



ATLANTIC TESTING LABORATORIES

Particle Size Distribution Report

Project: Avangrid - Powell Creek Solar, Miller City, OH

Report No.: RT1879CL-20-06-20

Client: Mott MacDonald

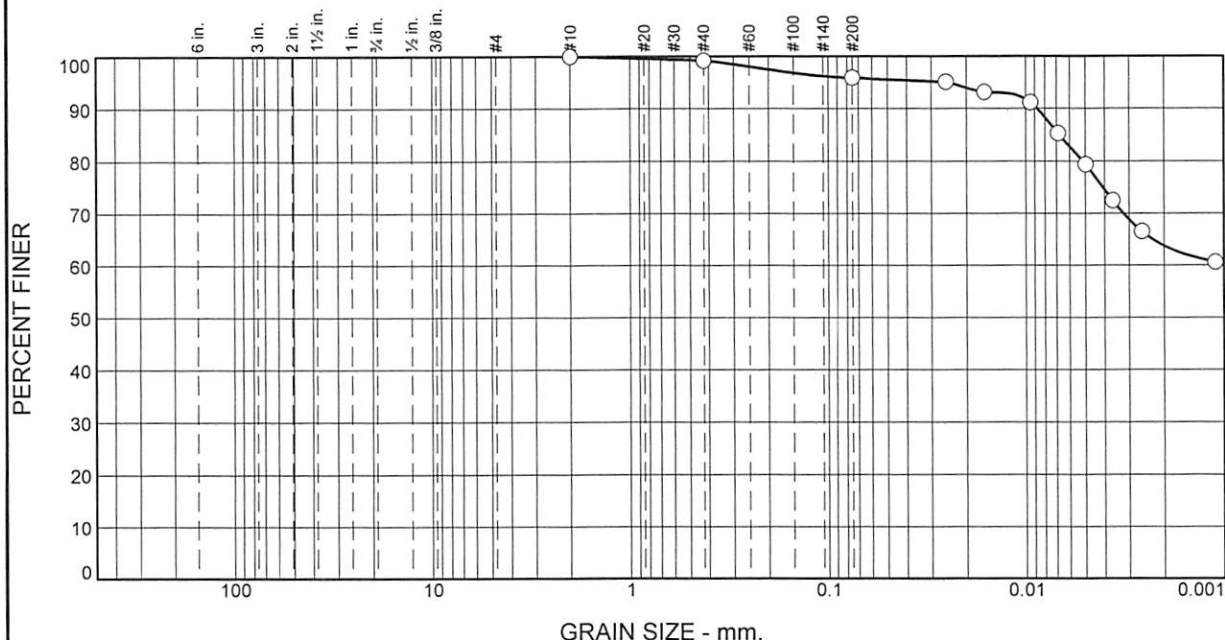
Date: 06/08/20

Sample No: B-15, S-2

Source of Sample: Boring Sample

Location: In-place

Elev./Depth: 2-4'



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	1	3	17	79

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	OUT OF SPEC. (X)
#10	100		
#40	99		
#200	96		

* (no specification provided)

Soil Description

Brown CLAY; little SILT; trace mf SAND

Atterberg Limits

PL= --

LL= --

PI= --

Coefficients

D₈₅= 0.0068D₆₀=D₅₀=D₃₀=D₁₅=D₁₀=C_u=C_c=

Classification

USCS=

AASHTO=

Remarks

Moisture Content= 22.1%

Figure

ATLANTIC TESTING LABORATORIES, LIMITED

Reviewed by:

Date:

06/09/20



ATLANTIC TESTING LABORATORIES

Particle Size Distribution Report

Project: Avangrid - Powell Creek Solar, Miller City, OH

Report No.: RT1879CL-20-06-20

Client: Mott MacDonald

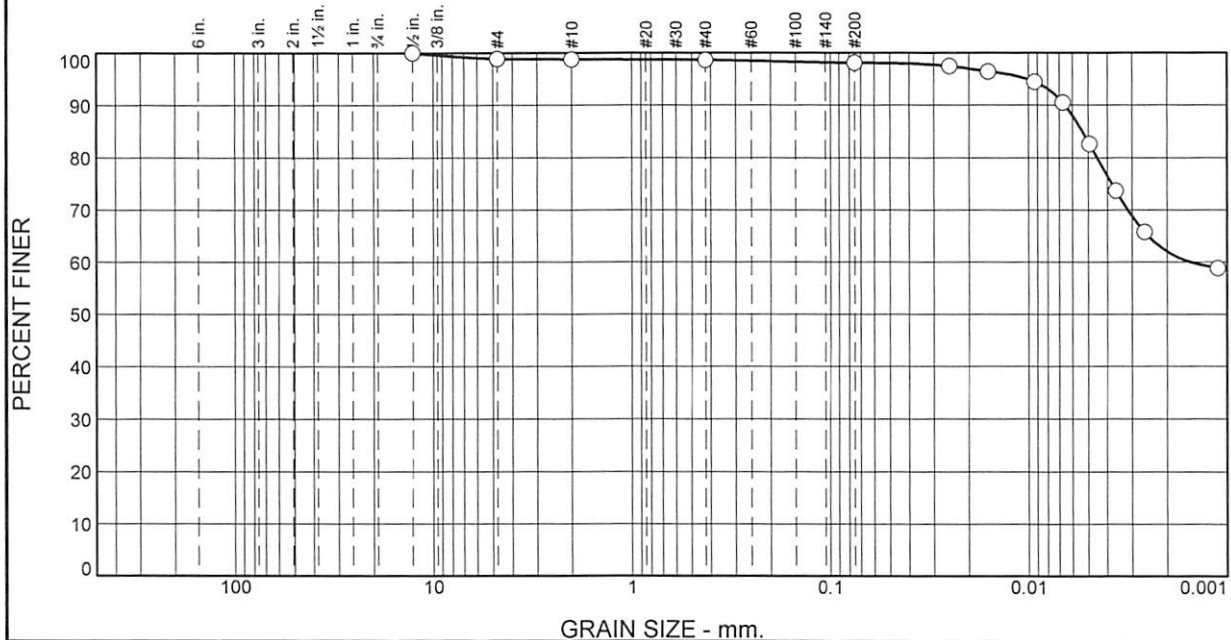
Date: 06/08/20

Sample No: B-27,S-6

Source of Sample: Boring Sample

Location: In-place

Elev./Depth: 13-15'



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	1	0	0	1	15	83

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	OUT OF SPEC. (X)
1/2"	100		
#4	99		
#10	99		
#40	99		
#200	98		

* (no specification provided)

Soil Description

Brown CLAY; Little SILT; trace f SAND; trace f GRAVEL

Atterberg Limits

PL= -- LL= -- PI= --

Coefficients

D₈₅= 0.0054 D₆₀= 0.0015 D₅₀=
D₃₀= D₁₅= D₁₀=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

Moisture Content= 25.9%

Figure

ATLANTIC TESTING LABORATORIES, LIMITED

Reviewed by: Judey Ames

Date: 06/09/20



ATLANTIC TESTING LABORATORIES

WBE certified company

LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY INDEX OF SOIL ASTM D 4318

PROJECT INFORMATION

Client: Mott MacDonald
Project: Avangrid - Powell Creek Solar
Location: Miller City, OH
MM Project No.: 513385046-071

ATL Report No.: RT1879CL-20-06-20
Report Date: June 9, 2020
Date Received: June 2, 2020

TEST DATA

Boring No.	Sample No.	LL	PL	PI
B-SS-2	S-3	56	24	32
B-14	S-4	67	25	42
B-26	S-5	55	24	31
B-28	S-2	75	24	51

SAMPLE INFORMATION

Boring No.	Sample No.	Maximum Grain Size (mm)	Estimated Amount of Sample Retained on No. 40 Sieve (%)	As Received Moisture Content (%)
B-SS-2	S-3	2	3	22.4
B-14	S-4	4.76	3	26.8
B-26	S-5	2	1	25.3
B-28	S-2	0.297	0	20.6

PREPARATION INFORMATION

Boring No.	Sample No.	Preparation	Method of Removing Oversized Material
B-SS-2	S-3	Air Dry	Pulverizing and Screening
B-14	S-4	Air Dry	Pulverizing and Screening
B-26	S-5	Air Dry	Pulverizing and Screening
B-28	S-2	Air Dry	Pulverizing and Screening

EQUIPMENT INFORMATION

Liquid Limit Procedure:	Multipoint - Method A	<input type="checkbox"/>	Single Point - Method B	<input checked="" type="checkbox"/>
Liquid Limit Apparatus:	Manual	<input checked="" type="checkbox"/>	Motor Driven	<input type="checkbox"/>
Liquid Limit Grooving Tool Material:	Plastic	<input checked="" type="checkbox"/>	Metal	<input type="checkbox"/>
Liquid Limit Grooving Tool Shape:	Flat	<input checked="" type="checkbox"/>	Curved (AASHTO Only)	<input type="checkbox"/>
Plastic Limit:	Hand Rolled	<input checked="" type="checkbox"/>	Mechanical Rolling Device	<input type="checkbox"/>

Reviewed By: Judge Amos

Date: 06/09/20



ATLANTIC TESTING LABORATORIES

CORROSION ANALYSIS SUITE

Client: Mott MacDonald
Project: Avangrid - Powell Creek Solar
Location: Miller City, OH
MM Project No.: 51385046-071

ATL Report No. RT1879CL-21-06-20
Report Date: June 10, 2020
Date Received: June 4, 2020

Boring: TP-01 **Sample:** -- **Depth (ft):** --

WATER-SOLUBLE SULFATE IN SOIL

ASTM C 1580

Sulfate by Mass of Sample (%)	Sulfate by Mass of Sample (mg/kg)
0.40	4000

MEASURING pH OF SOIL FOR USE IN CORROSION TESTING

ASTM G 51

Type of Test	Soil Temperature (°C)	pH Readings			Average
Laboratory	24.0	7.84	7.86	7.86	7.85

pH of calibration standards used: 7.00

MEASUREMENT OF SOIL RESISTIVITY USING THE TWO-ELECTRODE SOIL BOX METHOD

ASTM G 187 (LABORATORY)

Test Date: 06/09/20 **Performed by:** A. Rivers
Meter Used: Nisson 400 **Soil Box Factor:** 1.29

Date Collected	Temperature at Collection (°C)	Measured Resistance (Ω)	Calculated Resistivity (Ω/cm)
Not Provided	Not Provided	6,700	8,643

MEASUREMENT OF OXYGEN-REDUCTION POTENTIAL (ORP) OF SOIL

ASTM G 200

Test Date: 06/09/20 **Time of Measurements:** 10:00 AM
Date and Time Sample Extracted from the Ground: Not Provided
ORP Meter: Orion 5 Star **ORP Probe:** Orion 9179NMD

ORP Measurements			Ambient Temperature (°C)
8	8	9	24.0

WATER-SOLUBLE CHLORIDE ION CONTENT IN SOIL

AASHTO T 291, Method A

Chloride by Mass of Soil (mg/kg)
50

Reviewed By: Judge A. Ames

Date: 06/10/20



ATLANTIC TESTING LABORATORIES

CORROSION ANALYSIS SUITE

Client: Mott MacDonald
Project: Avangrid - Powell Creek Solar
Location: Miller City, OH
MM Project No.: 51385046-071

ATL Report No. RT1879CL-21-06-20
Report Date: June 10, 2020
Date Received: June 4, 2020

Boring: TP-02 Sample: -- Depth (ft): --

WATER-SOLUBLE SULFATE IN SOIL

ASTM C 1580

Sulfate by Mass of Sample (%)	Sulfate by Mass of Sample (mg/kg)
1.38	13800

MEASURING pH OF SOIL FOR USE IN CORROSION TESTING

ASTM G 51

Type of Test	Soil Temperature (°C)	pH Readings			Average
Laboratory	24.0	7.74	7.75	7.76	7.75

pH of calibration standards used: 7.00

MEASUREMENT OF SOIL RESISTIVITY USING THE TWO-ELECTRODE SOIL BOX METHOD

ASTM G 187 (LABORATORY)

Test Date: 06/09/20 Performed by: A. Rivers
Meter Used: Nisson 400 Soil Box Factor: 1.29

Date Collected	Temperature at Collection (°C)	Measured Resistance (Ω)	Calculated Resistivity (Ω/cm)
Not Provided	Not Provided	7,300	9,417

MEASUREMENT OF OXYGEN-REDUCTION POTENTIAL (ORP) OF SOIL

ASTM G 200

Test Date: 06/09/20 Time of Measurements 10:15 AM
Date and Time Sample Extracted from the Ground: Not Provided
ORP Meter: Orion 5 Star ORP Probe: Orion 9179NMD

ORP Measurements			Ambient Temperature (°C)
14	15	14	24.0

WATER-SOLUBLE CHLORIDE ION CONTENT IN SOIL

AASHTO T 291, Method A

Chloride by Mass of Soil (mg/kg)
25

Reviewed By: Judge A. Ames

Date: 06/10/20



ATLANTIC TESTING LABORATORIES

CORROSION ANALYSIS SUITE

Client: Mott MacDonald
Project: Avangrid - Powell Creek Solar
Location: Miller City, OH
MM Project No.: 51385046-071

ATL Report No. RT1879CL-21-06-20
Report Date: June 10, 2020
Date Received: June 4, 2020

Boring: TP-03 **Sample:** -- **Depth (ft):** --

WATER-SOLUBLE SULFATE IN SOIL

ASTM C 1580

Sulfate by Mass of Sample (%)	Sulfate by Mass of Sample (mg/kg)
1.16	11600

MEASURING pH OF SOIL FOR USE IN CORROSION TESTING

ASTM G 51

Type of Test	Soil Temperature (°C)	pH Readings			Average
Laboratory	24.0	7.94	7.91	7.92	7.92

pH of calibration standards used: 7.00

MEASUREMENT OF SOIL RESISTIVITY USING THE TWO-ELECTRODE SOIL BOX METHOD

ASTM G 187 (LABORATORY)

Test Date: 06/09/20 **Performed by:** A. Rivers
Meter Used: Nisson 400 **Soil Box Factor:** 1.29

Date Collected	Temperature at Collection (°C)	Measured Resistance (Ω)	Calculated Resistivity (Ω/cm)
Not Provided	Not Provided	6,200	7,998

MEASUREMENT OF OXYGEN-REDUCTION POTENTIAL (ORP) OF SOIL

ASTM G 200

Test Date: 06/09/20 **Time of Measurements:** 10:30 AM
Date and Time Sample Extracted from the Ground: Not Provided
ORP Meter: Orion 5 Star **ORP Probe:** Orion 9179NMD

ORP Measurements			Ambient Temperature (°C)
-3	-3	-1	24.0

WATER-SOLUBLE CHLORIDE ION CONTENT IN SOIL

AASHTO T 291, Method A

Chloride by Mass of Soil (mg/kg)
40

Reviewed By: Judge A. Ames

Date: 06/10/20



ATLANTIC TESTING LABORATORIES

CORROSION ANALYSIS SUITE

Client: Mott MacDonald
Project: Avangrid - Powell Creek Solar
Location: Miller City, OH
MM Project No.: 51385046-071

ATL Report No. RT1879CL-21-06-20
Report Date: June 10, 2020
Date Received: June 4, 2020

Boring: TP-04 **Sample:** -- **Depth (ft):** --

WATER-SOLUBLE SULFATE IN SOIL

ASTM C 1580

Sulfate by Mass of Sample (%)	Sulfate by Mass of Sample (mg/kg)
0.51	5100

MEASURING pH OF SOIL FOR USE IN CORROSION TESTING

ASTM G 51

Type of Test	Soil Temperature (°C)	pH Readings			Average
Laboratory	24.0	7.14	7.18	7.17	7.16

pH of calibration standards used: 7.00

MEASUREMENT OF SOIL RESISTIVITY USING THE TWO-ELECTRODE SOIL BOX METHOD

ASTM G 187 (LABORATORY)

Test Date: 06/09/20 **Performed by:** A. Rivers
Meter Used: Nisson 400 **Soil Box Factor:** 1.29

Date Collected	Temperature at Collection (°C)	Measured Resistance (Ω)	Calculated Resistivity (Ω/cm)
Not Provided	Not Provided	6,600	8,514

MEASUREMENT OF OXYGEN-REDUCTION POTENTIAL (ORP) OF SOIL

ASTM G 200

Test Date: 06/09/20 **Time of Measurements:** 10:45 AM
Date and Time Sample Extracted from the Ground: Not Provided
ORP Meter: Orion 5 Star **ORP Probe:** Orion 9179NMD

ORP Measurements			Ambient Temperature (°C)
-8	-7	-6	24.0

WATER-SOLUBLE CHLORIDE ION CONTENT IN SOIL

AASHTO T 291, Method A

Chloride by Mass of Soil (mg/kg)
35

Reviewed By: Judge A. Ames

Date: 06/10/20



ATLANTIC TESTING LABORATORIES

CORROSION ANALYSIS SUITE

Client: Mott MacDonald
Project: Avangrid - Powell Creek Solar
Location: Miller City, OH
MM Project No.: 51385046-071

ATL Report No. RT1879CL-21-06-20
Report Date: June 10, 2020
Date Received: June 4, 2020

Boring: TP-05 **Sample:** -- **Depth (ft):** --

WATER-SOLUBLE SULFATE IN SOIL

ASTM C 1580

Sulfate by Mass of Sample (%)	Sulfate by Mass of Sample (mg/kg)
0.48	4800

MEASURING pH OF SOIL FOR USE IN CORROSION TESTING

ASTM G 51

Type of Test	Soil Temperature (°C)	pH Readings			Average
Laboratory	24.0	7.38	7.40	7.40	7.39

pH of calibration standards used: 7.00

MEASUREMENT OF SOIL RESISTIVITY USING THE TWO-ELECTRODE SOIL BOX METHOD

ASTM G 187 (LABORATORY)

Test Date: 06/09/20 **Performed by:** A. Rivers
Meter Used: Nisson 400 **Soil Box Factor:** 1.29

Date Collected	Temperature at Collection (°C)	Measured Resistance (Ω)	Calculated Resistivity (Ω/cm)
Not Provided	Not Provided	7,800	10,062

MEASUREMENT OF OXYGEN-REDUCTION POTENTIAL (ORP) OF SOIL

ASTM G 200

Test Date: 06/09/20 **Time of Measurements:** 11:00 AM
Date and Time Sample Extracted from the Ground: Not Provided
ORP Meter: Orion 5 Star **ORP Probe:** Orion 9179NMD

ORP Measurements			Ambient Temperature (°C)
1	1	1	24.0

WATER-SOLUBLE CHLORIDE ION CONTENT IN SOIL

AASHTO T 291, Method A

Chloride by Mass of Soil (mg/kg)
30

Reviewed By: Judge A. Ames

Date: 06/10/20



ATLANTIC TESTING LABORATORIES

CORROSION ANALYSIS SUITE

Client: Mott MacDonald
Project: Avangrid - Powell Creek Solar
Location: Miller City, OH
MM Project No.: 51385046-071

ATL Report No. RT1879CL-21-06-20
Report Date: June 10, 2020
Date Received: June 4, 2020

Boring: TP-06 **Sample:** -- **Depth (ft):** --

WATER-SOLUBLE SULFATE IN SOIL

ASTM C 1580

Sulfate by Mass of Sample (%)	Sulfate by Mass of Sample (mg/kg)
0.98	9800

MEASURING pH OF SOIL FOR USE IN CORROSION TESTING

ASTM G 51

Type of Test	Soil Temperature (°C)	pH Readings			Average
Laboratory	24.0	7.53	7.53	7.54	7.53

pH of calibration standards used: 7.00

MEASUREMENT OF SOIL RESISTIVITY USING THE TWO-ELECTRODE SOIL BOX METHOD

ASTM G 187 (LABORATORY)

Test Date: 06/09/20 **Performed by:** A. Rivers
Meter Used: Nisson 400 **Soil Box Factor:** 1.29

Date Collected	Temperature at Collection (°C)	Measured Resistance (Ω)	Calculated Resistivity (Ω/cm)
Not Provided	Not Provided	5,200	6,708

MEASUREMENT OF OXYGEN-REDUCTION POTENTIAL (ORP) OF SOIL

ASTM G 200

Test Date: 06/09/20 **Time of Measurements:** 11:45 AM
Date and Time Sample Extracted from the Ground: Not Provided
ORP Meter: Orion 5 Star **ORP Probe:** Orion 9179NMD

ORP Measurements			Ambient Temperature (°C)
4	5	5	24.0

WATER-SOLUBLE CHLORIDE ION CONTENT IN SOIL

AASHTO T 291, Method A

Chloride by Mass of Soil (mg/kg)
30

Reviewed By: Judge A. Ames

Date: 06/10/20



ATLANTIC TESTING LABORATORIES

CORROSION ANALYSIS SUITE

Client: Mott MacDonald
Project: Avangrid - Powell Creek Solar
Location: Miller City, OH
MM Project No.: 51385046-071

ATL Report No. RT1879CL-21-06-20
Report Date: June 10, 2020
Date Received: June 4, 2020

Boring: TP-07 **Sample:** -- **Depth (ft):** --

WATER-SOLUBLE SULFATE IN SOIL

ASTM C 1580

Sulfate by Mass of Sample (%)	Sulfate by Mass of Sample (mg/kg)
0.53	5300

MEASURING pH OF SOIL FOR USE IN CORROSION TESTING

ASTM G 51

Type of Test	Soil Temperature (°C)	pH Readings			Average
Laboratory	24.0	7.77	7.79	7.79	7.78

pH of calibration standards used: 7.00

MEASUREMENT OF SOIL RESISTIVITY USING THE TWO-ELECTRODE SOIL BOX METHOD

ASTM G 187 (LABORATORY)

Test Date: 06/09/20 **Performed by:** A. Rivers
Meter Used: Nisson 400 **Soil Box Factor:** 1.29

Date Collected	Temperature at Collection (°C)	Measured Resistance (Ω)	Calculated Resistivity (Ω/cm)
Not Provided	Not Provided	5,800	7,482

MEASUREMENT OF OXYGEN-REDUCTION POTENTIAL (ORP) OF SOIL

ASTM G 200

Test Date: 06/09/20 **Time of Measurements:** 12:00 PM
Date and Time Sample Extracted from the Ground: Not Provided
ORP Meter: Orion 5 Star **ORP Probe:** Orion 9179NMD

ORP Measurements			Ambient Temperature (°C)
6	4	4	24.0

WATER-SOLUBLE CHLORIDE ION CONTENT IN SOIL

AASHTO T 291, Method A

Chloride by Mass of Soil (mg/kg)
45

Reviewed By: Judge A. Ames

Date: 06/10/20



ATLANTIC TESTING LABORATORIES

CORROSION ANALYSIS SUITE

Client: Mott MacDonald
Project: Avangrid - Powell Creek Solar
Location: Miller City, OH
MM Project No.: 51385046-071

ATL Report No. RT1879CL-21-06-20
Report Date: June 10, 2020
Date Received: June 4, 2020

Boring: TP-08 **Sample:** -- **Depth (ft):** --

WATER-SOLUBLE SULFATE IN SOIL

ASTM C 1580

Sulfate by Mass of Sample (%)	Sulfate by Mass of Sample (mg/kg)
0.59	5900

MEASURING pH OF SOIL FOR USE IN CORROSION TESTING

ASTM G 51

Type of Test	Soil Temperature (°C)	pH Readings			Average
Laboratory	24.0	6.83	6.86	6.84	6.84

pH of calibration standards used: 7.00

MEASUREMENT OF SOIL RESISTIVITY USING THE TWO-ELECTRODE SOIL BOX METHOD

ASTM G 187 (LABORATORY)

Test Date: 06/09/20 **Performed by:** A. Rivers
Meter Used: Nisson 400 **Soil Box Factor:** 1.29

Date Collected	Temperature at Collection (°C)	Measured Resistance (Ω)	Calculated Resistivity (Ω/cm)
Not Provided	Not Provided	6,700	8,643

MEASUREMENT OF OXYGEN-REDUCTION POTENTIAL (ORP) OF SOIL

ASTM G 200

Test Date: 06/09/20 **Time of Measurements:** 12:15 PM
Date and Time Sample Extracted from the Ground: Not Provided
ORP Meter: Orion 5 Star **ORP Probe:** Orion 9179NMD

ORP Measurements			Ambient Temperature (°C)
-3	-4	-2	24.0

WATER-SOLUBLE CHLORIDE ION CONTENT IN SOIL

AASHTO T 291, Method A

Chloride by Mass of Soil (mg/kg)
20

Reviewed By: Judge A. Ames

Date: 06/10/20



ATLANTIC TESTING LABORATORIES

CORROSION ANALYSIS SUITE

Client: Mott MacDonald
Project: Avangrid - Powell Creek Solar
Location: Miller City, OH
MM Project No.: 51385046-071

ATL Report No. RT1879CL-21-06-20
Report Date: June 10, 2020
Date Received: June 4, 2020

Boring: TP-09 **Sample:** -- **Depth (ft):** --

WATER-SOLUBLE SULFATE IN SOIL

ASTM C 1580

Sulfate by Mass of Sample (%)	Sulfate by Mass of Sample (mg/kg)
0.23	2300

MEASURING pH OF SOIL FOR USE IN CORROSION TESTING

ASTM G 51

Type of Test	Soil Temperature (°C)	pH Readings			Average
Laboratory	24.0	6.99	7.01	7.02	7.01

pH of calibration standards used: 7.00

MEASUREMENT OF SOIL RESISTIVITY USING THE TWO-ELECTRODE SOIL BOX METHOD

ASTM G 187 (LABORATORY)

Test Date: 06/09/20 **Performed by:** A. Rivers
Meter Used: Nisson 400 **Soil Box Factor:** 1.29

Date Collected	Temperature at Collection (°C)	Measured Resistance (Ω)	Calculated Resistivity (Ω/cm)
Not Provided	Not Provided	7,100	9,159

MEASUREMENT OF OXYGEN-REDUCTION POTENTIAL (ORP) OF SOIL

ASTM G 200

Test Date: 06/09/20 **Time of Measurements:** 12:30 PM
Date and Time Sample Extracted from the Ground: Not Provided
ORP Meter: Orion 5 Star **ORP Probe:** Orion 9179NMD

ORP Measurements			Ambient Temperature (°C)
-14	-13	-13	24.0

WATER-SOLUBLE CHLORIDE ION CONTENT IN SOIL

AASHTO T 291, Method A

Chloride by Mass of Soil (mg/kg)
45

Reviewed By: Judge A. Ames

Date: 06/10/20



ATLANTIC TESTING LABORATORIES

CORROSION ANALYSIS SUITE

Client: Mott MacDonald
Project: Avangrid - Powell Creek Solar
Location: Miller City, OH
MM Project No.: 51385046-071

ATL Report No. RT1879CL-21-06-20
Report Date: June 10, 2020
Date Received: June 4, 2020

Boring: TP-10 **Sample:** -- **Depth (ft):** --

WATER-SOLUBLE SULFATE IN SOIL

ASTM C 1580

Sulfate by Mass of Sample (%)	Sulfate by Mass of Sample (mg/kg)
0.13	1300

MEASURING pH OF SOIL FOR USE IN CORROSION TESTING

ASTM G 51

Type of Test	Soil Temperature (°C)	pH Readings			Average
Laboratory	24.0	7.23	7.21	7.20	7.21

pH of calibration standards used: 7.00

MEASUREMENT OF SOIL RESISTIVITY USING THE TWO-ELECTRODE SOIL BOX METHOD

ASTM G 187 (LABORATORY)

Test Date: 06/09/20 **Performed by:** A. Rivers
Meter Used: Nisson 400 **Soil Box Factor:** 1.29

Date Collected	Temperature at Collection (°C)	Measured Resistance (Ω)	Calculated Resistivity (Ω/cm)
Not Provided	Not Provided	5,900	7,611

MEASUREMENT OF OXYGEN-REDUCTION POTENTIAL (ORP) OF SOIL

ASTM G 200

Test Date: 06/09/20 **Time of Measurements:** 12:45 PM
Date and Time Sample Extracted from the Ground: Not Provided
ORP Meter: Orion 5 Star **ORP Probe:** Orion 9179NMD

ORP Measurements			Ambient Temperature (°C)
-6	-6	-7	24.0

WATER-SOLUBLE CHLORIDE ION CONTENT IN SOIL

AASHTO T 291, Method A

Chloride by Mass of Soil (mg/kg)
35

Reviewed By: Judge A. Ames

Date: 06/10/20



ATLANTIC TESTING LABORATORIES

CORROSION ANALYSIS SUITE

Client: Mott MacDonald
Project: Avangrid - Powell Creek Solar
Location: Miller City, OH
MM Project No.: 51385046-071

ATL Report No. RT1879CL-21-06-20
Report Date: June 10, 2020
Date Received: June 4, 2020

Boring: TP-11 **Sample:** -- **Depth (ft):** --

WATER-SOLUBLE SULFATE IN SOIL

ASTM C 1580

Sulfate by Mass of Sample (%)	Sulfate by Mass of Sample (mg/kg)
0.38	3800

MEASURING pH OF SOIL FOR USE IN CORROSION TESTING

ASTM G 51

Type of Test	Soil Temperature (°C)	pH Readings			Average
Laboratory	24.0	7.53	7.52	7.55	7.53

pH of calibration standards used: 7.00

MEASUREMENT OF SOIL RESISTIVITY USING THE TWO-ELECTRODE SOIL BOX METHOD

ASTM G 187 (LABORATORY)

Test Date: 06/09/20 **Performed by:** A. Rivers
Meter Used: Nisson 400 **Soil Box Factor:** 1.29

Date Collected	Temperature at Collection (°C)	Measured Resistance (Ω)	Calculated Resistivity (Ω/cm)
Not Provided	Not Provided	4,300	5,547

MEASUREMENT OF OXYGEN-REDUCTION POTENTIAL (ORP) OF SOIL

ASTM G 200

Test Date: 06/09/20 **Time of Measurements:** 1:00 PM
Date and Time Sample Extracted from the Ground: Not Provided
ORP Meter: Orion 5 Star **ORP Probe:** Orion 9179NMD

ORP Measurements			Ambient Temperature (°C)
18	17	17	24.0

WATER-SOLUBLE CHLORIDE ION CONTENT IN SOIL

AASHTO T 291, Method A

Chloride by Mass of Soil (mg/kg)
15

Reviewed By: Judge A. Ames

Date: 06/10/20



ATLANTIC TESTING LABORATORIES

CORROSION ANALYSIS SUITE

Client: Mott MacDonald
Project: Avangrid - Powell Creek Solar
Location: Miller City, OH
MM Project No.: 51385046-071

ATL Report No. RT1879CL-21-06-20
Report Date: June 10, 2020
Date Received: June 4, 2020

Boring: TP-12 Sample: -- Depth (ft): --

WATER-SOLUBLE SULFATE IN SOIL

ASTM C 1580

Sulfate by Mass of Sample (%)	Sulfate by Mass of Sample (mg/kg)
0.39	3900

MEASURING pH OF SOIL FOR USE IN CORROSION TESTING

ASTM G 51

Type of Test	Soil Temperature (°C)	pH Readings			Average
Laboratory	24.0	7.21	7.20	7.22	7.21

pH of calibration standards used: 7.00

MEASUREMENT OF SOIL RESISTIVITY USING THE TWO-ELECTRODE SOIL BOX METHOD

ASTM G 187 (LABORATORY)

Test Date: 06/09/20 Performed by: A. Rivers
Meter Used: Nisson 400 Soil Box Factor: 1.29

Date Collected	Temperature at Collection (°C)	Measured Resistance (Ω)	Calculated Resistivity (Ω/cm)
Not Provided	Not Provided	4,900	6,321

MEASUREMENT OF OXYGEN-REDUCTION POTENTIAL (ORP) OF SOIL

ASTM G 200

Test Date: 06/09/20 Time of Measurements 1:15 PM
Date and Time Sample Extracted from the Ground: Not Provided
ORP Meter: Orion 5 Star ORP Probe: Orion 9179NMD

ORP Measurements			Ambient Temperature (°C)
6	6	5	24.0

WATER-SOLUBLE CHLORIDE ION CONTENT IN SOIL

AASHTO T 291, Method A

Chloride by Mass of Soil (mg/kg)
40

Reviewed By: Judge A. Ames

Date: 06/10/20



ATLANTIC TESTING LABORATORIES

CORROSION ANALYSIS SUITE

Client: Mott MacDonald
Project: Avangrid - Powell Creek Solar
Location: Miller City, OH
MM Project No.: 51385046-071

ATL Report No. RT1879CL-21-06-20
Report Date: June 10, 2020
Date Received: June 4, 2020

Boring: TP-13 Sample: -- Depth (ft): --

WATER-SOLUBLE SULFATE IN SOIL

ASTM C 1580

Sulfate by Mass of Sample (%)	Sulfate by Mass of Sample (mg/kg)
0.61	6100

MEASURING pH OF SOIL FOR USE IN CORROSION TESTING

ASTM G 51

Type of Test	Soil Temperature (°C)	pH Readings			Average
Laboratory	24.0	7.41	7.41	7.40	7.41

pH of calibration standards used: 7.00

MEASUREMENT OF SOIL RESISTIVITY USING THE TWO-ELECTRODE SOIL BOX METHOD

ASTM G 187 (LABORATORY)

Test Date: 06/09/20 Performed by: A. Rivers
Meter Used: Nisson 400 Soil Box Factor: 1.29

Date Collected	Temperature at Collection (°C)	Measured Resistance (Ω)	Calculated Resistivity (Ω/cm)
Not Provided	Not Provided	5,100	6,579

MEASUREMENT OF OXYGEN-REDUCTION POTENTIAL (ORP) OF SOIL

ASTM G 200

Test Date: 06/09/20 Time of Measurements 1:30 PM
Date and Time Sample Extracted from the Ground: Not Provided
ORP Meter: Orion 5 Star ORP Probe: Orion 9179NMD

ORP Measurements			Ambient Temperature (°C)
9	10	11	24.0

WATER-SOLUBLE CHLORIDE ION CONTENT IN SOIL

AASHTO T 291, Method A

Chloride by Mass of Soil (mg/kg)
50

Reviewed By: Judge A. Ames

Date: 06/10/20



ATLANTIC TESTING LABORATORIES

CORROSION ANALYSIS SUITE

Client: Mott MacDonald
Project: Avangrid - Powell Creek Solar
Location: Miller City, OH
MM Project No.: 51385046-071

ATL Report No. RT1879CL-21-06-20
Report Date: June 10, 2020
Date Received: June 4, 2020

Boring: TP-14 Sample: -- Depth (ft): --

WATER-SOLUBLE SULFATE IN SOIL

ASTM C 1580

Sulfate by Mass of Sample (%)	Sulfate by Mass of Sample (mg/kg)
0.23	2300

MEASURING pH OF SOIL FOR USE IN CORROSION TESTING

ASTM G 51

Type of Test	Soil Temperature (°C)	pH Readings			Average
Laboratory	24.0	7.08	7.07	7.10	7.08

pH of calibration standards used: 7.00

MEASUREMENT OF SOIL RESISTIVITY USING THE TWO-ELECTRODE SOIL BOX METHOD

ASTM G 187 (LABORATORY)

Test Date: 06/09/20 Performed by: A. Rivers
Meter Used: Nisson 400 Soil Box Factor: 1.29

Date Collected	Temperature at Collection (°C)	Measured Resistance (Ω)	Calculated Resistivity (Ω/cm)
Not Provided	Not Provided	7,200	9,288

MEASUREMENT OF OXYGEN-REDUCTION POTENTIAL (ORP) OF SOIL

ASTM G 200

Test Date: 06/09/20 Time of Measurements 1:45 PM
Date and Time Sample Extracted from the Ground: Not Provided
ORP Meter: Orion 5 Star ORP Probe: Orion 9179NMD

ORP Measurements			Ambient Temperature (°C)
-1	-2	-2	24.0

WATER-SOLUBLE CHLORIDE ION CONTENT IN SOIL

AASHTO T 291, Method A

Chloride by Mass of Soil (mg/kg)
45

Reviewed By: Judge A. Ames

Date: 06/10/20



ATLANTIC TESTING LABORATORIES

CORROSION ANALYSIS SUITE

Client: Mott MacDonald
Project: Avangrid - Powell Creek Solar
Location: Miller City, OH
MM Project No.: 51385046-071

ATL Report No. RT1879CL-21-06-20
Report Date: June 10, 2020
Date Received: June 4, 2020

Boring: B-SS-2 Sample: -- Depth (ft): --

WATER-SOLUBLE SULFATE IN SOIL

ASTM C 1580

Sulfate by Mass of Sample (%)	Sulfate by Mass of Sample (mg/kg)
0.10	1000

MEASURING pH OF SOIL FOR USE IN CORROSION TESTING

ASTM G 51

Type of Test	Soil Temperature (°C)	pH Readings			Average
Laboratory	24.0	6.53	6.54	6.58	6.55

pH of calibration standards used: 7.00

MEASUREMENT OF SOIL RESISTIVITY USING THE TWO-ELECTRODE SOIL BOX METHOD

ASTM G 187 (LABORATORY)

Test Date: 06/09/20 Performed by: A. Rivers
Meter Used: Nisson 400 Soil Box Factor: 1.29

Date Collected	Temperature at Collection (°C)	Measured Resistance (Ω)	Calculated Resistivity (Ω/cm)
Not Provided	Not Provided	3,900	5,031

MEASUREMENT OF OXYGEN-REDUCTION POTENTIAL (ORP) OF SOIL

ASTM G 200

Test Date: 06/09/20 Time of Measurements 2:00 PM
Date and Time Sample Extracted from the Ground: Not Provided
ORP Meter: Orion 5 Star ORP Probe: Orion 9179NMD

ORP Measurements			Ambient Temperature (°C)
15	17	18	24.0

WATER-SOLUBLE CHLORIDE ION CONTENT IN SOIL

AASHTO T 291, Method A

Chloride by Mass of Soil (mg/kg)
35

Reviewed By: Judge A. Ames

Date: 06/10/20



ATLANTIC TESTING LABORATORIES

CORROSION ANALYSIS SUITE

Client: Mott MacDonald
Project: Avangrid - Powell Creek Solar
Location: Miller City, OH
MM Project No.: 51385046-071

ATL Report No. RT1879CL-21-06-20
Report Date: June 10, 2020
Date Received: June 4, 2020

Boring: B-13 Sample: -- Depth (ft): --

WATER-SOLUBLE SULFATE IN SOIL

ASTM C 1580

Sulfate by Mass of Sample (%)	Sulfate by Mass of Sample (mg/kg)
0.08	800

MEASURING pH OF SOIL FOR USE IN CORROSION TESTING

ASTM G 51

Type of Test	Soil Temperature (°C)	pH Readings			Average
Laboratory	24.0	7.05	7.07	7.06	7.06

pH of calibration standards used: 7.00

MEASUREMENT OF SOIL RESISTIVITY USING THE TWO-ELECTRODE SOIL BOX METHOD

ASTM G 187 (LABORATORY)

Test Date: 06/09/20 Performed by: A. Rivers
Meter Used: Nisson 400 Soil Box Factor: 1.29

Date Collected	Temperature at Collection (°C)	Measured Resistance (Ω)	Calculated Resistivity (Ω/cm)
Not Provided	Not Provided	4,600	5,934

MEASUREMENT OF OXYGEN-REDUCTION POTENTIAL (ORP) OF SOIL

ASTM G 200

Test Date: 06/09/20 Time of Measurements 2:15 PM
Date and Time Sample Extracted from the Ground: Not Provided
ORP Meter: Orion 5 Star ORP Probe: Orion 9179NMD

ORP Measurements			Ambient Temperature (°C)
6	6	4	24.0

WATER-SOLUBLE CHLORIDE ION CONTENT IN SOIL

AASHTO T 291, Method A

Chloride by Mass of Soil (mg/kg)
50

Reviewed By: Judge A. Ames

Date: 06/10/20



ATLANTIC TESTING LABORATORIES

CORROSION ANALYSIS SUITE

Client: Mott MacDonald
Project: Avangrid - Powell Creek Solar
Location: Miller City, OH
MM Project No.: 51385046-071

ATL Report No. RT1879CL-21-06-20
Report Date: June 10, 2020
Date Received: June 4, 2020

Boring: B-14 Sample: -- Depth (ft): --

WATER-SOLUBLE SULFATE IN SOIL

ASTM C 1580

Sulfate by Mass of Sample (%)	Sulfate by Mass of Sample (mg/kg)
0.11	1100

MEASURING pH OF SOIL FOR USE IN CORROSION TESTING

ASTM G 51

Type of Test	Soil Temperature (°C)	pH Readings			Average
Laboratory	24.0	7.84	7.81	7.82	7.82

pH of calibration standards used: 7.00

MEASUREMENT OF SOIL RESISTIVITY USING THE TWO-ELECTRODE SOIL BOX METHOD

ASTM G 187 (LABORATORY)

Test Date: 06/09/20 Performed by: A. Rivers
Meter Used: Nisson 400 Soil Box Factor: 1.29

Date Collected	Temperature at Collection (°C)	Measured Resistance (Ω)	Calculated Resistivity (Ω/cm)
Not Provided	Not Provided	5,700	7,353

MEASUREMENT OF OXYGEN-REDUCTION POTENTIAL (ORP) OF SOIL

ASTM G 200

Test Date: 06/09/20 Time of Measurements 2:30 PM
Date and Time Sample Extracted from the Ground: Not Provided
ORP Meter: Orion 5 Star ORP Probe: Orion 9179NMD

ORP Measurements			Ambient Temperature (°C)
22	21	20	24.0

WATER-SOLUBLE CHLORIDE ION CONTENT IN SOIL

AASHTO T 291, Method A

Chloride by Mass of Soil (mg/kg)
50

Reviewed By: Judge A. Ames

Date: 06/10/20



ATLANTIC TESTING LABORATORIES

CORROSION ANALYSIS SUITE

Client: Mott MacDonald
Project: Avangrid - Powell Creek Solar
Location: Miller City, OH
MM Project No.: 51385046-071

ATL Report No. RT1879CL-21-06-20
Report Date: June 10, 2020
Date Received: June 4, 2020

Boring: B-24 Sample: -- Depth (ft): --

WATER-SOLUBLE SULFATE IN SOIL

ASTM C 1580

Sulfate by Mass of Sample (%)	Sulfate by Mass of Sample (mg/kg)
0.12	1200

MEASURING pH OF SOIL FOR USE IN CORROSION TESTING

ASTM G 51

Type of Test	Soil Temperature (°C)	pH Readings			Average
Laboratory	24.0	6.94	6.91	6.90	6.92

pH of calibration standards used: 7.00

MEASUREMENT OF SOIL RESISTIVITY USING THE TWO-ELECTRODE SOIL BOX METHOD

ASTM G 187 (LABORATORY)

Test Date: 06/09/20 Performed by: A. Rivers
Meter Used: Nisson 400 Soil Box Factor: 1.29

Date Collected	Temperature at Collection (°C)	Measured Resistance (Ω)	Calculated Resistivity (Ω/cm)
Not Provided	Not Provided	4,300	5,547

MEASUREMENT OF OXYGEN-REDUCTION POTENTIAL (ORP) OF SOIL

ASTM G 200

Test Date: 06/09/20 Time of Measurements 2:45 PM
Date and Time Sample Extracted from the Ground: Not Provided
ORP Meter: Orion 5 Star ORP Probe: Orion 9179NMD

ORP Measurements			Ambient Temperature (°C)
-6	-7	-6	24.0

WATER-SOLUBLE CHLORIDE ION CONTENT IN SOIL

AASHTO T 291, Method A

Chloride by Mass of Soil (mg/kg)
50

Reviewed By: Judge A. Ames

Date: 06/10/20



ATLANTIC TESTING LABORATORIES

CORROSION ANALYSIS SUITE

Client: Mott MacDonald
Project: Avangrid - Powell Creek Solar
Location: Miller City, OH
MM Project No.: 51385046-071

ATL Report No. RT1879CL-21-06-20
Report Date: June 10, 2020
Date Received: June 4, 2020

Boring: B-26 Sample: -- Depth (ft): --

WATER-SOLUBLE SULFATE IN SOIL

ASTM C 1580

Sulfate by Mass of Sample (%)	Sulfate by Mass of Sample (mg/kg)
0.56	5600

MEASURING pH OF SOIL FOR USE IN CORROSION TESTING

ASTM G 51

Type of Test	Soil Temperature (°C)	pH Readings			Average
Laboratory	24.0	6.53	6.56	6.56	6.55

pH of calibration standards used: 7.00

MEASUREMENT OF SOIL RESISTIVITY USING THE TWO-ELECTRODE SOIL BOX METHOD

ASTM G 187 (LABORATORY)

Test Date: 06/09/20 Performed by: A. Rivers
Meter Used: Nisson 400 Soil Box Factor: 1.29

Date Collected	Temperature at Collection (°C)	Measured Resistance (Ω)	Calculated Resistivity (Ω/cm)
Not Provided	Not Provided	7,700	9,933

MEASUREMENT OF OXYGEN-REDUCTION POTENTIAL (ORP) OF SOIL

ASTM G 200

Test Date: 06/09/20 Time of Measurements 3:00 PM
Date and Time Sample Extracted from the Ground: Not Provided
ORP Meter: Orion 5 Star ORP Probe: Orion 9179NMD

ORP Measurements			Ambient Temperature (°C)
-10	-10	-11	24.0

WATER-SOLUBLE CHLORIDE ION CONTENT IN SOIL

AASHTO T 291, Method A

Chloride by Mass of Soil (mg/kg)
55

Reviewed By: Judge A. Ames

Date: 06/10/20



ATLANTIC TESTING LABORATORIES

CORROSION ANALYSIS SUITE

Client: Mott MacDonald
Project: Avangrid - Powell Creek Solar
Location: Miller City, OH
MM Project No.: 51385046-071

ATL Report No. RT1879CL-21-06-20
Report Date: June 10, 2020
Date Received: June 4, 2020

Boring: B-27 Sample: -- Depth (ft): --

WATER-SOLUBLE SULFATE IN SOIL

ASTM C 1580

Sulfate by Mass of Sample (%)	Sulfate by Mass of Sample (mg/kg)
0.22	2200

MEASURING pH OF SOIL FOR USE IN CORROSION TESTING

ASTM G 51

Type of Test	Soil Temperature (°C)	pH Readings			Average
Laboratory	24.0	6.71	6.71	6.74	6.72

pH of calibration standards used: 7.00

MEASUREMENT OF SOIL RESISTIVITY USING THE TWO-ELECTRODE SOIL BOX METHOD

ASTM G 187 (LABORATORY)

Test Date: 06/09/20 Performed by: A. Rivers
Meter Used: Nisson 400 Soil Box Factor: 1.29

Date Collected	Temperature at Collection (°C)	Measured Resistance (Ω)	Calculated Resistivity (Ω/cm)
Not Provided	Not Provided	6,200	7,998

MEASUREMENT OF OXYGEN-REDUCTION POTENTIAL (ORP) OF SOIL

ASTM G 200

Test Date: 06/09/20 Time of Measurements 3:15 PM
Date and Time Sample Extracted from the Ground: Not Provided
ORP Meter: Orion 5 Star ORP Probe: Orion 9179NMD

ORP Measurements			Ambient Temperature (°C)
4	3	3	24.0

WATER-SOLUBLE CHLORIDE ION CONTENT IN SOIL

AASHTO T 291, Method A

Chloride by Mass of Soil (mg/kg)
40

Reviewed By: Judge A. Ames

Date: 06/10/20



ATLANTIC TESTING LABORATORIES

CORROSION ANALYSIS SUITE

Client: Mott MacDonald
Project: Avangrid - Powell Creek Solar
Location: Miller City, OH
MM Project No.: 51385046-071

ATL Report No. RT1879CL-21-06-20
Report Date: June 10, 2020
Date Received: June 4, 2020

Boring: B-28 Sample: -- Depth (ft): --

WATER-SOLUBLE SULFATE IN SOIL

ASTM C 1580

Sulfate by Mass of Sample (%)	Sulfate by Mass of Sample (mg/kg)
0.12	1200

MEASURING pH OF SOIL FOR USE IN CORROSION TESTING

ASTM G 51

Type of Test	Soil Temperature (°C)	pH Readings			Average
Laboratory	24.0	6.97	6.98	7.00	6.98

pH of calibration standards used: 7.00

MEASUREMENT OF SOIL RESISTIVITY USING THE TWO-ELECTRODE SOIL BOX METHOD

ASTM G 187 (LABORATORY)

Test Date: 06/09/20 Performed by: A. Rivers
Meter Used: Nisson 400 Soil Box Factor: 1.29

Date Collected	Temperature at Collection (°C)	Measured Resistance (Ω)	Calculated Resistivity (Ω/cm)
Not Provided	Not Provided	5,100	6,579

MEASUREMENT OF OXYGEN-REDUCTION POTENTIAL (ORP) OF SOIL

ASTM G 200

Test Date: 06/09/20 Time of Measurements 3:30 PM
Date and Time Sample Extracted from the Ground: Not Provided
ORP Meter: Orion 5 Star ORP Probe: Orion 9179NMD

ORP Measurements			Ambient Temperature (°C)
7	6	4	24.0

WATER-SOLUBLE CHLORIDE ION CONTENT IN SOIL

AASHTO T 291, Method A

Chloride by Mass of Soil (mg/kg)
25

Reviewed By: Judge A. Ames

Date: 06/10/20



ATLANTIC TESTING LABORATORIES

CORROSION ANALYSIS SUITE

Client: Mott MacDonald
Project: Avangrid - Powell Creek Solar
Location: Miller City, OH
MM Project No.: 51385046-071

ATL Report No. RT1879CL-21-06-20
Report Date: June 10, 2020
Date Received: June 4, 2020

Boring: B-29 Sample: -- Depth (ft): --

WATER-SOLUBLE SULFATE IN SOIL

ASTM C 1580

Sulfate by Mass of Sample (%)	Sulfate by Mass of Sample (mg/kg)
0.06	600

MEASURING pH OF SOIL FOR USE IN CORROSION TESTING

ASTM G 51

Type of Test	Soil Temperature (°C)	pH Readings			Average
Laboratory	24.0	7.43	7.44	7.42	7.43

pH of calibration standards used: 7.00

MEASUREMENT OF SOIL RESISTIVITY USING THE TWO-ELECTRODE SOIL BOX METHOD

ASTM G 187 (LABORATORY)

Test Date: 06/09/20 Performed by: A. Rivers
Meter Used: Nisson 400 Soil Box Factor: 1.29

Date Collected	Temperature at Collection (°C)	Measured Resistance (Ω)	Calculated Resistivity (Ω/cm)
Not Provided	Not Provided	6,600	8,514

MEASUREMENT OF OXYGEN-REDUCTION POTENTIAL (ORP) OF SOIL

ASTM G 200

Test Date: 06/09/20 Time of Measurements 3:45 PM
Date and Time Sample Extracted from the Ground: Not Provided
ORP Meter: Orion 5 Star ORP Probe: Orion 9179NMD

ORP Measurements			Ambient Temperature (°C)
-1	-1	0	24.0

WATER-SOLUBLE CHLORIDE ION CONTENT IN SOIL

AASHTO T 291, Method A

Chloride by Mass of Soil (mg/kg)
35

Reviewed By: Judge A. Ames

Date: 06/10/20

G. Thermal Resistivity Results



ATLANTIC TESTING LABORATORIES

WBE certified company

Rochester

3495 Winton Place, Building B
Rochester, New York 14623
585-427-9020 (T)

THERMAL CONDUCTIVITY OF SOIL AND SOFT ROCK BY THERMAL NEEDLE PROBE IEEE 442

PROJECT INFORMATION

Client: Mott MacDonald, Inc.
Project: 2020 Laboratory Testing
Rochester, Monroe County, New York

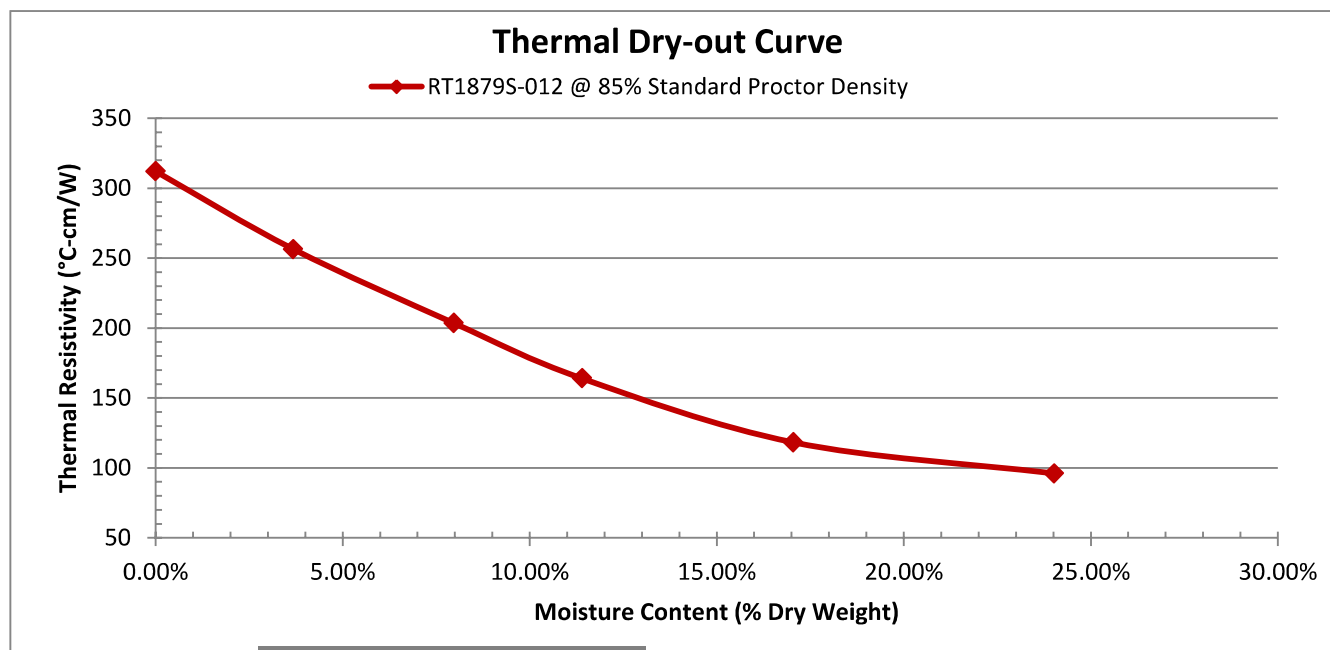
ATL Report No.: RT1879SL-012-06-20
Report Date: June 8, 2020
Date Received: June 1, 2020
Page: 1 of 1

SAMPLE INFORMATION

Source: Avangrid - Powell Creek Solar - Miller City, Ohio
Boring Information: B-SS-2 (3' - 5')
Sample Condition: Bulk; Re-molded
ATL Sample No.: RT1879S-012

Standard Proctor Values: 101.9 lb/ft³ @ 20.7% M.C.
Remolded Dry Density: 86.6 lb/ft³ (85%)
Received Moisture: 27.8%

Moisture Content (%)	Initial Soil Temperature (°C)	Thermal Resistivity of Sample (°C-cm/W)
0.00%	24.36	312
3.67%	25.80	256
7.96%	25.34	204
11.40%	24.81	164
17.05%	24.51	118
24.01%	25.02	96



Reviewed By: 

Date: 6/11/2020



ATLANTIC TESTING LABORATORIES

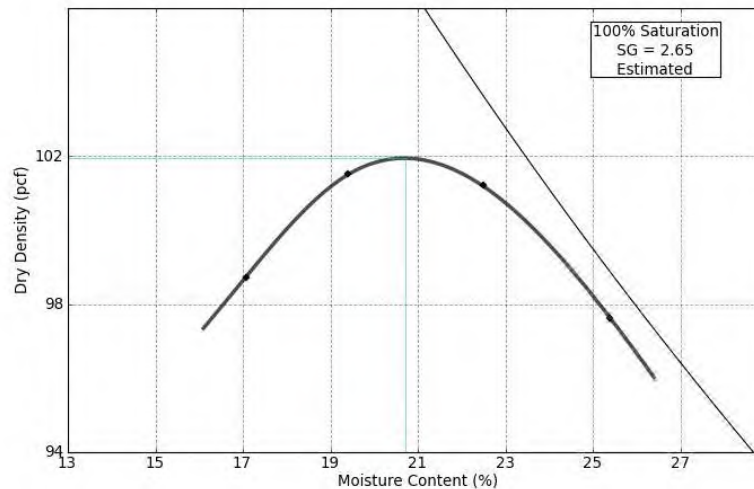
LABORATORY COMPACTION TEST REPORT No.: RT1879SL-012-05-20

Page 1 of 1

Client: MOTT MacDONALD NY, INC.
Project: 2020 Laboratory Testing
Rochester, Monroe County, New York

Sample Date: May 29, 2020
Sampled By: CLIENT
Service Order No.: 17252
Sample No.: RT1879S-12


Location: Avangrid - Powell Creek Solar - Miller City, Ohio - Boring B-SS-2



— Corrected

◆ - Uncorrected

Elev/ Depth	Classification		Received Moist.	Bulk Sp.G.	Oversize Sp.G.	Atterberg Limits			% > 3/8 in.
	USCS	AASHTO				LL	PL	PI	
--	--	--	--	2.65		--	--	--	0
TEST RESULTS					MATERIAL DESCRIPTION				
Maximum dry density (pcf) = 101.9 Optimum moisture (%) = 20.7					Bulk Sample				
Source of Sample: Boring B-SS-2 (3' - 5') Sp.G.: Estimated Prep Method: Moist Rammer: Manual									
Remarks: Delivered by FedEx on June 1, 2020.									
Test Specification: ASTM D-698 (12) Method-B									

Reviewed by: 
Project Manager
cinnis@atlantictesting.com

Date: Jun 11, 2020



ATLANTIC TESTING LABORATORIES

WBE certified company

Rochester

3495 Winton Place, Building B
Rochester, New York 14623
585-427-9020 (T)

THERMAL CONDUCTIVITY OF SOIL AND SOFT ROCK BY THERMAL NEEDLE PROBE IEEE 442

PROJECT INFORMATION

Client: Mott MacDonald, Inc.
Project: 2020 Laboratory Testing
Rochester, Monroe County, New York

ATL Report No.: RT1879SL-013-06-20
Report Date: June 9, 2020
Date Received: June 1, 2020
Page: 1 of 1

SAMPLE INFORMATION

Source: Avangrid - Powell Creek Solar - Miller City, Ohio

Test Pit Information: TP-01 (3' - 5')

Standard Proctor Values: 97.1 lb/ft³ @ 23.4% M.C.

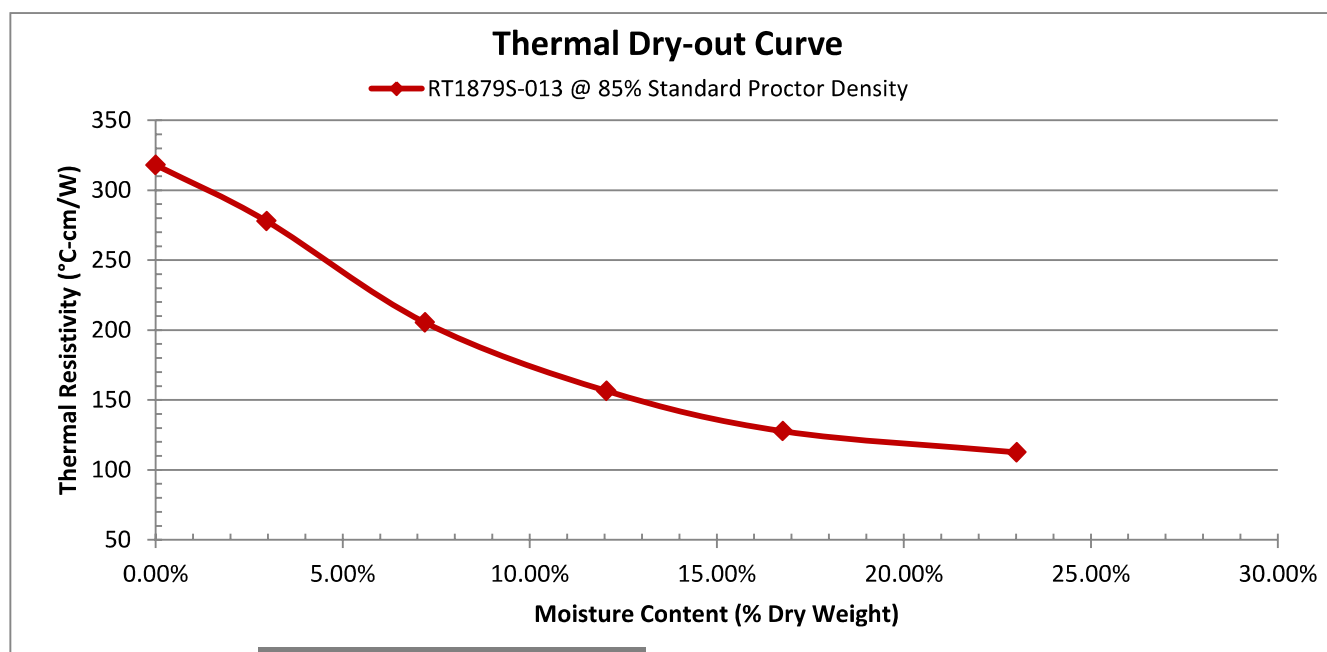
Sample Condition: Bulk; Re-molded

Remolded Dry Density: 82.5 lb/ft³ (85%)

ATL Sample No.: RT1879S-013

Received Moisture: 25.6%

Moisture Content (%)	Initial Soil Temperature (°C)	Thermal Resistivity of Sample (°C-cm/W)
0.00%	24.39	318
2.96%	23.73	278
7.20%	23.32	205
12.05%	23.02	156
16.77%	23.23	128
23.01%	23.64	112



Reviewed By: 

Date: 6/11/2020



ATLANTIC TESTING LABORATORIES

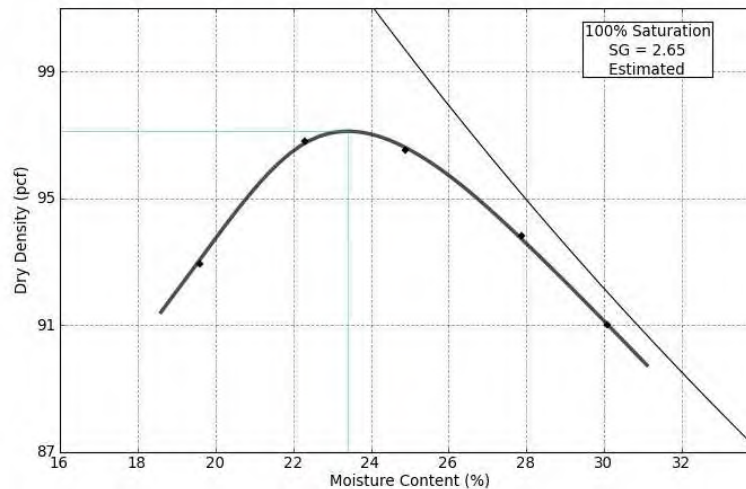
LABORATORY COMPACTION TEST REPORT No.: RT1879SL-013-05-20

Page 1 of 1

Client: MOTT MacDONALD NY, INC.
Project: 2020 Laboratory Testing
Rochester, Monroe County, New York

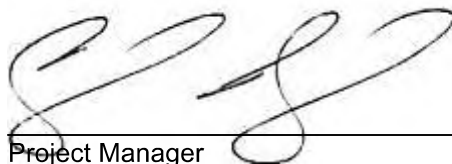
Sample Date: May 29, 2020
Sampled By: CLIENT
Service Order No.: 17252
Sample No.: RT1879S-13

Location: Avangrid - Powell Creek Solar - Miller City, Ohio - Boring TP-01



Elev/ Depth	Classification		Received Moist.	Bulk Sp.G.	Oversize Sp.G.	Atterberg Limits			% > 3/8 in.
	USCS	AASHTO				LL	PL	PI	
--	--	--	--	2.65		--	--	--	0
TEST RESULTS					MATERIAL DESCRIPTION				
Maximum dry density (pcf) = 97.10 Optimum moisture (%) = 23.4					Bulk Sample				
Source of Sample: Test Pit TP-01 (3' - 5')									
Sp.G.: Estimated Prep Method: Moist Rammer: Manual									
Remarks: Delivered by FedEx on June 1, 2020.									
Test Specification: ASTM D-698 (12) Method-B									

Reviewed by:



Project Manager
cinnis@atlantictesting.com

Date: Jun 11, 2020



ATLANTIC TESTING LABORATORIES

WBE certified company

Rochester

3495 Winton Place, Building B
Rochester, New York 14623
585-427-9020 (T)

THERMAL CONDUCTIVITY OF SOIL AND SOFT ROCK BY THERMAL NEEDLE PROBE IEEE 442

PROJECT INFORMATION

Client: Mott MacDonald, Inc.
Project: 2020 Laboratory Testing
Rochester, Monroe County, New York

ATL Report No.: RT1879SL-014-06-20
Report Date: June 8, 2020
Date Received: June 1, 2020
Page: 1 of 1

SAMPLE INFORMATION

Source: Avangrid - Powell Creek Solar - Miller City, Ohio

Test Pit Information: TP-02 (3' - 5')

Standard Proctor Values: 97.3 lb/ft³ @ 23.7% M.C.

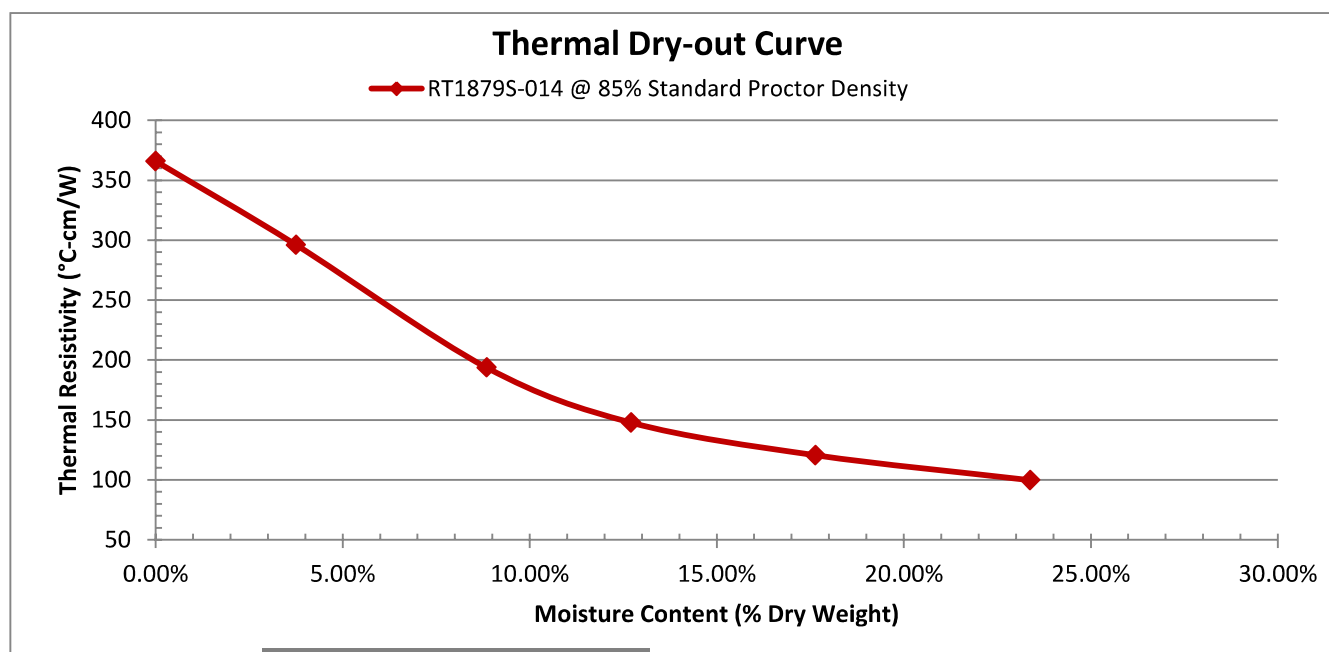
Sample Condition: Bulk; Re-molded

Remolded Dry Density: 82.7 lb/ft³ (85%)

ATL Sample No.: RT1879S-014

Received Moisture: 29.1%

Moisture Content (%)	Initial Soil Temperature (°C)	Thermal Resistivity of Sample (°C-cm/W)
0.00%	24.10	366
3.75%	26.28	296
8.85%	24.82	194
12.71%	25.19	148
17.64%	24.60	121
23.38%	25.10	100



Reviewed By: 

Date: 6/11/2020



ATLANTIC TESTING LABORATORIES

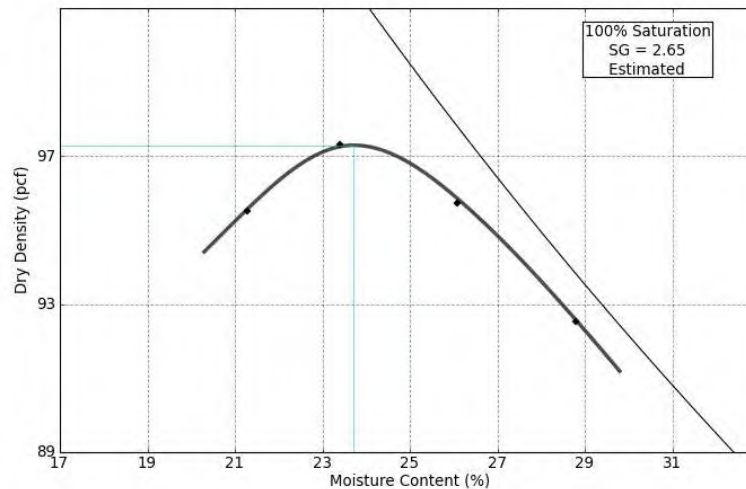
LABORATORY COMPACTION TEST REPORT No.: RT1879SL-014-05-20

Page 1 of 1

Client: MOTT MacDONALD NY, INC.
Project: 2020 Laboratory Testing
Rochester, Monroe County, New York

Sample Date: May 29, 2020
Sampled By: CLIENT
Service Order No.: 17252
Sample No.: RT1879S-14


Location: Avangrid - Powell Creek Solar - Miller City, Ohio - Boring TP-02



— Corrected

◆ - Uncorrected

Elev/ Depth	Classification		Received Moist.	Bulk Sp.G.	Oversize Sp.G.	Atterberg Limits			% > 3/8 in.
	USCS	AASHTO				LL	PL	PI	
--	--	--	--	2.65		--	--	--	0
TEST RESULTS					MATERIAL DESCRIPTION				
Maximum dry density (pcf) = 97.30 Optimum moisture (%) = 23.7					Bulk Sample				
Source of Sample: Test Pit TP-02 (3' - 5') Sp.G.: Estimated Prep Method: Moist Rammer: Manual									
Remarks: Delivered by FedEx on June 1, 2020.									
Test Specification: ASTM D-698 (12) Method-B									

Reviewed by: 
Project Manager
cinnis@atlantictesting.com

Date: Jun 11, 2020



ATLANTIC TESTING LABORATORIES

WBE certified company

Rochester

3495 Winton Place, Building B
Rochester, New York 14623
585-427-9020 (T)

THERMAL CONDUCTIVITY OF SOIL AND SOFT ROCK BY THERMAL NEEDLE PROBE IEEE 442

PROJECT INFORMATION

Client: Mott MacDonald, Inc.
Project: 2020 Laboratory Testing
Rochester, Monroe County, New York

ATL Report No.: RT1879SL-015-06-20
Report Date: June 9, 2020
Date Received: June 1, 2020
Page: 1 of 1

SAMPLE INFORMATION

Source: Avangrid - Powell Creek Solar - Miller City, Ohio

Test Pit Information: TP-04 (3' - 5')

Standard Proctor Values: 98.1 lb/ft³ @ 23.3% M.C.

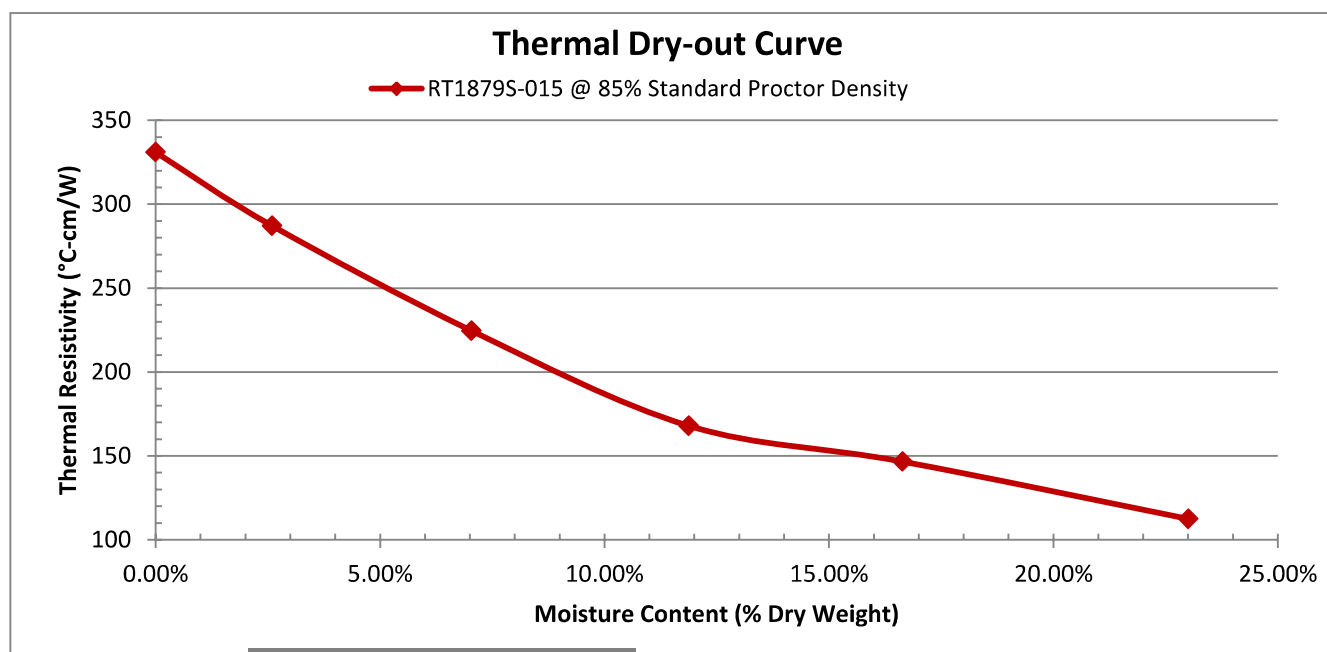
Sample Condition: Bulk; Re-molded

Remolded Dry Density: 83.4 lb/ft³ (85%)

ATL Sample No.: RT1879S-015

Received Moisture: 24.2%

Moisture Content (%)	Initial Soil Temperature (°C)	Thermal Resistivity of Sample (°C-cm/W)
0.00%	24.30	331
2.60%	23.92	287
7.04%	23.60	225
11.88%	23.37	168
16.64%	23.67	147
23.01%	23.74	112



Reviewed By: 

Date: 6/11/2020



ATLANTIC TESTING LABORATORIES

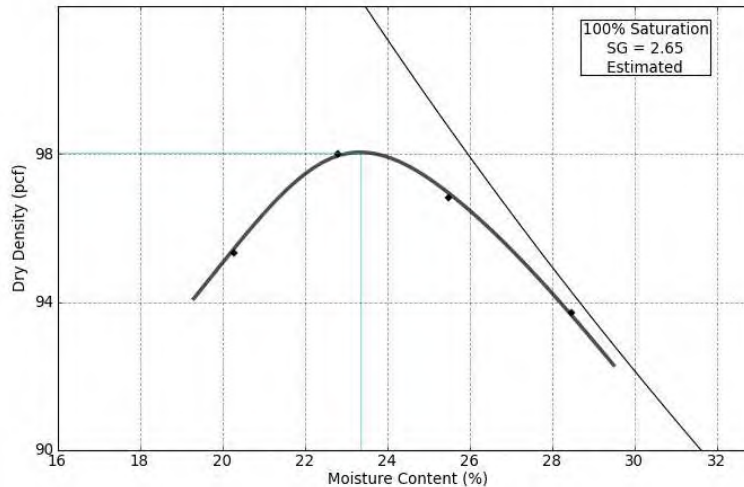
LABORATORY COMPACTION TEST REPORT No.: RT1879SL-015-05-20

Page 1 of 1

Client: MOTT MacDONALD NY, INC.
Project: 2020 Laboratory Testing
Rochester, Monroe County, New York

Sample Date: May 29, 2020
Sampled By: CLIENT
Service Order No.: 17252
Sample No.: RT1879S-15


Location: Avangrid - Powell Creek Solar - Miller City, Ohio - Boring TP-04



— Corrected

◆ - Uncorrected

Elev/ Depth	Classification		Received Moist.	Bulk Sp.G.	Oversize Sp.G.	Atterberg Limits			% > 3/8 in.
	USCS	AASHTO				LL	PL	PI	
--	--	--	--	2.65		--	--	--	0
TEST RESULTS					MATERIAL DESCRIPTION				
Maximum dry density (pcf) = 98.10 Optimum moisture (%) = 23.3					Bulk Sample				
Source of Sample: Test Pit TP-04 (3' - 5')									
Sp.G.: Estimated Prep Method: Moist Rammer: Manual									
Remarks: Delivered by FedEx on June 1, 2020.									
Test Specification: ASTM D-698 (12) Method-B									

Reviewed by: 
Project Manager
cinnis@atlantictesting.com

Date: Jun 11, 2020

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

10/7/2020 10:49:47 AM

in

Case No(s). 20-1084-EL-BGN

Summary: Application Exhibit H - Geotechnical Report (Part 3b) electronically filed by Teresa Orahoo on behalf of Dylan F. Borchers