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May 1, 2012 Reference No. 047392

Mr. Gregory Sutton
New York State Department of Environmental Conservation
270 Michigan Avenue
Buffalo, NY 14202 - 2999

Dear Mr. Sutton:

Re: Supplemental Radiation Survey
Frontier Chemical Site
Niagara Falls, NY

CRA has performed a supplemental radiation survey on the Frontier Chemical Site in Niagara Falls, New York. The intent of the survey was to collect additional radiation readings by probing beneath the hard surface areas (concrete and asphalt) within the excavation area for the proposed soil remediation program and slightly below the surface in some other areas of interest (particularly adjacent to the Norampac property). This information provides additional data to the Frontier Chemical PRP Group and the NYSDEC to assess the potential impact of radioactive slag material on the performance of the Site soil remediation project.

## SURVEY METHODOLOGY

The survey was performed by perforating through the surface material and digging shallow excavations with a small backhoe / hoe ram, typically 12 to 18 inches in depth, to determine whether slag is present in the subsurface. Based on the work performed on the Norampac property, the NYSDEC has identified that the source of the radioactive material found on that site was slag. Consequently, this supplemental program on the Frontier Site focused on gaining access to subsurface areas to observe where slag may have been used as structural backfill during the construction of the facilities on the Site. The Frontier Chemical PRP Group did not place the slag on the property nor is the Group in any way responsible for the implications of its presence. However, during the course of the soil remediation project that the Frontier Chemical PRP Group plans to perform, it is possible that some radioactive slag may be encountered and consequently, the Frontier Chemical PRP Group will be required to properly address such an occurrence.

The supplemental radiation survey was performed over two days with 41 locations being tested on April 17 and an additional 20 locations on April 25. The attached Figure 1 shows the locations of the 61 test locations. The Ludlum meter readings taken at each location are presented in Table 1.

## SURVEY RESULTS

The results of the supplemental survey show that the material on the Site is at or near background levels with the exception of the material encountered at Test Location 7 (see Figure 2). At this location, one foot of soil was removed to uncover a layer of slag that extended to 3 feet below the ground surface. The slag had an elevated reading of 338,000 counts per minute (cpm). The only other test location in which a specific slag layer was encountered was at Test Location 24. The reading at Test Location 24 was 24,000 cpm. Given the elevated reading at Test Location 7, this slag will have to be separately excavated, placed into an appropriate temporary on-site storage unit, and shipped off-site for disposal at a permitted facility.

The readings taken from the material tested throughout the remainder of the excavation area are within the range of radioactivity readings found across the Site within areas outside of the soil remediation excavation area (i.e., 4,000 to 80,000 cpm). Consequently, the remainder of the material tested is within or near background range, consistent with readings measured across the Site, and will remain on the Site.

## SUMMARY

This supplemental survey supports the expectation that the amount of elevated radioactive slag that will be encountered during the soil remediation program will be of a limited amount and is visually identifiable, if encountered. Therefore, the procedure for identifying and segregating radioactive slag during the soil remediation program (Section 5.10 of the approved Remedial Design Report) is generally sufficient to address such encounters, subject to the amendment below.

## REMEDIAL DESIGN REPORT AMENDMENT

Based on the foregoing, the Frontier Chemical PRP Group hereby requests an amendment of the approved Remedial Design Report by adding the following provision to Section 5.10 of the Report:

> *Consistent with recent findings in the Niagara Falls area, any slag layers encountered by visible observation during the excavation of Site soil for the soil remediation project will be scanned for radiological activity. A Ludlum hand-held meter will be used to measure the radiation levels. The volume, radiological readings, position, and circumstances regarding the finding of radiological material will determine the impact on the soil*

*remediation project. Expectations are that a deminimis amount of slag with elevated radiological readings will be encountered. If necessary to complete the implementation of the approved ex-situ soil treatment remedial action, the Frontier Group will remove, separate, and dispose of such deminimis quantities of slag, if visibly encountered during excavations for the soil remediation project. Should more than a deminimis quantity be encountered, the Frontier Group, if necessary to complete the approved ex-situ soil treatment remedial action, will remove, separate, and place the slag into a container on the property.*

Please advise whether the requested amendment is acceptable to the Department.

Should you have any questions regarding the supplemental radiation survey, please do not hesitate to call.

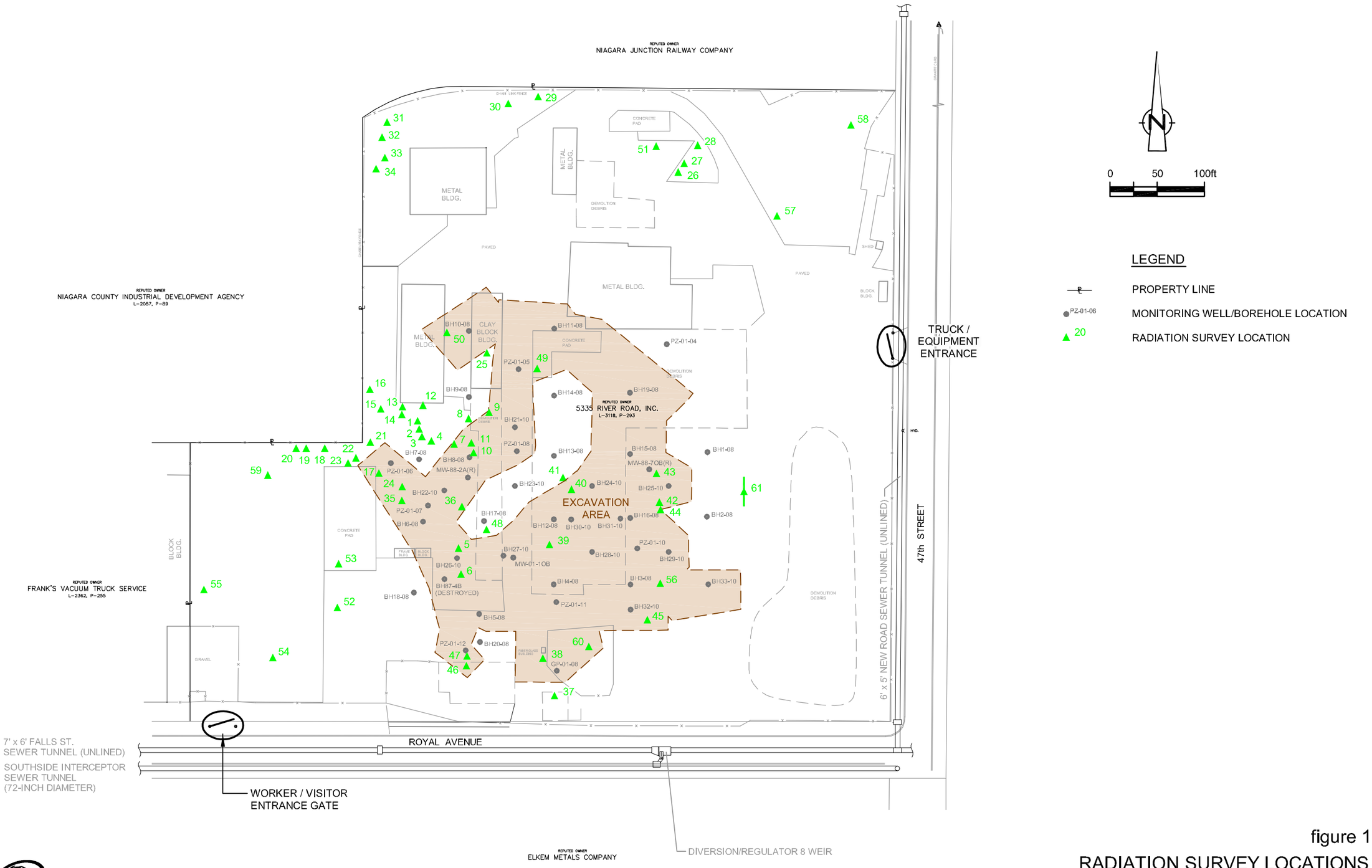
Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

James Kay

JKK/lp/5
Encl. Table and Figures

cc: James Charles, NYSDEC
Michael Hinton, NYSDEC
Tim Webster
Mike Bellotti




SOURCE: E & E, 2002

figure 1

RADIATION SURVEY LOCATIONS

*Frontier Chemical Site - Niagara Falls, New York*

47392-00(MEMO070)GN-WA001 APR 26/2012

figure 2

PHOTO OF TEST LOCATION #7
*Frontier Chemical Site - Niagara Falls, New York*

**TABLE 1**

**RADIATION SURVEY FIELD MEASUREMENTS**
**FRONTIER CHEMICAL SITE**

| *Reading Location #* | *Reading (cpm)* |
|---|---|
| 1 - 4 | 24,000 - 40,000 |
| 5 | 6,000 - 8000 |
| 6 | 6,000 - 8,000 |
| 7 | 40,000 - 70000 (0'-1' bgs), 338,000 (1'-2' bgs) |
| 8 | 6,000 - 7,000 |
| 9 | 6,000 - 7,000 |
| 10 | 50,000 |
| 11 | 20,000 |
| 12 | 13,000 |
| 13 | 10,000 |
| 14 | 9,000 - 10,000 |
| 15 | 6,000 - 7,000 |
| 16 | 16,000 |
| 17 | 6,000 |
| 18 | 20,000 |
| 19 | 7,000 - 8000 |
| 20 | 7,000 - 8000 |
| 21 | 22,000 - 39,000 |
| 22 | 6,000 - 7,000 |
| 23 | 6,000 - 7,000 |
| 24 | 24,000 |
| 25 | 12,000 |
| 26 | 6,000 - 7,000 |
| 27 | 13,000 |
| 28 | 6,000 - 7,000 |
| 29 | 17,000 - 18,000 |
| 30 | 6,000 - 7000 |
| 31 | 17,000 |
| 32 | 6,000 - 7000 |
| 33 | 6,000 - 7000 |
| 34 | 6,000 - 7000 |
| 35 | 6,000 - 7000 |
| 36 | 6,000 - 7,000 |
| 37 | 4,000 - 6,000 |
| 38 | 8,000 - 10,000 |
| 39 | 6,000 - 7,000 |
| 40 | 6,000 - 7,000 |
| 41 | 6,000 - 7,000 |
| 42 | 6,000 - 7,000 |
| 43 | 6,000 - 7,000 |
| 44 | 6,000 - 7,000 |
| 45 | 6,000 - 7,000 |
| 46 | 6,000 - 7,000 |
| 47 | 6,000 - 7,000 |

**TABLE 1**

**RADIATION SURVEY FIELD MEASUREMENTS**
**FRONTIER CHEMICAL SITE**

| *Reading Location #* | *Reading (cpm)* |
|---|---|
| 48 | 6,000 - 7,000 |
| 49 | 6,000 - 7,000 |
| 50 | 6,000 - 7,000 |
| 51 | 6,000 - 7,000 |
| 52 | 6,000 - 7,000 |
| 53 | 6,000 - 7,000 |
| 54 | 6,000 - 7,000 |
| 55 | 6,000 - 7,000 |
| 56 | 29,000 |
| 57 | 22,000 |
| 58 | 6,000 - 7,000 |
| 59 | 6,000 - 7,000 |
| 60 | 6,000 - 7,000 |
| 61 | 22,000 to 80,000 |