

Stan A. Huber Consultants, Inc.

Health Physics and Radiation Safety Services

200 North Cedar Road - New Lenox, Illinois 60451-1751 - (800) 383-0468 or (815) 485-6161 - FAX (815) 485-4433 - Email sahci@sahci.com - Home Page www.sahci.com

April 7, 2020

Mike Lanenga SET Environmental 450 Sumac Road Wheeling, Illinois 60090

RE: 100-211 E. Illinois St. Thorium Monitoring – City of Chicago Department of Water

Management / Reliable Contracting CDOT Permit: 1045362 & 1045373

Dear Mr. Lanenga:

Stan A. Huber Consultants, Inc (SAHCI) was hired by your firm to provide radiation monitoring during the excavation for the installation of a new water main at 100 – 211 E. Illinois St. in Chicago, Illinois. The monitoring was performed by Mark Dewald, Jeremy Kieser, and Brian Schmidt, SAHCI Health Physics Technicians, from March 2, 2020 to March 25, 2020. All activities were conducted under the guidance of document *SET General Procedure for Thorium Monitoring*.

The excavation work at this project is a continuation of a project that was already in progress. Rather than a single trench being excavated and monitored, most areas were extensions off of an already excavated trench. Some areas were where the upper lifts were already excavated, but were now being dig deeper.

Instrumentation

Surface gamma scans were performed using a Ludlum Model 2221 Scaler / Ratemeters with attached Ludlum Model 44-10 2"x2" Nal Detectors (w/ 6" collimated lead shield).

The following detail the serial numbers of the instruments, calibration dates, and US Environmental Protection Agency (USEPA) action level of 7.1 picocuries per gram (pCi/g) total thorium in counts per minute (cpm).

| Serial Number | Calibration Date | Action Level |
|---------------|------------------|--------------|
| 126497 | 10/18/19 | 6,197 cpm |
| 126496 | 10/18/19 | 7,102 cpm |
| 127242 | 8/6/19 | 6,673 cpm |
| 132844 | 8/7/19 | 7,299 cpm |

The average background count rate for this location ranged from 1,447 cpm to 1,998 cpm.

Soil Gamma Scans

Gamma surface scans were performed using the Ludlum Model 2221 Scaler / Ratemeter described above. Survey data was collected by entering the excavations and recording the highest count rate for the floor and walls to a maximum excavation depth of 8.5 feet below ground surface. Surveys of material excavated below 3 feet of ground surface were surveyed in the excavator bucket as it was removed. All asphalt, concrete, and soil were loaded directly into a truck for disposal.

The maximum gamma count rate for each lift was recorded on the attached Radiation Survey Form. The count rates in the excavation ranged from 1,300 cpm to 2,900 cpm. No count rates were found at any time that exceeded the threshold limits ranging from 6,197 cpm to 7,299 cpm.

Additional Monitoring

Since no count rates were identified above the 7.1 pCi/gram threshold limit, no additional soil sampling, air monitoring, or personnel monitoring were performed.

I will be providing a copy of this report to both the City of Chicago Department of Public Health and US Environmental Protection Agency, as required.

Thank you for your assistance with this project. If you have any questions or need additional information, please call me at (815) 485-6161.

Sincerely,

Stan A. Huber Consultants, Inc.

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Glenn Huber, CHP

President

100-211 Illinois Street Survey March 2-March 25, 2020

By: Jeremy Kieser, Mark Dewald, and Brian Schmidt

| | | Counts in cpm at each location: | | | | | | |
|--------|-----------|---------------------------------|-----------|-----------|-----------|-----------|-----------|--|
| _ | 3/2/2020 | 3/3/2020 | 3/4/2020 | 3/18/2020 | 3/5/2020 | 3/5/2020 | 3/6/2020 | |
| Depth: | Area 1 MD | Area 2 MD | Area 3 MD | Area 4 JK | Area 5 JK | Area 6 JK | Area 7 JK | |
| 0-1.5' | N/A | N/A | 1400 | 1300 | 1600 | 1600 | 1600 | |
| 1.5-3' | N/A | N/A | 1500 | 1800 | 1900 | 1800 | 1700 | |
| 3-4.5' | N/A | N/A | 2200 | 2300 | 2000 | 1900 | 1800 | |
| 4.5-6' | N/A | N/A | 2300 | 2100 | 2200 | 2200 | 2000 | |
| 6-7.5' | N/A | N/A | 1900 | 1900 | N/A | N/A | N/A | |
| 7.5-9' | 1400 | 1700 | N/A | N/A | N/A | N/A | N/A | |

| | Counts in cpm at each location: | | | | | |
|----------|---------------------------------|-----------|-----------|--|--|--|
| | 3/10/2020 3/10/2020 3/25/20 | | | | | |
| Depth: | Area 1 BS | Area 2 BS | Area 3 BS | | | |
| 0-1' | 1600 | 1400 | 1800 | | | |
| 1'-2.5' | 1600 | 1600 | 2500 | | | |
| 2.5'-4' | 1700 | 1700 | 2400 | | | |
| 4'-5.5' | N/A | 1900 | 2900 | | | |
| 5.5'-7' | N/A | 1800 | 2700 | | | |
| 7'-8.5' | N/A | 1800 | 1800 | | | |
| 8.5'-10' | N/A | N/A | 1600 | | | |

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Radiation Survey Form

| Location/ Project ID: _ | 100-211 5 | 11,00 5+ | | |
|--|----------------------------|-------------------|-------------|---------------|
| Date: 3/2/2020 - 3/4/20 | 20 | Technician:/ | Mark Dowald | |
| Inst Model: Ludlum 2 | 1221 | Serial No. : | 26497 | |
| Probe Type: 1"x1" Nal | /2"x2" Nal Not Shielded | Lift Elevation: | 0-8' | |
| Background 1447 | | Action Level: 617 | срт_срт | |
| Write grid designations in circles at grid intersections (if required) | | | | = 1 |
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TITA -> previously day area

NOTED -> excavated area

+ -> badegrand location

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of what pound location

Radiation Survey Form

| Date: 3/18/2020 Inst Model: Lillun 2221 Probe Type: 1"x1" Nal / 2"x2" Nath Shielded Background 1606 cpm Action Level: 7102 cpm Write grid designations in circles. Record highest counts for grid in cpm. Record 30 second counts at grid intersections (if required). Shade areas of elevated counts and record max cpm. | Locat | tion/ Project ID: _ | 190-211 | Ill.no, 5t | | |
|---|--------|---------------------|-----------------------------|-----------------|-------------------|--------------|
| Inst Model: | Date: | 3/18/2020 | | Technician: | Mark Dewald | |
| Background 1606 cpm Action Level: 710 Z cpm Write grid designations in circles. Record highest counts for grid in cpm. Record 30 second counts at grid intersections (if required). Shade areas of elevated counts and record max cpm. | Inst N | Model: Jullum ? | 2221 | Serial No.: _ | 126496 | |
| Background 1606 cpm Action Level: 710.2 cpm Write grid designations in circles. Record highest counts for grid in cpm. Record 30 second counts at grid intersections (if required). Shade areas of elevated counts and record max cpm. N Scale Tillings St Tillings | Prob | e Type: 1"x1" Na! | / 2"x2" Nal Not Shielded | Lift Elevation: | 0-7' | <u> </u> |
| at grid intersections (if required). Shade areas of elevated counts and record max cpm. Scale State Tillings St | Backg | 1/0/ | | Action Level: | 7102 cpm | |
| St (le.r.) | | | | | | N N |
| Illings St | | | \rangle | \geq | scale | \supset |
| → previously excutal area | | | | 6' | St (16:00) St | |
| → previously excutal area | | | | | | |
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Radiation Survey Form

Location/ Project ID: 100-211 Illinois St.

Technician: Jecemy Kicser

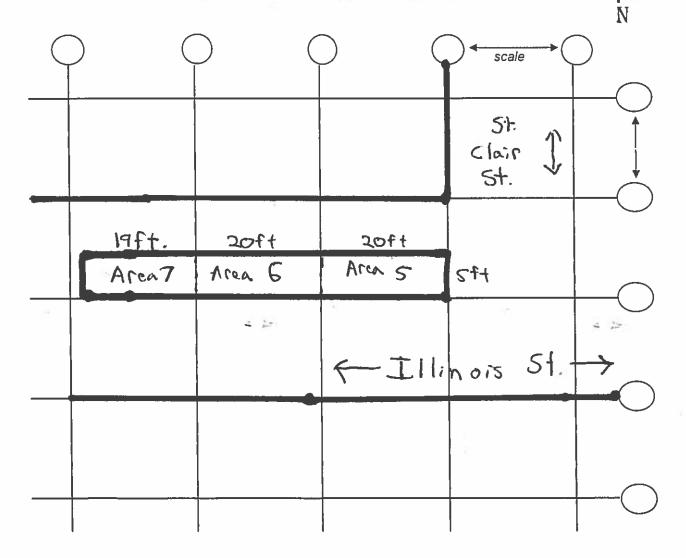
Serial No.: 127212 Date: March 5 & 6, 2020

Inst Model: Ludlum 2021

Probe Type: 1"x1" Nal / 2"x2" Nal Shielded / Not Shielded Lift Elevation: Surface to 6ft

Action Level: 6673 cpm Background 1998

Write grid designations in circles. Record highest counts for grid in cpm. Record 30 second counts at grid intersections (if required). Shade areas of elevated counts and record max cpm.



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Radiation Survey Form

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| Location/ Pro | oject ID: R | ELIABLE - ST | roam South 1 | CEPAIR - ROL | م ((A010 ∟06 | ICAL JOIL |) |
| Date:3 | 10/2020 | <u>.</u> | Technician | : BRIAL | SCYMIST | | |
| Inst Model: | LUPLUM | - 2221 | | 13184 | | | |
| Probe Type: | 1"x1" Nal | 2 2" Nal Not Shielded | | on: <u>0-84</u> | (" | | |
| Background | 1806 | _cpm | Action Level: | 7299 | cpm | | |
| Write grid design at grid intersectio | ations in circle ns (if required) | s. Record highest . Shade areas of e | counts for grid in cp levated counts and r | m. Record 30 seco ecord max epm. | and counts | ↑ N | |
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| TO DEPTH | n 1600 | (I) 0- | 12" 1400 30" 1600 | | | — | |
| 30-4 | 8" 1700 | 1 30- 48- 66- | 48" 1700 66" 1900 84" 1600 102" 1800 | 1 | ' | | |

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Radiation Survey Form

Location/ Project ID: RECIABLE - WALVE REPLACEMENT - ILLINOIS ST & ST. CLAIR ST. - ROW

RADIOLOGICAL SOIL

SURVEY

Date: 3/25/2020 Technician: Brian Schmitt Date: 3/25/2020 Inst Model: Lupum - 2221 Serial No.: 132844 Lift Elevation: _ 0 - 102 " Probe Type: 1"x1" Nal / 2(x2" Nal Shielded / Not Shielded Action Level: 7299 1806 cpm Background_ Write grid designations in circles. Record highest counts for grid in cpm. Record 30 second counts at grid intersections (if required). Shade areas of elevated counts and record max cpm. N scale STAGET 11' STABLE St. CLAM ST. 121 GUAS CPM 1800 2500 2400 29 W 27 00 l 1800 107-120" 1600