



***INVENTUM ENGINEERING, PC***

**DRAFT**

**Remedial Investigation Report**

**Volume # 3 – Appendices A through D**

Riverview Innovation & Technology Campus

Brownfield Cleanup Program Site No. C915353

3875 River Road

Tonawanda, New York 14150

August 18, 2023

## Appendices



## Appendix A - Geotechnical Data





December 17, 2020

Project No. 2020-626-001

Mr. Todd Waldrop  
Inventum Engineering  
481 Carlisle Drive, Suite 202  
Herndon, VA 20170

**Transmittal**  
**Laboratory Test Results**  
**Riverview / 06**

Please find attached the laboratory test results for the above referenced project. The tests were outlined on the Project Verification Form that was transmitted to your firm prior to the testing. The testing was performed in general accordance with the methods listed on the enclosed data sheets. The test results are believed to be representative of the samples that were submitted for testing and are indicative only of the specimens that were evaluated. We have no direct knowledge of the origin of the samples and imply no position with regard to the nature of the test results, i.e. pass/fail and no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization by our Client. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please contact our office.

Respectfully submitted,  
**Geotechnics, Inc.**

Nathan Melaro  
Director of Operations

***We understand that you have a choice in your laboratory services  
and we thank you for choosing Geotechnics.***

## SHELBY TUBE UNIT WEIGHT

ASTM D7263-09

Client:	Inventum Engineering	Boring No.:	Shelby Tube
Client Reference:	Riverview / 06	Depth Pushed (ft):	16.0
Project No.:	2020-626-001	Shelby Tube No.:	MW-BCP-02-16
Lab ID:	2020-626-001-001	Recovery (ft):	NA

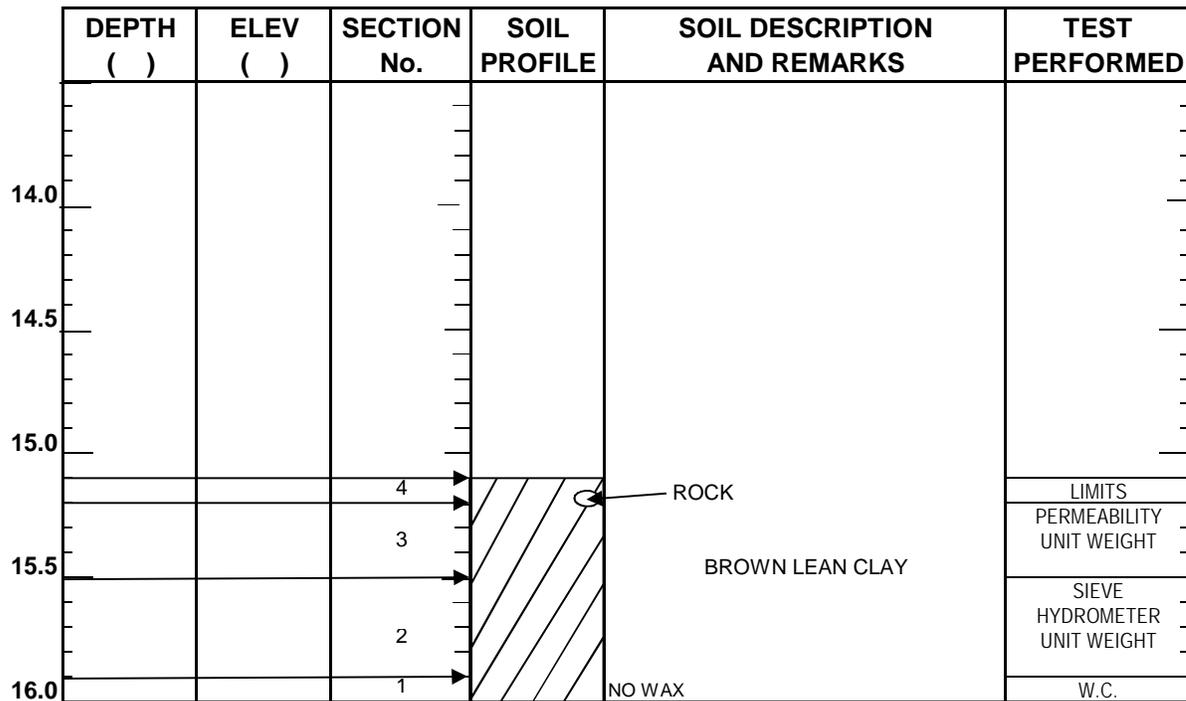
### MOISTURE CONTENT

Section Number	1	2	3	4	5
Tare Number	1724	2022		907	
Weight of Tare & Wet Sample (g)	298.78	1010.29		292.23	
Weight of Tare & Dry Sample (g)	266.38	883.49		266.24	
Weight of Tare (g)	82.51	145.69		110.23	
Moisture Content (%)	17.62	17.19		16.66	

### UNIT WEIGHT

Weight of Tube & Wet Sample (g)	1448.32	915.01
Weight of Tube (g)	333.02	207.55
Weight of Wet Sample (g)	1115.30	707.46
Length 1 (in)	4.862	3.031
Length 2 (in)	4.864	3.034
Length 3 (in)	4.860	3.042
Top Diameter (in)	2.907	2.884
Middle Diameter (in)	2.876	2.882
Bottom Diameter (in)	2.874	2.892
Sample Volume (cm <sup>3</sup> )	521.07	325.42
Moisture Content (%)	17.19	16.66
Unit Wet Weight (g/cm <sup>3</sup> )	2.14	2.17
Unit Wet Weight (pcf)	133.56	135.66
<b>Unit Dry Weight (g/cm<sup>3</sup>)</b>	<b>1.83</b>	<b>1.86</b>
<b>Unit Dry Weight (pcf)</b>	<b>114.0</b>	<b>116.3</b>

## SOIL PROFILE AND SAMPLING



*Note:* When full recovery is not achieved, the elevation can not be accurately defined.  
 Indicate each cut of the tube with an arrow.  
 Indicate dividing line between soil types with a solid line.  
 Indicate wax by cross-hatching. Indicate soil types by standard symbols.

Tested By	JAB	Date	12/7/20	Checked By	KC	Date	12/17/20
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# SIEVE AND HYDROMETER ANALYSIS

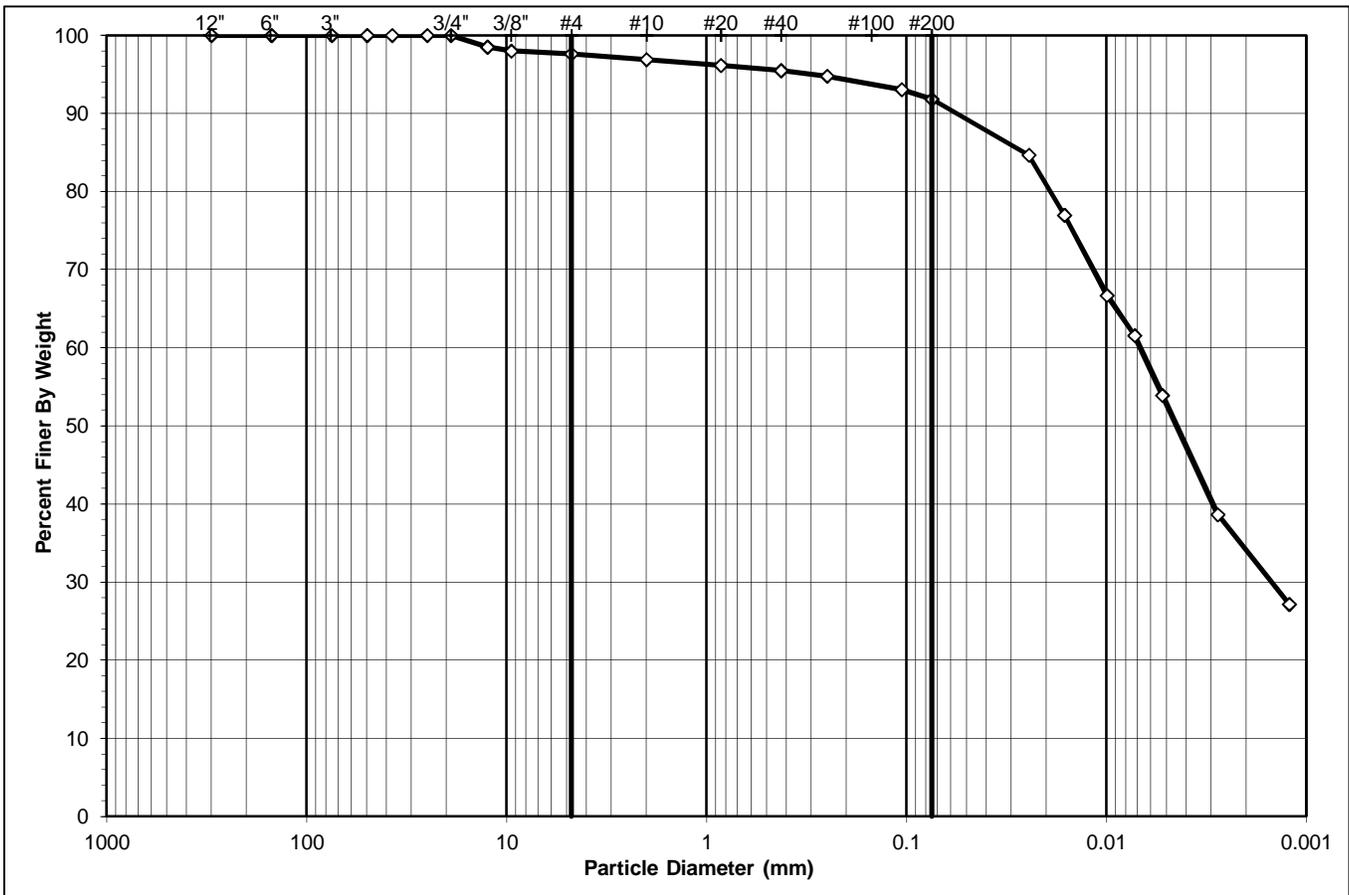
ASTM D 422-63 (2007), AASHTO T88



Client: Inventum Engineering  
 Client Reference: Riverview / 06  
 Project No.: 2020-626-001  
 Lab ID: 2020-626-001-001

Boring No.: Shelby Tube  
 Depth (ft): 16'  
 Sample No.: MW-BCP-02-16  
 Soil Color: Brown

USCS USDA	SIEVE ANALYSIS			HYDROMETER	
	cobble	gravel	sand	silt and clay fraction	
	cobble	gravel	sand	silt	clay

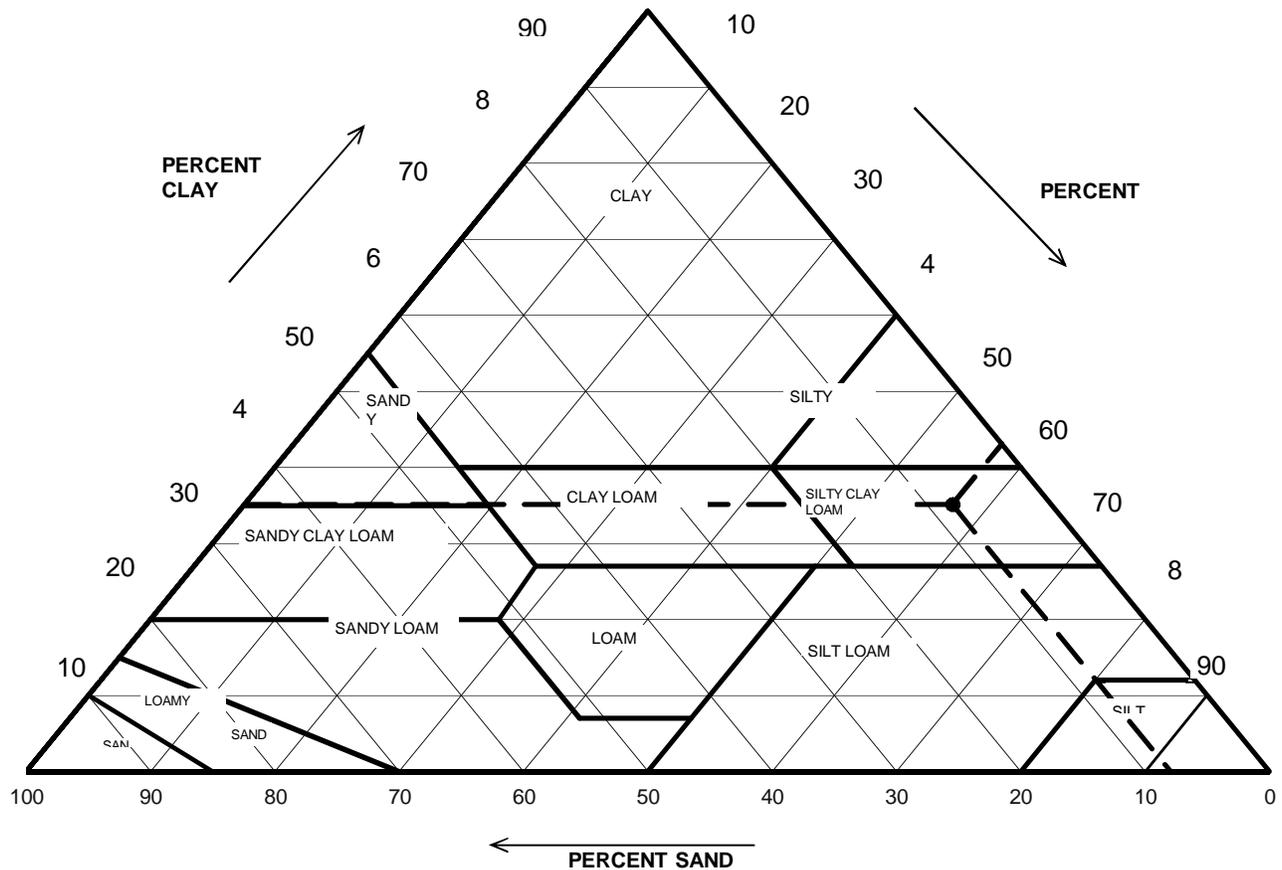


USCS Summary		
Sieve Size (mm)		Percentage (%)
Greater Than #4	<i>Gravel</i>	2.38
#4 to #200	<i>Sand</i>	5.80
Finer Than #200	<i>Silt &amp; Clay</i>	91.82
<b>USCS Symbol:</b> <i>CL, TESTED</i>		
<b>USCS Classification:</b> <i>LEAN CLAY</i>		

## USDA CLASSIFICATION CHART

Client: Inventum Engineering  
 Client Reference: Riverview / 06  
 Project No.: 2020-626-001  
 Lab ID: 2020-626-001-001

Boring No.: Shelby Tube  
 Depth (ft): 16'  
 Sample No.: MW-BCP-02-16  
 Soil Color: Brown



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		<i>Gravel</i>	3.10	<b>0.00</b>
2	96.90	<i>Sand</i>	7.67	<b>7.91</b>
0.05	89.23	<i>Silt</i>	55.18	<b>56.95</b>
0.002	34.05	<i>Clay</i>	34.05	<b>35.14</b>
		<b>USDA Classification</b>	<b><i>SILTY CLAY LOAM</i></b>	

**WASH SIEVE ANALYSIS**  
ASTM D 422-63 (2007), AASHTO T88

Client: Inventum Engineering  
Client Reference: Riverview / 06  
Project No.: 2020-626-001  
Lab ID: 2020-626-001-001

Boring No.: Shelby Tube  
Depth (ft): 16'  
Sample No.: MW-BCP-02-16  
Soil Color: Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	2022	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	1010.29	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	883.49	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	145.69	Weight of Tare (g):	NA
Weight of Water (g):	126.80	Weight of Water (g):	NA
Weight of Dry Soil (g):	737.80	Weight of Dry Soil (g):	NA
<b>Moisture Content (%):</b>	<b>17.2</b>	<b>Moisture Content (%):</b>	<b>0.0</b>

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	737.80
Dry Weight of - 3/4" Sample (g):	737.80	Weight of minus #200 Material (g):	677.46
Wet Weight of +3/4" Sample (g):	0.00	Weight of plus #200 Material (g):	60.34
Dry Weight of +3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	737.80		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	<b>100.00</b>
6"	150	0.00	0.00	0.00	100.00	<b>100.00</b>
3"	75	0.00	0.00	0.00	100.00	<b>100.00</b>
2"	50	0.00	(*)	0.00	100.00	<b>100.00</b>
1 1/2"	37.5	0.00		0.00	100.00	<b>100.00</b>
1"	25	0.00		0.00	100.00	<b>100.00</b>
3/4"	19	0.00		0.00	100.00	<b>100.00</b>
1/2"	12.5	11.12	1.51	1.51	98.49	<b>98.49</b>
3/8"	9.5	3.80	0.52	2.02	97.98	<b>97.98</b>
#4	4.75	2.66	0.36	2.38	97.62	<b>97.62</b>
#10	2	5.28	0.72	3.10	96.90	<b>96.90</b>
#20	0.85	5.56	(**)	3.85	96.15	<b>96.15</b>
#40	0.425	4.91	0.67	4.52	95.48	<b>95.48</b>
#60	0.25	5.14	0.70	5.21	94.79	<b>94.79</b>
#140	0.106	12.78	1.73	6.95	93.05	<b>93.05</b>
#200	0.075	9.09	1.23	8.18	91.82	<b>91.82</b>
Pan	-	677.46	91.82	100.00	-	-

**Notes :** (\*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample  
(\*\*) The - 3/4" sieve analysis is based on the Weight of the Dry Sample

Tested By JF Date 12/9/20 Checked By JLK Date 12/16/20

**HYDROMETER ANALYSIS**  
ASTM D 422-63 (2007), AASHTO T88

Client: Inventum Engineering  
 Client Reference: Riverview / 06  
 Project No.: 2020-626-001  
 Lab ID: 2020-626-001-001

Boring No.: Shelby Tube  
 Depth (ft): 16'  
 Sample No.: MW-BCP-02-16  
 Soil Color: Brown

Elapsed Time	R Measured	Temp. (°C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
(min)								
0	NA	NA	NA	NA	NA	NA	NA	NA
2	56.5	22.5	7.0	49.5	92.2	0.01305	0.0245	<b>84.7</b>
5	52.0	22.5	7.0	45.0	83.8	0.01305	0.0163	<b>77.0</b>
15	46.0	22.5	7.0	39.0	72.6	0.01305	0.0100	<b>66.7</b>
30	43.0	22.5	7.0	36.0	67.0	0.01305	0.0072	<b>61.6</b>
61	38.5	22.6	7.0	31.5	58.7	0.01303	0.0053	<b>53.9</b>
250	29.5	22.9	6.9	22.6	42.1	0.01299	0.0028	<b>38.7</b>
1440	23.0	22.2	7.1	15.9	29.6	0.01310	0.0012	<b>27.2</b>

Soil Specimen Data		Other Corrections	
Tare No.	922		
Wt. of Tare & Dry Material (g):	156.68	a - Factor	0.993
Weight of Tare (g):	98.42		
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	91.82
Weight of Dry Material (g):	53.26		
		Specific Gravity	2.70 Assumed

**Note:** Hydrometer test is performed on - # 200 sieve material.

## ATTERBERG LIMITS

ASTM D 4318-17

Client: Inventum Engineering  
 Client Reference: Riverview / 06  
 Project No.: 2020-626-001  
 Lab ID: 2020-626-001-001

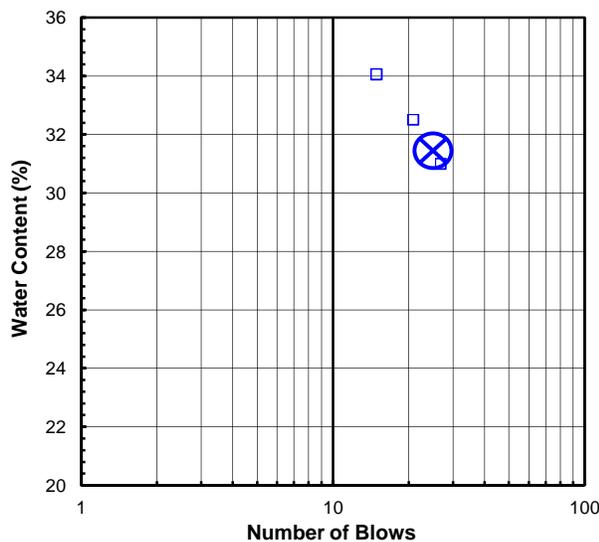
Boring No.: Shelby Tube  
 Depth (ft): 16'  
 Sample No.: MW-BCP-02-16  
 Soil Description: BROWN LEAN CLAY

**Note: The USCS symbol used with this test refers only to the minus No. 40** (Minus No. 40 sieve material, Air dried)  
**sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.**

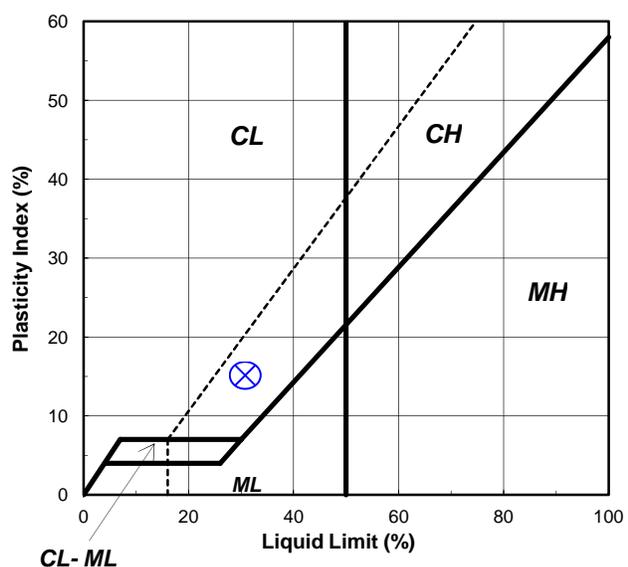
As Received Moisture Content ASTM D2216-19	Liquid Limit Test				
	1	2	3	M	
Tare Number:	907	519	633	627	U
Wt. of Tare & Wet Sample (g):	292.23	39.92	39.60	41.74	L
Wt. of Tare & Dry Sample (g):	266.24	35.08	34.53	35.89	T
Weight of Tare (g):	110.23	19.45	18.92	18.70	I
Weight of Water (g):	26.0	4.8	5.1	5.9	P
Weight of Dry Sample (g):	156.0	15.6	15.6	17.2	O
Was As Received MC Preserved:	<b>Yes</b>				I
<b>Moisture Content (%):</b>	<b>16.7</b>	<b>31.0</b>	<b>32.5</b>	<b>34.0</b>	<b>N</b>
<b>Number of Blows:</b>		<b>27</b>	<b>21</b>	<b>15</b>	<b>T</b>

Plastic Limit Test	1	2	Range	Test Results
Tare Number:	115	1273		<b>Liquid Limit (%):</b> <b>31</b>
Wt. of Tare & Wet Sample (g):	25.52	27.94		<b>Plastic Limit (%):</b> <b>16</b>
Wt. of Tare & Dry Sample (g):	24.62	27.10		<b>Plasticity Index (%):</b> <b>15</b>
Weight of Tare (g):	19.18	21.89		<b>USCS Symbol:</b> <b>CL</b>
Weight of Water (g):	0.9	0.8		
Weight of Dry Sample (g):	5.4	5.2		
<b>Moisture Content (%):</b>	<b>16.5</b>	<b>16.1</b>	<b>0.4</b>	
<i>Note: The acceptable range of the two Moisture Contents is <math>\pm</math></i>				1.12

**Flow Curve**



**Plasticity Chart**



Tested By TO Date 12/11/20 Checked By JLK Date 12/15/20

# PERMEABILITY TEST

ASTM D 5084-16a



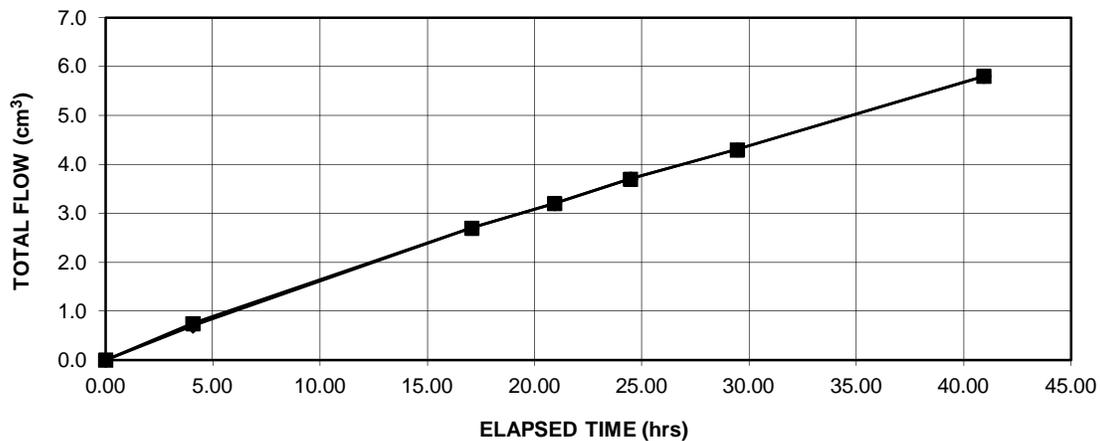
Client: Inventum Engineering  
Client Project: Riverview / 06  
Project No.: 2020-626-001  
Lab ID No.: 2020-626-001-001

Boring No.: Shelby Tube  
Depth (ft): 15.2-15.5  
Sample No.: MW-BCP-002-16  
Avg. Conf. Pressure (psi): 6.25

**AVERAGE PERMEABILITY = 3.3E-08 cm/sec @ 20°C**

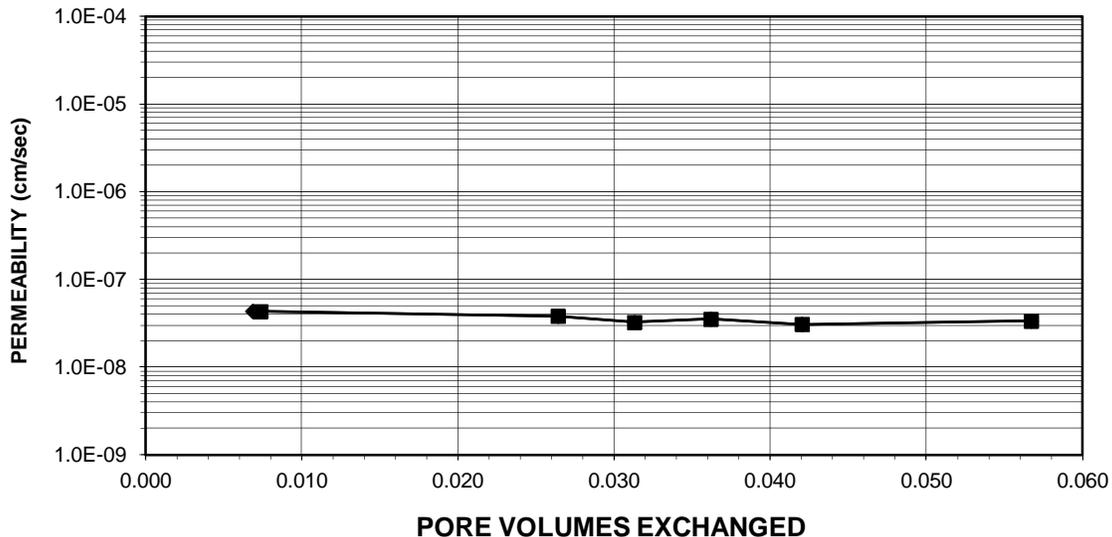
**AVERAGE PERMEABILITY = 3.3E-10 m/sec @ 20°C**

## TOTAL FLOW vs. ELAPSED TIME



← INFLOW      ← OUTFLOW

## PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: JAB

Date: 12/7/20

Checked By:

JLK

Date: 12/11/20

# PERMEABILITY TEST

ASTM D 5084-16a



Client: Inventum Engineering  
Client Project: Riverview / 06  
Project No.: 2020-626-001  
Lab ID No.: 2020-626-001-001

Boring No.: Shelby Tube  
Depth (ft): 15.2-15.5  
Sample No.: MW-BCP-002-16  
Avg. Conf. Pressure (psi): 6.25

Specific Gravity: 2.70 Assumed  
Sample Condition: Undisturbed

Visual Description: Brown Clay with a Trace of Rocks

Permeant Type: Deaired Water

<b>MOISTURE CONTENT:</b>	<u>BEFORE TEST</u>	<u>AFTER TEST</u>
Tare Number	907	882
Weight of Tare & Wet Sample (g)	292.23	818.28
Weight of Tare & Dry Sample (g)	266.24	713.46
Weight of Tare (g)	110.23	110.01
Weight of Water (g)	25.99	104.82
Weight of Dry Sample (g)	156.01	603.45
Moisture Content (%)	<b>16.7</b>	<b>17.4</b>

<b>SPECIMEN:</b>	<u>BEFORE TEST</u>	<u>AFTER TEST</u>
Weight of Tube & Wet Sample (g)	915.01	NA
Weight of Tube (g)	207.55	NA
Weight of Wet Sample (g)	707.46	711.77
Length 1 (in)	3.031	3.065
Length 2 (in)	3.034	3.044
Length 3 (in)	3.042	3.054
Top Diameter (in)	2.884	2.874
Middle Diameter (in)	2.882	2.888
Bottom Diameter (in)	2.892	2.889
Average Length (in)	3.04	3.05
Average Area (in <sup>2</sup> )	6.54	6.53
Sample Volume (cm <sup>3</sup> )	325.42	326.89
Unit Wet Weight (g/cm <sup>3</sup> )	2.17	2.18
Unit Wet Weight (pcf)	135.7	135.9
Unit Dry Weight (pcf)	116.3	115.8
Unit Dry Weight (g/cm <sup>3</sup> )	1.86	1.86
Void Ratio, e	0.45	0.46
Porosity, n	0.31	0.31
Pore Volume (cm <sup>3</sup> )	100.8	102.3
Total Weight of Sample After Test (g)		708.50

Tested By: JAB Date: 12/7/20 Checked By: JLK Date: 12/11/20

# PERMEABILITY TEST

ASTM D 5084-16a



Client:	Inventum Engineering	Boring No.:	Shelby Tube
Client Project:	Riverview / 06	Depth (ft):	15.2-15.5
Project No.:	2020-626-001	Sample No.:	MW-BCP-002-16
Lab ID No.:	2020-626-001-001	Avg. Conf. Pressure (psi):	6.25

**Pressure Heads (Constant)**

Top Cap (psi)	67.5
Bottom Cap (psi)	70.0
Cell (psi)	75.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	22.65

**Final Sample Dimensions**

Sample Length (cm), L	7.76
Sample Diameter (cm)	7.32
Sample Area (cm <sup>2</sup> ), A	42.14
Inflow Burette Area (cm <sup>2</sup> ), a-in	0.911
Outflow Burette Area (cm <sup>2</sup> ), a-out	0.968
B Parameter (%)	98

**AVERAGE PERMEABILITY = 3.3E-08 cm/sec @ 20°C**

**AVERAGE PERMEABILITY = 3.3E-10 m/sec @ 20°C**

DATE	TIME		ELAPSED TIME	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD	FLOW	TEMP.	INCREMENTAL PERMEABILITY
(mm/dd/yy)	(hr)	(min)	t (hr)	(cm <sup>3</sup> )	(cm <sup>3</sup> )	h (cm)	(0 flow) (1 stop)	(°C)	@ 20°C (cm/sec)
12/8/20	14	19	0.000	0.0	0.0	202.6	0	21.6	NA
12/8/20	18	23	4.067	0.7	0.8	201.0	0	21.3	4.3E-08
12/9/20	7	23	17.067	2.7	2.7	196.9	0	20.7	3.8E-08
12/9/20	11	14	20.917	3.2	3.2	195.8	0	21.2	3.3E-08
12/9/20	14	47	24.467	3.7	3.7	194.8	0	21.5	3.5E-08
12/9/20	19	45	29.433	4.3	4.3	193.5	0	21.0	3.1E-08
12/10/20	7	15	40.933	5.8	5.8	190.3	1	21.0	3.4E-08

Tested By: JAB      Date: 12/7/20      Checked By: JLK      Date: 12/11/20

## SHELBY TUBE UNIT WEIGHT

ASTM D7263-09

Client:	Inventum Engineering	Boring No.:	Shelby Tube
Client Reference:	Riverview / 06	Depth Pushed (ft):	30.0-32.0
Project No.:	2020-626-001	Shelby Tube No.:	MW-BCP-01-3032
Lab ID:	2020-626-001-002	Recovery (ft):	NA

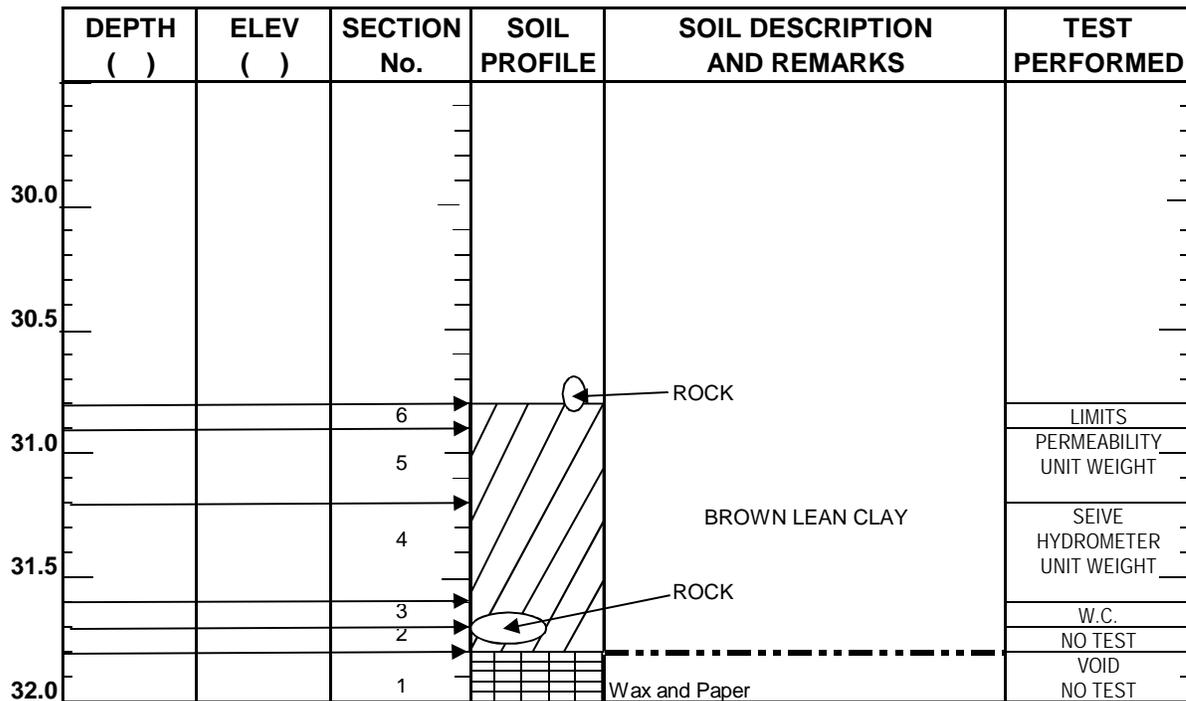
### MOISTURE CONTENT

Section Number	3	4	5	6	7
Tare Number	565	1543		897	
Weight of Tare & Wet Sample (g)	285.83	946.56		263.38	
Weight of Tare & Dry Sample (g)	237.79	735.61		233.38	
Weight of Tare (g)	82.17	144.34		109.26	
Moisture Content (%)	30.87	35.68		24.17	

### UNIT WEIGHT

Weight of Tube & Wet Sample (g)	1294.61	810.17
Weight of Tube (g)	329.99	205.59
Weight of Wet Sample (g)	964.62	604.58
Length 1 (in)	4.788	3.009
Length 2 (in)	4.791	2.977
Length 3 (in)	4.801	2.990
Top Diameter (in)	2.890	2.881
Middle Diameter (in)	2.874	2.879
Bottom Diameter (in)	2.878	2.888
Sample Volume (cm <sup>3</sup> )	511.93	319.99
Moisture Content (%)	35.68	24.17
Unit Wet Weight (g/cm <sup>3</sup> )	1.88	1.89
Unit Wet Weight (pcf)	117.58	117.90
<b>Unit Dry Weight (g/cm<sup>3</sup>)</b>	<b>1.39</b>	<b>1.52</b>
<b>Unit Dry Weight (pcf)</b>	<b>86.7</b>	<b>94.9</b>

## SOIL PROFILE AND SAMPLING



*Note:* When full recovery is not achieved, the elevation can not be accurately defined.  
 Indicate each cut of the tube with an arrow.  
 Indicate dividing line between soil types with a solid line.  
 Indicate wax by cross-hatching. Indicate soil types by standard symbols.

Tested By	JAB	Date	12/7/20	Checked By	KC	Date	12/17/20
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# SIEVE AND HYDROMETER ANALYSIS

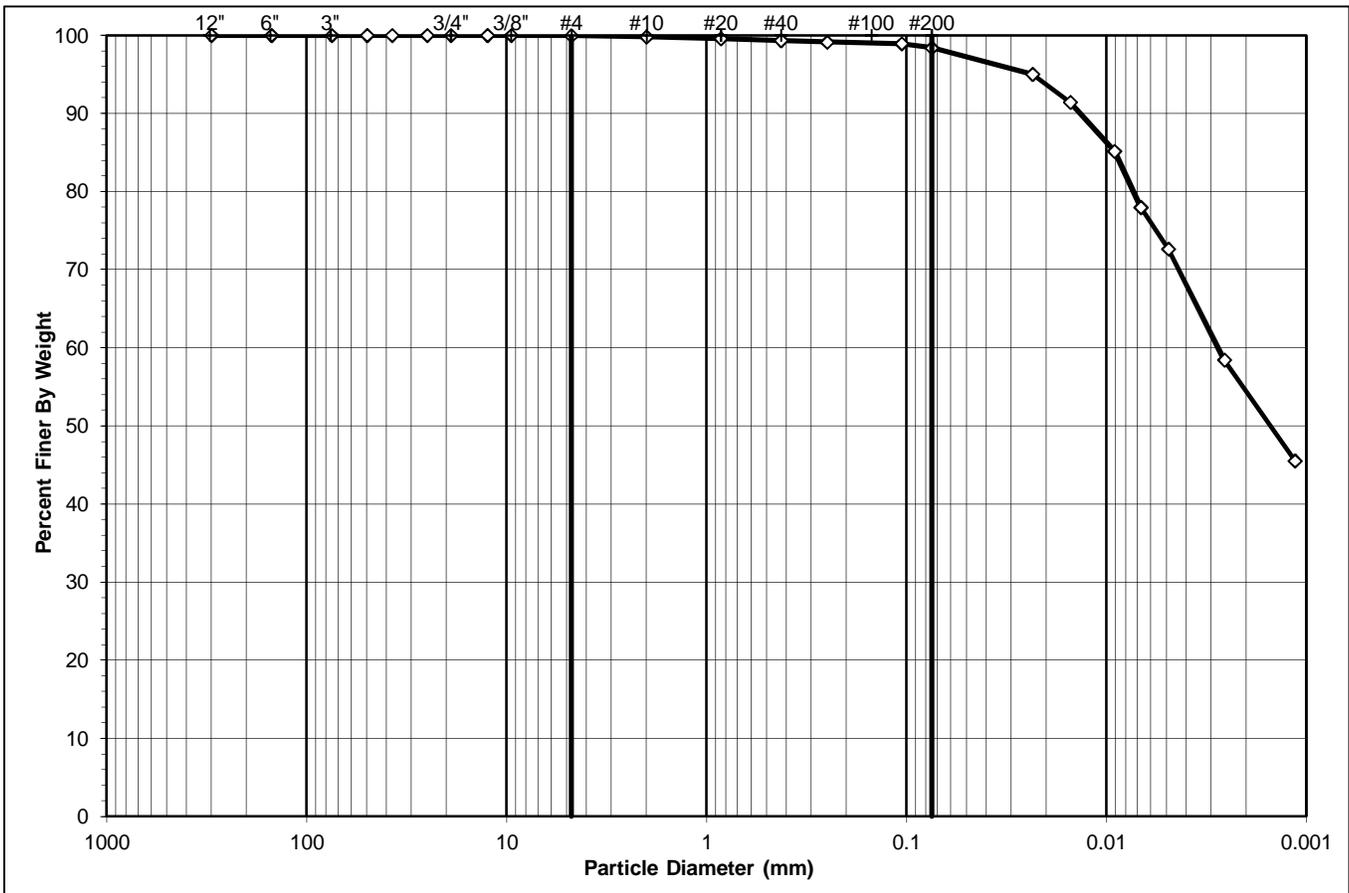
ASTM D 422-63 (2007), AASHTO T88



Client: Inventum Engineering  
 Client Reference: Riverview / 06  
 Project No.: 2020-626-001  
 Lab ID: 2020-626-001-002

Boring No.: Shelby Tube  
 Depth (ft): 31.2-31.6  
 Sample No.: MW-BCP-01-3032  
 Soil Color: Brown

<b>USCS</b>	<b>SIEVE ANALYSIS</b>				<b>HYDROMETER</b>	
	cobbles	gravel	sand		silt and clay fraction	
	cobbles	gravel	sand		silt	clay



USCS Summary		
Sieve Size (mm)		Percentage (%)
Greater Than #4	<i>Gravel</i>	0.05
#4 to #200	<i>Sand</i>	1.57
Finer Than #200	<i>Silt &amp; Clay</i>	98.38

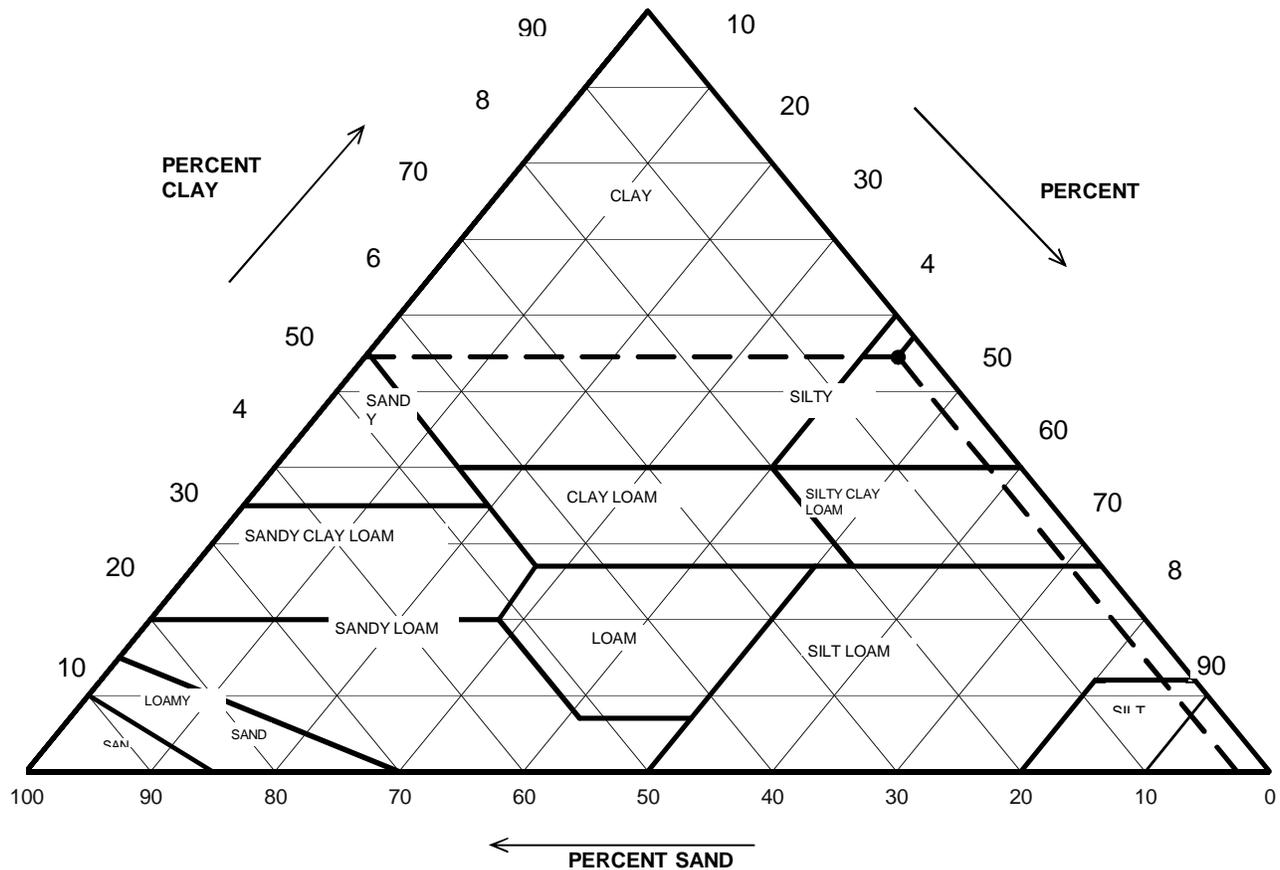
**USCS Symbol:**  
*CL, TESTED*

**USCS Classification:**  
*LEAN CLAY*

## USDA CLASSIFICATION CHART

Client: Inventum Engineering  
 Client Reference: Riverview / 06  
 Project No.: 2020-626-001  
 Lab ID: 2020-626-001-002

Boring No.: Shelby Tube  
 Depth (ft): 31.2-31.6  
 Sample No.: MW-BCP-01-3032  
 Soil Color: Brown



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classification
		<i>Gravel</i>	0.19	<b>0.00</b>
2	99.81	<i>Sand</i>	2.60	<b>2.60</b>
0.05	97.21	<i>Silt</i>	42.78	<b>42.86</b>
0.002	54.43	<i>Clay</i>	54.43	<b>54.54</b>
		<b>USDA Classification</b>	<b>SILTY CLAY</b>	

**WASH SIEVE ANALYSIS**  
ASTM D 422-63 (2007), AASHTO T88

Client: Inventum Engineering  
Client Reference: Riverview / 06  
Project No.: 2020-626-001  
Lab ID: 2020-626-001-002

Boring No.: Shelby Tube  
Depth (ft): 31.2-31.6  
Sample No.: MW-BCP-01-3032  
Soil Color: Brown

Moisture Content of Passing 3/4" Material		Moisture Content of Retained 3/4" Material	
Tare No.:	1543	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	946.56	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	735.61	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	144.37	Weight of Tare (g):	NA
Weight of Water (g):	210.95	Weight of Water (g):	NA
Weight of Dry Soil (g):	591.24	Weight of Dry Soil (g):	NA
<b>Moisture Content (%):</b>	<b>35.7</b>	<b>Moisture Content (%):</b>	<b>0.0</b>

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	591.24
Dry Weight of - 3/4" Sample (g):	591.24	Weight of minus #200 Material (g):	581.67
Wet Weight of +3/4" Sample (g):	0.00	Weight of plus #200 Material (g):	9.57
Dry Weight of +3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	591.24		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	100.00
6"	150	0.00	0.00	0.00	100.00	100.00
3"	75	0.00	0.00	0.00	100.00	100.00
2"	50	0.00	(*)	0.00	100.00	100.00
1 1/2"	37.5	0.00		0.00	100.00	100.00
1"	25	0.00		0.00	100.00	100.00
3/4"	19	0.00		0.00	100.00	100.00
1/2"	12.5	0.00		0.00	100.00	100.00
3/8"	9.5	0.00		0.00	100.00	100.00
#4	4.75	0.28		0.05	99.95	99.95
#10	2	0.86		0.19	99.81	99.81
#20	0.85	1.38	(**)	0.43	99.57	99.57
#40	0.425	1.41		0.66	99.34	99.34
#60	0.25	1.31		0.89	99.11	99.11
#140	0.106	1.02		1.06	98.94	98.94
#200	0.075	3.31		1.62	98.38	98.38
Pan	-	581.67		100.00	-	-

**Notes :** (\*) The + 3/4" sieve analysis is based on the Total Dry Weight of the Sample  
(\*\*) The - 3/4" sieve analysis is based on the Weight of the Dry Sample

Tested By JF Date 12/9/20 Checked By JLK Date 12/16/20

**HYDROMETER ANALYSIS**  
ASTM D 422-63 (2007), AASHTO T88

Client: Inventum Engineering  
 Client Reference: Riverview / 06  
 Project No.: 2020-626-001  
 Lab ID: 2020-626-001-002

Boring No.: Shelby Tube  
 Depth (ft): 31.2-31.6  
 Sample No.: MW-BCP-01-3032  
 Soil Color: Brown

Elapsed Time	R Measured	Temp. (°C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
(min)								
0	NA	NA	NA	NA	NA	NA	NA	NA
2	60.0	22.5	7.0	53.0	96.6	0.01305	0.0235	<b>95.0</b>
5	58.0	22.5	7.0	51.0	92.9	0.01305	0.0152	<b>91.4</b>
15	54.5	22.5	7.0	47.5	86.6	0.01305	0.0091	<b>85.2</b>
30	50.5	22.5	7.0	43.5	79.3	0.01305	0.0067	<b>78.0</b>
60	47.5	22.6	7.0	40.5	73.8	0.01303	0.0049	<b>72.6</b>
250	39.5	22.9	6.9	32.6	59.4	0.01299	0.0026	<b>58.4</b>
1440	32.5	22.2	7.1	25.4	46.3	0.01310	0.0011	<b>45.5</b>

Soil Specimen Data		Other Corrections	
Tare No.	700		
Wt. of Tare & Dry Material (g):	146.14	a - Factor	0.993
Weight of Tare (g):	86.69		
Weight of Deflocculant (g):	5.0	Percent Finer than # 200	98.38
Weight of Dry Material (g):	54.45		
		Specific Gravity	2.70 Assumed

**Note:** Hydrometer test is performed on - # 200 sieve material.

## ATTERBERG LIMITS

ASTM D 4318-17

Client: Inventum Engineering  
 Client Reference: Riverview / 06  
 Project No.: 2020-626-001  
 Lab ID: 2020-626-001-002

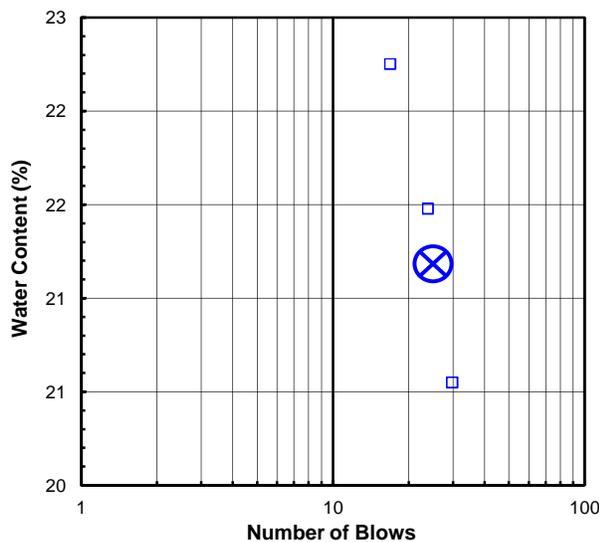
Boring No.: Shelby Tube  
 Depth (ft): 30.8-30.9  
 Sample No.: MW-BCP-01-3032  
 Soil Description: BROWN LEAN CLAY

**Note: The USCS symbol used with this test refers only to the minus No. 40** (Minus No. 40 sieve material, Air dried)  
**sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.**

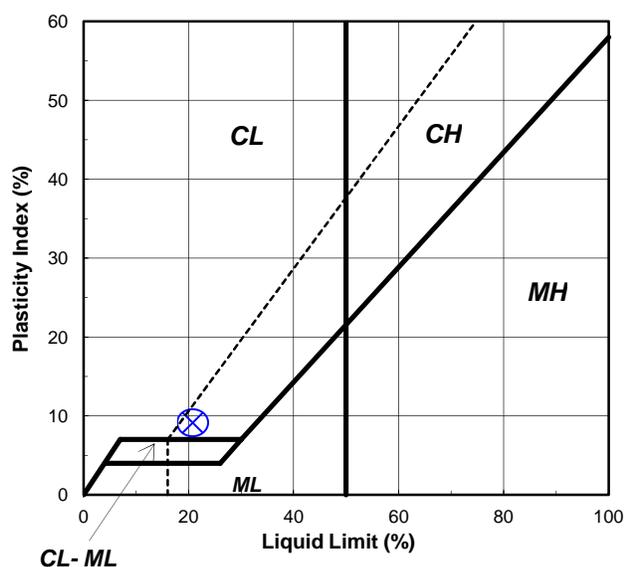
As Received Moisture Content ASTM D2216-19	Liquid Limit Test				
	1	2	3	M	
Tare Number:	897	229	294	346	U
Wt. of Tare & Wet Sample (g):	263.38	38.55	44.44	42.17	L
Wt. of Tare & Dry Sample (g):	233.38	35.08	40.65	38.23	T
Weight of Tare (g):	109.26	18.19	23.00	20.52	I
Weight of Water (g):	30.0	3.5	3.8	3.9	P
Weight of Dry Sample (g):	124.1	16.9	17.7	17.7	O
Was As Received MC Preserved:	<b>Yes</b>				I
<b>Moisture Content (%):</b>	<b>24.2</b>	<b>20.5</b>	<b>21.5</b>	<b>22.2</b>	<b>N</b>
<b>Number of Blows:</b>	<b>30</b>	<b>24</b>	<b>17</b>		<b>T</b>

Plastic Limit Test	1	2	Range	Test Results
Tare Number:	15	319		<b>Liquid Limit (%):</b> 21
Wt. of Tare & Wet Sample (g):	24.16	24.53		<b>Plastic Limit (%):</b> 12
Wt. of Tare & Dry Sample (g):	23.45	23.90		<b>Plasticity Index (%):</b> 9
Weight of Tare (g):	17.55	18.27		<b>USCS Symbol:</b> CL
Weight of Water (g):	0.7	0.6		
Weight of Dry Sample (g):	5.9	5.6		
<b>Moisture Content (%):</b>	<b>12.0</b>	<b>11.2</b>	<b>0.8</b>	
<i>Note: The acceptable range of the two Moisture Contents is <math>\pm</math></i>				1.12

Flow Curve



Plasticity Chart



Tested By **JP** Date **12/10/20** Checked By **JLK** Date **12/11/20**

# PERMEABILITY TEST

ASTM D 5084-16a



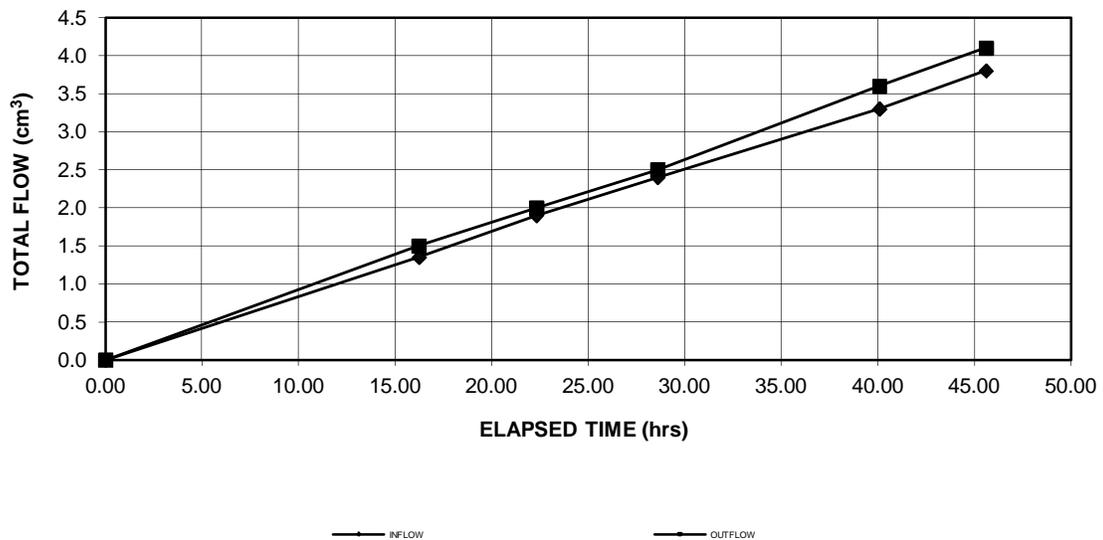
Client: Inventum Engineering  
Client Project: Riverview / 06  
Project No.: 2020-626-001  
Lab ID No.: 2020-626-001-002

Boring No.: Shelby Tube  
Depth (ft): 30.9-31.2  
Sample No.: MW-BCP-01-3032  
Avg. Conf. Pressure (psi): 6.25

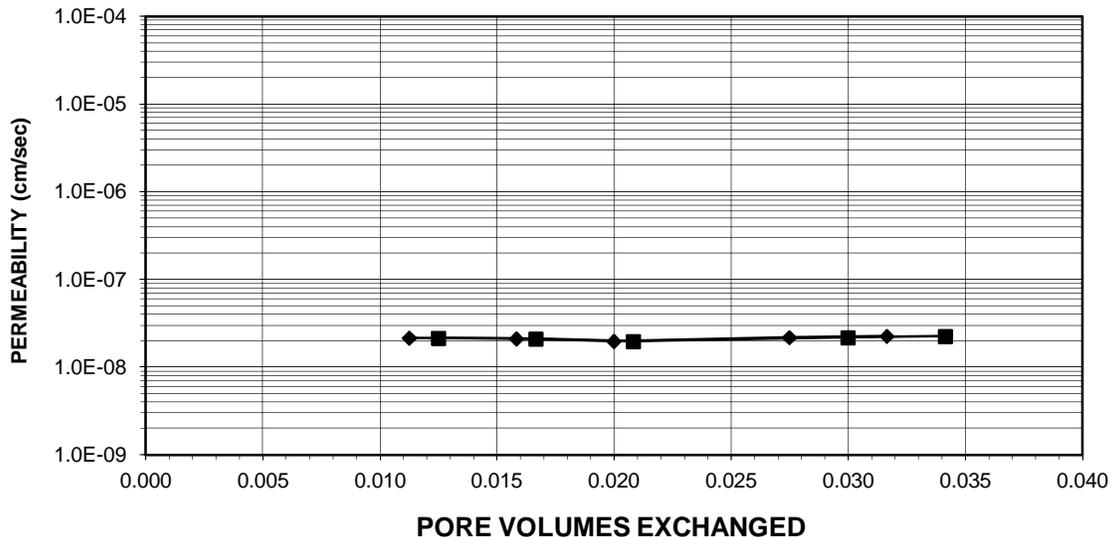
**AVERAGE PERMEABILITY = 2.1E-08 cm/sec @ 20°C**

**AVERAGE PERMEABILITY = 2.1E-10 m/sec @ 20°C**

## TOTAL FLOW vs. ELAPSED TIME



## PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: JAB Date: 12/7/20 Checked By: JLK Date: 12/11/20

# PERMEABILITY TEST

ASTM D 5084-16a



Client: Inventum Engineering  
Client Project: Riverview / 06  
Project No.: 2020-626-001  
Lab ID No.: 2020-626-001-002  
Boring No.: Shelby Tube  
Depth (ft): 30.9-31.2  
Sample No.: MW-BCP-01-3032  
Avg. Conf. Pressure (psi): 6.25

Specific Gravity: 2.70 Assumed  
Sample Condition: Undisturbed

Visual Description: Brown Clay with a Trace of Rocks

Permeant Type: Deaired Water

<b>MOISTURE CONTENT:</b>	<u>BEFORE TEST</u>	<u>AFTER TEST</u>
Tare Number	897	544
Weight of Tare & Wet Sample (g)	263.38	656.62
Weight of Tare & Dry Sample (g)	233.38	518.48
Weight of Tare (g)	109.26	84.16
Weight of Water (g)	30.00	138.14
Weight of Dry Sample (g)	124.12	434.32
Moisture Content (%)	<b>24.2</b>	<b>31.8</b>

<b>SPECIMEN:</b>	<u>BEFORE TEST</u>	<u>AFTER TEST</u>
Weight of Tube & Wet Sample (g)	810.17	NA
Weight of Tube (g)	205.59	NA
Weight of Wet Sample (g)	604.58	641.76
Length 1 (in)	3.009	2.885
Length 2 (in)	2.977	2.890
Length 3 (in)	2.990	2.916
Top Diameter (in)	2.881	2.829
Middle Diameter (in)	2.879	2.833
Bottom Diameter (in)	2.888	2.854
Average Length (in)	2.99	2.90
Average Area (in <sup>2</sup> )	6.53	6.33
Sample Volume (cm <sup>3</sup> )	319.99	300.45
Unit Wet Weight (g/cm <sup>3</sup> )	1.89	2.14
Unit Wet Weight (pcf)	117.9	133.3
Unit Dry Weight (pcf)	95.0	101.2
Unit Dry Weight (g/cm <sup>3</sup> )	1.52	1.62
Void Ratio, e	0.77	0.67
Porosity, n	0.44	0.40
Pore Volume (cm <sup>3</sup> )	139.7	120.1
Total Weight of Sample After Test (g)		572.90

Tested By: JAB Date: 12/7/20 Checked By: JLK Date: 12/11/20

# PERMEABILITY TEST

ASTM D 5084-16a



Client:	Inventum Engineering	Boring No.:	Shelby Tube
Client Project:	Riverview / 06	Depth (ft):	30.9-31.2
Project No.:	2020-626-001	Sample No.:	MW-BCP-01-3032
Lab ID No.:	2020-626-001-002	Avg. Conf. Pressure (psi):	6.25

**Pressure Heads (Constant)**

Top Cap (psi)	67.5
Bottom Cap (psi)	70.0
Cell (psi)	75.0
Total Pressure Head (cm)	175.8
Hydraulic Gradient	23.89

**Final Sample Dimensions**

Sample Length (cm), L	7.36
Sample Diameter (cm)	7.21
Sample Area (cm <sup>2</sup> ), A	40.83
Inflow Burette Area (cm <sup>2</sup> ), a-in	0.918
Outflow Burette Area (cm <sup>2</sup> ), a-out	0.907
B Parameter (%)	98

**AVERAGE PERMEABILITY = 2.1E-08 cm/sec @ 20°C**

**AVERAGE PERMEABILITY = 2.1E-10 m/sec @ 20°C**

DATE	TIME		ELAPSED TIME	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD	FLOW	TEMP.	INCREMENTAL PERMEABILITY
(mm/dd/yy)	(hr)	(min)	t (hr)	(cm <sup>3</sup> )	(cm <sup>3</sup> )	h (cm)	(0 flow) (1 stop)	(°C)	@ 20°C (cm/sec)
12/8/20	15	10	0.000	0.0	0.0	201.9	0	21.8	NA
12/9/20	7	24	16.233	1.4	1.5	198.8	0	20.7	2.1E-08
12/9/20	13	29	22.317	1.9	2.0	197.6	0	21.4	2.1E-08
12/9/20	19	46	28.600	2.4	2.5	196.5	0	21.0	2.0E-08
12/10/20	7	15	40.083	3.3	3.6	194.3	0	21.0	2.2E-08
12/10/20	12	46	45.600	3.8	4.1	193.2	1	21.6	2.2E-08

Tested By: JAB      Date: 12/7/20      Checked By: JLK      Date: 12/11/20

## Appendix B - Boring and Monitoring Well Installation Logs



**Project No:** RITC

**Log of Borehole: MW-BCP-01**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055363.11

**Surface Elevation:** 606.26

**Y Coordinate:** 1087812.34

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
0		Ground Surface	606.26					
1		Fill; with coal fines, fine to medium gravel, organic fragments, and bricks, black, moist		3-4-7-8		SS	0	
2								
3		Clay; low plasticity, reddish brown, dry	603.26	6-4-5-9		SS	0	
4			602.26					
5		Silty Clay; low plasticity, trace organics (roots), reddish brown with grey mottling, dry		5-15-23-28		SS	0	
6								
7		Silty Clay; low plasticity, trace fine gravel, reducing organics, some vertical spiral desiccation, reddish brown with grey mottling, dry		18-23-31-35		SS	0	
8			598.26					
9		Silty Clay; low plasticity, trace fine gravel, reddish brown with grey mottling, dry		15-24-34-39		SS	0	
10								
11								
12			594.26					
13		Silty Clay; low plasticity increasing with depth, trace fine gravel, reddish brown with grey mottling, moist		22-22-29-33		SS	0	
14								
15		Silty Clay, low plasticity, some horizontal micro bedding from 14.5' BGS to 14.75' BGS, reddish brown with grey mottling, moist		18-21-30-34		SS	0	
16			590.26					
17		Clay; medium plasticity, trace gravel, reddish brown, moist		9-13-11-15		SS	0	
18								
19								
20			586.26	9-14-15-17		SS	0	

**Drill Method:** 4.25" HSA

**Drill Date:** 10/20/2020 to 40' BGS, 40' BGS to 65.5' BGS completed on 06/29/2021

**Checked by:** JE

**Sheet:** 1 of 4

**Project No:** RITC

**Log of Borehole: MW-BCP-01**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055363.11

**Surface Elevation:** 606.26

**Y Coordinate:** 1087812.34

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
21		Clay; high plasticity, trace gravel, reddish brown, moist to wet at 21' BGS	584.26	4-7-9-14		SS	0	
22		Clay; high plasticity, trace fine gravel, reddish brown, moist		582.26	3-6-8-8		SS	
23		Clay; high plasticity (fat clay), reddish brown to grey, moist	580.26		2-3-4-5		SS	
24				Clay; high plasticity (fat clay) trace fine gravel (rounded), reddish brown to grey, moist	576.26	3-2-4-4		
25		2-2-3-4				SS	0	
26		Collected Shelby Tube	570.26	No Sample		SS	0	
27				No Sample		SS	0	
28				No Sample		SS	0	
29				No Sample		SS	0	
30		Clay; high plasticity, trace fine gravel (rounded), reddish brown to grey, moist	566.26	WR-WR-2-5		SS	0	
31	WR-WR-2-6				SS	0		
32								
33								
34								
35								
36								
37								
38								
39								
40								

**Drill Method:** 4.25" HSA

**Drill Date:** 10/20/2020 to 40' BGS, 40' BGS to 65.5' BGS completed on 06/29/2021

**Checked by:** JE

**Sheet:** 2 of 4

**Project No:** RITC

**Log of Borehole: MW-BCP-01**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055363.11

**Surface Elevation:** 606.26

**Y Coordinate:** 1087812.34

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
41		Clay; (not logged)						
42								
43								
44								
45								
46								
47								
48								
49								
50								
51								
52								
53		Shale	554.26					
54								
55								
56								
57		Shale; RQD=78.3%, grey	552.76					
58								
59								
60								

**Drill Method:** 4.25" HSA

**Drill Date:** 10/20/2020 to 40' BGS, 40' BGS to 65.5' BGS completed on 06/29/2021

**Checked by:** JE

**Sheet:** 3 of 4

**Project No:** RITC

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055363.11

**Y Coordinate:** 1087812.34

**Log of Borehole: MW-BCP-01**

**Surface Elevation:** 606.26

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
61		Shale; RQD=98.0%, grey	545.76					
62								
63								
64								
65			540.76					
66		End of Borehole						
67								
68								
69								
70								
71								
72								
73								
74								
75								
76								
77								
78								
79								
80								

**Drill Method:** 4.25" HSA

**Drill Date:** 10/20/2020 to 40' BGS, 40' BGS to 65.5' BGS completed on 06/29/2021

**Checked by:** JE

**Sheet:** 4 of 4

**Project No:** RITC

**Log of Borehole: MW-BCP-02**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055471.63

**Surface Elevation:** 605.83

**Y Coordinate:** 1087466.57

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
0		Ground Surface	605.83					
1		Fill; sandy gravel, some silt, trace coal, cinder, and brick fragments, black, moist		13-14-17-8		SS	0	
2								
3					10-10-12-13		SS	0
4				601.83				
5		Fill; sandy clay, trace fine to coarse gravel and brick, black, moist	600.83	11-9-5-6		SS	0	
6		Silty Clay; low to non-plastic, trace fine gravel, reddish brown with grey mottling, moist	599.83					
7		Silty Clay; low to non-plastic, reddish brown with grey mottling, moist	598.83	4-6-11-17		SS	0	
8		Silty Clay; low plasticity, trace fine gravel, reddish brown with grey mottling, moist						
9					9-9-9-20		SS	0
10				595.83				
11		Silty Clay; medium plasticity, trace gravel, reddish brown with grey mottling, dry			12-19-21-24		SS	0
12								
13					9-34-33-38		SS	0
14				591.83				
15	Silty Clay; medium plasticity, trace fine gravel, reddish brown, dry			15-24-35-35		SS	0	
16		Collected Shelby Tube						
17				No Sample		SS	0	
18			587.83					
19		Clay; medium plasticity, reddish brown trace grey mottling, moist		10-13-22-23		SS	0	
20								
			585.83					

**Drill Method:** 4.25" HSA

**Drill Date:** 11/18/2020

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-02**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055471.63

**Surface Elevation:** 605.83

**Y Coordinate:** 1087466.57

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes	
21	---	Clay; medium plasticity, trace very fine gravel, reddish brown, moist	583.83	10-13-17-21		SS	0		
22	---	Clay; medium plasticity, trace fine to coarse gravel, 2" gravel at 23' BGS, reddish brown, moist		581.83	8-10-10-12		SS		0
23	---	Clay; medium plasticity, trace fine gravel (rounded), coarse sand (0.5") at 25' BGS, reddish brown, moist		579.83	4-7-9-9		SS		0
24	---	End of Borehole							
25	---								
26	---								
27	---								
28	---								
29	---								
30	---								
31	---								
32	---								
33	---								
34	---								
35	---								
36	---								
37	---								
38	---								
39	---								
40	---								

**Drill Method:** 4.25" HSA

**Drill Date:** 11/18/2020

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-03**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055312.90

**Surface Elevation:** 602.10

**Y Coordinate:** 1087135.73

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
0		Ground Surface	602.10					
1		Topsoil Fill; trace rock fragments and fine to medium gravel, trace sand, brown, dry		11-13-13-20		SS	0	
2			600.10					
3		Topsoil Fill; trace rock fragments and fine gravel, trace medium sand, brown, moist	599.10	20-14-7-7		SS	0	
4		Clay; medium plasticity, some silt, trace organics (roots), reddish brown, moist	598.10					
5		Clay; medium plasticity, some silt, trace gravel, reddish brown, moist		16-13-20-27		SS	0	
6								
7				17-21-28-36		SS	0	
8			594.10					
9		Clay; medium plasticity, some silt, trace fine gravel, reddish brown, moist drying with depth		17-23-30-34		SS	0	
10								
11				15-21-26-43		SS	0	
12								
13				28-25-32-37		SS	0	
14			588.10					
15		Clay; medium plasticity (increasing with depth), some silt, trace fine gravel, reddish brown, moist		9-14-16-24		SS	0	
16			586.10					
17		Clay; medium to high plasticity, trace fine gravel, dark brown, moist (increasing with depth)		8-10-14-16		SS	0	
18								
19				7-10-16-17		SS	0	
20								

**Drill Method:** 4.25" HSA

**Drill Date:** 10/27/2020 to 40' BGS, 40' BGS to 64.5' BGS completed on 07/07/2021

**Checked by:** JE

**Sheet:** 1 of 4

**Project No:** RITC

**Log of Borehole: MW-BCP-03**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055312.90

**Surface Elevation:** 602.10

**Y Coordinate:** 1087135.73

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
21			581.10	4-5-7-10		SS	0	
22		Clay; high plasticity, light brown and grey, moist	580.10					
23		Clay; high plasticity, greyish brown, moist to wet		4-5-7-7		SS	0	
24								
25				2-3-3-4		SS	0	
26			576.10					
27		Clay; medium plasticity, trace fine gravel, light brown, moist to wet		1-2-3-3		SS	0	
28			574.10					
29		Clay; medium plasticity, very soft at 28' BGS, trace fine gravel, light brown, moist to wet		WH-WH-2-2		SS	0	
30			572.10					
31		Clay; medium plasticity, very soft, light brown, moist to wet		1-1-3-4		SS	0	
32								
33				1-1-2-3		SS	0	
34								
35				WH-WH-2-2		SS	0	
36		0% Recovery	566.10					
37				13-33-21-28		SS	0	
38			564.10					
39		Silty Clay; low plasticity, with sand and fine to coarse rounded gravel, wet		12-13-18-22		SS	0	
40			562.10					

**Drill Method:** 4.25" HSA

**Drill Date:** 10/27/2020 to 40' BGS, 40' BGS to 64.5' BGS completed on 07/07/2021

**Checked by:** JE

**Sheet:** 2 of 4

**Project No:** RITC

**Log of Borehole: MW-BCP-03**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055312.90

**Surface Elevation:** 602.10

**Y Coordinate:** 1087135.73

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
41	X	Silty Clay; not logged						
42	X							
43	X							
44	X							
45	X							
46	X							
47	X							
48	X							
49	X							
50	X							
51	X							
52	X							
53	█	Shale	549.60					
54	█		547.60					
55	█	Shale; RQD=46.9%, grey						
56	█							
57	█		544.92					
58	█	Shale; RQD=67.2%						
59	█							
60	█							

**Drill Method:** 4.25" HSA

**Drill Date:** 10/27/2020 to 40' BGS, 40' BGS to 64.5' BGS completed on 07/07/2021

**Checked by:** JE

**Sheet:** 3 of 4

**Project No:** RITC

**Log of Borehole: MW-BCP-03**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055312.90

**Surface Elevation:** 602.10

**Y Coordinate:** 1087135.73

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
61								
62								
63								
64			537.60					
65		End of Borehole						
66								
67								
68								
69								
70								
71								
72								
73								
74								
75								
76								
77								
78								
79								
80								

**Drill Method:** 4.25" HSA

**Drill Date:** 10/27/2020 to 40' BGS, 40' BGS to 64.5' BGS completed on 07/07/2021

**Checked by:** JE

**Sheet:** 4 of 4

**Project No:** RITC

**Log of Borehole: MW-BCP-04**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055565.75

**Surface Elevation:** 605.34

**Y Coordinate:** 1087328.19

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
0		Ground Surface	605.34					
1		Fill, Sandy Clay; trace gravel, brick, slag, and coke fragments, black, moist	603.34	7-8-12-9		SS	0	
2		Fill, Sandy Clay; trace large brick fragments and gravel, black, wet	601.34	12-11-4-3		SS	0	
3		Fill, Silty Clay; trace gravel and roots, grey, moist	600.34	6-3-3-6		SS	0	
4		Silty Clay; medium plasticity, grey with reddish brown mottling, moist	599.34					
5		Silty Clay; medium plasticity, trace gravel, reddish brown with grey mottling, dry		8-15-31-32		SS	0	
6				19-19-19-28		SS	0	
7			595.34					
8		Silty Clay; medium plasticity, trace fine gravel, reddish brown, dry		12-22-38-33		SS	0	
9				12-28-24-15		SS	0	
10			591.34					
11		Silty Clay; medium plasticity, trace fine gravel, reddish brown, moist		15-21-23-36		SS	0	
12				10-14-16-17		SS	0	
13			587.34					
14		Silty Clay; medium to high plasticity, trace fine gravel, reddish brown, moist		5-9-11-15		SS	0	
15								
16								
17								
18								
19								
20								

**Drill Method:** 4.25" HSA

**Drill Date:** 11/16/2020

**Checked by:** JE

**Sheet:** 1 of 2

**Project No:** RITC

**Log of Borehole: MW-BCP-04**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055565.75

**Surface Elevation:** 605.34

**Y Coordinate:** 1087328.19

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
21	X			6-7-11-14		SS	0	
22	X		583.34					
23	X	Silty Clay; medium to high plasticity, trace fine gravel, reddish brown, transition to stiff, moist		2-4-6-6		SS	0	
24	X		581.34					
25	X	Clay; high plasticity, trace fine gravel, reddish brown, moist		4-6-11-7		SS	0	
26	X		579.34					
27		End of Borehole						
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

**Drill Method:** 4.25" HSA

**Drill Date:** 11/16/2020

**Checked by:** JE

**Project No:** Riverview Innovation and Technology Campus

**Log of Borehole: MW-BCP-05**

**Project:** RITC

**X Coordinate:** 1055944.33

**Surface Elevation:** 604.74

**Y Coordinate:** 1087591.09

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
0		Ground Surface	604.74					
1		Fill; coal, coke, and gravel, trace crystalized tar (small granular), black, dry		11-12-31-17		SS	4.0	
2			602.24					
3		Fill; coal, coke, trace fine to medium slag, trace tar, black, wet		10-7-5-5		SS	49.1	
4			600.24					
5		Clay; medium plasticity, black, moist	599.74	2-4-6-9		SS	9.7	
6		Silty Clay; low plasticity, some black nodules to 5.5' BGS, reddish brown with grey mottling, dry	598.74				4.0	
7		Silty Clay; low plasticity, some black nodules at 6' BGS, reddish brown, dry		10-22-21-24		SS	0	
8			596.74					
9		Silty Clay; low plasticity, vertical cracking at 9.5' to 10' BGS, reddish brown, dry		17-22-28-29		SS	0	
10			594.74					
11		Silty Clay; low plasticity, little fine to coarse gravel, reddish brown, dry		16-15-28-29		SS	0	
12								
13		Silty Clay; low plasticity, little fine to coarse gravel, reddish brown, dry		17-15-20-20		SS	0	
14								
15		Silty Clay; low plasticity, little fine to coarse gravel, reddish brown, dry		11-13-18-23		SS	0	
16			588.74					
17		No Sample; Shelby Tube collected		No Sample		SS	0	
18			586.74					
19		Clay; low to medium plasticity (increasing with depth), little fine gravel, reddish brown, dry		7-12-13-16		SS	0	
20								

**Drill Method:** 4.25" HSA

**Drill Date:** 11/12/2020

**Checked by:** JE

**Project No:** Riverview Innovation and Technology Campus

**Log of Borehole: MW-BCP-05**

**Project:** RITC

**X Coordinate:** 1055944.33

**Surface Elevation:** 604.74

**Y Coordinate:** 1087591.09

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes	
21	[Orange vertical bar with horizontal dashed lines]	Clay; high plasticity, trace fine to coarse gravel, reddish brown, moist (increasing moisture with depth)	582.74	7-6-11-12		SS	0		
22				4-6-7-10		SS	0		
23									
24									
25				5-7-7-8		SS	0		
26									
27				2-2-4-5		SS	0		
28									
29			1-4-4-4		SS	0			
30									
31			1-4-4-5		SS	0			
32									
33			WH-1-2-4		SS	0			
34									
35	Clay; high plasticity, trace fine grain gravel, reddish brown, moist to very moist		570.74	1-1-3-4		SS	0		
36									
37				1-1-2-3		SS	0		
38									
39				WH-WH-2-4		SS	0		
40									

**Drill Method:** 4.25" HSA

**Drill Date:** 11/12/2020

**Checked by:** JE

**Project No:** Riverview Innovation and Technology Campus

**Log of Borehole: MW-BCP-05**

**Project:** RITC

**X Coordinate:** 1055944.33

**Surface Elevation:** 604.74

**Y Coordinate:** 1087591.09

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes	
41				WH-1-2-3		SS	0		
42		Clay; high plasticity, fine to grain shale fragment gravel, reddish brown, moist	562.74						
43				WR-WR-WR-WR		SS	0		
44									
45					WH-WH-1-5		SS	0	
46									
47				1-1-13-15		SS	0		
48									
49				19-48-50 3		SS	0		
50									
51			553.24	15-21-31-39		SS	0		
52		Gravelly Clay; low plasticity, shale and gypsum gravel, reddish brown moist	552.74						
53		Coarse gravel; with clay, shale and gypsum gravel, reddish brown, moist to wet		50 4		SS	0		
54		Auger refusal, 50/1 at 54' BGS	550.74						
55		Shale; TR=95%, SCR=95%, RQD=75%, gypsum pockets prevalent from 54.1' to 55.5 BGS, Shale is thinly bedded, grey	548.64						
56									
57		Shale; TR=83%, SCR=58%, RQD=42%, thinly laminated shale	547.64						
58		Shale; thinly laminated, gypsum pockets, TR=95%, SCR=90%, RQD=53%							
59									
60									

**Drill Method:** 4.25" HSA

**Drill Date:** 11/12/2020

**Checked by:** JE

**Project No:** Riverview Innovation and Technology Campus

**Log of Borehole: MW-BCP-05**

**Project:** RITC

**X Coordinate:** 1055944.33

**Surface Elevation:** 604.74

**Y Coordinate:** 1087591.09

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
61	[Hatched Pattern]	Shale; thinly laminated, gypsum pockets, TR=95%, SCR=90%, RQD=13% (lost water at 62' to 63' BGS)	543.64					
62								
63								
64								
65								
66			538.64					
67		End of Borehole						
68								
69								
70								
71								
72								
73								
74								
75								
76								
77								
78								
79								
80								

**Drill Method:** 4.25" HSA

**Drill Date:** 11/12/2020

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-06**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1056387.88

**Surface Elevation:** 604.98

**Y Coordinate:** 1087827.11

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes	
0		Ground Surface	604.98						
1		Fill; some gravel, slag, coal / coke fragments, black, wet		2-5-10-12		SS	0.7		
2									
3			601.48	33-22-5-6		SS	2.9		
4		Clay; high plasticity, grey, moist	600.48						
5		Silty Clay; low plasticity, trace fine gravel, reddish brown, dry		6-7-15-21		SS	0		
6									
7					8-9-17-20		SS		0
8									
9			594.98	15-23-29-45		SS	0		
10		Silty Clay; low plasticity, trace fine gravel, reddish brown, dry fine to coarse gravel lens from 10' to 10.25' BGS. observed vertical cracking at 11.5' BGS	592.98	17-27-37-38		SS	0		
11									
12		Silty Clay; low plasticity, trace fine gravel, reddish brown, dry 10-percent recovery from 14' to 16' BGS		11-25-28-33		SS	0		
13									
14					37-34-32-35		SS		0
15			588.98						
16		Clay; medium plasticity, little silt, trace fine to coarse gravel, reddish brown, moist		12-14-10-22		SS	0		
17			586.98						
18		Clay; medium increase to high plasticity, trace silt, trace gravel, reddish brown, moist		10-11-12-14		SS	0		
19									
20			584.98						

**Drill Method:** 4.25" HSA

**Drill Date:** 11/11/2020

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-06**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1056387.88

**Surface Elevation:** 604.98

**Y Coordinate:** 1087827.11

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
21	[Orange dashed symbol]	Clay; Medium to high plasticity, reddish brown to grey, moist	582.98	6-6-6-7		SS	0	
22		Clay; high plasticity, reddish brown to grey, moist		6-5-6-6		SS	0	
23	[Orange dashed symbol]	Clay; high plasticity, trace fine gravel, reddish brown to grey, moist	578.98	4-3-4-5		SS	0	
24				2-2-3-4		SS	0	
25				2-2-4-3		SS	0	
26	[Orange dashed symbol]	Clay, high plasticity, reddish brown to grey, wet Augered to 41' BGS to install the well, no samples collected beyond 36' BGS	574.98	2-2-3-4		SS	0	
27				2-2-4-3		SS	0	
28				WH-3-3-3		SS	0	
29				WH-2-2-5		SS	0	
30	[Orange dashed symbol]	Clay, high plasticity, reddish brown to grey, wet Augered to 41' BGS to install the well, no samples collected beyond 36' BGS	574.98	WR-WR-WH-2		SS	0	
31								
32								
33								
34	[Orange dashed symbol]	Clay, high plasticity, reddish brown to grey, wet Augered to 41' BGS to install the well, no samples collected beyond 36' BGS	574.98					
35								
36								
37								
38								
39								
40								

**Drill Method:** 4.25" HSA

**Drill Date:** 11/11/2020

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-06**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1056387.88

**Surface Elevation:** 604.98

**Y Coordinate:** 1087827.11

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
41			563.98					
42		End of Borehole						
43								
44								
45								
46								
47								
48								
49								
50								
51								
52								
53								
54								
55								
56								
57								
58								
59								
60								

**Drill Method:** 4.25" HSA

**Drill Date:** 11/11/2020

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-07**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055937.53

**Surface Elevation:** 604.96

**Y Coordinate:** 1087339.63

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
0		Ground Surface	604.96					
1		Fill; coal and coke fines, trace slag, trace clay, black, moist		4-5-9-6		SS	0	
2			602.46					
3		Silty Clay; low plasticity, trace gravel, reddish brown, dry	600.96	3-6-7-8		SS	0	
4								
5		Silty Clay; low plasticity, trace gravel, reddish brown with grey mottling, dry		4-7-12-14		SS	0	
6			598.96					
7		Silty Clay; low plasticity, reddish brown with grey mottling, dry vertical cracking from 7'-8' BGS		8-12-22-26		SS	0	
8								
9				9-19-23-29		SS	0	
10			594.96					
11		Silty Clay; low plasticity, trace fine gravel, reddish brown with grey mottling, dry		9-17-23-25		SS	0	
12								
13				13-14-26-25		SS	0	
14			590.96					
15		Clay; low plasticity (increasing with depth), some silt, reddish brown, little vertical cracking, dry		8-14-17-18		SS	0	
16								
17				8-8-10-12		SS	0	
18								
19				4-4-8-12		SS	0	
20								

**Drill Method:** 4.25" HSA

**Drill Date:** 11/10/2020

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-07**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055937.53

**Surface Elevation:** 604.96

**Y Coordinate:** 1087339.63

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes	
21				4-6-7-3		SS	0		
22		Clay; medium to high plasticity, trace fine to coarse gravel, brown to grey, dry	582.96						
23				4-5-5-7		SS	0		
24									
25				4-5-5-6		SS	0		
26			578.96						
27		Clay; high plasticity, brown, moist		2-2-3-4		SS	0		
28			576.96						
29		Clay; high plasticity, little fine to coarse gravel, brown, moist to increasing to wet		2-3-3-4		SS	0		
30									
31					WH-WH-2-3		SS	0	
32									
33					1-1-2-5		SS	0	
34									
35			569.96	1-2-10-12		SS	0		
36		Gravelly Clay; low plasticity, with fine to coarse gravel, little sand, trace silt, brown, moist							
37					12-13-15-20		SS	0	
38									
39					12-16-8-19		SS	0	
40									
41			563.96						

**Drill Method:** 4.25" HSA

**Drill Date:** 11/10/2020

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-08**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055989.35

**Surface Elevation:** 607.92

**Y Coordinate:** 1087260.01

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
0		Ground Surface	607.92					
1		Fill; coal and coke fines, trace wood fragments, trace fine to medium size slag, black, dry	605.92	4-7-6-5		SS	0	
2		Fill; coal and coke fines, some medium size slag, trace wood fragments, black, moist at 3.5' BGS	603.92	9-5-8-13		SS	0	
3		Fill; coal and coke fines, trace medium size slag, trace crystallized tar fragments, black, moist	602.12	11-12-8-5		SS	0	
4		Clay; low plasticity, reddish brown, moist	600.92	3-2-5-6		SS	0	
5		Clay; low to medium plasticity, some silt, trace coal and coke fines at 7' to 7.2' BGS, brown, moist	599.92					
6		Clay; low plasticity, trace gravel, reddish brown with grey mottling, dry	597.92	5-12-20-27		SS	0	
7		Silty Clay; low plasticity, trace fine to medium gravel, vertical desiccation cracks filled with fine to coarse gravel from 10' to 10.5' BGS, reddish brown, moist	595.92	11-17-24-31		SS	0	
8		Silty Clay; low plasticity and increasing with depth, trace fine to coarse gravel, reddish brown, moist	591.92	20-22-30-40		SS	0	
9				19-25-30-40		SS	0	
10		Clay; low to medium plasticity, little silt, trace fine to coarse gravel, reddish brown, dry		10-14-17-24		SS	0	
11				9-13-20-23		SS	0	
12			587.92					

**Drill Method:** 4.25" HSA

**Drill Date:** 11/10/2020

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-08**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055989.35

**Surface Elevation:** 607.92

**Y Coordinate:** 1087260.01

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
21	---	Clay, medium plasticity, little silt, trace fine to coarse gravel, reddish brown, dry	585.92	9-13-16-20		SS	0	
22	---							
23								
24								
25								
26		End of Borehole						
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

**Drill Method:** 4.25" HSA

**Drill Date:** 11/10/2020

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-09**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1056065.09

**Surface Elevation:** 606.98

**Y Coordinate:** 1087433.94

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
0		Ground Surface	606.98					
1		Fill; sandy gravel, trace coke fragments, trace concrete, black, moist	604.98	10-22-27-14		SS	0	
2		No Recovery; gravel and coke in shoe						
3			602.98	7-9-11-15		SS	0	
4		Silty Clay; low plasticity, trace fine gravel, grey and brown, moist	602.48					
5		Silty Clay; medium plasticity, reddish brown with grey mottling, moist (low recovery at 4.5' to 6' BGS)		8-9-10-12		SS	0	
6								
7				598.98	10-11-12-17		SS	0
8		Silty Clay; medium plasticity, trace fine gravel, reddish brown with grey mottling (mottling stop at 8' to 8.5' BGS), dry						
9			596.98	12-19-24-30		SS	0	
10		Silty Clay; medium plasticity, trace fine gravel, reddish brown, dry (no recovery from 14'-16' BGS, coarse gravel in spoon)						
11					15-21-22-25		SS	0
12								
13					11-26-23-30		SS	0
14								
15				15-30-50 3		SS	0	
16								
17				14-16-23-24		SS	0	
18			588.98					
19		Silty Clay; medium plasticity, trace fine gravel, reddish brown, moist (low recovery, pushed two spoons for sample)		16-18-25-26		SS	0	
20			586.98					

**Drill Method:** 4.25" HSA

**Drill Date:** 11/20/2020

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-09**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1056065.09

**Surface Elevation:** 606.98

**Y Coordinate:** 1087433.94

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
21		End of Borehole						
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

**Drill Method:** 4.25" HSA

**Drill Date:** 11/20/2020

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-10**

**Project:** Riverview Innovation and technology Campus

**X Coordinate:** 1056147.12

**Surface Elevation:** 605.86

**Y Coordinate:** 1087586.59

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
0		Ground Surface	605.86					
0		Asphalt						
1		Fill; coal and coke fines, trace slag, trace fine to medium grain sand, trace crystallized tar, black, moist (visable green sheen oil/NAPL in spoon at 1.75'-3' BGS)		3-9-12-26		SS	10	
2			602.86					
3		Clay; high plasticity, black, moist (visible NAPL in clay from 3'-3.5'BGS)	601.86	20-10-5-5		SS	45	
4		Clay; high plasticity, dark brown to reddish brown, dry ( no visible NAPL)						
5			599.86	12-5-16-9		SS	10.8	
6		Silty Clay; low to medium plasticity, reddish brown, dry						
7			597.86	11-12-14-18		SS	9.5	
8		Silty Clay; low plasticity, little fine gravel to trace fine gravel, brown, dry						
9				24-36-37-39		SS	0	
10								
11				16-22-27-34		SS	0	
12								
13			591.86	14-27-37-28		SS	0	
14		Clay; low plasticity (increasing plasticity), with silt, little fine gravel, reddish brown, dry (10-percent recovery from 16' to 18' BGS, gravel in shoe)						
15				15-29-35-16		SS	0	
16								
17				24-27-22-29		SS	0	
18								
19				6-10-15-20		SS	0	
20			585.86					

**Drill Method:** 4.25" HSA

**Drill Date:** 11/23/2020

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-10**

**Project:** Riverview Innovation and technology Campus

**X Coordinate:** 1056147.12

**Surface Elevation:** 605.86

**Y Coordinate:** 1087586.59

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
21		Clay; low to medium plasticity, trace fine gravel,reddish brown,dry	581.86	12-15-16-20		SS	0	
22				6-6-8-9		SS	0	
23		Clay, medium to high plasticity, trace fine gravel, reddish brown to grey, moist	577.86	5-5-5-6		SS	0	
24				1-1-3-4		SS	0	
25		Clay, medium to high plasticity, with fine gravel at 29.5' to 30' BGS, reddish brown to grey, moist	575.86	1-8-1-4		SS	0	
26				1-2-4-7		SS	0	
27		Clay, high plasticity, reddish brown, moist	573.86	2-4-4-6		SS	0	
28				1-5-12-4		SS	0	
29		Clay; high plasticity,little fine sand, trace fine to coarse gravel, brown, moist	569.86	15-16-17-18		SS	0	
30				13-14-17-12		SS	0	
31		Gravelly Clay; medium to high plasticity, with fine sand, dark grey, moist increasing to wet with depth	565.86					
32								
33								
34								
35								
36								
37								
38								
39								
40								

**Drill Method:** 4.25" HSA

**Drill Date:** 11/23/2020

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-11**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1056465.61

**Surface Elevation:** 609.34

**Y Coordinate:** 1087297.56

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
0		Ground Surface	609.34					
0		Fill; coal and coke fines, black, moist						
1				11-13-22-23		SS	0	
2			607.34					
2		Fill; coal and coke fines, slight volatile odor, black, moist						
3				10-9-7-6		SS	0.1	
4			605.34					
4		Fill; coal and coke fines, black, moist (no observed odor)	604.84					
5		Clay; fill, high plasticity, dark grey, wet		4-4-4-22		SS	0	
6			603.14					
7		Fill; coal and coke fines, trace slag, trace fine to coarse gravel, dark grey, wet		4-3-3-4		SS	0	
8			600.84					
9		Silty Clay; low plasticity, reddish brown with grey mottling, dry		3-3-6-11		SS	0	
10			599.34					
11		Silty Clay; low plasticity, little medium gravel, reddish brown with grey mottling, dry		5-13-19-25		SS	0	
12								
13				11-15-17-29		SS	0	
14			595.34					
15		Clay; low to medium plasticity (increasing with depth), trace fine to coarse gravel, reddish brown, dry		15-16-23-33		SS	0	
16								
17				16-19-23-24		SS	0	
18								
19				9-13-15-20		SS	0	
20								

**Drill Method:** 4.25" HSA

**Drill Date:** 11/9/2020

**Checked by:** JE

**Sheet:** 1 of 2

**Project No:** RITC

**Log of Borehole: MW-BCP-11**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1056465.61

**Surface Elevation:** 609.34

**Y Coordinate:** 1087297.56

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
21	[Orange dashed symbol]			8-9-13-16		SS	0	
22			587.34					
23	[Orange dashed symbol]	Clay; medium to high plasticity, trace fine to coarse gravel, reddish brown, dry		7-12-11-13		SS	0	
24			585.34					
25								
26		End of Borehole						
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

**Drill Method:** 4.25" HSA

**Drill Date:** 11/9/2020

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-12**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1087473.41

**Surface Elevation:** 605.73

**Y Coordinate:** 1056777.34

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
0		Ground Surface	605.73					
1		Fill; coke, with gravel, some sand and silt, trace concrete, trace bricks, black, moist (yellow sand mixed in at 1.5' to 2.0' BGS)	603.73	5-10-12-16		SS	0	
2		Fill; sandy gravel, some clay, trace concrete fragments, trace cinders, trace yellow sand, black, moist	601.73	21-14-10-5		SS	0	
3		Fill; sandy gravel, black, moist	600.73	4-5-7-14		SS	0	
4		Silty Clay; medium plasticity, trace fine grain gravel, reddish brown, dry	599.73					
5		Not logged due to setting shallow casing	598.73					
6		Silty Clay; medium plasticity, trace fine gravel, reddish brown, dry	589.73	19-20		SS	0	
7				12-28-32-34		SS	0	
8				11-21-22-30		SS	0	
9				9-16-25-31		SS	0	
10				8-11-16-19		SS	0	
11				5-8-10-15		SS	0	
12				4-6-10-12		SS	0	
13								
14								
15								
16								
17								
18								
19								
20								

**Drill Method:** 4.25" HSA

**Drill Date:** 11/16/2020

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-12**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1087473.41

**Surface Elevation:** 605.73

**Y Coordinate:** 1056777.34

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
21	---			8-8-9-12		SS	0	
22	---		583.73					
23	---	Clay; medium to high plasticity, trace fine to coarse rounded gravel, moist		5-7-8-9		SS	0	
24	---		581.73					
25	---	Clay; medium to high plasticity, trace fine grain gravel, reddish brown to grey, heavy mottling, moist		3-4-4-5		SS	0	
26	---		579.73					
27		End of Borehole						
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

**Drill Method:** 4.25" HSA

**Drill Date:** 11/16/2020

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-13**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1057386.82

**Surface Elevation:** 608.90

**Y Coordinate:** 1087140.56

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
0		Ground Surface	608.90					
1		Fill; sandy gravel, some coke fines and fragments, black, moist		2-13-12-19		SS	0	
2								
3			605.90	21-11-9-7		SS	0	
4		Fill; sandy gravel, some coke fines and fragments, trace slag, black moist					0.2	
5				6-9-7-8		SS	0.1	
6		Fill; sandy gravel, tar in loose material, some coke fines and fragments, trace slag, black, moist	602.90				77.2	
7			601.90	2-3-4-4		SS	60.1	
8		Fill; sandy gravel, tar in loose material, some coke fines and fragments, trace slag, black, wet	601.40				122.5	
9			600.90				14.0	
10		Fill; some gravel and coke fines, little sand, trace wood debris, tar mixed with wood debris, black, wet (sheen on spoon)		2-10-15-26		SS	9.6	
11		Fill; silty clay, medium plasticity, trace gravel, brownish grey, moist						
12		Silty Clay; low plasticity, trace fine gravel, reddish brown with grey mottling, tar within grey mottling, dry (tar reducing with depth)		9-13-16-28		SS	8.6	
13				14-21-27-30		SS	10.1	
14								
15				22-26-28-32		SS	15.7	
16			592.40				0.9	
17		Clay; medium plasticity, trace gravel, reddish brown, dry		14-19-26-28		SS	0	
18							0	
19				13-18-19-20		SS	0	
20								

**Drill Method:** 4.25" HSA

**Drill Date:** 11/6/2020

**Checked by:** JE

**Sheet:** 1 of 2

**Project No:** RITC

**Log of Borehole: MW-BCP-13**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1057386.82

**Surface Elevation:** 608.90

**Y Coordinate:** 1087140.56

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
21	---			6-10-12-15		SS	0.8	
22	---		586.90					
23	---	Clay; high plasticity, trace fine gravel, reddish brown, dry		4-5-8-14		SS	0.3	
24	---		584.90					
25	---	Clay; high plasticity, trace fine gravel, reddish brown, moist		4-6-12-14		SS	1.4	
26	---		582.90					
27	---	Clay; high plasticity, little silt, reddish brown, wet		2-4-6-7		SS	0	
28	---		580.90					
29	---	Clay; medium plasticity, little silt, trace fine gravel, greyish brown, wet		2-4-6-6		SS	0	
30	---		578.90					
31		End of Borehole						
32								
33								
34								
35								
36								
37								
38								
39								
40								

**Drill Method:** 4.25" HSA

**Drill Date:** 11/6/2020

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-15**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055307.91

**Surface Elevation:** 601.60

**Y Coordinate:** 1086750.28

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
0		Ground Surface	601.60					
0		Topsoil; some debris, brown, moist						
1		Fill, some fine gravel, debris, some slag at 1' to 1.2' BGS, brown, moist	599.60	3-7-12-11		SS	0	
2		Low Recovery: clay in shoe, reddish brown						
3				13-16-14-12		SS	0	
4		Silty Clay; low plasticity, some fine gravel, trace roots,reddish brown, dry	597.60					
5				10-10-14-16		SS	0	
6								
7				16-18-21-25		SS	0	
8			593.60					
9		Silty Clay; low plasticity, some fine gravel, reddish brown, dry						
10				11-15-18-23		SS	0	
11								
12			589.60					
13		Silty Clay; low plasticity increasing with depth, trace fine gravel, reddish brown, dry						
14			587.60					
15		No spilt spoon collected. Pushed Shelby Tube and the tube bent, sample not collected.		Shelby Tube	Tube Bent	SS	0	
16			585.60					
17		No spilt spoon collected. Pushed Shelby Tube and the tube bent, sample not collected.		Shelby Tube	Tube Bent	SS	0	
18			583.60					
18		Silty Clay, low plasticity, trace fine gravel, reddish brown, dry	583.10					
19		Clay; medium plasticity, some silt, trace fine rounded gravel, reddish brown, moist		5-11-15-16		SS	0	
20			581.60					

**Drill Method:** 4.25" HSA

**Drill Date:** 10/30/2020

**Checked by:** JE

**Sheet:** 1 of 2

**Project No:** RITC

**Log of Borehole: MW-BCP-15**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055307.91

**Surface Elevation:** 601.60

**Y Coordinate:** 1086750.28

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes	
21	[Orange vertical bar with horizontal tick marks]	Clay; medium to high plasticity, little silt, trace fine to coarse rounded gravel, reddish brown, moist  Clay; high plasticity, trace fine gravel, trace organics at 23.5' BGS, reddish brown to grey, moist  Clay; high plasticity, trace fine gravel, reddish brown to grey, moist (wet at 31' BGS)	579.60	4-9-13-16		SS	0		
22				15-16-9-14		SS	0		
23			577.60	9-11-12-15		SS	0		
24				11-7-7-8		SS	0		
25				3-4-4-4		SS	0		
26				2-2-3-4		SS	0		
27			569.60	Clay; high plasticity, reddish brown, very moist to wet	WR-WR-1-1		SS		0
28					WH-WH-2-3		SS		0
29					WR-WH-2-3		SS		0
30									
31			563.60						
32									
33									
34									
35									
36									
37									
38									
39									
40									

**Drill Method:** 4.25" HSA

**Drill Date:** 10/30/2020

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-16**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055451.81

**Surface Elevation:** 597.42

**Y Coordinate:** 1086196.06

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
0		Ground Surface	597.42					
		Asphalt, gravel base	596.92					
1		Fill; sandy gravel, some silt, dark grey to black, dry		16-17-23		SS	0	
2			595.42					
3		Fill, sandy gravel, some silt, dark grey to black, dry (low recovery from 2' to 4' BGS due to gravel)		21-12-17-13		SS	0	
4			592.92					
5		Silty Clay; low plasticity, trace fine rounded gravel, reddish brown with some grey mottling, dry		17-18-26-21		SS	0	
6								
7				12-19-18-22		SS	0	
8								
9				12-18-22-25		SS	0	
10			587.42					
11		No recovery due to gravel in spoon at 10' and 12' BGS interval. Re-pushed spoon at 12" BGS.		21-25-27-38		SS	0	
12			585.42					
13		Clay; medium plasticity, trace fine rounded gravel, reddish brown, moist		19-18-26-31		SS	0	
14								
15				11-14-14-17		SS	0	
16			581.42					
17		Clay; medium plasticity, trace fine gravel, reddish brown, moist		7-8-10-15		SS	0	
18								
19				5-12-10-15		SS	0	
20			577.42					

**Drill Method:** 4.25" HSA

**Drill Date:** 11/3/2020

**Checked by:** JE

**Sheet:** 1 of 2

**Project No:** RITC

**Log of Borehole: MW-BCP-16**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055451.81

**Surface Elevation:** 597.42

**Y Coordinate:** 1086196.06

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
21	Orange	Clay; medium plasticity, reddish brown, moist	575.42	4-7-8-9		SS	0	
22	Orange	Clay; high plasticity, reddish brown with grey mottling, moist	573.42	4-5-7-6		SS	0	
23	Orange	Clay; medium to high plasticity, reddish brown, moist	571.42	2-4-6-6		SS	0	
24	Orange	Clay; high plasticity, reddish brown with grey mottling, moist	569.42	1-3-4-5		SS	0	
25	Orange	Clay; medium plasticity, reddish brown with grey mottling, moist	567.42	WR-1-2-4		SS	0	
26	Orange	Clay; medium to high plasticity, trace fine gravel, reddish brown trace grey mottling, moist	565.42	WH-2-2-3		SS	0	
27	Orange	Clay; high plasticity, trace fine gravel, reddish brown with grey mottling, moist to wet	563.42	WR-WR-WH-4		SS	0	
28	Orange	Clay; high plasticity, grey, moist to wet	559.42	WR-WR-WH-WH		SS	0	
29	Orange	Clay; high plasticity, grey, moist to wet	559.42	WR-WR-WH-WH		SS	0	
30	Orange	Clay; high plasticity, trace fine gravel, brownish grey, moist	557.42	WR-WR-WR-WH		SS	0	
31	Orange							
32	Orange							
33	Orange							
34	Orange							
35	Orange							
36	Orange							
37	Orange							
38	Orange							
39	Orange							
40	Orange							

**Drill Method:** 4.25" HSA

**Drill Date:** 11/3/2020

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-17**

**Project:** Riverview Innovation at Technology Campus

**X Coordinate:** 1056162.37

**Surface Elevation:** 600.32

**Y Coordinate:** 1086319.27

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes		
0		Ground Surface	600.32							
1		Fill; coal fines, gravel, organic debris, black, moist		3-2-3-4		SS	0			
2										
3					10-16-22-25		SS	0		
4				596.32						
5		Fill; clay, low plasticity, reddish brown, dry	595.82	16-20-25-22		SS	0			
6		Fill; gravel, coal fines, organic debris, black, moist	595.32							
7		Clay; low plasticity, little silt, trace fine to medium grain gravel, trace organics, reddish brown, dry	594.32	16-24-26-22		SS	0			
8		Clay; low plasticity, little silt, reddish brown, dry	592.32							
9		Clay; low plasticity, little silt, trace fine to coarse gravel, reddish brown, dry		12-18-26-31		SS	0			
10			590.32							
11					14-17-20-22		SS	0		
12		Silty Clay; low to medium plasticity, reddish brown, moist		16-22-24-28		SS	0			
13										
14					586.32					
15							12-14-20-22			SS
16		Silty Clay; medium plasticity, reddish brown with grey mottling, moist		6-7-9-12		SS	0			
17										583.32
18					582.32					
19		Silty Clay; medium plasticity, trace fine rounded gravel, reddish brown with grey mottling, moist		4-5-7-8		SS	0			
20										580.32

**Drill Method:** 4.25" HSA

**Drill Date:** 11/2/2021

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-18**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1056826.68

**Surface Elevation:** 602.31

**Y Coordinate:** 1086409.21

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
0		Ground Surface	602.31					
0		Topsoil; with clay, trace organic roots, brown, moist	601.91					
1		Fill; gravelly clay, some coal fragments, black, dry		3-4-6-15		SS	0	
2								
3			598.81	11-8-5-17		SS	0	
4		Fill; silty clay, low plasticity, trace fine to medium grain gravel, reddish brown with grey mottling, dry	598.31					
5		Silty Clay; low plasticity, reddish brown with grey mottling, dry		9-12-18-24		SS	0	
6			596.31					
7		Silty Clay; low plasticity, trace rounded fine gravel, reddish brown and trace grey mottling, moist		9-17-19-23		SS	0	
8			594.31					
9		Silty Clay; low plasticity, trace rounded fine gravel, reddish brown, moist		10-21-28-32		SS	0	
10			592.31					
11		Silty Clay; low plasticity, trace rounded fine gravel, brown, moist		10-18-17-23		SS	0	
12		Silty Clay; low plasticity, trace rounded fine gravel, reddish brown, moist						
13				10-18-17-23		SS	0	
14			588.31					
15		Clay; little silt, medium plasticity, trace fine rounded gravel, reddish brown, dry		7-8-14-18		SS	0	
16			586.31					
17		Clay; little silt, medium plasticity, trace fine rounded gravel, reddish brown, moist		12-20-21-25		SS	0	
18								
19				4-7-10-14		SS	0	
20			582.31					
21								

**Drill Method:** 4.25" HSA

**Drill Date:** 11/4/2020

**Checked by:** JE

**Sheet:** 1 of 1

**Project No:** RTIC

**Log of Borehole: MW-BCP-19**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1057247.55

**Surface Elevation:** 607.53

**Y Coordinate:** 1086782.01

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
0		Ground Surface	607.53					
1		Fill; sandy gravel, some clay, trace coke fragments, black, moist	605.53	3-9-12-16		SS	0	
2		Fill; gravely sand, with coal and coke fines and fragments, black, moist	604.53	17-23-18-19		SS	0	
3		Fill; sand, trace rounded slag, black, moist	603.73		0			
4		Fill; tar at 3.8' BGS (1-inch), transition to silty clay, black, moist	602.53	10-11-6-9		SS	10.1	
5		Fill; sand, trace silt and clay, trace slag, black, moist	601.93		10.9			
6		Fill; silty clay, trace slag, trace coke fragments, black, moist	601.53		38.1			
7		Fill; sandy gravel, wood chips, trace slag, black, moist, (strong odor)	600.73	3-5-6-11		SS	7.8	
8		Fill; silty clay, trace slag, trace wood chips, black, wet					0.8	
9		Silty Clay; low plasticity, trace fine rounded gravel, reddish brown with grey mottling, dry		17-13-16-24		SS	1.1	
10		Silty Clay; low plasticity, trace fine rounded gravel, reddish brown, dry						
11		Silty Clay; low plasticity, trace fine rounded gravel, reddish brown, dry	595.53	13-19-24-30		SS	1.2	
12		Silty Clay; low plasticity, trace fine rounded gravel, reddish brown, dry						
13		Silty Clay; low plasticity, trace fine rounded gravel, reddish brown, dry		13-18-21-28		SS	7.0	
14		Silty Clay; low plasticity, trace fine rounded gravel, reddish brown, dry						
15		Silty Clay; low plasticity, trace fine rounded gravel, reddish brown, dry		13-22-18-19		SS	5.5	
16		Silty Clay; low plasticity, trace fine rounded gravel, reddish brown, dry	591.53					
17		Clay; medium plasticity, trace fine gravel, reddish brown, moist		10-13-14-17		SS	0.4	
18		Clay; medium plasticity, trace fine gravel, reddish brown, moist						
19		Clay; medium plasticity, trace fine gravel, reddish brown, moist		13-14-16-11		SS	0.2	
20		Clay; medium plasticity, trace fine gravel, reddish brown, moist	587.53					
21		End of Borehole						

**Drill Method:** 4.25" HSA

**Drill Date:** 11/5/2020

**Checked by:** JE

**Sheet:** 1 of 1

**Project No:** RITC

**Log of Borehole: MW-BCP-20**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1056636.43

**Surface Elevation:** 604.27

**Y Coordinate:** 1086677.27

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes	
0		Ground Surface	604.27						
1		Fill; coal fines with some silt (increasing silt with depth), black, dry		6-18-20-21		SS	0		
2									
3				16-30-33-18		SS	0		
4		Fill; silty clay, low plasticity, trace fine gravel, trace roots, reddish brown with grey mottling, dry	598.77	5-8-7-12		SS	0		
5									
6				Silty Clay; low plasticity, reddish brown with grey mottling, dry					
7									
8				9-13-9-8		SS	0		
9		Silty Clay; low plasticity, trace fine grain gravel, reddish brown with grey mottling, dry	596.27	9-13-18-20		SS	0		
10									
11				Silty Clay; medium plasticity, trace fine gravel, reddish brown, dry					
12									
13		Silty Clay; medium plasticity, trace fine gravel, reddish brown, dry	588.27	6-14-15-23		SS	0		
14									
15				10-13-22-23		SS	0		
16				15-21-22-25		SS	0		
17		Clay; medium to high plasticity, trace fine gravel, reddish brown, moist	584.27	18-15-18-21		SS	0		
18									
19				15-18-17-23		SS	0		
20									

**Drill Method:** 4.25" HSA

**Drill Date:** 11/6/2020

**Checked by:** JE

**Project No:** RITC

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1056636.43

**Y Coordinate:** 1086677.27

**Log of Borehole: MW-BCP-20**

**Surface Elevation:** 604.27

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
21		End of Borehole						
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

**Drill Method:** 4.25" HSA

**Drill Date:** 11/6/2020

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-21**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055965.50

**Surface Elevation:** 605.50

**Y Coordinate:** 1087819.21

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
0		Ground Surface	605.50					
1		Fill; with coal and coke fines, trace blue fragments, black, moist		6-19-29-19		SS	0	
2								
3		Clay; medium plasticity, dark brown, moist	602.50	2-3-9-10		SS	0	
4			601.50					
5		Clay; low plasticity, little silt, reddish brown with grey mottling, moist to dry		2-6-10-12		SS	0	
6			599.50					
7		Clay; low plasticity, little silt, trace fine to medium gravel, reddish brown with grey mottling, moist to dry		9-16-20-28		SS	0	
8								
9							0	
10								
11							0	
12								
13			592.50				0	
14		Clay; low plasticity, trace fine gravel, reddish brown, dry		8-16-16-16		SS		
15			590.50				0	
16		Clay; not logged						
17								
18								
19								
20								

**Drill Method:** 4.25" HSA

**Drill Date:** 06/23/2021

**Checked by:** JE

**Project No:** RITC

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055965.50

**Y Coordinate:** 1087819.21

***Log of Borehole: MW-BCP-21***

**Surface Elevation:** 605.50

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

**Drill Method:** 4.25" HSA

**Drill Date:** 06/23/2021

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-21**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055965.50

**Surface Elevation:** 605.50

**Y Coordinate:** 1087819.21

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
41								
42								
43								
44								
45			560.50					
46		Clay; medium plasticity, trace gravel, reddish brown, moist						
47			558.50					
48		Clay; medium plasticity, brown, moist						
49			556.50					
50		Clay; low plasticity, brown, moist (weathered rock at 49' BGS)		10-50 2		SS		
51								
52								
53			552.60					
54		Shale, RQD=59.0%						
55								
56			549.60					
57		Shale; RQD=82.7%, grey						
58								
59								
60								

**Drill Method:** 4.25" HSA

**Drill Date:** 06/23/2021

**Checked by:** JE

**Sheet:** 3 of 4

**Project No:** RITC

**Log of Borehole: MW-BCP-21**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055965.50

**Surface Elevation:** 605.50

**Y Coordinate:** 1087819.21

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
61								
62								
63		End of Borehole	542.60					
64								
65								
66								
67								
68								
69								
70								
71								
72								
73								
74								
75								
76								
77								
78								
79								
80								

**Drill Method:** 4.25" HSA

**Drill Date:** 06/23/2021

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-21**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055965.50

**Surface Elevation:** 605.50

**Y Coordinate:** 1087819.21

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
0		Ground Surface	605.50					
1		Fill; with coal and coke fines, trace blue fragments, black, moist		6-19-29-19		SS	0	
2								
3		Clay; medium plasticity, dark brown, moist	602.50	2-3-9-10		SS	0	
4			601.50					
5		Clay; low plasticity, little silt, reddish brown with grey mottling, moist to dry		2-6-10-12		SS	0	
6			599.50					
7		Clay; low plasticity, little silt, trace fine to medium gravel, reddish brown with grey mottling, moist to dry		9-16-20-28		SS	0	
8								
9							0	
10								
11							0	
12								
13			592.50				0	
14		Clay; low plasticity, trace fine gravel, reddish brown, dry		8-16-16-16		SS		
15			590.50				0	
16		Clay; not logged						
17								
18								
19								
20								

**Drill Method:** 4.25" HSA

**Drill Date:** 06/23/2021

**Checked by:** JE

**Project No:** RITC

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055965.50

**Y Coordinate:** 1087819.21

***Log of Borehole: MW-BCP-21***

**Surface Elevation:** 605.50

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

**Drill Method:** 4.25" HSA

**Drill Date:** 06/23/2021

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-21**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055965.50

**Surface Elevation:** 605.50

**Y Coordinate:** 1087819.21

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
41								
42								
43								
44								
45			560.50					
46		Clay; medium plasticity, trace gravel, reddish brown, moist						
47			558.50					
48		Clay; medium plasticity, brown, moist						
49			556.50					
50		Clay; low plasticity, brown, moist (weathered rock at 49' BGS)		10-50 2		SS		
51								
52								
53		Shale, RQD=59.0%	552.60					
54								
55								
56		Shale; RQD=82.7%, grey	549.60					
57								
58								
59								
60								

**Drill Method:** 4.25" HSA

**Drill Date:** 06/23/2021

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-21**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055965.50

**Surface Elevation:** 605.50

**Y Coordinate:** 1087819.21

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
61								
62								
63		End of Borehole	542.60					
64								
65								
66								
67								
68								
69								
70								
71								
72								
73								
74								
75								
76								
77								
78								
79								
80								

**Drill Method:** 4.25" HSA

**Drill Date:** 06/23/2021

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-22**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1055965.50

**Surface Elevation:** 606.45

**Y Coordinate:** 1087819.21

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
0		Ground Surface	606.45					
1		Fill; some sand, some slag (increasing with depth), trace tar fragments (hard), black, moist to wet increasing with depth.		5-10-12-9		SS	0	
2								
3				6-5-4-3		SS	0	
4			602.45					
5		Clay; medium to low plasticity, grey clay increasing with depth to reddish brown with grey mottling, moist		2-2-2-5		SS	0	
6								
7		End of Borehole						
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

**Drill Method:** 4.25" HSA

**Drill Date:** 6/24/2021

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-23**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1057994.20

**Surface Elevation:** 606.157

**Y Coordinate:** 1087804.74

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
0		Ground Surface	606.16					
1		Fill; coal and coke fines, some clay starting at 2' BGS, trace slag, trace tar fragments (hard) at 1' to 2' BGS, black, moist		4-6-7-5		SS	0	
2								
3				3-8-9-6		SS	0	
4			602.16					
5		Clay; low plasticity, brown with grey mottling, moist		1-2-3-4		SS	0	
6		End of Borehole	600.16					
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

**Drill Method:** 4.25" HSA

**Drill Date:** 6/24/2021

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-24**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1057178.46

**Surface Elevation:** 608.793

**Y Coordinate:** 1087117.11

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
0		Ground Surface	608.79					
1		Fill; coal and coke fines, little slag from 1' to 2, trace tar fragments (hard) to 3' BGS, black, moist	605.29	5-6-10-15		SS	0	
2				17-10-2-9		SS	0	
3			604.79					
4		Fill; clay low plasticity, little tar (hard), reddish brown, moist						
5		Fill; clay, low plasticity, with slag, some tar (hard), reddish brown, moist	602.79	5-6-10-12		SS	0	
6								
7		Fill; clay, low plasticity, trace brick, reddish brown, wet		3-7-7-7		SS		
8		No Recovery	600.79					
9						SS		
10			598.79					
11		Clay; low plasticity, reddish brown, moist						
12		Auger to 25' BGS to set B well	596.79	5-6-12-22		SS		
13								
14								
15								
16								
17								
18								
19								
20								

**Drill Method:** 4.25" HSA

**Drill Date:** 6/22/2021

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-24**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1057178.46

**Surface Elevation:** 608.793

**Y Coordinate:** 1087117.11

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
21	---							
22	---							
23	---							
24	---							
25	---		583.79					
26		End of Borehole						
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

**Drill Method:** 4.25" HSA

**Drill Date:** 6/22/2021

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-25**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1057100.68

**Surface Elevation:** 606.857

**Y Coordinate:** 1086740.71

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
0		Ground Surface	606.86					
1		Fill; coal and coke fines, some slag, trace tar fragments (hard), trace brick, black, moist increasing to wet with depth	601.86	14-24-21-18		SS	0	
2								
3				20-15-10-20		SS	0	
4								
5		Clay; medium plasticity, reddish brown, moist	600.86	11-5-6-8		SS	0	
6		Clay; medium plasticity, trace gravel, reddish brown with grey mottling, moist	598.86	Not Collected		SS	0	
7								
8		Fill; clay, low plasticity, trace brick, reddish brown, wet	596.86	7-12-18-20		SS	0	
9								
10								
11		Auger to 25' BGS to set B well						
12								
13								
14								
15								
16								
17								
18								
19								
20								

**Drill Method:** 4.25" HSA

**Drill Date:** 6/23/2021

**Checked by:** JE

**Project No:** RITC

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1057100.68

**Y Coordinate:** 1086740.71

**Log of Borehole: MW-BCP-25**

**Surface Elevation:** 606.857

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
21	---							
22	---							
23	---							
24	---							
25	---		581.86					
26		End of Borehole						
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

**Drill Method:** 4.25" HSA

**Drill Date:** 6/23/2021

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-26**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1057321.76

**Surface Elevation:** 602.88

**Y Coordinate:** 1086578.80

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
0		Ground Surface	602.88					
1		Fill; coal and coke fines, roots present, low recovery, black, moist		2-2-1-1		SS	0	
2			600.88					
3		Clay; with organics, medium plasticity, reddish brown, moist increasing to dry with depth		3-5-8-9		SS	0	
4								
5					5-10-14-13		SS	0
6		Auger to 20' BGS to set B well	596.88					
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20			582.88					

**Drill Method:** 4.25" HSA

**Drill Date:** 6/24/2021

**Checked by:** JE

**Project No:** RITC

**Log of Borehole: MW-BCP-27**

**Project:** Riverview Innovation and Technology Campus

**X Coordinate:** 1058255.48

**Surface Elevation:** 608.793

**Y Coordinate:** 1087226.57

**Engineer:** TW

Depth (ft)	Symbol	Description	Elev.	Blow Counts	Lab ID	Type	PID (ppm)	Notes
0		Ground Surface	608.79					
1		Fill; coal fines, trace bricks, some slag, 1' recovery, black, moist		3-4-3-1		SS	0	
2			606.79					
3		Fill; coal fines, trace bricks, some slag from 2' to 4' BGS, 1' recovery, black, wet		1-1-1-2		SS	0	
4								
5			603.79					
6		Fill; clay, dark grey, moist	602.79	1-2-2-1		SS	0	
7								
8		Clay; medium plasticity, greyish brown with grey mottling, moist		1-3-6-7		SS	0	
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20		End of Borehole						

**Drill Method:** 4.25" HSA

**Drill Date:** 6/24/2021

**Checked by:** JE

**Sheet:** 1 of 1

PROJECT NO.: RITC  
 WELL NO.: MW-BCP-01A  
 INSTALLATION DEPTH: 6.00'  
 INSTALLATION DATE: 10/29/2020

DEPTH TO WATER: 601.03' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

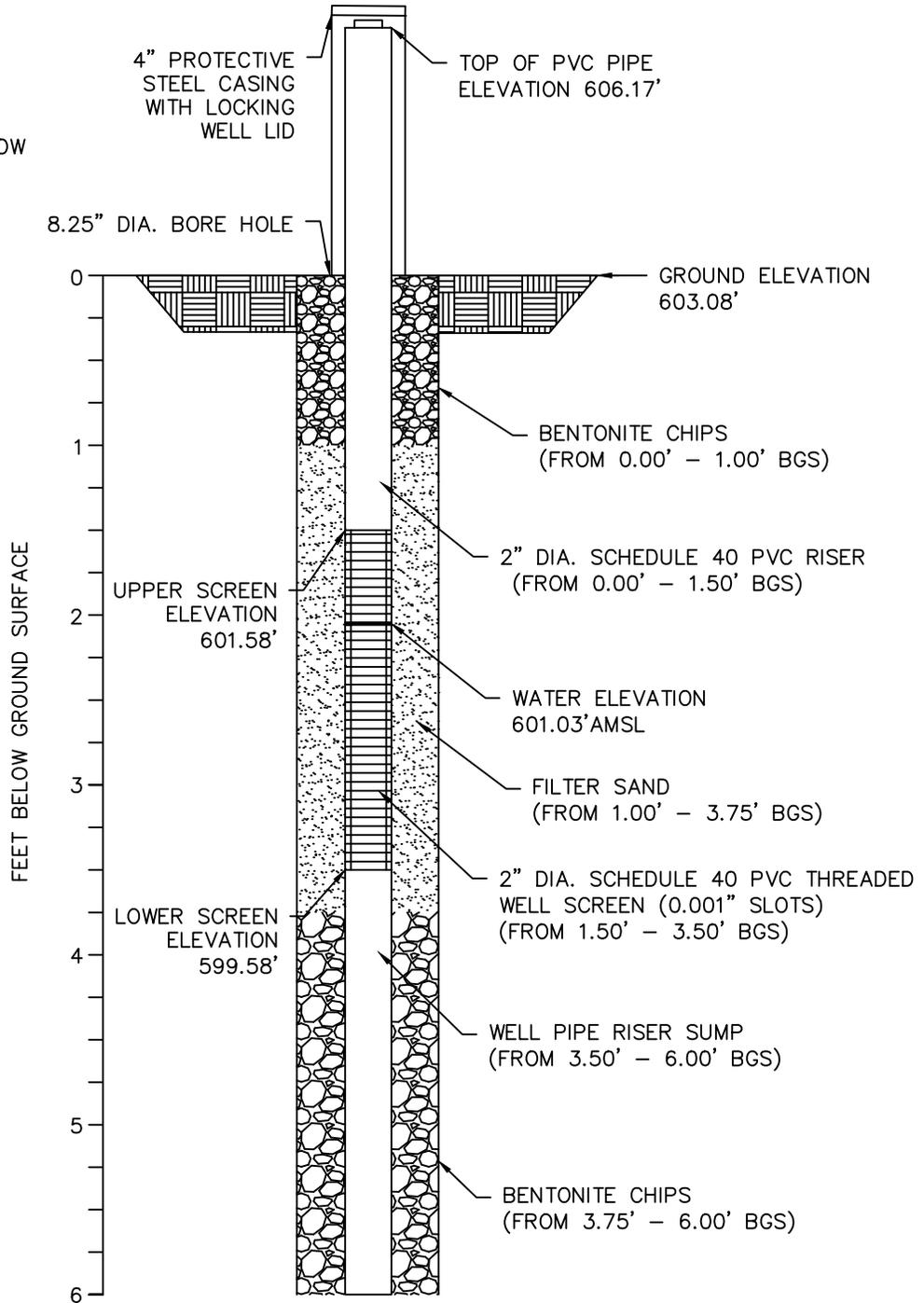
NORTHING: 1087813.27  
 EASTING: 1055371.76

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER

# MONITORING WELL

## MW-BCP-01A

(N.T.S)



481 CARLISLE DRIVE  
 SUITE 202  
 HERNDON VIRGINIA, 20170  
 (703)722-6049

WELL ID: MW-BCP-01A  
 DRAWING NUMBER  
 D-100

RIVERVIEW INNOVATION &  
 TECHNOLOGY CAMPUS, INC.  
 3875 RIVER ROAD  
 TONAWANDA, NY 14150

DRAWING BY: REB

CHECKED: JRE

APPROVED: TDW

PROPERTY OF INVENTUM ENGINEERING PC

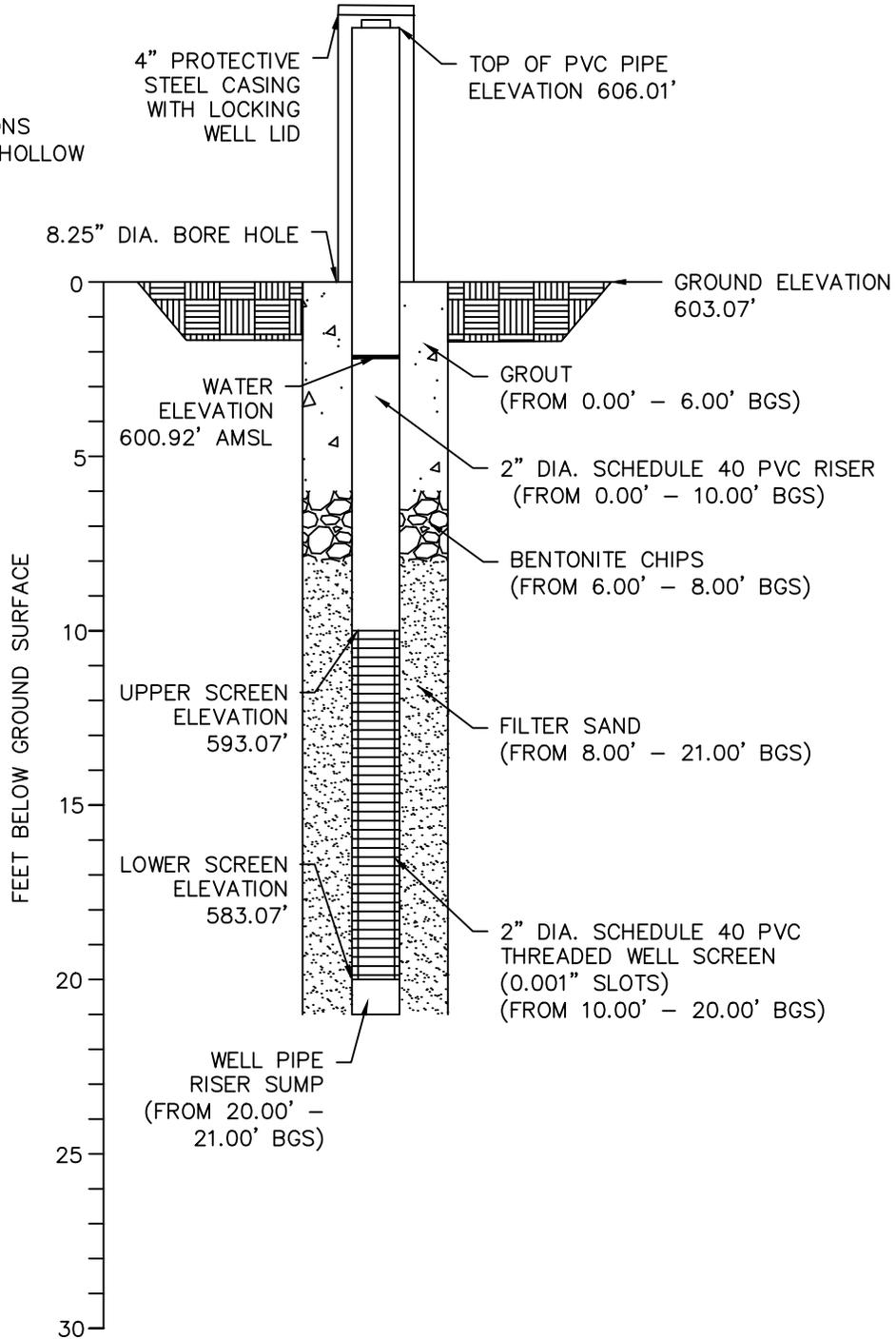
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-01B  
 INSTALLATION DEPTH: 21.00'  
 INSTALLATION DATE: 10/29/2020

# MONITORING WELL MW-BCP-01B (N.T.S)

DEPTH TO WATER: 600.92' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 1/11/2021

NORTHING: 1087812.78  
 EASTING: 1055367.41

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



481 CARLISLE DRIVE  
 SUITE 202  
 HERNDON VIRGINIA, 20170  
 (703)722-6049

WELL ID: MW-BCP-01B  
 DRAWING NUMBER  
 D-101

RIVERVIEW INNOVATION &  
 TECHNOLOGY CAMPUS, INC.  
 3875 RIVER ROAD  
 TONAWANDA, NY 14150

DRAWING BY: REB

CHECKED: JRE

APPROVED: TDW

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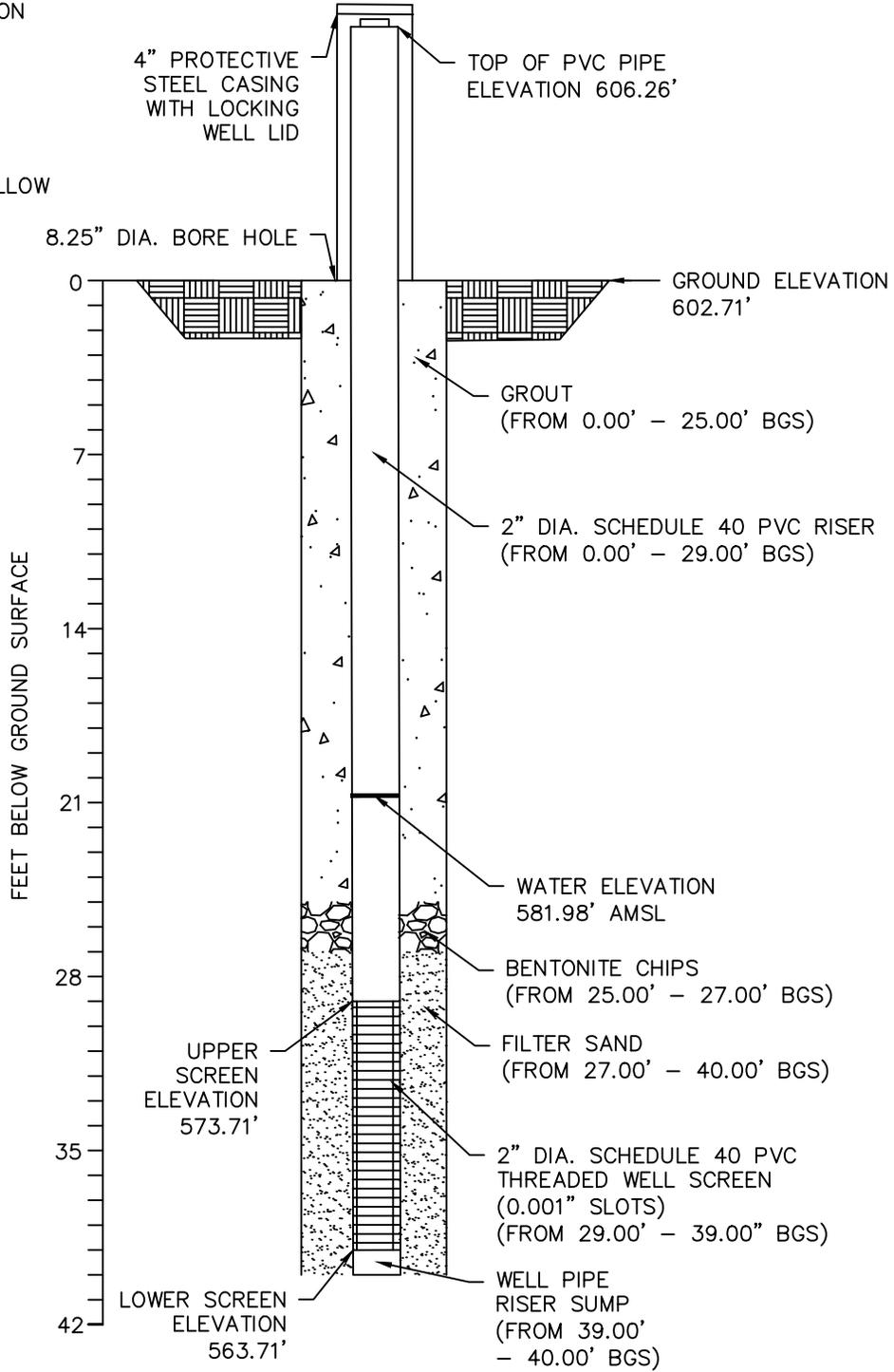
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-01C  
 INSTALLATION DEPTH: 40.00'  
 INSTALLATION DATE: 10/29/2020

DEPTH TO WATER: 581.98' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

NORTHING: 1087812.34  
 EASTING: 1055363.11

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER

# MONITORING WELL MW-BCP-01C (N.T.S)



**Inventum Engineering, PC**

481 CARLISLE DRIVE  
 SUITE 202  
 HERNDON VIRGINIA, 20170  
 (703)722-6049

WELL ID: MW-BCP-01C  
 DRAWING NUMBER  
 D-102

RIVERVIEW INNOVATION &  
 TECHNOLOGY CAMPUS, INC.  
 3875 RIVER ROAD  
 TONAWANDA, NY 14150

DRAWING BY: REB

CHECKED: JRE

APPROVED: TDW

PROPERTY OF INVENTUM ENGINEERING PC

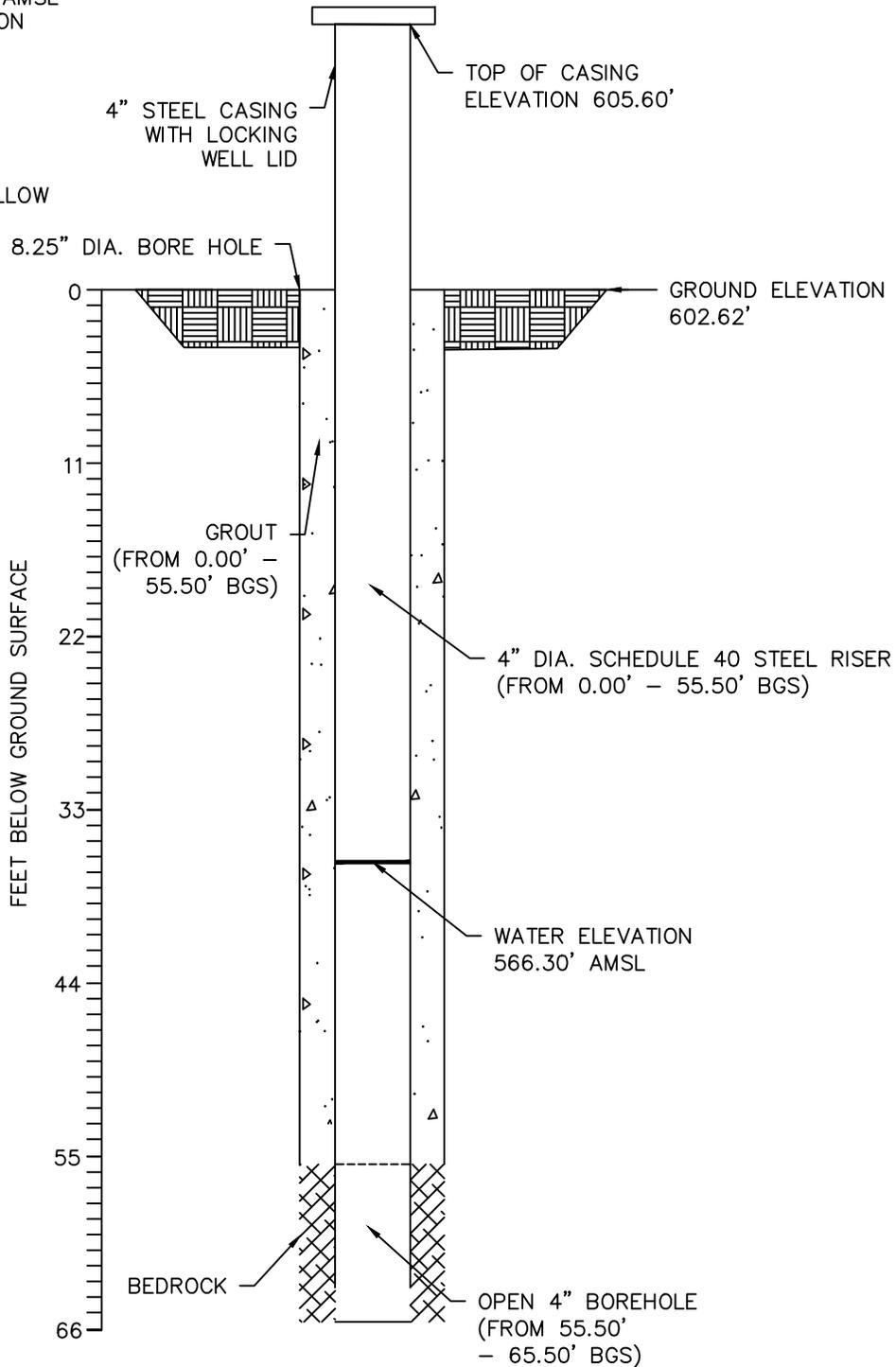
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-01D  
 INSTALLATION DEPTH: 65.50'  
 INSTALLATION DATE: 06/29/2021

DEPTH TO WATER: 566.30' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 09/20/2021

NORTHING: 1087815.75  
 EASTING: 1055378.66

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER

# MONITORING WELL MW-BCP-01D (N.T.S)



481 CARLISLE DRIVE  
 SUITE 202  
 HERNDON VIRGINIA, 20170  
 (703)722-6049

WELL ID: MW-BCP-01D  
 DRAWING NUMBER  
 D-102

RIVERVIEW INNOVATION &  
 TECHNOLOGY CAMPUS, INC.  
 3875 RIVER ROAD  
 TONAWANDA, NY 14150

DRAWING BY: REB

CHECKED: JRE

APPROVED: TDW

PROPERTY OF INVENTUM ENGINEERING PC

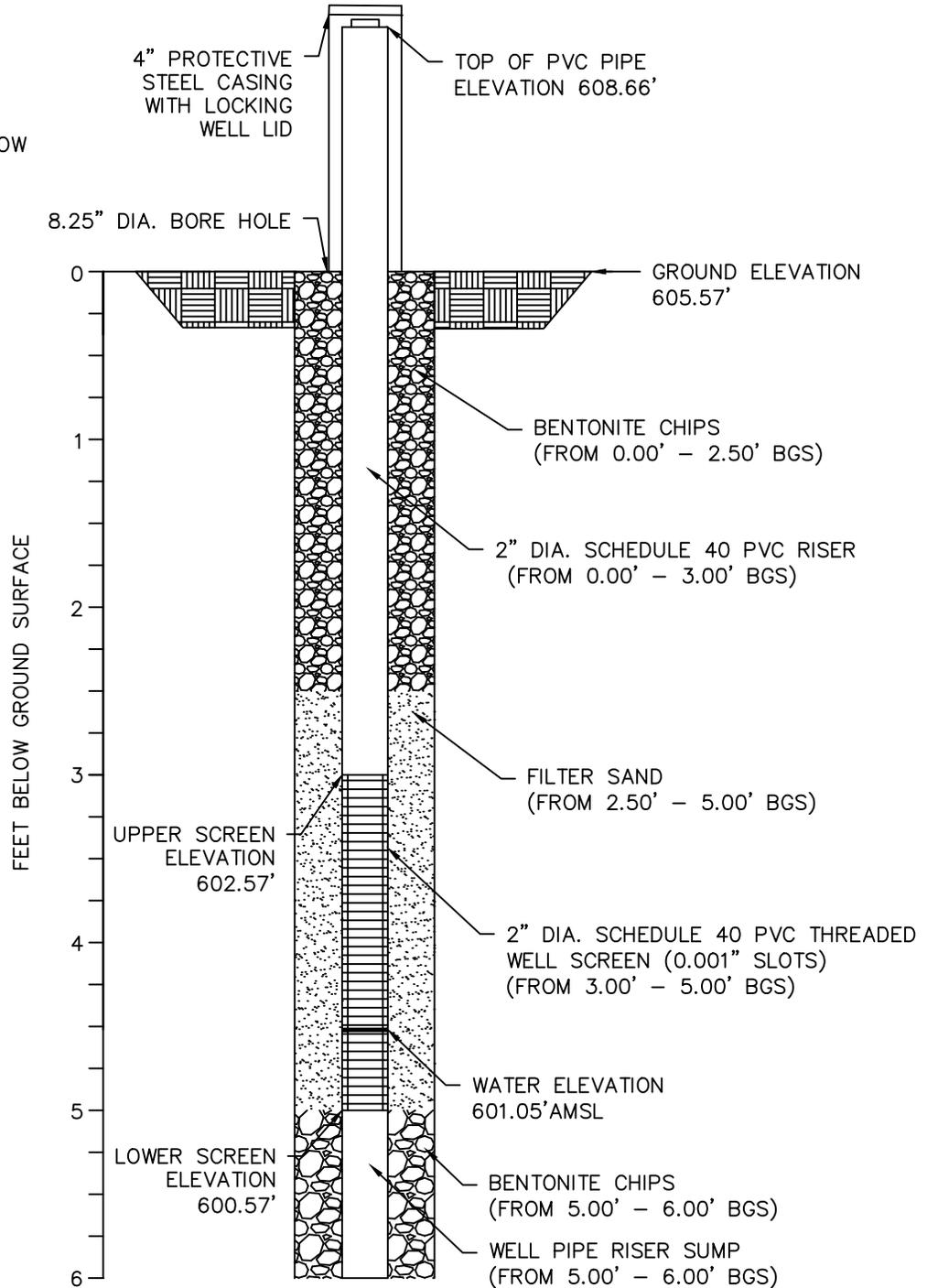
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-02A  
 INSTALLATION DEPTH: 6.00'  
 INSTALLATION DATE: 11/18/2020

# MONITORING WELL MW-BCP-02A (N.T.S)

DEPTH TO WATER: 601.05' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

NORTHING: 1087466.57  
 EASTING: 1055471.63

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



481 CARLISLE DRIVE  
 SUITE 202  
 HERNDON VIRGINIA, 20170  
 (703)722-6049

WELL ID: MW-BCP-02A  
 DRAWING NUMBER  
 D-103

RIVERVIEW INNOVATION &  
 TECHNOLOGY CAMPUS, INC.  
 3875 RIVER ROAD  
 TONAWANDA, NY 14150

DRAWING BY: REB

CHECKED: JRE

APPROVED: TDW

PROPERTY OF INVENTUM ENGINEERING PC

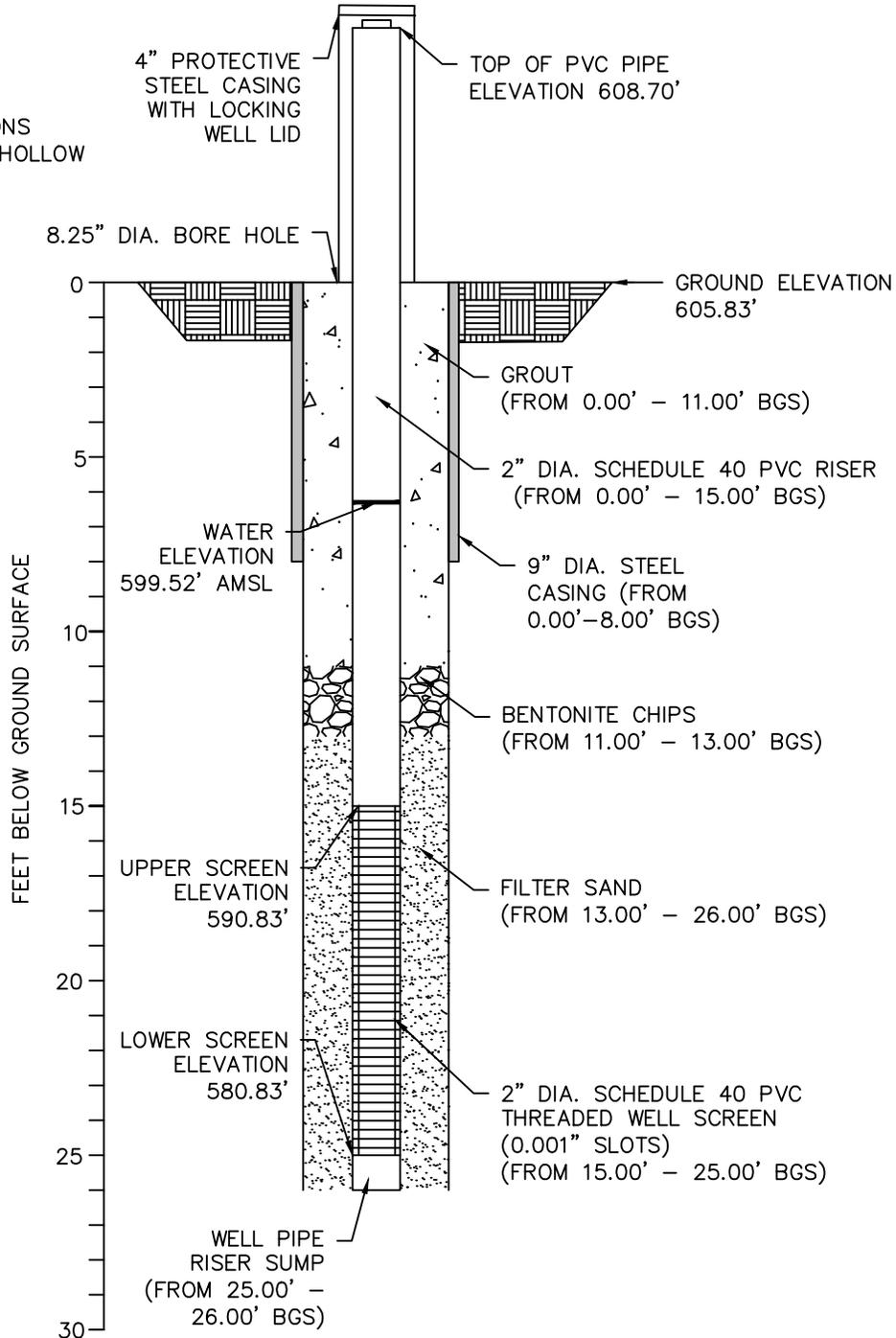
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-02B  
 INSTALLATION DEPTH: 26.00'  
 INSTALLATION DATE: 11/18/2020

# MONITORING WELL MW-BCP-02B (N.T.S)

DEPTH TO WATER: 599.52' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 1/11/2021

NORTHING: 1087462.56  
 EASTING: 1055472.80

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



481 CARLISLE DRIVE  
 SUITE 202  
 HERNDON VIRGINIA, 20170  
 (703)722-6049

WELL ID: MW-BCP-02B  
 DRAWING NUMBER  
 D-104

RIVERVIEW INNOVATION &  
 TECHNOLOGY CAMPUS, INC.  
 3875 RIVER ROAD  
 TONAWANDA, NY 14150

DRAWING BY: REB

CHECKED: JRE

APPROVED: TDW

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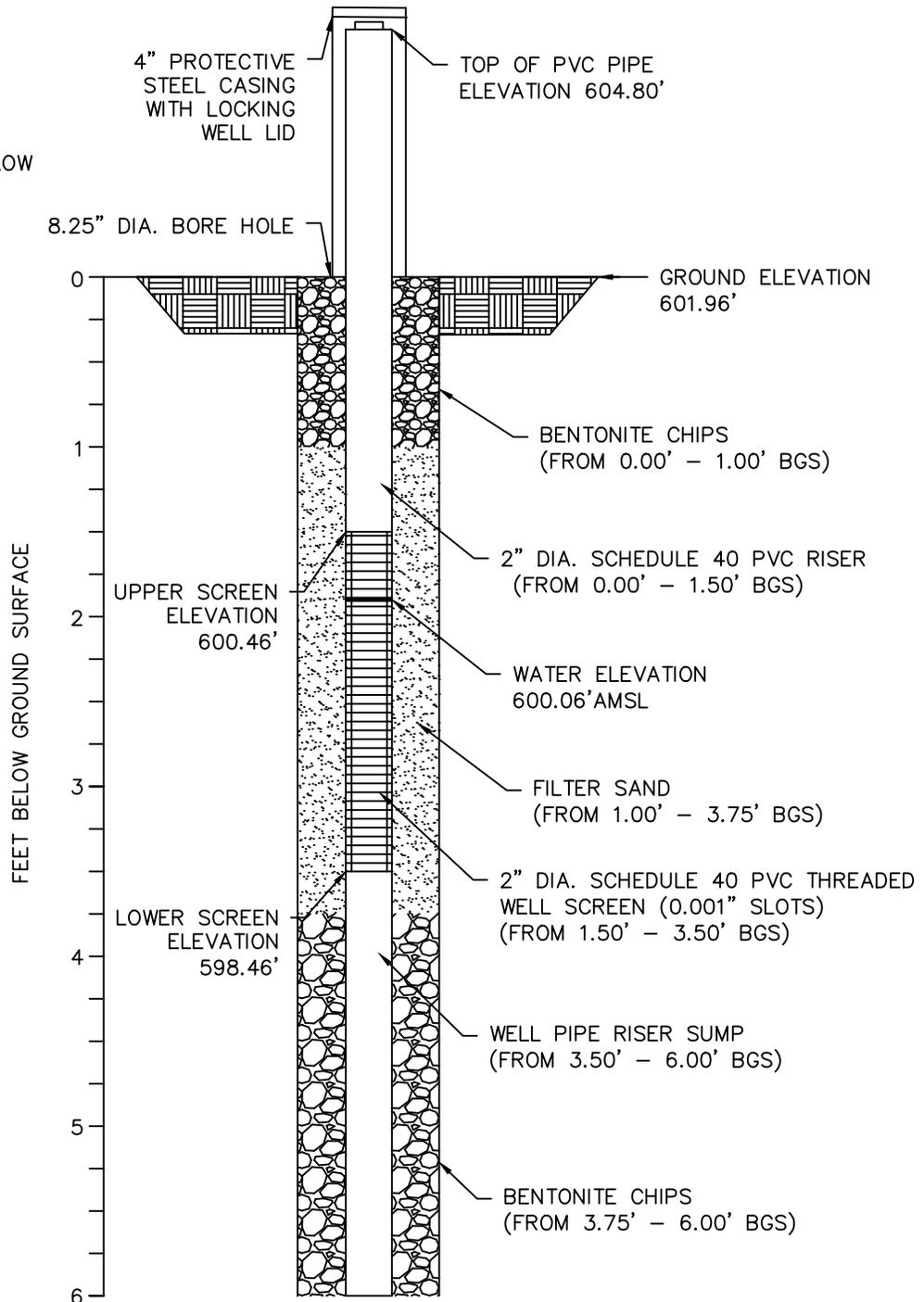
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-03A  
 INSTALLATION DEPTH: 6.00'  
 INSTALLATION DATE: 10/30/2020

# MONITORING WELL MW-BCP-03A (N.T.S)

DEPTH TO WATER: 600.06' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

NORTHING: 1087135.58  
 EASTING: 1055322.49

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



481 CARLISLE DRIVE  
 SUITE 202  
 HERNDON VIRGINIA, 20170  
 (703)722-6049

WELL ID: MW-BCP-03A  
 DRAWING NUMBER  
 D-105

RIVERVIEW INNOVATION &  
 TECHNOLOGY CAMPUS, INC.  
 3875 RIVER ROAD  
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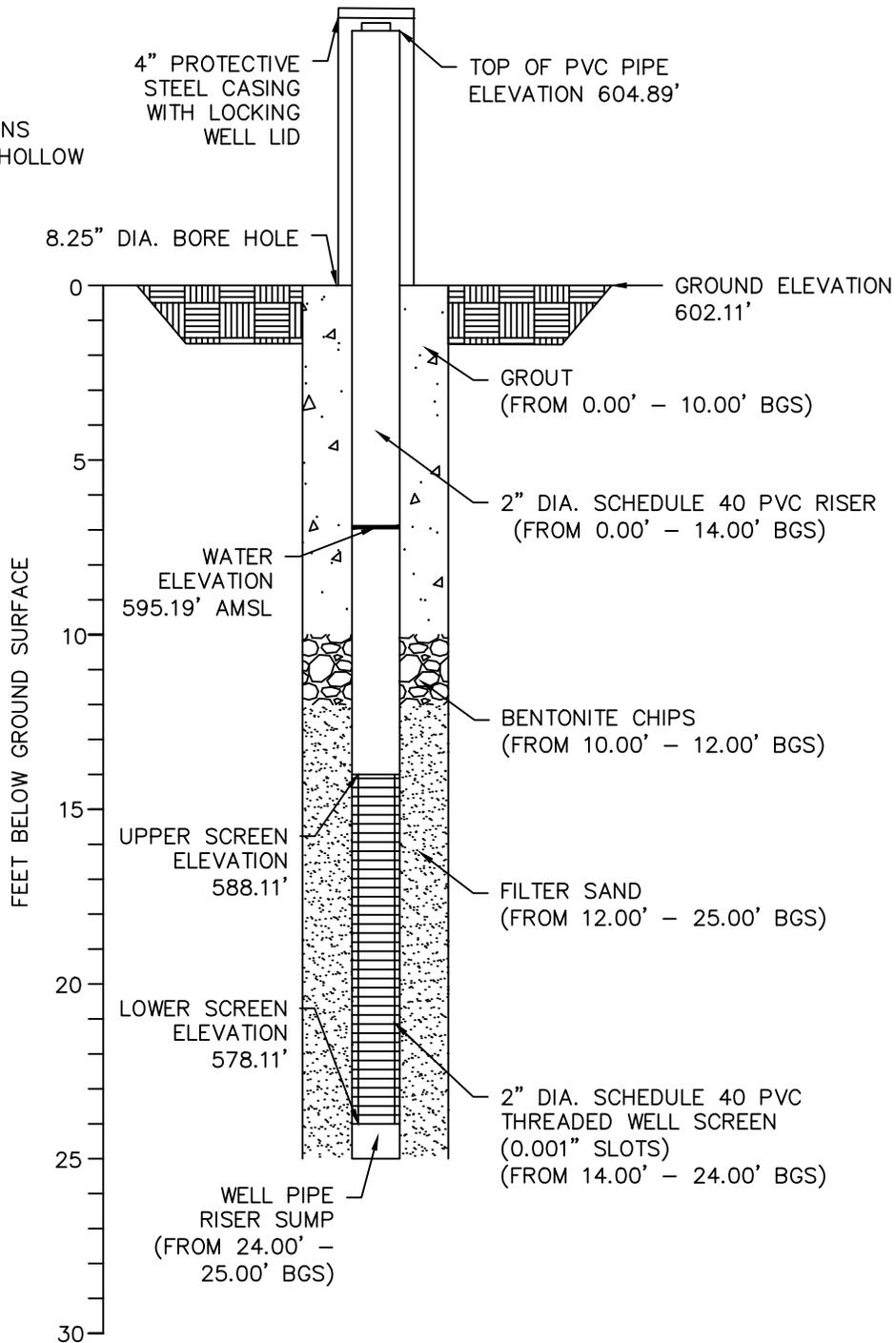
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-03B  
 INSTALLATION DEPTH: 25.00'  
 INSTALLATION DATE: 10/28/2020

# MONITORING WELL MW-BCP-03B (N.T.S)

DEPTH TO WATER: 595.19' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 1/11/2021

NORTHING: 1087135.68  
 EASTING: 1055317.58

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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WELL ID: MW-BCP-03B  
 DRAWING NUMBER  
 D-106

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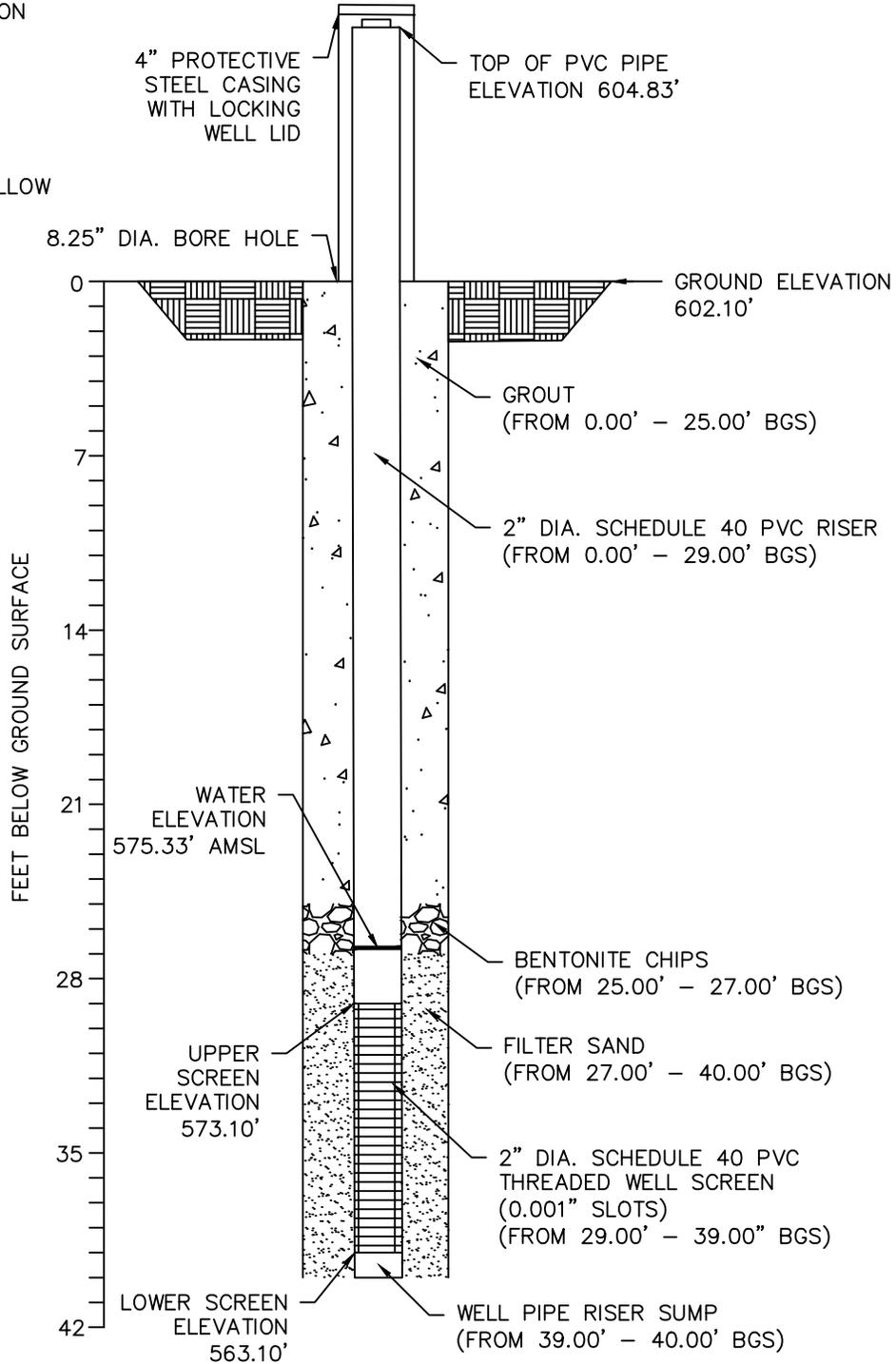
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-03C  
 INSTALLATION DEPTH: 40.00'  
 INSTALLATION DATE: 10/27/2020

# MONITORING WELL MW-BCP-03C (N.T.S)

DEPTH TO WATER: 575.33' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

NORTHING: 1087135.73  
 EASTING: 1055312.90

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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WELL ID: MW-BCP-03C  
 DRAWING NUMBER  
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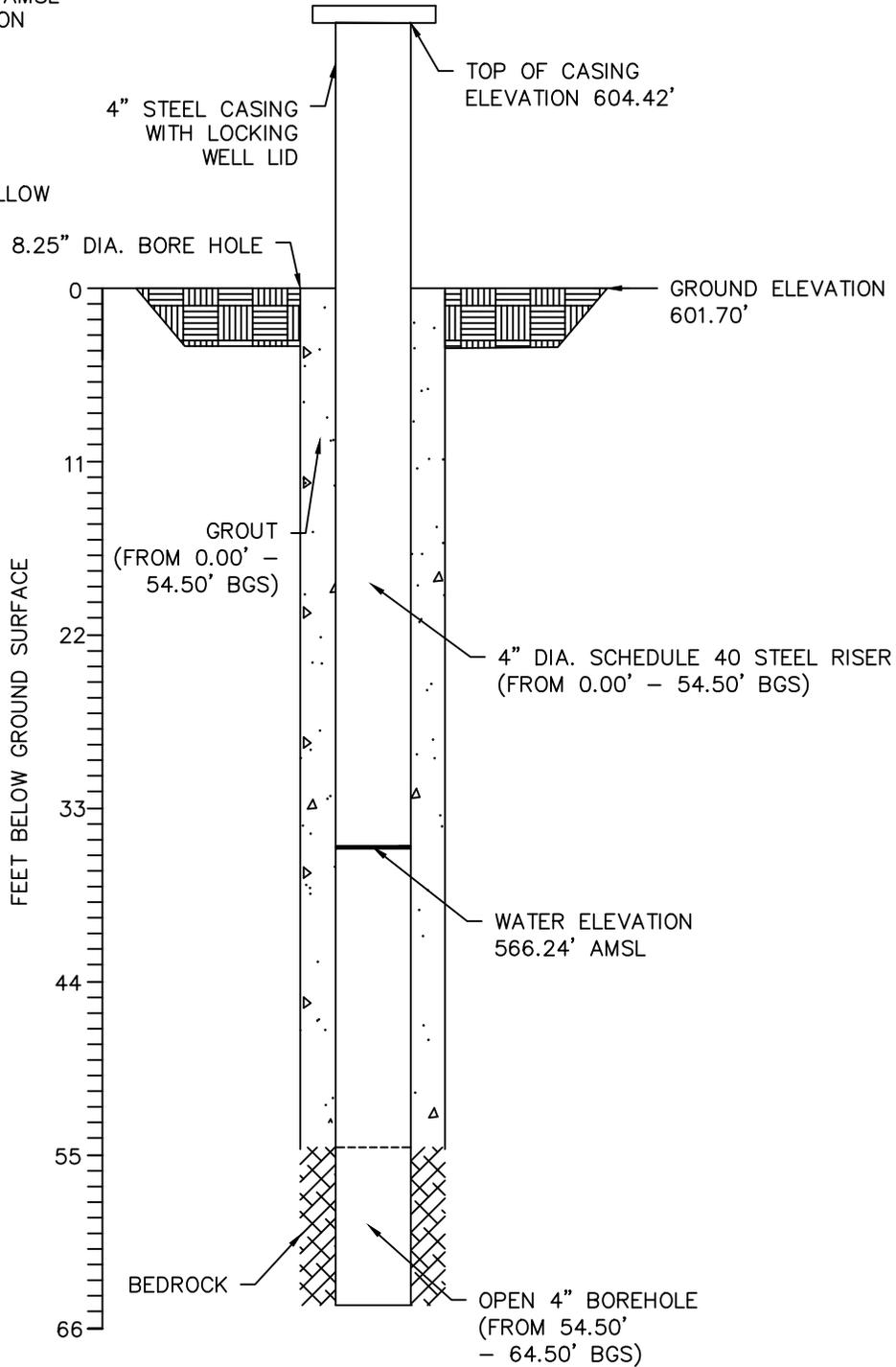
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-03D  
 INSTALLATION DEPTH: 64.50'  
 INSTALLATION DATE: 07/07/2021

# MONITORING WELL MW-BCP-03D (N.T.S)

DEPTH TO WATER: 566.24' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 09/20/2021

NORTHING: 1087136.80  
 EASTING: 1055330.76

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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WELL ID: MW-BCP-03C  
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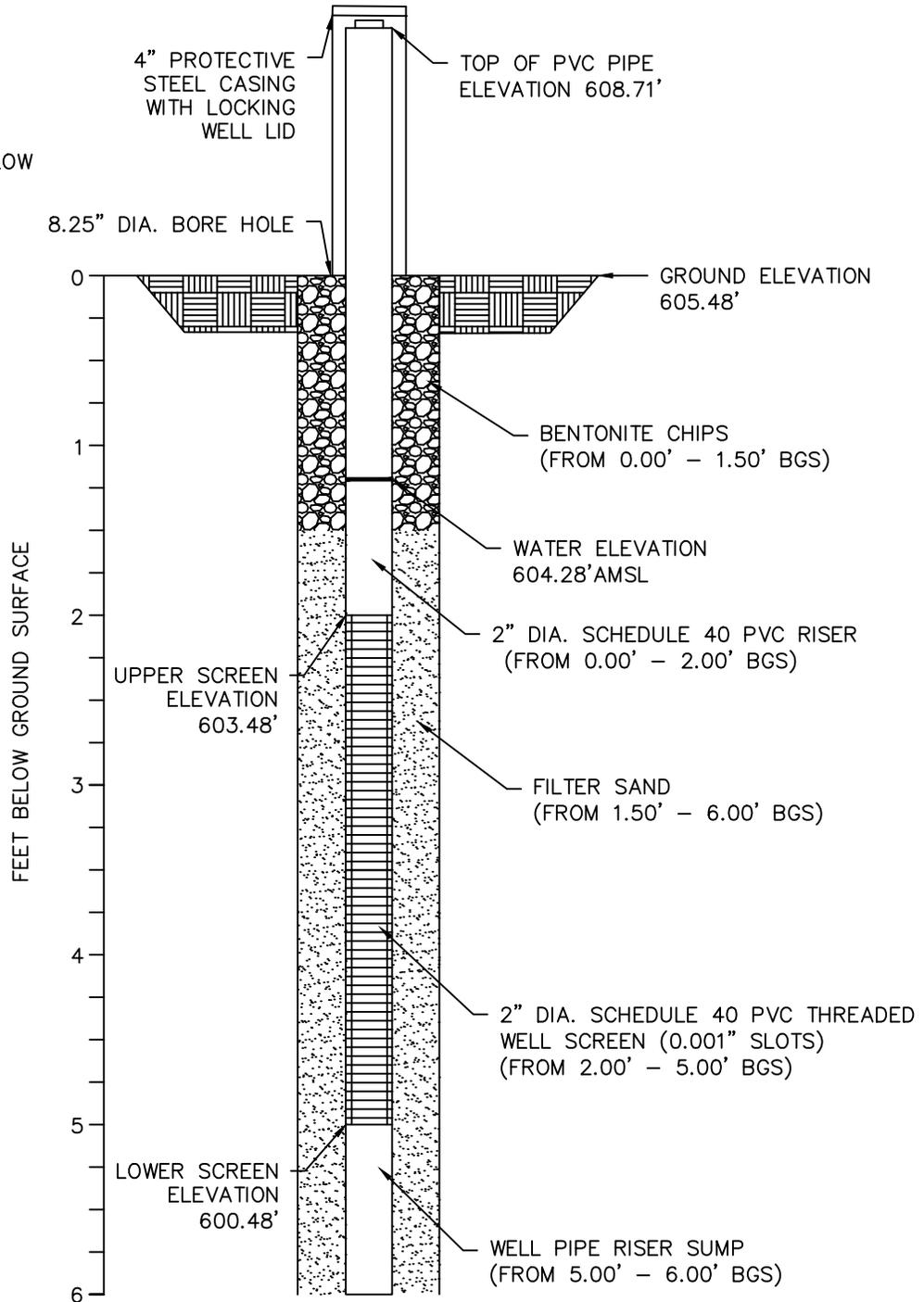
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-04A  
 INSTALLATION DEPTH: 6.00'  
 INSTALLATION DATE: 11/19/2020

# MONITORING WELL MW-BCP-04A (N.T.S)

DEPTH TO WATER: 604.28' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

NORTHING: 1087333.41  
 EASTING: 1055563.86

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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WELL ID: MW-BCP-04A  
 DRAWING NUMBER  
 D-108

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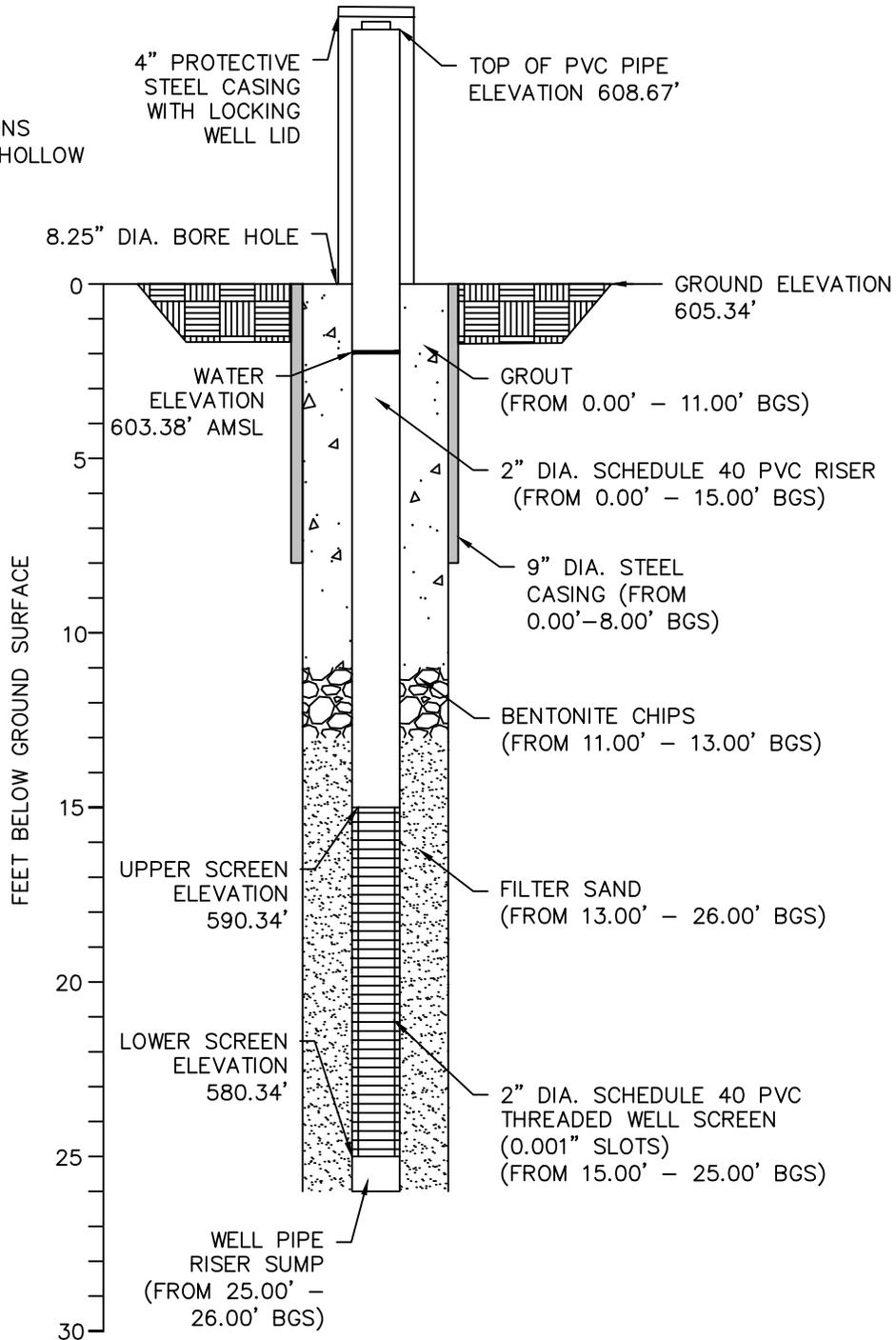
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-04B  
 INSTALLATION DEPTH: 26.00'  
 INSTALLATION DATE: 11/19/2020

# MONITORING WELL MW-BCP-04B (N.T.S)

DEPTH TO WATER: 603.38' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 1/11/2021

NORTHING: 1087328.19  
 EASTING: 1055565.75

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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WELL ID: MW-BCP-04B  
 DRAWING NUMBER  
 D-109

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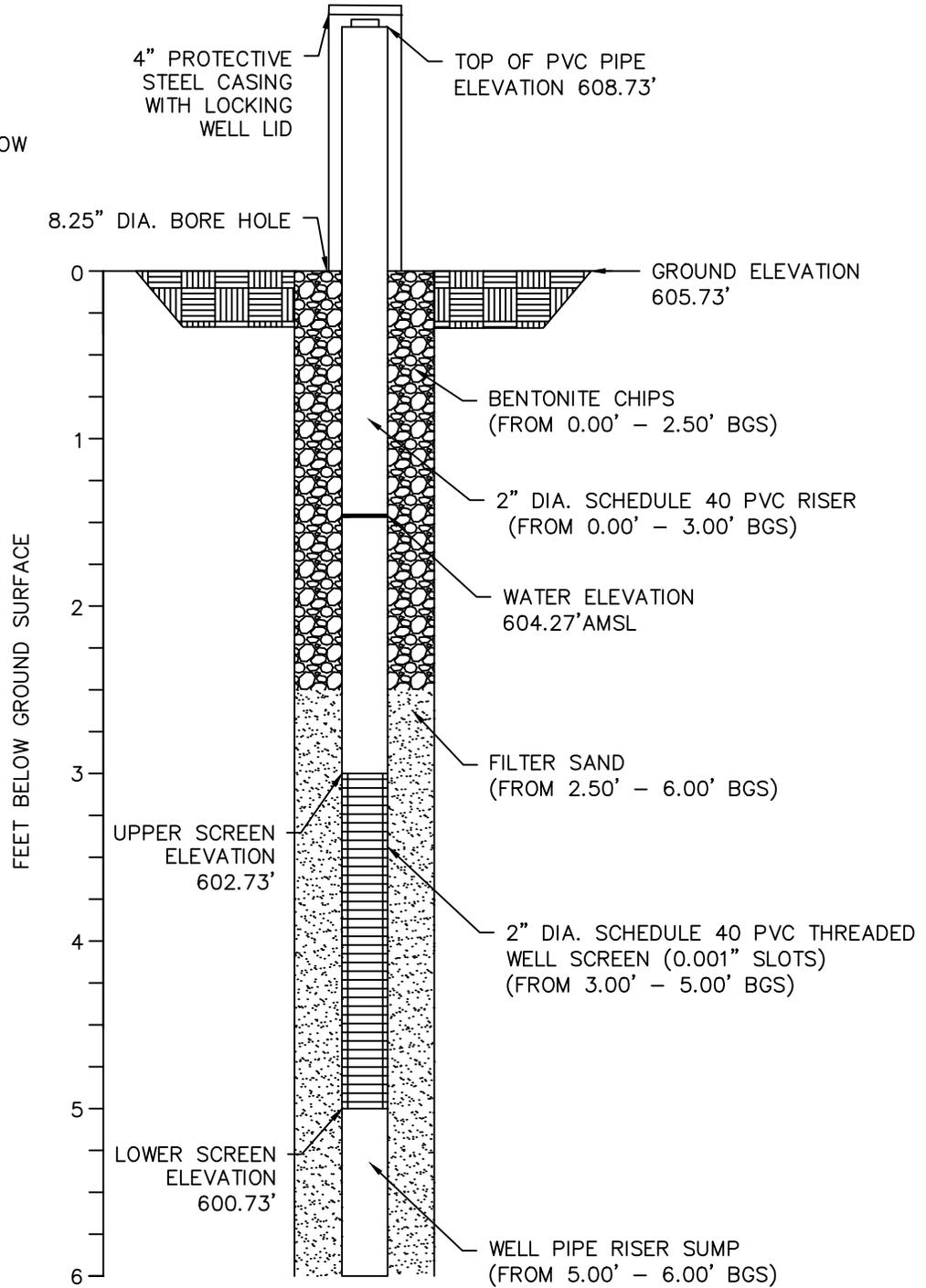
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-05A  
 INSTALLATION DEPTH: 6.00'  
 INSTALLATION DATE: 11/12/2020

DEPTH TO WATER: 604.27' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

NORTHING: 1087591.41  
 EASTING: 1055955.70

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER

# MONITORING WELL MW-BCP-05A (N.T.S)



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WELL ID: MW-BCP-05A  
 DRAWING NUMBER  
 D-110

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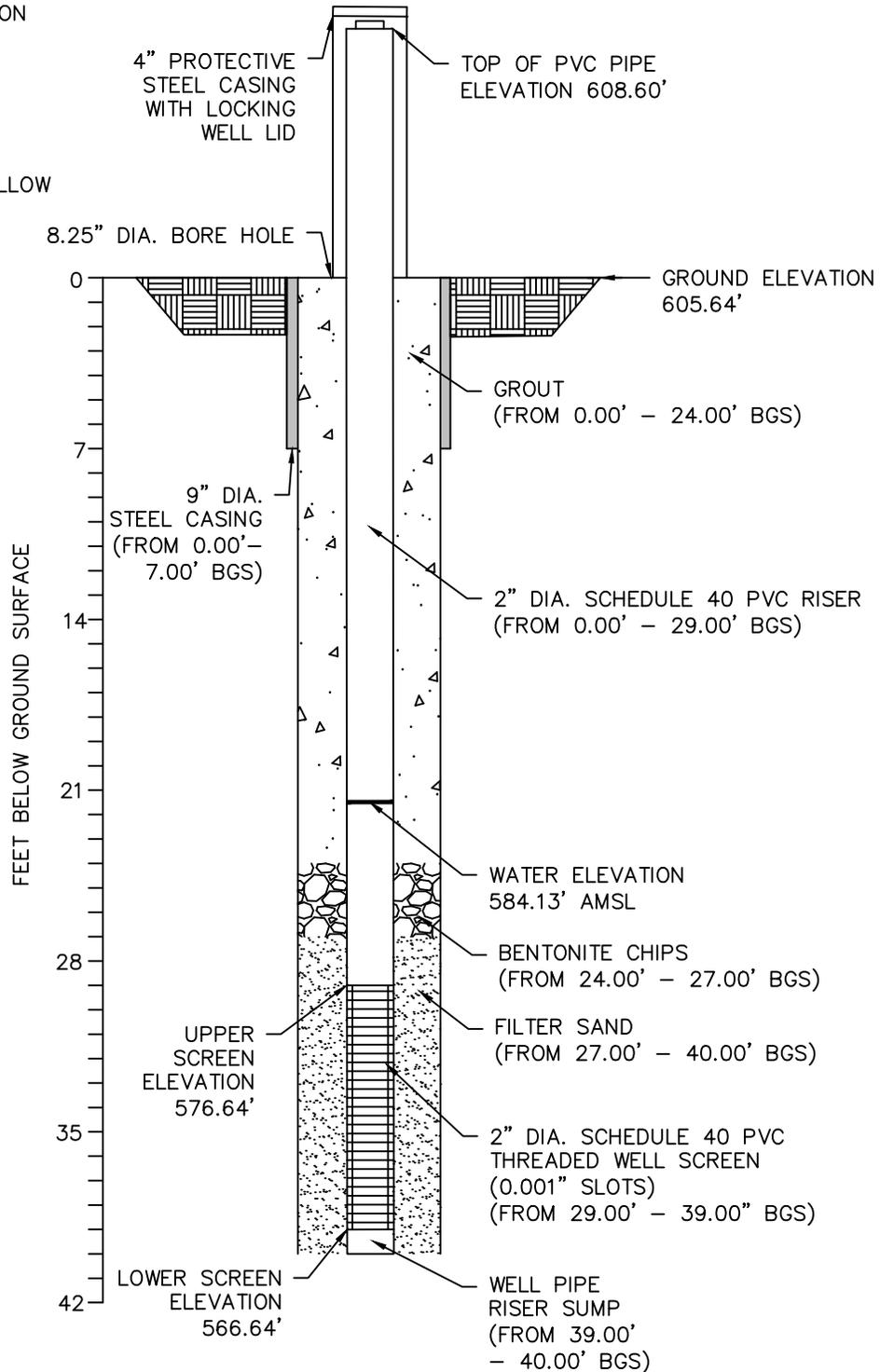
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-05C  
 INSTALLATION DEPTH: 40.00'  
 INSTALLATION DATE: 12/01/2020

# MONITORING WELL MW-BCP-05C (N.T.S)

DEPTH TO WATER: 584.13' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

NORTHING: 1087591.27  
 EASTING: 1055950.25

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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WELL ID: MW-BCP-05C  
 DRAWING NUMBER  
 D-111

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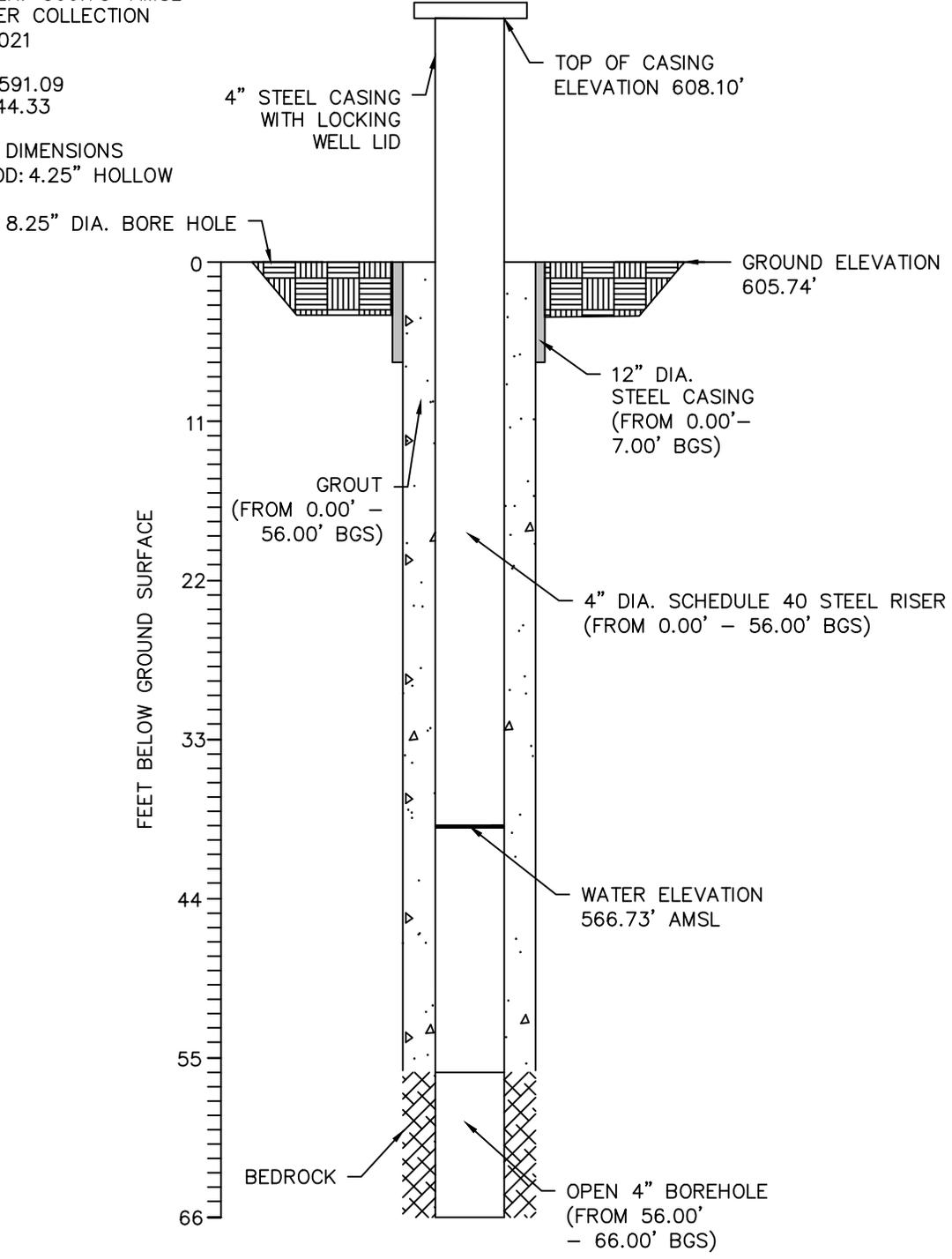
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-05D  
 INSTALLATION DEPTH: 66.00'  
 INSTALLATION DATE: 12/03/2020

DEPTH TO WATER: 566.73' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

NORTHING: 1087591.09  
 EASTING: 1055944.33

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER

# MONITORING WELL MW-BCP-05D (N.T.S)



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WELL ID: MW-BCP-05D  
 DRAWING NUMBER  
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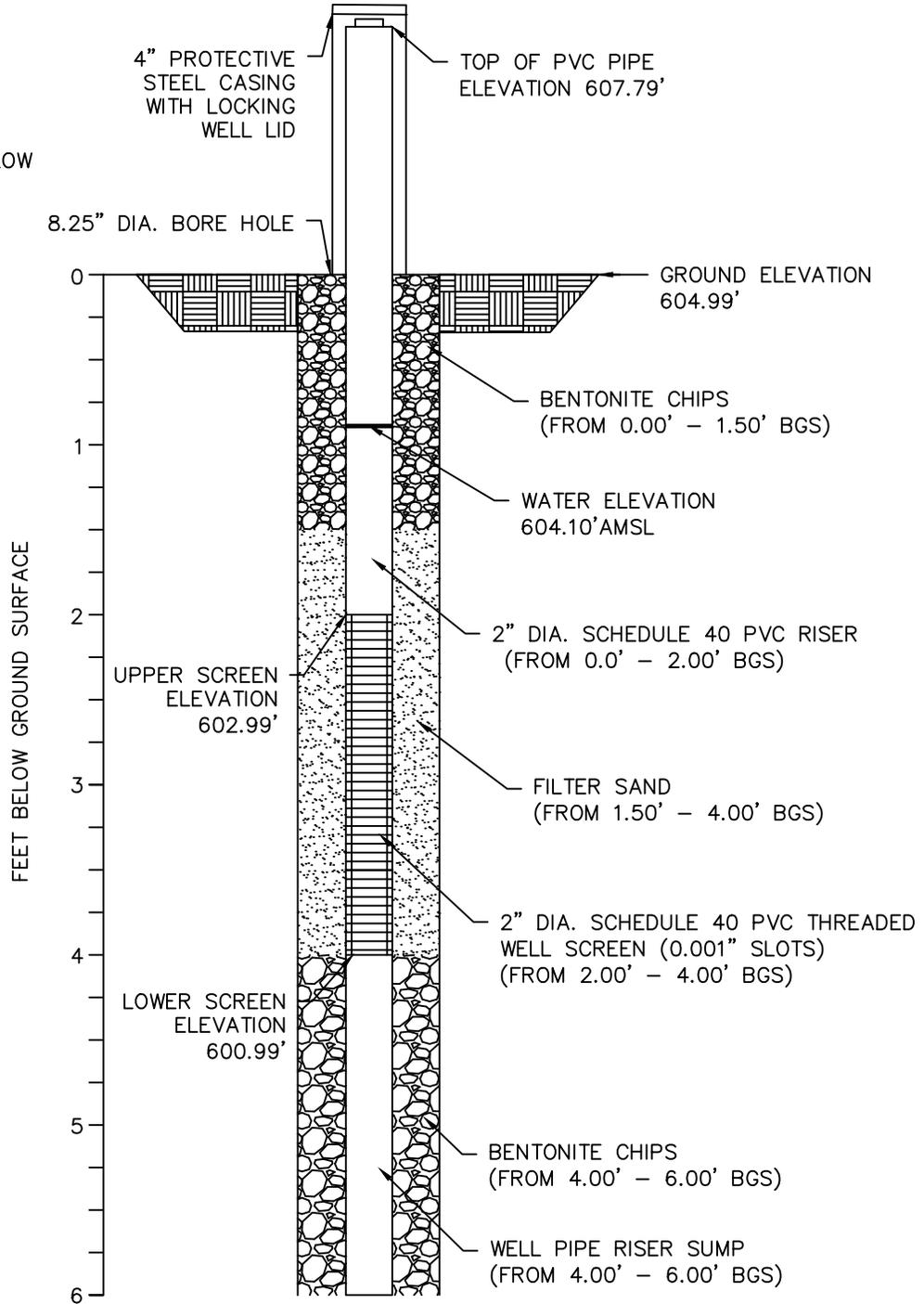
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-06A  
 INSTALLATION DEPTH: 6.00'  
 INSTALLATION DATE: 11/12/2020

# MONITORING WELL MW-BCP-06A (N.T.S)

DEPTH TO WATER: 604.10' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

NORTHING: 1087827.40  
 EASTING: 1056381.50

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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WELL ID: MW-BCP-06A  
 DRAWING NUMBER  
 D-113

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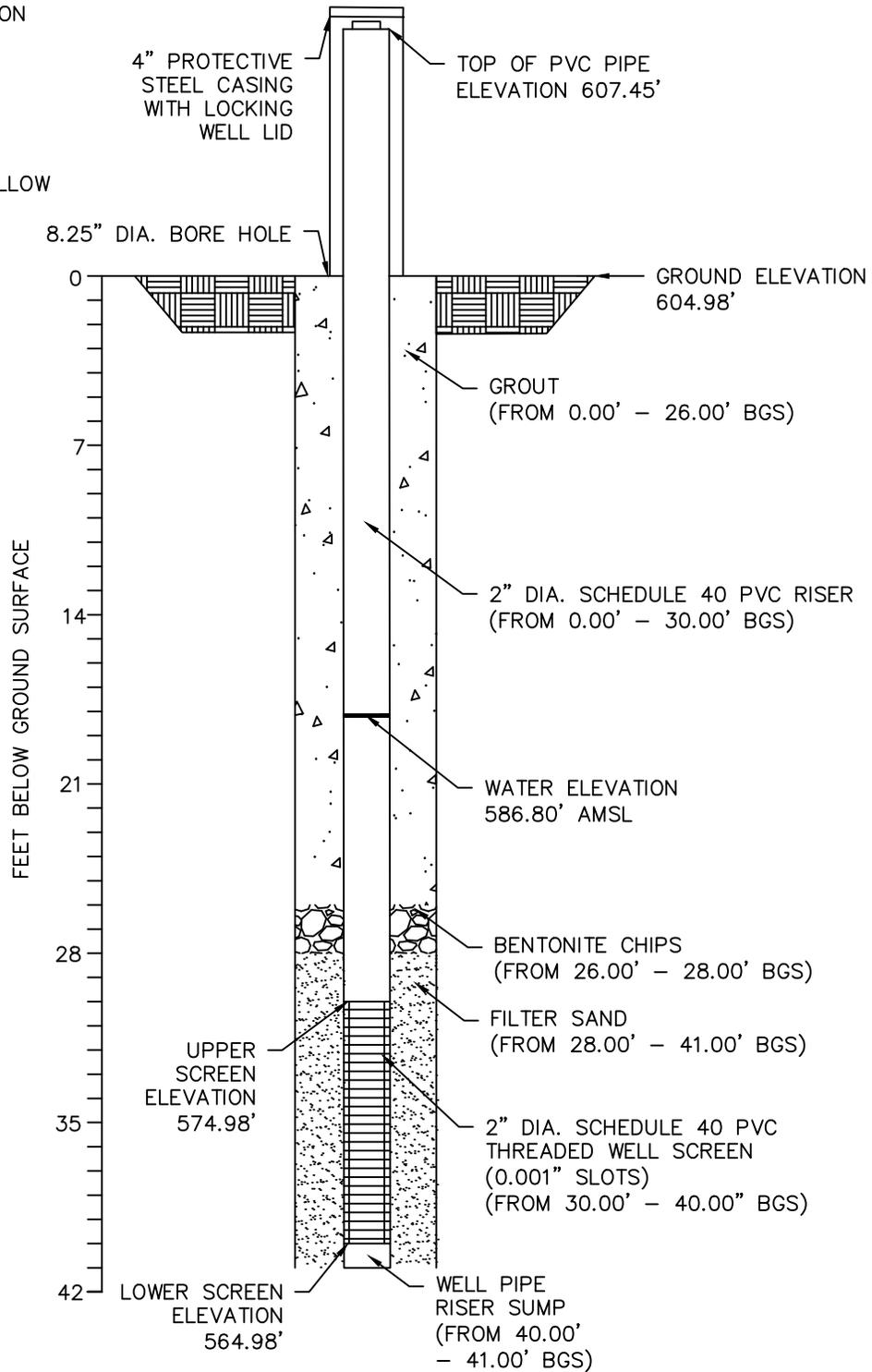
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-06C  
 INSTALLATION DEPTH: 41.00'  
 INSTALLATION DATE: 11/12/2020

# MONITORING WELL MW-BCP-06C (N.T.S)

DEPTH TO WATER: 586.80' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

NORTHING: 1087827.11  
 EASTING: 1056387.88

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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WELL ID: MW-BCP-06C  
 DRAWING NUMBER  
 D-114

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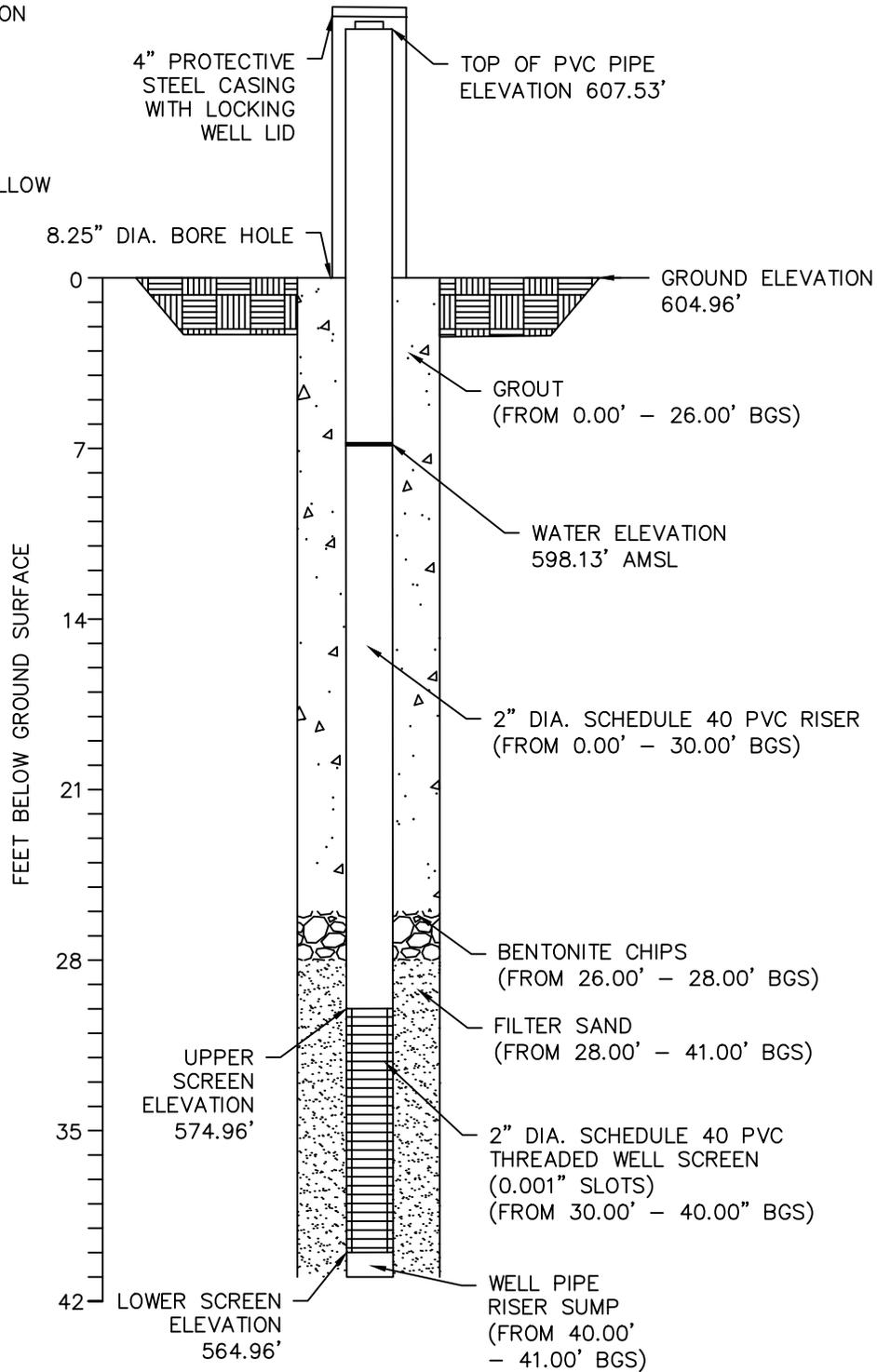
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-07C  
 INSTALLATION DEPTH: 41.00'  
 INSTALLATION DATE: 11/11/2020

# MONITORING WELL MW-BCP-07C (N.T.S)

DEPTH TO WATER: 598.13' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

NORTHING: 1087339.63  
 EASTING: 1055937.53

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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WELL ID: MW-BCP-07C  
 DRAWING NUMBER  
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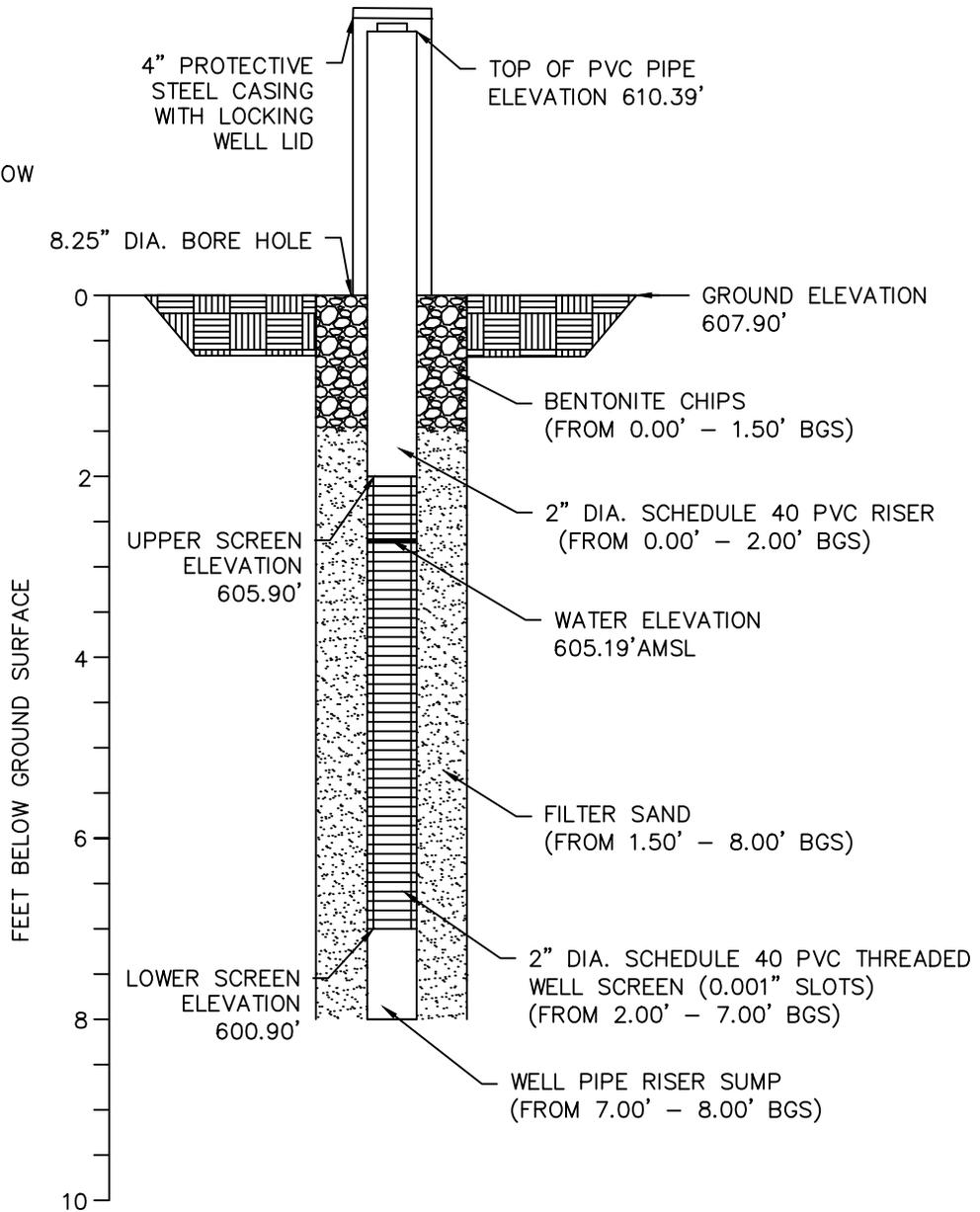
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-08A  
 INSTALLATION DEPTH: 8.00'  
 INSTALLATION DATE: 11/10/2020

# MONITORING WELL MW-BCP-08A (N.T.S)

DEPTH TO WATER: 605.19' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

NORTHING: 1087260.29  
 EASTING: 1055994.58

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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DRAWING BY: REB

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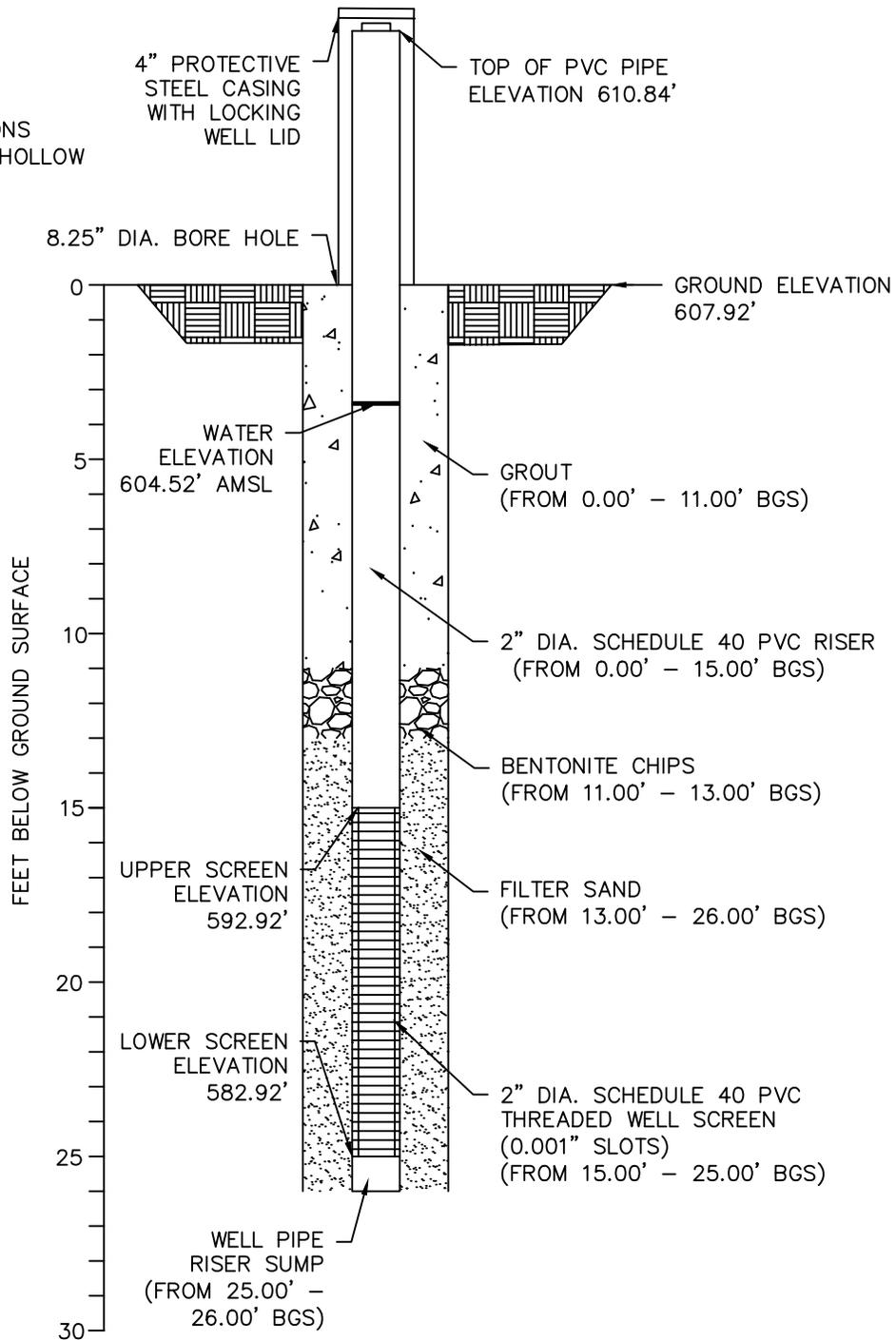
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-08B  
 INSTALLATION DEPTH: 26.00'  
 INSTALLATION DATE: 11/10/2020

# MONITORING WELL MW-BCP-08B (N.T.S)

DEPTH TO WATER: 604.52' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 1/11/2021

NORTHING: 1087260.01  
 EASTING: 1055989.35

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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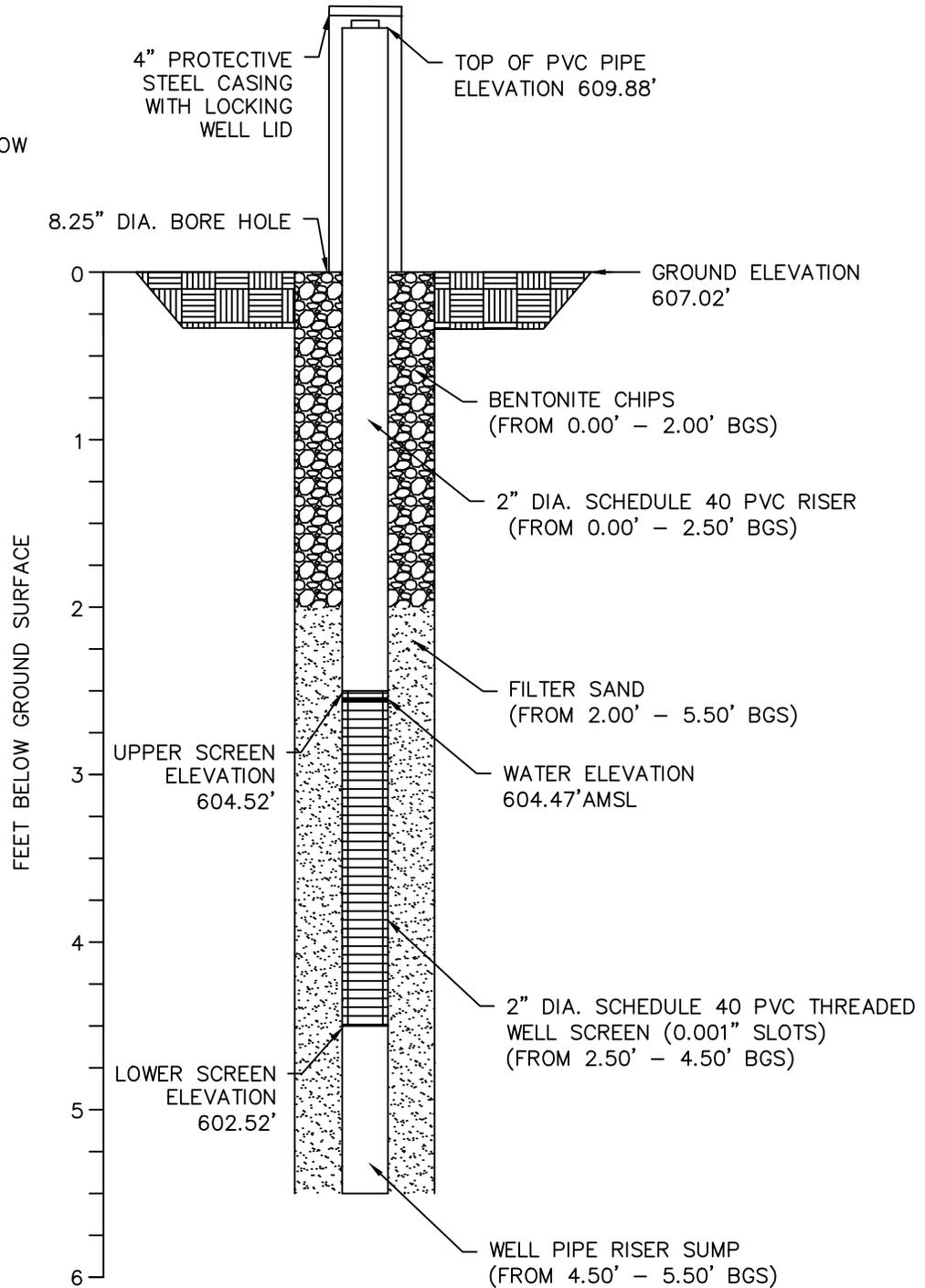
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-09A  
 INSTALLATION DEPTH: 5.50'  
 INSTALLATION DATE: 11/20/2020

# MONITORING WELL MW-BCP-09A (N.T.S)

DEPTH TO WATER: 604.47' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

NORTHING: 1087434.00.  
 EASTING: 1056059.80

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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WELL ID: MW-BCP-09A  
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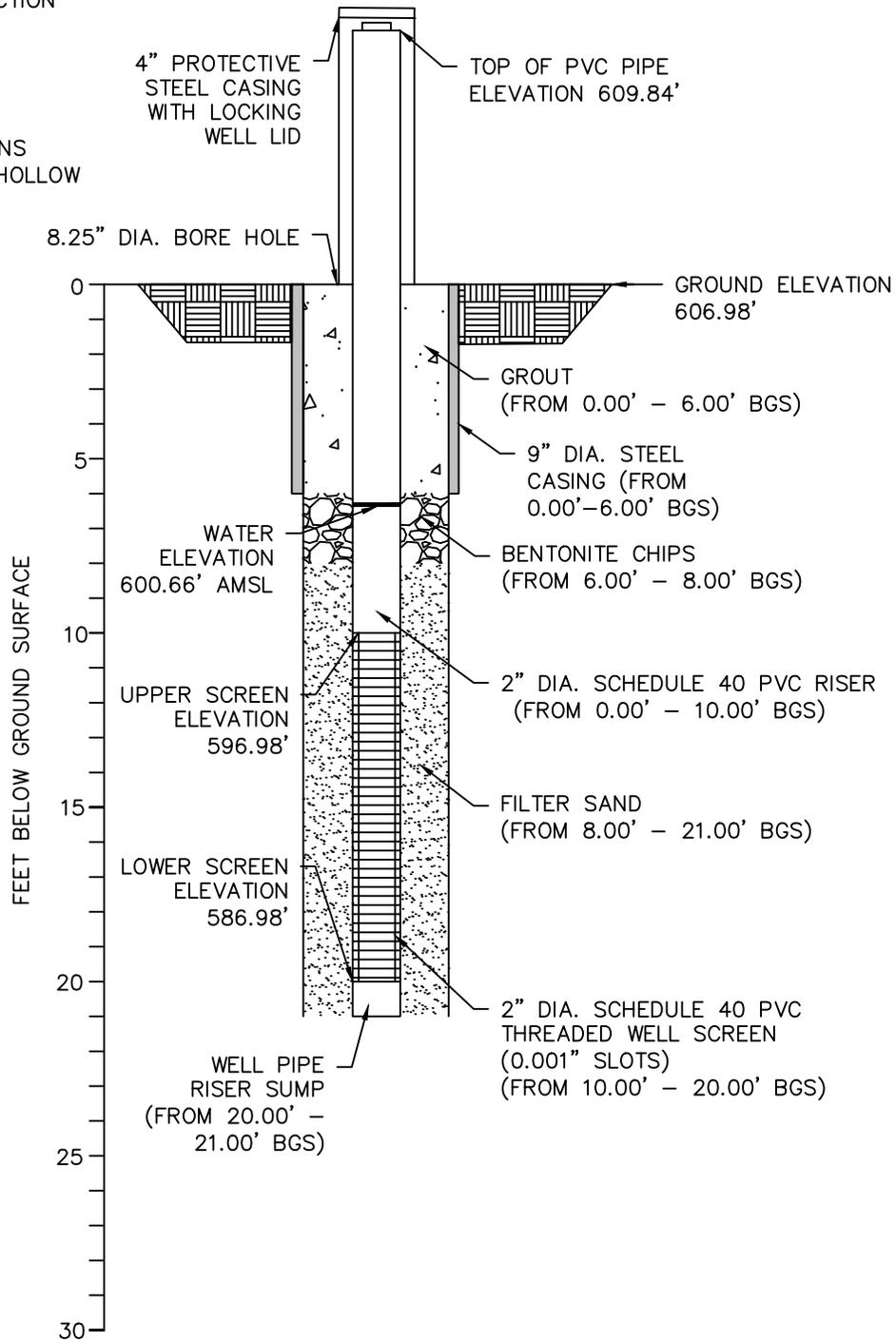
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-09B  
 INSTALLATION DEPTH: 21.00'  
 INSTALLATION DATE: 11/20/2020

DEPTH TO WATER: 600.66' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 1/11/2021

NORTHING: 1087433.94  
 EASTING: 1056065.09

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER

# MONITORING WELL MW-BCP-09B (N.T.S)



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WELL ID: MW-BCP-09B  
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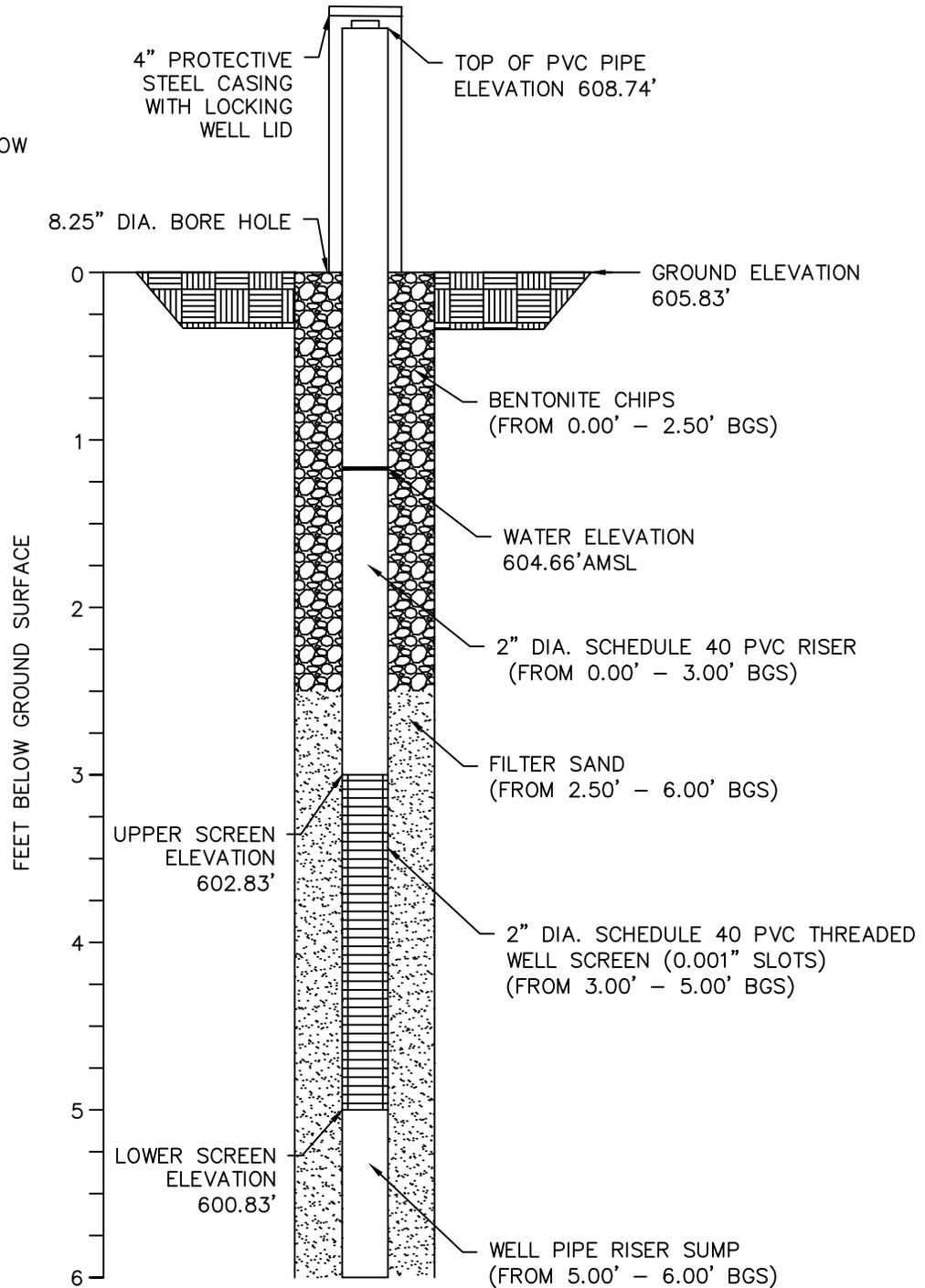
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-10A  
 INSTALLATION DEPTH: 6.00'  
 INSTALLATION DATE: 11/23/2020

# MONITORING WELL MW-BCP-10A (N.T.S)

DEPTH TO WATER: 604.66' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

NORTHING: 1087586.53  
 EASTING: 1056142.28

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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WELL ID: MW-BCP-10A  
 DRAWING NUMBER  
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DRAWING BY: REB

CHECKED: JRE

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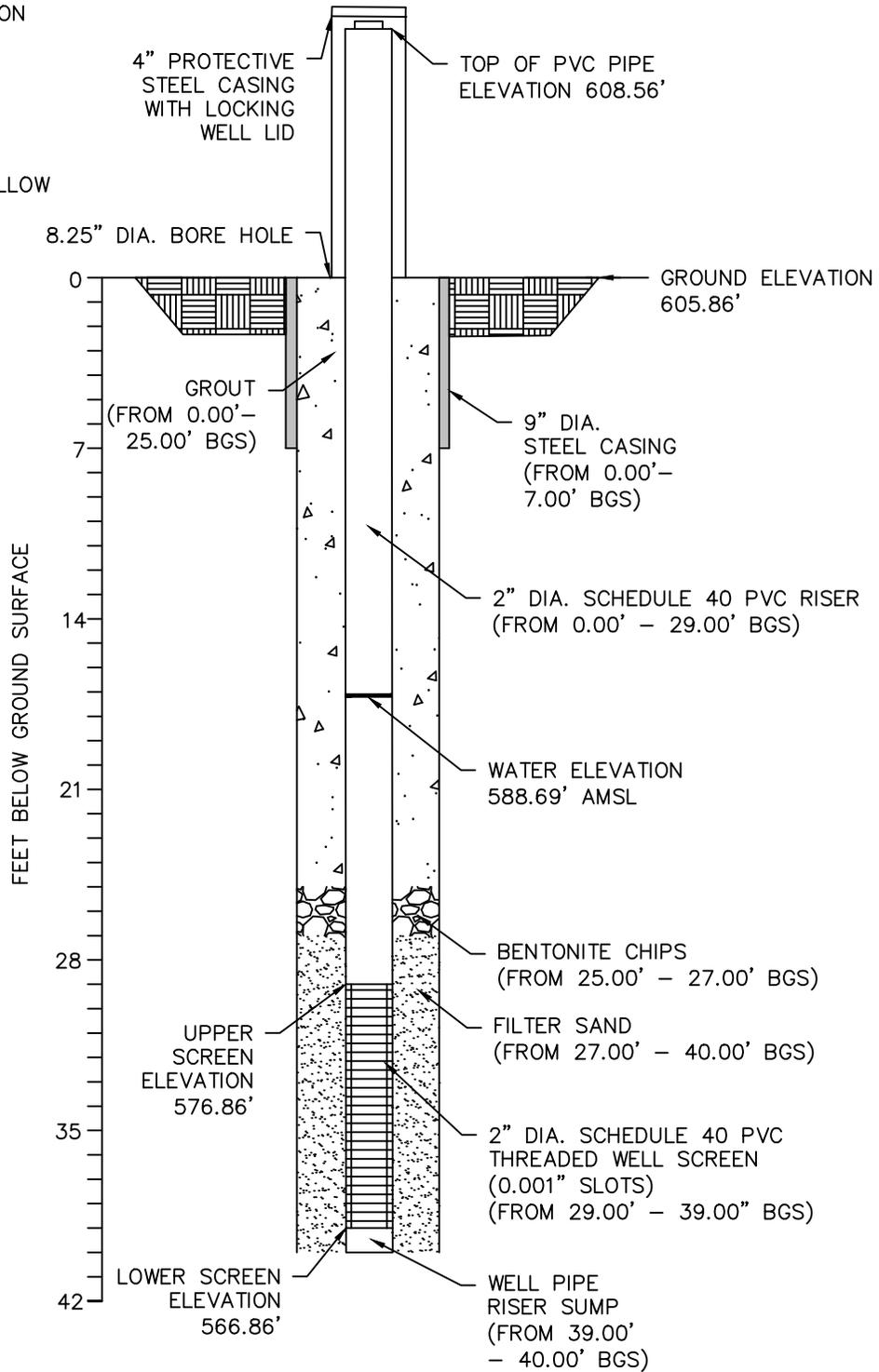
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-10C  
 INSTALLATION DEPTH: 40.00'  
 INSTALLATION DATE: 11/23/2020

# MONITORING WELL MW-BCP-10C (N.T.S)

DEPTH TO WATER: 588.69' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

NORTHING: 1087586.59  
 EASTING: 1056147.12

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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WELL ID: MW-BCP-10C  
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 TONAWANDA, NY 14150

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CHECKED: JRE

APPROVED: TDW

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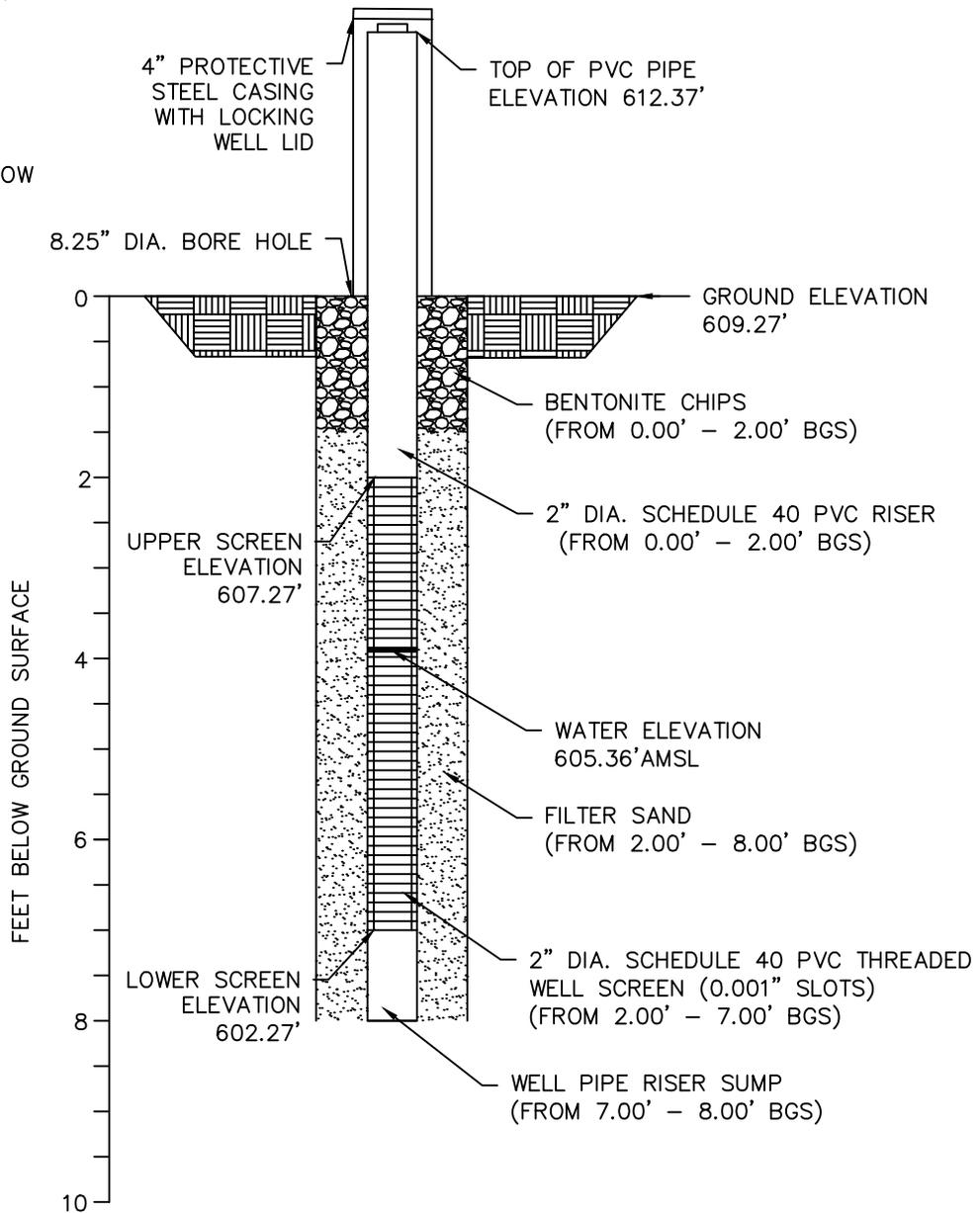
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-11A  
 INSTALLATION DEPTH: 8.00'  
 INSTALLATION DATE: 11/09/2020

DEPTH TO WATER: 605.36' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

NORTHING: 1087297.63  
 EASTING: 1056459.20

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER

# MONITORING WELL MW-BCP-11A (N.T.S)



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WELL ID: MW-BCP-11A  
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DRAWING BY: REB

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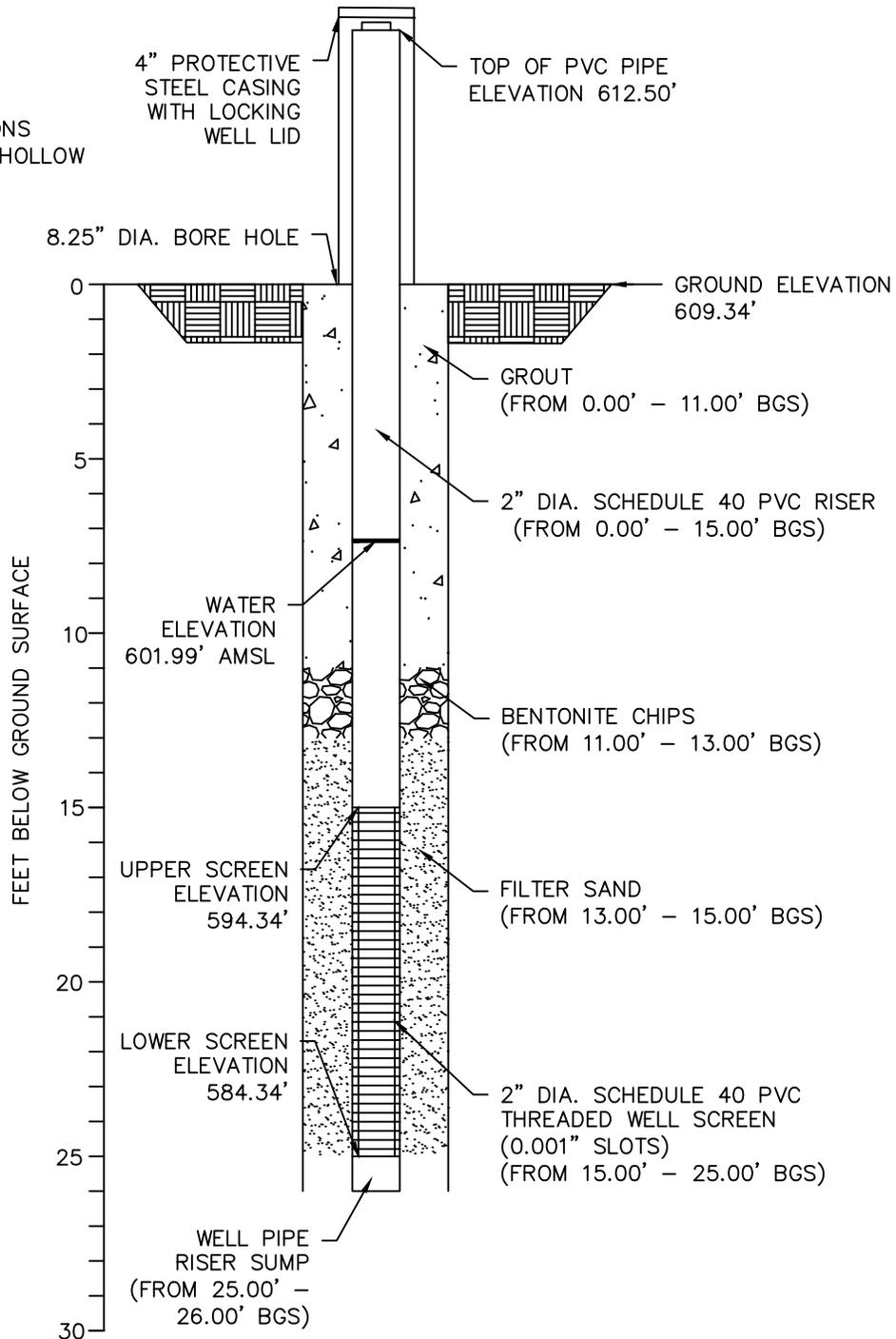
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-11B  
 INSTALLATION DEPTH: 26.00'  
 INSTALLATION DATE: 11/09/2020

# MONITORING WELL MW-BCP-11B (N.T.S)

DEPTH TO WATER: 601.99' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 1/11/2021

NORTHING: 1087297.56  
 EASTING: 1056465.61

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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 SUITE 202  
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WELL ID: MW-BCP-11B  
 DRAWING NUMBER  
 D-

RIVERVIEW INNOVATION &  
 TECHNOLOGY CAMPUS, INC.  
 3875 RIVER ROAD  
 TONAWANDA, NY 14150

DRAWING BY: REB

CHECKED: JRE

APPROVED: TDW

PROPERTY OF INVENTUM ENGINEERING PC

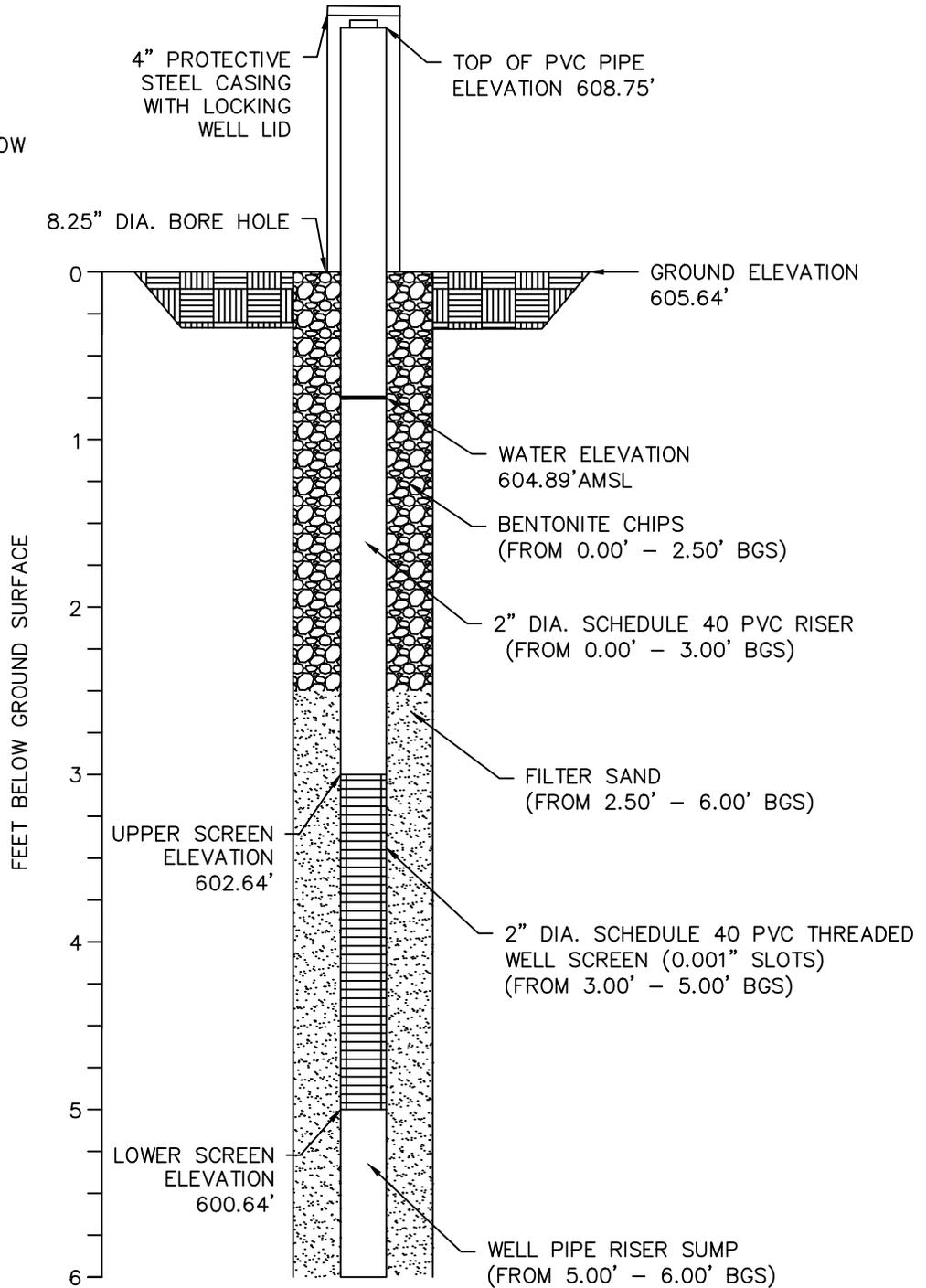
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-12A  
 INSTALLATION DEPTH: 6.00'  
 INSTALLATION DATE: 11/19/2020

DEPTH TO WATER: 604.89' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

NORTHING: 1087471.88  
 EASTING: 1056771.77

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER

# MONITORING WELL MW-BCP-12A (N.T.S)



481 CARLISLE DRIVE  
 SUITE 202  
 HERNDON VIRGINIA, 20170  
 (703)722-6049

WELL ID: MW-BCP-12A  
 DRAWING NUMBER  
 D-

RIVERVIEW INNOVATION &  
 TECHNOLOGY CAMPUS, INC.  
 3875 RIVER ROAD  
 TONAWANDA, NY 14150

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CHECKED: JRE

APPROVED: TDW

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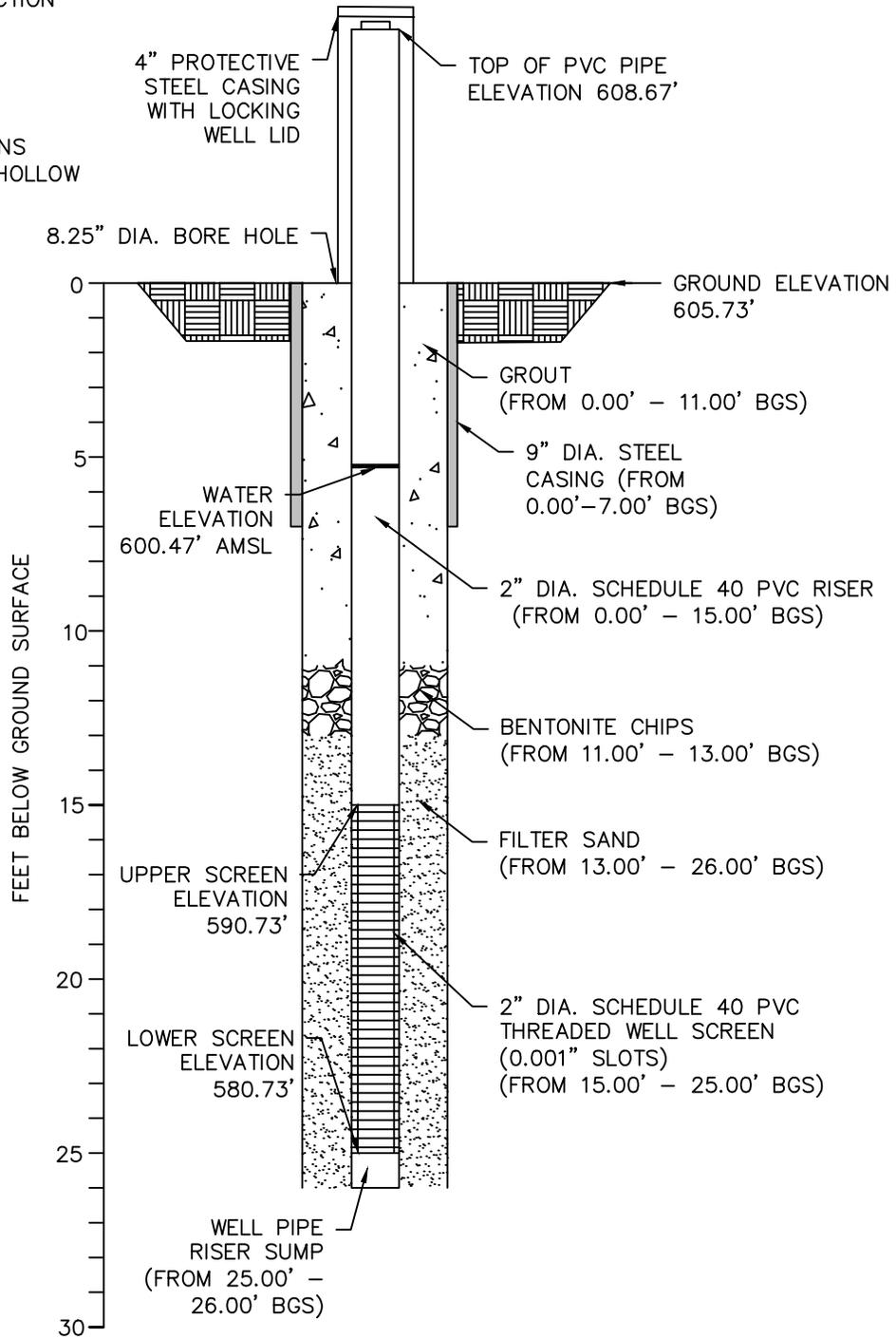
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-12B  
 INSTALLATION DEPTH: 26.00'  
 INSTALLATION DATE: 11/19/2020

DEPTH TO WATER: 600.47' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 1/11/2021

NORTHING: 1087473.41  
 EASTING: 1056777.34

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER

# MONITORING WELL MW-BCP-12B (N.T.S)



481 CARLISLE DRIVE  
 SUITE 202  
 HERNDON VIRGINIA, 20170  
 (703)722-6049

WELL ID: MW-BCP-12B  
 DRAWING NUMBER  
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 TECHNOLOGY CAMPUS, INC.  
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CHECKED: JRE

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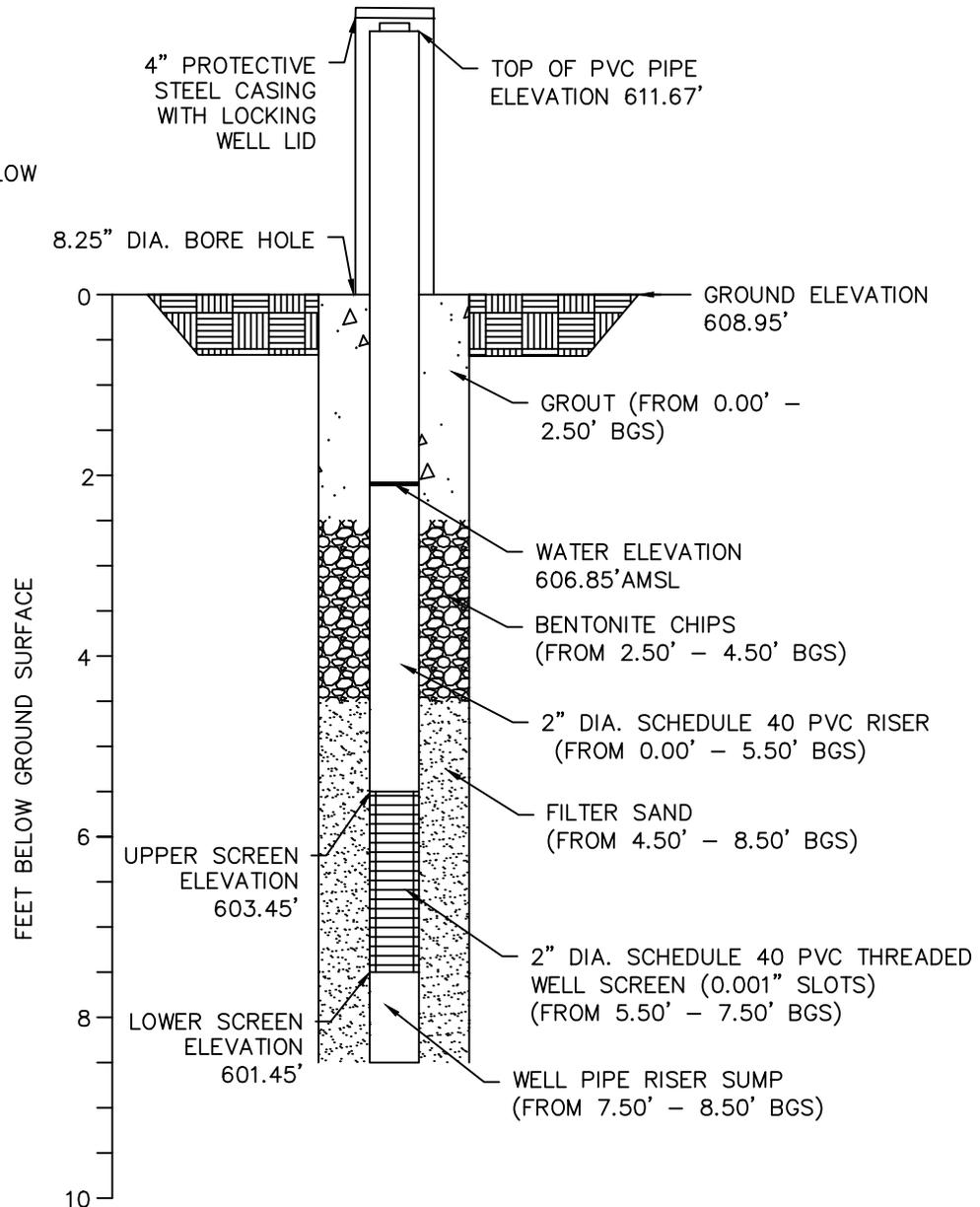
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-13A  
 INSTALLATION DEPTH: 8.50'  
 INSTALLATION DATE: 11/06/2020

# MONITORING WELL MW-BCP-13A (N.T.S)

DEPTH TO WATER: 606.85' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

NORTHING: 1087139.91  
 EASTING: 1057383.07

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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WELL ID: MW-BCP-13A  
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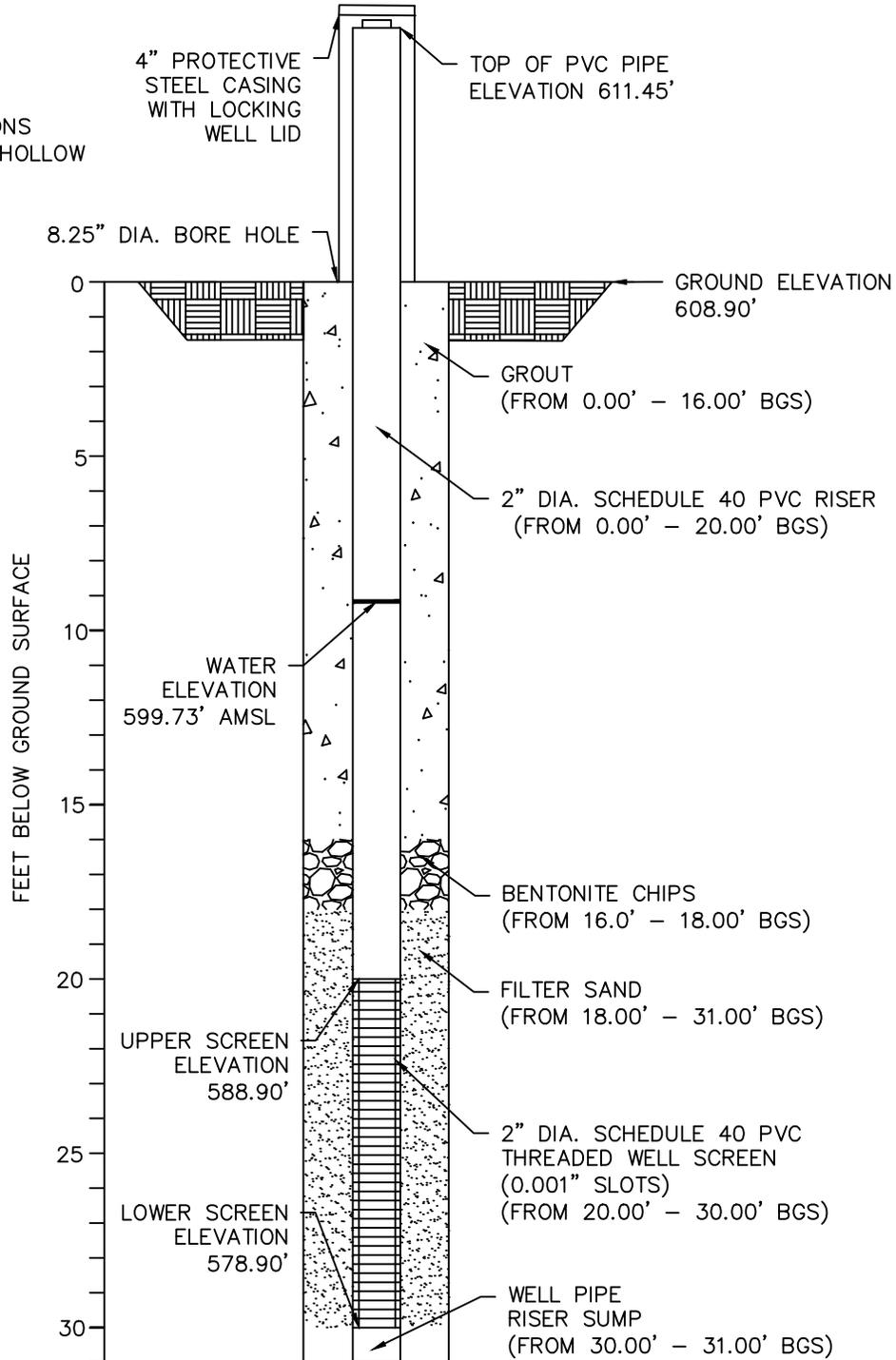
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-13B  
 INSTALLATION DEPTH: 31.00'  
 INSTALLATION DATE: 11/06/2020

# MONITORING WELL MW-BCP-13B (N.T.S)

DEPTH TO WATER: 599.73' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 1/11/2021

NORTHING: 1087140.56  
 EASTING: 1057386.82

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



481 CARLISLE DRIVE  
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WELL ID: MW-BCP-13B  
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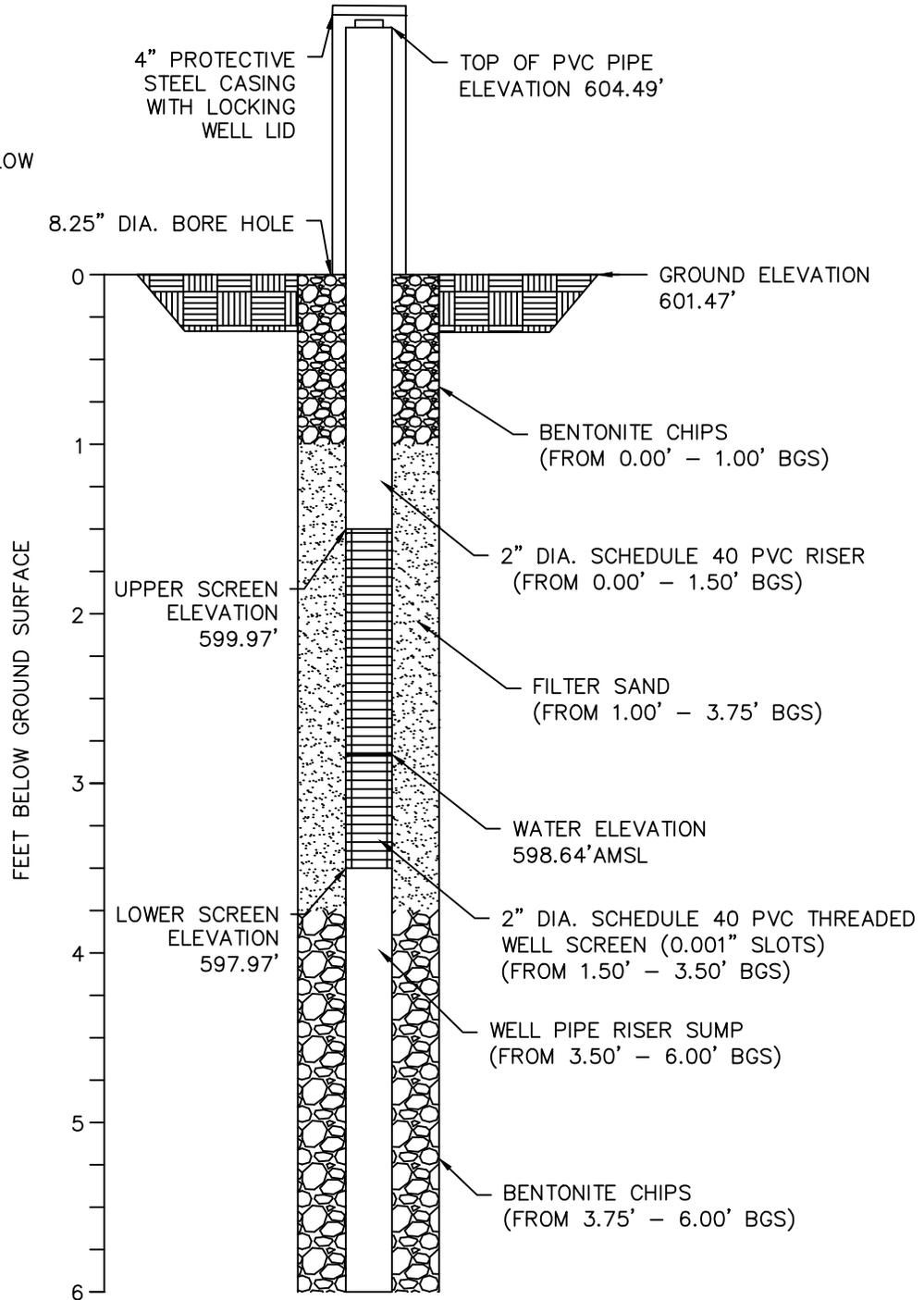
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-15A  
 INSTALLATION DEPTH: 6.00'  
 INSTALLATION DATE: 10/30/2020

# MONITORING WELL MW-BCP-15A (N.T.S)

DEPTH TO WATER: 598.64' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

NORTHING: 1086755.04  
 EASTING: 1055307.64

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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 SUITE 202  
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WELL ID: MW-BCP-15A  
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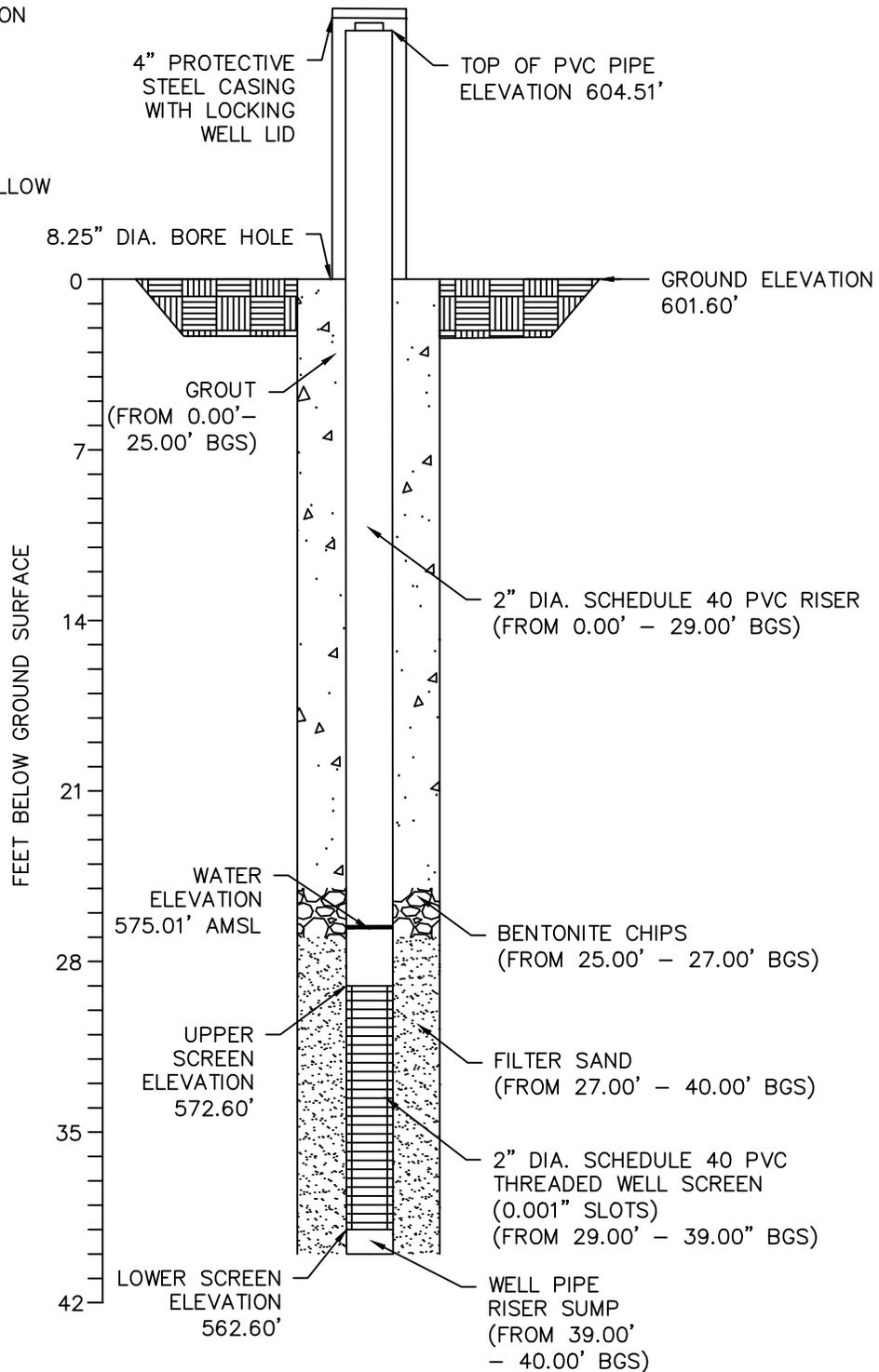
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-15C  
 INSTALLATION DEPTH: 40.00'  
 INSTALLATION DATE: 10/30/2020

DEPTH TO WATER: 575.01' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

NORTHING: 1086750.20  
 EASTING: 1055307.87

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER

# MONITORING WELL MW-BCP-15C (N.T.S)



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 SUITE 202  
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WELL ID: MW-BCP-15C  
 DRAWING NUMBER  
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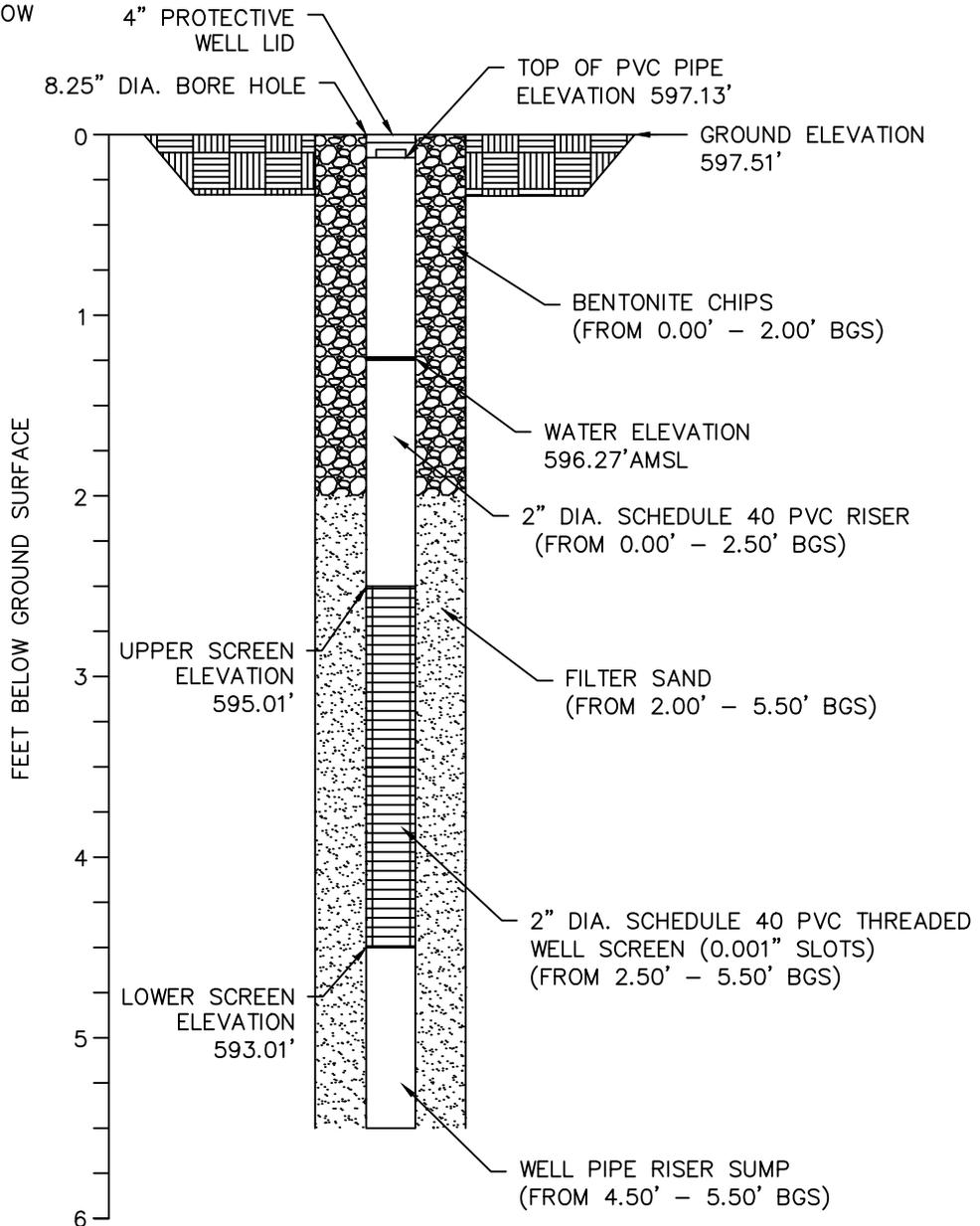
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-16A  
 INSTALLATION DEPTH: 5.50'  
 INSTALLATION DATE: 11/04/2020

# MONITORING WELL MW-BCP-16A (N.T.S)

DEPTH TO WATER: 596.27' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

NORTHING: 1086204.34  
 EASTING: 1055451.81

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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WELL ID: MW-BCP-15C  
 DRAWING NUMBER  
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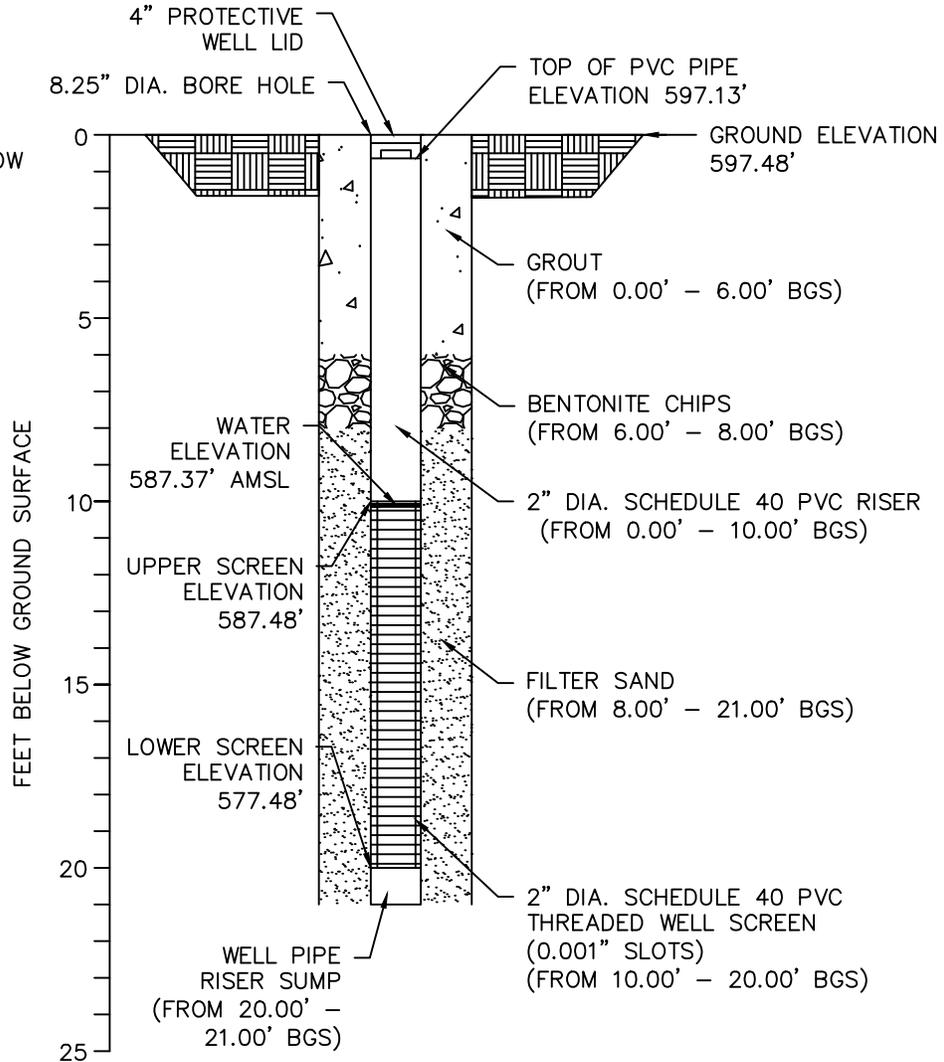
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-16B  
 INSTALLATION DEPTH: 21.00'  
 INSTALLATION DATE: 11/3/2020

DEPTH TO WATER: 587.37' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 1/11/2021

NORTHING: 1086200.13  
 EASTING: 1055451.68

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER

# MONITORING WELL MW-BCP-16B (N.T.S)



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 SUITE 202  
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WELL ID: MW-BCP-16B  
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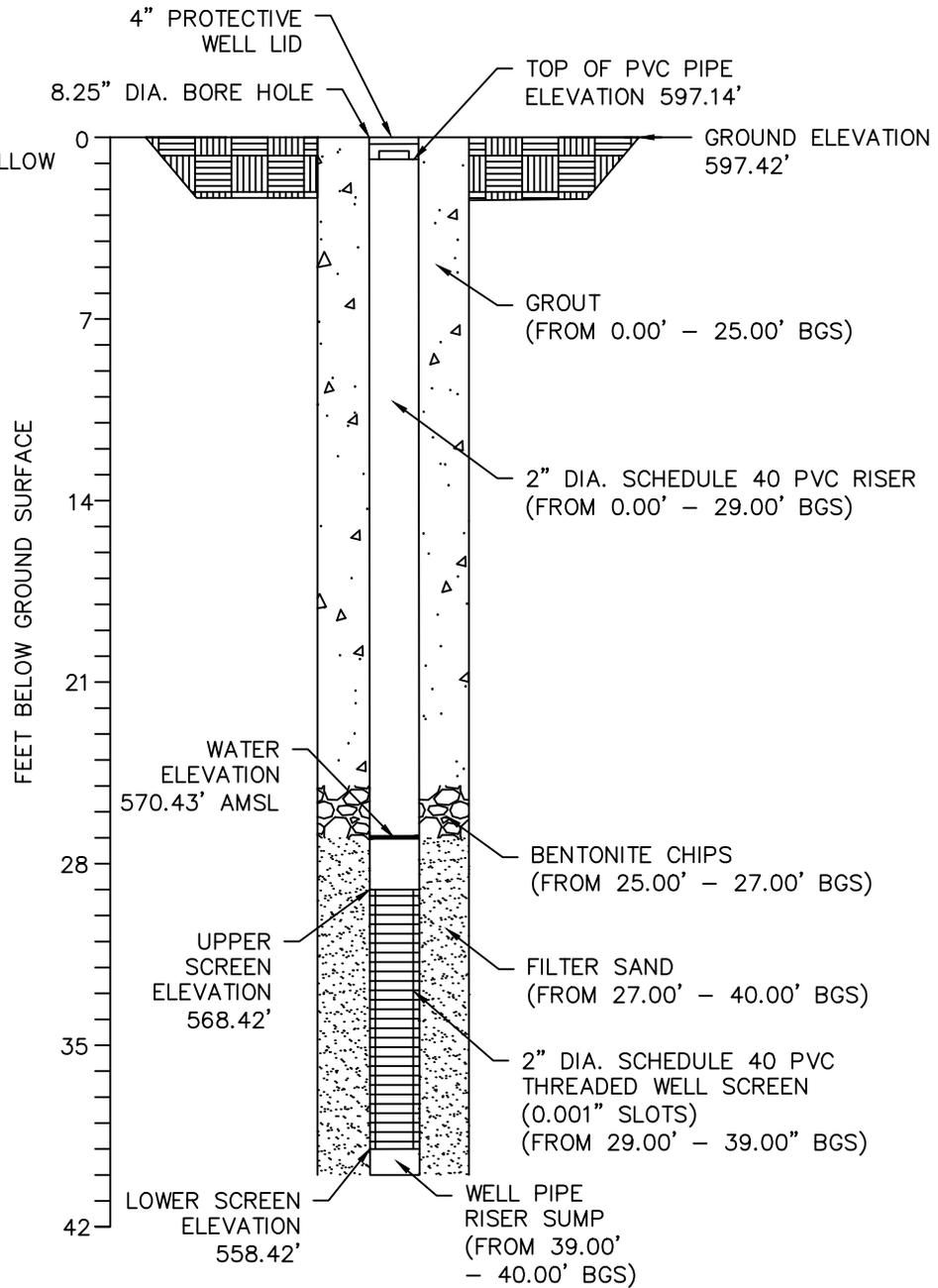
# MONITORING WELL MW-BCP-16C (N.T.S)

PROJECT NO.: RITC  
 WELL NO.: MW-BCP-16C  
 INSTALLATION DEPTH: 40.00'  
 INSTALLATION DATE: 11/3/2020

DEPTH TO WATER: 570.43' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

NORTHING: 1086195.83  
 EASTING: 1055451.88

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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WELL ID: MW-BCP-16C  
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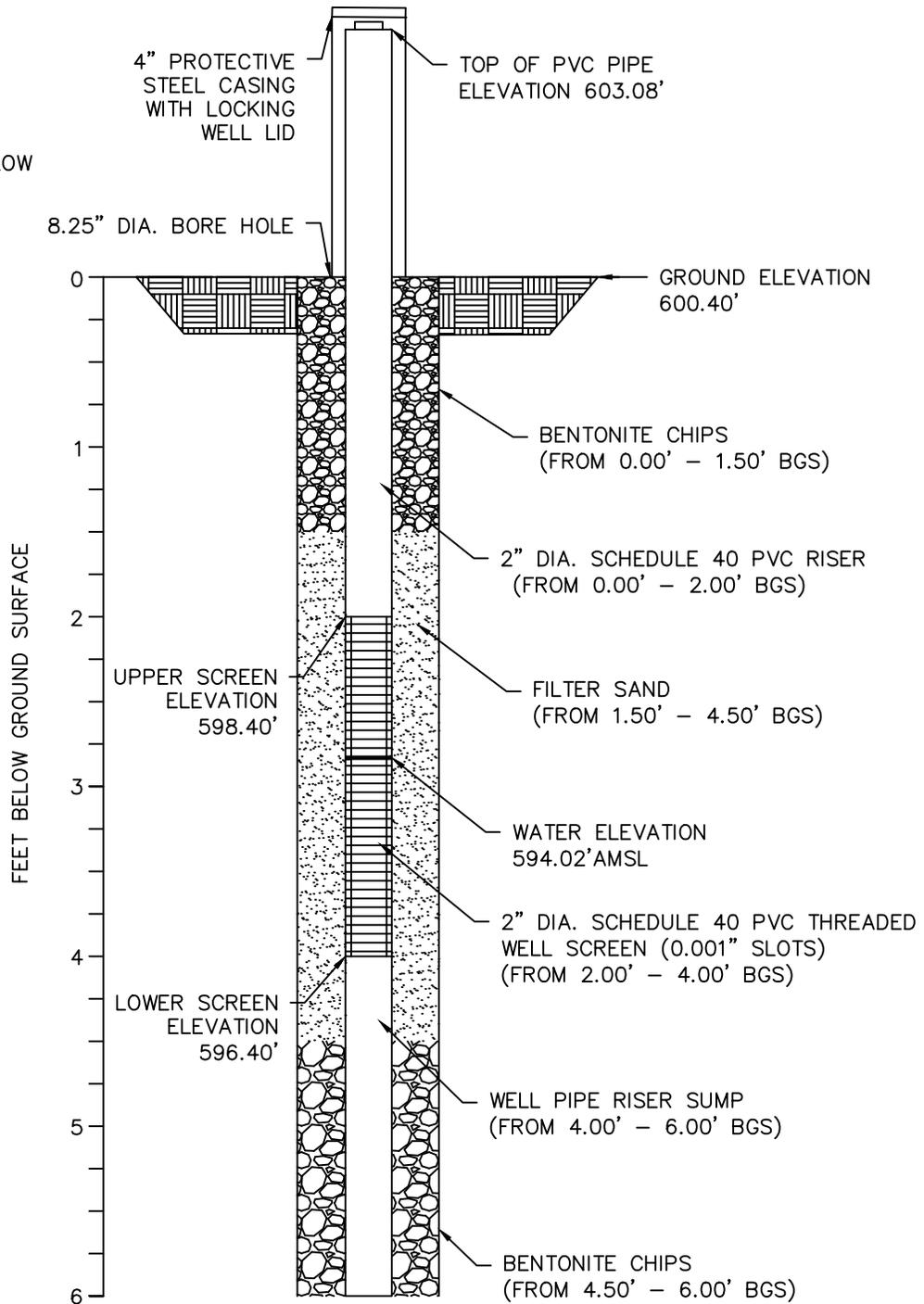
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-17A  
 INSTALLATION DEPTH: 6.00'  
 INSTALLATION DATE: 11/2/2020

DEPTH TO WATER: 594.02' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

NORTHING: 1086324.27  
 EASTING: 1056161.36

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER

# MONITORING WELL MW-BCP-17A (N.T.S)



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WELL ID: MW-BCP-17A  
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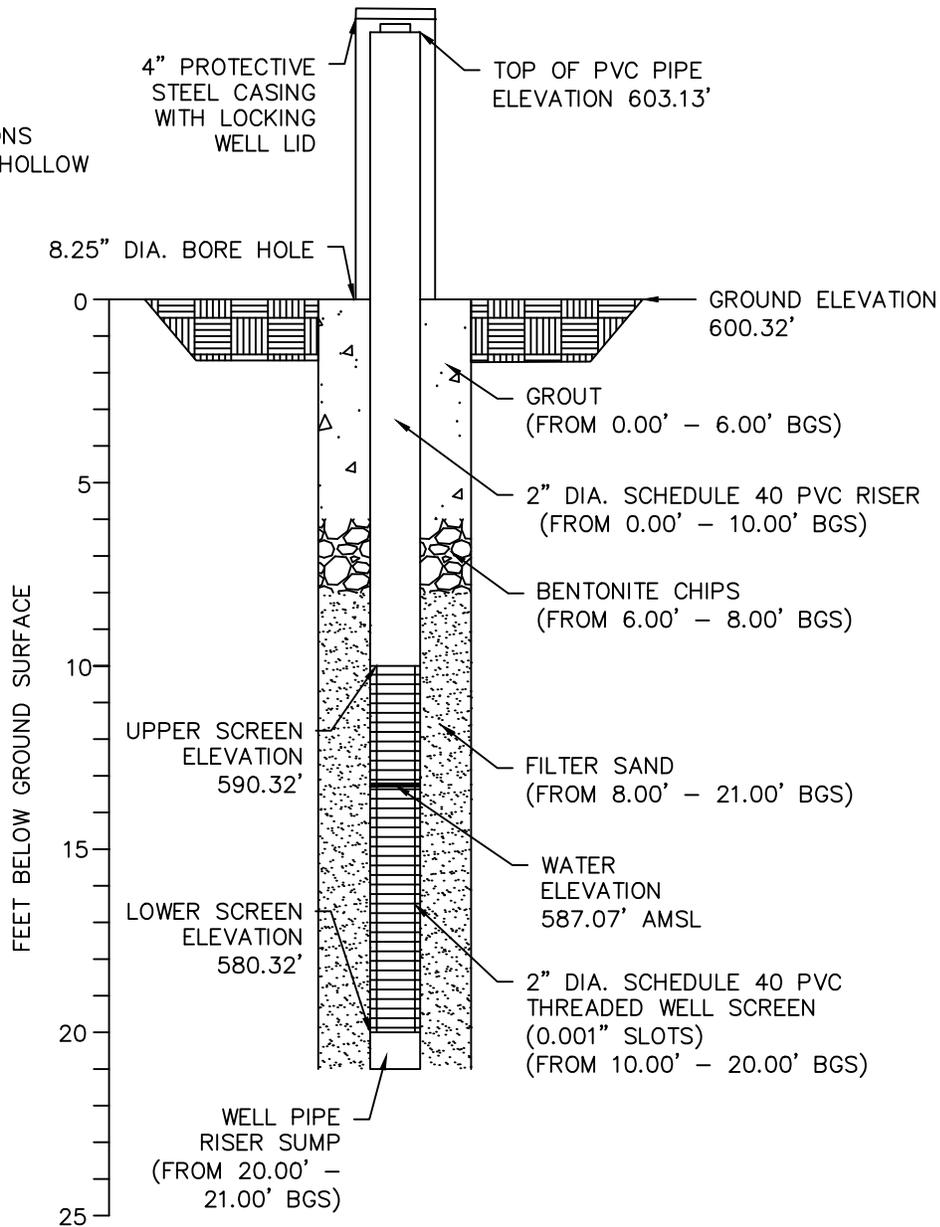
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-17B  
 INSTALLATION DEPTH: 21.00'  
 INSTALLATION DATE: 11/2/2020

DEPTH TO WATER: 587.07' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 1/11/2021

NORTHING: 1086319.17  
 EASTING: 1056162.34

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER

# MONITORING WELL MW-BCP-17B (N.T.S)



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WELL ID: MW-BCP-17B  
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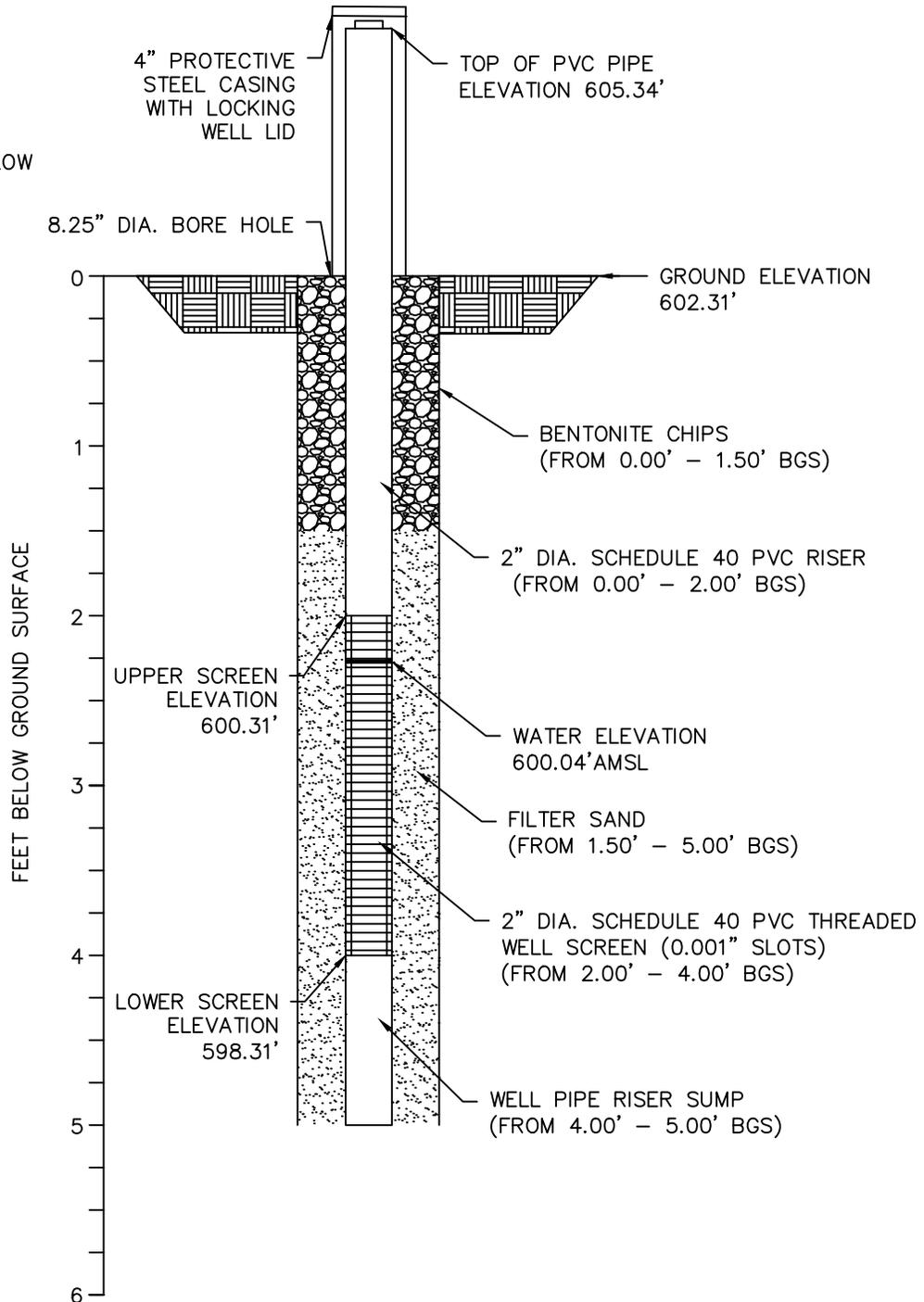
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-18A  
 INSTALLATION DEPTH: 5.00'  
 INSTALLATION DATE: 11/4/2020

# MONITORING WELL MW-BCP-18A (N.T.S)

DEPTH TO WATER: 600.04' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

NORTHING: 1086411.63  
 EASTING: 1056833.33

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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 SUITE 202  
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WELL ID: MW-BCP-18A  
 DRAWING NUMBER  
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DRAWING BY: REB

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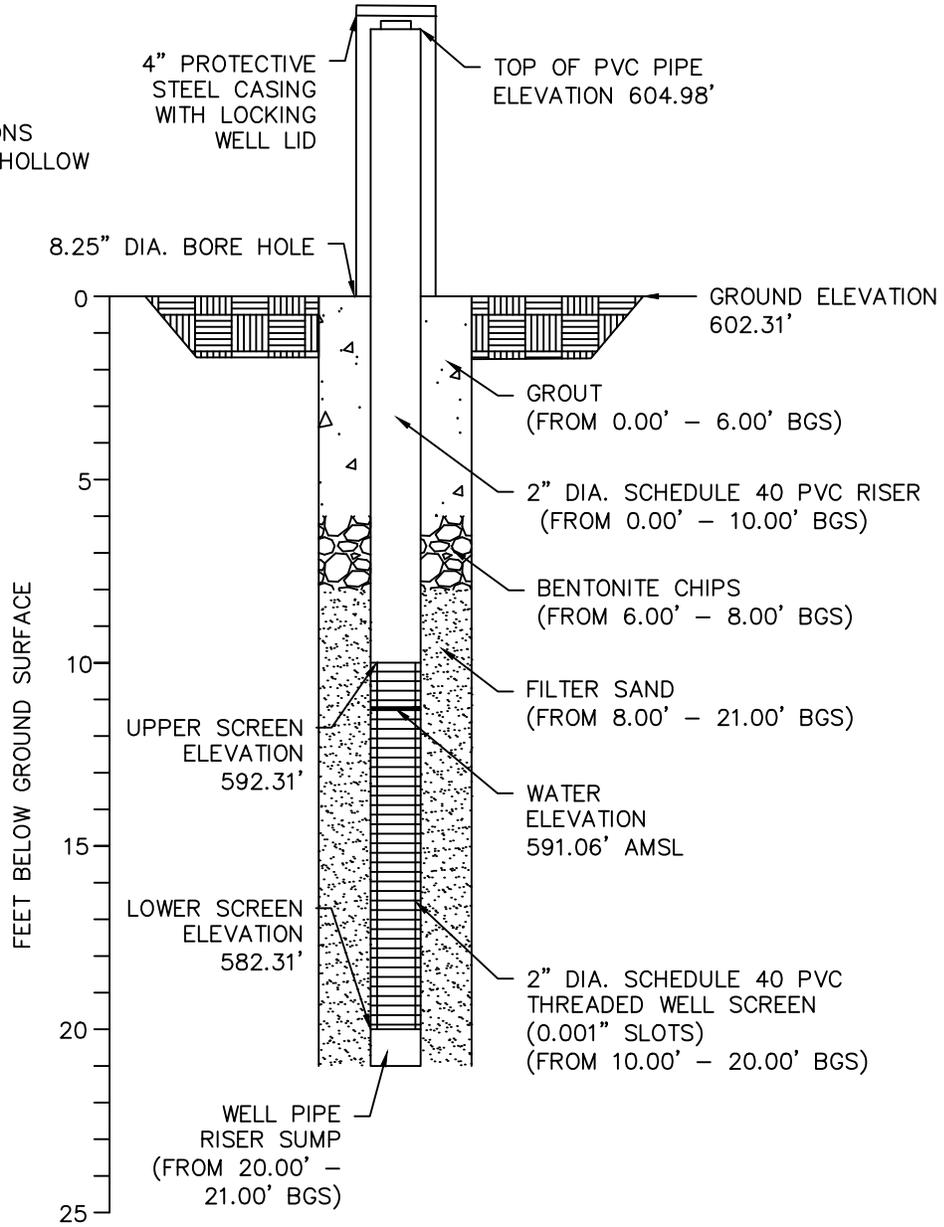
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-18B  
 INSTALLATION DEPTH: 21.00'  
 INSTALLATION DATE: 11/4/2020

# MONITORING WELL MW-BCP-18B (N.T.S)

DEPTH TO WATER: 591.06' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 1/11/2021

NORTHING: 1086319.17  
 EASTING: 1056162.34

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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 SUITE 202  
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WELL ID: MW-BCP-18B  
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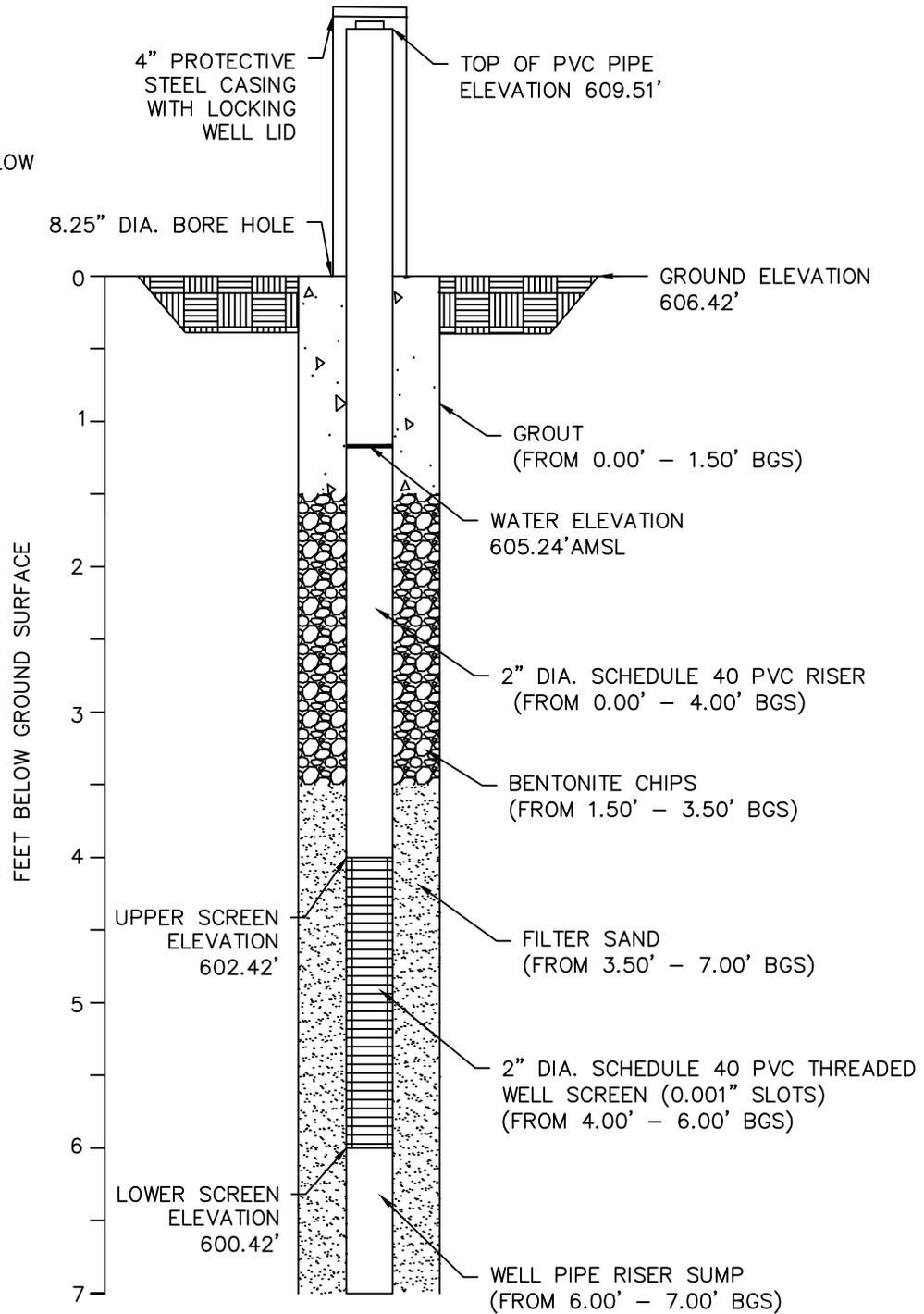
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-19A  
 INSTALLATION DEPTH: 7.00'  
 INSTALLATION DATE: 11/5/2020

# MONITORING WELL MW-BCP-19A (N.T.S)

DEPTH TO WATER: 605.24' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

NORTHING: 1086751.40  
 EASTING: 1057262.72

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



481 CARLISLE DRIVE  
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WELL ID: MW-BCP-19A  
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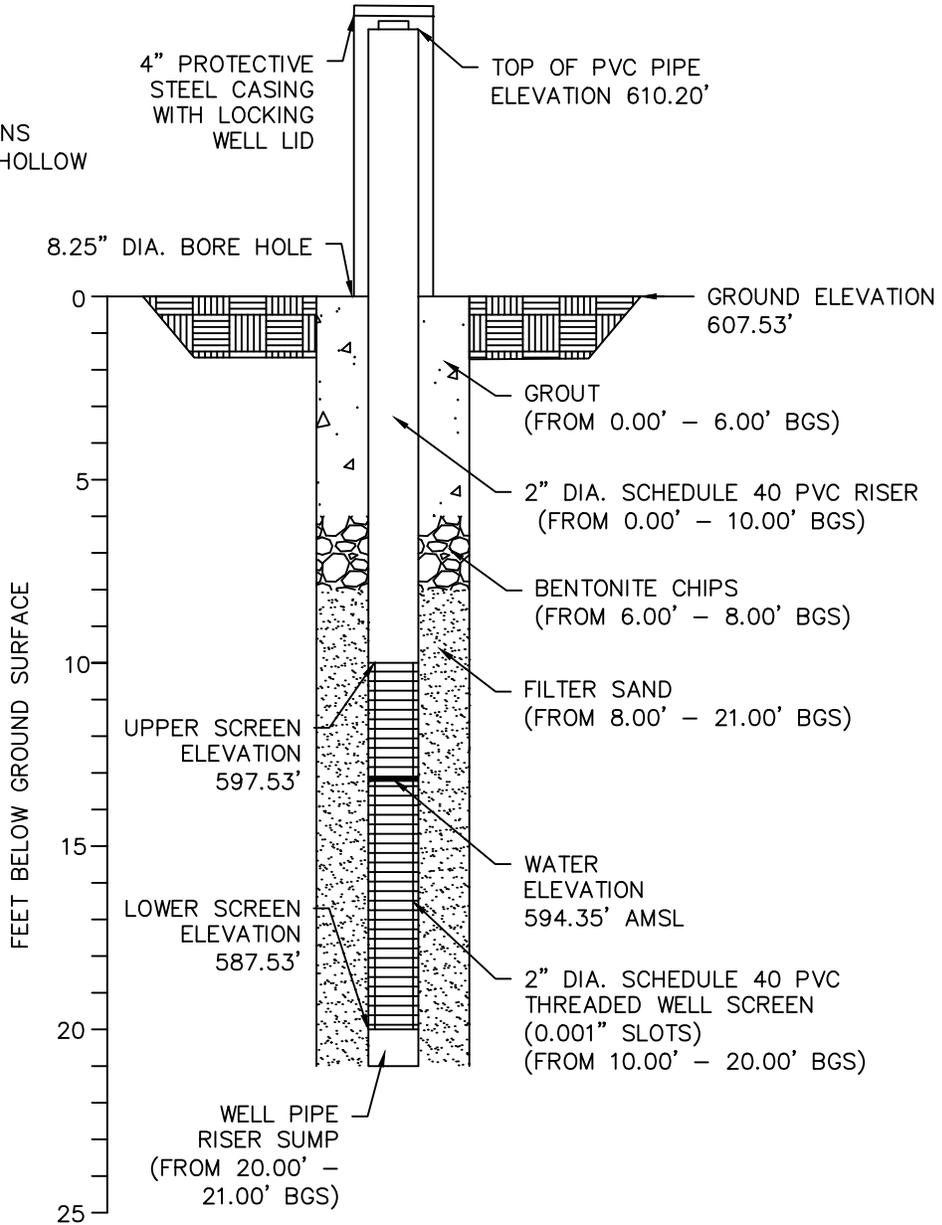
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-19B  
 INSTALLATION DEPTH: 21.00'  
 INSTALLATION DATE: 11/5/2020

# MONITORING WELL MW-BCP-19B (N.T.S)

DEPTH TO WATER: 594.35' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 1/11/2021

NORTHING: 1086781.99  
 EASTING: 1057247.51

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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WELL ID: MW-BCP-19B  
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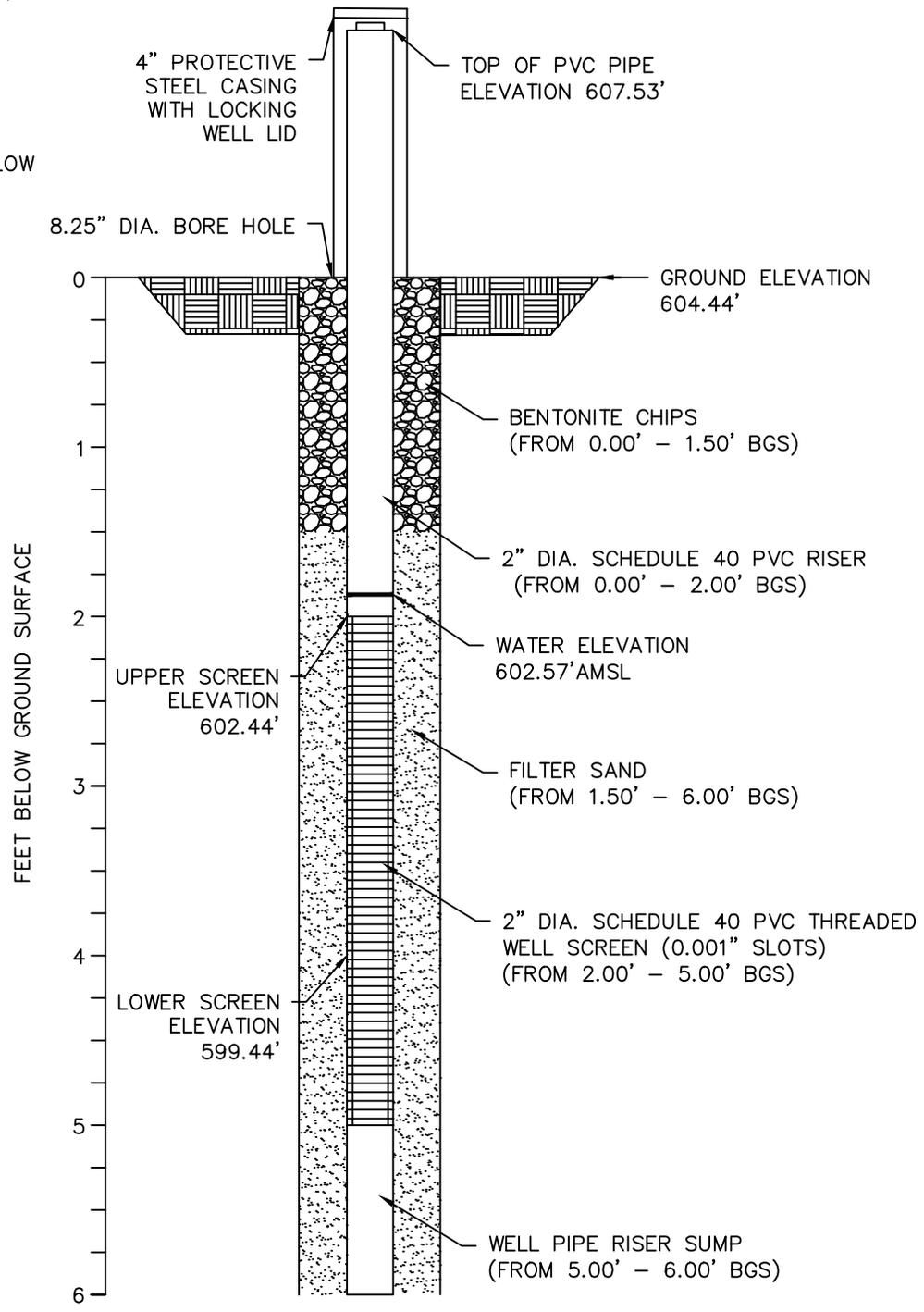
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-20A  
 INSTALLATION DEPTH: 6.00'  
 INSTALLATION DATE: 11/9/2020

# MONITORING WELL MW-BCP-20A (N.T.S)

DEPTH TO WATER: 602.57' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 01/11/2021

NORTHING: 1086682.38  
 EASTING: 1056634.82

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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WELL ID: MW-BCP-20A  
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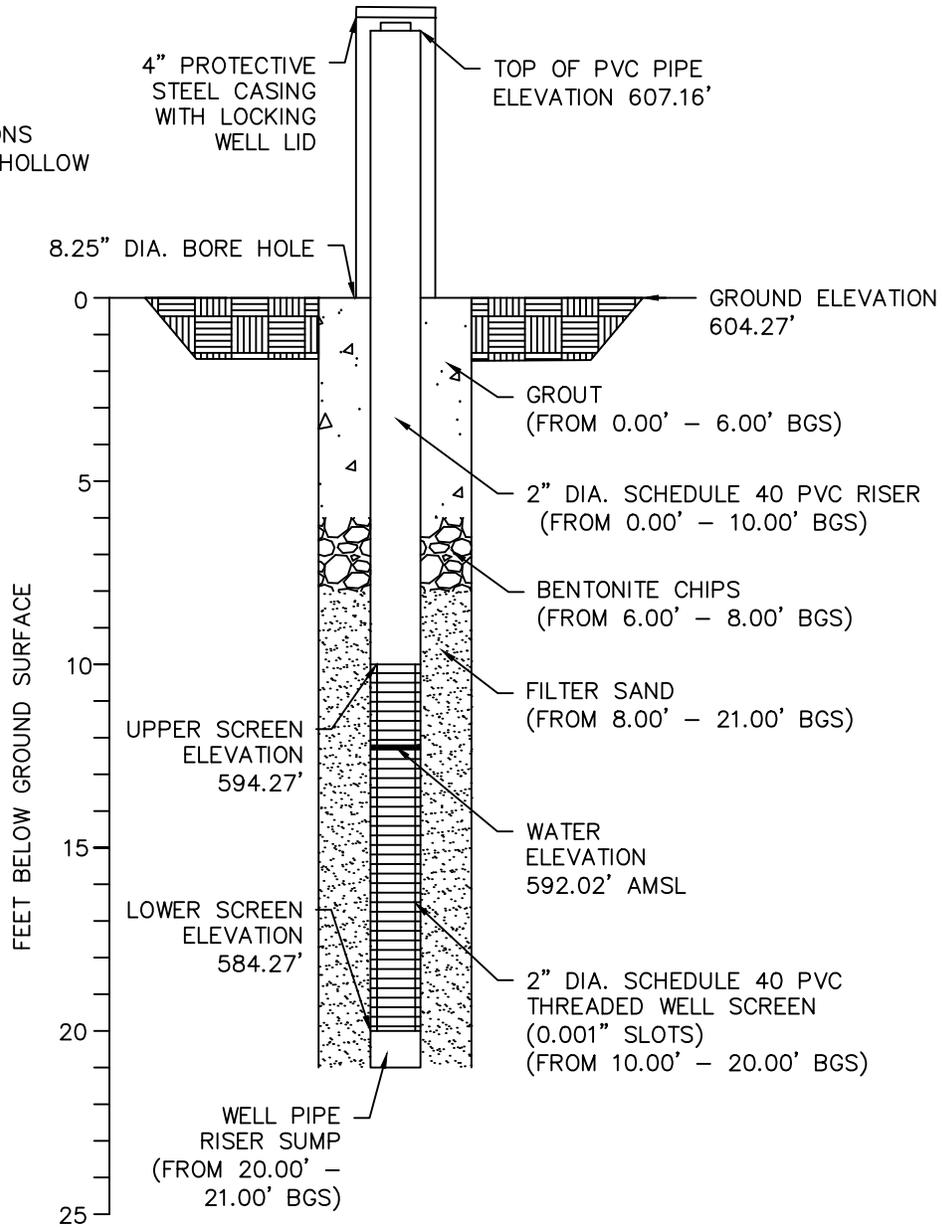
PROJECT NO.:RITC  
 WELL NO.: MW-BCP-20B  
 INSTALLATION DEPTH: 21.00'  
 INSTALLATION DATE:11/6/2020

# MONITORING WELL MW-BCP-20B (N.T.S)

DEPTH TO WATER: 592.02' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE:1/11/2021

NORTHING: 1086677.23  
 EASTING: 1056636.43

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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 SUITE 202  
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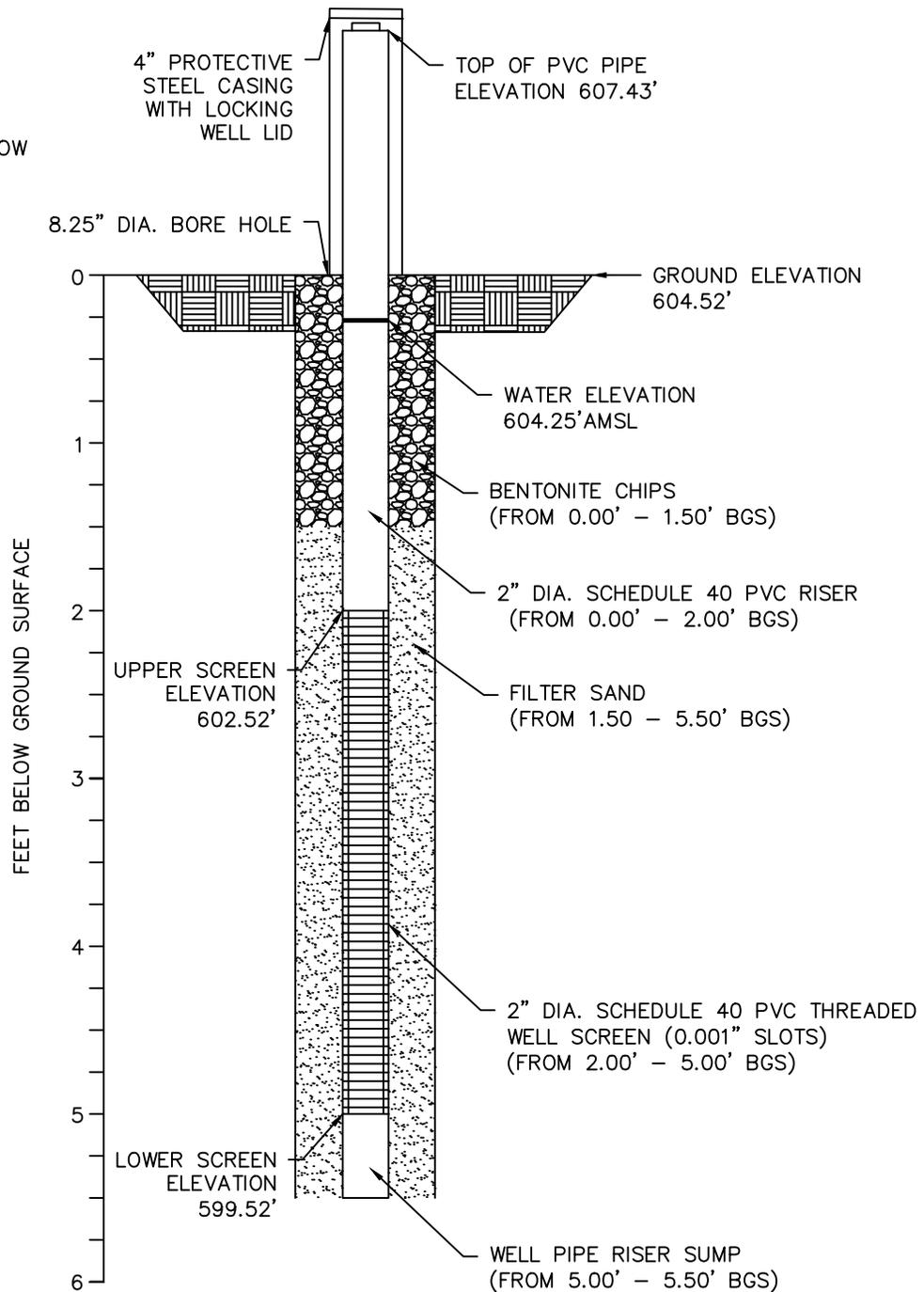
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-21A  
 INSTALLATION DEPTH: 5.50'  
 INSTALLATION DATE: 06/24/2021

# MONITORING WELL MW-BCP-21A (N.T.S)

DEPTH TO WATER: 604.25' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 09/20/2021

NORTHING: 1087819.76  
 EASTING: 1055959.62

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



481 CARLISLE DRIVE  
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WELL ID: MW-BCP-21A  
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RIVERVIEW INNOVATION &  
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DRAWING BY: REB

CHECKED: JRE

APPROVED: TDW

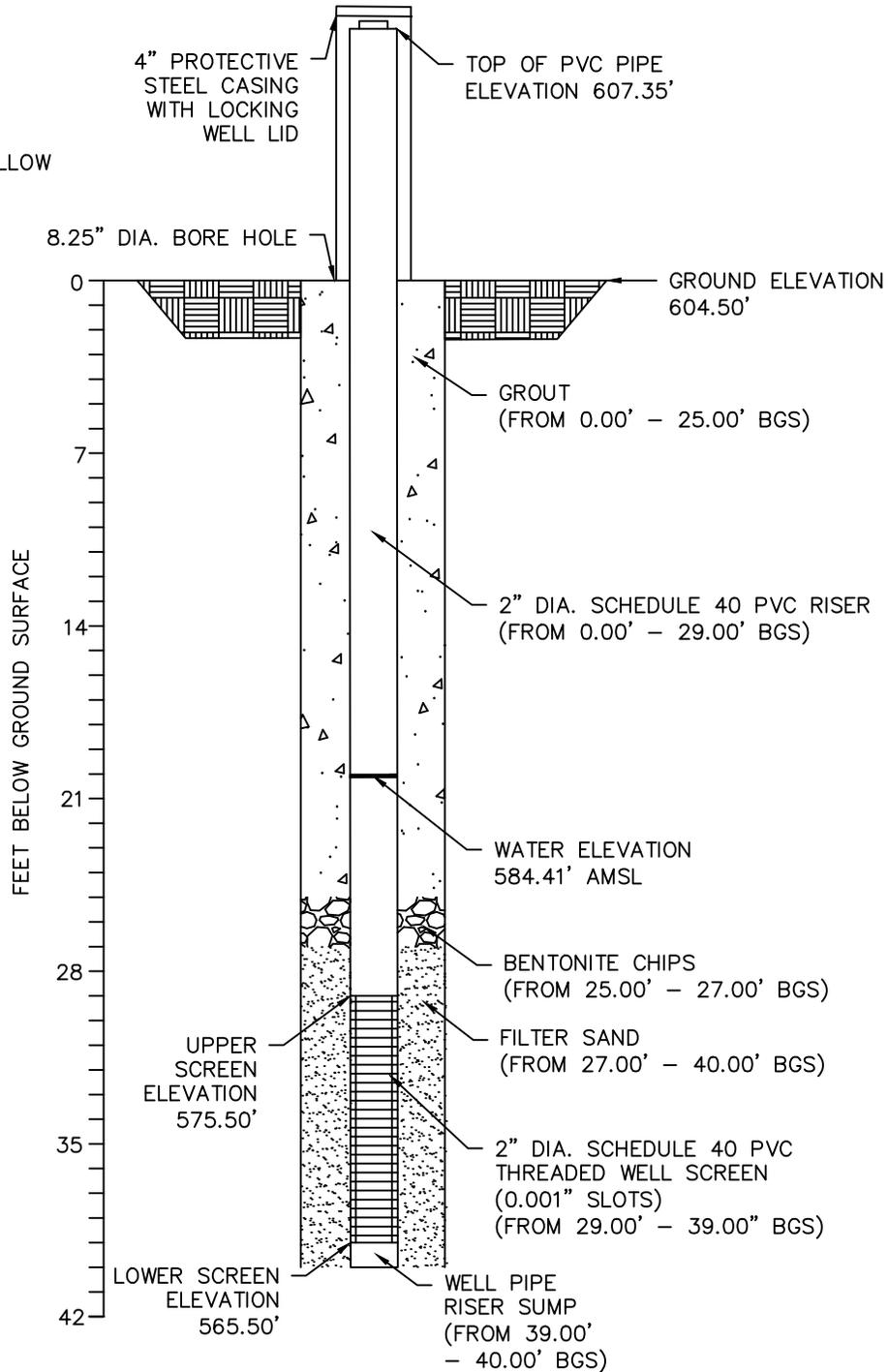
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PROJECT NO.: RITC  
 WELL NO.: MW-BCP-21C  
 INSTALLATION DEPTH: 40.00'  
 INSTALLATION DATE: 6/23/2021  
 DEPTH TO WATER: 584.41' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 09/20/2021

NORTHING: 1087820.16  
 EASTING: 1055954.45

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER

# MONITORING WELL MW-BCP-21C (N.T.S)



481 CARLISLE DRIVE  
 SUITE 202  
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WELL ID: MW-BCP-21C  
 DRAWING NUMBER  
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RIVERVIEW INNOVATION &  
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 3875 RIVER ROAD  
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CHECKED: JRE

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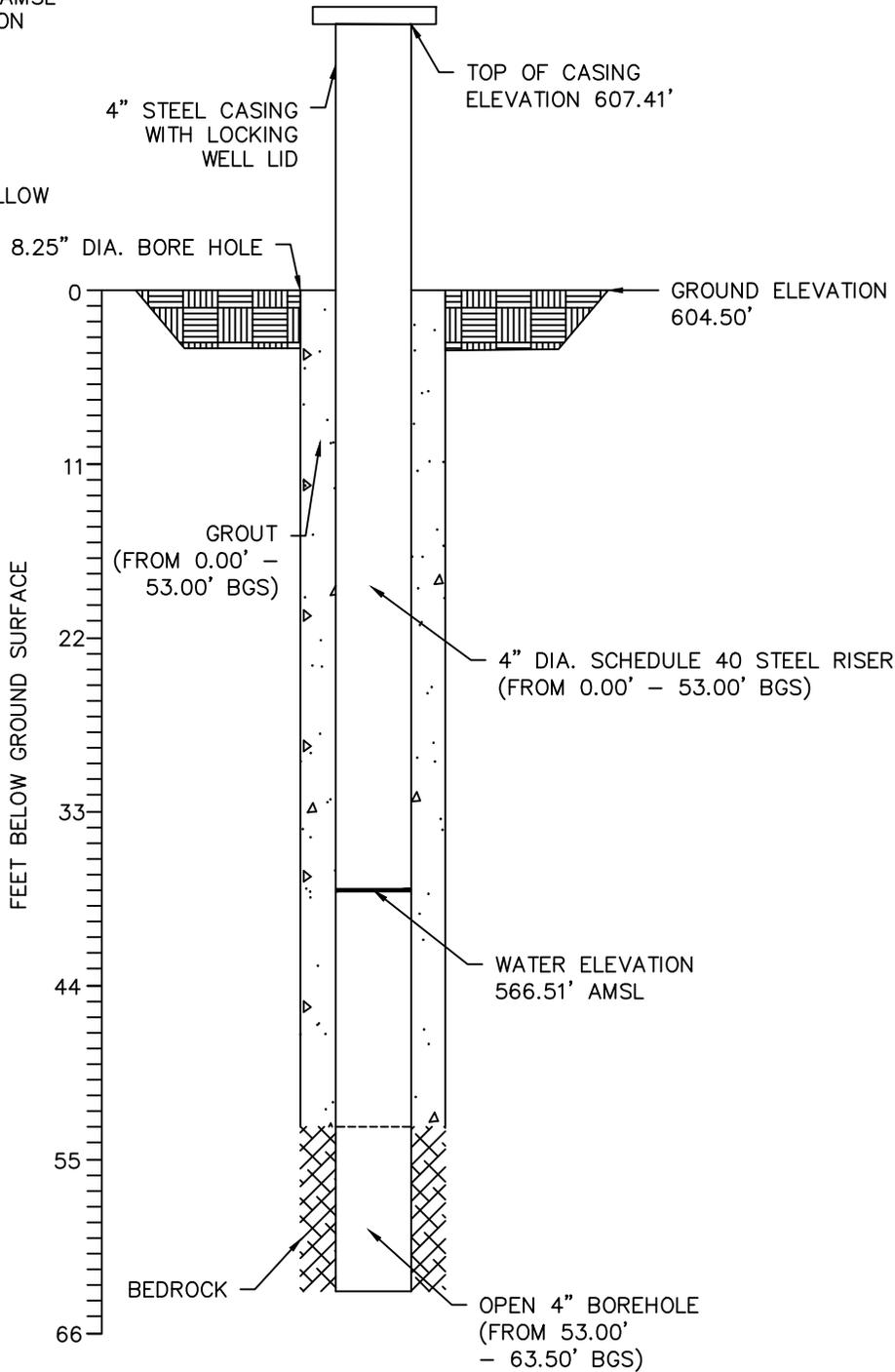
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-21D  
 INSTALLATION DEPTH: 63.50'  
 INSTALLATION DATE: 07/02/2021

# MONITORING WELL MW-BCP-21D (N.T.S)

DEPTH TO WATER: 566.51' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 09/20/2021

NORTHING: 1087819.21  
 EASTING: 1055965.50

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



481 CARLISLE DRIVE  
 SUITE 202  
 HERNDON VIRGINIA, 20170  
 (703)722-6049

WELL ID: MW-BCP-21D  
 DRAWING NUMBER  
 D-

RIVERVIEW INNOVATION &  
 TECHNOLOGY CAMPUS, INC.  
 3875 RIVER ROAD  
 TONAWANDA, NY 14150

DRAWING BY: REB  
 CHECKED: JRE  
 APPROVED: TDW  
 PROPERTY OF INVENTUM ENGINEERING PC

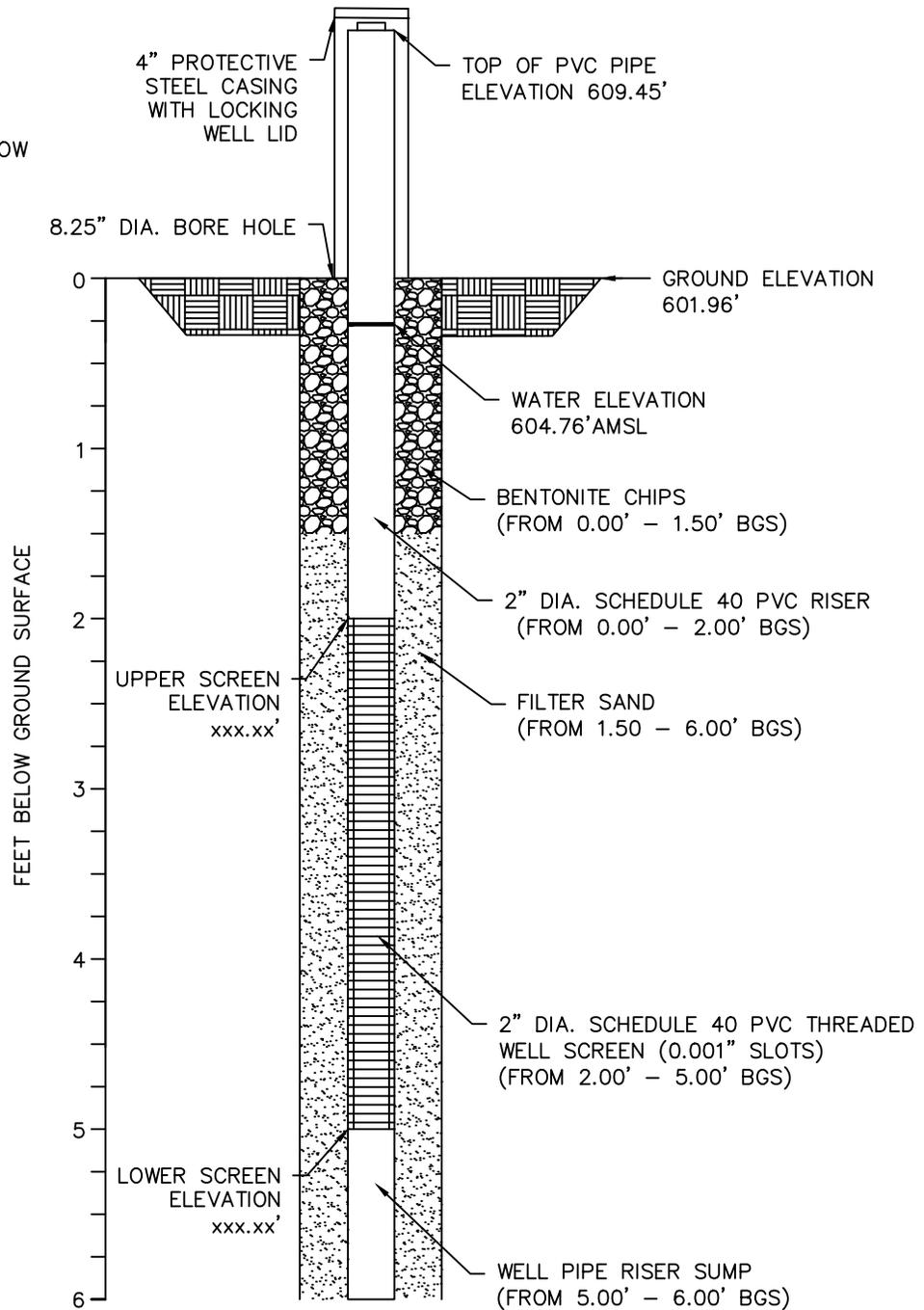
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-22A  
 INSTALLATION DEPTH: 6.00'  
 INSTALLATION DATE: 06/24/2021

DEPTH TO WATER: 604.76' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 09/20/2021

NORTHING: 1087768.44  
 EASTING: 1056964.29

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER

# MONITORING WELL MW-BCP-22A (N.T.S)



**Inventum Engineering, PC**

481 CARLISLE DRIVE  
 SUITE 202  
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 (703)722-6049

WELL ID: MW-BCP-22A  
 DRAWING NUMBER  
 D-

RIVERVIEW INNOVATION &  
 TECHNOLOGY CAMPUS, INC.  
 3875 RIVER ROAD  
 TONAWANDA, NY 14150

DRAWING BY: REB

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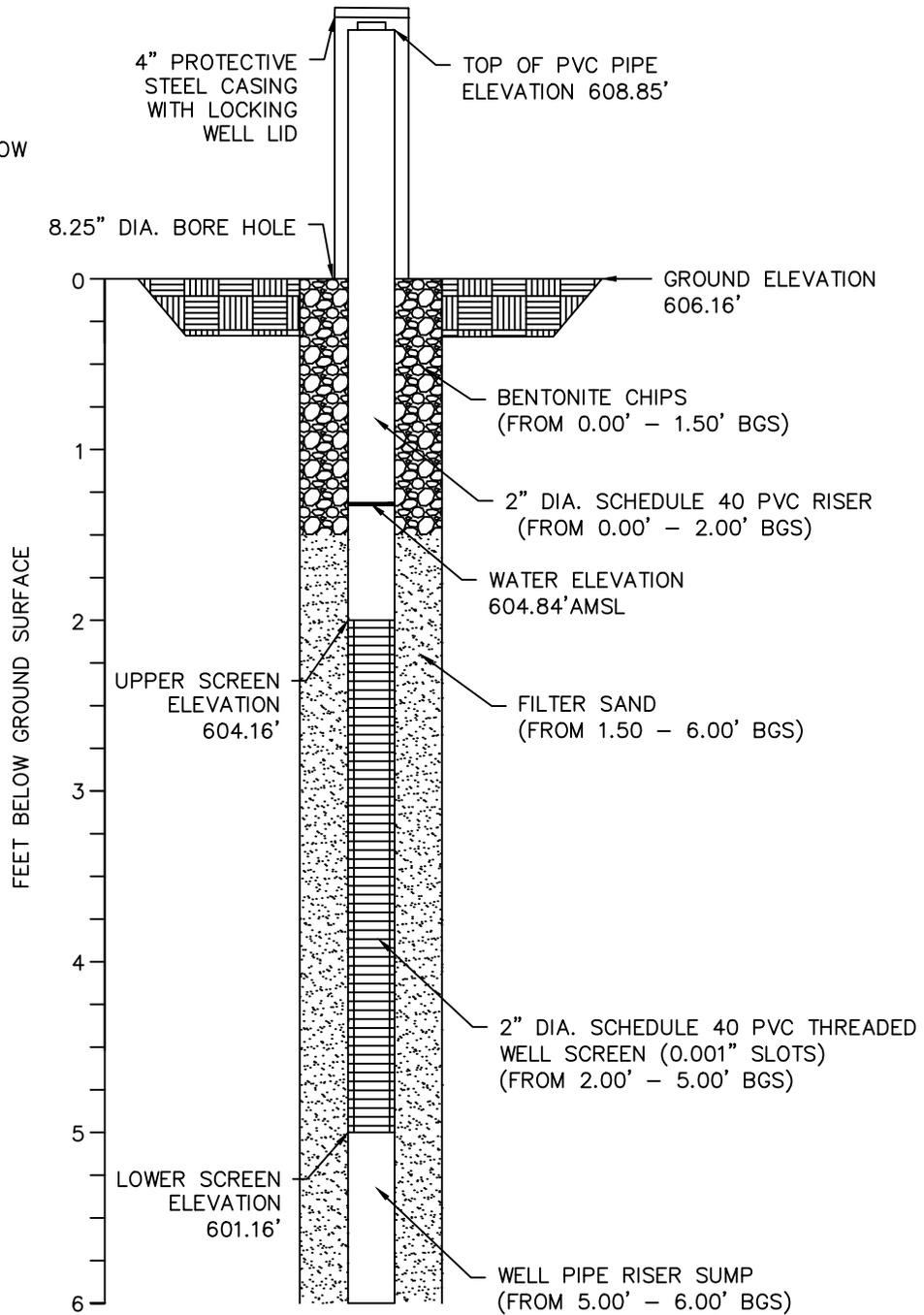
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-23A  
 INSTALLATION DEPTH: 6.00'  
 INSTALLATION DATE: 06/24/2021

# MONITORING WELL MW-BCP-23A (N.T.S)

DEPTH TO WATER: 604.84' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 09/20/2021

NORTHING: 1087804.74  
 EASTING: 1057994.20

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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 (703)722-6049

WELL ID: MW-BCP-23A  
 DRAWING NUMBER  
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RIVERVIEW INNOVATION &  
 TECHNOLOGY CAMPUS, INC.  
 3875 RIVER ROAD  
 TONAWANDA, NY 14150

DRAWING BY: REB

CHECKED: JRE

APPROVED: TDW

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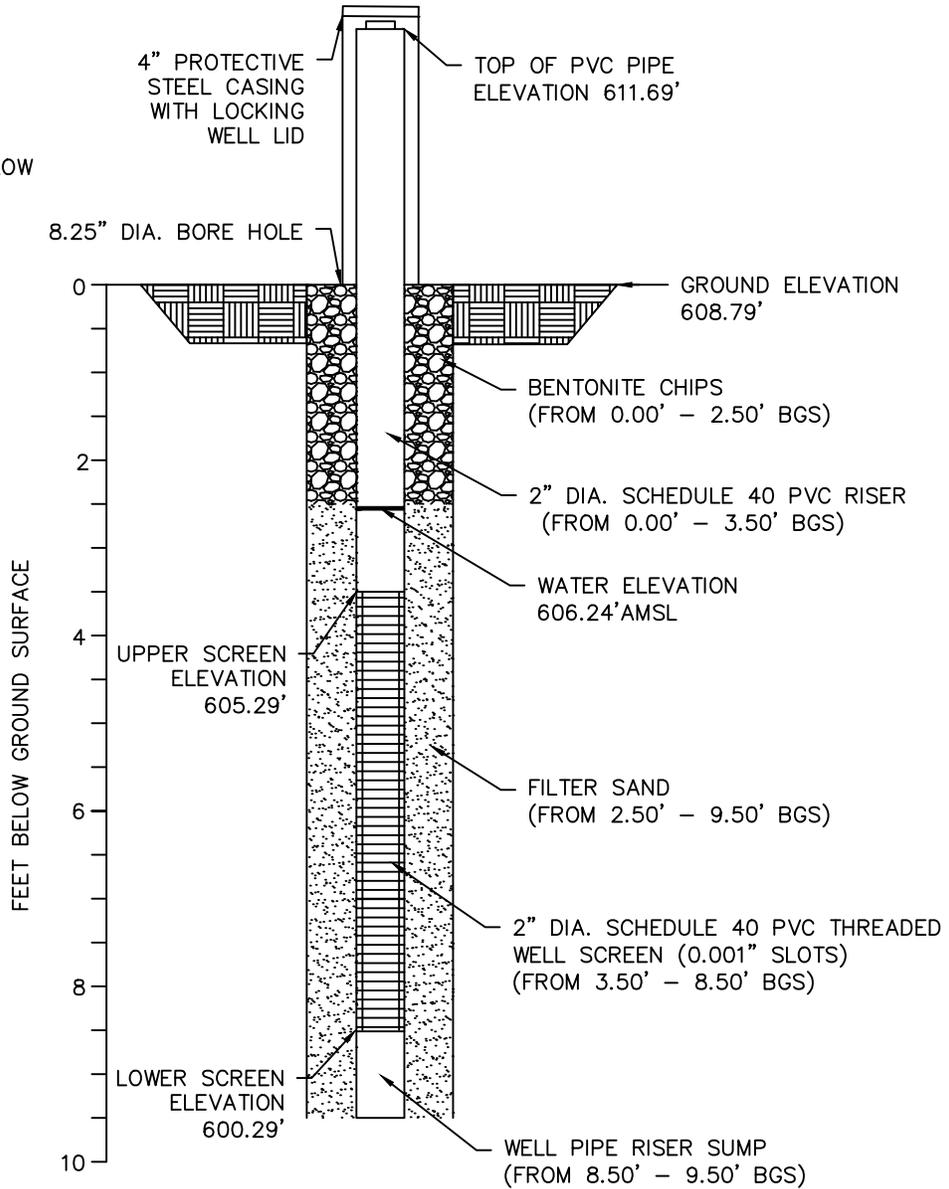
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-24A  
 INSTALLATION DEPTH: 9.50'  
 INSTALLATION DATE: 06/22/2021

# MONITORING WELL MW-BCP-24A (N.T.S)

DEPTH TO WATER: 606.24' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 09/20/2021

NORTHING: 1087117.11  
 EASTING: 1057178.46

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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 (703)722-6049

WELL ID: MW-BCP-24A  
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 3875 RIVER ROAD  
 TONAWANDA, NY 14150

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APPROVED: TDW

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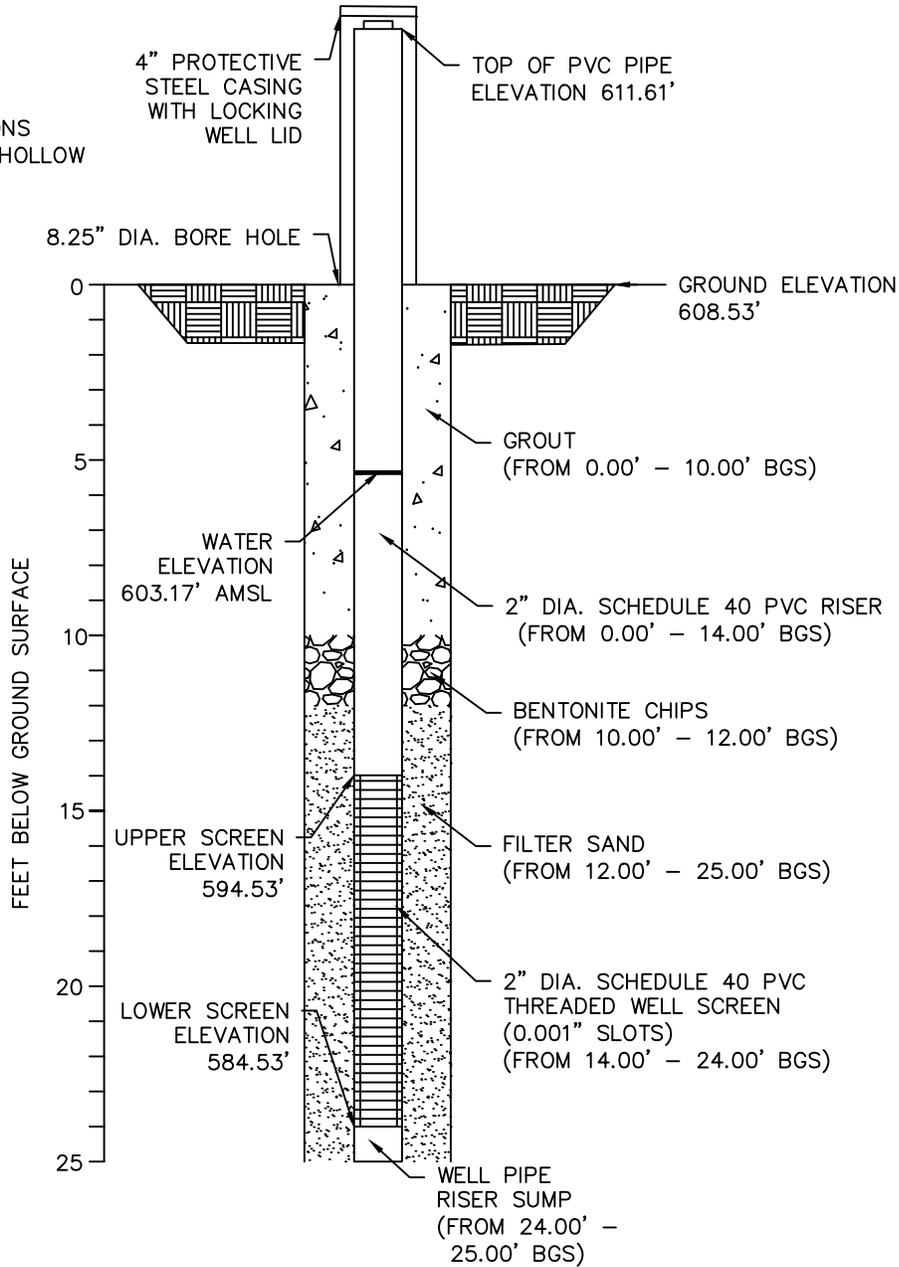
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-24B  
 INSTALLATION DEPTH: 25.00'  
 INSTALLATION DATE: 6/22/2021

# MONITORING WELL MW-BCP-24B (N.T.S)

DEPTH TO WATER: 603.17' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 9/20/2021

NORTHING: 1087112.88  
 EASTING: 1057177.03

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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 (703)722-6049

WELL ID: MW-BCP-24B  
 DRAWING NUMBER  
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RIVERVIEW INNOVATION &  
 TECHNOLOGY CAMPUS, INC.  
 3875 RIVER ROAD  
 TONAWANDA, NY 14150

DRAWING BY: REB

CHECKED: JRE

APPROVED: TDW

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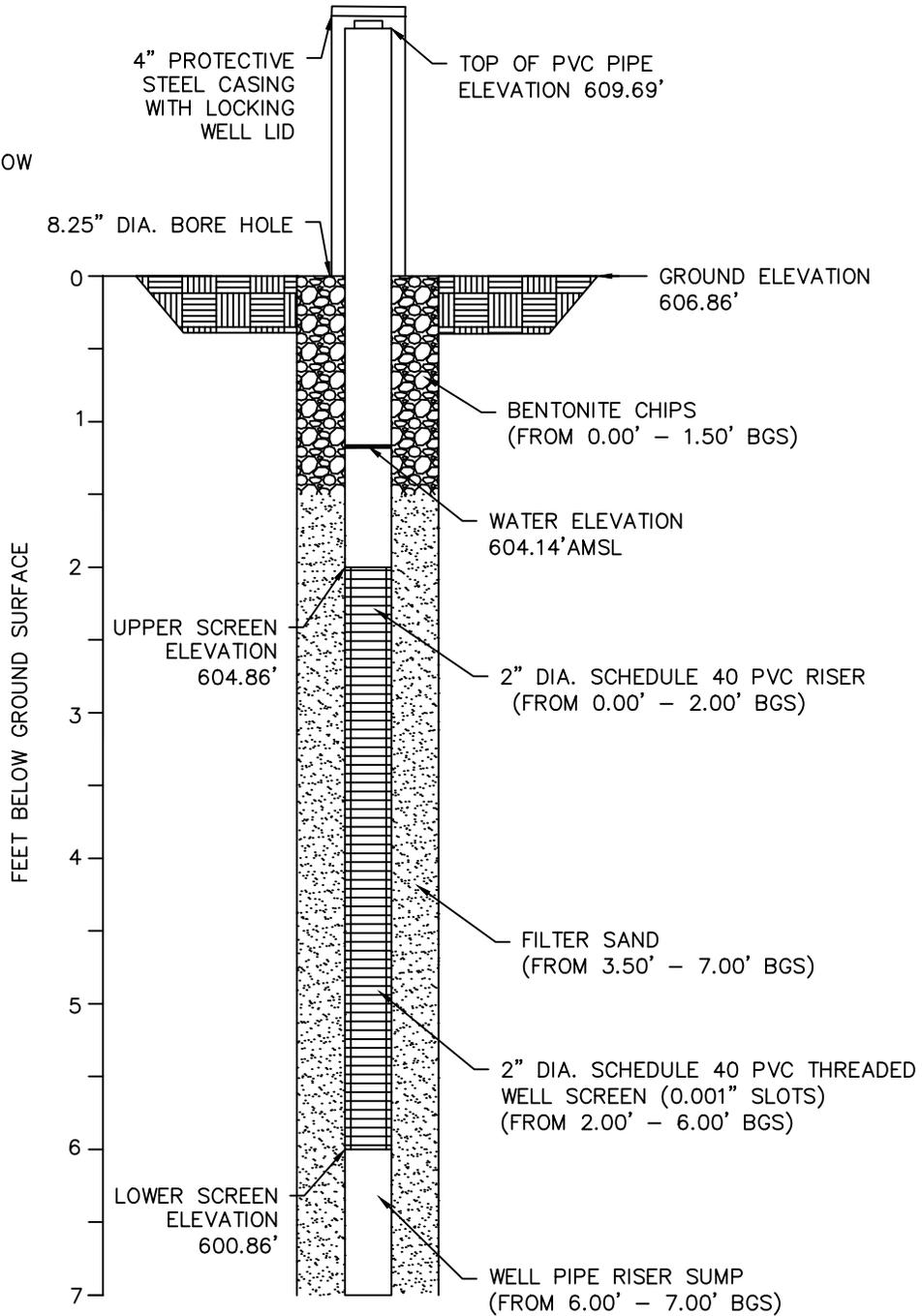
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-25A  
 INSTALLATION DEPTH: 7.00'  
 INSTALLATION DATE: 06/22/2021

# MONITORING WELL MW-BCP-25A (N.T.S)

DEPTH TO WATER: 604.14' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 09/20/2021

NORTHING: 1086740.71  
 EASTING: 1057100.68

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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 (703)722-6049

WELL ID: MW-BCP-25A  
 DRAWING NUMBER  
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RIVERVIEW INNOVATION &  
 TECHNOLOGY CAMPUS, INC.  
 3875 RIVER ROAD  
 TONAWANDA, NY 14150

DRAWING BY: REB

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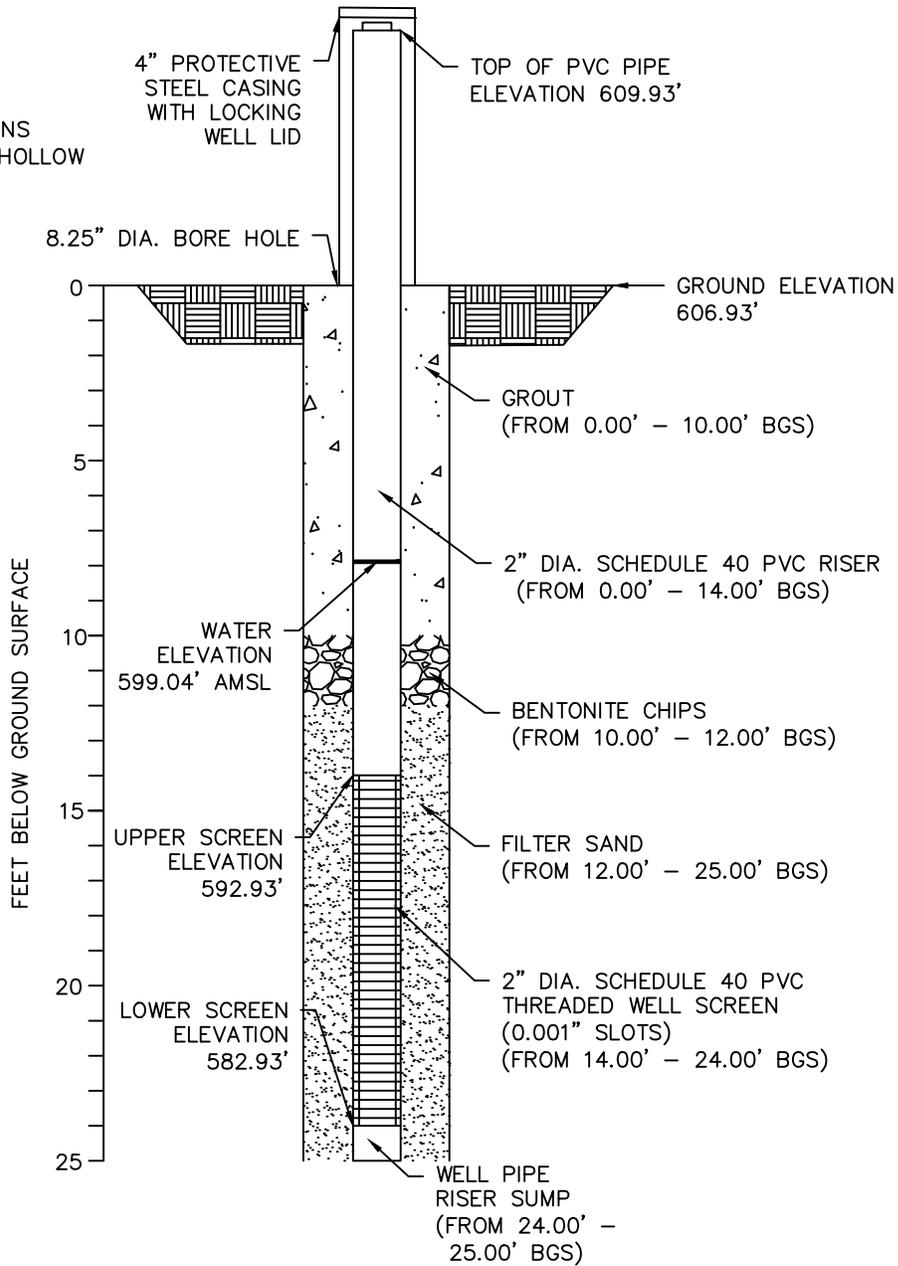
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-25B  
 INSTALLATION DEPTH: 25.00'  
 INSTALLATION DATE: 6/22/2021

# MONITORING WELL MW-BCP-25B (N.T.S)

DEPTH TO WATER: 599.04' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 9/20/2021

NORTHING: 1086737.23  
 EASTING: 1057096.37

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER



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 SUITE 202  
 HERNDON VIRGINIA, 20170  
 (703)722-6049

WELL ID: MW-BCP-25B  
 DRAWING NUMBER  
 D-

RIVERVIEW INNOVATION &  
 TECHNOLOGY CAMPUS, INC.  
 3875 RIVER ROAD  
 TONAWANDA, NY 14150

DRAWING BY: REB

CHECKED: JRE

APPROVED: TDW

PROPERTY OF INVENTUM ENGINEERING PC

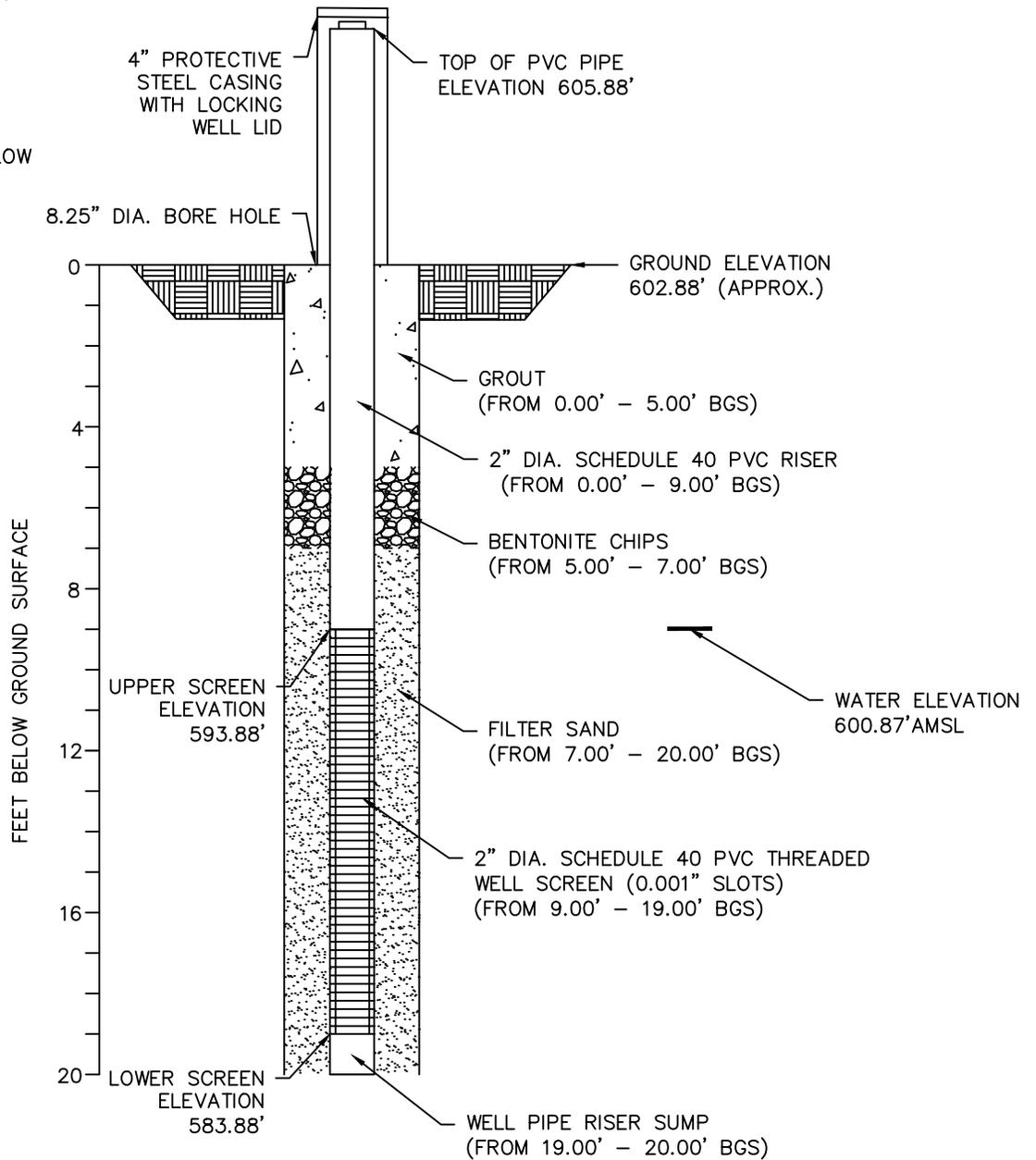
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-26B  
 INSTALLATION DEPTH: 20.00'  
 INSTALLATION DATE: 6/24/2021

DEPTH TO WATER: 600.87' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 9/20//2021

NORTHING: 1086578.80  
 EASTING: 1057321.76

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER

# MONITORING WELL MW-BCP-26B (N.T.S)



NOTE: GROUND ELEVATION IS ESTIMATED. UPPER AND LOWER SCREEN ELEVATIONS ARE THEREFORE ALSO ESTIMATED.



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 SUITE 202  
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 (703)722-6049

WELL ID: MW-BCP-26B  
 DRAWING NUMBER  
 D-

RIVERVIEW INNOVATION &  
 TECHNOLOGY CAMPUS, INC.  
 3875 RIVER ROAD  
 TONAWANDA, NY 14150

DRAWING BY: REB

CHECKED: JRE

APPROVED: TDW

PROPERTY OF INVENTUM ENGINEERING PC

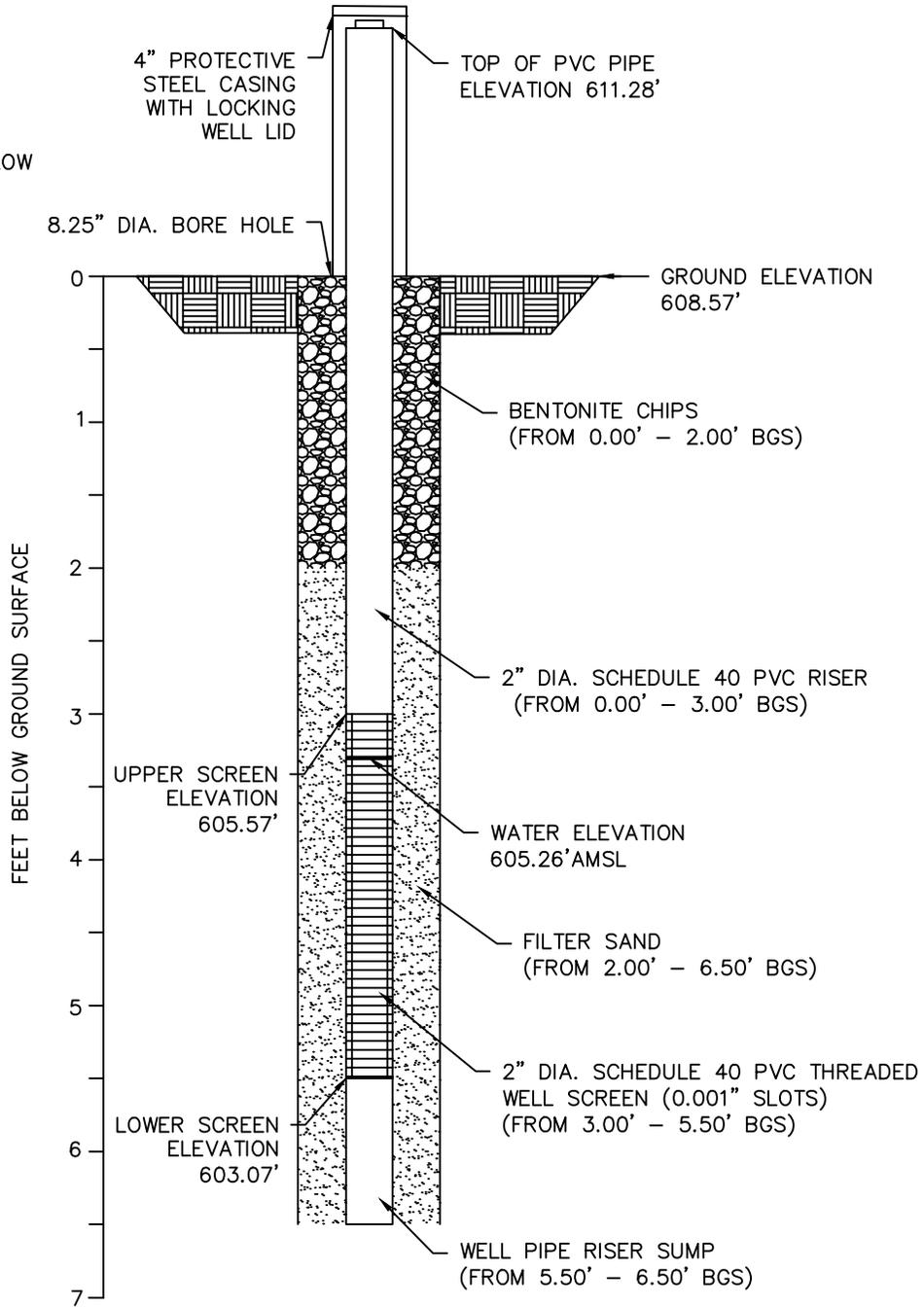
PROJECT NO.: RITC  
 WELL NO.: MW-BCP-27A  
 INSTALLATION DEPTH: 6.50'  
 INSTALLATION DATE: 06/24/2021

DEPTH TO WATER: 605.26' AMSL  
 DEPTH TO WATER COLLECTION  
 DATE: 09/20/2021

NORTHING: 1087226.57  
 EASTING: 1058255.48

DRILLER: EARTH DIMENSIONS  
 DRILLING METHOD: 4.25" HOLLOW  
 STEM AUGER

# MONITORING WELL MW-BCP-27A (N.T.S)



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 (703)722-6049

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 TONAWANDA, NY 14150

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APPROVED: TDW

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## Appendix C - Wetlands and Waterways Assessment





**DEPARTMENT OF THE ARMY**  
US ARMY CORPS OF ENGINEERS, BUFFALO DISTRICT  
1776 NIAGARA STREET  
BUFFALO, NEW YORK 14207-3199

January 6, 2023

Regulatory Branch

SUBJECT: Approved Jurisdictional Determination and Delineation Verification for Department of the Army Processing No. LRB-2021-01504

Inventum Engineering  
Attn: Todd Waldrop  
481 Carlisle Drive, Suite 202  
Herndon, Virginia 20170  
Email: [todd.waldrop@inventumeng.com](mailto:todd.waldrop@inventumeng.com)

Dear Mr. Waldrop:

I have reviewed your request for an approved jurisdictional determination (JD) for a 103-acre site made up of multiple parcels on the east side of River Road, in the Town of Tonawanda, Erie County, New York (Sheets 1 and 2 of 4: latitude: 42.98328 N, Longitude: -78.92505 W).

I have determined that the location and extent of all aquatic resources shown on the attached maps accurately represent the review area conditions.

Enclosed is an approved JD which verifies the limits of waters of the U.S. within the review area as depicted on Sheets 3 & 4 of 4. This approved JD will remain valid for a period of five (5) years from the date of this correspondence unless new information warrants revision of the approved JD before the expiration date. At the end of this period, a new aquatic resource delineation will be required to support any request for a new JD.

I have determined that the following aquatic resources are not waters of the U.S. as noted on the attached Approved Jurisdictional Determination Form 1 of 1: Wetlands 1, 2, 3, 4, 5, 6, Ponds 1 & 2, Ponds from Coke removal, and Ditches 1 and 2. Therefore, these aquatic resources are not regulated under Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act of 1899. Department of the Army authorization is not required if you propose work, installation of structures, or a discharge of dredged or fill material in these aquatic resources.

Based upon the information provided and as shown on the attached maps, the proposed activity is occurring entirely outside of the geographic limits of any waters of the U.S. Therefore, it has been determined that the Corps has no jurisdiction, and a Department of Army permit is not required.

Further, the delineation included herein has been conducted to identify the location and extent of the aquatic resource boundaries and/or the jurisdictional status of aquatic resources for

Regulatory Branch

SUBJECT: Approved Jurisdictional Determination and Delineation Verification for Department of the Army Processing No. **LRB-2021-01504**

purposes of the Clean Water Act for the review area identified in this request. This delineation and/or jurisdictional determination may not be valid for the Wetland Conservation Provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should discuss the applicability of a certified wetland determination with the local USDA service center, prior to starting work.

If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Request for Appeal (RFA) form. If you request to appeal the above JD, you must submit a completed RFA form within 60 days of the date on this letter to the Great Lakes/Ohio River Division Office at the following address:

Katherine McCafferty  
Regulatory Appeals Officer  
US Army Corps of Engineers  
Great Lakes and Ohio River Division  
550 Main Street, Room 10780  
Cincinnati, Ohio 45202-3222  
Phone: 513-684-2699 Fax: 513-684-2460  
e-mail: katherine.a.mccafferty@usace.army.mil

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete; that it meets the criteria for appeal under 33 C.F.R. part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by **March 8, 2023**.

It is not necessary to submit an RFA to the Division office if you do not object to the determination in this letter.

A copy of this letter has been sent to Earth Dimensions, Inc.

Questions pertaining to this matter should be directed to me at (716)879-4240, by writing to the following address: U.S. Army Corps of Engineers Regulatory Branch 1776 Niagara Street, Buffalo, New York 14207 or by e-mail at: Shaina.r.souder@usace.army.mil

Sincerely,



Shaina R. Souder  
Biologist

Enclosures

**APPROVED JURISDICTIONAL DETERMINATION FORM**  
**U.S. Army Corps of Engineers**

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

**SECTION I: BACKGROUND INFORMATION**

**A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):** January 6, 2023

**B. DISTRICT OFFICE, FILE NAME, AND NUMBER:** Buffalo District (LRB); Inventum Engineering - Riverview Innovation & Technology Campus; LRB-2021-01504; Form 1 of 1.

**C. PROJECT LOCATION AND BACKGROUND INFORMATION:**

State: New York County: Erie City: Tonawanda

Center coordinates of site (lat/long in degree decimal format): Lat: 42.98328° N Long: -78.69843° W  
Universal Transverse Mercator: Zone: 17

Name of nearest waterbody: Niagara River

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: N/A

Name of watershed or Hydrologic Unit Code (HUC): 0412010406

- Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.  
 Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

**D. REVIEW PERFORMED FOR SITE EVALUATION:**

- Office (Desk) Determination Date: January 6, 2023  
 Field Determination. Date: October 28, 2022

**SECTION II: SUMMARY OF FINDINGS**

**A. RHA SECTION 10 DETERMINATION OF JURISDICTION.**

There **ARE NO** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

- Waters subject to the ebb and flow of the tide.  
 Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain:

**B. CWA SECTION 404 DETERMINATION OF JURISDICTION.**

There **ARE NO** "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area.

**1. Waters of the U.S.**

**a. Indicate presence of waters of U.S. in review area (check all that apply):<sup>1</sup>**

- TNWs, including territorial seas  
 Wetlands adjacent to TNWs  
 Relatively permanent waters<sup>2</sup> (RPWs) that flow directly or indirectly into TNWs  
 Non-RPWs that flow directly or indirectly into TNWs  
 Wetlands directly abutting RPWs that flow directly or indirectly into TNWs  
 Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs  
 Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs  
 Impoundments of jurisdictional waters  
 Isolated (interstate or intrastate) waters, including isolated wetlands

**b. Identify (estimate) size of waters of the U.S. in the review area:**

Non-wetland waters: linear feet: width (ft) and/or acres.

<sup>1</sup> Boxes checked below shall be supported by completing the appropriate sections in Section III below.

<sup>2</sup> For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

Form 1 of 1  
 LRB-2021-01504 Wetlands 1, 2, 3, 4, 5, 6  
 Ponds 1, 2, 3, & Ponds\_FromCokeRemoval  
 Ditches 1 and 2  
 Isolated Wetlands/Preamble Non-jurisdictional Aquatic Resources  
 Page 2

Wetlands:            acres.

c. **Limits (boundaries) of jurisdiction** based on: **Pick List**  
 Elevation of established OHWM (if known):

2. **Non-regulated waters/wetlands (check if applicable):**<sup>3</sup>

Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.

The review area is an approximately 103-acre irregular-shaped area made up of multiple parcels on the east side of River Road, in the Town of Tonawanda, Erie County, New York. The review area is a highly disturbed parcel that is contaminated with Coke and the current active project is removing much of the coke. There are remnant buildings and other human structures on the parcel too. The review area contains several aquatic resources including constructed ponds and ditches that are part of a drainage system to work with the products on-site, as follows:

Wetland 1	.751 acre	PEM
Wetland 2	.125 acre	PEM
Wetland 3	.32 acre	PEM
Wetland 4	.364 acre	PEM
Wetland 5	.078 acre	PEM
Wetland 6	.026 acre	PEM
Pond Areas (from recent Coke removal)	1.308 acre	POW
Pond 1	.432 acre	POW
Pond 2	.248 acre	POW
Ditch 1	1240 ft	R4
Ditch 2	866 ft	R4
Pond 3	.122 acre	POW

Explain: Wetlands 1, 2, 3, 4, 5, 6, are not, or could not be used by interstate or foreign travelers for recreational or other purposes; or from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or is used or could be used for industrial purposes by industries in interstate commerce. Further, the subject wetlands, ponds, and ditches do not meet adjacency criteria and has been determined to be an isolated, intrastate wetland with no interstate or foreign commerce nexus.

The review area also contains Ponds 1, 2, 3, and Pond Areas (from recent Coke removal), and Ditches 1 and 2. Ponds 1, 2, 3, and Ditches 1 and 2 are man-made storm water control features that are part of an active, approved Stormwater Pollution Prevention Plan and are actively managed within this area. The Pond areas in the west-central portion of the site are waters that resulted from recent coke removal (since the delineation completion in 2021) and are now functioning as a man-made pond complex consisting of three ponds. It has been determined that these waters are not considered to be waters of the U.S. as described in the U.S. Army Corps of Engineers Regulations preamble, dated November 13, 1986 (preamble water), and as supported by the narrative below in this document.

**SECTION III: CWA ANALYSIS**

**A. TNWs AND WETLANDS ADJACENT TO TNWs**

**The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.**

<sup>3</sup> Supporting documentation is presented in Section III.F.

1. TNW

Identify TNW:

Summarize rationale supporting determination:

2. Wetland adjacent to TNW

Summarize rationale supporting conclusion that wetland is “adjacent”:

**B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):**

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are “relatively permanent waters” (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody<sup>4</sup> is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:

Watershed size: **Pick List**

Drainage area: **Pick List**

Average annual rainfall: inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

Tributary flows directly into TNW.

Tributary flows through **Pick List** tributaries before entering TNW

Project waters are **Pick List** river miles from TNW

Project waters are **Pick List** river miles from RPW

Project waters are **Pick List** aerial (straight) miles from TNW

Project waters are **Pick List** aerial (straight) miles from RPW

Project waters cross or serve as state boundaries. Explain:

Identify flow route to TNW<sup>5</sup>:

Tributary stream order, if known:

(b) General Tributary Characteristics (check all that apply):

Tributary is:  Natural

<sup>4</sup> Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

<sup>5</sup> Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

- Artificial (man-made). Explain:
- Manipulated (man-altered). Explain:

**Tributary** properties with respect to top of bank (estimate):

Average width:            feet

Average depth:           feet

Average side slopes: **Pick List**

Primary tributary substrate composition (check all that apply):

- |  |  |                                   |
|--|--|-----------------------------------|
| <input type="checkbox"/> Silts           | <input type="checkbox"/> Sands                     | <input type="checkbox"/> Concrete |
| <input type="checkbox"/> Cobbles         | <input type="checkbox"/> Gravel                    | <input type="checkbox"/> Muck     |
| <input type="checkbox"/> Bedrock         | <input type="checkbox"/> Vegetation. Type/% cover: |                                   |
| <input type="checkbox"/> Other. Explain: |  |                                   |

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain:

Presence of run/riffle/pool complexes. Explain:

Tributary geometry: **Pick List**

Tributary gradient (approximate average slope):            %

(c) Flow:

Tributary provides for: **Pick List**

Estimate average number of flow events in review area/year: **Pick List**

Describe flow regime:

Other information on duration and volume:

Surface flow is: **Pick List**. Characteristics:

Subsurface flow: **Pick List**. Explain findings:

Dye (or other) test performed:

Tributary has (check all that apply):

- |   |  |
|---|--|
| <input type="checkbox"/> Bed and banks  |  |
| <input type="checkbox"/> OHWM <sup>6</sup> (check all indicators that apply): |  |
| <input type="checkbox"/> clear, natural line impressed on the bank            | <input type="checkbox"/> the presence of litter and debris     |
| <input type="checkbox"/> changes in the character of soil                     | <input type="checkbox"/> destruction of terrestrial vegetation |
| <input type="checkbox"/> shelving   | <input type="checkbox"/> the presence of wrack line            |
| <input type="checkbox"/> vegetation matted down, bent, or absent              | <input type="checkbox"/> sediment sorting                      |
| <input type="checkbox"/> leaf litter disturbed or washed away                 | <input type="checkbox"/> scour                                 |
| <input type="checkbox"/> multiple observed or predicted flow events           | <input type="checkbox"/> sediment deposition                   |
| <input type="checkbox"/> abrupt change in plant community                     | <input type="checkbox"/> water staining                        |
| <input type="checkbox"/> other (list):  |  |
| <input type="checkbox"/> Discontinuous OHWM. <sup>7</sup> Explain:            |  |

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

- |  |  |
|--|--|
| <input type="checkbox"/> High Tide Line indicated by:              | <input type="checkbox"/> Mean High Water Mark indicated by:            |
| <input type="checkbox"/> oil or scum line along shore objects      | <input type="checkbox"/> survey to available datum;                    |
| <input type="checkbox"/> fine shell or debris deposits (foreshore) | <input type="checkbox"/> physical markings;                            |
| <input type="checkbox"/> physical markings/characteristics         | <input type="checkbox"/> vegetation lines/changes in vegetation types. |
| <input type="checkbox"/> tidal gauges                              |  |
| <input type="checkbox"/> other (list):                             |  |

<sup>6</sup>A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

<sup>7</sup>Ibid.

**(iii) Chemical Characteristics:**

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.). Explain:

Identify specific pollutants, if known:

**(iv) Biological Characteristics. Channel supports (check all that apply):**

- Riparian corridor. Characteristics (type, average width):
- Wetland fringe. Characteristics:
- Habitat for:
  - Federally Listed species. Explain findings:
  - Fish/spawn areas. Explain findings:
  - Other environmentally-sensitive species. Explain findings:
  - Aquatic/wildlife diversity. Explain findings:

**2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW**

**(i) Physical Characteristics:**

**(a) General Wetland Characteristics:**

Properties:

Wetland size:        acres

Wetland type. Explain:

Wetland quality. Explain:

Project wetlands cross or serve as state boundaries. Explain:

**(b) General Flow Relationship with Non-TNW:**

Flow is: **Pick List**. Explain:

Surface flow is: **Pick List**

Characteristics:

Subsurface flow: **Pick List**. Explain findings:

Dye (or other) test performed:

**(c) Wetland Adjacency Determination with Non-TNW:**

- Directly abutting
- Not directly abutting
  - Discrete wetland hydrologic connection. Explain:
  - Ecological connection. Explain:
  - Separated by berm/barrier. Explain:

**(d) Proximity (Relationship) to TNW**

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List**.

Estimate approximate location of wetland as within the **Pick List** floodplain.

**(ii) Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain:

Identify specific pollutants, if known:

**(iii) Biological Characteristics. Wetland supports (check all that apply):**

- Riparian buffer. Characteristics (type, average width):
- Vegetation type/percent cover. Explain:
- Habitat for:
  - Federally Listed species. Explain findings:

- Fish/spawn areas. Explain findings:
- Other environmentally-sensitive species. Explain findings:
- Aquatic/wildlife diversity. Explain findings:

**3. Characteristics of all wetlands adjacent to the tributary (if any)**

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)      Size (in acres)      Directly abuts? (Y/N)      Size (in acres)

Summarize overall biological, chemical and physical functions being performed:

**C. SIGNIFICANT NEXUS DETERMINATION**

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

**Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:**

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

**Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:**

- 1. Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .
- 2. Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .
- 3. Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

**D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):**

- 1. TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:

Form 1 of 1  
LRB-2021-01504 Wetlands 1, 2, 3, 4, 5, 6  
Ponds 1, 2, 3, & Ponds\_FromCokeRemoval  
Ditches 1 and 2  
Isolated Wetlands/Preamble Non-jurisdictional Aquatic Resources  
Page 7

- TNWs: linear feet width (ft), Or, acres.  
 Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**

- Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial:  
 Tributaries of TNW where tributaries have continuous flow “seasonally” (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet width (ft).  
 Other non-wetland waters: acres.

Identify type(s) of waters:

3. **Non-RPWs<sup>8</sup> that flow directly or indirectly into TNWs.**

- Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

- Tributary waters: linear feet width (ft).  
 Other non-wetland waters: acres.

Identify type(s) of waters:

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**

- Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.  
 Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:  
 Wetlands directly abutting an RPW where tributaries typically flow “seasonally.” Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**

- Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**

- Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.<sup>9</sup>**

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

- Demonstrate that impoundment was created from “waters of the U.S.,” or  
 Demonstrate that water meets the criteria for one of the categories presented above (1-6), or  
 Demonstrate that water is isolated with a nexus to commerce (see E below).

<sup>8</sup>See Footnote # 3.

<sup>9</sup>To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

**E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):<sup>10</sup>**

- which are or could be used by interstate or foreign travelers for recreational or other purposes.
- from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- which are or could be used for industrial purposes by industries in interstate commerce.
- Interstate isolated waters. Explain:
- Other factors. Explain:

**Identify water body and summarize rationale supporting determination:**

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters:        linear feet        width (ft).
- Other non-wetland waters:        acres.
- Identify type(s) of waters:
  - Wetlands:        acres.

**F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):**

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
  - Prior to the Jan 2001 Supreme Court decision in “SWANCC,” the review area would have been regulated based solely on the “Migratory Bird Rule” (MBR).
- Waters do not meet the “Significant Nexus” standard, where such a finding is required for jurisdiction. Explain:
- Other: (explain, if not covered above):

The review area is an approximately 103-acre irregular-shaped area made up of multiple parcels on the east side of River Road, in the Town of Tonawanda, Erie County, New York. The review area is a highly disturbed parcel that is contaminated with Coke and the current active project is removing much of the coke. There are remnant buildings and other human structures on the parcel too. The review area contains several aquatic resources including constructed ponds and ditches that are part of a drainage system to work with the products on-site: Wetlands 1, 2, 3, 4, 5, 6, Ponds 1, 2, 3, Ditches 1 and 2, and Pondered areas from recent Coke removal.

On October 28, 2022, a site visit was performed by U.S. Army Corps of Engineers staff with the wetland delineator, Mr. Scott Livingstone from Earth Dimensions, Inc. During the site visit Wetland’s 1, 2, 3, 4, 5, and 6 were walked entirely around confirming that there were no observable surface water connections to any of these. Wetlands 1, 2, 5, and 6 are Palustrine Emergent wetlands that are depressional in nature resulting from the flat nature of the site and the historic high level of disturbance before being left fallow, which created early successional vegetation growth and including the establishment of invasive species, such as *Phragmites australis*. Wetlands 3 and 4 are Palustrine Emergent wetlands located on the western extent of the review area and are in a much more topographic location, located lower than the entrance road to the review area. An in-office resource review, including aerial imagery suggested that this area may flow to the west. However, during the October 28, 2022 site visit it was determined that Wetlands 3 and 4 were completely surrounded by dry land and in some areas consisting of old fill material; no surface or subsurface water connections were observed flowing to the ditch observed in aerials outside of the review area. The nearest RPW is the Niagara River which is located approximately 2000 linear feet to the west of the review area. on the west side of the review area, approximately 440 linear feet away from Wetland 1. Wetlands 1, 2, 3, 4, 5, and 6 is not within a floodplain of any streams or rivers and does not have any inundations by any other regulated waters. There is no possibility of water from the wetlands within the review area to exchange waters through a surface or subsurface water connection with the Niagara River.

A review of in-office resources was conducted. The U.S. Fish and Wildlife Wetland mapper does not show any wetlands or waters or streams within the review area; the nearest waters shown are wetlands south of the site and a stream just outside of the western extent of the review area along River Road. According to the USDA NRCS web soil survey, majority of

<sup>10</sup> Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.



Form 1 of 1  
 LRB-2021-01504 Wetlands 1, 2, 3, 4, 5, 6  
 Ponds 1, 2, 3, & Ponds\_FromCokeRemoval  
 Ditches 1 and 2  
 Isolated Wetlands/Preamble Non-jurisdictional Aquatic Resources  
 Page 10

Pond 1	.432 acre	POW
Pond 2	.248 acre	POW
Ditch 1	1240 ft	R4
Ditch 2	866 ft	R4
Pond 3	.122 acre	POW

Wetlands:        acres.

**SECTION IV: DATA SOURCES.**

**A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):**

Maps, plans, plots or plat submitted: Wetland and Waterbodies Delineation Report for Riverview Innovation & Techonology Campus, Town of Tonawanda, Erie County, New York; dated, November 11, 2021; prepared for Inventum Engineering; prepared by Earth Dimensions, Inc.

Data sheets prepared/submitted by Earth Dimensions, Inc. on behalf of Inventum Engineering.

Office concurs with delineation data sheets dated June 23, 2021 and April 5, 2021 on an approximately 103-acre parcel and summarized in the Wetland and Waterbodies delineation report dated November 11, 2021.

Office does not concur with data sheets/delineation report.

Data sheets prepared by the Corps:

Corps navigable waters' study:

U.S. Geological Survey Hydrologic Atlas: HA -730

USGS NHD data.

USGS 8 and 12 digit HUC maps.

U.S. Geological Survey map(s). Cite scale & quad name: <https://ngmdb.usgs.gov/topoview/viewer/> - Scale: 24k; USGS: Buffalo NW - NY; 2019; accessed October 27, 2022.

USDA Natural Resources Conservation Service Soil Survey. Citation: on-line Web Soil Survey - <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx> – accessed October 27, 2022.

National wetlands inventory map(s). : <https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper> - accessed October 27, 2022. No wetlands shown within the review area.

State/Local wetland inventory map(s): New York State Department of Environmental Resource Mapper - <https://gisservices.dec.ny.gov/gis/erm/>; accessed October 27, 2022.

FEMA/FIRM maps: <https://msc.fema.gov/portal/> - accessed October 27, 2022

100-year Floodplain Elevation is:        (National Geodectic Vertical Datum of 1929)

Photographs:

Aerial (Name & Date): Connect Explorer - <https://explorer.pictometry.com/login.php> oblique imagery dated April 25, 2020. Google Earth aerial dated May 2022.

Other (Name & Date): Photographs included in the delineation report, dated April 5, 2021 and June 23, 2021.

Previous determination(s):

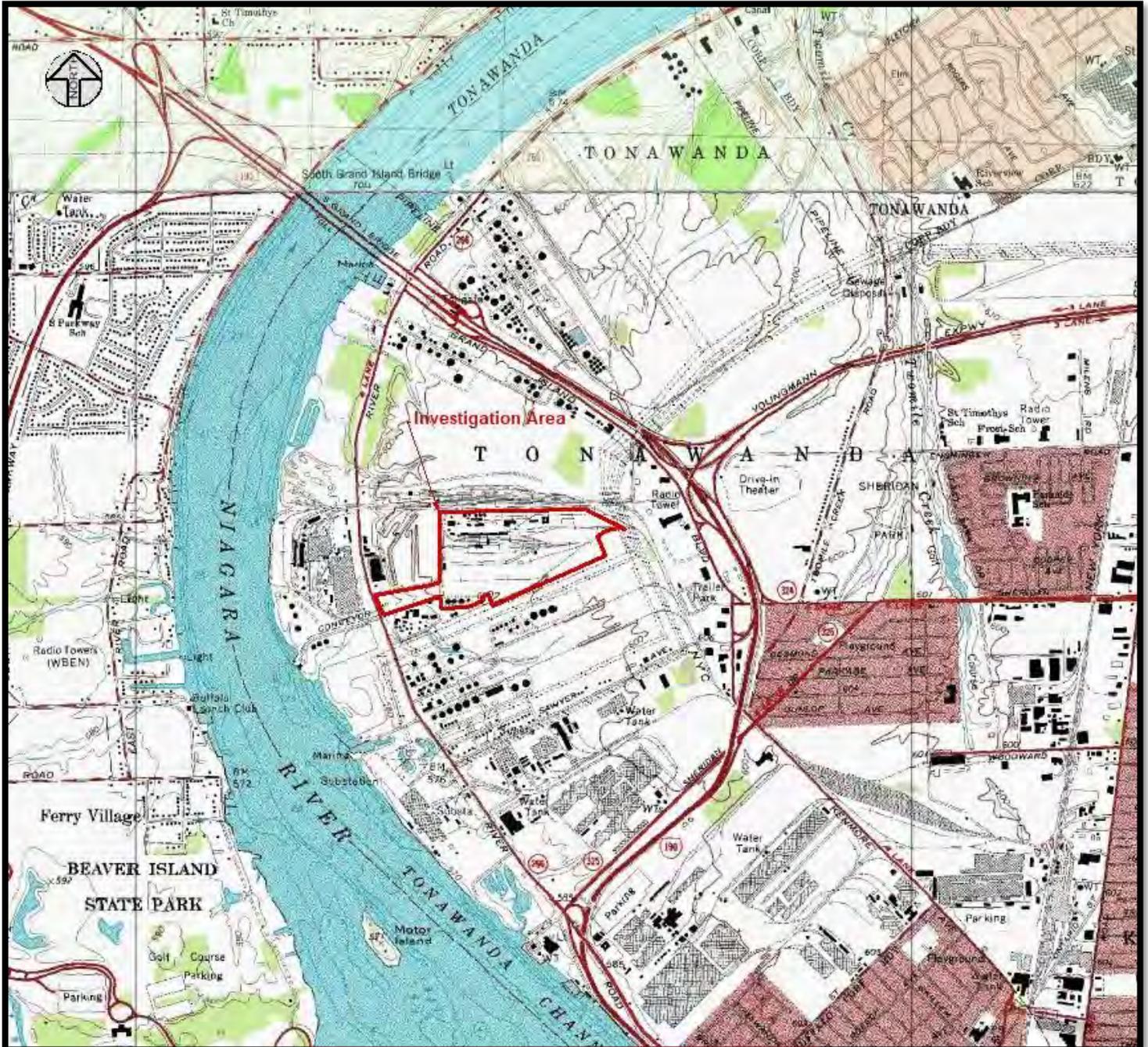
Applicable/supporting case law:

Applicable/supporting scientific literature:

Other information (please specify): U.S. Army Corps of Engineers Site Visit on October 28, 2022. NYS Department of Environmental Conservation letter dated February 1, 2022.

**B. ADDITIONAL COMMENTS TO SUPPORT JD:**

The review area (approximately 103-acres in size) contains Wetlands 1, 2, 3, 4, 5, 6 which have been determined to be closed boundary wetlands with no inflow or outflow, as an isolated water completely surrounded by uplands. The review area also contains Ponds 1, 2, 3, and Pond Areas (from recent Coke removal), and Ditches 1 and 2. Ponds 1, 2, 3, and Ditches 1 and 2 are man-made storm water control features that are part of an active, approved Stormwater Pollution Prevention Plan and are actively managed within this area. The Pond areas in the west-central portion of the site are waters that resulted from recent coke removal (since the delineation completion in 2021) and are now functioning as a man-made pond complex consisting of three ponds. It has been determined that these waters are not considered to be waters of the U.S. as described in the U.S. Army Corps of Engineers Regulations preamble, dated November 13, 1986 (preamble water), and as supported by the narrative below in this document. The documentation on this form explains and supports this determination.



Inventum Engineering - Riverview Innovation &  
 Technology Campus  
 LRB-2021-01504  
 Erie County, New York  
 USGS Quad: NY - Buffalo NW  
 Sheet 1 of 4 - USGS Location Map



**FIGURE 7: DRAINAGE MAP**

Buffalo Northwest Quadrangle / U.S. Geological Survey

Riverview Innovation & Technology Campus Brownfield Cleanup Program Site  
 Town of Tonawanda, Erie County, New York



Inventum Engineering - Riverview Innovation &  
Technology Campus  
LRB-2021-01504  
Erie County, New York  
USGS Quad: NY - Buffalo NW  
Sheet 2 of 4 - Review Area Location Map



**FIGURE 8: SITE AERIAL PHOTOGRAPH**

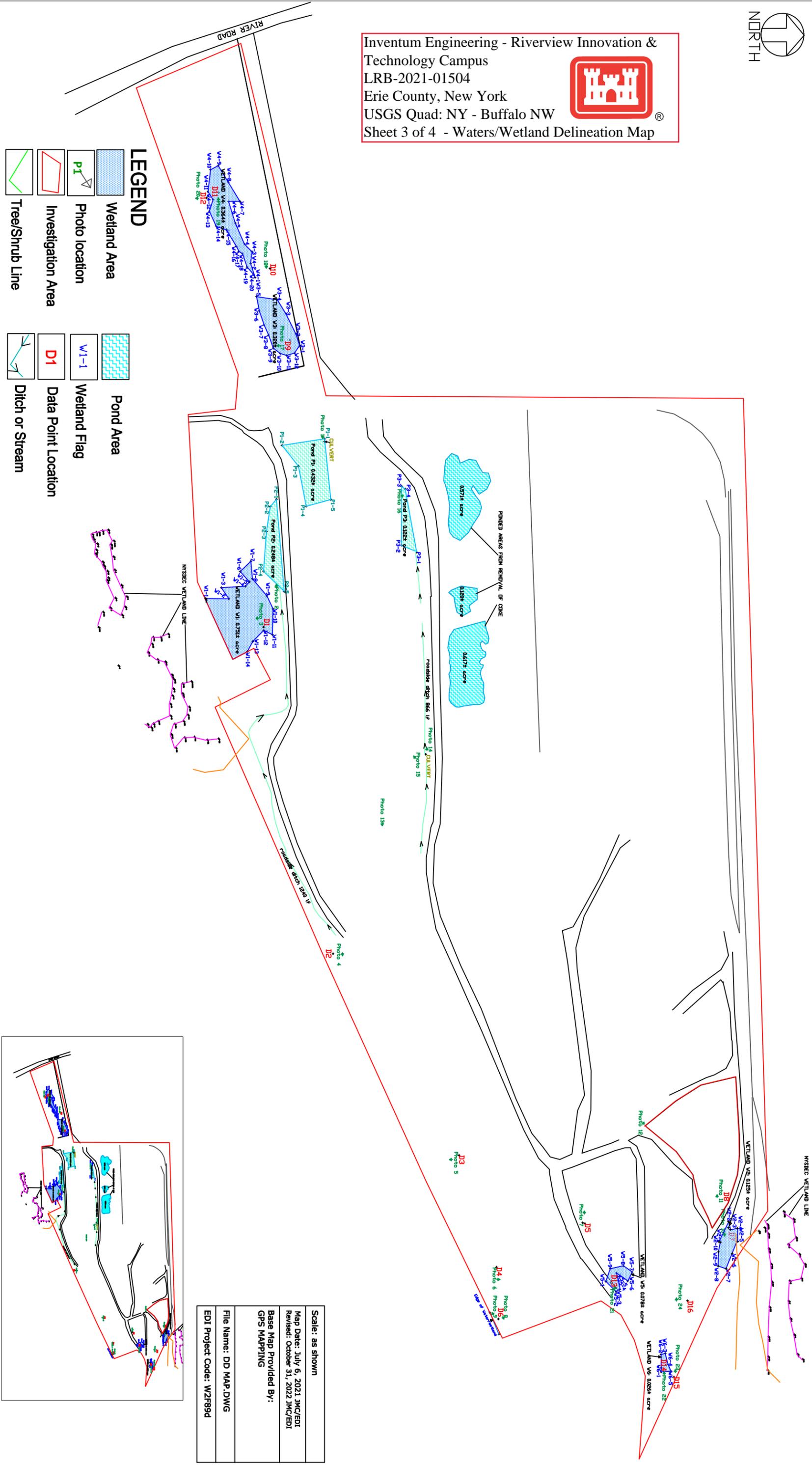
<http://gis2.erie.gov/HTML5/ErieCountyNY/PublicLaunchPage.aspx> (Visited 04/08/21)

Riverview Innovation & Technology Campus Brownfield Cleanup Program Site  
Town of Tonawanda, Erie County, New York

Figure 6: Wetland Delineation Map  
 Riverview Tech Campus  
 Town of Tonawanda, Erie County, New York



Inventum Engineering - Riverview Innovation & Technology Campus  
 LRB-2021-01504  
 Erie County, New York  
 USGS Quad: NY - Buffalo NW  
 Sheet 3 of 4 - Waters/Wetland Delineation Map



**LEGEND**

- Wetland Area
- Photo location
- Investigation Area
- Tree/Shrub Line
- Pond Area
- Wetland Flag
- Data Point Location
- Ditch or Stream

Scale: as shown
Map Date: July 6, 2021 JMC/EDI
Revised: October 31, 2022 JMC/EDI
Base Map Provided By: GPS MAPPING
File Name: DD MAP.DWG
EDI Project Code: W2F894



Inventum Engineering - Riverview Innovation & Technology Campus  
LRB-2021-01504  
Erie County, New York  
USGS Quad: NY - Buffalo NW  
Sheet 4 of 4 - Waters/Wetland Delineation Map overlaid on aerial

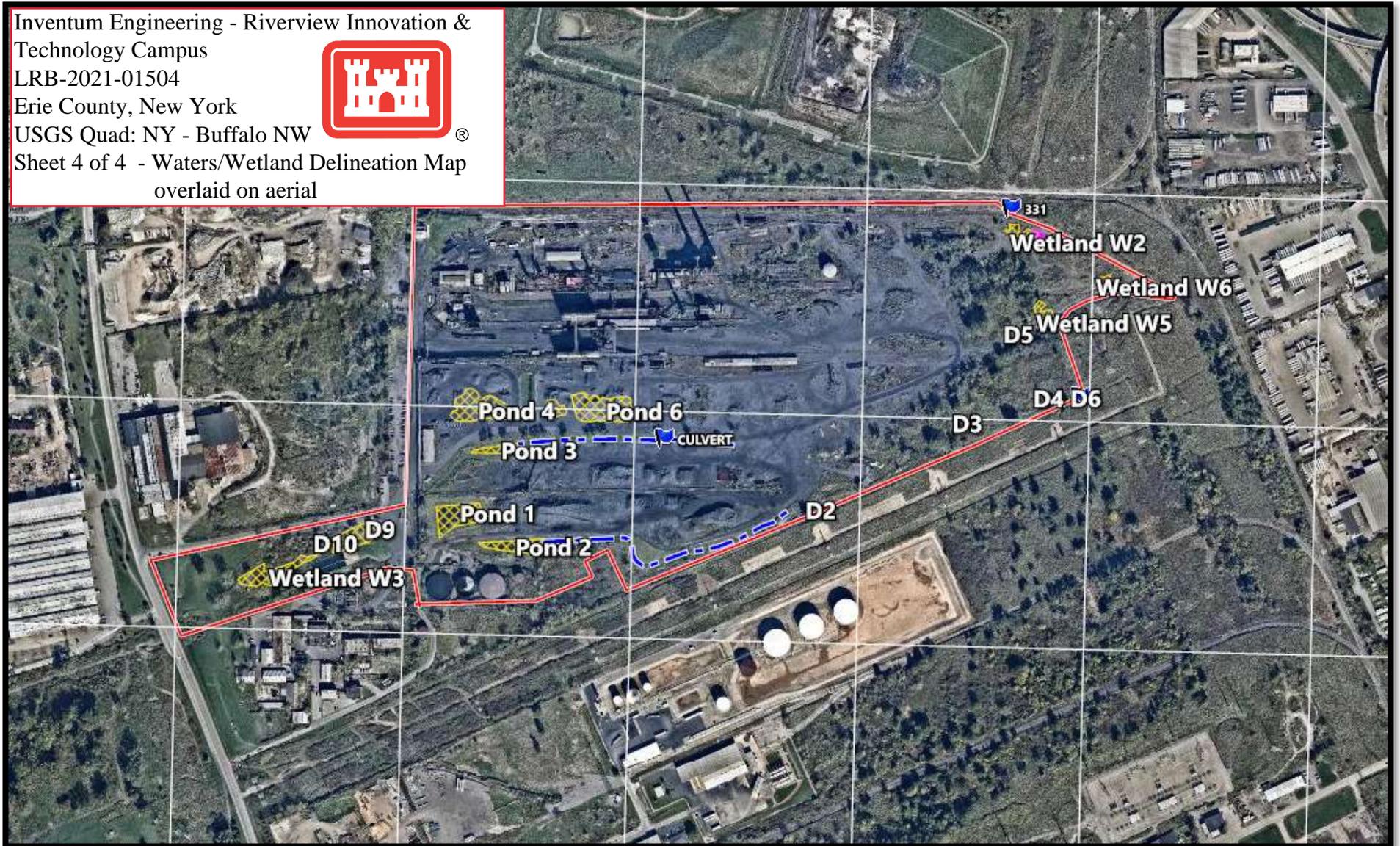


FIGURE 1: AERIAL PHOTO WITH WETLANDS

[GoogleEarth.com](https://www.google.com/earth/) (Visited 11/01/22)

Riverview Tech Campus, Town of Tonawanda, Erie County, New York

**NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND  
REQUEST FOR APPEAL**

Applicant: Inventum Engineering - Riverview Innovation & Technology Campus	File Number: LRB-2021-01504	Date: January 6, 2023
--	-----------------------------	-----------------------

Attached is:	See Section below
<input type="checkbox"/> INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
<input type="checkbox"/> PROFFERED PERMIT (Standard Permit or Letter of permission)	B
<input type="checkbox"/> PERMIT DENIAL	C
<input checked="" type="checkbox"/> APPROVED JURISDICTIONAL DETERMINATION	D
<input type="checkbox"/> PRELIMINARY JURISDICTIONAL DETERMINATION	E

**SECTION I** - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at [http://www.usace.army.mil/CECW/Pages/reg\\_materials.aspx](http://www.usace.army.mil/CECW/Pages/reg_materials.aspx) or Corps regulations at 33 CFR Part 331.

**A: INITIAL PROFFERED PERMIT:** You may accept or object to the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

**B: PROFFERED PERMIT:** You may accept or appeal the permit

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

**C: PERMIT DENIAL:** You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

**D: APPROVED JURISDICTIONAL DETERMINATION:** You may accept or appeal the approved JD or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

**E: PRELIMINARY JURISDICTIONAL DETERMINATION:** You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

**SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT**

**REASONS FOR APPEAL OR OBJECTIONS:** (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

**ADDITIONAL INFORMATION:** The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

**POINT OF CONTACT FOR QUESTIONS OR INFORMATION:**

If you have questions regarding this decision and/or the appeal process you may contact:

Shaina R. Souder  
U.S. Army Corps of Engineers  
1776 Niagara Street  
Buffalo, New York 14207  
(716)879-4240  
Shaina.r.souder@usace.army.mil

If you only have questions regarding the appeal process you may also contact:

Katherine McCafferty  
Regulatory Appeals Officer  
US Army Corps of Engineers  
Great Lakes and Ohio River Division  
550 Main Street, Room 10780  
Cincinnati, Ohio 45202-3222  
Phone: 513-684-2699 Fax: 513-684-2460  
e-mail: katherine.a.mccafferty@usace.army.mil

**RIGHT OF ENTRY:** Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

\_\_\_\_\_  
Signature of appellant or agent.

Date:

Telephone number:

Appendix D - Fish and Wildlife Resource Impact Analysis (FWRIA)





*INVENTUM ENGINEERING, PC*

**DRAFT**

**Step 1 Fish and Wildlife Resource Impact  
Analysis**

Riverview Innovation & Technology Campus  
Brownfield Cleanup Program Site No. C915353

3875 River Road  
Tonawanda, New York 14150

March 7, 2022

---

441 CARLISLE DRIVE  
SUITE C  
HERNDON, VA 20170  
[WWW.INVENTUMENG.COM](http://WWW.INVENTUMENG.COM)

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## 1 Introduction

On behalf of Riverview Innovation and Technology Campus, Inc (Riverview), Inventum Engineering, P.C. (Inventum) has prepared this Step 1 Fish and Wildlife Resource Impact Analysis (FWIA) for the Riverview Brownfield Cleanup Program Site (BCP Site; Site No. C915353) located at 3875 River Road in Tonawanda, Erie County, New York (Figure 1). The BCP Site represents a portion of the former Tonawanda Coke Corporation (TCC) facility which was an operating coke making and by-products facility for more than 100-years. TCC filed for bankruptcy protection in 2018 and all manufacturing on the property was permanently suspended at that time. On September 23, 2019, the sale of the property to Riverview was approved by the U.S. Bankruptcy Court and on February 14, 2020 a Brownfield Cleanup Agreement was signed by the New York State Department of Environmental Conservation (NYSDEC; Index No. C915353-02-20).

Inventum is conducting a Remedial Investigation (RI) of the BCP Site in support of Riverview's proposed redevelopment of the property.

The tax property<sup>1</sup> at 3875 River Road has been segregated into three separate sites for the purpose of addressing legacy environmental conditions as shown on Figure 2.

- BCP Site No. C915353 encompasses approximately 86.5± acres and is the Study Area for this FWIA;
- Site 109 (Site No. 915055) is approximately 7.6± acres of the 3875 River Road property and Honeywell International, Inc. is managing the investigation and remediation on that portion of the property in accordance with an Administrative Order on Consent (Index No. B9-85-2-77D) with the NYSDEC dated February 14, 2020; and
- Site 110 (Site No. 915055) is approximately 4.8± acres of the 3875 River Road property and Honeywell International, Inc. is managing the investigation and remediation on that portion of the property in accordance with an Administrative Order on Consent (Index No. B9-85-2-77D) with the NYSDEC dated February 14, 2020. For clarity, a portion of the Site 110 lies on property owned by others, east of the 3875 River Road property owned by Riverview.

This FWIA was conducted according to the guidance document entitled Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Sites (NYSDEC 1994) and DER-10 Technical Guidance for Site Investigation and Remediation (NYSDEC 2010. Step 1 (Site Description) of the 1994 guidance document is addressed in this report.

The purpose of the FWIA is to identify actual or potential impacts to identified fish and wildlife resources from potential exposure to constituents of ecological concern. The purpose of Step 1 of this FWIA is to characterize the physical and biological characteristics of the BCP Site and accompanying Study Area.

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<sup>1</sup> For purposes of this and other documents the term "Site" refers to the approximate 120-acre Riverview Innovation & Technology Campus, Inc. properties at 3875 (S-B-L 64.08-1-10) and 3800 River Road in the Town of Tonawanda. The "BCP Site" is the approximate 86.5-acre portion of the 3875 River Road property addressed by the BCP Agreement and this Remedial Investigation.



## 2 Step 1 – Site Description

This section characterizes the ecological communities (covertypes) within the Study Area based on habitats and associated fish and wildlife species that utilize these habitat types. This section also presents a qualitative evaluation of the ability of the Study Area to provide quality habitat (value) based on the identified covertypes for fish and wildlife and discusses the value to humans of the real and probable fish and wildlife resources within the Study Area.

### 2.1 Site Description

The TCC had a long history of environmental and safety violations and was closed in October 2018. TCC filed for bankruptcy protection in 2018 and all manufacturing on the property was permanently idled. The BCP Site (Figure 1) occupies an area of approximately 86.5 acres and represents the former operating areas of the TCC. These areas consist broadly of the former production area, coal and coke yards, a former railroad spur, stormwater and wastewater managements areas, and areas used for parking. Under the BCP, Riverview has voluntarily conducted extensive site investigation, site management, and site cleanup activities through the ongoing RI process and a series of NYSDEC and NYDOH approved Interim Remedial Measures (IRMs).

Prior to the bankruptcy and closure, the BCP Site was an operating coke making and by-products facility for more than 100-years. The facility was owned and operated from circa 1917 through 1947 by Semet Solvay Company, a subsidiary of Allied Chemical and Dye Corporation. In 1947, Semet Solvay Company was merged into Allied Chemical Corporation, which owned and operated the facility until 1978, when it sold the facility to TCC. TCC owned and operated the facility continuously from 1978 through October 2018. Between October 2018 and March 2020, the U.S. Environmental Protection Agency (USEPA) conducted emergency response activities to remove gases from pipes and tanks, treat wastewater, and manage stormwater.

Historically, manufacturing processes used at the plant have included by products coking, light oil distillation, ammonia recovery, and benzene, toluene, and xylene extraction. Coke making involves the removal of gasses, liquids (oils) and tar from coal by heating the coal in the absence of oxygen. The resulting carbon material “coke” was used, among other things, in foundries and for the production of steel.

The Riverview Innovation & Technology Campus (aka RITC) redevelopment vision is to work with the Town of Tonawanda and local businesses to create a sustainable integrated technology center with commercial facilities. The key targets for this portion of the development area are commercial activities including, but not limited to, data management, data users, and associated academic institutions.

### 2.2 Study Area

The Study Area for this FWIA is defined as the 86.5-acre BCP Site and the surrounding area within a 0.5-mile radius as shown on Figure 3. Descriptions of the identified ecological communities on the BCP Site and Study Area are presented in the following sections.

### 2.3 Covertypes Delineation

The evaluation of ecological communities or covertypes in the Study Area assists in the identification of fish and wildlife resources that can present ecological receptors that are resident to the BCP site or may enter from the surrounding areas. A specific covertype is defined as an area characterized by a distinct pattern of natural or cultural land use.



Covertypes within the BCP Site were identified based on physical features as observed by Earth Dimensions, Inc. (Appendix A; EDI 2021a) during a wetland delineation and habitat assessment conducted on the property between April and June 2021.

Descriptions of the identified covertypes are presented below.

## 2.4 Terrestrial System Covertypes

### 2.4.1 Urban Structure Exterior

This coertype is characterized by the exterior surfaces (metals, wood, or concrete) of structures such as commercial, apartment, and industrial buildings, houses and bridges, or any structure surface composed of inorganic materials (glass, plastics, etc.) in an urban or densely populated suburban area (Edinger et al. 2014). This coertype represents approximately 25-percent of the BCP Site and includes the former production areas, parking areas, and stormwater and wastewater control areas.

The areas immediately surrounding the BCP Site included in this designation include the commercial/industrial areas to the east and south and the former Allied Chemical Special Chemicals Division facility (Tonawanda Plastics Site), Vanocur Refractories, and Swift River Associates to the west. Also included in this coertype are sub-communities typical of the Paved road/path.

### 2.4.2 Urban Vacant Lot

This coertype includes much of the BCP Site outside of the former production area including the coal and coke yards where historic fill has been placed from the manufacturing of coke and its by-products. There is minimal vegetation in this community.

The coertype contained the following species: common reed (*Phragmites australis*), common dandelion (*Taraxacum officinale*), hairy crabgrass (*Digitaria sanguinalis*), sweet sagewort (*Artemisia annua*), little bluestem (*Schizachyrium scoparium*), spotted knapweed (*Centaurea stoebe*) and Virginia strawberry (*Fragaria virginiana*).

### 2.4.3 Successional Fill Pad

This coertype includes areas in the eastern portion of the BCP Site as well as Sites 109 and 110 where small trees, shrubs and herbaceous vegetation has grown on old industrial and commercial fill. This coertype represents over 75-percent of the BCP Site and includes the former coke and coal yards.

The community contained the following species: Tatarian honeysuckle (*Lonicera tatarica*), common reed (*Phragmites australis*), pin oak (*Quercus palustris*), sweet sageword (*Artemisia annua*), eastern cottonwood (*Populus deltoides*), crack willow (*Salix fragilis*), Queen Anne's lace (*Daucus carota*), summer grape (*Vitis aestivalis*), bull thistle (*Cirsium arvense*), gray dogwood (*Cornus racemosa*), common mullein (*Verbascum thapsus*), common burdock (*Actium minus*), common red raspberry (*Fragaria virginiana*), little bluestem (*Schizachyrium scoparium*), Japanese knotweed (*Polygonum cuspidatum*), sticky willy (*Galium aparine*), spotted knapweed (*Centaurea stoebe*), paper birch (*Betula papyrifera*), black raspberry (*Rubus occidentalis*), garlic mustard (*Alliaria officinalis*), velvet grass (*Holcus lanatus*), path rush (*Juncus tenuis*), narrowleaf bittercress (*Cardamine impatiens*), and Canada goldenrod (*Solidago canadensis*).

## 2.5 Palustrine System Covertypes

The presence of palustrine habitats (freshwater wetlands) on the BCP Site was evaluated through a review of the New York State Freshwater Wetlands (NYSFW) mapping, the United States Fish and Wildlife



Service (USFWS) National Wetlands Inventory (NWI) mapping, and jurisdictional wetlands delineation of the property completed by EDI in April and June 2021 (Appendix B; EDI 2021b). The NYSFW mapping presents the boundaries of wetlands that may be present and regulated by the NYSDEC. The NWI maps have no regulatory significance but provide an indication of areas with a high probability of meeting the federal criteria for jurisdictional wetlands regulated by the U.S. Army Corps of Engineers.

EDI identified six (6) wetland areas totaling 1.664± acres within the BCP Site. These wetland areas as well as several drainage ditches that were identified are shown on Figure 4. Three (3) stormwater ponds were identified and mapped. The mapped ponds are stormwater control features that are actively engineered, maintained, and monitored by Riverview under an approved Stormwater Pollution Prevention Plan (SWPPP; Inventum 2020). The identification number of the wetlands, acreage, and anticipated jurisdictional determination<sup>2</sup> are as follows:

Wetland ID#	Geographic Center (NAD 83)		Total Acreage	Wetland Type (Cowardin)	Wetland Type (Reschke)	Anticipated Jurisdictional Determination
	Latitude	Longitude				
Wetland 1	42.98089	78.92799	0.751±	PEM	Shallow Emergent Marsh	Non-Jurisdictional
Wetland 2	42.98492	78.92059	0.125±	PEM	Shallow Emergent Marsh	Non-Jurisdictional
Wetland 3	42.98124	78.93131	0.320±	PEM	Shallow Emergent Marsh	Non-Jurisdictional
Wetland 4	42.98075	98.93277	0.364±	PEM	Shallow Emergent Marsh	Non-Jurisdictional
Wetland 5	42.98397	78.92012	0.078±	PEM	Shallow Emergent Marsh	Non-Jurisdictional
Wetland 6	42.98435	78.91901	0.026±	PEM	Shallow Emergent Marsh	Non-Jurisdictional

Wetland ID#	Geographic Center (NAD 83)		Total Acreage	Classification (Cowardin)	Type (Reschke)	Anticipated Jurisdictional Determination
	Latitude	Longitude				
Pond 1	42.98510	78.92966	0.432±	POW	SWPPP Pond	Non-Jurisdictional
Pond 2	42.98111	78.92871	0.248±	POW	SWPPP Pond	Non-Jurisdictional
Pond 3	42.98229	78.92904	0.122±	POW	SWPPP Pond	Non-Jurisdictional

The invasive species marsh covertype is present within a portion of the BCP Site wetland areas and drainage ditches. This community contained the following species: common reed (*Phalaris arundinacea*), narrowleaf cattail (*Typha angustifolia*), and purple loosestrife (*Lythrum salicaria*).

The emergent marsh covertype is also present within a portion of the BCP Site wetland areas and contained: common reed (*Phragmites australis*), flat topped goldenrod (*Euthamia graminifolia*), narrowleaf cattail (*Typha angustifolia*), purple loosestrife (*Lythrum salicaria*), common rush (*Juncus effusus*), deer tongue grass (*Dichanthelium clandestinum*), American bugleweed (*Lycopus americana*),

<sup>2</sup> A formal Jurisdictional Request was submitted to the NYSDEC and USACOE on November 11, 2021 and was assigned Department of the Army File LRB-2021-01504.



pussy willow (*Salix discolor*), wrinkled goldenrod (*Solidago rugosa*), purpleleaf willowherb (*Epilobium coloratum*), eastern cottonwood (*Populus deltoides*), and northern arrowwood (*Viburnum recognitum*).

The industrial pond community is present along the edges of the open water areas (SWPPP Ponds) in the southwest portion of the BCP Site. This community contains the following species: common reed (*Phragmites australis*), narrowleaf cattail (*Typha angustifolia*), and pussy willow (*Salix discolor*).



### 3 Step 1 – Description of Fish and Wildlife Resources

The objective of this section is to identify potential ecological receptors in the Study Area based on observations conducted during reconnaissance by Inventum and EDI.

#### 3.1 Fish and Wildlife in the Study Area

The presence of fish and wildlife in the Study Area was assessed through coordination/inquiry with regulatory agencies and a wildlife assessment conducted by EDI in April and June 2021 (Appendix A). During the assessment EDI identified three (3) mammals, two (2) amphibians, and twenty-four (24) bird species, several of which were only flying over the site. Tracks of white-tailed deer, striped skunk, and racoon were noted within the BCP Site. Within the wetlands and ponds, leopard frog and western chorus frog were heard singing; however, no individuals were observed, and no egg masses were found.

Birds within the BCP Site included American crow, red-winged blackbird, European starling, rock pigeon, American goldfinch, song sparrow, northern flicker, wild turkey, killdeer, Canada goose, eastern phoebe, swamp sparrow, downy woodpecker, mallard, northern cardinal, American robin, turkey vulture, double-crested cormorant, tree swallow, brown cowbird, ring-billed gull, black-capped chickadee, mourning dove, and mockingbird.

#### 3.2 Observation of Stress

The BCP Site is dominated by abandoned industrial buildings and historic industrial fill with minimal vegetation throughout the site. There are no areas with natural covertypes apart from the small wetland areas (Section 2.5). These wetlands areas have been disturbed in the past from historical facility operations (primarily fill placement) and contain BCP Site related constituents of concern (Figure 5) at concentrations above NYSDEC Part 375 Soil Cleanup Objectives (SCOs) for Commercial and Industrial Use.

#### 3.3 Other Resources

The Step 1 FWIA includes the identification of other environmental features and fish and wildlife resources, such as NYSDEC significant habitats, habitats supporting endangered, threatened, or rare plant and animal species or species of special concern, regulated state and federal wetlands, and special surface waters that are present within the Study Area. Other resources within the Study Area were determined through contact with regulatory agencies, access to the NYSDEC Environmental Resource Mapper website, and review of the associated state wetland maps. The results of this coordination and review are described below.

##### 3.3.1 Plant and Animal Species of Special Concern

The presence of threatened, endangered, candidate, and species of special concern within the Study was evaluated through publicly available online resources and site reconnaissance (Appendix A).

The US Fish and Wildlife Service (USFWS) has identified Federally Threatened Northern long-eared bat (*Myotis septentrionalis*) as potentially within the region; however, the habitat assessment conducted by EDI found no potentially suitable habitat for the Northern long-eared bat, any other federally or state listed species, or bird species protected under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act present within the Study Area.



### 3.3.2 Wetlands

The presence of freshwater (palustrine) wetlands in the Study Area was evaluated through a review of applicable state and federal wetland mapping and the BCP Site jurisdictional delineation completed in April and June 2021 (Appendix B).

The NWI map obtained from the USFWS Wetland Mapper shows one (1) wetland and one (1) stream abutting, but outside of, the southern boundary of the BCP Site. The NYSDEC Freshwater Wetlands map obtained from the online NYSDEC Environmental Resource Mapper shows state jurisdictional Freshwater Wetland BW-6 within the Study Area but east and southeast of the BCP Site boundary (Appendix B – Figure 2).

EDI identified six (6) wetland areas totaling 1.664± acres within the BCP Site. These wetland areas as well as several drainage ditches that were identified are shown on Figure 4. Three (3) stormwater ponds were identified and mapped. The mapped ponds are stormwater control features that are actively engineered, maintained, and monitored by Riverview under an approved SWPPP.

### 3.3.3 Surface Waters

Surface waters within the Study Area are identified on Figure 4 and include the storm water control drainage ditches and ponds on the BCP Site.

Figure 2 of Appendix B depicts the estimated limits of one (1) stream within the Study Area but outside of the BCP Site boundary. The stream is identified from the USFWS NWI Mapper database and classified as an R4SBC: (R) Riverine; (4) Intermittent; (SB) Streambed; (C) Seasonally Flooded. This stream does not appear on the NYSDECs Environmental Resource Mapper.

### 3.3.4 Existing Fish and Wildlife Consumption Advisories

There are no fish and wildlife consumption advisories issued by the New York State Department of Health (NYSDOH) for the Study Area. There is a NYSDOH fish advisory (Polychlorinated Biphenyls [PCBs]) for the Niagara River, upstream of Niagara Falls, which is in the drainage area of the Study Area.

### 3.3.5 Recorded Fish Kills

There are no recorded fish kills within the Study Area

### 3.3.6 Wild, Scenic or Recreation Rivers

There are no rivers within the Study Area and no rivers within the vicinity of the Study Area, including the Niagara River, are listed as wild, scenic, or recreational (<https://www.dec.ny.gov/permits/32739.html>).

### 3.3.7 Significant Natural Communities

Based on information obtained from NYSDEC's Environmental Resource Mapper (<https://gisservices.dec.ny.gov/gis/erm/>) the NYNHP has no information indicating Significant Natural Communities exist on the Study Area.

## 3.4 Description of Fish and Wildlife Resource Value

The value of the habitat quality within the identified covertypes to fish and wildlife resources and society was evaluated for the Study Area based on field observations and assessments. The evaluation includes the diversity of species observed, the number and size of covertypes, evidence of past and present impacts from historical facility operations, and the adjacent land use patterns.



### 3.4.1 Value of Habitat to Associated Fauna

Wildlife species identified in the Study Area were limited and consistent with those expected to inhabit this historically urban industrial environment. A diverse wildlife habitat is limited in most of the Study Area because of the prevalence of the dominant cultural covertypes (Urban Structure Exterior, Urban Vacant Lot, and Successional Fill Pad) and absence of any extensive natural coertype community. These areas provide limited habitat to sustain a diverse wildlife community because of the high degree of historic heavy industrial use.

### 3.4.2 Value of Resources to Humans

The historically urban industrial environmental of the Study Area provides very little natural resource value to humans. The vegetated cultural and natural coertype areas (Successional Fill Pad and small Wetland areas) have been disturbed resulting in low diversity and natural resource value. Any potential inherent natural resource value (hiking, wildlife viewing, etc..) in vegetated areas is also limited due to small size of the areas, site access restrictions, and will be specifically prohibited within the context of future institutional controls limiting the BCP Site to a commercial or industrial land use as part of the BCP completion requirements.

## 3.5 Applicable Fish and Wildlife Regulatory Criteria

Given the limited habitat value within the Study Area, the contaminant-specific criteria utilized as screening values during the BCP Site RI process are also presumed to be applicable to the BCP Site FWIA, and include the following specific Standards, Criteria, and Guidelines (SCGs):

- 6 NYCRR Part 375 Soil Cleanup Objectives (SCOs) for Industrial Use (current use) and Commercial Use (future use)
- Applicable surface water quality criteria as defined by the BCP site-specific SWPPP and the Ambient Water Quality Standards Guidance Values and Groundwater Effluent Limitations under 6 NYCRR Part 703

Six (6) wetland areas and three (3) stormwater ponds were identified by EDI on the BCP Site. It was EDI's professional opinion that none of the wetlands, stormwater ponds, or ditches should be regulated by the USACOE under Section 404 of the Clean Water Act. Section 404 of the federal Clean Water Act allows no discharge of fill material into "water of the United States", including wetlands, if there is a practicable alternative that is less damaging to the aquatic environment. A formal request for jurisdictional determination was submitted to the USACOE in November 2021 and confirmation of EDI's findings is still pending.

The New York State's Freshwater Wetlands Act is designed to prevent the destruction of freshwater wetlands by requiring permits for defined activities in state-regulated wetlands. Freshwater Wetland BW-6 is just off of the BCP Site to the east of the southern property boundary. A portion of the 100-foot upland adjacent area (Figure 4) encroaches onto the BCP Site and would be regulated by NYSDEC under Article 24 of the New York Conservation Law.

## 4 Conclusions

The Step 1 FWIA determined the BCP Site has little natural resource value to fish and wildlife or humans because of historical facility operations and the predominant urban industrial cultural coertype. The 1.664± acres of wetlands identified on the 86.46 ± acres BCP Site are believed to be non-jurisdictional



under Section 404 and there are no threatened, endangered, candidate, or species of special concern within the Study Area.

A Step 2 FWIA is not warranted as part of the ongoing BCP Remedial Investigation/Alternatives Analysis process.

## 5 References



# Tables



# Figures



A



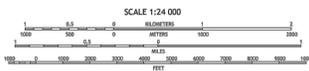
U.S. DEPARTMENT OF THE INTERIOR  
U.S. GEOLOGICAL SURVEY



BUFFALO NW QUADRANGLE  
NEW YORK - ERIE COUNTY  
7.5-MINUTE SERIES



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Geographic Names File (GNF)  
World Geobase System of the USGS, Projection and  
1:50,000 scale geospatial information. Date 1/11  
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agency for more information. Data provided by the  
following private firms:  
Boundary: NAD, October 2007 - December 2007  
Roads: U.S. Census Bureau, 2006  
Streams: National Hydrography Dataset, 2004  
Contours: National Elevation Dataset, 1995 - 2006  
Boundaries: National Wetlands Inventory, 1984 - 2002  
Wetlands: FWS National Wetlands Inventory 2002 - 2010



CONTOUR INTERVAL: 10 FEET  
NORTH AMERICAN DATUM, YEAR OF 1983  
This map was produced to conform with the  
National Geospatial Program 50 Topographic Standards, 2011.  
A metadata file associated with this product is stored version 5.0.10.



ROAD CLASSIFICATION

Expressway	Local Connector
Secondary Hwy	Local Road
Route	400
Unimproved Road	US Route
	State Route

ADJACENT QUADRANGLES

1	2	3
4	5	6
7	8	9

1 Higgins Falls  
2 Tonawanda East  
3 Tonawanda East  
4 Buffalo NE  
5 Buffalo NE  
6 Buffalo SE  
7 Buffalo SE

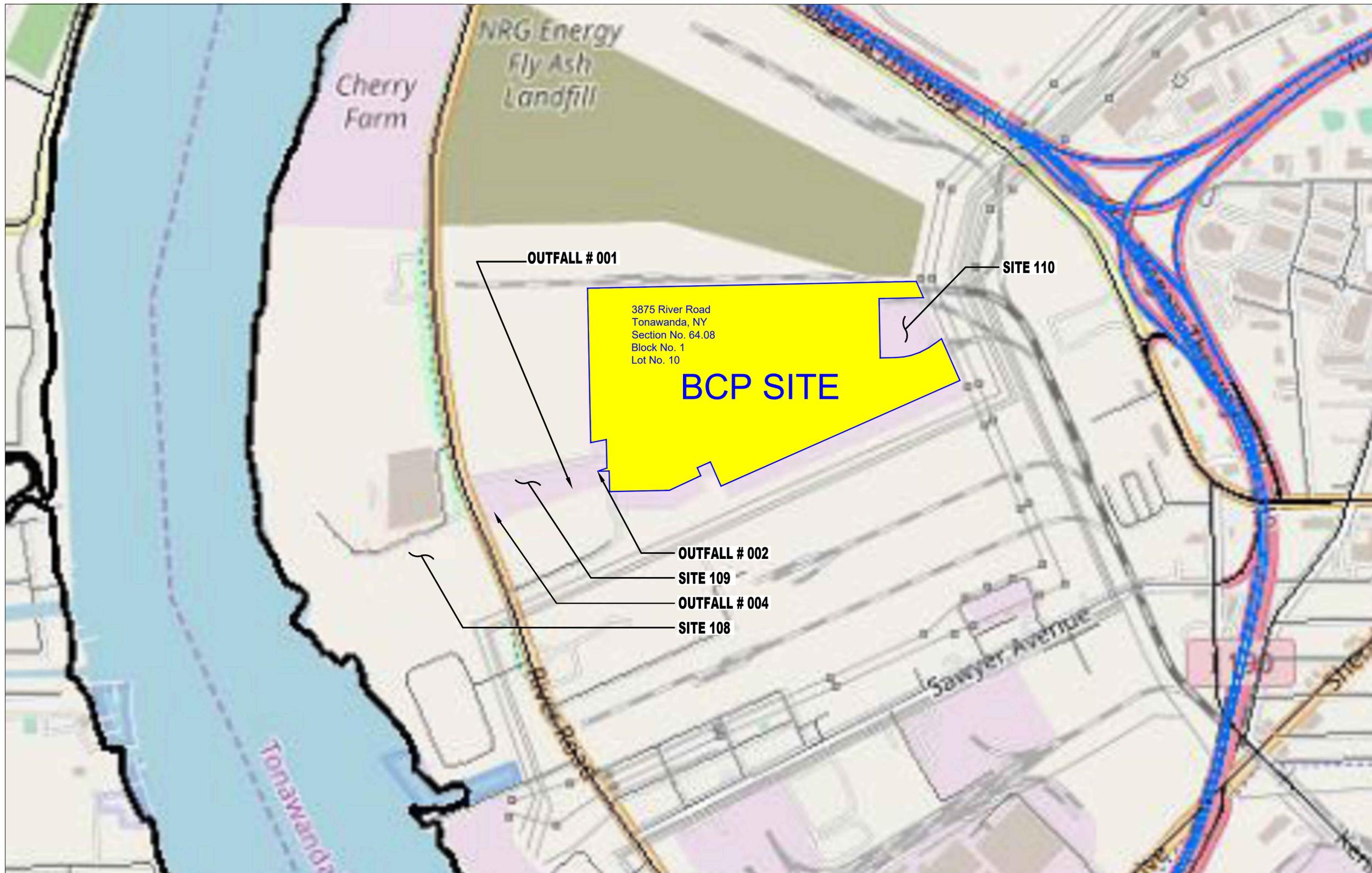
BUFFALO NW, NY, ON  
2019



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**SITE LOCATION MAP**  
**RIVERVIEW INNOVATION & TECHNOLOGY CAMPUS, INC.**  
3875 RIVER ROAD  
TONAWANDA, NEW YORK 14150  
BCP SITE No. C915353

DRAWING BY	RB
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<b>FIGURE 1 - 1</b>	
DRAWING NUMBER	



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**SITE LAYOUT**  
 RIVERVIEW INNOVATION & TECHNOLOGY  
 CAMPUS, INC.  
 3875 RIVER ROAD  
 TONAWANDA, NEW YORK 14150  
 BCP SITE No. C915353

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Erie County, New York, Interactive Mapping Viewer, [www2.erie.gov/gis](http://www2.erie.gov/gis)

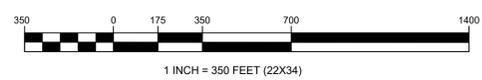
64.08-1-10 Section No., Block No., Lot No. (SBL)

Brownfield Site

**FIGURE 2**

DRAWING NUMBER

**D**





B

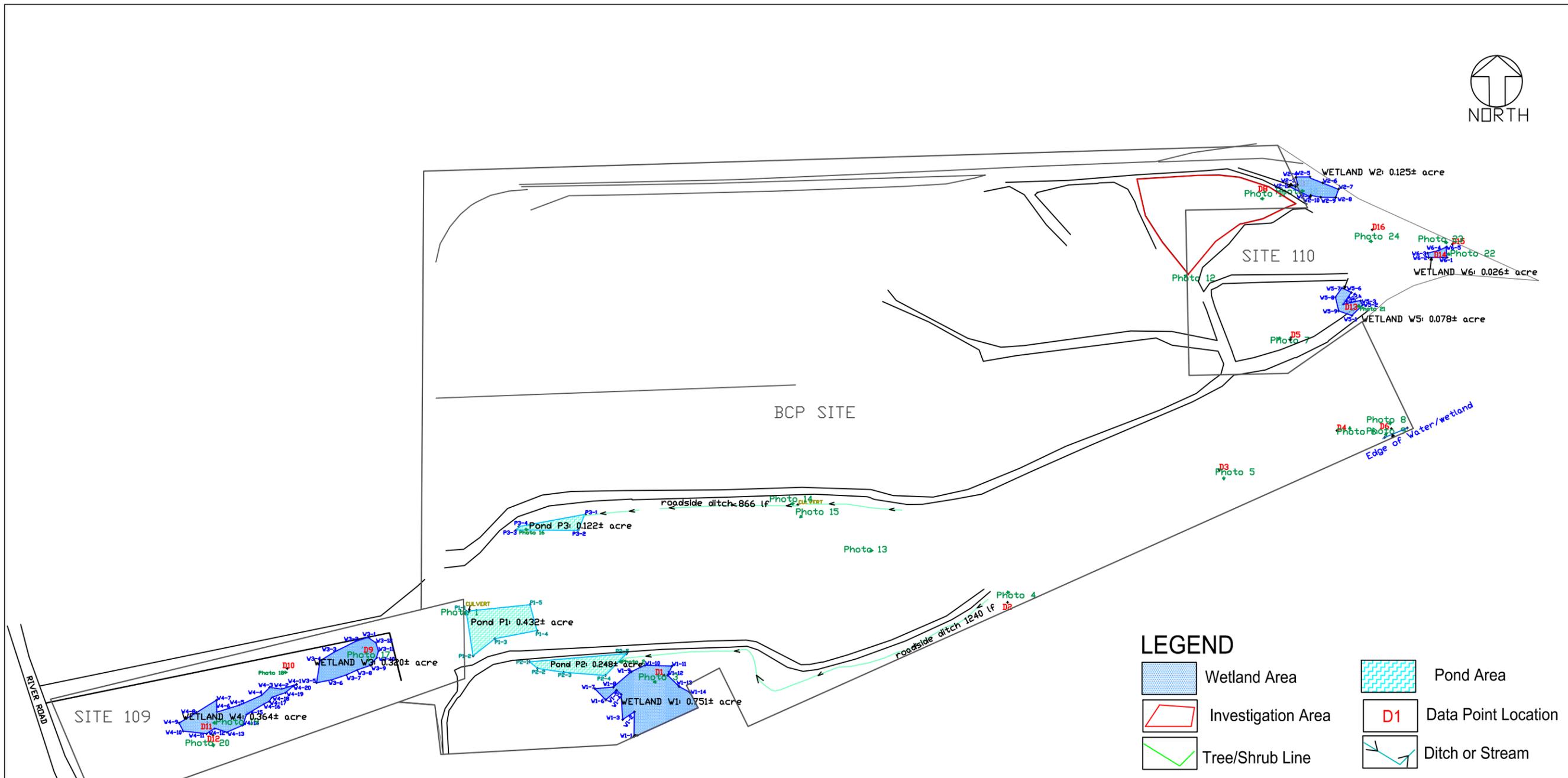
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**FWIA STUDY AREA**  
**RIVERVIEW INNOVATION AND**  
**TECHNOLOGY CAMPUS**  
**3875 RIVER ROAD**  
**TONAWANDA, NEW YORK 14150**  
**BCP SITE No. C915353**

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FIGURE 3



**LEGEND**

- Wetland Area
- Pond Area
- Investigation Area
- D1 Data Point Location
- Tree/Shrub Line
- Ditch or Stream

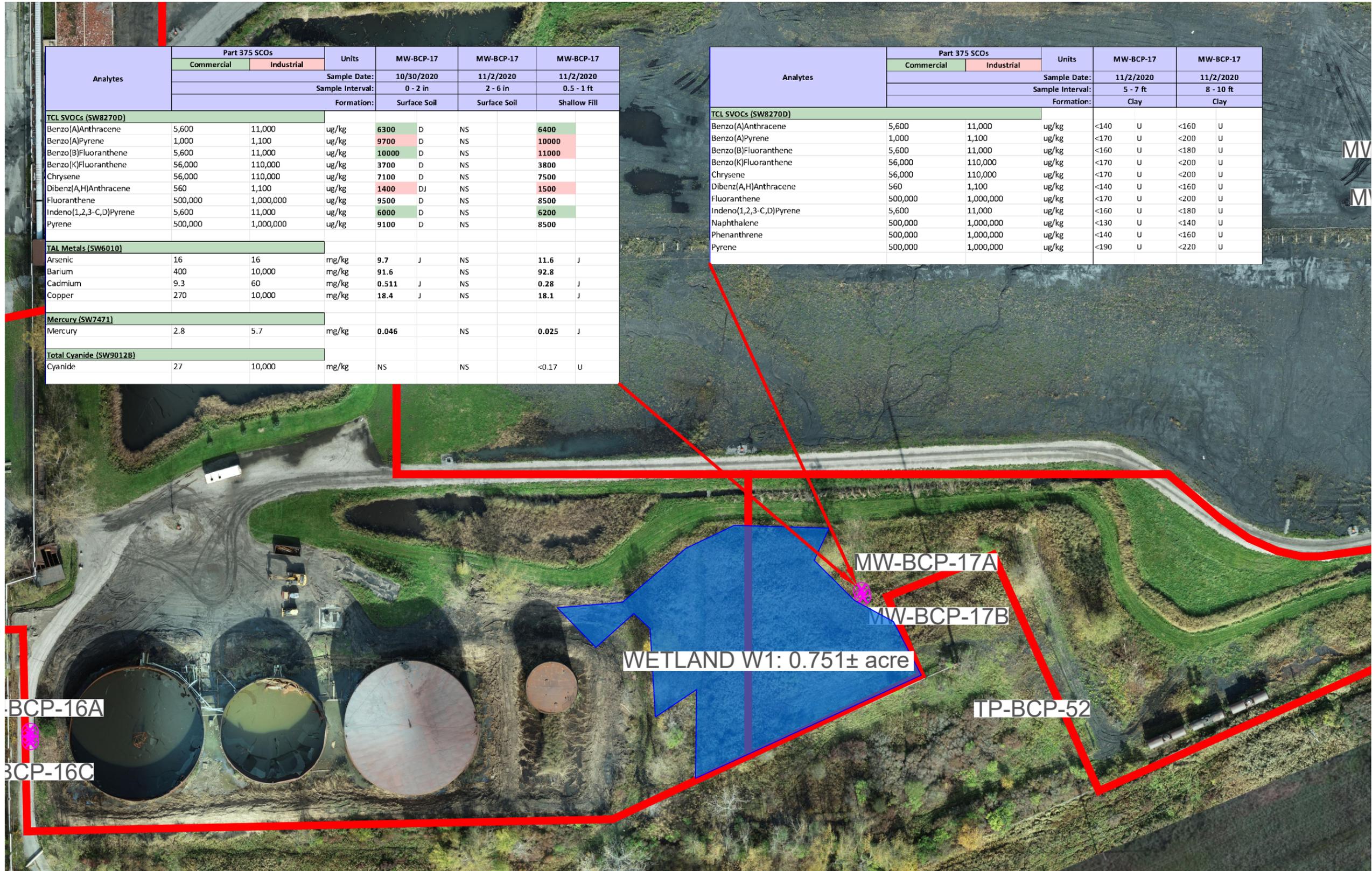
Wetland Summary								
Wetland ID#	Site	Geographic Center (NAD 83)		Total Acreage	Wetland Type (Cowardin)	Wetland Type (Reschke)	Approved State Jurisdictional Determination (February 2022)	Anticipated Federal Jurisdictional Determination
		Latitude	Longitude					
Wetland 1	BCP Site	42.98089	78.92799	0.751±	PEM	Shallow Emergent Marsh	Non-Jurisdictional	Non-Jurisdictional
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Wetland 6	Site 110	42.98435	78.91901	0.026±	PEM		Non-Jurisdictional	Non-Jurisdictional
Waterbody Summary								
Wetland ID#	Site	Geographic Center (NAD 83)		Total Acreage	Classification (Cowardin)	Type (Reschke)	Approved State Jurisdictional Determination (February 2022)	Anticipated Federal Jurisdictional Determination
		Latitude	Longitude					
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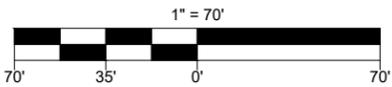
**FIGURE 4**  
 DRAWING NUMBER



Analytes	Part 375 SCOs		Units	MW-BCP-17		
	Commercial	Industrial		MW-BCP-17	MW-BCP-17	MW-BCP-17
Sample Date:				10/30/2020	11/2/2020	11/2/2020
Sample Interval:				0 - 2 in	2 - 6 in	0.5 - 1 ft
Formation:				Surface Soil	Surface Soil	Shallow Fill
<b>TCL SVOCs (SW8270D)</b>						
Benzo(A)Anthracene	5,600	11,000	ug/kg	6300	D	NS
Benzo(A)Pyrene	1,000	1,100	ug/kg	9700	D	NS
Benzo(B)Fluoranthene	5,600	11,000	ug/kg	10000	D	NS
Benzo(K)Fluoranthene	56,000	110,000	ug/kg	3700	D	NS
Chrysene	56,000	110,000	ug/kg	7100	D	NS
Dibenz(A,H)Anthracene	560	1,100	ug/kg	1400	DJ	NS
Fluoranthene	500,000	1,000,000	ug/kg	9500	D	NS
Indeno(1,2,3-C,D)Pyrene	5,600	11,000	ug/kg	6000	D	NS
Pyrene	500,000	1,000,000	ug/kg	9100	D	NS
<b>TAL Metals (SW6010)</b>						
Arsenic	16	16	mg/kg	9.7	J	NS
Barium	400	10,000	mg/kg	91.6	J	NS
Cadmium	9.3	60	mg/kg	0.511	J	NS
Copper	270	10,000	mg/kg	18.4	J	NS
<b>Mercury (SW7471)</b>						
Mercury	2.8	5.7	mg/kg	0.046	J	NS
<b>Total Cyanide (SW9012B)</b>						
Cyanide	27	10,000	mg/kg	NS	J	NS

Analytes	Part 375 SCOs		Units	MW-BCP-17	
	Commercial	Industrial		MW-BCP-17	MW-BCP-17
Sample Date:				11/2/2020	11/2/2020
Sample Interval:				5 - 7 ft	8 - 10 ft
Formation:				Clay	Clay
<b>TCL SVOCs (SW8270D)</b>					
Benzo(A)Anthracene	5,600	11,000	ug/kg	<140	U
Benzo(A)Pyrene	1,000	1,100	ug/kg	<170	U
Benzo(B)Fluoranthene	5,600	11,000	ug/kg	<160	U
Benzo(K)Fluoranthene	56,000	110,000	ug/kg	<170	U
Chrysene	56,000	110,000	ug/kg	<170	U
Dibenz(A,H)Anthracene	560	1,100	ug/kg	<140	U
Fluoranthene	500,000	1,000,000	ug/kg	<170	U
Indeno(1,2,3-C,D)Pyrene	5,600	11,000	ug/kg	<160	U
Naphthalene	500,000	1,000,000	ug/kg	<130	U
Phenanthrene	500,000	1,000,000	ug/kg	<140	U
Pyrene	500,000	1,000,000	ug/kg	<190	U

B



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 TONAWANDA, NEW YORK 14150  
 BCP SITE No. C915353

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 SUITE C  
 HERNDON, VIRGINIA 20170  
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FIGURE 5  
 DRAWING NUMBER

# Appendices



**Habitat Assessment Report**

for

**RIVERVIEW INNOVATION &  
TECHNOLOGY CAMPUS**

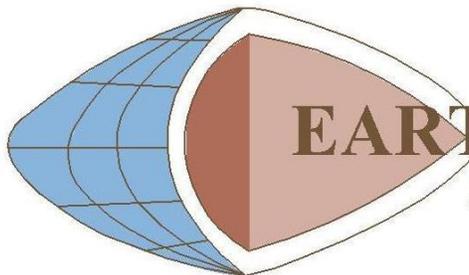
**Brownfield Cleanup Program Site**

**Town of Tonawanda**

**Erie County, New York**

for

**Inventum Engineering**



**EARTH DIMENSIONS, INC.**

*Soils Investigations • Wetland Delineations*

April 21, 2021

EDI Project Code: **W2F89e**

**REPORT SUMMARIZING  
THE RESULTS OF  
A HABITAT ASSESSMENT SURVEY OF**

**RIVERVIEW INNOVATION &  
TECHNOLOGY CAMPUS**  
**Brownfield Cleanup Program Site**

**Prepared By:**

EARTH DIMENSIONS, INC.  
1091 JAMISON ROAD  
ELMA, NEW YORK 14059

**Prepared For:**

TODD WALDROP, PE  
INVENTUM ENGINEERING  
481 CARLISLE DRIVE, SUITE 202  
HERNDON, VIRGINIA 20170

REPORT DATE: April 21, 2021  
EDI PROJECT CODE: W2F89e

## PROJECT INFORMATION

Project Name ..... Riverview Innovation & Technology Campus  
Street Address ..... 3875 River Road  
SBL Number ..... 64.08-1-10  
Town ..... Tonawanda  
County ..... Erie  
State ..... New York  
Latitude/Longitude (NAD83) ..... 42.98318°N, 78.92593°W  
Investigation Area ..... 86.50± Acres  
USGS 7.5 Minute Topographical Map ..... Buffalo Northwest Quadrangle  
Waterway ..... N/A  
Hydrologic Unit Code ..... 04120104  
Date of Investigation ..... April 19, 2021  
Consultant ..... Earth Dimensions, Inc.  
1091 Jamison Road  
Elma, New York 14095  
Point of Contact ..... Thomas Somerville  
(716)655-1717  
tsomerville@earthdimensions.com  
Engineer ..... Inventum Engineering  
Property Owner ..... Riverview Innovation & Tech Campus, Inc.  
Authority ..... Section 7 ESA

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## EXECUTIVE SUMMARY

Inventum Engineering, P.C., on behalf of Riverview Innovation & Technology Campus (RITC), is conducting a Remedial Investigation (RI) through the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) of an 86.50± acre parcel located along the east side of River Road in the Town of Tonawanda, County of Erie, and State of New York (BCP Site No. C915353). Inventum Engineering has retained Earth Dimensions, Inc. (EDI) to perform a Habitat Assessment study to identify the existence or potential for listed State and/or Federal species and /or their habitats. Coordination with the New York State Department of Environmental Conservation (NYSDEC) and United States Fish & Wildlife Service (USFWS) was conducted to determine their jurisdictional authority over the investigation area, pursuant to Title 6 of the New York Codes, Rules and Regulations (6NYCRR), Part 360.8 and Section 7 of the Endangered Species Act.

A preliminary review of available information pertaining to listed species, vegetation, soils, and hydrology in the project area was implemented prior to conducting a field investigation at the site. Sources of information include Figure 1: United States Geological Survey (USGS), Figure 2: National Wetland Inventory (NWI), Figure 3: Natural Resources Conservation Service (NRCS), and Figure 4 NYSDEC Freshwater Wetland maps. EDI applied methodology specified by the New York Natural Heritage Program in performing the habitat assessment. Within the investigation area, EDI identified six (6) ecological communities.

During initial review, USFWS identified the potential for the Northern Long-eared Bat (*Myotis septentrionalis*), a federally threatened species, within the project area. No federally listed significant habitats were identified. NYSDEC Natural Heritage identified no listed species or habitats within the investigation area.

A detailed field investigation was conducted on April 19, 2020 to document existing site conditions and survey for listed species and/or habitats. No listed species or significant habitats were identified during the field investigation.

In summary, it is EDI's professional opinion that no listed species or significant habitats are present within the investigation area. Although numerous small to medium (4 to 12 inch diameter) trees were identified, all were alive and healthy and provided no suitable habitat (peeling bark, cracks, crevices) for the Northern long-eared bat. EDI consulted the guidance found at: <https://www.dec.ny.gov/animals/106090.html> for the locations of known summer roosting and winter hibernacula. The project site lies beyond five (5) miles of an occupied hibernacula and is not in or adjacent to a Town identified as having known summer roost locations.

## SECTION I: INTRODUCTION

Inventum Engineering, P.C., on behalf of Riverview Innovation & Technology Campus (RITC), is conducting a Remedial Investigation (RI) through the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) of an 86.50± acre parcel located along the east side of River Road in the Town of Tonawanda, County of Erie, and State of New York (BCP Site No. C915353). The investigation area is an abandoned coke manufacturing facility with associated industrial disposal areas. The site is located on the USGS 7.5 minute quadrangle map indexed as Buffalo NW/USGS (Figure 1). The habitat assessment field work was completed on April 19, 2021 by an Ecologist from Earth Dimensions, Inc.

Inventum Engineering has retained Earth Dimensions, Inc. (EDI) to complete a habitat assessment study at this site. The vegetative communities found during the field assessment used the technical document updated in 2014 titled, “Ecological Communities of New York State” (Edinger et al.). The investigation was designed to facilitate a determination of the extent of NYSDEC and USFWS jurisdiction over the project area pursuant to Title 6 of New York Codes, Rules and Regulations (6NYCRR) Part 360.8 and Section 7 of the Endangered Species Act.

The New York State Natural Heritage Program and the U.S. Fish and Wildlife Service (USFWS) on-line mapping resources were consulted in order to determine whether known occurrences of protected species have been located in the project vicinity. The Natural Heritage Program did not identify any listed species or significant habitats within or adjacent to the investigation area. USFWS identified the potential for federally Threatened Northern Long-eared Bat within the project area. USFWS also identified seven (7) migratory birds that are identified as a Bird of Conservation Concern. The birds identified are bald eagle, black-billed cuckoo, Canada warbler, lesser yellowlegs, red-headed woodpecker, snowy owl and wood thrush.

EDI has performed a habitat assessment at the site under guidelines specified by the NYSDEC New York Natural Heritage Program and USFWS. The purpose of this report is to present EDI's findings with respect to the Riverview Innovations & Technology Campus project site.

## SECTION II: SITE DESCRIPTION

The Riverview Innovation & Technology Campus site is comprised of an 86.50± acre parcel on the east side of River Road. The project area is comprised of an abandoned coke manufacturing facility with areas of industrial waste and storage, abandoned industrial buildings and successional fill communities. Several open water industrial ponds are located in the southwestern portion of the site. The northern portion of the site is dominated by abandoned industrial buildings that are in the process of being demolished. The central portion of the site is dominated by industrial waste fill, with little to no vegetation present. The eastern portion of the site is dominated by a successional fill community, where small trees and herbaceous vegetation has grown on historic industrial fill piles. The investigation area is outlined on Figure 1 in Appendix A.

The natural topography of the investigation area is flat to gently sloping. The uplands within the investigation areas consisted of urban vacant lot, industrial building and successional fill pad communities. The wetland areas were found to consist of shallow emergent marsh and invasive species marsh communities. Three (3) industrial ponds were also identified. The vegetative communities of the investigation area are described according to *Ecological Communities of New York State* (Edinger et al. 2014).

Wherever potential habitat for Northern long-eared bat may occur within the investigation area, tree clearing for trees greater than 3" DBH (diameter at breast height) will take place between November 1<sup>st</sup> and March 31<sup>st</sup> to minimize disturbance to the potential summer roost habitat. No vegetative communities were found within the investigation area that are identified by NYNHP as potentially having summer roosting northern-long eared bats. The NYSDEC guidance found at <https://www.dec.ny.gov/animals/106090.html> was reviewed for the summer and winter occurrences of the NLEB.

### SECTION III: PURPOSE

The purpose of this study is to complete a general assessment of the site for listed species and to analyze the physical characteristics of communities on site. The investigation was designed to facilitate a determination of the extent of the NYSDEC's jurisdiction over the project pursuant 6NYCRR Part 360.8(b) which states: "Endangered species. Person(s) must not construct a facility or laterally expand an existing one in a manner that causes or contributes to the taking of any endangered or threatened species or to the destruction or adverse modification of their critical habitat".

On-line resources were used prior to the site visit to determine if listed species and/or significant habitats were present within or adjacent to the site. USFWS identified the Northern Long-eared Bat as potentially being present within the project area. At this time, all of New York State contains potentially suitable habitat for Northern Long-eared Bat. NYSDEC Natural Heritage Program identified no listed species or significant habitats within the project site. These on-line resource map documents are included in Appendix F of this report.

In response to the potential for listed species to be present within the project site, EDI has completed this Habitat Assessment to identify the potential for listed species or suitable habitats. A detailed field investigation was conducted during appropriate weather and season for northern long-eared bat.

## SECTION IV: SPECIES DESCRIPTIONS

USFWS identified Federally Threatened Northern long-eared bat (*Myotis septentrionalis*) as potentially within the investigation area.

Northern long-eared bat populations in the northeastern United States have fallen dramatically since the discovery of white-nose syndrome. Northern long-eared bats winter in caves and mines, often hibernating in small cracks and crevices. The northern long-eared bat's range includes much of the eastern and north central United States. In New York, they occur in a patchy distribution and may be found throughout most of the state including Long Island. Winter surveys prior to the start of WNS had recorded this species in all regions of the state where mines and caves have been surveyed. During the summer, northern long-eared bats roost underneath bark, in cavities or in crevices of both live trees and snags (dead trees) typically over 3 inches in diameter at breast height (dbh). Log piles and downed trees with cracks or crevices are also used, although not as commonly as standing trees. Northern long-eared bats seem to be flexible in selecting roosts, choosing roost trees based on suitability to retain bark or provide cavities or crevices. Breeding typically occurs in late summer to early fall, near the hibernacula. Females retain the males sperm over winter and the eggs are fertilized during ovulation in the spring. Females concentrate in areas where maternity roost trees are readily available, where they give birth to and raise a single pup. During June and July, these pups are flightless and any disturbance to the roost tree or immediate area can be detrimental.

The seven bird species identified by USFWS are only protected under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act. There are no Section 7 ESA regulations for migratory birds not specifically listed as threatened or endangered.

Bald eagle is unlikely to utilize the site due to lack of feeding areas (large open water areas) and insufficient roosting areas (large trees). Bald eagles are present along the Niagara River corridor and may fly over the site, however, the site provides no important habitat.

Snowy owl is an interruptive winter visitor to Western New York. They are found scattered throughout multiple habitats that provide sufficient feeding potential, such as open farmland and lake edges. Snowy owls are present each winter along the Buffalo waterfront, however, would not utilize the site based on lack of protected roosting areas and too much industrial/human activity.

Red-headed woodpeckers are rare to uncommon in Western New York. They utilize areas with large tracts of mature woods and minimal human disturbance. Based on the lack of large trees and dominant wooded communities, there is no potential habitat within the site to accommodate red-headed woodpeckers.

Lesser yellowlegs are a migratory shorebird that utilize open mudflats and open wetland areas. They are not known to breed in New York. Lesser yellowlegs prefer habitat with shallow water and dense muddy substrate rich with invertebrates. There is no suitable habitat within the site, as the wetlands are fully vegetated and the substrate is slag fill or densely packed soil fill.

Migratory songbirds such as black-billed cuckoo, Canada warbler and wood thrush use the Lake Erie shore and Niagara River as a migration pathway to breeding grounds in Northern New York and Canada. Although it is possible one of these species would briefly stop at the site to feed during migration, there is minimal potential based on the low-grade habitat and lack of suitable woody communities. Additionally, these species would not breed within the site.

## SECTION V: FIELD INVESTIGATION PROCEDURES

In order to accurately identify the limits of various vegetative communities, aerial photography (Figure 6) and ground truthing were utilized. As depicted on Figure 5 in Appendix A and included in Appendix B, eight (8) data points were used to characterize the site. Figure 5 depicts the locations of the photos included in Appendix C.

The plant community inhabiting each observation point was characterized. Dominant plant species were identified within four vegetative strata (i.e. herb, sapling/shrub, tree and liana (woody vines) at each sampling point. The quadrant sizes used for the vegetative strata were (i) a 3.28-foot radius for herbs; (ii) a ten-foot radius for saplings/shrubs and woody vines; and (iii) a 30-foot radius for trees. Dominant plant species were estimated using aerial coverage methods.

The plant community data was summarized on the data forms provided in the Northcentral and Northeast Regional Supplement included in this report as Appendix B. Details about each community type are included in the community descriptions in Section V.

In addition to plant community descriptions, a full wildlife assessment was conducted during the site visit. All birds, mammals and reptiles/amphibians were identified. During the site visit, three (3) mammals, two (2) amphibians and twenty-four (24) bird species were identified, several of which were only flying over the site. Tracks of white-tailed deer, striped skunk and raccoon were noted within the site. Within the wetlands and ponds, leopard frog and western chorus frog were heard singing. No individuals were observed, and no egg masses were found. Birds within the site included American crow, red-winged blackbird, European starling, rock pigeon, American goldfinch, song sparrow, northern flicker, wild turkey, killdeer, Canada goose, eastern phoebe, swamp sparrow, downy woodpecker, mallard, northern cardinal, American robin, turkey vulture, double-crested cormorant, tree swallow, brown cowbird, ring-billed gull, black-capped chickadee, mourning dove and mockingbird.

## SECTION VI: STUDY AREA HABITATS

Within the investigation area, EDI identified six (6) major ecological communities, none of which are listed as vulnerable in New York State. They are as follows:

<b>Ecological Community</b>	<b>Global Rank</b>	<b>State Rank</b>
1. Urban Vacant Lot	1. G5	1. S5
2. Industrial Building	2. G5	2. S5
3. Successional Fill Pad	3. G5	3. S5
4. Invasive Species Marsh	4. G5	4. S5
5. Emergent Marsh	5. G5	5. S5
6. Industrial Pond	6. G5	6. S5

Figure 5 in Appendix A depicts the vegetative communities as they existed at the time of the investigation. The vegetative communities of the investigation area are described according to Ecological Communities of New York State (Edinger et al. 2014). The following is a description of each major community type encountered.

The **Urban Vacant Lot** community includes much of the site, where historic fill has been placed from the manufacturing of coke and its bi-products. There is minimal vegetation in this community. The community contained the following species: common reed (*Phragmites australis*), common dandelion (*Taraxacum officinale*), hairy crabgrass (*Digitaria sanguinalis*), sweet sagewort (*Artemisia annua*), little bluestem (*Schizachyrium scoparium*), spotted knapweed (*Centaurea stoebe*) and Virginia strawberry (*Fragaria virginiana*).

The **Successional fill pad** community included areas in the eastern portion of the site where small trees, shrubs and herbaceous vegetation has grown on old industrial fill piles. The community contained the following species: Tatarian honeysuckle (*Lonicera tatarica*), common reed (*Phragmites australis*), pin oak (*Quercus palustris*), sweet sagewort (*Artemisia annua*), eastern cottonwood (*Populus deltoides*), crack willow (*Salix fragilis*), Queen Anne's lace (*Daucus carota*), summer grape (*Vitis aestivalis*), bull thistle (*Cirsium arvense*), gray dogwood (*Cornus racemosa*), common mullein (*Verbascum thapsus*), common burdock (*Actium minus*), common red raspberry (*Rubus idaeus*), mare's tail (*Conyza canadensis*), common wormwood (*Artemisia vulgaris*), Virginia strawberry (*Fragaria virginiana*), little bluestem (*Schizachyrium scoparium*), Japanese knotweed (*Polygonum cuspidatum*),

sticky willy (*Galium aparine*), spotted knapweed (*Centaurea stoebe*), paper birch (*Betula papyrifera*), black raspberry (*Rubus occidentalis*), garlic mustard (*Alliaria officinalis*), velvet grass (*Holcus lanatus*), path rush (*Juncus tenuis*), narrowleaf bittercress (*Cardamine impatiens*) and Canada goldenrod (*Solidago canadensis*)

The **invasive species marsh** community is present within a portion of the on-site wetland areas and drainage ditches. The community contained the following species: common reed (*Phalaris arundinacea*), narrowleaf cattail (*Typha angustifolia*) and purple loosestrife (*Lythrum salicaria*).

The **emergent marsh** community contained the following species: common reed (*Phragmites australis*), flat topped goldenrod (*Euthamia graminifolia*), narrowleaf cattail (*Typha angustifolia*), purple loosestrife (*Lythrum salicaria*), common rush (*Juncus effusus*), deer tongue grass (*Dichanthelium clandestinum*), American bugleweed (*Lycopus americana*), pussy willow (*Salix discolor*), wrinkled goldenrod (*Solidago rugosa*), purpleleaf willowherb (*Epilobium coloratum*), eastern cottonwood (*Populus deltoides*) and northern arrowwood (*Viburnum recognitum*)

The **industrial pond** community is present along the edges of the open water areas in the southwest portion of the site. This community contained the following species: common reed (*Phragmites australis*), narrowleaf cattail (*Typha angustifolia*) and pussy willow (*Salix discolor*).

Due to access restrictions and lack of vegetation, the industrial building community was not investigated in depth.

## SECTION VII: CONCLUSION

Earth Dimensions, Inc. (EDI) has completed a habitat assessment study at the Riverview Innovation & Technology Campus site located in the Town of Tonawanda, County of Erie, and State of New York. A field investigation was conducted by an Ecologist from EDI. The study identified six vegetative community types present within the site.

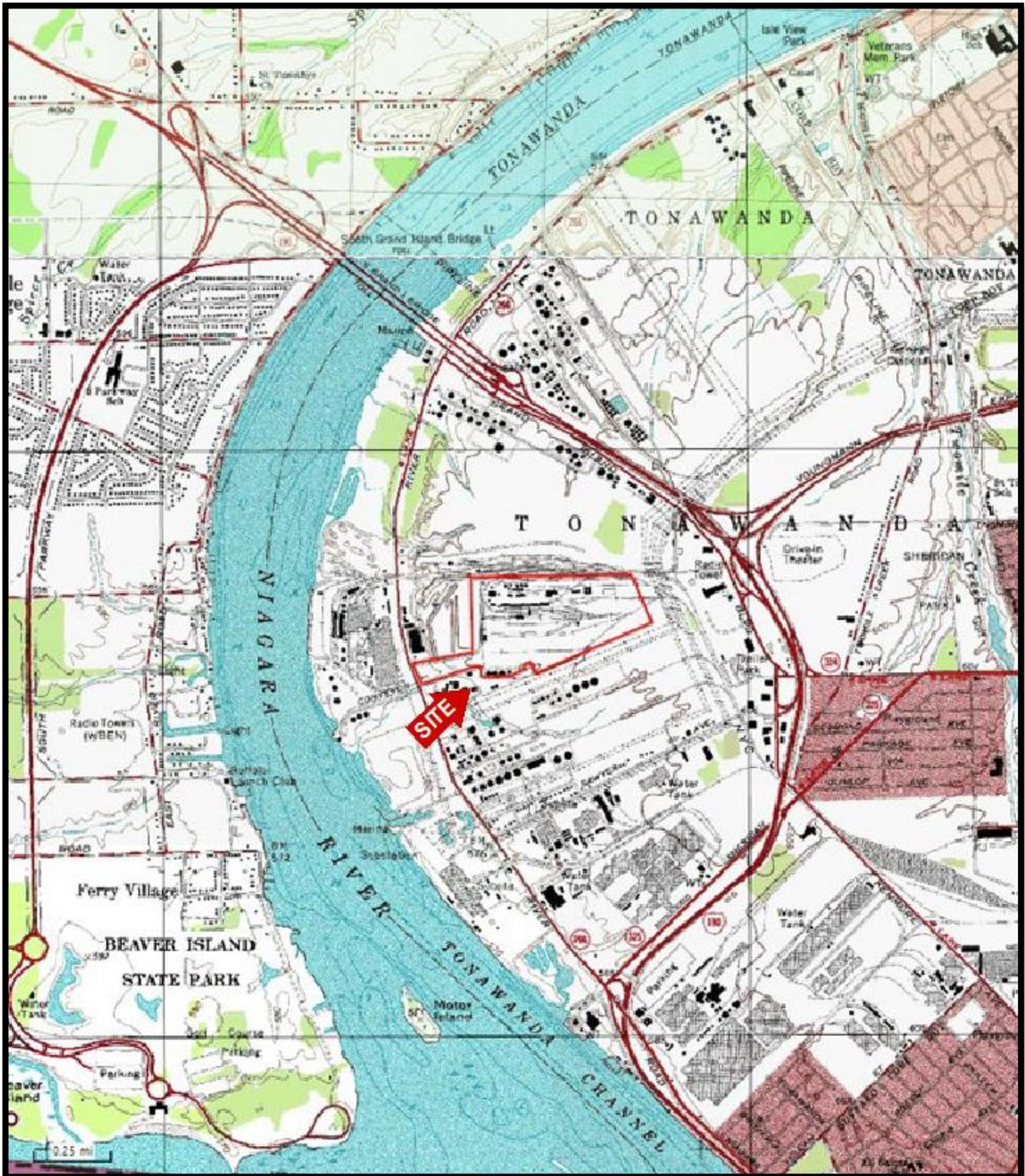
A map which depicts the site boundaries, the dominant community types and the location of all observation points and photo locations established during the field survey is included as Figure 5 in Appendix A of this report. Data forms are included as Appendix B. Appendix C includes representative photographs of the community types. Appendix D notes the references used during the preparation of this report and during the field investigation. Appendix E provides the names, addresses and phone numbers of the survey personnel involved in the wetland delineation study. Appendix F provides the correspondence from the USFWS and NYSDEC.

The Habitat Assessment found no potentially suitable habitat for the Northern long-eared bat present within the investigation area. The lack of large trees with peeling bark, cracks and/or crevices and the location of the site within a dense industrial area likely prohibit the bat from utilizing the site for summer roosting. No suitable winter hibernacula habitat was found during the investigation. Per the NYSDEC Northern Long-eared Bat information page, there are two (2) towns within Erie County that have recorded a summer roost location for Northern Long-eared Bat. These Towns are Collins and Wales. Wintering locations of Northern Long-eared Bats have been documented in the Towns of Akron, Alden, Clarence and Newstead. The project area is within the Town of Tonawanda, which does not border any of the identified towns.

In summary, there is no suitable habitat present for the Northern Long-eared Bat, or any other federally or state listed species. The site is dominated by abandoned industrial buildings and historic industrial fill, with minimal vegetation throughout the site.

# **RIVERVIEW INNOVATION & TECHNOLOGY CAMPUS**

APPENDIX A - FIGURES



**FIGURE 1: USGS 7.5 MINUTE TOPOGRAPHICAL MAP**

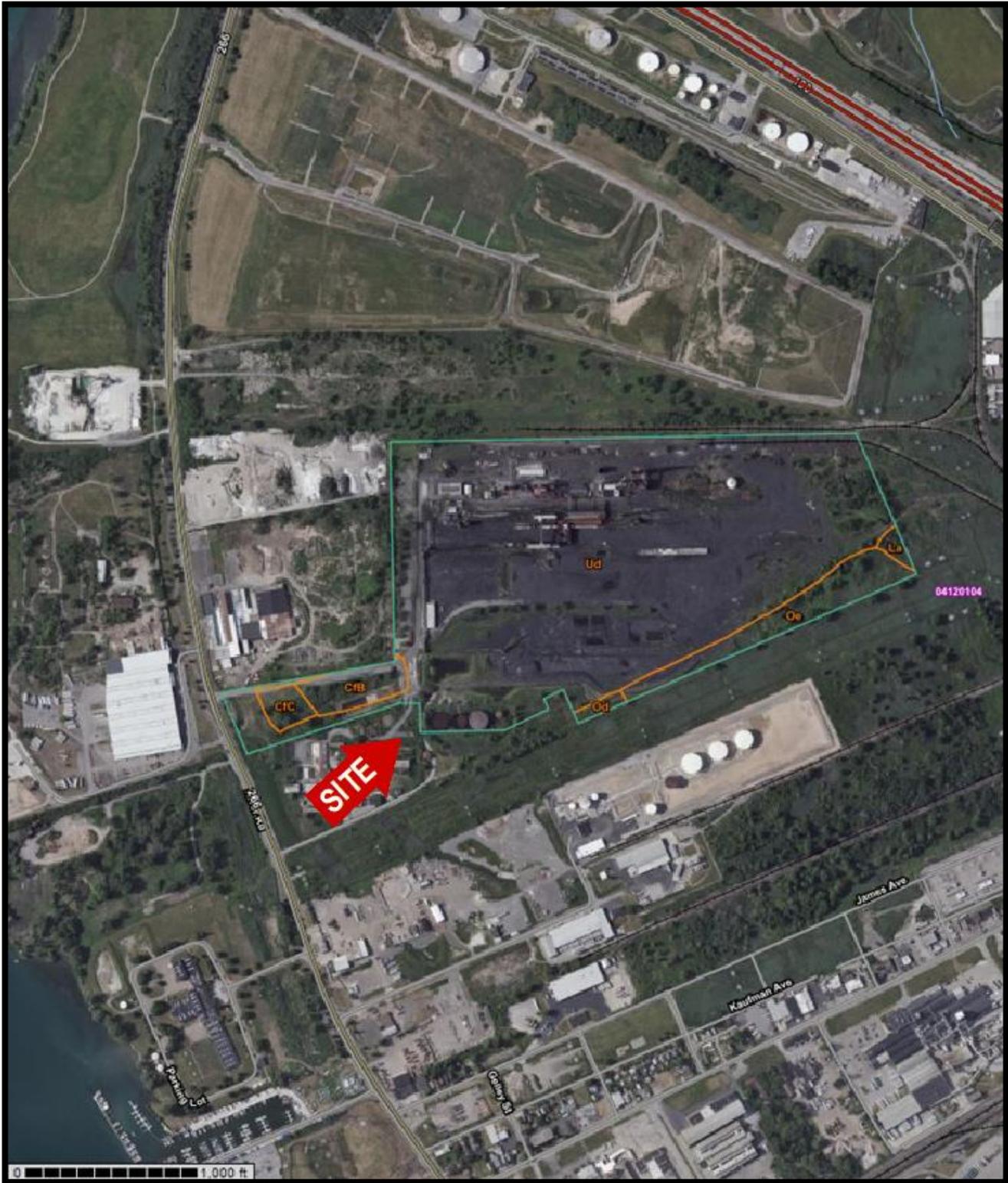
Buffalo Northwest Quadrangle / 2002 DeLorme  
Riverview Innovation & Technology Campus  
Town of Tonawanda, Erie County, New York



**FIGURE 2: NATIONAL WETLANDS INVENTORY MAP**

<http://www.fws.gov/wetlands/data/mapper.HTML> (Visited 4/20/21)

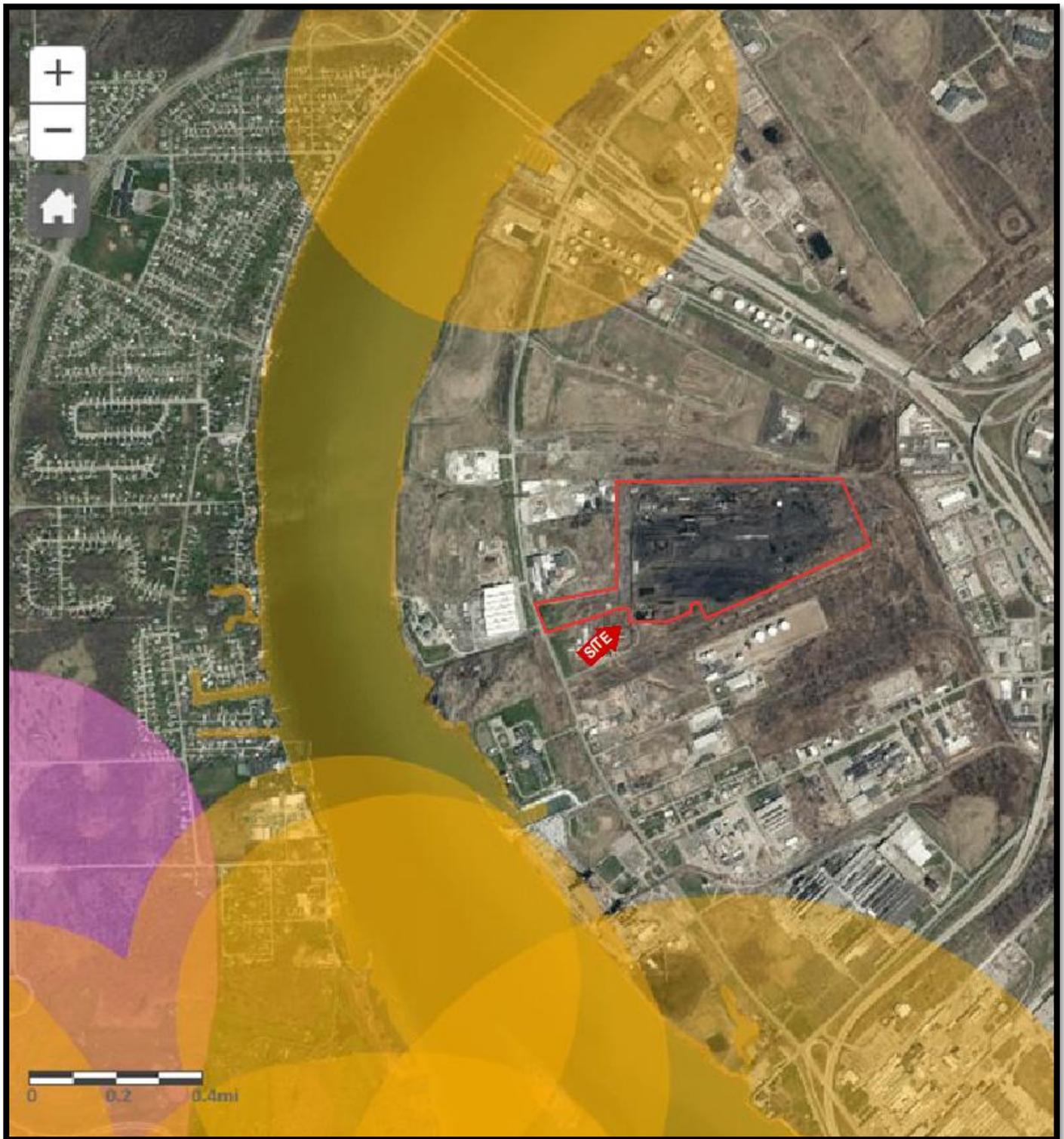
Riverview Innovation & Technology Campus  
Town of Tonawanda, Erie County, New York



**FIGURE 3: NRCS ERIE COUNTY SOIL SURVEY MAP**

<http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx> (Visited 4/20/21)

Riverview Innovation & Technology Campus  
Town of Tonawanda, Erie County, New York



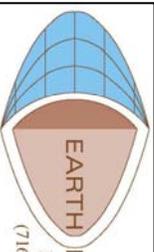
**FIGURE 4: NYSDEC ENVIRONMENTAL RESOURCE MAPPER**  
<http://www.dec.ny.gov/imsmaps/ERM/viewer.htm> (Visited 4/20/21)

Riverview Innovation & Technology Campus  
Town of Tonawanda, Erie County, New York

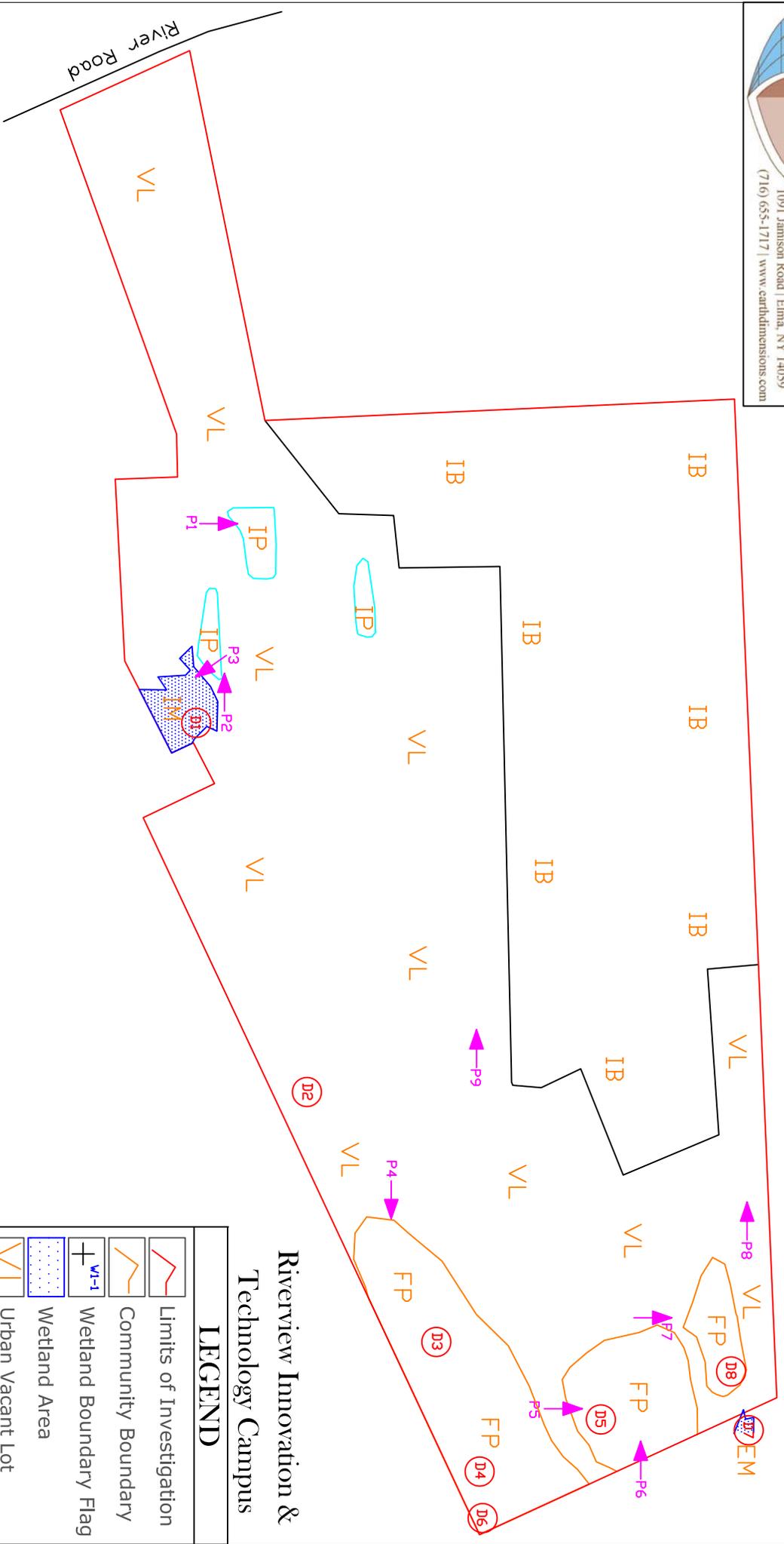
Figure 5 - Vegetative Community & Photo

Location Map

Town of Tonawanda Erie County, New York



**EARTH DIMENSIONS, INC.**  
 1091 Jamison Road | Elma, NY 14059  
 (716) 655-1717 | www.earthdimensions.com



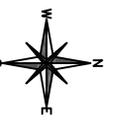
Scale: 0 200' 400'

Map Date: April 20, 2021/ TJS for EDI  
 Revised:

Base Map Provided By: Trimble Geo 7X GPS

File Name: Habitat Assessment\_Figure 5.dwg

EDI Project Code: W2F89e



Riverview Innovation & Technology Campus

LEGEND	
	Limits of Investigation
	Community Boundary
	Wetland Boundary Flag
	Wetland Area
	Urban Vacant Lot
	Industrial Building
	Successional Fill Pad
	Invasive Species Marsh
	Emergent Marsh
	Industrial Pond



**FIGURE 6: SITE AERIAL PHOTOGRAPH**

<https://www2.erie.gov/gis/index.php?q=internet-mapping> (Visited 4/20/21)

Riverview Innovation & Technology Campus  
Town of Tonawanda, Erie County, New York

# **RIVERVIEW INNOVATION & TECHNOLOGY CAMPUS**

APPENDIX B - DATA FORMS

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Riverview Tech Campus Town/County: Tonawanda/Erie County Sampling Date: April 5, 2021

Applicant/Owner: Inventum Engineering State: New York Sampling Point: D1

Investigator(s): Scott Livingstone & Jody Celeste Section, Township, Range: 64.08-1-10

Landform (hillslope, terrace, etc.): DEPRESSION Local relief (concave, convex, none): CONCAVE Slope (%): 1

Subregion (LRR or MLRA) LRRL Lat: 42.88102 Long: 78.92782 Datum: NAD83

Soil Map Unit Name: URBAN LAND NW I classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No

Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If yes, optional Wetland Site ID: <u>W1</u>
Remarks: (Explain alternative procedures here or in a separate report.) <p style="font-size: 1.2em; margin-top: 10px;">                     • W1-1-W1-14 (OPEN TO SOUTH)                      • PHRAGMITES STAND ON OLD FILL PAD                 </p>	

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u> Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u> Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: <p style="font-size: 1.2em; margin-top: 10px;">                     • SOME STANDING WATER IN AREAS                 </p>	

VEGETATION : Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Populus deltoides</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

5 = Total Cover

Sapling/Shrub Stratum (Plot size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Viburnum recognitum</u>	<u>3</u>	<u>Y</u>	<u>FACW</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

3 = Total Cover

Herb Stratum (Plot size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Phragmites australis</u>	<u>60</u>	<u>Y</u>	<u>FACW</u>
2. <u>Lythrum salicaria</u>	<u>10</u>	<u>N</u>	<u>OBL</u>
3. <u>Juncus effusus</u>	<u>5</u>	<u>N</u>	<u>↓</u>
4. <u>Euthamia graminifolia</u>	<u>5</u>	<u>N</u>	<u>FAC</u>
5. <u>Solidago rugosa</u>	<u>5</u>	<u>N</u>	<u>↓</u>
6. <u>Epilobium ciliatum</u>	<u>5</u>	<u>N</u>	<u>OBL</u>
7. <u>Panicum</u>	<u>5</u>	<u>N</u>	<u>FACW</u>
8. <u>Penthorum sedoides</u>	<u>5</u>	<u>N</u>	<u>OBL</u>
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

100 = Total Cover

Woody Vine Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>NA</u>	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

0 = Total Cover

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____	(A) _____ (B) _____

Prevalence Index = B/A = \_\_\_\_\_

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
  - 2 - Dominance Test is >50%
  - 3 - Prevalence Index is < 3.0<sup>1</sup>
  - 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
  - Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

Community Type: WI PEM SHALLOW emergent MARSH

Hydrophytic Vegetation Present? Yes X No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet.)  
 Photo # 3 Direction of Photo WEST

Disturbed



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Riverview Tech Campus Town/County: Tonawanda/Erie County Sampling Date: April 5, 2021

Applicant/Owner: Inventum Engineering State: New York Sampling Point: D2

Investigator(s): Scott Livingstone & Jody Celeste Section, Township, Range: 64.08-1-10

Landform (hillslope, terrace, etc.): FILL PAD Local relief (concave, convex, none): NONE Slope (%): 1%

Subregion (LRR or MLRA) LRRL Lat: 42.98156 Long: 78.92394 Datum: NAD83

Soil Map Unit Name: ODESSA-LAKEMONT COMPLEX, 0-3% Slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No

Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, optional Wetland Site ID: <u>N/A</u>
Remarks: (Explain alternative procedures here or in a separate report.) <div style="font-size: 1.2em; font-family: cursive;">                     UPLAND FILL PAD WITH PHRAGMITES STAND                 </div>	

**HYDROLOGY**

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Aquatic Fauna (B13)	
<input type="checkbox"/> Marl Deposits (B15)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u> Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u> Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u>	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Sampling Point: D2

VEGETATION : Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Quercus palustris</u>	<u>8</u>	<u>Y</u>	<u>FACW</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Sapling/Shrub Stratum (Plot size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>NA</u>	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. <u>✓</u>	_____	_____	_____

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>68</u>	x 2 = <u>136</u>
FAC species <u>5</u>	x 3 = <u>15</u>
FACU species <u>23</u>	x 4 = <u>92</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>96</u> (A)	<u>243</u> (B)

Prevalence Index = B/A = 2.5

Herb Stratum (Plot size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Phragmites australis</u>	<u>60</u>	<u>Y</u>	<u>FACW</u>
2. <u>Artemisa annua</u>	<u>15</u>	<u>N</u>	<u>FACW</u>
3. <u>Symphotrichum lateriflorum</u>	<u>5</u>	<u>N</u>	<u>FAC</u>
4. <u>Solidago canadensis</u>	<u>5</u>	<u>N</u>	<u>FACW</u>
5. <u>Rhus typhina</u>	<u>3</u>	<u>N</u>	<u>FACW</u>
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
  - 2 - Dominance Test is >50%
  - 3 - Prevalence Index is < 3.0<sup>1</sup>
  - 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
  - Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

Woody Vine Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

**SUCCESSIONAL OLD FILL PAD**

Community Type: \_\_\_\_\_

Hydrophytic Vegetation Present? Yes X No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet.)

Photo # 4 Direction of Photo EAST

~~\*~~ No hydrology

disturbed site



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Riverview Tech Campus Town/County: Tonawanda/Erie County Sampling Date: April 5, 2021

Applicant/Owner: Inventum Engineering State: New York Sampling Point: D3

Investigator(s): Scott Livingstone & Jody Celeste Section, Township, Range: 64.08-1-10

Landform (hillslope, terrace, etc.): FILL PAD Local relief (concave, convex, none): CONVEX Slope (%): 5

Subregion (LRR or MLRA) LRRL Lat: 42.98261 Long: 78.92153 Datum: NAD83

Soil Map Unit Name: ODESSA-LAKEMONT COMPLEX, 0-3/4 NW I classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No

Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, optional Wetland Site ID: <u>N/A</u>
Remarks: (Explain alternative procedures here or in a separate report.)  <div style="font-size: 1.2em; font-family: cursive;">                     UPLAND SCRUB/SHRUB COMMUNITY ON OLD FILL                 </div>	

**HYDROLOGY**

<p><b>Wetland Hydrology Indicators:</b></p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<p><u>Secondary Indicators (minimum of two required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p><b>Field Observations:</b></p> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u> Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u> Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  Remarks:	

VEGETATION : Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Populus deltoides</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

5 = Total Cover

Sapling/Shrub Stratum (Plot size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>SALIX fragilis</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>
2. <u>CORNUS racemosa</u>	<u>5</u>	<u>N</u>	<u>I</u>
3. <u>Populus deltoides</u>	<u>5</u>	<u>N</u>	<u>↓</u>
4. <u>Lonicera tatarica</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

40 = Total Cover

Herb Stratum (Plot size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Artemisa annua</u>	<u>35</u>	<u>Y</u>	<u>FACW</u>
2. <u>Alliaria officinalis</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>
3. <u>Rubus occidentalis</u>	<u>5</u>	<u>N</u>	<u>NI</u>
4. <u>Cirsium arvense</u>	<u>5</u>	<u>N</u>	<u>FACW</u>
5. <u>Solidago canadensis</u>	<u>5</u>	<u>N</u>	<u>FACW</u>
6. <u>Phragmites australis</u>	<u>5</u>	<u>N</u>	<u>FACW</u>
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

70 = Total Cover

Woody Vine Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Vitis aestivalis</u>	<u>5</u>	<u>Y</u>	<u>FACW</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

5 = Total Cover

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>5</u>	x 2 = <u>10</u>
FAC species <u>30</u>	x 3 = <u>90</u>
FACU species <u>80</u>	x 4 = <u>320</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>115</u> (A)	<u>420</u> (B)

Prevalence Index = B/A = 3.65

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
  - 2 - Dominance Test is >50%
  - 3 - Prevalence Index is < 3.0<sup>1</sup>
  - 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
  - Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

- Definitions of Vegetation Strata:**
- Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
  - Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
  - Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
  - Woody vines** - All woody vines greater than 3.28 ft in height.

Community Type: SUCCESSIONAL OLD FILL PFD

Hydrophytic Vegetation Present? Yes  No

Remarks: (Include photo numbers here or on a separate sheet.)  
 Photo # 5 Direction of Photo SOUTH disturbed

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-8"	-	-	-	-	-	-	SLAG	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

Indicators for Problematic Hydric Soils<sup>3</sup>:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L, M)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: HARD FILL  
 Depth (inches): 8"

Hydric Soil Present? Yes  No

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Riverview Tech Campus Town/County: Tonawanda/Erie County Sampling Date: April 5, 2021

Applicant/Owner: Inventum Engineering State: New York Sampling Point: D4

Investigator(s): Scott Livingstone & Jody Celeste Section, Township, Range: 64.08-1-10

Landform (hillslope, terrace, etc.): FILL PAD Local relief (concave, convex, none): CONVEX Slope (%): 3

Subregion (LRR or MLRA) LRRL Lat: 42.98291 Long: 78.92020 Datum: NAD83

Soil Map Unit Name: ODESSA-LAKEMONT COMPLEX, 0-3% NW I classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No

Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, optional Wetland Site ID: <u>N/A</u>
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	

Remarks: (Explain alternative procedures here or in a separate report.)

**UPLAND FILL PAD WITH PHRAGMITES STANDS;  
SOME BARE GROUND**

**HYDROLOGY**

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): N/A  
 Water Table Present? Yes  No  Depth (inches): N/A  
 Saturation Present? Yes  No  Depth (inches): N/A  
 (includes capillary fringe)

Wetland Hydrology Present? Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION : Use scientific names of plants.

Sampling Point: \_\_\_\_\_

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Populus deltoides</i>	5	Y	FAC
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80 (A/B)

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Salix fragilis</i>	10	Y	FAC
2. <i>Cornus Amomum</i>	5	Y	FACW
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>25</u>	x 2 = <u>50</u>
FAC species <u>37</u>	x 3 = <u>111</u>
FACU species <u>28</u>	x 4 = <u>112</u>
UPL species <u>5</u>	x 5 = <u>25</u>
Column Totals: <u>95</u> (A)	<u>298</u> (B)

Prevalence Index = B/A = 3.13

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Phragmites Australis</i>	20	Y	FACW
2. <i>Salix fragilis</i>	15	N	FAC
3. <i>Arctium minus</i>	3	N	FACU
4. <i>Artemisa Annua</i>	25	Y	FACW
5. <i>Penstemon digitalis</i>	7	N	FAC
6. <i>Coreya Canadensis</i>	5	N	NI
7. <i>Verbascum thapsus</i>	5	N	UPL
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
  - 2 - Dominance Test is >50%
  - 3 - Prevalence Index is < 3.0<sup>1</sup>
  - 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
  - Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

- Definitions of Vegetation Strata:**
- Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
  - Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
  - Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
  - Woody vines** - All woody vines greater than 3.28 ft in height.

Woody Vine Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. NA	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. ✓	_____	_____	_____

Community Type: SUCCESSIONAL OLD FILL

Hydrophytic Vegetation Present? Yes X No    

Remarks: (Include photo numbers here or on a separate sheet.)

Photo # 6 Direction of Photo NORTH DISTURBED



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Riverview Tech Campus Town/County: Tonawanda/Erie County Sampling Date: April 5, 2021  
 Applicant/Owner: Inventum Engineering State: New York Sampling Point: D5  
 Investigator(s): Scott Livingstone & Jody Celeste Section, Township, Range: 64.08-1-10  
 Landform (hillslope, terrace, etc.): Fill Pile Local relief (concave, convex, none): CONVEX Slope (%): 20%  
 Subregion (LRR or MLRA) LRRL Lat: 42.98368 Long: 78.92069 Datum: NAD83  
 Soil Map Unit Name: URBAN LAND NW I classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) <div style="font-size: 1.2em; font-family: cursive;">                     UPLAND FILL PILE WITH TREES                 </div>	

**HYDROLOGY**

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
<b>Primary Indicators (minimum of one is required; check all that apply)</b> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u> Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u> Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:  Remarks:	

VEGETATION : Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Populus deltoides</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

20 = Total Cover

Sapling/Shrub Stratum (Plot size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Salix fragilis</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

10 = Total Cover

Herb Stratum (Plot size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Salix fragilis</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>
2. <u>Polygonum cuspidatum</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>
3. <u>Verbascum thapsus</u>	<u>5</u>	<u>N</u>	<u>FACW</u>
4. <u>Artemisia annua</u>	<u>45</u>	<u>Y</u>	<u>FACW</u>
5. <u>Galium aparine</u>	<u>3</u>	<u>N</u>	<u>FACW</u>
6. <u>Centaurea stoebe</u>	<u>5</u>	<u>N</u>	<u>FACW</u>
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

88 = Total Cover

Woody Vine Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>NA</u>	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. <u>✓</u>	_____	_____	_____

0 = Total Cover

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60 (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>0</u>	x 2 = <u>0</u>
FAC species <u>45</u>	x 3 = <u>135</u>
FACU species <u>73</u>	x 4 = <u>292</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>118</u> (A)	<u>427</u> (B)

Prevalence Index = B/A = 3.62

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
  - 2 - Dominance Test is >50%
  - 3 - Prevalence Index is < 3.0<sup>1</sup>
  - 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
  - Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

- Definitions of Vegetation Strata:**
- Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
  - Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
  - Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
  - Woody vines** - All woody vines greater than 3.28 ft in height.

Community Type: SUCCESSIONAL OLD FILL PAD

Hydrophytic Vegetation Present? Yes X No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet.)

Photo # P7 Direction of Photo WEST

Disturbed



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Riverview Tech Campus Town/County: Tonawanda/Erie County Sampling Date: April 5, 2021  
 Applicant/Owner: Inventum Engineering State: New York Sampling Point: D6  
 Investigator(s): Scott Livingstone & Jody Celeste Section, Township, Range: 64.08-1-10  
 Landform (hillslope, terrace, etc.): FILL PAD Local relief (concave, convex, none): CONVEX Slope (%): 2%  
 Subregion (LRR or MLRA) LRRL Lat: 42.98291 Long: 78.91959 Datum: NAD83  
 Soil Map Unit Name: LAKEMONT SILT LOAM, 0-3% Slopes NWT classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, optional Wetland Site ID: <u>N/A</u>
Remarks: (Explain alternative procedures here or in a separate report.) <div style="font-family: cursive; font-size: 1.2em; padding: 10px;">                     • UPLAND FILL PAD WITH PHRAGMITES STAND                      • WETLAND HYDROLOGY OFF-SITE TO SOUTH                 </div>	

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> Primary Indicators (minimum of one is required; check all that apply) <table style="width:100%; border: none;"> <tr> <td><input type="checkbox"/> Surface Water (A1)</td> <td><input type="checkbox"/> Water-Stained Leaves (B9)</td> </tr> <tr> <td><input type="checkbox"/> High Water Table (A2)</td> <td><input type="checkbox"/> Aquatic Fauna (B13)</td> </tr> <tr> <td><input type="checkbox"/> Saturation (A3)</td> <td><input type="checkbox"/> Marl Deposits (B15)</td> </tr> <tr> <td><input type="checkbox"/> Water Marks (B1)</td> <td><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</td> </tr> <tr> <td><input type="checkbox"/> Sediment Deposits (B2)</td> <td><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</td> </tr> <tr> <td><input type="checkbox"/> Drift Deposits (B3)</td> <td><input type="checkbox"/> Presence of Reduced Iron (C4)</td> </tr> <tr> <td><input type="checkbox"/> Algal Mat or Crust (B4)</td> <td><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</td> </tr> <tr> <td><input type="checkbox"/> Iron Deposits (B5)</td> <td><input type="checkbox"/> Thin Muck Surface (C7)</td> </tr> <tr> <td><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</td> <td><input type="checkbox"/> Other (Explain in Remarks)</td> </tr> <tr> <td><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</td> <td></td> </tr> </table>	<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<b>Secondary Indicators (minimum of two required)</b> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)																				
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)																				
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)																				
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)																				
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)																				
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)																				
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)																				
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)																				
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)																				
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)																					
<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u> Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u> Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u>	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																				

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION : Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Betula papyrifera</u>	<u>10</u>	<u>Y</u>	<u>NI</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25 (A/B)

Sapling/Shrub Stratum (Plot size: 15')

1. <u>NA</u>	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

0 = Total Cover

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>65</u>	x 2 = <u>130</u>
FAC species <u>0</u>	x 3 = <u>0</u>
FACU species <u>20</u>	x 4 = <u>80</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>85</u> (A)	<u>210</u> (B)

Prevalence Index = B/A = 2.47

Herb Stratum (Plot size: 5')

1. <u>Phragmites australis</u>	<u>65</u>	<u>Y</u>	<u>FACW</u>
2. <u>Artemisia annua</u>	<u>10</u>	<u>N</u>	<u>FACW</u>
3. <u>Rubus occidentalis</u>	<u>20</u>	<u>Y</u>	<u>NI</u>
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

\_\_\_\_\_ = Total Cover

**Hydrophytic Vegetation Indicators:**

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is < 3.0<sup>1</sup>
- 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

Woody Vine Stratum (Plot size: 30')

1. <u>Vitis rotifolius</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

10 = Total Cover

Community Type: SUCCESSIONAL OLO FILL PAO

Hydrophytic Vegetation Present? Yes X No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet.)

Photo # 8 Direction of Photo EAST Disturbed

TWO DOMINANTS ARE "NI" SHOULD BE FACU/UPL

NOT WET - NO HYDROLOGY INDICES!



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Riverview Tech Campus Town/County: Tonawanda/Erie County Sampling Date: April 5, 2021

Applicant/Owner: Inventum Engineering State: New York Sampling Point: D7

Investigator(s): Scott Livingstone & Jody Celeste Section, Township, Range: 64.08-1-10

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): CONCAVE Slope (%): 0

Subregion (LRR or MLRA) LRRL Lat: 42.98492 Long: 78.92054 Datum: NAD83

Soil Map Unit Name: URBAN LAND NW I classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No

Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If yes, optional Wetland Site ID: <u>WZ</u>
Remarks: (Explain alternative procedures here or in a separate report.) <p style="font-size: 1.2em; margin-top: 10px;">                     • WETLAND POCKET FORMED ON OLD FILL PAD                      • WZ-1- WZ-5 (OPEN TO PE BUT CLOSED OFF-SITE)                 </p>	

**HYDROLOGY**

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Microtopographic Relief (D4)
<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Aquatic Fauna (B13)	
<input type="checkbox"/> Marl Deposits (B15)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

<b>Field Observations:</b> Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>2"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>SURFACE</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>SURFACE</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
--	--

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION : Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Populus deltoides</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

5 = Total Cover

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Salix fragilis</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>
2. <u>Salix discolor</u>	<u>5</u>	<u>Y</u>	<u>FACW</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

20 = Total Cover

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Phragmites australis</u>	<u>30</u>	<u>Y</u>	<u>FACW</u>
2. <u>Lythrum salicaria</u>	<u>30</u>	<u>Y</u>	<u>OBL</u>
3. <u>Lycopus americana</u>	<u>10</u>	<u>N</u>	<u>↓</u>
4. <u>Salix discolor</u>	<u>15</u>	<u>N</u>	<u>FACW</u>
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

85 = Total Cover

Woody Vine Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>NA</u>	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. <u>✓</u>	_____	_____	_____

0 = Total Cover

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (AB)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____	(A) _____ (B) _____

Prevalence Index = B/A = \_\_\_\_\_

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
  - 2 - Dominance Test is >50%
  - 3 - Prevalence Index is < 3.0<sup>1</sup>
  - 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
  - Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

(W2) Pem  
 Community Type: SHALLOW emergent MARSH

Hydrophytic Vegetation Present? Yes X No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet.)

Photo # 10 Direction of Photo EAST

Disturbed



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Riverview Tech Campus Town/County: Tonawanda/Erie County Sampling Date: April 5, 2021

Applicant/Owner: Inventum Engineering State: New York Sampling Point: D8

Investigator(s): Scott Livingstone & Jody Celeste Section, Township, Range: 64.08-1-10

Landform (hillslope, terrace, etc.): FILL PAD Local relief (concave, convex, none): NONE Slope (%): 41

Subregion (LRR or MLRA) LRRL Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: NAD83

Soil Map Unit Name: URBAN LAND NW I classification: NIA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation \_\_\_\_\_, Soil X, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_

Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: <u>NIA</u>
Remarks: (Explain alternative procedures here or in a separate report.)  <div style="font-size: 24px; font-family: cursive;">UPLAND FILL PAD</div>	

**HYDROLOGY**

<p><b>Wetland Hydrology Indicators:</b></p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <p> <input type="checkbox"/> Surface Water (A1)      <input type="checkbox"/> Water-Stained Leaves (B9)  <input type="checkbox"/> High Water Table (A2)      <input type="checkbox"/> Aquatic Fauna (B13)  <input type="checkbox"/> Saturation (A3)      <input type="checkbox"/> Marl Deposits (B15)  <input type="checkbox"/> Water Marks (B1)      <input type="checkbox"/> Hydrogen Sulfide Odor (C1)  <input type="checkbox"/> Sediment Deposits (B2)      <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)  <input type="checkbox"/> Drift Deposits (B3)      <input type="checkbox"/> Presence of Reduced Iron (C4)  <input type="checkbox"/> Algal Mat or Crust (B4)      <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)  <input type="checkbox"/> Iron Deposits (B5)      <input type="checkbox"/> Thin Muck Surface (C7)  <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)      <input type="checkbox"/> Other (Explain in Remarks)  <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)                 </p>	<p><u>Secondary Indicators (minimum of two required)</u></p> <p> <input type="checkbox"/> Surface Soil Cracks (B6)  <input type="checkbox"/> Drainage Patterns (B10)  <input type="checkbox"/> Moss Trim Lines (B16)  <input type="checkbox"/> Dry-Season Water Table (C2)  <input type="checkbox"/> Crayfish Burrows (C8)  <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)  <input type="checkbox"/> Stunted or Stressed Plants (D1)  <input type="checkbox"/> Geomorphic Position (D2)  <input type="checkbox"/> Shallow Aquitard (D3)  <input type="checkbox"/> Microtopographic Relief (D4)  <input type="checkbox"/> FAC-Neutral Test (D5)                 </p>
<p><b>Field Observations:</b></p> <p>                 Surface Water Present? Yes _____ No <u>X</u> Depth (inches): <u>N/A</u>                  Water Table Present? Yes _____ No <u>X</u> Depth (inches): <u>N/A</u>                  Saturation Present? Yes _____ No <u>X</u> Depth (inches): <u>N/A</u>                  (includes capillary fringe)             </p>	<p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION : Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Populus deltoides</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>
2. <u>Betula papyrifera</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 55 (A/B)

Sapling/Shrub Stratum (Plot size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Cornus Amomum</u>	<u>5</u>	<u>Y</u>	<u>FACW</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>15</u>	x 2 = <u>30</u>
FAC species <u>25</u>	x 3 = <u>75</u>
FACU species <u>73</u>	x 4 = <u>292</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>113</u> (A)	<u>397</u> (B)

Prevalence Index = B/A = 3.51

Herb Stratum (Plot size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Verbascum thapsus</u>	<u>3</u>	<u>N</u>	<u>FACW</u>
2. <u>Arctium minus</u>	<u>5</u>	<u>N</u>	<u>FACW</u>
3. <u>Schizachyrium sloparium</u>	<u>25</u>	<u>Y</u>	<u>FACW</u>
4. <u>Phragmites australis</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>
5. <u>Salix fragilis</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
6. <u>Fragaria virginiana</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>
7. <u>Juncus tenuis</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
8. <u>Artemisia annua</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>
9. <u>Holcus lanatus</u>	<u>5</u>	<u>N</u>	<u>FACW</u>
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

**Hydrophytic Vegetation Indicators:**

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is < 3.0<sup>1</sup>
- 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

Woody Vine Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>NA</u>	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. <u>✓</u>	_____	_____	_____

Community Type: SUCCESSIONAL OLD FILL PFD

Hydrophytic Vegetation Present? Yes X No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet.)

Photo # 11 Direction of Photo WEST

Disturbed



# **RIVERVIEW INNOVATION & TECHNOLOGY CAMPUS**

APPENDIX C - SITE PHOTOGRAPHS



**Photo 1:** Facing north. Depicts an industrial pond in the southwest portion of the site.



**Photo 2:** Facing west. Depicts an industrial pond in the southwest portion of the site.



**Photo 3:** Facing southeast. Depicts the invasive species marsh along the southern edge of the site.



**Photo 4:** Facing east. Depicts the successional fill pad community in the southeastern portion of the site.



**Photo 5:** Facing north. Depicts the successional fill pad community in the eastern portion of the site.



**Photo 6:** Facing west. Depicts the successional fill pad community in the eastern portion of the site.



**Photo 7:** Facing North. Depicts the successional fill pad community in the northeastern portion of the site.



**Photo 8:** Facing west. Depicts the site from along the northern limits of the property.



**Photo 9:** Facing west. Depicts the urban vacant lot community in the central portion of the site.

# **RIVERVIEW INNOVATION & TECHNOLOGY CAMPUS**

APPENDIX D - REFERENCES

## **INFORMATIONAL REFERENCES USED BY EARTH DIMENSIONS INC.**

- Andrus, R.E. 1980. Sphagnaceae (Peat Moss Family) of New York State. Contributions to a Flora of New York State III, R.S. Mitchell (Ed.), Bulletin No. 442, New York State Museum, Albany, New York. 89 pp.
- Benyus, J.M. 1989. The Field Guide to Wildlife Habitats of the Eastern United States. Fireside, Simon & Shuster, Inc., New York. 335 pp.
- Britton, N.L., and H.A. Brown. 1970. An Illustrated Flora of the Northern United States and Canada, Volumes 1, 2, and 3. Dover Publications, Inc., New York. 2052 pp.
- Brockman, C.F., R. Merrilees, and H.S. Zim. 1968. Trees of North America: A Field Guide to the Major Native and Introduced Species North of Mexico. Western Publishing, Inc. New York, New York. 280 pp.
- Brown, L. 1979. Grasses: An Identification Guide. Peterson Nature Library. Houghton Mifflin Co., Boston. 240 pp.
- Cobb, B. 1963. A Field Guide to the Ferns and Related Families. Houghton Mifflin Co., Boston. 281 pp.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. Laroe. 1979. Classification of Wetlands and Deep Water Habitats of the United States. U.S. Fish and Wildlife Service, Washington, D.C. FWS/OBS-79-31. 103 pp.
- Eggers, S.D., and D.M. Reed. 1997. Wetland Plants and Plant Communities of Minnesota and Wisconsin. Second Edition. U.S. Army Corps of Engineers, St. Paul District, Minnesota. 263 pp.
- Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, Mass. 100 pp. plus appendices.
- Hotchkiss, N. 1970. Common Marsh Plants of the United States and Canada. U.S. Department of the Interior, Bureau of Sport Fisheries and Wildlife, Washington, D.C., Resource Publication 93.
- Hurley, L.M. 1990. Field Guide to the Submerged Aquatic Vegetation of Chesapeake Bay. U.S. Fish and Wildlife Service, Chesapeake Bay Estuary Program, Annapolis, Maryland. 51 pp.
- Knobel, E. 1977. Field Guide to the Grasses, Sedges, and Rushes of the United States. Dover publications, Inc., New York. 83 pp.
- Little, E.L. 1980. The Audubon Society Field Guide to North American Trees (Eastern Region). Alfred A. Knopf, New York. 714 pp.
- Magee, D.W. 1981. Freshwater Wetlands. University of Massachusetts Press, Tonawanda. 245 pp.

- Mitchell, R.S., and G.C. Tucker. 1997. Revised Checklist of New York State Plants. Contributions to a Flora of New York State IV, R.S. Mitchell (Ed.). Bulletin No. 490, New York State Museum, Albany, New York. 400 pp.
- Munsell Color Chart. (Munsell Color 1975).
- National Wetland Inventory Maps. U.S. Department of the Interior, Fish and Wildlife Service, National Wetland Inventory, St. Petersburg, Florida. <http://wetlandsfws.er.usgs.gov> date visited: 2/4/2010
- Niering, W.C., and N.C. Olmstead. 1979. The Audubon Society Field Guide to North American Wildflowers (Eastern Region). Alfred A. Knopf, New York. 887 pp.
- New York State Code of Rules and Regulations (NYCRR). 1989. Protected Native Plants. NYCRR Part 193.3, June, 1989. New York State Department of Environmental Conservation.
- New York Natural Heritage Program. 2002. New York Rare Plant Status List, February, 1989. S.M. Young, (Ed.), New York State Department of Environmental Conservation and The Nature Conservancy publication. 26 pp.
- New York State Department of Environmental Conservation Freshwater Wetlands Maps, NYSDEC Environmental Resource Mapper, <http://www.dec.ny.gov/ismaps/ERM/viewer.htm>
- Newcomb, L. 1977. Newcomb's Wildflower Guide. Little, Brown and Co., Boston. 490 pp.
- Ogden, E.C. 1981. Field Guide to Northeastern Ferns. Contributions to a Flora of New York State III, R.S. Mitchell (Ed.), Bulletin No. 444, New York State Museum, Albany, New York. 122 pp.
- Peattie, D.C. 1991. A Natural History of Trees of Eastern and North America. Houghton Mifflin Co., Boston. 606 pp.
- Peterson, R.T., and M. McKenny. 1968. A Field Guide to Wildflowers of Northeastern and Northcentral North America. Houghton Mifflin Co., Boston. 420 pp.
- Petrides, G.A. 1972. A Field Guide to Trees and Shrubs. Houghton Mifflin Co., Boston. 428 pp.
- Prescott, G.W. 1969. How to Know the Aquatic Plants. Second Edition. William C. Brown Co., Dubuque, Iowa. 171 pp.
- Raynal, D.J., and D. J. Leopold. 1999. Landowner's Guide to State-Protected Plants of Forests in New York State. New York Center for Forestry Research and Development, SUNY-ESF, Syracuse, New York. 92pp.
- Reed, Porter B. Jr. 1988. National List of Plant Species that Occur in Wetlands: Northeast (Region 1). U.S. Fish and Wildlife Service, Washington, D.C. Biol. Rept. 88 (26.1). 112 pp.

- Reschke, C. 2002. Ecological Communities of New York State. New York Natural Heritage Program. NYSDEC, Latham, N.Y. (2nd Ed.) 136 pp.
- Soil Conservation Service. 1975. Soil Taxonomy: A Basic System of Soil Classification for Making and Interpreting Soil Surveys. U.S.D.A., Soil Conservation Service, U.S. Handbook 436.
- Soil Conservation Service. 1988. New York Hydric Soils and Soils with Hydric Inclusions, revised July, 1988, Soil Conservation Service, Syracuse, New York, Technical Guide, Section II. 23 pp.
- Simonds, R.L., and H.H. Tweedie. 1978. Wildflowers of the Great Lakes Region. Chicago Review Press, Chicago. 96 pp.
- Symonds, G.W.D. 1958. The Tree Identification Book. Quill, New York. 272 pp.
- Symonds, G.W.D. 1963. The Shrub Identification Book. William Morrow & Co., New York. 379 pp.
- Tiner, R. W. Jr. 1988. A Field Guide to Nontidal Wetland Identification. Maryland Department of Natural Resources and U.S. Fish and Wildlife Service Cooperative Publication. Maryland Department of Natural Resources, Annapolis, Maryland. 283 pp. + 198 color plates.
- United States Department and Agriculture & the Natural Resources Conservation Service (USDA, NRCS). Soil Conservation Service Soil Survey of Erie County, New York. U.S.D.A., Soil Conservation Service. 1986 <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>
- USDA, NRCS. 2009. The PLANTS Database (<http://plants.usda.gov>). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.
- United States Geological Survey maps, Denver, Colorado. Buffalo NW Quadrangle/2002DeLorme.
- U.S. Army Corps of Engineers. 2009. Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-09-19. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- U.S. Fish and Wildlife Service, A Wetlands and Deepwater Habitats Classification. May 3, 2002, <http://www.nwi.fws.gov/>. June 16, 2002.
- Zander, R.H., and G.J. Pierce. 1979. Flora of the Niagara Frontier Region. Bulletin of the Buffalo Society of Natural Sciences, Vol. 16 (Suppl. 2), Buffalo, New York. 110 pp

# **RIVERVIEW INNOVATION & TECHNOLOGY CAMPUS**

APPENDIX E - FIELD INVESTIGATION PERSONNEL

Soils and Hydrology Sampling

Scott Livingstone, Senior Soil Scientist  
Earth Dimensions, Inc.  
1091 Jamison Road  
Elma, New York 14059  
(716) 655-1717

Vegetation Sampling & Habitat Assessment

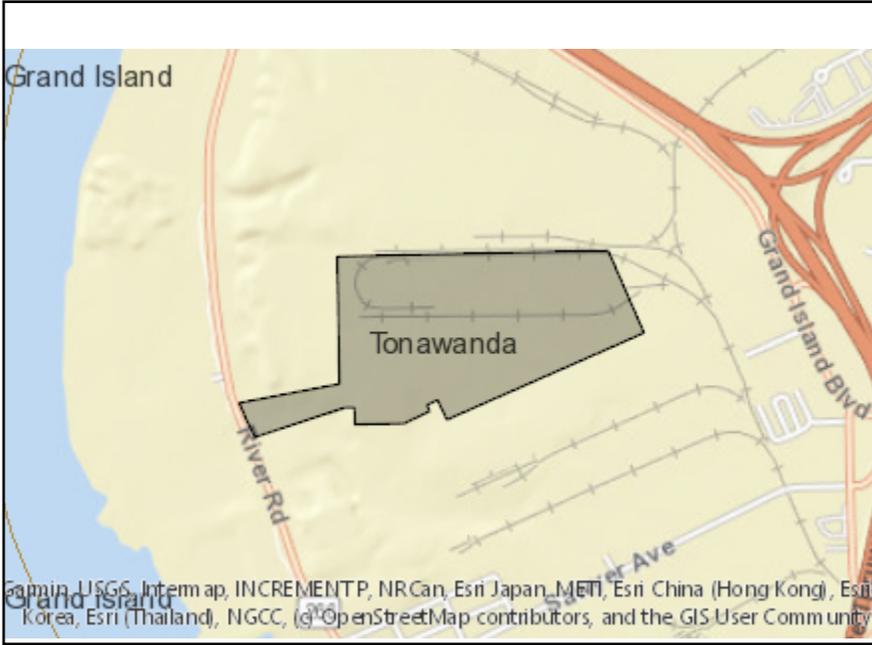
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Report Preparation

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# **RIVERVIEW INNOVATION & TECHNOLOGY CAMPUS**

APPENDIX F – AGENCY CORRESPONDENCE



**Disclaimer:** The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.



Part 1 / Question 7 [Critical Environmental Area]	No
Part 1 / Question 12a [National or State Register of Historic Places or State Eligible Sites]	No
Part 1 / Question 12b [Archeological Sites]	Yes
Part 1 / Question 13a [Wetlands or Other Regulated Waterbodies]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
Part 1 / Question 15 [Threatened or Endangered Animal]	No
Part 1 / Question 16 [100 Year Flood Plain]	No
Part 1 / Question 20 [Remediation Site]	Yes

## IPaC

U.S. Fish &amp; Wildlife Service

# IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

## Location

Erie County, New York



## Local office

New York Ecological Services Field Office

☎ (607) 753-9334

📠 (607) 753-9699

3817 Luker Road  
Cortland, NY 13045-9385

<http://www.fws.gov/northeast/nyfo/es/section7.htm>

NOT FOR CONSULTATION

# Endangered species

**This resource list is for informational purposes only and does not constitute an analysis of project level impacts.**

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species<sup>1</sup> and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries<sup>2</sup>).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

- 
1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
  2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an

office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

## Mammals

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/9045">https://ecos.fws.gov/ecp/species/9045</a>	Threatened

## Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

## Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds>

</pdf/management/nationwidestandardconservationmeasures.pdf>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME

BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

**Bald Eagle** *Haliaeetus leucocephalus*

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1626>

**Breeds Dec 1 to Aug 31**

**Black-billed Cuckoo** *Coccyzus erythrophthalmus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9399>

Breeds May 15 to Oct 10

**Canada Warbler** *Cardellina canadensis*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 20 to Aug 10

**Lesser Yellowlegs** *Tringa flavipes*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9679>

Breeds elsewhere

**Red-headed Woodpecker** *Melanerpes erythrocephalus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 10 to Sep 10

**Snowy Owl** *Bubo scandiacus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds elsewhere

**Wood Thrush** *Hylocichla mustelina*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 10 to Aug 31

## Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

### Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

### Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

### No Data (—)

A week is marked as having no data if there were no survey events for that week.

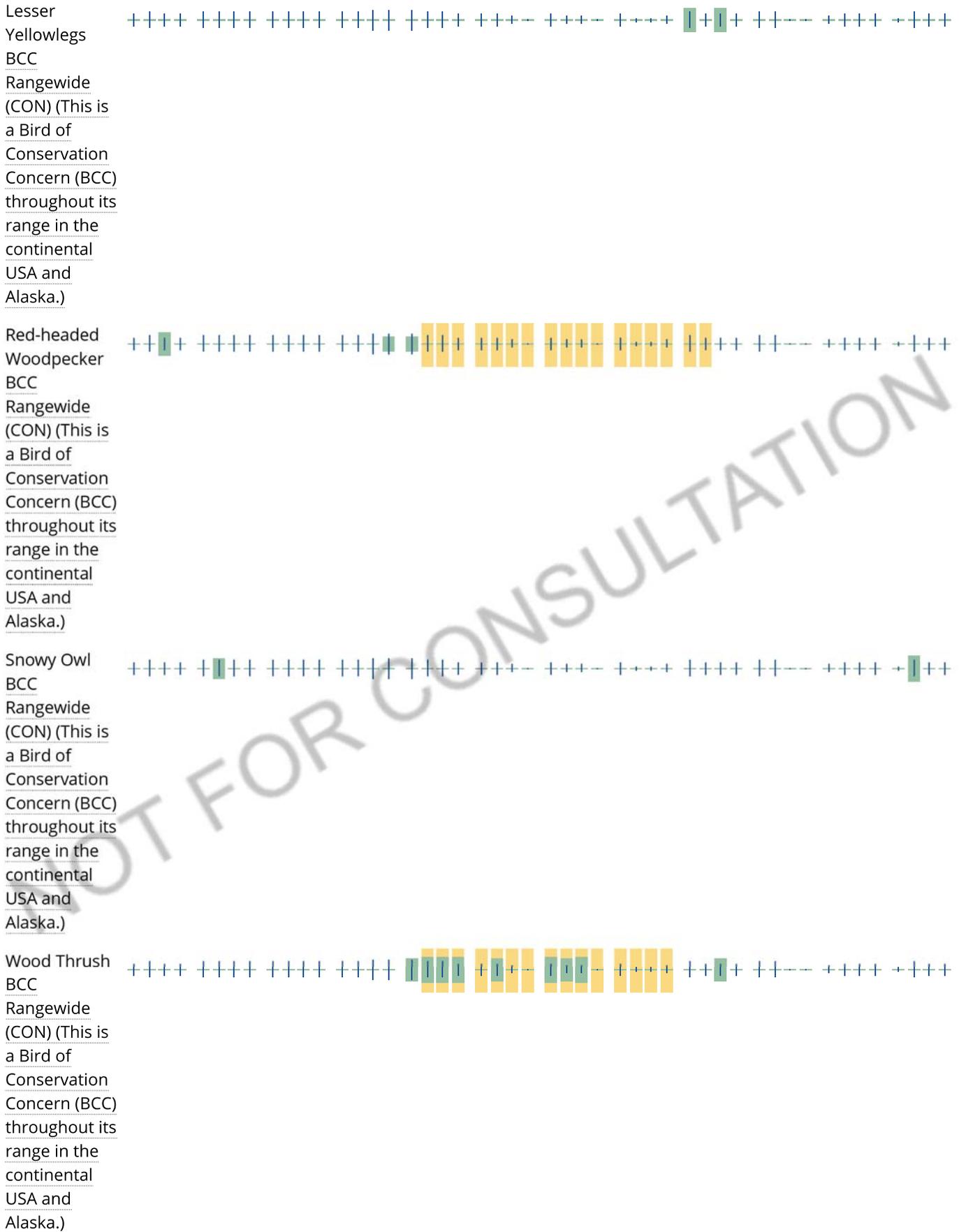
### Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





NOT FOR CONSULTATION



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

### **What does IPaC use to generate the migratory birds potentially occurring in my specified location?**

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

### **What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

### **How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?**

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

### **What are the levels of concern for migratory birds?**

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

### Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

### What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

### Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply

a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

## Facilities

### National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

### Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

## Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the [NWI map](#) to view wetlands at this location.

## Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

## Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

## Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

**Wetland and Waterbodies Delineation Report**

for

**RIVERVIEW INNOVATION &  
TECHNOLOGY CAMPUS**

**Town of Tonawanda  
Erie County, New York**

for

**Inventum Engineering**



November 11, 2021  
EDI Project Code: **W2F89d**

**REPORT SUMMARIZING  
THE RESULTS OF  
A WETLAND DELINEATION SURVEY OF**

# **RIVERVIEW INNOVATION & TECHNOLOGY CAMPUS BROWNFIELD CLEANUP PROGRAM SITE**

**Prepared for Submission to:**

U.S. ARMY CORPS OF ENGINEERS  
1776 NIAGARA STREET  
BUFFALO, NEW YORK 14207

AND

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
270 MICHIGAN AVENUE  
BUFFALO, NEW YORK 14203

**Prepared By:**

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481 CARLISLE DRIVE, SUITE 202  
HERNDON, VIRGINIA 20170

REPORT DATE: November 11, 2021

EDI PROJECT CODE: W2F89d

## PROJECT INFORMATION

Project Name ..... Riverview Innovation & Technology Campus (former Tonawanda Coke property)  
Street Address ..... 3875 River Road  
SBL Number ..... 64.08-1-10  
Town ..... Tonawanda  
County ..... Erie  
State ..... New York  
Latitude/Longitude (NAD83) ..... 42.98328°N, 78.92505°W  
Investigation Area ..... 103± Acres  
USGS 7.5 Minute Topographical Map ..... Buffalo Northwest Quadrangle  
Waterway ..... NA  
Hydrologic Unit Code ..... 04120104  
Date of Delineation ..... April 5<sup>th</sup>, 2021 & June 23, 2021  
Consultant ..... Earth Dimensions, Inc.  
1091 Jamison Road  
Elma, New York 14095  
Point of Contact ..... Scott Livingstone  
(716)655-1717  
slivingstone@earthdimensions.com  
Engineer ..... Inventum Engineering  
Property Owner ..... Riverview Innovation & Tech Campus, Inc.  
Authority ..... Section 404, Article 24  
Permit/Letter Being Requested ..... Jurisdictional Determination

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## EXECUTIVE SUMMARY

Inventum Engineering, P.C. (Inventum), on behalf of Riverview Innovation & Technology Campus (RITC), is conducting a Remedial Investigation (RI) through the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) of an 103± acre parcel located along the east side of River Road in the Town of Tonawanda, County of Erie, and State of New York (BCP Site No. C915353). Inventum Engineering has retained Earth Dimensions, Inc. (EDI) to complete a wetland delineation report that would allow the U.S. Army Corps of Engineers (USACE) and New York State Department of Environmental Conservation (NYSDEC) to determine their jurisdictional authority over the investigation area, pursuant to Section 404 of the Clean Water Act and Articles 15 (Protection of Waters) and 24 (Freshwater Wetlands) of the New York State Environmental Conservation Law.

A preliminary review of available information pertaining to vegetation, soils, and hydrology in the project area was implemented prior to conducting a field investigation at the site. Sources of information included the United States Geological Survey (USGS), Natural Resources Conservation Service (NRCS), National Wetland Inventory (NWI), and NYSDEC Freshwater Wetland maps. The NRCS map indicates the potential for wetlands under federal jurisdiction. The NYSDEC map indicates the potential for wetland under state jurisdiction.

EDI applied methodology specified by the Corps of Engineers Wetlands Delineation Manual (January 1987) and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region Version 2.0 (January 2012) to perform a delineation of Federal jurisdictional wetlands within the site. EDI identified six (6) wetland areas totaling 1.664± acres within the investigation area. Several drainages ditches were identified and are shown on the maps included as Figures 5 & 6. Three (3) stormwater ponds were identified and mapped. In addition, it should be noted that during the site investigation, several areas of standing water were found. The mapped ponds are stormwater control features that are actively engineered, maintained, and monitored by RITC under an approved Stormwater Pollution Prevention Plan (SWPPP)<sup>1</sup>. The identification number of the wetlands, their acreage and boundary flags are as follows:

---

<sup>1</sup> Inventum Engineering, P.C. *Stormwater Pollution Prevention Plan for Riverview Innovation & Technology Campus*. May 2020. NYSDEC approval June 1, 2020.

**TABLE 1: WETLAND SUMMARY**

Wetland Identification #	Geographic Center (NAD83)		Boundary Flag #	Total Acreage On-site	Wetland Type (Cowardin)	Wetland Type (Reschke)	Jurisdictional Determination
	Latitude	Longitude					
Wetland 1	42.98089	78.92799	W1-1 through W1-14	0.751±	PEM	Shallow emergent marsh	Non-Jurisdictional
Wetland 2	42.98492	78.92059	W2-1 through W2-10	0.125±	PEM	Shallow emergent marsh	Non-Jurisdictional
Wetland 3	42.98124	78.93131	W3-1 through W3-12	0.320±	PEM	Shallow emergent marsh	Non-Jurisdictional
Wetland 4	42.98075	78.93277	W4-1 through W4-20	0.364±	PEM	Shallow emergent marsh	Non-Jurisdictional
Wetland 5	42.98397	78.92012	W5-1 through W5-9	0.078±	PEM	Shallow emergent marsh	Non-Jurisdictional
Wetland 6	42.98435	78.91901	W6-1 through W6-5	0.026±	PEM	Shallow emergent marsh	Non-Jurisdictional
<b>Total Wetland Acreage:</b>				1.664±			

**TABLE 2: WATERBODY SUMMARY**

Identification #	Flag #	Geographic Center (NAD83)		Acreage On-site	Classification (Cowardin)	Type (Reschke)	Jurisdictional Determination
		Latitude	Longitude				
Pond 1	P1-1 through P1-5	42.98510	78.92966	0.432±	POW	SWPPP Pond	Non-Jurisdictional
Pond 2	P2-1 through P2-5	42.98111	78.92871	0.248±	POW	SWPPP Pond	Non-Jurisdictional
Pond 2	P3-1 through P3-4	42.98229	78.92904	0.122±	POW	SWPPP Pond	Non-Jurisdictional

## SECTION I: INTRODUCTION

Inventum is conducting a Remedial Investigation of a 103± acre parcel on the east side of River Road in the Town of Tonawanda, County of Erie, and State of New York through the NYSDEC BCP. The BCP Site is a portion of the Riverview Innovation & Technology Campus (RITC BCP) and is located on USGS 7.5 minute quadrangle map indexed as Buffalo Northwest (Figure 1). The field work was completed on April 5<sup>th</sup>, 2021 and June 23, 2021, using a handheld Garmin GPSmap 62s to locate wetland and drainage boundaries.

Inventum Engineering has retained Earth Dimensions, Inc. (EDI) to complete a wetland delineation study at this site. The investigation was designed to facilitate a determination of the extent of USACE and NYSDEC jurisdiction over the project area pursuant to Section 404 of the Clean Water Act and Articles 15 (Protection of Waters) and 24 (Freshwater Wetlands) of the New York State Environmental Conservation Law.

EDI has performed a wetland delineation study at the site under guidelines specified by the *Corps of Engineers Wetlands Delineation Manual*, dated January 1987 (referred to hereafter as the Corps Manual) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region version 2.0* (January 2012) (referred to hereafter as the Northcentral and Northeast Regional Supplement). The purpose of this report is to present EDI's methods, results, conclusions and recommendations with respect to the RITC BCP Site.

## SECTION II: SITE DESCRIPTION

The RITC BCP project area is comprised of a 103± acre irregular shaped investigation area on the east side of River Road which is outlined on Figure 1 and depicted on the Wetland Delineation Map included in Appendix A (Figure 6).

The natural topography of the RITC BCP site is no longer present and consists of disturbed and filled areas on a mostly flat surface with occasional fill piles and excavations. The uplands within the investigation area consisted of a successional old fill pad community. The wetland areas were found to consist of a shallow emergent marsh community. The vegetative communities of the investigation area are described according to *Ecological Communities of New York State* (Edinger et al. 2014).

## SECTION III: PRELIMINARY DATA REVIEW

### A. SUMMARY OF FINDINGS

Several sources of information may be reviewed to facilitate the completion of a wetland delineation study. In some cases it is even possible to make a preliminary office wetland determination based upon available vegetation, soils, and hydrologic information for a project area.

EDI completed a preliminary review of several data sources at the onset of this study. The results of the review are summarized as follows:

#### 1. USGS 7.5 MINUTE TOPOGRAPHICAL MAP

Figure 1 depicts the RITC BCP project site on the Buffalo Northwest quadrangle map. The figure depicts the flat to gently sloping topography of the site. The map depicts past development of the site.

#### 2. USFWS NATIONAL WETLANDS INVENTORY MAP

The National Wetlands Inventory (NWI) map obtained from the USFWS Wetland Mapper <http://www.fws.gov/wetlands/Data/Mapper.html> displays one (1) wetland and one (1) stream type, PSS1/Em1B abutting the southern limits of the investigation area and R4SBC along the western edge of the investigation area. The wetland and stream can be decoded as:

[P] Palustrine, [SS] Scrub-shrub, [1] Broad leaved-deciduous, [Em] Emergent, [1] Persistent, [B] Seasonally saturated

[R] Riverine, [4] Intermittent, [SB] Streambed, [C] Seasonally Saturated

#### 3. NATURAL RESOURCES CONSERVATION SERVICE SOILS MAP

Figure 3 presents the project area outlined on a copy of the Erie County Soil Survey map from the National Cooperative Soil Survey. As shown on that figure, the site has the following soil types:

#### Soil Conservation Service Legend

Map Unit Symbol	Map Unit Name	Hydric Soil/Inclusions?
CfB	Cayuga silt loam, 3 to 8 percent slopes	Inclusions unlikely
CfC	Cayuga silt loam, 8 to 15 percent slopes	Inclusions unlikely
La	Lakemont silt loam, 0 to 3 percent slopes	Hydric Soil

Od	Odessa silt loam, 0 to 3 percent slopes	Inclusions Possible
Oe	Odessa-Lakemont complex, 0 to 3 percent slopes	Inclusions Possible
Ud	Urban Land	NA

**Cayuga:** The Cayuga series consists of very deep, moderately well drained soils formed in clayey lacustrine deposits overlying till. These soils are on undulating to hilly till plains where a veneer of lake-laid deposits overlie the till. Slope ranges from 2 to 25 percent. The mean annual temperature is 48 degrees F., and the mean annual precipitation is 35 inches.

**Lakemont:** The Lakemont series consists of deep, poorly drained and very poorly drained soils of lake plains. They are nearly level soils formed in very slowly permeable reddish colored clayey lacustrine sediments. Slope ranges from 0 to 3 percent. Permeability is moderately slow in the surface and very slow in the subsoil sand substratum. Mean annual temperature is about 48°F and mean annual precipitation is about 34 inches.

**Odessa:** The Odessa series consists of very deep, somewhat poorly drained soils formed in red, clayey lacustrine deposits. These soils are in moderately low areas on lake plains and valley terraces. Slope ranges from 0 to 20 percent. Mean annual temperature is 8 degrees C (46 degrees F), and mean annual precipitation is 995 mm (39 in).

**Urban Land:** This map unit consists of areas where the soils have been altered or obscured by urban development. Buildings, concrete, debris and other manmade disturbances are evident.

The U.S. Department of Agriculture's National Technical Committee for Hydric Soils Criteria has developed a list of soils that often display hydric soil characteristics. Hydric soil typically forms in places of the landscape where surface water periodically collects for some time and/or where groundwater discharges sufficient to create waterlogged or anaerobic soils. Such anaerobic soils can support the growth and survival of hydrophytic vegetation that is tolerant of such conditions. Lakemont is a hydric soil and therefore may support wetland vegetation. Wetland hydrologic conditions, hydric soils, and hydrophytic vegetation are the three criteria of a wetland.

#### **4. NYSDEC FRESHWATER WETLANDS MAP**

The NYSDEC Freshwater Wetlands map obtained from the online NYSDEC Environmental Resource Mapper displays state jurisdictional Freshwater Wetland BW-6 in the northeast and southeast portions of the investigation area.

#### **B. RESULTS OF AGENCY INFORMATION REVIEW**

The preliminary data review revealed that the Corps may have jurisdiction over wetlands at the project location. The evidence consisted of hydric soils and soils with possible inclusions depicted within the project area as shown on the NRCS map (Figure 3). The preliminary data review indicated that NYSDEC may have jurisdiction over wetlands on site as depicted on the NYSDEC Resource Mapper (Figure 4). Therefore, it was considered necessary to perform a field investigation at the site in order to determine the presence of federal and state protected wetlands. The methods specified in the Corps of Engineers Wetlands Delineation Manual (January 1987) and Northcentral and Northeast Regional Supplement Version 2.0 (January 2012) were employed during the field investigation. Procedures, results, and conclusions of the wetland delineation study are presented in the remainder of this report.

## SECTION IV: FIELD INVESTIGATION PROCEDURES

### **WETLANDS:**

#### Step 1

EDI applied methodology specified by the 1987 Corps of Engineers Wetlands Delineation Manual and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region to perform a delineation of Federal jurisdictional wetlands within the site. EDI used the Level 2 Routine Determination method (on-site inspection necessary) since insufficient information was available for making a determination for the entire project area. This methodology is consistent with Part IV, Section D of the Corps Manual.

#### Step 2

EDI's initial evaluation of the project area revealed that no atypical situations existed. If an atypical situation had existed, EDI would have used methodology outlined in Part IV, Section F of the Corps manual and/or Section 5 of the Northcentral and Northeast Supplement.

#### Step 3

EDI made the determination that normal environmental conditions were present, as the area was not lacking hydrophytic vegetation or hydrologic indicators due to annual, seasonal or long-term fluctuations in precipitation, surface water, or groundwater levels. The Northcentral and Northeast Supplement defines the growing season as beginning when one of the following indicators of biological activity are evident in a given year: (1) above-ground growth and development of vascular plants and/or (2) soil temperature measured at 12" below ground surface reaches 41°F. The end of the growing season is defined as the point at which deciduous species lose their leaves or the last herbaceous plants cease flowering and their leaves become dry or brown, whichever comes latest.

#### Step 4

In order to accurately identify the limits of various vegetative communities and extent of wetlands on-site, a routine determination method was used. As depicted in Appendix A and included in Appendix B, sixteen (16) data points were used to characterize the site.

### Step 5

The plant community inhabiting each observation point was characterized in accordance with methods specified in the Northcentral and Northeast Regional Supplement. Dominant plant species were identified within four vegetative strata (i.e. herb, sapling/shrub, tree and liana (woody vines) at each sampling point. The Northcentral and Northeast Regional Supplement defines the vegetative strata in the following manner:

**Herb** – A non-woody individual of a macrophytic species. Seedlings of woody plants (including vines) that are less than 3.28 feet in height are considered to be herbs.

**Sapling/Shrub** – A layer of vegetation composed of woody plants < 3.0 inches in diameter at breast height but greater than 3.28 feet in height, exclusive of woody vines.

**Tree** – A woody plant > 3.0 inches in diameter at breast height, regardless of height (exclusive of woody vines)

**Liana** – A layer of vegetation in forested plant communities that consist of woody vines greater than 3.28 feet in height.

As outlined in the manual, the quadrant sizes used for the vegetative strata were (i) a 3.28-foot radius for herbs; (ii) a ten-foot radius for saplings/shrubs and woody vines; and (iii) a 30-foot radius for trees. Dominant plant species were estimated using aerial coverage methods. Dominant species are defined in the Corps Manual as the most abundant plant species that when ranked in descending order of abundance and cumulatively totaled immediately exceed 50 percent of the total dominance measure for the stratum, plus any additional species comprising 20 percent or more of the total dominance measure.

The wetland indicator status (OBL, FACW, FAC, FACU, or UPL) listed for each identified species by the U.S. Fish and Wildlife Service in the National List of Plant Species that Occur in Wetlands: Northeast (Region 1) was recorded. The U.S. Fish and Wildlife wetland indicator status listings are defined as follows:

**OBL** – Plants that occur almost always (estimated probability >99 percent) in wetlands under natural conditions, but which may also occur rarely (estimated probability < 1 percent) in nonwetlands.

**FACW** – Plants that occur usually (estimated probability >67 percent to 99 percent) in wetlands, but also occur (estimated probability 1 percent to 33 percent) in nonwetlands.

FAC – Plants with a similar likelihood (estimated probability 33 percent to 67 percent) of occurring in both wetlands and nonwetlands.

FACU – Plants that occur sometimes (estimated probability 1 percent to <33 percent) in wetlands but occur more often (estimated probability >67 percent to 99 percent) in nonwetlands.

UPL – Plants that occur rarely (estimated probability < 1 percent) in wetlands but occur almost always (estimated probability >99 percent) in nonwetlands under natural conditions.

The plant community data was summarized on the data forms provided in the Northcentral and Northeast Regional Supplement included in this report as Appendix B.

### Step 6

Plant data from each observation point were tested against the hydrophytic vegetation criterion specified in the Corps Manual and Northcentral and Northeast Regional Supplement. The Northcentral and Northeast Regional Supplement identifies a four-tiered approach for making a determination of whether or not the hydrophytic vegetation criteria is met for a sample plot. Indicator 1 (Rapid Test for Hydrophytic Vegetation) was first applied to determine if all dominant species across all strata are rated OBL and/or FACW. If Indicator 1 did not meet the hydrophytic vegetation criteria, Indicator 2 was then applied (dominance test); if greater than 50% of all plant species across all strata were rated OBL, FACW, or FAC, the hydrophytic vegetation criteria was considered met. In rare cases, when Indicators 1 and 2 did not meet the hydrophytic vegetation criteria but soils and hydrology criteria were met, Indicators 3 (Prevalence Index) and 4 (Morphological Adaptations) were used to make a final determination. All observation points that met the hydrophytic vegetation criterion were considered potential wetlands. Soils were then characterized.

### Step 7

The Corps Manual specifies that soils need not be characterized (and are assumed hydric soils) at sampling points meeting the hydrophytic vegetation criterion if: (i) all dominant plant species have an indicator status of OBL, or (ii) all dominant species have an indicator status of OBL and/or FACW, and the wetland boundary is abrupt (at least one dominant OBL species must be present). All observation points sampled during this field investigation were examined directly for soil and hydrologic characteristics.

### Step 8

At observation points requiring a soil evaluation, soil borings were performed by an EDI Soil Scientist using methods specified in the Northcentral and Northeast Regional Supplement. Soil pits were dug using a tile spade. Testpits were generally dug to a depth of 20 inches below ground surface. Soils were examined for any of the hydric soil indicators, as outlined in the Field Indicators of Hydric Soils in the United States. A determination was made as to whether or not the hydric soil criterion was met. Soils data was recorded on the data forms included in Appendix B of this report.

### Step 9

EDI's Soil Scientist examined hydrologic indicators using methods specified by the Northcentral and Northeast Regional Supplement at each observation point. The wetland hydrology criterion was met if: (i) one or more primary field indicators was materially present, (ii) available hydrologic records provided necessary evidence, or (iii) two or more secondary indicators were present. Results were recorded on data forms taken from the Corps Manual and are included in this report as Appendix B.

### Step 10

A wetland determination was made for every observation point. If a sample plot met the hydrophytic vegetation, hydric soil, and wetland hydrology criteria, the area was considered to be wetland.

### Step 11

Based on the results of the transected data, wetland boundaries were established for each identified wetland using survey ribbon labeled "wetland delineation" and numbered consecutively along each wetland boundary. As outlined in the Corps Manual, the placement of flags was based on the limits of areas where all three parameters were met. Wetland flags were labeled W1-1 through W1-14, W2-1 through W2-10, W3-1 through W3-12, W4-1 through W4-20, W5-1 through W5-9 and W6-1 through W6-5.

### **STREAMS & DRAINAGES:**

The federally regulated Ordinary High Water (OHW) mark of streams within the Project

area were delineated utilizing the definitional criteria as presented in Title 33, Code of Federal Regulations, Part 328, and the USACE Regulatory Guidance Letter 05-05 – Guidance on Ordinary High Water Mark Identification. Each stream is categorized in regard to its flow regime as perennial, intermittent, or ephemeral, as defined by the USACE. The Ordinary High Water (OHW) mark for each stream is surveyed using the handheld Garmin GPSmap 62s. Each stream is assigned a letter designation, and survey points are numbered consecutively. Substrate characteristics and water depth are noted. Streams classified as AA, A, B, C, C(t), C(ts) and D in the State of New York are regulated by NYSDEC under Article 15 Use and Protection of Waters. Streams are given classifications which designate the level of protection afforded to each waterbody. Class AA and A are assigned to sources of drinking water. Class B streams are best suited for swimming and other contact recreation, but not drinking water. Class C streams identify waters that support fishing and non-contact activities. A classification with (t) designated a stream with the potential to support trout populations. A classification of (ts) identifies waters that may support trout spawning. Class D waters are the lowest classification and are often highly imperiled.

## SECTION V: RESULTS AND CONCLUSIONS

Earth Dimensions, Inc. (EDI) has completed a wetland delineation study at the RITC BCP site located in the Town of Tonawanda, County of Erie, and State of New York. A field investigation was conducted by a Soil Scientist and a Wetland Ecologist from EDI. The wetland delineation study identified six (6) wetlands totaling 1.664± acres and three (3) stormwater ponds totaling 0.802± acre present within the RITC BCP. In addition, several drainage features were identified within the investigation area.

Figure 5 depicts the vegetative communities as they existed at the time of the investigation. The uplands within the investigation area were comprised of successional old fill pad communities. The wetland areas were found to consist of shallow emergent marsh communities. The vegetative communities of the investigation area are described according to Ecological Communities of New York State (Edinger et al. 2014).

The successional northern hardwood community was dominated by the following species: red maple (*Acer rubrum*), tatarian honeysuckle (*Lonicera tatarica*), silky dogwood (*Cornus amomum*), American beech (*Fagus grandifolia*) and black cherry (*Prunus serotina*).

The successional old fill pad community was dominated by the following species: common reed (*Phragmites australis*), pin oak (*Quercus palustris*), European buckthorn (*Rhamnus cathartica*), annual wormweed (*Artemisia annua*), pussy willow (*Salix discolor*), purple loosestrife (*Lythrum salicaria*), Indian hemp (*Apocynum cannabinum*), cut leaf raspberry (*Rubus laciniatus*), staghorn sumac (*Rhus typhina*), eastern cottonwood (*Populus deltoides*), crack willow (*Salix fragilis*), summer grape (*Vitis aestivalis*), bull thistle (*Cirsium arvense*), silky dogwood (*Cornus amomum*), common mullein (*Verbascum thapsus*), common burdock (*Actium minus*), foxglove beardtongue (*Penstemon digitalis*), mare's tail (*Conyza canadensis*), large leaf avens (*Geum macrophyllum*), Virginia strawberry (*Fragaria virginiana*), little bluestem (*Schizachyrium scoparium*), common black raspberry (*Rubus occidentalis*), daisy fleabane (*Erigeron philadelphicus*), crown vetch (*Securigera varia*), Japanese knotweed (*Polygonum cuspidatum*), sticky willy (*Galium aparine*), spotted knapweed (*Centaurea stoebe*), paper birch (*Betula papyrifera*), black raspberry (*Rubus occidentalis*), garlic mustard (*Alliaria officinalis*), tatarian honeysuckle (*Lonicera tatarica*), grey dogwood (*Cornus racemosa*), calico aster

(*Symphotrichum lateriflorum*), velvet grass (*Holcus lanatus*), path rush (*Juncus tenuis*) and Canada goldenrod (*Solidago canadensis*).

Wetland W1 is a 0.751± acre shallow emergent marsh dominated by common reed (*Phragmites australis*), purple loosestrife (*Lythrum salicaria*), soft rush (*Juncus effusus*), flat topped goldenrod (*Euthamia graminifolia*), ditch stonecrop (*Penthorum sedoides*), deer tongue grass (*Dichanthelium clandestinum*), wrinkled goldenrod (*Solidago rugosa*), purple leaf willowherb (*Epilobium coloratum*), eastern cottonwood (*Populus deltoides*) and northern arrowwood (*Viburnum recognitum*). Soils within wetland W1 are mapped as Urban Land and consisted of slag. Hydrology indicators present in Wetland W1 included Water-Stained Leaves (B9). It is EDI's professional opinion that Wetland W1 is not Federally jurisdictional under the Navigable Waters Protection Rule due to the apparent lack of connectivity to an intermittent or perennial stream.

Wetland W2 is a 0.125± acre shallow emergent marsh dominated by common reed (*Phragmites australis*), purple loosestrife (*Lythrum salicaria*), American bugleweed (*Lycopus americana*), eastern cottonwood (*Populus deltoides*), crack willow (*Salix fragilis*) and pussy willow (*Salix discolor*). Soils within wetland W2 are mapped as Urban Land and consisted of slag. Hydrology indicators present in Wetland W2 included surface water (A1), high water table (A2), saturation (A3) and Water-Stained Leaves (B9). It is EDI's professional opinion that Wetland W2 is not Federally jurisdictional under the Navigable Waters Protection Rule due to the apparent lack of connectivity to an intermittent or perennial stream.

Wetland W3 is a 0.320± acre shallow emergent marsh dominated by common reed (*Phragmites australis*), Canada goldenrod (*Solidago canadensis*), summer grape (*Vitis aestivalis*) and eastern cottonwood (*Populus deltoides*). Soils within wetland W3 are mapped as Cayuga Silt Loam and had a top soil color of 10YR2/1 with 7% 10YR5/8 mottles. The texture is mucky silt loam. This soil fits the NRCS F3 indicator (Depleted Matrix). Hydrology indicators present in Wetland W3 included Saturation (A3) and Water-Stained Leaves (B9). It is EDI's professional opinion that Wetland W3 is a man-made wetland and not Federally jurisdictional under the Navigable Waters Protection Rule due to the apparent lack of connectivity to an intermittent or perennial stream.

Wetland W4 is a 0.364± acre shallow emergent marsh dominated by common reed (*Phragmites australis*), large leaf avens (*Geum macrophyllum*), European buckthorn (*Rhamnus cathartica*), and

eastern cottonwood (*Populus deltoides*). Soils within wetland W4 are mapped as Cayuga Silt Loam and had a top soil color of 10YR3/1 with 3% 10YR5/8 mottles. The subsoil had a color of 10YR5/1 with 5% 10YR5/8 mottles. The texture is clay loam and silt loam. This soil fits the NRCS F3 indicator (Depleted Matrix). Hydrology indicators present in Wetland W4 included Surface Water (A1), High Water Table (A2), Saturation (A3) and Water-Stained Leaves (B9). It is EDI's professional opinion that Wetland W4 is a man-made wetland and not Federally jurisdictional under the Navigable Waters Protection Rule due to the apparent lack of connectivity to an intermittent or perennial stream.

Wetland W5 is a 0.078± acre shallow emergent marsh dominated by purple loosestrife (*Lythrum salicaria*), common reed (*Phragmites australis*), Canada goldenrod (*Solidago canadensis*), silky dogwood (*Cornus amomum*), pussy willow (*Salix discolor*), meadow willow (*Salix petiolaris*) and eastern cottonwood (*Populus deltoides*). Soils within wetland W5 are mapped as Urban Land and had a top soil color of 10YR2/1 with no mottles. The texture is slag. Hydrology indicators present in Wetland W5 included Water-Stained Leaves (B9). It is EDI's professional opinion that Wetland W5 is a man-made wetland and not Federally jurisdictional under the Navigable Waters Protection Rule due to the apparent lack of connectivity to an intermittent or perennial stream.

Wetland W6 is a 0.026± acre shallow emergent marsh dominated by purple loosestrife (*Lythrum salicaria*), common reed (*Phragmites australis*), spotted touch me not (*Impatiens capensis*), sensitive fern (*Onoclea sensibilis*), Indian hemp (*Apocynum cannabinum*), pussy willow (*Salix discolor*) and pin oak (*Quercus palustris*). Soils within wetland W6 are mapped as Urban Land and had a top soil color of 10YR2/1 with no mottles. The texture is slag. Hydrology indicators present in Wetland W5 included Water-Stained Leaves (B9). It is EDI's professional opinion that Wetland W6 is a man-made wetland and not Federally jurisdictional under the Navigable Waters Protection Rule due to the apparent lack of connectivity to an intermittent or perennial stream.

A map which depicts the site boundaries and the location of all observation points established during the field survey is included as Figure 6 in Appendix A of this report. Data forms are included as Appendix B. Appendix C includes representative photographs of the project area. Appendix D notes the references used during the preparation of this report and during the field investigation. Appendix E provides the names, addresses and phone numbers of the survey personnel involved in the wetland delineation study.

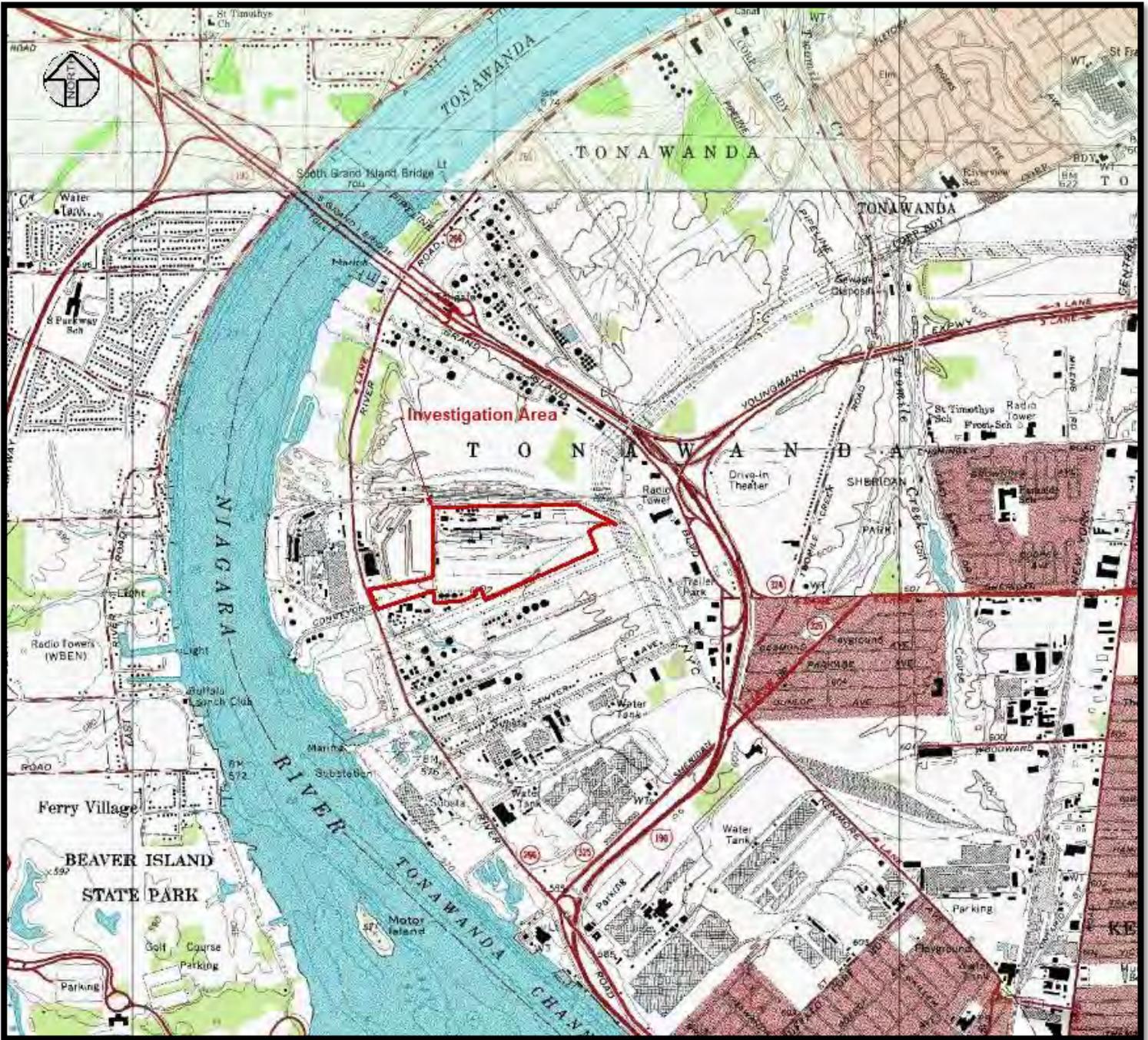
## SECTION VI: RECOMMENDATIONS

Six (6) wetland areas and three (3) stormwater ponds were identified during the course of a field investigation based upon the three-parameter technique (vegetation, soils, and hydrology) outlined in the Corps Manual and Northcentral and Northeast Regional Supplement. It is EDI's professional opinion that none of the wetlands, stormwater ponds or ditches should be regulated by the USACE under Section 404 of the Clean Water Act based on the Navigable Waters Protection Rule. It is also EDI's opinion that Freshwater Wetland BW-6 is just off-site along the southern property line. Based on this, a portion of the 100 foot upland adjacent area would fall within the investigation area and therefore a portion of the site would be regulated by NYSDEC under Article 24 of the New York Conservation Law. USACE and NYSDEC approach their regulatory analyses by first considering avoidance of wetlands and minimization of wetland losses. EDI recommends the following:

- (1) Submit this report to USACE and NYSDEC with a request for a wetland boundary confirmation and jurisdictional determination.
- (2) If no impacts are proposed to federal or state regulated wetlands, state regulated 100-foot adjacent area based on the outcome of the jurisdictional determination, it is the professional opinion of EDI that the project may proceed without the need for Section 404 or Article 24 Permits.
- (3) If any NYSDEC regulated upland adjacent area or federal or state jurisdictional wetland impacts are proposed, it is EDI's recommendation that a Joint Application for Permit and supporting documentation be submitted to the USACE and NYSDEC with a request for a Section 404 Permit, Section 401 Water Quality Certification and/or an Article 24 Permit.

**RIVERVIEW INNOVATION &  
TECHNOLOGY CAMPUS  
BROWNFIELD CLEANUP PROGRAM  
SITE**

APPENDIX A - FIGURES



**FIGURE 1: USGS 7.5 MINUTE TOPOGRAPHICAL MAP**

Buffalo Northwest Quadrangle / U.S. Geological Survey

Riverview Innovation & Technology Campus Brownfield Cleanup Program Site  
Town of Tonawanda, Erie County, New York



**FIGURE 2: NATIONAL WETLANDS INVENTORY MAP**

<http://www.fws.gov/wetlands/data/mapper.HTML> (Visited 07/06/21)

Riverview Innovation & Technology Campus Brownfield Cleanup Program Site  
Town of Tonawanda, Erie County, New York



**FIGURE 3: NRCS ERIE COUNTY SOIL SURVEY MAP**

<http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx> (Visited 04/08/21)

Riverview Innovation & Technology Campus Brownfield Cleanup Program Site  
Town of Tonawanda, Erie County, New York



**FIGURE 4: NYSDEC ENVIRONMENTAL RESOURCE MAPPER**

<http://www.dec.ny.gov/imsmaps/ERM/viewer.htm> (Visited 04/08/21)

Riverview Innovation & Technology Campus Brownfield Cleanup Program Site  
Town of Tonawanda, Erie County, New York

Figure 5: General Vegetation Map  
 Riverview Tech Campus  
 Town of Tonawanda, Erie County, New York



Scale: as shown
Map Date: July 6, 2021 JMC/EDI Revised:
Base Map Provided By: GPS MAPPING
File Name: VEG MAP.DWG
EDI Project Code: W2F89d

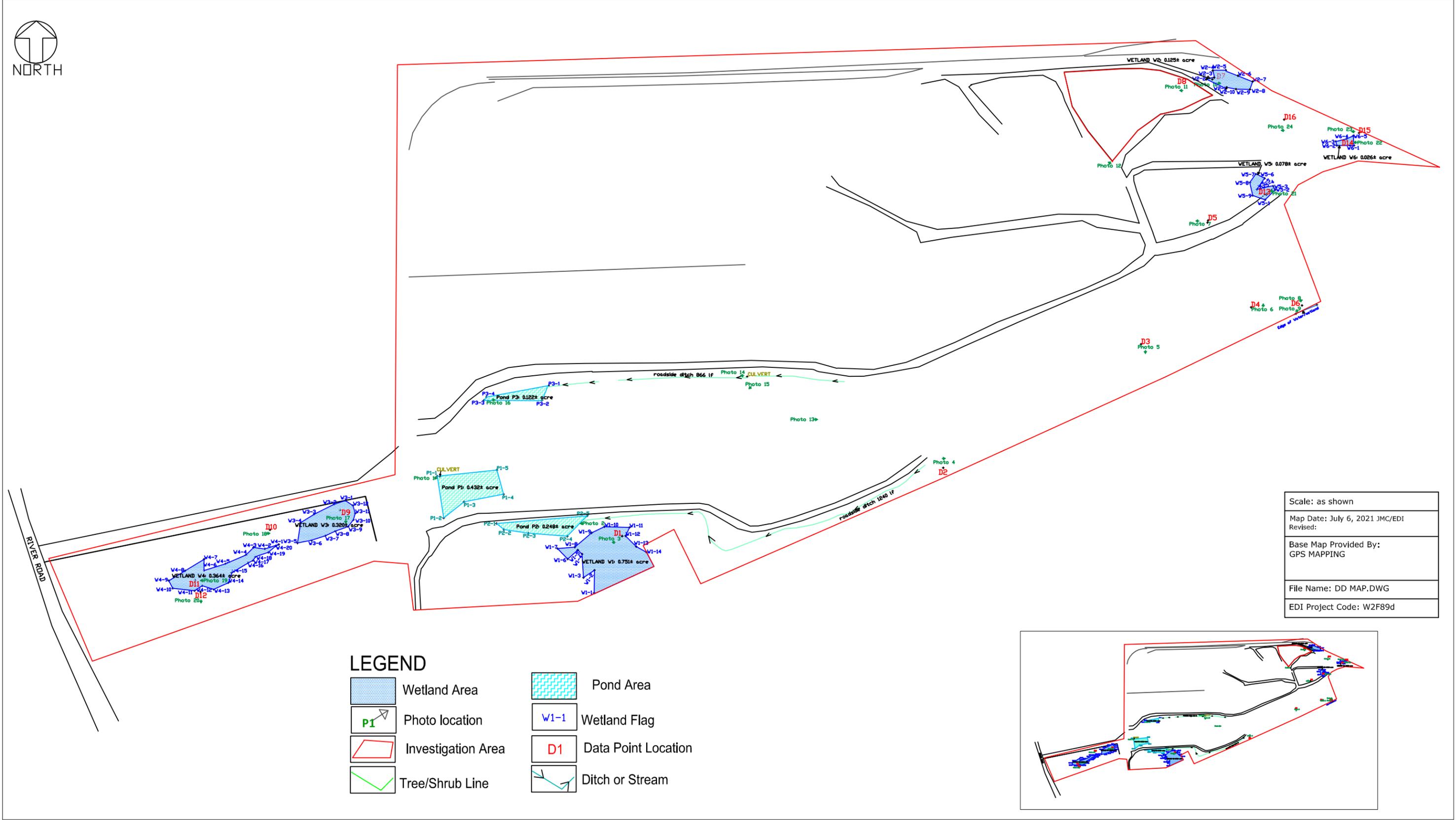


**LEGEND**

- Wetland Area
- Pond Area
- Investigation Area
- Data Point Location
- Tree/Shrub Line
- Ditch or Stream



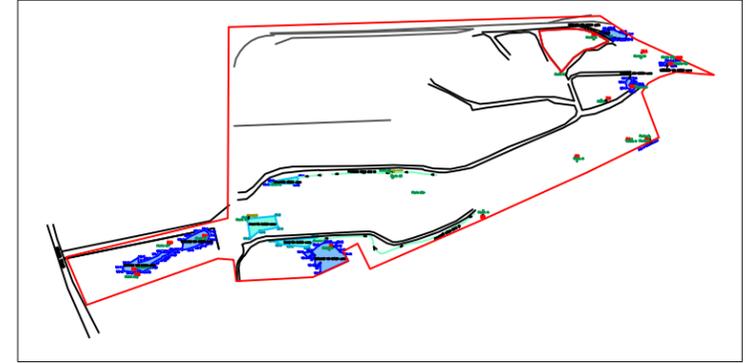
Figure 6: Wetland Delineation Map  
 Riverview Tech Campus  
 Town of Tonawanda, Erie County, New York

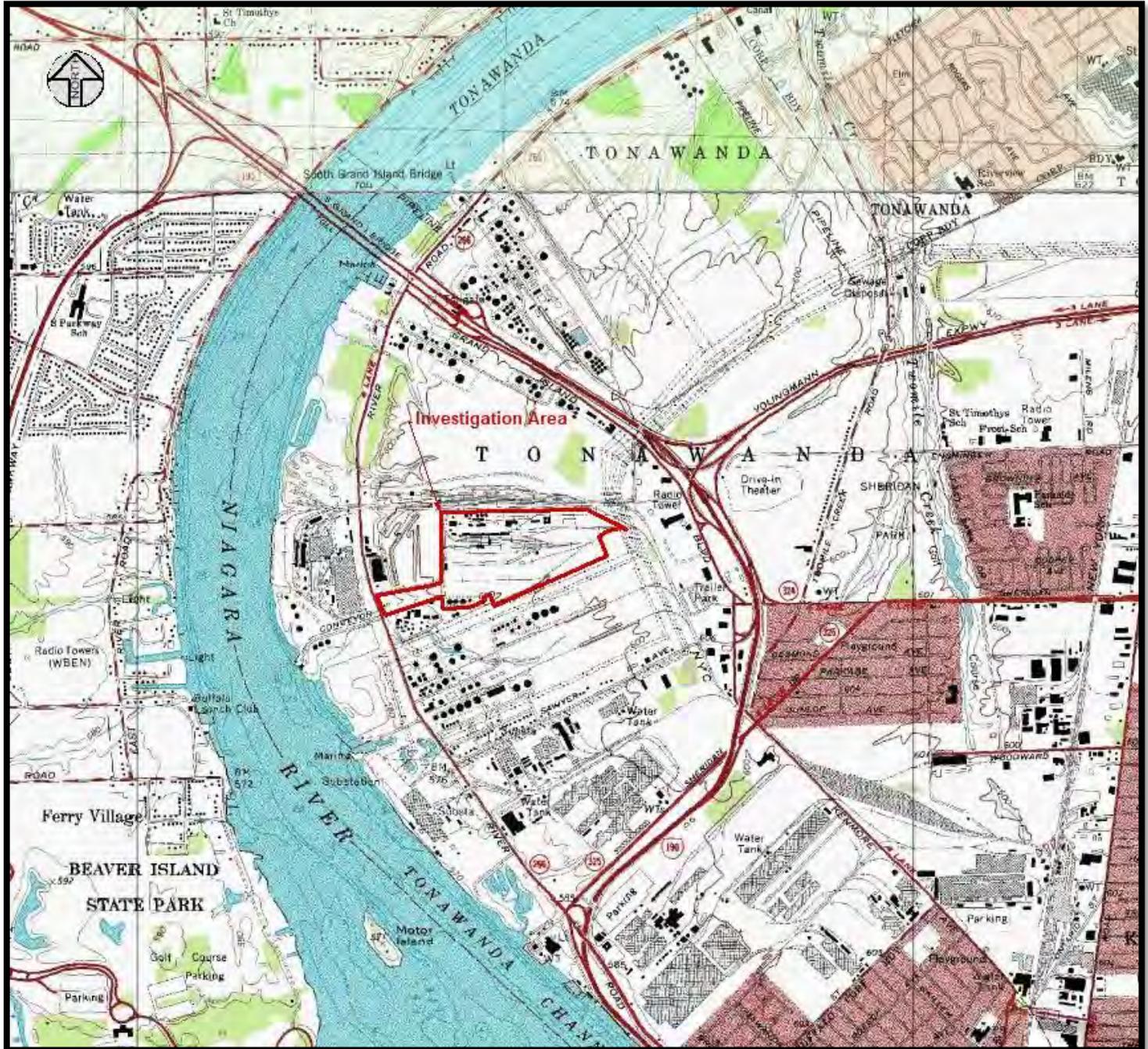


Scale: as shown
Map Date: July 6, 2021 JMC/EDI Revised:
Base Map Provided By: GPS MAPPING
File Name: DD MAP.DWG
EDI Project Code: W2F89d

**LEGEND**

- |                    |                     |
|--------------------|---------------------|
| Wetland Area       | Pond Area           |
| Photo location     | Wetland Flag        |
| Investigation Area | Data Point Location |
| Tree/Shrub Line    | Ditch or Stream     |





**FIGURE 7: DRAINAGE MAP**

Buffalo Northwest Quadrangle / U.S. Geological Survey

Riverview Innovation & Technology Campus Brownfield Cleanup Program Site  
Town of Tonawanda, Erie County, New York



**FIGURE 8: SITE AERIAL PHOTOGRAPH**

<http://gis2.erie.gov/HTML5/ErieCountyNY/PublicLaunchPage.aspx> (Visited 04/08/21)

Riverview Innovation & Technology Campus Brownfield Cleanup Program Site  
Town of Tonawanda, Erie County, New York

**RIVERVIEW INNOVATION &  
TECHNOLOGY CAMPUS  
BROWNFIELD CLEANUP PROGRAM  
SITE**

APPENDIX B – DATA SHEETS

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Riverview Tech Campus Town/County: Tonawanda/Erie County Sampling Date: April 5, 2021  
 Applicant/Owner: Inventum Engineering State: New York Sampling Point: D1  
 Investigator(s): Scott Livingstone & Jody Celeste Section, Township, Range: 64.08-1-10  
 Landform (hillslope, terrace, etc.): DEPRESSION Local relief (concave, convex, none): CONCAVE Slope (%): 1  
 Subregion (LRR or MLRA) LRR1 Lat: 42.98102 Long: 78.92782 Datum: NAD83  
 Soil Map Unit Name: URBAN LAND NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If yes, optional Wetland Site ID: <u>W1</u>
Remarks: (Explain alternative procedures here or in a separate report.) <div style="border: 1px solid black; padding: 5px; margin-top: 5px;">                     • W1-1-W1-14 (OPEN TO SOUTH)                      • PHRAGMITES STAND ON OLD FILL PAD                 </div>	

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u> Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u> Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
 • SOME STANDING WATER IN AREAS

VEGETATION : Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Populus deltoides</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
<u>5</u> = Total Cover			

Sapling/Shrub Stratum (Plot size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Viburnum recognatum</u>	<u>3</u>	<u>Y</u>	<u>FACW</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
<u>3</u> = Total Cover			

Herb Stratum (Plot size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Phragmites australis</u>	<u>60</u>	<u>Y</u>	<u>FACW</u>
2. <u>Lythrum salicaria</u>	<u>10</u>	<u>N</u>	<u>DBL</u>
3. <u>Juncus effusus</u>	<u>5</u>	<u>N</u>	<u>↓</u>
4. <u>Euthamia graminifolia</u>	<u>5</u>	<u>N</u>	<u>FAC</u>
5. <u>Solidago rugosa</u>	<u>5</u>	<u>N</u>	<u>↓</u>
6. <u>Epilobium coloratum</u>	<u>5</u>	<u>N</u>	<u>OBL</u>
7. <u>Panicum</u>	<u>5</u>	<u>N</u>	<u>FACW</u>
8. <u>Penthorum sedoides</u>	<u>5</u>	<u>N</u>	<u>OBL</u>
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
<u>100</u> = Total Cover			

Woody Vine Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>NA</u>	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
<u>0</u> = Total Cover			

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____	(A) _____ (B) _____

Prevalence Index = B/A = \_\_\_\_\_

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
  - 2 - Dominance Test is >50%
  - 3 - Prevalence Index is < 3.0<sup>1</sup>
  - 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
  - Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

Community Type: (W1) PEM SHALLOW emergent MARSH

Hydrophytic Vegetation Present? Yes ✓ No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet.)

Photo # 3 Direction of Photo WEST

Disturbed

SOIL

Sampling Point: D1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-9	-	-	-	-	-	-	Slag	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

- |  |  |  |
|--|--|--|
| <p><b>Hydric Soil Indicators:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Histosol (A1)</li> <li><input type="checkbox"/> Histic Epipedon (A2)</li> <li><input type="checkbox"/> Black Histic (A3)</li> <li><input type="checkbox"/> Hydrogen Sulfide (A4)</li> <li><input type="checkbox"/> Stratified Layers (A5)</li> <li><input type="checkbox"/> Depleted Below Dark Surface (A11)</li> <li><input type="checkbox"/> Thick Dark Surface (A12)</li> <li><input type="checkbox"/> Sandy Mucky Mineral (S1)</li> <li><input type="checkbox"/> Sandy Gleyed Matrix (S4)</li> <li><input type="checkbox"/> Sandy Redox (S5)</li> <li><input type="checkbox"/> Stripped Matrix (S6)</li> <li><input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)</li> <li><input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)</li> <li><input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)</li> <li><input type="checkbox"/> Loamy Gleyed Matrix (F2)</li> <li><input type="checkbox"/> Depleted Matrix (F3)</li> <li><input type="checkbox"/> Redox Dark Surface (F6)</li> <li><input type="checkbox"/> Depleted Dark Surface (F7)</li> <li><input type="checkbox"/> Redox Depressions (F8)</li> </ul> | <p><b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)</li> <li><input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)</li> <li><input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)</li> <li><input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)</li> <li><input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)</li> <li><input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)</li> <li><input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)</li> <li><input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)</li> <li><input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)</li> <li><input type="checkbox"/> Red Parent Material (TF2)</li> <li><input type="checkbox"/> Very Shallow Dark Surface (TF12)</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul> |
|--|--|--|

<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p><b>Restrictive Layer (if observed):</b></p> <p>Type: <u>HARD FILL</u></p> <p>Depth (inches): <u>9"</u></p>	<p>Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>
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Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Riverview Tech Campus Town/County: Tonawanda/Erie County Sampling Date: April 5, 2021

Applicant/Owner: Inventum Engineering State: New York Sampling Point: D2

Investigator(s): Scott Livingstone & Jody Celeste Section, Township, Range: 64.08-1-10

Landform (hillslope, terrace, etc.): FILL PAD Local relief (concave, convex, none): NONE Slope (%): 1%

Subregion (LRR or MLRA) LRRL Lat: 42.98156 Long: 78.92394 Datum: NAD83

Soil Map Unit Name: ODESSA-LAKEMONT COMPLEX, 0-3% Slopes NW 1 classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No

Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, optional Wetland Site ID:	<u>N/A</u>
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Remarks: (Explain alternative procedures here or in a separate report.)

UPLAND FILL PAD WITH PHRAGMITES STAND

**HYDROLOGY**

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): N/A  
 Water Table Present? Yes  No  Depth (inches): N/A  
 Saturation Present? Yes  No  Depth (inches): N/A  
 (includes capillary fringe)

Wetland Hydrology Present? Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION : Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Quercus palustris</u>	<u>8</u>	<u>Y</u>	<u>FACW</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

8 = Total Cover

Sapling/Shrub Stratum (Plot size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>NA</u>	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. <u>✓</u>	_____	_____	_____

0 = Total Cover

Herb Stratum (Plot size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Phragmites australis</u>	<u>60</u>	<u>Y</u>	<u>FACW</u>
2. <u>Artemisa annua</u>	<u>15</u>	<u>N</u>	<u>FACW</u>
3. <u>Symphoricarpos latiflorus</u>	<u>5</u>	<u>N</u>	<u>FAC</u>
4. <u>Solidago canadensis</u>	<u>5</u>	<u>N</u>	<u>FACW</u>
5. <u>Rhus typhina</u>	<u>3</u>	<u>N</u>	<u>FACW</u>
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

88 = Total Cover

Woody Vine Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

\_\_\_\_\_ = Total Cover

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>68</u>	x 2 = <u>136</u>
FAC species <u>5</u>	x 3 = <u>15</u>
FACU species <u>23</u>	x 4 = <u>92</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>96</u> (A)	<u>243</u> (B)

Prevalence Index = B/A = 2.5

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
  - 2 - Dominance Test is >50%
  - 3 - Prevalence Index is < 3.0<sup>1</sup>
  - 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
  - Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

SUCCESSIONAL OLD FILL PAD

Community Type: \_\_\_\_\_

Hydrophytic Vegetation Present? Yes X No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet.)

Photo # 4 Direction of Photo EAST

\* no hydrology

disturbed site



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Riverview Tech Campus Town/County: Tonawanda/Erie County Sampling Date: April 5, 2021  
 Applicant/Owner: Inventum Engineering State: New York Sampling Point: D3  
 Investigator(s): Scott Livingstone & Jody Celeste Section, Township, Range: 64.08-1-10  
 Landform (hillslope, terrace, etc.): FILL PAD Local relief (concave, convex, none): CONVEX Slope (%): 5  
 Subregion (LRR or MLRA) LRRL Lat: 42.98261 Long: 78.92153 Datum: NAD83  
 Soil Map Unit Name: ODESSA-LAKEMONT COMPLEX, 0-3 NW I classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, optional Wetland Site ID: <u>N/A</u>	
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Remarks: (Explain alternative procedures here or in a separate report.)  
UPLAND SCRUB/SHRUB COMMUNITY ON OLD FILL

**HYDROLOGY**

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u>	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u>	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION : Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Populus deltoides</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Sapling/Shrub Stratum (Plot size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Salix fragilis</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>
2. <u>Cornus racemosa</u>	<u>5</u>	<u>N</u>	<u>I</u>
3. <u>Populus deltoides</u>	<u>5</u>	<u>N</u>	<u>I</u>
4. <u>Lonicera tatarica</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>5</u>	x 2 = <u>10</u>
FAC species <u>30</u>	x 3 = <u>90</u>
FACU species <u>80</u>	x 4 = <u>320</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>115</u> (A)	<u>420</u> (B)

Prevalence Index = B/A = 3.65

Herb Stratum (Plot size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Artemisa annua</u>	<u>35</u>	<u>Y</u>	<u>FACW</u>
2. <u>Alliaria officinalis</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>
3. <u>Rubus occidentalis</u>	<u>5</u>	<u>N</u>	<u>NI</u>
4. <u>Cirsium arvense</u>	<u>5</u>	<u>N</u>	<u>FACW</u>
5. <u>Solidago canadensis</u>	<u>5</u>	<u>N</u>	<u>FACU</u>
6. <u>Phragmites australis</u>	<u>5</u>	<u>N</u>	<u>FACW</u>
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
  - 2 - Dominance Test is >50%
  - 3 - Prevalence Index is < 3.0<sup>1</sup>
  - 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
  - Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)
- <sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

Woody Vine Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Vitis aestivalis</u>	<u>5</u>	<u>Y</u>	<u>FACW</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

**SUCCESSIONAL OLD FILL**

Community Type: PAU

Hydrophytic Vegetation Present? Yes  No

Remarks: (Include photo numbers here or on a separate sheet.)

Photo # 5 Direction of Photo SOUTH disturbed

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-8"	-	-	-	-	-	-	SLAG	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

- Hydric Soil Indicators:**
- Histosol (A1)
  - Histic Epipedon (A2)
  - Black Histic (A3)
  - Hydrogen Sulfide (A4)
  - Stratified Layers (A5)
  - Depleted Below Dark Surface (A11)
  - Thick Dark Surface (A12)
  - Sandy Mucky Mineral (S1)
  - Sandy Gleyed Matrix (S4)
  - Sandy Redox (S5)
  - Stripped Matrix (S6)
  - Dark Surface (S7) (LRR R, MLRA 149B)
  - Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
  - Thin Dark Surface (S9) (LRR R, MLRA 149B)
  - Loamy Mucky Mineral (F1) (LRR K, L)
  - Loamy Gleyed Matrix (F2)
  - Depleted Matrix (F3)
  - Redox Dark Surface (F6)
  - Depleted Dark Surface (F7)
  - Redox Depressions (F8)
  - 2 cm Muck (A10) (LRR K, L, MLRA 149B)
  - Coast Prairie Redox (A16) (LRR K, L, R)
  - 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
  - Dark Surface (S7) (LRR K, L, M)
  - Polyvalue Below Surface (S8) (LRR K, L)
  - Thin Dark Surface (S9) (LRR K, L)
  - Iron-Manganese Masses (F12) (LRR K, L, R)
  - Piedmont Floodplain Soils (F19) (MLRA 149B)
  - Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
  - Red Parent Material (TF2)
  - Very Shallow Dark Surface (TF12)
  - Other (Explain in Remarks)

<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):**

Type: HARD FILL

Depth (inches): 3"

Hydric Soil Present? Yes  No

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Riverview Tech Campus Town/County: Tonawanda/Erie County Sampling Date: April 5, 2021  
 Applicant/Owner: Inventum Engineering State: New York Sampling Point: D4  
 Investigator(s): Scott Livingstone & Jody Celeste Section, Township, Range: 64.08-1-10  
 Landform (hillslope, terrace, etc.): FILL PAD Local relief (concave, convex, none): CONVEX Slope (%): 3  
 Subregion (LRR or MLRA) LRRL Lat: 42.98291 Long: 78.92020 Datum: NAD83  
 Soil Map Unit Name: ODESSA-LAKEMONT COMPLEX, 0-3% NW I classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, optional Wetland Site ID: <u>N/A</u>
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	

Remarks: (Explain alternative procedures here or in a separate report.)  
UPLAND FILL PAD WITH PHRAGMITES STAND;  
 SOME BARE GROUND

**HYDROLOGY**

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
<u>Primary Indicators (minimum of one is required; check all that apply)</u>	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:	
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u>	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u>	
Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION : Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Populus deltoides</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

5 = Total Cover

Sapling/Shrub Stratum (Plot size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Salix fragilis</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
2. <u>Cornus Amomum</u>	<u>5</u>	<u>Y</u>	<u>FACW</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

15 = Total Cover

Herb Stratum (Plot size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Phragmites Australis</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>
2. <u>Salix fragilis</u>	<u>15</u>	<u>N</u>	<u>FAC</u>
3. <u>Arctium minus</u>	<u>3</u>	<u>N</u>	<u>FACU</u>
4. <u>Artemisia ANOVA</u>	<u>25</u>	<u>Y</u>	<u>FACW</u>
5. <u>Penstemon digitalis</u>	<u>7</u>	<u>N</u>	<u>FAC</u>
6. <u>Carya CANADENSIS</u>	<u>5</u>	<u>N</u>	<u>NI</u>
7. <u>Verbascum thapsus</u>	<u>5</u>	<u>N</u>	<u>UPL</u>
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

80 = Total Cover

Woody Vine Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>NA</u>	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. <u>✓</u>	_____	_____	_____

0 = Total Cover

Remarks: (Include photo numbers here or on a separate sheet.)

Photo # 6

Direction of Photo NORTH

Disturbed

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80 (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>25</u>	x 2 = <u>50</u>
FAC species <u>37</u>	x 3 = <u>111</u>
FACU species <u>28</u>	x 4 = <u>112</u>
UPL species <u>5</u>	x 5 = <u>25</u>
Column Totals: <u>95</u> (A)	<u>298</u> (B)

Prevalence Index = B/A = 3.13

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
  - 2 - Dominance Test is >50%
  - 3 - Prevalence Index is < 3.0<sup>1</sup>
  - 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
  - Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

Community Type: SUCCESSIONAL OLD FILL

Hydrophytic Vegetation Present? Yes X No PAO



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Riverview Tech Campus Town/County: Tonawanda/Erie County Sampling Date: April 5, 2021  
 Applicant/Owner: Inventum Engineering State: New York Sampling Point: D5  
 Investigator(s): Scott Livingstone & Jody Celeste Section, Township, Range: 64.08-1-10  
 Landform (hillslope, terrace, etc.): Fill Pile Local relief (concave, convex, none): CONVEX Slope (%): 20%  
 Subregion (LRR or MLRA) LRRL Lat: 42.98368 Long: 78.92069 Datum: NAD83  
 Soil Map Unit Name: URBAN LAND NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, optional Wetland Site ID: _____	
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Remarks: (Explain alternative procedures here or in a separate report.)  
UPLAND FILL PILE WITH TREES

**HYDROLOGY**

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)		___ Surface Soil Cracks (B6)	
___ Surface Water (A1)	___ Water-Stained Leaves (B9)	___ Drainage Patterns (B10)	
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Moss Trim Lines (B16)	
___ Saturation (A3)	___ Marl Deposits (B15)	___ Dry-Season Water Table (C2)	
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Crayfish Burrows (C8)	
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Saturation Visible on Aerial Imagery (C9)	
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Stunted or Stressed Plants (D1)	
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Geomorphic Position (D2)	
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Shallow Aquitard (D3)	
___ Inundation Visible on Aerial Imagery (B7)	___ Other (Explain in Remarks)	___ Microtopographic Relief (D4)	
___ Sparsely Vegetated Concave Surface (B8)		___ FAC-Neutral Test (D5)	

Field Observations:  
 Surface Water Present? Yes  No  Depth (inches): N/A  
 Water Table Present? Yes  No  Depth (inches): N/A  
 Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): N/A  
 Wetland Hydrology Present? Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION : Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Populus deltoides</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

20 = Total Cover

Sapling/Shrub Stratum (Plot size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Salix fragilis</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

10 = Total Cover

Herb Stratum (Plot size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Salix fragilis</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>
2. <u>Polygonum cuspidatum</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>
3. <u>Verbastrum thibetense</u>	<u>5</u>	<u>N</u>	<u>FACW</u>
4. <u>Artemisia annua</u>	<u>45</u>	<u>Y</u>	<u>FACW</u>
5. <u>Galium aparine</u>	<u>3</u>	<u>N</u>	<u>FACW</u>
6. <u>Centaurea stoebe</u>	<u>5</u>	<u>N</u>	<u>FACW</u>
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

88 = Total Cover

Woody Vine Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>NA</u>	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. <u>✓</u>	_____	_____	_____

0 = Total Cover

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60 (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>0</u>	x 2 = <u>0</u>
FAC species <u>45</u>	x 3 = <u>135</u>
FACU species <u>73</u>	x 4 = <u>292</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>118</u> (A)	<u>427</u> (B)

Prevalence Index = B/A = 3.62

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
  - 2 - Dominance Test is >50%
  - 3 - Prevalence Index is < 3.0<sup>1</sup>
  - 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
  - Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

- Definitions of Vegetation Strata:**
- Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
  - Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
  - Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
  - Woody vines** - All woody vines greater than 3.28 ft in height.

Community Type: SUCCESSIONAL OLD FILL PAD

Hydrophytic Vegetation Present? Yes X No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet.)

Photo # P7 Direction of Photo WEST

Disturbed



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Riverview Tech Campus Town/County: Tonawanda/Erie County Sampling Date: April 5, 2021  
 Applicant/Owner: Inventum Engineering State: New York Sampling Point: D6  
 Investigator(s): Scott Livingstone & Jody Celeste Section, Township, Range: 64.08-1-10  
 Landform (hillslope, terrace, etc.): FILL PAD Local relief (concave, convex, none): CONVEX Slope (%): 2%  
 Subregion (LRR or MLRA) LRRL Lat: 42.98291 Long: 78.91959 Datum: NAD83  
 Soil Map Unit Name: LAKEMONT SILT LOAM, 0-3% Slopes NW1 classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, optional Wetland Site ID:	<u>N/A</u>
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Remarks: (Explain alternative procedures here or in a separate report.)  
 • UPLAND FILL PAD WITH PHRAGMITES STAND  
 • WETLAND HYDROLOGY OFF-SITE TO SOUTH

**HYDROLOGY**

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u>	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u>	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION : Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Betula papyrifera</u>	<u>10</u>	<u>Y</u>	<u>NI</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

10 = Total Cover

Sapling/Shrub Stratum (Plot size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>NA</u>	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

0 = Total Cover

Herb Stratum (Plot size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Phragmites australis</u>	<u>65</u>	<u>Y</u>	<u>FACW</u>
2. <u>Artemisia annua</u>	<u>10</u>	<u>N</u>	<u>FACW</u>
3. <u>Rubus occidentalis</u>	<u>20</u>	<u>Y</u>	<u>NI</u>
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

\_\_\_\_\_ = Total Cover

Woody Vine Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Vitis acedivalis</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

10 = Total Cover

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25 (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>65</u>	x 2 = <u>130</u>
FAC species <u>0</u>	x 3 = <u>0</u>
FACU species <u>20</u>	x 4 = <u>80</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>85</u> (A)	<u>210</u> (B)

Prevalence Index = B/A = 2.47

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
  - 2 - Dominance Test is >50%
  - 3 - Prevalence Index is < 3.0<sup>1</sup>
  - 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
  - Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

Community Type: SUCCESSIONAL OVO FILL PFO

Hydrophytic Vegetation Present? Yes X No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet.)

Photo # 8 Direction of Photo EAST Disturbed

TWO DOMINANTS ARE "NI" SHOULD BE FACU/LPC

NOT WET - NO HYDROLOGY INDICATORS!



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Riverview Tech Campus Town/County: Tonawanda/Erie County Sampling Date: April 5, 2021  
 Applicant/Owner: Inventum Engineering State: New York Sampling Point: D7  
 Investigator(s): Scott Livingstone & Jody Celeste Section, Township, Range: 64.08-1-10  
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): CONCAVE Slope (%): 0  
 Subregion (LRR or MLRA) LRRL Lat: 42.98492 Long: 78.92054 Datum: NAD83  
 Soil Map Unit Name: URBAN LAND NW I classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, optional Wetland Site ID: <u>WZ</u>
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Remarks: (Explain alternative procedures here or in a separate report.)  
 • WETLAND POCKET FORMED ON OLD FILL PAD  
 • WZ-1- WZ-5 (OPEN TO PE BUT CLOSED OFF-SITE)

**HYDROLOGY**

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Microtopographic Relief (D4)
<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Aquatic Fauna (B13)	
<input type="checkbox"/> Marl Deposits (B15)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations:  
 Surface Water Present? Yes  No  Depth (inches): 2"  
 Water Table Present? Yes  No  Depth (inches): SURFACE  
 Saturation Present? Yes  No  Depth (inches): SURFACE  
 (includes capillary fringe) Wetland Hydrology Present? Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION : Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Populus deltoides</i>	5	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			

5 = Total Cover

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Salix fragilis</i>	15	Y	FAC
2. <i>Salix discolor</i>	5	Y	FACW
3.			
4.			
5.			
6.			
7.			

20 = Total Cover

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Phragmites australis</i>	30	Y	FACW
2. <i>Lythrum salicaria</i>	30	Y	OBL
3. <i>Lycopus americana</i>	10	N	↓
4. <i>Salix discolor</i>	15	N	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			

85 = Total Cover

Woody Vine Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. NA			
2.			
3.			
4. ✓			

0 = Total Cover

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____	(A) _____ (B) _____

Prevalence Index = B/A = \_\_\_\_\_

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
  - 2 - Dominance Test is >50%
  - 3 - Prevalence Index is < 3.0<sup>1</sup>
  - 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
  - Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)
- <sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**W2** *Pem shallow emergent marsh*

Community Type: \_\_\_\_\_

Hydrophytic Vegetation Present? Yes X No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet.)

Photo # 10 Direction of Photo EAST Disturbed

SOIL

Sampling Point: D7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-2	-	-	-	-	-	-	SLAG	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

- |  |  |  |
|--|--|--|
| <p><b>Hydric Soil Indicators:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Histosol (A1)</li> <li><input type="checkbox"/> Histic Epipedon (A2)</li> <li><input type="checkbox"/> Black Histic (A3)</li> <li><input type="checkbox"/> Hydrogen Sulfide (A4)</li> <li><input type="checkbox"/> Stratified Layers (A5)</li> <li><input type="checkbox"/> Depleted Below Dark Surface (A11)</li> <li><input type="checkbox"/> Thick Dark Surface (A12)</li> <li><input type="checkbox"/> Sandy Mucky Mineral (S1)</li> <li><input type="checkbox"/> Sandy Gleyed Matrix (S4)</li> <li><input type="checkbox"/> Sandy Redox (S5)</li> <li><input type="checkbox"/> Stripped Matrix (S6)</li> <li><input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)</li> <li><input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)</li> <li><input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)</li> <li><input type="checkbox"/> Loamy Gleyed Matrix (F2)</li> <li><input type="checkbox"/> Depleted Matrix (F3)</li> <li><input type="checkbox"/> Redox Dark Surface (F6)</li> <li><input type="checkbox"/> Depleted Dark Surface (F7)</li> <li><input type="checkbox"/> Redox Depressions (F8)</li> </ul> | <p><b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)</li> <li><input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)</li> <li><input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)</li> <li><input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)</li> <li><input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)</li> <li><input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)</li> <li><input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)</li> <li><input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)</li> <li><input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)</li> <li><input type="checkbox"/> Red Parent Material (TF2)</li> <li><input type="checkbox"/> Very Shallow Dark Surface (TF12)</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul> |
|--|--|--|

<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<p><b>Restrictive Layer (if observed):</b></p> <p>Type: <u>HARD FILL</u></p> <p>Depth (inches): <u>2"</u></p>		<p>Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>
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Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Riverview Tech Campus Town/County: Tonawanda/Erie County Sampling Date: April 5, 2021

Applicant/Owner: Inventum Engineering State: New York Sampling Point: D8

Investigator(s): Scott Livingstone & Jody Celeste Section, Township, Range: 64.08-1-10

Landform (hillslope, terrace, etc.): FILL PAD Local relief (concave, convex, none): NONE Slope (%): <1

Subregion (LRR or MLRA) LRRL Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: NAD83

Soil Map Unit Name: URBAN LAND NW 1 classification: NIA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)

Are Vegetation \_\_\_\_\_, Soil X, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_

Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland?	Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____ No <u>X</u>	If yes, optional Wetland Site ID:	<u>NIA</u>
Wetland Hydrology Present?	Yes _____ No <u>X</u>		

Remarks: (Explain alternative procedures here or in a separate report.)

UPLAND FILL PAD

**HYDROLOGY**

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)		_____ Surface Soil Cracks (B6)	
_____ Surface Water (A1)	_____ Water-Stained Leaves (B9)	_____ Drainage Patterns (B10)	
_____ High Water Table (A2)	_____ Aquatic Fauna (B13)	_____ Moss Trim Lines (B16)	
_____ Saturation (A3)	_____ Marl Deposits (B15)	_____ Dry-Season Water Table (C2)	
_____ Water Marks (B1)	_____ Hydrogen Sulfide Odor (C1)	_____ Crayfish Burrows (C8)	
_____ Sediment Deposits (B2)	_____ Oxidized Rhizospheres on Living Roots (C3)	_____ Saturation Visible on Aerial Imagery (C9)	
_____ Drift Deposits (B3)	_____ Presence of Reduced Iron (C4)	_____ Stunted or Stressed Plants (D1)	
_____ Algal Mat or Crust (B4)	_____ Recent Iron Reduction in Tilled Soils (C6)	_____ Geomorphic Position (D2)	
_____ Iron Deposits (B5)	_____ Thin Muck Surface (C7)	_____ Shallow Aquitard (D3)	
_____ Inundation Visible on Aerial Imagery (B7)	_____ Other (Explain in Remarks)	_____ Microtopographic Relief (D4)	
_____ Sparsely Vegetated Concave Surface (B8)		_____ FAC-Neutral Test (D5)	

<b>Field Observations:</b>		Wetland Hydrology Present? Yes _____ No <u>X</u>
Surface Water Present?	Yes _____ No <u>X</u> Depth (inches): <u>N/A</u>	
Water Table Present?	Yes _____ No <u>X</u> Depth (inches): <u>N/A</u>	
Saturation Present? (includes capillary fringe)	Yes _____ No <u>X</u> Depth (inches): <u>N/A</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION : Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Populus deltoides</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>
2. <u>Betula papyrifera</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

20 = Total Cover

Sapling/Shrub Stratum (Plot size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Cornus Amomum</u>	<u>5</u>	<u>Y</u>	<u>FACW</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

5 = Total Cover

Herb Stratum (Plot size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Verbascum thapsus</u>	<u>3</u>	<u>N</u>	<u>FACW</u>
2. <u>Arctium minus</u>	<u>5</u>	<u>N</u>	<u>FACW</u>
3. <u>Schizachyrium scoparium</u>	<u>25</u>	<u>Y</u>	<u>FACW</u>
4. <u>Phragmites australis</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>
5. <u>Salix fragilis</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
6. <u>Fragaria virginiana</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>
7. <u>Juncus tenuis</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
8. <u>Artemisia annua</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>
9. <u>Holcus lanatus</u>	<u>5</u>	<u>N</u>	<u>FACW</u>
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

88 = Total Cover

Woody Vine Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>NA</u>	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

0 = Total Cover

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 55 (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>15</u>	x 2 = <u>30</u>
FAC species <u>25</u>	x 3 = <u>75</u>
FACU species <u>73</u>	x 4 = <u>292</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>113</u> (A)	<u>397</u> (B)

Prevalence Index = B/A = 3.51

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
  - 2 - Dominance Test is >50%
  - 3 - Prevalence Index is < 3.0<sup>1</sup>
  - 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
  - Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

Community Type: SUCCESSIONAL OLD FILL PAV

Hydrophytic Vegetation Present? Yes X No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet.)

Photo # 11 Direction of Photo WEST

Disturbed



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Riverview Tech Campus Town/County: Tonawanda/Erie County Sampling Date: June 23, 2021

Applicant/Owner: Inventum Engineering State: New York Sampling Point: D9

Investigator(s): Scott Livingstone & Jody Celeste Section, Township, Range: 64.08-1-10

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): CONCAVE Slope (%): 0

Subregion (LRR or MLRA) LRRL Lat: 42.98133 Long: 78.93120 Datum: NAD83

Soil Map Unit Name: CAYUGA SILT LOAM, 3-8% Slopes NW I classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If no, explain in Remarks.)

Are Vegetation     , Soil X, or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes X No     

Are Vegetation     , Soil     , or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <u>X</u> No <u>    </u> Hydric Soil Present? Yes <u>X</u> No <u>    </u> Wetland Hydrology Present? Yes <u>X</u> No <u>    </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u>    </u> If yes, optional Wetland Site ID: <u>    </u>
Remarks: (Explain alternative procedures here or in a separate report.) • W3-1-W3-1a (CLOSED/ISOLATED) - PHRACMITES • WETLAND & SURROUNDING AREA HISTORICALLY DISTURBED • MAN-MADE WETLAND	

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> Primary Indicators (minimum of one is required; check all that apply)	<b>Secondary Indicators (minimum of two required)</b>
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)	Field Observations: Surface Water Present? Yes <u>    </u> No <u>X</u> Depth (inches): <u>N/A</u> Water Table Present? Yes <u>    </u> No <u>X</u> Depth (inches): <u>N/A</u> Saturation Present? (includes capillary fringe) Yes <u>X</u> No <u>    </u> Depth (inches): <u>Surface</u> Wetland Hydrology Present? Yes <u>X</u> No <u>    </u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION : Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Populus deltoides</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

15 = Total Cover

Sapling/Shrub Stratum (Plot size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>NA</u>	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. <u>✓</u>	_____	_____	_____

0 = Total Cover

Herb Stratum (Plot size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Phragmites australis</u>	<u>75</u>	<u>Y</u>	<u>FACW</u>
2. <u>Solidago canadensis</u>	<u>3</u>	<u>N</u>	<u>FACW</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

78 = Total Cover

Woody Vine Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Vitis californica</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

10 = Total Cover

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67 (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____	(A) _____ (B) _____

Prevalence Index = B/A = \_\_\_\_\_

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
  - 2 - Dominance Test is >50%
  - 3 - Prevalence Index is < 3.0<sup>1</sup>
  - 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
  - Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**W3** PEM  
Community Type: Phragmites  
Impoundment

Hydrophytic Vegetation Present? Yes X No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet.)  
Photo # 17 Direction of Photo SOUTH



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Riverview Tech Campus Town/County: Tonawanda/Erie County Sampling Date: June 23, 2021  
 Applicant/Owner: Inventum Engineering State: New York Sampling Point: D10  
 Investigator(s): Scott Livingstone & Jody Celeste Section, Township, Range: 64.08-1-10  
 Landform (hillslope, terrace, etc.): FILL PAD Local relief (concave, convex, none): CONVEX Slope (%): 10  
 Subregion (LRR or MLRA) LRRL Lat: 42.98116 Long: 78.93204 Datum: NAD83  
 Soil Map Unit Name: CAYUGA SILT LOAM, 3-8% Slopes NW I classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, optional Wetland Site ID: <u>N/A</u>
Remarks: (Explain alternative procedures here or in a separate report.) <div style="font-family: cursive; font-size: 1.2em; padding: 10px;">                     • UPLAND SCRUB/SHRUB (HAWTHORN) COMMUNITY                      • OLD FILL                 </div>	

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
---	---

<b>Field Observations:</b> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u> Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u> Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION : Use scientific names of plants.

Sampling Point: \_\_\_\_\_

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Populus deltoides</i>	10	Y	FAC
2. <i>Crataegus crus-galli</i>	10	Y	FAC
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 44 (A/B)

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Crataegus crus-galli</i>	50	Y	FAC
2. <i>Rhamnus cathartica</i>	10	N	↓
3. <i>Fraxinus pennsylvanica</i>	5	N	FACW
4. <i>Rubus occidentalis</i>	5	N	NZ
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>5</u>	x 2 = <u>10</u>
FAC species <u>92</u>	x 3 = <u>276</u>
FACU species <u>40</u>	x 4 = <u>160</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>137</u> (A)	<u>446</u> (B)

Prevalence Index = B/A = 3.255

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Hesperis matronalis</i>	5	N	FACW
2. <i>Rubus occidentalis</i>	20	Y	NZ
3. <i>Geum canadense</i>	10	Y	FACW
4. <i>Alliaria officinalis</i>	10	Y	↓
5. <i>Solidago canadensis</i>	15	Y	↓
6. <i>Symphoricarpon latifolium</i>	10	Y	FAC
7. <i>Solanum dulcamara</i>	2	N	FAC
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
  - 2 - Dominance Test is >50%
  - 3 - Prevalence Index is < 3.0<sup>1</sup>
  - 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
  - Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

Woody Vine Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Vitis aestivalis</i>	10	Y	FACU
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

Community Type: SUCCESSIONAL OLD FILLPAD (SHRUBS)

Hydrophytic Vegetation Present? Yes  No

Remarks: (Include photo numbers here or on a separate sheet.)

Photo # 18 Direction of Photo EAST

DRY, NO HYDROLOGY



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Riverview Tech Campus Town/County: Tonawanda/Erie County Sampling Date: June 23, 2021  
 Applicant/Owner: Inventum Engineering State: New York Sampling Point: D11  
 Investigator(s): Scott Livingstone & Jody Celeste Section, Township, Range: 64.08-1-10  
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): CONCAVE Slope (%): 0  
 Subregion (LRR or MLRA) LRRL Lat: 42.98670 Long: 78.93293 Datum: NAD83  
 Soil Map Unit Name: CAYUGA SILT LOAM, 8-15% Slopes NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	If yes, optional Wetland Site ID: <u>W4</u>
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Remarks: (Explain alternative procedures here or in a separate report.)

- W4-1 → W4-20 (CLOSED/ISOLATED)
- PHRAGMITES DEPRESSIONAL MAN-MADE WETLAND

**HYDROLOGY**

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
<b>Primary Indicators (minimum of one is required; check all that apply)</b>	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Microtopographic Relief (D4)
<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Aquatic Fauna (B13)	
<input type="checkbox"/> Marl Deposits (B15)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): 3"  
 Water Table Present? Yes  No  Depth (inches): INUNDATED  
 Saturation Present? Yes  No  Depth (inches): INUNDATED  
 (includes capillary fringe) Wetland Hydrology Present? Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION : Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Populus deltoides</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

5 = Total Cover

Sapling/Shrub Stratum (Plot size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>RHAMNUS CATHARTICA</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

5 = Total Cover

Herb Stratum (Plot size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>PHRAGMITES AUSTRALIS</u>	<u>85</u>	<u>Y</u>	<u>FACW</u>
2. <u>SPERM MACROPHYLLUM</u>	<u>3</u>	<u>N</u>	<u>FACW</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

88 = Total Cover

Woody Vine Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>NA</u>	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. <u>✓</u>	_____	_____	_____

0 = Total Cover

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____	(A) _____ (B) _____

Prevalence Index = B/A = \_\_\_\_\_

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
  - 2 - Dominance Test is >50%
  - 3 - Prevalence Index is < 3.0<sup>1</sup>
  - 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
  - Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

Community Type: (W4) PEM PHRAGMITES IMPOUNOMEN

Hydrophytic Vegetation Present? Yes X No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet.)  
 Photo # 19 Direction of Photo WEST



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Riverview Tech Campus Town/County: Tonawanda/Erie County Sampling Date: June 23, 2021  
 Applicant/Owner: Inventum Engineering State: New York Sampling Point: D12  
 Investigator(s): Scott Livingstone & Jody Celeste Section, Township, Range: 64.08-1-10  
 Landform (hillslope, terrace, etc.): Fill Pad Local relief (concave, convex, none): CONVEX Slope (%): 5  
 Subregion (LRR or MLRA) LRRL Lat: 42.98063 Long: 78.93290 Datum: NAD83  
 Soil Map Unit Name: URBAN LAND NW I classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, optional Wetland Site ID: <u>N/A</u>	
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Remarks: (Explain alternative procedures here or in a separate report.)  
UPLAND SCRUB/SHRUB COMMUNITY ON OLD FILL PAD

**HYDROLOGY**

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
<b>Primary Indicators (minimum of one is required; check all that apply)</b> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)

**Field Observations:**  
 Surface Water Present? Yes  No  Depth (inches): N/A  
 Water Table Present? Yes  No  Depth (inches): N/A  
 Saturation Present? Yes  No  Depth (inches): N/A  
 (includes capillary fringe)      **Wetland Hydrology Present?** Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION : Use scientific names of plants.

Sampling Point: \_\_\_\_\_

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. NA			
2.			
3.			
4.			
5.			
6.			
7. ✓			

0 = Total Cover

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. NA			
2.			
3.			
4.			
5.			
6.			
7. ✓			

0 = Total Cover

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Indicator Status
1. Solidago canadensis 50 Y FACW			
2. Lolium multiflorum 10 N NI			
3. Rumex crispus 3 N FAC			
4. Hesperis matronalis 3 N FACW			
5. Phragmites australis 2 N FACW			
6. Alliaria officinalis 5 N FACW			
7.			
8.			
9.			
10.			
11.			
12.			

73 = Total Cover

Woody Vine Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. NA			
2.			
3.			
4. ✓			

0 = Total Cover

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>2</u>	x 2 = <u>4</u>
FAC species <u>3</u>	x 3 = <u>9</u>
FACU species <u>58</u>	x 4 = <u>232</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>63</u> (A)	<u>245</u> (B)

Prevalence Index = B/A = 3.88

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
  - 2 - Dominance Test is >50%
  - 3 - Prevalence Index is < 3.0<sup>1</sup>
  - 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
  - Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**SUCCESSIONAL FILL PAD**

Community Type: \_\_\_\_\_

Hydrophytic Vegetation Present? Yes \_\_\_\_\_ No X

Remarks: (Include photo numbers here or on a separate sheet.)

Photo # 20 Direction of Photo SOUTH



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Riverview Tech Campus Town/County: Tonawanda/Erie County Sampling Date: June 23, 2021  
 Applicant/Owner: Inventum Engineering State: New York Sampling Point: D13  
 Investigator(s): Scott Livingstone & Jody Celeste Section, Township, Range: 64.08-1-10  
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): CONCAVE Slope (%): 41  
 Subregion (LRR or MLRA) LRRL Lat: 42.98390 Long: 78.91998 Datum: NAD83  
 Soil Map Unit Name: URBAN LAND NW I classification: PSS

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If yes, optional Wetland Site ID: <u>W5</u>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks: (Explain alternative procedures here or in a separate report.) • W5-1 → W5-9 (CLOSED/ISOLATED) • MAN-MADE DEPRESSION		

**HYDROLOGY**

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>N/A</u>	
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>N/A</u>	
Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>N/A</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION : Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Populus deltoides</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Sapling/Shrub Stratum (Plot size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Salix petiolaris</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>
2. <u>Salix discolor</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>
3. <u>Cornus amomum</u>	<u>5</u>	<u>N</u>	<u>FACW</u>
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____	(A) _____ (B) _____

Prevalence Index = B/A = \_\_\_\_\_

Herb Stratum (Plot size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Solidago canadensis</u>	<u>10</u>	<u>N</u>	<u>FACU</u>
2. <u>PHRAGMITES AUSTRALIS</u>	<u>65</u>	<u>Y</u>	<u>FACW</u>
3. <u>LYTARUM SALICARIA</u>	<u>15</u>	<u>N</u>	<u>OBL</u>
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
  - 2 - Dominance Test is >50%
  - 3 - Prevalence Index is < 3.0<sup>1</sup>
  - 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
  - Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)
- Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

Woody Vine Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>NA</u>	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

**Community Type:** WS PEM Phragmites IMPROVEMENT

**Hydrophytic Vegetation Present?** Yes  No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet.)

Photo # 21 Direction of Photo WEST

OLD RAILROAD BED



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Riverview Tech Campus Town/County: Tonawanda/Erie County Sampling Date: June 23, 2021  
 Applicant/Owner: Inventum Engineering State: New York Sampling Point: D14  
 Investigator(s): Scott Livingstone & Jody Celeste Section, Township, Range: 64.08-1-10  
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): CONCAVE Slope (%): 41  
 Subregion (LRR or MLRA) LRRL Lat: 42.98432 Long: 78.91896 Datum: NAD83  
 Soil Map Unit Name: URBAN LAND NWI classification: PEM  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	If yes, optional Wetland Site ID: <u>W6</u>	
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Remarks: (Explain alternative procedures here or in a separate report.)  
 • W6-1 - W6-5 (CLOSED / ISOLATED)  
 • MAN-MADE PHRAGMITES WETLAND BETWEEN TWO FORMER RAIL SIDINGS

**HYDROLOGY**

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u>	
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u>	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION : Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Quercus palustris</u>	<u>5</u>	<u>Y</u>	<u>FACW</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

5 = Total Cover

Sapling/Shrub Stratum (Plot size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Salix discolor</u>	<u>5</u>	<u>Y</u>	<u>FACW</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

5 = Total Cover

Herb Stratum (Plot size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Phragmites australis</u>	<u>60</u>	<u>Y</u>	<u>FACW</u>
2. <u>Lytium salicaria</u>	<u>25</u>	<u>Y</u>	<u>OBL</u>
3. <u>Impatiens capensis</u>	<u>2</u>	<u>N</u>	<u>FACW</u>
4. <u>Ondoclea sensibilis</u>	<u>5</u>	<u>N</u>	<u>↓</u>
5. <u>Apocynum cannabinum</u>	<u>3</u>	<u>N</u>	<u>FAC</u>
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

95 = Total Cover

Woody Vine Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>NA</u>	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. <u>✓</u>	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

0 = Total Cover

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

Total % Cover of: \_\_\_\_\_ Multiply by: \_\_\_\_\_

OBL species \_\_\_\_\_ x 1 = \_\_\_\_\_

FACW species \_\_\_\_\_ x 2 = \_\_\_\_\_

FAC species \_\_\_\_\_ x 3 = \_\_\_\_\_

FACU species \_\_\_\_\_ x 4 = \_\_\_\_\_

UPL species \_\_\_\_\_ x 5 = \_\_\_\_\_

Column Totals: \_\_\_\_\_ (A) \_\_\_\_\_ (B)

Prevalence Index = B/A = \_\_\_\_\_

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
  - 2 - Dominance Test is >50%
  - 3 - Prevalence Index is < 3.0<sup>1</sup>
  - 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
  - Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

**Community Type:** (W6) PERN PHRAGMITES IMPONNEMENT

**Hydrophytic Vegetation Present?** Yes X No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet.)  
 Photo # 22 Direction of Photo WEST

*Between OLD RAILROAD TRAILS*



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Riverview Tech Campus Town/County: Tonawanda/Erie County Sampling Date: June 23, 2021  
 Applicant/Owner: Inventum Engineering State: New York Sampling Point: D15  
 Investigator(s): Scott Livingstone & Jody Celeste Section, Township, Range: 64.08-1-10  
 Landform (hillslope, terrace, etc.): FILL PAD Local relief (concave, convex, none): CONVEX Slope (%): 3  
 Subregion (LRR or MLRA) LRRL Lat: 42.98442 Long: 78.91885 Datum: NAD83  
 Soil Map Unit Name: URBAN LAND NW I classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation  Soil  or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation  Soil  or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		If yes, optional Wetland Site ID: <u>N/A</u>
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks: (Explain alternative procedures here or in a separate report.) <u>UPLAND FILL PAD (SHRUB/FIELD)</u> <u>OLD FILL / DISTURBED AREA BETWEEN TWO ABANDONED RAIL SIDINGS</u>			

**HYDROLOGY**

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>N/A</u>	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>N/A</u>	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>N/A</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION : Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Rhus typhina</u>	<u>5</u>	<u>Y</u>	<u>FACW</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 56 (A/B)

Sapling/Shrub Stratum (Plot size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Cornus racemosa</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
2. <u>Salix discolor</u>	<u>5</u>	<u>Y</u>	<u>FACW</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>5</u>	x 1 = <u>5</u>
FACW species <u>15</u>	x 2 = <u>30</u>
FAC species <u>40</u>	x 3 = <u>120</u>
FACU species <u>25</u>	x 4 = <u>100</u>
UPL species <u>10</u>	x 5 = <u>50</u>
Column Totals: <u>95</u> (A)	<u>310</u> (B)

Prevalence Index = B/A = 3.26

Herb Stratum (Plot size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Rubus laciniatus</u>	<u>10</u>	<u>Y</u>	<u>UPL</u>
2. <u>Phragmites australis</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>
3. <u>Cornus racemosa</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
4. <u>Apolynum cannabinum</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>
5. <u>Solidago canadensis</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>
6. <u>Rubus occidentalis</u>	<u>5</u>	<u>N</u>	<u>NI</u>
7. <u>Erigeron philadelphicus</u>	<u>5</u>	<u>N</u>	<u>FAC</u>
8. <u>Securigera varia</u>	<u>10</u>	<u>Y</u>	<u>NI</u>
9. <u>Lythrum salicaria</u>	<u>5</u>	<u>N</u>	<u>OBL</u>
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
  - 2 - Dominance Test is >50%
  - 3 - Prevalence Index is < 3.0<sup>1</sup>
  - 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
  - Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)
- <sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

Woody Vine Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>NA</u>	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. <u>✓</u>	_____	_____	_____

**SUCCESSIONAL FILL PAD**

Community Type: \_\_\_\_\_

Hydrophytic Vegetation Present? Yes X No \_\_\_\_\_

Remarks: (Include photo numbers here or on a separate sheet.)

Photo # 23 Direction of Photo WEST

NOT WET!  
ON OLD RAILROAD BED

SOIL

Sampling Point: D15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-6	10YR2/1	100					SIAG OLD FILL	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.  
**Hydric Soil Indicators:** **Indicators for Problematic Hydric Soils<sup>3</sup>:**

- |  |  |   |
|--|--|---|
| <ul style="list-style-type: none"> <li><input type="checkbox"/> Histosol (A1)</li> <li><input type="checkbox"/> Histic Epipedon (A2)</li> <li><input type="checkbox"/> Black Histic (A3)</li> <li><input type="checkbox"/> Hydrogen Sulfide (A4)</li> <li><input type="checkbox"/> Stratified Layers (A5)</li> <li><input type="checkbox"/> Depleted Below Dark Surface (A11)</li> <li><input type="checkbox"/> Thick Dark Surface (A12)</li> <li><input type="checkbox"/> Sandy Mucky Mineral (S1)</li> <li><input type="checkbox"/> Sandy Gleyed Matrix (S4)</li> <li><input type="checkbox"/> Sandy Redox (S5)</li> <li><input type="checkbox"/> Stripped Matrix (S6)</li> <li><input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)</li> <li><input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)</li> <li><input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)</li> <li><input type="checkbox"/> Loamy Gleyed Matrix (F2)</li> <li><input type="checkbox"/> Depleted Matrix (F3)</li> <li><input type="checkbox"/> Redox Dark Surface (F6)</li> <li><input type="checkbox"/> Depleted Dark Surface (F7)</li> <li><input type="checkbox"/> Redox Depressions (F8)</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)</li> <li><input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)</li> <li><input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)</li> <li><input type="checkbox"/> Dark Surface (S7) (LRR K, L, M)</li> <li><input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)</li> <li><input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)</li> <li><input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)</li> <li><input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)</li> <li><input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)</li> <li><input type="checkbox"/> Red Parent Material (TF2)</li> <li><input type="checkbox"/> Very Shallow Dark Surface (TF12)</li> <li><input type="checkbox"/> Other (Explain in Remarks)</li> </ul> |
|--|--|---|

<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):**

Type: NONE

Depth (inches): N/A

Hydric Soil Present? Yes  No

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Riverview Tech Campus Town/County: Tonawanda/Erie County Sampling Date: June 23, 2021  
 Applicant/Owner: Inventum Engineering State: New York Sampling Point: D6  
 Investigator(s): Scott Livingstone & Jody Celeste Section, Township, Range: 64.08-1-10  
 Landform (hillslope, terrace, etc.): FILL PAD Local relief (concave, convex, none): NONE Slope (%): 1-2  
 Subregion (LRR or MLRA) LRRL Lat: 42.98456 Long: 78.91974 Datum: NAD83  
 Soil Map Unit Name: URBAN LAND NW I classification: N/A  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	If yes, optional Wetland Site ID: <u>N/A</u>	
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Remarks: (Explain alternative procedures here or in a separate report.)  
 • UPLAND FILL PAD DOMINATED BY PHRAGMITES  
 • OLD FILL BETWEEN TWO ABANDONED RAIL SIDINGS

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Aquatic Fauna (B13)	
<input type="checkbox"/> Marl Deposits (B15)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

**Field Observations:**

Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>N/A</u>	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>N/A</u>	
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>N/A</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION : Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. NA			
2.			
3.			
4.			
5.			
6.			
7. ✓			

0 = Total Cover

Sapling/Shrub Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus deltoides	5	N	FAC
2. Rosa multiflora	3	N	FACW
3. Rubus occidentalis	30	Y	NE
4.			
5.			
6.			
7.			

38 = Total Cover

Herb Stratum (Plot size: 5')	Absolute % Cover	Dominant Species?	Indicator Status
1. Phragmites australis	25	Y	FACW
2. Solidago canadensis	10	N	FACW
3. Solidago rugosa	10	N	FAC
4. Pycnanthemum virginicum	10	N	FACW
5. Schizachyrium spp.	15	N	NE
6. Rubus occidentalis	25	Y	NE
7. Lythrum salicaria	5	N	DBL
8.			
9.			
10.			
11.			
12.			

100 = Total Cover

Woody Vine Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. NA			
2.			
3.			
4. ✓			

0 = Total Cover

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>35</u>	x 2 = <u>70</u>
FAC species <u>15</u>	x 3 = <u>45</u>
FACU species <u>13</u>	x 4 = <u>52</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>68</u> (A)	<u>177</u> (B)

Prevalence Index = B/A = 2.60

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
  - 2 - Dominance Test is >50%
  - 3 - Prevalence Index is < 3.0<sup>1</sup>
  - 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
  - Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

**Tree** - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling/shrub** - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

**Herb** - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vines** - All woody vines greater than 3.28 ft in height.

Community Type: SUCCESSIONAL ALL PWD

Hydrophytic Vegetation Present? Yes X No     

Remarks: (Include photo numbers here or on a separate sheet.)

Photo # 24 Direction of Photo WEST



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APPENDIX C - SITE PHOTOGRAPHS



**Photo 1:** Facing east. Depicts Stormwater Pond 1.



**Photo 2:** Facing west. Depicts Stormwater Pond 2.



**Photo 3:** Facing west. Depicts wetland W1 at data point D1.



**Photo 4:** Facing east. Depicts a successional old fill pad community at data point D2.



**Photo 5:** Facing south. Depicts a successional old fill pad community at data point D3.



**Photo 6:** Facing north. Depicts a successional old fill pad community at data point D4.



**Photo 7:** Facing west. Depicts a successional old fill pad community at data point D5.



**Photo 8:** Facing east. Depicts a successional old fill pad community at data point D6.



**Photo 9:** Facing South from along the southern property line. Depicts the edge of water and wetland area off-site.



**Photo 10:** Facing east. Depicts wetland W2 at data point D7.



**Photo 11:** Facing west. Depicts a successional old fill pad community at data point D8.



**Photo 12:** Facing northwest from near the eastern central portion of the site. Depicts developed portion of the site.



**Photo 13:** Facing east from near the south central portion of the site. Depicts ponded water from recent rains in an area recently excavated.



**Photo 14:** Facing east. Depicts ditch.



**Photo 15:** Facing southwest from near the south central portion of the site. Depicts ponded water from recent rains in an area recently excavated.



**Photo 16:** Facing east. Depicts Stormwater Pond 3.



**Photo 17:** Facing south. Depicts wetland W3 at data point D9.



**Photo 18:** Facing east. Depicts a successional old fill pad community at data point D10.



**Photo 19:** Facing west. Depicts wetland W4 at data point D11.



**Photo 20:** Facing south. Depicts a successional old fill pad community at data point D12.



**Photo 21:** Facing west. Depicts wetland W5 at data point D13.



**Photo 22:** Facing west. Depicts wetland W6 at data point D14.



**Photo 23:** Facing west. Depicts a successional old fill pad community at data point D15.



**Photo 24:** Facing west. Depicts a successional old fill pad community at data point D16.

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APPENDIX D - REFERENCES

## **INFORMATIONAL REFERENCES USED BY EARTH DIMENSIONS INC.**

- Andrus, R.E. 1980. Sphagnaceae (Peat Moss Family) of New York State. Contributions to a Flora of New York State III, R.S. Mitchell (Ed.), Bulletin No. 442, New York State Museum, Albany, New York. 89 pp.
- Benyus, J.M. 1989. The Field Guide to Wildlife Habitats of the Eastern United States. Fireside, Simon & Shuster, Inc., New York. 335 pp.
- Britton, N.L., and H.A. Brown. 1970. An Illustrated Flora of the Northern United States and Canada, Volumes 1, 2, and 3. Dover Publications, Inc., New York. 2052 pp.
- Brockman, C.F., R. Merrilees, and H.S. Zim. 1968. Trees of North America: A Field Guide to the Major Native and Introduced Species North of Mexico. Western Publishing, Inc. New York, New York. 280 pp.
- Brown, L. 1979. Grasses: An Identification Guide. Peterson Nature Library. Houghton Mifflin Co., Boston. 240 pp.
- Cobb, B. 1963. A Field Guide to the Ferns and Related Families. Houghton Mifflin Co., Boston. 281 pp.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. Laroe. 1979. Classification of Wetlands and Deep Water Habitats of the United States. U.S. Fish and Wildlife Service, Washington, D.C. FWS/OBS-79-31. 103 pp.
- Eggers, S.D., and D.M. Reed. 1997. Wetland Plants and Plant Communities of Minnesota and Wisconsin. Second Edition. U.S. Army Corps of Engineers, St. Paul District, Minnesota. 263 pp.
- Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, Mass. 100 pp. plus appendices.
- Hotchkiss, N. 1970. Common Marsh Plants of the United States and Canada. U.S. Department of the Interior, Bureau of Sport Fisheries and Wildlife, Washington, D.C., Resource Publication 93.
- Hurley, L.M. 1990. Field Guide to the Submerged Aquatic Vegetation of Chesapeake Bay. U.S. Fish and Wildlife Service, Chesapeake Bay Estuary Program, Annapolis, Maryland. 51 pp.
- Knobel, E. 1977. Field Guide to the Grasses, Sedges, and Rushes of the United States. Dover publications, Inc., New York. 83 pp.
- Little, E.L. 1980. The Audubon Society Field Guide to North American Trees (Eastern Region). Alfred A. Knopf, New York. 714 pp.
- Magee, D.W. 1981. Freshwater Wetlands. University of Massachusetts Press, Tonawanda. 245 pp.

- Mitchell, R.S., and G.C. Tucker. 1997. Revised Checklist of New York State Plants. Contributions to a Flora of New York State IV, R.S. Mitchell (Ed.). Bulletin No. 490, New York State Museum, Albany, New York. 400 pp.
- Munsell Color Chart. (Munsell Color 1975).
- National Wetland Inventory Maps. U.S. Department of the Interior, Fish and Wildlife Service, National Wetland Inventory, St. Petersburg, Florida. <http://wetlandsfws.er.usgs.gov> date visited: 2/4/2010
- Niering, W.C., and N.C. Olmstead. 1979. The Audubon Society Field Guide to North American Wildflowers (Eastern Region). Alfred A. Knopf, New York. 887 pp.
- New York State Code of Rules and Regulations (NYCRR). 1989. Protected Native Plants. NYCRR Part 193.3, June, 1989. New York State Department of Environmental Conservation.
- New York Natural Heritage Program. 2002. New York Rare Plant Status List, February, 1989. S.M. Young, (Ed.), New York State Department of Environmental Conservation and The Nature Conservancy publication. 26 pp.
- New York State Department of Environmental Conservation Freshwater Wetlands Maps, NYSDEC Environmental Resource Mapper, <http://www.dec.ny.gov/ismaps/ERM/viewer.htm>
- Newcomb, L. 1977. Newcomb's Wildflower Guide. Little, Brown and Co., Boston. 490 pp.
- Ogden, E.C. 1981. Field Guide to Northeastern Ferns. Contributions to a Flora of New York State III, R.S. Mitchell (Ed.), Bulletin No. 444, New York State Museum, Albany, New York. 122 pp.
- Peattie, D.C. 1991. A Natural History of Trees of Eastern and North America. Houghton Mifflin Co., Boston. 606 pp.
- Peterson, R.T., and M. McKenny. 1968. A Field Guide to Wildflowers of Northeastern and Northcentral North America. Houghton Mifflin Co., Boston. 420 pp.
- Petrides, G.A. 1972. A Field Guide to Trees and Shrubs. Houghton Mifflin Co., Boston. 428 pp.
- Prescott, G.W. 1969. How to Know the Aquatic Plants. Second Edition. William C. Brown Co., Dubuque, Iowa. 171 pp.
- Raynal, D.J., and D. J. Leopold. 1999. Landowner's Guide to State-Protected Plants of Forests in New York State. New York Center for Forestry Research and Development, SUNY-ESF, Syracuse, New York. 92pp.
- Reed, Porter B. Jr. 1988. National List of Plant Species that Occur in Wetlands: Northeast (Region 1). U.S. Fish and Wildlife Service, Washington, D.C. Biol. Rept. 88 (26.1). 112 pp.

- Reschke, C. 2002. Ecological Communities of New York State. New York Natural Heritage Program. NYSDEC, Latham, N.Y. (2nd Ed.) 136 pp.
- Soil Conservation Service. 1975. Soil Taxonomy: A Basic System of Soil Classification for Making and Interpreting Soil Surveys. U.S.D.A., Soil Conservation Service, U.S. Handbook 436.
- Soil Conservation Service. 1988. New York Hydric Soils and Soils with Hydric Inclusions, revised July, 1988, Soil Conservation Service, Syracuse, New York, Technical Guide, Section II. 23 pp.
- Simonds, R.L., and H.H. Tweedie. 1978. Wildflowers of the Great Lakes Region. Chicago Review Press, Chicago. 96 pp.
- Symonds, G.W.D. 1958. The Tree Identification Book. Quill, New York. 272 pp.
- Symonds, G.W.D. 1963. The Shrub Identification Book. William Morrow & Co., New York. 379 pp.
- Tiner, R. W. Jr. 1988. A Field Guide to Nontidal Wetland Identification. Maryland Department of Natural Resources and U.S. Fish and Wildlife Service Cooperative Publication. Maryland Department of Natural Resources, Annapolis, Maryland. 283 pp. + 198 color plates.
- United States Department and Agriculture & the Natural Resources Conservation Service (USDA, NRCS). Soil Conservation Service Soil Survey of Erie County, New York. U.S.D.A., Soil Conservation Service. 1986 <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>
- USDA, NRCS. 2009. The PLANTS Database (<http://plants.usda.gov>, 12/14/09). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.
- United States Geological Survey maps, Denver, Colorado. Buffalo Northwest Quadrangle.
- U.S. Army Corps of Engineers. 2009. Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-09-19. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- U.S. Fish and Wildlife Service, A Wetlands and Deepwater Habitats Classification. May 3, 2002, <http://www.nwi.fws.gov/>. June 16, 2002.
- Zander, R.H., and G.J. Pierce. 1979. Flora of the Niagara Frontier Region. Bulletin of the Buffalo Society of Natural Sciences, Vol. 16 (Suppl. 2), Buffalo, New York. 110 pp

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APPENDIX E - WETLAND INVESTIGATION PERSONNEL

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