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

October 24, 2011 (revised 11/1/11 GAH)

Stuart Dykstra
V3 Companies
7325 Janes Ave
Woodridge, Illinois 60517

RE: Michigan Avenue Thorium Monitoring

Dear Mr. Dykstra:

Stan A. Huber Consultants, Inc (SAHCI) was hired by your firm to provide thorium monitoring during construction and maintenance activities on North Michigan Avenue in Chicago, Illinois. The monitoring was performed on October 10, 2011 through October 24, 2011. All activities were conducted under the guidance of document *V3 Procedure for Thorium Monitoring* approved under Chicago Department of Transportation permit number 176966211.

Instrumentation

Surface gamma scans were performed by Glenn Huber and Joel Ahrweiler using a Ludlum Model 2221 Scaled / Ratemeter with attached 2"x2" NaI probe. The instrument was calibrated on November 8, 2010. The USEPA action level of 7.1 picocuries per gram (pCi/g) total thorium for this instrument is 18,728 counts per minute (cpm).

The average background count rate for this location was found to be between 5,000 cpm and 7,000 cpm.

Soil Gamma Scans

Gamma surface scans were performed using the Ludlum Model 2221 Scaler / Ratemeter described above. No soil was excavated during the project; only the removal and replacement of concrete and/or asphalt around manholes, curbs, and sidewalks. Each designated area was surveyed prior to excavation on the surface and again after the concrete/asphalt was removed. No excavations exceeded 1.5 feet in depth so each location has one surface and one subsurface count rate recorded.

Excavations were performed on the following areas:

- 16 manholes
- 4 road surface replacements
- 2 sections of curb
- 1 large section of sidewalk at 636 N. Michigan Avenue

Results of the surveys are attached and detailed on the site diagram and survey spreadsheet.

With the exception of the sidewalk removal at 636 N. Michigan Avenue, no count rates were found at any time that exceeded the threshold limit of 18,728 cpm. Count rates at the remaining locations (outside of 636 N. Michigan sidewalk) ranged from 5,200 cpm – 11,800 cpm.

Additional Monitoring

On October 17, 2011 Joel Ahrweiler, SAHCI Health Physics Technician, was performing routine thorium monitoring while a concrete sidewalk was being removed at 636 N. Michigan Avenue. Although no soil was removed under the sidewalk, count rates as high as 40,000 cpm were identified. Stuart Dykstra, V3 Companies, and Verneta Simon, USEPA, were immediately notified. Ms. Simon requested that a soil sample be obtained and analyzed so that a decision could be made on how to proceed. Glenn Huber responded to the site to perform confirmatory surveys and collect the soil sample.

The sample was analyzed using a screening gamma spectroscopy system and found to have a total thorium concentration of 11.17 pCi/g. This exceeds the Streeterville Area threshold concentration for total thorium of 7.1 pCi/g. The analytical report is attached. While obtaining the sample Glenn Huber dug to approximately 10 inches deep in order to attempt to determine the depth of the contamination. At 10 inches in depth the count rate was found to be 312,000 cpm. This count rate is significantly higher than what the sample concentration of 11.17 pCi/g would indicate. Therefore, it is likely that higher activity concentrations are present below 10 inches in depth. A layer of plastic sheeting was then secured over the surface of area in question pending further investigation.

On October 18, 2011 USEPA requested that a more detailed survey be performed on the area to determine the potential extent of contamination. Glenn Huber returned to the site that night to conduct the survey which consisted of taking 30 second integrated counts over the entire area with 1 foot x 1 foot spacing. This survey identified as *636 N. Michigan Avenue Exclusion Zone Survey* is Attached. All results have been converted to CPM.

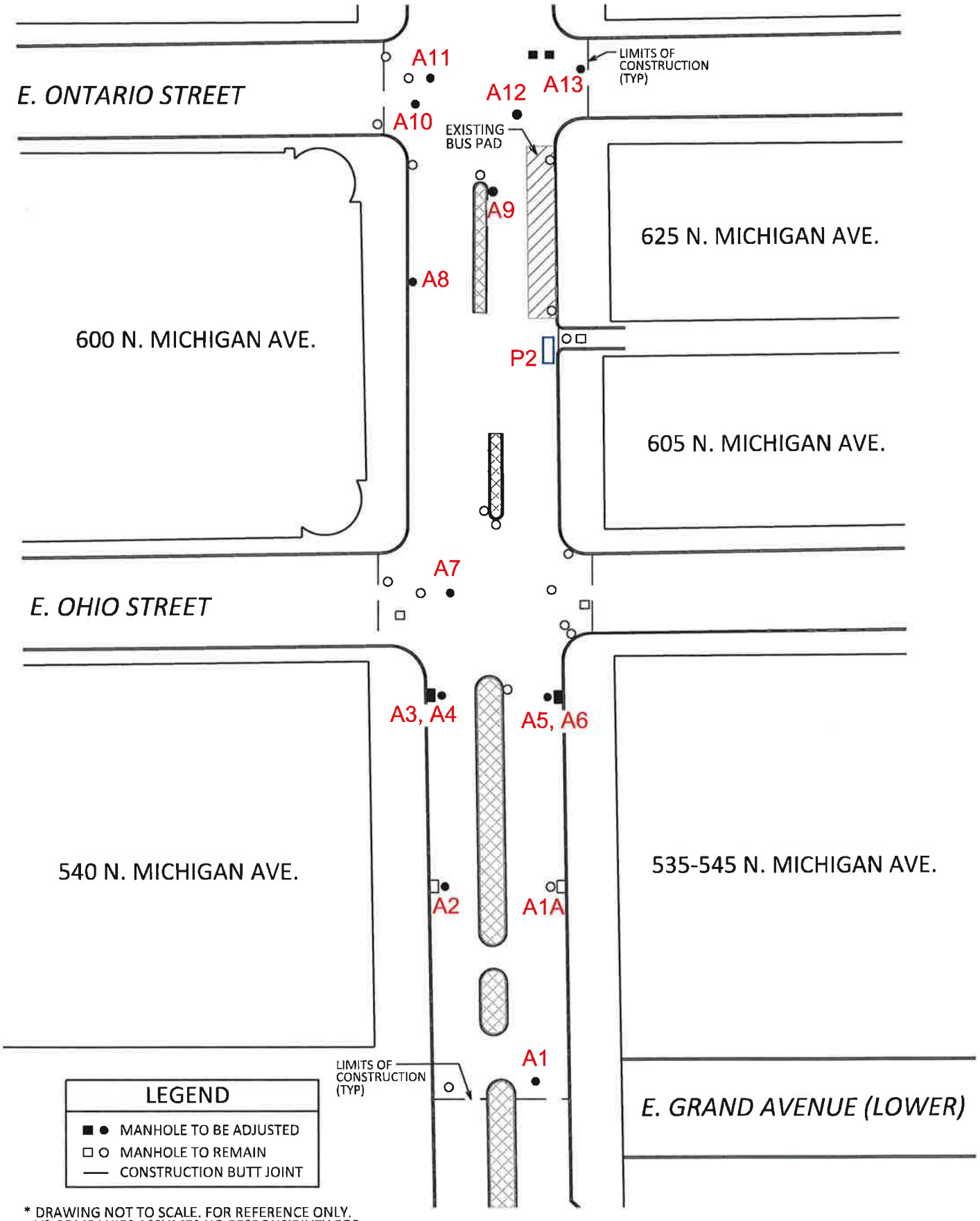
Additionally, USEPA requested that surveys be performed inside of the manhole vault that is located in the exclusion zone. The vault below the manhole is approximately 4 feet deep. A survey was performed using the Ludlum 2221 Scaler / Ratemeter and a maximum count rate of 17,000 cpm was identified. Although this count rate is elevated above background levels it can be attributed to the poor survey geometry of lowering the detector into a hole and being surrounded by the material in question. A dose rate survey was also performed inside of the vault using a Bicron MicroRem Tissue Equivalent Survey Meter. The dose rate at the center of the vault was found to be 9 micro-Rem/hour. Based on this dose rate, there is no reason for access to be restricted to the vault and the dose rate is well below and public radiation thresholds.

On October 24, 2011 Glenn Huber performed a survey of the Exclusion Zone area after the concrete sidewalk had been poured over the surface. The maximum on-contact count rate was 9200 cpm (at previously identified highest location). The dose rate at both 6 inches above the surface and 3 feet above the surface was between 4-6 micro-Rem/hour.

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.

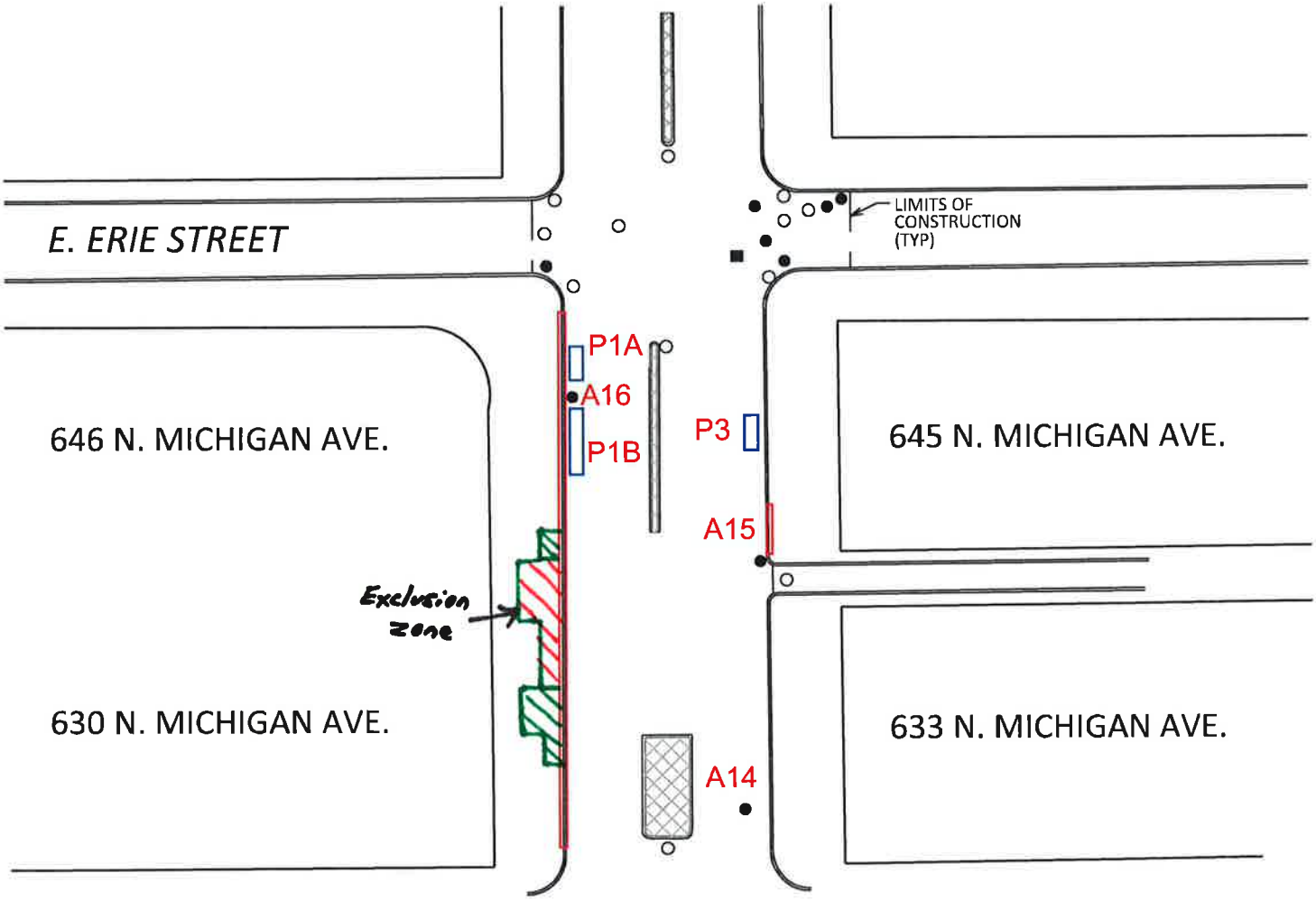
Glenn Huber, CHP
President



* DRAWING NOT TO SCALE. FOR REFERENCE ONLY. V3 COMPANIES ASSUMES NO RESPONSIBILITY FOR ACCURACY OF PLANS.

N. MICHIGAN AVENUE
ILLINOIS STREET TO ONTARIO STREET

N



= Curb Removal
= Road Removal / Patch
= Manhole
= Sidewalk Removal

LEGEND
■ ● MANHOLE TO BE ADJUSTED
□ ○ MANHOLE TO REMAIN
—— CONSTRUCTION BUTT JOINT

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N. MICHIGAN AVENUE
ONTARIO STREET TO ERIE STREET

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Thorium Monitoring Surveys
V3 Companies - Michigan Avenue Resurfacing Project October 2011

Instrument ID:	Ludlum 2221 with 2"x2" unshielded NaI detector
Surveyed By:	Glenn Huber and Joel Ahrweiler, SAHCI
7.1 pCi/g Thorium:	18,728 count per minute (CPM)
Background CPM	5,000-7,000 CPM

Manhole	Surface CPM Before Excavation	Surface CPM Post Concrete Removal
A1	5800	6000
A1A	5700	5800
A2	6700	6600
A3	5900	6200
A4	5900	6200
A5	5400	5600
A6	5400	5600
A7	6400	6500
A8	5900	6400
A9	N/A	N/A
A10	5600	7900
A11	5500	5900
A12	5400	6700
A13	5400	5600
A14	5300	6100
A15	5800	5600
A16	5200	6700

Road Patch

P1A	6400	8100
P1B	6500	11800
P2	5800	6100
P3	6000	7800

Curb Replacement

645 N. Michigan	5400	5800
630-646 N. Michigan	6500	10100

Sidewalk Replacement

636 N. Michigan (Non EZ)	7400	9000
Exclusion Zone Area	9200	See Attached

Exclusion Zone Survey - 636 N. Michigan Avenue

V3 Companies - Michigan Avenue Resurfacing Project

← N

Michigan Avenue

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
A	5822	6280	6060	5638	5532	5610	6196	5736	5588	6524	6858	6380	6876	7214	7080	6780	7872	7582	7334	7420	8808	8704	9728	10632	9788	8896	8482	7808	7734	7012	6572	5714	6016	8054	7676
B	6149	6156	5907	5838	5852	5746	5928	6382	7244	6742	7892	7532	7624	7780	7344	6646	7966	9316	9908	8774	9670	10440	10378	10944	10154	10468	10994	9646	8846	8416	7622	SIGN		8084	11170
C	6445	6690	6382	6216	6130	6334	8050	8038	8424	9264	8946	9400	8082	8404	5730	6604	9560	10824	11400	10396	10768	10554	11682	11512	11024	13286	13380	12374	11296	11076	10216	8612	9960	13092	15142
D	7182	7197	7531	7686	7926	6448	10408	11822	11128	11170	10324	9770	9446	8552	MANHOLE		9784	10422	11572	11392	11690	10170	13132	13602	15268	14370	15586	13708	13256	11160	10974	11340	14312	18196	18172
E	8322	9929	9374	10334	10832	12508	13338	15984	14608	13334	14312	SIGN	10080	10116																					
F	9644	12043	12861	13014	15964	17848	19536	25202	17922	17246	17404	14238	12392	11890	9718	11860																			
G	10666	16657	20505	16834	22208	27766	39742	30134	26742	27456	18008	15870	14312	12684	10812	12930																			
H	12278	17762	24148	17350	24966	26052	34772	28758	33808	26648	23502	15370	15608	14314	10238	12604																			
I	11506	16581	24816	18532	21410	25934	31076	29484	29980	23902	20084	18718	15764	16518	12508	13624																			
J	10790	14228	17561	18294	19638	25286	30010	28772	25720	23074	20014	SIGN	17536	17562	15586	15810																			

Sidewalk

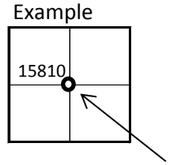
Performed By: Glenn Huber, CHP - Stan A. Huber Consultants, Inc.

Date: October 18, 2011

Instrument ID: Ludlum Model 2211 Scaler/Ratemeter (Serial No. 134542)

w/ Model 44-10 2"x2" NaI Detector - Unshielded

Example



Data collected at intersection of grid - results in CPM

(lower right hand corner of each box)

7.1 pCi/g Total Thorium: 18,728 Counts Per Minute (CPM)

Notes: Data for columns 1-3 were collected as one-minute integrated counts. Remainder of data was collected in 30-second counts and multiplied by 2 to equal CPM

= Maximum Surface Count Rate Observed (39743 CPM) to be marked at surface of new concrete sidewalk

Gamma Spec Report - V3 Companies Michigan Avenue Resurfacing Project

Stan A. Huber Consultants, Inc.
200 North Cedar Road
New Lenox, IL 60451
(800) 383-0468

Instrument ID:
Canberra Genie 2000 NaI Gamma Spec System
2"x2" NaI detector w/ pulse height analysis software package

Summary Report October 17, 2011

Sample ID	Analysis Date	Sample Group	Description	Weight (g)	U-238 Activity	U-238 Uncertainty	Th-232 Activity	Th-232 Uncertainty	Ra-226 Activity	Ra-226 Uncertainty	Total Radium Activity	Total Radium Uncertainty
3678	10/17/2011	V3 - Exclusion Zone	S6508 636 N. Michigan	29.5	9.9	6.82	2.16	2.01	9.01	2.73	11.17	3.39

All results are in pCi/gram

** Important Note: System has not been calibrated for U-238 and the analytical results detailed above for U-238 should not be used or considered accurate