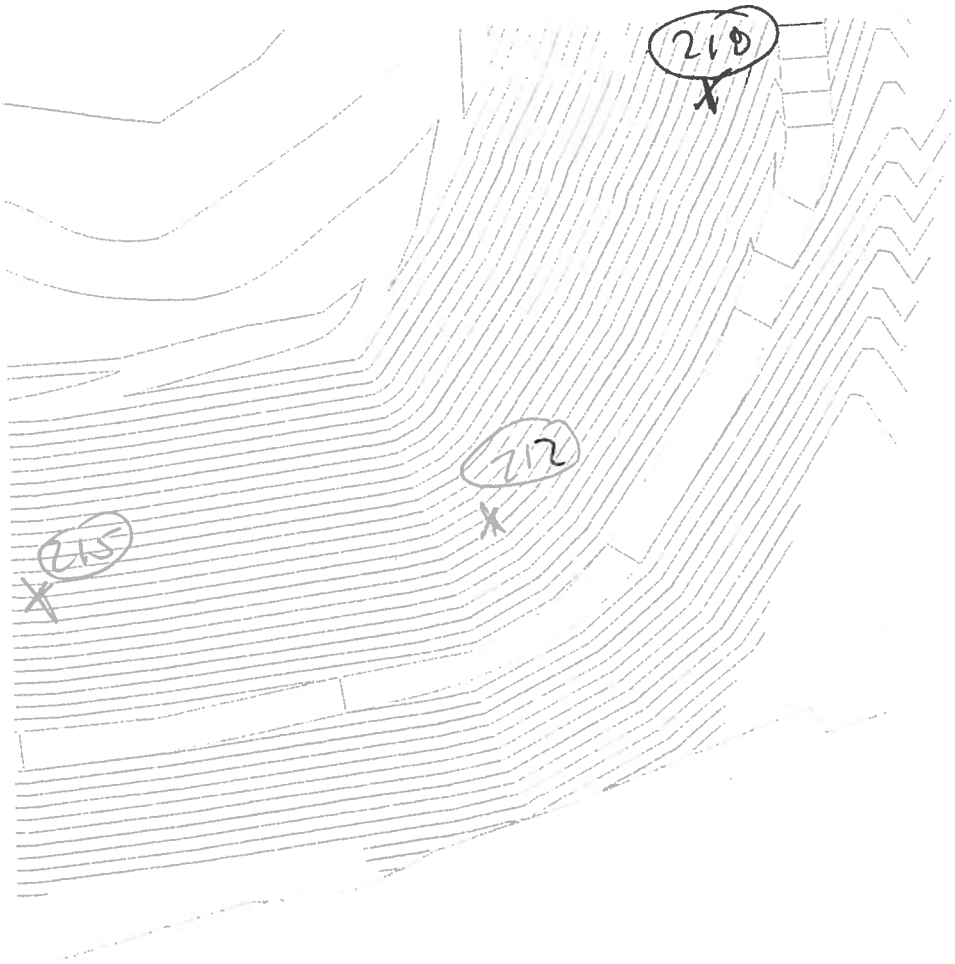
Date: 08/31/12 (Friday)

Time In: Same as Daily

Time Out: Same as Daily

Weather: Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other

Bill Foster 08/31/12

Signature of CQA Monitor Date

Field Compaction Test Data

Brown AND Caldwell

Project Name:	Ford Rd. - Phase 2 Remedial Action	Gauge Model No.	Troxler 3440
Project Number:	142889	Gauge Serial No.	24585
Tested By:	Bill Foster	Standard Moisture Content	6.1 % Change 0.1
Date:	09/04/12 (Tuesday)	Standard Density Count	2124 % Change 0.0

Test Information										
Test Number	219	220	221	222	223	224				
Lift Number	36	36	36	37	37	37				
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6	6				
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	134.7	132.1	132.2	133.3	132.7	134.2				
Dry Density (pcf)	121.8	117.5	117.8	119.2	118.5	120.7				
Moisture (pcf)	12.9	14.6	14.4	14.1	14.2	13.5				
Moisture (%)	10.6	12.4	12.2	11.8	12.0	11.2				
Laboratory Data										
Proctor Curve No.	55-24	55-24	55-24	55-24	55-24	55-24				
Max Dry Density (pcf)	123.7	123.7	123.7	123.7	123.7	123.7				
Optimum Moisture (%)	10.5	10.5	10.5	10.5	10.5	10.5				
Results										
% Compaction	98.4	95.0	95.2	96.4	95.8	97.6				
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass				
Retest Number/Date										

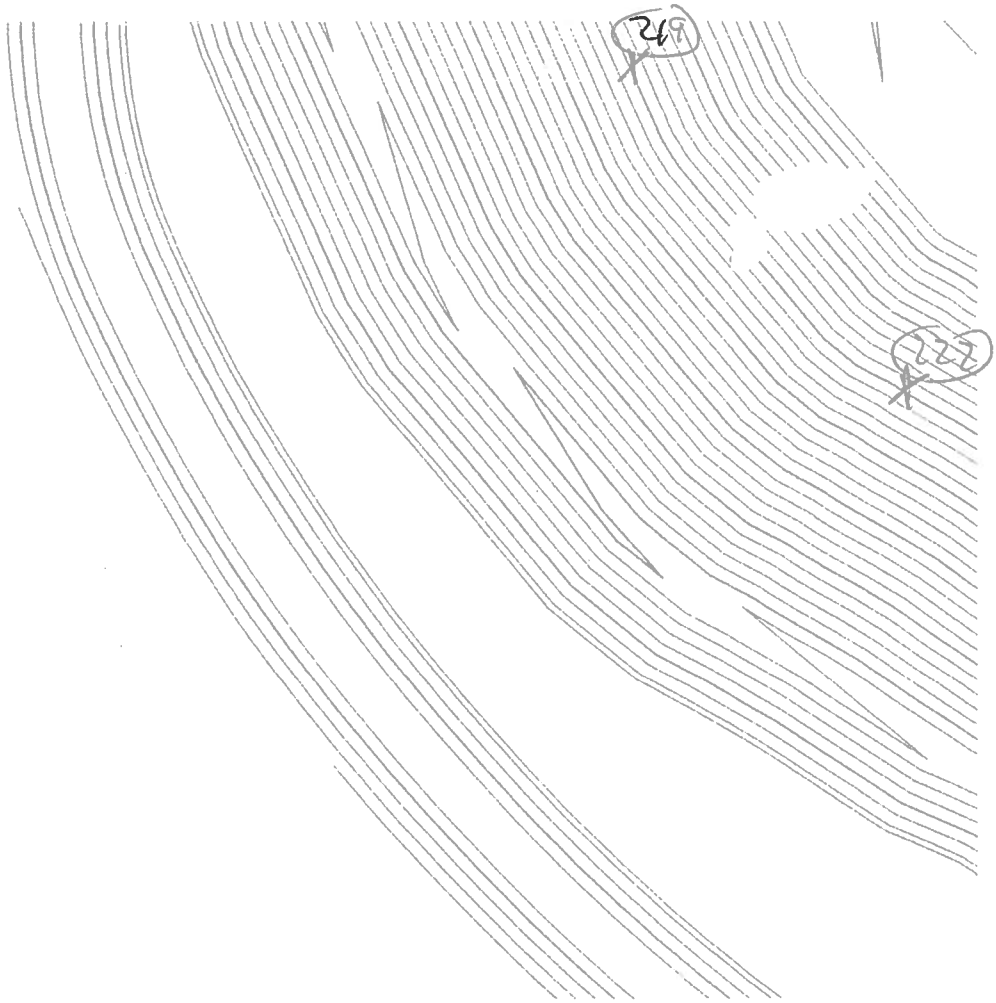
Comments

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	09/04/12 (Tuesday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster 09/04/12

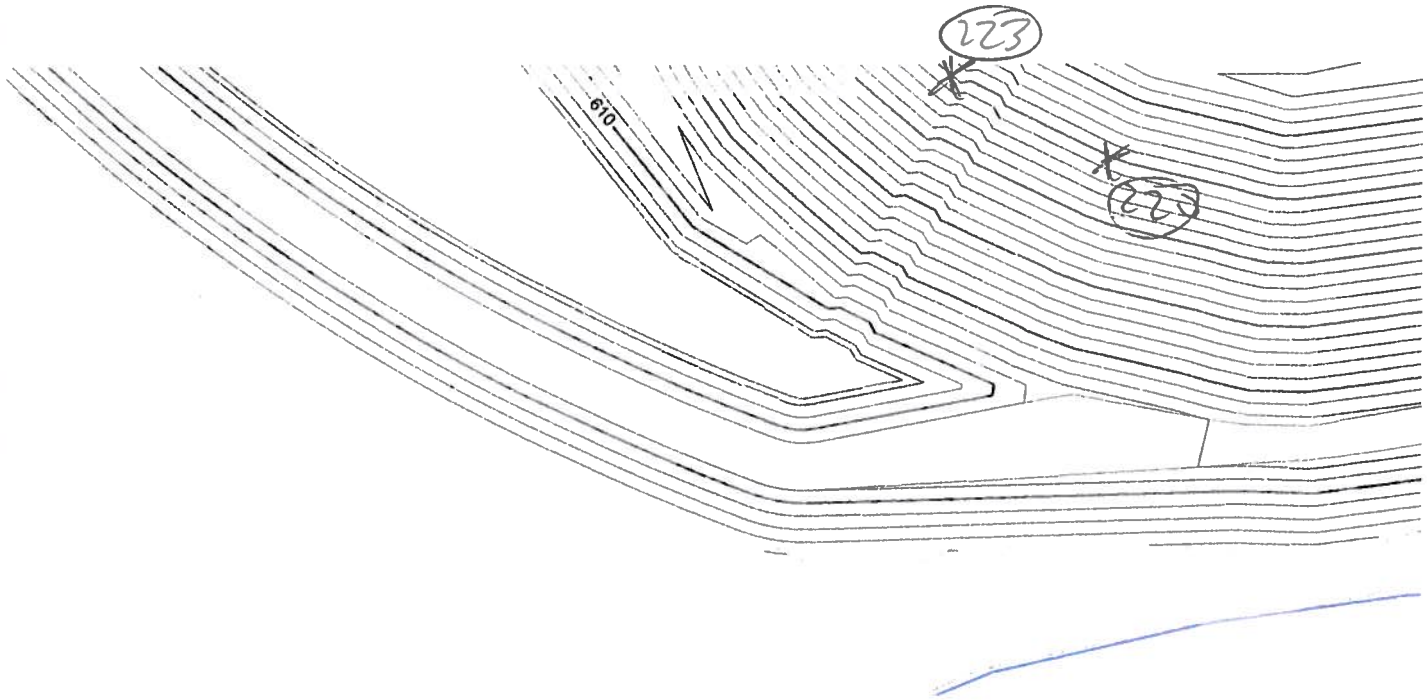
Signature of CQA Monitor Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	09/04/12 (Tuesday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — **Signature of CQA Monitor**

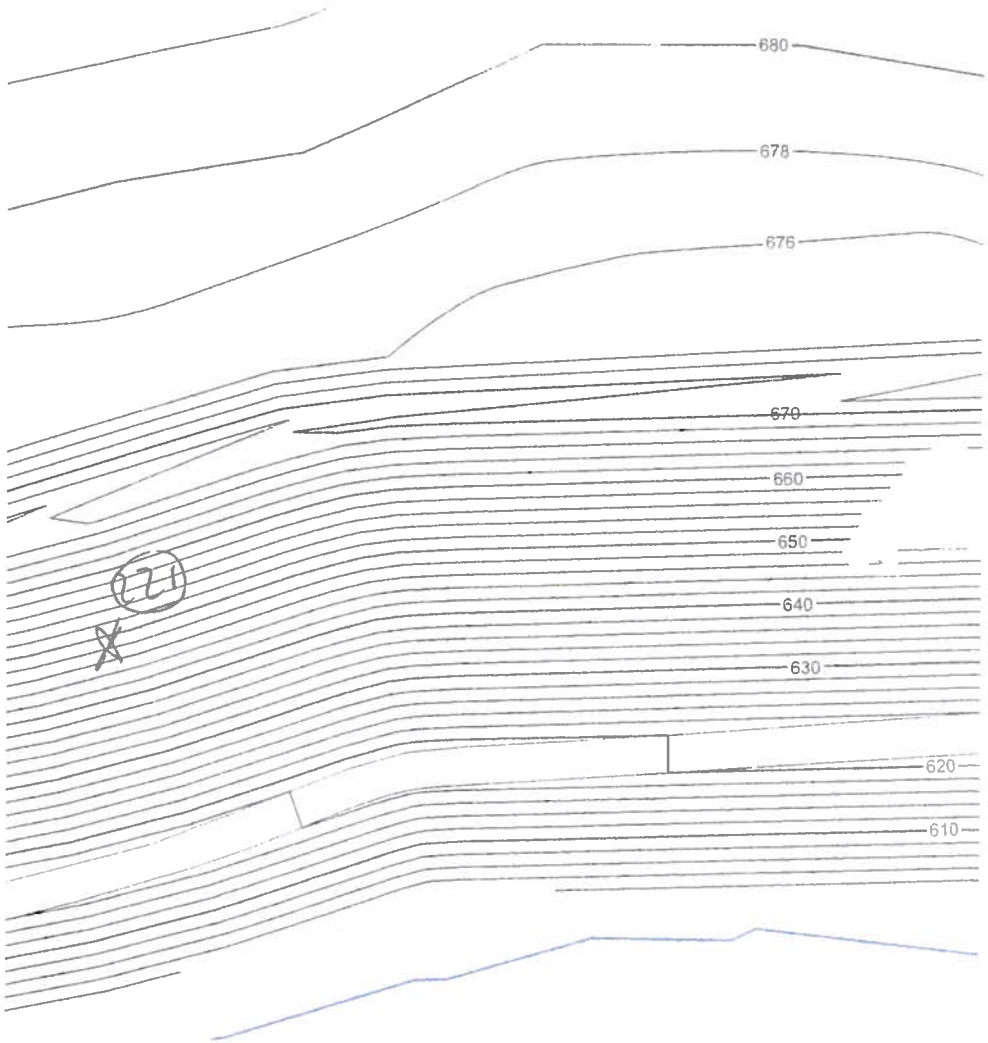
09/04/12 — **Date**

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	09/04/12 (Tuesday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142839	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: BW Foster

Date: 09/04/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site: Ford Rd.

Project: Phase 2 Remedial Action

Project No: 142889

BC Personnel: Bill Foster

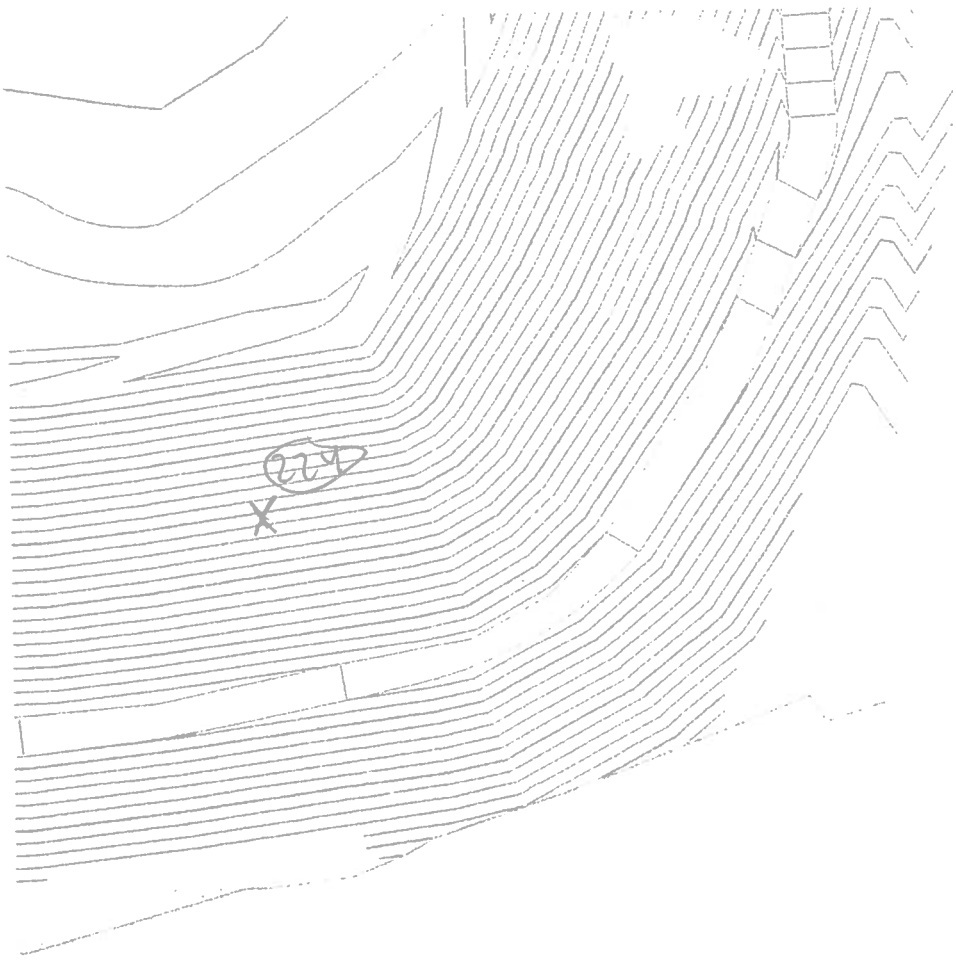
Date: 09/04/12 (Tuesday)

Time In: Same as Daily

Time Out: Same as Daily

Weather: Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other.

Signature of CQA Monitor: Bill Foster

Date: 09/04/12

Field Compaction Test Data

Brown AND Caldwell

Project Name:	Ford Rd - Phase 2 Remedial Action	Gauge Model No.	Troxler 3440
Project Number:	142889	Gauge Serial No.	24585
Tested By:	Bill Foster	Standard Moisture Content	606 % Change -0.8
Date:	09/06/12 (Thursday)	Standard Density Count	2111 % Change -0.5

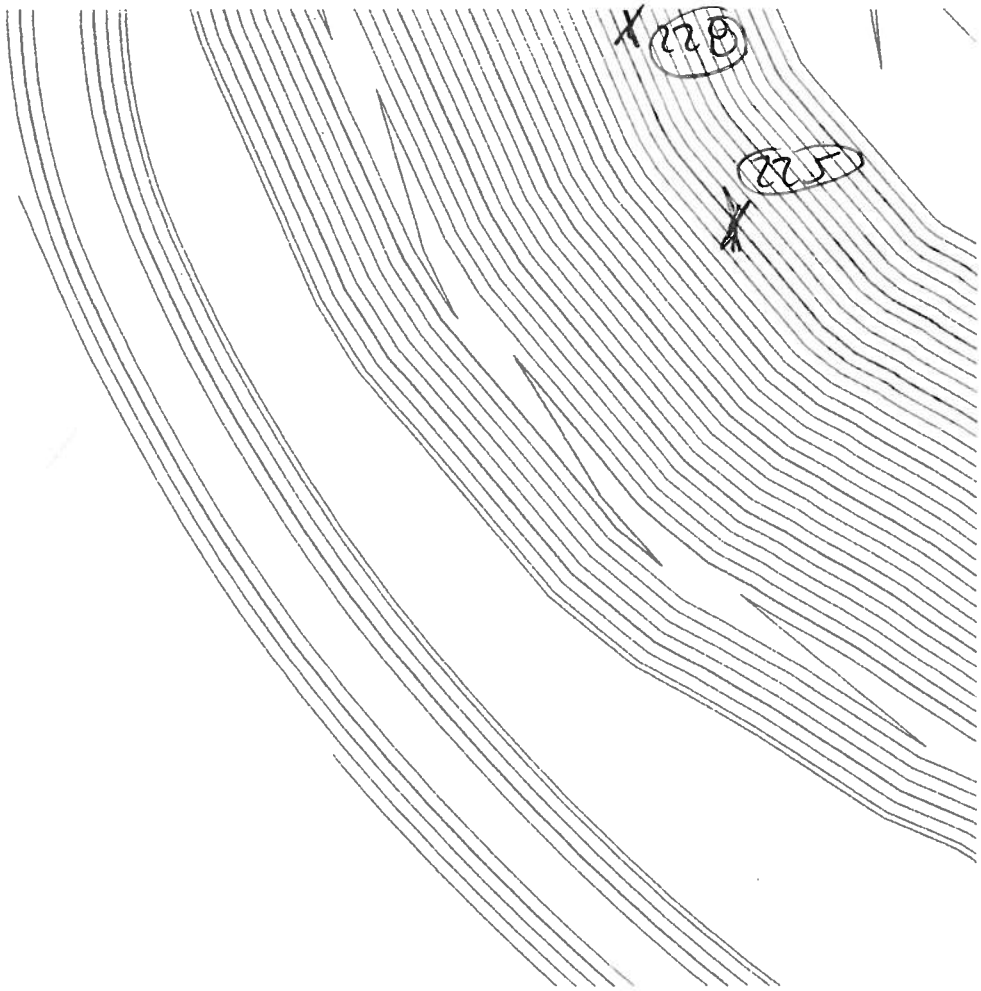
Test Information										
Test Number	225	226	227	228	229	230				
Lift Number	38	38	38	39	39	39				
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6	6				
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	139.9	132.9	132.0	133.1	132.6	133.0				
Dry Density (pcf)	126.9	119.7	118.0	118.9	118.0	118.5				
Moisture (pcf)	13.1	13.3	14.0	14.2	14.6	14.5				
	10.3	11.1	11.9	12.0	12.4	12.2				
	SS-24	SS-24	SS-24	SS-24	SS-24	SS-24				
	123.7	123.7	123.7	123.7	123.7	123.7				
	10.5	10.5	10.5	10.5	10.5	10.5				
	102.6	96.8	95.4	96.1	95.4	95.8				
	Pass	Pass	Pass	Pass	Pass	Pass				

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	09/06/12 (Thursday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

BW Foster — Signature of CQA Monitor

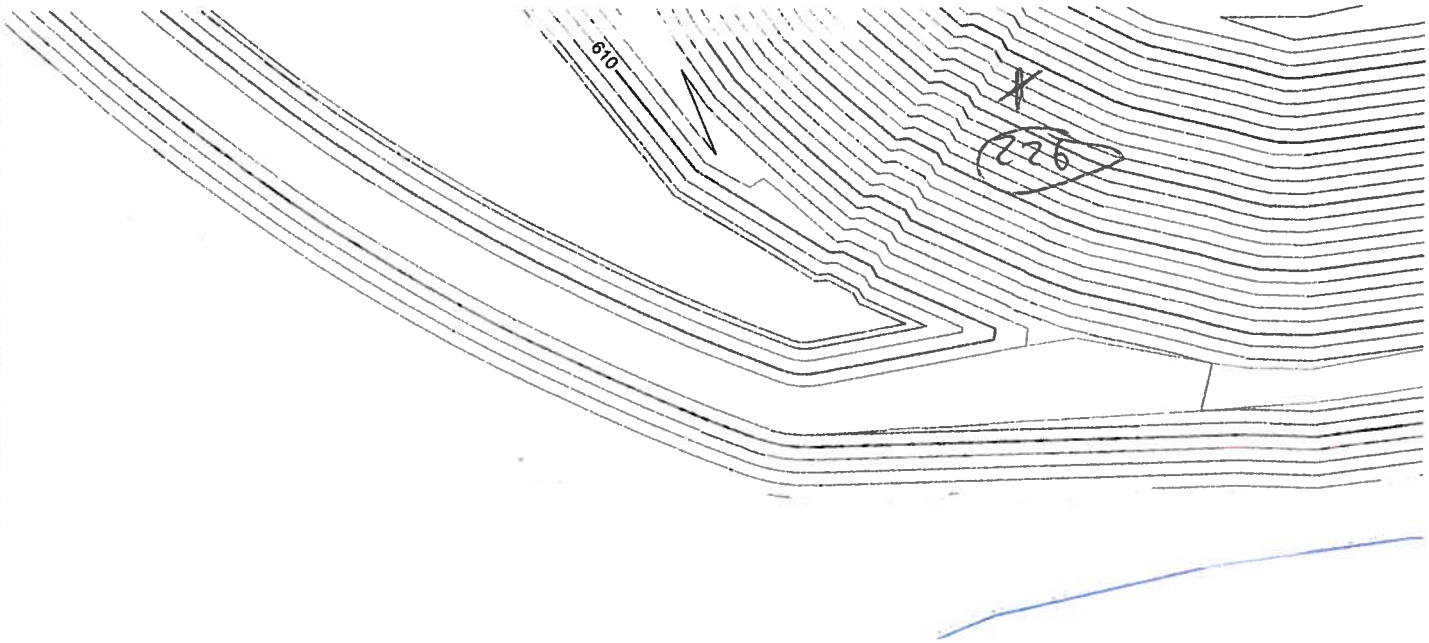
09/06/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	08/06/12 (Thursday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foste	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

BN [illegible] — **Signature of CQA Monitor**

08/06/12 — **Date**

Brown AND Caldwell

Soil Testing Locations Field Report

Site: Ford Rd

Project: Phase 2 Remedial Action

Project No: 142889

BC Personnel: Bill Foster

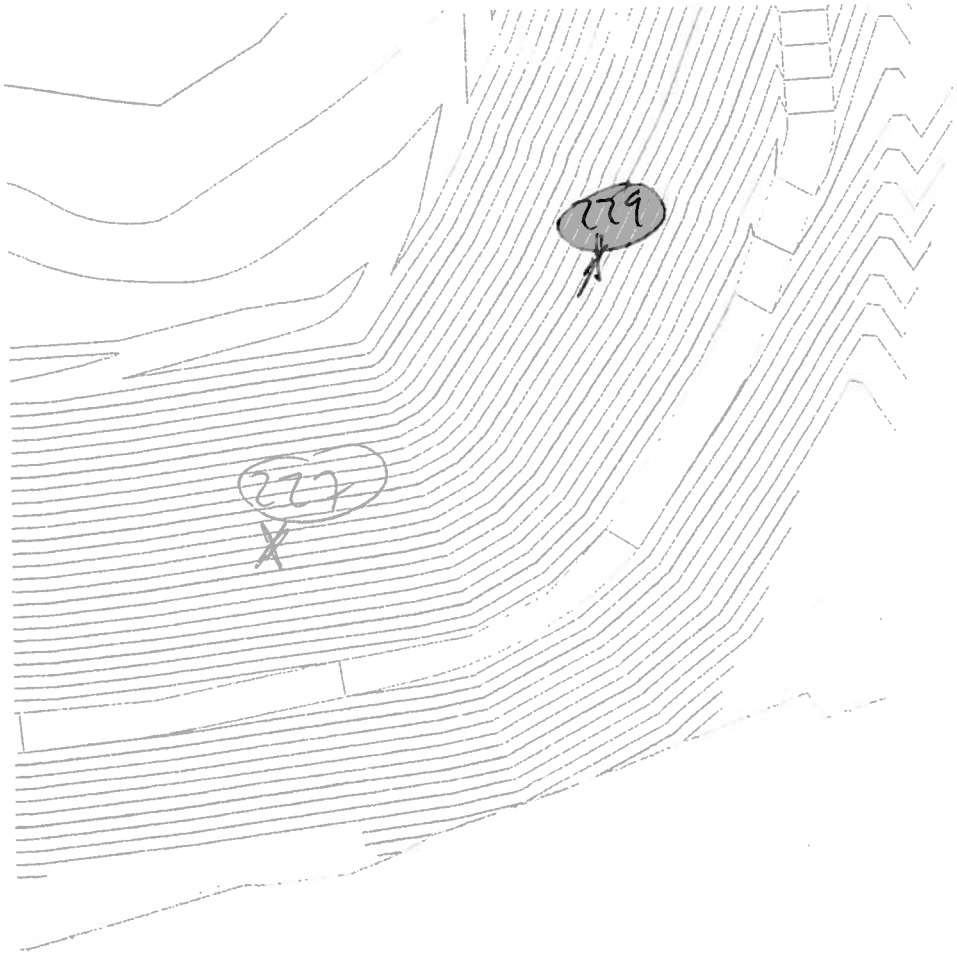
Date: 09/06/12 (Thursday)

Time In: Same as Daily

Time Out: Same as Daily

Weather: Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other

Signature of CQA Monitor: Bill Foster

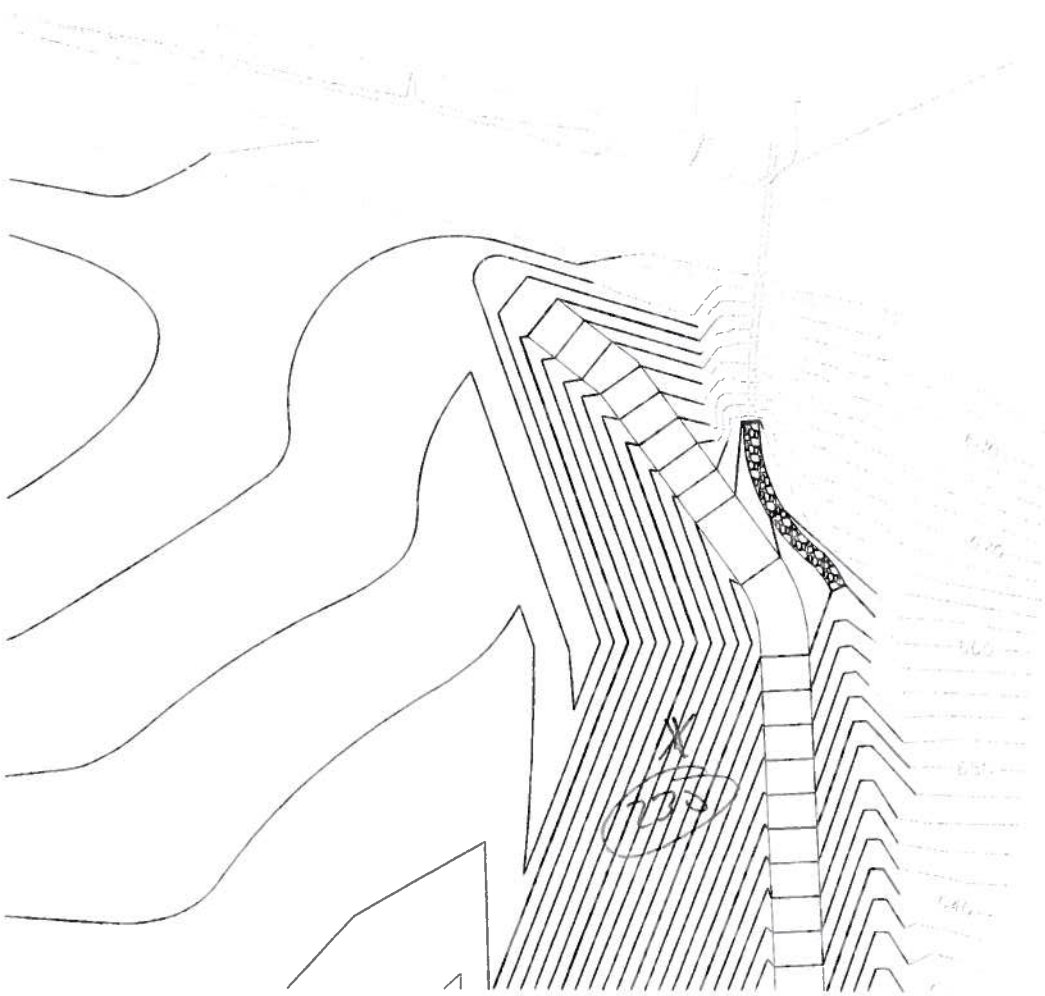
Date: 09/06/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	09/06/12 (Thursday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — 09/06/12

Signature of CQA Monitor — **Date**

Brown AND Caldwell

Field Compaction Test Data

Project Name:	Ford Rd. - Phase 2 Remedial Action	Gauge Model No.	Troxler 3440
Project Number:	142889	Gauge Serial No.	24585
Tested By:	Bill Foster	Standard Moisture Content	616 % Change 0.9
Date:	09/12/12 (Tuesday)	Standard Density Count	2127 % Change 0.3

Test Information										
Test Number	231	232	233	234	235	236				
Lift Number	40	40	40	41	41	41				
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6	6				
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	138.2	135.2	133.1	134.5	135.1	131.9				
Dry Density (pcf)	123.6	119.6	117.9	120.7	120.4	116.7				
Moisture (pcf)	14.7	15.6	15.2	13.8	14.8	15.2				
Moisture (%)	11.9	13.1	12.9	11.4	12.3	13.0				
Laboratory Data										
Proctor Curve No.	55-25	55-25	55-25	55-25	55-25	55-25				
Max Dry Density (pcf)	122.6	122.6	122.6	122.6	122.6	122.6				
Optimum Moisture (%)	11.1	11.1	11.1	11.1	11.1	11.1				
Results										
% Compaction	100.8	97.5	96.2	98.5	98.2	95.2				
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass				
Retest Number/Date										

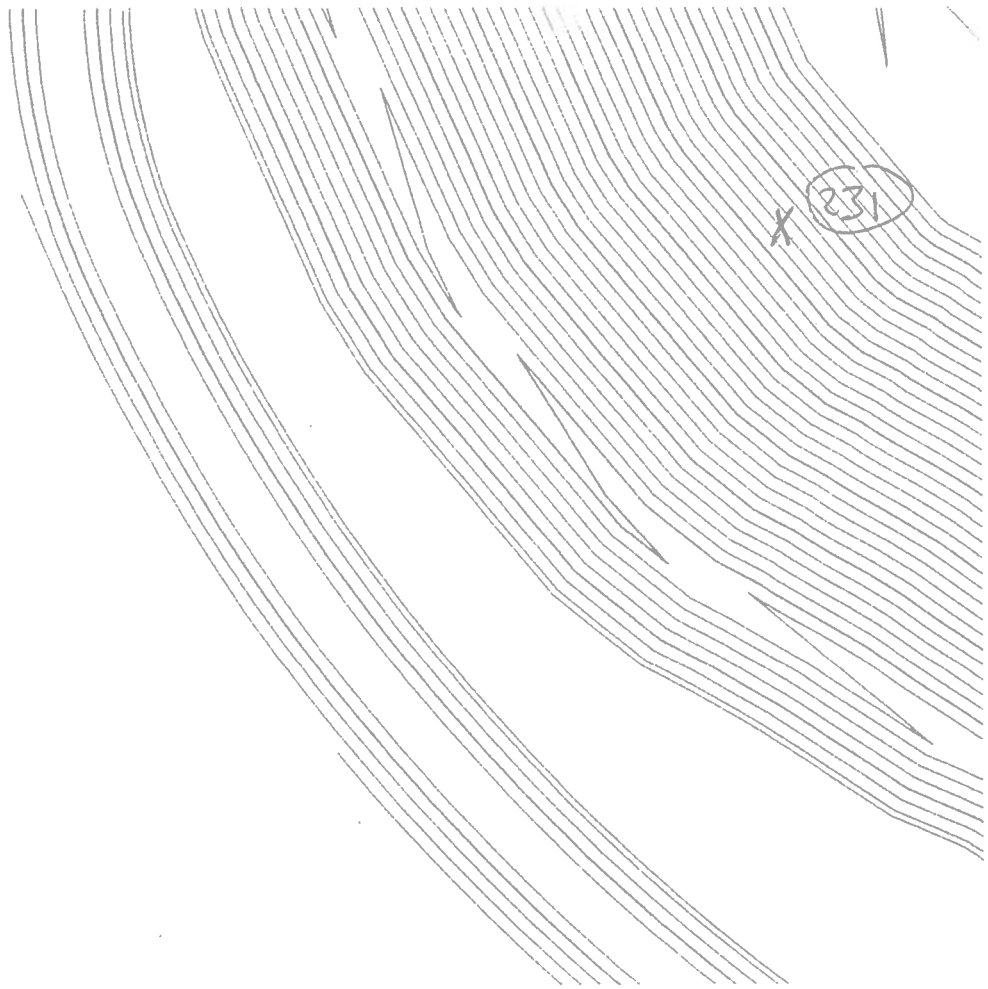
Comments

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	09/11/12 (Tuesday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill K 09/11/12

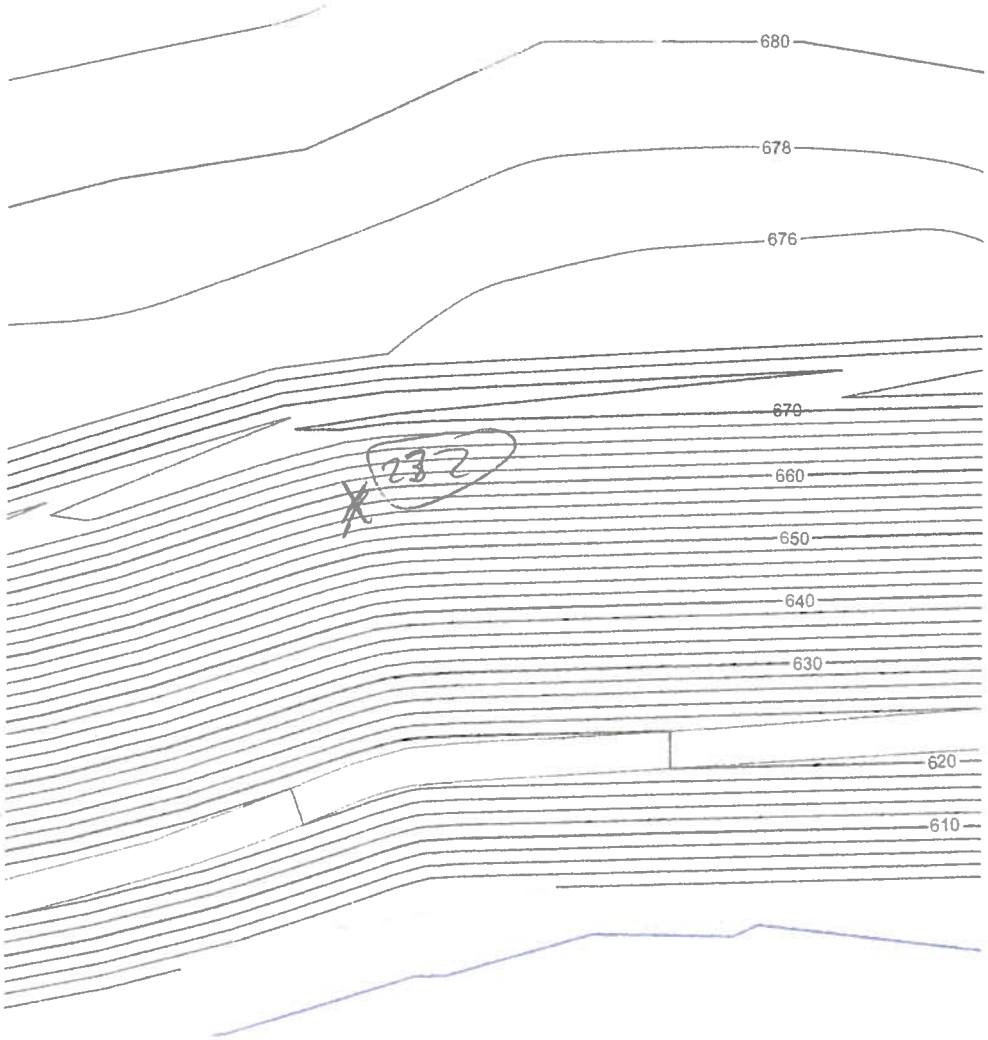
Signature of CQA Monitor — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	09/11/12 (Tuesday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

BW Foster — Signature of CQA Monitor

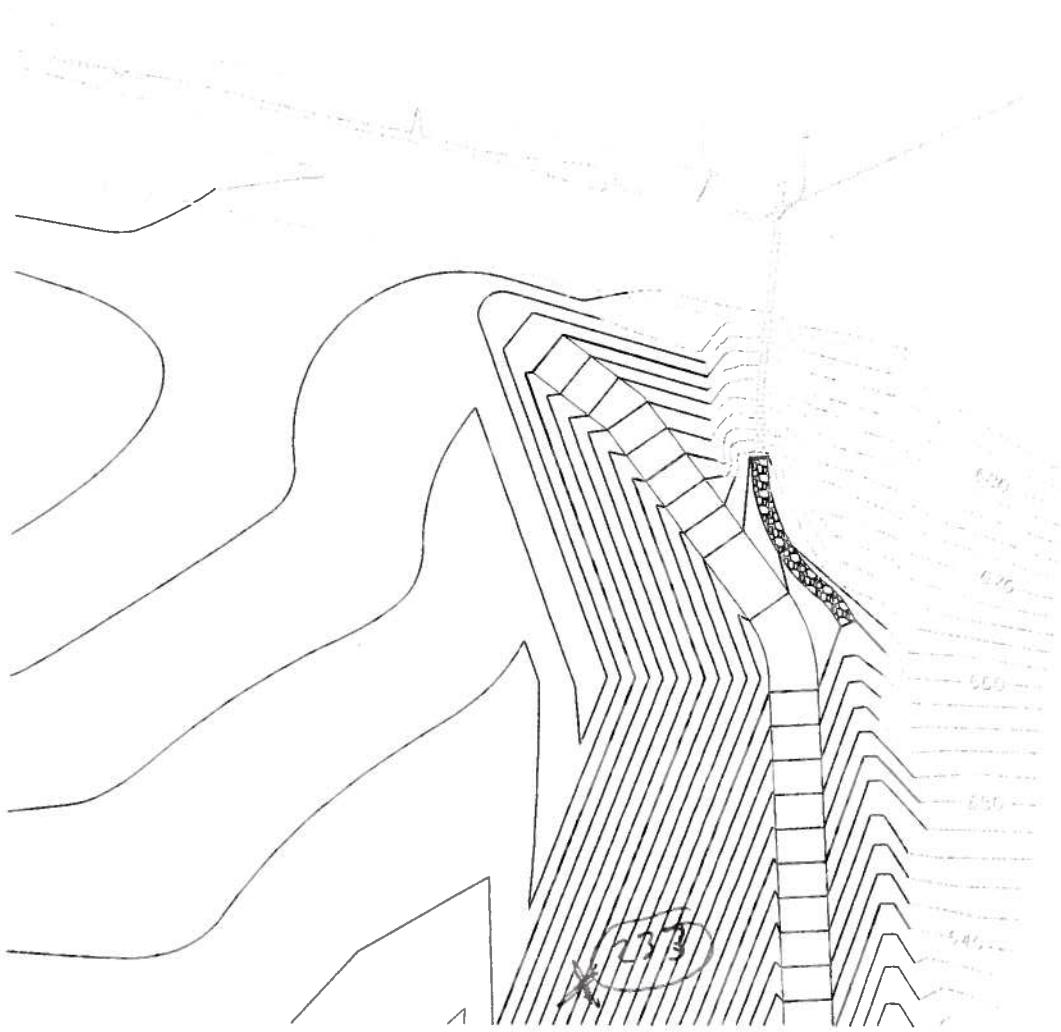
09/11/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	09/11/12 (Tuesday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other

Bill Foster — Signature of CQA Monitor

09/11/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	09/11/12 (Tuesday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):

Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

BW [illegible] — Signature of CQA Monitor

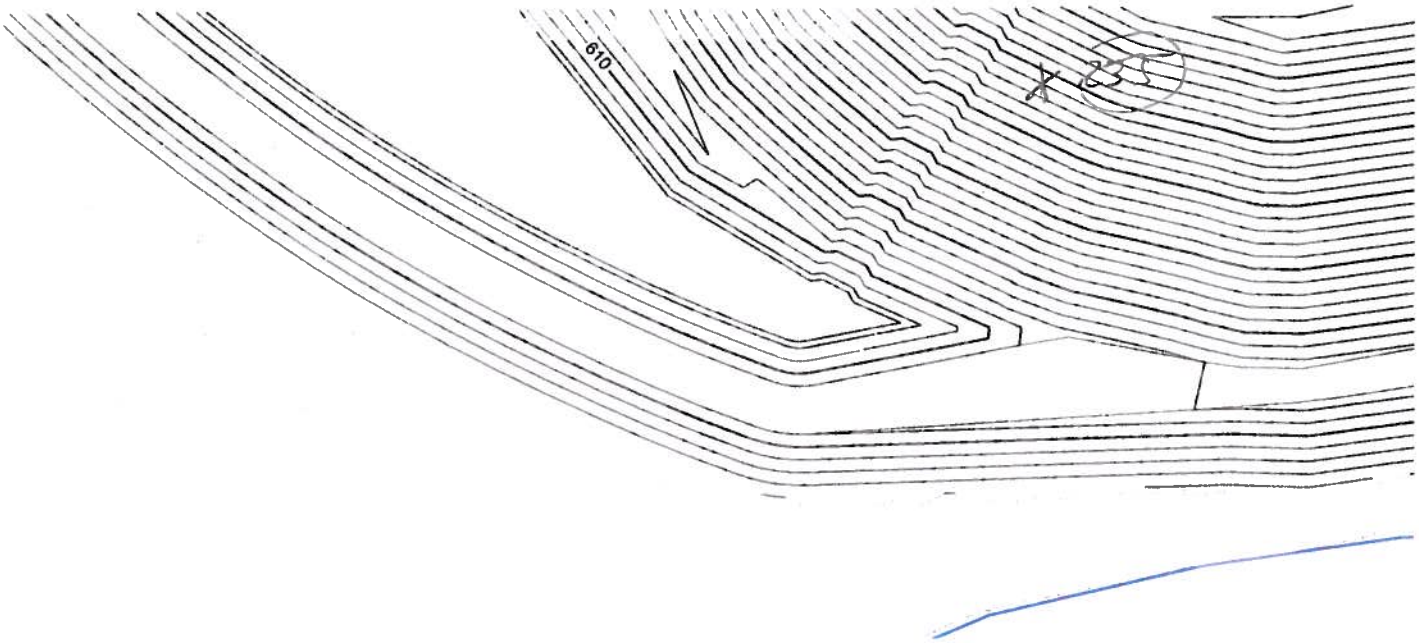
09/11/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	09/11/12 (Tuesday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

BW RT — **Signature of CQA Monitor**

09/11/12 — **Date**

Brown AND Caldwell

Soil Testing Locations Field Report

Site: Ford Rd.

Project: Phase 2 Remedial Action

Project No: 142889

BC Personnel: Bill Foster

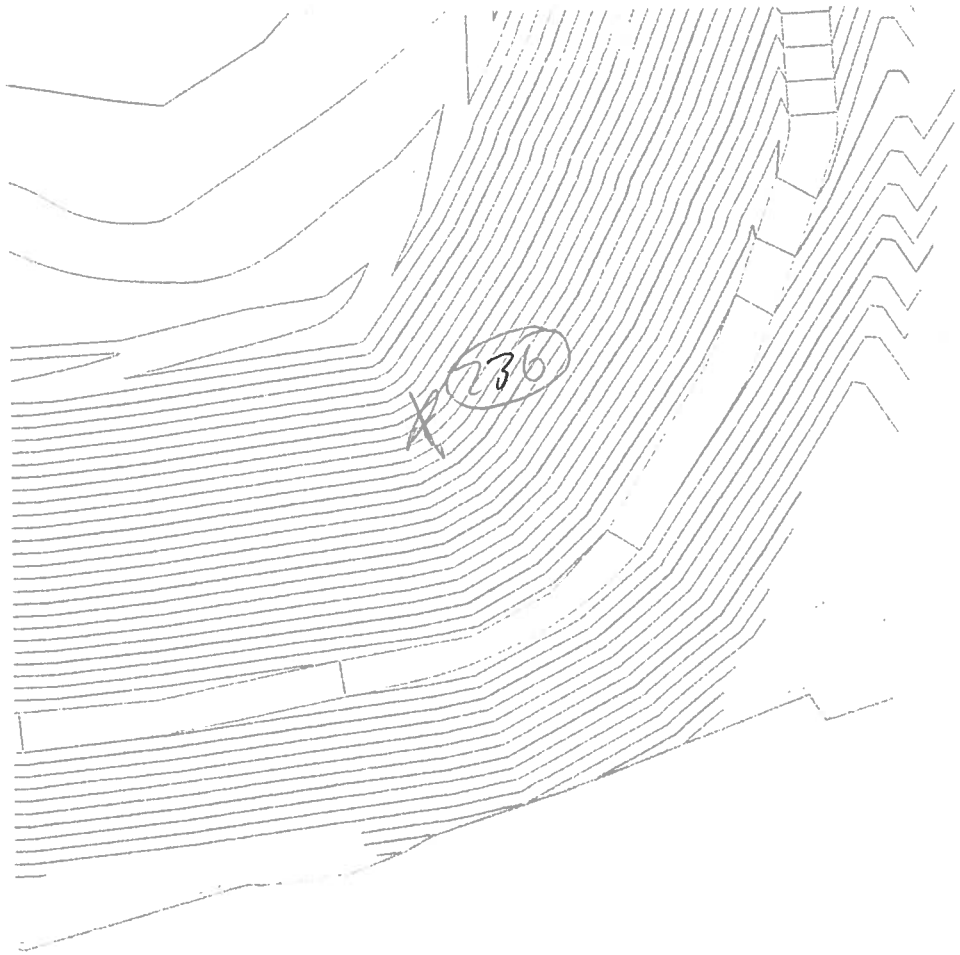
Date: 09/11/12 (Tuesday)

Time In: Same as Daily

Time Out: Same as Daily

Weather: Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: [illegible] Date: 09/11/12

Brown AND Caldwell

Field Compaction Test Data

Project Name: Ford Rd. - Phase 2 Remedial Actio
Project Number: 142889
Tested By: Bill Foster
Date: 09/12/12 (Wed)

auge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 609 % Change -0.2
Standard Density Count 2139 % Change 0.8

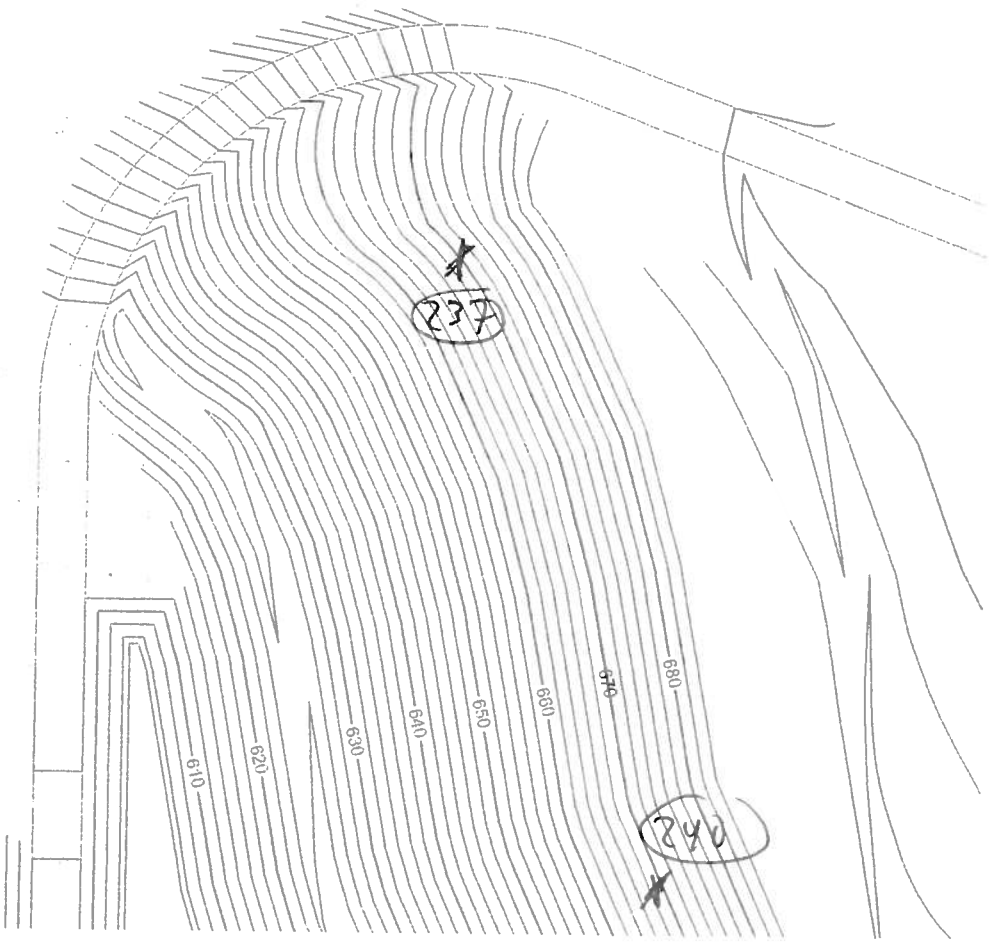
Test Information										
Test Number	237	238	239	240	241	242				
Lift Number	42	42	42	43	43	43				
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6	6				
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	138.6	133.7	131.3	134.6	134.5	134.6				
Dry Density (pcf)	125.1	122.1	116.8	120.8	119.8	120.3				
Moisture (pcf)	13.6	11.5	14.5	13.9	14.6	14.4				
Moisture (%)	10.9	9.4	12.5	11.5	12.2	11.9				
Laboratory Data										
Proctor Curve No.	55-25	55-25	55-25	55-25	55-25	55-25				
Max Dry Density (pcf)	122.6	122.6	122.6	122.6	122.6	122.6				
Optimum Moisture (%)	11.1	11.1	11.1	11.1	11.1	11.1				
Results										
% Compaction	102.0	99.6	95.2	98.5	97.7	98.1				
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass				
Retest Number/Date										

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	09/12/12 (wed)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: BW [illegible]

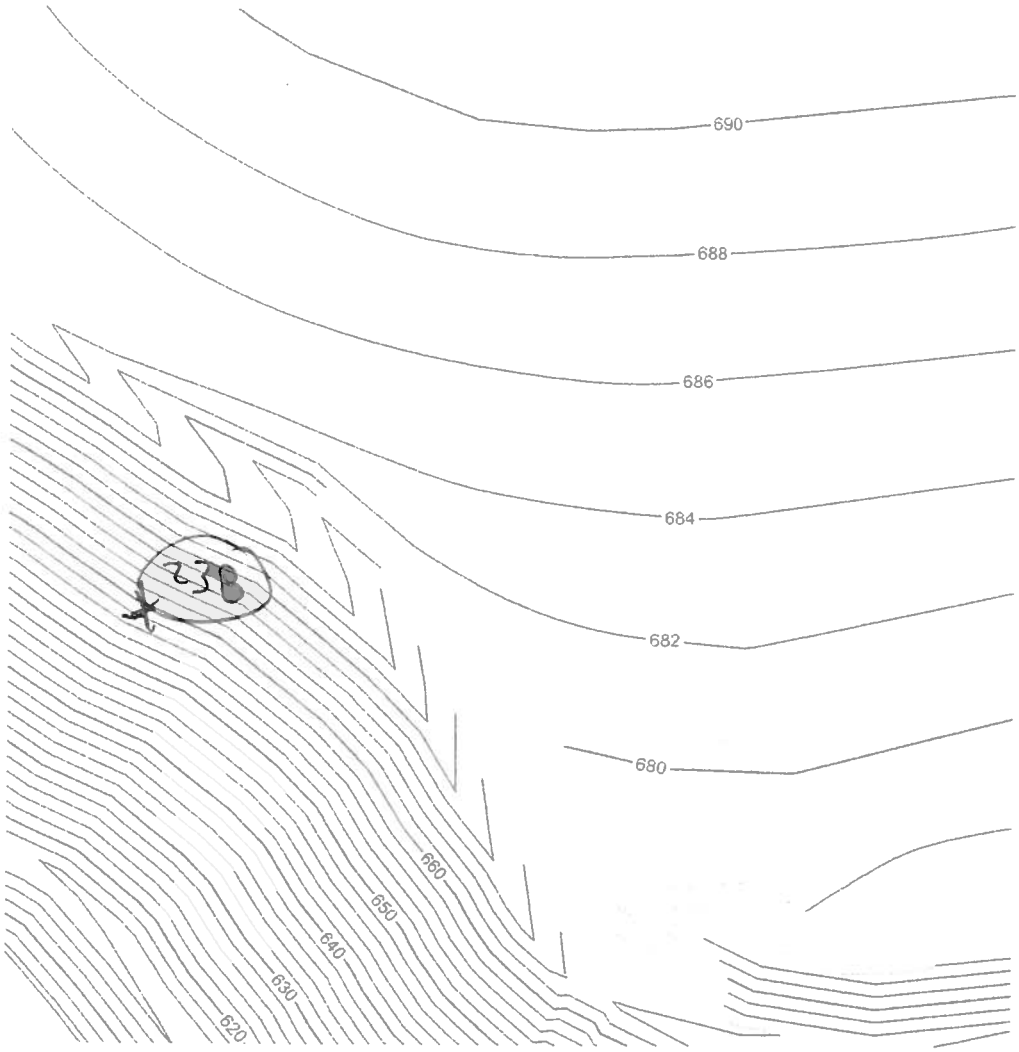
Date: 09/12/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	09/12/12 (Wed)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

BW KN — Signature of CQA Monitor

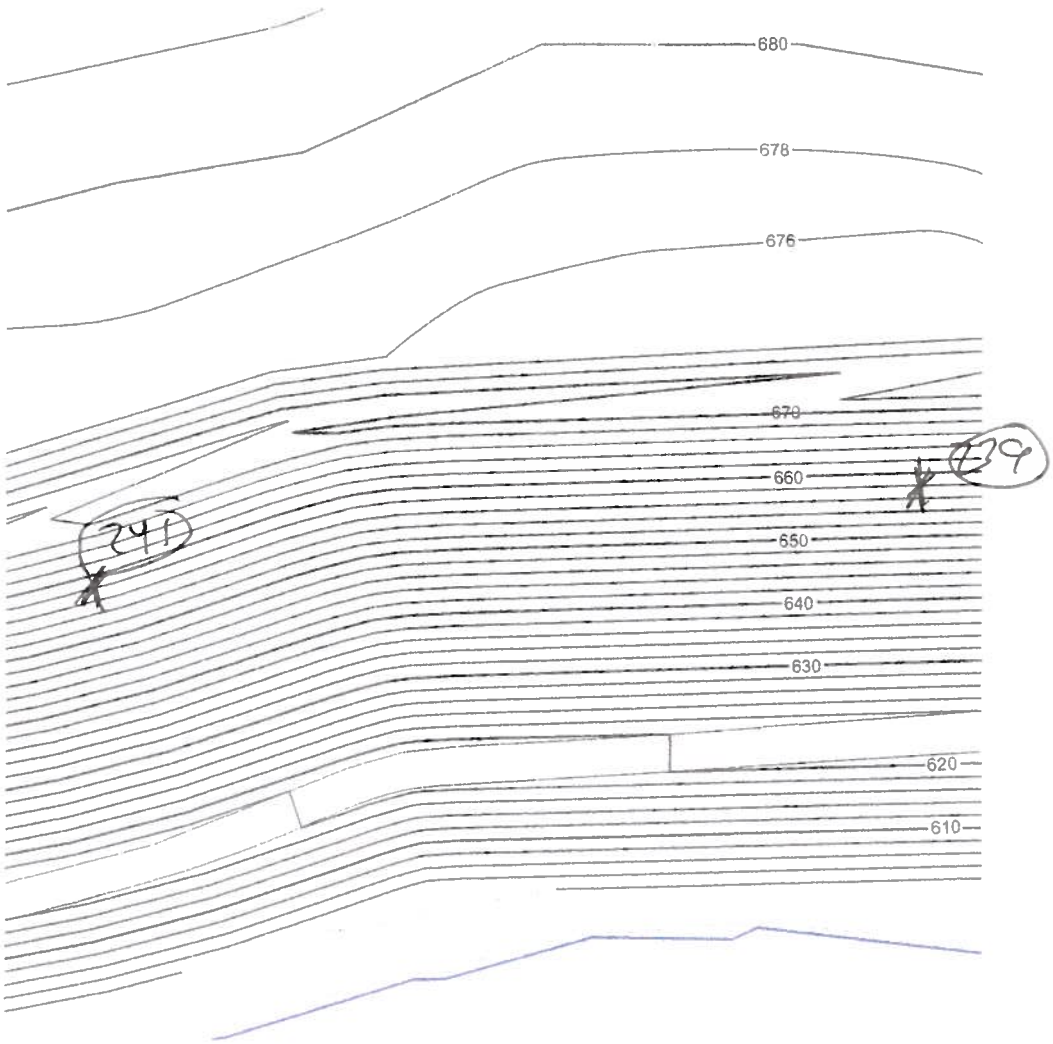
09/12/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	09/12/12 (Wed)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142899	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

BN Foster — Signature of CQA Monitor

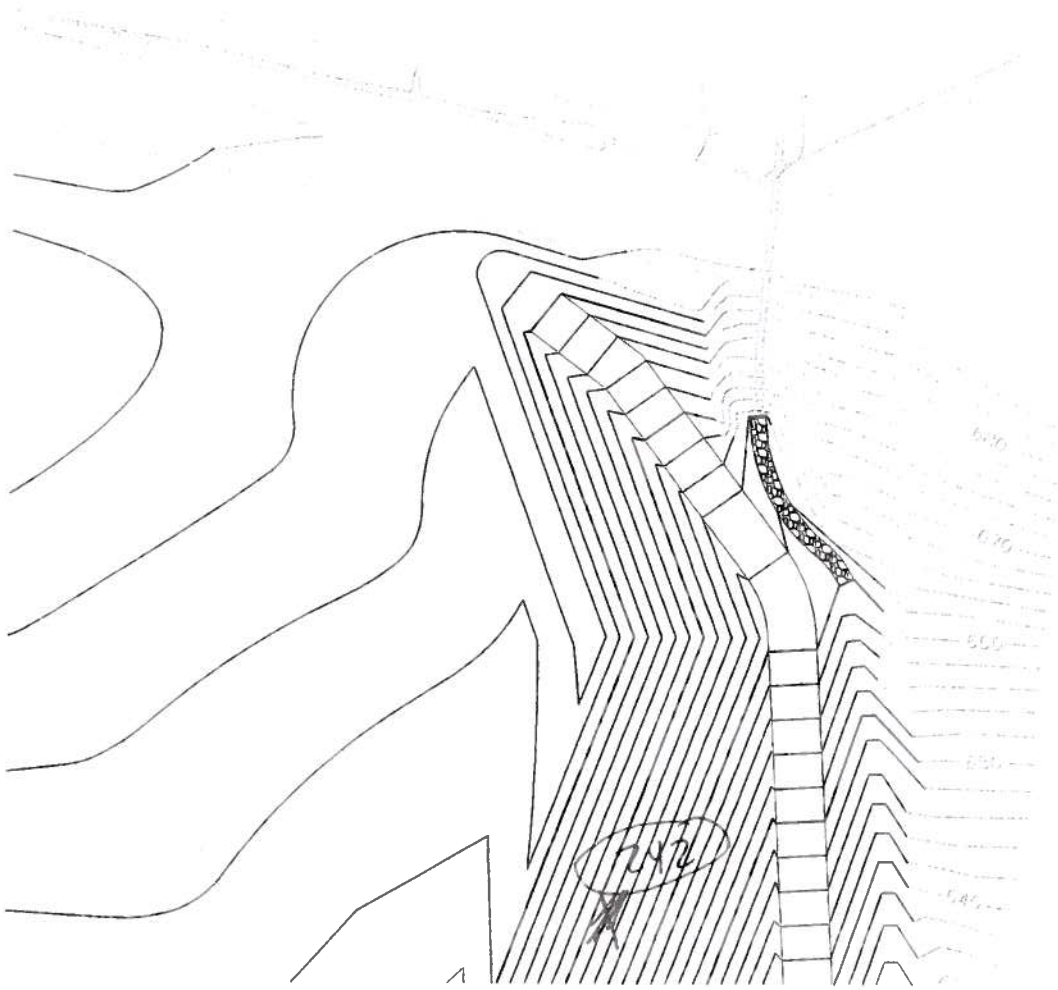
09/12/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	09/12/12 (wed)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

09/12/12 — Date

Brown AND Caldwell

Field Compaction Test Data

Project Name: Ford Rd - Phase 2 Remedial Action
Project Number: 142889
Tested By: Bill Foster
Date: 09/13/12 (Thursday)

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 609 % Change -0.1
Standard Density Count 2125 % Change -0.0

Test Information										
Test Number	243	244	245	246	247	248				
Lift Number	44	44	44	45	45	45				
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6	6				
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	138.9	136.1	132.8	135.8	129.5	134.8				
Dry Density (pcf)	126.6	123.3	120.6	122.7	116.8	121.2				
Moisture (pcf)	12.3	14.7	12.2	13.1	12.7	13.7				
Moisture (%)	9.7	12.0	10.1	10.7	10.9	11.3				
Laboratory Data										
Proctor Curve No.	SS-25	SS-25	SS-25	SS-25	SS-25	SS-25				
Max Dry Density (pcf)	122.6	122.6	122.6	122.6	122.6	122.6				
Optimum Moisture (%)	11.1	11.1	11.1	11.1	11.1	11.1				
Results										
% Compaction	103.2	100.6	98.3	100.1	95.3	98.8				
Pass/Fail	PASS	PASS	PASS	PASS	PASS	PASS				
Retest Number/Date										

Comments

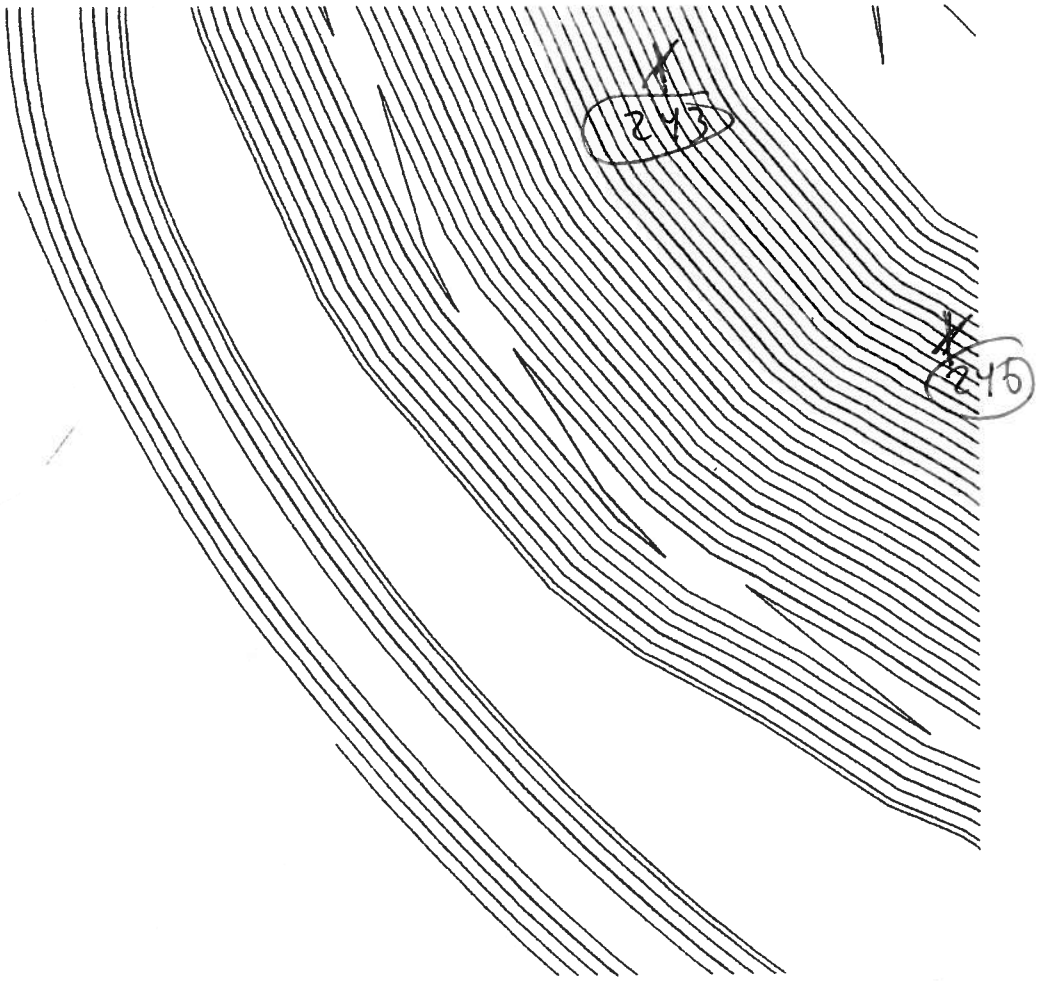
Page ___ of ___

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	09/13/12 (Thursday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

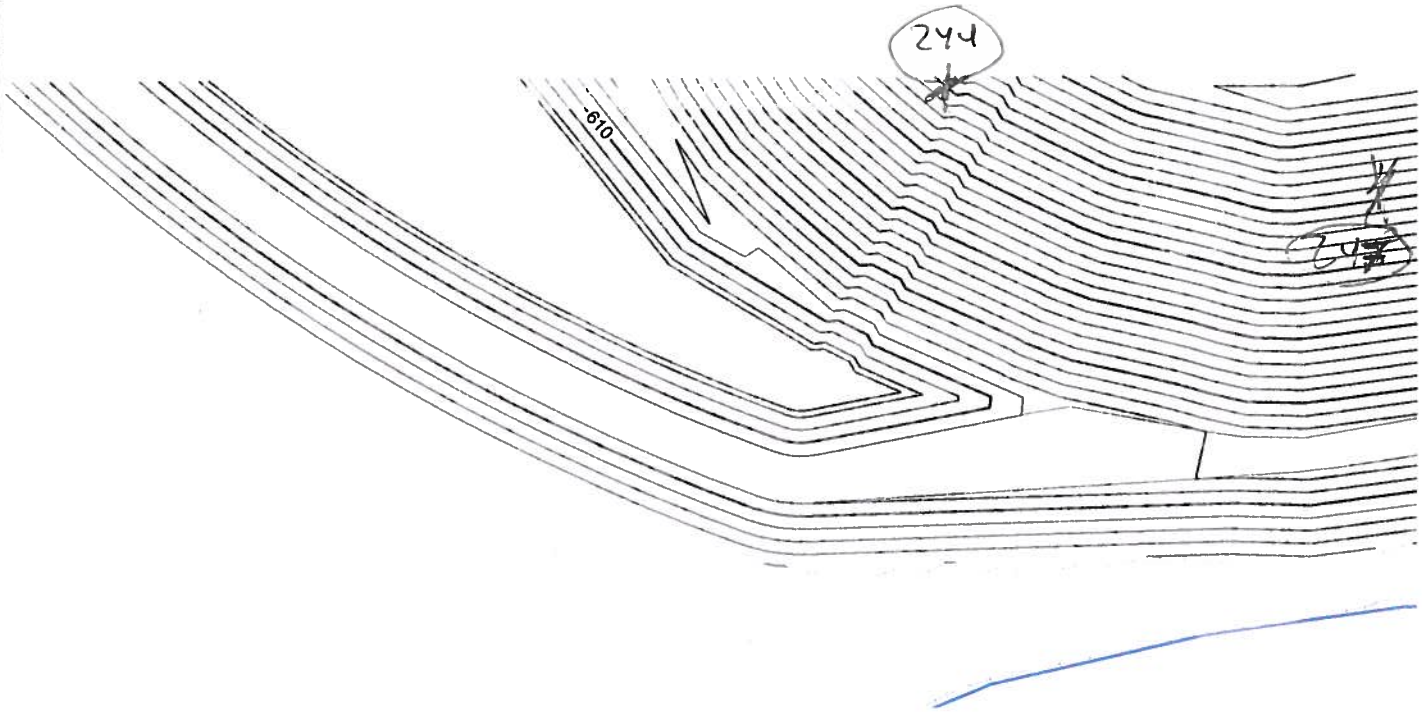
09/13/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	09/13/12 (Thursday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — **Signature of CQA Monitor**

09/13/12 — **Date**

Brown Caldwell

Soil Testing Locations Field Report

Site: Ford Rd.

Project: Phase 2 Remedial Action

Project No: 142889

BC Personnel: Bill Foster

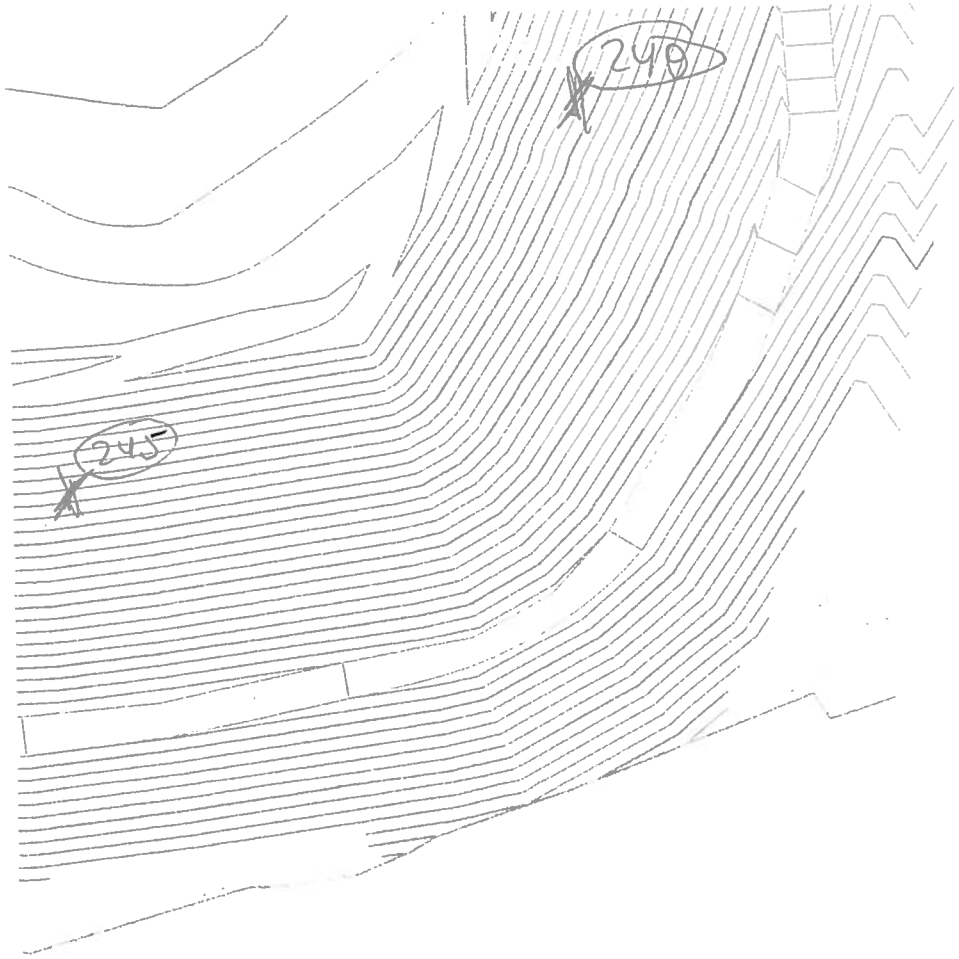
Date: 09/13/12 (Thursday)

Time In: Same as Daily

Time Out: Same as Daily

Weather: Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: [signature]

Date: 09/13/12

Brown AND Caldwell

Model No. Troxler 34[illegible]
Serial No. 24585
Moisture Content 610 % Change -0.1
Density Count 2120 % Change -0.4

Bill Foster
09/17/12 (Monday)

	249	250	251	252	253	254				
	46	46	46	47	47	47				
Compaction Equipment (Type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (Weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	
Number of Passes	6	6	6	6	6	6				
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	
Compaction Tests (Type)										
Moisture Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	134.4	132.9	131.9	134.3	133.0	132.3				
Dry Density (pcf)	119.1	117.6	116.8	120.8	118.3	117.3				
Moisture (pcf)	15.3	15.3	15.2	13.5	14.7	15.0				
Moisture (%)	12.8	13.0	13.0	11.2	12.4	12.8				
Laboratory Data										
Proctor Curve No.	SS-25	SS-25	SS-25	SS-25	SS-25	SS-25				
Max Dry Density (pcf)	122.6	122.6	122.6	122.6	122.6	122.6				
Optimum Moisture (%)	11.1	11.1	11.1	11.1	11.1	11.1				
Results										
% Compaction	97.2	95.9	95.2	98.5	96.5	95.6				
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass				
Retest Number/Date										

Comments

Brown Caldwell

Soil Testing Locations Field Report

Site: Ford Rd.

Project: Phase 1 Remedial Action

Project No: 142889

BC Personnel: Bill Foster

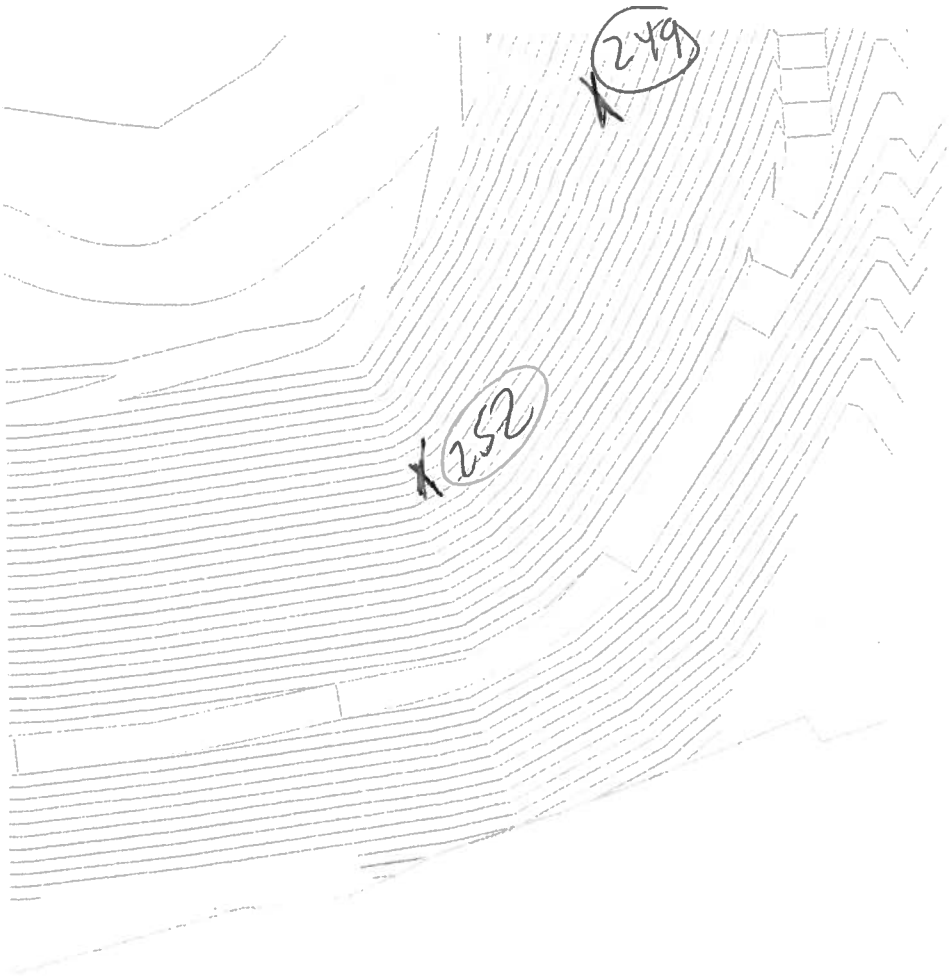
Date: 08/17/12 (Monday)

Time In: Same as Daily

Time Out: Same as Daily

Weather: Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other

BW KT 08/17/12

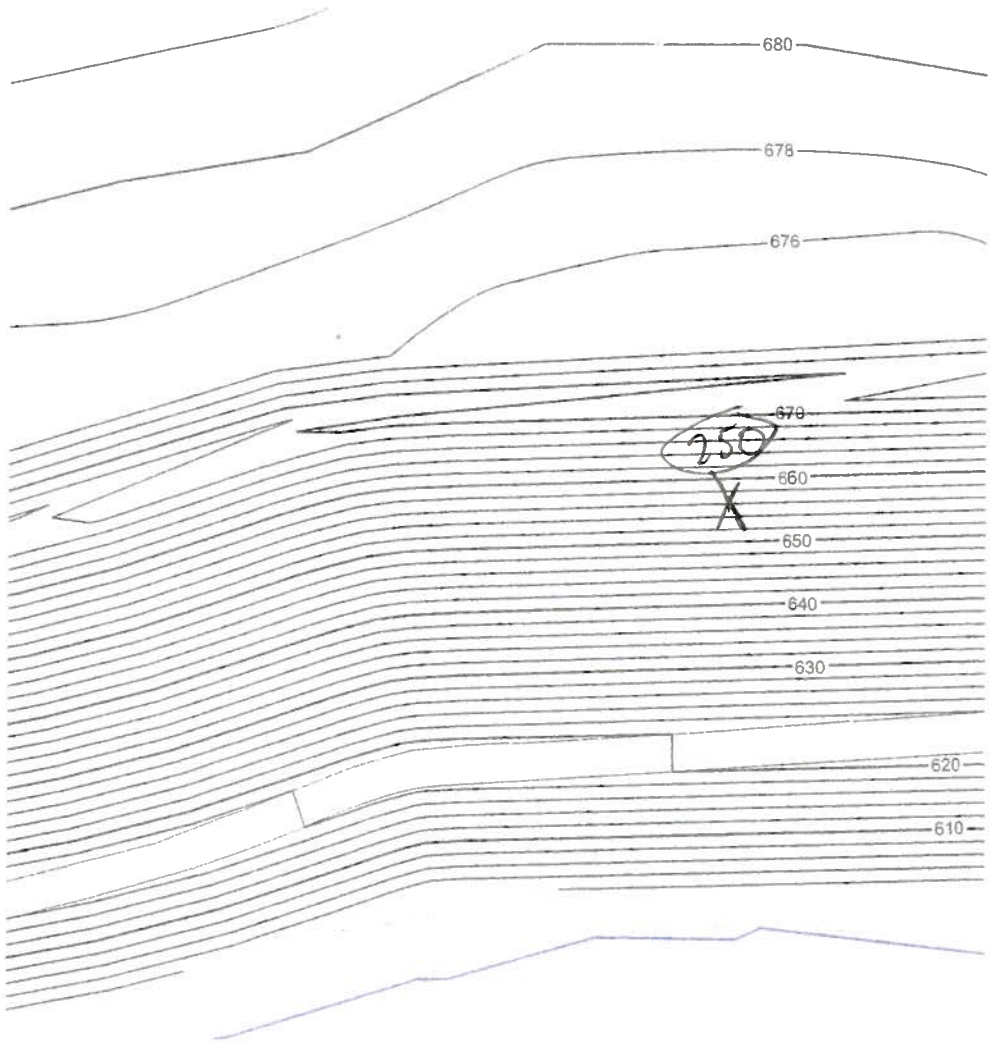
Signature of CQA Monitor — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	08/17/12 (Monday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

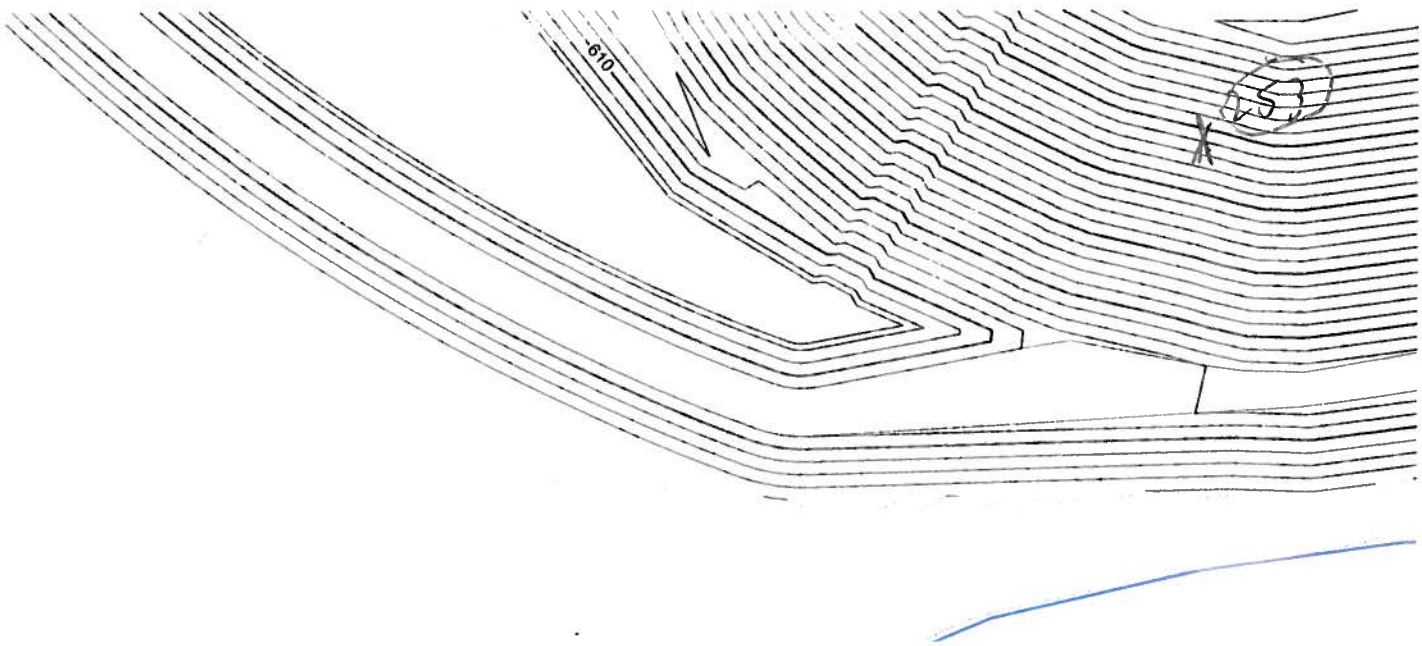
09/17/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	09/17/12 (Monday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Wt — **Signature of CQA Monitor**

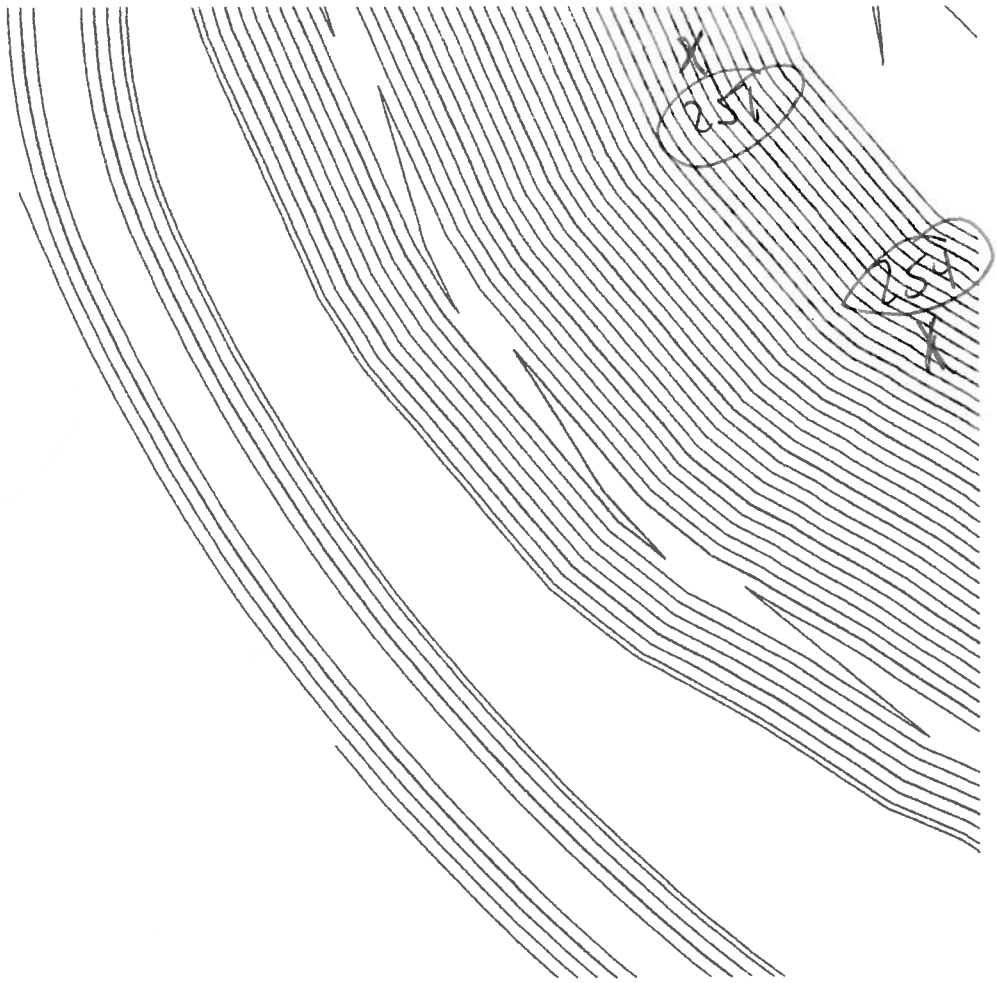
09/17/12 — **Date**

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	08/17/12 (Monday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

BN [illegible] 08/17/12

Signature of CQA Monitor — Date

Brown AND Caldwell

Field Compaction Test Data

Project Name: Ford Rd. - Phase 2 Remedial Action
Project Number: 142889
Tested By: Bill Foster
Date: 09/20/12 (Thursday)

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 610 % Change 0.2
Standard Density Count 2127 % Change -0.0

Test Information										
Test Number	255	256	257	258	259	260	261	262	263	
Lift Number	48	48	48	49	49	49	50	50	50	
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6	6	6	6	6	
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	133.7	132.3	133.2	132.3	131.4	130.9	133.9	135.7	132.3	
Dry Density (pcf)	119.8	117.0	118.1	117.7	117.2	118.6	119.0	120.4	118.3	
Moisture (pcf)	13.8	15.3	15.1	14.6	14.2	12.3	14.9	15.3	14.0	
Moisture (%)	11.5	13.1	12.8	12.4	12.1	10.4	12.5	12.7	11.8	
Laboratory Data										
Proctor Curve No.	55-25	55-25	55-25	55-25	55-25	55-25	55-25	55-25	55-25	
Max Dry Density (pcf)	122.6	122.6	122.6	122.6	122.6	122.6	122.6	122.6	122.6	
Optimum Moisture (%)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	
Results										
% Compaction	97.8	95.4	96.4	96.0	95.6	96.8	97.1	98.2	96.5	
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	
Retest Number/Date										

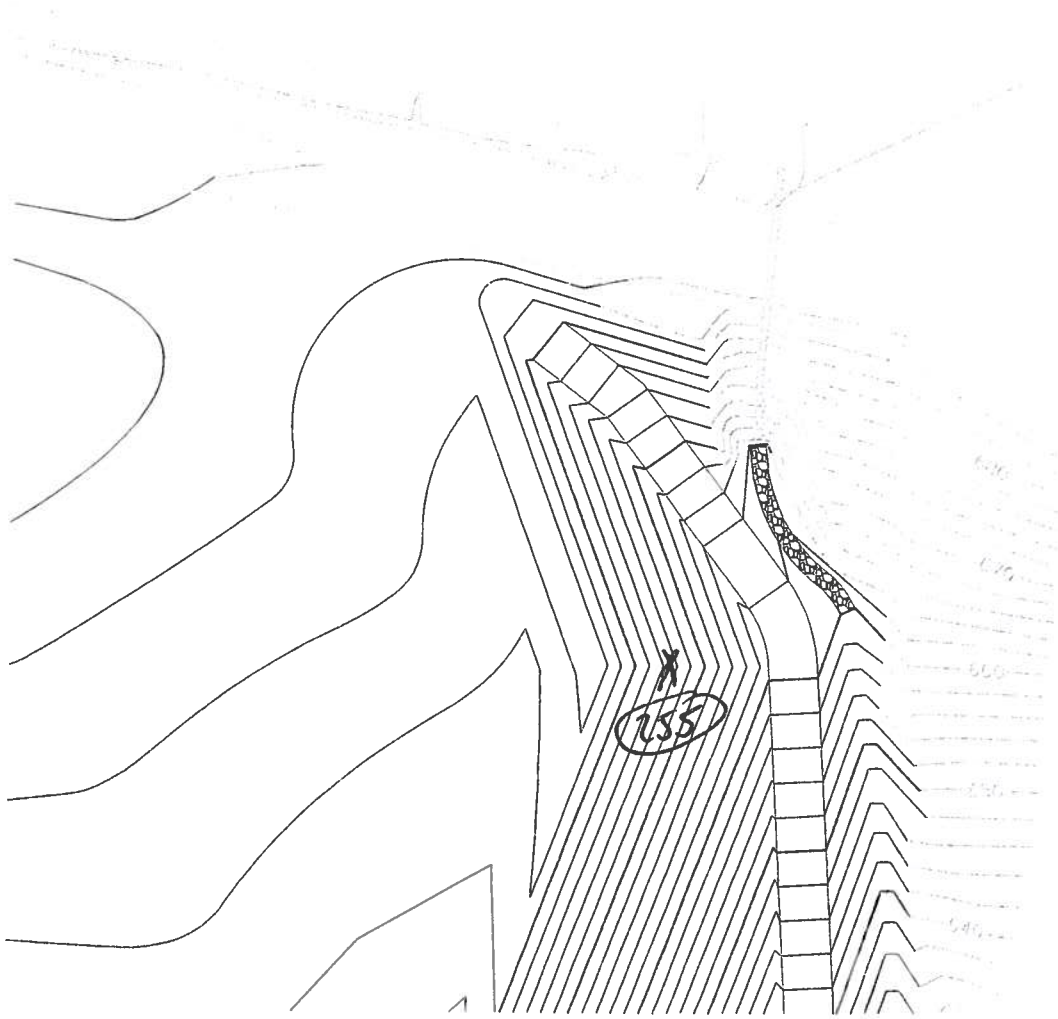
Comments

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	09/20/12 (Thursday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

09/20/12 — Date

BURNS AND McDONNELL

Soil Testing Locations Field Report

Site: Feed Rd.

Project: Phase 2 Remedial Action

Project No: 142889

BC Personnel: Bill Foster

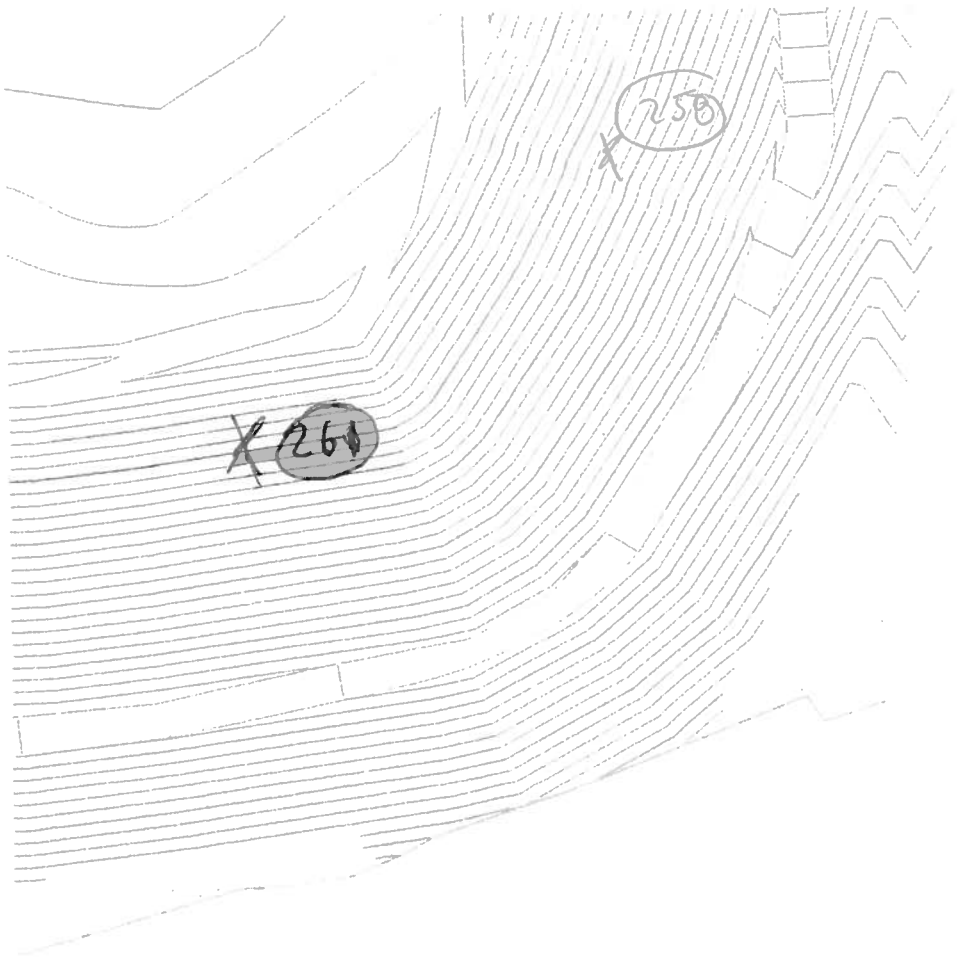
Date: 09/20/12 (Thursday)

Time In: Same as Daily

Time Out: Same as Daily

Weather: Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other

Signature of CQA Monitor: [signature]

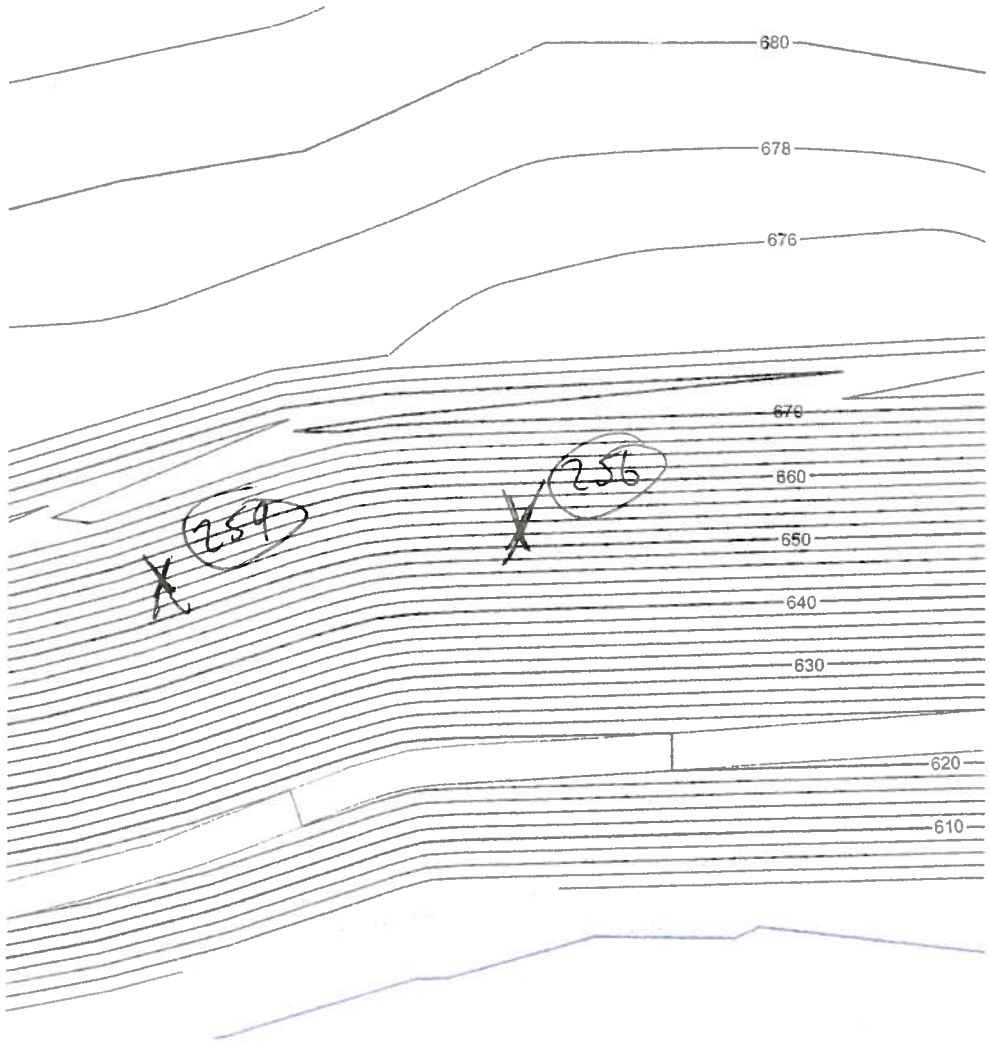
Date: 09/20/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	09/20/12 (Thursday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

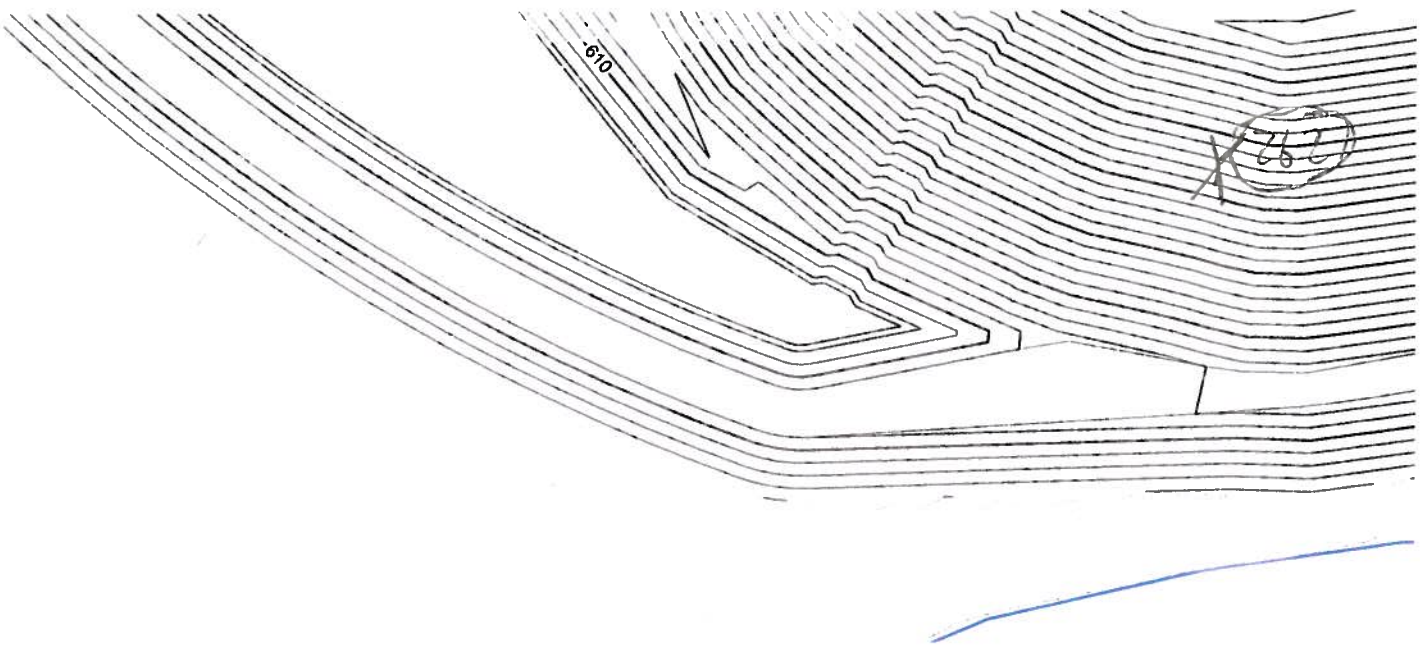
09/20/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	09/20/12 (Thursday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster 09/20/12

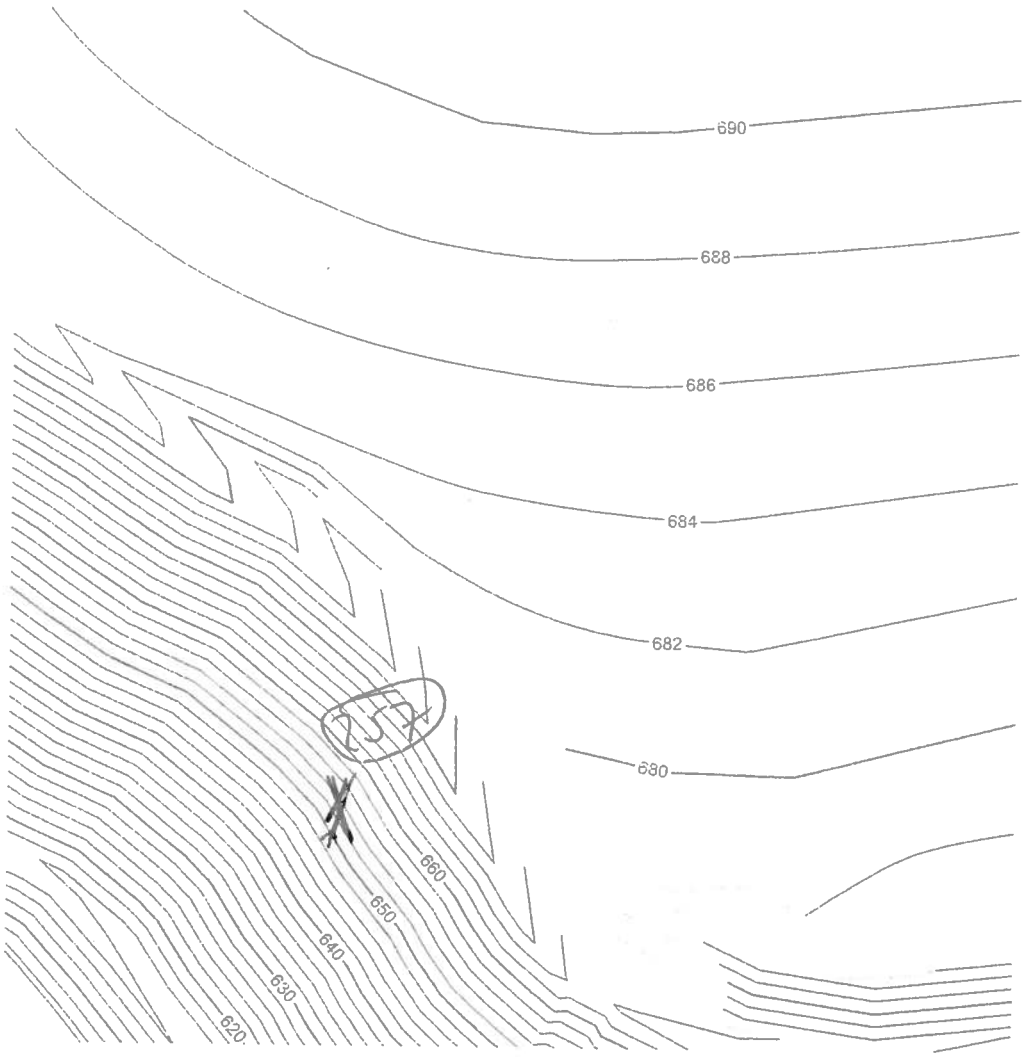
Signature of CQA Monitor **Date**

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	09/20/12 (Thursday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: Bill Foster

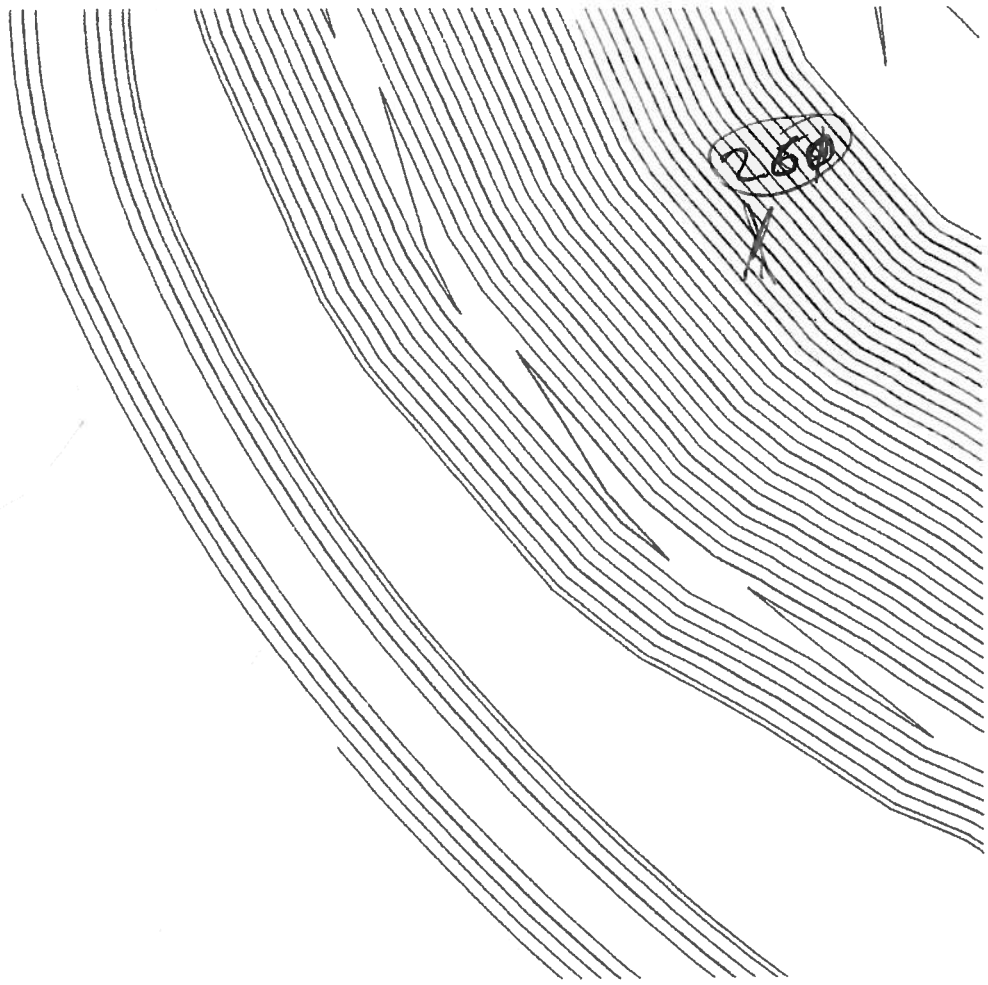
Date: 09/20/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	09/20/12 (Thursday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

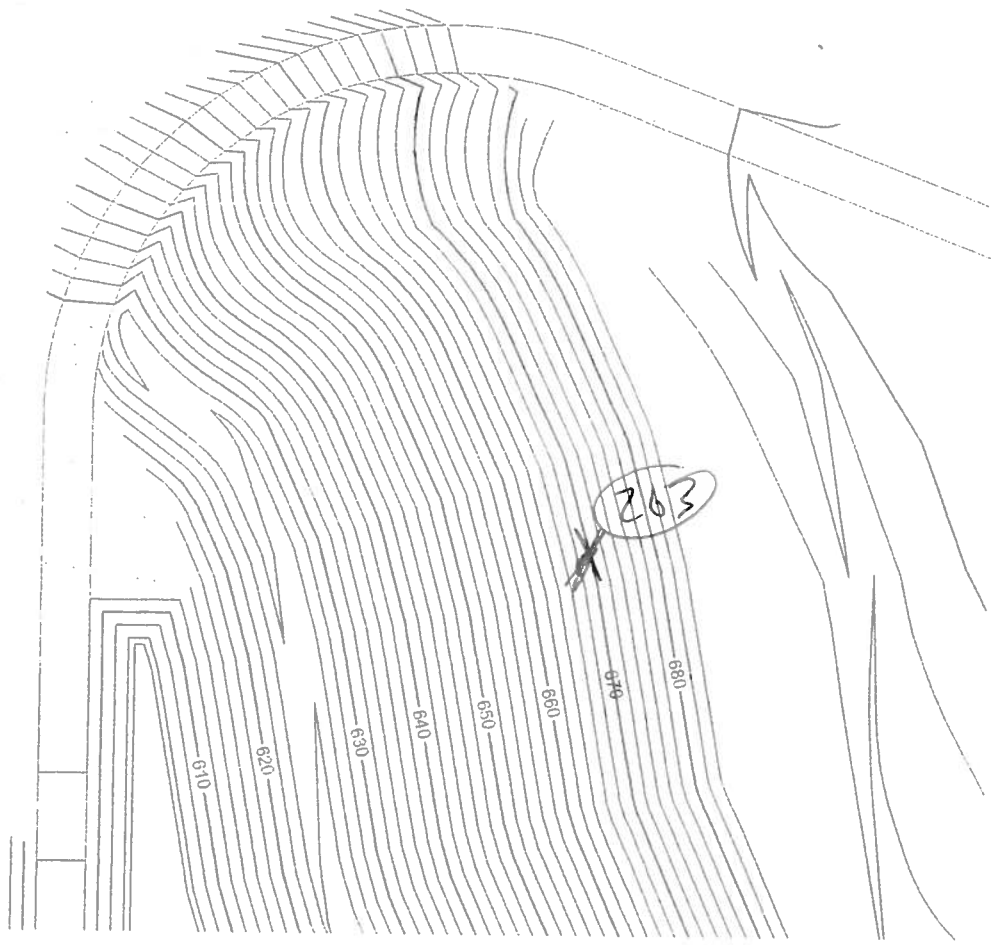
09/20/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	09/20/12 (Thursday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

09/20/12 — Date

Brown AND Caldwell

Field Compaction Test Data

Project Name: Ford Rd. – Phase 2 Remedial Action
Project Number: 142889
Tested By: Bill Fox
Date: 09/21/12 (Friday)

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 606 % Change -0.6
Standard Density Count 2109 % Change -0.9

Test Information										
Test Number	264	265	266	267	268	269	270	271	272	
Lift Number	51	51	51	52	52	52	53	53	53	
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6	6	6	6	6	
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	132.2	131.4	132.4	133.0	133.5	132.3	131.3	131.9	132.1	
Dry Density (pcf)	117.6	116.4	118.4	117.8	119.2	117.7	116.6	118.0	117.5	
Moisture (pcf)	14.6	15.0	14.0	15.2	14.3	14.6	14.7	13.8	14.6	
Moisture (%)	12.4	12.9	11.8	12.9	12.0	12.4	12.6	11.7	12.4	
Laboratory Data										
Proctor Curve No.	55-25	55-25	55-25	55-25	55-25	55-25	55-25	55-25	55-25	
Max Dry Density (pcf)	122.6	122.6	122.6	122.6	122.6	122.6	122.6	122.6	122.6	
Optimum Moisture (%)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	
Results										
% Compaction	95.9	95.0	96.6	96.1	97.2	96.0	95.1	96.3	95.8	
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	
Retest Number/Date										

Comments

Brown AND Caldwell

Soil Testing Locations Field Report

Site: Ford Rd.

Project: Phase 2 Remedial Action

Project No: 142669

EC Personnel: Bill Foster

Date: 09/21/12 (Friday)

Time In: Same as Daily

Time Out: Same as Daily

Weather: Same as Daily

Location of Moisture/Density Test(s):

Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other

Signature of CQA Monitor

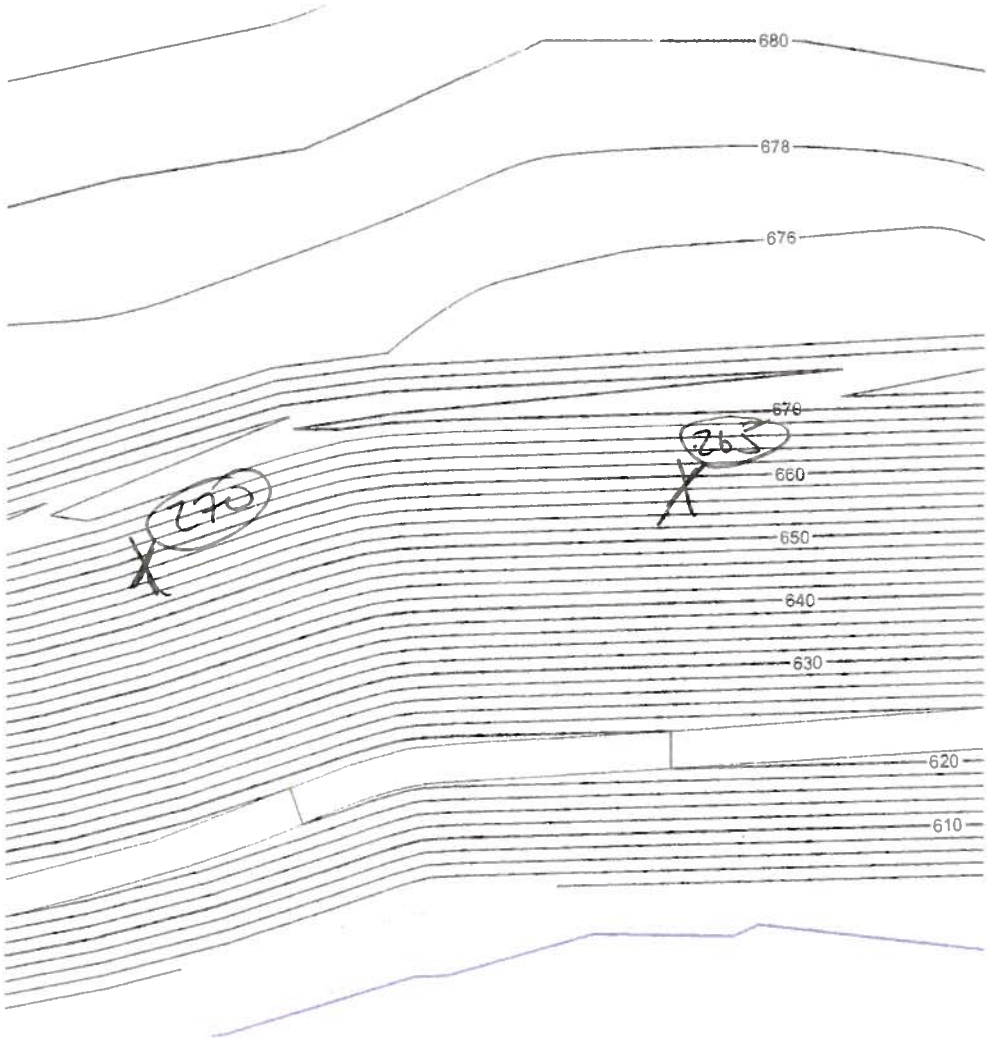
09/21/12
Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	09/21/12 (Friday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

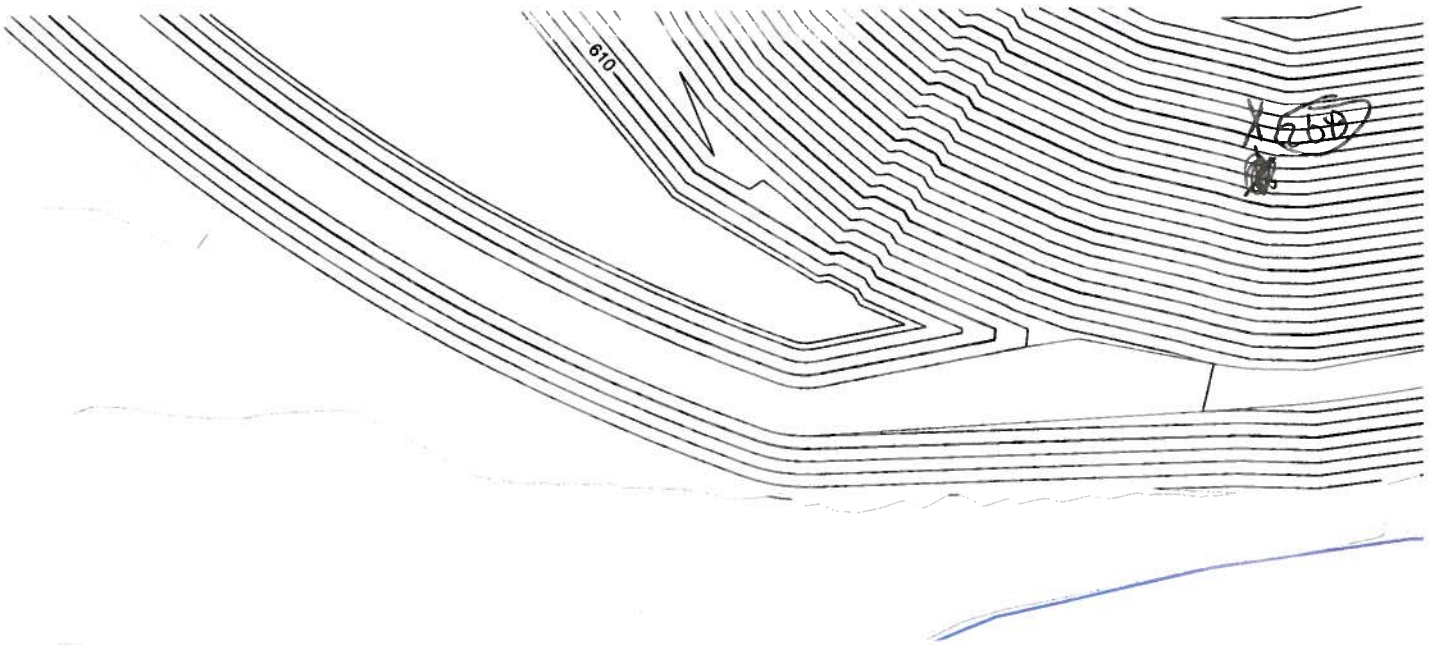
09/21/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	09/21/12 (Friday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

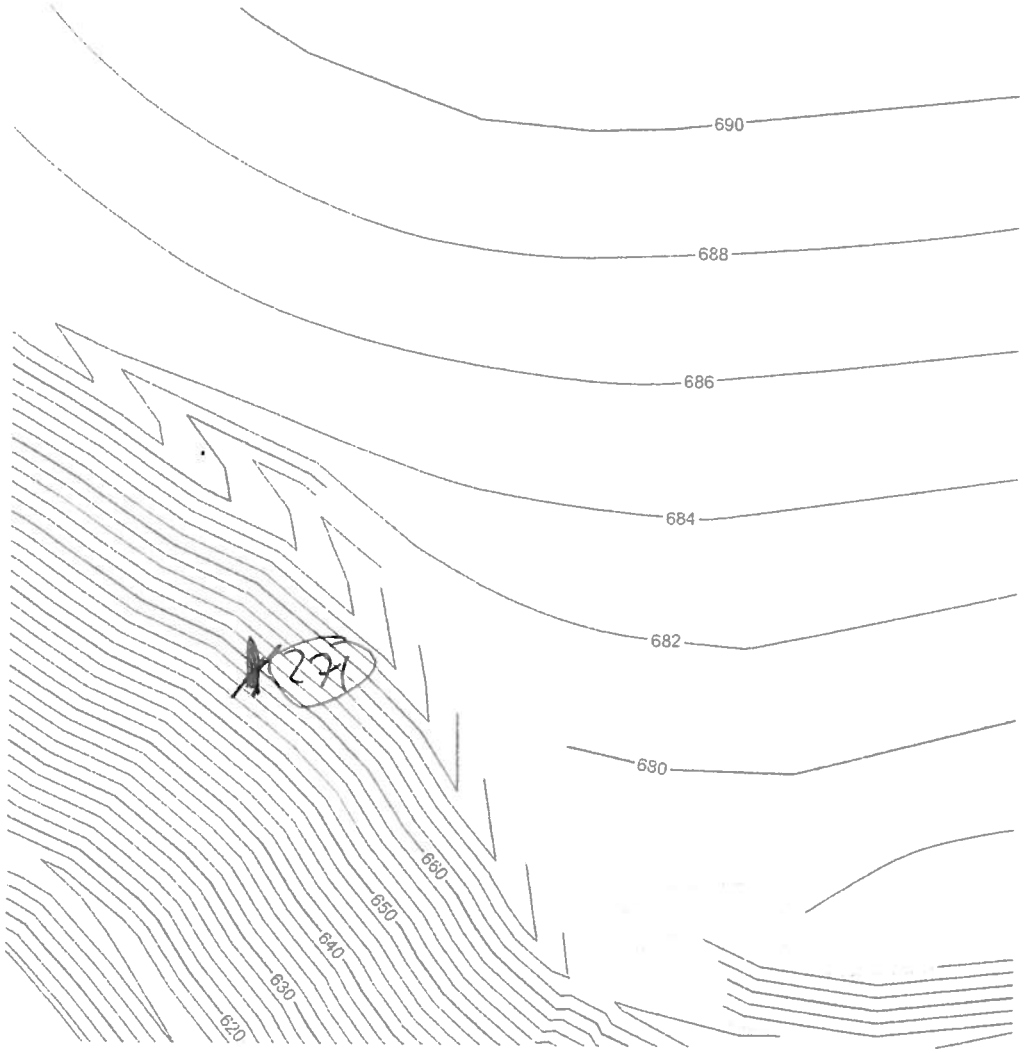
09/21/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	09/21/12 (Friday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

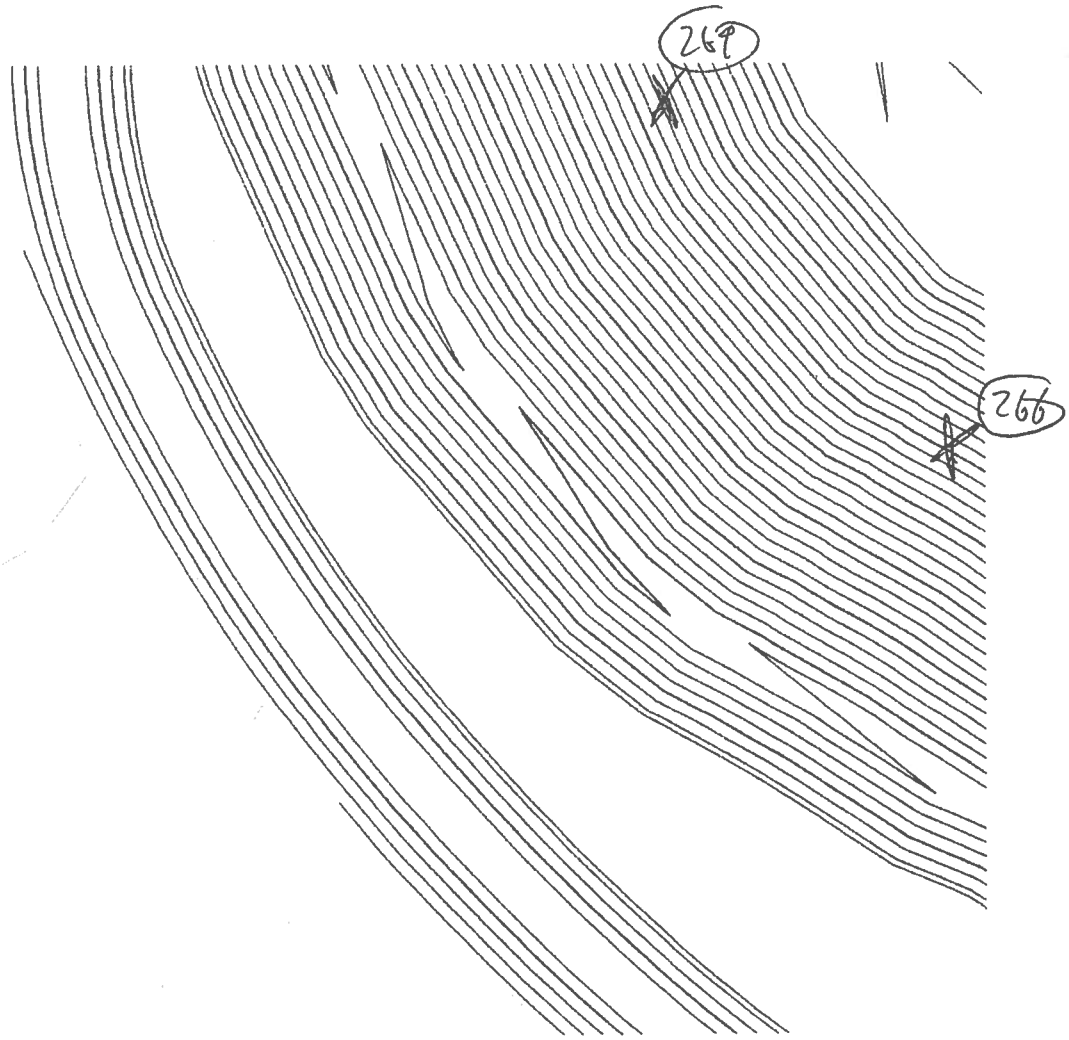
09/21/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	09/21/12 (Friday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

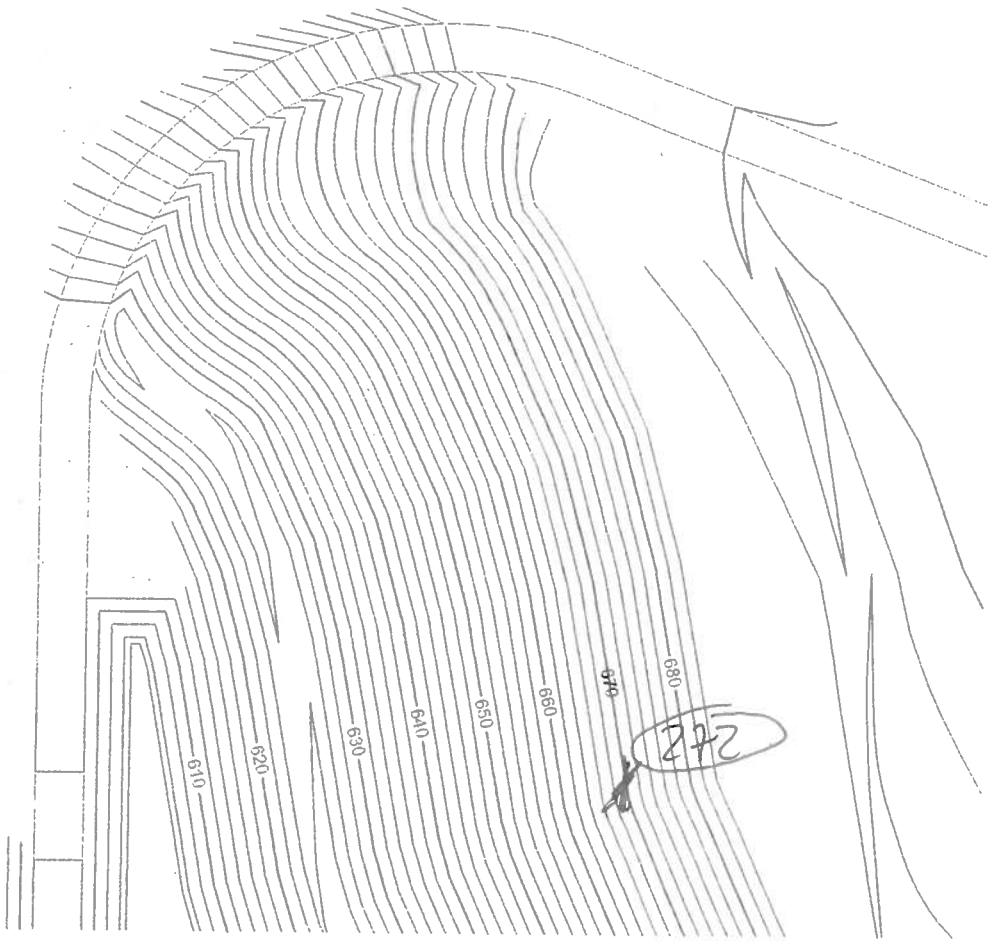
09/21/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	09/21/12 (Friday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

09/21/12 — Date

Field Compaction Test Data

Brown AND Caldwell

Project Name:	Ford Rd. - Phase 2 Remedial Action	Gauge Model No.	Troxler 3440
Project Number:	142889	Gauge Serial No.	24585
Tested By:	Bill Foster	Standard Moisture Content	609 % Change 0.0
Date:	09/25/12 (Tuesday)	Standard Density Count	2121 % Change 0.0

Test Information										
Test Number	273	274	275	276	277	278	279	280	281	
Lift Number	54	54	54	55	55	55	56	56	56	
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6	6	6	6	6	
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	131.9	131.3	132.2	132.1	132.8	131.4	131.7	131.4	131.4	
Dry Density (pcf)	117.9	117.2	118.7	117.5	119.4	118.4	117.0	117.7	118.4	
Moisture (pcf)	14.0	14.1	13.5	14.6	13.4	13.0	14.7	13.7	13.0	
Moisture (%)	11.9	12.0	11.4	12.4	11.2	11.0	12.6	11.6	11.0	
Laboratory Data										
Proctor Curve No.	SS-25	SS-25	SS-25	SS-25	SS-25	SS-25	SS-25	SS-25	SS-25	
Max Dry Density (pcf)	122.6	122.6	122.6	122.6	122.6	122.6	122.6	122.6	122.6	
Optimum Moisture (%)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	
Results										
% Compaction	96.2	95.6	96.8	95.8	97.4	96.6	95.4	96.0	96.6	
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	
Retest Number/Date										

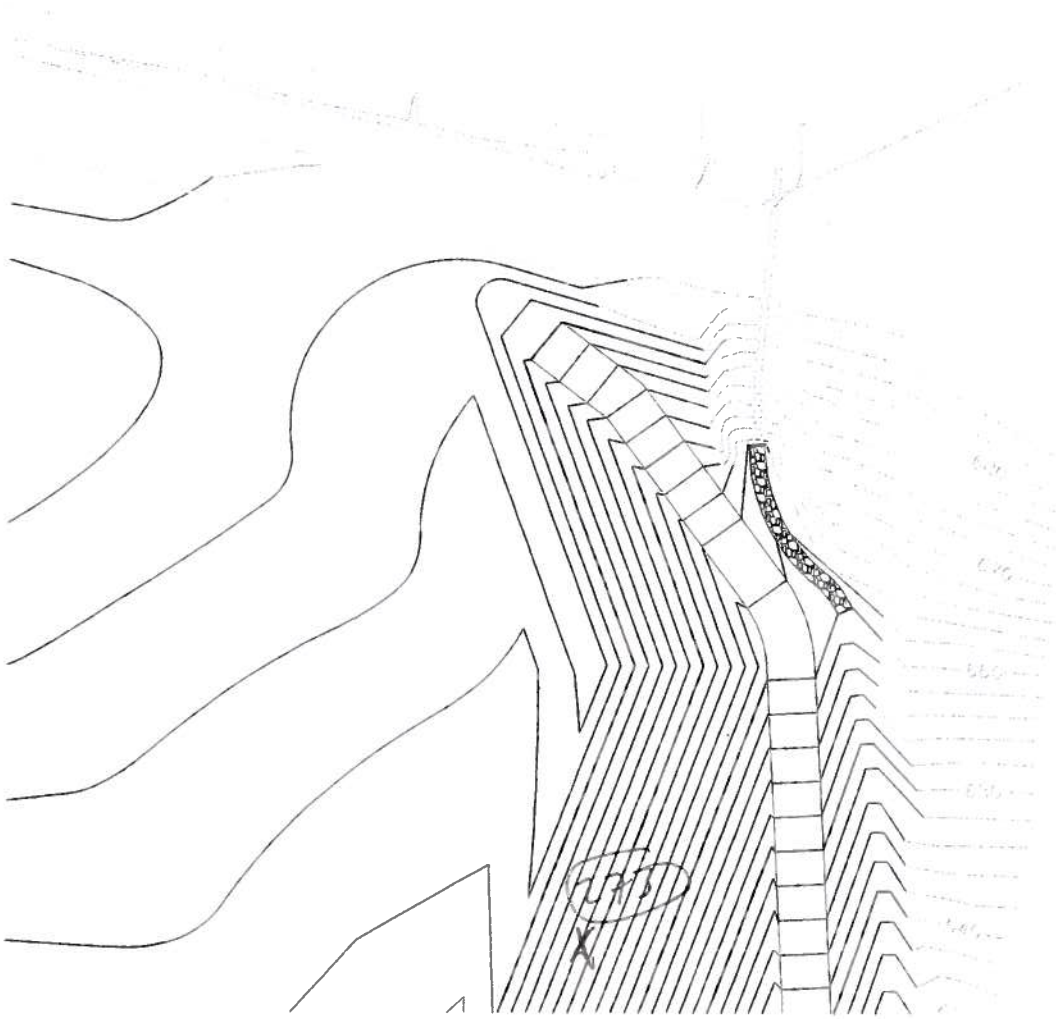
Comments

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	09/25/12 (Tuesday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

09/25/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site: Ford Rd

Project: Phase 2 Remedial Action

Project No: 142889

BC Personnel: Bill Foster

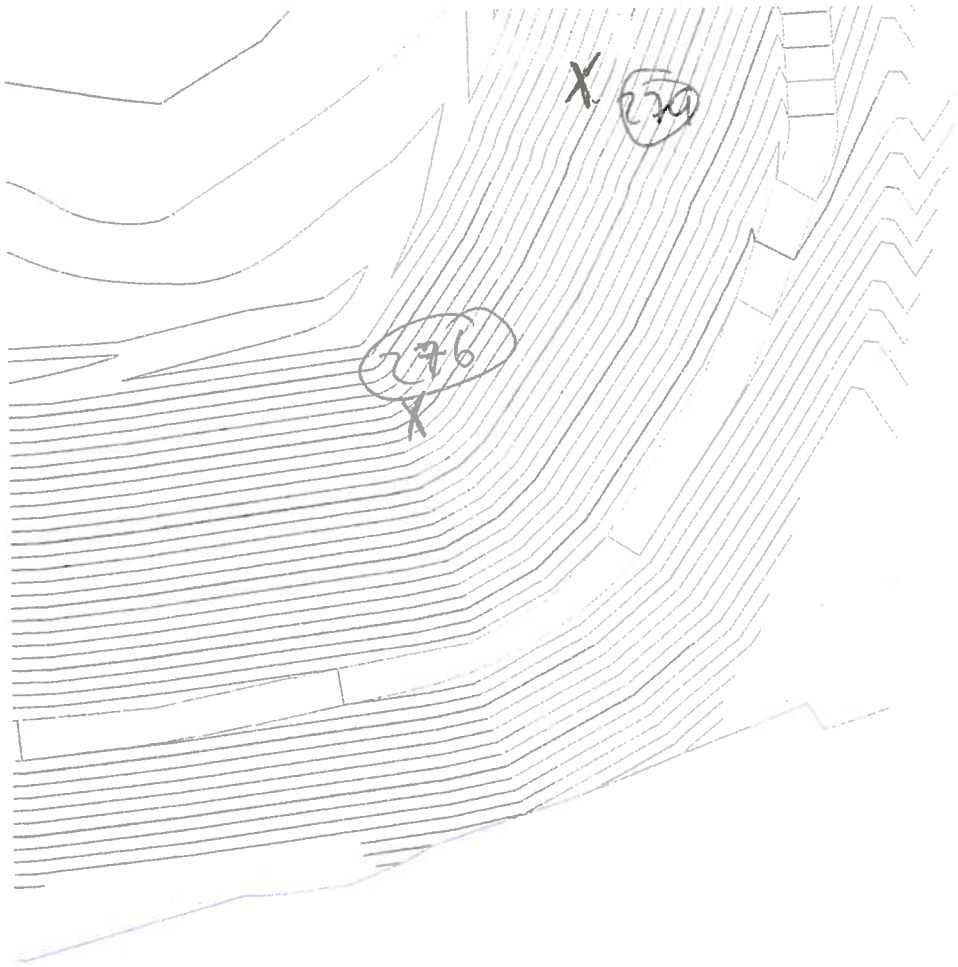
Date: 09/25/12 (Tuesday)

Time In: Same as Daily

Time Out: Same as Daily

Weather: Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: Bill Foster

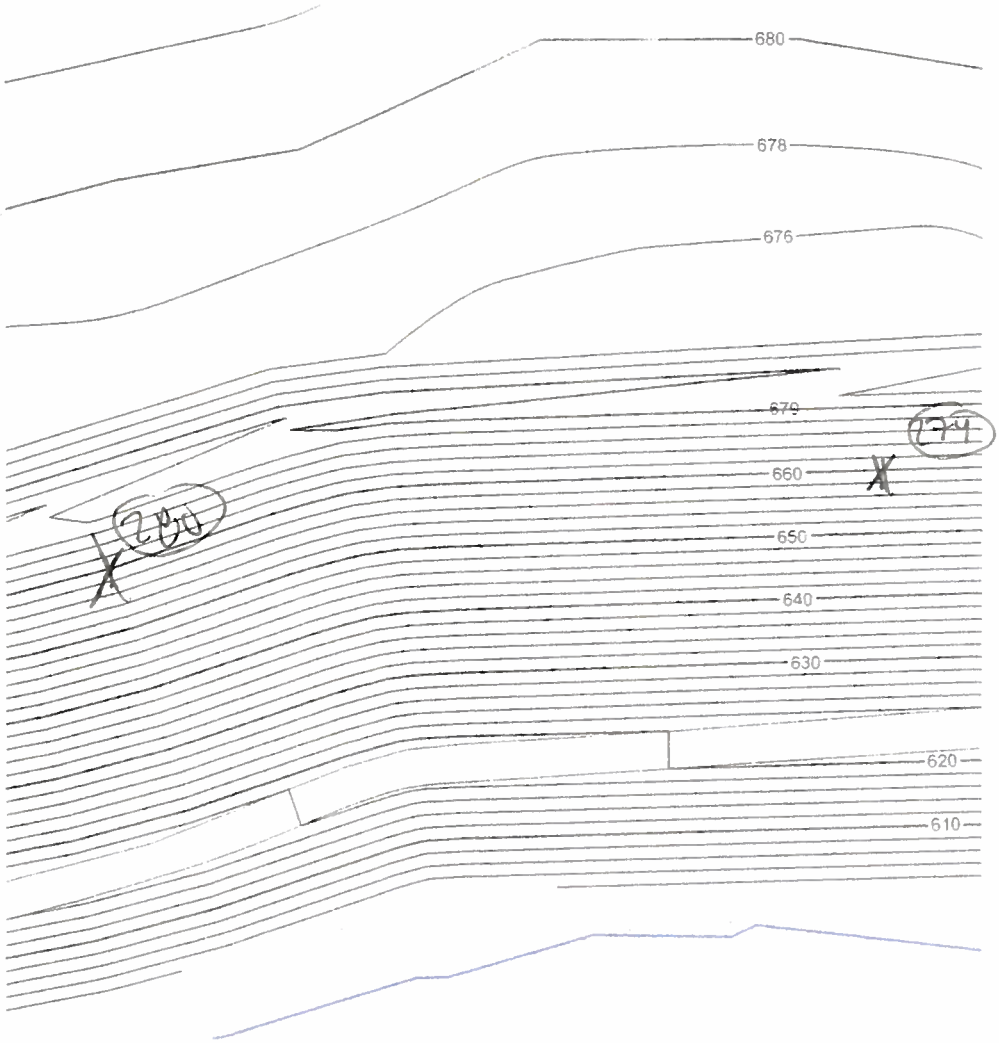
Date: 09/25/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	09/25/12 (Tuesday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

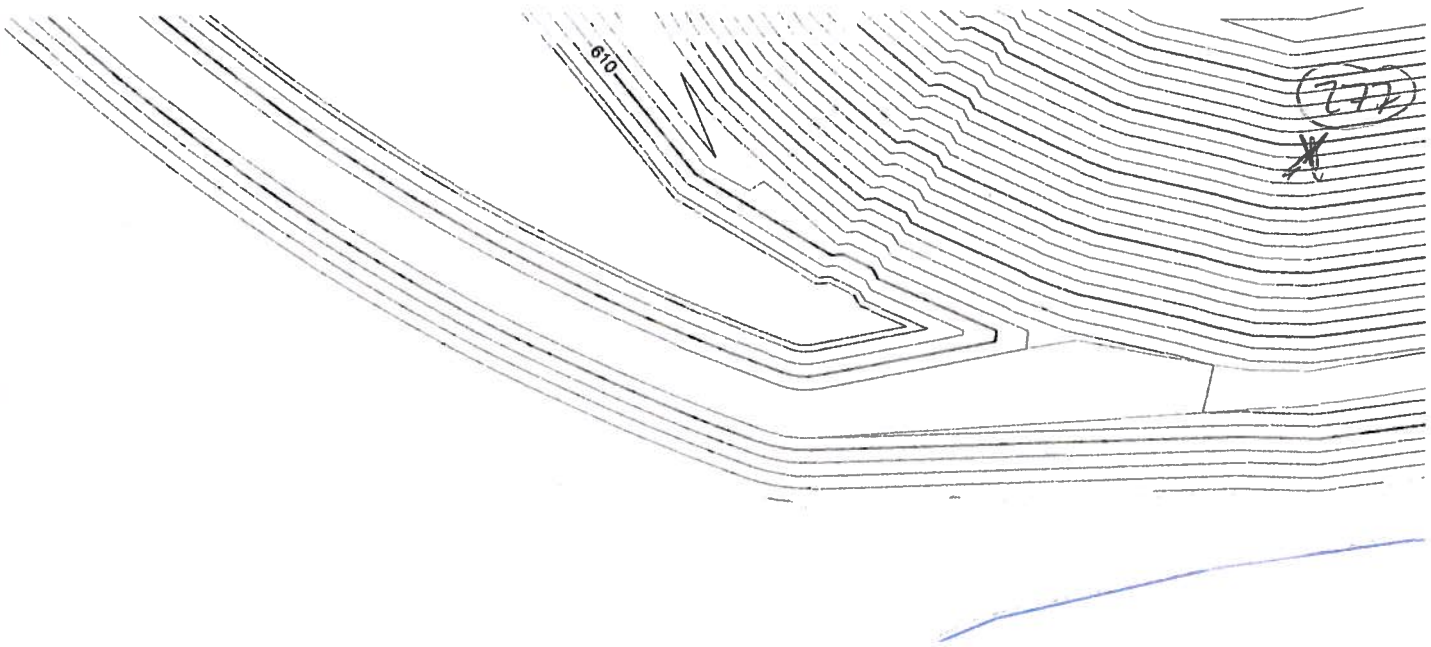
09/25/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	09/25/12 (Tuesday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

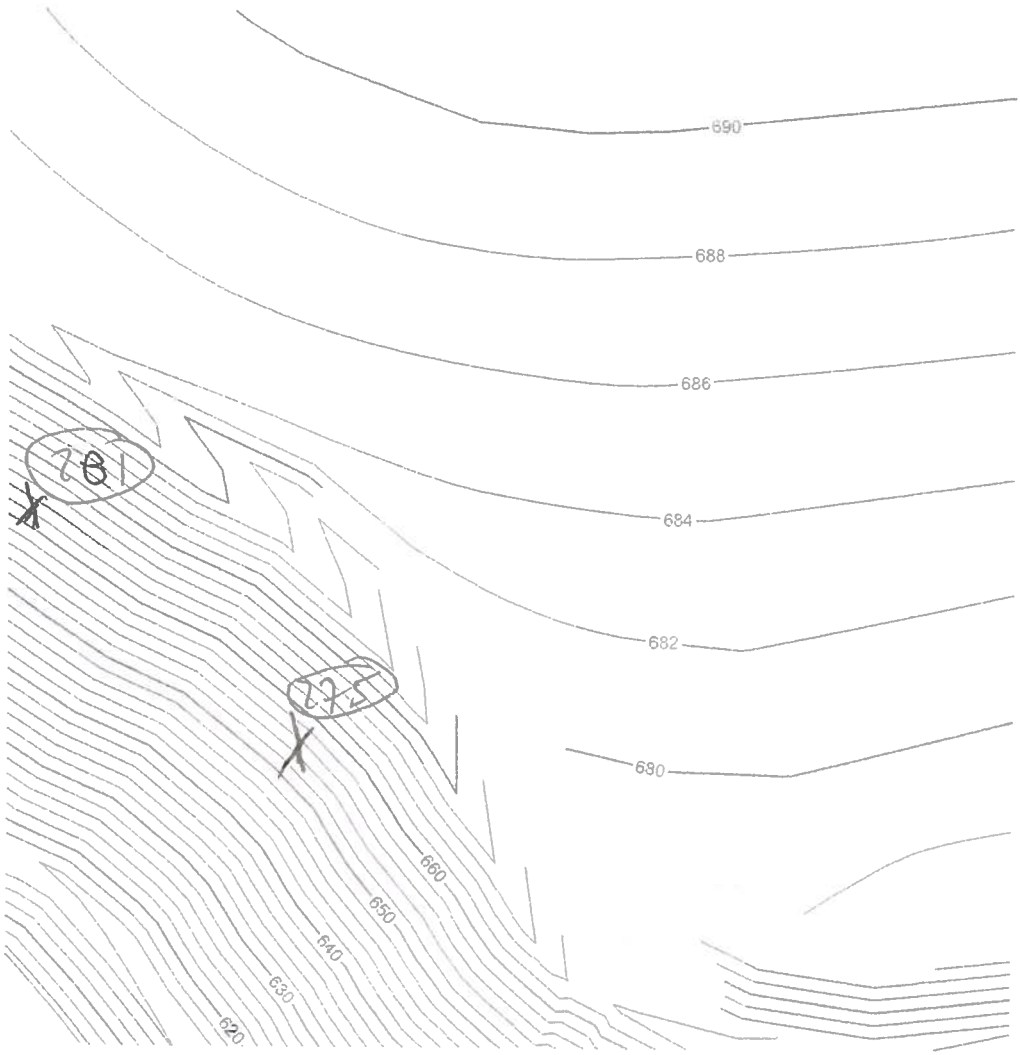
09/25/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	09/25/12 (Tuesday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142989	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

BN [illegible] — Signature of CQA Monitor

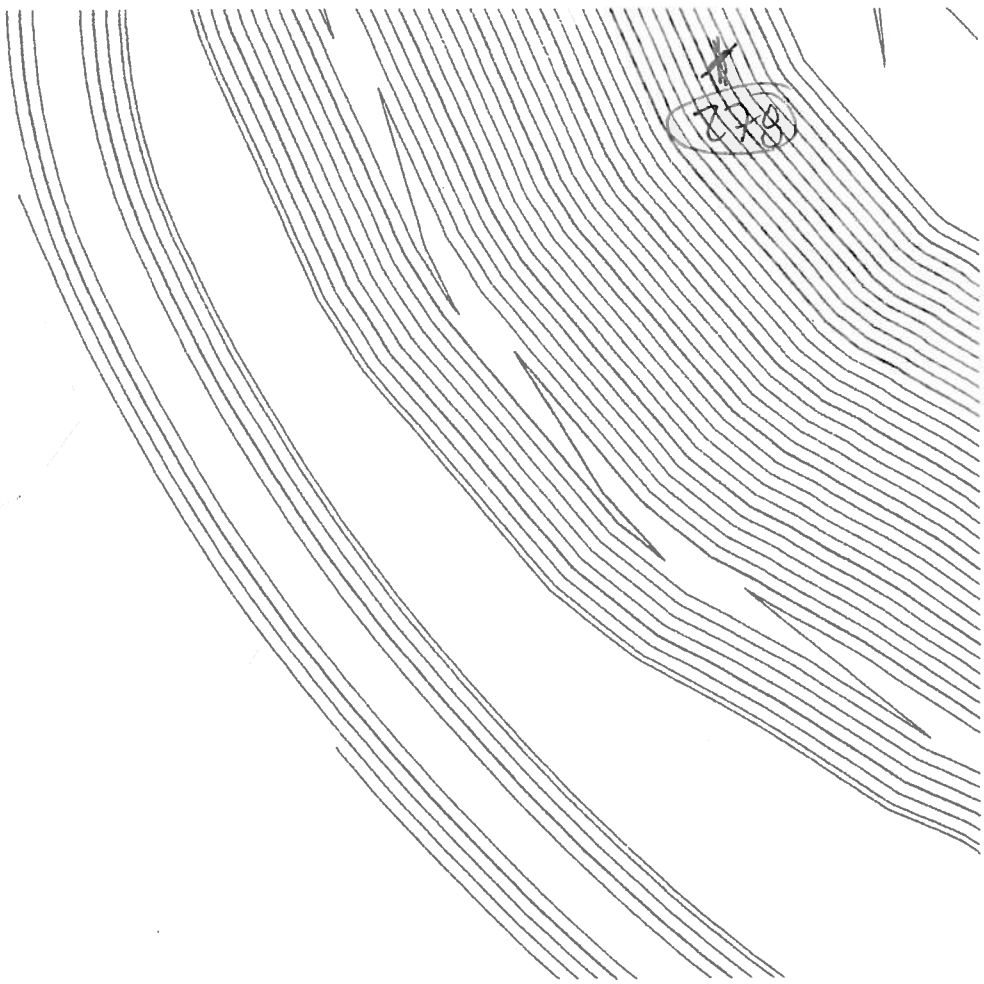
09/25/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	09/25/12 (Tuesday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Lt — Signature of CQA Monitor

09/25/12 — Date

Brown AND Caldwell

Field Compaction Test Data

Project Name:	Ford Rd. - Phase 2 Remedial Action	Gauge Model No.	Troxler 3440
Project Number:	142889	Gauge Serial No.	24585
Tested By:	Bill Foster	Standard Moisture Content	609 % Change 0.0
Date:	09/28/12 (Friday)	Standard Density Count	2121 % Change 0.0

Test Information										
Test Number	282	283	284	285	286	287	288	289	290	
Lift Number	57	57	57	58	58	58	59	59	59	
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6	6	6	6	6	
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	133.3	134.8	133.4	133.4	132.4	131.8	132.3	133.1	133.6	
Dry Density (pcf)	118.2	120.4	118.7	118.9	117.2	116.7	117.5	118.2	118.4	
Moisture (pcf)	15.1	14.4	14.7	14.5	15.2	15.1	14.8	14.9	15.2	
Moisture (%)	12.8	12.0	12.4	12.2	13.0	12.9	12.6	12.6	12.8	
Laboratory Data										
Proctor Curve No.	SS-25	SS-25	SS-25	SS-25	SS-25	SS-25	SS-25	SS-25	SS-25	
Max Dry Density (pcf)	122.6	122.6	122.6	122.6	122.6	122	122.6	122.6	122.6	
Optimum Moisture (%)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	
Results										
% Compaction	96.4	98.2	96.8	97.0	95.6	95.2	95.8	96.4	96.6	
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	
Retest Number/Date										

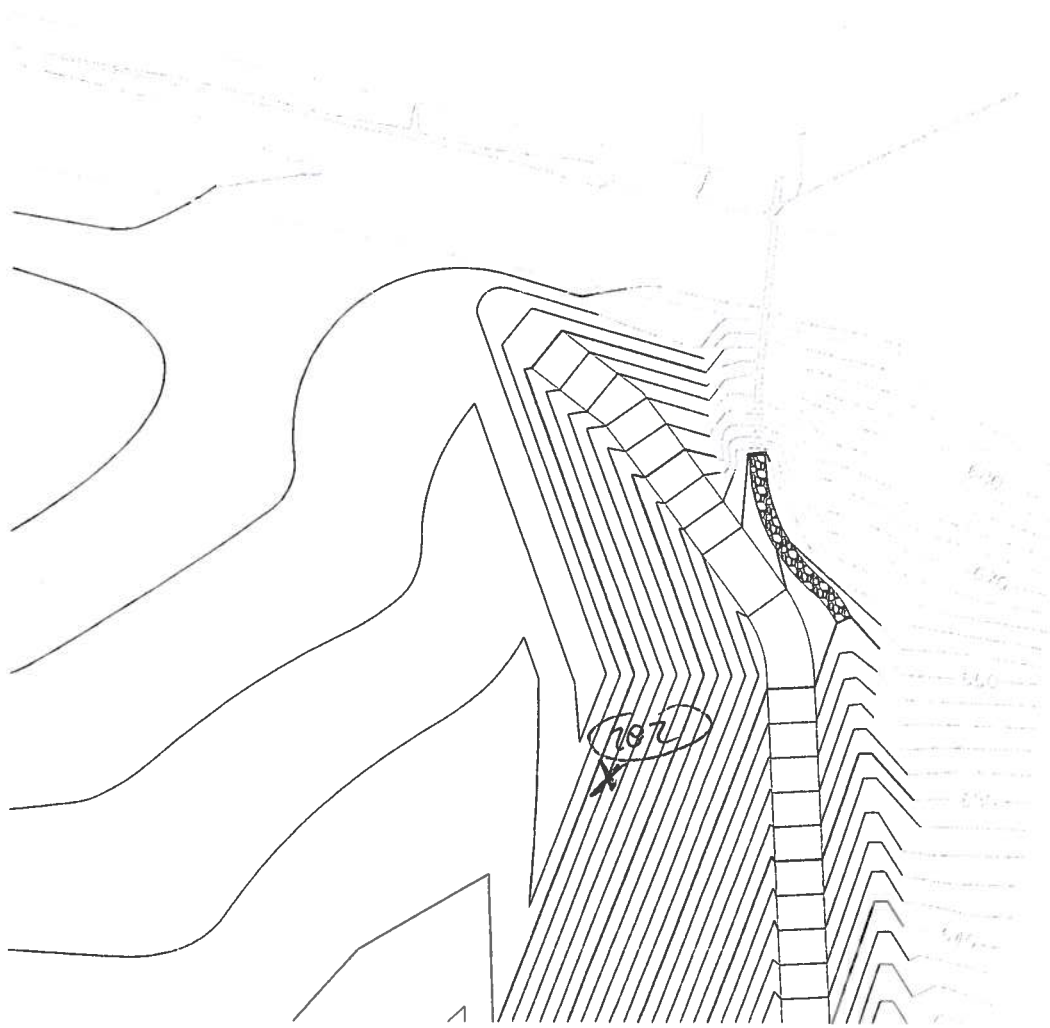
Comments

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	**Date:**	09/28/12 (Friday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

BN LN — Signature of CQA Monitor

09/28/12 — Date

BROWN AND C

Soil Testing Locations Field Report

Site: Ford Rd

Project: Phase I Remedial Action

Project No: 142882

BC Personnel: Bill Foster

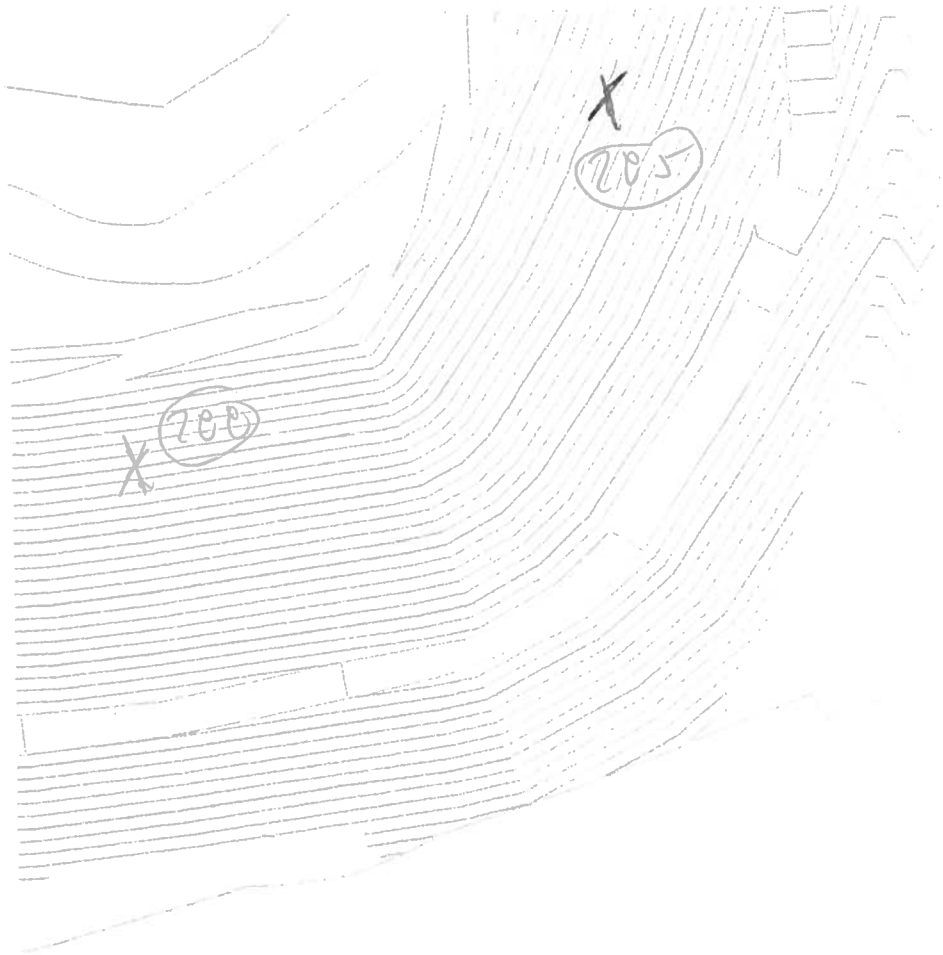
Date: 09/28/12 (Friday)

Time In: Same as Date

Time Out: Same as Date

Weather: Same as Date

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other

Bill Foster

Signature of COA Monitor

09/28/12

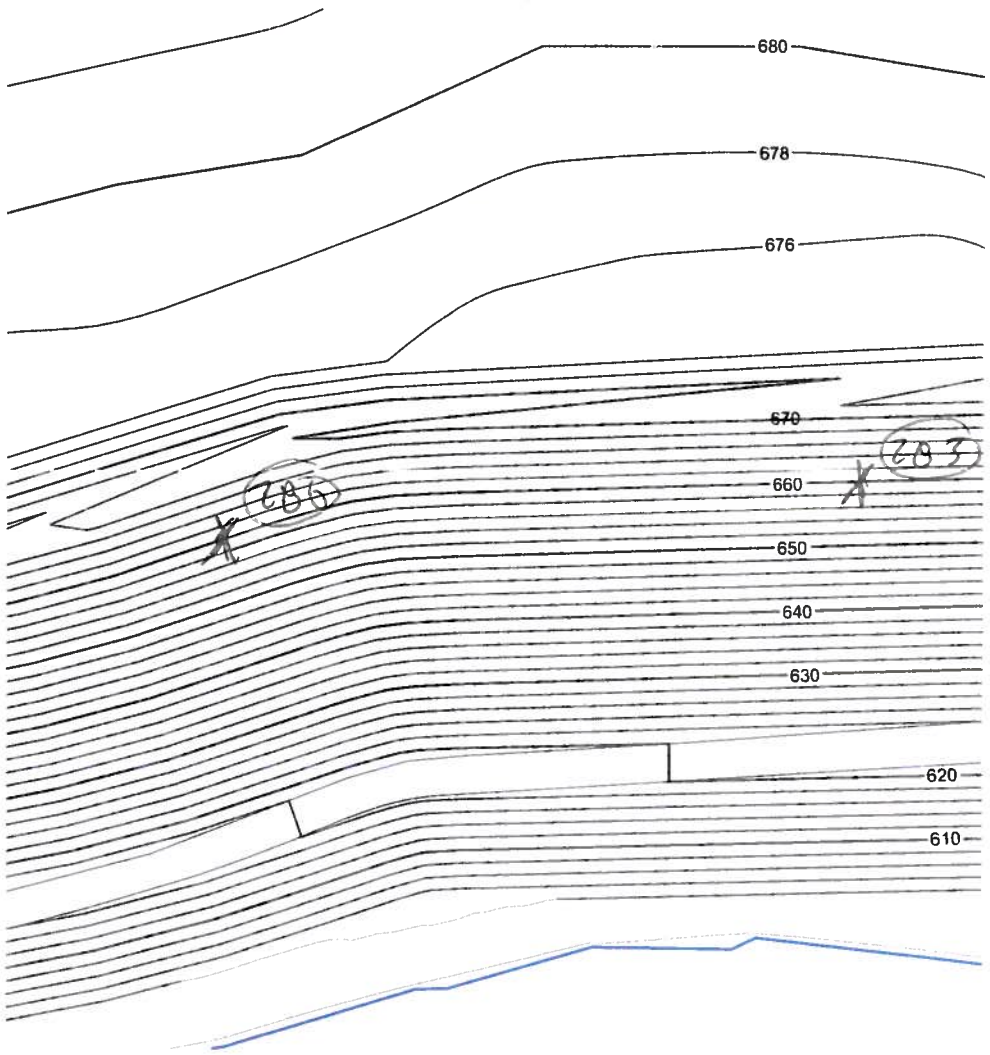
Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	09/20/12 (Friday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — 09/20/12

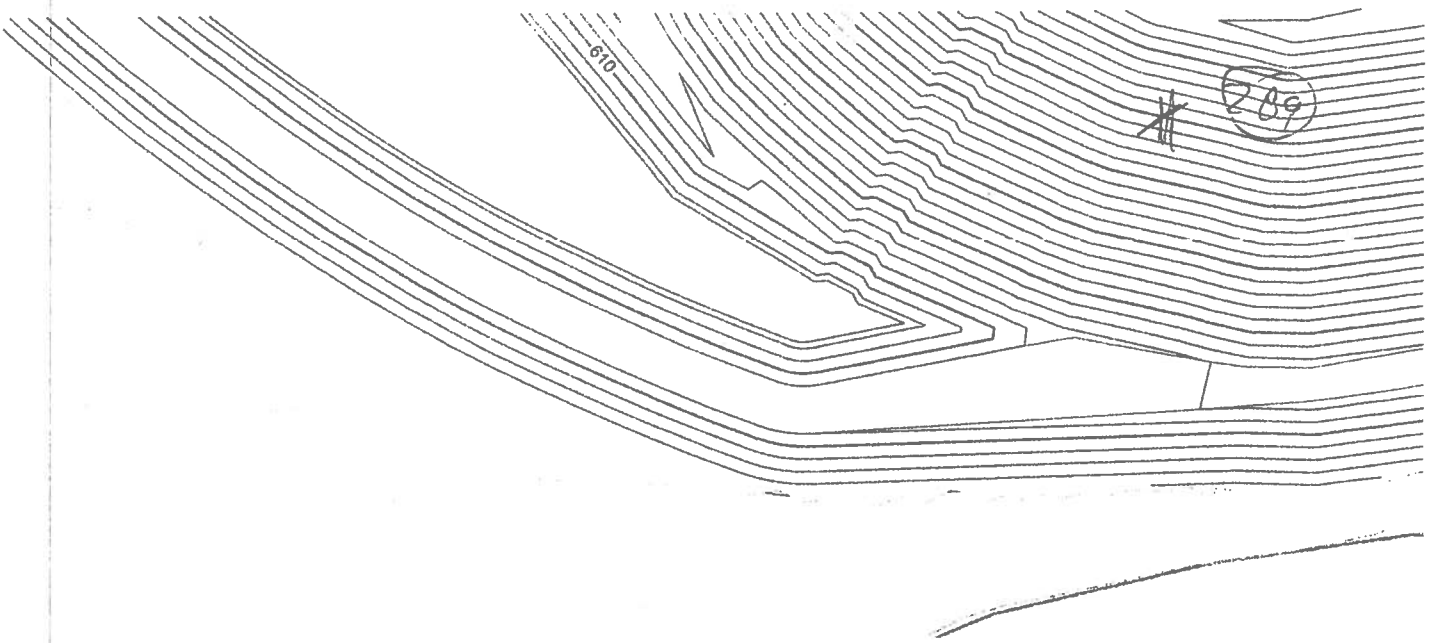
Signature of CQA Monitor — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	09/28/12 (Friday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — **Signature of CQA Monitor**

09/28/12 — **Date**

Brown AND Caldwell

Soil Testing Locations Field Report

Site: Ford Rd.

Project: Phase 2 Remedial Action

Project No: 142889

BC Personnel: Bill Foster

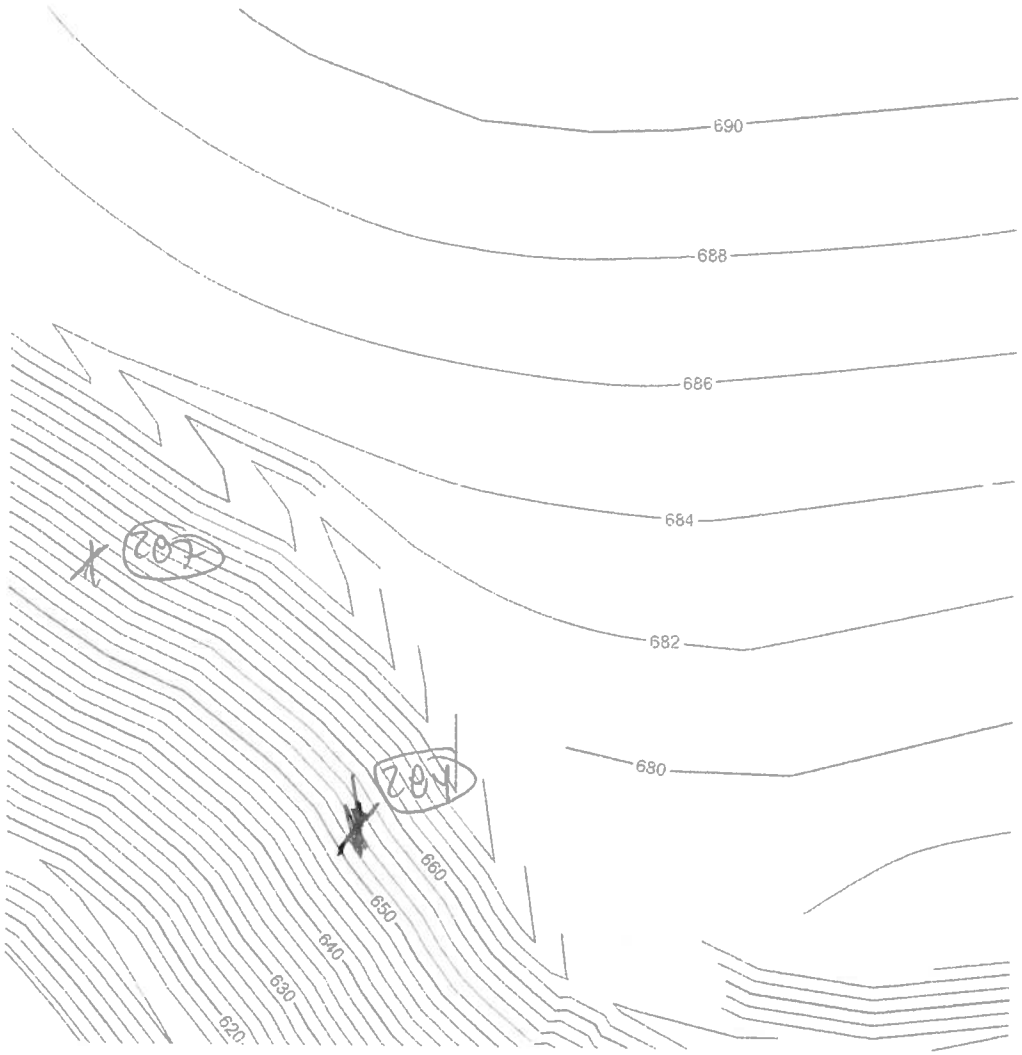
Date: 09/20/12 (Friday)

Time In: Same as Daily

Time Out: Same as Daily

Weather: Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

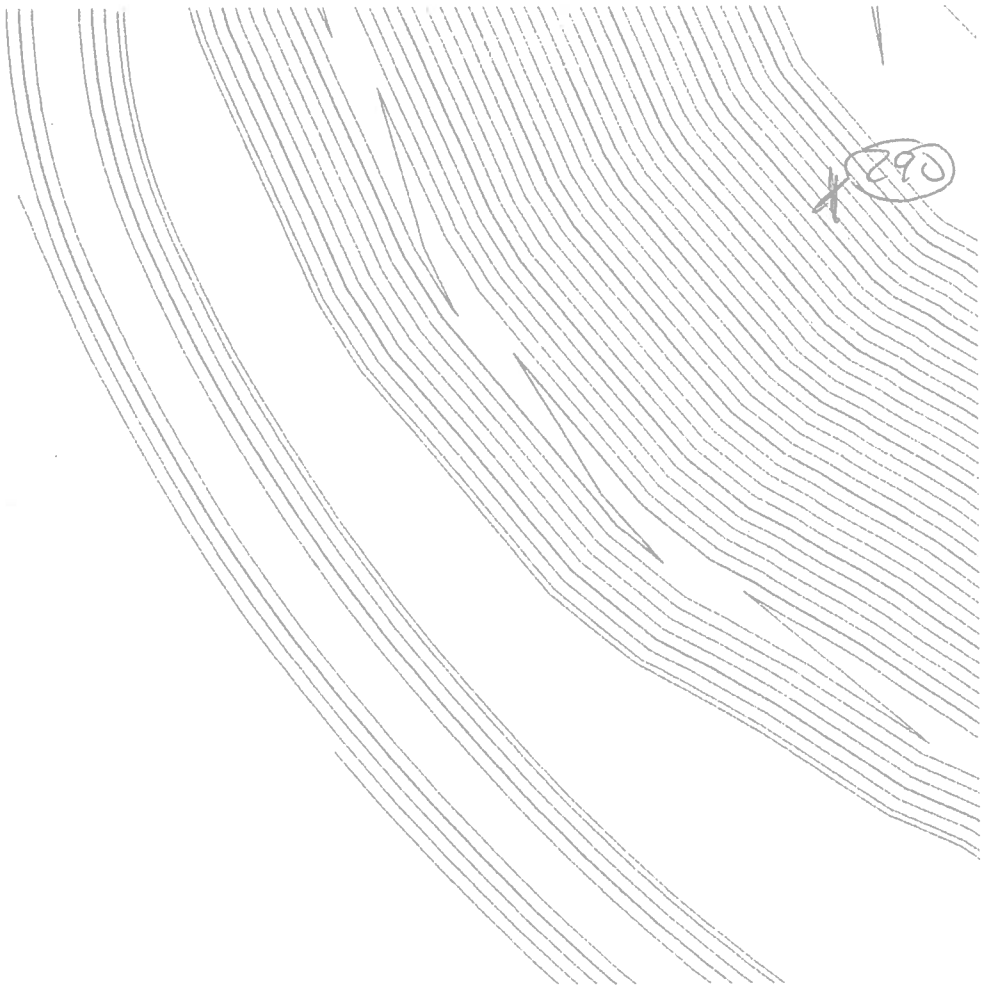
09/20/12 — Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	09/28/12 (Friday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

09/28/12 — Date

Brown AND Caldwell

Field Compaction Test Data

Project Name: Ford Rd. - Phase 2 Remedial Action
Project Number: 142889
Tested By: Bill Foster
Date: 09/29/12 (Saturday)

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 613 % Change 0.7
Standard Density Count 2128 % Change 0.6

Test Information										
Test Number	291	292	293	294	295	296	297	298	299	300
Lift Number	60	60	61	61	62	62	63	63	64	64
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6	6	6	6	6	6
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	137.1	135.1	134.5	132.8	131.9	132.3	131.3	132.7	131.4	133.0
Dry Density (pcf)	117.9	120.4	118.8	115.4	116.7	118.3	116.8	117.8	116.4	118.3
Moisture (pcf)	15.2	14.8	14.6	13.4	15.2	14.0	14.5	14.9	15.0	14.7
Moisture (%)	12.9	12.3	12.2	11.2	13.0	11.8	12.5	12.6	12.9	12.4
Laboratory Data										
Proctor Curve No.	55-25	55-25	55-25	55-25	55-25	55-25	55-25	55-25	55-25	55-25
Max Dry Density (pcf)	122.6	122.6	122.6	122.6	122.6	122.6	122.6	122.6	122.6	122.6
Optimum Moisture (%)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
Results										
% Compaction	96.2	98.2	97.7	97.4	95.2	96.5	95.2	96.1	95.0	96.5
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Retest Number/Date										

Comments

Page ___ of ___

Brown AND Caldwell

Field Compaction Test Data

-3 to +2

Project Name: Ford Rd. - Phase 2 Remedial Action
Project Number: 142889
Tested By: Bill Foster
Date: 09/28/12 (Saturday)

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 613 % Change 0.7
Standard Density Count 2128 % Change 0.6

Test Information										
Test Number	301	302	303	304	305	306	307	308		
Lift Number	65	65	66	66	67	67	68	68		
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6	6	6	6		
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	132.1	131.4	130.9	132.4	131.8	132.9	131.9	132.3		
Dry Density (pcf)	117.5	117.7	118.6	118.4	116.7	117.6	118.0	117.7		
Moisture (pcf)	14.6	13.7	12.3	14.0	15.1	15.3	13.8	14.6		
Moisture (%)	12.4	11.6	10.4	11.8	12.9	13.0	11.7	12.4		
Laboratory Data										
Proctor Curve No.	55-25	55-25	55-25	55-25	55-25	55-25	55-25	55-25		
Max Dry Density (pcf)	122.6	122.6	122.6	122.6	122.6	122.6	122.6	122.6		
Optimum Moisture (%)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1		
Results										
% Compaction	95.8	96.0	96.8	96.6	95.2	95.9	96.3	96.0		
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass		
Retest Number/Date										

Comments

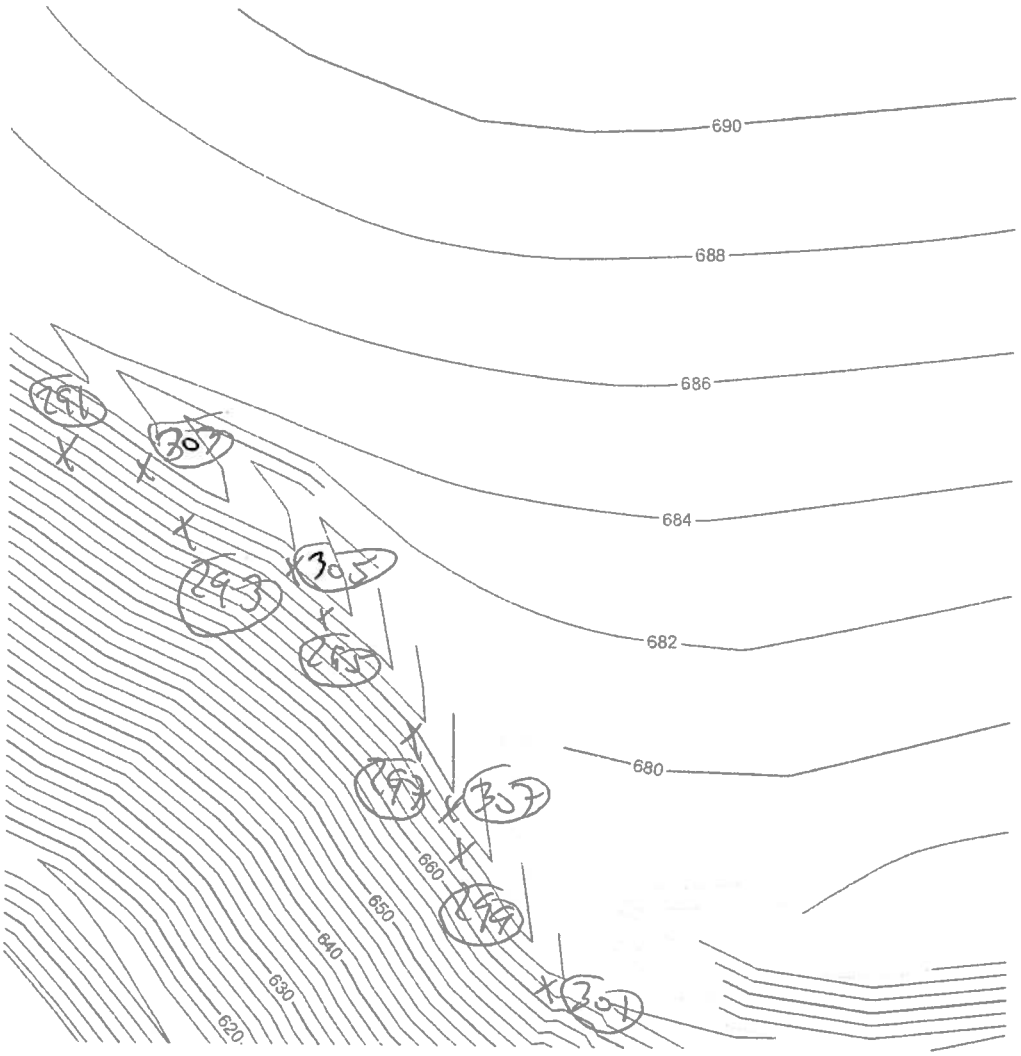
Page ___ of ___

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	09/28/12 (Saturday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

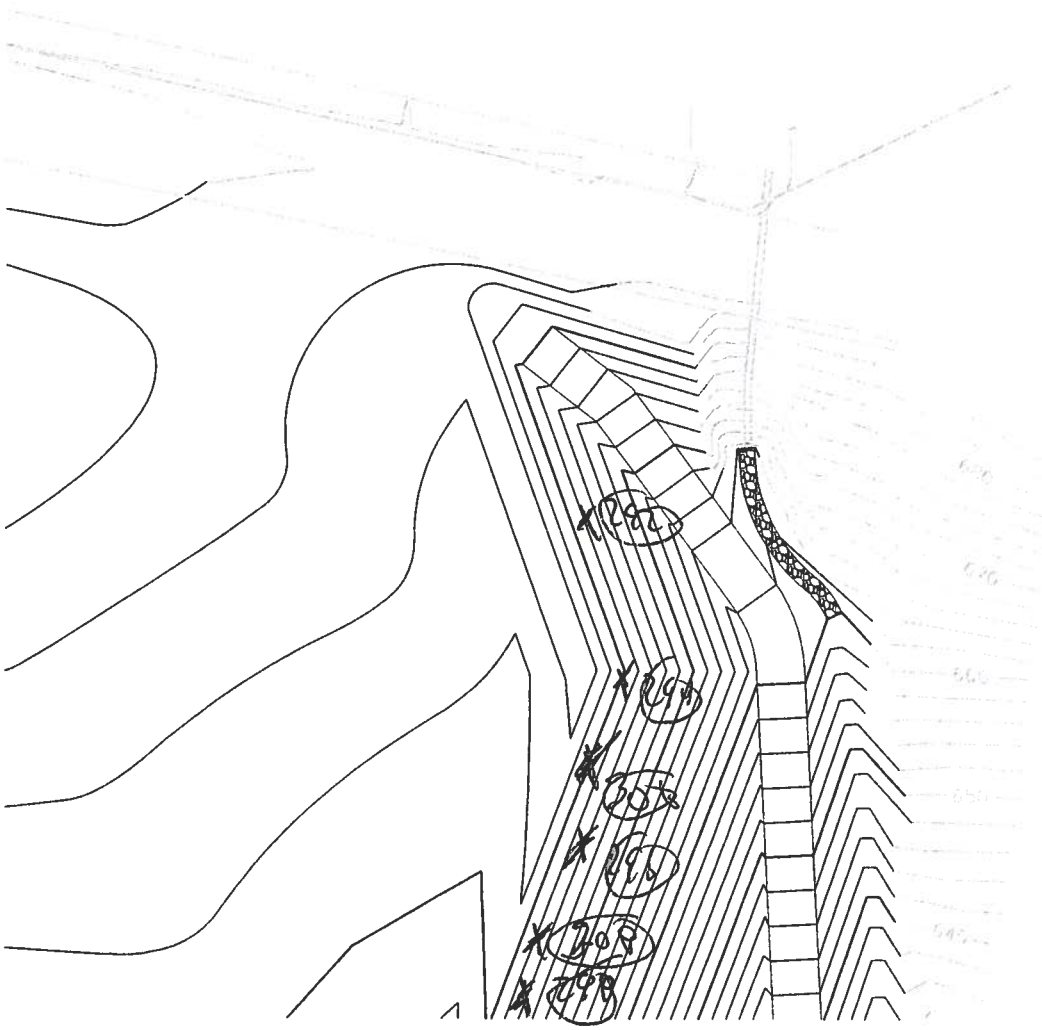
Signature of CQA Monitor: [signature] Date: 09/28/12

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	**Date:**	08/28/12 (Saturday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — **Signature of CQA Monitor**

08/29/12 — **Date**

Brown AND Caldwell

Soil Testing Locations Field Report

Site: Ford Rd.

Project: Phase 2 Remedial Action

Project No: 142889

BC Personnel: Bill Foster

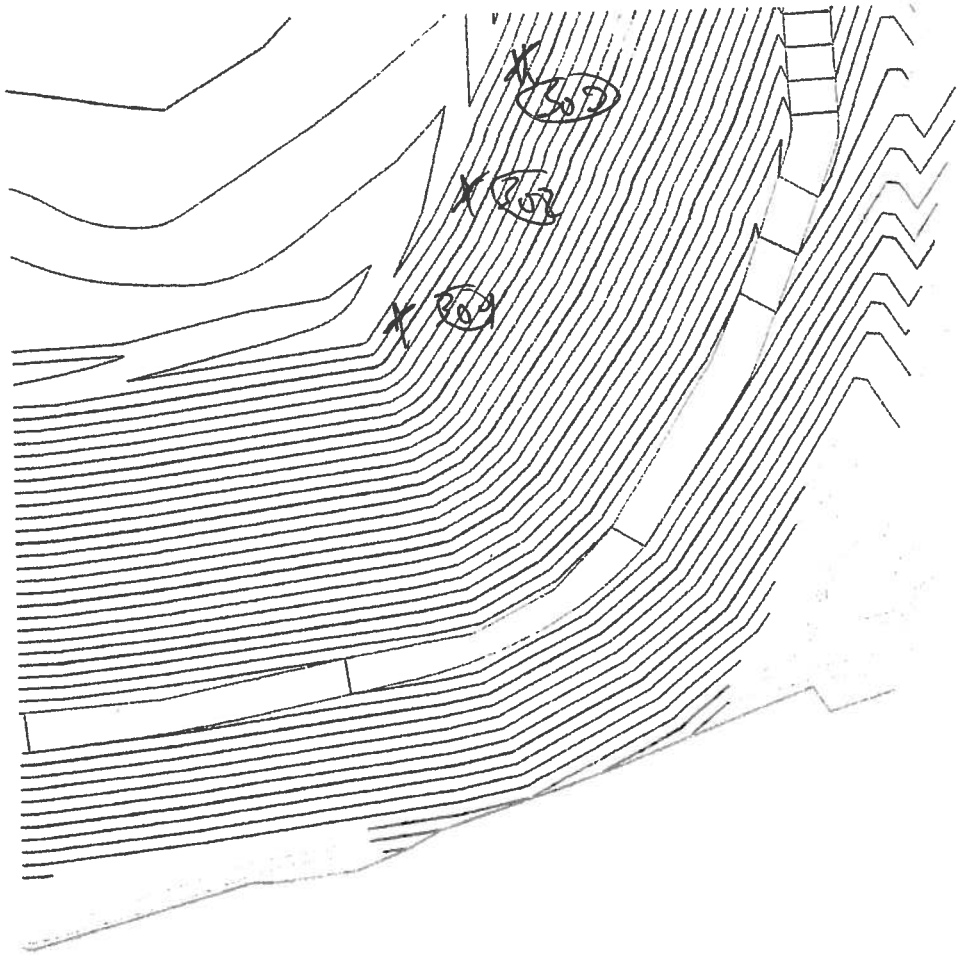
Date: 08/28/12 (Saturday)

Time In: Same as Daily

Time Out: Same as Daily

Weather: Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster

Signature of CQA Monitor

08/28/12

Date

-2 to +3

Brown AND Caldwell

Field Compaction Test Data

Project Name: Ford Rd. - Phase 2 Remedial Action
Project Number: 142889
Tested By: Bill Foster
Date: 10/03/12 (Monday)

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 616 % Change 0.9
Standard Density Count 2127 % Change 0.5

Test Information										
Test Number	309	310	311	312	313	314	315	316	317	318
Lift Number	1	2	3	4	5	6	7	8	9	10
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6	6	6	6	6	6
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	131.0	131.1	132.6	129.8	131.4	131.5	129.6	132.2	130.2	131.8
Dry Density (pcf)	113.1	114.0	114.9	114.4	114.6	113.6	113.9	115.8	112.4	113.2
Moisture (pcf)	17.9	17.1	17.7	15.4	16.8	17.9	15.6	16.3	17.8	18.6
Moisture (%)	15.8	15.0	15.4	13.5	14.7	15.8	13.7	14.1	15.8	16.4
Laboratory Data										
Proctor Curve No.	55-7	55-7	55-7	55-7	55-7	55-7	55-7	55-7	55-7	55-7
Max Dry Density (pcf)	116.5	116.5	116.5	116.5	116.5	116.5	116.5	116.5	116.5	116.5
Optimum Moisture (%)	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9
Results										
% Compaction	97.1	97.9	98.6	98.2	98.4	97.5	97.8	99.4	96.4	97.2
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Retest Number/Date										

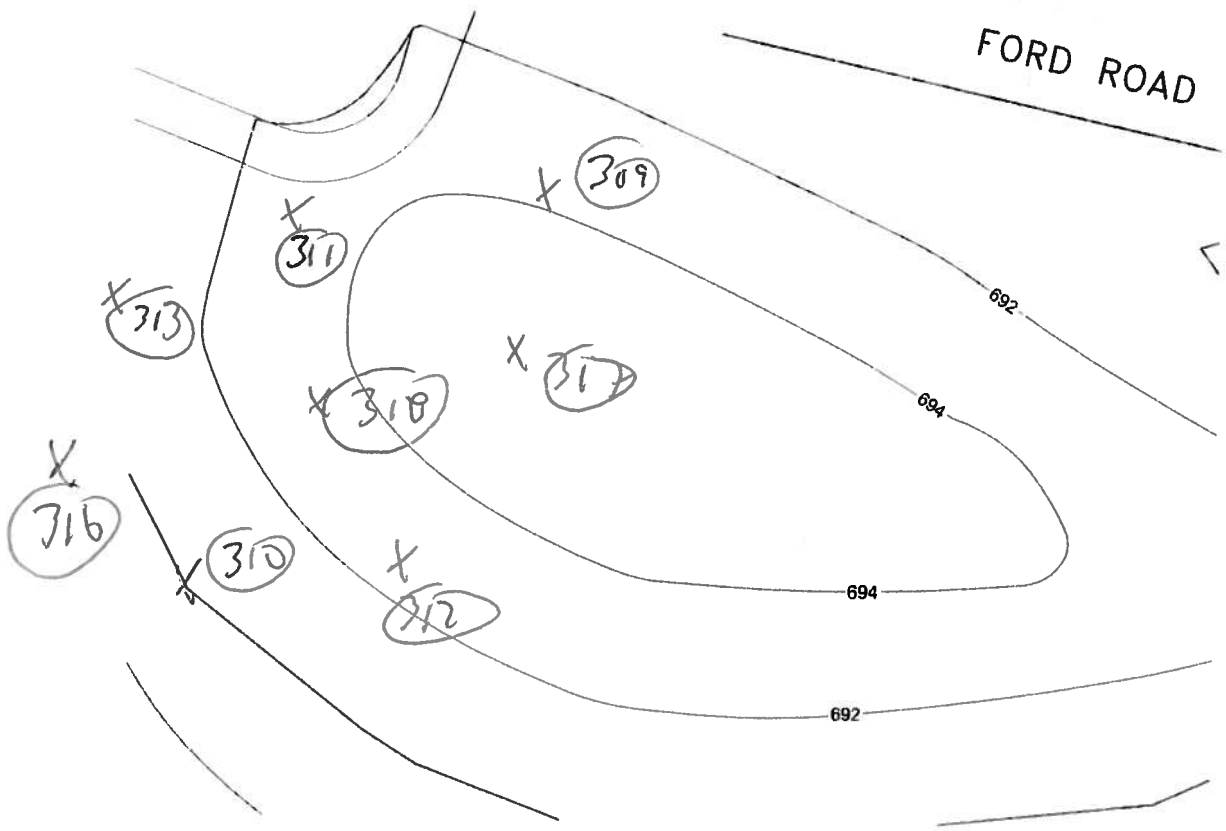
Comments

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	**Date:**	10/01/12 (monday)
Project:	Phase 2 Remedial Action	**Time In:**	Same as Daily
Project No:	142889	**Time Out:**	Same as Daily
BC Personnel:	Bill Foster	**Weather:**	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster 10/01/12

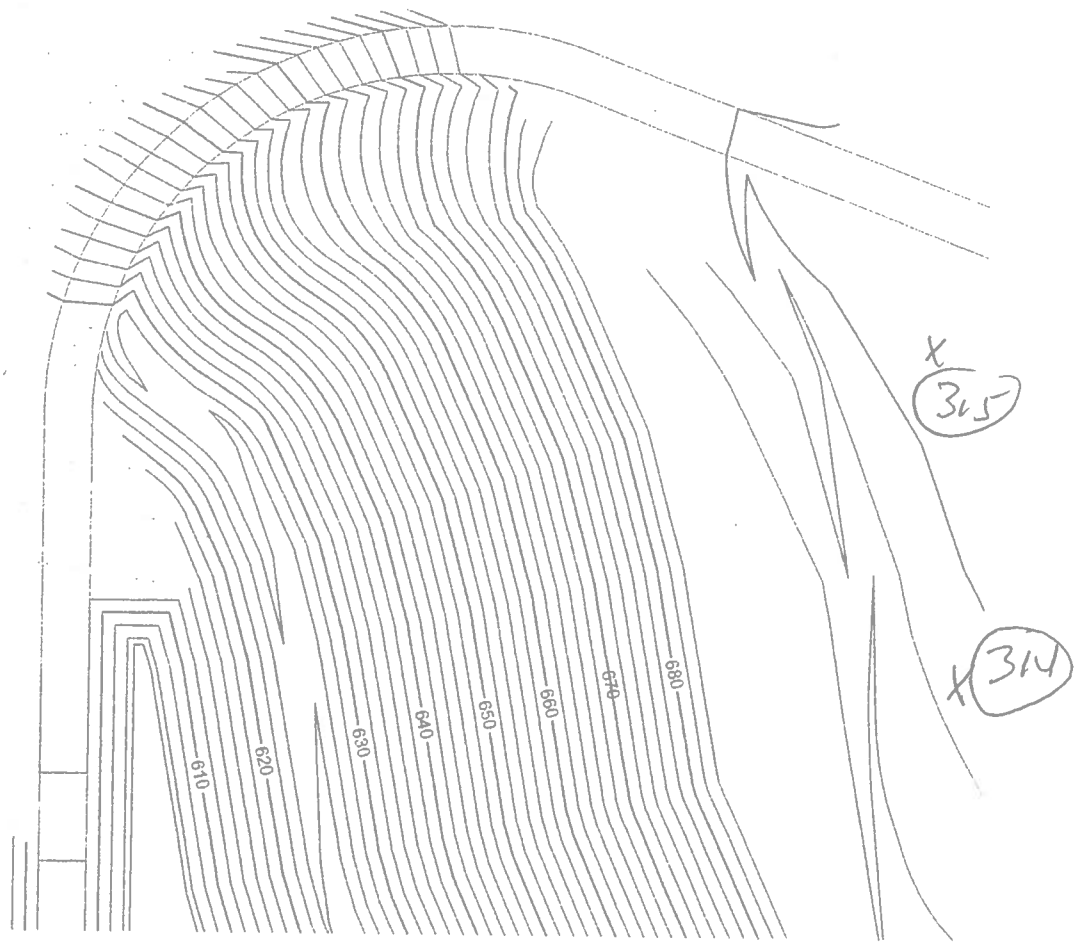
Signature of CQA Monitor **Date**

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd.	Date:	10/01/12 (Monday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142889	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster — Signature of CQA Monitor

10/01/12 — Date

Brown AND Caldwell

Field Compaction Test Data

Project Name: Ford Rd. - Phase 2 Remedial Action
Project Number: 142889
Tested By: Bill Foster
Date: 10/04/12 (Thursday)

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 612 % Change 0.4
Standard Density Count 2122 % Change 0.3

Test Information										
Test Number	319	320	321	322	323	324	325	326	327	328
Lift Number	55	56	57	58	59	60	61	62	63	64
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6	6	6	6	6	6	6
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	133.4	134.1	132.3	132.1	131.9	132.1	133.8	132.7	133.6	132.6
Dry Density (pcf)	118.7	120.4	117.9	117.5	118.4	118.2	119.9	118.9	120.1	118.2
Moisture (pcf)	14.7	13.7	14.4	14.6	13.5	13.9	13.9	13.8	13.5	14.4
Moisture (%)	12.4	11.4	12.2	12.4	11.4	11.8	11.6	11.6	11.2	12.2
Laboratory Data										
Proctor Curve No.	SS-25	SS-25	SS-25	SS-25	SS-25	SS-25	SS-25	SS-25	SS-25	SS-25
Max Dry Density (pcf)	122.6	122.6	122.6	122.6	122.6	122.6	122.6	122.6	122.6	122.6
Optimum Moisture (%)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
Results										
% Compaction	96.8	98.2	96.2	95.8	96.6	96.4	97.8	97.0	98.0	96.4
Pass/Fail	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Retest Number/Date										

Comments

Brown AND Caldwell

Field Compaction Test Data

Project Name: Ford Rd. - Phase 2 Remedial Action
Project Number: 142889
Tested By: Bill Foster
Date: 10/04/12 (Thursday)

Gauge Model No. Troxler 3440
Gauge Serial No. 24585
Standard Moisture Content 612 % Change 0.4
Standard Density Count 2122 % Change 0.3

Test Information										
Test Number	329	330	331	332						
Lift Number	65	66	67	68						
Compaction Equipment (type)	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B	CAT 815B
Compaction Equipment (weight)	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb	44,170 lb
Number of Passes	6	6	6	6						
Loose Lift Thickness (inches)	8	8	8	8	8	8	8	8	8	8
Compacted Lift Thickness (inches)	6	6	6	6	6	6	6	6	6	6
Gauge Readings										
Mode/Probe Depth (inches)	4	4	4	4	4	4	4	4	4	4
Wet Density (pcf)	133.0	132.9	132.2	133.8						
Dry Density (pcf)	119.2	118.7	117.2	119.7						
Moisture (pcf)	13.8	14.2	15.0	14.1						
Moisture (%)	11.6	12.0	12.8	11.8						
Laboratory Data										
Proctor Curve No.	55-25	55-25	55-25	55-25						
Max Dry Density (pcf)	122.6	122.6	122.6	122.6						
Optimum Moisture (%)	11.1	11.1	11.1	11.1						
Results										
% Compaction	97.2	96.8	95.6	97.6						
Pass/Fail	Pass	Pass	Pass	Pass						
Retest Number/Date										

Comments

Brown AND Caldwell

Soil Testing Locations Field Report

Site: Ford Rd.

Project: Phase 2 Remedial Action

Project No: 142869

BC Personnel: Bill Foster

Date: 10/04/12 (Thursday)

Time In: Same as Daily

Time Out: Same as Daily

Weather: Same as Daily

Location of Moisture/Density Test(s):

Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Bill Foster

Signature of CQA Monitor

10/04/12

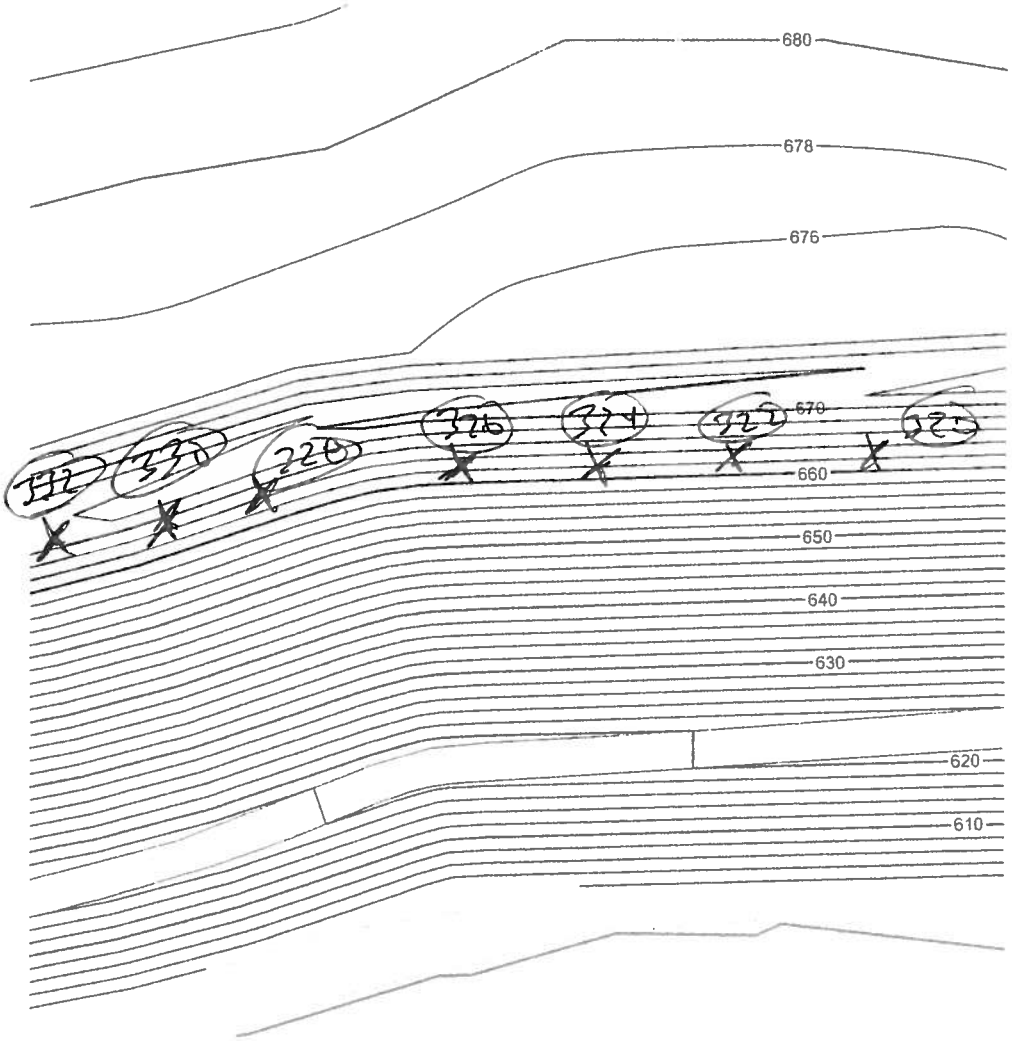
Date

Brown AND Caldwell

Soil Testing Locations Field Report

Site:	Ford Rd	Date:	10/04/12 (Thursday)
Project:	Phase 2 Remedial Action	Time In:	Same as Daily
Project No:	142839	Time Out:	Same as Daily
BC Personnel:	Bill Foster	Weather:	Same as Daily

Location of Moisture/Density Test(s):



Attachments:

- ☐ Contractor Report
- ☐ Field Notes
- ☐ Other:

Signature of CQA Monitor: B N Foster

Date: 10/04/12

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Appendix H: Laboratory Analytical Results

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Temporary Onsite Treatment

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Pace Analytical
www.pacelabs.com

Pace Analytical Services, Inc.
1233 Dublin Road
Columbus, Ohio 43215
Phone: 614.486.5421
Fax: 614.486.5478

Monday, October 24, 2011

Joe Naselli
Op-Tech
150 Rotterdam Industrial Park
Schenectady, NY 12306

TEL: (518) 365-2990
FAX:

RE: Ford Road AFOD0001

Order No.: 1110431

Dear Joe Naselli:

Pace Analytical Services Inc. received 1 sample(s) on 10/20/2011 for the analyses presented in the following report.

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications. Any exception would be noted in a Case Narrative.

We appreciate the opportunity to assist you. If you have any questions regarding this report, please contact the Laboratory at (614)-486-5421.

Sincerely,

Joyce Sarapata

Joyce Sarapata
Client Services Manager

Pace Analytical Services Inc. **Date:** *24-Oct-11*

CLIENT: Op-Tech
Project: Ford Road AFOD0001
Lab Order: 1110431

CASE NARRATIVE

The following report contains the analytical results for one sample submitted to Pace Analytical Services, Inc. Laboratory. The sample was received according to documented sample acceptance procedures and was analyzed in accordance with Ohio EPA protocols, where applicable.

Pace Analytical Services, Inc. utilizes USEPA-OEPA approved methods in all analytical work. The sample presented in this report was analyzed for the parameters listed on the Chain of Custody.

Pace Analytical Services, Inc. attests to the validity of the laboratory data generated and reported herein. All analyses performed by Pace Analytical Services, Inc. were done using established laboratory SOP's that incorporate QA/QC procedures described in the applicable methods. Pace Analytical Services, Inc. QA/QC Manager has reviewed the data for compliance with the laboratory's QA/QC plan, and the data have been found to be compliant with laboratory protocols unless otherwise noted.

The analytical results in this report met the requirements of the laboratories QA/QC program.

Pace Analytical Services Inc.

Date: *24-Oct-11*

CLIENT:	Op-Tech	**Client Sample ID:**	FR 1
Lab Order:	1110431	**Tag Number:**	
Project:	Ford Road AFOD0001	**Collection Date:**	10/19/2011 9:00:00 AM
Lab ID:	1110431-001A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ORGANOCHLORINE PESTICIDES/PCB		**E608**		**E608**		Analyst: **CSS**
4,4'-DDD	< 0.102	0.102		µg/L	1	10/23/2011
4,4'-DDE	< 0.102	0.102		µg/L	1	10/23/2011
4,4'-DDT	< 0.102	0.102		µg/L	1	10/23/2011
Aldrin	< 0.102	0.102		µg/L	1	10/23/2011
alpha-BHC	< 0.102	0.102		µg/L	1	10/23/2011
beta-BHC	< 0.102	0.102		µg/L	1	10/23/2011
Chlordane	< 0.102	0.102		µg/L	1	10/23/2011
delta-BHC	< 0.102	0.102		µg/L	1	10/23/2011
Dieldrin	< 0.102	0.102		µg/L	1	10/23/2011
Endosulfan I	< 0.102	0.102		µg/L	1	10/23/2011
Endosulfan II	< 0.102	0.102		µg/L	1	10/23/2011
Endosulfan sulfate	< 0.102	0.102		µg/L	1	10/23/2011
Endrin	< 0.102	0.102		µg/L	1	10/23/2011
Endrin aldehyde	< 0.102	0.102		µg/L	1	10/23/2011
gamma-BHC	< 0.102	0.102		µg/L	1	10/23/2011
Heptachlor	< 0.102	0.102		µg/L	1	10/23/2011
Heptachlor epoxide	< 0.102	0.102		µg/L	1	10/23/2011
PCB-1016	< 0.510	0.510		µg/L	1	10/23/2011
PCB-1221	< 0.510	0.510		µg/L	1	10/23/2011
PCB-1232	< 0.510	0.510		µg/L	1	10/23/2011
PCB-1242	< 0.510	0.510		µg/L	1	10/23/2011
PCB-1248	< 0.510	0.510		µg/L	1	10/23/2011
PCB-1254	< 0.510	0.510		µg/L	1	10/23/2011
PCB-1260	< 0.510	0.510		µg/L	1	10/23/2011
TCDD	< 0.102	0.102		µg/L	1	10/23/2011
Toxaphene	< 0.102	0.102		µg/L	1	10/23/2011
Surr: Decachlorobiphenyl	78.3	40-150		%REC	1	10/23/2011
Surr: Tetrachloro-m-xylene	65.8	40-150		%REC	1	10/23/2011
MERCURY		**E245.2**				Analyst: **JG**
Mercury	< 0.20	0.20		µg/L	1	10/24/2011
ICP METALS, TOTAL		**SW6010B**				Analyst: **JP**
Aluminum	1310	10.0		µg/L	1	10/23/2011
Antimony	43.5	10.0		µg/L	1	10/23/2011
Arsenic	71.3	15.0		µg/L	1	10/23/2011
Barium	39.0	10.0		µg/L	1	10/23/2011
Beryllium	< 5.00	5.00		µg/L	1	10/23/2011
Cadmium	< 10.0	10.0		µg/L	1	10/23/2011
Chromium	< 10.0	10.0		µg/L	1	10/23/2011

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Manual Integration used to determine area response
ND	Not Detected at the Reporting Limit	S	Spike Recovery outside accepted recovery limits
X	Value exceeds Maximum Contaminant Level		

Pace Analytical Services Inc.

Date: *24-Oct-11*

CLIENT:	Op-Tech	**Client Sample ID:**	FR 1
Lab Order:	1110431	**Tag Number:**	
Project:	Ford Road AFOD0001	**Collection Date:**	10/19/2011 9:00:00 AM
Lab ID:	1110431-001A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
ICP METALS, TOTAL		**SW6010B**				Analyst: **JP**
Cobalt	< 3.00	3.00		µg/L	1	10/23/2011
Copper	< 10.0	10.0		µg/L	1	10/23/2011
Iron	11.4	10.0		µg/L	1	10/23/2011
Lead	< 10.0	10.0		µg/L	1	10/23/2011
Manganese	< 10.0	10.0		µg/L	1	10/23/2011
Nickel	< 10.0	10.0		µg/L	1	10/23/2011
Selenium	< 20.0	20.0		µg/L	1	10/23/2011
Silver	< 10.0	10.0		µg/L	1	10/23/2011
Thallium	< 10.0	10.0		µg/L	1	10/24/2011
Vanadium	76.8	10.0		µg/L	1	10/23/2011
Zinc	< 10.0	10.0		µg/L	1	10/23/2011
ICP MINERAL		**SW6010B**				Analyst: **JP**
Calcium	54.70	1.000		mg/L	1	10/23/2011
Magnesium	2.610	1.000		mg/L	1	10/23/2011
Potassium	21.70	1.000		mg/L	1	10/23/2011
Sodium	41.10	1.000		mg/L	1	10/23/2011
BASE/NEUTRALS/ACIDS		**E625**		**E625**		Analyst: **CSS**
1,2,4-Trichlorobenzene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
1,2-Dichlorobenzene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
1,2-Diphenylhydrazine	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
1,3-Dichlorobenzene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
1,4-Dichlorobenzene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
2,3-Dichloroaniline	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
2,4,6-Trichlorophenol	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
2,4-Dichlorophenol	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
2,4-Dimethylphenol	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
2,4-Dinitrophenol	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
2,4-Dinitrotoluene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
2,6-Dinitrotoluene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
2-Chloronaphthalene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
2-Chlorophenol	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
2-Nitrophenol	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
3,3'-Dichlorobenzidine	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
4,6-Dinitro-2-methylphenol	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
4-Bromophenyl phenyl ether	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
4-Chloro-3-methylphenol	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
4-Chlorophenyl phenyl ether	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
4-Nitrophenol	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Manual Integration used to determine area response
ND	Not Detected at the Reporting Limit	S	Spike Recovery outside accepted recovery limits
X	Value exceeds Maximum Contaminant Level		

Pace Analytical Services Inc.

Date: *24-Oct-11*

CLIENT:	Op-Tech	**Client Sample ID:**	FR 1
Lab Order:	1110431	**Tag Number:**	
Project:	Ford Road AFOD0001	**Collection Date:**	10/19/2011 9:00:00 AM
Lab ID:	1110431-001A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
BASE/NEUTRALS/ACIDS		**E625**		**E625**		Analyst: **CSS**
a-Terpineol	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Acenaphthene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Acenaphthylene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Anthracene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Benz(a)anthracene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Benzidine	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Benzo(a)pyrene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Benzo(b)fluoranthene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Benzo(g,h,I)perylene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Benzo(k)fluoranthene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Benzoic Acid	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Bis(2-chloroethoxy)methane	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Bis(2-chloroethyl)ether	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Bis(2-chloroisopropyl)ether	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Bis(2-ethylhexyl)phthalate	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Butyl benzyl phthalate	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Chrysene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Di-n-butyl phthalate	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Di-n-octyl phthalate	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Dibenz(a,h)anthracene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Diethyl phthalate	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Dimethyl phthalate	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Fluoranthene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Fluorene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Hexachlorobenzene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Hexachlorobutadiene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Hexachlorocyclopentadiene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Hexachloroethane	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Indeno(1,2,3-cd)pyrene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Isophorone	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
n-Decane	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
N-Nitrosodi-n-propylamine	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
N-Nitrosodimethylamine	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
N-Nitrosodiphenylamine	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Naphthalene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Nitrobenzene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Pentachlorophenol	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Phenanthrene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Phenol	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Manual Integration used to determine area response
ND	Not Detected at the Reporting Limit	S	Spike Recovery outside accepted recovery limits
X	Value exceeds Maximum Contaminant Level		

Pace Analytical Services Inc.

Date: *24-Oct-11*

CLIENT:	Op-Tech	**Client Sample ID:**	FR 1
Lab Order:	1110431	**Tag Number:**	
Project:	Ford Road AFOD0001	**Collection Date:**	10/19/2011 9:00:00 AM
Lab ID:	1110431-001A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
BASE/NEUTRALS/ACIDS		**E625**		**E625**		Analyst: **CSS**
Pyrene	< 10.3	10.3		µg/L	1	10/23/2011 1:20:00 AM
Surr: 2,4,6-Tribromophenol	72.0	10-123		%REC	1	10/23/2011 1:20:00 AM
Surr: 2-Fluorobiphenyl	66.7	43-116		%REC	1	10/23/2011 1:20:00 AM
Surr: 2-Fluorophenol	38.1	21-100		%REC	1	10/23/2011 1:20:00 AM
Surr: 4-Terphenyl-d14	110	33-141		%REC	1	10/23/2011 1:20:00 AM
Surr: Nitrobenzene-d5	56.7	35-114		%REC	1	10/23/2011 1:20:00 AM
Surr: Phenol-d6	22.3	10-94		%REC	1	10/23/2011 1:20:00 AM
PURGEABLES		**E624**				Analyst: **IR**
1,2-Dibromoethane	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
cis-1,2-Dichloroethene	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
Dichlorodifluoromethane	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
Chloromethane	< 10.0	10.0		µg/L	1	10/21/2011 4:03:00 PM
Vinyl chloride	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
Bromomethane	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
Chloroethane	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
Trichlorofluoromethane	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
Acrolein	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
1,1-Dichloroethene	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
Acetone	35.9	10.0		µg/L	1	10/21/2011 4:03:00 PM
Carbon Disulfide	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
Methylene chloride	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
trans-1,2-Dichloroethene	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
Acrylonitrile	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
1,1-Dichloroethane	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
Tetrahydrofuran	115	2.00		µg/L	1	10/21/2011 4:03:00 PM
Chloroform	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
1,1,1-Trichloroethane	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
Carbon tetrachloride	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
Benzene	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
1,2-Dichloroethane	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
Trichloroethene	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
1,2-Dichloropropane	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
Bromodichloromethane	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
2-Chloroethyl vinyl ether	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
cis-1,3-Dichloropropene	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
Toluene	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
trans-1,3-Dichloropropene	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
1,1,2-Trichloroethane	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
Tetrachloroethene	< 10.0	10.0		µg/L	1	10/21/2011 4:03:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	M	Manual Integration used to determine area response
ND	Not Detected at the Reporting Limit	S	Spike Recovery outside accepted recovery limits
X	Value exceeds Maximum Contaminant Level		

Pace Analytical Services Inc.

Date: *24-Oct-11*

CLIENT:	Op-Tech	**Client Sample ID:**	FR 1
Lab Order:	1110431	**Tag Number:**	
Project:	Ford Road AFOD0001	**Collection Date:**	10/19/2011 9:00:00 AM
Lab ID:	1110431-001A	**Matrix:**	AQUEOUS

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
PURGEABLES		**E624**				Analyst: **IR**
1,3-Dichloropropane	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
Dibromochloromethane	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
Chlorobenzene	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
Ethylbenzene	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
m,p-Xylene	< 4.00	4.00		µg/L	1	10/21/2011 4:03:00 PM
o-Xylene	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
Total Xylenes	< 6.00	6.00		µg/L	1	10/21/2011 4:03:00 PM
Bromoform	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
1,1,2,2-Tetrachloroethane	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
1,2,4-Trimethylbenzene	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
1,3-Dichlorobenzene	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
1,4-Dichlorobenzene	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
1,2-Dichlorobenzene	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
Naphthalene	< 2.00	2.00		µg/L	1	10/21/2011 4:03:00 PM
Surr: 1,2-Dichloroethane-d4	102	80-120		%REC	1	10/21/2011 4:03:00 PM
Surr: Toluene-d8	102	80-120		%REC	1	10/21/2011 4:03:00 PM
Surr: 4-Bromofluorobenzene	102	80-120		%REC	1	10/21/2011 4:03:00 PM
TOTAL CYANIDE		**E335.4**				Analyst: **GR**
Cyanide	< 5.0	5.0		µg/L	1	10/21/2011
PH		**M4500-H +**				Analyst: **JG**
PH	10.0	0.100		SU	1	10/20/2011

Qualifiers:				
	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	M	Manual Integration used to determine area response
	ND	Not Detected at the Reporting Limit	S	Spike Recovery outside accepted recovery limits
	X	Value exceeds Maximum Contaminant Level		

Pace Analytical Services Inc.

Date: *24-Oct-11*

CLIENT: Op-Tech
Work Order: 1110431
Project: Ford Road AFOD0001

ANALYTICAL QC SUMMARY REPORT

TestCode: 608_W

Sample ID: MB-102111	SampType: MBLK	TestCode: 608_W	Units: µg/L	Prep Date: 10/21/2011	RunNo: 50419
Client ID: ZZZZZ	Batch ID: 8497	TestNo: E608	E608	Analysis Date: 10/23/2011	SeqNo: 692228

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
4,4´-DDD	< 0.100	0.100									
4,4´-DDE	< 0.100	0.100									
4,4´-DDT	< 0.100	0.100									
Aldrin	< 0.100	0.100									
alpha-BHC	< 0.100	0.100									
beta-BHC	< 0.100	0.100									
Chlordane	< 0.100	0.100									
delta-BHC	< 0.100	0.100									
Dieldrin	< 0.100	0.100									
Endosulfan I	< 0.100	0.100									
Endosulfan II	< 0.100	0.100									
Endosulfan sulfate	< 0.100	0.100									
Endrin	< 0.100	0.100									
Endrin aldehyde	< 0.100	0.100									
gamma-BHC	< 0.100	0.100									
Heptachlor	< 0.100	0.100									
Heptachlor epoxide	< 0.100	0.100									
PCB-1016	< 0.500	0.500									
PCB-1221	< 0.500	0.500									
PCB-1232	< 0.500	0.500									
PCB-1242	< 0.500	0.500									
PCB-1248	< 0.500	0.500									
PCB-1254	< 0.500	0.500									
PCB-1260	< 0.500	0.500									
TCDD	< 0.100	0.100									
Toxaphene	< 0.100	0.100									
Surr: Decachlorobiphenyl	1.04		1.000		104	40	150				
Surr: Tetrachloro-m-xylene	0.898		1.000		89.8	40	150				

Qualifiers:

E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	M	Manual Integration used to determine
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

CLIENT: Op-Tech
Work Order: 1110431
Project: Ford Road AFOD0001

ANALYTICAL QC SUMMARY REPORT

TestCode: 608_W

Sample ID: LCS-102111	SampType: LCS	TestCode: 608_W	Units: µg/L	Prep Date: 10/21/2011	RunNo: 50419
Client ID: ZZZZZ	Batch ID: 8497	TestNo: E608	E608	Analysis Date: 10/23/2011	SeqNo: 692229

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
4,4'-DDT	0.704	0.100	1.000	0	70.4	40	150				
Aldrin	0.300	0.100	0.4000	0	75.0	40	150				
Dieldrin	0.878	0.100	1.000	0	87.8	40	150				
Endrin	0.846	0.100	1.000	0	84.6	40	150				
gamma-BHC	0.338	0.100	0.4000	0	84.5	40	150				
Heptachlor	0.399	0.100	0.4000	0	99.8	40	150				
PCB-1016	1.66	0.500	2.000	0	83.0	40	150				
PCB-1260	1.61	0.500	2.000	0	80.5	40	150				
Surr: Decachlorobiphenyl	1.11		1.000		111	40	150				
Surr: Tetrachloro-m-xylene	0.901		1.000		90.1	40	150				

Qualifiers:

E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	M	Manual Integration used to determine
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

CLIENT: Op-Tech
Work Order: 1110431
Project: Ford Road AFOD0001

ANALYTICAL QC SUMMARY REPORT

TestCode: 624_W

Sample ID: **LCS 1110210910** SampType: **LCS** TestCode: **624_W** Units: **µg/L** Prep Date: RunNo: **50400**
Client ID: **ZZZZZ** Batch ID: **R50400** TestNo: **E624** Analysis Date: **10/21/2011** SeqNo: **691912**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromoethane	46.3	2.00	50.00	0	92.6	84	127				
cis-1,2-Dichloroethene	44.3	2.00	50.00	0	88.6	77.8	129				
Dichlorodifluoromethane	69.8	2.00	50.00	0	140	46.2	150				
Chloromethane	83.4	10.0	50.00	0	167	65.5	137				S
Vinyl chloride	54.7	2.00	50.00	0	109	71.1	134				
Bromomethane	41.8	2.00	50.00	0	83.6	67.2	141				
Chloroethane	54.2	2.00	50.00	0	108	74.3	132				
Trichlorofluoromethane	55.0	2.00	50.00	0	110	71.7	133				
Acrolein	208	2.00	250.0	0	83.2	73.3	130				
1,1-Dichloroethene	46.5	2.00	50.00	0	93.0	65.7	141				
Acetone	273	10.0	250.0	0	109	69.1	137				
Carbon Disulfide	30.5	2.00	25.00	0	122	71	138				
Methylene chloride	49.1	2.00	50.00	0	98.2	59.2	138				
trans-1,2-Dichloroethene	42.5	2.00	50.00	0	85.0	59.1	138				
Acrylonitrile	466	2.00	500.0	0	93.2	70	139				
1,1-Dichloroethane	48.7	2.00	50.00	0	97.4	66.4	133				
Tetrahydrofuran	91.1	2.00	100.0	0	91.1	80	115				
Chloroform	44.5	2.00	50.00	0	89.0	63.6	138				
1,1,1-Trichloroethane	43.1	2.00	50.00	0	86.2	67.7	133				
Carbon tetrachloride	40.4	2.00	50.00	0	80.8	64.2	135				
Benzene	45.0	2.00	50.00	0	90.0	68	129				
1,2-Dichloroethane	45.8	2.00	50.00	0	91.6	67.4	135				
Trichloroethene	47.1	2.00	50.00	0	94.2	64.9	131				
1,2-Dichloropropane	44.4	2.00	50.00	0	88.8	71.8	129				
Bromodichloromethane	45.8	2.00	50.00	0	91.6	70.6	131				
2-Chloroethyl vinyl ether	255	2.00	250.0	0	102	65.7	141				
cis-1,3-Dichloropropene	45.6	2.00	50.00	0	91.2	70.7	133				
Toluene	46.3	2.00	50.00	0	92.6	63.4	131				
trans-1,3-Dichloropropene	49.7	2.00	50.00	0	99.4	69.9	132				
1,1,2-Trichloroethane	44.6	2.00	50.00	0	89.2	71.8	131				
Tetrachloroethene	42.8	10.0	50.00	0	85.6	40.8	161				

Qualifiers:
E Value above quantitation range
ND Not Detected at the Reporting Limit
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits
M Manual Integration used to determine
S Spike Recovery outside accepted reco

CLIENT: Op-Tech
Work Order: 1110431
Project: Ford Road AFOD0001

ANALYTICAL QC SUMMARY REPORT

TestCode: 624_W

Sample ID: **LCS 1110210910** SampType: **LCS** TestCode: **624_W** Units: **µg/L** Prep Date: RunNo: **50400**
Client ID: **ZZZZZ** Batch ID: **R50400** TestNo: **E624** Analysis Date: **10/21/2011** SeqNo: **691912**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,3-Dichloropropane	46.2	2.00	50.00	0	92.4	79.9	119				
Dibromochloromethane	43.8	2.00	50.00	0	87.6	56.6	132				
Chlorobenzene	44.2	2.00	50.00	0	88.4	75	129				
Ethylbenzene	43.3	2.00	50.00	0	86.6	76	129				
m,p-Xylene	45.3	4.00	50.00	0	90.6	72.1	131				
o-Xylene	46.8	2.00	50.00	0	93.6	80.9	123				
Total Xylenes	92.1	6.00	100.0	0	92.1	72	130				
Bromoform	39.8	2.00	50.00	0	79.6	64.6	132				
1,1,2,2-Tetrachloroethane	46.1	2.00	50.00	0	92.2	63.3	145				
1,2,4-Trimethylbenzene	45.4	2.00	50.00	0	90.8	80.4	125				
1,3-Dichlorobenzene	43.7	2.00	50.00	0	87.4	75.5	126				
1,4-Dichlorobenzene	43.1	2.00	50.00	0	86.2	82.4	122				
1,2-Dichlorobenzene	43.8	2.00	50.00	0	87.6	75.1	128				
Naphthalene	42.1	2.00	50.00	0	84.2	56.5	154				
Surr: 1,2-Dichloroethane-d4	21.9		20.00		110	76.5	130				
Surr: Toluene-d8	20.4		20.00		102	78.8	120				
Surr: 4-Bromofluorobenzene	19.9		20.00		99.5	83.1	119				

Sample ID: **MBLK** SampType: **MBLK** TestCode: **624_W** Units: **µg/L** Prep Date: RunNo: **50400**
Client ID: **ZZZZZ** Batch ID: **R50400** TestNo: **E624** Analysis Date: **10/21/2011** SeqNo: **691913**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromoethane	< 2.00	2.00									
cis-1,2-Dichloroethene	< 2.00	2.00									
Dichlorodifluoromethane	< 2.00	2.00									
Chloromethane	< 10.0	10.0									
Vinyl chloride	< 2.00	2.00									
Bromomethane	< 2.00	2.00									
Chloroethane	< 2.00	2.00									
Trichlorofluoromethane	< 2.00	2.00									
Acrolein	< 2.00	2.00									

Qualifiers:
E Value above quantitation range
ND Not Detected at the Reporting Limit
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits
M Manual Integration used to determine
S Spike Recovery outside accepted reco

CLIENT: Op-Tech
Work Order: 1110431
Project: Ford Road AFOD0001

ANALYTICAL QC SUMMARY REPORT

TestCode: 624_W

Sample ID: MBLK	SampType: MBLK	TestCode: 624_W	Units: µg/L	Prep Date:	RunNo: 50400
Client ID: ZZZZZ	Batch ID: R50400	TestNo: E624		Analysis Date: 10/21/2011	SeqNo: 691913

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	< 2.00	2.00									
Acetone	< 10.0	10.0									
Carbon Disulfide	< 2.00	2.00									
Methylene chloride	< 2.00	2.00									
trans-1,2-Dichloroethene	< 2.00	2.00									
Acrylonitrile	< 2.00	2.00									
1,1-Dichloroethane	< 2.00	2.00									
Tetrahydrofuran	< 2.00	2.00									
Chloroform	< 2.00	2.00									
1,1,1-Trichloroethane	< 2.00	2.00									
Carbon tetrachloride	< 2.00	2.00									
Benzene	< 2.00	2.00									
1,2-Dichloroethane	< 2.00	2.00									
Trichloroethene	< 2.00	2.00									
1,2-Dichloropropane	< 2.00	2.00									
Bromodichloromethane	< 2.00	2.00									
2-Chloroethyl vinyl ether	< 2.00	2.00									
cis-1,3-Dichloropropene	< 2.00	2.00									
Toluene	< 2.00	2.00									
trans-1,3-Dichloropropene	< 2.00	2.00									
1,1,2-Trichloroethane	< 2.00	2.00									
Tetrachloroethene	< 10.0	10.0									
1,3-Dichloropropane	< 2.00	2.00									
Dibromochloromethane	< 2.00	2.00									
Chlorobenzene	< 2.00	2.00									
Ethylbenzene	< 2.00	2.00									
m,p-Xylene	< 4.00	4.00									
o-Xylene	< 2.00	2.00									
Total Xylenes	< 6.00	6.00									
Bromoform	< 2.00	2.00									
1,1,2,2-Tetrachloroethane	< 2.00	2.00									

Qualifiers:
E Value above quantitation range
ND Not Detected at the Reporting Limit
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits
M Manual Integration used to determine
S Spike Recovery outside accepted reco

CLIENT: Op-Tech
Work Order: 1110431
Project: Ford Road AFOD0001

ANALYTICAL QC SUMMARY REPORT

TestCode: 624_W

Sample ID: **MBLK** SampType: **MBLK** TestCode: **624_W** Units: **µg/L** Prep Date: RunNo: **50400**
Client ID: **ZZZZZ** Batch ID: **R50400** TestNo: **E624** Analysis Date: **10/21/2011** SeqNo: **691913**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,4-Trimethylbenzene	< 2.00	2.00									
1,3-Dichlorobenzene	< 2.00	2.00									
1,4-Dichlorobenzene	< 2.00	2.00									
1,2-Dichlorobenzene	< 2.00	2.00									
Naphthalene	< 2.00	2.00									
Surr: 1,2-Dichloroethane-d4	20.1		20.00		101	80	120				
Surr: Toluene-d8	20.4		20.00		102	80	120				
Surr: 4-Bromofluorobenzene	21.0		20.00		105	80	120				

Sample ID: **1110431-001AMS** SampType: **MS** TestCode: **624_W** Units: **µg/L** Prep Date: RunNo: **50400**
Client ID: **FR 1MS** Batch ID: **R50400** TestNo: **E624** Analysis Date: **10/21/2011** SeqNo: **691916**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	47.4	2.00	50.00	0	94.8	40.2	145				
Benzene	49.3	2.00	50.00	0	98.6	76.8	132				
Trichloroethene	49.8	2.00	50.00	0	99.6	71.7	134				
Toluene	50.2	2.00	50.00	0	100	61.1	132				
Chlorobenzene	48.5	2.00	50.00	0	97.0	64.2	130				
Surr: 1,2-Dichloroethane-d4	20.4		20.00		102	76.5	130				
Surr: Toluene-d8	20.5		20.00		103	78.8	120				
Surr: 4-Bromofluorobenzene	20.9		20.00		104	83.1	119				

Sample ID: **1110431-001AMSD** SampType: **MSD** TestCode: **624_W** Units: **µg/L** Prep Date: RunNo: **50400**
Client ID: **FR 1MSD** Batch ID: **R50400** TestNo: **E624** Analysis Date: **10/21/2011** SeqNo: **691917**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	51.7	2.00	50.00	0	103	40.2	145	47.40	8.68	0	
Benzene	52.1	2.00	50.00	0	104	76.8	132	49.30	5.52	0	
Trichloroethene	55.1	2.00	50.00	0	110	71.7	134	49.80	10.1	0	
Toluene	51.7	2.00	50.00	0	103	61.1	132	50.20	2.94	0	
Chlorobenzene	52.8	2.00	50.00	0	106	64.2	130	48.50	8.49	0	

Qualifiers:
E Value above quantitation range
ND Not Detected at the Reporting Limit
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits
M Manual Integration used to determine
S Spike Recovery outside accepted reco

CLIENT: Op-Tech
Work Order: 1110431
Project: Ford Road AFOD0001

ANALYTICAL QC SUMMARY REPORT

TestCode: 624_W

Sample ID: **1110431-001AMSD**	SampType: **MSD**	TestCode: **624_W**	Units: **µg/L**	Prep Date:	RunNo: **50400**
Client ID: **FR 1MSD**	Batch ID: **R50400**	TestNo: **E624**		Analysis Date: **10/21/2011**	SeqNo: **691917**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	19.4		20.00		97.0	76.5	130		0	0	
Surr: Toluene-d8	19.6		20.00		98.0	78.8	120		0	0	
Surr: 4-Bromofluorobenzene	20.8		20.00		104	83.1	119		0	0	

Qualifiers:

E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	M	Manual Integration used to determine
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

CLIENT: Op-Tech
Work Order: 1110431
Project: Ford Road AFOD0001

ANALYTICAL QC SUMMARY REPORT

TestCode: 625_W

Sample ID: MB-102111	SampType: MBLK	TestCode: 625_W	Units: µg/L	Prep Date: 10/21/2011	RunNo: 50416
Client ID: ZZZZZ	Batch ID: 8495	TestNo: E625	E625	Analysis Date: 10/22/2011	SeqNo: 692179

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,4-Trichlorobenzene	< 10.0	10.0									
1,2-Dichlorobenzene	< 10.0	10.0									
1,2-Diphenylhydrazine	< 10.0	10.0									
1,3-Dichlorobenzene	< 10.0	10.0									
1,4-Dichlorobenzene	< 10.0	10.0									
2,3-Dichloroaniline	< 10.0	10.0									
2,4,6-Trichlorophenol	< 10.0	10.0									
2,4-Dichlorophenol	< 10.0	10.0									
2,4-Dimethylphenol	< 10.0	10.0									
2,4-Dinitrophenol	< 10.0	10.0									
2,4-Dinitrotoluene	< 10.0	10.0									
2,6-Dinitrotoluene	< 10.0	10.0									
2-Chloronaphthalene	< 10.0	10.0									
2-Chlorophenol	< 10.0	10.0									
2-Nitrophenol	< 10.0	10.0									
3,3'-Dichlorobenzidine	< 10.0	10.0									
4,6-Dinitro-2-methylphenol	< 10.0	10.0									
4-Bromophenyl phenyl ether	< 10.0	10.0									
4-Chloro-3-methylphenol	< 10.0	10.0									
4-Chlorophenyl phenyl ether	< 10.0	10.0									
4-Nitrophenol	< 10.0	10.0									
a-Terpineol	< 10.0	10.0									
Acenaphthene	< 10.0	10.0									
Acenaphthylene	< 10.0	10.0									
Anthracene	< 10.0	10.0									
Benz(a)anthracene	< 10.0	10.0									
Benzidine	< 10.0	10.0									
Benzo(a)pyrene	< 10.0	10.0									
Benzo(b)fluoranthene	< 10.0	10.0									
Benzo(g,h,I)perylene	< 10.0	10.0									
Benzo(k)fluoranthene	< 10.0	10.0									

Qualifiers:
E Value above quantitation range
ND Not Detected at the Reporting Limit
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits
M Manual Integration used to determine
S Spike Recovery outside accepted reco

CLIENT: Op-Tech
Work Order: 1110431
Project: Ford Road AFOD0001

ANALYTICAL QC SUMMARY REPORT

TestCode: 625_W

Sample ID: MB-102111	SampType: MBLK	TestCode: 625_W	Units: µg/L	Prep Date: 10/21/2011	RunNo: 50416
Client ID: ZZZZZ	Batch ID: 8495	TestNo: E625	E625	Analysis Date: 10/22/2011	SeqNo: 692179

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzoic Acid	< 10.0	10.0									
Bis(2-chloroethoxy)methane	< 10.0	10.0									
Bis(2-chloroethyl)ether	< 10.0	10.0									
Bis(2-chloroisopropyl)ether	< 10.0	10.0									
Bis(2-ethylhexyl)phthalate	< 10.0	10.0									
Butyl benzyl phthalate	< 10.0	10.0									
Chrysene	< 10.0	10.0									
Di-n-butyl phthalate	< 10.0	10.0									
Di-n-octyl phthalate	< 10.0	10.0									
Dibenz(a,h)anthracene	< 10.0	10.0									
Diethyl phthalate	< 10.0	10.0									
Dimethyl phthalate	< 10.0	10.0									
Fluoranthene	< 10.0	10.0									
Fluorene	< 10.0	10.0									
Hexachlorobenzene	< 10.0	10.0									
Hexachlorobutadiene	< 10.0	10.0									
Hexachlorocyclopentadiene	< 10.0	10.0									
Hexachloroethane	< 10.0	10.0									
Indeno(1,2,3-cd)pyrene	< 10.0	10.0									
Isophorone	< 10.0	10.0									
n-Decane	< 10.0	10.0									
N-Nitrosodi-n-propylamine	< 10.0	10.0									
N-Nitrosodimethylamine	< 10.0	10.0									
N-Nitrosodiphenylamine	< 10.0	10.0									
Naphthalene	< 10.0	10.0									
Nitrobenzene	< 10.0	10.0									
Pentachlorophenol	< 10.0	10.0									
Phenanthrene	< 10.0	10.0									
Phenol	< 10.0	10.0									
Pyrene	< 10.0	10.0									
Surr: 2,4,6-Tribromophenol	155		200.0		77.4	10	123				

Qualifiers:

E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	M	Manual Integration used to determine
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

CLIENT: Op-Tech
Work Order: 1110431
Project: Ford Road AFOD0001

ANALYTICAL QC SUMMARY REPORT

TestCode: 625_W

Sample ID: MB-102111	SampType: MBLK	TestCode: 625_W	Units: µg/L	Prep Date: 10/21/2011	RunNo: 50416
Client ID: ZZZZZ	Batch ID: 8495	TestNo: E625	E625	Analysis Date: 10/22/2011	SeqNo: 692179

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 2-Fluorobiphenyl	77.5		100.0		77.5	43	116				
Surr: 2-Fluorophenol	95.8		200.0		47.9	21	100				
Surr: 4-Terphenyl-d14	111		100.0		111	33	141				
Surr: Nitrobenzene-d5	69.2		100.0		69.2	35	114				
Surr: Phenol-d6	54.6		200.0		27.3	10	94				

Sample ID: LCS-102111	SampType: LCS	TestCode: 625_W	Units: µg/L	Prep Date: 10/21/2011	RunNo: 50416
Client ID: ZZZZZ	Batch ID: 8495	TestNo: E625	E625	Analysis Date: 10/23/2011	SeqNo: 692181

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,4-Trichlorobenzene	64.9	10.0	100.0	0	64.9	32	123				
1,4-Dichlorobenzene	60.6	10.0	100.0	0	60.6	28	115				
2,4-Dinitrotoluene	78.0	10.0	100.0	0	78.0	24	163				
2-Chlorophenol	124	10.0	200.0	0	62.3	34	120				
4-Chloro-3-methylphenol	141	10.0	200.0	0	70.7	43	140				
4-Nitrophenol	58.8	10.0	200.0	0	29.4	1	145				
Acenaphthene	78.1	10.0	100.0	0	78.1	33	153				
N-Nitrosodi-n-propylamine	70.7	10.0	100.0	0	70.7	27	171				
Pentachlorophenol	164	10.0	200.0	0	81.8	12	136				
Phenol	51.9	10.0	200.0	0	26.0	1	115				
Pyrene	98.4	10.0	100.0	0	98.4	26	184				
Surr: 2,4,6-Tribromophenol	172		200.0		86.0	10	123				
Surr: 2-Fluorobiphenyl	80.4		100.0		80.4	43	116				
Surr: 2-Fluorophenol	93.0		200.0		46.5	21	100				
Surr: 4-Terphenyl-d14	111		100.0		111	33	141				
Surr: Nitrobenzene-d5	70.9		100.0		70.9	35	114				
Surr: Phenol-d6	56.3		200.0		28.1	10	94				

Qualifiers:
E Value above quantitation range
ND Not Detected at the Reporting Limit
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits
M Manual Integration used to determine
S Spike Recovery outside accepted reco

CLIENT: Op-Tech
Work Order: 1110431
Project: Ford Road AFOD0001

ANALYTICAL QC SUMMARY REPORT

TestCode: CN_AQ

Sample ID: MB-R50380	SampType: MBLK	TestCode: CN_AQ	Units: µg/L	Prep Date:	RunNo: 50380
Client ID: ZZZZZ	Batch ID: R50380	TestNo: E335.4		Analysis Date: 10/21/2011	SeqNo: 690353

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	< 5.0	5.0									

Sample ID: LCS-R50380	SampType: LCS	TestCode: CN_AQ	Units: µg/L	Prep Date:	RunNo: 50380
Client ID: ZZZZZ	Batch ID: R50380	TestNo: E335.4		Analysis Date: 10/21/2011	SeqNo: 690354

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	230	5.0	230.0	0	98.8	80	120				

Sample ID: 1110431-001ADUP	SampType: DUP	TestCode: CN_AQ	Units: µg/L	Prep Date:	RunNo: 50380
Client ID: FR 1	Batch ID: R50380	TestNo: E335.4		Analysis Date: 10/21/2011	SeqNo: 690359

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	< 5.0	5.0						0	0	20	

Sample ID: 1110431-001AMS	SampType: MS	TestCode: CN_AQ	Units: µg/L	Prep Date:	RunNo: 50380
Client ID: FR 1MS	Batch ID: R50380	TestNo: E335.4		Analysis Date: 10/21/2011	SeqNo: 690360

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	290	5.0	250.0	0	115	80	120				

Sample ID: 1110431-001AMSD	SampType: MSD	TestCode: CN_AQ	Units: µg/L	Prep Date:	RunNo: 50380
Client ID: FR 1MSD	Batch ID: R50380	TestNo: E335.4		Analysis Date: 10/21/2011	SeqNo: 690361

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	260	5.0	250.0	0	105	80	120	288.0	9.27	20	

Qualifiers:

E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	M	Manual Integration used to determine
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

CLIENT: Op-Tech
Work Order: 1110431
Project: Ford Road AFOD0001

ANALYTICAL QC SUMMARY REPORT

TestCode: Hg_WW

Sample ID: **MB-R50412** SampType: **MBLK** TestCode: **Hg_WW** Units: **µg/L** Prep Date: RunNo: **50412**
Client ID: **ZZZZZ** Batch ID: **R50412** TestNo: **E245.2** Analysis Date: **10/24/2011** SeqNo: **692069**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	< 0.20	0.20									

Sample ID: **LCS-R50412** SampType: **LCS** TestCode: **Hg_WW** Units: **µg/L** Prep Date: RunNo: **50412**
Client ID: **ZZZZZ** Batch ID: **R50412** TestNo: **E245.2** Analysis Date: **10/24/2011** SeqNo: **692070**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	5.0	0.20	5.000	0	101	90	110				

Sample ID: **1110210-001ADUP** SampType: **DUP** TestCode: **Hg_WW** Units: **µg/L** Prep Date: RunNo: **50412**
Client ID: **ZZZZZ** Batch ID: **R50412** TestNo: **E245.2** Analysis Date: **10/24/2011** SeqNo: **692072**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	< 0.20	0.20						0	0	20	

Sample ID: **1110210-001AMS** SampType: **MS** TestCode: **Hg_WW** Units: **µg/L** Prep Date: RunNo: **50412**
Client ID: **ZZZZZ** Batch ID: **R50412** TestNo: **E245.2** Analysis Date: **10/24/2011** SeqNo: **692073**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	5.0	0.20	5.000	0	99.9	90	110				

Sample ID: **1110210-001AMSD** SampType: **MSD** TestCode: **Hg_WW** Units: **µg/L** Prep Date: RunNo: **50412**
Client ID: **ZZZZZ** Batch ID: **R50412** TestNo: **E245.2** Analysis Date: **10/24/2011** SeqNo: **692074**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	5.0	0.20	5.000	0	100	90	110	4.994	0.579	20	

Sample ID: **MB-R50412** SampType: **MBLK** TestCode: **Hg_WW** Units: **µg/L** Prep Date: RunNo: **50412**
Client ID: **ZZZZZ** Batch ID: **R50412** TestNo: **E245.2** Analysis Date: **10/24/2011** SeqNo: **692075**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:
E Value above quantitation range
ND Not Detected at the Reporting Limit
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits
M Manual Integration used to determine
S Spike Recovery outside accepted reco

CLIENT: Op-Tech
Work Order: 1110431
Project: Ford Road AFOD0001

ANALYTICAL QC SUMMARY REPORT

TestCode: Hg_WW

Sample ID: MB-R50412	SampType: MBLK	TestCode: Hg_WW	Units: µg/L	Prep Date:	RunNo: 50412
Client ID: ZZZZZ	Batch ID: R50412	TestNo: E245.2		Analysis Date: 10/24/2011	SeqNo: 692075

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	< 0.20	0.20									

Sample ID: LCS-R50412	SampType: LCS	TestCode: Hg_WW	Units: µg/L	Prep Date:	RunNo: 50412
Client ID: ZZZZZ	Batch ID: R50412	TestNo: E245.2		Analysis Date: 10/24/2011	SeqNo: 692076

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	5.1	0.20	5.000	0	103	90	110				

Qualifiers:

E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	M	Manual Integration used to determine
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

CLIENT: Op-Tech
Work Order: 1110431
Project: Ford Road AFOD0001

ANALYTICAL QC SUMMARY REPORT

TestCode: ICP_AQ

Sample ID: **MB-R50401** SampType: **MBLK** TestCode: **ICP_AQ** Units: **µg/L** Prep Date: RunNo: **50401**
Client ID: **ZZZZZ** Batch ID: **R50401** TestNo: **SW6010B** Analysis Date: **10/23/2011** SeqNo: **691926**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	< 10.0	10.0									
Antimony	< 10.0	10.0									
Arsenic	< 15.0	15.0									
Barium	< 10.0	10.0									
Beryllium	< 5.00	5.00									
Cadmium	< 10.0	10.0									
Chromium	< 10.0	10.0									
Cobalt	< 3.00	3.00									
Copper	< 10.0	10.0									
Iron	< 10.0	10.0									
Lead	< 10.0	10.0									
Manganese	< 10.0	10.0									
Nickel	< 10.0	10.0									
Selenium	< 20.0	20.0									
Silver	< 10.0	10.0									
Thallium	< 10.0	10.0									
Vanadium	< 10.0	10.0									
Zinc	< 10.0	10.0									

Sample ID: **LCS-R50401** SampType: **LCS** TestCode: **ICP_AQ** Units: **µg/L** Prep Date: RunNo: **50401**
Client ID: **ZZZZZ** Batch ID: **R50401** TestNo: **SW6010B** Analysis Date: **10/23/2011** SeqNo: **691927**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	98.2	10.0	100.0	0	98.2	82.3	118				
Antimony	100	10.0	100.0	0	100	93.1	110				
Arsenic	98.2	15.0	100.0	0	98.2	85.6	119				
Barium	98.8	10.0	100.0	0	98.8	90.3	114				
Beryllium	99.0	5.00	100.0	0	99.0	89.7	113				
Cadmium	100	10.0	100.0	0	100	87.4	113				
Chromium	97.1	10.0	100.0	0	97.1	86.3	112				
Cobalt	102	3.00	100.0	0	102	92.5	113				

Qualifiers:
E Value above quantitation range
ND Not Detected at the Reporting Limit
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits
M Manual Integration used to determine
S Spike Recovery outside accepted reco

CLIENT: Op-Tech
Work Order: 1110431
Project: Ford Road AFOD0001

ANALYTICAL QC SUMMARY REPORT

TestCode: ICP_AQ

Sample ID: **LCS-R50401** SampType: **LCS** TestCode: **ICP_AQ** Units: **µg/L** Prep Date: RunNo: **50401**
Client ID: **ZZZZZ** Batch ID: **R50401** TestNo: **SW6010B** Analysis Date: **10/23/2011** SeqNo: **691927**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	103	10.0	100.0	0	103	89	119				
Iron	103	10.0	100.0	0	103	87.4	120				
Lead	99.7	10.0	100.0	0	99.7	88.1	117				
Manganese	101	10.0	100.0	0	101	89.1	115				
Nickel	99.2	10.0	100.0	0	99.2	90.1	114				
Selenium	101	20.0	100.0	0	101	84.5	117				
Silver	94.3	10.0	100.0	0	94.3	78.5	121				
Vanadium	99.0	10.0	100.0	0	99.0	88.1	115				
Zinc	101	10.0	100.0	0	101	87.8	117				

Sample ID: **MB-R50404** SampType: **MBLK** TestCode: **ICP_AQ** Units: **µg/L** Prep Date: RunNo: **50404**
Client ID: **ZZZZZ** Batch ID: **R50404** TestNo: **SW6010B** Analysis Date: **10/24/2011** SeqNo: **691937**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Thallium	< 10.0	10.0									

Sample ID: **LCS-R50404** SampType: **LCS** TestCode: **ICP_AQ** Units: **µg/L** Prep Date: RunNo: **50404**
Client ID: **ZZZZZ** Batch ID: **R50404** TestNo: **SW6010B** Analysis Date: **10/24/2011** SeqNo: **691938**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Thallium	94.3	10.0	100.0	0	94.3	77.9	119				

Qualifiers:
E Value above quantitation range
ND Not Detected at the Reporting Limit
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits
M Manual Integration used to determine
S Spike Recovery outside accepted reco

CLIENT: Op-Tech
Work Order: 1110431
Project: Ford Road AFOD0001

ANALYTICAL QC SUMMARY REPORT

TestCode: ICP_MIN

Sample ID: **MB-R50403** SampType: **MBLK** TestCode: **ICP_MIN** Units: **mg/L** Prep Date: RunNo: **50403**
Client ID: **ZZZZZ** Batch ID: **R50403** TestNo: **SW6010B** Analysis Date: **10/23/2011** SeqNo: **691934**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	< 1.000	1.000									
Magnesium	< 1.000	1.000									
Potassium	< 1.000	1.000									
Sodium	< 1.000	1.000									

Sample ID: **LCS-R50403** SampType: **LCS** TestCode: **ICP_MIN** Units: **mg/L** Prep Date: RunNo: **50403**
Client ID: **ZZZZZ** Batch ID: **R50403** TestNo: **SW6010B** Analysis Date: **10/23/2011** SeqNo: **691935**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	46.10	1.000	50.00	0	92.2	91.4	101				
Magnesium	47.20	1.000	50.00	0	94.4	91.7	104				
Potassium	46.40	1.000	50.00	0	92.8	85	109				
Sodium	47.60	1.000	50.00	0	95.2	85.9	110				

Qualifiers:
E Value above quantitation range
ND Not Detected at the Reporting Limit
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits
M Manual Integration used to determine
S Spike Recovery outside accepted reco

CLIENT: Op-Tech
Work Order: 1110431
Project: Ford Road AFOD0001

ANALYTICAL QC SUMMARY REPORT

TestCode: PH_W

Sample ID: LCS-R50385	SampType: LCS	TestCode: PH_W	Units: SU	Prep Date:	RunNo: 50385
Client ID: ZZZZZ	Batch ID: R50385	TestNo: M4500-H +		Analysis Date: 10/20/2011	SeqNo: 690410

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
PH	7.01	0.100	7.000	0	100	90	110				

Sample ID: 1110431-001ADUP	SampType: DUP	TestCode: PH_W	Units: SU	Prep Date:	RunNo: 50385
Client ID: FR 1	Batch ID: R50385	TestNo: M4500-H +		Analysis Date: 10/20/2011	SeqNo: 690412

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
PH	10.1	0.100						10.05	0.0995	10	

Qualifiers:

E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	M	Manual Integration used to determine
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted reco

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

1453097

Section A Required Client Information:

Company: Op-Tech Env.
Address: 150 Rotterdam Ind. Park. Schenectady NY 12306
Email To: naselli@op-tech.us
Phone: 518-355-0387 Fax:
Requested Due Date/TAT: ASAP

Section B Required Project Information:

Report To: Joe Naselli
Copy To: Dave Curran
Curran@op-tech.us
Purchase Order No.:
Project Name: FORD ROAD
Project Number: AFOD 0001

Section C Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

NPDES | GROUND WATER | DRINKING WATER
UST | RCRA | OTHER

Site Location STATE: OH

Section D Required Client Information

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start Date	Composite Start Time	Composite End/Grab Date	Composite End/Grab Time	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N) TOTAL METALS	Mercury 1631E	Cyanide 4500	VOC's 624	SVOC's 8270/625	Pest, 8081	PCB's 8082	pH	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FR 1	WT	G	10/19	0900				10			X	X	X				X	X	X	X	X	X	X	X		1110431
2																											
3																											
4																											
5																											
6																											
7																											
8																											
9																											
10																											
11																											
12																											

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Aaron Hollenbeck / Op-Tech	10-19-11	12:42	[signature]	10-20-11	1300	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Aaron Hollenbeck

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 10/19/2011

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Sample Condition Upon Receipt

Face Analytical

Client Name: OpTech Project # 1110431

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☒ Client ☐ Commercial ☐ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other _____

Thermometer Used IWR Type of Ice: (Wet) Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature 4.3 Ice Visible in Sample Containers: ☐ yes ☒ no

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 10-20-11

		Comments:
Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☒Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☒Yes ☐No ☐N/A	4.
Short Hold Time Analysis (<72hr):	☒Yes ☐No ☐N/A	5.
Rush Turn Around Time Requested:	☒Yes ☐No ☐N/A	6. 30 day
Containers Intact:	☒Yes ☐No ☐N/A	7.
Sample Labels match COC: -Includes date/time/ID/Analysis	☒Yes ☐No ☐N/A	8.
All containers needing preservation have been pH checked? exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☒Yes ☐No ☐N/A	9. HNO3 x2 pH<2 Cn pH>12
All containers needing preservation are found to be in compliance with EPA recommendation.	☒Yes ☐No ☐N/A	
Headspace in VOA Vials (>6mm):	☐Yes ☒No ☐N/A	10.
Trip Blank Present:	☒Yes ☐No ☐N/A	11. NOT on COC logged as 02
Trip Blank Custody Seals Present	☐Yes ☐No ☒N/A	
Project Manager Review		
Samples Arrived within Hold Time:	☒Yes ☐No ☐N/A	12.
Sufficient Volume:	☒Yes ☐No ☐N/A	13.
Correct Containers Used:	☒Yes ☐No ☐N/A	14.

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: COC lists 8000 series quoted for 600 series
Logged as 600 series

Cr on quote should be Fe per Harry Borg - 10-21-11

Project Manager Review: _____ **Date:** _____

Form F-IN-Q290-rev.0, 02Mar2010

Soil Stockpile

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica North Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-5865-1
Client Project/Site: Ford Road - Elyria, Ohio

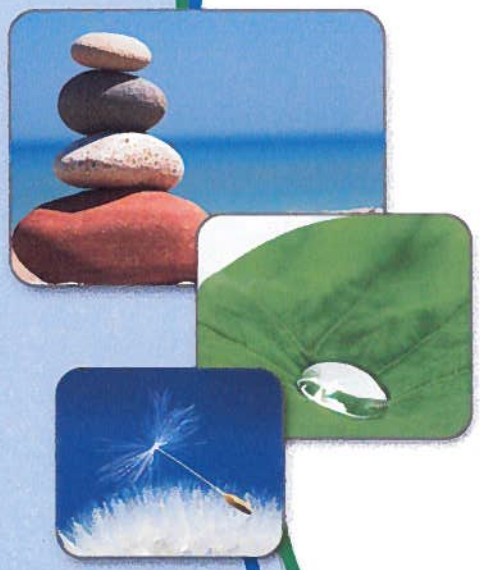
For:
Brown and Caldwell
4700 Lakehurst Court
Suite 100
Dublin, Ohio 43016

Attn: Mr. Jim Peeples

Alesia M. Danford

Authorized for release by:
11/18/2011 2:11:25 PM

Alesia Danford
Project Manager II
alesia.danford@testamericainc.com



LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Brown and Caldwell
Project/Site: Ford Road - Elyria, Ohio

TestAmerica Job ID: 240-5865-1

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
X	Surrogate is outside control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 240-5865-1

Laboratory: TestAmerica North Canton

Narrative

CASE NARRATIVE

Client: Brown and Caldwell

Project: Ford Road - Elyria, Ohio

Report Number: 240-5865-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica North Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 11/11/2011; the samples arrived in good condition, properly preserved and on ice. The temperature of the cooler at receipt was 4.6 C.

POLYCHLORINATED BIPHENYLS (PCBS)

Samples FR-SS-1-A (240-5865-1), FR-SS-2-A (240-5865-2), FR-SS-2-B (240-5865-3), FR-SS-2-B-DUP (240-5865-4) and FR-SS-2-C (240-5865-5) were analyzed for polychlorinated biphenyls (PCBs) in accordance with EPA SW-846 Method 8082. The samples were prepared on 11/14/2011 and analyzed on 11/17/2011.

Surrogates are added during the extraction process prior to dilution. When the sample dilution is 5X or greater, surrogate recoveries are diluted out and no corrective action is required.

DCB Decachlorobiphenyl and Tetrachloro-m-xylene failed the surrogate recovery criteria low for FR-SS-2-A (240-5865-2) and FR-SS-2-B (240-5865-3).

Refer to the QC report for details.

Samples FR-SS-2-A (240-5865-2)[10X], FR-SS-2-B (240-5865-3)[10X], FR-SS-2-B-DUP (240-5865-4)[5X] and FR-SS-2-C (240-5865-5)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Job ID: 240-5865-1 (Continued)

Laboratory: TestAmerica North Canton (Continued)

Method(s) 8082: The following samples required a tetrabutylammonium sulfite (TBA) clean-up to reduce matrix interferences caused by sulfur: (240-5556-4 MS), (240-5556-4 MSD), FR-SS-1-A (240-5865-1), FR-SS-2-A (240-5865-2), FR-SS-2-B (240-5865-3), FR-SS-2-B-DUP (240-5865-4), FR-SS-2-C (240-5865-5), TPW2 (240-5556-4).

No other difficulties were encountered during the PCBs analyses.

All other quality control parameters were within the acceptance limits.

PERCENT SOLIDS

Samples FR-SS-1-A (240-5865-1), FR-SS-2-A (240-5865-2), FR-SS-2-B (240-5865-3), FR-SS-2-B-DUP (240-5865-4) and FR-SS-2-C (240-5865-5) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 11/14/2011.

No difficulties were encountered during the % solids analyses.

All quality control parameters were within the acceptance limits.

Method Summary

Client: Brown and Caldwell
Project/Site: Ford Road - Elyria, Ohio

TestAmerica Job ID: 240-5865-1

Method	Method Description	Protocol	Laboratory
8082	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	SW846	TAL NC
Moisture	Percent Moisture	EPA	TAL NC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL NC = TestAmerica North Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Brown and Caldwell
Project/Site: Ford Road - Elyria, Ohio

TestAmerica Job ID: 240-5865-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-5865-1	FR-SS-1-A	Solid	11/09/11 11:15	11/11/11 09:40
240-5865-2	FR-SS-2-A	Solid	11/09/11 11:30	11/11/11 09:40
240-5865-3	FR-SS-2-B	Solid	11/09/11 11:45	11/11/11 09:40
240-5865-4	FR-SS-2-B-DUP	Solid	11/09/11 11:48	11/11/11 09:40
240-5865-5	FR-SS-2-C	Solid	11/09/11 12:06	11/11/11 09:40

Detection Summary

Client: Brown and Caldwell
Project/Site: Ford Road - Elyria, Ohio

TestAmerica Job ID: 240-5865-1

Client Sample ID: FR-SS-1-A — Lab Sample ID: 240-5865-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aroclor-1242	22	J	43	17	ug/Kg	1	☼	8082	Total/NA
Aroclor-1254	60		43	22	ug/Kg	1	☼	8082	Total/NA

Client Sample ID: FR-SS-2-A — Lab Sample ID: 240-5865-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aroclor-1242	660		460	180	ug/Kg	10	☼	8082	Total/NA

Client Sample ID: FR-SS-2-B — Lab Sample ID: 240-5865-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aroclor-1242	690		470	190	ug/Kg	10	☼	8082	Total/NA
Aroclor-1254	380	J	470	240	ug/Kg	10	☼	8082	Total/NA

Client Sample ID: FR-SS-2-B-DUP — Lab Sample ID: 240-5865-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aroclor-1242	210	J	230	93	ug/Kg	5	☼	8082	Total/NA
Aroclor-1260	1200		230	120	ug/Kg	5	☼	8082	Total/NA

Client Sample ID: FR-SS-2-C — Lab Sample ID: 240-5865-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aroclor-1242	320		240	94	ug/Kg	5	☼	8082	Total/NA
Aroclor-1254	380		240	120	ug/Kg	5	☼	8082	Total/NA

Client Sample Results

Client: Brown and Caldwell
Project/Site: Ford Road - Elyria, Ohio

TestAmerica Job ID: 240-5865-1

Client Sample ID: FR-SS-1-A

Date Collected: 11/09/11 11:15
Date Received: 11/11/11 09:40

Lab Sample ID: 240-5865-1

Matrix: Solid
Percent Solids: 77.2

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND		43	27	ug/Kg	☼	11/14/11 12:20	11/17/11 03:51	1
Aroclor-1221	ND		43	21	ug/Kg	☼	11/14/11 12:20	11/17/11 03:51	1
Aroclor-1232	ND		43	18	ug/Kg	☼	11/14/11 12:20	11/17/11 03:51	1
Aroclor-1242	22	J	43	17	ug/Kg	☼	11/14/11 12:20	11/17/11 03:51	1
Aroclor-1248	ND		43	22	ug/Kg	☼	11/14/11 12:20	11/17/11 03:51	1
Aroclor-1254	60		43	22	ug/Kg	☼	11/14/11 12:20	11/17/11 03:51	1
Aroclor-1260	ND		43	22	ug/Kg	☼	11/14/11 12:20	11/17/11 03:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*68*		*29 - 151*	*11/14/11 12:20*	*11/17/11 03:51*	*1*
DCB Decachlorobiphenyl	*74*		*14 - 163*	*11/14/11 12:20*	*11/17/11 03:51*	*1*

Client Sample Results

Client: Brown and Caldwell
Project/Site: Ford Road - Elyria, Ohio

TestAmerica Job ID: 240-5865-1

Client Sample ID: FR-SS-2-A

Date Collected: 11/09/11 11:30
Date Received: 11/11/11 09:40

Lab Sample ID: 240-5865-2

Matrix: Solid
Percent Solids: 71.9

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND		460	290	ug/Kg	☼	11/14/11 12:20	11/17/11 04:37	10
Aroclor-1221	ND		460	220	ug/Kg	☼	11/14/11 12:20	11/17/11 04:37	10
Aroclor-1232	ND		460	200	ug/Kg	☼	11/14/11 12:20	11/17/11 04:37	10
Aroclor-1242	660		460	180	ug/Kg	☼	11/14/11 12:20	11/17/11 04:37	10
Aroclor-1248	ND		460	240	ug/Kg	☼	11/14/11 12:20	11/17/11 04:37	10
Aroclor-1254	ND		460	240	ug/Kg	☼	11/14/11 12:20	11/17/11 04:37	10
Aroclor-1260	ND		460	240	ug/Kg	☼	11/14/11 12:20	11/17/11 04:37	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*0*	*X*	*29 - 151*	*11/14/11 12:20*	*11/17/11 04:37*	*10*
DCB Decachlorobiphenyl	*0*	*X*	*14 - 163*	*11/14/11 12:20*	*11/17/11 04:37*	*10*

Client Sample Results

Client: Brown and Caldwell
Project/Site: Ford Road - Elyria, Ohio

TestAmerica Job ID: 240-5865-1

Client Sample ID: FR-SS-2-B

Date Collected: 11/09/11 11:45
Date Received: 11/11/11 09:40

Lab Sample ID: 240-5865-3

Matrix: Solid
Percent Solids: 69.5

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND		470	300	ug/Kg	☼	11/14/11 12:20	11/17/11 04:52	10
Aroclor-1221	ND		470	230	ug/Kg	☼	11/14/11 12:20	11/17/11 04:52	10
Aroclor-1232	ND		470	200	ug/Kg	☼	11/14/11 12:20	11/17/11 04:52	10
Aroclor-1242	690		470	190	ug/Kg	☼	11/14/11 12:20	11/17/11 04:52	10
Aroclor-1248	ND		470	240	ug/Kg	☼	11/14/11 12:20	11/17/11 04:52	10
Aroclor-1254	380	J	470	240	ug/Kg	☼	11/14/11 12:20	11/17/11 04:52	10
Aroclor-1260	ND		470	240	ug/Kg	☼	11/14/11 12:20	11/17/11 04:52	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*0*	*X*	*29 - 151*	*11/14/11 12:20*	*11/17/11 04:52*	*10*
DCB Decachlorobiphenyl	*0*	*X*	*14 - 163*	*11/14/11 12:20*	*11/17/11 04:52*	*10*

Client Sample Results

Client: Brown and Caldwell
Project/Site: Ford Road - Elyria, Ohio

TestAmerica Job ID: 240-5865-1

Client Sample ID: FR-SS-2-B-DUP

Date Collected: 11/09/11 11:48
Date Received: 11/11/11 09:40

Lab Sample ID: 240-5865-4

Matrix: Solid
Percent Solids: 70.7

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND		230	150	ug/Kg	☼	11/14/11 12:20	11/17/11 05:08	5
Aroclor-1221	ND		230	110	ug/Kg	☼	11/14/11 12:20	11/17/11 05:08	5
Aroclor-1232	ND		230	100	ug/Kg	☼	11/14/11 12:20	11/17/11 05:08	5
Aroclor-1242	210	J	230	93	ug/Kg	☼	11/14/11 12:20	11/17/11 05:08	5
Aroclor-1248	ND		230	120	ug/Kg	☼	11/14/11 12:20	11/17/11 05:08	5
Aroclor-1254	ND		230	120	ug/Kg	☼	11/14/11 12:20	11/17/11 05:08	5
Aroclor-1260	1200		230	120	ug/Kg	☼	11/14/11 12:20	11/17/11 05:08	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*80*		*29 - 151*	*11/14/11 12:20*	*11/17/11 05:08*	*5*
DCB Decachlorobiphenyl	*73*		*14 - 163*	*11/14/11 12:20*	*11/17/11 05:08*	*5*

Client Sample Results

Client: Brown and Caldwell
Project/Site: Ford Road - Elyria, Ohio

TestAmerica Job ID: 240-5865-1

Client Sample ID: FR-SS-2-C

Date Collected: 11/09/11 12:06
Date Received: 11/11/11 09:40

Lab Sample ID: 240-5865-5

Matrix: Solid
Percent Solids: 69.7

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND		240	150	ug/Kg	☼	11/14/11 12:20	11/17/11 05:23	5
Aroclor-1221	ND		240	120	ug/Kg	☼	11/14/11 12:20	11/17/11 05:23	5
Aroclor-1232	ND		240	100	ug/Kg	☼	11/14/11 12:20	11/17/11 05:23	5
Aroclor-1242	320		240	94	ug/Kg	☼	11/14/11 12:20	11/17/11 05:23	5
Aroclor-1248	ND		240	120	ug/Kg	☼	11/14/11 12:20	11/17/11 05:23	5
Aroclor-1254	380		240	120	ug/Kg	☼	11/14/11 12:20	11/17/11 05:23	5
Aroclor-1260	ND		240	120	ug/Kg	☼	11/14/11 12:20	11/17/11 05:23	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*80*		*29 - 151*	*11/14/11 12:20*	*11/17/11 05:23*	*5*
DCB Decachlorobiphenyl	*67*		*14 - 163*	*11/14/11 12:20*	*11/17/11 05:23*	*5*

Surrogate Summary

Client: Brown and Caldwell
Project/Site: Ford Road - Elyria, Ohio

TestAmerica Job ID: 240-5865-1

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		TCX2	DCB2
Lab Sample ID	Client Sample ID	(29-151)	(14-163)
240-5865-1	FR-SS-1-A	68	74
240-5865-2	FR-SS-2-A	0 X	0 X
240-5865-3	FR-SS-2-B	0 X	0 X
240-5865-4	FR-SS-2-B-DUP	80	73
240-5865-5	FR-SS-2-C	80	67
LCS 240-23152/21-A	Lab Control Sample	83	80
MB 240-23152/20-A	Method Blank	68	73

Surrogate Legend

TCX = Tetrachloro-m-xylene

DCB = DCB Decachlorobiphenyl

QC Sample Results

Client: Brown and Caldwell
Project/Site: Ford Road - Elyria, Ohio

TestAmerica Job ID: 240-5865-1

Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 240-23152/20-A
Matrix: Solid
Analysis Batch: 23587

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 23152

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND		33	21	ug/Kg		11/14/11 12:20	11/17/11 04:07	1
Aroclor-1221	ND		33	16	ug/Kg		11/14/11 12:20	11/17/11 04:07	1
Aroclor-1232	ND		33	14	ug/Kg		11/14/11 12:20	11/17/11 04:07	1
Aroclor-1242	ND		33	13	ug/Kg		11/14/11 12:20	11/17/11 04:07	1
Aroclor-1248	ND		33	17	ug/Kg		11/14/11 12:20	11/17/11 04:07	1
Aroclor-1254	ND		33	17	ug/Kg		11/14/11 12:20	11/17/11 04:07	1
Aroclor-1260	ND		33	17	ug/Kg		11/14/11 12:20	11/17/11 04:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*68*		*29 - 151*	*11/14/11 12:20*	*11/17/11 04:07*	*1*
DCB Decachlorobiphenyl	*73*		*14 - 163*	*11/14/11 12:20*	*11/17/11 04:07*	*1*

Lab Sample ID: LCS 240-23152/21-A
Matrix: Solid
Analysis Batch: 23587

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 23152

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aroclor-1016	333	254		ug/Kg		76	62 - 120
Aroclor-1260	333	251		ug/Kg		75	56 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*83*		*29 - 151*
DCB Decachlorobiphenyl	*80*		*14 - 163*

QC Association Summary

Client: Brown and Caldwell
Project/Site: Ford Road - Elyria, Ohio

TestAmerica Job ID: 240-5865-1

GC Semi VOA

Prep Batch: 23152

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-5865-1	FR-SS-1-A	Total/NA	Solid	3540C	
240-5865-2	FR-SS-2-A	Total/NA	Solid	3540C	
240-5865-3	FR-SS-2-B	Total/NA	Solid	3540C	
240-5865-4	FR-SS-2-B-DUP	Total/NA	Solid	3540C	
240-5865-5	FR-SS-2-C	Total/NA	Solid	3540C	
LCS 240-23152/21-A	Lab Control Sample	Total/NA	Solid	3540C	
MB 240-23152/20-A	Method Blank	Total/NA	Solid	3540C	

Analysis Batch: 23587

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-5865-1	FR-SS-1-A	Total/NA	Solid	8082	23152
240-5865-2	FR-SS-2-A	Total/NA	Solid	8082	23152
240-5865-3	FR-SS-2-B	Total/NA	Solid	8082	23152
240-5865-4	FR-SS-2-B-DUP	Total/NA	Solid	8082	23152
240-5865-5	FR-SS-2-C	Total/NA	Solid	8082	23152
LCS 240-23152/21-A	Lab Control Sample	Total/NA	Solid	8082	23152
MB 240-23152/20-A	Method Blank	Total/NA	Solid	8082	23152

General Chemistry

Analysis Batch: 23110

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-5865-1	FR-SS-1-A	Total/NA	Solid	Moisture	
240-5865-2	FR-SS-2-A	Total/NA	Solid	Moisture	
240-5865-3	FR-SS-2-B	Total/NA	Solid	Moisture	
240-5865-4	FR-SS-2-B-DUP	Total/NA	Solid	Moisture	
240-5865-5	FR-SS-2-C	Total/NA	Solid	Moisture	
240-5865-5 DU	FR-SS-2-C	Total/NA	Solid	Moisture	

Lab Chronicle

Client: Brown and Caldwell
Project/Site: Ford Road - Elyria, Ohio

TestAmerica Job ID: 240-5865-1

Client Sample ID: FR-SS-1-A

Lab Sample ID: 240-5865-1
Date Collected: 11/09/11 11:15
Matrix: Solid
Date Received: 11/11/11 09:40
Percent Solids: 77.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3540C			23152	11/14/11 12:20	SE	TAL NC
Total/NA	Analysis	8082		1	23587	11/17/11 03:51	LH	TAL NC
Total/NA	Analysis	Moisture		1	23110	11/14/11 10:19	CN	TAL NC

Client Sample ID: FR-SS-2-A

Lab Sample ID: 240-5865-2
Date Collected: 11/09/11 11:30
Matrix: Solid
Date Received: 11/11/11 09:40
Percent Solids: 71.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3540C			23152	11/14/11 12:20	SE	TAL NC
Total/NA	Analysis	8082		10	23587	11/17/11 04:37	LH	TAL NC
Total/NA	Analysis	Moisture		1	23110	11/14/11 10:19	CN	TAL NC

Client Sample ID: FR-SS-2-B

Lab Sample ID: 240-5865-3
Date Collected: 11/09/11 11:45
Matrix: Solid
Date Received: 11/11/11 09:40
Percent Solids: 69.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3540C			23152	11/14/11 12:20	SE	TAL NC
Total/NA	Analysis	8082		10	23587	11/17/11 04:52	LH	TAL NC
Total/NA	Analysis	Moisture		1	23110	11/14/11 10:19	CN	TAL NC

Client Sample ID: FR-SS-2-B-DUP

Lab Sample ID: 240-5865-4
Date Collected: 11/09/11 11:48
Matrix: Solid
Date Received: 11/11/11 09:40
Percent Solids: 70.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3540C			23152	11/14/11 12:20	SE	TAL NC
Total/NA	Analysis	8082		5	23587	11/17/11 05:08	LH	TAL NC
Total/NA	Analysis	Moisture		1	23110	11/14/11 10:19	CN	TAL NC

Client Sample ID: FR-SS-2-C

Lab Sample ID: 240-5865-5
Date Collected: 11/09/11 12:06
Matrix: Solid
Date Received: 11/11/11 09:40
Percent Solids: 69.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3540C			23152	11/14/11 12:20	SE	TAL NC
Total/NA	Analysis	8082		5	23587	11/17/11 05:23	LH	TAL NC
Total/NA	Analysis	Moisture		1	23110	11/14/11 10:19	CN	TAL NC

Laboratory References:

TAL NC = TestAmerica North Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Certification Summary

Client: Brown and Caldwell
Project/Site: Ford Road - Elyria, Ohio

TestAmerica Job ID: 240-5865-1

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica North Canton	ACLASS	DoD ELAP		ADE-1437
TestAmerica North Canton	California	NELAC	9	01144CA
TestAmerica North Canton	Connecticut	State Program	1	PH-0590
TestAmerica North Canton	Florida	NELAC	4	E87225
TestAmerica North Canton	Georgia	Georgia EPD	4	N/A
TestAmerica North Canton	Illinois	NELAC	5	200004
TestAmerica North Canton	Kansas	NELAC	7	E-10336
TestAmerica North Canton	Kentucky	State Program	4	58
TestAmerica North Canton	Minnesota	NELAC	5	039-999-348
TestAmerica North Canton	Nevada	State Program	9	OH-000482008A
TestAmerica North Canton	New Jersey	NELAC	2	OH001
TestAmerica North Canton	New York	NELAC	2	10975
TestAmerica North Canton	Ohio	OVAP	5	CL0024
TestAmerica North Canton	Pennsylvania	NELAC	3	68-00340
TestAmerica North Canton	USDA	USDA		P330-11-00328
TestAmerica North Canton	Virginia	NELAC Secondary AB	3	460175
TestAmerica North Canton	West Virginia	West Virginia DEP	3	210
TestAmerica North Canton	Wisconsin	State Program	5	999518190

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Test America North Canton
Regulatory program: ☐ DW ☐ NPDES ☒ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact				
Company Name: Brown & Caldwell	Client Project Manager: Jim Peeples	Site Contact: Bill Foster	Lab Contact:	COC No: 034999
Address: 4700 Lakehurst Ct, Suite 100	Telephone: 614-410-3081	Telephone: 614-312-6299	Telephone:	1 of 1 COCs
City/State/Zip: Dublin, OH 43016	Email: jpeeples@brwncald.com	Analysis Turnaround Time (in BUS days)	Analyses	For lab use only
Phone: 614-410-6144		TAT if different from below ____ ☐ 3 weeks ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client ☐ Lab pickup ☐ Lab sampling ☐
Project Name: Ford Rd - Phase I Remedial Action	Method of Shipment/Carrier: BC Delivered			Job/SDG No:
Project Number: 141617	Shipping/Tracking No:			
PO#				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	EPA 8082			Sample Specific Notes / Special Instructions:
[redacted] FR-SS-1-A	11/09/11	1115				X										C								X			
[redacted] FR-SS-2-A	↓	1130				X										C								X			
[redacted] FR-SS-2-B		1145				X										C								X			
[redacted] FR-SS-2-B-Dup		1148				X										C								X			
FR-SS-2-C		1206				X										C								X			

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return to Client ☐ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements & Comments:

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
BW	BC	11/10/11 1030			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:
			[signature]	TAL	11/11/11 - 9:48

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TAL 0018-1 (04/10)

11/18/2011

TestAmerica Cooler Receipt Form/Narrative **Lot Number:** #5865
North Canton Facility

Client Brown + Caldwell Project _____ By: [signature] (Signature)
Cooler Received on 11/11/11 Opened on 11/11/11
FedEx ☒ UPS ☐ DHL ☐ FAS ☐ Stetson ☐ Client Drop Off ☐ TestAmerica Courier ☐ Other _____
TestAmerica Cooler # _____ Multiple Coolers ☐ Foam Box ☐ Client Cooler ☒ Other _____

1. Were custody seals on the outside of the cooler(s)? Yes ☒ No ☐ Intact? Yes ☒ No ☐ NA ☐
   If YES, Quantity 1 Quantity Unsalvageable _____
   Were custody seals on the outside of cooler(s) signed and dated? Yes ☒ No ☐ NA ☐
   Were custody seals on the bottle(s)? Yes ☐ No ☒
   If YES, are there any exceptions? _____
2. Shippers' packing slip attached to the cooler(s)? Yes ☒ No ☐
3. Did custody papers accompany the sample(s)? Yes ☒ No ☐ Relinquished by client? Yes ☒ No ☐
4. Were the custody papers signed in the appropriate place? Yes ☒ No ☐
5. Packing material used: Bubble Wrap ☒ Foam ☐ None ☐ Other _____
6. Cooler temperature upon receipt 4.6 °C See back of form for multiple coolers/temps ☐
   METHOD: IR ☒ Other ☐ _____
   COOLANT: Wet Ice ☒ Blue Ice ☐ Dry Ice ☐ Water ☐ None ☐
7. Did all bottles arrive in good condition (Unbroken)? Yes ☒ No ☐
8. Could all bottle labels be reconciled with the COC? Yes ☒ No ☐
9. Were sample(s) at the correct pH upon receipt? Yes ☐ No ☐ NA ☒
10. Were correct bottle(s) used for the test(s) indicated? Yes ☒ No ☐
11. Were air bubbles >6 mm in any VOA vials? Yes ☐ No ☐ NA ☒
12. Sufficient quantity received to perform indicated analyses? Yes ☒ No ☐
13. Was a trip blank present in the cooler(s)? Yes ☐ No ☒ Were VOAs on the COC? Yes ☐ No ☒

Contacted PM _____ Date _____ by _____ via Verbal ☐ Voice Mail ☐ Other ☐
Concerning

14. CHAIN OF CUSTODY

The following discrepancies occurred:

_____

15. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in Sample Receiving to meet recommended pH level(s). *Nitric Acid Lot# 110410-HNO_3; Sulfuric Acid Lot# 110410-H_2SO_4; Sodium Hydroxide Lot# 121809 -NaOH; Hydrochloric Acid Lot# 041911-HCl; Sodium Hydroxide and Zinc Acetate Lot# 100108-$(CH_3COO)_2ZN/NaOH$.* What time was preservative added to sample(s)? _____

Client ID	pH	Date	Initials

TestAmerica Cooler Receipt Form/Narrative
North Canton Facility

Client ID	pH	Date	Initials

Cooler #	Temp. °C	Method	Coolant

Discrepancies Cont'd

Login Sample Receipt Checklist

Client: Brown and Caldwell

Job Number: 240-5865-1

Login Number: 5865
List Number: 1
Creator: Gambone, Mike

List Source: TestAmerica North Canton

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	4.6
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica North Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-6863-1
Client Project/Site: FORD RD.-PHASE 1

For:
Brown and Caldwell
4700 Lakehurst Court
Suite 100
Dublin, Ohio 43016

Attn: Mr. Jim Peeples

Alesia M. Danford

Authorized for release by:
12/27/2011 11:03:34 AM

Alesia Danford
Project Manager II
alesia.danford@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6863-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
L	A negative instrument reading had an absolute value greater than the reporting limit

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 240-6863-1

Laboratory: TestAmerica North Canton

Narrative

CASE NARRATIVE

Client: Brown and Caldwell

Project: FORD RD.-PHASE 1

Report Number: 240-6863-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica North Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 12/14/2011; the samples arrived in good condition, properly preserved and on ice. The temperature of the cooler at receipt was 1.5 C.

VOLATILE ORGANIC COMPOUNDS (GC-MS)

Samples TRIP BLANK (240-6863-1), FIELD BLANK (240-6863-2) and SOUTH SEEP (240-6863-4) were analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 12/21/2011.

Methylene Chloride was detected in method blank MB 240-27716/5 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged "J". If the associated sample reported a result above the MDL and/or RL, the result has been "B" flagged. Refer to the QC report for details.

No other difficulties were encountered during the VOCs analyses.

All other quality control parameters were within the acceptance limits.

TOTAL RECOVERABLE METALS (ICP)

Sample SOUTH SEEP (240-6863-3) was analyzed for total recoverable metals (ICP) in accordance with EPA SW-846 Method 6010B. The samples were prepared on 12/16/2011 and analyzed on 12/20/2011 and 12/21/2011.

Job ID: 240-6863-1 (Continued)

Laboratory: TestAmerica North Canton (Continued)

Barium was detected in method blank MB 240-27122/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged "J". If the associated sample reported a result above the MDL and/or RL, the result has been "B" flagged. Refer to the QC report for details.

No other difficulties were encountered during the metals analysis.

All other quality control parameters were within the acceptance limits.

TOTAL MERCURY

Sample SOUTH SEEP (240-6863-3) was analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared on 12/19/2011 and analyzed on 12/20/2011.

No difficulties were encountered during the mercury analysis.

All other quality control parameters were within the acceptance limits.

Method Summary

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6863-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL NC
6010B	Metals (ICP)	SW846	TAL NC
7470A	Mercury (CVAA)	SW846	TAL NC

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL NC = TestAmerica North Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6863-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-6863-1	TRIP BLANK	Water	12/13/11 13:30	12/14/11 09:25
240-6863-2	FIELD BLANK	Water	12/13/11 13:34	12/14/11 09:25
240-6863-3	SOUTH SEEP	Water	12/13/11 14:29	12/14/11 09:25
240-6863-4	SOUTH SEEP	Water	12/13/11 14:31	12/14/11 09:25

Detection Summary

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6863-1

Client Sample ID: TRIP BLANK — Lab Sample ID: 240-6863-1

No Detections

Client Sample ID: FIELD BLANK — Lab Sample ID: 240-6863-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloroform	0.45	J	1.0	0.16	ug/L	1		8260B	Total/NA
Methylene Chloride	3.1	B	1.0	0.33	ug/L	1		8260B	Total/NA

Client Sample ID: SOUTH SEEP — Lab Sample ID: 240-6863-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	91	J B	200	0.67	ug/L	1		6010B	Total Recovera
Chromium	9.4		5.0	2.2	ug/L	1		6010B	Total Recovera
Lead	17		3.0	1.9	ug/L	1		6010B	Total Recovera
Iron	16000		100	81	ug/L	1		6010B	Total Recovera

Client Sample ID: SOUTH SEEP — Lab Sample ID: 240-6863-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	1.2	J	10	1.1	ug/L	1		8260B	Total/NA
Benzene	0.92	J	1.0	0.13	ug/L	1		8260B	Total/NA
Trichloroethene	0.64	J	1.0	0.17	ug/L	1		8260B	Total/NA
Vinyl chloride	18		1.0	0.22	ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	3.2		1.0	0.17	ug/L	1		8260B	Total/NA

Client Sample Results

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6863-1

Client Sample ID: TRIP BLANK

Date Collected: 12/13/11 13:30
Date Received: 12/14/11 09:25

Lab Sample ID: 240-6863-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10	1.1	ug/L			12/21/11 19:35	1
Benzene	ND		1.0	0.13	ug/L			12/21/11 19:35	1
Dichlorobromomethane	ND		1.0	0.15	ug/L			12/21/11 19:35	1
Bromoform	ND		1.0	0.64	ug/L			12/21/11 19:35	1
Bromomethane	ND		1.0	0.41	ug/L			12/21/11 19:35	1
2-Butanone (MEK)	ND		10	0.57	ug/L			12/21/11 19:35	1
Carbon disulfide	ND		1.0	0.13	ug/L			12/21/11 19:35	1
Carbon tetrachloride	ND		1.0	0.13	ug/L			12/21/11 19:35	1
Chlorobenzene	ND		1.0	0.15	ug/L			12/21/11 19:35	1
Chloroethane	ND		1.0	0.29	ug/L			12/21/11 19:35	1
Chloroform	ND		1.0	0.16	ug/L			12/21/11 19:35	1
Chloromethane	ND		1.0	0.30	ug/L			12/21/11 19:35	1
1,1-Dichloroethane	ND		1.0	0.15	ug/L			12/21/11 19:35	1
1,2-Dichloroethane	ND		1.0	0.22	ug/L			12/21/11 19:35	1
1,1-Dichloroethene	ND		1.0	0.19	ug/L			12/21/11 19:35	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			12/21/11 19:35	1
cis-1,3-Dichloropropene	ND		1.0	0.14	ug/L			12/21/11 19:35	1
trans-1,3-Dichloropropene	ND		1.0	0.19	ug/L			12/21/11 19:35	1
Ethylbenzene	ND		1.0	0.17	ug/L			12/21/11 19:35	1
2-Hexanone	ND		10	0.41	ug/L			12/21/11 19:35	1
Methylene Chloride	ND		1.0	0.33	ug/L			12/21/11 19:35	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.32	ug/L			12/21/11 19:35	1
Styrene	ND		1.0	0.11	ug/L			12/21/11 19:35	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.18	ug/L			12/21/11 19:35	1
Tetrachloroethene	ND		1.0	0.29	ug/L			12/21/11 19:35	1
Toluene	ND		1.0	0.13	ug/L			12/21/11 19:35	1
Trichloroethene	ND		1.0	0.17	ug/L			12/21/11 19:35	1
Vinyl chloride	ND		1.0	0.22	ug/L			12/21/11 19:35	1
Xylenes, Total	ND		2.0	0.28	ug/L			12/21/11 19:35	1
1,1,1-Trichloroethane	ND		1.0	0.22	ug/L			12/21/11 19:35	1
1,1,2-Trichloroethane	ND		1.0	0.27	ug/L			12/21/11 19:35	1
Cyclohexane	ND		1.0	0.12	ug/L			12/21/11 19:35	1
1,2-Dibromo-3-Chloropropane	ND		2.0	0.67	ug/L			12/21/11 19:35	1
Ethylene Dibromide	ND		1.0	0.24	ug/L			12/21/11 19:35	1
Dichlorodifluoromethane	ND		1.0	0.31	ug/L			12/21/11 19:35	1
cis-1,2-Dichloroethene	ND		1.0	0.17	ug/L			12/21/11 19:35	1
trans-1,2-Dichloroethene	ND		1.0	0.19	ug/L			12/21/11 19:35	1
Isopropylbenzene	ND		1.0	0.13	ug/L			12/21/11 19:35	1
Methyl acetate	ND		10	0.38	ug/L			12/21/11 19:35	1
Methyl tert-butyl ether	ND		5.0	0.17	ug/L			12/21/11 19:35	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.28	ug/L			12/21/11 19:35	1
1,2,4-Trichlorobenzene	ND		1.0	0.15	ug/L			12/21/11 19:35	1
1,2-Dichlorobenzene	ND		1.0	0.13	ug/L			12/21/11 19:35	1
1,3-Dichlorobenzene	ND		1.0	0.14	ug/L			12/21/11 19:35	1
1,4-Dichlorobenzene	ND		1.0	0.13	ug/L			12/21/11 19:35	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			12/21/11 19:35	1
Chlorodibromomethane	ND		1.0	0.18	ug/L			12/21/11 19:35	1
Methylcyclohexane	ND		1.0	0.13	ug/L			12/21/11 19:35	1

Client Sample Results

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6863-1

Client Sample ID: TRIP BLANK

Date Collected: 12/13/11 13:30
Date Received: 12/14/11 09:25

Lab Sample ID: 240-6863-1

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	107		63 - 129		12/21/11 19:35	1
4-Bromofluorobenzene (Surr)	89		66 - 117		12/21/11 19:35	1
Toluene-d8 (Surr)	99		74 - 115		12/21/11 19:35	1
Dibromofluoromethane (Surr)	107		75 - 121		12/21/11 19:35	1

Client Sample Results

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6863-1

Client Sample ID: FIELD BLANK

Date Collected: 12/13/11 13:34
Date Received: 12/14/11 09:25

Lab Sample ID: 240-6863-2

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10	1.1	ug/L			12/21/11 19:56	1
Benzene	ND		1.0	0.13	ug/L			12/21/11 19:56	1
Dichlorobromomethane	ND		1.0	0.15	ug/L			12/21/11 19:56	1
Bromoform	ND		1.0	0.64	ug/L			12/21/11 19:56	1
Bromomethane	ND		1.0	0.41	ug/L			12/21/11 19:56	1
2-Butanone (MEK)	ND		10	0.57	ug/L			12/21/11 19:56	1
Carbon disulfide	ND		1.0	0.13	ug/L			12/21/11 19:56	1
Carbon tetrachloride	ND		1.0	0.13	ug/L			12/21/11 19:56	1
Chlorobenzene	ND		1.0	0.15	ug/L			12/21/11 19:56	1
Chloroethane	ND		1.0	0.29	ug/L			12/21/11 19:56	1
Chloroform	0.45	J	1.0	0.16	ug/L			12/21/11 19:56	1
Chloromethane	ND		1.0	0.30	ug/L			12/21/11 19:56	1
1,1-Dichloroethane	ND		1.0	0.15	ug/L			12/21/11 19:56	1
1,2-Dichloroethane	ND		1.0	0.22	ug/L			12/21/11 19:56	1
1,1-Dichloroethene	ND		1.0	0.19	ug/L			12/21/11 19:56	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			12/21/11 19:56	1
cis-1,3-Dichloropropene	ND		1.0	0.14	ug/L			12/21/11 19:56	1
trans-1,3-Dichloropropene	ND		1.0	0.19	ug/L			12/21/11 19:56	1
Ethylbenzene	ND		1.0	0.17	ug/L			12/21/11 19:56	1
2-Hexanone	ND		10	0.41	ug/L			12/21/11 19:56	1
Methylene Chloride	3.1	B	1.0	0.33	ug/L			12/21/11 19:56	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.32	ug/L			12/21/11 19:56	1
Styrene	ND		1.0	0.11	ug/L			12/21/11 19:56	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.18	ug/L			12/21/11 19:56	1
Tetrachloroethene	ND		1.0	0.29	ug/L			12/21/11 19:56	1
Toluene	ND		1.0	0.13	ug/L			12/21/11 19:56	1
Trichloroethene	ND		1.0	0.17	ug/L			12/21/11 19:56	1
Vinyl chloride	ND		1.0	0.22	ug/L			12/21/11 19:56	1
Xylenes, Total	ND		2.0	0.28	ug/L			12/21/11 19:56	1
1,1,1-Trichloroethane	ND		1.0	0.22	ug/L			12/21/11 19:56	1
1,1,2-Trichloroethane	ND		1.0	0.27	ug/L			12/21/11 19:56	1
Cyclohexane	ND		1.0	0.12	ug/L			12/21/11 19:56	1
1,2-Dibromo-3-Chloropropane	ND		2.0	0.67	ug/L			12/21/11 19:56	1
Ethylene Dibromide	ND		1.0	0.24	ug/L			12/21/11 19:56	1
Dichlorodifluoromethane	ND		1.0	0.31	ug/L			12/21/11 19:56	1
cis-1,2-Dichloroethene	ND		1.0	0.17	ug/L			12/21/11 19:56	1
trans-1,2-Dichloroethene	ND		1.0	0.19	ug/L			12/21/11 19:56	1
Isopropylbenzene	ND		1.0	0.13	ug/L			12/21/11 19:56	1
Methyl acetate	ND		10	0.38	ug/L			12/21/11 19:56	1
Methyl tert-butyl ether	ND		5.0	0.17	ug/L			12/21/11 19:56	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.28	ug/L			12/21/11 19:56	1
1,2,4-Trichlorobenzene	ND		1.0	0.15	ug/L			12/21/11 19:56	1
1,2-Dichlorobenzene	ND		1.0	0.13	ug/L			12/21/11 19:56	1
1,3-Dichlorobenzene	ND		1.0	0.14	ug/L			12/21/11 19:56	1
1,4-Dichlorobenzene	ND		1.0	0.13	ug/L			12/21/11 19:56	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			12/21/11 19:56	1
Chlorodibromomethane	ND		1.0	0.18	ug/L			12/21/11 19:56	1
Methylcyclohexane	ND		1.0	0.13	ug/L			12/21/11 19:56	1

Client Sample Results

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6863-1

Client Sample ID: FIELD BLANK

Date Collected: 12/13/11 13:34
Date Received: 12/14/11 09:25

Lab Sample ID: 240-6863-2

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		63 - 129		12/21/11 19:56	1
4-Bromofluorobenzene (Surr)	88		66 - 117		12/21/11 19:56	1
Toluene-d8 (Surr)	101		74 - 115		12/21/11 19:56	1
Dibromofluoromethane (Surr)	106		75 - 121		12/21/11 19:56	1

Client Sample Results

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6863-1

Client Sample ID: SOUTH SEEP

Date Collected: 12/13/11 14:29
Date Received: 12/14/11 09:25

Lab Sample ID: 240-6863-3

Matrix: Water

Method: 6010B - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	91	J B	200	0.67	ug/L		12/16/11 07:01	12/20/11 18:56	1
Cadmium	ND		2.0	0.66	ug/L		12/16/11 07:01	12/20/11 18:56	1
Chromium	9.4		5.0	2.2	ug/L		12/16/11 07:01	12/21/11 19:16	1
Silver	ND	L	5.0	2.2	ug/L		12/16/11 07:01	12/20/11 18:56	1
Arsenic	ND		10	3.2	ug/L		12/16/11 07:01	12/20/11 18:56	1
Lead	17		3.0	1.9	ug/L		12/16/11 07:01	12/20/11 18:56	1
Selenium	ND		5.0	4.1	ug/L		12/16/11 07:01	12/20/11 18:56	1
Iron	16000		100	81	ug/L		12/16/11 07:01	12/20/11 18:56	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.12	ug/L		12/19/11 14:15	12/20/11 13:52	1

Client Sample Results

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6863-1

Client Sample ID: SOUTH SEEP

Date Collected: 12/13/11 14:31
Date Received: 12/14/11 09:25

Lab Sample ID: 240-6863-4
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	1.2	J	10	1.1	ug/L			12/21/11 20:17	1
Benzene	0.92	J	1.0	0.13	ug/L			12/21/11 20:17	1
Dichlorobromomethane	ND		1.0	0.15	ug/L			12/21/11 20:17	1
Bromoform	ND		1.0	0.64	ug/L			12/21/11 20:17	1
Bromomethane	ND		1.0	0.41	ug/L			12/21/11 20:17	1
2-Butanone (MEK)	ND		10	0.57	ug/L			12/21/11 20:17	1
Carbon disulfide	ND		1.0	0.13	ug/L			12/21/11 20:17	1
Carbon tetrachloride	ND		1.0	0.13	ug/L			12/21/11 20:17	1
Chlorobenzene	ND		1.0	0.15	ug/L			12/21/11 20:17	1
Chloroethane	ND		1.0	0.29	ug/L			12/21/11 20:17	1
Chloroform	ND		1.0	0.16	ug/L			12/21/11 20:17	1
Chloromethane	ND		1.0	0.30	ug/L			12/21/11 20:17	1
1,1-Dichloroethane	ND		1.0	0.15	ug/L			12/21/11 20:17	1
1,2-Dichloroethane	ND		1.0	0.22	ug/L			12/21/11 20:17	1
1,1-Dichloroethene	ND		1.0	0.19	ug/L			12/21/11 20:17	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			12/21/11 20:17	1
cis-1,3-Dichloropropene	ND		1.0	0.14	ug/L			12/21/11 20:17	1
trans-1,3-Dichloropropene	ND		1.0	0.19	ug/L			12/21/11 20:17	1
Ethylbenzene	ND		1.0	0.17	ug/L			12/21/11 20:17	1
2-Hexanone	ND		10	0.41	ug/L			12/21/11 20:17	1
Methylene Chloride	ND		1.0	0.33	ug/L			12/21/11 20:17	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.32	ug/L			12/21/11 20:17	1
Styrene	ND		1.0	0.11	ug/L			12/21/11 20:17	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.18	ug/L			12/21/11 20:17	1
Tetrachloroethene	ND		1.0	0.29	ug/L			12/21/11 20:17	1
Toluene	ND		1.0	0.13	ug/L			12/21/11 20:17	1
Trichloroethene	0.64	J	1.0	0.17	ug/L			12/21/11 20:17	1
Vinyl chloride	18		1.0	0.22	ug/L			12/21/11 20:17	1
Xylenes, Total	ND		2.0	0.28	ug/L			12/21/11 20:17	1
1,1,1-Trichloroethane	ND		1.0	0.22	ug/L			12/21/11 20:17	1
1,1,2-Trichloroethane	ND		1.0	0.27	ug/L			12/21/11 20:17	1
Cyclohexane	ND		1.0	0.12	ug/L			12/21/11 20:17	1
1,2-Dibromo-3-Chloropropane	ND		2.0	0.67	ug/L			12/21/11 20:17	1
Ethylene Dibromide	ND		1.0	0.24	ug/L			12/21/11 20:17	1
Dichlorodifluoromethane	ND		1.0	0.31	ug/L			12/21/11 20:17	1
cis-1,2-Dichloroethene	3.2		1.0	0.17	ug/L			12/21/11 20:17	1
trans-1,2-Dichloroethene	ND		1.0	0.19	ug/L			12/21/11 20:17	1
Isopropylbenzene	ND		1.0	0.13	ug/L			12/21/11 20:17	1
Methyl acetate	ND		10	0.38	ug/L			12/21/11 20:17	1
Methyl tert-butyl ether	ND		5.0	0.17	ug/L			12/21/11 20:17	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.28	ug/L			12/21/11 20:17	1
1,2,4-Trichlorobenzene	ND		1.0	0.15	ug/L			12/21/11 20:17	1
1,2-Dichlorobenzene	ND		1.0	0.13	ug/L			12/21/11 20:17	1
1,3-Dichlorobenzene	ND		1.0	0.14	ug/L			12/21/11 20:17	1
1,4-Dichlorobenzene	ND		1.0	0.13	ug/L			12/21/11 20:17	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			12/21/11 20:17	1
Chlorodibromomethane	ND		1.0	0.18	ug/L			12/21/11 20:17	1
Methylcyclohexane	ND		1.0	0.13	ug/L			12/21/11 20:17	1

Client Sample Results

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6863-1

Client Sample ID: SOUTH SEEP

Date Collected: 12/13/11 14:31
Date Received: 12/14/11 09:25

Lab Sample ID: 240-6863-4

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	104		63 - 129		12/21/11 20:17	1
4-Bromofluorobenzene (Surr)	86		66 - 117		12/21/11 20:17	1
Toluene-d8 (Surr)	104		74 - 115		12/21/11 20:17	1
Dibromofluoromethane (Surr)	106		75 - 121		12/21/11 20:17	1

Surrogate Summary

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6863-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(63-129)	(66-117)	(74-115)	(75-121)
240-6863-1	TRIP BLANK	107	89	99	107
240-6863-2	FIELD BLANK	103	88	101	106
240-6863-4	SOUTH SEEP	104	86	104	106
LCS 240-27716/4	Lab Control Sample	100	102	105	100
MB 240-27716/5	Method Blank	100	89	100	102

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

QC Sample Results

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6863-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-27716/5
Matrix: Water
Analysis Batch: 27716

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10	1.1	ug/L			12/21/11 12:44	1
Benzene	ND		1.0	0.13	ug/L			12/21/11 12:44	1
Dichlorobromomethane	ND		1.0	0.15	ug/L			12/21/11 12:44	1
Bromoform	ND		1.0	0.64	ug/L			12/21/11 12:44	1
Bromomethane	ND		1.0	0.41	ug/L			12/21/11 12:44	1
2-Butanone (MEK)	ND		10	0.57	ug/L			12/21/11 12:44	1
Carbon disulfide	ND		1.0	0.13	ug/L			12/21/11 12:44	1
Carbon tetrachloride	ND		1.0	0.13	ug/L			12/21/11 12:44	1
Chlorobenzene	ND		1.0	0.15	ug/L			12/21/11 12:44	1
Chloroethane	ND		1.0	0.29	ug/L			12/21/11 12:44	1
Chloroform	ND		1.0	0.16	ug/L			12/21/11 12:44	1
Chloromethane	ND		1.0	0.30	ug/L			12/21/11 12:44	1
1,1-Dichloroethane	ND		1.0	0.15	ug/L			12/21/11 12:44	1
1,2-Dichloroethane	ND		1.0	0.22	ug/L			12/21/11 12:44	1
1,1-Dichloroethene	ND		1.0	0.19	ug/L			12/21/11 12:44	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			12/21/11 12:44	1
cis-1,3-Dichloropropene	ND		1.0	0.14	ug/L			12/21/11 12:44	1
trans-1,3-Dichloropropene	ND		1.0	0.19	ug/L			12/21/11 12:44	1
Ethylbenzene	ND		1.0	0.17	ug/L			12/21/11 12:44	1
2-Hexanone	ND		10	0.41	ug/L			12/21/11 12:44	1
Methylene Chloride	0.394	J	1.0	0.33	ug/L			12/21/11 12:44	1
4-Methyl-2-pentanone (MIBK)	ND		10	0.32	ug/L			12/21/11 12:44	1
Styrene	ND		1.0	0.11	ug/L			12/21/11 12:44	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.18	ug/L			12/21/11 12:44	1
Tetrachloroethene	ND		1.0	0.29	ug/L			12/21/11 12:44	1
Toluene	ND		1.0	0.13	ug/L			12/21/11 12:44	1
Trichloroethene	ND		1.0	0.17	ug/L			12/21/11 12:44	1
Vinyl chloride	ND		1.0	0.22	ug/L			12/21/11 12:44	1
Xylenes, Total	ND		2.0	0.28	ug/L			12/21/11 12:44	1
1,1,1-Trichloroethane	ND		1.0	0.22	ug/L			12/21/11 12:44	1
1,1,2-Trichloroethane	ND		1.0	0.27	ug/L			12/21/11 12:44	1
Cyclohexane	ND		1.0	0.12	ug/L			12/21/11 12:44	1
1,2-Dibromo-3-Chloropropane	ND		2.0	0.67	ug/L			12/21/11 12:44	1
Ethylene Dibromide	ND		1.0	0.24	ug/L			12/21/11 12:44	1
Dichlorodifluoromethane	ND		1.0	0.31	ug/L			12/21/11 12:44	1
cis-1,2-Dichloroethene	ND		1.0	0.17	ug/L			12/21/11 12:44	1
trans-1,2-Dichloroethene	ND		1.0	0.19	ug/L			12/21/11 12:44	1
Isopropylbenzene	ND		1.0	0.13	ug/L			12/21/11 12:44	1
Methyl acetate	ND		10	0.38	ug/L			12/21/11 12:44	1
Methyl tert-butyl ether	ND		5.0	0.17	ug/L			12/21/11 12:44	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		1.0	0.28	ug/L			12/21/11 12:44	1
1,2,4-Trichlorobenzene	ND		1.0	0.15	ug/L			12/21/11 12:44	1
1,2-Dichlorobenzene	ND		1.0	0.13	ug/L			12/21/11 12:44	1
1,3-Dichlorobenzene	ND		1.0	0.14	ug/L			12/21/11 12:44	1
1,4-Dichlorobenzene	ND		1.0	0.13	ug/L			12/21/11 12:44	1
Trichlorofluoromethane	ND		1.0	0.21	ug/L			12/21/11 12:44	1
Chlorodibromomethane	ND		1.0	0.18	ug/L			12/21/11 12:44	1
Methylcyclohexane	ND		1.0	0.13	ug/L			12/21/11 12:44	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-27716/5
Matrix: Water
Analysis Batch: 27716

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		63 - 129		12/21/11 12:44	1
4-Bromofluorobenzene (Surr)	89		66 - 117		12/21/11 12:44	1
Toluene-d8 (Surr)	100		74 - 115		12/21/11 12:44	1
Dibromofluoromethane (Surr)	102		75 - 121		12/21/11 12:44	1

Lab Sample ID: LCS 240-27716/4
Matrix: Water
Analysis Batch: 27716

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	15.0		ug/L		75	43 - 136
Benzene	10.0	9.96		ug/L		100	83 - 112
Dichlorobromomethane	10.0	9.82		ug/L		98	72 - 121
Bromoform	10.0	8.57		ug/L		86	40 - 131
Bromomethane	10.0	9.59		ug/L		96	11 - 185
2-Butanone (MEK)	20.0	16.3		ug/L		82	60 - 126
Carbon disulfide	10.0	9.66		ug/L		97	62 - 142
Carbon tetrachloride	10.0	10.1		ug/L		101	66 - 128
Chlorobenzene	10.0	10.2		ug/L		102	85 - 110
Chloroethane	10.0	8.55		ug/L		86	25 - 153
Chloroform	10.0	10.2		ug/L		102	79 - 117
Chloromethane	10.0	7.87		ug/L		79	44 - 126
1,1-Dichloroethane	10.0	9.80		ug/L		98	82 - 115
1,2-Dichloroethane	10.0	10.3		ug/L		103	71 - 127
1,1-Dichloroethene	10.0	9.81		ug/L		98	78 - 131
1,2-Dichloropropane	10.0	9.88		ug/L		99	81 - 115
cis-1,3-Dichloropropene	10.0	8.66		ug/L		87	61 - 115
trans-1,3-Dichloropropene	10.0	9.45		ug/L		95	58 - 117
Ethylbenzene	10.0	10.2		ug/L		102	83 - 112
2-Hexanone	20.0	18.8		ug/L		94	55 - 133
Methylene Chloride	10.0	10.4		ug/L		104	66 - 131
4-Methyl-2-pentanone (MIBK)	20.0	17.5		ug/L		88	63 - 128
Styrene	10.0	10.5		ug/L		105	79 - 114
1,1,2,2-Tetrachloroethane	10.0	9.77		ug/L		98	68 - 118
Tetrachloroethene	10.0	10.2		ug/L		102	79 - 114
Toluene	10.0	10.4		ug/L		104	84 - 111
Trichloroethene	10.0	10.1		ug/L		101	76 - 117
Vinyl chloride	10.0	7.52		ug/L		75	53 - 127
Xylenes, Total	30.0	31.1		ug/L		104	83 - 112
1,1,1-Trichloroethane	10.0	9.69		ug/L		97	74 - 118
1,1,2-Trichloroethane	10.0	10.2		ug/L		102	80 - 112
Cyclohexane	10.0	8.59		ug/L		86	54 - 121
1,2-Dibromo-3-Chloropropane	10.0	8.23		ug/L		82	42 - 136
Ethylene Dibromide	10.0	10.1		ug/L		101	79 - 113
Dichlorodifluoromethane	10.0	5.78		ug/L		58	19 - 129
cis-1,2-Dichloroethene	10.0	9.80		ug/L		98	80 - 113
trans-1,2-Dichloroethene	10.0	9.95		ug/L		100	83 - 117
Isopropylbenzene	10.0	9.93		ug/L		99	75 - 114
Methyl acetate	10.0	8.76	J	ug/L		88	58 - 131

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-27716/4
Matrix: Water
Analysis Batch: 27716

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methyl tert-butyl ether	10.0	9.02		ug/L		90	52 - 144
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	10.6		ug/L		106	74 - 151
1,2,4-Trichlorobenzene	10.0	8.55		ug/L		86	48 - 135
1,2-Dichlorobenzene	10.0	9.58		ug/L		96	81 - 110
1,3-Dichlorobenzene	10.0	9.81		ug/L		98	80 - 110
1,4-Dichlorobenzene	10.0	9.62		ug/L		96	82 - 110
Trichlorofluoromethane	10.0	11.8		ug/L		118	49 - 157
Chlorodibromomethane	10.0	9.96		ug/L		100	64 - 119
Methylcyclohexane	10.0	8.97		ug/L		90	56 - 127
m-Xylene & p-Xylene	20.0	20.7		ug/L		104	83 - 113
o-Xylene	10.0	10.4		ug/L		104	83 - 113

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*63 - 129*
4-Bromofluorobenzene (Surr)	*102*		*66 - 117*
Toluene-d8 (Surr)	*105*		*74 - 115*
Dibromofluoromethane (Surr)	*100*		*75 - 121*

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 240-27122/1-A
Matrix: Water
Analysis Batch: 27648

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 27122

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	1.34	J	200	0.67	ug/L		12/16/11 06:53	12/20/11 15:58	1
Cadmium	ND		2.0	0.66	ug/L		12/16/11 06:53	12/20/11 15:58	1
Chromium	ND		5.0	2.2	ug/L		12/16/11 06:53	12/20/11 15:58	1
Silver	ND		5.0	2.2	ug/L		12/16/11 06:53	12/20/11 15:58	1
Arsenic	ND		10	3.2	ug/L		12/16/11 06:53	12/20/11 15:58	1
Lead	ND	L	3.0	1.9	ug/L		12/16/11 06:53	12/20/11 15:58	1
Selenium	ND		5.0	4.1	ug/L		12/16/11 06:53	12/20/11 15:58	1
Iron	ND		100	81	ug/L		12/16/11 06:53	12/20/11 15:58	1

Lab Sample ID: LCS 240-27122/2-A
Matrix: Water
Analysis Batch: 27648

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 27122

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Barium	2000	2060		ug/L		103	80 - 120
Cadmium	50.0	50.3		ug/L		101	80 - 120
Chromium	200	198		ug/L		99	80 - 120
Silver	50.0	50.5		ug/L		101	80 - 120
Arsenic	2000	1960		ug/L		98	80 - 120
Lead	500	494		ug/L		99	80 - 120
Selenium	2000	1990		ug/L		99	80 - 120
Iron	1000	999		ug/L		100	80 - 120

QC Sample Results

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6863-1

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 240-27353/1-A
Matrix: Water
Analysis Batch: 27597

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 27353

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.12	ug/L		12/19/11 14:15	12/20/11 13:18	1

Lab Sample ID: LCS 240-27353/2-A
Matrix: Water
Analysis Batch: 27597

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 27353

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	4.48		ug/L		90	81 - 123

QC Association Summary

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6863-1

GC/MS VOA

Analysis Batch: 27716

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-6863-1	TRIP BLANK	Total/NA	Water	8260B	
240-6863-2	FIELD BLANK	Total/NA	Water	8260B	
240-6863-4	SOUTH SEEP	Total/NA	Water	8260B	
LCS 240-27716/4	Lab Control Sample	Total/NA	Water	8260B	
MB 240-27716/5	Method Blank	Total/NA	Water	8260B	

Metals

Prep Batch: 27122

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-6863-3	SOUTH SEEP	Total Recoverable	Water	3005A	
LCS 240-27122/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
MB 240-27122/1-A	Method Blank	Total Recoverable	Water	3005A	

Prep Batch: 27353

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-6863-3	SOUTH SEEP	Total/NA	Water	7470A	
LCS 240-27353/2-A	Lab Control Sample	Total/NA	Water	7470A	
MB 240-27353/1-A	Method Blank	Total/NA	Water	7470A	

Analysis Batch: 27597

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-6863-3	SOUTH SEEP	Total/NA	Water	7470A	27353
LCS 240-27353/2-A	Lab Control Sample	Total/NA	Water	7470A	27353
MB 240-27353/1-A	Method Blank	Total/NA	Water	7470A	27353

Analysis Batch: 27648

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-6863-3	SOUTH SEEP	Total Recoverable	Water	6010B	27122
LCS 240-27122/2-A	Lab Control Sample	Total Recoverable	Water	6010B	27122
MB 240-27122/1-A	Method Blank	Total Recoverable	Water	6010B	27122

Analysis Batch: 27915

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-6863-3	SOUTH SEEP	Total Recoverable	Water	6010B	27122

Lab Chronicle

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6863-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-6863-1
Matrix: Water

Date Collected: 12/13/11 13:30
Date Received: 12/14/11 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	27716	12/21/11 19:35	RQ	TAL NC

Client Sample ID: FIELD BLANK

Lab Sample ID: 240-6863-2
Matrix: Water

Date Collected: 12/13/11 13:34
Date Received: 12/14/11 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	27716	12/21/11 19:56	RQ	TAL NC

Client Sample ID: SOUTH SEEP

Lab Sample ID: 240-6863-3
Matrix: Water

Date Collected: 12/13/11 14:29
Date Received: 12/14/11 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7470A			27353	12/19/11 14:15	LM	TAL NC
Total/NA	Analysis	7470A		1	27597	12/20/11 13:52	AS	TAL NC
Total Recoverable	Prep	3005A			27122	12/16/11 07:01	LM	TAL NC
Total Recoverable	Analysis	6010B		1	27648	12/20/11 18:56	BD	TAL NC
Total Recoverable	Analysis	6010B		1	27915	12/21/11 19:16	BD	TAL NC

Client Sample ID: SOUTH SEEP

Lab Sample ID: 240-6863-4
Matrix: Water

Date Collected: 12/13/11 14:31
Date Received: 12/14/11 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	27716	12/21/11 20:17	RQ	TAL NC

Laboratory References:

TAL NC = TestAmerica North Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Certification Summary

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6863-1

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica North Canton	ACLASS	DoD ELAP		ADE-1437
TestAmerica North Canton	California	NELAC	9	01144CA
TestAmerica North Canton	Connecticut	State Program	1	PH-0590
TestAmerica North Canton	Florida	NELAC	4	E87225
TestAmerica North Canton	Georgia	Georgia EPD	4	N/A
TestAmerica North Canton	Illinois	NELAC	5	200004
TestAmerica North Canton	Kansas	NELAC	7	E-10336
TestAmerica North Canton	Kentucky	State Program	4	58
TestAmerica North Canton	Minnesota	NELAC	5	039-999-348
TestAmerica North Canton	Nevada	State Program	9	OH-000482008A
TestAmerica North Canton	New Jersey	NELAC	2	OH001
TestAmerica North Canton	New York	NELAC	2	10975
TestAmerica North Canton	Ohio	OVAP	5	CL0024
TestAmerica North Canton	Pennsylvania	NELAC	3	68-00340
TestAmerica North Canton	USDA	USDA		P330-11-00328
TestAmerica North Canton	Virginia	NELAC Secondary AB	3	460175
TestAmerica North Canton	West Virginia	West Virginia DEP	3	210
TestAmerica North Canton	Wisconsin	State Program	5	999518190

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

Chain of Custody Record

TestAmerica Laboratory location: Test America - North Canton

Regulatory program: ☐ DW ☐ NPDES ☒ RCRA ☐ Other

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TestAmerica Laboratories, Inc.

Client Contact			
Company Name: Brown + Caldwell	Client Project Manager: Jim Peeples	Site Contact: Bill Foster	Lab Contact: Alesia Danford
Address: 4700 Lakehurst Ct, Suite 200	Telephone: 614-410-3081	Telephone: 614-312-6299	Telephone: 330-497-9396
City/State/Zip: Dublin, OH 43016	Email: jpeeples@brwncald.com		
Phone: 614-410-6144			
Project Name: Ford Rd - Phase 1	Method of Shipment/Carrier: Fed EX		
Project Number: 141617	Shipping/Tracking No: 8744 4314 5430		
PO#			

COC No: 022020

1 of 1 COCs

Analysis Turnaround Time (in BUS days)

TAT if different from below

☐ 3 weeks
☐ 2 weeks
☐ 1 week
☒ 2 days — South Seep + 8 oz.

Hold 2 oz til 8 oz results

For lab use only
Walk-in client ☐
Lab pickup ☐
Lab sampling ☐
Job/SDG No.:

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	Analyses: EPA 8260B	Total Metals	Sample Specific Notes / Special Instructions:
FR-SS-3-A-1	12/13/11	1326				X							X			G	X		2 containers
FR-SS-3-A-2	12/13/11	1334				X							X			G	X		2 "
FR-SS-3-A-3	12/13/11	1338				X							X			G	X		2 "
FR-SS-3-A-4	12/13/11	1342				X							X			G	X		2 "
Trip Blank	12/13/11	1370		X						X						G	X		1 "
Field Blank	12/13/11	1330		X						X						G	X		1 "
South Seep	12/13/11	1429		X					X							G		X	3 "
South Seep	12/13/11	1431		X						X						G	X		2 "

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☐ Disposal By Lab ☐ Archive For _____ Months

Special Instructions/QC Requirements & Comments:
Hold 2 oz until we have the results for the 8 oz. All South Seep = 2 day Turnaround Time

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Bill [illegible]	Brown + Caldwell	12/13/11 1710			
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by: [illegible]	Company: TAL	Date/Time: 12/14/11 - 9:25

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TAL 0018- 1 (04/10)

12/27/2011

TestAmerica Cooler Receipt Form/Narrative **Lot Number:** #63653
North Canton Facility

Client Brown + Caldwell Project _____ By: [signature] (Signature)
Cooler Received on 12/14/11 Opened on 12/14/11
FedEx UPS DHL FAS Stetson Client Drop Off TestAmerica Courier Other _____
TestAmerica Cooler # _____ Multiple Coolers Foam Box Client Cooler Other _____

1. Were custody seals on the outside of the cooler(s)? Yes No Intact? Yes No NA
   If YES, Quantity 2 Quantity Unsalvageable _____
   Were custody seals on the outside of cooler(s) signed and dated? Yes No NA
   Were custody seals on the bottle(s)? Yes No
   If YES, are there any exceptions? _____
2. Shippers' packing slip attached to the cooler(s)? Yes No
3. Did custody papers accompany the sample(s)? Yes No Relinquished by client? Yes No
4. Were the custody papers signed in the appropriate place? Yes No
5. Packing material used: Bubble Wrap Foam None Other _____
6. Cooler temperature upon receipt 1.5 °C See back of form for multiple coolers/temps
   METHOD: IR Other _____
   COOLANT: Wet Ice Blue Ice Dry Ice Water None
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were sample(s) at the correct pH upon receipt? Yes No NA
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Were air bubbles >6 mm in any VOA vials? Yes No NA
12. Sufficient quantity received to perform indicated analyses? Yes No
13. Was a trip blank present in the cooler(s)? Yes No Were VOAs on the COC? Yes No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other
Concerning

14. CHAIN OF CUSTODY

The following discrepancies occurred:

_____

15. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) 3 x 250 ml were further preserved in Sample Receiving to meet recommended pH level(s). *Nitric Acid Lot# 110410-HNO_3; Sulfuric Acid Lot# 041911-H_2SO_4; Sodium Hydroxide Lot# 121809 -NaOH; Hydrochloric Acid Lot# 041911-HCl; Sodium Hydroxide and Zinc Acetate Lot# 100108-$(CH_3COO)_2ZN/NaOH$.* What time was preservative added to sample(s)? _____

Client ID	pH	Date	Initials
Seep 14:29	<2 <2 <2	12/14/11	[initials]

TestAmerica Cooler Receipt Form/Narrative
North Canton Facility

Client ID	pH	Date	Initials

Cooler #	Temp. °C	Method	Coolant

Discrepancies Cont'd:

Login Sample Receipt Checklist

Client: Brown and Caldwell

Job Number: 240-6863-1

Login Number: 6863
List Number: 1
Creator: Gambone, Mike

List Source: TestAmerica North Canton

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.5
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica North Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-6860-1
Client Project/Site: FORD RD.-PHASE 1
Revision: 1

For:
Brown and Caldwell
4700 Lakehurst Court
Suite 100
Dublin, Ohio 43016

Attn: Mr. Jim Peeples

Alesia M. Danford

Authorized for release by:
1/4/2012 5:26:40 PM

Alesia Danford
Project Manager II
alesia.danford@testamericainc.com

LINKS

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Results relate only to the items tested and the sample(s) as received by the laboratory.

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Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 240-6860-1

Laboratory: TestAmerica North Canton

Narrative

CASE NARRATIVE

Client: Brown and Caldwell

Project: FORD RD.-PHASE 1

Report Number: 240-6860-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica North Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT
The samples were received on 12/14/2011; the samples arrived in good condition, properly preserved and on ice. The temperature of the cooler at receipt was 1.5 C.

TCLP VOLATILE ORGANIC COMPOUNDS (GC-MS)
Samples FR-SS-3-A-1 (240-6860-1), FR-SS-3-A-2 (240-6860-2), FR-SS-3-A-3 (240-6860-3) and FR-SS-3-A-4 (240-6860-4) were analyzed for TCLP volatile organic compounds (GC-MS) in accordance with EPA SW-846 Methods 1311/8260B. The samples were leached on 12/15/2011 and analyzed on 12/16/2011.

No difficulties were encountered during the VOCs analyses.

All quality control parameters were within the acceptance limits.

PERCENT SOLIDS
Samples FR-SS-3-A-1 (240-6860-1), FR-SS-3-A-2 (240-6860-2), FR-SS-3-A-3 (240-6860-3) and FR-SS-3-A-4 (240-6860-4) were analyzed for percent solids in accordance with EPA Method 160.3 MOD. The samples were analyzed on 12/14/2011.

No difficulties were encountered during the % solids analyses.

Job ID: 240-6860-1 (Continued)

Laboratory: TestAmerica North Canton (Continued)

All quality control parameters were within the acceptance limits.

Method Summary

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6860-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL NC
Moisture	Percent Moisture	EPA	TAL NC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL NC = TestAmerica North Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6860-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-6860-1	FR-SS-3-A-1	Solid	12/13/11 13:26	12/14/11 09:25
240-6860-2	FR-SS-3-A-2	Solid	12/13/11 13:34	12/14/11 09:25
240-6860-3	FR-SS-3-A-3	Solid	12/13/11 13:38	12/14/11 09:25
240-6860-4	FR-SS-3-A-4	Solid	12/13/11 13:42	12/14/11 09:25

Detection Summary

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6860-1

Client Sample ID: FR-SS-3-A-1 — Lab Sample ID: 240-6860-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.0885		0.0250		mg/L	1		8260B	TCLP

Client Sample ID: FR-SS-3-A-2 — Lab Sample ID: 240-6860-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.139		0.0250		mg/L	1		8260B	TCLP

Client Sample ID: FR-SS-3-A-3 — Lab Sample ID: 240-6860-3

No Detections

Client Sample ID: FR-SS-3-A-4 — Lab Sample ID: 240-6860-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.199		0.0250		mg/L	1		8260B	TCLP

Client Sample Results

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6860-1

Client Sample ID: FR-SS-3-A-1

Date Collected: 12/13/11 13:26
Date Received: 12/14/11 09:25

Lab Sample ID: 240-6860-1

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	<0.0250		0.0250		mg/L			12/16/11 19:09	1
1,2-Dichloroethane	<0.0250		0.0250		mg/L			12/16/11 19:09	1
2-Butanone (MEK)	<0.250		0.250		mg/L			12/16/11 19:09	1
Benzene	<0.0250		0.0250		mg/L			12/16/11 19:09	1
Carbon tetrachloride	<0.0250		0.0250		mg/L			12/16/11 19:09	1
Chlorobenzene	<0.0250		0.0250		mg/L			12/16/11 19:09	1
Chloroform	<0.0250		0.0250		mg/L			12/16/11 19:09	1
Tetrachloroethene	<0.0250		0.0250		mg/L			12/16/11 19:09	1
Trichloroethene	<0.0250		0.0250		mg/L			12/16/11 19:09	1
Vinyl chloride	**0.0885**		0.0250		mg/L			12/16/11 19:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*80 - 121*		*12/16/11 19:09*	*1*
4-Bromofluorobenzene (Surr)	*91*		*70 - 124*		*12/16/11 19:09*	*1*
Toluene-d8 (Surr)	*111*		*90 - 115*		*12/16/11 19:09*	*1*
Dibromofluoromethane (Surr)	*106*		*84 - 128*		*12/16/11 19:09*	*1*

Client Sample Results

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6860-1

Client Sample ID: FR-SS-3-A-2

Date Collected: 12/13/11 13:34
Date Received: 12/14/11 09:25

Lab Sample ID: 240-6860-2

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	<0.0250		0.0250		mg/L			12/16/11 19:34	1
1,2-Dichloroethane	<0.0250		0.0250		mg/L			12/16/11 19:34	1
2-Butanone (MEK)	<0.250		0.250		mg/L			12/16/11 19:34	1
Benzene	<0.0250		0.0250		mg/L			12/16/11 19:34	1
Carbon tetrachloride	<0.0250		0.0250		mg/L			12/16/11 19:34	1
Chlorobenzene	<0.0250		0.0250		mg/L			12/16/11 19:34	1
Chloroform	<0.0250		0.0250		mg/L			12/16/11 19:34	1
Tetrachloroethene	<0.0250		0.0250		mg/L			12/16/11 19:34	1
Trichloroethene	<0.0250		0.0250		mg/L			12/16/11 19:34	1
Vinyl chloride	**0.139**		0.0250		mg/L			12/16/11 19:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*115*		*80 - 121*		*12/16/11 19:34*	*1*
4-Bromofluorobenzene (Surr)	*93*		*70 - 124*		*12/16/11 19:34*	*1*
Toluene-d8 (Surr)	*113*		*90 - 115*		*12/16/11 19:34*	*1*
Dibromofluoromethane (Surr)	*105*		*84 - 128*		*12/16/11 19:34*	*1*

Client Sample Results

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6860-1

Client Sample ID: FR-SS-3-A-3

Date Collected: 12/13/11 13:38
Date Received: 12/14/11 09:25

Lab Sample ID: 240-6860-3

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	<0.0250		0.0250		mg/L			12/16/11 19:58	1
1,2-Dichloroethane	<0.0250		0.0250		mg/L			12/16/11 19:58	1
2-Butanone (MEK)	<0.250		0.250		mg/L			12/16/11 19:58	1
Benzene	<0.0250		0.0250		mg/L			12/16/11 19:58	1
Carbon tetrachloride	<0.0250		0.0250		mg/L			12/16/11 19:58	1
Chlorobenzene	<0.0250		0.0250		mg/L			12/16/11 19:58	1
Chloroform	<0.0250		0.0250		mg/L			12/16/11 19:58	1
Tetrachloroethene	<0.0250		0.0250		mg/L			12/16/11 19:58	1
Trichloroethene	<0.0250		0.0250		mg/L			12/16/11 19:58	1
Vinyl chloride	<0.0250		0.0250		mg/L			12/16/11 19:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*113*		*80 - 121*		*12/16/11 19:58*	*1*
4-Bromofluorobenzene (Surr)	*94*		*70 - 124*		*12/16/11 19:58*	*1*
Toluene-d8 (Surr)	*112*		*90 - 115*		*12/16/11 19:58*	*1*
Dibromofluoromethane (Surr)	*106*		*84 - 128*		*12/16/11 19:58*	*1*

Client Sample Results

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6860-1

Client Sample ID: FR-SS-3-A-4

Date Collected: 12/13/11 13:42
Date Received: 12/14/11 09:25

Lab Sample ID: 240-6860-4

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	<0.0250		0.0250		mg/L			12/16/11 20:23	1
1,2-Dichloroethane	<0.0250		0.0250		mg/L			12/16/11 20:23	1
2-Butanone (MEK)	<0.250		0.250		mg/L			12/16/11 20:23	1
Benzene	<0.0250		0.0250		mg/L			12/16/11 20:23	1
Carbon tetrachloride	<0.0250		0.0250		mg/L			12/16/11 20:23	1
Chlorobenzene	<0.0250		0.0250		mg/L			12/16/11 20:23	1
Chloroform	<0.0250		0.0250		mg/L			12/16/11 20:23	1
Tetrachloroethene	<0.0250		0.0250		mg/L			12/16/11 20:23	1
Trichloroethene	<0.0250		0.0250		mg/L			12/16/11 20:23	1
Vinyl chloride	**0.199**		0.0250		mg/L			12/16/11 20:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*114*		*80 - 121*		*12/16/11 20:23*	*1*
4-Bromofluorobenzene (Surr)	*92*		*70 - 124*		*12/16/11 20:23*	*1*
Toluene-d8 (Surr)	*113*		*90 - 115*		*12/16/11 20:23*	*1*
Dibromofluoromethane (Surr)	*105*		*84 - 128*		*12/16/11 20:23*	*1*

Surrogate Summary

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6860-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(80-121)	(70-124)	(90-115)	(84-128)
LCS 240-27241/6	Lab Control Sample	119	97	113	107

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid

Prep Type: TCLP

		Percent Surrogate Recovery (Acceptance Limits)			
		12DCE	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(80-121)	(70-124)	(90-115)	(84-128)
240-6860-1	FR-SS-3-A-1	115	91	111	106
240-6860-2	FR-SS-3-A-2	115	93	113	105
240-6860-3	FR-SS-3-A-3	113	94	112	106
240-6860-4	FR-SS-3-A-4	114	92	113	105
240-6860-4 MS	FR-SS-3-A-4	119	94	112	105
240-6860-4 MSD	FR-SS-3-A-4	111	96	113	107
LB 240-27160/1-A MB	Method Blank	118	92	112	106

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

QC Sample Results

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6860-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: LCS 240-27241/6
Matrix: Solid
Analysis Batch: 27241

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	1.00	1.100		mg/L		110	71 - 133
1,2-Dichloroethane	1.00	1.010		mg/L		101	81 - 114
2-Butanone (MEK)	2.00	2.060		mg/L		103	49 - 120
Benzene	1.00	0.9200		mg/L		92	84 - 120
Carbon tetrachloride	1.00	0.7550		mg/L		76	54 - 122
Chlorobenzene	1.00	0.9500		mg/L		95	86 - 111
Chloroform	1.00	1.015		mg/L		102	87 - 123
Tetrachloroethene	1.00	0.9100		mg/L		91	79 - 134
Trichloroethene	1.00	0.9300		mg/L		93	78 - 130
Vinyl chloride	1.00	0.9600		mg/L		96	56 - 111

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*119*		*80 - 121*
4-Bromofluorobenzene (Surr)	*97*		*70 - 124*
Toluene-d8 (Surr)	*113*		*90 - 115*
Dibromofluoromethane (Surr)	*107*		*84 - 128*

Lab Sample ID: LB 240-27160/1-A MB
Matrix: Solid
Analysis Batch: 27241

Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	<0.0250		0.0250		mg/L			12/16/11 17:36	1
1,2-Dichloroethane	<0.0250		0.0250		mg/L			12/16/11 17:36	1
2-Butanone (MEK)	<0.250		0.250		mg/L			12/16/11 17:36	1
Benzene	<0.0250		0.0250		mg/L			12/16/11 17:36	1
Carbon tetrachloride	<0.0250		0.0250		mg/L			12/16/11 17:36	1
Chlorobenzene	<0.0250		0.0250		mg/L			12/16/11 17:36	1
Chloroform	<0.0250		0.0250		mg/L			12/16/11 17:36	1
Tetrachloroethene	<0.0250		0.0250		mg/L			12/16/11 17:36	1
Trichloroethene	<0.0250		0.0250		mg/L			12/16/11 17:36	1
Vinyl chloride	<0.0250		0.0250		mg/L			12/16/11 17:36	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*80 - 121*		*12/16/11 17:36*	*1*
4-Bromofluorobenzene (Surr)	*92*		*70 - 124*		*12/16/11 17:36*	*1*
Toluene-d8 (Surr)	*112*		*90 - 115*		*12/16/11 17:36*	*1*
Dibromofluoromethane (Surr)	*106*		*84 - 128*		*12/16/11 17:36*	*1*

Lab Sample ID: 240-6860-4 MS
Matrix: Solid
Analysis Batch: 27241

Client Sample ID: FR-SS-3-A-4
Prep Type: TCLP

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	<0.0250		1.00	1.060		mg/L		106	67 - 139
1,2-Dichloroethane	<0.0250		1.00	1.030		mg/L		103	80 - 115
2-Butanone (MEK)	<0.250		2.00	1.915		mg/L		96	49 - 117
Benzene	<0.0250		1.00	0.9300		mg/L		93	85 - 119
Carbon tetrachloride	<0.0250		1.00	0.7400		mg/L		74	60 - 110

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-6860-4 MS
Matrix: Solid
Analysis Batch: 27241

Client Sample ID: FR-SS-3-A-4
Prep Type: TCLP

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chlorobenzene	<0.0250		1.00	0.9450		mg/L		95	85 - 113
Chloroform	<0.0250		1.00	1.015		mg/L		102	86 - 124
Tetrachloroethene	<0.0250		1.00	0.8800		mg/L		88	74 - 138
Trichloroethene	<0.0250		1.00	0.9350		mg/L		94	75 - 134
Vinyl chloride	0.199		1.00	1.155		mg/L		96	51 - 118

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*119*		*80 - 121*
4-Bromofluorobenzene (Surr)	*94*		*70 - 124*
Toluene-d8 (Surr)	*112*		*90 - 115*
Dibromofluoromethane (Surr)	*105*		*84 - 128*

Lab Sample ID: 240-6860-4 MSD
Matrix: Solid
Analysis Batch: 27241

Client Sample ID: FR-SS-3-A-4
Prep Type: TCLP

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	<0.0250		1.00	1.095		mg/L		110	67 - 139	3	30
1,2-Dichloroethane	<0.0250		1.00	1.040		mg/L		104	80 - 115	1	30
2-Butanone (MEK)	<0.250		2.00	1.930		mg/L		97	49 - 117	1	30
Benzene	<0.0250		1.00	0.9350		mg/L		94	85 - 119	1	30
Carbon tetrachloride	<0.0250		1.00	0.7400		mg/L		74	60 - 110	0	30
Chlorobenzene	<0.0250		1.00	0.9800		mg/L		98	85 - 113	4	30
Chloroform	<0.0250		1.00	1.005		mg/L		101	86 - 124	1	30
Tetrachloroethene	<0.0250		1.00	0.8750		mg/L		88	74 - 138	1	30
Trichloroethene	<0.0250		1.00	0.9450		mg/L		95	75 - 134	1	30
Vinyl chloride	0.199		1.00	1.135		mg/L		94	51 - 118	2	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*111*		*80 - 121*
4-Bromofluorobenzene (Surr)	*96*		*70 - 124*
Toluene-d8 (Surr)	*113*		*90 - 115*
Dibromofluoromethane (Surr)	*107*		*84 - 128*

QC Association Summary

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6860-1

GC/MS VOA

Leach Batch: 27160

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-6860-1	FR-SS-3-A-1	TCLP	Solid	1311	
240-6860-2	FR-SS-3-A-2	TCLP	Solid	1311	
240-6860-3	FR-SS-3-A-3	TCLP	Solid	1311	
240-6860-4	FR-SS-3-A-4	TCLP	Solid	1311	
240-6860-4 MS	FR-SS-3-A-4	TCLP	Solid	1311	
240-6860-4 MSD	FR-SS-3-A-4	TCLP	Solid	1311	
LB 240-27160/1-A MB	Method Blank	TCLP	Solid	1311	

Analysis Batch: 27241

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-6860-1	FR-SS-3-A-1	TCLP	Solid	8260B	
240-6860-2	FR-SS-3-A-2	TCLP	Solid	8260B	
240-6860-3	FR-SS-3-A-3	TCLP	Solid	8260B	
240-6860-4	FR-SS-3-A-4	TCLP	Solid	8260B	
240-6860-4 MS	FR-SS-3-A-4	TCLP	Solid	8260B	
240-6860-4 MSD	FR-SS-3-A-4	TCLP	Solid	8260B	
LB 240-27160/1-A MB	Method Blank	TCLP	Solid	8260B	
LCS 240-27241/6	Lab Control Sample	Total/NA	Solid	8260B	

General Chemistry

Analysis Batch: 26859

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-6860-1	FR-SS-3-A-1	Total/NA	Solid	Moisture	
240-6860-2	FR-SS-3-A-2	Total/NA	Solid	Moisture	
240-6860-2 DU	FR-SS-3-A-2	Total/NA	Solid	Moisture	
240-6860-3	FR-SS-3-A-3	Total/NA	Solid	Moisture	
240-6860-4	FR-SS-3-A-4	Total/NA	Solid	Moisture	

Lab Chronicle

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6860-1

Client Sample ID: FR-SS-3-A-1

Lab Sample ID: 240-6860-1
Matrix: Solid

Date Collected: 12/13/11 13:26
Date Received: 12/14/11 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			27160	12/15/11 16:10	DJ	TAL NC
TCLP	Analysis	8260B		1	27241	12/16/11 19:09	TL	TAL NC
Total/NA	Analysis	Moisture		1	26859	12/14/11 16:16	CN	TAL NC

Client Sample ID: FR-SS-3-A-2

Lab Sample ID: 240-6860-2
Matrix: Solid

Date Collected: 12/13/11 13:34
Date Received: 12/14/11 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			27160	12/15/11 16:10	DJ	TAL NC
TCLP	Analysis	8260B		1	27241	12/16/11 19:34	TL	TAL NC
Total/NA	Analysis	Moisture		1	26859	12/14/11 16:16	CN	TAL NC

Client Sample ID: FR-SS-3-A-3

Lab Sample ID: 240-6860-3
Matrix: Solid

Date Collected: 12/13/11 13:38
Date Received: 12/14/11 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			27160	12/15/11 16:10	DJ	TAL NC
TCLP	Analysis	8260B		1	27241	12/16/11 19:58	TL	TAL NC
Total/NA	Analysis	Moisture		1	26859	12/14/11 16:16	CN	TAL NC

Client Sample ID: FR-SS-3-A-4

Lab Sample ID: 240-6860-4
Matrix: Solid

Date Collected: 12/13/11 13:42
Date Received: 12/14/11 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			27160	12/15/11 16:10	DJ	TAL NC
TCLP	Analysis	8260B		1	27241	12/16/11 20:23	TL	TAL NC
Total/NA	Analysis	Moisture		1	26859	12/14/11 16:16	CN	TAL NC

Laboratory References:

TAL NC = TestAmerica North Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Certification Summary

Client: Brown and Caldwell
Project/Site: FORD RD.-PHASE 1

TestAmerica Job ID: 240-6860-1

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica North Canton	ACLASS	DoD ELAP		ADE-1437
TestAmerica North Canton	California	NELAC	9	01144CA
TestAmerica North Canton	Florida	NELAC	4	E87225
TestAmerica North Canton	Georgia	Georgia EPD	4	N/A
TestAmerica North Canton	Illinois	NELAC	5	200004
TestAmerica North Canton	Kansas	NELAC	7	E-10336
TestAmerica North Canton	Kentucky	State Program	4	58
TestAmerica North Canton	Nevada	State Program	9	OH-000482008A
TestAmerica North Canton	New Jersey	NELAC	2	OH001
TestAmerica North Canton	New York	NELAC	2	10975
TestAmerica North Canton	Ohio	OVAP	5	CL0024
TestAmerica North Canton	Pennsylvania	NELAC	3	68-00340
TestAmerica North Canton	USDA	USDA		P330-11-00328
TestAmerica North Canton	Virginia	NELAC Secondary AB	3	460175
TestAmerica North Canton	Wisconsin	State Program	5	999518190

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratory location: Test America - North Canton
Regulatory program: ☐ DW ☐ NPDES ☒ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact				
Company Name: Brown & Caldwell	Client Project Manager: Jim Peeples	Site Contact: Bill Foster	Lab Contact: Alesia Danford	COC No: 022020
Address: 4700 Lakehurst Ct, Suite 200	Telephone: 614-410-3081	Telephone: 614-312-6299	Telephone: 330-497-9396	1 of 1 COCs
City/State/Zip: Dublin, OH 43016	Email: jpeeples@bruncald.com			
Phone: 614-410-6144				
Project Name: Ford Rd - Phase 1	Method of Shipment/Carrier: Fed EX			
Project Number: 141617	Shipping/Tracking No: 8744 4314 5430			
PO #				

Analysis Turnaround Time (in BUS days)
TAT if different from below
☐ 3 weeks
☐ 2 weeks
☐ 1 week
☒ 2 days — South seep + 8 oz
Hold 2 oz til 8 oz results

For lab use only
Walk-in client ☐
Lab pickup ☐
Lab sampling ☐
Job/SDG No.

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filter Sample (X/N)	Composite (C/Grab G)	Analyses: EPA 8260B	Total Metals	Sample Specific Notes / Special Instructions:
FR-SS-3-A-1	12/13/11	1326				X							X			G	X		2 containers
FR-SS-3-A-2	12/13/11	1334				X							X			G	X		2 "
FR-SS-3-A-3	12/13/11	1338				X							X			G	X		2 "
FR-SS-3-A-4	12/13/11	1342				X							X			G	X		2 "
Trip Blank	12/13/11	1330		X						X						G	X		1 "
Field Blank	12/13/11	1334		X						X						G	X		1 "
South Seep	12/13/11	1429		X					X							G		X	3 "
South Seep	12/13/11	1431		X						X						G	X		2 "

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☐ Disposal By Lab ☐ Archive For _____ Months

Special Instructions/QC Requirements & Comments:
Hold 2 oz until we have the results for the 8 oz. All South Seep = 2 day Turnaround Time

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Bill [signature]	Brown & Caldwell	12/13/11 1710			
			Received in Laboratory by: [signature]	TAL	12/14/11 - 9:25

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TAL 0018-1 (04/10)

1/4/2012

TestAmerica Cooler Receipt Form/Narrative **Lot Number:** #68860
North Canton Facility

Client Brown + Caldwell Project _____ By: [signature] (Signature)
Cooler Received on 12/14/11 Opened on 12/14/11
FedEx UPS DHL FAS Stetson Client Drop Off TestAmerica Courier Other _____
TestAmerica Cooler # _____ Multiple Coolers Foam Box Client Cooler Other _____

1. Were custody seals on the outside of the cooler(s)? Yes No Intact? Yes No NA
   If YES, Quantity 2 Quantity Unsalvageable _____
   Were custody seals on the outside of cooler(s) signed and dated? Yes No NA
   Were custody seals on the bottle(s)? Yes No
   If YES, are there any exceptions? _____
2. Shippers' packing slip attached to the cooler(s)? Yes No
3. Did custody papers accompany the sample(s)? Yes No Relinquished by client? Yes No
4. Were the custody papers signed in the appropriate place? Yes No
5. Packing material used: Bubble Wrap Foam None Other _____
6. Cooler temperature upon receipt 1.5 °C See back of form for multiple coolers/temps
   METHOD: IR Other _____
   COOLANT: Wet Ice Blue Ice Dry Ice Water None
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were sample(s) at the correct pH upon receipt? Yes No NA
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Were air bubbles >6 mm in any VOA vials? Yes No NA
12. Sufficient quantity received to perform indicated analyses? Yes No
13. Was a trip blank present in the cooler(s)? Yes No Were VOAs on the COC? Yes No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other
Concerning

14. CHAIN OF CUSTODY

The following discrepancies occurred:

15. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) 3 x 250 ml were further preserved in Sample Receiving to meet recommended pH level(s). Nitric Acid Lot# 110410-HNO_3; Sulfuric Acid Lot# 041911-H_2SO_4; Sodium Hydroxide Lot# 121809 -NaOH; Hydrochloric Acid Lot# 041911-HCl; Sodium Hydroxide and Zinc Acetate Lot# 100108-$(CH_3COO)_2ZN$/NaOH. What time was preservative added to sample(s)? _____

Client ID	pH	Date	Initials
Seep 14:29	<2 <2 <2	12/14/11	[illegible]

TestAmerica Cooler Receipt Form/Narrative
North Canton Facility

Client ID	pH	Date	Initials

Cooler #	Temp. °C	Method	Coolant

Discrepancies Cont'd:

Login Sample Receipt Checklist

Client: Brown and Caldwell

Job Number: 240-6860-1

Login Number: 6860
List Number: 1
Creator: Gambone, Mike

List Source: TestAmerica North Canton

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.5
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Ford Road Culvert Outlet Channel Seep

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Ford Road Landfill
City of Elyria Seep Analyses July 2012

Location: Ford Rd. near siphon

Address:

All table results in mg/L

	mg/L or ppm															
Industrial Ordinance Limits:	15	30	---	0.36	---	---	0.23	6.1	1.3	0.69	1.6	1.5	---	0.012	---	7.4

DATE	TIME	PO4(P)	NH3-N	Ag	As	Ba	Be	Cd	Cr	Cu	Mo	Ni	Pb	Sb	Se	Ti	Zn
7/2/2012	0845	---	4.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
7/23/2012	1050	---	---	0.000	0.005	0.043	0.000	0.001	0.012	0.016	0.016	0.024	0.014	0.000	0.004	0.047	0.046
7/23/2012	1423	7.9	<0.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---

7/2/2012 grab sample taken from pool at the riverbank. Fecal coliform = BDL. Not sanitary waste.

7/23/2012 grab samples taken from the small leak in the storm ditch near the rip rap. Does not appear to be sanitary waste.

NOTES: Fecal coliform not tested. Sample contaminated with dirt.
Chlorine test very high positive. Tap water control gave a normal light pink chlorine result.
PO4(as P) result higher than typical influent (4-5 mg/L).
NH3-N result not consistent with normal influent (15-17 mg/L).

Concentrations Converted to ug/l		Ag	As	Ba	Be	Cd	Cr	Cu	Mo	Ni	Pb	Sb	Se	Ti	Zn
Analytical Result		0	5	43	0	1	12	16	16	24	14	0	4	47	46
PRGs HHA - USEPA Region 9 for Tap Water	**Surface Water**		15	2600	73	18	NA	1500		730	NA	15			1100
OEPA Water Quality Stds. For Human Health	**Surface Water**		780	160000	NA	730	14000	64000		43000	190	780			3500
PRGs HHA - USEPA Region 9 for Tap Water	**Leachate**	180	0.045	2600	73	18	NA	1500		730	NA	15	180		11000
OEPA Water Quality Stds. For Human Health	**Leachate**	NA	580	160000	NA	730	14000	64000		43000	190	780	3100		35000

Note:

Converted mg/kg to ug/kg

1. Analytical data converted from ug/l to mg/l for comparison
2. PRGs for soil were originally mg/kg. Analytical data multiplied by 1000 to convert to ug/kg
3. PRGs are shown for Total Metals.

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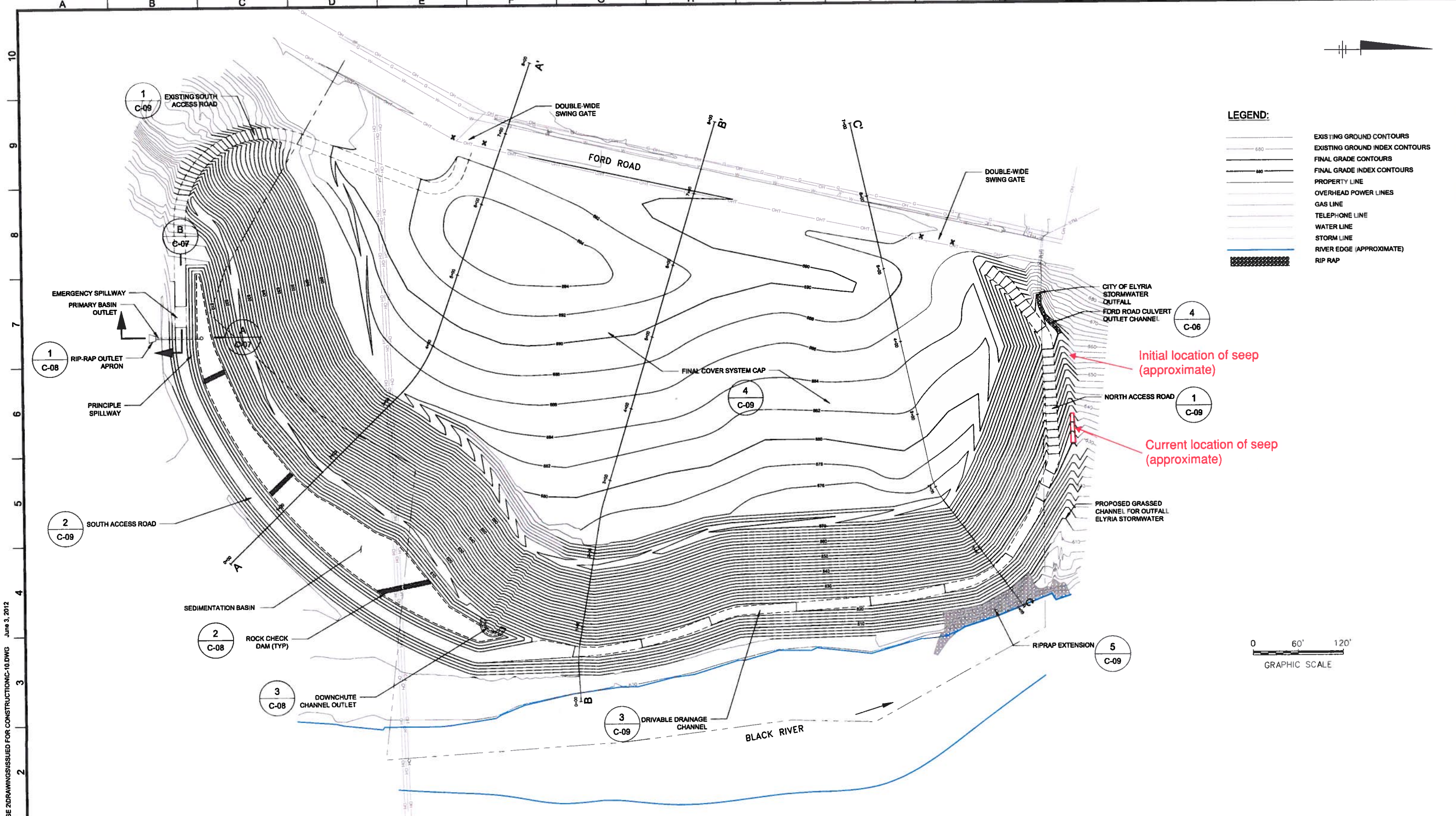

Brown AND Caldwell
COLUMBUS, OHIO

SUBMITTED: _____ DATE: _____
PROJECT MANAGER
APPROVED: _____ DATE: _____
BROWN AND CALDWELL

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED: RWJP
DRAWN: BF
CHECKED: RI
CHECKED: EG
APPROVED: RI

EXTERNAL REFERENCE FILES

REVISIONS

ZONE	REV	DESCRIPTION	BY	DATE	APP.

ISSUED FOR CONSTRUCTION

FORD ROAD LANDFILL, ELYRIA OHIO
PHASE 2
FINAL GRADING PLAN

FILENAME C-10.DWG
BC PROJECT NUMBER 141617
CLIENT PROJECT NUMBER
FIGURE NUMBER C-10

P:\FORD ROAD\CONSTRUCTION\PHASE 2\DRAWINGS\ISSUED FOR CONSTRUCTION\C-10.DWG June 3, 2012

June 3, 2012

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Appendix I: Slurry Wall Test Results

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Slurry Systems, Inc.

6515 East Melton Road Gary, Indiana 46403
p: (219) 938-6667 f: (219) 938-3437
e: info@slurrysystems.com

TO:			
OP-TECH 150 ROTTERDAM INDUSTRIAL PARKWAY SCHENECTADY, NEW YORK 12306 ATTN: JOE NASELLI			
REG MAIL	EMAIL	OVERNITE	HAND
	X		

DATE: 11.21.11	SSI JOB # 062-11CON-OH
REFERENCE: FORD ROAD LANDFILL ELYRIA, OHIO	

WE ARE SENDING YOU:

COPIES	DATE	DESCRIPTION
1	11.21.11	S-1, S-2, S-3; C/B Slurry Permeability Test Results
1	11.21.11	S-1, S-2, S-3; C/B Slurry Unconfined Compressive Strength Test Results

THESE ARE TRANSMITTED (AS CHECKED BELOW)

	FOR YOUR APPROVAL	FOR BID PROPOSAL
X	FOR YOUR USE	FOR RESUBMITTAL

REMARKS: _____

BY: Phil Ross
PHIL ROSS, PROJECT MANAGER

www.slurrysystems.com

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Great Lakes Soil & Environmental Consultants, Inc Territorial Drive, Suite G, Bolingbrook, IL 60440 Ph: (630) 754-8700 Fax: (630) 754-8705 www.greatlakessoil.com	COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)

Project	Ford Road Landfill, Elyria, OH						
Client	Slurry Systems, Inc., 6515 Melton Road, Gary, IN 46403						
File #	5831	Date Tested	10/19/2011	Tested by:	PP	QC by:	KDK
Sample ID:	S-1	Date Recd.	10/12/11	Location	STA 0+30		
Sample Description	C/B Slurry						

Specimen Data

Initial

Diameter:	7.65	cm	Area, A:	46.0	sq cm
Height, L:	5.03	cm	Volume, V:	231.2	cu cm
Mass of Sample:	254.3	g	Moisture Content:	502.2	%
			Wet Density	68.6	pcf
			Dry Density	11.4	pcf

Final

Diameter:	7.52	cm	Area, A:	44.4	sq cm
Height, L:	4.92	cm	Volume, V:	218.5	cu cm
Mass of Sample:	244.45	g	Moisture Content:	462.4	%
			Wet Density	69.8	pcf
			Dry Density	12.4	pcf
			Deg of Saturation	99.1	

Test Data

Permeant	Water	
Cell Pressure	80.0	psi
Top Pressure	75.0	psi
Bottom Pressure	76.6	psi
Gradient	22.4	

Date	Time	Elapsed Time (Sec)	Cumulative Time (Sec)	Burette Readings Outflow cc	Burette Readings Inflow cc	Outflow/Inflow Ratio	Fluid Temp. oC	Permeability cm/sec
10/26/2011	9:00 AM	0	0	2.14	5.73		22.8	---
10/26/2011	10:00 AM	3600	3600	2.20	5.66	0.9	22.8	1.55E-08
10/26/2011	11:00 AM	3600	7200	2.24	5.62	1.0	22.8	8.91E-09
10/26/2011	12:00 PM	3600	10800	2.30	5.56	1.0	22.8	1.34E-08
10/26/2011	1:00 PM	3600	14400	2.36	5.50	1.0	22.8	1.35E-08

Average Permeability = **1.3E-08** cm/sec

Remarks:

Test ID	46843

Great Lakes Soil & Environmental Consultants, Inc Territorial Drive, Suite G, Bolingbrook, IL 60440 Ph: (630) 754-8700 Fax: (630) 754-8705 www.greatlakessoil.com	COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)

Project	Ford Road Landfill, Elyria, OH						
Client	Slurry Systems, Inc., 6515 Melton Road, Gary, IN 46403						
File #	5831	Date Tested	10/20/2011	Tested by:	PF	QC by:	KDK
Sample ID:	S-2	Date Recd.	10/12/11	Location	STA 1+00		
Sample Description	C/B Slurry						

Specimen Data

Initial

Diameter:	7.55	cm	Area, A:	44.8	sq cm
Height, L:	6.00	cm	Volume, V:	223.8	cu cm
Mass of Sample:	256.0	g	Moisture Content:	930.6	%
			Wet Density	71.4	pcf
			Dry Density	6.9	pcf

Final

Diameter:	7.53	cm	Area, A:	44.5	sq cm
Height, L:	4.99	cm	Volume, V:	222.2	cu cm
Mass of Sample:	252.31	g	Moisture Content:	407.5	%
			Wet Density	70.8	pcf
			Dry Density	14.0	pcf
			Deg of Saturation	99.2	

Test Data

Permeant:	Water	
Cell Pressure	80.0	psi
Top Pressure	75.0	psi
Bottom Pressure	76.6	psi
Gradient:	22.5	

Date	Time	Elapsed Time (Sec)	Cumulative Time (Sec)	Burette Readings Outflow cc	Burette Readings Inflow cc	Outflow/Inflow Ratio	Fluid Temp. oC	Permeability cm/sec
10/25/2011	10:00 AM	0	0	3.14	5.94		22.8	---
10/25/2011	11:00 AM	3600	3600	3.22	5.86	1.0	22.8	1.89E-08
10/25/2011	12:00 PM	3600	7200	3.36	5.72	1.0	22.8	3.34E-08
10/25/2011	1:00 PM	3600	10800	3.44	5.64	1.0	22.8	1.93E-08
10/25/2011	2:00 PM	3600	14400	3.54	5.54	1.0	22.8	2.44E-08

Average Permeability = **2.4E-08** cm/sec

Remarks:

Test ID	46846

Quality, Service & Commitment

Great Lakes Soil & Environmental Consultants, Inc
Territorial Drive, Suite G, Bolingbrook, IL 60440 Ph: (630) 754-8700 Fax: (630) 754-8705 www.greatlakessoil.com

COEFFICIENT OF PERMEABILITY - ASTM D5084 (FLEXIBLE WALL)

Project	Ford Road Landfill, Elyria, OH						
Client	Slurry Systems, Inc., 6515 Melton Road, Gary, IN 46403						
File #	5831	**Date Tested**	10/20/2011	**Tested by:**	PP	**QC by:**	
Sample ID:	S-3	Date Recd.	10/12/11	**Location**	STA 1+65		
Sample Description	C/B Slurry						

Specimen Data

Initial

Diameter:	7.56	cm	Area, A:	44.9	sq cm
Height, L:	5.00	cm	Volume, V:	224.4	cu cm
Mass of Sample:	256.5	g	**Moisture Content:**	438.2	%
			Wet Density	71.3	pcf
			Dry Density	13.3	pcf

Final

Diameter:	7.27	cm	Area, A:	41.5	sq cm
Height, L:	4.90	cm	Volume, V:	203.4	cu cm
Mass of Sample:	233.96	g	**Moisture Content:**	389.2	%
			Wet Density	71.8	pcf
			Dry Density	14.7	pcf
			Deg of Saturation	100.1	

Test Data

Permeant:	Water	
Cell Pressure	80.0	psi
Top Pressure	75.0	psi
Bottom Pressure	76.6	psi
Gradient:	22.5	

Date	Time	Elapsed Time (Sec)	Cumulative Time (Sec)	Burette Readings Outflow cc	Burette Readings Inflow cc	Outflow/Inflow Ratio	Fluid Temp. oC	Permeability cm/sec
10/28/2011	9:05 AM	0	0	3.04	5.84		23.3	---
10/28/2011	10:05 AM	3600	3600	3.20	5.70	1.1	23.3	3.30E-08
10/28/2011	11:05 AM	3600	7200	3.40	5.50	1.0	23.3	4.81E-08
10/28/2011	12:05 PM	3600	10800	3.60	5.34	1.3	23.3	3.93E-08
10/28/2011	1:05 PM	3600	14400	3.80	5.18	1.3	23.3	4.01E-08
10/28/2011								

Average Permeability = **4.0E-08** cm/sec

Remarks:

Test ID	46849

Quality, Service & Commitment

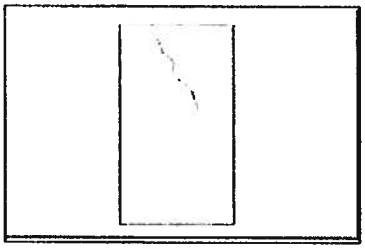
Great Lakes Soil & Environmental Consultants, Inc.
600 Territorial Drive, Suite G, Bolingbrook, IL 60440 Ph: (630) 754-8700 Fax: (630) 754-8705
www.greatlakessoil.com

UNCONFINED COMPRESSIVE STRENGTH (ASTM D 2166)

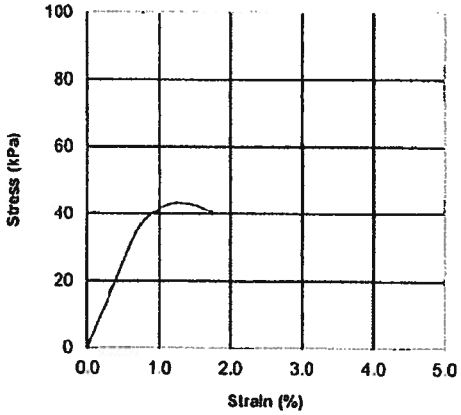
Project	Ford Road Landfill, Elyria, OH						
Client	Slurry Systems, Inc., 6515 Melton Road, Gary, IN 46403						
File No.	5831	**Sample No.**	S-1	**Date Tested**	10/24/11	**Tested By**	PP
						QC By	KDK

Date Sample Received	10/12/11
Description of Soil	C/B Slurry
Location	STA 0+30

Type of Sample	Cylinder	
Average Height =	14.50	cm
Average Diameter =	7.57	cm
Height/Diameter Ratio =	1.92	
Wet Sample Weight=	471.72	g
Wet Density =	0.72	g/cc
Moisture Content =	519.7	%
Dry Density =	0.12	g/cc
Strain Rate =	1.00	%/min



Failure Image



Unconfined Compressive Strength =	43.1	kPa
	899	psf
Shear Strength =	22	kPa
	450	psf
Strain at Failure =	1.4	%

Remarks:

Test ID	46844

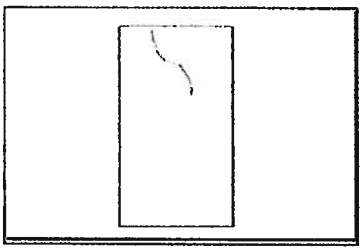
Great Lakes Soil & Environmental Consultants, Inc.
600 Territorial Drive, Suite C, Bolingbrook, IL 60440 Ph: (630) 754-8700 Fax: (630) 754-8705
www.greatlakessoil.com

UNCONFINED COMPRESSIVE STRENGTH (ASTM D 2166)

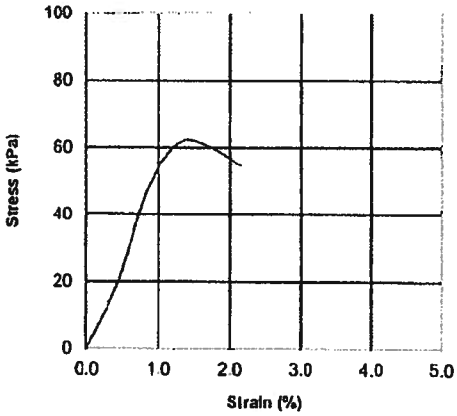
Project	Ford Road Landfill, Elyria, OH						
Client	Slurry Systems, Inc., 6515 Melton Road, Gary, IN 46403						
File No.	5831	**Sample No.**	S-2	**Date Tested**	10/24/11	**Tested By**	PP
						QC By	KDK

Date Sample Received	10/12/11
Description of Soil	C/B Slurry
Location	STA 1+00

Type of Sample	Cylinder	
Average Height =	11.74	cm
Average Diameter =	7.64	cm
Height/Diameter Ratio =	1.54	
Wet Sample Weight=	608.22	g
Wet Density =	1.13	g/cc
Moisture Content =	436.6	%
Dry Density =	0.21	g/cc
Strain Rate =	1.00	%/min



Failure Image



Unconfined Compressive Strength =	61.4	kPa
	1283	psf
Shear Strength =	31	kPa
	642	psf
Strain at Failure =	1.3	%

Remarks:

Test ID	46847

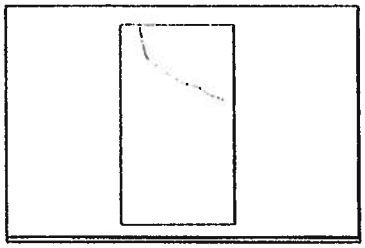
Great Lakes Soil & Environmental Consultants, Inc.
600 Territorial Drive, Suite G, Bolingbrook, IL 60440 Ph: (630) 754 8700 Fax: (630) 754-8705
www.greatlakessoil.com

UNCONFINED COMPRESSIVE STRENGTH (ASTM D 2166)

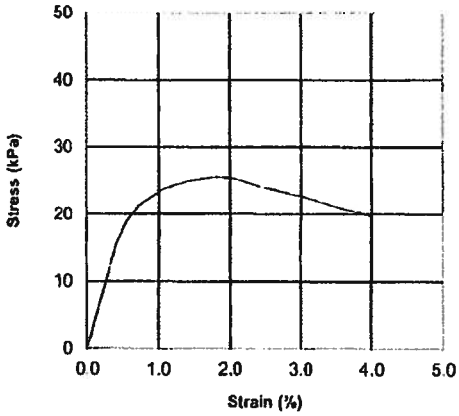
Project	Ford Road Landfill, Elyria, OH						
Client	Slurry Systems, Inc., 6515 Melton Road, Gary, IN 46403						
File No.	5831	**Sample No.**	S-3	**Date Tested**	10/26/11	**Tested By**	PP
						QC By	KDK

Date Sample Received	10/12/11
Description of Soil	C/B Slurry
Location	STA 1+65

Type of Sample	Cylinder	
Average Height =	10.20	cm
Average Diameter =	4.87	cm
Height/Diameter Ratio =	2.09	
Wet Sample Weight=	214.05	g
Wet Density =	1.13	g/cc
Moisture Content =	436.4	%
Dry Density =	0.21	g/cc
Strain Rate =	1.00	%/min



Failure Image



Unconfined Compressive Strength =	25.4	kPa
	531	psf
Shear Strength =	13	kPa
	266	psf
Strain at Failure =	2.0	%

Remarks:

Test ID	46850

Appendix J: Air Monitoring and Soil Screening Results

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North Soil Removal Area

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Brown Caldwell

Air Monitoring Form

Name of Project/Site: Phase 1 Remedial Action	Project No: 141617
Project/Site Location: Ford Rd.	
Employee Performing Air Monitoring (Print and Sign): Bill Foster *Bill Foster*	Date: 09/08/16 (monday)

Instrument(s)

Manufacturer: RAE	Model: QRAE Plus	Manufacturer: RAE	Model: MiniRAE 3000

Were instruments calibrated per manufacturer's instructions? ☒ Yes ☐ No Remarks:

Air Monitoring Data						Soil Monitoring Data
Time	Location and Activity	PID VOC's (ppm)	Multi-Gas Detection O_2 (%)	LEL (Methane) (%)	H_2S (ppm)	PID VOC's (ppm)
Action Level:		≤ 5 (Level D) > 5 & < 15 (Level C) ≥15 (Cease Work)	≤ 19.5 ≥ 22.0	≥ 10	≥ 5	< 50 (Toe of Slope) ≥ 50 (Upper Staging Area)
7:30						
7:45						
8:00						
8:15						
8:30						
8:45						
9:00						
9:15						
9:30						
9:45						
10:00						
10:15						
10:30	Slurry Wall	0.0	20.9	0.0	0.0	0.0
10:45						
11:00						
11:15						
11:30						
11:45						
12:00						
12:15						
12:30						
12:45						
13:00						
13:15						
13:30						
13:45						
14:00						
14:15						
14:30						
14:45						
15:00						
15:15						
15:30						
15:45						
16:00						10.4
16:15						60.2
16:30						12.8
16:45						0.0
17:00						
17:15						
17:30						
17:45						
18:00						
18:15						
18:30						

Brown Caldwell

Air Monitoring Form

Name of Project/Site: Phase 1 Remedial Action	Project No: 141617
Project/Site Location: Ford Rd.	
Employee Performing Air Monitoring (Print and Sign): Bill Foster BW Foster	Date: 09/20/11 (Tuesday)

Instrument(s)

Manufacturer: RAE	Model: QRAE Plus	Manufacturer: RAE	Model: MiniRAE 3000

Were instruments calibrated per manufacturer's instructions? ☒ Yes ☐ No Remarks:

Air Monitoring Data						Soil Monitoring Data
Time	Location and Activity	PID VOC's (ppm)	Multi-Gas Detection O_2 (%)	LEL (Methane) (%)	H_2S (ppm)	PID VOC's (ppm)
Action Level:		≤ 5 (Level D) > 5 & < 15 (Level C) ≥15 (Cease Work)	≤ 19.5 ≥ 22.0	≥ 10	≥ 5	< 50 (Toe of Slope) ≥ 50 (Upper Staging Area)
7:30	Slurry wall	0.0	20.9	0.0	0.0	0.0
7:45						
8:00						
8:15						
8:30						
8:45						
9:00						
9:15						
9:30						54.2
9:45						58.8
10:00						62.2
10:15						35.6
10:30						22.4
10:45						51.0
11:00						46.2
11:15						36.6
11:30						18.4
11:45						12.2
12:00						0.0
12:15						
12:30						
12:45						
13:00						
13:15						
13:30						
13:45						
14:00						
14:15						
14:30						
14:45						
15:00						
15:15						
15:30						10.0
15:45						11.4
16:00						14.6
16:15						8.2
16:30						2.2
16:45						0.0
17:00						
17:15						
17:30						
17:45						
18:00						
18:15						
18:30						

Brown Caldwell

Air Monitoring Form

Name of Project/Site: Phase 1 Remedial Action	Project No: 141617
Project/Site Location: Ford Rd.	
Employee Performing Air Monitoring (Print and Sign): Bill Foster Bill Foster	Date: 09/21/11 (Wed)

Instrument(s)

Manufacturer: RAE	Model: QRAE Plus	Manufacturer: RAE	Model: MiniRAE 3000

Were instruments calibrated per manufacturer's instructions? ☒ Yes ☐ No Remarks:

Air Monitoring Data						Soil Monitoring Data
Time	Location and Activity	PID VOC's (ppm)	Multi-Gas Detection O_2 (%)	LEL (Methane) (%)	H_2S (ppm)	PID VOC's (ppm)
Action Level:		≤ 5 (Level D) > 5 & < 15 (Level C) ≥15 (Cease Work)	≤ 19.5 ≥ 22.0	≥ 10	≥ 5	< 50 (Toe of Slope) ≥ 50 (Upper Staging Area)
7:30						
7:45						
8:00						
8:15						
8:30						
8:45						
9:00	Slurry Wall	0.0	20.9	0.0	0.0	0.0
9:15						
9:30						
9:45						
10:00						
10:15						
10:30						
10:45						
11:00						
11:15						
11:30						
11:45						
12:00						
12:15						
12:30						56.6
12:45						52.4
13:00						70.4
13:15						10.6
13:30						0.0
13:45						
14:00						
14:15						
14:30						
14:45						
15:00						
15:15						
15:30						
15:45						
16:00						
16:15						
16:30						
16:45						
17:00						
17:15						
17:30						
17:45						
18:00						
18:15						
18:30						

Brown Caldwell

Air Monitoring Form

Name of Project/Site: Phase 1 Remedial Action	Project No: 141617
Project/Site Location: Ford Rd.	
Employee Performing Air Monitoring (Print and Sign): Bill Foster BW Foster	Date: 10/17/11 (Monday)

Instrument(s)

Manufacturer: RAE	Model: QRAE Plus	Manufacturer: RAE	Model: MiniRAE 3000

Were instruments calibrated per manufacturer's instructions? ☒ Yes ☐ No Remarks:

Air Monitoring Data						Soil Monitoring Data
Time	Location and Activity	PID VOC's (ppm)	Multi-Gas Detection O_2 (%)	LEL (Methane) (%)	H_2S (ppm)	PID VOC's (ppm)
Action Level:		≤ 5 (Level D) > 5 & < 15 (Level C) ≥15 (Cease Work)	≤ 19.5 ≥ 22.0	≥ 10	≥ 5	< 50 (Toe of Slope) ≥ 50 (Upper Staging Area)
7:30						
7:45						
8:00						
8:15						
8:30						
8:45						
9:00						
9:15						
9:30						
9:45						
10:00						
10:15						
10:30						
10:45						
11:00						
11:15						
11:30						
11:45						
12:00						
12:15						
12:30						
12:45						
13:00	North Soil Removal Area -	0.0	20.9	0.0	0.0	0.0
13:15	Remove one foot of	↓	↓	↓	↓	↓
13:30	overburden + grade to					
13:45	drain surface water					
14:00						
14:15						
14:30	↓					
14:45						
15:00						
15:15						
15:30						
15:45						
16:00						
16:15						
16:30						
16:45						
17:00						
17:15						
17:30						
17:45						
18:00						
18:15						
18:30						

Brown Caldwell

Air Monitoring Form

Name of Project/Site: Phase 1 Remedial Action	Project No: 141617
Project/Site Location: Ford Rd.	
Employee Performing Air Monitoring (Print and Sign): Bill Foster BN BF	Date: 10/29/16 (Saturday)

Instrument(s)

Manufacturer: RAE	Model: QRAE Plus	Manufacturer: RAE	Model: MiniRAE 3000

Were instruments calibrated per manufacturer's instructions? ☒ Yes ☐ No Remarks:

Air Monitoring Data						Soil Monitoring Data
Time	Location and Activity	PID VOC's (ppm)	Multi-Gas Detection O_2 (%)	LEL (Methane) (%)	H_2S (ppm)	PID VOC's (ppm)
Action Level:		≤ 5 (Level D) > 5 & < 15 (Level C) ≥15 (Cease Work)	≤ 19.5 ≥ 22.0	≥ 10	≥ 5	< 50 (Toe of Slope) ≥ 50 (Upper Staging Area)
7:30						
7:45						
8:00						
8:15						
8:30						
8:45						
9:00						
9:15						
9:30						
9:45						
10:00	North Soil Removal	0.0	20.9	0.0	0.0	—
10:15						—
10:30	Test Pit A					0.0
10:45						—
11:00	Test Pit B-3					0.5
11:15						—
11:30	Test Pit C-3					1.3
11.45						—
12:00	Test Pit D-4					0.0
12:15						—
12:30						—
12:45						—
13:00						—
13:15						—
13:30						—
13:45						—
14:00	Test Pit E-3					13.0
14:15						—
14:30	Test Pit F-3					5.2
14:45						—
15:00						—
15:15						—
15:30						—
15:45						—
16:00						—
16:15						—
16:30						—
16:45						—
17:00						—
17:15						
17:30						
17:45						
18:00						
18:15						
18:30						

Brown Caldwell

Air Monitoring Form

Name of Project/Site: Phase 1 Remedial Action	Project No: 141617
Project/Site Location: Ford Rd.	
Employee Performing Air Monitoring (Print and Sign): Bill Foster *Bill Foster*	Date: 10/30/16 (Sunday)

Instrument(s)

Manufacturer: RAE	Model: QRAE Plus	Manufacturer: RAE	Model: MiniRAE 3000

Were instruments calibrated per manufacturer's instructions? ☒ Yes ☐ No Remarks:

Air Monitoring Data						Soil Monitoring Data
Time	Location and Activity	PID VOC's (ppm)	Multi-Gas Detection O_2 (%)	LEL (Methane) (%)	H_2S (ppm)	PID VOC's (ppm)
Action Level:		≤ 5 (Level D) > 5 & < 15 (Level C) ≥15 (Cease Work)	≤ 19.5 ≥ 22.0	≥ 10	≥ 5	< 50 (Toe of Slope) ≥ 50 (Upper Staging Area)
7:30						
7:45						
8:00						
8:15						
8:30						
8:45						
9:00	North Soil Removal	0.0	20.9	0.0	0.0	—
9:15						—
9:30	Test Pit 6-7					0.1
9:45						—
10:00	Test Pit 4-5					1.3
10:15						—
10:30	Test Pit 4-7					2.9
10:45						—
11:00						—
11:15						—
11:30						—
11:45						—
12:00						—
12:15						—
12:30						—
12:45						—
13:00						—
13:15						—
13:30						—
13:45						—
14:00						—
14:15						—
14:30						—
14:45						—
15:00						—
15:15						—
15:30						—
15:45						—
16:00						—
16:15						
16:30						
16:45						
17:00						
17:15						
17:30						
17:45						
18:00						
18:15						
18:30						

Brown Caldwell

Air Monitoring Form

Name of Project/Site: Phase 1 Remedial Action	Project No: 141617
Project/Site Location: Ford Rd.	
Employee Performing Air Monitoring (Print and Sign): Bill Foster Bill Foster	Date: 10/31/11 (Monday)

Instrument(s)

Manufacturer: RAE	Model: QRAE Plus	Manufacturer: RAE	Model: MiniRAE 3000

Were instruments calibrated per manufacturer's instructions? ☒ Yes ☐ No Remarks:

Air Monitoring Data						Soil Monitoring Data
Time	Location and Activity	PID VOC's (ppm)	Multi-Gas Detection O_2 (%)	LEL (Methane) (%)	H_2S (ppm)	PID VOC's (ppm)
Action Level:		≤ 5 (Level D) > 5 & < 15 (Level C) ≥15 (Cease Work)	≤ 19.5 ≥ 22.0	≥ 10	≥ 5	< 50 (Toe of Slope) ≥ 50 (Upper Staging Area)
7:30						
7:45						
8:00	North Soil Excavation	0.0	20.9	0.0	0.0	≥50.0
8:15						
8:30						
8:45						
9:00						
9:15						
9:30						
9:45						
10:00						
10:15						
10:30						
10:45						
11:00						
11:15						
11:30						
11:45						
12:00						0.0
12:15						
12:30						
12:45						
13:00						
13:15						
13:30						
13:45						
14:00						
14:15						
14:30						
14:45						
15:00						
15:15						
15:30						
15:45						
16:00						
16:15						
16:30						
16:45						
17:00						
17:15						
17:30						
17:45						
18:00						
18:15						
18:30						

Brown Caldwell

Air Monitoring Form

Name of Project/Site: Phase 1 Remedial Action	Project No: 141617
Project/Site Location: Ford Rd.	
Employee Performing Air Monitoring (Print and Sign): Bill Foster *Bill Foster*	Date: 11/01/11 (Tuesday)

Instrument(s)

Manufacturer: RAE	Model: QRAE Plus	Manufacturer: RAE	Model: MiniRAE 3000

Were instruments calibrated per manufacturer's instructions? ☒ Yes ☐ No Remarks:

Air Monitoring Data						Soil Monitoring Data
Time	Location and Activity	PID VOC's (ppm)	Multi-Gas Detection O_2 (%)	LEL (Methane) (%)	H_2S (ppm)	PID VOC's (ppm)
Action Level:		≤ 5 (Level D) > 5 & < 15 (Level C) ≥15 (Cease Work)	≤ 19.5 ≥ 22.0	≥ 10	≥ 5	< 50 (Toe of Slope) ≥ 50 (Upper Staging Area)
7:30						
7:45						
8:00						
8:15						
8:30	North Soil Excavation	0.0	20.9	0.0	0.0	0.0
8:45						
9:00						
9:15						
9:30						
9:45						
10:00						
10:15						
10:30						
10:45						
11:00						
11:15						
11:30						
11:45						
12:00						
12:15						
12:30	Bottom Layer @					0.0
12:45	River Bank					
13:00	(DNAPL)					
13:15						
13:30						
13:45						
14:00						
14:15						
14:30						
14:45						
15:00						
15:15						
15:30						
15:45						
16:00						
16:15						
16:30						
16:45						
17:00						
17:15						
17:30						
17:45						
18:00						
18:15						
18:30						

South Soil Removal Area

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Brown AND Caldwell

Air Monitoring Form

Name of Project/Site: Phase 1 Remedial Action | Project No: 141617

Project/Site Location: Ford Rd.

Employee Performing Air Monitoring (Print and Sign): Bill Foster BW FT | Date: 11/10/11 (Thursday)

Instrument(s)

Manufacturer: RAE	Model: QRAE Plus	Manufacturer: RAE	Model: MiniRAE 3000

Were instruments calibrated per manufacturer's instructions? ☒ Yes ☐ No Remarks:

Air Monitoring Data								Soil Monitoring Data
Time	Location and Activity	PID VOC's (ppm)	Vinyl Chloride (if P/FID ≥1)	Multi-Gas Detection O_2 (%)	LEL (Methane) (%)	H_2S (ppm)	CO (ppm)	PID VOC's (ppm)
Action Level:		≤ 5 (Level D) > 5 & ≤ 25 (Level C) > 25 (Cease Work)	Tube ≥1 (Cease Work)	≤ 19.5	≥ 10	≥ 10	≥ 25	< 30 (Toe of Slope) ≥ 30 (Upper Staging Area)
7:30								
7:45								
8:00								
8:15								
8:30								
8:45								
9:00								
9:15								
9:30								
9:45								
10:00								
10:15								
10:30								
10:45								
11:00	South Soil Excavation	0.0	N/A	20.9	0.0	0.0	0.0	0.0
11:15	0'-2'							0.0
11:30	2'-6'							0.4
11:45	6'-10'							0.0
12:00	10'-12'							140.0
12:15	0'-2'							0.0
12:30	2'-6'							0.0
12:45	6'-10'							0.0
13:00	10'-12'							80.1
13:15								stopped taking by
13:30								readings once
13:45	12'-14'							the level of the
14:00		0.7						contaminated soil
14:15		0.3						was figured out.
14:30		0.4						
14:45		0.0						
15:00		0.0						
15:15		0.3						
15:30		0.0						
15:45		0.0						
16:00		0.0						
16:15		0.0						
16:30	Finish Excavation	0.0						
16:45								
17:00								
17:15								
7:30								
:45								
18:00								
18:15								
18:30								

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Seep Drain

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Brown AND Caldwell

Air Monitoring Form

Name of Project/Site: Phase 2 Remedial Action | **Project No:** 142889

Project/Site Location: Ford Rd.

Employee Performing Air Monitoring (Print and Sign): Bill Foster BW Foster | **Date:** 06/18/12 (Monday)

Instrument(s)

Manufacturer:	Model:	Manufacturer:	Model:
RAE	QRAE+	RAE	MiniRAE 2000

Was instrument(s) calibrated per manufacturer's instructions? ☒ Yes ☐ No **Remarks:**

Monitoring Data

Time	Location and Activity	PID (ppm)		Multi-Gas Detection O_2	%LEL	H_2S	CO
	Action Level:	≤ 5 (Level D) > 5 & ≤ 25 (Level C) > 25 (Cease Work)	Tube ≥ 1 (Cease Work)	≤ 19.5%	≥ 10%	≥ 10 ppm	≥ 25 ppm
7:00							
7:15							
7:30							
7:45							
8:00							
8:15							
8:30	SEEP DRAIN	0.0	N/A	20.8	0.0	0.0	0.0
8:45	↓	↓	↓	↓	↓	↓	↓
9:00							
9:15							
9:30							
9:45							
10:00							
10:15				20.9			
10:30							
10:45							
11:00							
11:15							
11:30							
11:45							
12:00							
12:15							
12:30							
12:45							
13:00							
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16:45							
17:00							
17:15							
17:30							
17:45							
18:00							
18:15							
18:30							
18:45							
19:00							

Brown AND Caldwell

Air Monitoring Form

Name of Project/Site: Phase 2 Remedial Action | **Project No:** 142889

Project/Site Location: Ford Rd.

Employee Performing Air Monitoring (Print and Sign): Bill Foster Bill Foster | **Date:** 06/19/12 (Tuesday)

Instrument(s)

Manufacturer:	Model:	Manufacturer:	Model:
RAE	QRAE+	RAE	MiniRAE 2000

Was instrument(s) calibrated per manufacturer's instructions? ☒ Yes ☐ No **Remarks:**

Monitoring Data

Time	Location and Activity	PID (ppm)		Multi-Gas Detection O_2	%LEL	H_2S	CO
	Action Level:	≤ 5 (Level D) > 5 & ≤ 25 (Level C) > 25 (Cease Work)	Tube ≥ 1 (Cease Work)	≤ 19.5%	≥ 10%	≥ 10 ppm	≥ 25 ppm
7:00							
7:15							
7:30	Seep Drain	0.0	N/A	20.9	0.0	0.0	0.0
7:45	↓	↓	↓	↓	↓	↓	↓
8:00							
8:15							
8:30							
8:45							
9:00							
9:15							
9:30							
9:45							
10:00							
10:15							
10:30							
10:45							
11:00							
11:15							
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15:30							
15:45							
16:00							
16:15							
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18:45							
19:00							

Appendix K: Groundwater Monitoring Wells

Monitoring Well Abandonment Reports

Monitoring Well Installations and Development Letter

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Monitoring Well Abandonment Reports

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DNR 7810.10

WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0197146

MW#1

LOCATION

County LORAIN Township ELYRIA Circle One or Both Section/Lot Number

Owner/Builder LORAIN COUNTY METROPOLITAN PARK DISTRICT
Circle One or Both

Address of Well Location FORD ROAD (LANDFILL)
Number Street Name

City ELYRIA Zip Code 44035

Property Location Description 1 1/2 miles NORTH (n, e, s, w) of WEST RIVER ROAD (nearest intersection)

on the EAST (n, e, s, w) side of FORD ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X ____ . ____ +/- ____ ft. or m Y ____ . ____ +/- ____ ft. or m
OR
Latitude/Longitude Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.
Latitude ____ Longitude ____

Elevation of Well 610.48 +/- ____ ft. or m Datum Plain: ☐ NAD27 ☐ NAD83

Source of Coordinates: ☐ GPS ☐ Survey ☐ Other ____

ORIGINAL WELL

ODNR Well Log Number ____ Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS

Date of measurements SEPTEMBER 7, 2011

Depth of Well 16 FT.
Size of Casing 2 INCH
Well Condition GOOD

Static Water Level 7.81
Length of casing 16 FT.

SEALING PROCEDURE

Method of Placement OVERDRILL W/ 4 1/4 HSA + TREMIE GROUT

Placement:	From	To	Sealing Material	Volume
	16.0 FT.	SURFACE	CEMENT BENTONITE	44 GALLONS

Was Casing Removed? Yes or No (circle one)

Condition of Casing GOOD

Perforations: From 16.0 To 6.0
From 6.0 To SURFACE

Date Sealing Performed SEPTEMBER 7, 2011

Reason(s) for Sealing WELL NO LONGER NEEDED FOR MONITORING

CONTRACTOR

Name TTL ASSOCIATES, INC
Address 1915 N. 12TH STREET
City/State/Zip TOLEDO, OH 43604

ODH Registration # N/A

Signature [signature]

I hereby certify the information given is accurate and correct to the best of my knowledge.

Completion of this form is required by section 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.
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2045 MORSE ROAD BLDG. B, COLS., OHIO 43229-6693
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DNR 7810.10

WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0197142

MW #2

LOCATION

County LORAIN Township ELYRIA Circle One or Both Section/Lot Number

Owner/Builder LORAIN COUNTY METROPOLITAN PARK DISTRICT
Circle One or Both

Address of Well Location FORD ROAD (LANDFILL)
Number Street Name

City ELYRIA Zip Code 44035

Property Location Description: 1 1/2 miles NORTH (n, e, s, w) of WEST RIVER ROAD (nearest intersection) on the EAST (n, e, s, w) side of FORD ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X ____ . ____ +/- ft. or m Y ____ . ____ +/- ft. or m
OR
Latitude/Longitude { Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec. Latitude ____ Longitude ____ }

Elevation of Well 607.69 +/- ft. or m Datum Plain: ☐ NAD27 ☐ NAD83

Source of Coordinates: ☐ GPS ☐ Survey ☐ Other

ORIGINAL WELL ODNR Well Log Number ____ Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS

Date of measurements SEPTEMBER 7, 2011

Depth of Well 14 FT.
Size of Casing 2 INCH
Well Condition GOOD
Static Water Level 10.2 ft.
Length of casing 14 FT.

SEALING PROCEDURE

Method of Placement OVERDRILL W/ 4 1/4 HSA + TREMIE GROUT

Placement:	From	To	Sealing Material	Volume
	14.0	SURFACE	CEMENT BENTONITE	38 GALLONS
	From	To		
	From	To		

Was Casing Removed? Yes or No (circle one)

Condition of Casing GOOD

Perforations: From 14.0 To 9.0
From 9.0 To SURFACE

Date Sealing Performed SEPTEMBER 7, 2011

Reason(s) for Sealing WELL NO LONGER NEEDED FOR MONITORING

CONTRACTOR

Name TTL ASSOCIATES INC
Address 1915 N. 12TH STREET
City/State/Zip TOLEDO, OH 43604
ODH Registration # N/A

Signature

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DNR 7810.10

WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0197141

MW #3

LOCATION

County LORAIN Township ELYRIA Circle One or Both Section/Lot Number

Owner/Builder (Circle One or Both) LORAIN COUNTY METROPOLITAN PARK DISTRICT

Address of Well Location FORD ROAD (LANDFILL) (Number, Street Name)

City ELYRIA Zip Code 44035

Property Location Description 1½ miles NORTH (n, e, s, w) of WEST RIVER ROAD (nearest intersection) on the EAST (n, e, s, w) side of FORD ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X ____ +/- ____ ft. or m Y ____ +/- ____ ft. or m
OR
Latitude/Longitude (Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.) Latitude ____ Longitude ____

Elevation of Well 607.51 +/- ____ ft. or m Datum Plain: ☐ NAD27 ☐ NAD83

Source of Coordinates: ☐ GPS ☐ Survey ☐ Other

ORIGINAL WELL

ODNR Well Log Number ____ Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS

Date of measurements SEPTEMBER 6, 2011

Depth of Well 23 FT. Static Water Level 9.8 FT
Size of Casing 2 INCH Length of casing 23 FT
Well Condition GOOD

SEALING PROCEDURE

Method of Placement OVERDRILL W/ 4¼ HSA + TREMIE GROUT

Placement:	From	To	Sealing Material	Volume
	23.0	SURFACE	CEMENT BENTONITE	64 GALLONS

Was Casing Removed? Yes or No (circle one)

Condition of Casing GOOD

Perforations: From 23.0 To 18.0
From 18.0 To SURFACE

Date Sealing Performed SEPTEMBER 6 2011

Reason(s) for Sealing WELL NO LONGER NEEDED FOR MONITORING

CONTRACTOR

Name TTL ASSOCIATES INC ODH Registration # N/A
Address 1915 N. 12TH STREET
City/State/Zip TOLEDO, OH 43604

Signature [signature]

I hereby certify the information given is accurate and correct to the best of my knowledge.

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2045 MORSE ROAD BLDG. B, COLS., OHIO 43229-6693
Blue - Customer's copy Pink - Driller's copy Green - Local Health Dept. copy

DNR 7810.10

MW#4

WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0197140

LOCATION

County LORAIN Township ELYRIA Circle One or Both Section/Lot Number

Owner/Builder (Circle One or Both) LORAIN COUNTY METROPOLITAN PARK DISTRICT

Address of Well Location FORD ROAD (LANDFILL) Number Street Name

City ELYRIA Zip Code 44035

Property Location Description 1 1/2 miles NORTH (n, e, s, w) of WEST RIVER ROAD (nearest intersection)

on the EAST (n, e, s, w) side of FORD ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X ____ . ____ +/- ft. or m Y ____ . ____ +/- ft. or m

OR Latitude/Longitude Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.

Latitude Longitude

Elevation of Well 604.67 +/- ft. or m Datum Plain: ☐ NAD27 ☐ NAD83

Source of Coordinates: ☐ GPS ☐ Survey ☐ Other

ORIGINAL WELL

ODNR Well Log Number Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS

Date of measurements SEPTEMBER 6 2011

Depth of Well 10 FT.
Size of Casing 2 INCH
Well Condition GOOD

Static Water Level 16 IN
Length of casing 10 FT

SEALING PROCEDURE

Method of Placement OVERDRILL W/ 4 1/4 HSA + TREMIE GROUT

Placement:	From	To	Sealing Material	Volume
	10 FT.	GROUND SURFACE	CEMENT-BENTONITE	28 GALLONS

Was Casing Removed? Yes or No (circle one)

Condition of Casing GOOD

Perforations: From 10.0 To 5.0
From 5.0 To SURFACE

Date Sealing Performed SEPTEMBER 6 2011

Reason(s) for Sealing WELL NO LONGER NEEDED FOR MONITORING

CONTRACTOR

Name TTL ASSOCIATES INC
Address 1915 N. 12TH STREET
City/State/Zip TOLEDO OH 43604

ODH Registration # N/A

Signature [signature]

I hereby certify the information given is accurate and correct to the best of my knowledge.

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2045 MORSE ROAD BLDG. B, COLS., OHIO 43229-6693
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DNR 7810.10

MW#8

WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0197144

LOCATION

County LORAIN Township ELYRIA Circle One or Both Section/Lot Number

Owner/Builder (Circle One or Both) LORAIN COUNTY METROPOLITAN PARK DISTRICT

Address of Well Location FORD ROAD (LAND FILL) Number Street Name

City ELYRIA Zip Code 44035

Property Location Description 1 1/2 miles NORTH (n, e, s, w) of WEST RIVER ROAD (nearest intersection) on the EAST (n, e, s, w) side of FORD ROAD (road name)

Location of Well in either: State Plane N/S X ft. or m +/- Y ft. or m +/- OR Latitude/Longitude (Check ONE: In Decimal Degrees / Degrees Minutes / Degrees Min. Sec.) Latitude Longitude

Elevation of Well 606.63 +/- ft. or m Datum Plain: NAD27 NAD83

Source of Coordinates: GPS Survey Other

ORIGINAL WELL

ODNR Well Log Number Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS

Date of measurements SEPTEMBER 7, 2011

Depth of Well 14.2 FT. Static Water Level 9.38 FT.

Size of Casing 2 INCH Length of casing 14.2 FT

Well Condition GOOD

SEALING PROCEDURE

Method of Placement OVERDRILL W/ 4 1/4 HSA + TREMIE GROUT

Placement:	From	To	Sealing Material	Volume
	14.2	SURFACE	CEMENT BENTONITE	38 GALLONS

Was Casing Removed? Yes or No (circle one)

Condition of Casing GOOD

Perforations:	From	To
	14.2	4.2
	4.2	SURFACE

Date Sealing Performed SEPTEMBER 7, 2011

Reason(s) for Sealing WELL NO LONGER NEEDED FOR MONITORING

CONTRACTOR

Name TL ASSOCIATES INC ODH Registration # N/A

Address 1915 N. 12TH STREET

City/State/Zip TOLEDO, OH 43604

Signature

I hereby certify the information given is accurate and correct to the best of my knowledge.

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DNR 7810.10

WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0197143

MW #9

LOCATION

County LORAIN Township ELYRIA Circle One or Both Section/Lot Number

Owner/Builder (Circle One or Both) LORAIN COUNTY METROPOLITAN PARK DISTRICT

Address of Well Location Number FORD ROAD (LANDFILL) Street Name

City ELYRIA Zip Code 44035

Property Location Description: 1 1/2 miles NORTH (n, e, s, w) of WEST RIVER ROAD (nearest intersection) on the EAST (n, e, s, w) side of FORD ROAD (road name)

Location of Well in either: State Plane (N / S) X ____ +/- ____ ft. or m Y ____ +/- ____ ft. or m OR Latitude/Longitude (Check ONE: In Decimal Degrees / Degrees Minutes / Degrees Min. Sec.) Latitude ____ Longitude ____

Elevation of Well 607.38 +/- ____ ft. or m Datum Plain: NAD27 NAD83

Source of Coordinates: GPS Survey Other

ORIGINAL WELL

ODNR Well Log Number ____ Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS

Date of measurements SEPTEMBER 7, 2011

Depth of Well 14.0 FT. Static Water Level 10.1 FT.

Size of Casing 2 INCH Length of casing 14.0 FT.

Well Condition GOOD

SEALING PROCEDURE

Method of Placement OVERFILL W/ 4 1/4 HSA + TREMIE GROUT

Placement:	From	To	Sealing Material	Volume
	14.0	SURFACE	CEMENT BENTONITE	38 GALLONS
	From	To		
	From	To		

Was Casing Removed? Yes or No (circle one)

Condition of Casing GOOD

Perforations:	From	To
	14.0	4.0
	4.0	SURFACE

Date Sealing Performed SEPTEMBER 7, 2011

Reason(s) for Sealing WELL NO LONGER NEEDED FOR MONITORING

CONTRACTOR

Name TTL ASSOCIATES INC ODH Registration # N/A

Address 1915 N 12TH STREET

City/State/Zip TOLEDO, OH 43604

Signature [signature]

I hereby certify the information given is accurate and correct to the best of my knowledge.

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2045 MORSE ROAD BLDG. B, COLS., OHIO 43229-6693

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DNR 7810.10

WATER WELL SEALING REPORT
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

0197145

MW#10

LOCATION

County LORAIN Township ELYRIA Circle One or Both Section/Lot Number

Owner/Builder (Circle One or Both) LORAIN COUNTY METROPOLITAN PARK DISTRICT

Address of Well Location FORD ROAD (LANDFILL) (Number, Street Name)

City ELYRIA Zip Code 44035

Property Location Description: 1 1/2 miles NORTH (n, e, s, w) of WEST RIVER ROAD (nearest intersection) on the EAST (n, e, s, w) side of FORD ROAD (road name)

Location of Well in either: State Plane N ☐ S ☐ X ____ +/- ____ ft. or m Y ____ +/- ____ ft. or m
OR
Latitude/Longitude (Check ONE ☐ In Decimal Degrees ☐ Degrees Minutes ☐ Degrees Min. Sec.) Latitude ____ Longitude ____

Elevation of Well 605.67 +/- ____ ft. or m Datum Plain: ☐ NAD27 ☐ NAD83

Source of Coordinates: ☐ GPS ☐ Survey ☐ Other

ORIGINAL WELL

ODNR Well Log Number ____ Copy attached? Yes or No (circle one)

MEASURED CONSTRUCTION DETAILS

Date of measurements SEPTEMBER 7, 2011

Depth of Well 14.42
Size of Casing 2 INCH
Well Condition GOOD

Static Water Level 8.6 ft.
Length of casing 14.42

SEALING PROCEDURE

Method of Placement OVERDRILL w/ 4 1/4 HSA + TREMIE GROUT

Placement:	From	To	Sealing Material	Volume
	14.42	SURFACE	CEMENT-BENTONITE	38 GALLONS
	From	To		
	From	To		

Was Casing Removed? Yes or No (circle one)

Condition of Casing GOOD

Perforations: From 14.42 To 4.42
From 4.42 To SURFACE

Date Sealing Performed SEPTEMBER 7, 2011

Reason(s) for Sealing WELL NO LONGER NEEDED FOR MONITORING

CONTRACTOR

Name TTE ASSOCIATES, INC
Address 1915 N. 12TH STREET
City/State/Zip TOLEDO OH 43604

ODH Registration # N/A

Signature [signature]

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Monitoring Well Installations and Development Letter

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4700 Lakehurst Court, Suite 100
Dublin, Ohio 43016
Tel: 614-410-6144
Fax: 614-410-3088
www.brownandcaldwell.com

January 17, 2013

Brown AND Caldwell

Mr. Patrick Steerman
Steerman Environmental Management and Consulting
422 Creek View Lane
Roswell, Georgia 30075

SID-43053

Subject: Monitoring Well Installations and Development
Ford Road Landfill
Elyria, OH

Dear Mr. Steerman:

Brown and Caldwell Ohio, LLC (Brown and Caldwell) is pleased to submit this letter summarizing the installation and development of the seven replacement monitoring wells along the eastern perimeter of the Ford Road Landfill and the re-development of three existing monitoring wells. The new wells replaced the seven wells that were abandoned in 2011 to accommodate the remedial action construction activities. The replacement well locations were proposed in your September 7, 2012 email message to Demaree Collier and were approved by the U.S. EPA on September 9, 2012. Several modifications to approved Field Sampling Plan (FSP) procedures, specific to this work, were submitted to the U.S. EPA in your September 10, 2012 email message to Demaree Collier and approved by the U.S. EPA on September 11, 2012. The following sections discuss well installation and well development.

Monitoring Well Installations

Seven (7) new wells were installed by Brown and Caldwell's subcontracted driller, TTL, from September 24 through October 1, 2012 at the Site at the same general locations where the original wells were once located. The original locations were staked prior to drill rig mobilization. The new wells were located approximately five to ten feet from the original locations they replaced, with the exception of the two wells removed from the North Soil Excavation Area (FR-MW-1 and FR- MW-10). FR-MW-1R was installed approximately 130 feet south of its original location and FR-MW-10R was installed approximately 100 feet northwest of its original location, as requested by the U.S. Army Corps of Engineers (ACOE) and approved by the U.S EPA on September 10, 2012. The locations of the original and replacement wells are shown on Figure 1. The originally proposed well depths and the as-built well depths are summarized in Table 1. As requested by the ACOE, wells were completed in the basal unconsolidated soils above the shale bedrock. At most locations, a sand or sandy layer was encountered. The screened intervals of the new wells were originally to straddle the water table; however, in accordance with the ACOE's September 12, 2012 request, each well was "seated" approximately 6 to 12 inches into the underlying shale bedrock and installed with 10 feet of screen. The wells were finished above grade, housed in a lockable steel protective casing within a concrete well pad.

The wells installed along the driveable drainage channel were originally to be located along the inner portion of the drainage channel at the toe of the slope; however, due to concerns that those locations could contain ponded or flowing water during and after rain events, the wells were moved to the outside edge of the drainage channel. The locations of the replacement wells were approved by U. S. EPA and ACOE. The new wells were installed and constructed in accordance with the approved FSP and alternate procedures approved by the U.S. EPA in a September 11, 2012 email message.

Alternative procedures included not collecting soil samples while drilling through the recently constructed clay soil buttress, screening of wells in the overburden, as requested by the ACOE, and disposal of un-impacted soil cuttings and decontamination wash water in the Site storm water sedimentation basin. A Brown and Caldwell Geologist was onsite to oversee the well installations and to log the borings.

Table 1. Summary of Replacement Well Total Depths

Replacement Well ID	Projected Total Depth (ft, bgs)	Actual Total Depth (ft, bgs)
FR-MW-1R	29	28.47
FR-MW-2	22	25.83
FR-MW-3	31	23.81
FR-MW-4	17	18.70
FR-MW-8	26	30.41
FR-MW-9	31	28.33
FR-MW-10R	35	35.38

Soil cuttings were screened with a photoionization detector (PID) to verify that they were not impacted before being spread on the ground surface in the vicinity of the wells. Drilling equipment that came in contact with the subsurface material was decontaminated between well locations using pressurized water/steam. The wash water was discharged to the storm water sedimentation basin.

Following completion, the seven new wells were surveyed for location and elevation control by a licensed Ohio land surveyor (Bair, Goodie & Associates, Inc.). Soil boring and well construction details are included in Attachment A. Survey data are summarized in Table 2.

Table 2. Summary of Survey Data and Groundwater Elevations

Well ID	Ground Surface Elevation (ft, msl)	Well Reference Elevation (ft, msl)	Groundwater Elevation (10/24/12) (ft, msl)
FR-MW-1R	620.02	623.74	594.64
FR-MW-2	617.69	620.74	595.48
FR-MW-3	614.82	616.92	596.01
FR-MW-4	610.96	613.55	599.17
FR-MW-5	689.49*	692.47**	677.17
FR-MW-6	687.45*	689.43*	680.05
FR-MW-7	608.04*	610.21*	598.16
FR-MW-8	622.28	625.14	594.65
FR-MW-9	620.02	621.87	594.79
FR-MW-10R	626.52	628.64	598.52

*=Based on previous survey

**=Based on survey performed by Brown and Caldwell.

Well Development

Upon completion of the new well installations, the driller (TTL) used surge blocks and submersible pumps to develop the seven new wells on October 2, 2012. The seven replacement wells were developed to the point where the water was clear for wells FR-MW-2, 3, 4, 8 and 10R, with each well producing in excess of 50 gallons each. Wells FR-MW-1R and FR-MW-9 produced less than 5 gallons each and remained turbid. Development and recovery rates for these two wells were consistent with those observed during Remedial Investigation sampling.

Brown and Caldwell completed well development for the three existing wells (FR-MW-5, 6 and 7), and a second round of well development for the seven new wells from October 24 through 26, 2012 using bailing methods. Prior to this well development event, a round of water levels was collected from all ten onsite wells, and the resulting groundwater elevations are included in Table 2. During this development event, wells FR-MW 6 and 7 both bailed dry in less than three well volumes. Wells FR-MW-1R and 9R were both low yielding (less than 0.25 gallons over 5 minutes and less than 0.50 gallons over 5 minutes, respectively) and remained turbid. However, it is believed that these wells are capable of producing a sufficient volume of water for laboratory analysis. At least 10 well volumes were removed from wells FR-MW-2, 3, 4, 8 and 10R. Field parameters were routinely measured and recorded during this well development event and did not indicate that development water was noticeably impacted. As approved by the U.S. EPA on September 11, 2012, well development water was discharged to the storm water sedimentation basin.

Upon arriving at the site on October 24, 2012, Brown and Caldwell discovered that existing well FR-MW-5 had apparently been damaged by heavy equipment during the recent Remedial Action work. The well surface completion was repaired by the Remedial Action contractor. However, the bailer could not be lowered beyond approximately eight feet in the well, apparently due to a "pinch point" at that depth. Based on field observations, it was determined that this well could be sampled in the future using a peristaltic pump and the integrity of the well was not compromised. A peristaltic pump/tubing was used to purge approximately 2 gallons from the well. Brown and Caldwell resurveyed well FR-MW-5 following the repairs using a Sokkia LP31A Beam Detector.

The completed well development forms are included in Attachment B.

We appreciate the opportunity to be of assistance to you and the Ford Road Settling Parties. Should you have any questions, please do not hesitate to call Mr. Isaac at 614-923-5006.

Very truly yours,

Brown and Caldwell Ohio, LLC

Peter Schlater
Project Geologist

Richard A. Isaac, P.E.
Supervising Engineer

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Attachment A: Well Logs

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MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Ford Road Landfill Monitoring Well Installation Project Number: 143403 Project Location: Elyria, Ohio	Well No. **FR-MW-1R** Page 1 of 1

Geologist	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
P. Schlater	M. Watkins	6"	2" PVC	0.010"	30.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: Split Spoon	Development Method:
9/28/12 - 9/28/12	TTL	Hammer Type: Automatic	Submersible Pump and SS Bailer

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj:	Easting: 2079552.6 ft.
Neal	4.25" HSA	CME 45	Vert Datum:	Northing: 633563.6 ft.
			Ground Surface Elev: 620.0 ft.	TOC Elev: 623.7 ft.

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log: Sample Int	Recovery	Lithology	Well (Stick Up)	Readings (ppm)	Remarks
			-Compacted Clay, moist								
5	615										
10	610										
			-brown Clay w/ trace sand, gravel, and rock fragments, tight, stiff, no odor, damp	4-6-10-10						0.0	
				6-6-7-11						0.0	
15	605										
				12-15-22-15						0.0	
			Brick fragments, dry								
			-gray Clay w/ sand, silty, trace gravel, trace organics, no odor, Fe Staining,, damp	3-6-8-8						0.0	
20	600										
				7-6-3-3						0.0	
				2-2-6-5						0.0	
			-gray silty Sand, graded, no odor, coarse towards the bottom, moist	1-2-4-5						0.0	
25	595										
			-gray coarse Sad and gravel w/ weathered black shale fragments, wet	6-6-8-8						0.0	
				8-12-22-50/2						0.0	
			-gray Shale, wet								
30											

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Ford Road Landfill Monitoring Well Installation Project Number: 143403 Project Location: Elyria, Ohio	Well No. FR-MW-2 Page 1 of 1

Geologist	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
P. Schlater	M. Watkins	6"	2" PVC	0.010"	26.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: Split Spoon Hammer Type: Automatic	Development Method:
9/27/12 - 9/28/12	TTL		Submersible Pump and SS Bailer

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: Vert Datum: Ground Surface Elev: 617.7 ft.	Easting: 2079572.6 ft. Northing: 633390.4 ft. TOC Elev: 620.7 ft.
Neal	4.25" HSA	CME 45		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log: Sample Int	Recovery	Lithology	Well (Stick Up)	Readings (ppm)	Remarks
			-Compacted Clay, moist								
	615										
5											
	610										
10			-brown-gray Clay, stiff, trace sand, dry	2-7-8-12						0.0	
	605			12-13-15-16						0.0	
				5-7-5-3						0.0	
15											
			-gray silty sandy Clay, trace gravel, no odor, medium stiffness, moist	3-4-4-5						0.0	
	600		-light brown sandy Clay, fine grained sand, no odor, plastic, medium stiffness,, damp	2-2-2-2						0.0	
20				8-8-6-4						0.0	
			-brown Sand and gravel, no odor, w/ shale fragments, wet								
	595			5-7-7-7						0.0	
			-gray Shale, damp	2-6-19-40/6						0.0	
25											

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Ford Road Landfill Monitoring Well Installation Project Number: 143403 Project Location: Elyria, Ohio	Well No. FR-MW-3 Page 1 of 1

Geologist	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
P. Schlater	M. Watkins	6"	2" PVC	0.010"	24.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: Split Spoon	Development Method:
9/25/12 - 9/26/12	TTL	Hammer Type: Automatic	Submersible Pump and SS Bailer

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj:	Easting: 2079618.5 ft.
Neal	4.25" HSA	CME 45	Vert Datum:	Northing: 633254.8 ft.
			Ground Surface Elev: 614.8 ft.	TOC Elev: 616.9 ft.

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log: Sample Int / Recovery / Lithology / Well (Stick Up)	Readings (ppm)	Remarks
			-Compacted Clay, moist					
5	610							
			-fill-grayish brown Clay, stiff, w/sand, gravel, and rock fragments, no odor, dry	5-6-6-11			0.0	
				5-6-7-13			0.0	
10	605			5-10-10-12			0.0	
				7-12-15-17			0.0	
15	600		-dark gray Clay, w/ fine grained sand and gravel, fryable, no odor, moist	2-3-3-3			0.0	
			-brown silty Clay, trace sand, medium stiffness, no odor, moist	2-3-4-5			0.0	
			-brown Sand, fine to medium grained, trace silt, wet					
			-brown silty Clay, moist	3-3-3-4			0.0	
20	595		-dark brown coarse Sand and Gravel, poorly graded, trace silt, w/ some rock fragments, wet	3-5-5-8			0.0	
				6-6-7-30/0			0.0	
			-dark gray Shale, fissle, weathered bedrock, no odor, dry					

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Ford Road Landfill Monitoring Well Installation Project Number: 143403 Project Location: Elyria, Ohio	Well No. **FR-MW-4** Page 1 of 1

Geologist	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
P. Schlater	M. Watkins	6"	2" PVC	0.010"	20.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: Split Spoon Hammer Type: Automatic	Development Method:
9/25/12 - 9/26/12	TTL		Submersible Pump and SS Bailer

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: Vert Datum: Ground Surface Elev: 611.0 ft.	Easting: 2079610.1 ft. Northing: 633108.0 ft. TOC Elev: 613.6 ft.
Neal	4.25" HSA	CME 45		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log: Sample Int	Recovery	Lithology	Well (Stick Up)	Readings (ppm)	Remarks
	610		-Compacted Clay, moist								
5	605		-fill-brown Clay, stiff, trace sand and gravel, no odor, dry	2-7-6-8						0.0	
				10-13-19-17						0.0	
			-brown Clay, fine to medium trace sand and gravel, stiff, no odor, damp	2-4-5-5						0.0	
10	600			9-8-3-3						0.0	
			-brown Sand, fine to medium grained, no odor, dense, wet -brown silty Sand, dense, fine to medium grained, no odor, wet	2-1-1-1						0.0	
15	595		-brown Sand and Gravel, coarse, w/shale fragments, no odor, wet	1-4-6-5						0.0	
				2-3-3-2						0.0	
			-black Shale, weathered, moist -dark gray Shale, lightly weathered, fissle, no odor, dry	8-20-40/6						0.0	
20											

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Ford Road Landfill Monitoring Well Installation Project Number: 143403 Project Location: Elyria, Ohio	Well No. **FR-MW-8** Page 1 of 2

Geologist	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
P. Schlater	M. Watkins	6"	2" PVC	0.010"	31.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: Split Spoon	Development Method:
9/28/12 - 9/28/12	TTL	Hammer Type: Automatic	Submersible Pump and SS Bailer

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj:	Easting: 2079542.4 ft.
Neal	4.25" HSA	CME 45	Vert Datum:	Northing: 633636.8 ft.
			Ground Surface Elev: 622.3 ft.	TOC Elev: 625.1 ft.

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log: Sample Int / Recovery / Lithology / Well (Stick Up)	Readings (ppm)	Remarks
	620		-Compacted Clay, moist					
5								
	615							
10								
	610							
15			-fill-brown Clay, rock fragments, stiff, damp	5-9-6-10			0.0	
	605			9-11-13-19			0.0	
				1-2-4-6			0.0	
20			-gray silty Clay, trace sand and gravel, stiff, no odor, damp					
	600			7-9-7-8			0.0	
				1-1-2-3			0.0	
25				1-2-3-3			0.0	
	595		-dark gray silty Sand, coarse, w/ rock fragments,, wet	1-3-5-8			0.0	
				4-7-6-50/4			0.0	
30								

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Ford Road Landfill Monitoring Well Installation Project Number: 143403 Project Location: Elyria, Ohio	Well No. FR-MW-8 Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log: Sample Int	Graphic Log: Recovery	Graphic Log: Lithology	Graphic Log: Well	Readings (ppm)	Remarks
			-gray Shale, dry								

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Ford Road Landfill Monitoring Well Installation Project Number: 143403 Project Location: Elyria, Ohio	Well No. FR-MW-9 Page 1 of 1

Geologist	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
P. Schlater	M. Watkins	6"	2" PVC	0.010"	28.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: Split Spoon	Development Method:
9/27/12 - 9/28/12	TTL	Hammer Type: Automatic	Submersible Pump and SS Bailer

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj:	Easting: 2079558.4 ft.
Neal	4.25" HSA	CME 45	Vert Datum:	Northing: 633520.9 ft.
			Ground Surface Elev: 620.0 ft.	TOC Elev: 621.9 ft.

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log: Sample Int	Recovery	Lithology	Well (Stick Up)	Readings (ppm)	Remarks
			-Compacted Clay, moist								
5	615										
10	610										
			-gray/brown Clay, trace sand and gravel, w/ rock fragments and pieces of brick and stone, damp	2-7-10-11						0.0	
				4-5-7-10						0.0	
15	605			14-14-14-14						0.0	
			-gray sandy Clay, meduim stiffness, plastic, w/ fine grained sand, damp	3-4-5-3						0.0	
20	600			3-3-3-3						0.0	
				2-2-3-3						0.0	
25	595		-gray coarse Sand and Gravel, w/ black shale fragments, no odor, wet	1-1-1-3						0.0	
				3-7-8-9						0.0	
			-gray Shale, dry								

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Ford Road Landfill Monitoring Well Installation Project Number: 143403 Project Location: Elyria, Ohio	Well No. FR-MW-10R Page 1 of 2

Geologist	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
P. Schlater	M. Watkins	6"	2" PVC	0.010"	36.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: Split Spoon	Development Method:
10/1/12 - 10/1/12	TTL	Hammer Type: Automatic	Submersible Pump and SS Bailer

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj:	Easting: 2079453.9 ft.
Neal	4.25" HSA	CME 45	Vert Datum:	Northing: 633785.2 ft.
			Ground Surface Elev: 626.5 ft.	TOC Elev: 628.6 ft.

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log: Sample Int	Recovery	Lithology	Well (Stick Up)	Readings (ppm)	Remarks
	625		Compacted Clay, damp								
5	620										
10	615										
15	610										
20	605										
			-gray silty Clay, mottling dark brown, firm, moist	2-3-5-6						0.0	
				3-3-4-5						0.0	
25	600			3-4-4-5						0.0	
			-brown silty Clay, firm,, moist	2-2-3-4						0.0	
30				WT-2-3-4						0.0	

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Ford Road Landfill Monitoring Well Installation Project Number: 143403 Project Location: Elyria, Ohio	Well No. FR-MW-10R Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log: Sample Int	Graphic Log: Recovery	Graphic Log: Lithology	Graphic Log: Well	Readings (ppm)	Remarks
	595										
				3-4-4-5						0.0	
			-brown silty sandy Clay, soft to firm,, wet								
			-brown to dark gray silty Clay, plastic, firm, w/ black weathered shale, wet	2-2-22-30/0						0.0	
35			-dark gray Shale, dry								

Attachment B: Well Development Data

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BROWN AND CALDWELL

WELL DEVELOPMENT DATA

WELL NUMBER: MW-1R

PROJECT: Ford Road
PERSONNEL: Schlater
JOB NUMBER: 143403
TASK: Well Development
Weather Conditions: ☑ Sun ☐ Partly Cloudy ☐ Cloudy ☐ Rain ☐ Snow ☐ Windy
Temperature: 75 °F
Other:

WELL DATA

Casing: Diameter (inches) 2
Date: 10/24/12
Type: ☐ Stainless Steel ☑ PVC ☐ Other
Time:
Intake Screen: ☐ Stainless Steel ☑ PVC ☐ Other

Elevation at top of Riser 623.74 ft.
Depth to Static Water Level 29.10 ft.
Elevation of Static Water Level 594.64 ft.
Depth to Well Bottom 32.18 ft.
Feet of Water in Well 3.08 ft.
Re-check TD
Calculated Volume of Water in Well 0.49 gal.
0.65 gal/ft 4" diameter, 0.16 gal/ft 2" diameter, 0.07 gal/ft 1" diameter

Immiscible Liquid: ☐ Yes ☑ No
☑ Soft ☐ Hard

Is well in good condition? ☑ Yes ☐ No
Is well visible? ☑ Yes ☐ No
Is well accessible? ☑ Yes ☐ No
Is drainage acceptable? ☑ Yes ☐ No
Is well labeled? ☑ Yes ☐ No
Is well locked? ☑ Yes ☐ No

Measurement Datum: ☑ Top of Inner Casing ☐ Procasing
Other
Concrete Pad/ Condition: Good

Lock Type
Key Number

DEVELOPMENT DATA

Number of Well Volumes Removed 0.50
Date: 10/25/12 Time: 1120

Developm't. Method: ☐ Air Displace. Pump ☑ Bailer ☐ Sub Pump Other:

Materials: Bailer/Pump ☐ Teflon ☑ SS ☐ PVC ☐ PE Other:
Cord/Tubing ☐ Teflon ☐ Polypropylene ☑ Nylon Other:

Pumping Rate 0.05 gal./m
Elapsed Time 5 Hrs.min
Volume Purged .25 gal.
Well Evacuated? ☑ Yes ☐ No

Development Equipment
☐ Dedicated
☐ Disposable
☑ Field Cleaned

Time Series Data

Instruments: Horiba U-52
Date Calibrated: 10/23/

Time:	1130										
Well Vol.:	0	0.5									
Temp:	18.66										
pH:	8.45										
Cond.:	0.801										
Turbidity:	>800										

Thick silt
will not develop properly - need to re-visit prior to sampling and bail down and clean up well

Comments: Removed 1.25 gal of a thick silty water from well - consistency of grout
- Well check tomorrow
- Rechecked and more thick silt removed

WELL DEVELOPMENT WAS PERFORMED IN ACCORDANCE WITH APPLICABLE REGULATORY AND CORPORATE PROTOCOLS

SIGNATURE

10/25/12
DATE

BROWN AND CALDWELL

WELL DEVELOPMENT DATA

WELL NUMBER: MW-2

PROJECT: Pond Road

PERSONNEL: Schlater

JOB NUMBER: 143403

TASK: Well Development

Weather Conditions: ☑ Sun ☐ Partly Cloudy ☐ Cloudy ☐ Rain ☐ Snow ☑ Windy

Temperature: 75 °F

Other:

WELL DATA

Casing: Diameter (inches) 2

Date: 10/24/12

Type: ☐ Stainless Steel ☑ PVC ☐ Other

Time:

Intake Screen: ☐ Stainless Steel ☑ PVC ☐ Other

Elevation at top of Riser 620.74 ft.

Depth to Static Water Level 25.26 ft.

Elevation of Static Water Level 595.48 ft.

Depth to Well Bottom 28.88 ft.

Feet of Water in Well 3.62 ft.

Calculated Volume of Water in Well 0.58 gal. (0.65 gal/ft 4" diameter, 0.16 gal/ft 2" diameter, 0.07 gal/ft 1" diameter)

Immiscible Liquid: ☐ Yes ☑ No

☐ Soft ☐ Hard

Is well in good condition? ☑ Yes ☐ No

Is well visible? ☑ Yes ☐ No

Is well accessible? ☑ Yes ☐ No

Is drainage acceptable? ☑ Yes ☐ No

Is well labeled? ☑ Yes ☐ No

Is well locked? ☑ Yes ☐ No

Measurement Datum: ☑ Top of Inner Casing ☐ Procasing

Other

Concrete Pad/ Condition: Good

Lock Type

Key Number

DEVELOPMENT DATA

Number of Well Volumes Removed 10.35

Date: 10/25/12 Time: 1000

Developm't. Method: ☐ Air Displace. Pump ☑ Bailer ☐ Sub Pump Other:

Materials: Bailer/Pump ☐ Teflon ☑ SS ☐ PVC ☐ PE Other:

Cord/Tubing ☐ Teflon ☐ Polypropylene ☑ Nylon Other:

Pumping Rate 0.20 gal./m

Elapsed Time 30 Hrs:min

Volume Purged 6.0 gal.

Well Evacuated? ☐ Yes ☑ No

Development Equipment

☐ Dedicated

☐ Disposable

☑ Field Cleaned

Time Series Data

Instruments: Horiba U-52

Date Calibrated: 10/25/12

Time:	1005	1007	1010	1012	1014	1016	1019	1035			
Well Vol.:	0	0.6	1.2	1.8	2.4	3.0	4.5	6.0			
Temp:	17.07	16.95	16.94	16.94	16.97	16.92	16.93	16.99			
pH:	7.31	7.42	7.30	7.43	7.28	7.25	7.24	7.40			
Cond.:	3.74	3.53	3.48	3.44	3.44	3.45	3.45	3.44			
Turbidity:	0.0	>800	>800	>800	>800	>800	>800	>800			

Comments

WELL DEVELOPMENTWAS PERFORMED IN ACCORDANCE WITH APPLICABLE REGULATORY AND CORPORATE PROTOCOLS

SIGNATURE

10/25/12

DATE

BROWN AND CALDWELL

WELL DEVELOPMENT DATA

WELL NUMBER: MW-3

PROJECT: Ford Road PERSONNEL: Schlater

JOB NUMBER: 143403 TASK: Well Development

Weather Conditions: ☑ Sun ☐ Partly Cloudy ☐ Cloudy ☐ Rain ☐ Snow ☑ Windy Temperature: 75 °F

Other:

WELL DATA

Casing: Diameter (inches) 2 Date: 10/24/12

Type: ☐ Stainless Steel ☑ PVC ☐ Other Time:

Intake Screen: ☐ Stainless Steel ☑ PVC ☐ Other

Elevation at top of Riser 616.92 ft.

Depth to Static Water Level 20.91 ft.

Elevation of Static Water Level 596.01 ft.

Depth to Well Bottom 25.91 ft.

Feet of Water in Well 5.00 ft.

Calculated Volume of Water in Well 0.80 gal. (0.65 gal/ft 4" diameter, 0.16 gal/ft 2" diameter, 0.07 gal/ft 1" diameter)

Immiscible Liquid: ☐ Yes ☐ No

☐ Soft ☐ Hard

Is well in good condition? ☑ Yes ☐ No

Is well visible? ☑ Yes ☐ No

Is well accessible? ☑ Yes ☐ No

Is drainage acceptable? ☑ Yes ☐ No

Is well labeled? ☑ Yes ☐ No

Is well locked? ☑ Yes ☐ No

Measurement Datum: ☒ Top of Inner Casing ☐ Procasing Other

Concrete Pad/ Condition: Good

Lock Type Key Number

DEVELOPMENT DATA

Number of Well Volumes Removed 10.0 Date: 10/25/12 Time: 0845

Developm't. Method: ☐ Air Displace. Pump ☑ Bailer ☐ Sub Pump Other:

Materials: Bailer/Pump ☐ Teflon ☑ SS ☐ PVC ☐ PE Other:

Cord/Tubing ☐ Teflon ☐ Polypropylene ☑ Nylon Other:

Pumping Rate 0.12 gal./m

Elapsed Time 67 Hrs.min

Volume Purged 8.0 gal.

Well Evacuated? ☐ Yes ☑ No

Development Equipment

☐ Dedicated

☐ Disposable

☑ Field Cleaned

Time Series Data

Instruments: Horiba U-52

Date Calibrated: 10/25/12

Time:	0848	0851	0855	0859	0906	0910	0913	0917	0955		
Well Vol.: (gal)	0	1	2	3	4	5	6	7	8		
Temp:	16.54	16.91	16.93	17.05	16.75	16.91	16.98	16.89	16.71		
pH:	7.03	6.97	7.00	6.96	7.15	7.04	7.06	7.06	7.10		
Cond.:	3.63 mS/cm	3.66	3.65	3.68	3.68	3.71	3.71	3.73	3.80		
Turbidity:	584	>800	>800	>800	>800	>800	>800	>800	>800		

Comments

WELL DEVELOPMENTWAS PERFORMED IN ACCORDANCE WITH APPLICABLE REGULATORY AND CORPORATE PROTOCOLS

SIGNATURE 10/25/12 DATE

BROWN AND CALDWELL

WELL DEVELOPMENT DATA

WELL NUMBER: MW-4

PROJECT: Ford Road PERSONNEL: Schlater

JOB NUMBER: 143403 TASK: Well Development

Weather Conditions: ☑ Sun ☐ Partly Cloudy ☐ Cloudy ☐ Rain ☐ Snow ☐ Windy Temperature: 75 °F

Other:

WELL DATA

Casing: Diameter (inches) 2 Date: 10/24/12

Type: ☐ Stainless Steel ☑ PVC ☐ Other Time:

Intake Screen: ☐ Stainless Steel ☑ PVC ☐ Other

Elevation at top of Riser 613.55 ft.

Depth to Static Water Level 14.38 ft.

Elevation of Static Water Level 599.17 ft.

Depth to Well Bottom 21.29 ft.

Feet of Water in Well 6.91 ft.

Calculated Volume of Water in Well 1.11 gal. × 0.65 gal/ft 4" diameter, 0.16 gal/ft 2" diameter, 0.07 gal/ft 1" diameter

Immiscible Liquid: ☐ Yes ☒ No

☐ Soft ☒ Hard

Is well in good condition? ☑ Yes ☐ No

Is well visible? ☑ Yes ☐ No

Is well accessible? ☑ Yes ☐ No

Is drainage acceptable? ☑ Yes ☐ No

Is well labeled? ☑ Yes ☐ No

Is well locked? ☑ Yes ☐ No

Measurement Datum: ☒ Top of Inner Casing ☐ Procasing

Other

Concrete Pad/ Condition: Good

Lock Type Key Number

DEVELOPMENT DATA

Number of Well Volumes Removed 10.14 Date: 10/25/12 Time: 0750

Developm't. Method: ☐ Air Displace. Pump ☑ Bailer ☐ Sub Pump Other:

Materials: Bailer/Pump ☐ Teflon ☑ SS ☐ PVC ☐ PE Other:

Cord/Tubing ☐ Teflon ☐ Polypropylene ☑ Nylon Other:

Pumping Rate 0.32 gal./m

Elapsed Time 35 Hrs/min

Volume Purged 11.25 gal.

Well Evacuated? ☐ Yes ☑ No

Development Equipment

☐ Dedicated

☐ Disposable

☑ Field Cleaned

Time Series Data

Instruments: Horiba U52

Date Calibrated: 10/25/12

Time:	0803	0806	0810	0815	0822	0830	0838				
Well Vol.: (gal)	0	1.25	2.5	3.75	6.25	8.75	11.25				
Temp:	17.29	17.53	17.33	17.43	17.59	17.53	17.39				
pH:	6.74	6.66	6.69	6.75	6.68	6.72	6.90				
Cond.:	3.14 mS/cm	3.24	3.45	3.39	3.50	3.56	3.62				
Turbidity:	589	800	800	800	800	800	800				

Comments Water stayed turbid

WELL DEVELOPMENT WAS PERFORMED IN ACCORDANCE WITH APPLICABLE REGULATORY AND CORPORATE PROTOCOLS

SIGNATURE

10/25/12

DATE

BROWN AND CALDWELL

WELL DEVELOPMENT DATA

WELL NUMBER: MW-5

PROJECT: Ford Road
PERSONNEL: Schlater
JOB NUMBER: 143403
TASK: Well Development
Weather Conditions: ☑ Sun ☐ Partly Cloudy ☐ Cloudy ☐ Rain ☐ Snow ☐ Windy
Temperature: 75 °F
Other:

WELL DATA

Casing: Diameter (inches) 2
Date: 10/24/12
Type: ☐ Stainless Steel ☑ PVC ☐ Other
Time:
Intake Screen: ☐ Stainless Steel ☑ PVC ☐ Other

Elevation at top of Riser 692.13 ft.
Depth to Static Water Level 15.30 ft.
Elevation of Static Water Level 676.83 ft.
Depth to Well Bottom 32.44 ft.
Feet of Water in Well 17.14 ft.
Calculated Volume of Water in Well 2.74 gal. × 0.65 gal/ft 4" diameter, 0.16 gal/ft 2" diameter, 0.07 gal/ft 1" diameter

Immiscible Liquid: ☐ Yes ☑ No
☐ Soft ☐ Hard

Is well in good condition? ☑ Yes ☐ No
Is well visible? ☑ Yes ☐ No
Is well accessible? ☑ Yes ☐ No
Is drainage acceptable? ☑ Yes ☐ No
Is well labeled? ☑ Yes ☐ No
Is well locked? ☑ Yes ☐ No

Measurement Datum: ☑ Top of Inner Casing ☐ Procasing
Other
Concrete Pad/ Condition: Well Damaged - must be repaired or reinstalled REPAIRED
Lock Type
Key Number

DEVELOPMENT DATA

Number of Well Volumes Removed 0.73
Date: 10/26/12 Time: 0740

Developm't. Method: ☐ Air Displace. Pump ☐ Bailer ☐ Sub Pump Other:

Materials: Bailer/Pump ☐ Teflon ☐ SS ☐ PVC ☐ PE Other: Silicon
Cord/Tubing ☐ Teflon ☑ Polypropylene ☐ Nylon Other:

Pumping Rate 0.06 gal./m Peri Pump
Elapsed Time 35 Hrs:min
Volume Purged 2 gal.
Well Evacuated? ☐ Yes ☑ No

Development Equipment
☐ Dedicated
☑ Disposable
☐ Field Cleaned

Time Series Data

Instruments: Horiba U-52
Date Calibrated: 10/26/12

Time:	0805	0815	0830							
Well Vol.:	0	1 gal	2 gal							
Temp:	14.80	14.69	14.61							
pH:	7.28	7.09	7.01							
Cond.:	1.06	1.16	1.13							
Turbidity:	0.0	>800	>800							

stop @ 20.77

water rusty in color

Comments well repaired - J. Montello ask to show that the well could be sampled via pump. Using a peri-pump w/ tubing at approximately 23' which is just below top of screen the well was pumped.

WELL DEVELOPMENT WAS PERFORMED IN ACCORDANCE WITH APPLICABLE REGULATORY AND CORPORATE PROTOCOLS

SIGNATURE

10/26/12
DATE

BROWN AND CALDWELL

WELL DEVELOPMENT DATA

WELL NUMBER: MW-6

PROJECT: Ford Road
PERSONNEL: Schlater
JOB NUMBER: 143403
TASK: Well Development

Weather Conditions: ☑ Sun ☐ Partly Cloudy ☐ Cloudy ☐ Rain ☐ Snow ☐ Windy
Temperature: 73 °F
Other:

WELL DATA

Casing: Diameter (inches) 2
Date: 10/24/12
Type: ☐ Stainless Steel ☑ PVC ☐ Other
Time:
Intake Screen: ☐ Stainless Steel ☑ PVC ☐ Other

Elevation at top of Riser 689.43 ft.
Depth to Static Water Level 9.38 ft.
Elevation of Static Water Level 680.05 ft.
Depth to Well Bottom 30.44 ft.
Feet of Water in Well 21.06 ft.
Calculated Volume of Water in Well 3.37 gal. (0.65 gal/ft 4" diameter, 0.16 gal/ft 2" diameter, 0.07 gal/ft 1" diameter)

Immiscible Liquid: ☐ Yes ☑ No
☐ Soft ☑ Hard

Is well in good condition? ☑ Yes ☐ No
Is well visible? ☑ Yes ☐ No
Is well accessible? ☑ Yes ☐ No
Is drainage acceptable? ☑ Yes ☐ No
Is well labeled? ☑ Yes ☐ No
Is well locked? ☑ Yes ☐ No

Measurement Datum: ☑ Top of Inner Casing ☐ Procasing
Other
Concrete Pad/ Condition: Good
Lock Type
Key Number

DEVELOPMENT DATA

Number of Well Volumes Removed 2.02
Date: 10/25/12 Time: 1445

Developm't. Method: ☐ Air Displace. Pump ☑ Bailer ☐ Sub Pump
Other:

Materials: Bailer/Pump ☐ Teflon ☑ SS ☐ PVC ☐ PE
Other:
Cord/Tubing ☐ Teflon ☐ Polypropylene ☑ Nylon
Other:

Pumping Rate 0.31 gal./m
Elapsed Time 22 Hrs:min
Volume Purged 6.8 gal.
Well Evacuated? ☑ Yes ☐ No

Development Equipment
☐ Dedicated
☐ Disposable
☑ Field Cleaned

Time Series Data

Instruments: Horiba U-52
Date Calibrated: 10/25/12

Time:	1452	1500	1515								
Well Vol.:	0	3.4	6.8	10.2	15	20	25	30	35		
Temp:	15.83	16.20	16.70								
pH:	7.10	7.14	7.45								
Cond.:	8.09	8.20	8.11								
Turbidity:	0.5	>800	>800								
			dry								

30.13 ft

Comments slow recovery

WELL DEVELOPMENTWAS PERFORMED IN ACCORDANCE WITH APPLICABLE REGULATORY AND CORPORATE PROTOCOLS

SIGNATURE

10/25/12
DATE

BROWN AND CALDWELL

WELL DEVELOPMENT DATA

WELL NUMBER: MW-7

PROJECT: Ford Road
PERSONNEL: Schlater
JOB NUMBER: 143403
TASK: Well Development
Weather Conditions: ☑ Sun ☐ Partly Cloudy ☐ Cloudy ☐ Rain ☐ Snow ☐ Windy
Temperature: 72 °F
Other:

WELL DATA

Casing: Diameter (inches) 2
Date: 10/24/12
Type: ☐ Stainless Steel ☑ PVC ☐ Other
Time:
Intake Screen: ☐ Stainless Steel ☑ PVC ☐ Other

Elevation at top of Riser 610.21 ft.
Depth to Static Water Level 12.05 ft.
Elevation of Static Water Level 598.16 ft.
Depth to Well Bottom 16.95 ft.
Feet of Water in Well 4.90 ft.
Calculated Volume of Water in Well 0.78 gal. X 0.65 gal/ft 4" diameter, 0.16 gal/ft 2" diameter, 0.07 gal/ft 1" diameter

Immiscible Liquid: ☐ Yes ☑ No
☐ Soft ☑ Hard

Is well in good condition? ☑ Yes ☐ No
Is well visible? ☑ Yes ☐ No
Is well accessible? ☑ Yes ☐ No
Is drainage acceptable? ☑ Yes ☐ No
Is well labeled? ☑ Yes ☐ No
Is well locked? ☑ Yes ☐ No

Measurement Datum: ☑ Top of Inner Casing ☐ Procasing
Other
Concrete Pad/ Condition: Below ground surface

Lock Type: Key Number:

DEVELOPMENT DATA

Number of Well Volumes Removed 2.05
Date: 10/25/12 Time: 1620

Developm't. Method: ☐ Air Displace. Pump ☑ Bailer ☐ Sub Pump
Other:

Materials: Bailer/Pump ☐ Teflon ☑ SS ☐ PVC ☐ PE
Other:
Cord/Tubing ☐ Teflon ☐ Polypropylene ☑ Nylon
Other:

Pumping Rate 0.27 gal./m
Elapsed Time 6 Hrs.min
Volume Purged 1.6 gal.
Well Evacuated? ☑ Yes ☐ No

Development Equipment
☐ Dedicated
☐ Disposable
☑ Field Cleaned

Time Series Data

Instruments: Horiba U-52
Date Calibrated: 10/25/12

Time:	1625	1632	1635							
Well Vol.:	0	0.8	1.6							
Temp:	19.78	18.08	16.89							
pH:	7.75	6.65	6.10							
Cond.:	1.63	1.15	1.89							
Turbidity:	>800	>800	>800							
			Dry @16.61							

Comments Rusty red water - slow recovery

WELL DEVELOPMENT WAS PERFORMED IN ACCORDANCE WITH APPLICABLE REGULATORY AND CORPORATE PROTOCOLS

SIGNATURE

10/25/12
DATE

BROWN AND CALDWELL

WELL DEVELOPMENT DATA

WELL NUMBER: MW-8

PROJECT: Ford Road PERSONNEL: Schlater

JOB NUMBER: 143403 TASK: Well Developmet

Weather Conditions: ☑ Sun ☐ Partly Cloudy ☐ Cloudy ☐ Rain ☐ Snow ☐ Windy Temperature: 75 °F

Other:

WELL DATA

Casing: Diameter (inches) 2 Date: 10/24/12

Type: ☐ Stainless Steel ☑ PVC ☐ Other Time:

Intake Screen: ☐ Stainless Steel ☑ PVC ☐ Other

Elevation at top of Riser 625.14 ft.

Depth to Static Water Level 30.49 ft. Immiscible Liquid:

Elevation of Static Water Level 594.65 ft. ☐ Yes ☑ No

Depth to Well Bottom 53.27 ft. ☐ Soft ☑ Hard

Feet of Water in Well 2.78 ft.

Calculated Volume of Water in Well 0.45 gal. X 0.65 gal/ft 4" diameter, 0.16 gal/ft 2" diameter, 0.07 gal/ft 1" diameter

Is well in good condition? ☑ Yes ☐ No

Is well visible? ☑ Yes ☐ No

Is well accessible? ☑ Yes ☐ No

Is drainage acceptable? ☑ Yes ☐ No

Is well labeled? ☑ Yes ☐ No

Is well locked? ☑ Yes ☐ No

Measurement Datum: ☑ Top of Inner Casing ☐ Procasing

Other

Concrete Pad/ Condition: Good

Lock Type Key Number

DEVELOPMENT DATA

Number of Well Volumes Removed 11.11 Date: 10/25/12 Time: 1240

Developm't. Method: ☐ Air Displace. Pump ☑ Bailer ☐ Sub Pump Other:

Materials: Bailer/Pump ☐ Teflon ☑ SS ☐ PVC ☐ PE Other:

Cord/Tubing ☐ Teflon ☐ Polypropylene ☑ Nylon Other:

Pumping Rate 0.20 gal./m

Elapsed Time 25 Hrs/min

Volume Purged 5 gal.

Well Evacuated? ☐ Yes ☑ No

Development Equipment

☐ Dedicated

☑ Disposable

☐ Field Cleaned

Time Series Data

Instruments: Horiba U-52

Date Calibrated: 10/25/12

Time:	1247	1250	1252	1259	1302	1305	1309	1312			
Well Vol.:	0	0.5	1.0	1.5	2	3	4	5			
Temp:	18.82	17.54	17.16	17.36	17.16	16.98	17.17	16.77			
pH:	7.80	7.02	6.92	7.05	6.91	6.79	6.80	6.79			
Cond.:	3.13	3.09	3.15	3.08	3.18	3.20	3.27	3.37			
Turbidity:	0.0	>800	>800	>800	>800	>800	>800	>800			

Comments Water Stayed turbid

WELL DEVELOPMENTWAS PERFORMED IN ACCORDANCE WITH APPLICABLE REGULATORY AND CORPORATE PROTOCOLS

SIGNATURE

10/25/12 DATE

BROWN AND CALDWELL

WELL DEVELOPMENT DATA

WELL NUMBER: MW-9

PROJECT: Ford Road

PERSONNEL: Schlatter

JOB NUMBER: 143403

TASK: Well Development

Weather Conditions: ☑ Sun ☐ Partly Cloudy ☐ Cloudy ☐ Rain ☐ Snow ☑ Windy

Temperature: 75 °F

Other:

WELL DATA

Casing: Diameter (inches) 2

Date: 10/24/12

Type: ☐ Stainless Steel ☑ PVC ☐ Other

Time:

Intake Screen: ☐ Stainless Steel ☑ PVC ☐ Other

Elevation at top of Riser 621.87 ft.

Depth to Static Water Level 27.08 ft.

Immiscible Liquid: ☐ Yes ☐ No

Elevation of Static Water Level 594.79 ft.

Depth to Well Bottom 30.17 ft. ☐ Soft ☐ Hard

Feet of Water in Well 3.09 ft.

Calculated Volume of Water in Well 0.49 gal. × 0.65 gal/ft 4" diameter, 0.16 gal/ft 2" diameter, 0.07 gal/ft 1" diameter

Is well in good condition? ☑ Yes ☐ No

Is well visible? ☑ Yes ☐ No

Is well accessible? ☑ Yes ☐ No

Is drainage acceptable? ☑ Yes ☐ No

Is well labeled? ☑ Yes ☐ No

Is well locked? ☑ Yes ☐ No

Measurement Datum: ☑ Top of Inner Casing ☐ Procasing

Other

Concrete Pad/ Condition: Good

Lock Type

Key Number

DEVELOPMENT DATA

Number of Well Volumes Removed 1

Date: 10/25/12 Time: 1040

Developm't. Method: ☐ Air Displace. Pump ☑ Bailer ☐ Sub Pump Other:

Materials: Bailer/Pump ☐ Teflon ☑ SS ☐ PVC ☐ PE Other:

Cord/Tubing ☐ Teflon ☐ Polypropylene ☑ Nylon Other:

Pumping Rate 0.10 gal./m

Elapsed Time 5 Hrs:min

Volume Purged .50 gal.

Well Evacuated? ☐ Yes ☐ No

Development Equipment

☐ Dedicated

☐ Disposable

☑ Field Cleaned

Time Series Data

Instruments: Horiba U-52

Date Calibrated: 10/23/12

Time:	1045 dry											
Well Vol.:	0	.5	1	1.5	2	2.5						
Temp:	10.90											
pH:	7.21											
Cond.:	3.33											
Turbidity:	>800											

@1058

Comments Very turbid

WELL DEVELOPMENTWAS PERFORMED IN ACCORDANCE WITH APPLICABLE REGULATORY AND CORPORATE PROTOCOLS

SIGNATURE

10/25/12

DATE

BROWN AND CALDWELL

WELL DEVELOPMENT DATA

WELL NUMBER: MW-10R

PROJECT: Ford Road
PERSONNEL: Schlater
JOB NUMBER: 143403
TASK: Well Development
Weather Conditions: ☒ Sun ☐ Partly Cloudy ☐ Cloudy ☐ Rain ☐ Snow ☐ Windy
Temperature: 65 °F
Other:

WELL DATA

Casing: Diameter (inches) 2
Date: 10/24/12
Type: ☐ Stainless Steel ☒ PVC ☐ Other
Time:
Intake Screen: ☐ Stainless Steel ☒ PVC ☐ Other

Elevation at top of Riser 628.64 ft.
Depth to Static Water Level 30.12 ft.
Elevation of Static Water Level 598.52 ft.
Depth to Well Bottom 37.50 ft.
Feet of Water in Well 7.38 ft.
Calculated Volume of Water in Well 1.18 gal. X 0.65 gal/ft 4" diameter, 0.16 gal/ft 2" diameter, 0.07 gal/ft 1" diameter

Immiscible Liquid: ☐ Yes ☒ No
☐ Soft ☒ Hard

Is well in good condition? ☒ Yes ☐ No
Is well visible? ☒ Yes ☐ No
Is well accessible? ☒ Yes ☐ No
Is drainage acceptable? ☒ Yes ☐ No
Is well labeled? ☒ Yes ☐ No
Is well locked? ☒ Yes ☐ No

Measurement Datum: ☒ Top of Inner Casing ☐ Procasing
Other
Concrete Pad/ Condition: Good
Lock Type
Key Number

DEVELOPMENT DATA

Number of Well Volumes Removed 10.17
Date: 10/25/12 Time: 1310

Developm't. Method: ☐ Air Displace. Pump ☒ Bailer ☐ Sub Pump Other:

Materials: Bailer/Pump ☐ Teflon ☒ SS ☐ PVC ☐ PE Other:
Cord/Tubing ☐ Teflon ☐ Polypropylene ☒ Nylon Other:

Pumping Rate 0.26 gal./m
Elapsed Time 46 Hrs:min
Volume Purged 12 gal.
Well Evacuated? ☐ Yes ☒ No

Development Equipment
☐ Dedicated
☐ Disposable
☒ Field Cleaned

Time Series Data

Instruments: Horiba U-52
Date Calibrated: 10/25/12

Time:	1318	1324	1328	1332	1336	1349	1354	1359	1404		
Well Vol.:	0	1.25	2.5	3.75	5	6.25	8	10	12		
Temp:	16.36	15.88	15.05	14.81	14.21	15.19	14.98	14.85	14.55		
pH:	7.41	7.10	6.74	6.69	6.43	6.75	6.58	6.59	6.43		
Cond.:	3.11	3.00	3.33	3.28	3.77	3.95	3.84	4.03	3.97		
Turbidity:	>800	>800	>800	>800	>800	>800	>800	>800	>800		

Comments Water Stayed turbid

WELL DEVELOPMENT WAS PERFORMED IN ACCORDANCE WITH APPLICABLE REGULATORY AND CORPORATE PROTOCOLS

SIGNATURE

10/25/12
DATE

Figures

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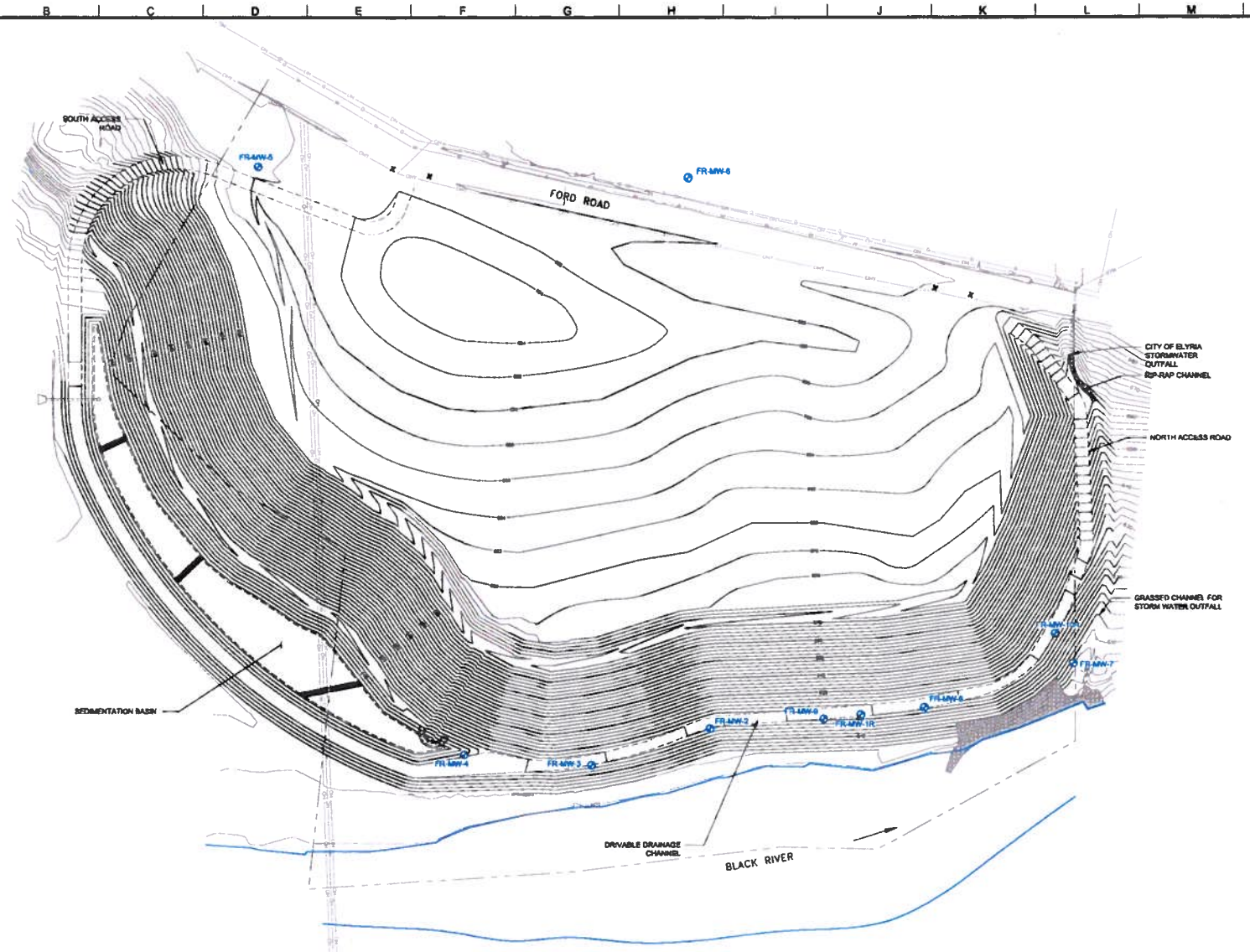

LEGEND:

- EXISTING GROUND CONTOURS
- EXISTING GROUND INDEX CONTOURS
- FINAL GRADE CONTOURS
- FINAL GRADE INDEX CONTOURS
- PROPERTY LINE
- OVERHEAD POWER LINES
- GAS LINE
- TELEPHONE LINE
- WATER LINE
- STORM LINE
- RIVER EDGE (APPROXIMATE)
- 15' ACCESS ROAD
- TOP OF WASTE WITH 2' OF COVER CONTOUR
- FR-MW-8 FINAL MONITORING WELL LOCATION

NOTES:

1. BOUNDARY AND TOPOGRAPHIC SURVEY OF THE SITE WAS PROVIDED BY KS ASSOCIATES ON 1/20/2004. BORING LOCATIONS AND ADDITIONAL TOPOGRAPHIC DETAIL SURVEYED BY BAIR GOODIE & ASSOCIATES, MAY 2010.
2. NEW GROUNDWATER MONITORING WELL LOCATIONS (FR-MW-1R, FR-MW-2, FR-MW-3, FR-MW-4, FR-MW-6, FR-MW-8, AND FR-MW-10R) SURVEYED BY BAIR GOODIE & ASSOCIATES, OCTOBER 11, 2012.
3. WATER EDGE IS APPROXIMATE.

0 60' 120'
GRAPHIC SCALE

Brown AND Caldwell
COLUMBUS, OHIO

SUBMITTED: _____ DATE: _____
APPROVED: _____ DATE: _____

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED: RI
DRAWN: NG
CHECKED: RI
CHECKED: BP
APPROVED: RI

EXTERNAL REFERENCE FILES

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP

FORD ROAD LANDFILL, ELYRIA OHIO

GROUNDWATER MONITORING NETWORK

FILENAME GROUNDWATER_WELLS
BC PROJECT NUMBER 142229
CLIENT PROJECT NUMBER
FIGURE NUMBER 1

October 30, 2012

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Appendix L: Vegetation – Seed Tags, Fertilizer, Mulch Information

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Phase I Remedial Action

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PURE FIRELANDS "HIGHWAY MEDIAN" LAWN SEED MIXTURE

SEED	KIND OF SEED	GERMINATION
39.20%	FAWN TALL FESCUE	85%
29.55%	PERENNIAL RYEGRASS VNS	90%
25.80%	KENTUCKY BLUEGRASS VNS	80%

00.30% CROP 00.05% WEEDS 05.10% INERT

LOT NO: LG7480-11 TEST DATE: MAY 2011

SELL BY: AUG. 20, 2012 NET WEIGHT 50 POUNDS

MADE FOR: FIRELANDS SUPPLY CO.
NORWALK, OHIO

PACKAGED BY OHIO SEED PERMIT HOLDER
OLIGER SEED COMPANY 89 HANNA PARKWAY AKRON, OH

VARIETY LOT STATED RYE

LOT # 9744

Pure Seed	98.00%	Germination	85%
Other Crop	.40%	Test Date	6-11
Inert	1.40%	Net Weight	56
Weeds	.20%	Origin	CAN

No Noxious Weed Seeds Found in 50 Grams

Shipper: OLIGER SEED

AKRON, OH AMS#948

We warrant to extent of the purchase price that seeds are as described on the bag on this tag attached thereto, within recognized tolerances. We give no other warranty, expressed or implied, of merchantability or fitness of the seed for any particular purpose, nor any other warranty against loss of yield due to any cause, including environmental conditions, disease, insect, soil conditions, chemicals, farming practices or the response of this seed to any such conditions. We shall in no event be liable for any special or consequential damages, notwithstanding any breach of warranty or negligence on its part. Purchaser accepts these terms unless he returned seed within fifteen days for refund of purchase.

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Phase II Remedial Action

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JMD COMPANY
MACEDONIA, OH

FORD LANDFILL Flat Area seed mix

%	Seed Type	Origin	Germ	Hard
49.82%	Hound Dog 6 Dwarf Tall Fescue	OR	90%	
22.71%	Fawn Tall Fescue	OR	90%	
10.76%	Creeping Red Fescue	CAN	85%	
10.11%	Kentucky Bluegrass 85/80	WA	80%	
05.98%	Keystone 2 Perennial Ryegrass	OR	90%	
00.13%	Other Crop Seed			
00.48%	Inert Matter			
00.01%	Weed Seed NO NOXIOUS			

LOT #AJB05171202 Test Date: 4/12 Sell By: 07/13 Net Wt.: 50 LB

DISCOUNT SEEDS INC
PO BOX 84
WATERTOWN, SD 57201

KIND RYE LOT #12224
VARIETY UNKNOWN

PURE SEED	98.00%	GERMINATION	85%
CROP SEED	.72%	DATE TESTED	9/[illegible]
INERT	1.25%	ORIGIN	SD
WEEDS	.03%	NET WT	56#

NOXIOUS WEEDS NONE FOUND IN 500 GRAMS

NOTICE TO BUYER-EXCLUSIONS AND WARRANTIES

Seller Warrants that this Seed conforms to the label description as required by federal and state seed laws. Seller makes no other warranties express or implied of merchantibility, fitness for a particular purpose or otherwise

LIMITATIONS OF DAMAGES AND REMEDIES

Liability for damages for any cause including Breach of Contract, Breach of Warranty and Negligence, with respect to the Sale of Seed is Limited to a refund of the purchase price of the Seeds, this Remedy is exclusive in no event shall seller be Liable for any Incidental or Consequential Damages, including Loss of Profits

Ohio Prairie Nursery

Slope Mix **Lot 134974**

Botanical Name	Common Name	% of Blend	% Germ	Test Date
Sorghastrum nutans	Indian Grass	16.00%	93.00%	5/25/2012
Elymus canadensis	Nodding Wild Rye	13.00%	97.00%	10/25/2011
Festuca rubra	Creeping Red Fescue-1	13.00%	89.00%	3/20/2012
Schizachyrium scoparium	Little Bluestem	13.00%	91.00%	6/30/2012
Andropogon gerardii	Big Bluestem	9.00%	73.00%	6/30/2012
Panicum virgatum	Switch Grass	6.00%	94.00%	1/12/2012
Chamaecrista fasciculata	Partridge Pea	5.00%	90.00%	3/21/2012
Echinacea purpurea	Purple Coneflower	4.00%	90.00%	4/1/2012
Heliopsis helianthoides	Ox Eye Sunflower	4.00%	96.00%	6/25/2012
Ratibida pinnata	Yellow Coneflower/Grey-Headed Coneflower	4.00%	96.00%	2/9/2012
Rudbeckia hirta	Black-eyed Susan	3.00%	86.00%	12/11/2011
Rudbeckia triloba	Brown-eyed Susan	3.00%	93.50%	3/25/2012
Solidago rigida	Stiff Goldenrod	2.00%	93.00%	12/8/2011
Asclepias tuberosa	Butterfly Weed	1.00%	87.00%	12/21/2011
Aster novae-angliae	New England Aster	1.00%	95.00%	5/31/2012
Liatris spicata	Dense Blazingstar	1.00%	80.00%	10/31/2011
Monarda fistulosa	Wild Bergamot	1.00%	90.00%	6/14/2012
Trifolium pratense	Red Clover (Medium)	1.00%	90.00%	5/2/2012

Pure Seed	Other	Inert	Weed	Total
90.09%	0.02%	9.89%	0.00%	100%

Ohio Prairie Nursery - PO BOX 174 Hiram, OH 44234 330.569.3380
www.OhioPrairieNursery.com

43 lb net

Appendix M: Offsite Borrow Sources Analytical Results

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Table 1. Off-Site Borrow Sources Geotechnical Test Results

Sample Location	Sample No.	Date Sampled	Moisture Content (%)	Atterberg Limits			USCS Classification	Sieve Analysis (%)				Organic Content (%)	pH	Moisture Density Standard Proctor		Moisture Density Modified Proctor		Direct Shear		Permeability
				LL (%)	PL (%)	PI (%)		%Gravel	%Sand	%Silt	%Clay			Optimum Water Content (%)	Maximum Dry Density (pcf)	Optimum Water Content (%)	Maximum Dry Density (pcf)	C, ksf	ϕ, deg	k, cm/sec
Metro Parks Stockpile	SP-1A	2/25/2010	--	30	16	14	Lean Clay with Sand CL	--	--	--	--	--	--	13.8	118.6	--	--	--	--	--
	SP-2	2/25/2010	--	30	18	12	Lean Clay with Sand CL	--	--	--	--	--	--	14.0	118.1	--	--	--	--	--
	SP-3A	2/25/2010	--	28	16	12	Sandy Lean Clay CL	--	--	--	--	--	--	13.5	121.4	--	--	--	--	--
	SP-4A	2/25/2010	--	28	15	13	Lean Clay with Sand CL	--	--	--	--	--	--	14.9	117.0	--	--	--	--	--
	SP-5A	2/25/2010	--	31	18	13	Sandy Lean Clay with Gravel CL	--	--	--	--	--	--	14.0	118.7	--	--	--	--	--
	SS-1	12/29/2011	13	27	15	12	Lean Clay with Sand CL	4.90	24.90	40.40	29.80	1.18	--	13.4	119.8	--	--	0.00	38.00	--
	SS-6	3/6/2012	--	28	17	11	--	--	--	--	--	--	--	--	--	10.5	127.1	0.33	32.00	--
	SP-6A	5/30/2012	16	--	--	--	Sandy Lean Clay CL	5.70	30.10	41.60	22.60	--	6.99	--	--	9.8	126.9	--	--	--
Camp Wahoo	SS-2	12/29/2011	16	36	19	17	Lean Clay with Sand CL	1.70	22.50	40.30	35.50	2.01	--	15.9	113.3	--	--	0.23	41.00	--
	SS-3	12/29/2011	15	36	20	16	Sandy Lean Clay CL	14.30	31.20	29.10	25.40	--	--	13.8	116.3	--	--	0.10	36.00	--
	SS-4	12/29/2011	14	35	18	17	Lean Clay with Sand CL	3.80	22.20	43.40	30.60	2.26	--	16.5	112.1	--	--	0.43	28.00	--
	SS-5	3/6/2012	--	34	19	15	--	--	--	--	--	--	--	--	--	11.8	122.6	0.32	30.00	--
	SS-7	5/30/2012	22	45	22	23	Lean Clay with Sand CL	3.40	17.60	44.40	34.70	3.00	--	--	--	13.9	116.5	--	--	7.943E-08
	SS-8	5/30/2012	19	39	20	19	Lean Clay with Sand CL	3.50	18.60	43.40	34.40	2.60	--	--	--	12.9	119.9	0.60	28.00	--
	SS-9	5/30/2012	20	46	21	25	Lean Clay with Sand CL	3.60	17.00	44.50	34.90	3.00	--	--	--	13.4	118.5	--	--	--
	SS-10	5/30/2012	18	42	19	23	Sandy Lean Clay CL	4.80	26.80	38.90	29.40	2.40	--	--	--	11.6	122.9	0.11	40.00	7.6210E-07
	SS-11	5/30/2012	20	42	21	21	Lean Clay with Sand CL	4.40	17.80	44.30	33.50	1.80	--	--	--	12.3	120.7	--	--	7.8360E-08
	SS-12	5/30/2012	15	32	19	13	Sandy Lean Clay CL	4.40	26.70	42.40	26.50	2.30	--	--	--	11.2	123.7	--	--	--
	SS-13	5/30/2012	20	40	21	19	Lean Clay with Sand CL	6.20	16.80	43.40	33.70	2.30	--	--	--	12.1	121.0	--	--	--
	SS-14	5/30/2012	20	45	22	23	Lean Clay with Sand CL	6.00	16.70	41.50	35.90	3.10	--	--	--	13.7	118.4	--	--	--
	SS-15	5/30/2012	--	31	18	13	Lean Clay with Sand CL	3.10	24.00	47.90	25.00	2.10	--	--	--	11.4	124.4	0.24	37.00	--
	SS-16	5/30/2012	22	--	--	--	Lean Clay with Sand CL	3.10	16.50	42.80	37.60	2.30	--	--	--	--	--	--	--	--
	SS-17	5/30/2012	17	35	20	15	Lean Clay with Sand CL	2.90	23.30	46.10	27.60	1.80	--	--	--	11.5	122.8	--	--	--
	SS-18	5/30/2012	20	--	--	--	Lean Clay with Sand CL	1.50	17.20	43.90	37.40	--	--	--	--	13.1	118.8	--	--	--
	SS-19	5/30/2012	19	29	18	11	Sandy Lean Clay CL	6.10	27.30	47.60	19.00	1.60	--	--	--	10.2	127.3	0.00	43.00	8.541E-06
	SS-20	5/30/2012	-- Hold - No Testing Assigned --																	
	SS-21	5/30/2012	15	32	19	13	Lean Clay with Sand CL	3.50	23.50	45.10	27.90	--	--	--	--	11.9	124.0	--	--	--
Grobe Fruit Farm	SS-22	6/11/2012	18	25	18	7	Sandy Silty Clay CL-ML	8.70	22.10	55.70	13.50	1.80	--	--	--	10.3	125.5	0.18	36.00	--
	SS-23	6/11/2012	16	22	17	5	Sandy Silty Clay CL-ML	5.00	26.70	55.70	12.50	1.70	--	--	--	9.4	127.8	--	--	--
	SS-24	6/11/2012	17	27	19	8	Lean Clay with Sand CL	8.50	21.20	56.80	13.40	2.30	--	--	--	10.5	123.7	0.00	35.00	--
	SS-25	6/11/2012	17	23	18	5	Silty Clay with Sand CL-ML	8.30	20.80	61.10	9.90	1.90	--	--	--	11.1	122.6	0.07	43.00	--
	SS-26	6/18/2012	18	23	19	4	Sandy Silty Clay CL-ML	10.50	21.80	58.00	9.70	2.20	--	--	--	11.1	121.0	--	--	--
	SS-27	6/18/2012	18	24	19	5	Sandy Silty Clay CL-ML	6.00	24.20	61.90	7.80	2.00	--	--	--	11.1	121.1	--	--	--
Camp Wahoo Topsoil	TS-1	12/29/2011	28	--	--	--	--	0.20	19.60	34.10	46.10	5.80	--	--	--	--	--	--	--	--
	TS-2	5/30/2012	32	54	32	22	Organic Silt with Sand OH	2.60	22.20	52.80	22.40	--	4.80	--	--	--	--	--	--	--
	TS-3	5/30/2012	--	46	29	17	Organic Silt with Sand OL	--	--	--	--	6.00	4.33	--	--	--	--	--	--	--
Grobe Fruit Farm Topsoil	TS-1	9/14/2012	24	42	22	20	Brown silty clay	0.30	19.60	40.00	40.10	4.24	--	--	--	--	--	--	--	--
	TS-2	9/14/2012	27	41	22	19	Brown silty clay	0.10	19.10	40.60	40.20	4.67	--	--	--	--	--	--	--	--
	TS-3	10/3/2012	--	--	22	--	--	--	--	--	--	--	7.10	--	--	--	--	--	--	--

NOTES:

% - Percent
LL - Liquid Limit
PL - Plastic Limit
PI - Plasticity Index
pcf - pounds per cubic foot
ksf - kips per square foot
cm/sec - centimeters per second

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BBCM

Job No. 012.01262.200 Date 2/25/10

Project FORD ROAD LANDFILL

Location ELYRIA, OHIO

Source of Material SP-1A

Description of Material LEAN CLAY with SAND CL

Test Method ASTM D698 Method A

TEST RESULTS

Maximum Dry Density 118.6 PCF

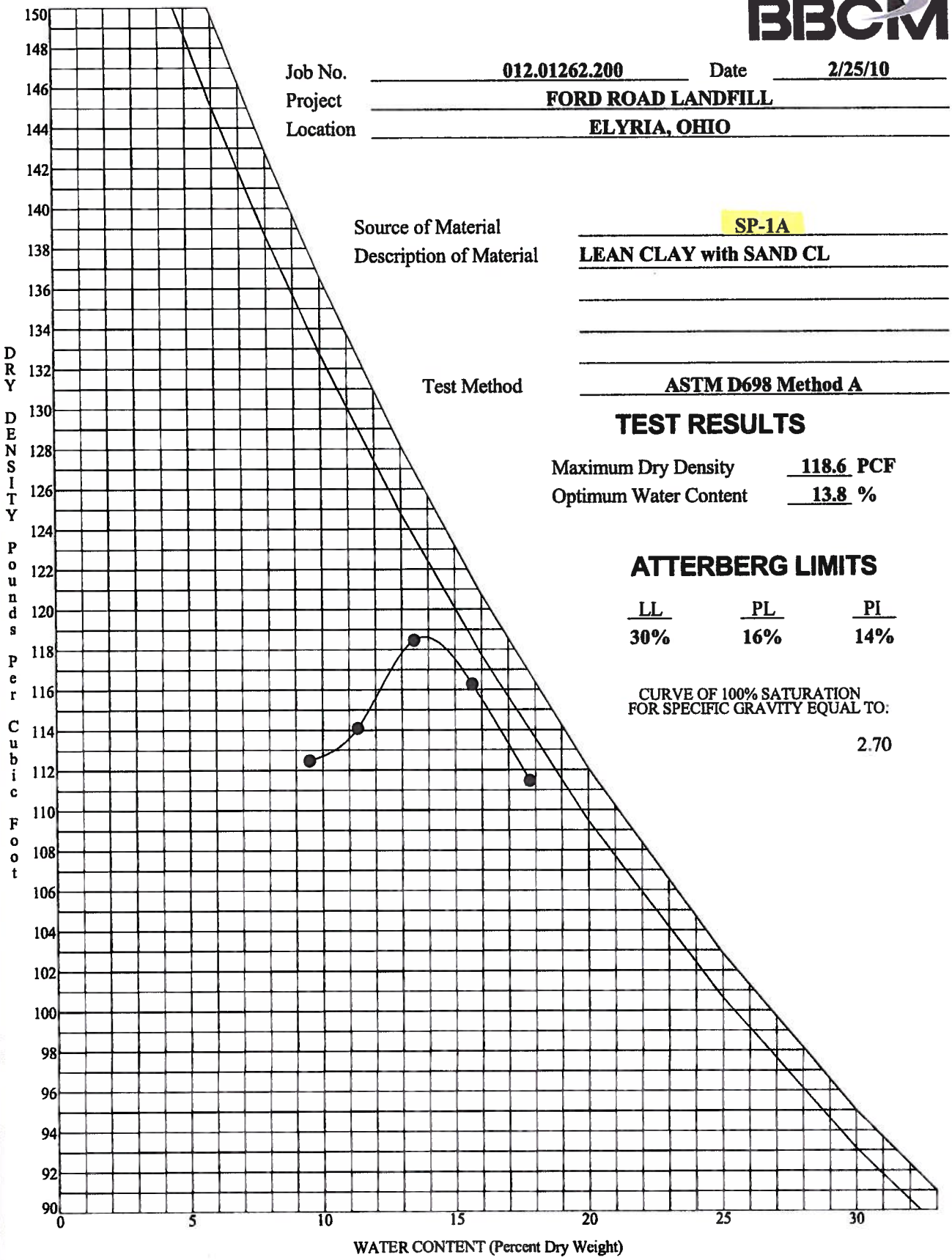
Optimum Water Content 13.8 %

ATTERBERG LIMITS

LL	PL	PI
30%	16%	14%

CURVE OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO:

2.70



MOISTURE-DENSITY RELATIONSHIP

COMP-REG

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BBCM

Job No. 012.01262.200 Date 2/25/10

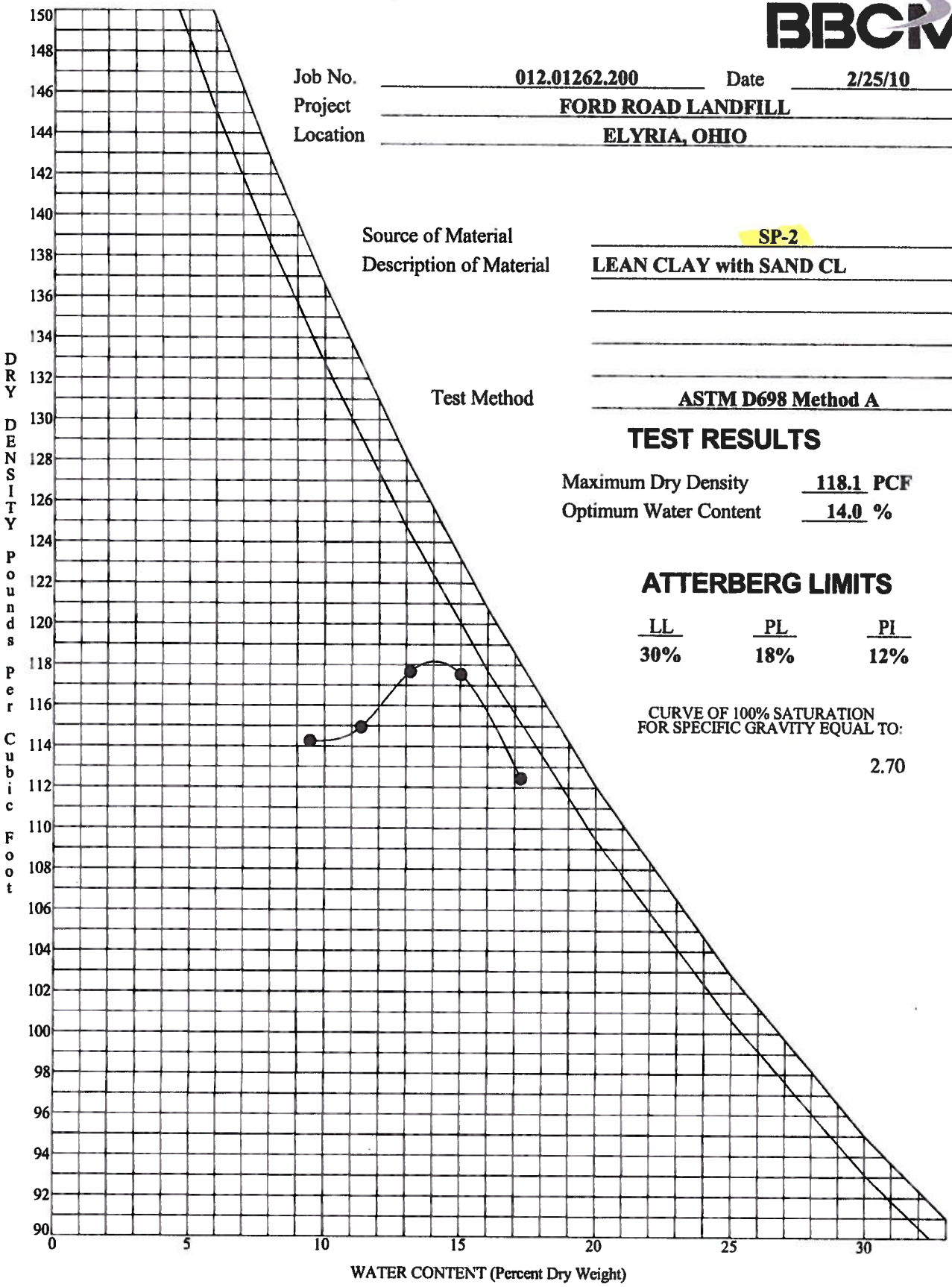
Project FORD ROAD LANDFILL

Location ELYRIA, OHIO

Source of Material SP-2

Description of Material LEAN CLAY with SAND CL

Test Method ASTM D698 Method A



TEST RESULTS

Maximum Dry Density 118.1 PCF

Optimum Water Content 14.0 %

ATTERBERG LIMITS

LL	PL	PI
30%	18%	12%

CURVE OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO:

2.70

MOISTURE-DENSITY RELATIONSHIP

COMP REG

PLATE

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BBCM

Job No. 012.01262.200 Date 2/25/10

Project FORD ROAD LANDFILL

Location ELYRIA, OHIO

Source of Material SP-3A

Description of Material SANDY LEAN CLAY CL

Test Method ASTM D698 Method A

TEST RESULTS

Maximum Dry Density 121.4 PCF

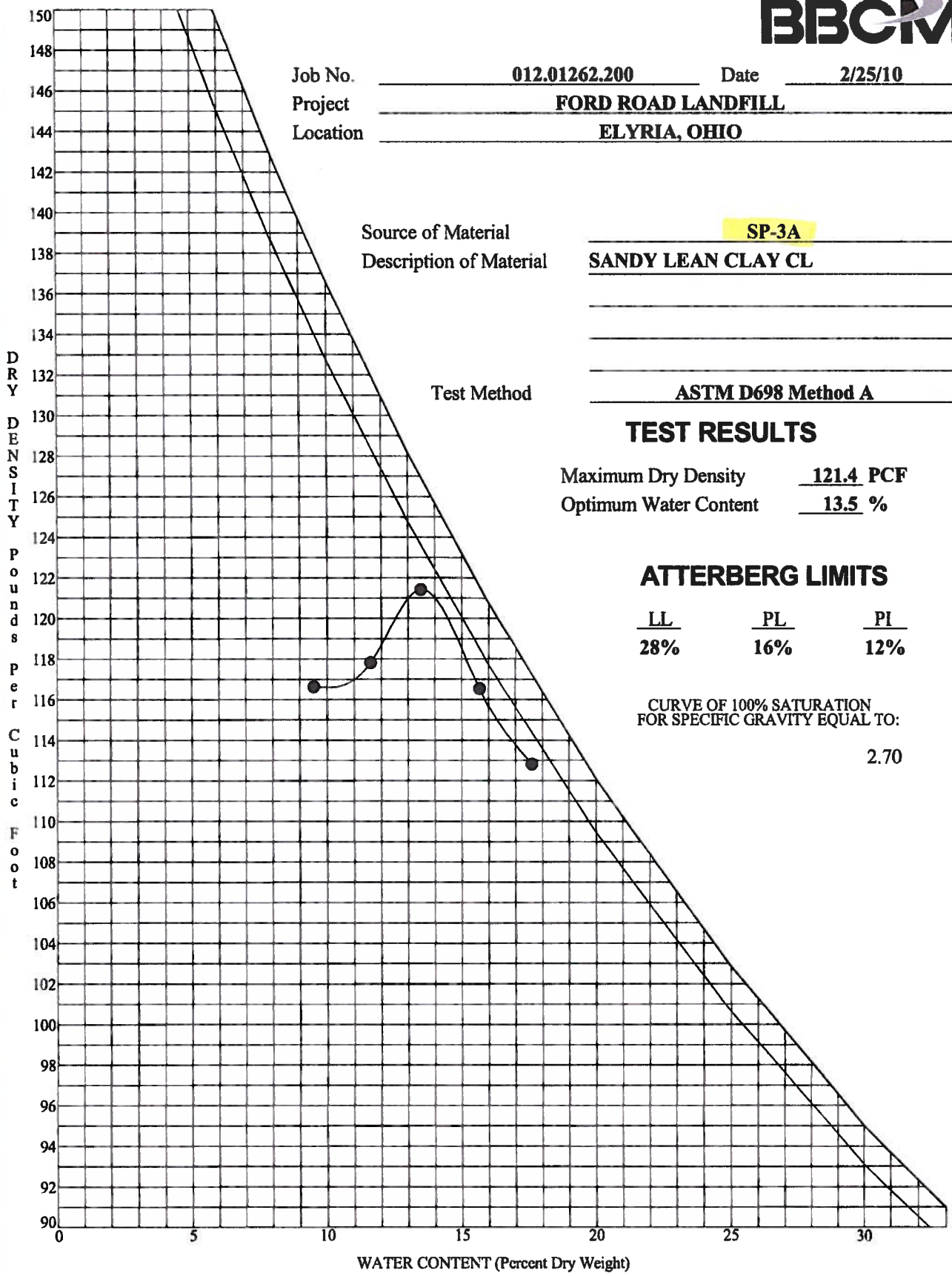
Optimum Water Content 13.5 %

ATTERBERG LIMITS

LL	PL	PI
28%	16%	12%

CURVE OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO:

2.70



MOISTURE-DENSITY RELATIONSHIP

COMP-REG

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BBCM

Job No. 012.01262.200 Date 2/25/10

Project FORD ROAD LANDFILL

Location ELYRIA, OHIO

Source of Material SP-4A

Description of Material LEAN CLAY with SAND CL

Test Method ASTM D698 Method A

TEST RESULTS

Maximum Dry Density 117.0 PCF

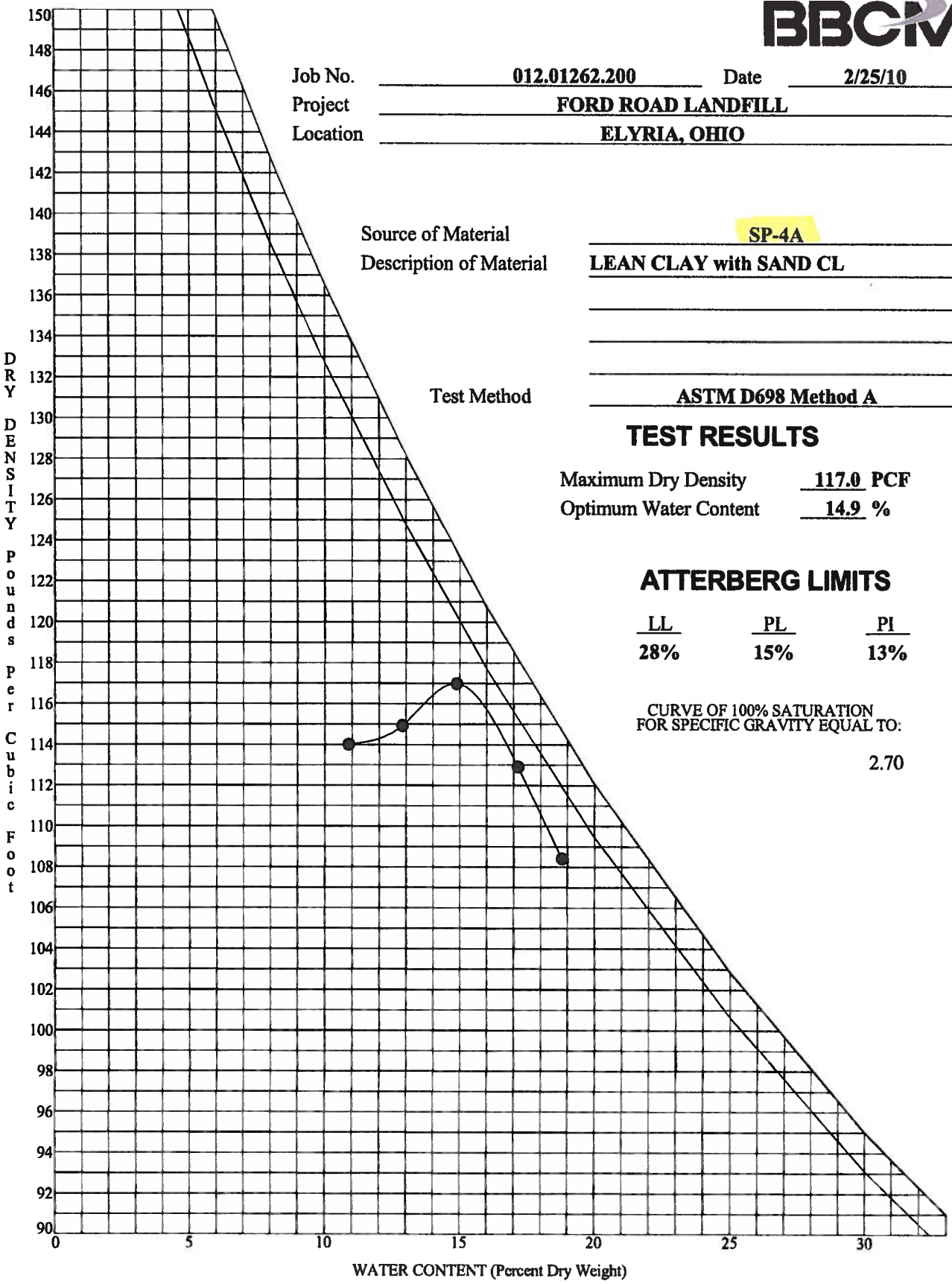
Optimum Water Content 14.9 %

ATTERBERG LIMITS

LL	PL	PI
28%	15%	13%

CURVE OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO:

2.70



MOISTURE-DENSITY RELATIONSHIP

COMP-REG

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BBCM

Job No. 012.01262.200 Date 2/25/10

Project FORD ROAD LANDFILL

Location ELYRIA, OHIO

Source of Material SP-5A

Description of Material SANDY LEAN CLAY with GRAVEL CL

Test Method ASTM D698 Method A

TEST RESULTS

Maximum Dry Density 118.7 PCF

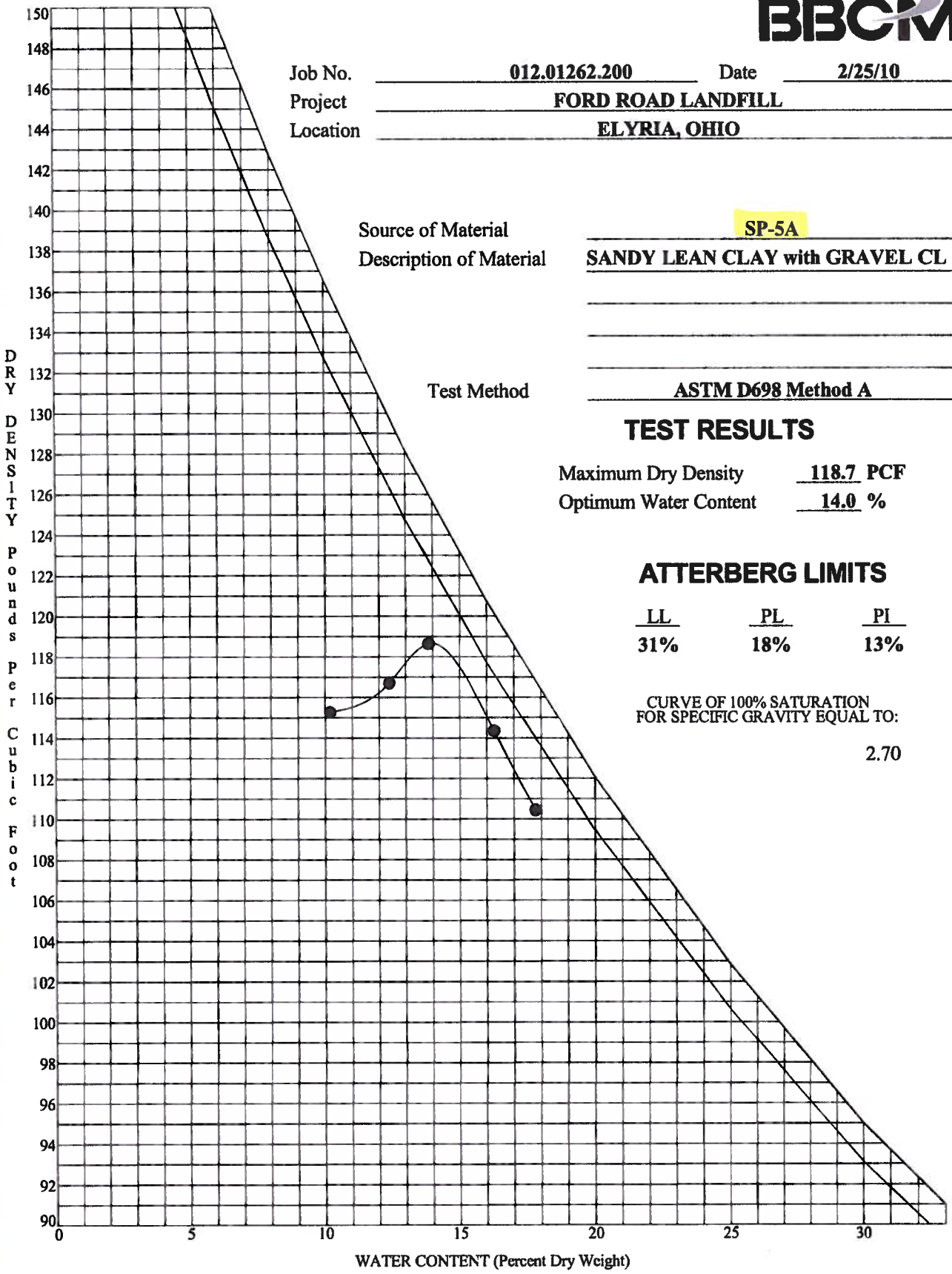
Optimum Water Content 14.0 %

ATTERBERG LIMITS

LL	PL	PI
31%	18%	13%

CURVE OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO:

2.70



MOISTURE-DENSITY RELATIONSHIP

COMP-REG

PLATE

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S&ME

Job No. 012.01559.201 Date 1/17/12

Project Ford Road Landfill Laboratory Testing

Location Elyria, Ohio

Source of Material SS-1

Description of Material Lean Clay with Sand (CL)

Test Method ASTM D698 Method A

TEST RESULTS

Maximum Dry Density 119.8 PCF

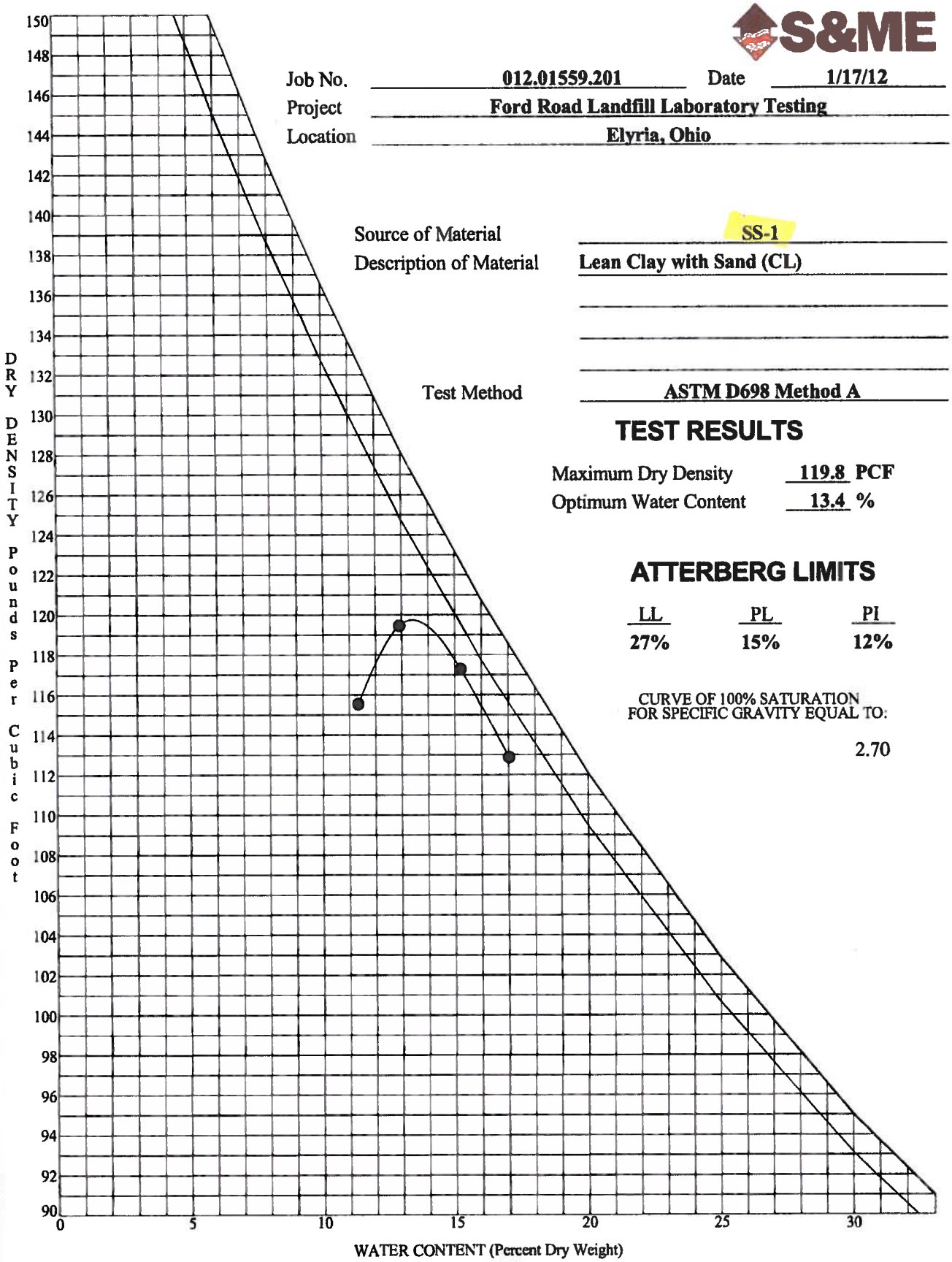
Optimum Water Content 13.4 %

ATTERBERG LIMITS

LL	PL	PI
27%	15%	12%

CURVE OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO:

2.70

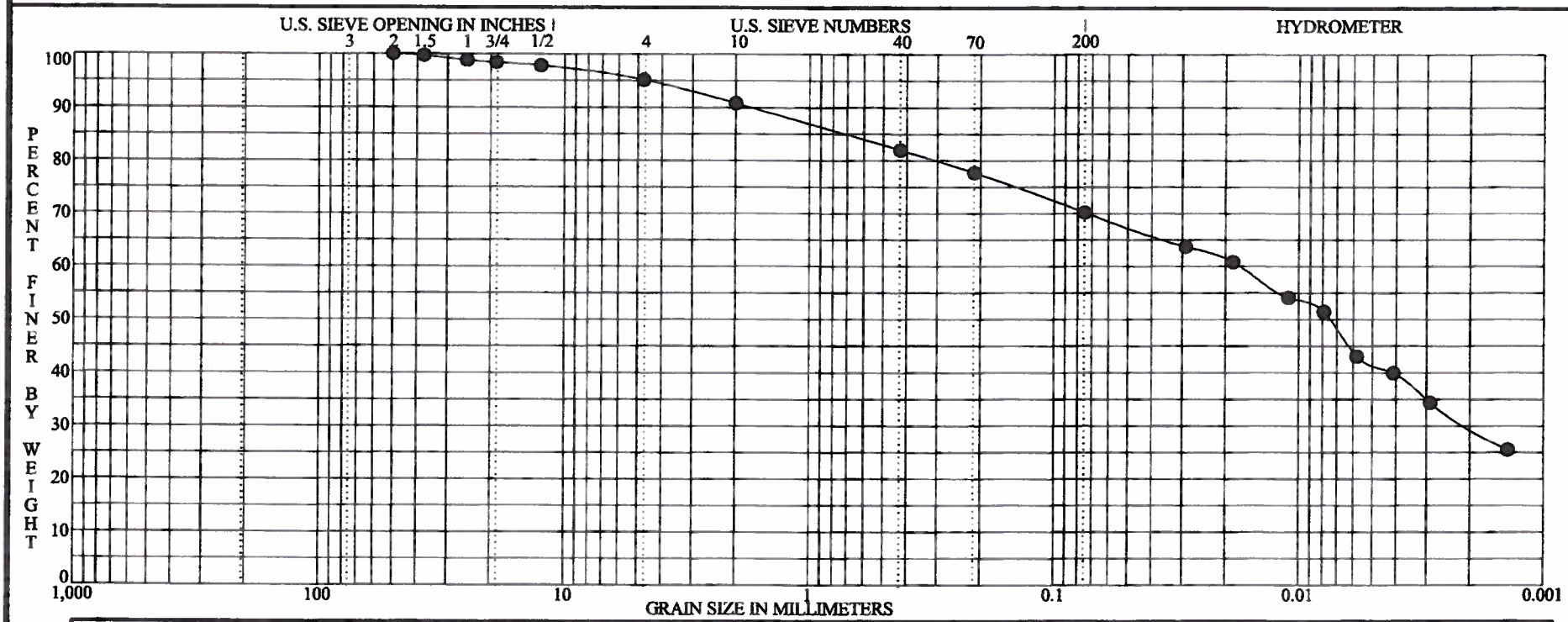


MOISTURE-DENSITY RELATIONSHIP

COMP-REG

PLATE

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-1	LEAN CLAY with SAND CL LOI = 1.18%	13	27	15	12		

	Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	SS-1	50.0000	4.6554	0.0174	0.0075		4.9	24.9	40.4	29.8

ASTM D422 | **GRADATION CURVE**

PROJECT: Ford Road Landfill Laboratory Testing
LOCATION: Elyria, Ohio
JOB NO.: 012.01559.201
DATE: 1/16/12

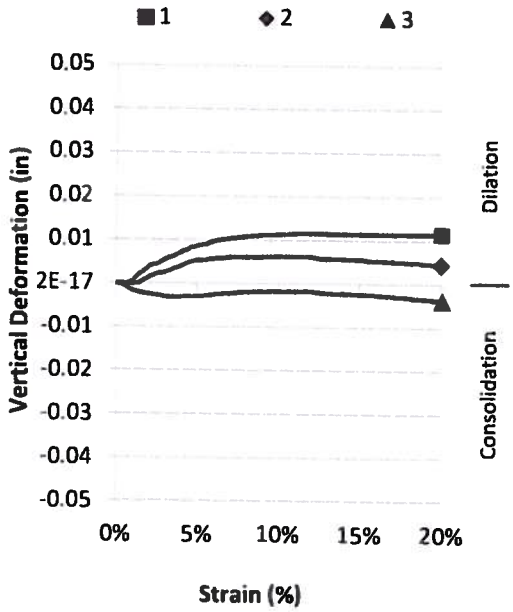
PLATE 1

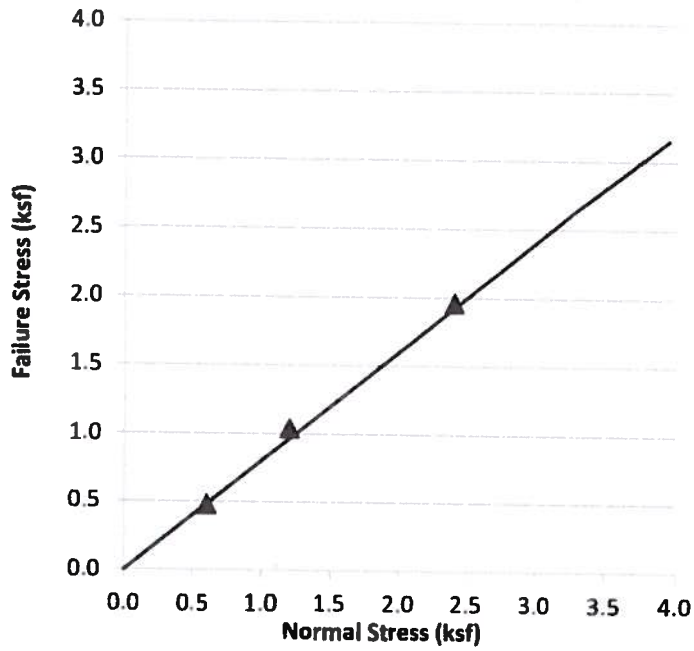
VAEE-NRD

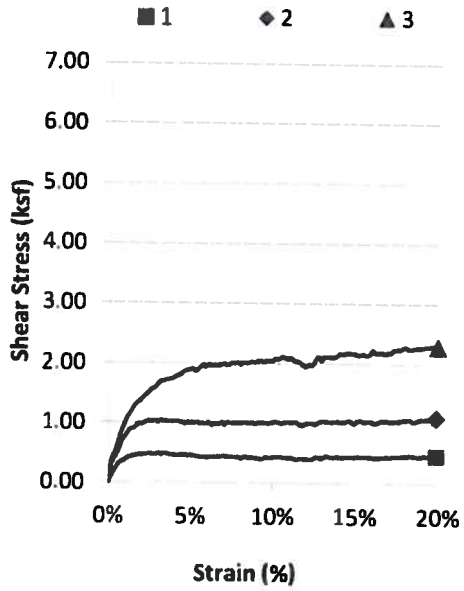
S&ME

DIRECT SHEAR TEST REPORT

Results: C (ksf) = 0.00 ϕ (deg) = 38







Sample No.		1	2	3
Initial	Moisture Content (%)	11.69%	11.66%	11.19%
	Dry Density (pcf)	122.69	123.32	123.55
	Saturation (%)	84.5%	86.0%	83.1%
	Void Ratio	0.3732	0.3661	0.3637
	Diameter (in)	2.50	2.50	2.50
	Height (in)	1.00	1.00	1.00
At Test	Moisture Content (%)	16.31%	15.29%	14.87%
	Dry Density (pcf)	119.30	118.73	118.18
	Saturation (%)	106.8%	98.5%	94.3%
	Void Ratio	0.4123	0.4190	0.4256
	Diameter (in)	2.5	2.5	2.5
	Height (in)	0.99	1.01	1.01
Normal Stress (ksf)		0.60	1.20	2.40
Failure Stress (ksf)		0.48	1.04	1.96
- Strain at Failure (%)		2.51%	3.13%	5.72%
Ultimate Stress (ksf)		0.46	1.09	2.28
- Strain at Ultimate (%)		19.91%	19.87%	19.95%
Avg. Strain Rate (in/min)		0.0016	0.0016	0.0016

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

Comments:
Remolded to 94 to 95% of the Estimated Modified Proctor maximum dry density and plus 1.8% of the estimated optimum moisture content.

LL = 27 **PI =** 12
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-1
Sample Depth:	Bulk Sample
Date(s) Tested:	3/29/12 - 4/3/12

Tested By: JJ Checked By: BKS

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S&ME

Job No. 012.01559.201 Date 3/9/12

Project Ford Road Landfill Laboratory Testing

Location Elyria, Ohio

Source of Material SS-6 B.R. Trail

Description of Material

Test Method ASTM D1557 Method B

TEST RESULTS

Maximum Dry Density 127.1 PCF

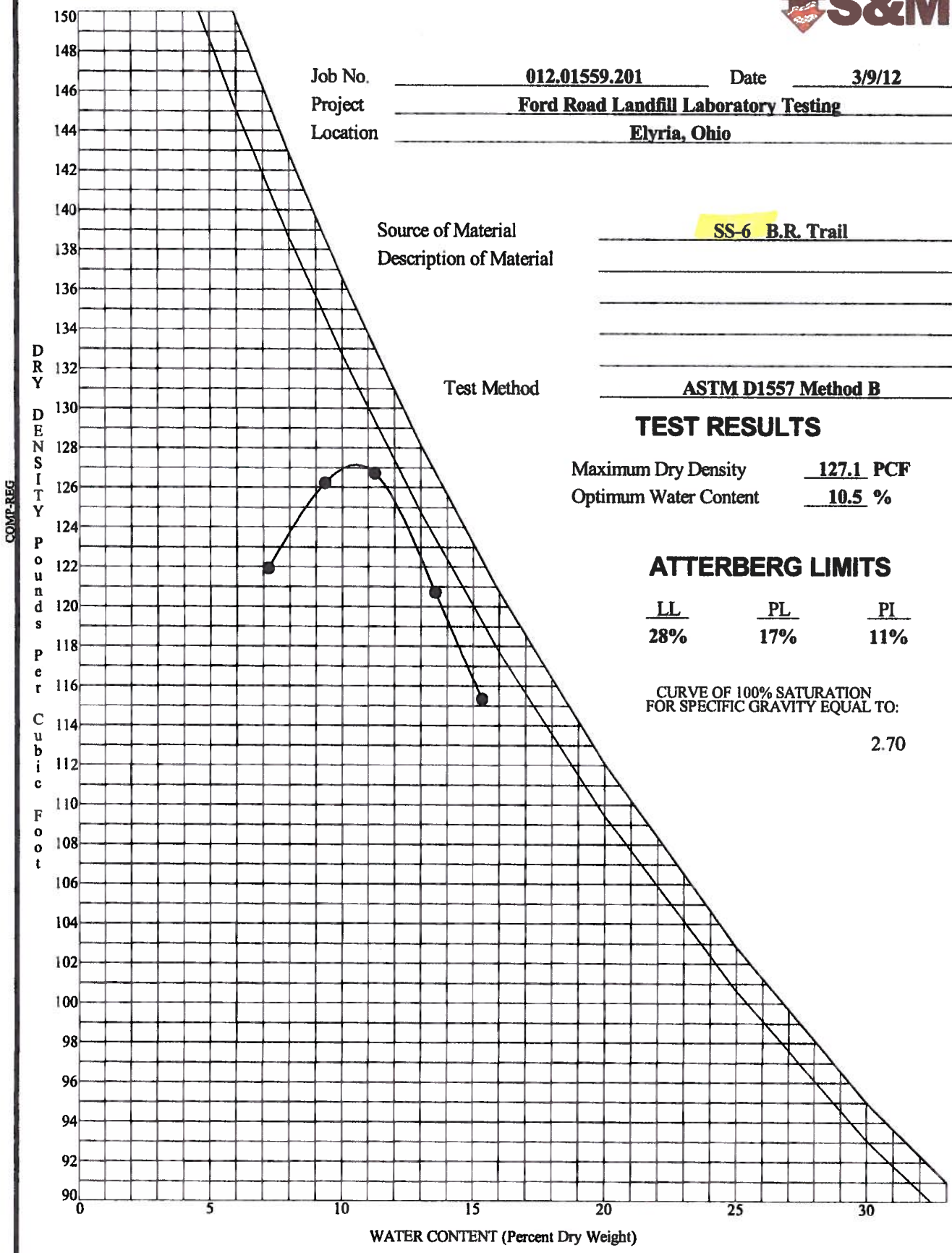
Optimum Water Content 10.5 %

ATTERBERG LIMITS

LL	PL	PI
28%	17%	11%

CURVE OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO:

2.70



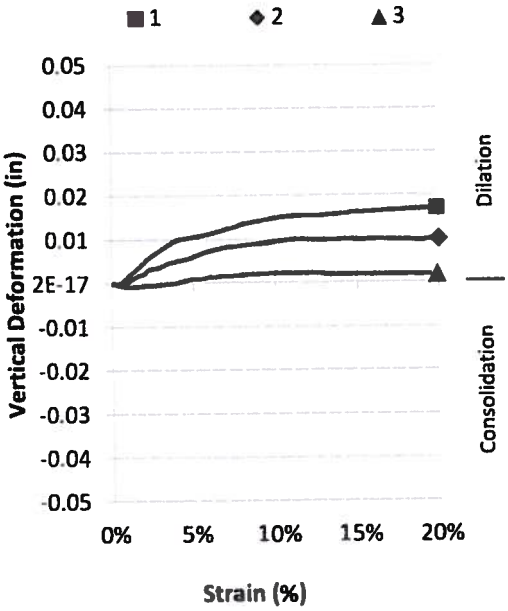
MOISTURE-DENSITY RELATIONSHIP

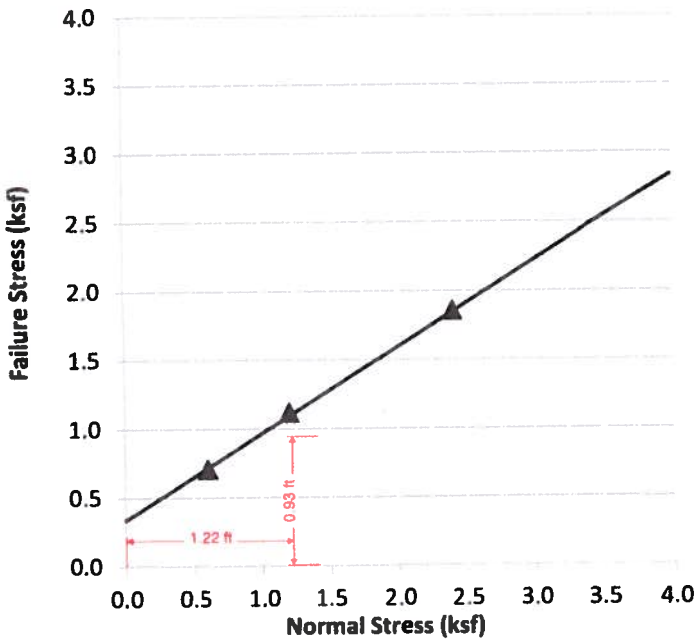
COMP-REG

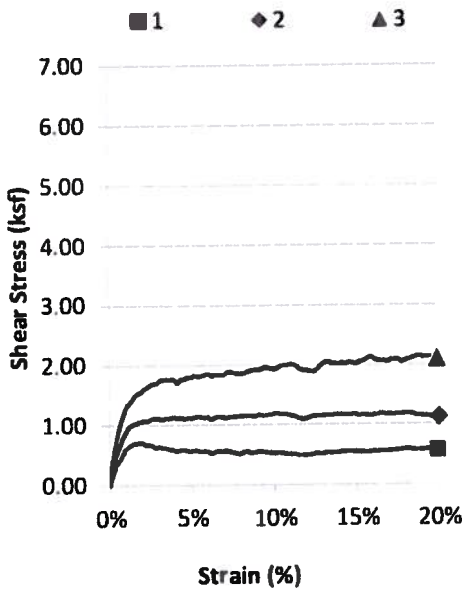
PLATE 2

DIRECT SHEAR TEST REPORT

Results: C (ksf) = 0.33 ϕ (deg) = 32







Sample No.		1	2	3
Initial	Moisture Content (%)	11.57%	11.28%	11.50%
	Dry Density (pcf)	121.31	120.74	120.75
	Saturation (%)	80.4%	77.0%	78.5%
	Void Ratio	0.3889	0.3954	0.3953
	Diameter (in)	2.50	2.50	2.50
	Height (in)	1.00	1.00	1.00
At Test	Moisture Content (%)	16.18%	16.09%	15.97%
	Dry Density (pcf)	117.07	115.96	117.48
	Saturation (%)	99.5%	95.9%	99.3%
	Void Ratio	0.4391	0.4529	0.4341
	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	1.12	1.86
- Strain at Failure (%)		1.96%	2.73%	5.95%
Ultimate Stress (ksf)		0.58	1.13	2.10
- Strain at Ultimate (%)		19.88%	19.99%	19.88%
Avg. Strain Rate (in/min)		0.0018	0.0019	0.0017

Sample Type: Bulk Sample
Sample Description:

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

LL = 28 **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-6
Sample Depth: Bulk Sample
Date(s) Tested: 3/21/12 - 3/26/12

Tested By: PJM Checked By: BKS

S&ME

Job No. 012.01559.201 Date 5/30/12

Project Ford Road Landfill Laboratory Testing

Location Elyria, Ohio

Source of Material SP-6A

Description of Material SANDY LEAN CLAY CL

Test Method ASTM D1557 Method B

TEST RESULTS

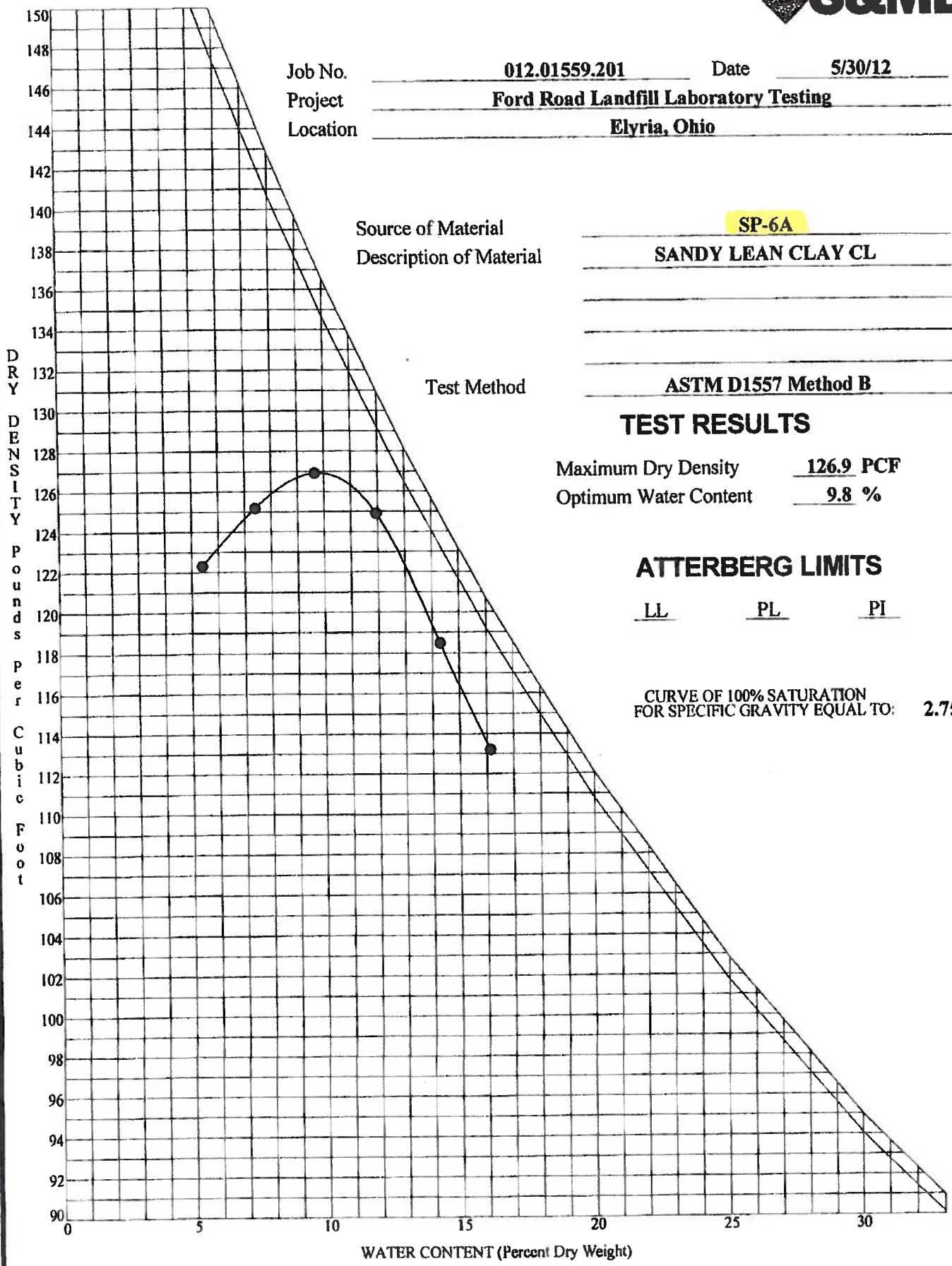
Maximum Dry Density 126.9 PCF

Optimum Water Content 9.8 %

ATTERBERG LIMITS

LL PL PI

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

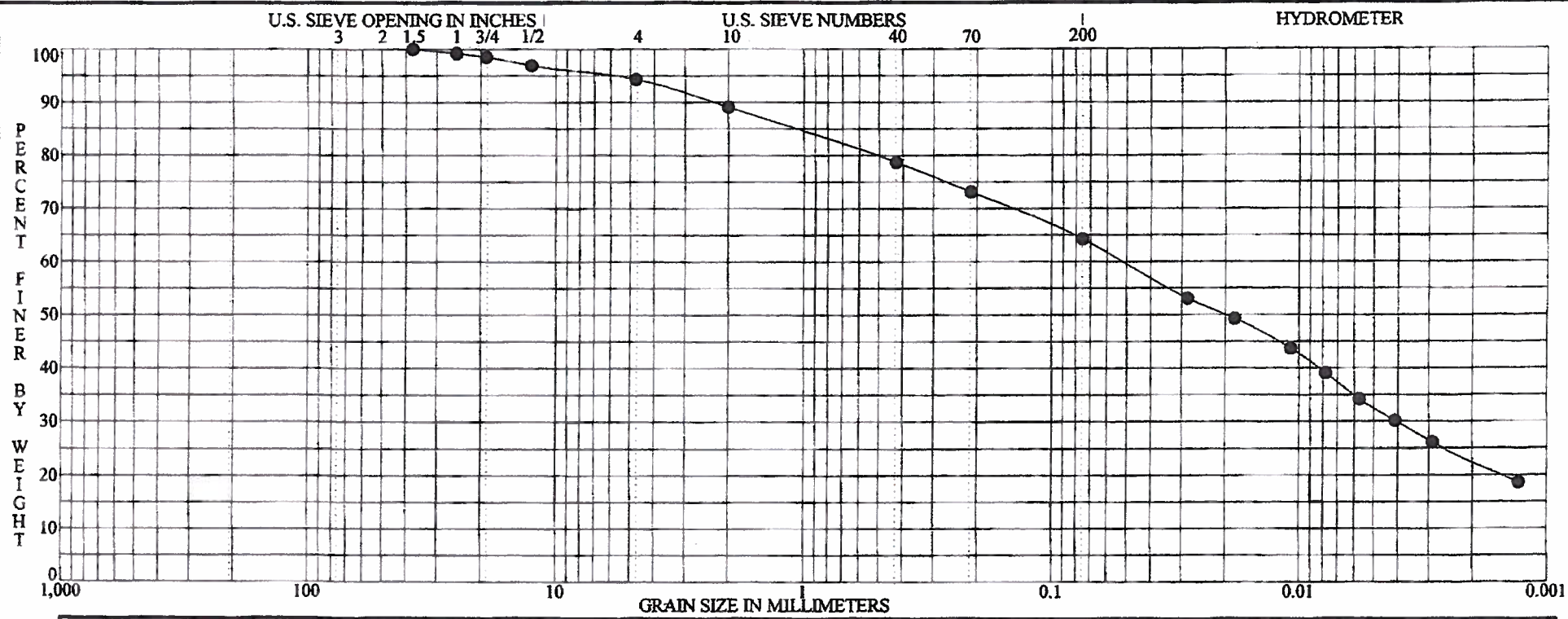


MOISTURE-DENSITY RELATIONSHIP

COMP-EPA

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
●	SP-6A	SANDY LEAN CLAY CL	16				9.8	126.9

	Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	SP-6A	37.5000	6.1201	0.0517	0.0198		5.7	30.1	41.6	22.6

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 1

Chain of Custody Record

BROWN AND CALDWELL

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

☐ Cleveland Office
7550 Lucerne Dr, Suite 310
Middleburg Heights, Ohio 44130
(440) 826-4900
(440) 826-3400 fax

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

COC No: 1016

Page 1 of 1

Lab Quote No:

Lab: BBC+M

Address: 8535 Seven Valley Rd Ste 5 Valley View OH 44125

Phone: 216-901-1000

Carrier:

Airbill:

Project Name: Ford Road LP

Project Location: Elyria OH

Project Number: 157335

Project Manager: Jim Peoples

Sampler's Name: BRYANT KIEDROWSKI

Sampler's Signature: Bryant Kiedrowski

Field Phone: 614-778-8015

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

Container Size and Type (P/G): 5 Gal bucket

Preservative Code

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	Total # of Cont.	Density, Moisture, Visual ID	Moisture ASTM D2216	Liquid and Plastic Limits ASTM D 4318	Sieve and Long Hydrometer ASTM D422	Optimum Moisture Std. Proctor ASTM D698	Remarks:
SP-1A	11/18/09	14:40	Grab	Soil	2	↓	↓	↓	↓	↓	
SP-3A	11/18/09	14:55	↓	↓	↓	↓	↓	↓	↓	↓	
SP-4A	11/18/09	15:10	↓	↓	↓	↓	↓	↓	↓	↓	
SP-5A	11/18/09	15:30	↓	↓	↓	↓	↓	↓	↓	↓	

Special Instructions/QC Requirements & Comments:

Relinquished by:	Date/Time:	Received by:	Date/Time:
Bryant Kiedrowski	11/18/09 15:50	[illegible]	11/18/09 15:50

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, Suite 100
Dublin, Ohio 43016
(614) 410-6144
(614) 410-3088 fax

☐ Cleveland Office
7550 Lucerne Dr, Suite 310
Middleburg Heights, Ohio 44130
(440) 826-4900
(440) 826-3400 fax

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

COC No: 1002
Page 2 of 2
Lab Quote No:
Lab: BBC+M
Address: 8555 Sweet Valley Rd
Valley View OH 44125
Phone: 216-901-1000
Carrier: Pickup
Airbill:

Project Name: Ford Road LF
Project Location: Elyria OH
Project Number:
Project Manager: J. Peeples
Sampler's Name: J. Warburton
Sampler's Signature: [signature]
Field Phone: 614-738-2879

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.	Density, moisture, visual ID	Moisture ASTM D 2216	Liquid and plastic limits ASTM D 4318	Size and Long Hydrometer ASTM D 422	Triaxial Cons. Undrained ASTM D 4767	optimum moisture - Std. Proctor ASTM D 698					Remarks:
50-16-18	11/5/09	13:05	Shelby Tube	Soil	1	X	X	X	X	X						
57-13-15	11/4/09	16:10	↓	↓	↓	↓	↓	↓	↓	↓						
57-2-4	↓	14:45	↓	↓	↓	↓	↓	↓	↓	↓						
58-2-4	↓	13:45	↓	↓	↓	↓	↓	↓	↓	↓						
58-2-4-2	↓	14:00	↓	↓	↓	↓	↓	↓	↓	↓						Second tube - poor recovery
SP-1	11/4/09	14:30	5-gal bucket	↓	2						X					
SP-2	↓	16:45	↓	↓	↓						↓					
SP-3	↓	15:00	↓	↓	↓						↓					
SP-4	↓	15:30	↓	↓	↓						↓					
SP-5	↓	16:25	↓	↓	↓						↓					

Special Instructions/QC Requirements & Comments:

Relinquished by: [signature]	Date/Time: 11/6/09 12:35	Received by: [signature]	Date/Time: 11-6-09 12:35
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: 1911
Page 1 **of** 1
Lab Quote No:

Project Name: FORD ROAD PHASE 2 REMEDIAL ACTION
Project Location: ELYRIA, OHIO
Project Number: 141617
Project Manager: DAN DUFFY
Sampler's Name: RICHARD A. KNOX
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 CONC DUBLIN OHIO 43016
Phone: (614) 793-2226
Carrier: HAND DELIVERED
Airbill:

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	Total # of Cont.	ASTM D422	ASTM D1557	ASTM D2216	ASTM D4972-01							Remarks:
SP-6A	4/26/12	1530	GRAB	SOLID	6	X	X	X	X							RUN AS COMPOSITE SAMPLE

Special Instructions/QC Requirements & Comments:

Relinquished by: [signature]	Date/Time: 5/2/12 1405	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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S&ME

Job No.	012.01559.201	Date	1/17/12
Project	Ford Road Landfill Laboratory Testing		
Location	Elyria, Ohio		

Source of Material: SS-2

Description of Material: Lean Clay with Sand (CL)

Test Method: ASTM D698 Method A

TEST RESULTS

Maximum Dry Density: 113.3 PCF

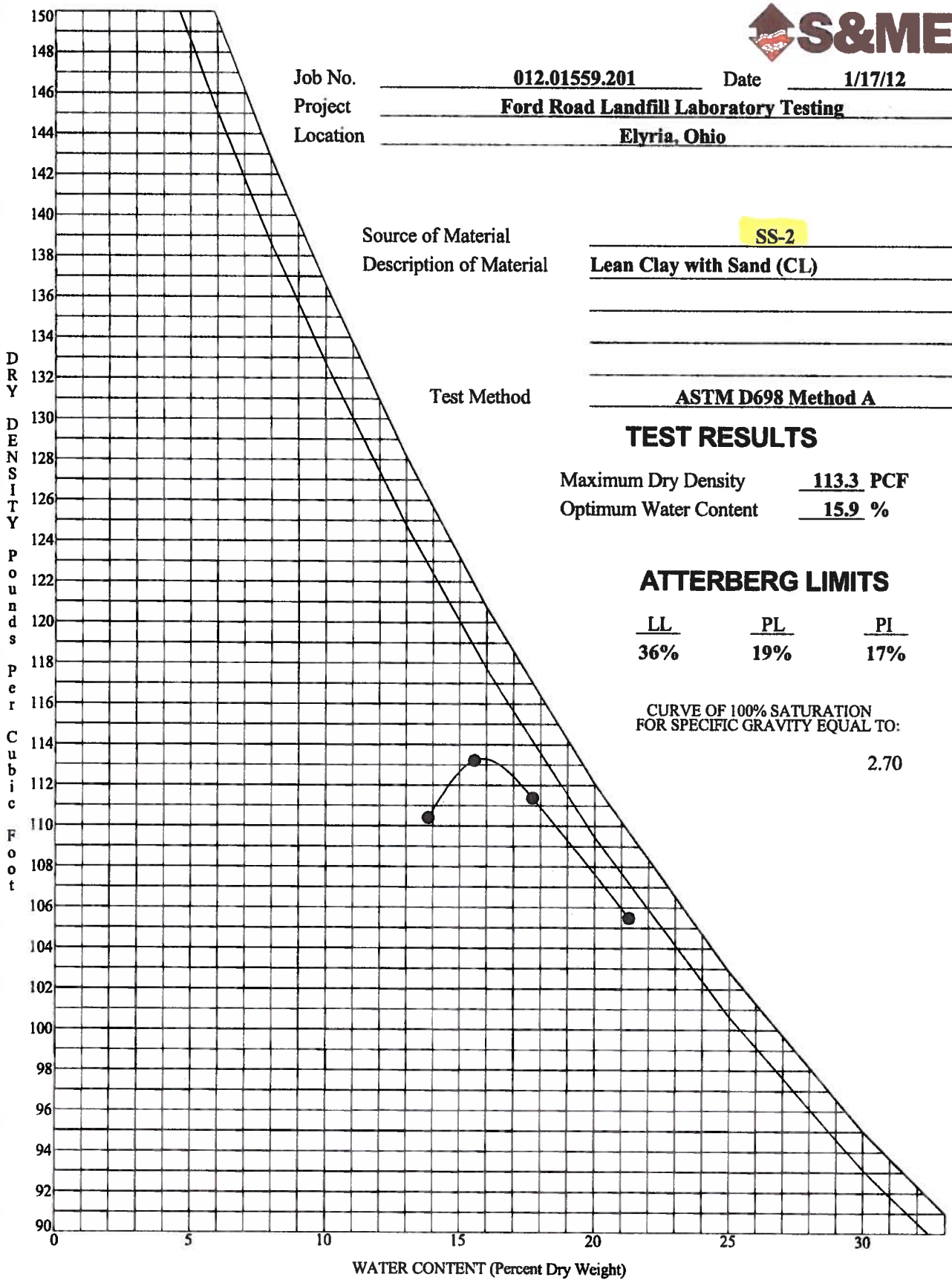
Optimum Water Content: 15.9 %

ATTERBERG LIMITS

LL	PL	PI
36%	19%	17%

CURVE OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO:

2.70

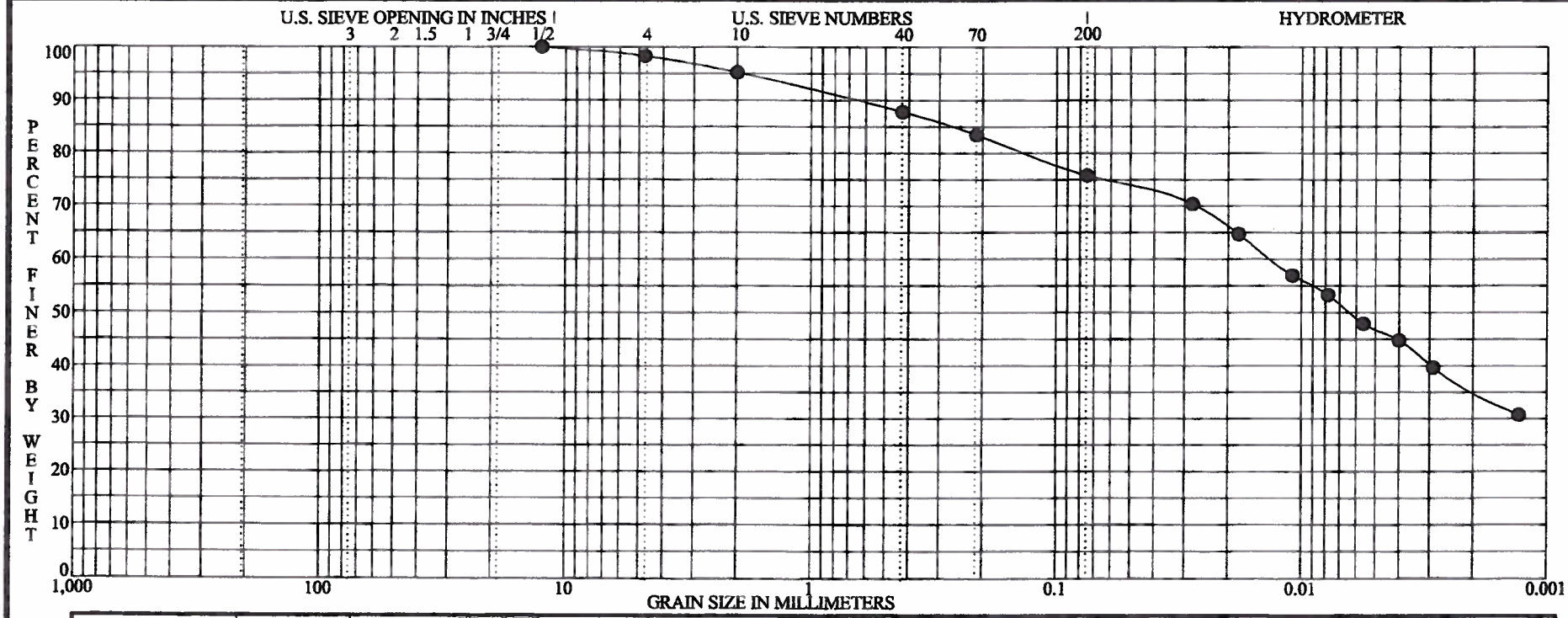


MOISTURE-DENSITY RELATIONSHIP

COMP-REG

PLATE

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-2	LEAN CLAY with SAND CL LOI = 2.01%	16	36	19	17		

	Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	SS-2	12.5000	1.9273	0.0133	0.0064		1.7	22.5	40.3	35.5

ASTM D422 | **GRADATION CURVE**

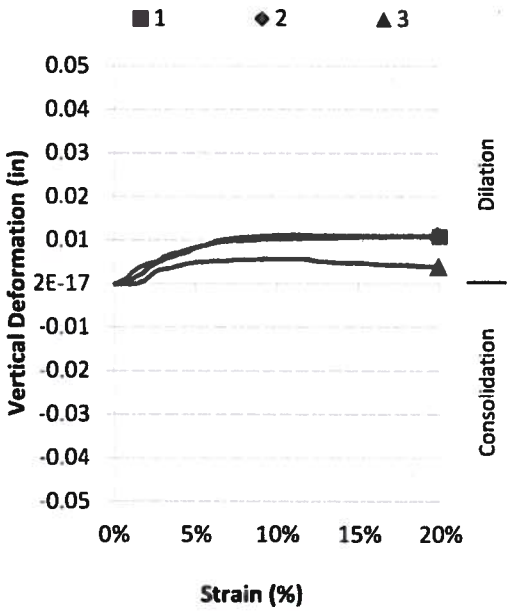
PROJECT: Ford Road Landfill Laboratory Testing
LOCATION: Elyria, Ohio
JOB NO.: 012.01559.201 DATE: 1/16/12

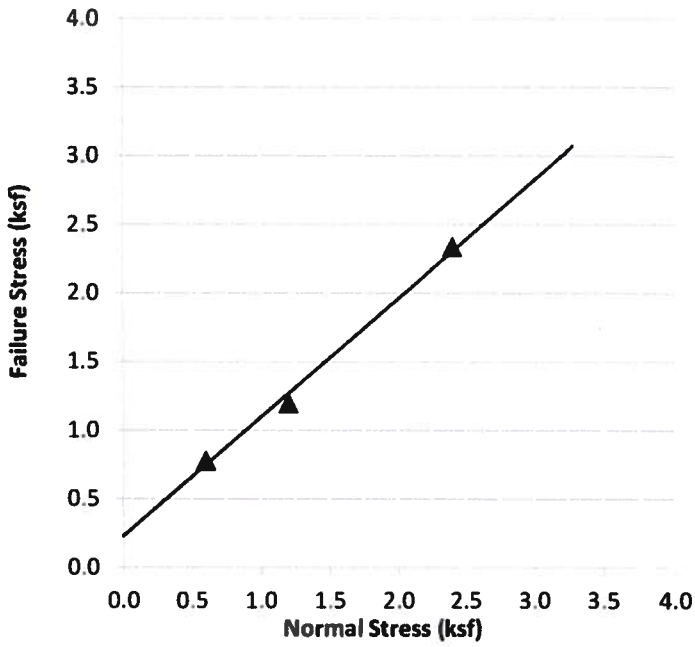
PLATE 2

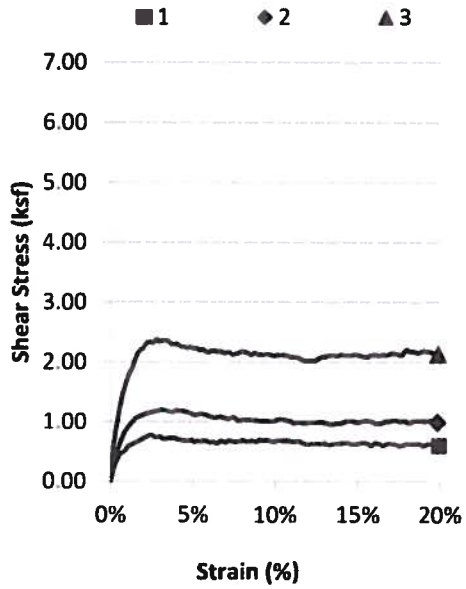
GRN-EPA

DIRECT SHEAR TEST REPORT

Results: C (ksf) = 0.23 ϕ (deg) = 41







Sample No.		1	2	3
Initial	Moisture Content (%)	13.93%	14.66%	14.19%
	Dry Density (pcf)	117.16	116.28	116.50
	Saturation (%)	85.9%	88.2%	85.9%
	Void Ratio	0.4381	0.4489	0.4462
	Diameter (in)	2.50	2.50	2.50
	Height (in)	1.00	1.00	1.00
At Test	Moisture Content (%)	19.70%	19.19%	17.92%
	Dry Density (pcf)	109.08	111.77	113.07
	Saturation (%)	97.7%	102.1%	98.7%
	Void Ratio	0.5446	0.5073	0.4901
	Diameter (in)	2.5	2.5	2.5
	Height (in)	1.02	1.00	1.00
Normal Stress (ksf)		0.60	1.20	2.40
Failure Stress (ksf)		0.78	1.20	2.34
- Strain at Failure (%)		2.46%	3.19%	2.39%
Ultimate Stress (ksf)		0.60	0.99	2.14
- Strain at Ultimate (%)		19.94%	19.81%	19.86%
Avg. Strain Rate (in/min)		0.0016	0.0024	0.0017

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

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

LL = 36 **PI =** 17
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-2
Sample Depth: Bulk Sample
Date(s) Tested: 04/0312 - 04/09/12

Tested By: JJ Checked By: BKS

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S&ME

Job No. 012.01559.201 Date 1/17/12

Project Ford Road Landfill Laboratory Testing

Location Elyria, Ohio

Source of Material SS-3

Description of Material Sandy Lean Clay (CL)

Test Method ASTM D698 Method A

TEST RESULTS

Maximum Dry Density 116.3 PCF

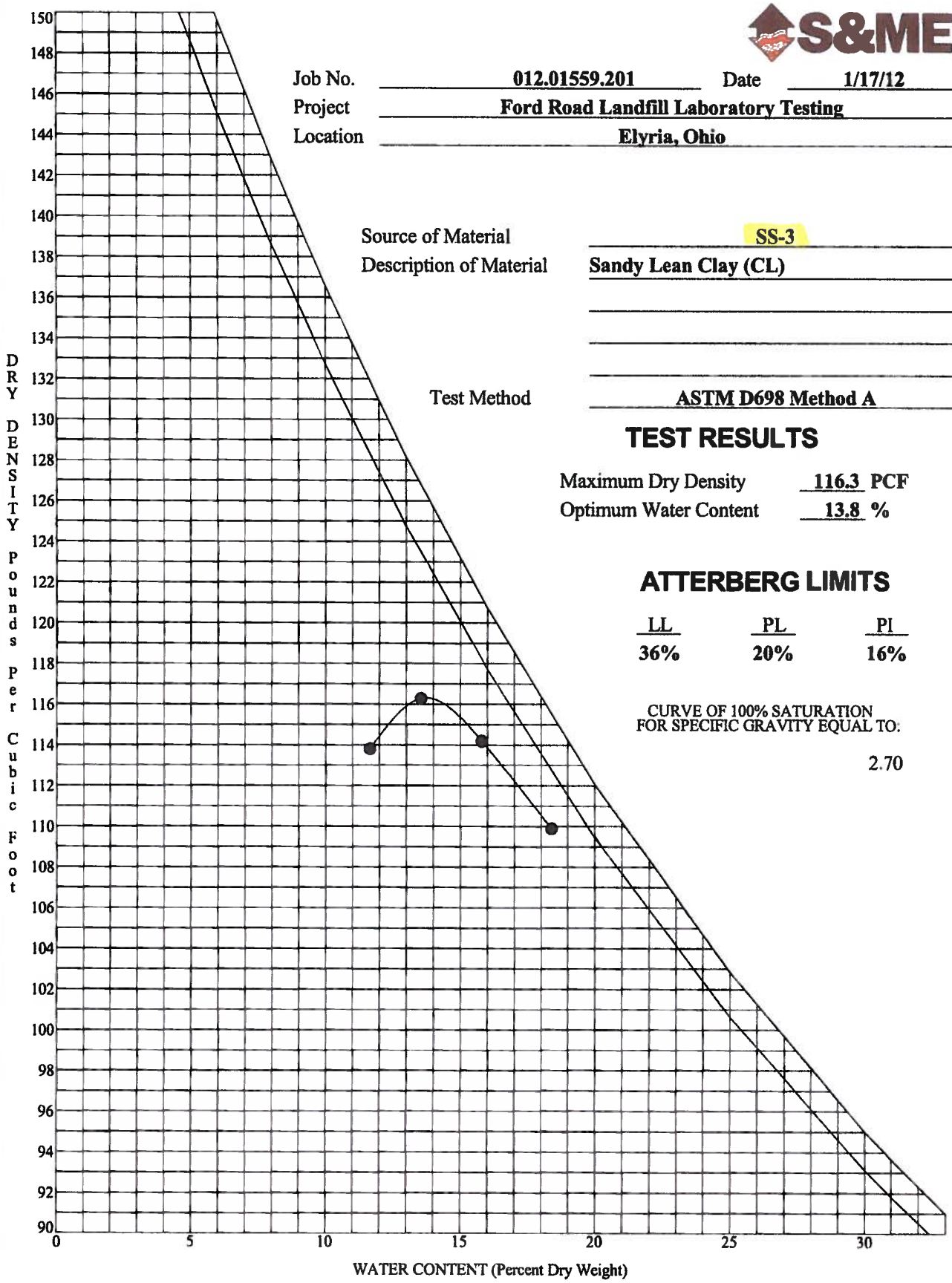
Optimum Water Content 13.8 %

ATTERBERG LIMITS

LL	PL	PI
36%	20%	16%

CURVE OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO:

2.70

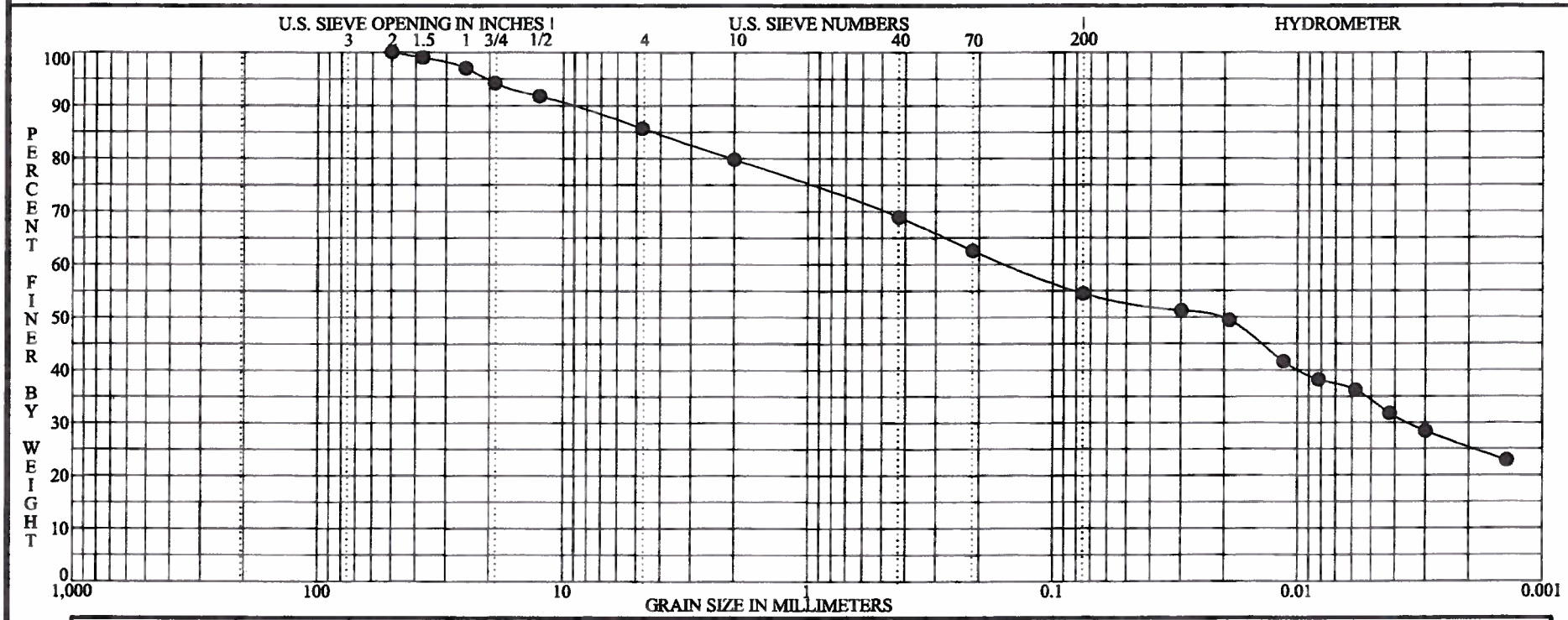


MOISTURE-DENSITY RELATIONSHIP

COMP-REG

PLATE

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-3	SANDY LEAN CLAY CL LOI = 2.53%	15	36	20	16		

	Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	SS-3	50.0000	20.5498	0.1519	0.0216		14.3	31.2	29.1	25.4

ASTM D422 | **GRADATION CURVE**

PROJECT: Ford Road Landfill Laboratory Testing
LOCATION: Elyria, Ohio
JOB NO.: 012.01559.201 DATE: 1/16/12

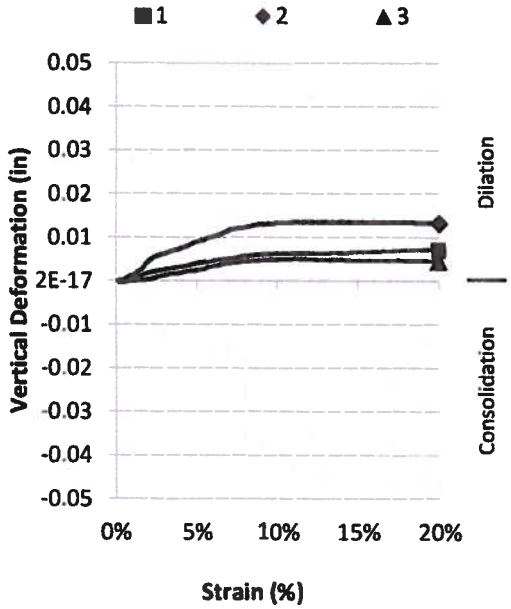
PLATE 3

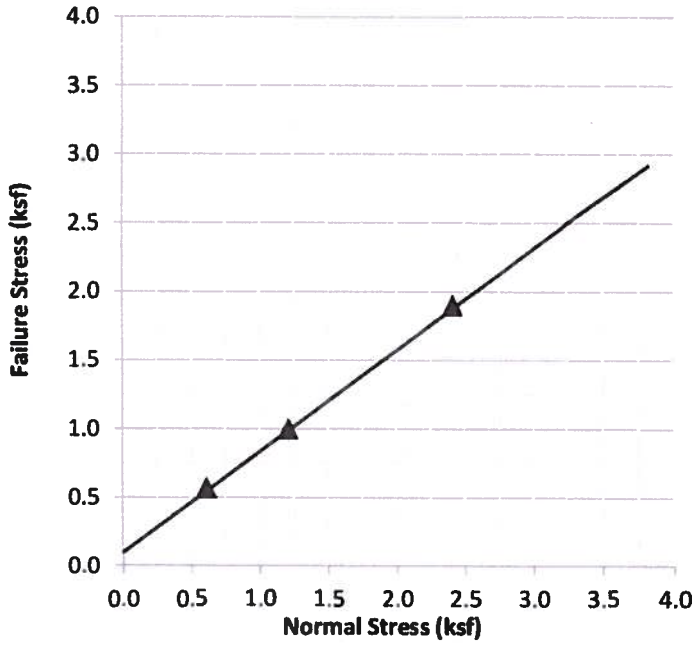
GRN-FPA

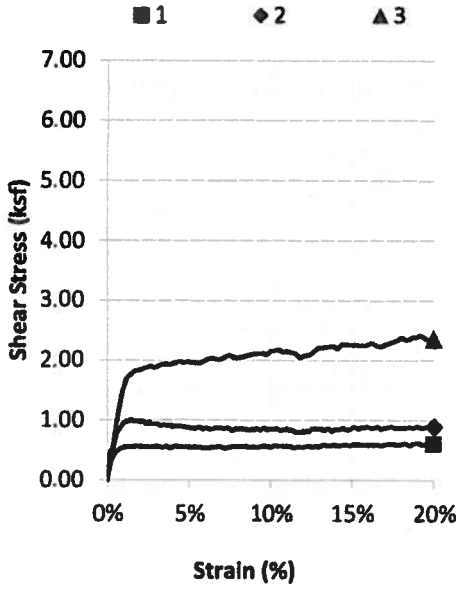
S&ME

DIRECT SHEAR TEST REPORT

Results: C (ksf) = 0.10 ϕ (deg) = 36







Sample No.		1	2	3
Initial	Moisture Content (%)	12.07%	11.74%	11.70%
	Dry Density (pcf)	113.84	114.81	116.77
	Saturation (%)	67.9%	67.8%	71.3%
	Void Ratio	0.4800	0.4674	0.4429
	Diameter (in)	2.50	2.50	2.50
	Height (in)	1.00	1.00	1.00
At Test	Moisture Content (%)	19.89%	18.68%	17.48%
	Dry Density (pcf)	104.77	107.61	112.12
	Saturation (%)	88.3%	89.2%	93.9%
	Void Ratio	0.6081	0.5656	0.5027
	Diameter (in)	2.5	2.5	2.5
	Height (in)	1.02	1.00	0.99
Normal Stress (ksf)		0.60	1.20	2.40
Failure Stress (ksf)		0.57	1.00	1.90
- Strain at Failure (%)		1.86%	1.42%	2.60%
Ultimate Stress (ksf)		0.61	0.89	2.36
- Strain at Ultimate (%)		19.90%	19.96%	19.92%
Avg. Strain Rate (in/min)		0.0020	0.0013	0.0021

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 = 36 **PI =** 16
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-3
Sample Depth: Bulk Sample
Date(s) Tested: 4/6/12 - 4/12/12

Tested By: PJM Checked By: BKS

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S&ME

Job No. 012.01559.201 Date 1/17/12

Project Ford Road Landfill Laboratory Testing

Location Elyria, Ohio

Source of Material SS-4

Description of Material Lean Clay with Sand (CL)

Test Method ASTM D698 Method A

TEST RESULTS

Maximum Dry Density 112.1 PCF

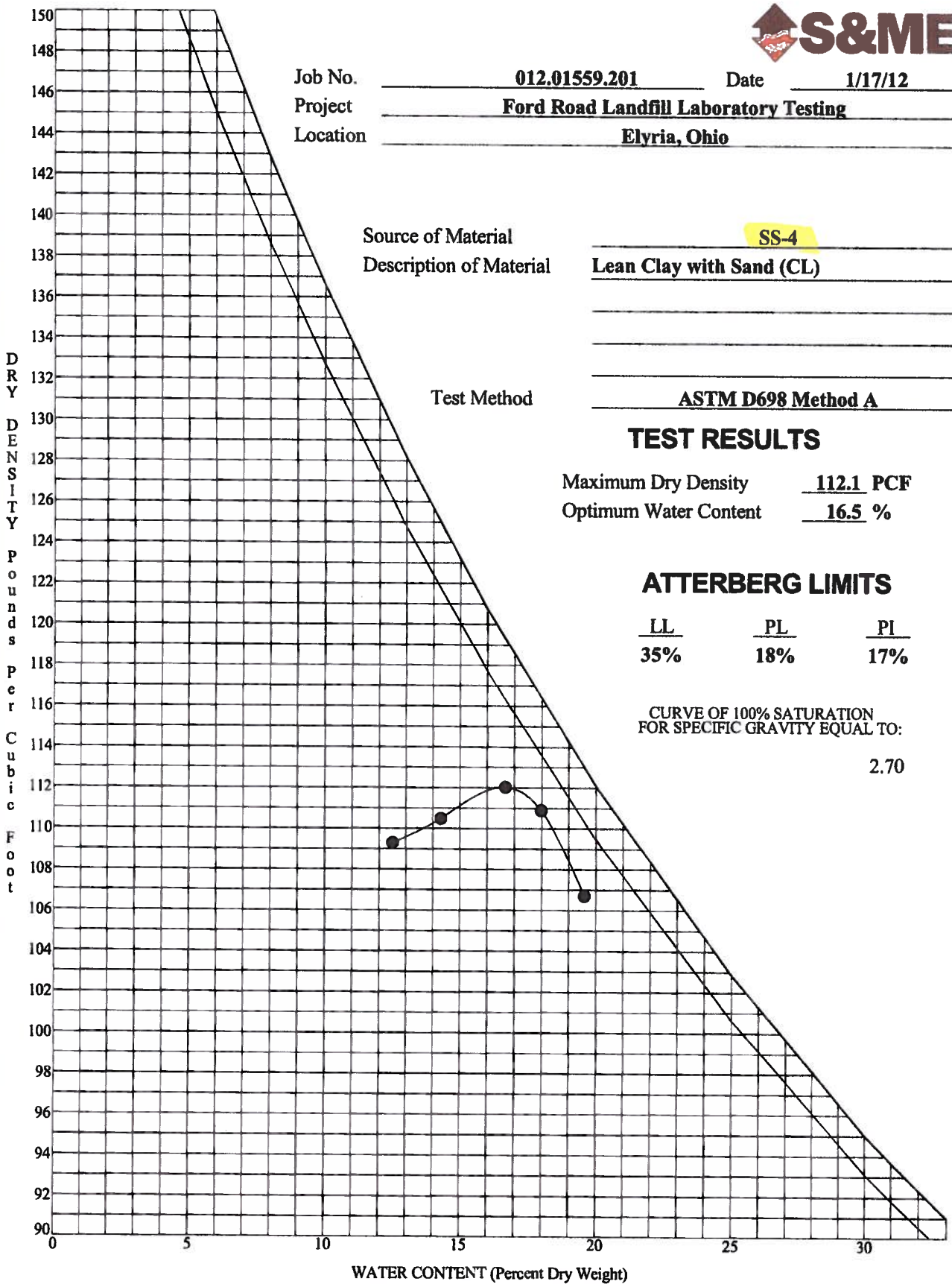
Optimum Water Content 16.5 %

ATTERBERG LIMITS

LL	PL	PI
35%	18%	17%

CURVE OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO:

2.70

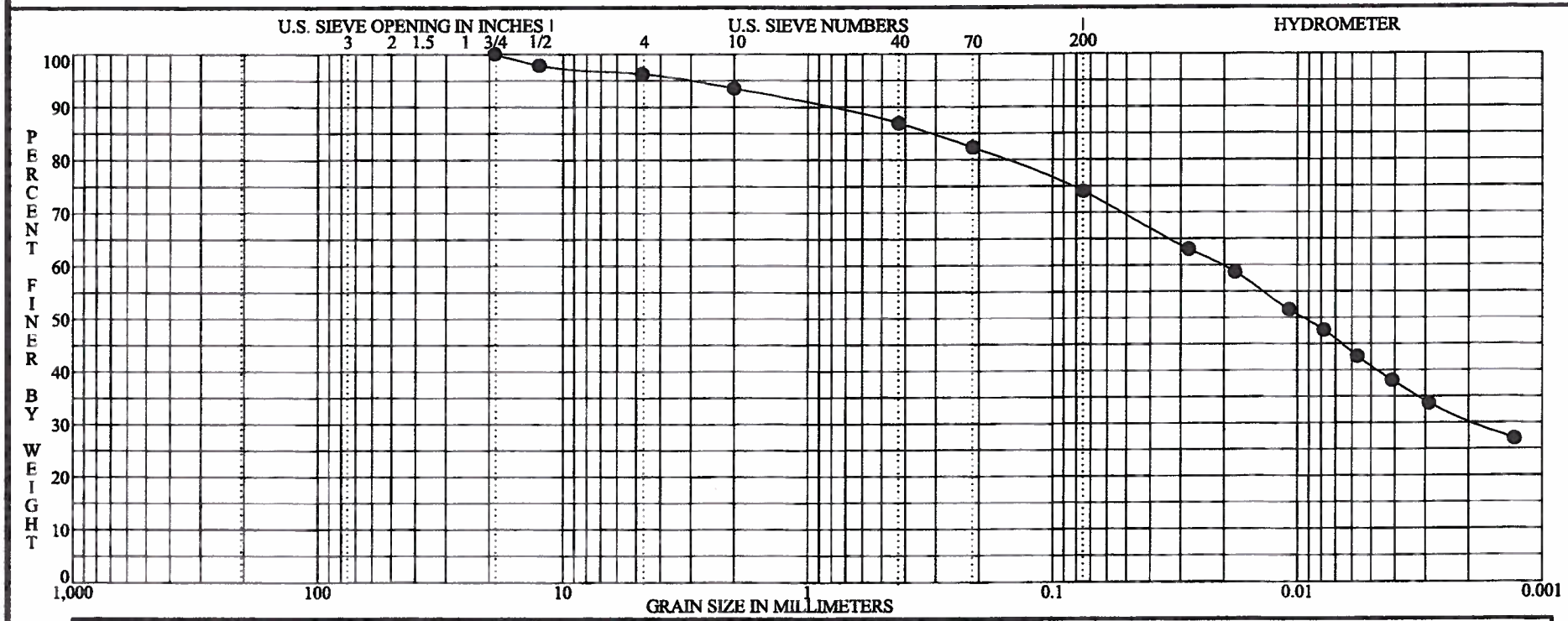


MOISTURE-DENSITY RELATIONSHIP

COMP-REG

PLATE

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-4	LEAN CLAY with SAND CL LOI = 2.26%	14	35	18	17		

	Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	SS-4	19.0000	3.2116	0.0205	0.0095		3.8	22.2	43.4	30.6

ASTM D422 | **GRADATION CURVE**

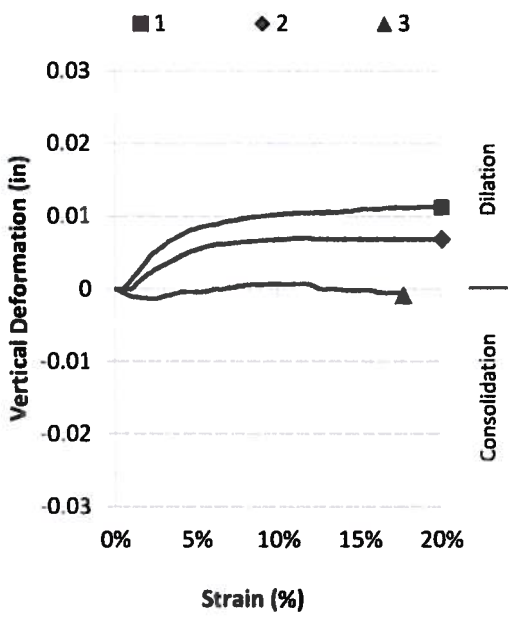
PROJECT: Ford Road Landfill Laboratory Testing
LOCATION: Elyria, Ohio
JOB NO.: 012.01559.201 DATE: 1/16/12

PLATE 4

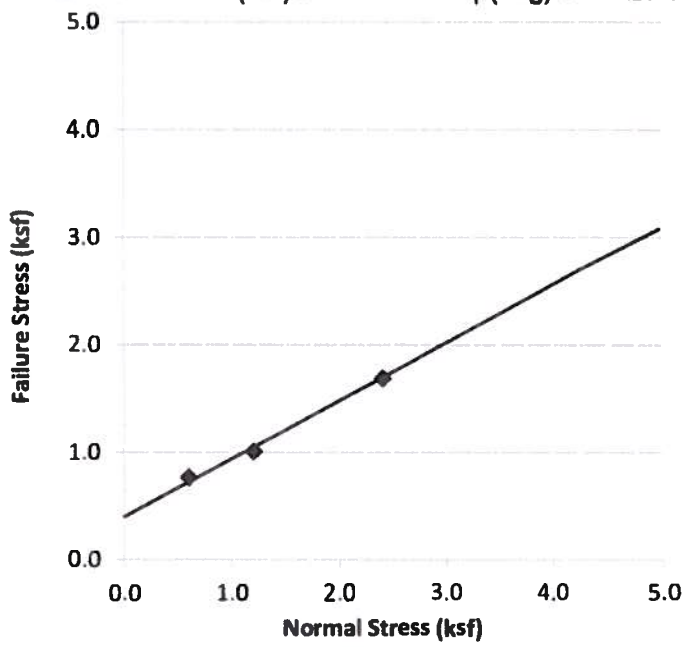
GRN-EPA

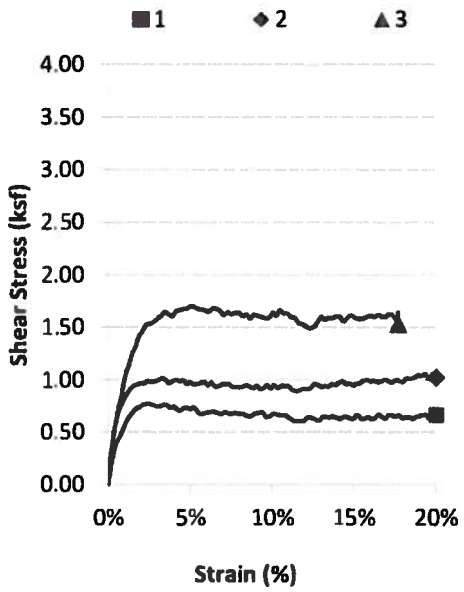
DIRECT SHEAR TEST REPORT

S&ME



Results: C (ksf) = **0.43** ϕ (deg) = **28.0**





Sample No.		1	2	3
Initial	Moisture Content (%)	15.09%	14.51%	14.60%
	Dry Density (pcf)	114.82	113.05	113.69
	Saturation (%)	87.2%	79.9%	81.8%
	Void Ratio	0.4674	0.4903	0.4820
	Diameter (in)	2.50	2.50	2.50
	Height (in)	1.00	1.00	1.00
At Test	Moisture Content (%)	19.48%	19.28%	18.49%
	Dry Density (pcf)	111.63	110.00	111.40
	Saturation (%)	103.3%	97.9%	97.4%
	Void Ratio	0.5093	0.5316	0.5124
	Diameter (in)	2.5	2.5	2.5
	Height (in)	0.9908	0.9866	0.987
Normal Stress (ksf)		0.60	1.20	2.40
Failure Stress (ksf)		0.77	1.01	1.69
Strain at Failure (%)		2.51%	3.28%	5.24%
Ultimate Stress (ksf)				
Strain at Ultimate (%)				
Avg. Strain Rate (in/min)		0.0017	0.0018	0.0017

Sample Type: Bulk Sample
Sample Description:
Lean clay with sand, CL

Comments:
Remolded to 102% of Standard Proctor maximum dry density and minus 1.5% of the optimum moisture content.

LL = 35 **PI =** 17
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-4
Sample Depth:	Bulk Sample
Date(s) Tested:	2/27/12 - 3/2/12

Tested By: JJ Checked By: BKS

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S&ME

Job No. 012.01559.201 Date 3/9/12

Project Ford Road Landfill Laboratory Testing

Location Elyria, Ohio

Source of Material SS-5 Dennis N+S

Description of Material

Test Method ASTM D1557 Method B

TEST RESULTS

Maximum Dry Density 122.6 PCF

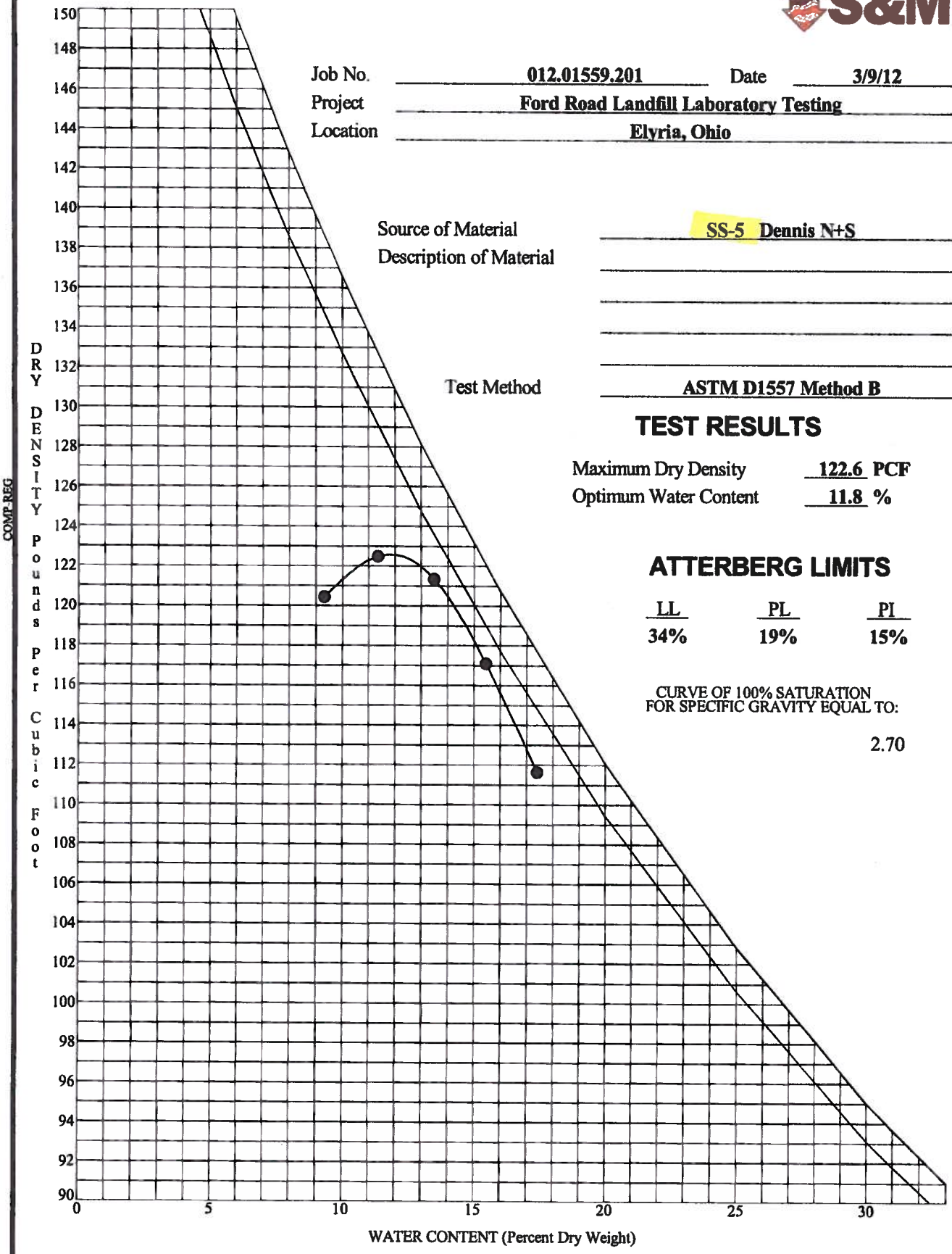
Optimum Water Content 11.8 %

ATTERBERG LIMITS

LL	PL	PI
34%	19%	15%

CURVE OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO:

2.70



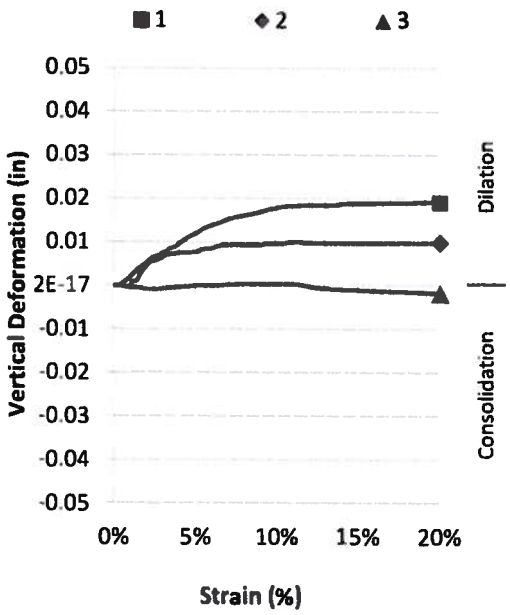
MOISTURE-DENSITY RELATIONSHIP

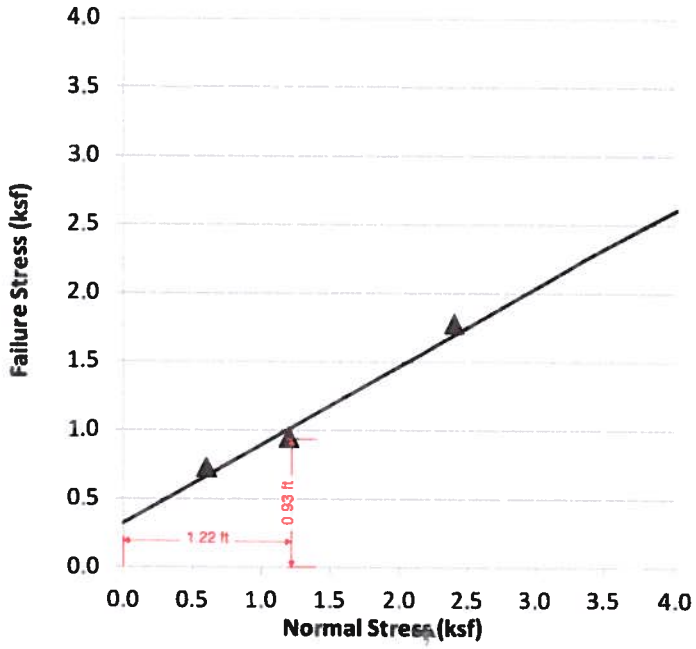
COMP-REG

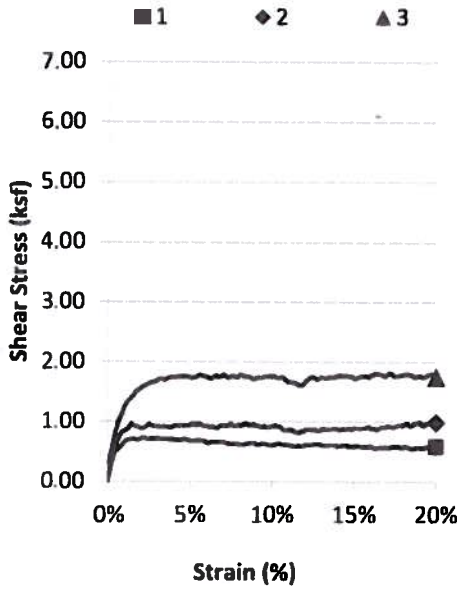
PLATE 1

DIRECT SHEAR TEST REPORT

Results: C (ksf) = 0.32 ϕ (deg) = 30







Sample No.		1	2	3
Initial	Moisture Content (%)	12.83%	12.51%	13.02%
	Dry Density (pcf)	115.99	116.93	116.06
	Saturation (%)	76.5%	76.6%	77.8%
	Void Ratio	0.4526	0.4409	0.4517
	Diameter (in)	2.50	2.50	2.50
	Height (in)	1.00	1.00	1.00
At Test	Moisture Content (%)	19.54%	18.79%	18.01%
	Dry Density (pcf)	112.05	112.48	112.84
	Saturation (%)	104.8%	101.9%	98.6%
	Void Ratio	0.5036	0.4979	0.4931
	Diameter (in)	2.5	2.5	2.5
	Height (in)	0.98	0.98	0.99
Normal Stress (ksf)		0.60	1.20	2.40
Failure Stress (ksf)		0.73	0.95	1.78
- Strain at Failure (%)		2.18%	2.47%	5.51%
Ultimate Stress (ksf)		0.59	0.99	1.76
- Strain at Ultimate (%)		20.00%	20.00%	20.00%
Avg. Strain Rate (in/min)		0.0020	0.0014	0.0021

Sample Type: Bulk Sample
Sample Description:

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

LL = 34 **PI =** 15
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-5
Sample Depth:	Bulk Sample
Date(s) Tested:	3/15/12 - 3/23/12

Tested By: PJM Checked By: BKS

S&ME

Job No. 012.01559.201 Date 5/30/12

Project Ford Road Landfill Laboratory Testing

Location Elyria, Ohio

Source of Material SS-7

Description of Material LEAN CLAY with SAND CL

Test Method ASTM D1557 Method B

TEST RESULTS

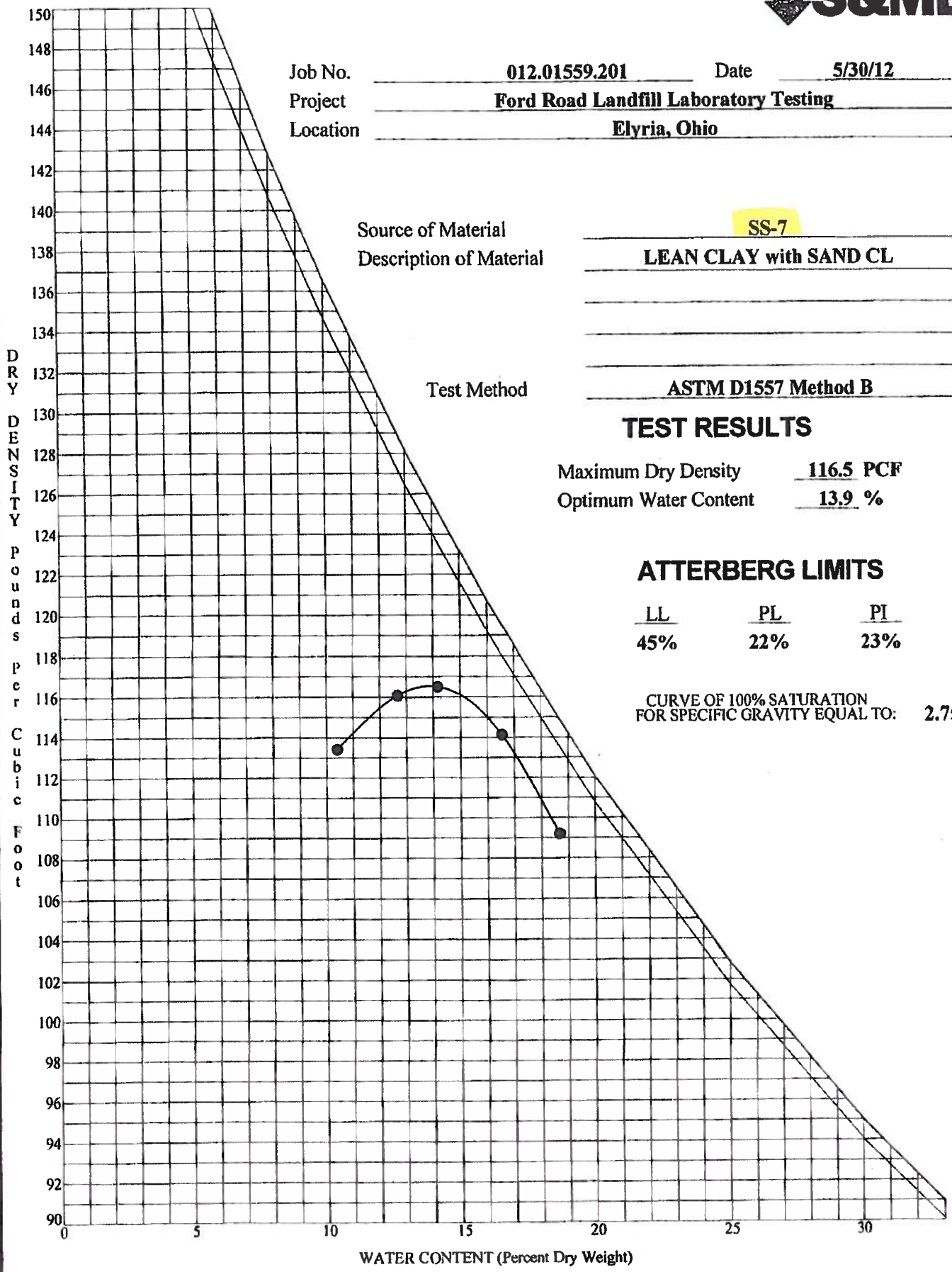
Maximum Dry Density 116.5 PCF

Optimum Water Content 13.9 %

ATTERBERG LIMITS

LL	PL	PI
45%	22%	23%

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

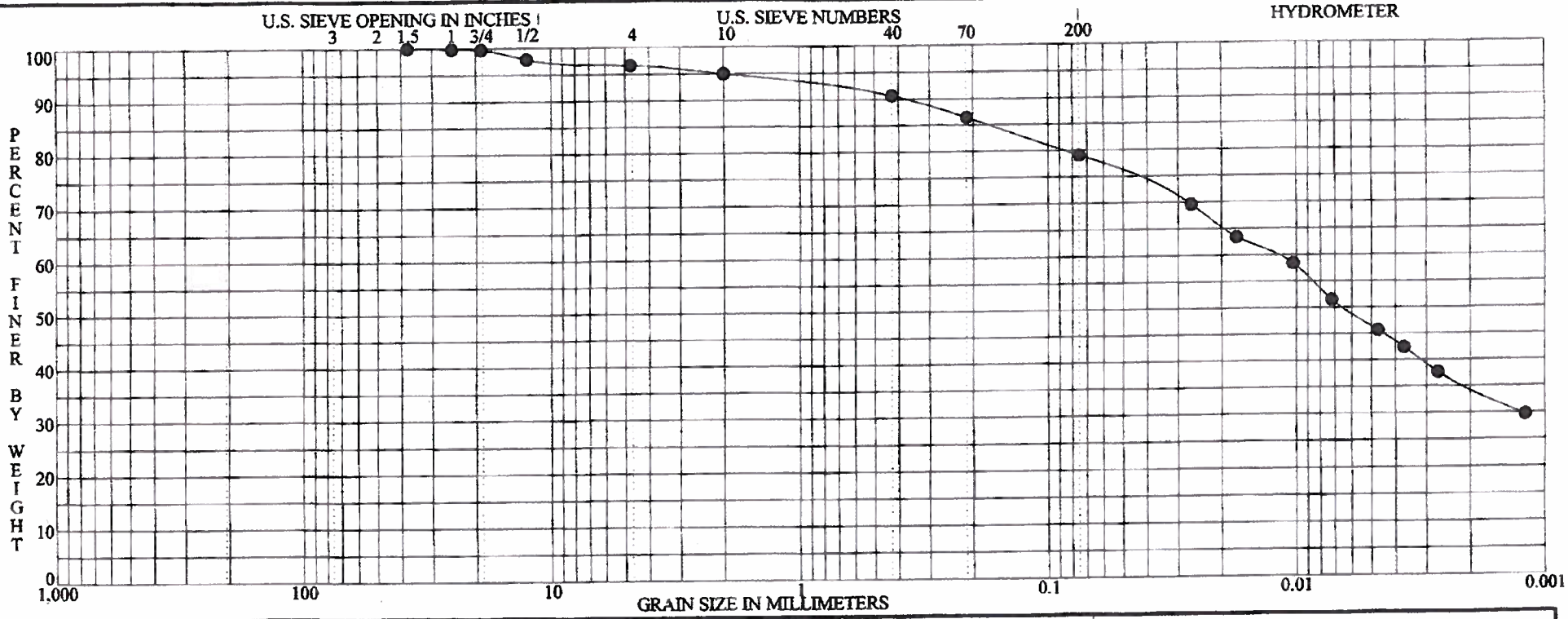


MOISTURE-DENSITY RELATIONSHIP

COMP-EPA

PLATE 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-7	LEAN CLAY with SAND CL	22	45	22	23	13.9	116.5

	Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	SS-7	37.5000	2.0417	0.0121	0.0064		3.4	17.6	44.4	34.7

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 2

PERMEABILITY TEST DATA AND COMPUTATION SHEET

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

S&ME

Job Number:	1179-11-024B	Date:	5/24-30/2012	Maximum Dry Density:	116.50 pcf
Project Name:	Ford Rd. Landfill Lab Testing	Boring:	SS-7	Optimum Moisture Content:	13.90 %
Project Location:	Elyria, Ohio	Sample:		% Compaction.:	92.43 %
Tested By:	PJM	Depth:		Optimum +/-:	3.03 %
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):	3.0980 in = 7.869 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.:	639.16 grams
Unit Wet Wt.:	125.90 pcf
Unit Dry Wt.:	107.68 pcf

Test Conditions:

Chamber Pressure:	62 psi
Back Pressure:	58 psi
Confining Pressure:	4 psi
Temp. @ Start:	24.6 °C
Temp. @ End:	24.4 °C
Average Temp.:	24.5 °C
B Parameter:	0.95

Moisture Content:

	Before Test	After Test
Pan No. =	H	H
Wet Wt. + Pan =	639.16	678.37
Dry Wt. + Pan =	546.63	546.63
Wt. of Pan =		
Wt. of Dry Soil =	546.63	546.63
Wt. of Water =	92.53	131.74
% Moisture =	16.93	24.10
% SATURATION	80.83	105.54
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
5/29/2012	9:03 AM	0.00	42.10	4099.36	3.30	4284.50	-185.15	-	-
5/29/2012	11:00 AM	7,020	41.40	4100.16	4.00	4283.70	-183.54	0.00870	9.205E-08
5/29/2012	12:19 PM	4,740	41.00	4100.62	4.50	4283.13	-182.51	0.00564	8.827E-08
5/29/2012	1:39 PM	4,800	40.60	4101.08	4.90	4282.67	-181.60	0.00504	7.789E-08
5/29/2012	2:15 PM	2,160	40.40	4101.30	5.10	4282.44	-181.14	0.00253	8.688E-08
5/29/2012	3:19 PM	3,840	40.00	4101.76	5.40	4282.10	-180.33	0.00444	8.582E-08
5/29/2012	4:58 PM	5,940	39.50	4102.34	5.90	4281.52	-179.19	0.00638	7.969E-08
5/30/2012	8:44 AM	56,760	35.10	4107.38	10.50	4276.25	-168.87	0.05929	7.755E-08
5/30/2012	10:21 AM	5,820	34.70	4107.84	10.90	4275.79	-167.96	0.00544	6.945E-08

Time Weighted Average, k [cm/sec] = 7.943E-08

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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-8

Description of Material LEAN CLAY with SAND CL

Test Method ASTM D1557 Method B

TEST RESULTS

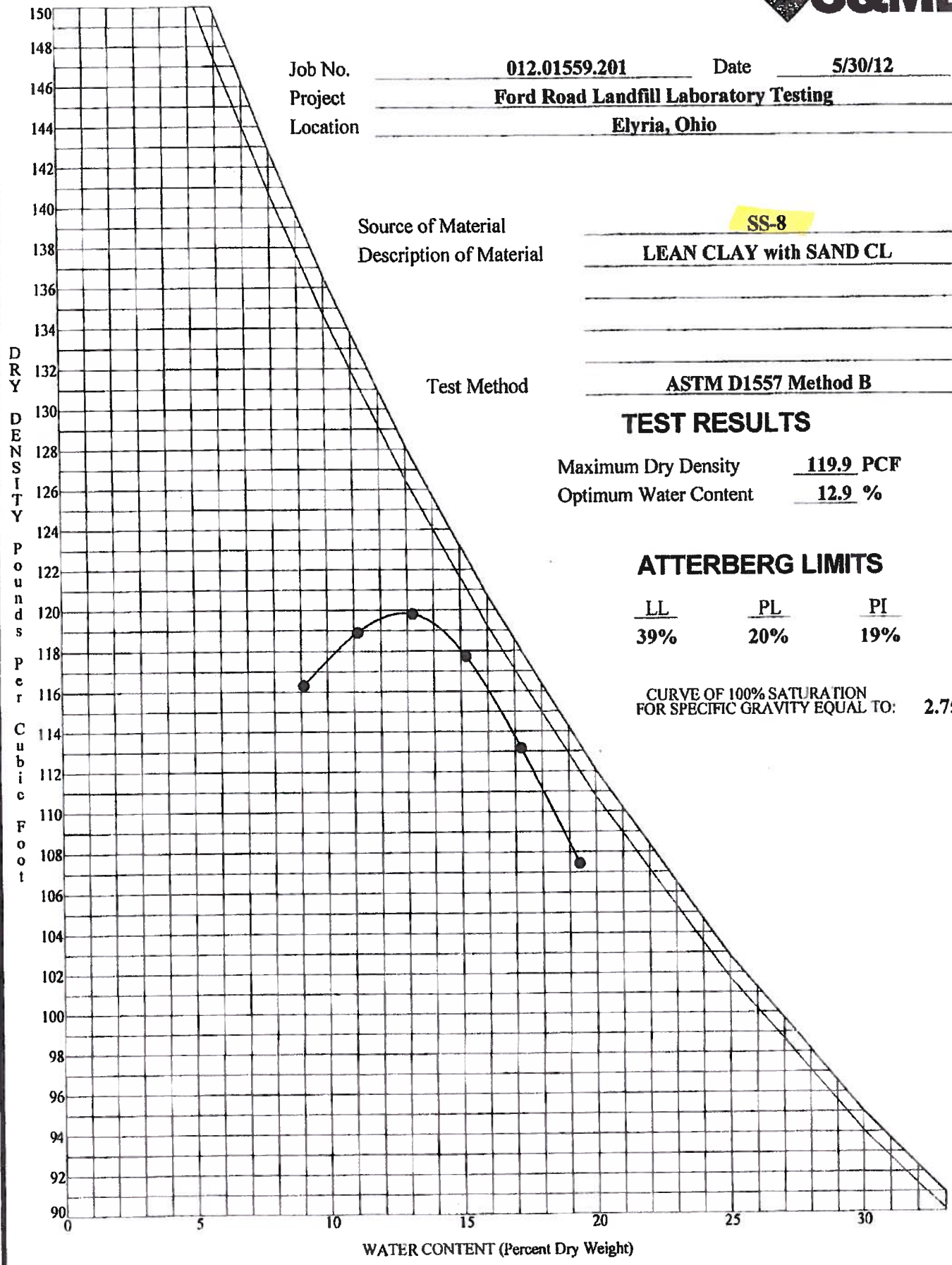
Maximum Dry Density 119.9 PCF

Optimum Water Content 12.9 %

ATTERBERG LIMITS

LL	PL	PI
39%	20%	19%

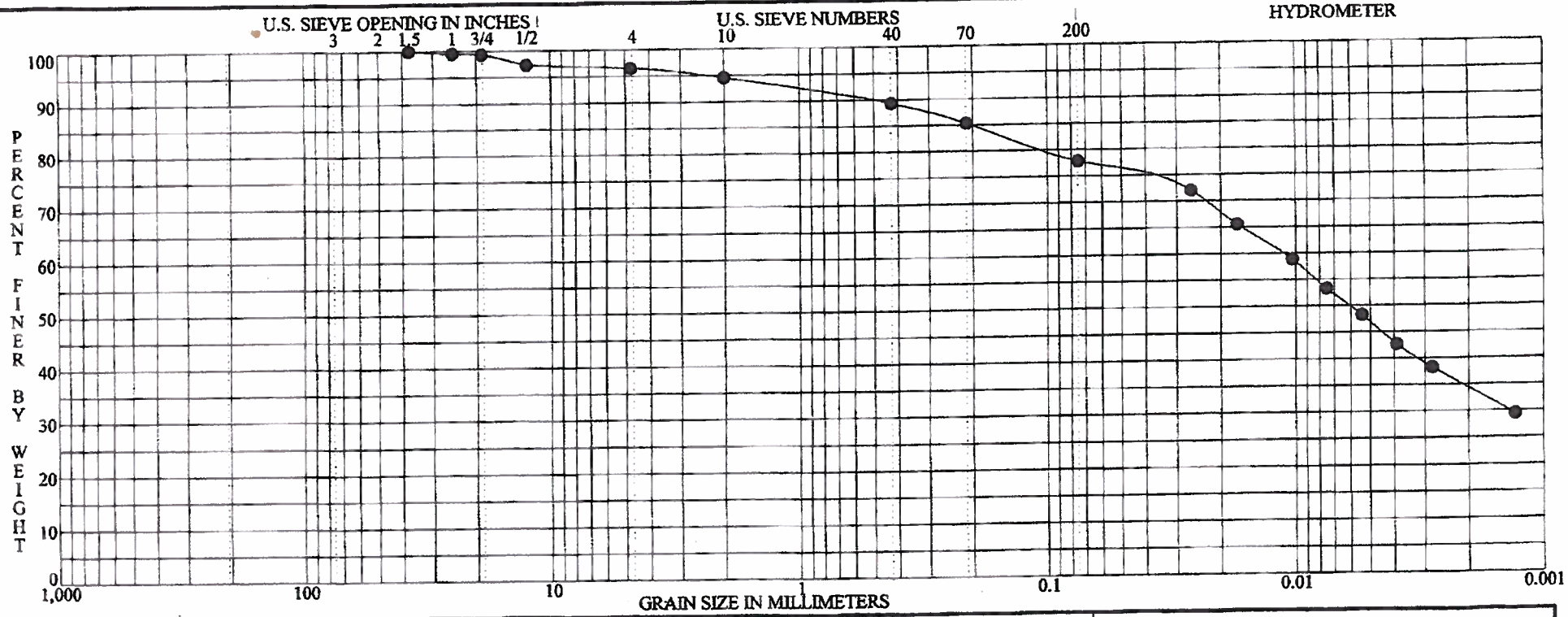
CURVE OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO: 2.75



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-8	LEAN CLAY with SAND CL	19	39	20	19	12.9	119.9

	Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	SS-8	37.5000	2.4916	0.0112	0.0061		3.5	18.6	43.4	34.4

ASTM D422 | **GRADATION CURVE**

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

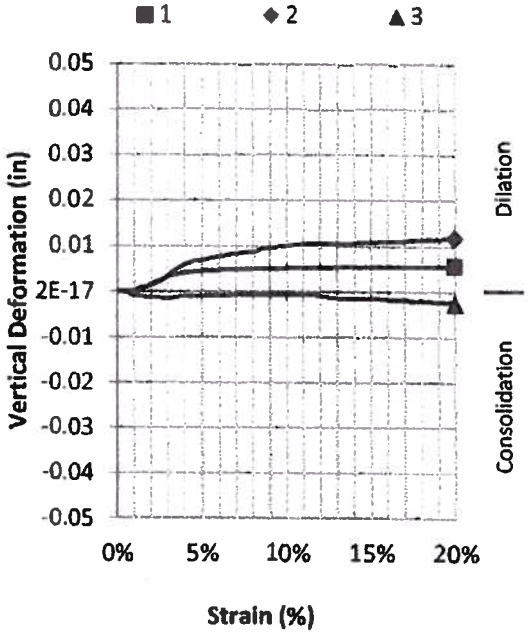
GRN-EPA

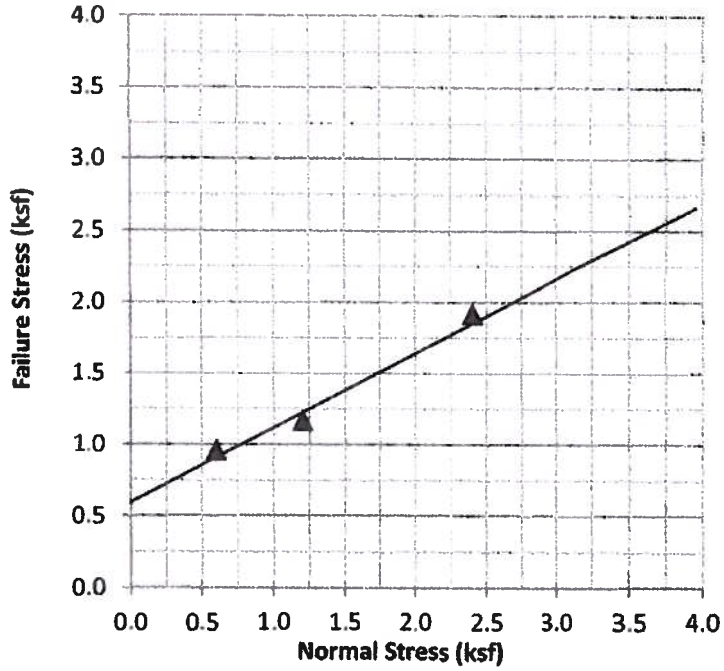
PLATE 3

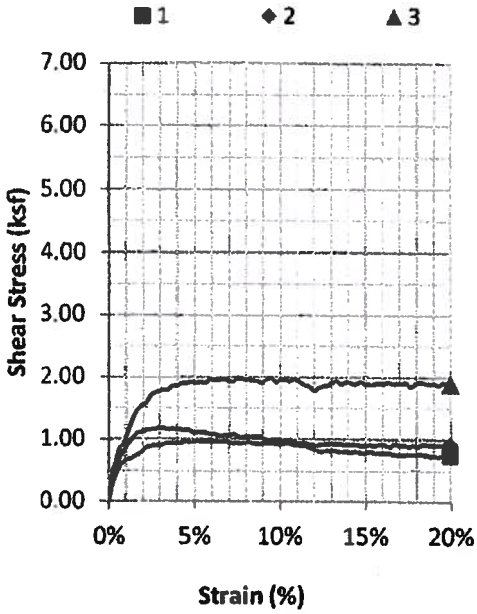
S&ME

DIRECT SHEAR TEST REPORT

Results: C (ksf) = 0.60 ϕ (deg) = 28







Sample No.		1	2	3
Initial	Moisture Content (%)	13.17%	13.69%	13.88%
	Dry Density (pcf)	114.26	113.92	113.98
	Saturation (%)	74.9%	77.2%	78.4%
	Void Ratio	0.4745	0.4789	0.4782
	Diameter (in)	2.50	2.50	2.50
	Height (in)	1.00	1.00	1.00
At Test	Moisture Content (%)	21.62%	20.69%	19.69%
	Dry Density (pcf)	103.80	105.75	108.55
	Saturation (%)	93.7%	94.1%	96.3%
	Void Ratio	0.6231	0.5932	0.5521
	Diameter (in)	2.5	2.5	2.5
	Height (in)	1.02	1.01	1.00
Normal Stress (ksf)		0.60	1.20	2.40
Failure Stress (ksf)		0.96	1.17	1.92
- Strain at Failure (%)		5.12%	3.16%	4.84%
Ultimate Stress (ksf)		0.74	0.90	1.89
- Strain at Ultimate (%)		20.00%	19.97%	20.00%
Avg. Strain Rate (in/min)		0.0023	0.0024	0.0022

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

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

LL = 39 **PI =** 19
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-8
Sample Depth:	Bulk Sample
Date(s) Tested:	05/21/12 - 05/24/12

Tested By: JJ Checked By: BKS

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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-9

Description of Material LEAN CLAY with SAND CL

Test Method ASTM D1557 Method B

TEST RESULTS

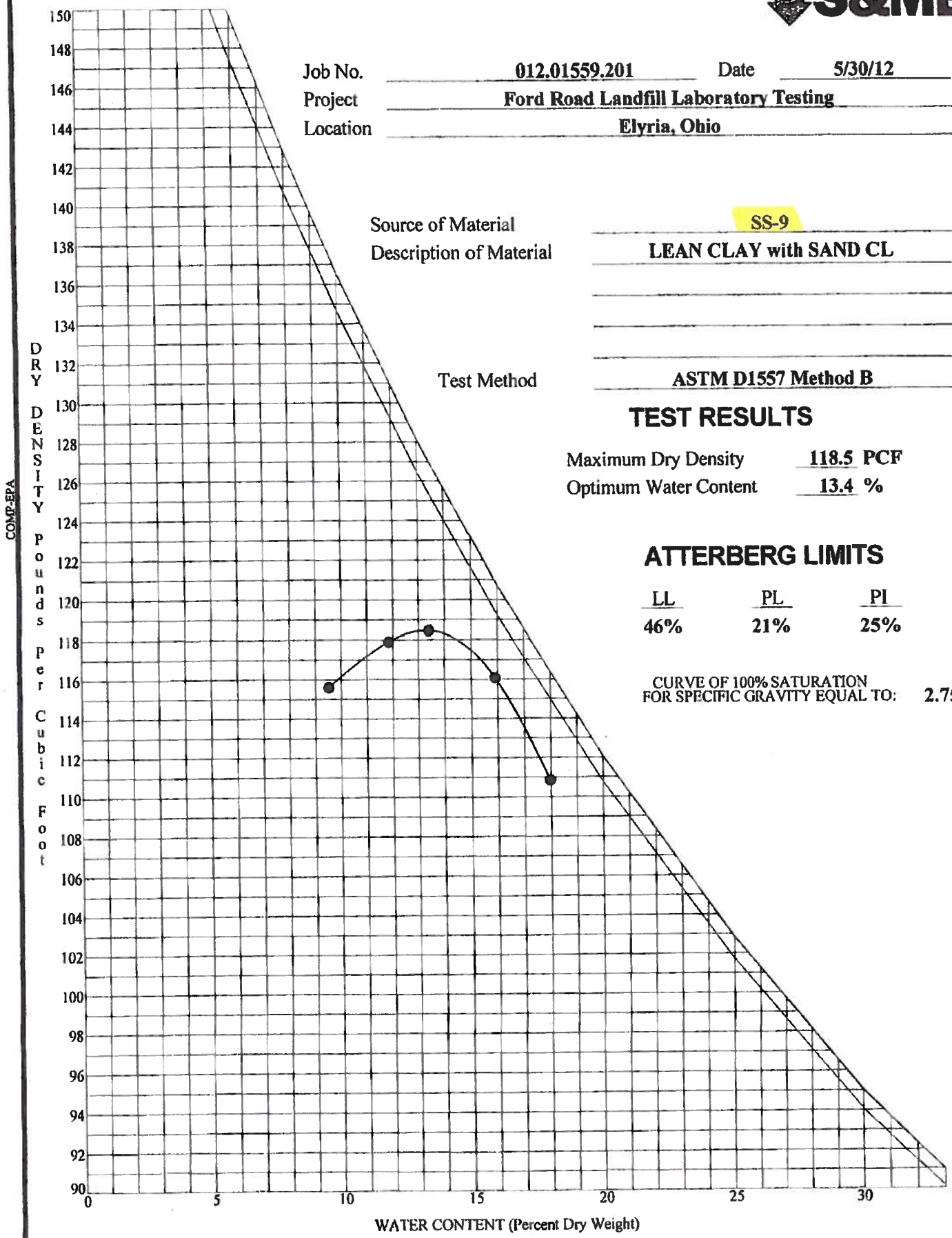
Maximum Dry Density 118.5 PCF

Optimum Water Content 13.4 %

ATTERBERG LIMITS

LL	PL	PI
46%	21%	25%

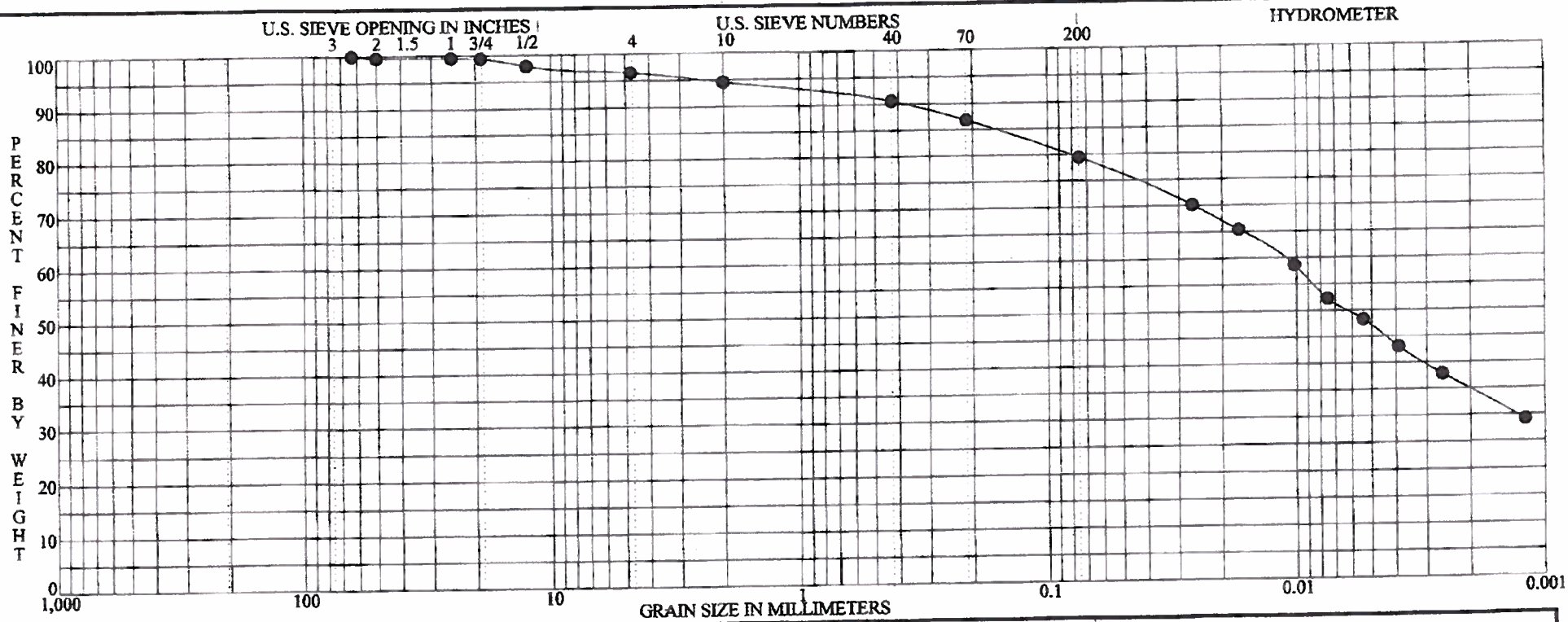
CURVE OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO: 2.75



COMP-EPA

MOISTURE-DENSITY RELATIONSHIP

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-9	LEAN CLAY with SAND CL	20	46	21	25	13.4	118.5

	Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	SS-9	63.0000	2.5143	0.0113	0.0062		3.6	17.0	44.5	34.9

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 4

S&ME

Job No. 012.01559.201 Date 5/30/12

Project Ford Road Landfill Laboratory Testing

Location Elyria, Ohio

Source of Material SS-10

Description of Material SANDY LEAN CLAY CL

Test Method ASTM D1557 Method B

TEST RESULTS

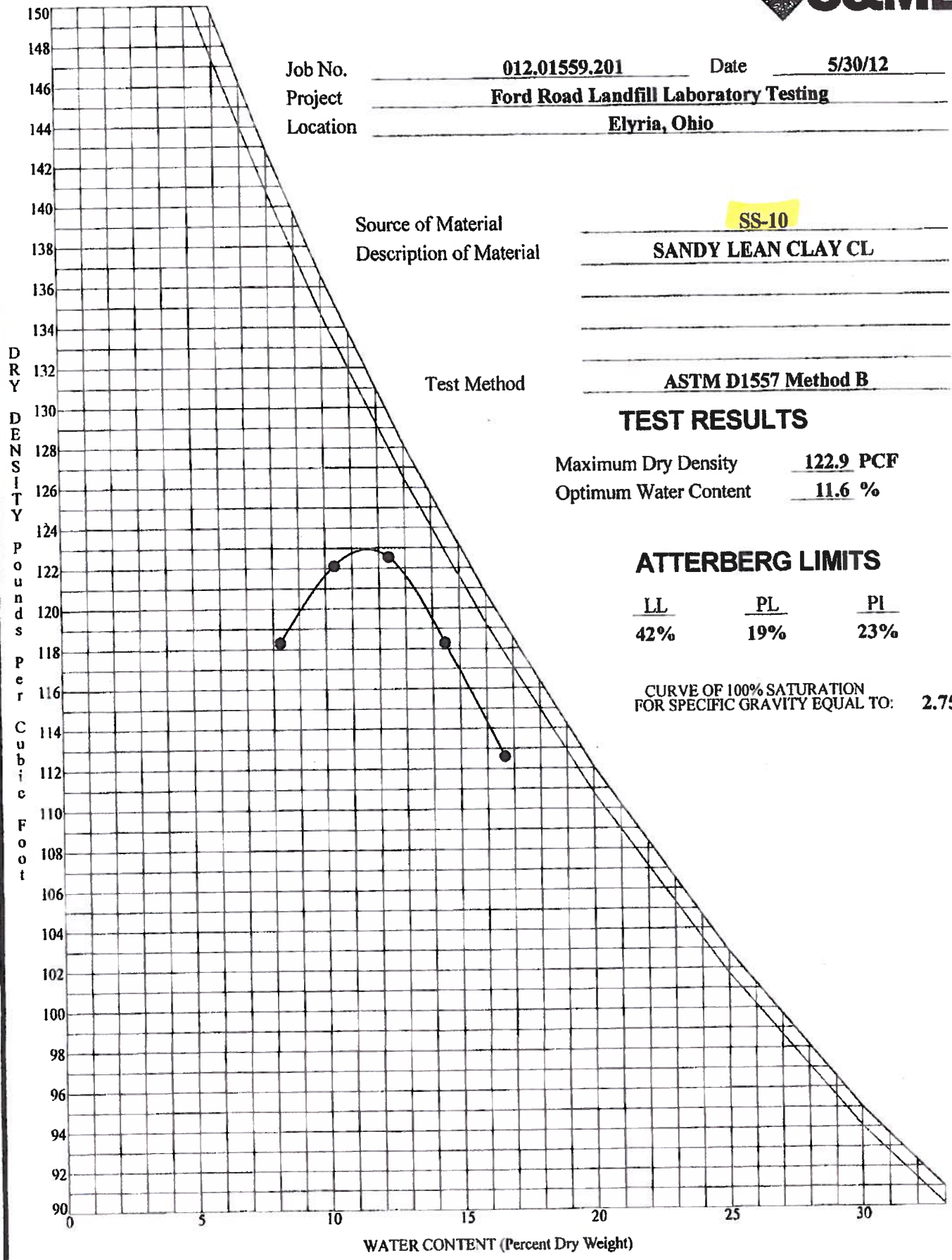
Maximum Dry Density 122.9 PCF

Optimum Water Content 11.6 %

ATTERBERG LIMITS

LL	PL	PI
42%	19%	23%

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

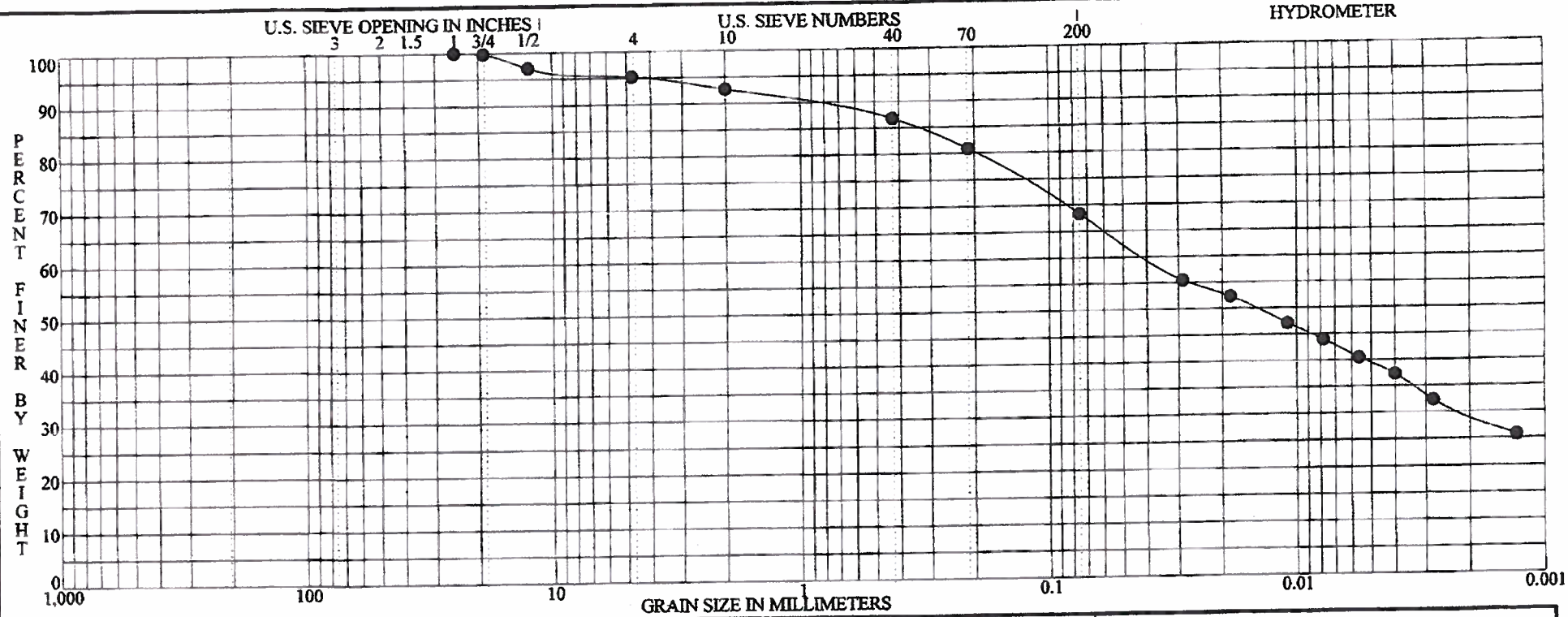


MOISTURE-DENSITY RELATIONSHIP

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-10	SANDY LEAN CLAY CL	18	42	19	23	11.6	122.9

	Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	SS-10	25.0000	4.4636	0.0402	0.0146		4.8	26.8	38.9	29.4

ASTM D422 | **GRADATION CURVE**

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

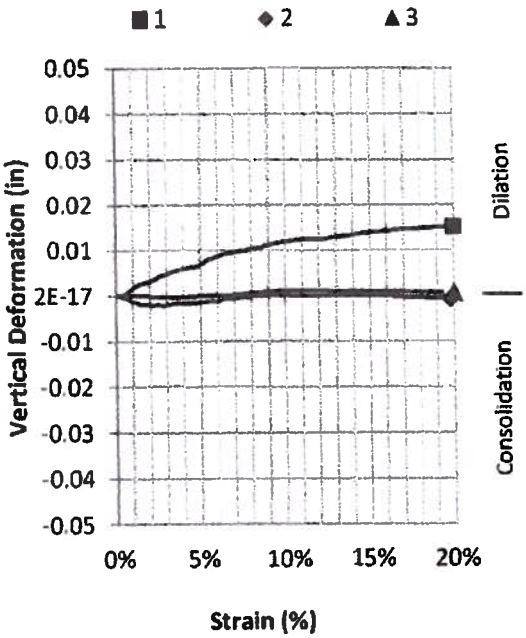
GRN-EPA

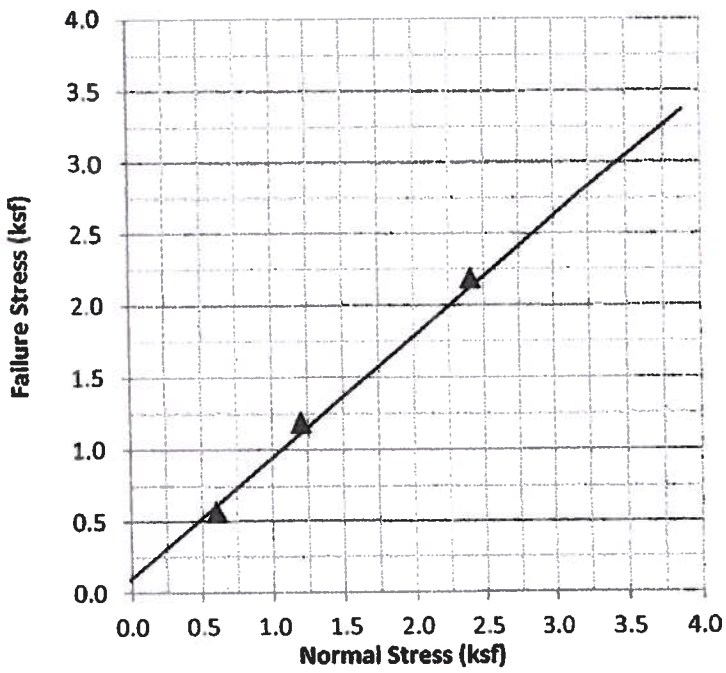
PLATE 5

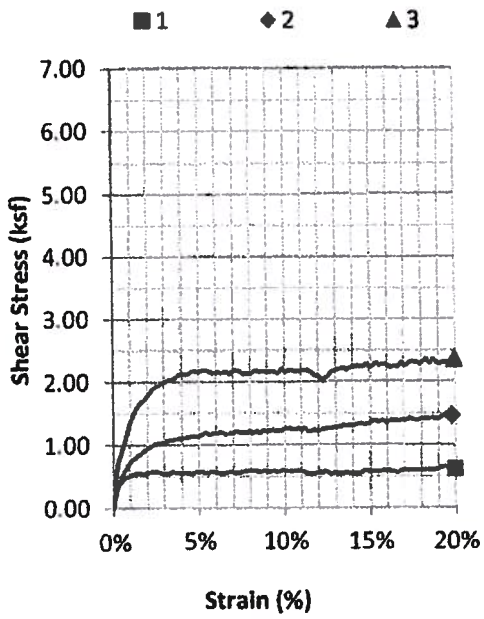
S&ME

DIRECT SHEAR TEST REPORT

Results: C (ksf) = 0.11 ϕ (deg) = 40







Sample No.		1	2	3
Initial	Moisture Content (%)	12.22%	12.22%	11.83%
	Dry Density (pcf)	116.82	116.55	115.96
	Saturation (%)	74.6%	74.0%	70.5%
	Void Ratio	0.4422	0.4455	0.4530
	Diameter (in)	2.50	2.50	2.50
	Height (in)	1.00	1.00	1.00
At Test	Moisture Content (%)	20.05%	18.81%	17.14%
	Dry Density (pcf)	108.45	109.59	111.30
	Saturation (%)	97.8%	94.5%	90.1%
	Void Ratio	0.5535	0.5373	0.5137
	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)		0.57	1.19	2.19
- Strain at Failure (%)		2.66%	5.36%	5.28%
Ultimate Stress (ksf)		0.61	1.46	2.37
- Strain at Ultimate (%)		20.00%	19.80%	20.00%
Avg. Strain Rate (in/min)		0.0024	0.0017	0.0017

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 = 42 **PI =** 23
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-10
Sample Depth:	Bulk Sample
Date(s) Tested:	05/11/12 - 05/16/12

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:	122.90 pcf
Project Name:	Ford Rd. Landfill Lab Testing	Boring:	SS-10	Optimum Moisture Content:	11.60 %
Project Location:	Elyria, Ohio	Sample:		% Compaction:	87.53 %
Tested By:	PJM	Depth:		Optimum +/-:	5.43 %
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):	3.0182 in = 7.666 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.:	639.11 grams
Unit Wet Wt.:	125.89 pcf
Unit Dry Wt.:	107.58 pcf

Test Conditions:

Chamber Pressure:	62 psi
Back Pressure:	58 psi
Confining Pressure:	4 psi
Temp. @ Start:	21.7 °C
Temp. @ End:	22.0 °C
Average Temp.:	21.9 °C
B Parameter:	0.98

Moisture Content:

	Before Test	After Test
Pan No. =	G	G
Wet Wt. + Pan =	639.11	662.99
Dry Wt. + Pan =	546.12	546.12
Wt. of Pan =	0.00	0.00
Wt. of Dry Soil =	546.12	546.12
Wt. of Water =	92.99	116.87
% Moisture =	17.03	21.40
% SATURATION	81.10	100.24
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	8:53 AM	0.00	48.00	4092.59	2.30	4285.65	-193.06	-	-
5/16/2012	9:21 AM	1,880	45.70	4095.23	4.80	4282.79	-187.56	0.02891	1.324E-06
5/16/2012	10:09 AM	2,880	42.40	4099.01	8.30	4278.77	-179.76	0.04244	1.134E-06
5/16/2012	10:59 AM	3,000	39.40	4102.45	11.20	4275.45	-173.00	0.03834	9.832E-07
5/16/2012	12:33 PM	5,640	34.35	4108.24	16.30	4269.60	-161.37	0.06961	9.495E-07
5/16/2012	1:29 PM	3,360	31.60	4111.39	19.00	4266.51	-155.12	0.03948	9.039E-07
5/16/2012	3:00 PM	5,460	27.70	4115.86	23.00	4261.93	-146.06	0.06015	8.474E-07
5/16/2012	4:55 PM	6,900	23.30	4120.90	27.30	4257.00	-136.09	0.07071	7.883E-07
5/17/2012	8:21 AM	55,560	0.60	4146.92	50.40	4230.52	-83.60	0.48732	8.747E-07

Time Weighted Average, k [cm/sec] = 7.621E-07

S&ME

Job No. 012.01559.201 Date 5/30/12

Project Ford Road Landfill Laboratory Testing

Location Elyria, Ohio

Source of Material SS-11

Description of Material LEAN CLAY with SAND CL

Test Method ASTM D1557 Method B

TEST RESULTS

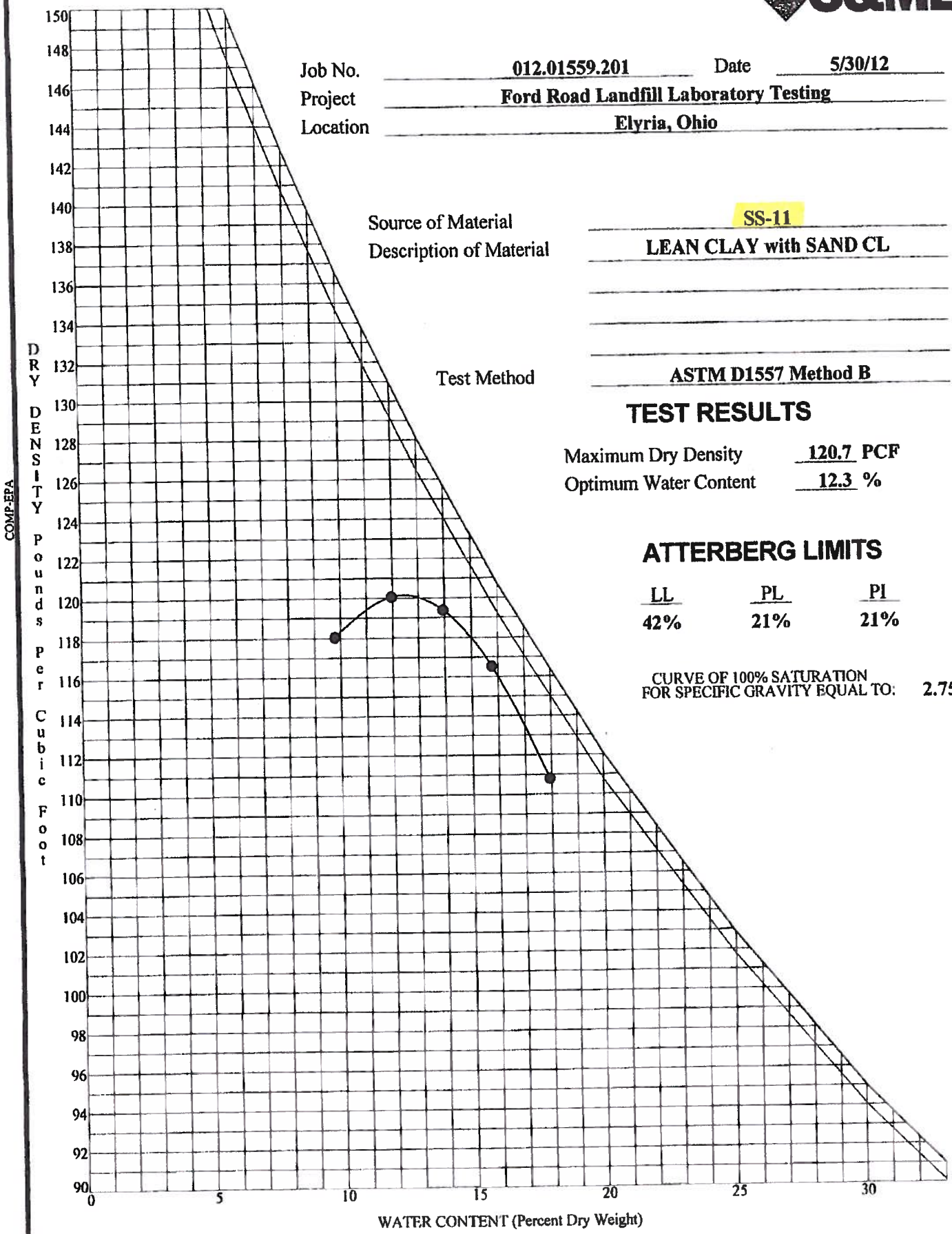
Maximum Dry Density 120.7 PCF

Optimum Water Content 12.3 %

ATTERBERG LIMITS

LL	PL	PI
42%	21%	21%

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

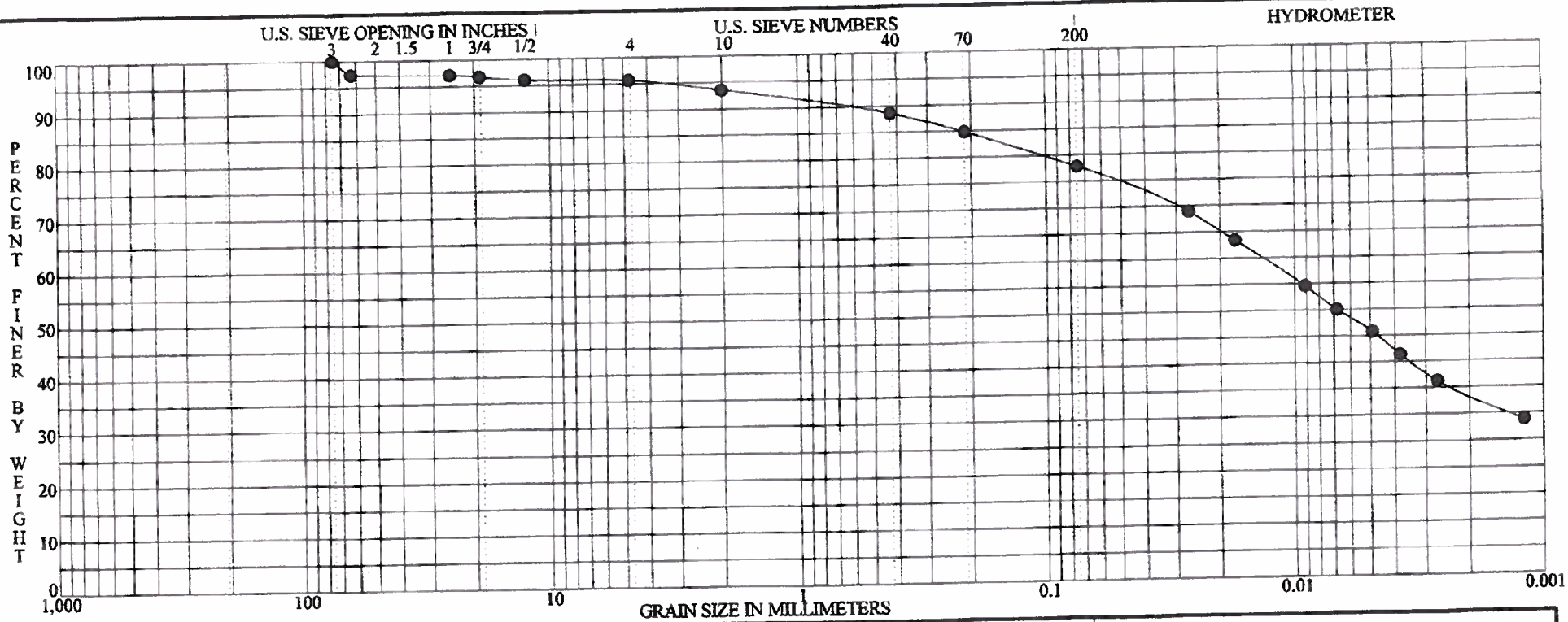


COMP-EPA

MOISTURE-DENSITY RELATIONSHIP

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-11	LEAN CLAY with SAND CL	20	42	21	21	12.3	120.7

	Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	SS-11	75.0000	3.6562	0.0135	0.0068		4.4	17.8	44.3	33.5

ASTM D422 | **GRADATION CURVE**

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

PLATE 6

GRN-EPA

PERMEABILITY TEST DATA AND COMPUTATION SHEET

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

S&ME

Job Number:	1179-11-024B	Date:	5/24-30/2012	Maximum Dry Density:	120.70 pcf
Project Name:	Ford Rd. Landfill Lab Testing	Boring:	SS-11	Optimum Moisture Content:	12.30 %
Project Location:	Elyria, Ohio	Sample:		% Compaction:	89.60 %
Tested By:	PJM	Depth:		Optimum +/-:	4.12 %
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):	3.0760 in = 7.813 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.:	639.15 grams
Unit Wet Wt.:	125.90 pcf
Unit Dry Wt.:	108.15 pcf

Test Conditions:

Chamber Pressure:	62 psi
Back Pressure:	58 psi
Confining Pressure:	4 psi
Temp. @ Start:	24.6 °C
Temp. @ End:	24.4 °C
Average Temp.:	24.5 °C
B Parameter:	0.95

Moisture Content:

	Before Test	After Test
Pan No. =	C	C
Wet Wt. + Pan =	639.15	682.42
Dry Wt. + Pan =	549.01	549.01
Wt. of Pan =		
Wt. of Dry Soil =	549.01	549.01
Wt. of Water =	90.14	133.41
% Moisture =	16.42	24.30
% SATURATION	79.35	109.69

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
5/29/2012	9:03 AM	0.00	34.00	4108.64	0.70	4287.49	-178.84	-	-
5/29/2012	11:00 AM	7,020	33.70	4108.98	1.80	4286.22	-177.24	0.00901	9.463E-08
5/29/2012	12:16 PM	4,560	33.50	4109.21	2.30	4285.65	-176.44	0.00454	7.334E-08
5/29/2012	1:39 PM	4,980	33.20	4109.56	2.90	4284.96	-175.41	0.00586	8.679E-08
5/29/2012	2:14 PM	2,100	33.10	4109.67	3.20	4284.62	-174.95	0.00262	9.186E-08
5/29/2012	3:19 PM	3,900	32.75	4110.07	3.45	4284.33	-174.26	0.00394	7.444E-08
5/29/2012	4:58 PM	5,940	32.40	4110.47	3.80	4283.93	-173.46	0.00461	5.726E-08
5/30/2012	8:42 AM	56,640	28.20	4115.29	8.40	4278.66	-163.37	0.05991	7.796E-08
5/30/2012	10:21 AM	5,940	27.80	4115.75	8.90	4278.09	-162.34	0.00633	7.860E-08

Time Weighted Average, k [cm/sec] = 7.836E-08

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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-12

Description of Material SANDY LEAN CLAY CL

Test Method ASTM D1557 Method B

TEST RESULTS

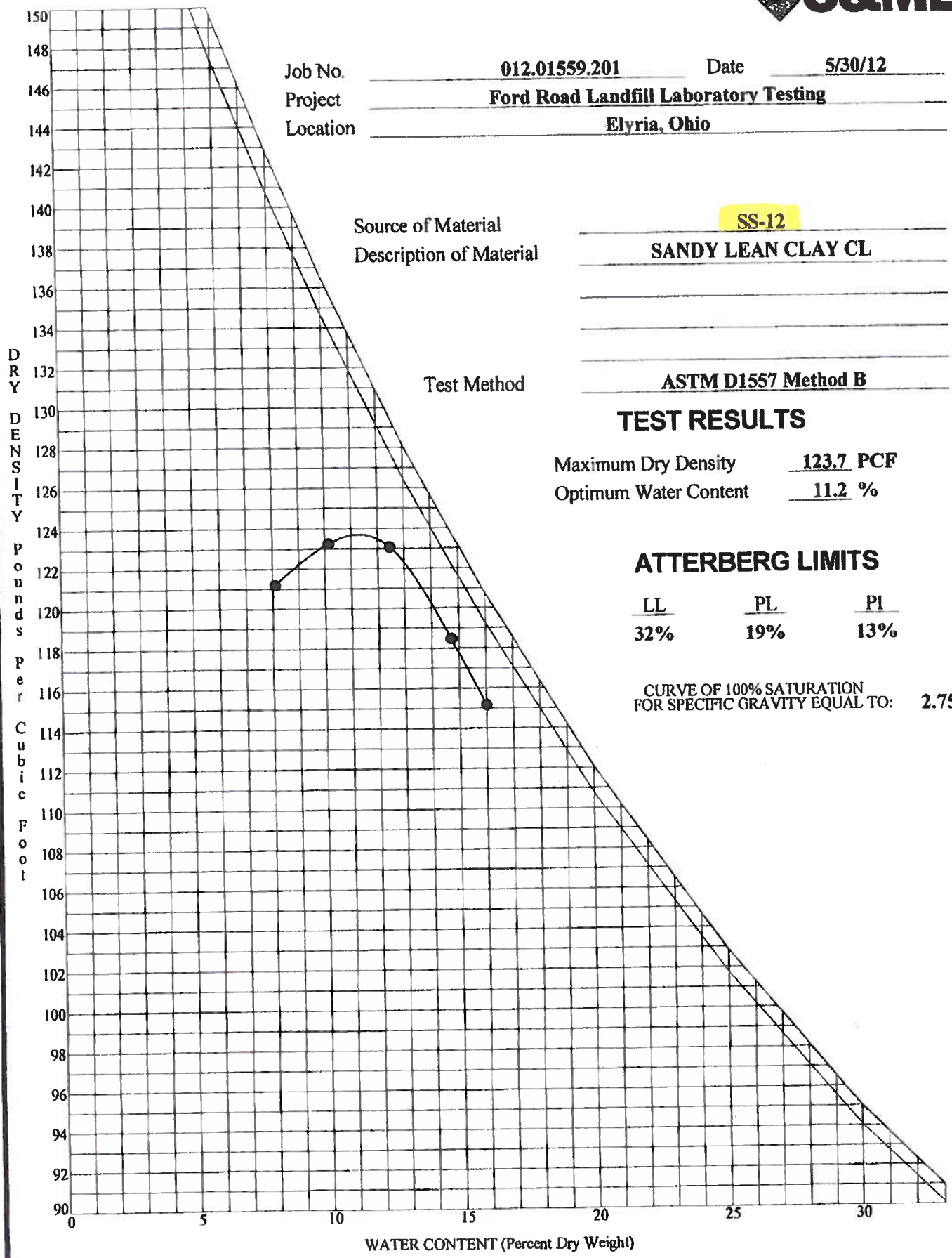
Maximum Dry Density 123.7 PCF

Optimum Water Content 11.2 %

ATTERBERG LIMITS

LL	PL	PI
32%	19%	13%

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

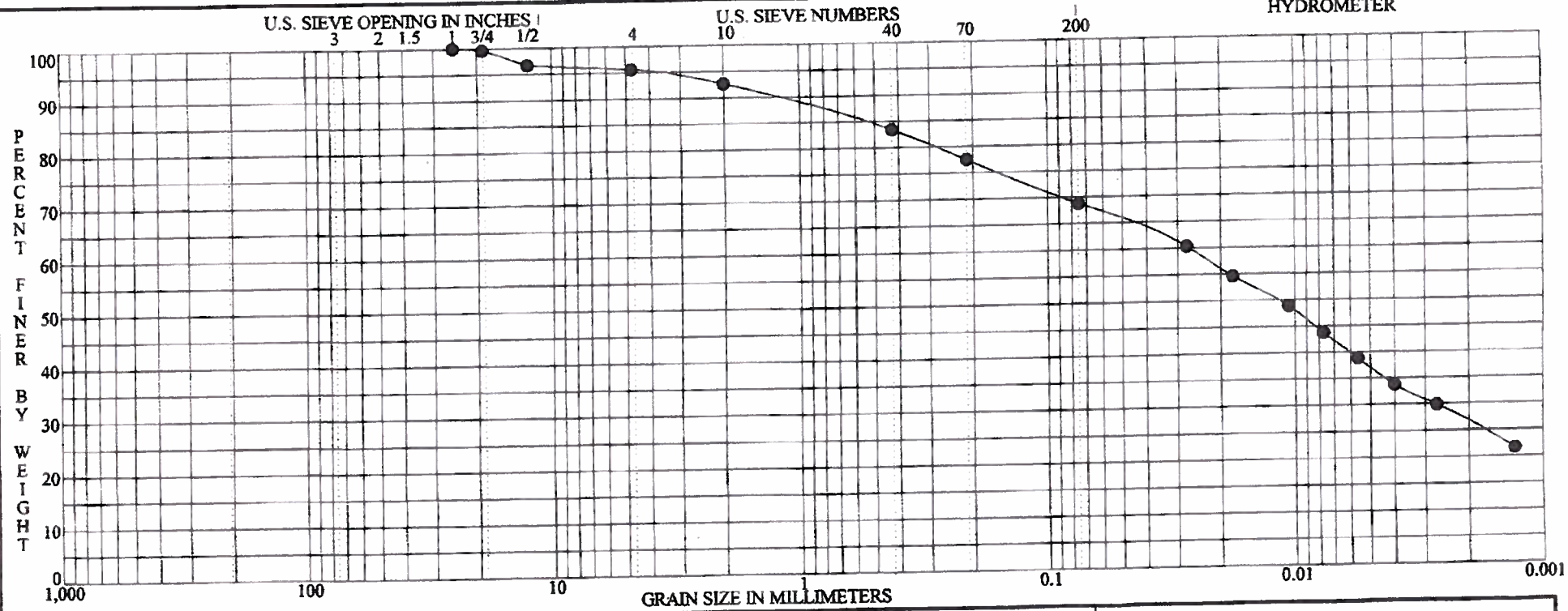


MOISTURE-DENSITY RELATIONSHIP

COMP-EPA

PLATE 7

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-12	SANDY LEAN CLAY CL	15	32	19	13	11.2	123.7

	Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	SS-12	25.0000	4.0394	0.0268	0.0117		4.4	26.7	42.4	26.5

ASTM D422 | **GRADATION CURVE**

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

PLATE 7

VEB-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-13

Description of Material LEAN CLAY with SAND CL

Test Method ASTM D1557 Method B

TEST RESULTS

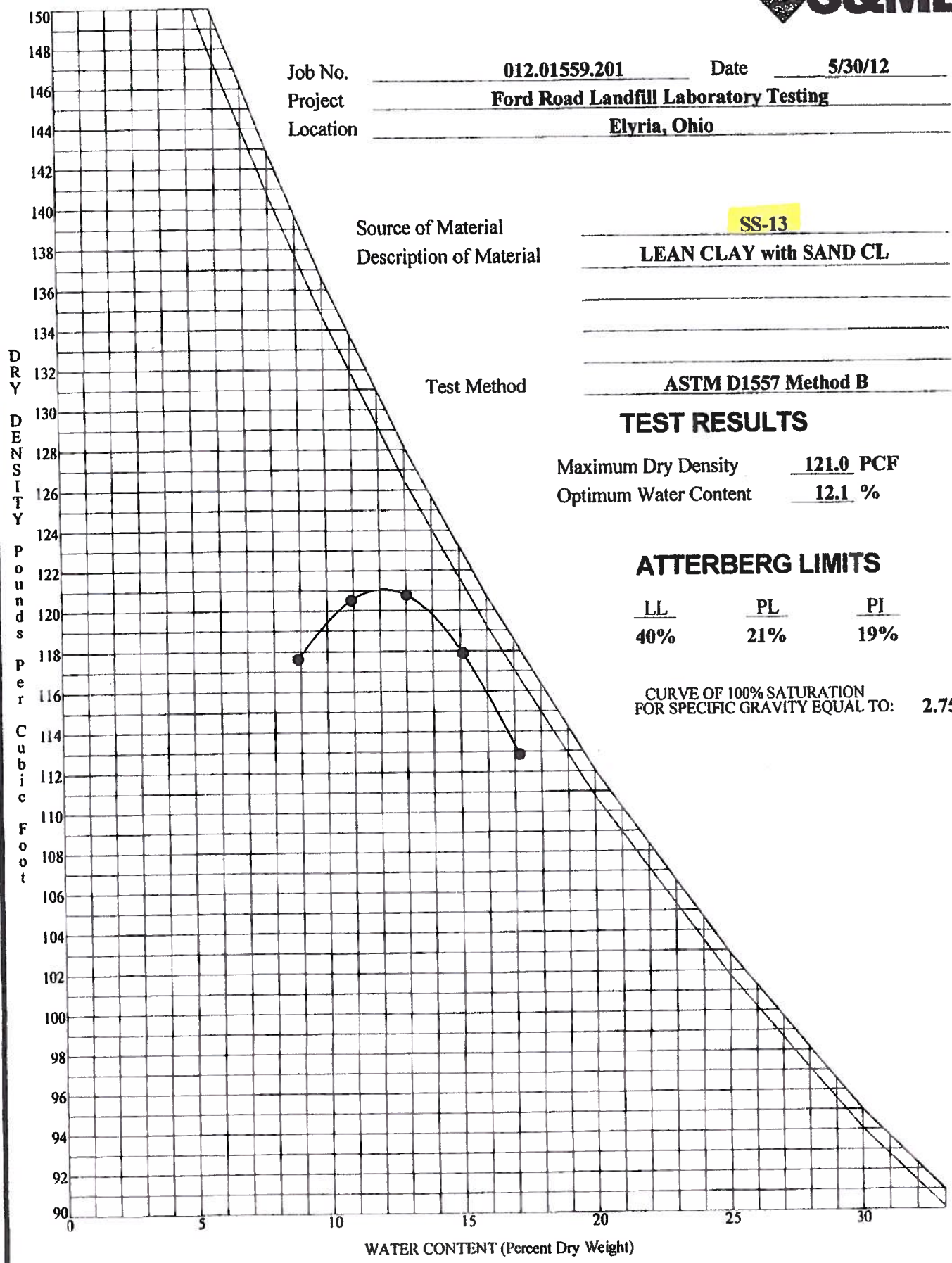
Maximum Dry Density 121.0 PCF

Optimum Water Content 12.1 %

ATTERBERG LIMITS

LL	PL	PI
40%	21%	19%

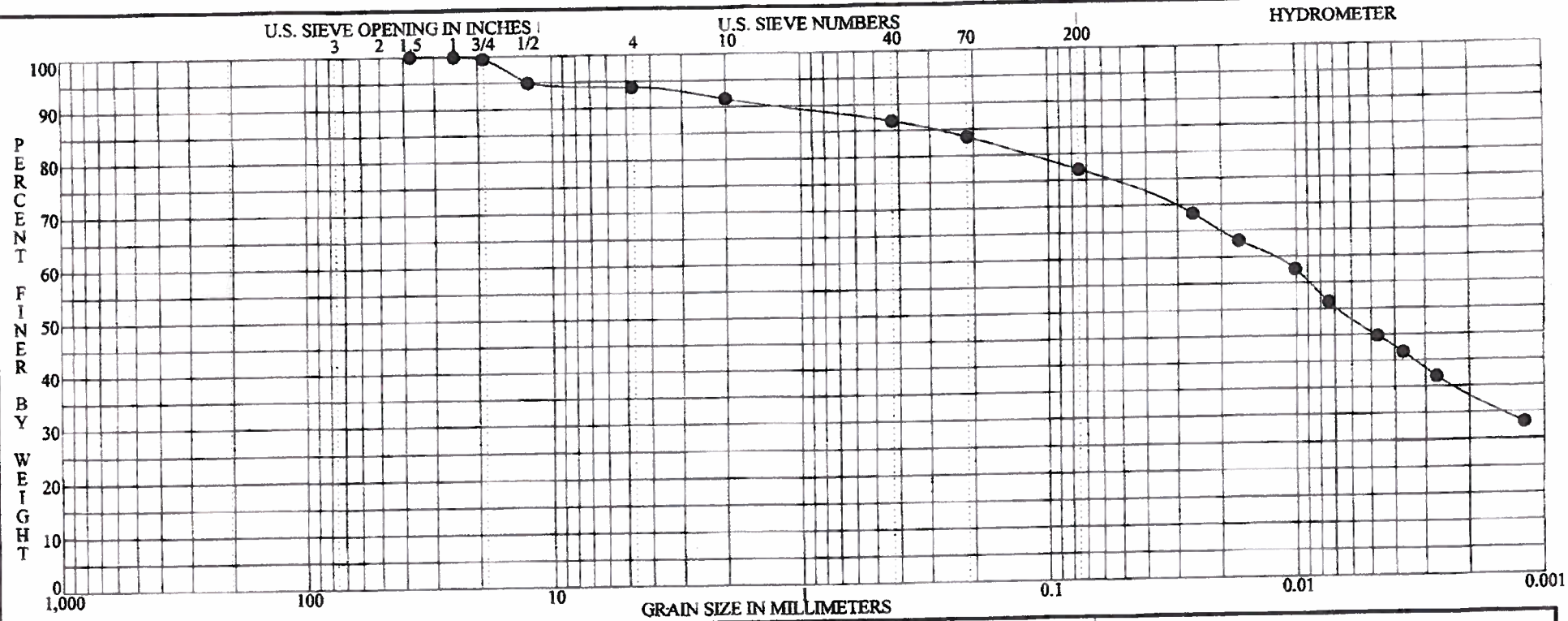
CURVE OF 100% SATURATION FOR SPECIFIC GRAVITY EQUAL TO: 2.75



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-13	LEAN CLAY with SAND CL	20	40	21	19	12.1	121.0

	Specimen Identification	D100	D95	D60	D50	D10	%Gravel	%Sand	%Silt	%Clay
●	SS-13	37.5000	12.6641	0.0127	0.0068		6.2	16.8	43.4	33.7

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 8