April 08, 2013

Mr. Timothy Dieffenbach
Engineering Geologist 2
NYS Department of Environmental Conservation
Division of Environmental Remediation
Region 9
270 Michigan Avenue
Buffalo, NY 14203

Subject: **Radiological Slag Surface Survey Work Plan**
Tract I Site, Niagara Falls, New York
Amec Project No. 3410130921

Dear Mr. Dieffenbach:

INTRODUCTION

Amec Environment & Infrastructure, Inc. (Amec) has prepared this Radiological Slag Surface Survey Work Plan (WP) on behalf of Brightfields Corporation for the Tract I Site (Site) located at 3123 Highland Avenue, in the City of Niagara Falls (City), Niagara County, New York (**Figure 1**). The purpose of this WP is to provide a plan for screening the sub-slab soil beneath the former Power City Warehouse building to determine if the Technologically Enhanced Naturally Occurring Radioactive Material (TENORM) slag that is present on Tract II is also present beneath the building slab on Tract I. Given that the Power City Warehouse building was constructed in approximately 1910, and also that the TENORM slag production (from phosphorus production) began at approximately the same time, it is not likely that the slag was widely available during the building construction. However, the possibility exists for the material to be present, and it is prudent to survey the footprint of the slab upon removal.

BACKGROUND

In January of 2012, the Tract II project team became aware of the presence of radiologically contaminated TENORM slag in the central portion of Tract II. The material is believed to be a slag byproduct of a phosphorus extraction processing facility that was located in the Niagara Falls Area. Since the discovery of this material, Site-wide surveys have been performed to identify the nature, extent, and volume of the TENORM slag. As part of this effort, an initial radiological surface survey was completed by Greater Radiological Dimensions (GRD) on the Tract I and Tract II sites in March of 2012. The results of this survey, which can be found in the March 2012 report entitled “Initial Radiological Walkover, Tract I, 3123 Highland Avenue, Tract II, 3001 Highland Avenue, Niagara Falls, New York”, did not definitively identify slag near the former Power City Warehouse (Tract I) building. However, the survey did identify areas that had readings above the measured Site background. These areas typically appeared to be associated with the brick in the building. Because the concrete floor could serve to shield radiological material from detection, and or the masonry could be the source of above

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background readings the radiological surface survey will be completed following removal of the Tract I building slab.

DATA COLLECTION

The radiological survey will be performed by completing a Site walkover in the area of the former Power City Warehouse building footprint. To remain consistent with nomenclature utilized with previous radiological survey reports, the Tract I Site will continue to be referred to as radiological investigation "Area V" (**Figure 2**). Areas I through IV are located on the Tract II site, and are also shown on **Figure 2** for reference. Because the final grades on Tract I will not require cutting material, the survey will consist only of a surface scan; no intrusive survey will be performed. The radiological subcontractor will use, a Ludlum Model 2221 instrument with a 44-10 probe (which is capable of interfacing with global positioning system equipment) to scan the surface soil once a substantial portion of the slab has been removed. The work will be performed on approximately one-half of the slab area at a time. The instrument will be capable of recording data collected as counts per minute (CPM) or kilo counts per minute (KCPM).

The Site will be divided into a grid with the grid nodes approximately 25 feet apart. The area of the grid will be located using a GPS unit and the coordinates will be used to lay the grid out on the Site ALTA survey. The technician will walk the grid lines in both the east-west and north-south directions with the probe less than six-inches from the ground surface. During the survey, any radiological anomalies above approximately 10,000 CPM will be marked, and the GPS coordinates noted, to facilitate further investigation. Once the initial survey is complete, the technician will return to radiological anomaly areas to determine if the source can be identified. The technician will look for visual cues as well as instrument readings to determine if the material above the 10,000 CPM limit can be identified. Should the source be identified as brick, concrete, soil, or soil-like material, it will be noted as such and eliminated from consideration as TENORM slag material. If the material appears to be slag, samples may be collected for confirmation.

If confirmatory samples are determined to be necessary following the initial survey; samples will be collected and sent to radiological (TestAmerica, St. Louis, MO) and mineralogical (RJ Lee, Pasco, WA) labs. The samples will be analyzed for radiochemistry and metals analysis by TestAmerica and by X-ray diffraction at the RJ Lee lab to identify the crystal structure(s) present. The radiologic analyses will consist of the uranium series and daughters, the metals analysis will consist of uranium, radium, iron, calcium, sodium, and phosphorus using a complete acid (HNO_3/HF) digestion. The radiological analysis and reporting will take approximately five weeks to complete.

Should analytical data need to be collected, the interpretation will consist of combining all of the data gathered, as well as the experience of the radiological technician to positively identify TENORM slag material above 10,000 CPM. If necessary, an attempt will also be made to delineate the extent of the TENORM slag material above 10,000 CPM. Areas containing these materials will be surveyed and plotted on the Site maps. A brief letter report will be generated including the supporting field data. If analytical samples are collected, the laboratory reports will also be included in the letter report.

SCHEDULE

Work activities will begin when approximately one-half of the Tract I building slab has been removed, and the construction work allows safe entry into the area. The field effort for the survey of each half of the building footprint is not expected to take more than two days, once the subject area is available to safely perform the work. The survey will be completed in at least two phases and completion of the field work will be contingent on the timing of the slab removal. Assuming that no analytical samples are necessary, the report will be submitted within four weeks of completion of the field survey. If analytical samples are collected, the report will be submitted six weeks after receipt of the radiological analytical results to allow for data validation. Note that the radiological analysis requires 28 days plus approximately one week to generate a report. Assuming that the first half of the slab removal is completed in late April, and the second half is completed in late May, the survey would be initiated in early May, and completed by the beginning of June. If no samples are collected, the report would be completed by the beginning of July; sample analysis and validation would extend the scheduled delivery of the report another six weeks.

If you have any questions or need additional information, please contact me at (412) 279-6661.

Sincerely,

AMEC Environment & Infrastructure, Inc.

Thomas Hudrlik
for

Sean Condie
Staff Geologist

Robert E. Crowley
Senior Principal Scientist

SC/REC:

cc: Matthew Forcucci (NYS Department of Health)

Attachments

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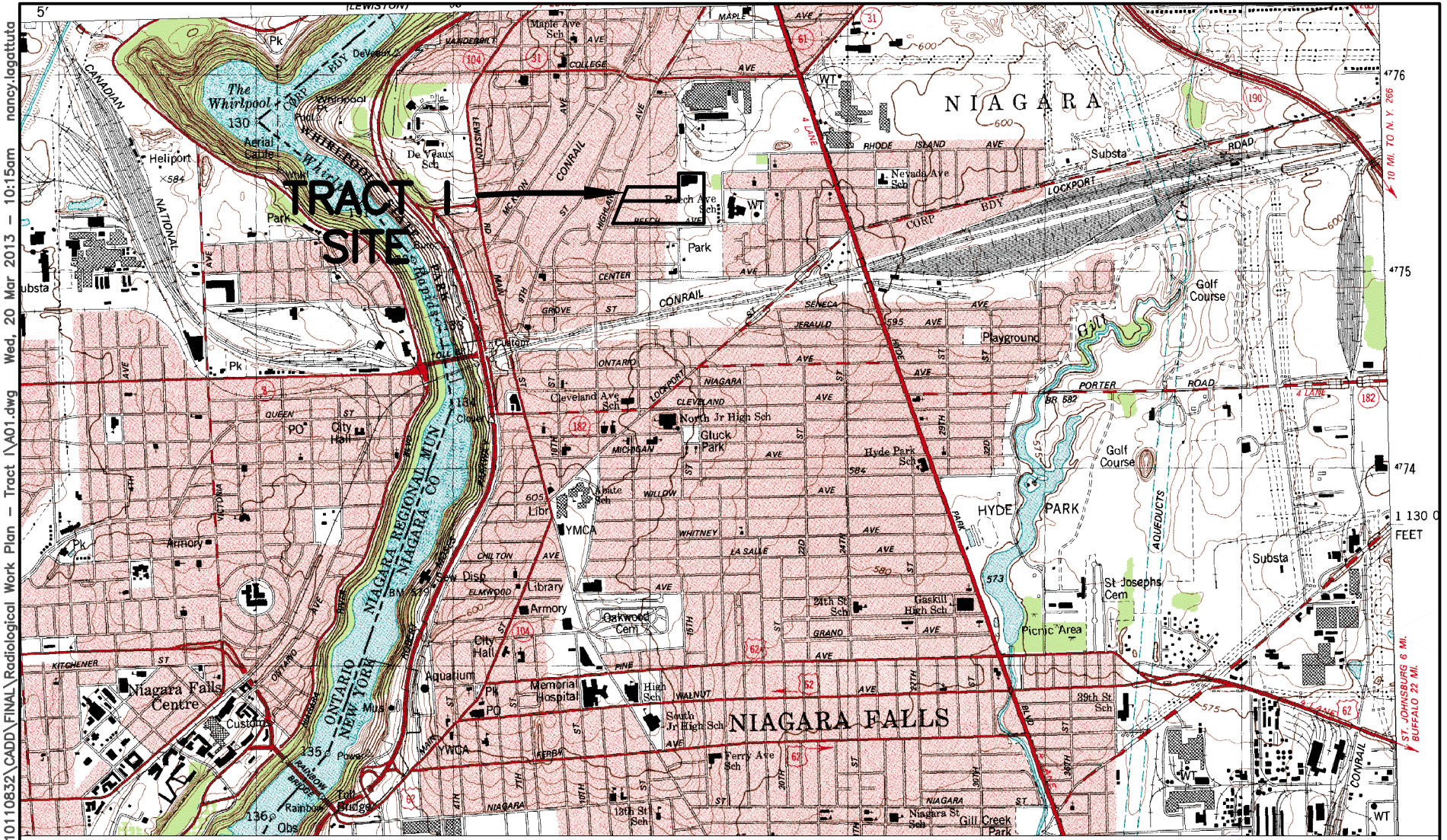
DRAWN BY: NEL 2-6-2012 APPROVED BY: ESW 4-11-2012



SCALE 1:24000

1 0.5 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0.5 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET

NIAGARA FALLS QUADRANGLE

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HONEYWELL INTERNATIONAL INC. NIAGARA FALLS, NEW YORK Project No.: 3410110832	amec Environment & Infrastructure - Pittsburgh 800 North Bell Avenue, Carnegie, Pennsylvania 15106 2200 Georgetown Drive, Sewickley, Pennsylvania 15143	SITE LOCATION MAP Figure: 1	1

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DRAWN BY: NEL 9-26-2012 APPROVED BY: SCC

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DILAPIDATED STRUCTURE

IV

V

TRACT I

III

TRACT II

IIb

IId

IIa

UNDERGROUND PARKING STRUCTURE

I

II

IIe

FORMER PARKING AREA

IIf

IIIa

IIc

HIGHLAND AVENUE

THIRTEENTH STREET

BEECH AVENUE

FIFTEENTH STREET

BEECH AVENUE

STREET BOUNDARY

LEGEND

- PROPERTY BOUNDARY
- EXISTING STRUCTURE
- RADIOLOGICAL AREAS
- PROPOSED FENCE LINE

120 0 120

SCALE: 1"=120'

HONEYWELL INTERNATIONAL INC.
NIAGARA FALLS, NEW YORK

Project No.: 3410110832

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RADIOLOGICAL AREAS

Figure: 2

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