

August 7, 2020

Trowbridge Wolf Michaels Landscape Architects LLP 1001 West Seneca Street Suite 201 Ithaca, New York 14850

Attention: Margot D. Chiuten, RLA ASLA

Subject: Geotechnical Engineering Investigation

Buffalo Outer Harbor Phase 2

Fuhrmann Boulevard

City of Buffalo, Erie County, New York

Ms. Chiuten:

Ravi Engineering & Land Surveying, P.C. is pleased to submit the revised Geotechnical Engineering Report for the above referenced project. If you require additional information please contact the undersigned at (585) 703-9932. Thank you.

Respectfully submitted,

RAVI ENGINEERING & LAND SURVEYING, P.C.

James D. MacKecknie, P.G.

Project Manager

Attachment: Geotechnical Engineering Investigation Report

#### **REPORT**

# GEOTECHNICAL ENGINEERING INVESTIGATION BUFFALO OUTER HARBOR PHASE 2 FUHRMANN BOULEVARD CITY OF BUFFALO, ERIE COUNTY, NEW YORK

For

Trowbridge Wolf Michaels Landscape Architects

August 2020

Trowbridge Wolf Michaels Landscape Architects 1001 West Seneca Street, Suite 201 Ithaca, New York 14850

Attention: Margot Chiuten

Subject: Geotechnical Engineering Investigation

Buffalo Outer Harbor Phase 2

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City of Buffalo, Erie County, New York

#### Readers:

This report presents the results of a geotechnical engineering investigation for the project identified above. Information regarding the proposed construction was provided to us by Trowbridge Wolf Michaels Landscape Architects, and by WSP.

#### UNDERSTANDING OF PROPOSED CONSTRUCTION

The proposed construction includes three one-story buildings, one or more decks, a landscaped amphitheater, several light poles, two pylons, and areas of pavement.

Additional comments regarding the proposed construction are presented in subsequent sections of this report.

#### SUBSURFACE EXPLORATIONS

Subsurface explorations for this investigation consisted of 18 test borings, identified as B-1-20 through B-18-20. The quantity and locations of the borings were determined by others. Because of field conditions, it was necessary to shift some of the borings from their originally requested locations. The as-drilled locations of the borings are shown on the plans in Appendix A. The approximate ground surface elevations, at the boring locations, are presented in attached Table 1. Also presented in Table 1 are the proposed features at or near each boring location, as provided to us by others.

The borings were performed by Earth Dimensions, Inc., using rotary drilling equipment, between 7/1/20 and 7/14/20.

Of the 18 borings, 14 were each advanced to a depth of 27 feet below the ground surface.

Four of the borings (B-3-20, B-4-20, B-10-20, and B-15-20) were advanced to the top of apparent bedrock. Two of these borings (B-4-20 and B-15-20) were each cored an additional 10 feet into bedrock.

The logs of the borings, as prepared by Earth Dimensions, Inc., are presented in Appendix B. Detailed descriptions of the subsurface conditions encountered, as well as a concise summary, are presented on the log of each boring.

Selected subsurface information is also presented in attached Table 1.

#### COMMENTS ON SUBSURFACE CONDITIONS

All of the borings encountered random fill materials. The depth of the random fill, at the boring locations, ranged from approximately 4 feet to approximately 22 feet below the ground surface. The approximate depths and elevations of the bottom of random fill are presented in attached Table 1.

The natural soils, underlying the random fill, are variable. Some of these soils are relatively weak and compressible. Organic matter is present at some locations and depths.

As previously noted, four of the borings were advanced to the top of apparent bedrock. Two of these borings were also advanced into bedrock. The bedrock, within the depths explored, is described as limestone. The depth to the top of bedrock, where encountered, ranged from approximately 52 feet to approximately 66 feet below the ground surface. In general, the depth to bedrock appeared to decrease from south to north. The approximate depths and elevations of the top of bedrock, where encountered, are presented in attached Table 1.

Observations of down-hole groundwater and sample moisture were made during the test boring program. It should be noted that short-term observations may not be representative of actual groundwater levels, and that groundwater levels will vary with factors including location, time, precipitation, season, and site activities. In general, it is likely that groundwater will be encountered near or above the level of nearby Lake Erie.

It should be noted that objects too large to be retrieved by the sampling equipment (including cobbles, boulders, and concrete fragments) are likely to be present. Such objects are especially likely to be present in the random fill.

More detailed descriptions of the subsurface conditions, as encountered by the borings, are provided on the logs in Appendix B. Selected subsurface information is also presented in attached Table 1.

#### DESIGN AND CONSTRUCTION

#### General

All design and construction should meet or exceed the requirements of all applicable codes.

With regard to the International Building Code, a seismic Site Class of "E" should be applied to this project. This corresponds to a "Soft soil profile."

#### **Foundations for Three Proposed One-Story Buildings**

It is understood that the floors of the buildings in the south and south-central parts of the site will be at or near existing grade. It is also understood that the floor of the building in the north part of the site will be approximately 2 feet higher than existing grade.

It is recommended that each of the three proposed one-story buildings be supported by a reinforced concrete mat foundation. The top of each mat foundation would serve as the building's floor. All of the following requirements should be satisfied:

- No topsoil, existing utilities, or other unsuitable materials should be left in place. It is anticipated that much of the existing fill, however, including trace amounts of organic matter, may be left in place.
- Compacted granular fill should be placed below each foundation. The thickness of the compacted granular fill should be at least 12 inches. Greater thicknesses of compacted granular fill are likely to be necessary.
- Subgrades should be prepared, and granular fill should be placed and compacted, as described elsewhere in this report.
- Drained, unsaturated conditions should be maintained within the compacted granular fill.
- Design of each foundation should be based on a maximum net allowable bearing pressure of 500 pounds per square foot, and a subgrade modulus (K) not exceeding 25 pounds per cubic inch.
- Each mat foundation should be haunched/thickened along its perimeter, and perhaps elsewhere as necessary, to provide additional stiffness.
- Exterior haunches or frost walls should consist of reinforced concrete, and should extend at least 4 feet below final adjacent exterior grade.
- The final grading should be such that surface water is conducted away from each structure.

For a mat foundation properly designed and installed in accordance with this report, the post-construction settlement is not expected to exceed 1 inch. The post-construction shear strain (angular distortion) resulting from differential settlement is not expected to exceed 0.2 percent.

#### **Deck Foundations**

Based on the conditions encountered by boring B-3-20, the proposed decks are not well suited to conventional spread footings, mat foundations, or drilled shafts. A preferable foundation system would be steel piles driven to bedrock. It might be possible to reduce the number of piles, by stiffening the beams atop the piles.

The piles could be H piles, open-end pipe piles, or closed-end pipe piles filled with concrete.

H piles and open-end pipe piles may be designed for a maximum allowable axial stress of 35 percent of the yield strength, or 17,500 pounds per square inch, whichever is less.

Closed-end pipe piles, if driven to refusal and filled with good-quality concrete (at least 4,000 psi), may be designed for an allowable load of 1,200 pounds per square inch of total pile cross-sectional area.

Piles should be driven, using a suitable hammer, to practical refusal on or in bedrock.

The ultimate capacity of each pile should be at least twice the allowable load. Pile capacities should be verified by the use of a pile-driving analyzer (PDA), by load testing, or by a combination of the two. Applicable code requirements should be followed.

The minimum center-to-center spacing of piles should be 30 inches or 2.5 pile widths, whichever is greater.

Lateral loads, buckling, the need for cross-bracing, and the need for batter piles should all be considered.

Piles should be installed by a contractor experienced in this specialized work. Obstructions and other installation difficulties should be anticipated. All piles should be installed in such a way that they are not overstressed or otherwise damaged during installation.

#### **Landscaped Amphitheater**

It is understood that the landscaped amphitheater will be constructed in the south part of the site, in the area of borings B-1-20, B-2-20, and B-3-20. It is also understood that grade increases as great as approximately 6 feet will be required.

It is recommended that the grade increases be achieved using compacted common and/or granular fill. Subgrades should be prepared, and fill should be placed and compacted, as described elsewhere in this report.

Final slopes should be no steeper than 1 vertical on 3 horizontal.

The proposed grade increases are likely to cause compression of the underlying soft soils, resulting in settlement. It is estimated that a settlement of roughly 1 inch per each foot of grade increase is possible. Grade increases, therefore, should be achieved as early as possible in the construction sequence.

#### Foundations for Light Poles and Pylons

It is understood that the vertical loads from light poles and pylons will be modest, and that the primary concern is overturning.

The design and construction of the light pole and pylon foundations will be strongly controlled by the existing random fill materials.

It is recommended that the light pole and pylon foundations consist of drilled shafts, and that the existing random fill materials generally be left in place.

Each drilled shaft should be designed for a tip bearing pressure not exceeding 1,000 pounds per square foot.

Each drilled shaft should be at least 2.5 feet in diameter.

The resistance to lateral load and overturning moment should be computed using the method proposed by Broms (1964), or a similar method. Analysis should be based on a soil unit weight of 60 pounds per cubic foot, and a passive lateral earth pressure coefficient of 2.50. A safety factor of at least 3.00 should be applied.

It is anticipated that the drilled shafts will be installed using conventional rotary drilling methods and temporary casings. Drilling difficulties should be expected. Dewatering is likely to be necessary. All concrete should be placed in the dry, or by a suitable tremie method.

#### **Pavement**

A practical pavement design is based on factors including subgrade quality, frost action, traffic loads, traffic frequency, design life, and the relative importance of initial costs versus future maintenance.

At this site, the subgrade quality for flexible pavement should be represented using a California Bearing Ratio (CBR) not exceeding 5.

For auto parking areas, the recommended minimum flexible pavement section consists of a 1-inch asphaltic top course, a 2-inch asphaltic binder course, and a 12-inch subbase course of compacted granular fill.

For areas subjected to more frequent and/or heavier vehicles, the minimum combined thickness of asphaltic top and binder courses should be increased to 5 inches. The minimum thickness of the granular subbase should be increased to 16 inches.

The subgrade quality for rigid pavement should be represented using a subgrade modulus (K) not exceeding 75 pounds per cubic inch. The rigid section should consist of reinforced concrete, and should be at least 6 inches thick. At least 12 inches of compacted granular fill should be placed below the slab.

For all pavement sections, compacted common fill may be placed as required below the granular fill.

No existing topsoil or other unsuitable materials should be left in place. Complete removal of the existing fill materials, however, should not be necessary. Subgrades should be prepared, and fill should be placed and compacted, as described elsewhere in this report.

Drained, unsaturated conditions should be maintained within all pavement sections. Surface water should be conducted away from paved areas and structures.

The project designers may wish to consider pavement sections that are more or less conservative than those presented. This could depend on the traffic and cost factors described above, as well as the performance of existing and previous pavement sections at the site.

#### **Excavation and Construction Dewatering**

Excavation should be performed in accordance with all applicable local, state, and federal requirements. The sides of all excavations should be sloped or supported as required by safety regulations. Existing structures, utilities, and other property should be protected.

With regard to the current OSHA regulations, Type C soil should be assumed. This would apply to adequately dewatered soil.

To minimize subgrade disturbance, excavation should be performed with increasing care as subgrade levels are approached.

All work should be performed in the dry. In addition, the dewatering should be sufficient to permit suitable preparation of the subgrade and compaction of any subsequent fill materials.

The contractor should be prepared to dewater as necessary, and should choose and employ an appropriate type of dewatering system. Any dewatering system should be operated in such a way that disturbance or removal of the subgrade soil does not occur.

#### **Subgrade Preparation**

It is cautioned that the soils at this site contain fine-grained material, and that they will be sensitive to disturbance. Subgrades should be kept free of water, subjected to a minimum amount of construction traffic, exposed no longer than necessary, and not permitted to freeze.

Subgrades should be carefully prepared and thoroughly examined by qualified personnel. Subgrades should also be tamped using vibratory equipment, to the greatest extent possible without loosening or softening the subgrade soils.

Where space permits, subgrades should be thoroughly proofrolled with <u>both</u> a large vibratory roller and a fully-loaded ten-wheel dump truck. The primary objective of this additional effort is to identify and/or compact any voids or loose zones in the existing random fill materials.

No new fill or foundation concrete should be placed over material that is loose, soft, wet, frozen, or otherwise unsuitable with respect to the design recommendations. No more than trace amounts of organic matter should be left in place.

#### Fill and Backfill

Granular fill should consist of a durable sand and gravel or crusher-run stone, free of any organic matter. The plasticity index should be less than 5. Granular fill should have 100 percent finer than 3 inches, 20 to 60 percent finer than the Number 4 sieve, and no more than 10 percent finer than the Number 200 sieve.

Granular fill could also be specified as meeting the NYSDOT requirements for Subbase Course Type 1, 2, or 4.

Common fill should consist of durable soil material, free of any organic matter. The plasticity index should be less than 15. Common fill should have 100 percent finer than 6 inches, at least 90 percent finer than 3 inches, and at least 20 percent finer than the Number 4 sieve.

It should be noted that granular fill meets all of the requirements of common fill, and that granular fill can generally be placed and compacted with less difficulty.

All load-bearing fill should be compacted, in lifts of 9 inches or less, to at least 95 percent of the maximum dry density determined by ASTM D 1557.

The in-place density and water content of compacted fill should be determined by ASTM D 6938. At least one test should be performed per 2,500 square feet, per lift.

#### CLOSING COMMENTS AND RECOMMENDATIONS

Professional services for this investigation were performed in accordance with generally accepted geotechnical engineering practices, exclusively for the subject project. No warranty, expressed or implied, is made.

Subsurface conditions are inferred from the logs of subsurface explorations. Conditions between, beyond, and below these explorations are likely to vary. It should also be noted that subsurface conditions are often described on the basis of visual examinations of recovered samples, that these visual descriptions may not always agree well with descriptions made on the basis of laboratory tests, and that the distinction between fill and naturally-deposited soil can not always be readily determined on the basis of recovered samples. If subsurface conditions are subsequently revealed that appear to be significantly different or less favorable than those described, we should be given the opportunity to revise the statements in this report.

Designers and contractors are advised that this report was prepared primarily for design purposes, and that it may not contain sufficient information for bidding. Contractors should visit the site, review this report and the related exploration logs, and evaluate potential construction difficulties on the basis of their own knowledge and experience.

It is recommended that qualified personnel be retained to review the geotechnical portions of the contract drawings and specifications, and to provide monitoring services during construction.

It has been a pleasure assisting you with this investigation. If you have questions or comments regarding this report, please contact the undersigned.

Yours truly,

RAVI ENGINEERING & LAND SURVEYING, P.C.

Nagappa Ravindra, P.E.

President

Ray M. Teeter, P.E. Geotechnical Engineer

Attachments: Table 1 – Selected Subsurface Information

Appendix A – Test Boring Location Plans

Appendix B – Test Boring Logs

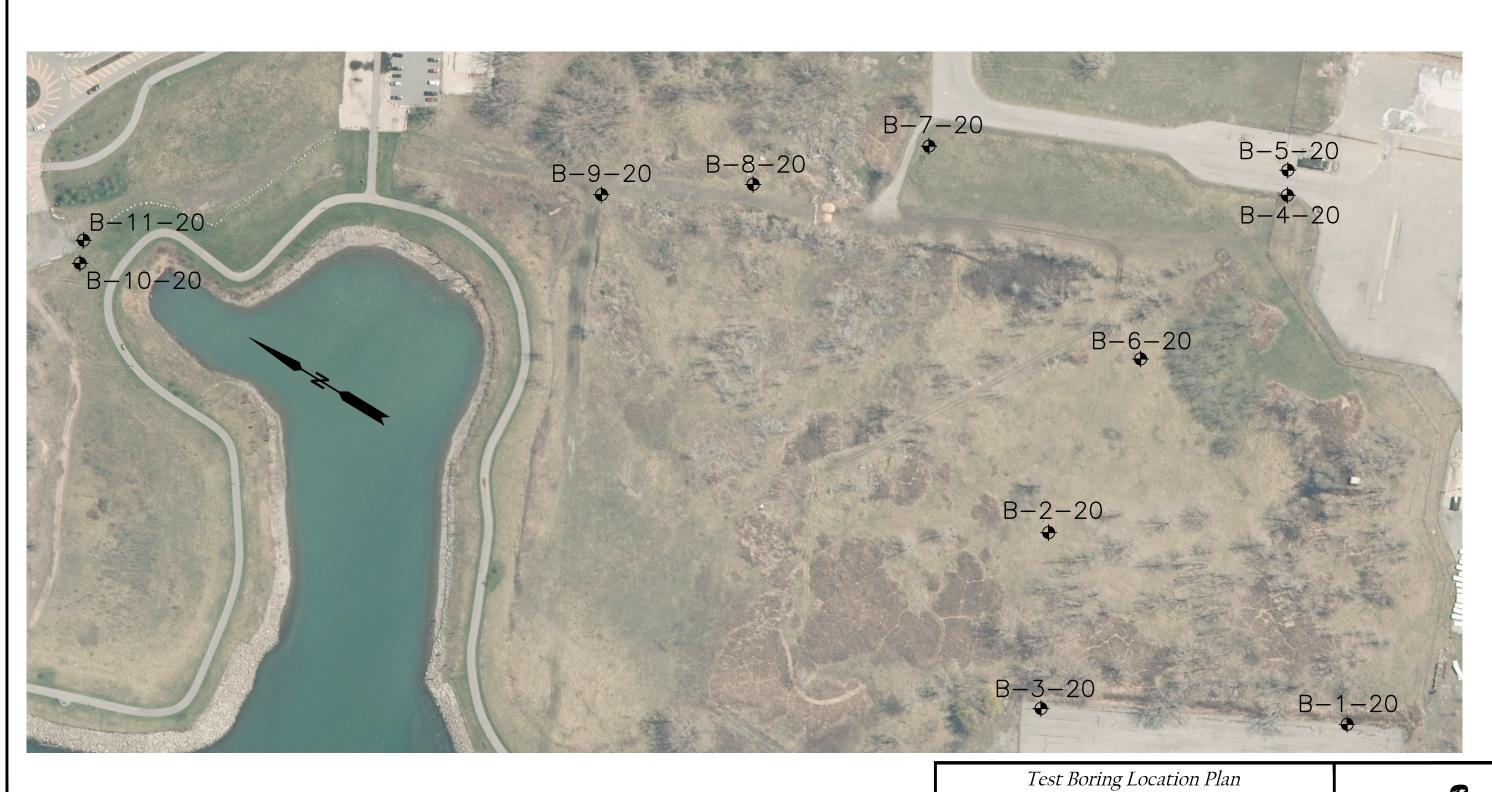
Table 1
Selected Subsurface Information
Buffalo Outer Harbor Phase 2
Fuhrmann Boulevard
City of Buffalo, Erie County, New York

| Boring<br><u>Number</u> | Approx.<br>Ground<br>Surface<br><u>Elevation</u> | Botton | oximate<br>n of Fill<br>Elevation | Approximate Top of Bedrock Depth Elevation | Proposed Feature       |
|-------------------------|--|--------|-----------------------------------|--|------------------------|
| B-1-20                  | 580  | 6      | 574                               | not encountered                            | light pole             |
| B-2-20                  | 585  | 14     | 571                               | not encountered                            | pylon                  |
| B-3-20                  | 580  | 4      | 576                               | 66 514                                     | deck                   |
| B-4-20                  | 585  | 15     | 570                               | 64 521                                     | south building         |
| B-5-20                  | 586  | 14     | 572                               | not encountered                            | south building         |
| B-6-20                  | 585  | 11     | 574                               | not encountered                            | light pole             |
| B-7-20                  | 585  | 20     | 565                               | not encountered                            | light pole             |
| B-8-20                  | 586  | 22     | 564                               | not encountered                            | light pole             |
| B-9-20                  | 585  | 22     | 563                               | not encountered                            | light pole             |
| B-10-20                 | 584  | 21     | 563                               | 52 532                                     | south-central building |
| B-11-20                 | 583  | 22     | 561                               | not encountered                            | south-central building |
| B-12-20                 | 581  | 12     | 569                               | not encountered                            | north building         |
| B-13-20                 | 581  | 12     | 569                               | not encountered                            | north building         |
| B-14-20                 | 581  | 12     | 569                               | not encountered                            | north building         |
| B-15-20                 | 581  | 13     | 568                               | 53 528                                     | north building         |
| B-16-20                 | 581  | 12     | 569                               | not encountered                            | north building         |
| B-17-20                 | 581  | 13     | 568                               | not encountered                            | north building         |
| B-18-20                 | 582  | 7      | 575                               | not encountered                            | pylon                  |

Note: All elevations and depths are in feet, and are approximate. Elevations and depths at other locations will vary. See accompanying report and boring logs for additional information.

# Appendix A

**Test Boring Location Plans** 



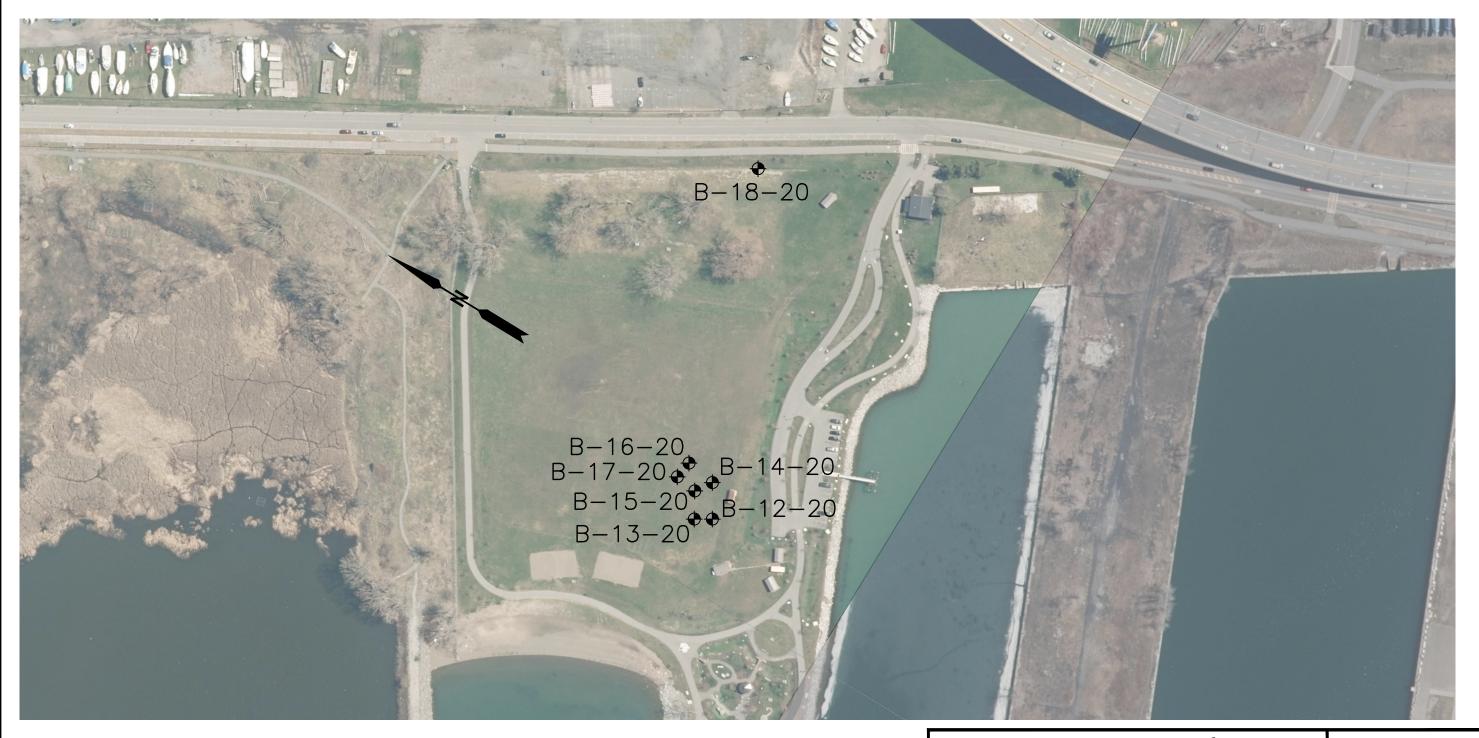
300' 150' 450'

*Borings B-1-20 through B-11-20* Buffalo Outer Harbor - Phase 2 Fuhrmann Boulevard City of Buffalo, Erie County, New York



DWG # 20-16-204 | Scale : 1"=150' | Date : 7/29/20

Drawn By : JFF



300' 450'

Test Boring Location Plan *Borings B-12-20 through B-18-20* Buffalo Outer Harbor - Phase 2 Fuhrmann Boulevard City of Buffalo, Erie County, New York

RAVI ENGINEERING

<u>& LAND SURVEYING, P.C.</u>

2110 South Clinton Average

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Date : 7/29/20 Drawn By : JFF Appendix B

**Test Boring Logs** 



Soil and Hydrogeologic Investigations • Wetland Delineations 1091 Jamison Road • Elma, NY 14059

13E96b

HOLE NO. B-1-20 • EDI@earthdimensions.com

SURF. ELEVATION

PROJECT Buffalo Outer Harbor Phase 2

LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/06/20 COMPLETED 07/06/20

| SN<br>REC | 0/<br>6      | 6/<br>12 | 12/<br>18 | 18/<br>24 | Z   | LITH         | DESCRIPTION AND CLASSIFICATION                                      | WATER TABLE AND REMARKS   |
|-----------|--------------|----------|-----------|-----------|-----|--------------|---|---|
| 1         | 16           |          |           | 12.7      | T   | Ö., Ö.       | Gray asphalt pavement.  | Asphalt pavement to 0.3 feet  |
| 13        | 704          | 6        |           |           | 14  | 0.0.0.0      | 0.3   | over sandy soil fill with some  |
|           |              | 100      | 8         |           | 196 | 0 0          |   | gravel, trace silt and slag to 4.1                                    |
|           |              |          |           | 12        |     | 0.0.0        | Moist gray to dark gray gravelly (SAND) fill with 20 to 40% gravel, | feet over sand and gravel fill  |
| 2         | 16           |          |           |           |     | 0.0.0        | trace silt and slag, compact, massive                               | with trace silt and slag to 6.0<br>feet over clayey slack water       |
| 12        | The state of | 27       |           |           |     | 00           | soil structure, (SW).   | sediment with trace sand to 15.0                                      |
| -         |              |          | 50/4      |           |     | 0.0.0        |   | feet over silty slack water   |
|           |              |          | January 1 |           |     | 0:0:         | 4.1   | sediment with trace sand and  |
| 3         | 35           |          |           |           |     | 0.00         | Wet gray very gravelly (SAND) fill with                             | organic matter to 20.0 feet over                                      |
| 17        | 100          | 17       |           |           | 33  | 000          | 40 to 60% gravel, trace silt and slag,                              | silty slack water sediment with                                       |
| 1         |              |          | 16        |           | -   | 0.00         | dense, massive soil structure,                                      | little sand, trace to little gravel<br>to 25.0 feet over water sorted |
| -         |              |          |           | 17        |     | 0.00         | (SW), (GW).   | and deposited sand and gravel   |
| 4         | 4            |          |           | -         |     |              | 6.0   | with trace silt to end of boring.                                     |
| 9         | -            | 1        |           |           | 2   | T-17-        | Extremely moist gray (CLAYEY-SILT)                                  |   |
|           | -            |          | 1         |           | -   |              | with some clay, trace sand, very soft                               | WH: Sampler penetration with  |
|           |              |          |           | 2         |     | 10715        | to soft, thinly laminated with very thin                            | weight of rods and hammer.  |
| 5         | 1            |          |           |           |     | <u> </u>     | coarse silt lenses, (CL).   |   |
| 8         | -            | 1        |           |           | 2   |              | grades downward to 8.0  |   |
|           |              |          | 1         | -         |     |              | Extremely moist gray (SILTY-CLAY)                                   |   |
|           |              |          | - 41      |           |     | <u> </u>     | with trace sand, very soft, thinly                                  |   |
| 6         | WH           | -        |           | 1         |     |              | laminated with very thin coarse silt                                |   |
| 16        | 1000         | WH       |           |           | <1  |              | lenses, (CL).   |   |
| -         |              | L TU     | WH        |           | 131 | <u> </u>     |   |   |
|           |              |          | 1.00      | WH        |     |              |   | ¥ Water level at 11.9 feet below                                      |
|           | -            |          |           |           |     |              |   | ground surface at completion.   |
|           |              |          | 11        |           |     | <u> </u>     |   |   |
|           |              |          |           | 10, 100   |     |              |   | Note: Added water to augers   |
|           | . = =        |          |           | -         | 1   |              |   | prior to sample number 9 to<br>combat running sand conditions.        |
|           |              |          |           |           | 1   | <del></del>  | 45.6  | compat running said conditions.                                       |
|           | 8, 4,        |          |           | -         |     |              | grades downward to 15.0   | Note: Advanced bore hole with 3                                       |
| 7         | 1            |          |           | -1        |     |              | Wet dark gray (SILT) with trace                                     | 1/4" ID x 7" OD hollow stem augs                                      |
| 18        | 1 -6         | - 1      |           | 7.5       | 2   |              | organic matter and sand, very loose,                                | casing with continuous split  |
|           | N.           |          | 1         |           | 1 - | YAME WA      | thinly bedded, (ML).  | spoon sampling to 12.0 feet and                                       |
|           |              |          |           | 1         | 1   | (8.11.00.17) |   | 5.0-foot interval sampling to en<br>of boring at 27.0 feet. Bore      |
|           | -            |          | 1         |           |     |              |   | hole was backfilled with cuttings                                     |
|           |              |          |           |           |     |              |   | to ground surface upon  |
| L m       |              |          |           |           |     |              |   | completion.   |
|           |              |          |           | 17.11     |     |              |   |   |
|           |              |          |           | -         |     | 4600         | - 1   |   |
|           |              |          |           | -         |     | MARKE        | 20.0  |   |



Soil and Hydrogeologic Investigations • Wetland Delineations 1091 Jamison Road . Elma, NY 14059

13E96b

CLIENT

HOLE NO. B-1-20 SURF. ELEVATION

Buffalo Outer Harbor Phase 2 PROJECT

LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY

Ravi Engineering & Land Surveying, PC

DATE STARTED 07/06/20 COMPLETED 07/06/20

BLOWS ON DEPTH SAMPLER IN FT

| SN | 0/<br>6 | 6/<br>12 | 12/<br>18 | 18/<br>24 | N  | LITH                                    | DESCRIPTION AND CLASSIFICATION                                      | WATER TABLE AND REMARKS |
|----|---------|----------|-----------|-----------|----|---|---|-------------------------|
| 8  | 1       |          |           |           | ~  | 0 00 0                                  | Entropolis moiet to seet dock grow                                  |                         |
| 19 |         | 2        | -         |           | 14 | 0 00                                    | Extremely moist to wet dark gray (SANDY-SILT) with 5 to 15% gravel, |                         |
|    |         |          | 2         |           | 4  | • | little sand, very loose, thinly bedded,                             |                         |
|    |         |          |           | 3         |    | 0 0 0 0                                 | (ML).   |                         |
| -  |         |          |           | 3         | 1  |   | 7-27  |                         |
|    |         |          |           |           |    | 4                                       |   |                         |
|    |         |          |           |           |    | 0 .0 .                                  |   |                         |
|    |         |          |           |           |    |   |   |                         |
|    |         |          | -         |           |    |   |   |                         |
| -  | _       |          |           |           |    | 0 00 0                                  | grades downward to 25.0   |                         |
|    | 0.7     |          |           | _         |    | V.0V.                                   | Wet gray very gravelly (SAND) with 40                               |                         |
| 9  | 12      | 11 22 1  |           | -         |    | 0.00                                    | to 60% gravel, trace silt, compact,                                 |                         |
| 20 |         | -11      | - 10      | -         | 21 | 0.00.                                   | stratified, (SW), (GW).   |                         |
| -  |         | -        | 10        | 1.7       | 1  | 2000                                    | 27.0  |                         |
|    |         |          |           | 24        |    | V.av.                                   |   |                         |
| -  |         |          |           |           |    | 10.7                                    | Boring completed at 27.0 feet.                                      |                         |
| -  |         |          |           |           | 4  |   |   |                         |
|    | -       | -        | -         |           |    |   |   |                         |
| -  |         |          |           | -         | -  |   |   |                         |
| _  |         |          |           |           |    | 1                                       |   |                         |
| -  |         |          | -         |           |    |   |   |                         |
|    |         |          |           |           |    | 1                                       |   |                         |
|    | -       | -        | -         |           | 1  |   |   |                         |
| _  |         | -        | -         | -         | -  |   |   |                         |
|    |         |          | _         |           | -  |   |   |                         |
|    |         |          |           |           |    |   |   |                         |
|    |         |          | -         |           |    |   |   |                         |
|    |         |          | -         |           |    |   |   |                         |
|    |         |          |           |           | 1  |   |   |                         |
|    |         |          |           |           | 1  |   |   |                         |
|    |         |          |           |           | 1  |   |   |                         |
|    | 100     |          |           |           |    |   |   |                         |
| 1  | Til     |          |           |           |    |   |   |                         |
|    |         |          |           |           |    |   |   |                         |
|    | V-1     |          |           |           |    |   |   |                         |
|    |         |          |           | ==        |    |   |   |                         |
|    | pt w    |          |           |           |    |   |   |                         |
|    | 11 =    |          |           |           | ]  |   |   |                         |
|    |         |          |           |           | ]  |   |   |                         |
|    |         |          |           |           | 1  |   |   |                         |
|    |         |          |           |           | 1  | -                                       |   |                         |



Soil and Hydrogeologic Investigations • Wetland Delineations 1091 Jamison Road • Elma, NY 14059

13E96b

HOLE NO. B-2-20 EDI@earthdimensions.com

SURF. ELEVATION \_

PROJECT Buffalo Outer Harbor Phase 2

LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC DATE STARTED 07/0

DATE STARTED 07/07/20 COMPLETED 07/07/20

| DEPTH | BLOWS ON |
|-------|----------|
| IN FT | SAMPLER  |

| SN  | 0/<br>6 | 6/   | 12/<br>18 | 18/<br>24 | N   | LITH        | DESCRIPTION AND CLASSIFICATION  | WATER TABLE AND REMARKS  |
|-----|---------|------|-----------|-----------|-----|-------------|---|--|
| 1   | 5       |      |           |           |     | *********** | Malat bassalah mass (STLTV SAND)  | Sandy topsoil fill with little silt                                |
| 10  |         | 6    |           |           | 1.0 |             | Moist brownish gray (SILTY-SAND)<br>topsoil fill with 3 to 7% gravel, little silt | and organic matter to 0.8 feet                                     |
|     |         |      | 8         |           | 14  | 0000        | and organic matter, compact, massive  | over coarse silty soil fill with                                   |
|     |         |      |           | 11        |     | 0 0         | soil structure, (SM).   | little gravel and sand, trace slag                                 |
| 2   | 11      |      |           |           | 1   | 0 . 60 . 6  | 0.8   | to 2.0 feet over sandy soil fill                                   |
| 17  |         | 12   |           | TI        | 100 | 0 60 6      | Moist dark brown (SANDY-SILT) fill  | with trace to little gravel and sill                               |
| -   |         | 1    | 8         |           | 20  | 9. 9.       | with 10 to 20% gravel, little sand, trace   | trace slag to 6.0 feet over  |
|     |         |      | -0        | 10        | 1   | 0 60 6      | slag, compact, massive soil structure,  | coarse silty soil fill with little<br>sand and gravel, trace slag, |
| 3   | 7       |      |           | 10        |     |             | (ML).   | clay, and wood fiber to 12.0 feet                                  |
| 19  |         | 5    |           |           |     |             | 2.0   | over sandy soil fill with little silt                              |
| 18  | -       | 2    | _         |           | 8   | 0 60 6      |   | and gravel, trace concrete   |
| _   |         | -    | _3_       | 1         | 1   |             | Moist black (SILTY-SAND) fill with 5  | debris to 13.5 feet over clayey                                    |
| 104 | 17.2    |      |           | _5_       | 1   | 0.00        | to 15% gravel, trace to little silt, trace slag, compact, massive soil structure, | slack water sediment with trace                                    |
| 15  | 8       |      |           |           | -   | 0000        | (SM).   | sand to 25.0 feet over water                                       |
| 15  | -       | 6    | 3.0       |           | 18  | 000         | 6.0   | sorted and deposited sand with                                     |
|     |         | -    | 12        |           |     | 000         |   | trace clay to end of boring.                                       |
| _   | -       | -    |           | -5        |     | 0 00        | Moist to extremely moist, wet below   |  |
| 5   | 6       | -    | _         | _         |     | 0000        | 10.0 feet, dark gray (SANDY-SILT) fill  |  |
| 10  |         | 6    |           | -         | 9   | 0000        | with 10 to 20% gravel, little sand, trace slag, clay, and wood fiber, compact,    |  |
|     |         | -    | 3         | 10.77     |     | 000         | massive soil structure, (ML).   |  |
|     |         |      |           | 5         |     | V. O. U. C. | massive son structure; they   |  |
| 6   | 3       |      |           |           | -   | 0 00        |   |  |
| 6   |         | 6    | 50.00     |           |     | 0.0.0       |   | ¥ Water level at 11.0 feet below                                   |
| -1  |         |      | 50/3      |           |     | 0000        | 12.0  | ground surface upon completion.                                    |
| -   |         | -    |           | -         | 1   | . 0 . 0     | Wet gray to dark gray (SILTY-SAND)  | Note: Advanced bore hole with 3                                    |
| 7   | 3       |      | -         | _         | -   | 0000        | fill with 10 to 20% gravel, little silt,  | 1/4" ID x 7" OD hollow stem augi                                   |
| 5   | -       | _11_ | 2.010     | _         | 1   | 0000        | trace concrete debris, very dense,  | casing with continuous split                                       |
| -   | -       | -    | 50/1      | -         | 1   | 0.0.        | massive soil structure, (SM).   | spoon sampling to 16.0 feet and                                    |
| -   |         |      | -         |           | -   | =====       | 13.5  | 5.0-foot interval sampling to en                                   |
| 8   |         | -    | -         |           |     |             |   | of boring at 27.0 feet. Bore                                       |
| 18  |         | 1    |           | -         | - 2 | ====        | Extremely moist gray (SILTY-CLAY) with trace sand, very soft to soft,             | hole was backfilled with cuttings<br>to ground surface upon        |
|     |         | -    | 1         | -         |     | <u> </u>    | thinly laminated with very thin coarse  | completion.  |
|     | 11      |      |           | 1         |     |             | silt lenses, (CL).  | completion.  |
|     |         |      |           |           |     | ====        | 201 (2010) 1220   | WH: Sampler penetration with                                       |
|     | 1       |      | _         | -         |     | F-F-F-F     |   | weight of rods and hammer.   |
|     |         |      |           |           |     |             |   | A to collin south involutional                                     |
|     | ( T = 1 |      |           |           |     | ====        |   |  |
|     |         |      |           |           |     | I-TE-I      |   |  |
| 1   |         |      | /         |           |     |             |   |  |
|     |         |      |           |           |     |             |   |  |
|     |         |      |           |           |     | <u> </u>    |   |  |



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PROJECT Buffalo Outer Harbor Phase 2

LOCATION Fuhrmann Bouleyard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/07/20 COMPLETED 07/07/20

| SN    | 0/<br>6 | 6/<br>12 | 12/<br>18 | 18/<br>24 | N | LITH       | DESCRIPTION AND CLASSIFICATION   |       | WATER TABLE AND REMARKS |
|-------|---------|----------|-----------|-----------|---|------------|--|-------|-------------------------|
| 9     | WH      |          |           |           |   | 72.42.2    | E. John John John J. College   |       |                         |
| 24    | MIT     | -        |           |           | 1 | ====       | Extremely moist gray (SILTY-CLAY)  |       |                         |
| 24    |         |          | 37.       |           | 2 | T- 22-2    | with trace sand, very soft to soft,  |       |                         |
| -     |         |          | 1         |           |   | =-=-       | thinly laminated with very thin coarse   |       |                         |
|       |         |          |           | 2         |   | F-F-F      | silt lenses, (CL).   |       |                         |
|       |         |          |           |           |   |            |  |       |                         |
| 1     | 5       |          |           |           |   |            |  | - 1   |                         |
|       |         |          |           | - 1       |   | Z-2Z-2     |  | - 4   |                         |
| -     |         |          |           | 75-1      |   |            |  |       |                         |
|       |         |          | -         | -         | 1 | <u> </u>   |  | 196.5 |                         |
|       |         |          |           |           |   |            | grades downward to   | 25.0  |                         |
| 162   |         |          |           | -         | 1 | 53 554     | Wet gray (SAND) mostly fine size,  | 771   |                         |
| 10    | 2       | 1        |           | -         |   | 1,117      | trace silt, loose, thinly bedded, (SP).  |       |                         |
| 20    |         | 4        |           |           | 8 | 1,14,15,17 | trace sur, loose, trining bedded, (or ).   | 22.24 |                         |
|       |         |          | 4         |           |   | 100        |  | 27.0  |                         |
|       |         |          |           | 5         |   | 9779 957   | The state of the s | -     |                         |
| 1     | -       |          |           |           | 1 |            | Boring completed at 27.0 feet.   |       |                         |
|       |         |          |           |           |   |            |  |       |                         |
|       |         |          |           |           |   |            |  |       |                         |
|       |         |          |           |           | 1 |            |  |       |                         |
|       |         |          |           |           | 1 |            |  | 1     |                         |
|       |         | -        |           |           | 1 |            |  | 1     |                         |
|       |         |          |           |           |   |            |  |       |                         |
|       |         |          | -         |           | 1 |            |  |       |                         |
| _     | -       | -        | -         | -         |   |            |  |       |                         |
|       | -       |          |           | -         |   |            |  |       |                         |
|       |         |          |           |           | 1 |            |  |       |                         |
|       |         |          |           |           |   |            |  |       |                         |
|       |         |          |           |           | ] |            |  |       |                         |
|       | -       |          |           |           |   |            |  | - 1   |                         |
|       |         |          |           |           |   |            |  | l l   |                         |
| -     | -       |          |           |           |   |            |  |       |                         |
| -     |         |          |           |           | 1 |            |  |       |                         |
|       | 15      |          |           |           | 1 |            |  |       |                         |
|       |         |          |           |           | 1 |            |  |       |                         |
| -     |         |          | -         |           | 1 |            |  |       |                         |
| -     | +       |          |           | -         | - |            |  |       |                         |
| _     | -       | -        | -         |           |   |            |  |       |                         |
|       |         |          |           |           |   |            |  |       |                         |
|       | 11 0    |          |           |           |   |            |  |       |                         |
|       |         |          |           |           |   |            |  |       |                         |
| 7.3.3 |         |          |           |           |   |            |  | 1     |                         |
|       |         |          |           |           | 1 |            |  |       |                         |
| _     | -       | 1        | -         |           | 1 |            |  |       |                         |



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SURF, ELEVATION

PROJECT Buffalo Outer Harbor Phase 2

LOCATION Euhrmann Boulevard

City of Buffalo, Erie County, NY

Lauring Carrier Carrier

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/06/20 COMPLETED 07/06/20

| SN<br>REC | 0/<br>6 | 6/<br>12 | 12/<br>18 | 18/<br>24 | N    | LITH      | DESCRIPTION AND CLASSIFICATION  | WATER TABLE AND REMARKS  |
|-----------|---------|----------|-----------|-----------|------|-----------|---|--|
| 1         | 17      |          |           |           |      | ٠٠٠٥٠٠    | Gray asphalt pavement.  | Asphalt pavement to 0.3 feet                                   |
| 12        | 110     | 10       |           | -         | 18   | 0.0.0     | 0.3   | over sandy soil fill with some                                 |
| 1         |         |          | .8        |           | 10   | O O.      |   | gravel, trace slag, concrete                                   |
|           |         |          |           | 11        |      | 0.0.0     | Moist gray to dark gray gravelly  | debris, and brick fragments to 4.                              |
| 2         | 7       |          |           | -         |      | 0.0.0     | (SAND) fill with 20 to 40% gravel,<br>trace silt, slag, concrete debris and | feet over silty slack water<br>sediment with trace sand, clay, |
| 10        |         | 10       |           |           | 18   | 0.00      | brick fragments, compact, massive soil                                      | and organic matter to 6.0 feet                                 |
|           |         |          | 8         |           | 1.0  | 0.0.0     | structure, (SW).  | over silty slack water sediment                                |
| _         | -       |          |           | 5         |      | 0.0.0     | 4.1   | with little to some clay, trace                                |
| 3         | 4       |          |           |           |      |           | Extremely moist dark gray (SILT)  | sand to 15.0 feet over clayey                                  |
| 23        |         | 2        | -         |           | 4    | Value 1   | trace organic matter, sand, and clay,                                       | slack water sediment with trace                                |
|           |         |          | 2         |           | 1.59 |           | loose, thinly bedded. (ML).   | sand to 21.2 feet over water<br>sorted and deposited sand with |
|           |         |          | 1 200     | 2         |      | 14114166  | grades downward to 6.0  | trace silt to 30.0 feet over                                   |
| 4         |         |          | 11        | 1 1 1 1   |      |           |   | clayey lake sediment with trace                                |
| 20        | 4 11 11 | 1        |           |           | 2    | 5         | Extremely moist gray (CLAYEY-SILT) with little to some clay, trace sand,    | sand to 65.5 feet over coarse                                  |
|           |         | 1        | 1         |           | -    |           | very loose, thinly laminated with very                                      | silty glacial till with little sand                            |
|           |         |          |           | 1         |      |           | thin coarse silt lenses, (CL).  | and gravel to auger refusal.                                   |
| 5         | 1       |          |           |           |      | 7.7.      | England as adjust to by no  | Note: Advanced bore hole with 3                                |
| 11        |         | 1        | -         | 11 7 7    | 2    |           |   | 1/4" ID x 7" OD hollow stem auge                               |
|           | -       | 1        | 1         |           | -    | 三三        |   | casing with continuous split                                   |
|           |         |          |           | 1         |      | : dinastr | V   | spoon sampling to 12.0 feet and                                |
| 6         | 1       |          |           |           |      |           | <u> </u>  | 5.0-foot interval sampling to                                  |
| 13        |         | 1        |           |           | 2    | ===       | i l   | auger refusal at 66.3 feet. Bore                               |
|           | 4       |          | 1         | -         | 7    |           | 1 A II  | hole was backfilled with cuttings<br>to ground surface upon    |
|           | - 1     |          | 1 114     | 1         |      |           |   | completion.  |
|           |         |          | 11 11     |           |      | =         |   | COMPICTION.  |
| -         | 11      |          |           |           |      |           |   |  |
|           | 1       |          |           |           |      |           |   |  |
|           |         |          |           |           |      | ***       |   |  |
|           | 1 -7    |          |           | _         |      |           | grades downward to 15.0   |  |
|           | 1. =    |          |           |           |      |           |   |  |
| 7         | 1       | -        |           |           |      |           | Wet gray (SILTY-SAND) with mostly   |  |
| 14        | 1.4     | 2        |           |           | 5    |           | fine size sand, some silt, compact,   |  |
|           | 1       |          | 3         |           | 1    |           | thinly bedded, (SM).  |  |
|           | 1-27    |          |           | 3         | 1    |           |   |  |
|           | 1       |          |           |           | 1    |           |   |  |
|           | 5=      |          |           | 1 0       |      |           |   |  |
|           | _==     |          |           |           |      |           |   |  |
| 1 = 1     | 1       |          |           |           |      |           |   |  |
|           |         |          |           | 1 1       |      |           | C. C                                    |  |
| 1. 11.    | 100     |          |           |           |      | 74774     | grades downward to 20.0   |  |



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PROJECT Buffalo Outer Harbor Phase 2

LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY

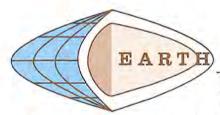
COOK TON CANTAGE CASE

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/06/20 COMPLETED 07/06/20

SURF. ELEVATION

| SN<br>REC | 0/<br>6 | 6/ | 12/<br>18 | 18/<br>24 | N  | LITH        | DESCRIPTION AND CLASSIFICATION  | WA  | TER TABLE AND REMARKS |
|-----------|---------|----|-----------|-----------|----|-------------|---|-----|-----------------------|
| 8         | 2       |    |           |           |    | Z-7 Z-Z-7 Z | Extremely moist gray (SILTY-CLAY)   |     |                       |
| 23        |         | 1  |           |           | ,  | ====        | with trace sand, firm, thinly laminated                                   |     |                       |
| 1.2       |         |    | 2         |           | 3  | T- T- T     | with very thin coarse silt lenses, (CL).                                  |     |                       |
| -         |         |    |           | 2         |    |             |   | .2  |                       |
|           |         |    |           | 12.1      |    | 133,733     | L   | 7)  |                       |
|           |         |    | -         | 7-7       |    | 50 0 0 3    | Wet gray (SAND) mostly fine size,<br>trace silt, compact with tendency to |     |                       |
|           |         |    |           |           |    | 00,000      | liquefy when disturbed, thinly bedded,                                    |     |                       |
| -         |         |    |           |           | 1  | 12.0        | (SP).   |     |                       |
|           |         |    |           |           | 1  | 15, 131     | 12.5  |     |                       |
|           |         |    | -         |           | 1  |             |   |     |                       |
| 9         | 5       |    |           |           | 1  |             |   |     |                       |
| 24        | -5      | 7  |           |           | 1  | 10' 11'     |   |     |                       |
|           |         | -  | 5         |           | 12 | Sent Sent   |   |     |                       |
|           |         |    | -         | 4         | 1  | 12 4 2 2    |   |     |                       |
|           |         |    |           | -4        | 1  | 44 - 44     |   |     |                       |
|           |         |    |           |           | 1  | 100         |   |     |                       |
|           |         |    |           |           | 1  | 133 T 15 K  |   |     |                       |
| _         |         |    |           |           | 1  | 20 2 2 9    |   |     |                       |
|           |         |    |           |           | 1  |             |   | 7.  |                       |
|           |         | -  |           |           | 1  | 1257.757    | grades downward to  | 0.0 |                       |
| 10        | 6       |    |           |           | 1  |             | Moist gray (SILTY-CLAY) with trace  |     |                       |
| 10        | 6       | 7  | -         |           |    |             | sand, firm to stiff, thinly laminated with                                |     |                       |
| 10        | _       | +- | -         |           | 10 | 745745      | very thin coarse silt lenses, (CL).                                       |     |                       |
| -         | -       | -  | 3         | 3         | 1  |             |   |     |                       |
|           | 1       | -  | -         | 3         | 1  |             |   |     |                       |
| -         | -       |    | +         |           | -  | =====       |   |     |                       |
| -         | -       | -  | +         | -         | 1  |             |   |     |                       |
| -         | -       | -  | -         | -         | 1  |             |   |     |                       |
| -         | -       | -  | -         |           | 1  | <u> </u>    |   |     |                       |
| -         | -       | -  |           |           | +  |             |   |     |                       |
| -         | -       | -  | -         |           | +  |             |   |     |                       |
| 11        | 5       |    |           |           | +  | <u> </u>    |   |     |                       |
| 15        | -       | 2  |           | -         | 6  | ====        |   |     |                       |
| -         | -       | -  | 4         |           | 1  |             |   |     |                       |
|           | -       | -  | -         | 4         | -  |             |   |     |                       |
| -         |         | -  | -         |           | 4  |             |   |     |                       |
|           |         |    | -         |           |    |             | 17 1  |     |                       |
|           |         | -  | -         | -         |    | =====       | l .   |     |                       |
| 1 1       |         | -  |           |           |    |             |   |     |                       |
|           |         |    |           |           |    |             |   |     |                       |
|           |         |    |           |           |    |             |   |     |                       |



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PROJECT Buffalo Outer Harbor Phase 2

LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY

Ravi Engineering & Land Surveying, PC

DATE STARTED 07/06/20 COMPLETED 07/06/20

DEPTH BLOWS ON IN FT SAMPLER

CLIENT

| SN | 0/<br>6 | 6/<br>12 | 12/<br>18 | 18/<br>24 | N    | LITH        | DESCRIPTION AND CLASSIFICATION   | WATER TABLE AND REMARKS          |
|----|---------|----------|-----------|-----------|------|-------------|--|----------------------------------|
| 12 | 4       |          |           | 17.11     | -    |             | Malat area (CT) TV CI AVA site trans   |                                  |
| 24 |         | 2        |           | 1 4 4     |      | ====        | Moist gray (SILTY-CLAY) with trace   |                                  |
| 24 | -       | _        |           |           | 5    | <u> </u>    | sand, firm to stiff, thinly laminated with very thin coarse silt lenses, (CL). |                                  |
| -  | -       | -        | _3_       |           | Peri |             | very thin coarse sitt lenses, (CL).  |                                  |
|    |         |          |           | _3_       |      | <u> </u>    |  | ¥ Water level at 42.3 feet below |
|    |         |          |           | -         |      |             |  | ground surface at completion.    |
| 1  | 100     |          |           |           |      |             |  | ground surface at completion.    |
|    |         |          |           |           |      | <u> </u>    |  | WR: Sampler penetration with     |
|    | 1       |          |           |           |      |             |  | weight of rods,                  |
|    |         |          |           |           |      | ======      |  | Weight of Toda.                  |
|    |         |          |           | -         |      |             |  | WH: Sampler penetration with     |
| 12 |         | -        | _         |           |      |             |  | weight of rods and hammer        |
| 13 | _5_     |          | -         | -         |      | 74 55 4 5   |  | insight of Food and Hamilton     |
| 15 |         | 4_       | -         | -         | 10   |             |  |                                  |
|    |         |          | 6         |           |      |             |  |                                  |
|    |         |          |           | 8         |      |             |  |                                  |
|    |         |          | 7 100     | -         |      | =-=-        |  |                                  |
|    |         |          |           |           |      | I + I I - I |  |                                  |
|    |         |          | 100       |           |      |             |  |                                  |
| -  |         |          |           | 7         | 1    |             |  |                                  |
|    |         |          |           |           |      |             |  |                                  |
| -  |         |          |           |           | 1    |             |  |                                  |
| -  |         |          | -         |           |      | <u> </u>    |  |                                  |
| 14 | WR      |          |           |           |      |             |  |                                  |
| 15 | 100     | WR       |           |           | <1   |             |  |                                  |
|    | 5       |          | WH        |           |      | <u> </u>    |  |                                  |
|    |         |          |           | WH        |      |             |  |                                  |
|    |         |          |           |           |      | <u> </u>    |  |                                  |
|    |         |          |           |           | 1    |             |  |                                  |
|    |         |          |           |           | 1    | ====        |  |                                  |
|    |         | -        | -         |           | 1    | <u> </u>    |  |                                  |
|    | -       | 1        |           |           | 1    |             |  |                                  |
| -  | -       | -        | 7.75      | -         | 1    |             |  |                                  |
| -  |         |          |           |           | -    |             |  |                                  |
| 15 | WR      |          |           |           | 1    | ====        |  |                                  |
| 24 |         | WR       |           | 1         | <2   | <u> </u>    |  |                                  |
|    |         | 110      | 1         |           |      |             |  |                                  |
|    |         |          | -         | 1         | 1    |             |  |                                  |
|    |         |          |           |           | 1    | E           |  |                                  |
|    |         |          |           |           | 1    | = = = = =   |  |                                  |
|    | -       |          |           |           | 1    | <u> </u>    |  |                                  |
| -  | -       | -        | -         | -         | 1    |             |  |                                  |
| -  | -       | -        | -         | -         | -    |             |  |                                  |
|    |         |          | -         |           | 1    | =====       |  |                                  |
| -  |         |          |           |           |      |             |  |                                  |



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SURF. ELEVATION

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LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/06/20 COMPLETED 07/06/20

DEPTH BLOWS ON IN FT SAMPLER

13E96b

| SN  | 6  | 6/ | 12/<br>18 | 18/<br>24 | N    | LITH     | DESCRIPTION AND CLASSIFICATION   | WATER TABLE AND REMARKS      |
|-----|----|----|-----------|-----------|------|----------|--|------------------------------|
| REC | 9  | 14 | 10        | -4        | 17.6 |          |  |                              |
| 16  | 4  |    |           |           |      |          | Moist gray (SILTY-CLAY) with trace   | WH: Sampler penetration with |
| 24  | -  | 2  | 7-3-1     |           | <3   |          | sand, firm to stiff, thinly laminated with   | weight of rods and hammer.   |
|     |    |    | WH/12     |           |      |          | very thin coarse silt lenses, (CL).  |                              |
|     |    |    | h. 1 h 1  |           |      |          | The state of the s |                              |
|     |    |    |           |           |      | =-=-     |  |                              |
| 1   |    |    | 2         |           | 1    | FFFFF    |  |                              |
| -   |    |    |           | 7         | 1    |          |  |                              |
|     |    |    |           |           |      | ====     |  |                              |
|     |    |    |           |           |      | <u> </u> |  |                              |
| -   |    |    |           |           |      |          |  |                              |
| 700 |    |    |           | -         |      |          | grades downward to 65.5  |                              |
| 17  | 2  |    | -         |           |      | 0 0      | Maria and Canada St. The Hall to to  |                              |
| 6   |    | 6  | 028.3     |           |      | 0000     | Moist gray (SANDY-SILT) with 10 to 20% gravel, little sand, very dense,  |                              |
| -   |    | _  | 50/1      | -         |      |          | massive soil structure, (ML).  |                              |
|     |    |    |           | -         |      |          | 66.3   |                              |
|     |    | _  |           | -         |      |          |  |                              |
|     |    |    |           |           |      |          | Advanced augers to refusal at 66.3 feet.   |                              |
| -   | 4  |    | 100       |           |      |          |  |                              |
|     |    |    |           |           |      |          |  |                              |
|     |    |    |           |           |      |          |  |                              |
|     |    |    |           | 1         |      |          |  |                              |
|     |    |    |           |           |      |          |  |                              |
|     |    |    |           |           | ]    | 1 1      |  |                              |
|     |    |    |           |           | 1    |          |  |                              |
|     |    |    |           |           | 1    |          |  |                              |
|     |    |    |           |           | 1    |          |  |                              |
|     |    |    |           |           | 1    |          |  |                              |
|     |    |    |           |           | 1    |          |  |                              |
| -   | 1  |    |           |           |      |          |  |                              |
| -   | -  |    |           | -         | 1    |          |  |                              |
| _   |    | -  |           |           | 1    |          |  |                              |
|     | -  | -  | -         |           | -    |          |  |                              |
|     | -  | -  |           |           |      |          |  |                              |
| _   | 1/ | -  |           |           |      |          |  |                              |
| -   | -  | -  |           |           | 1    |          |  |                              |
|     | -  |    |           |           |      | 1 1      |  |                              |
| -   |    |    |           |           |      |          | 1  |                              |
|     |    |    |           |           |      |          |  |                              |
|     |    |    |           |           |      |          |  |                              |
|     |    |    |           |           |      |          |  |                              |
|     |    |    | 1         | 1         |      |          |  |                              |
|     | 1  |    |           | -         | 1    | 4        |  |                              |



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SURF, ELEVATION

PROJECT Buffalo Outer Harbor Phase 2

LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY

Ravi Engineering & Land Surveying, PC

DATE STARTED 07/01/20 COMPLETED 07/02/20

| SN       | 0/<br>6   | 6/<br>12 | 12/<br>18 | 18/<br>24 | N    | LITH             | DESCRIPTION AND CLASSIFICATION   | WATER TABLE AND REMARKS  |
|----------|-----------|----------|-----------|-----------|------|------------------|--|--|
| 1        | 4         | La la    |           | -         | ) 1  | *********        | CANDY CLUT   | Coarse silty topsoil fill with little                                |
| 18       |           | 8        |           | 1         |      | 0.0.0            | Moist light brown (SANDY-SILT) topsoil fill with little sand and organic   | sand and organic matter to 0.4                                       |
|          |           |          | 15        |           | 23   | 0.00             | matter, loose, massive soil structure,   | feet over sandy soil fill with some                                  |
|          |           |          |           | 10        |      | 0.00             | (ML).  | gravel, little slag, trace silt and                                  |
| 2        | 19        |          | - 1       |           |      | 0:00             | 0.4  | brick fragments to 4.0 feet over                                     |
| 14       | IM        | 29       |           |           | 16   | 0.0.0            |  | sandy soil fill with some gravel,                                    |
| -17      |           | 28       | - 11      |           | 40   | 0.00.            | Moist dark gray to gray gravelly   | trace to little silt to 6.9 feet                                     |
|          |           |          |           | 8         |      | 0.0.0            | (SAND) fill with 20 to 40% gravel, little slag, trace silt and brick fragments,  | over coarse silty soil fill with<br>little sand, trace gravel to 9.0 |
| -        | 10        |          |           | -8-       |      | 0000             | stratified, massive soil structure,  | feet over coarse silty soil fill wit                                 |
| _3<br>12 | _19_      | 10       |           |           | 100  | 0000             | (SW), (GW).  | little gravel and sand, trace clay                                   |
| 12       |           | _13_     |           |           | 30   | 0000             | 4.0  | and brick fragments to 14.0 feet                                     |
|          |           |          | _17       | 757       |      | 0 00             |  | over mostly asphalt remnants/ta                                      |
|          |           |          |           | 10        | 1    | 0000             | Extremely moist brown gravelly   | residue to 15.0 feet over water                                      |
| 4        | 9_        | _        |           | _         |      | 10000            | (SILTY-SAND) fill with 20 to 40% gravel, trace to little silt, compact,  | sorted and deposited sand with                                       |
| 12       |           | 3        |           |           | 6    | 0 00 0           | massive soil structure, (SM).  | trace silt to 20.7 feet over water                                   |
|          |           |          | 3_        | _         | 000  | 9 6              | 6.9  | sorted and deposited sand with                                       |
| -        |           |          | 100       | 2         |      | 6 6              | 6.9  | little gravel, trace to little silt to                               |
| 5        | 5         |          |           |           |      | 0. 0 0           | Extremely moist to wet gray  | 25.0 feet over water sorted and<br>deposited sand with trace grave   |
| 13       | 1 H. T. 1 | 1        |           |           | 7    | 4'               | (SANDY-SILT) fill with 3 to 7% gravel.   | to 30.0 feet over clayey lake  |
|          |           |          | 6         |           | 1    | 0000             | little sand, loose, massive soil   | sediment with trace sand and   |
|          |           |          |           | 8         |      | 0 00             | structure, (ML).   | gravel to 35.0 feet over clayey                                      |
| 6        | 5         |          |           |           |      | V. C. J. M. C. I | 9.0  | lake sediment with trace sand to                                     |
| 14       |           | 4        |           |           | 7    | 0 00             | Extremely moist gray (SANDY-SILT)  | 45.0 feet over silty slack water                                     |
|          | -         |          | 3         |           | 1 '  | K. O. O. U.      | fill with 10 to 20% gravel, little sand,   | sediment with trace sand and   |
|          |           |          |           | 3         | 1    | 0 0              | trace clay and brick fragments, loose,   | clay to 50.0 feet over clayey  |
| 7        | 3         |          |           | -×-       | 1    | V. 1.) XJ. 1.1   | massive soil structure, (ML).  | lake sediment with trace sand to                                     |
| 21       |           | 4        |           |           | 1    | 0 00             | The state of the s | 64.2 feet over limestone bedroo<br>to end of coring.                 |
| -        |           | 1        | 6         |           | 10   | 0 13 13 13       | 17.5   | to end of comig.   |
|          | -         |          | · O       | 6         |      | 0,0              | 14.0   | Note: Advanced bore hole with :                                      |
|          | 20        |          |           | -         | 1    |                  | Mostly asphalt remnants and tar  | 1/4" ID x 7" OD hollow stem aug                                      |
| 18       | 20        | 0.1      |           | -         | 1125 |                  | residue.   | casing with continuous split   |
| 10       |           | 21       | -         | -         | 28   |                  | 15.0   | spoon sampling to 16.0 feet and                                      |
| -        |           | -        | 7         | 1         | 1    | 3.55             |  | 5.0-foot interval sampling to  |
| -        | -         | -        | -         | 8         | -    | 100000           | Wet black (SAND) mostly fine to  | 64.2 feet. Continued below with                                      |
| -        |           |          |           |           |      | 1404(914)        | medium size, trace silt, compact, thinly   | a NG-2 size double tubed   |
|          |           | -        |           | -         |      | 140000           | bedded, (SP).  | wireline core barrel with diamond<br>bit to end of coring at 74.2    |
| -        |           |          | -         |           | 1    | 140:234          |  | feet. Bore hole was backfilled                                       |
|          |           |          | 1 =       | -         | 1    |                  |  | with cuttings to ground surface                                      |
|          | 17        |          |           | -         | 1    | 1.00             |  | upon completion.   |
|          |           |          |           |           |      | 130000           |  |  |
|          |           |          |           | 1         | 1    | (3)3:153:        |  |  |
|          |           |          |           | 1         |      |                  |  |  |



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PROJECT Buffalo Outer Harbor Phase 2

LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/01/20 COMPLETED 07/02/20

| SN         | 0/ | 6/  | 12/  | 18/  | 100 | 1 2211      | DESCRIPTION AND OLASSISISATION   | WATER TABLE AND DEMARKS          |
|------------|----|-----|------|------|-----|-------------|--|----------------------------------|
|            | 6  | 12  | 18   | 24   | N   | LITH        | DESCRIPTION AND CLASSIFICATION   | WATER TABLE AND REMARKS          |
| REC        |    | 127 | 7.00 |      |     |             |  |                                  |
| 9          | 7  |     |      |      | 1.4 | 15355       | Wet black (SAND) mostly fine to  |                                  |
| 17         |    | 7   |      |      | 18  | 0000        | medium size, trace silt, compact, thinly   | G NAVELEN AUTORISANON            |
|            |    |     | - 11 |      |     | 600         | bedded, (SP).  | ¥ Water level at 21.3 feet below |
| -          |    |     |      | 12   |     | 0000        | grades downward to 20.7  | ground surface at completion.    |
|            |    |     |      |      |     | 0 0         |  |                                  |
|            |    |     |      |      |     | 0000        | Wet gray (SILTY-SAND) with 10 to   |                                  |
| -          |    |     |      |      |     | 0000        | 20% gravel, trace to little silt,  |                                  |
| -          |    | _   | -    |      |     | 0 0         | compact, stratified, (SM).   |                                  |
| -          |    |     |      | -    |     | 0000        |  |                                  |
|            |    | 4   |      |      |     | 0 00 0      | grades downward to 25.0  |                                  |
| - 1        |    | -   | 1 1  |      |     | 00.00       |  |                                  |
| 10         | 2  |     |      |      |     | 4. 9        | Wet dark gray (SAND) with 3 to 7%  |                                  |
| 20         | h  | 2   |      |      | 7   | 3 5         | gravel, loose, thinly bedded, (SW).  |                                  |
| 100        |    | 100 | 3    |      | 1   | 9           | 200  |                                  |
|            |    |     | -    | 5    |     | 0           |  |                                  |
|            |    | -   |      | 9    |     | 9 9         |  |                                  |
|            | -  |     |      |      |     | .44.        |  |                                  |
| -          |    | -   | -    | -    |     | 8           |  |                                  |
|            |    |     |      |      |     | 6 9 .       |  |                                  |
|            |    |     | -    |      |     | o b         |  |                                  |
|            |    |     |      |      |     | 1           | grades downward to 30.0  |                                  |
| J. C. Sale |    |     |      |      |     | 4. 9        | grades downward to 30.0  |                                  |
| 11         | 11 |     |      |      | 1   | 6_06_0      | Moist to extremely moist gray  |                                  |
| 14         | -  | 9   |      | -    | 26  |             | (SILTY-CLAY) with 3 to 7% gravel,  |                                  |
| 19         |    | 9_  | 10   |      | 21  |             | trace sand, very stiff, thinly laminated   |                                  |
|            | -  |     | 12   | 1762 | -   | o           | with very thin coarse silt lenses, (CL).   |                                  |
| -          | -  | -   | _    | 13   | -   |             | Leave del apprendiction of the control of the contr |                                  |
|            |    |     | _    |      |     | 8 _ 8 _ a   |  |                                  |
|            |    |     |      |      |     | 88          |  |                                  |
|            |    |     |      |      |     | I 4 I I 4 I |  |                                  |
|            |    |     |      |      |     | 8 8 0       |  |                                  |
| - 2        |    |     |      |      | 1   |             | category communication 2023  |                                  |
|            |    |     |      |      | 1   | 4 - 4       | grades downward to 35.0  |                                  |
| 10         | 2  |     |      |      | 1   |             | Moist gray (SILTY-CLAY) with trace   |                                  |
| 12         | 12 | -   | 1    |      |     |             | sand, firm, thinly laminated with very   |                                  |
| 22         | -  | 3   |      |      | - 5 | <u> </u>    | thin coarse silt lenses, (CL).   |                                  |
| 0.00       |    | -   | 2    |      |     | ====        | www.series.com/eurefl.Well   |                                  |
|            |    |     |      | 3    |     | <u> </u>    |  |                                  |
| -          | -  |     |      |      |     |             |  |                                  |
|            |    |     | -    |      |     |             |  |                                  |
|            |    |     |      |      | 1   | ======      |  |                                  |
|            |    |     |      |      | 1   | ===         |  |                                  |
| -          |    |     |      |      | 1   | T-27-2      |  |                                  |
| -          | -  | 1   | -    | -    | -   |             |  |                                  |
|            | -  |     |      | _    |     | #7-+7-      |  |                                  |



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PROJECT Buffalo Outer Harbor Phase 2

LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/01/20 COMPLETED 07/02/20

| SN  | 0/<br>6 | 6/       | 12/<br>18 | 18/<br>24 | N   | LITH        | DESCRIPTION AND CLASSIFICATION  |        | WATER TABLE AND REMARKS      |
|-----|---------|----------|-----------|-----------|-----|-------------|---|--------|------------------------------|
| 13  | 3       | 1337     | = =       |           |     |             | Maiat area. (CTLTY_CLAY) with trace                                       |        | WR: Sampler penetration with |
| 22  |         | 4        |           |           |     | ====        | Moist gray (SILTY-CLAY) with trace sand, firm, thinly laminated with very |        | weight of rods.              |
|     |         |          | 5         |           | 9   |             | thin coarse silt lenses, (CL).  |        | weight of roos.              |
|     |         |          |           | 6         |     |             | timi codise sil icrises, toes.  |        |                              |
|     |         |          |           | -0        |     |             |   |        |                              |
|     |         |          |           | _         |     | <del></del> |   |        |                              |
| -   |         |          |           |           |     |             |   |        |                              |
| _   |         |          | -         | -         |     |             |   |        |                              |
| _   |         |          |           | -         |     | ======      |   |        |                              |
|     |         | _        | -         | -         |     |             | grades downward to  | 45.0   |                              |
|     | _       |          |           | -         |     | <u> </u>    |   | -      |                              |
| 14_ | 9       | -        | -         | -         |     | WANTE OF    | Wet gray (SILT) with trace sand and                                       |        |                              |
| 14  |         | 10       |           |           | 22  |             | clay, compact, thinly bedded, (ML).                                       |        |                              |
|     |         | -        | 12        |           | 175 |             |   |        |                              |
| -   |         |          |           | 16        |     |             |   |        |                              |
|     |         | -        |           | -         |     |             |   |        |                              |
|     |         |          |           |           |     |             |   |        |                              |
|     |         |          |           |           |     | 1493/3741   |   |        |                              |
|     |         |          |           | 11        |     |             |   |        |                              |
|     | 1 4     |          | 1, -      |           |     | READOR.     | 555450 0000 (100440)  | 50.0   |                              |
|     |         |          |           |           |     | SEVAVA:     | grades downward to  | 50.0   |                              |
| 15  | 10      |          |           |           |     |             | Extremely moist gray (SILTY-CLAY)   |        |                              |
| 20  |         | 6        |           |           | 1   |             | with trace sand, stiff, thinly laminated                                  |        |                              |
| 1.0 |         |          | 5         |           | 11  | <u> </u>    | with very thin coarse silt lenses, (CL).                                  |        |                              |
|     |         |          | -         | 6         |     |             |   |        |                              |
|     |         |          |           |           |     | ====        |   |        |                              |
|     |         | _        | -         |           |     | <u> </u>    |   |        |                              |
|     |         |          |           |           | 1   |             |   |        |                              |
|     |         |          |           |           |     |             |   |        |                              |
|     |         |          |           |           | 1   | स्पर्यस्य स |   |        |                              |
| _   |         |          |           | -         |     |             |   |        |                              |
| -   | 100     |          |           | -         | -   |             |   |        |                              |
| 16  | WR      | F-0-74-Y |           | -         |     | # 4 # 4 # 4 |   |        |                              |
| 24  |         | WR       |           | -         | <2  |             |   |        |                              |
| _   | _       |          | _1_       |           |     |             |   |        |                              |
| 100 |         |          |           | 1         |     |             |   |        |                              |
|     |         |          |           |           |     |             |   |        |                              |
|     |         |          | -         |           |     |             |   |        |                              |
|     |         |          |           |           |     |             |   |        |                              |
|     | -       |          |           |           |     |             |   |        |                              |
|     |         |          | A =       |           |     | <u> </u>    |   | - 1/1/ |                              |
| -   |         |          |           |           |     |             |   |        |                              |



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SURF. ELEVATION

Buffalo Outer Harbor Phase 2 PROJECT

LOCATION Euhrmann Boulevard

City of Buffalo, Erie County, NY

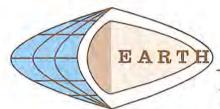
Ravi Engineering & Land Surveying, PC CLIENT

DATE STARTED 07/01/20 COMPLETED 07/02/20

DEPTH BLOWS ON IN FT SAMPLER

13E96b

| SN    | 6     | 6/ | 12/ | 18/   | N   | LITH     | DESCRIPTION AND CLASSIFICATION   | WATER TABLE AND REMARKS          |
|-------|-------|----|-----|-------|-----|----------|--|----------------------------------|
| 17    | WR    |    |     |       |     |          | Futramely maint gray (STLTY-CLAY)  | WR: Sampler penetration with     |
| 24    |       | WR |     |       | 100 |          | Extremely moist gray (SILTY-CLAY) with trace sand, stiff, thinly laminated | weight of rods.                  |
|       |       |    |     |       | <1  | <u> </u> |  | weight of roos.                  |
|       |       | _  | WR  |       |     | ====     | with very thin coarse silt lenses, (CL).                                   |                                  |
|       |       |    |     | WR    |     |          |  |                                  |
|       |       |    |     | 11    |     |          |  |                                  |
|       |       |    | 1   |       |     |          |  |                                  |
|       |       |    |     |       |     |          |  |                                  |
|       |       |    |     |       |     |          | clear transition to 64.2   |                                  |
|       |       | _  |     | -     |     | T-11-1   | Clear transition to  | Run Depth Length Rec Rec RGD     |
| 1     |       |    |     | _     |     |          | Dark gray limestone bedrock,   | # (ft) (ft) (ft) % %             |
| 1     | 1     |    |     |       |     |          | effervesces without etching, hard,   |                                  |
|       | -     |    |     |       |     |          | massive bedding, very slightly   | 64.2                             |
|       |       |    |     |       |     |          | fractured, occasional fossils, core  | 1 to 5.5 5.5 100 100             |
| _     |       |    |     |       |     |          | pieces range from (1.4-3.8').  | 69.7                             |
| -     | -     |    | _   | -     |     |          | pieces range from the sist.  |                                  |
|       | Run   | #1 |     |       |     |          |  | 69.7                             |
|       | 1000  |    |     |       |     |          |  | 2 to 4.5 4.5 100 to              |
|       | 1 = 1 |    |     |       |     |          |  | 74.2                             |
|       |       |    |     |       |     |          |  | EDI Bedrock Hardness Classifica  |
| -     | -     | _  |     |       |     |          |  |                                  |
| -     |       | -  | _   |       |     |          |  | Hard: Intact hand-held specimen  |
| V     |       |    |     |       |     |          |  | requires more than one hammer    |
|       | _ 17  |    |     |       |     |          | 1  | blow to break it. Can be faintly |
|       |       |    |     |       | 1   |          |  | scratched by a steel nail.       |
|       |       | _  |     |       | 1   |          |  | scratched by a steel fiall.      |
| -     | _     | _  |     |       | -   |          |  |                                  |
|       | - 1   |    |     |       |     |          | As III   |                                  |
|       | Run   | #2 |     | 120   |     |          | 1  |                                  |
| 14    | 1     |    |     |       |     |          |  |                                  |
|       |       |    |     |       | 1   |          |  |                                  |
| -     | -     |    |     | -     | 1   | 1 1 1    |  |                                  |
| _     | -     | -  |     | -     |     | 3 5 5 5  | 428  |                                  |
| V     |       |    |     |       |     | 1111     | 74.2   |                                  |
| _     |       |    | = = |       |     |          | Coring completed at 74.2 feet.   |                                  |
|       | -     |    |     |       |     |          | Corning Completed at 14.2 Teet.  |                                  |
|       |       |    |     |       |     |          |  |                                  |
| _     |       | -  |     | _     | 1   |          |  |                                  |
|       |       | _  | _   | -     | -   |          |  |                                  |
|       |       |    |     |       |     | 1        |  |                                  |
| ir ii |       |    | 1   | 7.4   |     |          |  |                                  |
|       |       |    |     |       | 1   |          |  |                                  |
| -     |       |    |     |       | 1   |          |  |                                  |
|       |       |    | -   |       | 1   |          |  |                                  |
|       |       |    |     |       | 1   |          |  |                                  |
|       | OF SL |    |     | 14 _/ |     |          | I A  |                                  |
|       |       |    |     |       |     |          |  |                                  |
| -     |       |    |     | 1.    | 1   |          |  |                                  |



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PROJECT Buffalo Outer Harbor Phase 2

LOCATION Fuhrmann Bouleyard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/02/20 COMPLETED 07/02/20

" PER BLOW

| SN<br>REC | 0/<br>6 | 6/<br>12 | 12/<br>18 | 18/<br>24 | N   | LITH        | DESCRIPTION AND CLASSIFICATION                            |        | WATER TABLE AND REMARKS   |
|-----------|---------|----------|-----------|-----------|-----|-------------|---|--------|---|
|           |         |          |           | 7         |     | 0000        | Gray asphalt pavement.                                    | 0.2    | Asphalt pavement to 0.2 feet<br>over sandy soil fill with some    |
| 1         | 23      |          |           |           |     | 0000        | Maint deals asset assets alles                            | -      | gravel, trace to little silt, trace                               |
| 3         |         | 50/2     | -         | -         |     | 0000        | Moist dark gray gravelly (SILTY-SAND) fill with 20 to 40% |        | slag, asphalt remenants, and<br>ceramic and brick fragments to    |
| 2         | 22      | - 1      |           | -         |     | 0 00 0      | gravel, trace to little silt, trace                       |        | 6.6 feet over silty soil fill with                                |
| 16        |         | 18       |           | -         | 29  | 0000        | asphalt remnants, slag, and ceramic                       |        | little clay, trace sand to 8.0 feet                               |
|           | -       | _        | _11_      |           |     | 0000        | and brick fragments, compact to                           |        | over coarse silty soil fill with                                  |
|           |         |          |           | 9         |     | 0 00 0      | dense, massive soil structure, (SM).                      |        | little gravel and sand, trace brick                               |
| 3         | 7       |          |           |           |     | 0000        |   |        | fragments and concrete debris                                     |
| 11        |         | 9        |           | -         | 14  | 0000        |   |        | to 12.0 feet over clayey soil fill                                |
|           |         |          | 5         |           | 0.0 | 0 00        |   |        | with trace sand, gravel, and<br>concrete debris to 14.0 feet      |
| 1         |         |          |           | 7         |     | 0000        |   |        | over water sorted and deposited                                   |
| 4         | 8       |          |           |           |     | 0000        |   | 6.6    | sand with trace silt to 25.0 feet                                 |
| 15        |         | 3        |           |           | 5   | TENTER      | Extremely moist gray (CLAYEY-SILT)                        | 70.00  | over water sorted and deposited                                   |
|           | -       |          | 2         |           | 3   | 400         | fill with little clay, trace sand, firm,                  |        | sand with some gravel, trace silt                                 |
| -         |         |          |           | 5         | 1   | 18:00 H     | massive soil structure, (ML-CL).                          |        | to end of boring.   |
| 5         | 7       |          |           |           | 1   | 000         |   | 8.0    |   |
| 7         |         | 5        |           |           | 1 , | 0000        | Extremely moist gray (SANDY-SILT)                         | = 1    | Note: Advanced bore hole with 3                                   |
| . 1       |         |          | 4         |           | 9   | 0000        | fill with 10 to 20% gravel, little sand,                  |        | 1/4" ID x 7" OD hollow stem auger<br>casing with continuous split |
|           |         |          |           | 5         | 1   | 0 00        | trace brick fragments and concrete                        |        | spoon sampling to 16.0 feet and                                   |
| 6         | 5       |          |           | _         | 1   | 1000        | debris, loose to compact, massive soil                    |        | 5.0-foot interval sampling to end                                 |
| 16        | -0_     | 6        |           |           | 1   | 0 0         | structure, (ML).  |        | of boring at 27.0 feet. Bore                                      |
| 10        |         | 10       | 10        |           | 16  | 0000        |   | July S | hole was backfilled with cuttings                                 |
|           |         | 1        | 10        | 13        | 1   | 0 00        |   | 12.0   | to ground surface upon  |
| 7         | -       |          |           | 13        |     | 8 <u></u> 8 | Extremely moist gray (SILTY-CLAY)                         | = "    | completion.   |
| 6         | 8       | 7        |           |           |     |             | fill with 3 to 7% gravel, trace sand and                  | i      |   |
| 0         | -       | 1        | -         |           | 13  |             | concrete debris, stiff, massive soil                      |        |   |
| _         | -       | -        | 6         | - 60      | 1   | 0 0 0       | structure, (CL).  | 0.4    |   |
| - G.      | -       | -        | -         | 6         | 1   |             | The second second   | 14.2   |   |
| 8         | 5       |          |           | -         | 1   | 13343       | Wet black (SAND) mostly fine to                           | - 0    |   |
| 6         | -       | 8        |           |           | 18  | 10000       | medium size, trace silt, compact, thinly                  |        |   |
|           | _       | -        | 10        | -         |     | 13/5/5/1    | bedded, (SP).   |        |   |
|           | -       |          |           | - 11      | 4   | 19(3)33     | bedded, for A   |        |   |
|           |         |          |           |           | 1   | 100000      |   | 11.4   |   |
| 110       | 21.00   |          |           |           | 1   | 33333       |   |        |   |
|           | (       |          |           |           |     |             |   |        |   |
|           | 1       |          |           |           |     | Montan      |   |        |   |
| 1         | 11 1    |          |           |           |     | 0.000       |   |        |   |
|           |         |          |           |           |     | 1400        |   |        |   |
|           |         |          |           |           |     | 1450000     |   | 55.7   |   |
| 7.00      |         |          |           |           | 1   | 1435000     |   | 20.0   |   |



Soil and Hydrogeologic Investigations • Wetland Delineations

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PROJECT Buffalo Outer Harbor Phase 2

SURF. ELEVATION

City of Buffalo, Erie County, NY

LOCATION Fuhrmann Bouleyard

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/02/20 COMPLETED 07/02/20

DEPTH BLOWS ON IN FT SAMPLER

13E96b

| SN   |     | 6/<br>12 | 12/<br>18 | 18/<br>24 | N   | LITH       | DESCRIPTION AND CLASSIFICATION  | WATER TABLE AND REMARKS           |
|------|-----|----------|-----------|-----------|-----|------------|---|-----------------------------------|
| 9    | 6   |          |           |           |     |            | Wet gray (SAND) mostly fine to medium                                     |                                   |
| 23   |     | 5        | -         |           | 9   |            | size, trace silt, compact, thinly   |                                   |
| 1    |     |          | 4         |           |     | 35555      | bedded, (SP).   |                                   |
|      |     |          |           | 7         |     | 1111111111 |   |                                   |
|      |     |          |           | 1000      |     | (44.44)    |   |                                   |
| 1    |     |          |           |           |     |            |   |                                   |
|      |     |          |           | -         |     | 123333     |   |                                   |
| _    |     |          |           |           |     |            |   |                                   |
| -    | -   |          | -         |           | 4   | ::::::::   | grades downward to 25.0   |                                   |
| 1    |     |          |           |           |     | ÷÷;÷÷      |   | ¥ Water level at 25.3 feet below  |
| 10   | 9   |          |           |           | 100 | 0.0.0      | Wet dark gray gravelly (SAND) with 20 to 40% gravel, trace silt, compact, | ground surface at completion.     |
| 19   |     | _11_     | 10        |           | 24  | 0.00       | stratified, (SW), (GW).   | 2. Company of the Property of the |
|      |     |          | 13        | 10        |     |            | 27.0  |                                   |
| -    |     |          |           | 10        |     | 1.07       | Boring completed at 27.0 feet.  |                                   |
|      |     |          |           |           | 1   |            | Bothing completed at 27.0 rect.   |                                   |
|      |     |          |           |           | 1   |            |   |                                   |
|      |     |          |           |           | 1   |            |   |                                   |
| 7.70 |     |          |           |           | 1   |            |   |                                   |
|      |     |          |           |           | 1   |            | L 19.   |                                   |
|      |     |          |           |           | ]   |            |   |                                   |
|      |     |          |           |           | ]   |            |   |                                   |
|      |     |          |           |           |     |            |   |                                   |
|      |     |          |           |           |     |            |   |                                   |
|      |     |          |           | -         |     |            |   |                                   |
|      | 1 1 |          |           |           | 1   |            |   |                                   |
|      |     |          |           |           |     |            |   |                                   |
|      |     | -        |           | -         | -   |            |   |                                   |
| -    | -   | -        | -         |           | 4   |            |   |                                   |
| -    | -   | -        |           |           | -   |            | *  \_   |                                   |
|      | +-  |          |           | -         | 1   |            |   |                                   |
| _    | -   |          | -         |           | 1   |            |   |                                   |
| -    | -   | -        |           |           | 1   |            |   |                                   |
|      | -   |          |           |           | 1   |            |   |                                   |
| -    |     |          |           |           |     |            |   |                                   |
|      |     | 1        |           |           | 1   |            |   |                                   |
|      |     | -        |           |           | 1   |            |   |                                   |
|      |     |          |           |           | 1   |            |   |                                   |
|      | -   |          | 1         |           |     |            |   |                                   |



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PROJECT Buffalo Outer Harbor Phase 2

SURF, ELEVATION
LOCATION Fuhrmann Boulevard

MONEO I DATIBLE CALLET HAIDOT FRANCE Z

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/07/20 COMPLETED 07/07/20

DEPTH BLOWS ON IN FT SAMPLER

13E96b

| SN     | 0/<br>6 | 6/<br>12 | 12/<br>18 | 18/<br>24 | N     | LITH         | DESCRIPTION AND CLASSIFICATION            | WATER TABLE AND REMARKS  |
|--------|---------|----------|-----------|-----------|-------|--------------|---|--|
| ALU.   | 15      | -        |           |           |       | 0000         | Trust of a structure 20 days and a        | 2 1 20 20 10 10 10 10 10 10 10 10 10 10 10 10 10                           |
| 16     | 15      | 17.2     |           |           | 10    | 0.0          | Moist light brown (SILTY-SAND) fill       | Sandy soil fill with little silt and                                       |
| 16     |         | 13       | 777       |           | 31    | 0000         | with 10 to 20% gravel, little silt, trace | gravel, trace organic matter to  |
|        |         |          | _18_      |           | 10,71 | G. 15-12-71. | organic matter, compact, massive soil     | 1.3 feet over sandy soil fill with   |
|        |         |          |           | 19        |       | 100000       | structure, (SM).                          | little silt to II.2 feet over silty<br>slack water sediment with little to |
| 2      | 21      |          |           |           |       |              | 1.3                                       | some clay, trace sand to 15.0  |
| 23     | 100     | 17       | 4         |           | 36    |              | Moist black (SILTY-SAND) fill with        | feet over clayey slack water   |
|        |         |          | 19        |           | 30    | 140000000    | trace to little silt, compact to dense,   | sediment to 21.0 feet over water   |
|        |         |          |           | 26        |       |              | massive soil structure, (SM).             | sorted and deposited sand with   |
| 3      | 20      |          |           | 20        | ND    | (1)          | industrie son structurer torn.            | trace silt to 25.0 feet over   |
|        | 20_     | 172      |           |           |       | 1772         |   | clayey slack water sediment with   |
| 22     | -       | 13       | -         | -         | 24    | 3.555        |   | trace sand to end of boring.   |
|        |         | -        |           |           |       | 17.00        | 6.0                                       | made dana to one or saving.  |
| L.T.T. |         |          |           | 12        |       | 110000       |   | WR: Sampler penetration with   |
| 4      | 4       |          | 11.11     |           |       |              | Wet black (SILTY-SAND) fill with trace    | weight of Rods.  |
| 20     |         | 4        | 11-       |           | 8     | 1077230      | to little silt, loose, massive soil       |  |
|        |         |          | 4         |           | 0     | 160000       | structure, (SM).                          |  |
|        |         |          | 1177      | 8         |       | 17W3X3X      |   |  |
|        | - 25    |          |           | -0        |       |              |   |  |
| 5      | 4       |          |           | -         |       | VS1000       |   |  |
| 20     |         | 5        |           | -         | 10    | 1477         |   |  |
|        |         |          | 5         |           |       | 1000         |   |  |
|        |         |          | - 1       | 6         |       |              | Y   |  |
| 6      | 2       |          |           |           |       |              |   |  |
| 21     |         | 2        |           |           | -     | 7477000      | 11.2                                      |  |
|        |         |          | 3         |           | 5     | 7427327441   | - (c) (VEV CT)                            |  |
|        |         |          | 3         | 2         |       |              | Extremely moist gray (CLAYEY-SILT)        |  |
| _      |         |          |           | -         |       | 7 - 7        | with little to some clay, trace sand,     |  |
| -      | -       | -        |           |           | 1     |              | firm, thinly laminated with very thin     |  |
|        |         |          |           |           | -     |              | coarse silt lenses, (ML-CL).              | Water level at 13.3 feet below   |
|        |         |          | -         | _         |       |              |   |  |
|        | 7, 1    |          |           |           |       | +            |   | ground surface at completion.  |
|        |         |          |           |           |       |              | 15 A                                      | Note: Advanced bore hole with 3  |
| 1      |         |          |           | 1         |       | 7            | grades downward to 15.0                   | 1/4" ID x 7" OD hollow stem augs   |
| 7      | WR      |          |           |           | 1     |              | Extremely moist to wet gray               | casing with continuous split   |
| 24     | 7(1)    | WR       |           |           |       | <b></b>      | (SILTY-CLAY) with trace sand, very        | spoon sampling to 12.0 feet and  |
| 64     |         | MK       |           |           | <1    | # + # # # #  | soft, thinly laminated with very thin     | 5.0-foot interval sampling to en   |
| -      | -36     | -        | WR        | Tour de   | 1     | +            | coarse silt lenses, (CL).                 | of boring at 27.0 feet. Bore   |
|        |         | -        |           | WR        | -     |              | or seem the second of chieff in only in   | hole was backfilled with cuttings  |
|        |         |          |           |           |       |              |   | to ground surface upon   |
|        |         |          |           |           |       |              |   | completion.  |
|        |         |          |           |           |       | Z-2Z-2       |   | Completion   |
|        |         |          |           |           | 1     |              |   |  |
|        |         |          |           |           | 1     | 平台 平平台       |   |  |
|        |         | -        | -         | -         | 1     |              |   |  |
|        |         |          |           |           |       | +            |   |  |



Soil and Hydrogeologic Investigations • Wetland Delineations 1091 Jamison Road • Elma, NY 14059

13E96b

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SURF. ELEVATION .

\* PER BLOW

PROJECT Buffalo Outer Harbor Phase 2

LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/07/20 COMPLETED 07/07/20

| SN     | 0/    | 6/ | 12/ | 18/ |   | 1007.00         | Francisco III (No. 1) No. 1 (No. 1)    | WATER TARIE AND DENABLE |
|--------|-------|----|-----|-----|---|-----------------|--|-------------------------|
| REC    | -     | 12 | 18  | 24  | N | LITH            | DESCRIPTION AND CLASSIFICATION         | WATER TABLE AND REMARKS |
| 8      | 1     | -  |     |     |   | <u>स्मान्यस</u> | Extremely moist to wet gray            |                         |
| 18     | 22.73 | 2  |     |     | 9 |                 | (SILTY-CLAY) with trace sand, very     |                         |
| e as l |       |    | 7   |     | 0 | 21.032          | soft, thinly laminated with very thin  |                         |
|        |       |    |     | 10  |   | 144 144         | coarse silt lenses, (CL).              |                         |
|        |       | _  |     |     |   |                 | grades downward to 21.0                |                         |
|        |       |    |     |     | 1 | 1.55            | Wet dark gray (SAND) mostly fine size, |                         |
|        |       |    |     |     | 1 | 13 1 23         | trace silt, compact, thinly bedded,    |                         |
|        |       |    |     | -   | 1 | 130             | (SP).                                  |                         |
|        |       |    |     |     | 1 | 33 5 5 5        |  |                         |
|        |       |    | 1   |     |   | 0,000,000       | grades downward to 25.0                |                         |
| 9      | 2     |    |     |     | 1 | 3-15-1          | Moist gray (SILTY-CLAY) with trace     |                         |
| 18     | -     | 2  |     |     |   |                 | sand, firm, thinly laminated with very |                         |
| 10     |       | 1  | 4   |     | 6 | <u> </u>        | thin coarse silt lenses, (CL).         |                         |
|        |       | -  | 4   | 4   | 1 |                 | 27.0                                   |                         |
|        |       |    |     | 4_  | 1 |                 | Boring completed at 27.0 feet.         |                         |
|        |       |    |     |     | 1 |                 | Boring completed at 27.0 feet.         |                         |
|        |       | -  |     |     | 1 |                 |  |                         |
| -      | _     |    | -   |     | 1 |                 |  |                         |
| -      |       | -  |     |     | 1 |                 |  |                         |
|        | -     | -  | -   | -   | 1 |                 |  |                         |
| -      |       | -  | -   | -   |   |                 | i                                      |                         |
|        |       | -  | -   |     | - |                 |  |                         |
|        |       | -  | -   |     |   |                 |  |                         |
|        |       |    |     |     |   |                 |  |                         |
| _      | -     | -  | -   | _   | 1 |                 | 1, 11                                  |                         |
|        | -     | -  |     |     | - |                 |  |                         |
|        |       |    |     |     |   |                 |  |                         |
|        |       |    |     |     |   |                 |  |                         |
|        | 1     |    |     |     | 1 |                 |  |                         |
|        | 1     |    |     |     | 4 |                 |  |                         |
|        | 1 = 1 |    |     |     | 1 |                 |  |                         |
|        | 1     |    |     |     | 1 |                 |  |                         |
|        | 11.   |    |     |     | 1 |                 |  |                         |
| 17.4   | 100   |    |     |     |   |                 |  |                         |
|        |       |    |     | 7   |   |                 |  |                         |
|        |       |    | 1   |     |   |                 |  |                         |
|        |       |    |     | 1   |   |                 |  |                         |
|        |       |    |     |     | 7 |                 |  |                         |
|        |       |    |     | 1   |   |                 |  |                         |
|        | _     |    |     |     |   |                 |  |                         |
| -      |       |    |     |     | - |                 |  |                         |



Soil and Hydrogeologic Investigations • Wetland Delineations

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Buffalo Outer Harbor Phase 2 PROJECT

SURF. ELEVATION LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/07/20 COMPLETED 07/07/20

BLOWS ON DEPTH IN FT SAMPLER

13E96b

| SN | 0/<br>6 | 6/    | 12/<br>18 | 18/<br>24 | N    | LITH              | DESCRIPTION AND CLASSIFICATION   | WATER TABLE AND REMARKS  |
|----|---------|-------|-----------|-----------|------|-------------------|--|--|
| 1  | 13      |       |           |           | Ti   | 9.00              | Malat has to prevent (CAND) till with  | Sandy soil fill with some gravel,                                    |
| 18 | - 17    | 15    |           |           |      | 0.0.0             | Moist brown gravelly (SAND) fill with  | trace silt and asphalt remenants                                     |
| 0  | -       | 1:3   | 12        | -         | 27   | 0.00              | 20 to 40% gravel, trace silt and asphalt remnants, compact, massive  | to 2.0 feet over silty soil fill with                                |
| _  |         |       | 12        | 10        |      | 0.0.0             | soil structure, (SW).  | little sand and gravel, trace  |
|    | No. Co. |       | -         | 10        |      | 0.00              | 2.0  | concrete debris to 6.0 feet over                                     |
| 2  | 27      | 7     | -         |           |      | 0000              | 2.0  | sandy soil fill with little gravel                                   |
| 20 | -       | - 11  | -         | -         | 26   | 0 0               | Moist brown (SANDY-SILT) fill with 10  | and silt, trace brick fragments to                                   |
|    |         |       | _15_      |           |      | 0000              | to 20% gravel, little sand, trace  | 9.5 feet over silty soil fill with                                   |
|    |         |       |           | 19        |      | 0 0               | concrete debris, compact, massive soil   | trace slag to 12.0 feet over   |
| 3  | 21      |       |           | 1 = 1     |      | 000               | structure, (ML).   | sandy soil fill with little gravel,                                  |
| 9  | 120     | 26    |           |           | 30   | 0 00              |  | trace to little silt, trace wood                                     |
|    |         |       | 6         |           | 32   | 0.000             | W.2  | fiber, slag, and fiberous materials                                  |
|    |         |       |           | 9         |      | 0,0               | 6.0  | to 20.0 feet over water sorted                                       |
|    |         |       |           | - 0       |      | 0                 | Extremely moist gray (SILTY-SAND)  | and deposited sand with trace to                                     |
| 4_ | _21_    |       |           | _         |      | 0000              | fill with 10 to 20% gravel, little silt,   | little silt to end of boring.  |
| 16 | -       | -11   | -         |           | 18   | 0000              | trace brick fragments, compact, loose  | Marie American Large College   |
|    |         |       | _7_       |           |      | 0 0               | below 8.0 feet, massive soil structure,  | Note: Advanced bore hole with 3                                      |
|    |         |       |           | 4         |      | 0000              | (SM).  | 1/4" ID x 7" OD hollow stem auge                                     |
| 5  | 2       |       | 11        |           | 1    | 0000              | 15   | casing with continuous split   |
| 8  |         | 3     |           |           | 7    | 0000              | 9.5  | spoon sampling to 22.0 feet and<br>5.0-foot interval sampling to end |
|    |         | -     | 4         |           | 1 '  | 0000              | 9.5  | of boring at 27.0 feet. Bore   |
|    |         |       | -         | 3         | 1    | 2 2               | Extremely moist gray   | hole was backfilled with cuttings                                    |
| 6  |         |       |           |           | 1    |                   | (SAND-SILT-CLAY) fill with 5 to 15%  | to ground surface upon   |
| 9  |         | 2     |           |           |      | 7-1               | gravel, trace to little sand and clay,   | completion.  |
| 9  | -       | 12    |           |           | 5    | <u>* * </u>       | trace slag, firm, massive soil structure,  |  |
| _  | -       | 1     | 3         |           | -    | $I_{ij} = I_{ij}$ | (ML-CL).   |  |
| _  |         |       |           | 4         | -    | 300               | 12.0   |  |
| 7  | 4       |       |           |           | 1    | 0000              | e to the state of deck seed to   |  |
| 12 | 7.4     | 6     |           |           | 16   | 0.00              | Extremely moist to wet dark gray to  |  |
|    | -       | Land. | 10        |           | 1 17 | 0000              | black (SILTY-SAND) fill with 10 to 20%   |  |
| 1  | In i    |       | 127       | 7         |      | 0000              | gravel, trace to little silt, trace wood<br>fiber and slag, trace fiberous material  |  |
| 8  | 3       |       |           |           |      | 0 00 0            | from 15.8 to 16.0 feet, compact,   |  |
| 10 |         | 3     | 1         | lan-      |      | 0000              | massive soil structure, (SM).  |  |
| 10 | 11.4    | -     | 2         |           | - 5  | 0000              | mostro sur structure, 1970.  |  |
|    | -       | -     | -         | _         | 1    | 0.0               |  |  |
|    |         | -     |           | 3         | 1    | 0000              |  |  |
| 9  | 4       | -     | -         | -         | 1    | 0 00 0            |  |  |
| 6  | 12      | 9     |           |           | 21   | 0000              |  |  |
|    | 1. =    |       | 12        |           |      | 0000              |  |  |
|    |         |       | -         | 5         |      |                   |  |  |
| 10 | 5       |       |           |           |      | 0000              |  |  |
| 8  |         | 9     |           |           | 1    | 0 00 0            |  |  |
|    | 1       | -     | 5         |           | 14   |                   |  |  |
|    |         |       |           |           | 1    | 0 10 1            | the state of the s |  |



Soil and Hydrogeologic Investigations • Wetland Delineations 1091 Jamison Road • Elma, NY 14059

13E96b

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SURF, ELEVATION

PROJECT Buffalo Outer Harbor Phase 2

LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/07/20 COMPLETED 07/07/20

| SN  | 0/<br>6  | 6/<br>12 | 12/<br>18 | 18/<br>24 | N   | LITH      | DESCRIPTION AND CLASSIFICATION   | WATER TABLE AND REMARKS |
|-----|----------|----------|-----------|-----------|-----|-----------|--|-------------------------|
| 11  | 7        |          | _         |           |     | 100       | Wet dark gray (SILTY-SAND) with  |                         |
| 19  |          | 9        |           |           | 22  |           | mostly fine size sand, trace to little   |                         |
|     |          |          | 13        |           | 22  | MOVEN.    | silt, compact, thinly bedded, (SM).  |                         |
| 4-  | -        |          | 1200      | 19        |     |           |  |                         |
|     |          |          |           |           |     |           |  |                         |
|     | -        |          | 1-1       |           |     | 1,7,7,7,7 |  |                         |
|     |          |          |           | -         |     | 7 7.77    |  |                         |
| 1   | -        |          |           |           |     |           |  |                         |
|     |          |          |           |           |     |           |  |                         |
| DD- | 4.4      |          |           |           |     |           |  |                         |
| 12  | 16       |          |           |           |     | 100000    |  |                         |
| 19  | 11.107.1 | 4        |           | -         | 16  | 10.700    |  |                         |
|     |          |          | 12        | -         | 1.0 |           | 27.0   |                         |
|     |          | 1        |           | 10        |     | 17.16     |  |                         |
|     |          |          |           |           |     |           | Boring completed at 27.0 feet.   |                         |
|     |          |          |           |           |     |           | the state of the s |                         |
|     |          | -        |           |           |     |           |  |                         |
|     |          |          |           |           |     |           |  |                         |
| -   |          |          | -         |           | -   |           |  |                         |
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| _   | -        | -        | -         | -         | 1   |           |  |                         |
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|     | -        | -        | -         | -         | 1   |           |  |                         |
|     | -        | -        | -         | -         |     |           |  |                         |
|     |          |          |           |           | -   |           |  | ****                    |



Soil and Hydrogeologic Investigations • Wetland Delineations 1091 Jamison Road • Elma, NY 14059

HOLE NO. B-8-20

SURF. ELEVATION

PROJECT Buffalo Outer Harbor Phase 2

LOCATION Euhrmann Boulevard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/08/20 COMPLETED 07/08/20

DEPTH BLOWS ON IN FT SAMPLER

13E96b

| SN  | 0/<br>8 | 6/<br>12 | 12/<br>18 | 18/<br>24 | N   | LITH   | DESCRIPTION AND CLASSIFICATION   | WATER TABLE AND REMARKS   |
|-----|---------|----------|-----------|-----------|-----|--------|--|---|
| 1   | 12      |          |           |           |     | V.5.V. | 101100   | Sand and grovel fill with trace                                     |
| 14  | -14-    | 13       |           |           |     | 20.0   | Moist brown gray very gravelly (SAND) fill with 40 to 60% gravel, trace silt,  | Sand and gravel fill with trace<br>concrete debris to 8.0 feet over |
| 17  |         | 1-3      | 14        | -         | 27  | 0.00   | trace concrete debris, very dense,   | sandy soil fill with little gravel,                                 |
| -   |         |          | _14       | 10        |     | 200    | massive soil structure, (SM).  | trace to little silt, trace brick                                   |
|     | 22.0    |          |           | 18        |     | 0.0.0  | massive son structurer towns   | fragments to 14.0 feet over   |
| 2   | 50/4    |          |           | -         |     | 25:00  |  | sandy soil fill with some gravel,                                   |
| 3   | -       |          |           | -         | 1   | 0.0    |  | trace brick fragments, concrete                                     |
|     | -       | -        |           | -         |     | 0:00:  |  | debris, rubber, and wood fiber to                                   |
|     | 387.181 | -        |           |           | 1   | 0.00   |  | 22.0 feet over silty slack water                                    |
| 3   | 50/3    |          |           | _         |     | 0:00:  |  | sediment with some organic<br>matter, trace sand to 25.0 feet       |
| 3   |         |          | _         | -         | 1   | 0.0.0  |  | over water sorted and deposited                                     |
| _   |         |          |           |           | 1   | 0.00.  |  | sand with little gravel, trace silt                                 |
|     | 7.77    |          |           |           | -   | 20.00  |  | to end of boring.   |
| 4   | 45      |          |           | _         |     | 00.0   |  |   |
| 1   |         | 50       |           |           | 61  | 0.00   |  |   |
|     |         | _        | _11_      | -         |     | 0.00   | 8.0  |   |
|     |         |          | -         | 4         |     | 0.00   | 1. 1. 2. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.  |   |
| _5_ | 2       |          |           | -         |     | 0000   | Moist, wet below 10.5 feet, gray to reddish brown gravelly (SILTY-SAND)  |   |
| 6   |         | 4        | -         | -         | 6   | 0000   | fill with 20 to 40% gravel, trace to   |   |
| _   |         |          | 2         |           |     | 0 0    | little silt, trace brick fragments, loose,   |   |
|     |         |          |           | 2         | 1   | 0000   | massive soil structure, (SM).  |   |
| 6   | 4       |          |           |           |     | 00.00  | Target of a capacitation of the Capacitation o | Y Water level at 10.8 feet below                                    |
| 8   |         | 3        |           |           | 7   | 0 0    |  | Water level at 10.8 feet below<br>ground surface at completion.     |
| _   |         |          | 4         |           |     | 0000   |  | ground surface at completion.                                       |
|     |         |          |           | 4         |     | 0000   |  | Note: Advanced bore hole with 3                                     |
| 7   | 3       | -1       |           |           |     | 0 00   |  | 1/4" ID x 7" OD hollow stem auge                                    |
| 8   |         | 2        |           |           | 4   | 0000   |  | casing with continuous split  |
|     |         |          | 2         |           |     | 0000   | 14.0   | spoon sampling to 24.0 feet and                                     |
|     |         |          |           | 3         |     | 8 8    |  | 5.0-foot interval sampling to end<br>of boring at 27.0 feet. Bore   |
| 8   | 3       |          |           |           |     | 0.0.0  | Wet gray gravelly (SAND) fill with 20  | hole was backfilled with cuttings                                   |
| 2   | 2.78    | 2        |           | _         | - 5 | 0.00   | to 40% gravel, trace brick fragments,<br>concrete debris, rubber, and wood   | to ground surface upon  |
|     |         |          | 3         |           |     | 0.0.0  | fiber, loose, massive soil structure,  | completion.   |
|     |         |          |           | 2         | 1   | 0.00   | (SW).  |   |
| 9   | 2       | -        | -         |           | -   | 0.0.0  | (773)  |   |
| 6   |         | 2        |           |           | 3   |        |  |   |
|     |         |          | 1         |           | 1   | 0.0    |  |   |
|     | 11 1    |          |           | 2         | -   | 0000   |  |   |
| 10  | 1       |          |           |           | 1   | 0.0    |  |   |
| 8   |         | 1        |           |           | 3   | 0.0.0  |  |   |
|     |         | -        | 2         |           | 1   | 0:00:  |  |   |
|     |         |          |           | 4         |     | 0.0.0  |  |   |



Soil and Hydrogeologic Investigations • Wetland Delineations

1091 Jamison Road • Elma, NY 14059 HOLE NO. 8-8-20 \* EDI@earthdimensions.com

Butfalo Outer Harbor Phase 2 PROJECT

LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/08/20 COMPLETED 07/08/20

SURF. ELEVATION

BLOWS ON DEPTH SAMPLER IN FT

13E96b

| SN  | 0/  | 6/  | 12/ | 18/   | N  | LITH                                    | DESCRIPTION AND CLASSIFICATION  | WATER TABLE AND REMARKS |
|-----|-----|-----|-----|-------|----|---|---|-------------------------|
| REC | 6   | 12  | 18  | 24    | 44 | 1573                                    |   |                         |
| 11  | 4   |     |     | -     |    | 0.0.0                                   | Mad area areas (CAND) fill with 20  |                         |
| 3   |     | 2   |     | 100   |    | 0.0.0                                   | Wet gray gravelly (SAND) fill with 20 to 40% gravel, trace brick fragments, |                         |
|     | -   |     | 3   |       | 5  | 000                                     | concrete debris, rubber, and wood   |                         |
|     |     |     | -   | 3     |    | 0.0.0                                   | fiber, loose, massive soil structure,                                       |                         |
| 1.7 | 22  |     |     | 3     |    | ·                                       | \ (SW).   |                         |
| 12  | _5_ | 140 |     |       |    |   | 22.0  |                         |
| 6   |     | 2   |     | -     | 4  | 03/20/21                                |   |                         |
|     |     | -   | 2   |       |    |   | Extremely moist to wet brown to dark  |                         |
|     |     | -   |     | 2     |    | 000000000000000000000000000000000000000 | gray (SILT) with some organic matter  |                         |
|     |     |     |     |       |    |   | trace sand, very loose, thinly bedded                                       |                         |
|     |     |     |     |       |    |   | to massive soil structure, (ML) to  |                         |
| 13  | 8   |     |     |       |    | 0.0.0                                   | (PT).   |                         |
| 11  |     | 11  |     | 1 = 1 | 20 | 00.1                                    | grades downward to 25.0   |                         |
|     |     |     | 9   |       | 20 | 0.00                                    | Wet gray (SAND) with 10 to 20%  |                         |
|     |     |     |     | 4     |    | 0::0:                                   | gravel, trace silt, compact, stratified,                                    |                         |
|     | 7   |     | -   | 1     | 1  | Part or                                 | \ (SW).   |                         |
|     |     |     |     |       | 1  |   | 27.0  |                         |
|     |     |     |     |       | 1  |   | Boring completed at 27.0 feet.  |                         |
| _   |     |     |     |       | 1  |   | Borning completed at 27.0 reet.   |                         |
| _   |     | _   |     |       |    |   |   |                         |
| -   |     | -   | -   |       | 1  |   |   |                         |
|     | -   | -   | -   | -     | 1  |   |   |                         |
|     | -   | -   | -   | -     | 1  |   |   |                         |
|     |     | -   |     | -     | 1  |   |   |                         |
|     |     |     | -   | -     |    |   |   |                         |
|     |     |     |     |       | 1  |   |   |                         |
|     |     |     |     |       |    |   |   |                         |
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|     | 1   |     |     | 1     |    |   |   |                         |
| -   |     | -   |     |       | 1  |   | 1 11  |                         |
| -   |     |     | -   | 125   | 1  |   |   |                         |
|     |     |     |     |       | 1  |   |   |                         |
|     | 5   |     |     |       | 1  |   |   |                         |
|     | -   | -   | -   |       | 1  |   |   |                         |
|     | -   | -   | +   | -     |    |   | )   |                         |
|     | -   | -   | -   | +     |    |   |   |                         |
|     |     | -   | 4   | -     | 4  |   |   |                         |
|     | -   | -   | -   |       |    |   |   |                         |
|     |     |     |     |       |    |   |   |                         |
| 1 1 |     |     |     |       |    |   |   |                         |
|     |     |     |     |       |    |   |   |                         |
| 1   |     |     |     |       |    |   |   |                         |



Soil and Hydrogeologic Investigations • Wetland Delineations 1091 Jamison Road • Elma, NY 14059

13E96b

HOLE NO. B-9-20 \* EDI@earthdimensions.com

PROJECT Buffalo Outer Harbor Phase 2

LOCATION Euhrmann Boulevard

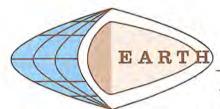
City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/08/20 COMPLETED 07/08/20

SURF. ELEVATION

| SN    | 0/<br>6 | 6/     | 12/<br>18 | 18/<br>24 | N    | LITH              | DESCRIPTION AND CLASSIFICATION  | WATER TABLE AND REMARKS  |
|-------|---------|--------|-----------|-----------|------|-------------------|---|--|
|       | a       |        |           |           |      | 000               | Moist gray to dark gray gravelly  | Sandy soil fill with some gravel,  |
| 15    | -       | 9      |           |           |      | 0.0.0             | (SAND) fill with 20 to 40% gravel,                                      | trace silt and slag to 2.0 feet  |
|       | F 44    |        | 10        |           | 19   | 000               | trace silt and slag, compact, massive                                   | over coarse silty soil fill with   |
|       |         |        |           | 7         |      | 0.0               | soil structure, (SW).   | little gravel and sand, trace brick                                      |
| 2     | 32      |        |           |           |      |                   | 2.0   | fragments and concrete debris  |
| 24    | 32      | 27     |           |           | 10.0 | 00,0              |   | to 6.0 feet over sandy soil fill   |
| 24    | -       | 21     | 14        |           | 44   | 0 00              | Moist gray to dark gray   | with little gravel, trace to little                                      |
| _     |         |        | _17       | 120       |      | 0000              | (SANDY-SILT) fill with 10 to 20%  | silt, trace brick and glass  |
|       | 1000    |        |           | 16        |      | 000               | gravel, little sand, trace brick<br>fragments, concrete debris, compact | fragments and concrete debris  |
| _3_   | 14      |        |           | -         | 14.  | 0000              | to dense, massive soil structure, (ML).                                 | to 12.0 feet over sandy soil fill<br>with some gravel, trace silt, brick |
| 12    |         | 18_    |           | -         | 27   | 0000              | to delice, illegate son an actara, trust                                | and glass fragments, concrete  |
| -     |         |        | 9         | _         |      | ం ్ల              | 6.0   | debris, and wood fiber to 22.3   |
|       |         |        |           | 10        | 1    |                   | V-1   | feet over water sorted and   |
| 4     | 24      | _      | _         |           |      | 0000              | Moist dark gray (SILTY-SAND) fill with                                  | deposited sand with trace silt   |
| 13    | -       | 15     |           | -         | 32   | 0,0               | 10 to 20% gravel, trace to little silt,                                 | and gravel to end of boring.   |
|       |         | 100    | 17        |           | 1    | 0.000             | trace brick and glass fragments and concrete debris, compact to dense,  |  |
|       |         |        | 1.7       | 15        |      | 0 00              | massive soil structure, (SM).   |  |
| 5     | 12      |        |           |           |      | V. (-) (3 - 1 - 1 | massive son strastars; teny   |  |
| 17    |         | 4      |           | -         | 12   | 0,00              |   |  |
| 11 11 |         |        | 8         |           |      | 0000              | 10.0  |  |
|       |         |        | 12        | 8         |      | 000               | 10.0  |  |
| 6     | 4       |        | 1         |           |      | 00000             | Wet dark gray (SILTY-SAND) fill with                                    |  |
| 6     |         | 3      |           | 10.1      | 5    | 0 00 0            | 10 to 20% gravel, trace to little silt,                                 | 4 777  |
|       |         |        | 2         |           | ] "  | 0000              | trace brick and glass fragments and                                     | Water level at 11.2 feet below   |
|       |         |        | Z.        | 2         | 1    | 0000              | concrete debris, loose, massive soil                                    | ground surface at completion.  |
| 7     | 1.4     |        |           |           | 1    | 000               | structure, (SM).  | Note: Advanced bore hole with 3  |
| 4     |         | 2      |           |           |      | 0.0.0             | 12.0  | 1/4" ID x 7" OD hollow stem auge   |
|       |         |        | 1         |           | 3    | 0.0.0             | Wet black gravelly (SAND) fill with 20                                  | casing with continuous split   |
|       |         |        |           | 3         |      | 0.00              | to 40% gravel, trace silt, brick and                                    | spoon sampling to 24.0 feet and  |
| 8     | 5       |        |           | 3         | 1    | 0.0.0             | glass fragments, concrete debris, and                                   | 5.0-foot interval sampling to en   |
| 5     | 5       | 6      |           |           |      | 0:00:             | wood fiber, very loose, massive soil                                    | of boring at 27.0 feet. Bore   |
| 5     |         | 0      | 2         |           | 8    | 0.000             | structure, (SW).  | hole was backfilled with cuttings  |
| -     |         |        | - 2       | 2         | 1    | 0.00.             |   | to ground surface upon   |
| -     | 9.17    | 1      | 1         | 3         | 1    | 0.0.0.0           |   | completion.  |
| 9     | 4       | 11/2/4 | -         | -         |      | 0.00              |   |  |
| 4     |         | 3      | -         | -         | - 6  | 0.0.0             |   |  |
| -     | 1       |        | 3         |           | 1    |                   |   |  |
|       |         |        | -         | 1         | 4    | 0.0.0             |   |  |
| 10    | 3       | -      |           |           |      | 0000              |   |  |
| 4     | -       | 4      |           | -         | 6    |                   |   |  |
|       |         | -      | 2         |           |      | 0.000             |   |  |
|       |         |        |           | 2         |      | 0.0               |   |  |



Soil and Hydrogeologic Investigations • Wetland Delineations 1091 Jamison Road • Elma, NY 14059

13E96b

HOLE NO. B-9-20 • EDI@earthdimensions.com

SURF. ELEVATION

PROJECT Buffalo Outer Harbor Phase 2

LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/08/20 COMPLETED 07/08/20

| SN<br>REC | 0/<br>6 | 6/<br>12 | 12/<br>18 | 18/<br>24 | N | LITH    | DESCRIPTION AND CLASSIFICATION   | WATER TABLE AND REMARKS |
|-----------|---------|----------|-----------|-----------|---|---------|--|-------------------------|
| 11_       | 4       |          |           |           |   | 0.0.0   | Wet black gravelly (SAND) fill with 20   |                         |
| 3         |         | 3        |           |           |   | .0.0.0  | to 40% gravel, trace silt, birck and   |                         |
| _         |         |          | 1         |           | 4 | 000     | glass fragments, concrete debris, and  |                         |
| _         |         |          | -         |           |   | 0.0.0   | wood fiber, very loose, massive soil   |                         |
| -         |         |          | -         | 2         | 1 | 0.00    | structure, (SW).   |                         |
| 12        | 7       | _        |           |           |   | b P . a |  |                         |
| 18        | 1       | 3        |           | 100       | 7 |         | 22.3   |                         |
|           |         |          | 4         |           |   |         | Wet gray (SAND) mostly medium size   |                         |
| 1 50      |         |          |           | 6         |   | 0       | with 3 to 7% gravel, trace silt, loose,  |                         |
| -         |         |          |           |           | 1 | 4 9.    | thinly bedded, (SP).   |                         |
|           | 1       |          |           |           | 1 | 0       | 1000 C 100 C |                         |
| 100       |         |          |           |           | 1 | 4       |  |                         |
| _13       | 1       |          | -         | -         | 1 | 4       |  |                         |
| 23        | -       | 7        |           | -         | 9 | 01.01   |  |                         |
|           |         |          | 2         |           |   | 9'. 4.  | 27.0   |                         |
| 4         |         |          |           | 3         |   | 6 6     | 27.0   |                         |
|           | E =     |          |           |           |   |         | Boring completed at 27.0 feet.   |                         |
|           |         |          |           |           |   |         | Carlotte Commission School (1997)  |                         |
|           |         |          |           |           | 1 | 1 1     |  |                         |
| -         | -       | -        | -         |           | 1 |         |  |                         |
| _         | _       |          |           | -         | 1 |         |  |                         |
|           |         |          |           |           | 1 |         |  |                         |
|           |         |          |           |           |   | 1       | 1/14   |                         |
|           |         |          |           |           |   |         |  |                         |
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| -         | -       | -        | _         | _         | 4 |         |  |                         |
|           |         | _        |           |           | 1 |         |  |                         |
|           |         |          |           |           |   |         |  |                         |
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| +         | -       | -        | -         |           | 1 |         |  |                         |
| -         | -       | -        | -         |           | 1 |         |  |                         |
|           | 1       | -        | -         |           | - |         |  |                         |
|           |         |          |           |           | 1 |         |  |                         |
|           | W.I     |          |           |           |   |         |  |                         |
|           |         |          |           | -         |   |         |  |                         |
|           | 1       |          |           |           |   |         |  | V .                     |
|           | -       | -        |           | -         | 1 |         |  |                         |
| -         | -       |          | -         | -         | - |         |  |                         |
|           | 1       | -        |           |           | - |         |  |                         |
|           | 7       |          | 1         |           |   | 1 1     |  |                         |
| 1         | 1       |          | 1         |           |   |         |  |                         |



Soil and Hydrogeologic Investigations • Wetland Delineations 1091 Jamison Road • Elma, NY 14059

13E96b

(716) 655-1717 • EDI@earthdimensions.com

SURF. ELEVATION \_

PROJECT Buffalo Outer Harbor Phase 2

LOCATION Fuhrmann Bouleyard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/08/20 COMPLETED 07/09/20

DEPTH BLOWS ON IN FT SAMPLER

| SN  | 0/  | 6/  | 12/ | 18/   |     | LITH DESCRIPTION AND CLASSIFICATION             | WATER TABLE AND REMARKS  |
|-----|-----|-----|-----|-------|-----|---|--|
| REC | 6   | 12  | 18  | 24    | N   |   |  |
| i.  | 10  |     |     |       |     | Moist light brown (SANDY-SILT) fill             | Coarse silty soil fill with little                                       |
| 15  |     | 12  |     |       | 27  | with 3 to 7% gravel, little sand, trace         | sand, trace gravel and organic   |
| 1   |     |     | 15  | 7.7   |     | organic matter, compact, massive soil           | matter to 0.9 feet over sandy  |
|     | 1   |     |     | 18    |     | o: o:   structure, (ML).                        | soil fill with some gravel, trace  |
| 2   | 15  |     |     |       |     | 0.9   | silt, slag, concrete debris, ash,  |
| 15  | 1   | 9   |     | - 1   | 16  | Moist gray gravelly (SAND) fill with 20         | and glass fragments to 4.2 feet<br>over sandy soll fill with little      |
|     |     | TV- | 7   |       | 10  | to 40% gravel, trace silt, trace slag,          | gravel, trace to little silt, trace                                      |
|     |     |     |     | 12    |     | concrete debris, glass fragments and            | brick and glass fragments, slag,   |
| 3   | 15  |     |     |       | 1   | ash, compact, massive soil structure,           | and ash to 21.0 feet over clayey   |
| 13  |     | 12  |     |       | 22  | 0.0 0.0 \ (sw).                                 | slack water sediment with trace  |
|     |     |     | 10  |       | 22  | 0000 \  | sand to 30.0 feet over water   |
| -5  | 1   |     |     | 10    |     | Moist, extremely moist to wet at 9.0            | sorted and deposited sand with   |
| 4   | 6   |     |     | - 177 | 1   | feet, wet below 16.0 feet, black                | little gravel, trace silt to 31.1 fee<br>over silty slack water sediment |
| 20  |     | 14  |     |       | 1   | SOOTO (SILTY-SAND) fill with 10 to 20%          | with trace sand and clay to 35.0   |
|     |     | 1   | 10  |       | 24  | gravel, trace to little silt, trace brick       | feet over clayey lake sediment   |
|     |     |     | 10  | 10    | 1   | and glass fragments, slag, and ash,             | with trace sand to 45.0 feet   |
| 5   | 6   |     |     |       | 1   | loose to compact, massive soil structure, (SM). | over silty glacial drift with little                                     |
| 16  | -   | 4   |     | -     | 1 . | o o a structure, torn.                          | clay and gravel, trace to little   |
|     |     |     | 5   |       | 9   |   | sand to 50.0 feet over sandy<br>glacial till with some gravel, little    |
|     |     |     |     | 5     | 1   | 0000  | silt to auger refusal.   |
| 6   | 5   |     | -   |       | 1   | 0.00  | on to anger terrain  |
| 15  |     | 3   |     | -     | 1 . |   | Note: Advanced bore hole with 3  |
|     |     |     | 3   | 16-   | 6   | 0000  | 1/4" ID x 7" OD hollow stem auge   |
|     | -   |     |     | 3     |     |   | casing with continuous split   |
| 7   | 5   |     |     | Ť     | 1   |   | spoon sampling to 24.0 feet and<br>5.0-foot interval sampling to en      |
| 13  |     | 4   |     |       | 1 . | 0000  | of boring at 51.8 feet. Bore hold  |
|     |     |     | 4   |       | 8   | 0.00  | was backfilled with cuttings to  |
|     | -   |     | -   | 10    |     | 0.00  | ground surface upon completion   |
| 8   | 7   |     |     | ,,,   | 1   | 0000  | G-11 2-11-12 11-2 12-13-13-13-13-13-13-13-13-13-13-13-13-13-             |
| 13  |     | 5   |     |       | 17  |   |  |
|     |     | -   | 12  |       | 17  | e   |  |
|     | 1   | -   | 10  | 16    |     | 0000  |  |
| 9   | 17  |     |     | 1     | 1   | 000   |  |
| 8   | 100 | 7   |     | - 1   |     |   |  |
|     |     | -   | 5   | -     | 12  | ોંંં , તે <sup>*</sup> ં , તે                   |  |
|     |     |     | 0   | 4     |     | 0000  |  |
| 10  | 4   |     |     | -4    | 1   | 6 6   |  |
| 9   | 4   | 3   |     |       | 1 - | 50000   | ¥ Water level at 18,8 feet below   |
| -   | -   | 3   | 2   |       | - 5 | 00001   | ground surface upon completion   |
| _   | -   | -   | - 2 | 2     | 1   | 0.00  |  |

N=NUMBER OF BLOWS TO DRIVE 2 \* SPOON 12 \* WITH 140 Ib. WT. FALLING 30 \* PER BLOW LOGGED BY Jason Kryszak, (cns) SHEET 1 OF 3



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Buffalo Outer Harbor Phase 2 PROJECT

LOCATION Euhrmann Boulevard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/08/20 COMPLETED 07/09/20

DEPTH BLOWS ON SAMPLER IN FT

| SN  | 0/<br>6 | 6/  | 12/<br>18 | 18/<br>24 | N   | LITH                    | DESCRIPTION AND CLASSIFICATION   |        | WATER TABLE AND REMARKS |
|-----|---------|-----|-----------|-----------|-----|-------------------------|--|--------|-------------------------|
| 11  | 2       |     |           |           |     | 0000                    | Moist, extremely moist to wet at 9.0   |        |                         |
| 5   | 147     | 2   |           |           | 2   | 0 0                     | feet, wet below 16.0 feet, black   |        |                         |
|     |         | -   |           |           | 3   |                         | (SILTY-SAND) fill with 10 to 20%   |        |                         |
| -   |         |     |           |           |     | <del></del>             | (SILTY-SAND) fill with 10 to 20%   | -/     |                         |
|     |         |     |           | 4         |     |                         | gravel, trace to little silt, trace brick  |        |                         |
|     |         |     |           |           |     |                         | and glass fragments, slag, and ash,  |        |                         |
| 100 | 1       |     |           |           |     | <u> </u>                | loose to compact, massive soil   |        |                         |
|     |         |     |           |           |     |                         | structure, (SM).   |        |                         |
|     |         |     |           |           |     | <u> </u>                |  | 21.0   |                         |
| -   |         |     | -         |           |     |                         | Extremely moist gray (SILTY-CLAY)  | 34 )   |                         |
|     |         |     |           |           | 1   |                         | with trace sand, soft, thinly lamianted  |        |                         |
|     |         |     |           |           |     |                         | with very thin coarse silt lenses, (CL).   |        |                         |
| 12  | 2       |     |           |           |     |                         | with very thin coarse sirt lenses, toc.  |        |                         |
| 14  | 1 100   | 2   |           | -         |     |                         |  |        |                         |
|     |         | -   | 4         |           | 6   |                         |  | W      |                         |
|     |         |     | 4         | -         | 1   | <u> </u>                |  |        |                         |
| -   | -       | -   | -         | 7         | 1   |                         |  |        |                         |
|     |         | _   |           |           | 1   |                         |  |        |                         |
|     |         |     |           |           |     |                         |  |        |                         |
|     |         |     |           |           |     |                         |  |        |                         |
|     |         |     |           |           | 1   | Z- 2Z-Z                 |  |        |                         |
|     |         | _   |           |           | 1   | ====                    |  | AT S   |                         |
|     |         | _   | -         | -         | 1   | <u> </u>                | grades downward to   | 30.0   |                         |
|     | -       | -   | -         | -         | 4   |                         | (0.41D) - 415 (0.41 0.00)  | (F)    |                         |
| _13 | 8       |     |           | -         |     | 0.000                   | Wet gray (SAND) with 10 to 20%   |        |                         |
| 16  | -       | 8   |           |           | 11  | 0:0:                    | gravel, trace silt, compact, stratified,   |        |                         |
|     |         | 4.0 | 3         |           | 1 1 | (A) (A) (A)             | (SW).  | orius  |                         |
|     |         |     |           | 4         |     | 970000                  | clear transition to  | 31.1   |                         |
|     |         |     |           |           | 1   |                         | Extremely moist gray (SILT) with trace   | -      |                         |
|     | -       | 1   | 1         |           | 1   |                         | sand and clay, loose, thinly bedded,   |        |                         |
| -   | -       | -   | -         | +         | 1   | 0.000                   | (ML).  |        |                         |
|     |         | -   | -         | -         | 1   | 0350500                 | V. C.  |        |                         |
|     |         |     |           |           | 1   |                         |  |        |                         |
|     |         |     | 1         |           |     |                         | grades downward to   | 35.0   |                         |
|     |         |     |           |           |     | 1000000                 | grades downward to   | 30.0   |                         |
| 14  | 5       |     |           |           |     |                         | Extremely moist gray (SILTY-CLAY)  |        |                         |
| 18  | -       | 2   |           | 1         |     | ====                    | with trace sand, firm, thinly laminated  |        |                         |
| 10  |         | -   | -         | 1         | - 5 | <u> </u>                | with very thin coarse silt lenses, (CL).   |        |                         |
|     | -       | -   | 3         | -         | -   |                         | The state of the state of the section of the state of the | - 1111 |                         |
|     |         |     | -         | 3         | -   |                         |  |        |                         |
|     |         |     |           | 100       | 1   |                         |  |        |                         |
| 17  |         |     |           | 1         |     |                         |  | 1      |                         |
|     |         |     |           |           | 7   |                         |  |        |                         |
|     |         |     |           | 1         |     | ====                    |  |        |                         |
| -   | -       | -   | -         | -         | 4   | $\pm i \pm \pm i \pm i$ |  |        |                         |
| -   |         | -   | -         | -         | 4   | ====                    |  |        |                         |
|     |         |     |           |           |     | 五十五五十五                  |  |        |                         |



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City of Buffalo, Erie County, NY

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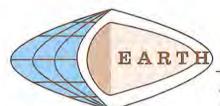
DATE STARTED 07/08/20 COMPLETED 07/09/20

SURF. ELEVATION

BLOWS ON DEPTH SAMPLER IN FT

13E96b

| 201    | 01      | 01   | 101   | 10.7      |   | ALCO DE             | i dala di 2000 il matsil in conservationi 🗀 🕹 | to the experience of the beginning |
|--------|---------|------|-------|-----------|---|---------------------|---|------------------------------------|
| SN     | 0/<br>6 | 6/   | 12/   | 18/<br>24 | N | LITH                | DESCRIPTION AND CLASSIFICATION                | WATER TABLE AND REMARKS            |
| 15     | 8       |      |       |           |   |                     | Extremely moist gray (SILTY-CLAY)             |                                    |
| 17     | 250     | 2    |       |           | 1 |                     |   |                                    |
|        |         |      | 100   |           | 3 | <u> </u>            | with very thin coarse silt lenses, (CL).      |                                    |
|        |         | _    | -     |           |   |                     | with very than coarse sat lenses, toca        |                                    |
|        | _       | -    | -     | 4         | 1 |                     |   |                                    |
|        |         | -    | -     | _         | - | <u> </u>            |   |                                    |
|        |         |      |       |           |   |                     |   |                                    |
|        |         |      |       |           |   | <u> </u>            |   |                                    |
| -      |         |      |       |           |   |                     |   |                                    |
|        |         |      |       |           |   |                     | 490000000000000000000000000000000000000       |                                    |
|        |         |      |       |           | 1 |                     | grades downward to 45.0                       | )                                  |
| 10     | 2       |      |       |           | 1 | 2.0                 | Extremely moist gray                          |                                    |
| 16     | -       | 100  |       |           |   | 0.0                 | (SAND-SILT-CLAY) with 10 to 20%               |                                    |
| 16     |         | 4    | 172   |           | 9 | 0 60                | gravel, little clay, trace to little sand,    |                                    |
|        |         | -    | 5     | -         | - | 0000                | stiff, massive soil structure, (ML-CL).       |                                    |
|        |         |      |       | 10_       | - | 0-00                | seinu maetria erikenaatii 70 km. 700          |                                    |
|        |         |      | -     |           | 1 | 0000                |   |                                    |
|        |         |      |       | 1         |   | ō- "e               |   |                                    |
|        |         |      |       |           |   | 0 0 0<br>0 0<br>0 0 |   |                                    |
|        | 1       |      |       |           | 1 | م م                 |   |                                    |
|        | 7. 1    |      |       |           | 1 | 0.0-0               |   |                                    |
|        |         |      |       |           | 1 | 0 0                 | grades downward to 50.0                       | 0                                  |
| -      | - 10    |      |       |           | 1 | 0.0-0               | Moist gray gravelly (SILTY-SAND)              |                                    |
| 17_    | 10      | 74.0 |       |           | 1 | 0000                | with 20 to 40% gravel, little silt, very      |                                    |
| 8      |         | 56   | 0.000 |           | 1 | 00.00               | dense, massive soil structure, (SM).          |                                    |
|        |         |      | 50/3  |           | - |                     | 51.8  | i                                  |
|        |         |      |       |           |   |                     |   |                                    |
| 1 - 17 | ± * 1   |      |       |           |   | 1 1                 | Boring completed at 51.8 feet.                |                                    |
|        |         |      |       |           | ] |                     |   |                                    |
|        |         |      |       |           |   |                     |   |                                    |
|        |         |      |       |           |   |                     |   |                                    |
|        |         |      |       |           |   | W 1                 |   | Al.                                |
|        |         |      | _     | -         |   |                     |   |                                    |
| -      | -       |      | -     |           | 1 |                     |   |                                    |
| -      |         |      | -     |           | - |                     |   | M/n                                |
| _      |         | _    | -     | -         | - |                     |   |                                    |
|        |         | _    | -     | -         | 4 |                     |   |                                    |
|        | 1       |      |       |           | 1 |                     |   |                                    |
|        |         |      |       | 1         | 1 |                     |   |                                    |
|        | 1-7     |      | b     | 2.0       |   |                     |   |                                    |
|        |         |      | 1     | -         |   |                     |   |                                    |
| 1      |         |      |       |           |   |                     |   |                                    |
|        |         |      | -     |           | 1 |                     |   |                                    |
| -      | -       | -    | -     |           | - | la partir de        |   | ,                                  |
|        |         |      |       |           |   |                     |   |                                    |



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PROJECT Buffalo Outer Harbor Phase 2

LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY

Ravi Engineering & Land Surveying, PC

DATE STARTED 07/09/20 COMPLETED 07/09/20

SURF. ELEVATION

| SN<br>REC | 0/<br>6 | 6/<br>12 | 12/<br>18 | 18/<br>24 | Z   | LITH   | DESCRIPTION AND CLASSIFICATION   | WATER TABLE AND REMARKS  |
|-----------|---------|----------|-----------|-----------|-----|--------|--|--|
| 1         | 10      |          |           |           |     | 0.00   | Moist gray to dark gray gravelly   | Sandy soil fill with some gravel,                                    |
| 10        |         | - 11     |           |           | 28  | 0.0.0  | (SAND) fill with 20 to 40% gravel,   | trace silt, slag, and brick and                                      |
|           | -       |          | 17        |           | 20  | 0.0.0  | trace silt, slag, and brick and glass  | glass fragments to 7.3 feet over                                     |
| 11        |         |          |           | 21        |     | 0:00:  | fragments, compact to dense, massive   | sandy soil fill with little gravel,                                  |
| 2         | 22      |          |           | Thy.      |     | 0.0.0  | soil structure, (SW).  | trace to little silt, trace slag,                                    |
| 20        | 1147    | 12       | 17.7      |           | 40  | O. O.  |  | glass fragments, and wood fiber<br>to 16.0 feet over sandy soil fill |
|           |         | 46.4     | 28        |           | 40  | 0.0.0  |  | with some gravel, trace silt, glass                                  |
|           | 1.      |          |           | 36        |     | 0.00   |  | fragments, and wood fiber to   |
| 3         | 50/3    |          |           |           |     | 0.0.0  | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \  | 22.0 feet over clayey slack  |
| 11        |         |          |           |           |     |        |  | water sediment with trace sand                                       |
|           |         |          |           |           |     | 0.000  |  | to end of boring.  |
| 1.1.1     |         |          |           |           |     | 0.0.0  |  |  |
| 4         | 38      |          |           |           |     | 0:00:  |  |  |
| 7         |         | 20       |           |           | 25  | 0.0.0  | 7.3  |  |
|           |         |          | 5         | -         | 20  | 0.0    |  |  |
|           |         | 1 1      |           | 4         |     | 0000   | Extremely moist dark gray (SILTY-SAND) fill with 10 to 20%   |  |
| 5         | 3       |          | 1         |           |     | 00000  | gravel, trace to little silt, trace slag,  |  |
| 17        |         | 4        |           |           | 7   | 0 00 0 | glass fragments, and wood fiber, loose   |  |
|           |         | 744      | 3         |           | , , | 0000   | to compact, massive soil structure,  |  |
|           |         |          |           | 2         |     | 0000   | (SM).  |  |
| 6         | 3       |          | -         |           |     | 0 00 0 |  |  |
| 16        |         | 3        |           | -         | 11  | 0000   |  |  |
|           |         |          | 8         | -         | 11  | 0000   |  |  |
|           |         |          |           | 3         |     | 0 00 0 |  |  |
| 7         | 3       |          |           | -         |     | 0000   |  | Water level at 12.4 feet below                                       |
| 12        |         | 3        |           |           | 7   | 10000  |  | ground surface upon completion.                                      |
|           |         |          | 4         |           | 1   | 0.00   |  | mark a second second .   |
|           |         |          |           | 6         |     | 0.00   |  | Note: Advanced bore hole with 3<br>1/4" ID x 7" OD hollow stem auge  |
| 8         | 3       |          |           | 2         |     | 0000   |  | casing with continuous split   |
| 8         | 7-1     | 2        |           |           | 5   | 0000   |  | spoon sampling to 24.0 feet and                                      |
|           |         |          | 3         |           |     | 0 000  | 16.0   | 5.0-foot interval sampling to end                                    |
|           | 1       |          | 1 1       | 3         |     | 0000   | The state of the s | of boring at 27.0 feet. Bore   |
| 9         | 5       |          |           |           |     | 0.0.0  | Wet black gravelly (SAND) fill with 20   | hole was backfilled with cuttings                                    |
| 10        | 1,4     | 1        | 1         |           | 2   | 0.0    | to 40% gravel, trace silt, glass   | to ground surface upon completion.                                   |
|           |         |          | 1         |           | 1 7 | 0.0.0  | fragments, and wood fiber, very loose, massive soil structure, (SW).   | completion.  |
|           | ) =     |          |           | 5         |     | 0.00.  | massive son structure, (SW).   |  |
|           |         |          |           |           |     |        |  |  |
|           |         |          |           |           |     | 0.0.0  |  |  |
|           | -       |          |           |           |     | 0.00   |  |  |



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SURF. ELEVATION \_

PROJECT Buffalo Outer Harbor Phase 2

LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/09/20 COMPLETED 07/09/20

| IN FT |         | 9,       | 1PLER     |           |    |                |  |                         |
|-------|---------|----------|-----------|-----------|----|----------------|--|-------------------------|
| SN    | 0/<br>6 | 6/<br>12 | 12/<br>18 | 18/<br>24 | N  | LITH           | DESCRIPTION AND CLASSIFICATION         | WATER TABLE AND REMARKS |
| 10    | 5       |          |           | 1         |    | 0.0.0          | Wet black gravelly (SAND) fill with 20 |                         |
| 4     |         | 2        |           |           | -  | 0.00           | to 40% gravel, trace silt, glass       |                         |
|       |         |          | 3         |           | 5  | 0.0.0          | fragments, and wood fiber, very loose, |                         |
|       |         |          | 1         |           | 1  | 00             | massive soil structure, (SW).          |                         |
| 7     |         |          | -         | 4         |    |                | 22.0                                   |                         |
| -11   | -5      | -        | -         | -         | -  |                |  |                         |
| 1     | _       | 2        | -         | -         | 4  |                | Extremely moist gray (SILTY-CLAY)      |                         |
|       |         | _        | 2         |           | 4  |                | with trace sand, soft to firm, thinly  |                         |
|       |         |          | Y         | 2         |    | <u> </u>       | lamianted with very thin coarse silt   |                         |
|       |         |          |           | -         |    |                | lenses, (CL).                          |                         |
|       |         |          |           |           |    |                |  |                         |
| 12    | 4       |          |           |           | 1  |                |  |                         |
| 4     | 4       | 5        |           |           |    | ====           |  |                         |
| 4     |         | 5        |           | -         | 10 | z + z / z + z' |  |                         |
| -     |         |          | 5_        |           | 1  |                | 27.0                                   |                         |
| -     |         | -        | -         | 4         | 4  | Z- ZZ- Z       |  |                         |
|       |         |          |           |           | 1  |                | Boring completed at 27.0 feet.         |                         |
| T     |         |          |           |           |    |                |  |                         |
| 7     |         |          |           |           |    |                |  |                         |
|       |         |          |           |           | 1  | 1              |  |                         |
|       |         |          |           |           | 1  | 1              |  |                         |
| _     |         |          |           |           | 1  |                |  |                         |
| -     |         | -        | 1         | +-        | -  |                |  |                         |
| _     | -       | _        | -         | -         | -  |                |  |                         |
|       | -       | -        | -         | -         | -  | 1 4            |  |                         |
| -     |         |          |           |           |    |                |  |                         |
|       |         |          |           |           |    | 1 1            |  |                         |
|       |         |          |           |           | 1  |                |  |                         |
|       |         |          | -         |           | 1  |                |  |                         |
|       |         |          |           |           | 1  | 1 1            |  |                         |
|       | -       |          |           |           | 1  |                |  |                         |
|       |         |          | -         | -         | 1  |                |  |                         |
| -     | -       | -        | -         | -         | -  |                |  |                         |
|       |         | -        |           | -         | 4  |                |  |                         |
|       |         |          |           |           |    |                |  |                         |
|       | 1       | -        |           |           |    |                |  |                         |
|       |         |          |           |           |    |                |  |                         |
|       |         |          |           |           | 1  |                |  |                         |
|       |         | -        |           |           | 1  |                |  |                         |
| -     |         | -        | -         |           | 1  |                |  |                         |
|       |         |          | -         | -         |    |                |  |                         |
|       |         |          |           |           |    |                |  |                         |
| 1     |         |          |           |           |    |                |  |                         |
|       |         |          |           |           |    |                |  |                         |
|       |         |          |           |           |    |                |  |                         |



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SURF. ELEVATION

PROJECT Buffalo Outer Harbor Phase 2

LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/13/20 COMPLETED 07/13/20

DEPTH

BLOWS ON

| IN       | FT  |         | SAM      | PLER      |           |     |               |   |   |
|----------|-----|---------|----------|-----------|-----------|-----|---------------|---|---|
| 11.7     | SN  | 0/<br>6 | 6/<br>12 | 12/<br>18 | 18/<br>24 | N   | LITH          | DESCRIPTION AND CLASSIFICATION  | WATER TABLE AND REMARKS   |
|          | 1   | 6       | 10 (100) | -         | a last    | 1   |               | Mariat State Assess (SANDY STUT) (III                                       | Coarse silty soil fill with little                              |
| Ī        | 16  | 10      | 11       |           |           |     | 2 2 2         | Moist light brown (SANDY-SILT) fill with 3 to 7% gravel, little sand, trace | sand, trace organic matter and                                  |
| Г        |     |         | ini n    | 13        |           | 24  | 0000          | organic matter, compact, massive soil                                       | gravel to 0.8 feet over sandy                                   |
|          |     |         |          | - 00      | 16        |     | 0000          | structure, (ML).  | soil fill with little gravel, trace to                          |
|          | 2   | 32      |          |           |           |     | 0 00          | 0.8   | little silt, trace brick fragments,                             |
|          | 17  |         | 34       |           |           | 46  | 0000          | Moist, wet below 8.2 feet, dark gray to                                     | concrete debris, slag, and wood                                 |
| Г        |     |         |          | 12        |           | 46  | 00.00         | gray (SILTY-SAND) fill with 10 to 20%                                       | fiber to 11.6 feet over water<br>sorted and deposited sand with |
|          |     |         |          |           | 8         |     | 0 0           | gravel, trace to little silt, trace brick                                   | trace silt to 21.2 feet over                                    |
|          | 3   | 12      |          |           |           |     | 0000          | fragments, concrete debris, slag, and                                       | coarse silty slack water sedimen                                |
| Г        | 16  |         | 27       |           |           | 17  | 0000          | wood fiber, compact to dense, massive                                       | with trace to little sand to 25.0                               |
| Г        |     |         |          | 20        |           | 47  | 0 0           | soil structure, (SM).   | feet over water sorted and                                      |
| T        |     |         |          | -         | 13        |     | 0000          |   | deposited sand with trace to                                    |
| Г        | 4   | 11      |          |           | 1.0       |     | 0000          |   | little silt to end of boring.                                   |
| Г        | 18  |         | 4        |           |           |     | 0 00          |   | Note: Advanced bore hole with 3                                 |
|          |     |         | 1197     | 9         |           | 13  | 0000          |   | 1/4" ID x 7" OD hollow stem auge                                |
| 1        |     |         |          | -5        | 5         |     | 0000          | 7   | casing with continuous split                                    |
|          | 5   | 10      |          |           | -         |     | 0 00          |   | spoon sampling to 12.0 feet and                                 |
|          | 20  | -10     | 6        |           |           |     | 0000          |   | 5.0-foot interval sampling to end                               |
| ۲        |     |         |          | 7         |           | 13  | 0000          |   | of boring at 27.0 feet. Bore                                    |
| F        |     |         |          |           | - 8       |     | 0 00 0        |   | hole was backfilled with cuttings<br>to ground surface upon     |
| t        | 6   | 6       |          |           | -0        |     | 0000          |   | completion.   |
| 1        | 15  | 0       | 12       |           |           | 13. | 0000          |   | Completion  |
| H        | 10  |         | 12       | 12        |           | 24  | 0 00          | 11.6  |   |
| -        |     |         |          | 12        | 16        |     | 0000          | was a construction of the same and  |   |
| H        | -   |         | -        | -         | 16        |     |               | Extremely moist to wet gray to dark gray (SAND) mostly fine size, trace     |   |
| +        | -   |         |          | -         | -         | 1   | 10.00         | silt and organic matter, compact, thinly                                    |   |
| H        |     | -       | -        | _         |           |     | 1.0           | bedded, (SP).   |   |
| -        | _   | _       |          |           |           | -   |               | 22333, 13.7   |   |
| $\vdash$ | _   | _       |          |           | -         | 1   | A32.48.       |   |   |
| -        | _   | _       |          | -         |           |     | 44 4 44       |   |   |
| +        |     | 160     | -        | -         | -         |     |               |   | ¥ Water level at 15.3 feet below                                |
| H        | 7   | 16      |          | -         | -         |     |               |   | ground surface at completion.                                   |
| -        | 17  |         | 6        |           | -         | 11  | 11.0          |   | Si carra carraca ar combierion                                  |
| F        |     |         |          | 5         |           | 1   | 19 LW         |   |   |
| F        | _   |         | -        |           | 9         | -   |               |   |   |
| -        |     |         |          |           |           | -   | 8.2           |   |   |
| L        |     |         |          | 1         |           | 1   |               |   |   |
|          |     |         |          |           |           |     | 1 7 2 4 5 6 1 |   |   |
| L        | - 1 |         |          | 1         |           | 1   |               |   |   |
|          |     |         |          | ļ.,—      | -         | ]   | 100           |   |   |
| F        |     |         |          | 13        |           |     | 6.            |   |   |



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SURF. ELEVATION

PROJECT Buffalo Outer Harbor Phase 2

LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/13/20 COMPLETED 07/13/20

| SN    | 0/   | 6/   | 12/   | 18/     | N  | LITH     | DESCRIPTION AND CLASSIFICATION                         | WATER TABLE AND REMARKS |
|-------|------|------|-------|---------|----|----------|--|-------------------------|
| REC   | 6    | 12   | 18    | 24      | IA | WALL I   |  |                         |
| 8     | 7    |      | 5.35  |         |    |          | Extremely moist to wet gray to dark                    |                         |
| 17    |      | 9    |       |         | 12 | 78, 71   | gray (SAND) mostly fine size, trace                    |                         |
|       |      |      | 8     |         | 17 |          | silt and organic matter, compact, thinly bedded, (SP). |                         |
|       |      |      |       | 9       |    |          |  |                         |
|       |      |      |       |         |    |          | grades downward to 21.2                                |                         |
|       |      |      | -     |         |    |          | Extremely moist gray (SANDY-SILT)                      |                         |
|       |      |      |       |         |    |          | with trace to little sand, compact,                    |                         |
|       |      |      |       |         |    | Ministra | thinly bedded, (ML).                                   |                         |
|       |      |      |       |         |    | ALV.     |  |                         |
| -     | 1    |      |       | 1       |    |          | grades downward to 25.0                                |                         |
| 9     | 8    |      |       |         |    |          | Extremely moist gray (SILTY-SAND)                      |                         |
| 20    | 1201 | 19   |       |         | 39 |          | with trace to little silt, dense, thinly               |                         |
| 10.00 |      | TOT  | 20    |         | 29 |          | bedded (SM).   |                         |
|       |      |      | 4-1   | 18      |    |          | 27.0   |                         |
| 11    |      | 1    |       | 1,315,7 |    |          | Boring completed at 27.0 feet.                         |                         |
|       |      |      |       |         |    |          |  |                         |
| -     |      |      |       |         |    |          |  |                         |
|       |      |      |       |         |    |          |  |                         |
|       |      |      |       |         |    |          |  |                         |
|       |      | -    |       |         |    |          |  |                         |
|       |      | Vi . | -     |         |    |          |  |                         |
|       |      |      |       |         |    |          |  |                         |
| 11    |      |      |       |         |    |          |  |                         |
|       |      |      |       |         |    |          |  |                         |
|       |      |      |       |         |    |          |  |                         |
|       |      |      |       |         |    |          |  |                         |
|       |      | -    |       |         |    |          |  |                         |
|       |      |      |       |         |    |          |  |                         |
|       |      |      |       |         |    |          | IV.  |                         |
|       |      |      |       |         |    |          | LA.  |                         |
|       |      |      |       |         |    |          |  |                         |
|       |      |      |       |         |    |          |  |                         |
|       | -    | 0    |       |         |    |          |  |                         |
|       |      |      | 1     |         |    |          |  |                         |
|       |      |      | 1, -, |         | 1  |          |  |                         |
|       |      | la . |       |         | 1  |          | 21   |                         |
| 1,    |      |      |       |         | 1  |          |  |                         |
|       |      |      |       |         | 1  |          |  |                         |
|       |      |      | -     |         | 1  |          |  |                         |
|       |      |      |       |         |    |          |  |                         |



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SURF. ELEVATION .

PROJECT Buffalo Outer Harbor Phase 2

LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/13/20 COMPLETED 07/13/20

| SN   | 6     | 6/ | 12/  | 18/<br>24 | N    | LITH                                    | DESCRIPTION AND CLASSIFICATION  | WATER TABLE AND REMARKS  |
|------|-------|----|------|-----------|------|---|---|--|
| 1    | 6     |    |      |           |      | 0 00 0                                  | Moist light gray (SANDY-SILT) fill with                                 | Coarse silty soil fill with little   |
| 18   |       | 7  |      |           |      | 9                                       | 3 to 7% gravel, little sand, trace                                      | sand, trace organic matter and   |
|      |       |    | 16   |           | 23   | 0000                                    | organic matter, compact, massive soil                                   | gravel to 0.9 feet over sandy  |
|      | 1     |    | -10  | 20        |      | 0 00 0                                  | structure, (ML).  | soil fill with little silt and gravel,   |
| 2    | 7     |    |      | 24        |      | 0 000                                   | 0.9   | trace brick fragments, slag, and   |
| 19   | -     |    |      |           |      |   |   | concrete debris to 2.0 feet over   |
| 18   | -     | 4_ | -2-  | _         | 13   |   | Moist dark gray (SILTY-SAND) fill with                                  | coarse silty soil fill, trace to little  |
| -    | -     | -  | 9    |           |      | 0 0 0                                   | 10 to 20% gravel, little silt, trace brick                              | sand and gravel, trace brick   |
| -    | 4     | -  |      | 7         |      |   | fragments, slag, and concrete debris,<br>compact to dense, massive soil | fragments to 5.0 feet over sandy   |
| _3   | 19    | -  |      |           |      | 0 0 0                                   | structure, (SM).  | soil fill with little gravel, trace to<br>little silt, trace slag and ash to   |
| 20   |       | 15 | -    |           | 31   | 3 00 0                                  |   | 11.8 feet over water sorted and  |
|      | 1     |    | 16   |           | 1,80 | 0000                                    | 2.0   | deposited sand with trace to   |
| 7. 1 | 10.00 |    |      | 17        |      | 0,000                                   | Moist light brown to brown  | little silt, trace organic matter to   |
| 4    | 11    | -  |      |           |      | 0000                                    | (SANDY-SILT) fill with 5 to 15% gravel,                                 | 20.0 feet over coarse silty slack  |
| 18   |       | 6  |      |           | 16   | 0000                                    | trace to little sand, trace brick                                       | water sediment with little sand,   |
|      |       |    | 9    |           | 15   | 0 0                                     | fragments, compact, (ML).   | trace organic matter to 25,0   |
|      |       |    |      | 10        | 1    | 0000                                    | 5.0   | feet over water sorted and   |
|      | 1     |    |      | 10        | 1    | 0.00                                    | Moist black (SILTY-SAND) fill with 10                                   | deposited sand with trace to   |
| 5    | 6     | -  |      |           | 1    | 0000                                    | to 20% gravel, trace to little silt, trace                              | little silt to end of boring.  |
| 17   | -     | 7_ | -    | -         | 16   | 0000                                    | siag and ash, compact, to dense,  |  |
| _    | -     | -  | 9    | _         |      | 0 00 0                                  | massive soil structure, (SM).   | Note: Advanced bore hole with 3  |
|      | 1     |    |      | 12        |      | 0000                                    | III SSIVE SON STITUTE TO THE  | 1/4" ID x 7" OD hollow stem auge   |
| 6    | 9     |    | 1111 |           |      | 0000                                    |   | casing with continuous split   |
| 17   | 126   | 26 |      |           | 48   | 0 0                                     |   | spoon sampling to 12.0 feet and  |
|      |       |    | 22   | 1         | 1.0  | 0000                                    | 11.8  | 5.0-foot interval sampling to end  |
| 1    |       |    | 100  | 10        |      | 0,00                                    |   | of boring at 27.0 feet. Bore   |
|      |       |    |      | 1 1000    |      |   | Extremely moist gray (SILTY-SAND)                                       | hole was backfilled with cuttings  |
|      |       |    |      |           | 1    | 100                                     | trace to little slit, trace organic                                     | to ground surface upon completion.   |
|      | -     |    | _    |           | 1    |   | matter, compact, thinly bedded, (SP).                                   | completion.  |
| -    | -     | -  |      |           | -    |   |   |  |
|      | -     | -  |      |           | -    | 15255                                   |   |  |
| _    | -     | -  |      | -         | 4    | /                                       |   |  |
|      |       | -  | -    | -         | 1    |   |   |  |
| 7    | 17    |    |      |           |      |   |   | ¥ Water level at 15.6 feet below   |
| 20   |       | 2  |      |           | 5    | 37.00                                   |   | ground surface at completion.  |
|      | 17.2  |    | 3    |           | ] "  |   |   | Stanting of the state of the st |
|      | 11.   |    |      | a         |      |   |   |  |
|      |       |    |      | 0         |      | 100                                     |   |  |
|      |       |    |      |           |      | 100                                     |   |  |
| -    | -     | -  |      | -         | 1    | 111111111111111111111111111111111111111 |   |  |
| -    | -     | +  | -    | -         | -    |   |   |  |
| -    |       | -  |      |           | -    | 13.50                                   |   |  |
|      |       |    |      |           |      |   | 124   |  |
|      | 100   | 1  |      |           |      | CA.5525A                                | grades downward to 20.0   |  |



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SURF. ELEVATION

PROJECT Buffalo Outer Harbor Phase 2

LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/13/20 COMPLETED 07/13/20

BLOWS ON IN FT SAMPLER

13E96b

| SN  |    | 6/<br>12 | 12/<br>18 | 18/<br>24 | N  | LITH          | DESCRIPTION AND CLASSIFICATION  |      | WATER TABLE AND REMARKS |
|-----|----|----------|-----------|-----------|----|---------------|---|------|-------------------------|
| B_  | 8  |          |           |           |    | William       | AND AND THE STATE OF THE STATE |      |                         |
| 17  |    | 15_      |           |           |    |               | Moist to extremely moist gray<br>(SANDY-SILT) with little sand, trace   |      |                         |
|     |    |          | 19        |           | 34 |               | organic matter, thinly bedded,  |      |                         |
|     | 10 |          |           | 20        |    | M. W. W. W.   | compact to dense, (ML).   |      |                         |
|     |    | -        |           | hand      |    |               |   | - 1  |                         |
| _   |    |          |           |           |    | 07:000        |   |      |                         |
|     |    |          |           |           |    | Market 1      |   |      |                         |
| -   |    | -        |           |           |    |               |   | 100  |                         |
| -   |    |          |           |           |    |               | grades downward to  | 25.0 |                         |
|     | 1  |          |           |           |    | 22.19.20.20.2 | Moist gray (SILTY-SAND) with trace  | -27  |                         |
| 9   | 17 | 14       |           | -         |    | 7.5           | to little silt, thinly bedded, dense,   |      |                         |
| -11 |    | 14       | 17        | 7         | 31 |               | (SM).   |      |                         |
|     |    |          |           | 21        |    | 7.00          |   | 27.0 |                         |
|     |    |          |           |           |    |               | Boring completed at 27.0 feet.  |      |                         |
|     |    |          | -         | 1         |    |               |   |      |                         |
|     |    |          |           |           | 1  |               |   |      |                         |
|     |    |          |           |           |    |               |   |      |                         |
|     | -  |          |           |           |    |               |   |      |                         |
| -   |    | -        | -         |           | 1  |               |   |      |                         |
| -   | -  | -        |           | -         | 1  |               |   |      |                         |
|     | 1  |          |           |           | 1  |               |   | 1    |                         |
|     |    |          |           |           |    |               | X.  |      |                         |
|     |    |          |           |           | 1  |               |   |      |                         |
|     |    |          |           |           | ]  |               |   | 11   |                         |
|     |    |          | -         |           |    |               |   |      |                         |
|     |    |          | -         |           |    |               |   |      |                         |
| -   |    | -        | 1         |           | -  |               |   |      |                         |
| -   | -  |          |           |           | -  |               |   |      |                         |
| -   | -  |          | -         | -         | -  |               |   |      |                         |
| -   | -  |          |           |           | 1  |               |   |      |                         |
|     |    |          |           |           |    |               |   |      |                         |
|     |    |          |           |           |    |               |   |      |                         |
|     |    |          |           |           |    |               |   |      |                         |
|     |    |          |           |           |    |               |   |      |                         |
|     |    |          |           |           |    |               |   |      |                         |
|     |    |          |           |           |    |               |   |      |                         |
|     |    | 100      |           |           |    |               |   |      |                         |



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SURF. ELEVATION \_

PROJECT Buffalo Outer Harbor Phase 2

LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/13/20 COMPLETED 07/13/20

| SN  | 0/<br>6 | 6/   | 12/<br>18 | 18/<br>24 | N   | LITH   | DESCRIPTION AND CLASSIFICATION            | WATER TABLE AND REMARKS  |
|-----|---------|------|-----------|-----------|-----|--|---|--|
| 1   | 7       |      |           |           |     | WWW.   | Moist light gray (SANDY-SILT) fill with   | Coarse silty soil fill with little                                   |
| 20  |         | 10   |           |           | 22  |  | little sand, trace organic matter,        | sand, trace organic matter to 1.3                                    |
|     |         | (10) | 12        |           | 44  | 0000   | compact, massive soil structure, (ML).    | feet over sandy soil fill with little                                |
|     |         |      |           | 13        |     | 0000   | 1.3                                       | gravel, trace to little silt, trace                                  |
| 2   | 10      |      |           |           |     | 0000   | Moist gray to dark gray                   | slag, brick and glass fragments,<br>and concrete debris to 9.2 feet  |
| 16  |         | 15   |           |           | 23  | -0-0   | (SILTY-SAND) fill with 10 to 20%          | over coarse silty soil fill with                                     |
| 754 |         | 1    | 8         |           |     | 0000   | gravel, trace to little silt, trace brick | some sand, little gravel, trace                                      |
|     |         | -    | - 1       | 18        |     | 0000   | and glass fragments, concrete debris,     | concrete debris and brick  |
| 3   | 28      |      |           |           |     | 0000   | and slag, compact, massive soil           | fragments to 12.3 feet over  |
| 16  |         | 23   |           |           |     | 00.  | structure, (SM).                          | water sorted and deposited sand                                      |
|     |         | -    | 50/4      |           |     | 0000   |   | with trace silt to 26.2 feet over<br>silty slack water sediment with |
|     |         |      | 1277.54   |           |     | 0000   |   | trace sand to end of boring.   |
| 4   | 38      |      |           |           |     | 0000   |   |  |
| 6   | 1       | 50/4 |           | _         |     | 0000   |   | Note: Advanced bore hole with 3                                      |
|     |         |      |           |           | . 6 | 0000   |   | 1/4" ID x 7" OD hollow stem auge                                     |
|     |         |      |           |           |     | 0 0  |   | casing with continuous split   |
| 5   | 18      |      |           |           |     | 0000   | 25  | spoon sampling to 14.0 feet and 5.0-foot interval sampling to end    |
| 16  |         | 9    |           |           | 16  | 0000   | 9.2                                       | of boring at 27.0 feet. Bore   |
|     | 7 1     |      | 7         |           |     | 0  | Extremely moist dark gray to gray         | hole was backfilled with cuttings                                    |
|     |         |      |           | 9         |     | 0000   | (SANDY-SILT) fill with 10 to 20%          | to ground surface upon   |
| 6   | 6       | _    |           |           |     | V 1.7 C1 . V 1   | gravel, some sand, trace concrete         | completion.  |
| 14  |         | 12   |           |           | 26  | 0 0  | debris, and brick fragments, compact,     |  |
|     |         |      | 14        |           | 100 | 0000   | (ML).                                     |  |
|     |         |      |           | 23        |     | 0 00   | 12,3                                      |  |
| 7   | 13      |      |           |           |     |  | Wet gray (SAND) mostly fine size,         |  |
| 20  |         | -11  |           |           | 24  | 1100   | trace silt, compact, thinly bedded,       |  |
|     |         |      | 13        |           | 100 |  | (SP).                                     |  |
|     |         |      |           | 14        |     | 1,44,754   |   |  |
|     |         | -    |           | -         |     |  |   |  |
|     |         | -    |           |           |     | 1017   |   | ¥ Water level at 15.0 feet below                                     |
| 8   | 3       |      |           |           |     | 44.5   | M. T. | ground surface upon completion.                                      |
| 23  |         | 8    |           |           | 18  |  |   |  |
| -   |         | -    | 10        | -         | (1) |  | h la a la l |  |
| -   |         |      | -         | - 11      |     | 135,035  | 11  |  |
| -   | -       | -    | -         |           |     | The state of the s |   |  |
|     |         |      |           |           |     | A. A.  |   |  |
|     |         | -    |           |           |     | 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1   |   |  |
|     | -       |      |           | -         |     |  |   |  |
|     |         |      |           |           |     |  |   |  |
|     |         |      |           |           |     | 3.8 1.58   |   |  |



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SURF, ELEVATION \_

PROJECT Buffalo Outer Harbor Phase 2

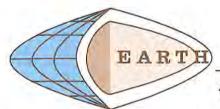
LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC DATE STARTED 07/13/20

COMPLETED 07/13/20

|     | SN | 6 | 6/<br>12 | 12/ | 18/<br>24 | N  | LITH        | DESCRIPTION AND CLASSIFICATION   | WATER TABLE AND REMARKS |
|-----|----|---|----------|-----|-----------|----|-------------|--|-------------------------|
|     | 9  | 7 |          |     |           |    | 3.50        | Wet gray (SAND) mostly fine size,  |                         |
| 1   | 20 |   | 10       |     | 1         | 22 | 100         | trace silt, compact, thinly bedded,  |                         |
|     |    |   |          | 12  |           | -  |             | (SP).  |                         |
|     | _  |   |          |     | 17        |    |             |  |                         |
| +   |    |   |          |     | in the    |    | ALC: NO     |  |                         |
| -   | -  | - |          | -   |           |    | 10 - 00     |  |                         |
| -   | -  | - |          | -   | -         |    |             |  |                         |
| -   |    |   |          | -   | -         | 1  | 300         |  |                         |
| H   |    |   |          |     |           | 1  | 20.00       |  |                         |
| t   | 10 | 4 |          | -   |           | 1  |             |  |                         |
|     | 16 | 4 | 5        |     |           | 1. | 4.5         | grades downward to 26.2  |                         |
|     |    |   | ,        | 9   |           | 14 | 5/2/3/2/2/2 |  |                         |
|     |    |   |          |     | 7         |    |             | Extremely moist gray (SILT) with trace sand, compact, thinly bedded, (ML). |                         |
|     |    |   |          |     |           |    |             | 27.0   |                         |
| ī   |    |   |          |     |           |    |             |  |                         |
| L   |    |   |          |     |           |    |             | Boring completed at 27.0 feet.   |                         |
|     |    |   |          |     | -         |    |             | A. S. I. S.                            |                         |
|     |    |   | -        |     | 1         | -  |             |  |                         |
| +   | -  |   |          |     | -         | -  |             |  |                         |
| -   |    | _ | _        |     | -         | -  |             |  |                         |
| H   |    | - | -        |     | -         | 1  |             |  |                         |
| -   |    |   |          |     |           | 1  | 1           |  |                         |
| H   |    |   |          |     |           | 1  |             |  |                         |
|     |    |   |          |     |           | 1  |             |  |                         |
|     |    |   |          |     |           | 1  |             |  |                         |
|     |    |   |          |     |           | ]  |             | 1  |                         |
|     |    |   |          |     |           |    |             |  |                         |
| _   |    |   |          |     |           |    |             |  |                         |
| -   |    |   |          |     |           | -  |             |  |                         |
| -   |    |   |          |     | -         | -  |             |  |                         |
| -   |    | - | -        |     | -         | -  |             | l'i  |                         |
| -   | _  | - | -        |     | -         | 1  |             | I   I   I   I   I   I   I   I   I   I                                      |                         |
| +   | -  | - |          |     | -         | 1  |             |  |                         |
| -   |    |   |          |     |           |    |             |  |                         |
| 100 |    |   |          |     |           | 1  |             | (I Mills   |                         |
|     |    |   |          |     |           |    |             |  |                         |
| t   |    |   | 1        |     |           |    |             |  |                         |



Soil and Hydrogeologic Investigations • Wetland Delineations 1091 Jamison Road • Elma, NY 14059

13E96b

HOLE NO. B-15-20 • EDI@earthdimensions.com

PROJECT Buffalo Outer Harbor Phase 2 LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/10/20 COMPLETED 07/10/20

SURF. ELEVATION

DEPTH BLOWS ON SAMPLER IN FT

| SN       | 6     | 6/  | 12/<br>18 | 18/<br>24 | N    | LITH       | DESCRIPTION AND CLASSIFICATION   | WATER TABLE AND REMARKS  |
|----------|-------|-----|-----------|-----------|------|------------|--|--|
| 1        | 9     |     |           |           |      | 0 00 0     | Marie Male area (CAMPY OT T) an other                                    | Coarse silty soil fill with some                                       |
| 20       |       | 16  | 1         |           |      |            | Moist light gray (SANDY-SILT) fill with                                  | sand, trace to little gravel, trace                                    |
|          |       | 10  | 11        |           | 27   | 0000       | 5 to 15% gravel, some sand, trace organic matter, compact, massive soil  | organic matter to 1.0 feet over  |
|          |       |     |           | 10        |      | 0000       | structure, (ML).   | sandy soil fill with little silt and                                   |
|          | 10000 |     |           | 12        |      | 200        | 1.0  | gravel, trace brick fragments to<br>2.0 feet over sandy soil fill with |
| 2        | 8     |     | -         | _         |      | 0000       |  | little gravel, trace to little silt,                                   |
| 19       | -     | 11_ |           |           | 21   | 0000       | Moist gray (SILTY-SAND) fill with 10                                     | trace slag to 6.5 feet over  |
| _        | -     |     | 10        |           |      | 0 0        | to 20% gravel, little silt, trace brick                                  | sandy soil fill with trace silt and                                    |
|          | _     |     |           | 13        |      | 0000       | fragments, compact to dense, massive                                     | metal debris to 8.0 feet over  |
| 3_       | 16    |     |           |           |      | 0000       | soil structure, (SM).  | sandy soil fill with little gravel,                                    |
| 18       | 100   | 9   |           |           | 15   | 0000       | 2.0  | trace to little silt, trace brick                                      |
|          | -     | 11  | 6         |           | 7.5  | 0000       | Moist dark gray to brown   | fragments to 10.0 feet over  |
|          |       |     | et.       | 8         |      | 0 00 0     | (SILTY-SAND) fill with 10 to 20%   | coarse silty soil fill with little to                                  |
| 4        | 11    |     |           |           |      | 0000       | gravel, trace to little silt, trace slag,                                | some sand, trace gravel to 13.0  |
| 17       |       | 8   |           |           |      | 4.4.8.53   | compact, massive soil structure, (SM).                                   | feet over coarse silty slack   |
|          |       |     | 9         |           | 17   | 135315     | 6.5  | water sediment to 25.0 feet over                                       |
|          |       |     | 5         | 20        |      | (2000 to 1 | Marie and CAND OF CITY Inches  | water sorted and deposited sand  |
| -        |       |     |           | 20        |      | 0000       | Moist gray (SAND) fill with trace silt,                                  | with trace silt to 52.5 feet over<br>limestone bedrock to end of       |
| _5<br>15 | 26    |     |           | _         | 182  | 0000       | flat metal debris at 7.8 feet, compact,<br>massive soil structure, (SP). | coring.  |
| 15       |       | 22  | 70.0      |           | 36   | 0000       |  | corning.   |
|          | -     |     | 14_       | A-V       | -    | 0 00 0     | 8.0  | Note: Advanced bore hole with 3  |
| -        |       |     |           | 10        | 1    | 0000       | Moist gray (SILTY-SAND) fill with 10                                     | 1/4" ID x 7" OD hollow stem auge                                       |
| 6        | 7     | -   |           |           |      | 9 8        | to 20% gravel, trace to little silt, trace                               | casing with continuous split   |
| 12       |       | 4   |           |           | 6    | 0 . 0 .    | brick fragments, compact to dense,                                       | spoon sampling to 17.0 feet and  |
|          |       |     | 2         |           |      |            | massive soil structure, (SM).  | 5.0-foot interval sampling to 52.5                                     |
|          |       |     |           | 2         |      | 4 4        | 10.0   | feet. Continued below with a   |
| 7        | 27    |     |           | ===       |      | 0 00 0     | Moist gray (SANDY-SILT) fill with 3 to                                   | NG-2 size double tubed wireline  |
| 18       |       | 23  |           |           | 43   |            | 7% gravel, little to some sand, loose,                                   | core barrel with diamond bit to  |
|          |       |     | 20        |           | 1 75 |            | massive soil structure, (ML).  | end of coring at 62.5 feet. Bore<br>hole was backfilled with cuttings  |
|          |       |     | - 377     | 21        | 1    | 70.75      | 13.0   | to ground surface upon   |
| 8        | 9     |     |           |           | 1    |            | Mat area (CANDY STIT) with some  | completion.  |
| 22       |       | 11  | 1         | -         | 1    | 75.75.75   | Wet gray (SANDY-SILT) with some fine size sand, compact, thinly bedded,  |  |
| -        |       | 1   | 7         |           | 18   | 35.55      | (ML).  | Water level at 15.1 feet below   |
|          |       |     | 1         | 9         | 1    |            | Vien   | ground surface at completion.  |
|          | 1     |     |           | 9         | 1    |            |  |  |
|          | -     | -   |           |           | 1    |            |  |  |
| -        | -     | -   |           |           | 1    |            |  |  |
| -        | -     | -   |           |           | 1    |            |  |  |
| -        | -     | -   | -         | -         | -    |            |  |  |
|          |       |     | -         |           | -    |            |  |  |
|          |       | -   |           |           | 1    |            |  |  |
|          |       |     | 11.71     |           |      |            | 5.00 g v 80 m 20 m 30 m  |  |
|          |       |     |           |           |      |            | grades downward to 20.0  |  |

LOGGED BY Jason Kryszak, (cns)



Soil and Hydrogeologic Investigations • Wetland Delineations 1091 Jamison Road • Elma, NY 14059

13E96b HOLE N

HOLE NO. B-15-20 SURF. ELEVATION

PROJECT Buffalo Outer Harbor Phase 2

LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/10/20 COMPLETED 07/10/20

| INFI |         |    | PLER      |      |     |  |  |                                    |
|------|---------|----|-----------|------|-----|--|--|------------------------------------|
| SN   | 0/<br>6 | 6/ | 12/<br>18 | 18/  | N   | LITH                                       | DESCRIPTION AND CLASSIFICATION   | WATER TABLE AND REMARKS            |
| 9    | 12      | 4  | 17 14     |      |     | 4000                                       | Wet gray (SANDY-SILT) with some  | Note: Added water prior to         |
| 15   |         | 9  |           | 100  | 15  |  | fine size sand, compact, thinly bedded,                                    | taking samples 10, 11, 12, 13, 14, |
|      |         |    | 6         |      | 13  |  | (SP).  | and 15                             |
|      |         |    | -         | 7    |     |  | W. W   |                                    |
|      |         |    |           |      |     |  |  |                                    |
|      |         |    | -         |      |     |  |  |                                    |
|      |         |    |           |      |     |  |  |                                    |
|      |         |    |           |      |     |  |  |                                    |
|      |         |    |           |      |     | MARKE (AV.                                 | grades downward to 25.0  |                                    |
|      |         |    |           |      |     | 31.73.73.7                                 |  |                                    |
| 10_  | _5_     |    |           | _    |     |  | Wet gray (SAND) mostly fine size,  |                                    |
| 22   | 7       | 6  |           |      | 13  | 35,130                                     | trace silt, compact, tendency to<br>liquefy when disturbed, thinly bedded, |                                    |
| -    |         | -  | _7_       |      | m   |  | (SP).  |                                    |
| -    |         |    |           | 12   |     | 120  | 1707   |                                    |
| -    | -       | -  | -         | -    |     | 12. 14. 14. 14. 14. 14. 14. 14. 14. 14. 14 |  |                                    |
| -    |         |    |           |      |     | 44 . 25                                    |  |                                    |
| -    | -       |    |           |      |     |  |  |                                    |
|      | -       |    | _         |      |     |  |  |                                    |
| -    | 10.11   |    |           |      |     | 21 5 34                                    |  |                                    |
| -    | 8       | -  |           |      | 1   |  |  |                                    |
| 23   | 8       | 7  | -         |      | 100 |  |  |                                    |
| -20  | -       | -  | 19        |      | 26  | ANCAN.                                     |  |                                    |
|      |         |    | 15        | 21   |     | 14 1 14                                    |  |                                    |
|      | 1       |    |           | -61  |     | 3710                                       |  |                                    |
|      | -       |    | -         |      |     |  |  |                                    |
| 11   |         |    |           |      |     | 18.1.18                                    |  |                                    |
|      |         |    |           |      |     |  |  |                                    |
|      |         |    |           |      |     |  |  |                                    |
|      |         |    |           |      |     | 135.535                                    |  |                                    |
| 12   | 4       |    |           |      |     |  |  |                                    |
| 20   |         | 7  | -         | le i | 16  | 178.7.64                                   |  |                                    |
| V    |         | -  | 9         | 1    | ,×  |  |  |                                    |
|      | 1       |    | -         | 9    |     |  |  |                                    |
| -    |         |    |           |      |     |  |  |                                    |
|      | - 1     | -  |           | 1=   |     | 1000                                       |  |                                    |
|      |         |    |           |      |     | 31,744                                     |  |                                    |
|      |         |    |           | -    |     |  |  |                                    |
|      |         |    |           |      |     | 17.00                                      |  |                                    |
|      |         |    |           |      |     | -22.00                                     |  |                                    |



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SURF. ELEVATION

PROJECT Buffalo Outer Harbor Phase 2

LOCATION Fuhrmann Bouleyard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC DATE ST

DATE STARTED 07/10/20 COMPLETED 07/10/20

|   | SN        | 0/<br>6 | 6/  | 12/<br>18 | 18/<br>24 | N  | LITH                 | DESCRIPTION AND CLASSIFICATION                                     | WATER TABLE AND REMARKS      |
|---|-----------|---------|-----|-----------|-----------|----|----------------------|--|------------------------------|
|   | 13        | 7       |     |           |           |    |                      | Wet gray (SAND) mostly fine size,                                  |                              |
|   | 24        |         | 12  |           |           | 27 |                      | trace silt, compact, tendency to                                   |                              |
| - |           |         |     | 15_       |           | 50 | 111                  | liquefy when disturbed, thinly bedded,                             |                              |
|   |           |         | 100 |           | 26        |    |                      | (SP).  |                              |
| 1 |           |         |     |           | 1         |    |                      |  |                              |
|   |           | 1       |     |           |           |    |                      |  |                              |
|   |           |         |     |           |           |    | 200                  |  |                              |
| 1 |           |         | _   |           |           |    | 1541.08              |  |                              |
|   |           |         |     |           |           |    |                      |  |                              |
| 4 |           |         |     |           |           |    | 100                  |  |                              |
|   | 14        | 4       |     |           |           |    | 11 1 11              |  | 1                            |
| 1 | 24        |         | 4   |           |           | 9  |                      |  | 1                            |
|   |           |         |     | 5_        |           | -  | 1.50                 |  |                              |
| 1 |           |         |     |           | 6         |    | 3 3 5 5 8<br>3 5 5 8 |  |                              |
| 4 |           |         |     | -         |           |    | 140,100              |  |                              |
| 1 |           |         |     |           |           |    |                      |  |                              |
| 1 |           |         | -   |           |           |    | 1000                 |  |                              |
| - |           |         |     |           |           |    | 35 - 34              |  |                              |
| 1 |           |         |     | 1         |           |    |                      |  |                              |
| - |           | -       | _   | _         |           |    | 100                  |  |                              |
| 1 | 15        | 6       | -   | _         |           |    | 131,131              |  |                              |
| 1 | 20        | _       | 7   | -         |           | 15 |                      |  |                              |
| 1 | -         | -       |     | 8         |           | 1  |                      |  |                              |
|   | _         | _       | _   | _         | -11_      | 1  | 34, 34               | clear transition to 52.5   |                              |
| - | $\Lambda$ |         | -   |           |           |    |                      |  | Run Depth Length Rec Rec RQD |
|   | +         |         |     | -         | -         |    |                      | Dark gray limestone bedrock,<br>effervesces without etching, hard, | # (ft) (ft) (ft) % %         |
| - | -         | -       |     |           |           |    |                      | massive bedding, slightly fractured,                               | 52.5                         |
|   | +         |         |     | -         | -         |    |                      | core pieces range from (0.1-3.4'),                                 | 1 to 5.0 4.8 96 90           |
| 1 | -         | W.7.    |     | _         |           |    |                      | occasional fossils.  | 57.5                         |
| + |           | Run     | #1  | _         |           |    |                      |  |                              |
|   | -         |         |     |           | _         |    | TX-TX-T              |  | 57.5                         |
|   |           |         |     |           | -         |    |                      |  | 2 to 5.0 4.7 94 88           |
|   | +         |         |     |           |           | 1  |                      |  | 02.0                         |
|   | 1,        |         | -   |           |           | 1  |                      |  |                              |
| _ | *         |         | 7   |           |           | 1  |                      |  |                              |
|   |           | Dun     | #2  |           |           | 1  |                      |  |                              |
|   |           | Run     | #2  |           |           |    |                      |  |                              |
|   |           |         | -   |           |           |    |                      |  |                              |
| ) | _         |         |     |           | -         | 1  |                      |  |                              |



Soil and Hydrogeologic Investigations • Wetland Delineations 1091 Jamison Road • Elma, NY 14059

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HOLE NO. B-15-20 SURF. ELEVATION \_

PROJECT Buffalo Outer Harbor Phase 2

LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/10/20 COMPLETED 07/10/20

| SN | 0/<br>6 | 6/<br>12 | 12/<br>18 | 18/<br>24 | N | LITH | DESCRIPTION AND CLASSIFICATION  | WATER TABLE AND REMARKS   |
|----|---------|----------|-----------|-----------|---|------|---|---|
| V  | Run     | #2       |           |           |   |      | Dark gray limestone bedrock, effervesces without etching, hard, massive bedding, slightly fractured, core pieces range from (0.1-3.4'), occasional fossils. | Run Depth Length Rec Rec RQD<br># (ft) (ft) (ft) % %<br>  |
| -  |         |          |           |           |   |      | Coring completed at 62.5 feet.  | EDI Bedrock Hardness Classification   |
|    |         |          |           |           |   |      |   | Hard: Intact hand-held specimen requires more than one hammer blow to break it. Can be faintly scratched by a steel nail. |
|    |         |          |           |           |   |      |   |   |
|    |         | -        |           |           |   |      |   |   |
|    | 1       |          |           |           |   |      |   |   |
|    |         |          |           |           |   |      |   |   |
|    |         |          |           |           |   |      |   |   |
|    |         |          |           |           |   |      |   |   |
|    |         |          |           |           |   |      |   |   |
|    |         |          |           |           |   |      |   |   |
|    |         |          |           |           |   |      |   |   |
|    |         |          |           |           |   |      |   |   |
|    |         |          |           |           |   |      |   |   |
|    |         |          |           |           |   |      |   |   |
|    |         |          |           |           |   |      |   |   |
|    |         |          |           |           |   |      |   |   |



Soil and Hydrogeologic Investigations • Wetland Delineations 1091 Jamison Road • Elma, NY 14059

13E96b

CLIENT

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SURF. ELEVATION

PROJECT Buffalo Outer Harbor Phase 2

LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY

Ravi Engineering & Land Surveying, PC

DATE STARTED 07/14/20 COMPLETED 07/14/20

| SN            | 0/<br>6 | 6/<br>12 | 12/<br>18 | 18/<br>24 | N    | LITH      | DESCRIPTION AND CLASSIFICATION   | WATER TABLE AND REMARKS  |
|---------------|---------|----------|-----------|-----------|------|-----------|--|--|
| 1             | 7       |          |           |           |      | 0 . 0 . 0 | CONDO CONTO  | Consequently and fill with little                                    |
| 19            |         | 14       |           |           | 25   |           | Moist light gray (SANDY-SILT) fill with  3 to 7% gravel, little sand, trace  | Coarse silty soil fill with little sand, trace organic matter and    |
| -/-           |         | -14      | 19        |           | 33   | 0000      | organic matter, compact, massive soil  | gravel to 0.8 feet over sandy  |
|               |         |          | 1.5       | 22        | 11 6 | 0 00 0    | structure, (ML).   | soil fill with little gravel, trace to                               |
| 2             | 25      |          |           |           |      | 0000      | 0.8  | little silt, trace brick and glass                                   |
| 18            | - 211   | 27       |           |           | 212  | 0000      | A  | fragments, slag, and concrete  |
| 0             |         |          | 22        |           | 49   | 0000      | Moist dark gray to gray<br>(SILTY-SAND) fill with 10 to 20%  | debris to 12.1 feet over water                                       |
|               |         |          |           | 4         |      | 0000      | gravel, trace to little silt, trace slag,  | sorted and deposited sand with<br>trace silt to 15.0 feet over water |
| 3             | 9       |          |           | -4        |      | 0000      | brick and glass fragments, and   | sorted and deposited sand with                                       |
| 10            |         | 10       |           |           |      | 0000      | concrete debris, compact to dense,   | trace to little silt, trace organic                                  |
| 10            |         | 10       | 2         |           | 12   | 0000      | massive soil structure, (SM).  | matter to 21.0 feet over silty                                       |
|               |         |          | -         | 9         |      | 0000      | Married C. London Co. Brand Co. Bran | slack water sediment with little to                                  |
|               | 12      |          |           | 9         |      | 0 00 0    |  | some clay, trace sand to 25.0  |
| <u>4</u><br>6 | 12      | 7        |           |           | More | 0000      | 1.0  | feet over water sorted and   |
| 0             |         | 1        | 1         |           | 12   | 0000      |  | deposited sand with trace to<br>little silt to end of boring.        |
| -             |         |          | 5         | -         |      | 0000      |  | little slit to end of borning.                                       |
|               |         |          |           | -5        |      | 0000      |  | Note: Advanced bore hole with 3                                      |
| 5             | 9       | 16       | -         |           |      | 0000      |  | 1/4" ID x 7" OD hollow stem auge                                     |
| 8             | -       | 16       | 20120     |           | 1    | 0000      |  | casing with continuous split   |
| _             |         |          | 50/3      | _         | 1    | 0000      |  | spoon sampling to 14.0 feet and                                      |
| -             | 1       |          |           |           | 1    | 0000      |  | 5.0-foot interval sampling to end                                    |
| 6             | 7_      |          |           | -         |      | 0 00 0    |  | of boring at 27.0 feet. Bore   |
| 8             | -       | 2        |           | _         | 4    | 0000      |  | hole was backfilled with cuttings<br>to ground surface upon          |
| -             | -       | -        | 2         | _         | 110  | 0000      | 12.1   | completion.  |
| _             |         | -        |           | 4         |      | 0 00 0    |  | completion.  |
| 7             | 7       |          |           |           |      |           | Wet gray (SAND) mostly fine size,  | No water at compeltion.  |
| 23            |         | 7        |           |           | 17   | 44 64     | trace silt, compact, thinly bedded,  |  |
|               |         |          | 10        |           |      | 7 Y       | (SP).  |  |
|               | 1       |          | 1 10 11   | 12        |      | 3500      |  |  |
|               |         |          |           | -         | Į    | 43 1 3 8  | grades downward to 15.0  |  |
| -             | -       |          |           |           |      |           |  |  |
| 8             | 7       |          |           |           | Į    | V(V)(C/)  | Wet gray (SILTY-SAND) with trace to  |  |
| 22            |         | 4        |           |           | 9    |           | little silt, trace organic matter, loose,  |  |
| 7.5           |         | -        | 5         |           | NG.  | 17.7      | thinly bedded, (SM).   |  |
| 11.17         |         |          |           | 8         |      | 0,4       |  |  |
|               |         |          |           |           |      | 0.50      |  |  |
| 11            | 1       |          |           |           |      | 100       |  |  |
| 1111          |         |          | -         |           | 1    |           |  |  |
|               |         |          |           |           | 1    | 10000     |  |  |
|               |         |          |           | 1         |      |           |  |  |
|               |         |          |           |           |      |           |  |  |



Soil and Hydrogeologic Investigations • Wetland Delineations 1091 Jamison Road • Elma, NY 14059

HOLE NO. B-16-20 • EDI@earthdimensions.com

SURF. ELEVATION \_

PROJECT Buffalo Outer Harbor Phase 2 LOCATION Fuhrmann Boulevard

City of Buffalo, Erie County, NY

Ravi Engineering & Land Surveying, PC

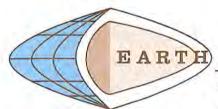
COMPLETED 07/14/20 DATE STARTED 07/14/20

BLOWS ON DEPTH IN FT SAMPLER

13E96b

CLIENT

| SN      | 0/<br>6 | 6/  | 12/<br>18 | 18/<br>24 | N  | LITH         | DESCRIPTION AND CLASSIFICATION   | WATER TABLE AND REMARKS |
|---------|---------|-----|-----------|-----------|----|--------------|--|-------------------------|
| 9       | 5       |     |           |           | 7  |              | Wet gray (SILTY-SAND) with trace to                                      |                         |
| 20      | - 1     | 4   |           |           | 10 |              | , little silt, trace organic matter, loose,                              |                         |
|         |         |     | 6         |           | 10 |              | thinly bedded, (SM).   |                         |
|         |         |     | - 12      | 7         |    |              | grades downward to 21.0  |                         |
|         |         |     |           |           |    | 7-           |  |                         |
|         |         |     |           | -         |    |              | Extremely moist gray (CLAYEY-SILT) with little to some clay, trace sand, |                         |
|         |         |     |           |           |    |              | firm, thinly laminated with very thin                                    |                         |
|         |         |     |           |           |    |              | coarse silt lenses, (ML-CL).   |                         |
|         |         |     |           |           |    |              |  |                         |
|         |         |     | -         |           |    |              | grades downward to 25.0  |                         |
| 10      | 12      |     |           |           |    | DAMES AND    | Wet gray (SILTY-SAND) with trace to                                      |                         |
| 20      | 1/_     | 5   |           |           | 45 | 12.45.23     | little silt, loose, thinly bedded, (SM).                                 |                         |
| 20      |         | _0_ | 5         |           | 10 |              |  |                         |
|         |         |     | 5         | 10        |    |              | 27.0   |                         |
|         |         | -   |           | 10_       |    | 11.10.11.127 | Boring completed at 27.0 feet.   |                         |
|         | _       |     |           |           |    |              | Borning completed at 27.0 reet.  |                         |
|         | _       |     |           |           |    |              |  |                         |
| -       | _       | _   |           |           |    |              |  |                         |
|         | -       |     |           | -         |    |              |  |                         |
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| 1 1 1 1 |         | _   |           |           |    |              |  |                         |
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| 7.3     |         |     |           |           |    |              |  |                         |
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|         |         |     |           |           |    |              | [ ]  |                         |
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|         |         | 1   |           |           |    |              |  |                         |
|         |         |     |           |           | 1  |              |  |                         |
|         |         |     |           |           | 1  |              | 110  |                         |
|         |         |     |           |           | 1  |              |  |                         |
|         |         |     |           |           | 1  |              |  |                         |
|         |         |     |           |           | 1  |              | l'   |                         |
|         |         | -   | -         | -         | -  |              |  |                         |



Soil and Hydrogeologic Investigations • Wetland Delineations 1091 Jamison Road • Elma, NY 14059

13E96b

HOLE NO. B-17-20 • EDI@earthdimensions.com

SURF. ELEVATION .

PROJECT Buffalo Outer Harbor Phase 2

LOCATION Euhrmann Boulevard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/14/20 COMPLETED 07/14/20

| SN | 0/<br>6 | 6/  | 12/<br>18 | 18/<br>24 | N    | LITH       | DESCRIPTION AND CLASSIFICATION   | WATER TABLE AND REMARKS   |
|----|---------|-----|-----------|-----------|------|------------|--|---|
| 1  | 8       |     |           |           |      | 0 0 0 0    | Martin Balan areas (CAMBY BILT) (BILLIM  | Coarse silty soil fill with little                                |
| 23 |         | 16  |           |           | 2.0  |            | Moist light gray (SANDY-SILT) fill with  3 to 7% gravel, little sand, trace  | sand, trace organic matter and                                    |
|    |         | 10  | 8         |           | 24   | 00000      | organic matter, compact, massive soil  | gravel to 0.8 feet over sandy                                     |
| -  | -       | _   |           |           |      | 0 0        | structure, (ML).   | soil fill with little gravel, trace to                            |
|    | 1.000   | _   |           | 9         |      | 0000       |  | little silt, trace brick and glass                                |
| 2  | 50/4    |     | _         | -         |      | 0000       | 0.8  | fragments, concrete debris, ash,                                  |
| 4  | -       |     |           | _         |      | 0 0        | Moist, wet below 10.0 feet, dark gray  | and wood fiber to 12.5 feet over                                  |
| _  |         |     | -         | -         |      | 0000       | to gray (SILTY-SAND) fill with 10 to   | water sorted and deposited sand                                   |
|    |         |     |           |           |      | 0000       | 20% gravel, trace to little silt, trace  | with trace to little silt, trace                                  |
| 3  | 7       |     |           |           |      | 0000       | brick and glass fragments, concrete  | organic matter to 20.0 feet over                                  |
| 19 |         | 5   |           |           | 10   | 0000       | debris, ash, wood fiber, compact,  | silty slack water sediment with                                   |
|    |         |     | 5         |           | 10   | 0 0        | massive soil structure, (SM),  | little to some clay to end of                                     |
|    |         |     | -         | 6         | 1    | 0000       |  | boring.   |
| 4  | 4       |     |           | _0_       |      | 0000       |  | ay ng turing gayan tahun at an ili lamin dasar 12                 |
| 16 | 4       |     |           |           |      | 0          | 1  | Note: Advanced bore hole with 3                                   |
| 10 |         | 6   |           | _         | 12   | 0000       |  | 1/4" ID x 7" OD hollow stem auge                                  |
|    | -       | -   | 6         |           |      | 0 00 0     | 9  | casing with continuous split                                      |
|    |         |     |           | 12        |      | 0000       |  | spoon sampling to 14.0 feet and                                   |
| 5  | 3       |     | 1 = 1     |           |      | 00.00      | 5  | 5.0-foot interval sampling to en-<br>of boring at 27.0 feet. Bore |
| 8  |         | 2   |           |           | 4    | 0 0        | 5 I  | hole was backfilled with cuttings                                 |
| 77 |         |     | 2         |           | 100  | 0000       | 7  | to ground surface upon  |
|    |         |     |           | 2         |      | 0,000      |  | completion.   |
| 6  | 1       |     | 1         |           | 1    | 0000       |  | Completion.   |
| 8  |         |     |           |           | Ugi  | 0000       |  | No water at compeltion.   |
|    |         |     | 3         |           | 4    | 0 00       |  | Marie Anna Tourist College Co.                                    |
| -  | -       | -   | 3         |           | 1    | 0000       | 3024   |   |
|    | -       | _   | 1         | 4         | 1    | 0000       | 12.5   |   |
| 7  | 5       | -   |           | -         |      | 0000       | The second secon |   |
| 18 |         | 9   |           |           | 15   |            | Wet gray (SILTY-SAND) with trace to  |   |
|    |         |     | 6         |           |      | 100        | little silt, trace organic matter,   |   |
|    |         | 4   |           | 7         |      |            | compact, thinly bedded, (SM).  |   |
|    | - 1     |     |           | 100       |      | 1.50       |  |   |
|    | -       | /== |           |           | 1    | A.,        |  |   |
| 8  | 7       |     |           |           |      |            |  |   |
| 20 | 7       | 13  |           |           | 1 00 |            |  |   |
| 32 |         | 10  | 12        |           | 25   |            |  |   |
| -  |         |     | 12        | - 11      | 1    |            |  |   |
| -  | -       | -   |           | 11        | 1    | 11/1/25/27 |  |   |
| -  |         | -   | -         |           | -    |            |  |   |
| -  | -       |     |           | -         | -    |            |  |   |
|    |         |     |           |           |      | (32)       |  |   |
|    | 1       |     |           |           |      |            |  |   |
|    |         |     |           |           |      |            |  |   |
|    |         |     |           |           |      |            | grades downward to 20.0  |   |



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SURF. ELEVATION \_

PROJECT Buffalo Outer Harbor Phase 2

LOCATION Fuhrmann Boulevard

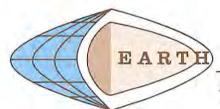
City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/14/20 COMPLETED 07/14/20

DEPTH IN FT BLOWS ON SAMPLER

| SN   | 0/<br>6  | 6/<br>12 | 12/<br>18 | 18/ | N  | LITH  | DESCRIPTION AND CLASSIFICATION                               | WATER TABLE AND REMARKS |
|------|----------|----------|-----------|-----|----|-------|--|-------------------------|
| 9    | 5        |          |           |     |    |       | Extremely moist gray (CLAYEY-SILT)                           |                         |
| 17   |          | 8        |           |     |    |       | with little to some clay, stiff, thinly                      |                         |
|      |          |          | 11        |     | 19 |       | laminated with very thin coarse silt                         |                         |
|      |          |          |           | 9   |    | 7     | lenses, (ML-CL).   |                         |
|      |          |          | -         | 9   |    |       |  |                         |
|      |          |          | _         |     |    |       |  |                         |
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|      |          |          |           |     |    |       |  |                         |
| _10_ | 8        |          |           |     |    |       | Ø  |                         |
| 20   | 1 1 1    | 7        |           | -   | 19 |       |  |                         |
|      |          |          | 12        |     | 10 | 1     | 07.0   |                         |
|      |          |          |           | 14  |    | 77.77 | 27.0   |                         |
|      |          |          |           |     |    |       | Boring completed at 27.0 feet.                               |                         |
|      |          |          |           |     | 1  |       | CANAL CANAL CONTRACT AND |                         |
|      |          |          |           |     | 1  |       |  |                         |
|      |          |          |           |     | 1  |       |  |                         |
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|      |          |          |           |     |    |       |  |                         |
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|      | 14 7     |          |           |     |    |       |  |                         |
|      |          | -        |           |     | ]  |       |  |                         |
|      |          |          |           |     | 1  |       |  |                         |
|      | 111      |          |           |     |    |       |  |                         |
| 7    |          |          |           |     |    |       |  |                         |
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|      |          |          |           |     |    |       |  |                         |



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SURF, ELEVATION \_
LOCATION <u>Fuhrmann Boulevard</u>

COMPLETED 07/10/20

PROJECT Buffalo Outer Harbor Phase 2

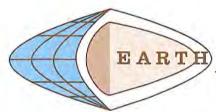
CLIENT Ravi Engineering & Land Surveying, PC

City of Buffalo, Erie County, NY

DATE STARTED 07/09/20

DEPTH IN FT BLOWS ON

| NFT       |         | SAM      | PLER      |           |     |           |  |  |
|-----------|---------|----------|-----------|-----------|-----|-----------|--|--|
| SN<br>REC | 0/<br>6 | 6/<br>12 | 12/<br>18 | 18/<br>24 | N   | LITH      | DESCRIPTION AND CLASSIFICATION   | WATER TABLE AND REMARKS  |
| 1         | 5       |          | I Follows |           |     | 000       | Moist stay (SANDY-STIT) fill with 10   | Coarse silty soil fill with little                               |
| 12        |         | 4        | 11        |           | 120 | 0000      | Moist gray (SANDY-SILT) fill with 10 to 20% gravel, little sand, trace   | sand and gravel, trace organic                                   |
|           |         |          | 4         |           | 8   | 0 0       | organic matter, loose, massive soil  | matter to 2.0 feet over sandy                                    |
|           |         | -        | -4        | 3         |     | 0000      | structure, (ML).   | soil fill with little silt and gravel,                           |
| 2         | 7       |          |           |           |     | . 0. 0    | 2.0  | trace brick fragments, concrete                                  |
| 10        |         |          |           |           |     | 0000      | <u> </u>   | debris, and wood fiber to 7.0                                    |
| 10        |         | _6_      |           | -         | 9   | 0000      | Moist gray to brownish gray  | feet over water sorted and                                       |
| _         |         | -        | _3_       |           | m   | 0 00 0    | (SILTY-SAND) fill with 10 to 20%   | deposited sand with trace to                                     |
| _         |         |          |           | 7_        |     | 0000      | gravel, little silt, trace brick fragments,  | little gravel, trace silt to 15.0                                |
| 3         | 7       | _        |           |           |     | 0000      | concrete debris, and wood fiber,<br>loose, massive soil structure, (SM).   | feet over clayey slack water                                     |
| 13        |         | 7        |           |           | 14  | 0 0       | loose, massive son structure, (SM).  | sediment with trace sand to 20.0 feet over water sorted and      |
|           |         |          | 7_        |           |     | 0000      |  | deposited sand with trace silt                                   |
|           |         |          |           | 9         |     | 0000      |  | and gravel to end of boring.                                     |
| 4_        | 6       |          |           |           |     | 0 0       | 7.0  | and graver to end or borning.                                    |
| 14        |         | 8        |           |           | 19  | 0000      | 7.0  |  |
|           |         |          | 11        | -         | 19  | 0.00.0    | Extremely moist gray (SAND) with 5 to  |  |
|           |         |          |           | 16        |     |           | 15% gravel, trace silt, compact,   |  |
| 5         | 20      |          |           | 10        |     | 6 6       | stratified, (SW).  |  |
| 15        | -20     | 11       |           |           | 63  | b p       | A STATE OF THE STA |  |
| 10        |         | _11_     | 40        |           | 29  | 3. 3. 4.  |  |  |
| _         |         |          | 18        | 76.1      |     |           |  |  |
| 1.50      |         | _        |           | 19        |     | b o       |  | Water level at 10.1 feet below                                   |
| 6         | 12      |          |           | -         |     |           |  | ground surface at completion.                                    |
| 16        |         | 18       |           | -         | 29  | 9 . 4     |  |  |
|           |         |          | - 11      |           |     | 8         |  | Note: Advanced bore hole with 3                                  |
|           |         |          |           | 21        |     | 6. 9      |  | 1/4" ID x 7" OD hollow stem auge                                 |
|           |         |          |           |           |     | 0         |  | casing with continuous split                                     |
|           |         |          | = =       |           |     | 9         |  | spoon sampling to 12.0 feet and                                  |
|           |         |          |           |           |     | 4. 9.     |  | 5.0-foot interval sampling to en<br>of boring at 27.0 feet. Bore |
|           |         |          |           |           |     | 0 . 6 6   |  | hole was backfilled with cuttings                                |
|           |         | -        |           |           | 1   | 3         |  | to ground surface upon   |
|           |         |          |           |           |     | 4. 9.     | grades downward to 15.0  | completion.  |
| 7         | 5       |          |           |           | 1   |           | Extremely moist gray (SILTY-CLAY)  | Patrix shie its  |
| 13        | - 5     | 2        |           |           | 1 3 |           | with trace sand, soft, thinly laminated  |  |
| 10        | -       | 4        |           |           | 3   | <u> </u>  | with very thin coarse silt lenses, (CL).   |  |
| -         | -       | -        | 1         |           |     |           | The state of the s |  |
|           | -       |          | -         | 2         | 0.  |           |  |  |
| -         | -       | -        | -         | -         |     | I = I = I |  |  |
|           |         |          |           |           |     |           |  |  |
|           |         |          |           |           | 1   | <u> </u>  |  |  |
|           | -       |          |           |           |     |           |  |  |
|           |         |          |           |           |     | ====      | 1  |  |
|           |         |          |           |           |     | T- T- T   | grades downward to 20.0  |  |



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SURF. ELEVATION

PROJECT Buffalo Outer Harbor Phase 2

LOCATION Fuhrmann Bouleyard

City of Buffalo, Erie County, NY

CLIENT Ravi Engineering & Land Surveying, PC

DATE STARTED 07/09/20 COMPLETED 07/10/20

| SN<br>REC | 0/<br>6 | 6/<br>12 | 12/<br>18 | 18/<br>24 | N    | LITH    | DESCRIPTION AND CLASSIFICATION         | WATER TABLE AND REMARKS |
|-----------|---------|----------|-----------|-----------|------|---------|--|-------------------------|
| 8         | 2       |          |           |           |      | 5       | Wet gray (SAND) with 3 to 7% gravel,   |                         |
| 16        |         | 2        |           |           |      |         | trace silt, very loose, thinly bedded, |                         |
|           |         |          | 2         |           | 4    | 9       | (SP).                                  |                         |
| -         |         |          |           | 3         |      | b p' a  | 10.7                                   |                         |
|           |         |          |           |           |      | 0 0     |  |                         |
|           |         |          |           |           |      | 9'6.    |  |                         |
|           |         |          |           |           |      | 0. 00.0 |  |                         |
|           | -       |          |           |           | 1    | 2 2     |  |                         |
|           |         |          |           |           | 1    | 9 4     |  |                         |
|           |         |          |           |           |      | 0, 00 0 |  |                         |
| 9         | 9       |          |           |           |      | 3 . 3   |  |                         |
| 18        | 9       | 5        |           |           | 100  | 9'4.    |  |                         |
| 10        |         | 5        | 6         |           | - 11 | 0 0     |  |                         |
|           |         | -        | ь.        | _         |      |         | 27.0                                   |                         |
|           |         |          |           | 6         | 1    |         | Boring completed at 27.0 feet.         |                         |
| _         |         | -        | _         |           | 1    |         | Borning completed at 27.0 reet.        |                         |
| -         |         |          |           |           | 1    |         |  |                         |
| _         | -       |          | -         | -         | 1    |         |  |                         |
|           | -       | -        |           |           | 1    |         |  |                         |
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| 1         |         |          | 1         | 1         |      |         |  |                         |
|           |         |          |           | T T       |      |         |  |                         |
|           |         |          |           |           |      |         |  |                         |