

SITE INVESTIGATION WORK PLAN

DRY CLEANERS SITE (FORMER)

2311 S. 108TH STREET

WEST ALLIS, WISCONSIN 53227

WDNR BRRTS #: 02-41-580667, FID #: 341293040

Prepared for:

**Paralyzed Veterans of America – Wisconsin Chapter
750 N. Lincoln Memorial, Suite 306
West Allis, Wisconsin 53202**

And

**Wisconsin Dept. of Natural Resources
Bureau of Remediation and Redevelopment**

Prepared by:


**Kapur & Associates, Inc.
7711 North Port Washington Road
Milwaukee, Wisconsin 53217**

January 2018

**SUBMITTAL CERTIFICATION
SITE INVESTIGATION WORK PLAN**

**Dry Cleaners Site (Former)
2311 S. 108th Street
West Allis, Wisconsin 53227**

"I hereby certify that I am a scientist as that term is defined in s. [NR 712.03 \(3\)](#), Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. [NR 700](#) to [726](#), Wis. Adm. Code."



Kapur & Associates, Inc.
Travis W. Peterson
Environmental Manager

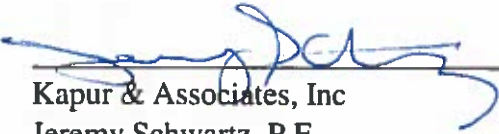
January 5, 2018
Date



Kapur & Associates, Inc.
Alex Amundson
Staff Geologist

January 5, 2018
Date

"I hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. [A-E 4](#), Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. [A-E 8](#), Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. [NR 700](#) to [726](#), Wis. Adm. Code."



Kapur & Associates, Inc.
Jeremy Schwartz, P.E.
Environmental Engineer

January 5, 2018
Date

P.E. stamp

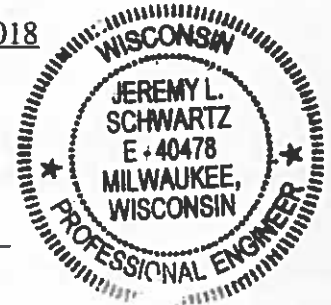


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1.0 INTRODUCTION

Kapur & Associates, Inc. (Kapur) has prepared this Site Investigation Work Plan, in accordance with ch.NR 716, for the property herein referred to as Dry Cleaners Site (Former). Site information is detailed below.

Site Name: Dry Cleaners Site (Former)

Site Address: 2311 S. 108th Street
West Allis, WI 53227

Site Location: The subject property consists of a single parcel with Tax Key ID Number: 4840002001 (Milwaukee County) totaling approximately 0.22 acres located in the Northeast ¼ of Section 7, Township 6 North, Range 21 East. The site is located on the West side of South 108th Street, in the City of West Allis, Milwaukee County, Wisconsin. The legal description is recorded as:

LINCOLN LAWNS LOTS 2 & 3 BLK 1 & HWY REMNANT ADJ ON E

Property Owner/RP: Paralyzed Veterans of America Wisconsin Chapter
750 N. Lincoln Memorial Drive, Suite 306, Milwaukee, WI 53202
Attn: Mr. Scott Griffith, Government Relations Director/Treasurer
Phone: (414) 328-8910
Email: sgriffith@wisconsinpva.org

RP Contact: Mr. Derek Reinke
Ogden & Company, Inc.
1665 N. Water Street, Milwaukee, WI 53202
Phone: (414) 270-4153
Email: derekr@ogdenre.com

Consultant: Kapur & Associates, Inc.
7711 North Port Washington Road, Milwaukee, Wisconsin 53217
Contact: Travis Peterson, Environmental Manager
Phone: (414) 751-7279
Email: tpeterson@kapurinc.com

Current Land Use: Office Building

Historic Land Use: “Historic documents from the City of West Allis and records searches indicate that the 2311 S. 108th Street building was constructed in 1956. According to permits, the parcel was utilized as a laundromat and dry cleaner from at least 1962 to 1986. Between 1986 and 2000, the parcel was utilized as a bakery thrift store, drug store, carpet and flooring store, computer sales, locksmith company, pet store, and office building” (Ref. 1).

1.1 Project Background

In October 2017, a Phase I Environmental Site Assessment (Phase I ESA) was performed for the subject site as part of a potential real estate transaction. The Phase I ESA identified a Recognized Environmental Condition (REC) in that the site formerly operated as a dry cleaner / laundromat and a 150-gallon solvent tank was identified on the north side of the building. Dry cleaning operations were located in the north-central portion of the building. A vent pipe and cap were observed to the south of exterior of the 2311 S. 108th Street building. The former use of the parcel as dry-cleaning operations and the identification of the vent pipe and cap was considered a REC of concern. (Ref. 1). Resulting from the identified REC, the solvent tank was closed by removal and a Tank System Site Assessment (TSSA) completed. The TSSA included the collection of two (2) soil samples from the base of the excavation at an approximate depth of seven (7) feet below ground surface (bgs) and designated East Base and West Base. The soil samples were submitted to for analysis of volatile organic compounds (VOCs). Groundwater was not encountered during drilling activities (Ref.2). The findings and analytical data of the TSSA revealed that four (4) chlorinated VOC or CVOC compounds were detected at concentrations exceeding the applicable ch. NR 720 Soil to Groundwater Pathway Residual Contaminant Level (RCL) and one (1), vinyl chloride, also exceeding the ch. NR 720 Non-Industrial Direct Contact RCL.

Based upon the identified contamination being discovered and pursuant to s. 292.11 Wis. Stat., the WDNR was notified of the hazardous substance discharge to the environment. Subsequently, on December 1, 2017 the Department issued a Responsible Party letter stating that Paralyzed veterans of America is responsible for investigating and restoring the environment at the subject site under Section 292.11, Wisconsin Statutes.

1.2 Potential Contaminant / Discharge Sources

An obvious contaminant source, the former 150-gallon solvent tank, has been identified at the site. There have been no other obvious sources of potential contamination documented.

2.0 GEOLOGY AND RECEPTORS

2.1 Regional and Local Geology and Hydrology

2.1.1 Site Topography

The topography of the subject site is relatively flat with a ground surface elevation ranging from 735 to 740 feet above MSL (Ref. 3). The surrounding topography slopes from west to east. Surface water at the subject property enters storm sewers/drains in the southeast corner of the parking lot and in the South 108th Street right-of-way.

2.1.2 Site Geology

Native soil types for the subject site are the Matherton Silt Loam. Native soils typically consist of silt and sandy clay. Matherton Silt Loam make up 100 percent of the native soils on site. The Matherton soil are gently sloping, and occupy outwash plains (Ref. 4). Bedrock in the region is expected to be between 50 to 100 feet bgs (Ref. 5).

2.1.3 Site Hydrogeology

Previous TSSA activities did not include the installation of monitoring wells and as such, site specific hydraulic gradient/groundwater flow direction has not been obtained. However, groundwater is estimated to flow from the east southeast to the west northwest based upon surrounding RR Sites and available recorded GIS hydrologic data. Hydraulic conductivity specific to the subject property was not obtained. Native soils (silts and clays) 0.4×10^3 to 1.0×10^{-4} (m/yr) (Ref. 6). The estimated permeability for the native soils (silts and clays) 1.57 m/yr (Ref. 6).

2.2 Receptors

Municipal water is supplied to the subject property by the City of West Allis, municipal sewer is provided by Milwaukee Metropolitan Sewage District (MMSD), and subgrade utilities service the subject property. According to Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP) and Wisconsin Department of Natural Resources (WDNR) online well records database, there were approximately 40 private wells located within 1,200 feet of the subject property. As the City of West Allis supplies municipal water, and MMSD provides sewer service, these private wells, many of which are no longer in service, would not be receptors of environmental significance. Subgrade utilities for the building are potential receptors of potential contaminants.

3.0 INVESTIGATIVE ACTIVITIES STRATEGY

For this project, Kapur proposes to complete the work in a single phase, which is referred to herein as Tasks 1 and 2 based upon the findings of the previously conducted TSSA activities onsite. In general, the intent of Task 1 will be to define the extent of soil contamination on the property, to provide groundwater data supporting the presumption of only minimal, if any, contaminant impacts to the groundwater present and determine the need for extended groundwater monitoring, if necessary. Task 1, will include the placement of ch. NR 141 compliant permanent 2-inch groundwater monitoring wells and sampling these wells for a minimum of two (2) quarters if no or only minimal (low level) contaminant concentrations present. Should elevated concentrations in the groundwater be detected, an additional two rounds would be completed and the data applied to statistical test analysis (Mann-Kendall) to determine if there is a stable, decreasing or increasing trend in contaminant levels over the course of monitoring. Task 2 will be implemented to determine if a Vapor Intrusion Risk is present onsite stemming from the breakdown of historic solvent based products utilized onsite and the SVOC compounds producing vapors that may be entering the onsite building. These vapors have the potential to be harmful to human health.

3.1 Scope of Work

TASK 1

The following sampling plan being presented is intended to specify the location of soil borings/monitoring wells prior to the commencement of additional field activities. The borings and/or wells may need to be relocated in the field due to the proximity of utilities, results of other borings, or other site constraints. The proposed sampling locations and depths are based on the information currently available.

The general scope of Task 1 will consist of the following activities: advancement of soil borings, installation of permanent 2-inch groundwater monitoring wells, soil and groundwater sampling, laboratory analysis of soil and groundwater samples, data analysis and interpretation, and report preparation. Further detailed description of the proposed tasks for this project is presented below.

Drilling (hollow-stem auger) and sampling operations will be directed by Kapur and all field personnel will be OSHA trained in accordance with 29 CFR 1910.120. Prior to subsurface soil drilling activities, Kapur or the drilling firm will notify Diggers Hotline for utility clearance. Prior to fieldwork, the down-hole sampling equipment will be decontaminated with an Alconox and potable water solution followed by a potable water rinse. New, disposable acetate liners will be used for each sample collected and nitrile gloves will be worn by sampling personnel and changed between samples. These procedures will be used to reduce the possibility of cross-contamination

between samples and sample locations. Equipment decontamination, sample collection, field documentation, sample custody and laboratory analyses will be performed in general accordance with methods prescribed by the United States Environmental Protection Agency (USEPA).

1. Kapur is proposing to advance a total of six hollow-stem auger soil borings on the subject property at the approximate locations shown on Figure B.1.b “Detailed Site Plan”. Each boring will be advanced to a maximum depth of 15-feet below ground surface (bgs), or refusal. If obvious signs of contamination are identified in the initial borings, advancement of additional borings ‘stepped out’ and away from those locations will be completed where site constraints allow in an attempt to define the horizontal extent of contaminant impacts.
2. Field screening for total volatile organic vapors during the subsurface soil investigation will be performed at each 2.0-foot sample interval at each boring. The headspace above each soil sample will be screened with a MiniRae 3000 photoionization detector (PID) equipped with a 10.6 electron volt lamp. The PID will be calibrated prior to use through the introduction of zero gas and subsequently a known concentration of isobutylene gas into the instrument. The manufacturer indicates that the sensitivity of the device is 1 part per million (ppm) for volatile organic compounds (VOCs) that have an ionization potential equal to or less than the lamp energy. The calibrated PID will be used to detect total organic vapors in comparison to the isobutylene standard. Due to the inexact volume of the headspace and varying soil conditions, PID readings will only be considered a relative indication of VOC concentrations. The moisture contents of soil and humid atmospheric conditions have been found to produce inaccurate organic vapor readings due to condensation on the lamp. To perform the field screening, each soil sample will be placed in a resealable plastic bag and equilibrated to ambient temperature. Reported PID results will be obtained by sampling the headspace above each soil sample and recording the maximum instrument reading.
3. Soil samples will be collected from each of the soil borings for the purposes of olfactory observation, field screening, and soil classification at continuous five-foot intervals using a direct-push macro core sampler with acetate liners. Two macro core samples will also be collected from each soil boring for laboratory analysis of Volatile Organic Compounds (VOCs). The laboratory samples will be selected based on visual evidence of contamination, from the sample intervals that exhibited the highest PID readings, or from the soil-groundwater interface. Soil samples collected from soil borings advanced through asphalt will be collected at a depth of at least three feet bgs in an effort to avoid erroneous readings that may be caused from the asphalt products themselves.

4. Upon completion of the soil boring and sampling activities, Kapur will install a permanent 2-inch PVC groundwater monitoring well at four select boring locations and complete installation of the wells per ch. NR 141 of the Wisconsin Administrative Code (WAC) including filter pack material, bentonite and appropriate surface seal. The wells will be developed prior to sampling activities.
5. Kapur will collect one groundwater sample from each groundwater monitoring well for laboratory analysis of VOCs. The groundwater samples will be collected following completion of well installation activities. WDNR Well Construction and Development forms (4400-113A and 4400-113B) will be prepared for each well completed. Though not anticipated, if groundwater is not encountered or cannot be sampled, our conclusions will be based upon the soil data only.
6. All boreholes not converted into permanent monitoring wells will be properly abandoned with bentonite upon completion of sampling. WDNR Borehole abandonment forms (Form 3300-005) will be prepared for each borehole. Soil borings advanced through asphalt will be capped with an asphalt or concrete mix.
7. Kapur will submit one trip blank for VOC analysis.
8. All samples will be prepared in laboratory supplied containers using new, disposable nitrile gloves. All samples will be placed in a cooler with ice and transported under chain-of-custody to Pace Analytical Laboratory (PACE) in Green Bay, Wisconsin for chemical analysis performed on a normal turn-around basis. The analytical methods for the analysis discussed above are as follows:
 - Volatile Organic Compounds (SW 846 Method 8260)
9. Investigation derived waste from the site will be containerized in a sealed 55-gallon drum and either taken for disposal by the drilling contractor or left-on-site until disposal can be arranged.
10. Upon completion of the Task 1 work, Kapur will complete a report in general accordance with NR 716. The report will contain the following elements:
 - Executive summary consisting of a brief narrative of the site investigation results, conclusions and recommendations for future action.
 - General site information.
 - Site background information obtained during the project scoping and performance of the field investigation.

- Method of investigation utilized to characterize the site.
- Detailed results of the data obtained during the project scoping, field investigation, and sample analysis.
- Visual aids including maps, figures, tables, diagrams and photographs to support our results, interpretation and recommendations.
- Well and borehole documentation contained on the appropriate DNR forms.
- Conclusions and Recommendations – A summary of results, a comparison of the results to the current cleanup standards and detailed recommendations for further response actions deemed necessary to protect public health, safety, welfare and the environment. The WDNR shall receive one hard copy and an electronic copy of each report prepared by Kapur.

Please Note: As part of this SIWP, Kapur is requesting a variance to approve the installation of permanent 1-inch monitoring wells (compliant with ch. NR 141) in leu of the 2-inch wells outlined above under TASK 1 and item No. 1 should site constraints / utilities prohibit or limit access by proposed drilling equipment. This determination would need to be made at the time field drilling activities are being performed and only likely to be an issue along the western property boundary with the unnamed alley.

TASK 2

The general scope of Task 2 will consist of the following activities: installation of sub-slab vapor sample ports, sampling, laboratory analysis of vapor samples, data analysis and interpretation, determination if a vapor intrusion risk exists and determination of alternatives to address vapor intrusion risk. Further detailed description of the proposed tasks for this project is presented below.

Sub-slab vapor port installation and sampling operations will be directed by Kapur and all field personnel will be OSHA trained in accordance with 29 CFR 1910.120.

1. Kapur is proposing to install two (2) sub-slab vapor ports within the onsite building at the approximate locations shown on Figure B.1.b “Detailed Site Plan”. Each vapor port will be advanced to terminate below the concrete floor bottom.
2. A HR 2475 Makita hammer drill will be used to core through the concrete floor allowing for installation of the two vapor ports (VP-1 and VP-2).
3. The vapor ports will be purged utilizing a Landtec GEM 3000 landfill gas analyzer that also recorded oxygen, carbon dioxide, and methane concentrations.

4. Vapor samples from each vapor port will be collected utilizing individual 6-Liter stainless steel Summa canisters with a 30 minute 'fill' or collection time regulator. A total of two vapor samples will be collected and submitted for laboratory analysis of VOCs using the EPA TO-15 method.

5. Laboratory analytical results will be analyzed, reviewed and incorporated into the Site Investigation report further detailed above under Task 1, Item 10.

Should the investigative findings warrant, Kapur would recommend case closure from the WDNR within the Site Investigation Report submittal. It is likely that the site will need to be placed in the WDNR's Geographic Information System (GIS) Registry as a condition of case closure. Upon case closure, the monitoring wells will be abandoned and forms submitted to the Department.

4.0 REFERENCES

1. K Singh (October 4, 2017), Phase I Environmental Site Assessment - 2311 S. 108th Street, 2319-2321 S. 108th Street, 10800 W. Flanders Street, and 2300 S. 109th Street, City of West Allis, Milwaukee County, Wisconsin.
2. The Sigma Group (November 21, 2017) Results for Tank System Site Assessment for Paralyzed Veterans of America Site, 2311 South 108th Street, West Allis, Wisconsin.
3. USGS Topographic Map (1971) Wauwatosa, Wisconsin Quadrangle 7.5-Minute Series.
4. U.S. Department of Agriculture, Soil Conservation Service, University of Wisconsin, Wisconsin Geological and Natural History Survey, Soils Department, and Wisconsin Agricultural Experiment Station (July 1971). Soil Survey of Milwaukee and Waukesha Counties, Wisconsin.
5. M. G. Mudrey, Jr, B.A. Brown and J. K. Greenberg (1982). Bed Rock Geologic Map of Wisconsin.
6. Freeze, R.A., and Cherry, J.A., 1979, Groundwater: Englewood Cliffs, NJ, Prentice-Hall, 604 p.

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APPENDICES

APPENDIX A

Site Maps and Figures

Milwaukee County Land Information Parcel Report

TAXKEY: 4840002001

Report generated 1/3/2018 10:21:14 AM



Parcel location within Milwaukee County



Selected parcel highlighted

Parcel Information

TAXKEY: 4840002001

Record Date: 12/31/2016

Owner(s): WISCONSIN PARALYZED VETERANS

Address: 2311 S 108TH ST

Municipality: West Allis

Acres: 0.22

Parcel Description: OTHER

Zoning Description:

Legal Description: LINCOLN LAWNS LOTS 2 & 3 BLK 1 & HWY REMNANT ADJ ON E

School District: WEST ALLIS-WEST MILWAUKEE SCHOOL DISTRICT

Assessed Value: \$0

Land Value: \$0

Improvement Value: \$0

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.



MILWAUKEE COUNTY INTERACTIVE MAPPING SERVICE



Projection
 NAD_1927_StatePlane_Wisconsin_South_FIPS_4803

Notes
 2015

DISCLAIMER: This map is a user generated static output from the Milwaukee County Land Information Office Interactive Mapping Service website. The contents herein are for reference purposes only and may or may not be accurate, current or otherwise reliable. No liability is assumed for the data delineated herein either expressed or implied by Milwaukee County or its employees.

188 94 188 Feet

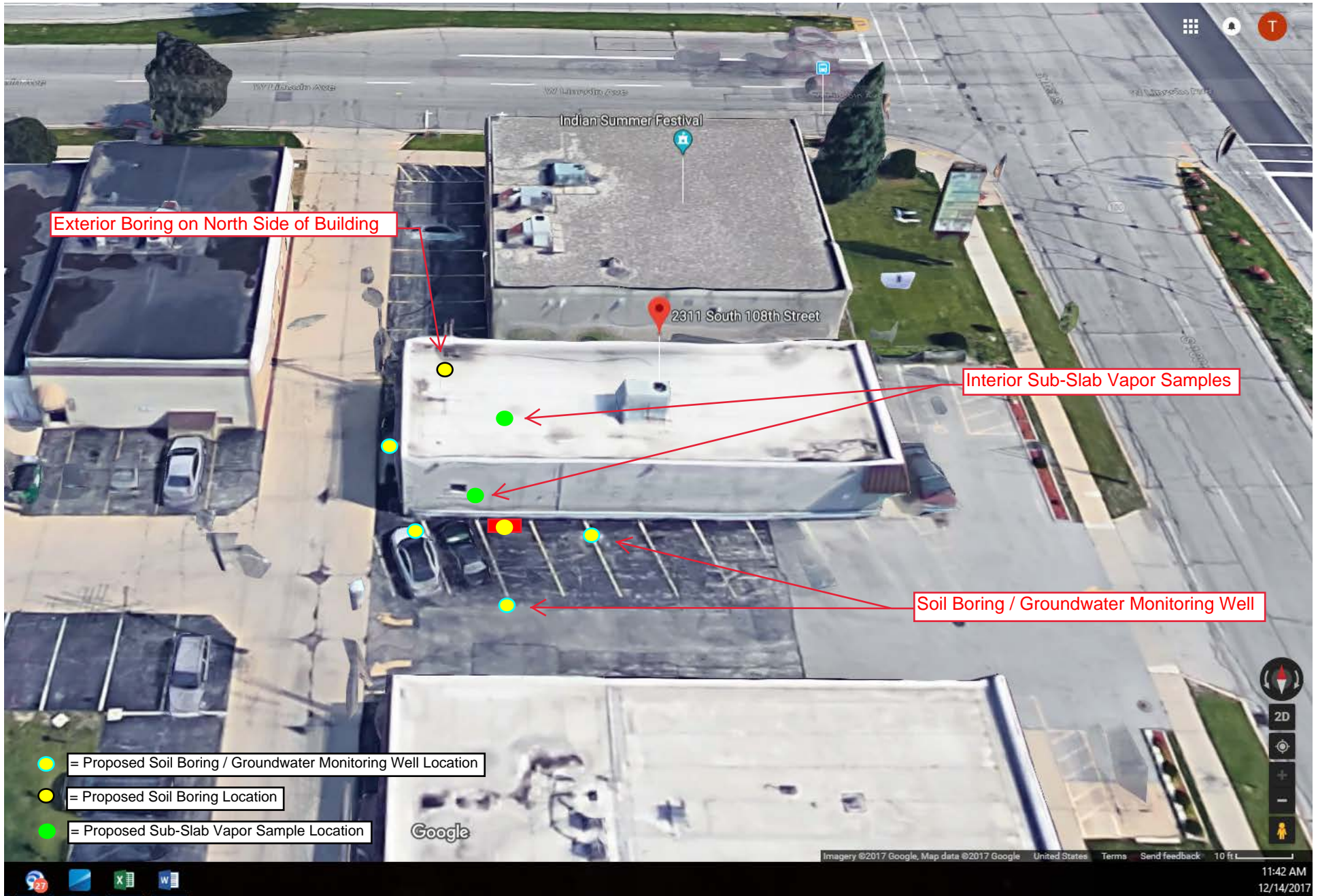
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THIS MAP IS NOT TO BE USED FOR NAVIGATION © MCAMLIS

Figure B.1.b

Site Plan: Proposed Soil Boring / Groundwater Monitoring Well Locations



APPENDIX B

Tank System Site Assessment Documentation



November 21, 2017

Project Reference #17287

Sent Via email to: gordons@ogdenre.com

Paralyzed Veterans of America
c/o Gordon J. Steimle, CSM
Executive Vice President Commercial Brokerage
Ogden & Company, Inc.
1665 N. Water Street
Milwaukee, WI 53202

**RE: Results for Tank System Site Assessment for Paralyzed Veterans of America Site
2311 South 108th Street, West Allis, Wisconsin**

Dear Mr. Steimle:

The Sigma Group, Inc. (Sigma) was retained by Paralyzed Veterans of America (Client) to remove a 150-gallon underground storage tank (UST) used to store Tetrachloroethene for historical dry-cleaning operations. The UST was removed on November 14, 2017. Following the removal of the UST, two soil samples were collected from the base of the excavation at an approximate depth of seven feet below ground surface (bgs) and designated East Base and West Base. The soil samples were submitted to Synergy Environmental Lab, Inc. for analysis of volatile organic compounds (VOCs).

A review of the laboratory analytical report indicates that the VOC results for the East Base sample were reported at a concentration less than the laboratory Limit of Detection (LOD). The VOC results from the West Base sample detected four chlorinated VOC compounds ranging in concentration from 0.197 to 15.7 milligrams per kilogram (mg/kg). Soil results were generally compared to groundwater pathway RCLs and non-industrial Direct contact RCLs which are the Wisconsin regulatory standards for soil. A summary of the results compared to the RCLs is presented below.

Compound	Result (mg/kg)	Groundwater Pathway RCL (mg/kg)	Non-Industrial Direct Contact RCL (mg/kg)
Tetrachloroethene (PCE)	15.7	0.0045	30.7
cis-1,2-Dichloroethene	0.60	0.0412	156
Trichloroethene (TCE)	0.38	0.0036	1.26
Vinyl Chloride	0.197	0.0001	0.067

A copy of the laboratory analytical report is attached.

CONCLUSIONS

Laboratory analytical results for soil samples collected at the Site indicate that soil has been impacted with CVOCs, which is indicative of dry cleaning solvent. The detected concentrations of CVOCs in the West Base soil sample are above the Groundwater Pathway RCLs. Vinyl Chloride was the only compound reported above the Non-Industrial Direct Contact RCLs.

RECOMMENDATIONS

Based on our current understanding of the potential redevelopment of the Site, Sigma providing the following recommendations for:

- Notification of a release of a hazardous substance;
- Additional investigation activities;

Notification - Based on the subsurface impacts identified at the Site, pursuant to s. 292.11 Wis. Stat., the owner or operator of a property is required to notify the WDNR of a hazardous substance discharge to the environment. The definition of a "discharge" means, but is not limited to, spilling, leaking, pumping, pouring, emitting, emptying or dumping. Notification would require using the Notification for Hazardous Substance Discharge (Non-Emergency) form 4400-225 and this report.

Additional Investigation Activities - Further soil and groundwater sampling will likely be necessary to define the extent of contamination and potential vapor intrusion impacts. Sampling locations would likely focus in the areas around the detected CVOC impacts.

LIMITATIONS OF INVESTIGATION

This report was prepared under the constraint of cost, time, and scope of work, and reflects an assessment and evaluation that is based on data collected from potential areas of concern at the time of the evaluation. Our assessment was performed using the degree of care and skill ordinarily exercised, under similar circumstances, by professional consultants practicing in this or similar localities. No other warranty or guarantee, expressed or implied, is made as the conclusions and professional advice included in this report.

The findings of this report are valid as of the present date of the assessment. However, changes in the conditions of a property can occur with the passage of time, whether due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation, from the broadening of knowledge, or from other reasons. Accordingly, the findings of this report may be invalid wholly or partially by changes outside our control.

A subsurface exploration was performed and is presented in this report. However, subsurface exploration cannot totally reveal what is below the surface. Depending upon the sampling method and frequency, every soil condition may not be observed, and some materials or layers, which are present in the subsurface, may not be noted.


This report is issued with understanding that it is the responsibility of the owner(s) to ensure that the information and recommendations contained herein are brought to the attention of the appropriate regulatory agencies, if warranted.

CLOSING

If you have any questions or comments regarding the completed activities, please call the undersigned at (414) 643-4200.

Sincerely,

THE SIGMA GROUP, INC.

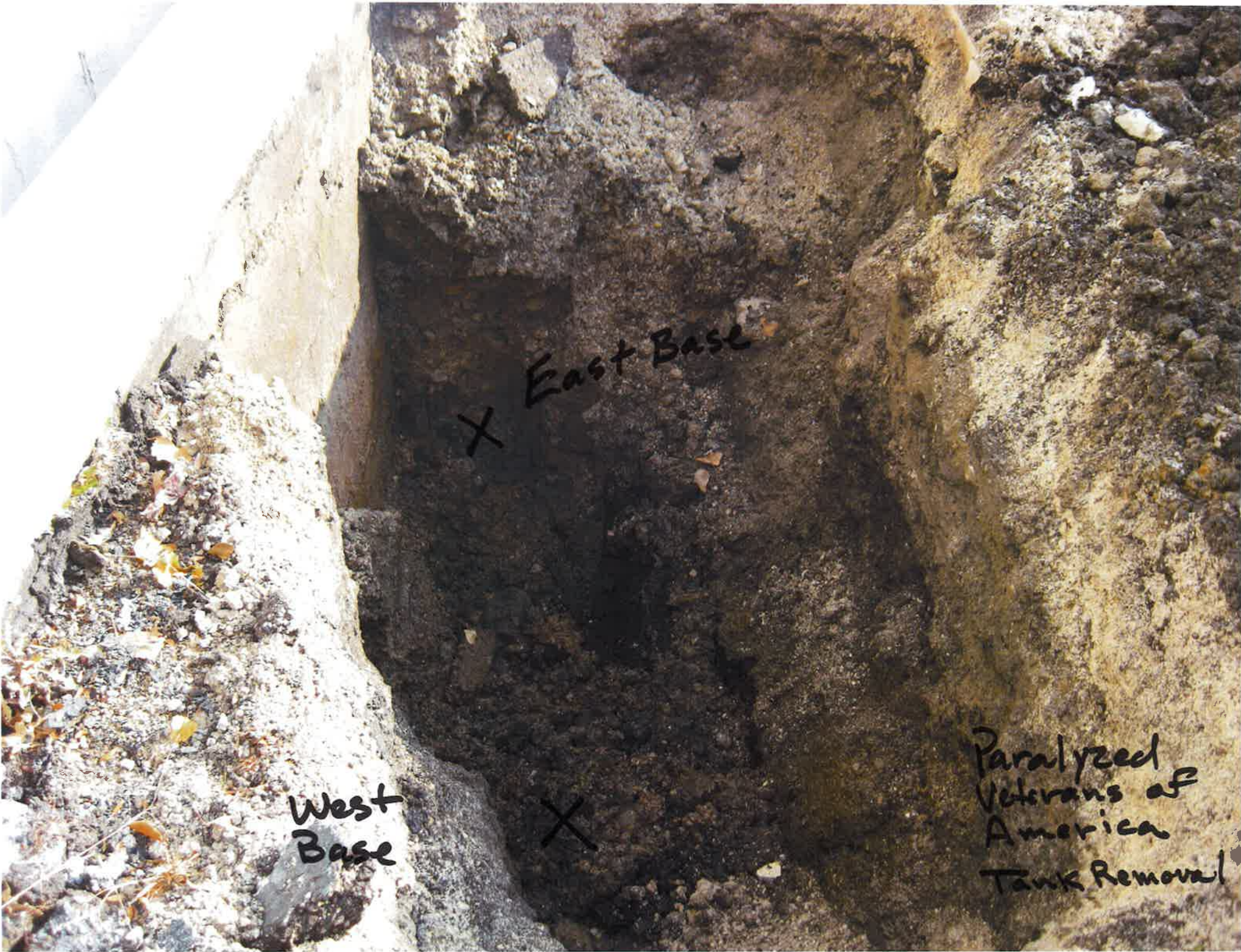

Timothy E. Wimmer, PG
Senior Project Manager
(414) 643-4139 (direct)
twimmer@thesigmagroup.com


Randy E. Boness, PG
Geosciences Manager
(414) 643-4116 (direct)
rboness@thesigmagroup.com

Attachments

cc: Derek Reinke - derekr@ogdenre.com

FIGURE



+ East Base

West Base

X

Paralyzed Veterans of America
Tank Removal

APPENDIX B

Laboratory Analytical Reports

Synergy Environmental Lab, INC.

1990 Prospect Ct., Appleton, WI 54914 *P 920-830-2455 * F 920-733-0631

TIM WIMMER
THE SIGMA GROUP, INC.
1300 W. CANAL STREET
MILWAUKEE, WI 53233

Report Date 21-Nov-17

Project Name PARALYZED VETERANS
Project # 17082

Invoice # E33909

Lab Code 5033909A
Sample ID EAST BASE
Sample Matrix Soil
Sample Date 11/14/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	76.3	%			1	5021		11/15/2017	NJC	1
Organic										
VOC's										
Benzene	< 0.03	mg/kg	0.03	0.096	1	8260B		11/16/2017	CJR	1
Bromobenzene	< 0.025	mg/kg	0.025	0.081	1	8260B		11/16/2017	CJR	1
Bromodichloromethane	< 0.074	mg/kg	0.074	0.24	1	8260B		11/16/2017	CJR	1
Bromoform	< 0.029	mg/kg	0.029	0.092	1	8260B		11/16/2017	CJR	1
tert-Butylbenzene	< 0.026	mg/kg	0.026	0.084	1	8260B		11/16/2017	CJR	1
sec-Butylbenzene	< 0.033	mg/kg	0.033	0.1	1	8260B		11/16/2017	CJR	1
n-Butylbenzene	< 0.04	mg/kg	0.04	0.13	1	8260B		11/16/2017	CJR	1
Carbon Tetrachloride	< 0.016	mg/kg	0.016	0.053	1	8260B		11/16/2017	CJR	1
Chlorobenzene	< 0.013	mg/kg	0.013	0.04	1	8260B		11/16/2017	CJR	1
Chloroethane	< 0.091	mg/kg	0.091	0.29	1	8260B		11/16/2017	CJR	1
Chloroform	< 0.035	mg/kg	0.035	0.11	1	8260B		11/16/2017	CJR	1
Chloromethane	< 0.076	mg/kg	0.076	0.24	1	8260B		11/16/2017	CJR	1
2-Chlorotoluene	< 0.015	mg/kg	0.015	0.047	1	8260B		11/16/2017	CJR	1
4-Chlorotoluene	< 0.018	mg/kg	0.018	0.057	1	8260B		11/16/2017	CJR	1
1,2-Dibromo-3-chloropropane	< 0.058	mg/kg	0.058	0.18	1	8260B		11/16/2017	CJR	1
Dibromochloromethane	< 0.025	mg/kg	0.025	0.079	1	8260B		11/16/2017	CJR	1
1,4-Dichlorobenzene	< 0.037	mg/kg	0.037	0.12	1	8260B		11/16/2017	CJR	1
1,3-Dichlorobenzene	< 0.037	mg/kg	0.037	0.12	1	8260B		11/16/2017	CJR	1
1,2-Dichlorobenzene	< 0.028	mg/kg	0.028	0.088	1	8260B		11/16/2017	CJR	1
Dichlorodifluoromethane	< 0.048	mg/kg	0.048	0.15	1	8260B		11/16/2017	CJR	1
1,2-Dichloroethane	< 0.038	mg/kg	0.038	0.12	1	8260B		11/16/2017	CJR	1
1,1-Dichloroethane	< 0.034	mg/kg	0.034	0.11	1	8260B		11/16/2017	CJR	1
1,1-Dichloroethene	< 0.022	mg/kg	0.022	0.069	1	8260B		11/16/2017	CJR	1
cis-1,2-Dichloroethene	< 0.032	mg/kg	0.032	0.1	1	8260B		11/16/2017	CJR	1
trans-1,2-Dichloroethene	< 0.028	mg/kg	0.028	0.09	1	8260B		11/16/2017	CJR	1
1,2-Dichloropropane	< 0.035	mg/kg	0.035	0.11	1	8260B		11/16/2017	CJR	1
1,3-Dichloropropane	< 0.025	mg/kg	0.025	0.079	1	8260B		11/16/2017	CJR	1
trans-1,3-Dichloropropene	< 0.022	mg/kg	0.022	0.068	1	8260B		11/16/2017	CJR	1

Project Name PARALYZED VETERANS
Project # 17082

Invoice # E33909

Lab Code 5033909A
Sample ID EAST BASE
Sample Matrix Soil
Sample Date 11/14/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
cis-1,3-Dichloropropene	< 0.039	mg/kg	0.039	0.12	1	8260B		11/16/2017	CJR	1
Di-isopropyl ether	< 0.01	mg/kg	0.01	0.032	1	8260B		11/16/2017	CJR	1
EDB (1,2-Dibromoethane)	< 0.023	mg/kg	0.023	0.072	1	8260B		11/16/2017	CJR	1
Ethylbenzene	< 0.035	mg/kg	0.035	0.11	1	8260B		11/16/2017	CJR	1
Hexachlorobutadiene	< 0.085	mg/kg	0.085	0.27	1	8260B		11/16/2017	CJR	1
Isopropylbenzene	< 0.034	mg/kg	0.034	0.11	1	8260B		11/16/2017	CJR	1
p-Isopropyltoluene	< 0.029	mg/kg	0.029	0.093	1	8260B		11/16/2017	CJR	1
Methylene chloride	< 0.15	mg/kg	0.15	0.46	1	8260B		11/16/2017	CJR	1
Methyl tert-butyl ether (MTBE)	< 0.05	mg/kg	0.05	0.16	1	8260B		11/16/2017	CJR	1
Naphthalene	< 0.094	mg/kg	0.094	0.3	1	8260B		11/16/2017	CJR	1
n-Propylbenzene	< 0.033	mg/kg	0.033	0.1	1	8260B		11/16/2017	CJR	1
1,1,2,2-Tetrachloroethane	< 0.028	mg/kg	0.028	0.88	1	8260B		11/16/2017	CJR	1
1,1,1,2-Tetrachloroethane	< 0.028	mg/kg	0.028	0.09	1	8260B		11/16/2017	CJR	1
Tetrachloroethene	< 0.032	mg/kg	0.032	0.1	1	8260B		11/16/2017	CJR	1
Toluene	< 0.032	mg/kg	0.032	0.1	1	8260B		11/16/2017	CJR	1
1,2,4-Trichlorobenzene	< 0.064	mg/kg	0.064	0.2	1	8260B		11/16/2017	CJR	1
1,2,3-Trichlorobenzene	< 0.066	mg/kg	0.066	0.21	1	8260B		11/16/2017	CJR	1
1,1,1-Trichloroethane	< 0.03	mg/kg	0.03	0.96	1	8260B		11/16/2017	CJR	1
1,1,2-Trichloroethane	< 0.033	mg/kg	0.033	0.11	1	8260B		11/16/2017	CJR	1
Trichloroethene (TCE)	< 0.041	mg/kg	0.041	0.13	1	8260B		11/16/2017	CJR	1
Trichlorofluoromethane	< 0.041	mg/kg	0.041	0.13	1	8260B		11/16/2017	CJR	1
1,2,4-Trimethylbenzene	< 0.025	mg/kg	0.025	0.08	1	8260B		11/16/2017	CJR	1
1,3,5-Trimethylbenzene	< 0.032	mg/kg	0.032	0.1	1	8260B		11/16/2017	CJR	1
Vinyl Chloride	< 0.019	mg/kg	0.019	0.062	1	8260B		11/16/2017	CJR	1
m&p-Xylene	< 0.072	mg/kg	0.072	0.23	1	8260B		11/16/2017	CJR	1
o-Xylene	< 0.044	mg/kg	0.044	0.14	1	8260B		11/16/2017	CJR	1
SUR - Dibromofluoromethane	96	Rec %			1	8260B		11/16/2017	CJR	1
SUR - 1,2-Dichloroethane-d4	99	Rec %			1	8260B		11/16/2017	CJR	1
SUR - 4-Bromofluorobenzene	93	Rec %			1	8260B		11/16/2017	CJR	1
SUR - Toluene-d8	94	Rec %			1	8260B		11/16/2017	CJR	1

Project Name PARALYZED VETERANS
Project # 17082

Invoice # E33909

Lab Code 5033909B
Sample ID WEST BASE
Sample Matrix Soil
Sample Date 11/14/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	76.3	%			1	5021		11/15/2017	NJC	1
Organic										
VOC's										
Benzene	< 0.03	mg/kg	0.03	0.096	1	8260B		11/16/2017	CJR	1
Bromobenzene	< 0.025	mg/kg	0.025	0.081	1	8260B		11/16/2017	CJR	1
Bromodichloromethane	< 0.074	mg/kg	0.074	0.24	1	8260B		11/16/2017	CJR	1
Bromoform	< 0.029	mg/kg	0.029	0.092	1	8260B		11/16/2017	CJR	1
tert-Butylbenzene	< 0.026	mg/kg	0.026	0.084	1	8260B		11/16/2017	CJR	1
sec-Butylbenzene	< 0.033	mg/kg	0.033	0.1	1	8260B		11/16/2017	CJR	1
n-Butylbenzene	< 0.04	mg/kg	0.04	0.13	1	8260B		11/16/2017	CJR	1
Carbon Tetrachloride	< 0.016	mg/kg	0.016	0.053	1	8260B		11/16/2017	CJR	1
Chlorobenzene	< 0.013	mg/kg	0.013	0.04	1	8260B		11/16/2017	CJR	1
Chloroethane	< 0.091	mg/kg	0.091	0.29	1	8260B		11/16/2017	CJR	1
Chloroform	< 0.035	mg/kg	0.035	0.11	1	8260B		11/16/2017	CJR	1
Chloromethane	< 0.076	mg/kg	0.076	0.24	1	8260B		11/16/2017	CJR	1
2-Chlorotoluene	< 0.015	mg/kg	0.015	0.047	1	8260B		11/16/2017	CJR	1
4-Chlorotoluene	< 0.018	mg/kg	0.018	0.057	1	8260B		11/16/2017	CJR	1
1,2-Dibromo-3-chloropropane	< 0.058	mg/kg	0.058	0.18	1	8260B		11/16/2017	CJR	1
Dibromochloromethane	< 0.025	mg/kg	0.025	0.079	1	8260B		11/16/2017	CJR	1
1,4-Dichlorobenzene	< 0.037	mg/kg	0.037	0.12	1	8260B		11/16/2017	CJR	1
1,3-Dichlorobenzene	< 0.037	mg/kg	0.037	0.12	1	8260B		11/16/2017	CJR	1
1,2-Dichlorobenzene	< 0.028	mg/kg	0.028	0.088	1	8260B		11/16/2017	CJR	1
Dichlorodifluoromethane	< 0.048	mg/kg	0.048	0.15	1	8260B		11/16/2017	CJR	1
1,2-Dichloroethane	< 0.038	mg/kg	0.038	0.12	1	8260B		11/16/2017	CJR	1
1,1-Dichloroethane	< 0.034	mg/kg	0.034	0.11	1	8260B		11/16/2017	CJR	1
1,1-Dichloroethene	< 0.022	mg/kg	0.022	0.069	1	8260B		11/16/2017	CJR	1
cis-1,2-Dichloroethene	0.60	mg/kg	0.032	0.1	1	8260B		11/16/2017	CJR	1
trans-1,2-Dichloroethene	< 0.028	mg/kg	0.028	0.09	1	8260B		11/16/2017	CJR	1
1,2-Dichloropropane	< 0.035	mg/kg	0.035	0.11	1	8260B		11/16/2017	CJR	1
1,3-Dichloropropane	< 0.025	mg/kg	0.025	0.079	1	8260B		11/16/2017	CJR	1
trans-1,3-Dichloropropene	< 0.022	mg/kg	0.022	0.068	1	8260B		11/16/2017	CJR	1
cis-1,3-Dichloropropene	< 0.039	mg/kg	0.039	0.12	1	8260B		11/16/2017	CJR	1
Di-isopropyl ether	< 0.01	mg/kg	0.01	0.032	1	8260B		11/16/2017	CJR	1
EDB (1,2-Dibromoethane)	< 0.023	mg/kg	0.023	0.072	1	8260B		11/16/2017	CJR	1
Ethylbenzene	< 0.035	mg/kg	0.035	0.11	1	8260B		11/16/2017	CJR	1
Hexachlorobutadiene	< 0.085	mg/kg	0.085	0.27	1	8260B		11/16/2017	CJR	1
Isopropylbenzene	< 0.034	mg/kg	0.034	0.11	1	8260B		11/16/2017	CJR	1
p-Isopropyltoluene	< 0.029	mg/kg	0.029	0.093	1	8260B		11/16/2017	CJR	1
Methylene chloride	< 0.15	mg/kg	0.15	0.46	1	8260B		11/16/2017	CJR	1
Methyl tert-butyl ether (MTBE)	< 0.05	mg/kg	0.05	0.16	1	8260B		11/16/2017	CJR	1
Naphthalene	< 0.094	mg/kg	0.094	0.3	1	8260B		11/16/2017	CJR	1
n-Propylbenzene	< 0.033	mg/kg	0.033	0.1	1	8260B		11/16/2017	CJR	1
1,1,2,2-Tetrachloroethane	< 0.028	mg/kg	0.028	0.88	1	8260B		11/16/2017	CJR	1
1,1,1,2-Tetrachloroethane	< 0.028	mg/kg	0.028	0.09	1	8260B		11/16/2017	CJR	1
Tetrachloroethene	15.7	mg/kg	0.32	1	10	8260B		11/20/2017	CJR	1
Toluene	< 0.032	mg/kg	0.032	0.1	1	8260B		11/16/2017	CJR	1
1,2,4-Trichlorobenzene	< 0.064	mg/kg	0.064	0.2	1	8260B		11/16/2017	CJR	1
1,2,3-Trichlorobenzene	< 0.066	mg/kg	0.066	0.21	1	8260B		11/16/2017	CJR	1
1,1,1-Trichloroethane	< 0.03	mg/kg	0.03	0.96	1	8260B		11/16/2017	CJR	1
1,1,2-Trichloroethane	< 0.033	mg/kg	0.033	0.11	1	8260B		11/16/2017	CJR	1
Trichloroethene (TCE)	0.38	mg/kg	0.041	0.13	1	8260B		11/16/2017	CJR	1
Trichlorofluoromethane	< 0.041	mg/kg	0.041	0.13	1	8260B		11/16/2017	CJR	1
1,2,4-Trimethylbenzene	< 0.025	mg/kg	0.025	0.08	1	8260B		11/16/2017	CJR	1
1,3,5-Trimethylbenzene	< 0.032	mg/kg	0.032	0.1	1	8260B		11/16/2017	CJR	1
Vinyl Chloride	0.197	mg/kg	0.019	0.062	1	8260B		11/16/2017	CJR	1

Project Name PARALYZED VETERANS
Project # 17082

Invoice # E33909

Lab Code 5033909B
Sample ID WEST BASE
Sample Matrix Soil
Sample Date 11/14/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
m&p-Xylene	< 0.072	mg/kg	0.072	0.23	1	8260B		11/16/2017	CJR	I
o-Xylene	< 0.044	mg/kg	0.044	0.14	1	8260B		11/16/2017	CJR	I
SUR - Toluene-d8	97	Rec %			1	8260B		11/16/2017	CJR	I
SUR - 1,2-Dichloroethane-d4	98	Rec %			1	8260B		11/16/2017	CJR	I
SUR - 4-Bromofluorobenzene	93	Rec %			1	8260B		11/16/2017	CJR	I
SUR - Dibromofluoromethane	96	Rec %			1	8260B		11/16/2017	CJR	I

"J" Flag: Analyte detected between LOD and LOQ

LOD Limit of Detection

LOQ Limit of Quantitation

Code **Comment**

1 Laboratory QC within limits.

All solid sample results reported on a dry weight basis unless otherwise indicated. All LOD's and LOQ's are adjusted for dilutions but not dry weight. Subcontracted results are denoted by SUB in the analyst field.

Authorized Signature



APPENDIX C

Photographs



Subject Property – Facing northwest, looking from S. 108th Street right of way



Subject Property – Facing northwest, aerial view showing property extents