Phase 2.5 Subsurface Investigation

Project ID 6997-03-00, E. Fifth Street, Washburn Street to Fairview Avenue - Local Street

City of Shawano, Shawano County, Wisconsin

Prepared for Wisconsin Department of Transportation
North Central Region – Rhinelander Office

Prepared by: Alan J. Gustafson, Geologist

Accepted by: _____

REL Project Number: 4281-016

Date: August 31, 2017

Robert E. Lee & Associates, Inc.
Engineering • Surveying • Environmental Services

TABLE OF ACRONYM DEFINITIONS

BRRTS	Bureau of Remediation and Redevelopment Tracking System
DC	Direct Contact
ERP	Environmental Repair
ES	Enforcement Standard
FBG	Feet Below Ground
HMA	Hazardous Materials Assessment
LUST	Leaking Underground Storage Tank
MTBE	Methyl tert-butyl ether
PAL	Preventative Action Limit
PCE	Tetrachloroethene
PECFA	Petroleum Environmental Cleanup Act
PID	Photoionization Detector
PLC	Polyvinyl Chloride
PPB	Parts Per Billion
PPM	Parts Per Million
RCL	Residual Contaminant Level
REL	Robert E. Lee & Associates, Inc.
Synergy	Synergy Environmental Lab
TCE	Trichloroethylene
VOA	Volatile Organic Analysis
VOC	Volatile Organic Compound
WDNR	Wisconsin Department of Natural Resources
WisDOT	Wisconsin Department of Transportation

Robert E. Lee & Associates, Inc.
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August 31, 2017

Mr. Dennis Mack
CEDAR CORPORATION
604 Wilson Avenue
Menominee, WI 54751

RE: Phase 2.5 Subsurface Investigation
Project ID 6997-03-00
East Fifth Street
Washburn Street to Fairview Avenue – Local Street
City of Shawano, Shawano County, Wisconsin

Dear Mr. Mack:

Please find enclosed one copy of the Phase 2.5 Subsurface Investigation report for the above-referenced project. The enclosed report describes the investigative activities performed and provides conclusions and recommendations for the management of soil and groundwater during the proposed future utility work within the East Fifth Street project corridor.

If you have any questions or comments on this report, please feel free to contact our office at your convenience.

Sincerely,

ROBERT E. LEE & ASSOCIATES, INC.

Alan J. Gustafson
Geologist

Nicole L. LaPlant
Senior Project Geologist

AJG/NLL/NJM

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1.0 PROJECT DESCRIPTION

The project involves complete reconstruction of the existing asphalt pavement roadway, including concrete curb and gutter and sidewalk. The proposed reconstruction would accommodate a new paved driving surface with uniform driving lanes, which will consist of two 11-foot paved driving lanes, two 6.5-foot parking lanes, two 2-foot concrete curb and gutter, two 5-foot terrace, and two 5-foot concrete sidewalks. Intersection drainage structures will be replaced with minimal mainline storm sewer work anticipated. The existing railroad crossing within the project limits will be reconstructed at the same relative vertical alignment, and railroad lights and gates will be added at the crossing due to existing inadequate sign distances. The intersection within Washburn Street is a proposed closure to improve the safety of the crossing. The railroad crossing reconstruction will be completed by the railroad at the same time the roadway work on East Fifth Street, City of Shawano, Shawano County, Wisconsin.

This project work will be completed under the oversight of the Wisconsin Department of Transportation (WisDOT) and the subject corridor for this work is classified by the WisDOT as a local street and traverses in an east/west direction between Washburn Street and Fairview Avenue. The project corridor is approximately 0.204-miles long and consists of a two-lane urban facility with two 11-foot lanes and two 6-foot parking lanes. A railroad crossing is located within the western extent of the project corridor. Under the proposed improvements, the depths of the excavation within the project corridor will range from ground surface to an approximate maximum depth of 6 feet below grade (fbg) to accommodate the anticipated mainline storm sewer work.

Prior to the implementation of the WisDOT project, the City of Shawano proposes to reconstruct the sanitary and water utilities within the project corridor. The depths of the excavation within the project corridor for the water and sanitary sewer utility work are anticipated to range from ground surface to approximate maximum depths of 7 and 14 fbg, to accommodate the water and sanitary sewer reconstruction, respectively.

2.0 SITE DESCRIPTION

The site description for the Phase 2.5 Subsurface Investigation with the project corridor is East Fifth Street, beginning approximately 90 feet east of the intersection of East Fifth Street and North Washburn Avenue, and spanning approximately 275 feet eastward along East Fifth Street (the Site). The Site is located in the southeast quarter of the southwest quarter of Section 30, Township 27 North, Range 16 East, City of Shawano, Shawano County, Wisconsin. The Site location is shown in Figure 1.

The surface areas in and around the Site are asphalt covered, with grass and concrete in the residences located in close proximity to the work area. Land use surrounding the Site is a combination of residential and commercial properties. A railroad runs north/south near the western boundary of the Site.

3.0 SITE HISTORY

In 2017, Robert E. Lee & Associates, Inc. (REL) performed a Phase I Hazardous Materials Assessment (HMA) of the East Fifth Street project corridor. The results of the Phase I HMA identified two Bureau of Remediation and Redevelopment Tracking Sites (BRRTS) with environmental concern with the WisDOT project corridor.

The BRRTSs sites consist of the following:

- Site #2: Fifth & Ellis Street – Phantom (State Lead) (BRRTS#: 02-59-563634 / STA 15+00 to STA 16+50) – Tetrachloroethene (PCE) was detected in a monitoring well (MW1000), located within the north terrace of the East Fifth Street right-of-way, in excess of the Chapter NR 140, Wisconsin Administrative Code (Wis. Adm. Code) enforcement standard (ES). Depth to groundwater in this area ranges from approximately 6.5 to 7.5 fbg. Groundwater contamination including PCE, trichloroethene, and petroleum products has been shown to have impacted the subject corridor. The Fifth and Ellis Street – Phantom site is an open Environmental Repair Program (ERP) Case, and is listed as a State Lead case on the Wisconsin Department of Natural Resources (WDNR) BRRTS.

- Site #8: Grosskopf Bus Company (BRRTS#: 03-59-001935) (805 E. Green Bay Street / STA 15+50 to STA 17+00) – Groundwater contamination in excess of the Wis. Admin Code ES was identified at this property on September 28, 1994, during the completion of a site investigation at the property. The Site is located approximately one block south and hydraulically up gradient of the project corridor. Based on review of additional information contained in the WDNR case file for the closed BRRTS Site, petroleum compounds in groundwater in excess of the Chapter NR 140, Wis. Adm. Code ES, have been shown to have impacted the subject corridor in the location of the intersection of East 5th Street and Ellis Street. The Grosskopf Bus Company site is a Closed Leaking Underground Storage Tank (LUST) site, and the Responsible Party listed at the time of the cleanup is Scott Grosskopf. The site received funding assistance from the Petroleum Environmental Cleanup Act (PECFA) and was closed in 2006.

Based on the results of the Phase I HMA, REL concluded that additional environmental assessment activities were warranted. As a result, REL provided Cedar Corporation with a scope of work for the completion of a Phase 2.5 subsurface investigation. Subsequently, REL was retained by WisDOT and the City of Shawano to complete the Phase 2.5 subsurface investigation during June 2017.

4.0 SOIL AND GROUNDWATER SAMPLING ACTIVITIES

Soil Sampling

On July 20, 2017, REL oversaw the completion of six soil borings (B1 through B6) at the Site. The borings were advanced by Geiss Soil and Samples, LLC, of Merrill, Wisconsin, to a maximum depth of 14 fbg with a Geoprobe® using hydraulic direct-push methods. The borings were placed between the sanitary sewer and water mains; and the storm sewer where present, at approximate 50-foot intervals between stations 14+50 to 17+00. The soil boring locations are shown in Figure 2. Photos taken at each boring location are included in Appendix A.

All down-hole drilling and sampling equipment was cleaned prior to its use on-site and between borings. Soil samples were collected from each boring by using a 2-inch diameter four-foot long polyvinyl chloride (PVC) liner, which was advanced by the Geoprobe using four-foot long by 1.5-inch diameter drill rods. Upon sample retrieval, a lengthwise section of each PVC liner was removed using a splitting tool to expose the soil. The soil column was visually inspected for discoloration, odors, and classified with the United Soil Classification System. Each soil sample was described at 2-foot continuous intervals by a REL geologist and were properly containerized for field-screening in a sealable plastic bag and possible laboratory analysis using a disposable plastic syringe on one methanol–preserved volatile organic analysis (VOA) vial. Soil sample collection, handling, and field-screening procedures followed Wisconsin Department of Natural Resources (WDNR) guidance and REL's *Standard Operating Procedure 1 – Soil Sample Collection* included as Appendix B. Field screening was performed using a RAE Systems MiniRAE 3000 photoionization detector (PID). Soil boring logs were prepared on WDNR Form 4400-122; these are included in Appendix C.

Two soil samples from each boring, the soil sample exhibiting the greatest PID reading above the apparent water table, and in accordance with *State of Wisconsin Department of Transportation Facilities Development Manual 21-35-1 Section 10.5.2 Soil Sampling* since the apparent water table was encountered in each boring, a soil sample from at least two feet below the water table were submitted for laboratory analysis. The soil samples were submitted under chain-of-custody protocol to Synergy Environmental Lab, Inc., (Synergy) in Appleton, Wisconsin (WDNR Lab Certification #445037560) for analysis of Volatile Organic Compounds (VOCs).

Groundwater Sampling

After soil sampling to the terminal depth, four borings (B1, B3, B5, and B6) were converted to temporary monitoring wells (TW1, TW3, TW5, and TW6, respectively) to facilitate the collection of groundwater samples from the boreholes. The temporary well locations are shown in Figure 2. The wells consisted of 1-inch diameter PVC pipe with 5 feet of 0.01-inch, factory-slotted screen pipe (placed to intersect the water table) attached to unslotted PVC riser pipe extending above ground surface. New screens, riser pipe, and tubing were used for each well.

Upon installation, the wells were immediately purged with a peristaltic pump using new polyethylene tubing for each well until sediment free groundwater was produced. Groundwater from the well was then conveyed from the tubing into three hydrochloric acid-preserved 40-milliliter vials. Each vial was filled with no observable headspace or air bubbles to minimize the potential for volatilization, labeled for identification and stored in an iced cooler. The groundwater samples were submitted under chain-of-custody protocol to Synergy for analysis of VOCs.

Groundwater sample collection procedures followed WDNR guidance and REL's *Standard Operating Procedure 2 – Groundwater Sample Collection* included as Appendix B.

Post-Sampling

Upon completion of soil and groundwater sampling, the soil borings and temporary wells were abandoned with bentonite and the ground surface restored to match existing ground cover. Borehole abandonment forms are also included in Appendix D. No significant amount of investigative waste was generated during the sampling.

5.0 SUBSURFACE CONDITIONS

Based on field observations, soils primarily consist of aggregate base coarse/sand fill from approximately 0.5 to 1 fbg underlain by poorly graded sand with trace gravel to depths of approximately 11 to 14 fbg with the exception of Borings B3 through B5. In Borings B3 through B5, the sand was underlain by silt or silty sand from approximately 11 to 12 fbg, followed by silty clay to 14 fbg. Saturated soil (i.e., the groundwater table) was encountered at depths ranging from approximately 6.5 to 8 fbg in the borings. Detailed soil descriptions for each boring are contained in the soil boring logs included in Appendix C. A geologic cross-section showing the stratigraphy is shown in Figure 3.

Field screening of the soil samples collected from the borings produced PID readings; however, the PID was found to be malfunctioning. REL attempted to recalibrate the PID in the field; however, it was not able to solve the malfunctioning. No soil staining or unusual odors were observed in any of the samples collected from any of the borings. PID readings are listed on the soil boring logs included in Appendix B.

6.0 SOIL AND GROUNDWATER ANALYTICAL RESULTS

Soil

Laboratory analysis detected no VOCs in any of the soil samples submitted for analysis. The soil laboratory analytical results are summarized in Table 1. The soil laboratory data for each boring is also shown on Figure 4, *Soil Quality Map*. The soil laboratory analytical report and chain-of-custody are included in Appendix D.

Groundwater

Groundwater laboratory analysis detected concentrations of methyl-tert-butyl-ether (MTBE) in Temporary Wells TW1 and TW3, PCE in Temporary Well B5, and cis-1,2-dichloroethene in Temporary Well TW6.

The groundwater sample analytical results were compared to groundwater quality standards as set forth in Chapter NR 140, Wis. Adm. Code. A preventive action limit (PAL) and enforcement standard (ES) are established for some of the metals, polynuclear aromatic hydrocarbons, and many VOCs. If the concentration of any compound exceeds its PAL, a wide range of actions may be required, ranging from no action to active remediation. If the concentration of any compound exceeds the ES, some action must be taken. This ranges from monitoring to active remediation, depending on characteristics of the contaminants and the site.

The concentrations of MTBE and cis-1,2-dichloroethene in TW1, TW3, and TW6 are below the Chapter NR 140 Wis. Adm. Code PAL and ES. However, the PCE concentration of 1.62 micrograms per liter (ug/l) detected in Temporary Well TW5 is in excess of the Chapter NR 140, Wis. Adm. Code PAL of 0.5 ug/l. The groundwater analytical results are summarized in Table 2. The groundwater laboratory data for each temporary well is shown on Figure 5, *Groundwater Quality Map*. The groundwater laboratory analytical report is included in Appendix E.

TABLE 1
SOIL ANALYTICAL RESULTS
East Fifth Street, Shawano, WI
Project ID 6997-03-00

			Sample ID:	B1	B1	B2	B2	B3	B3	B4	B4	B5	B5	B6	B6
			Sample Depth (Feet):	4-6	10-12	2-4	10-12	2-4	6-8	4-6	8-10	2-4	10-12	2-4	8-10
			Date:	7/20/2017	7/20/2017	7/20/2017	7/20/2017	7/20/2017	7/20/2017	7/20/2017	7/20/2017	7/20/2017	7/20/2017	7/20/2017	7/20/2017
Volatile Organic Compounds (mg/kg)	**NR 720 Residential Direct Contact RCL**	**NR 720 Industrial Direct Contact RCL**	**Groundwater Pathway RCL**												
Benzene	1 6	7 07	0.0051	<0.03	<0.03	<0 03	<0 03	<0 03	<0.03	<0 03	<0 03	<0 03	<0.03	<0.03	<0 03
Bromobenzene	342	679	NE	<0 025	<0 025	<0 025	<0 025	<0 025	<0 025	<0 025	<0 025	<0 025	<0 025	<0.025	<0 025
Bromodichloromethane	0 418	1 83	0.0003	<0 074	<0 074	<0 074	<0 074	<0 074	<0 074	<0 074	<0 074	<0 074	<0 074	<0 074	<0 074
Bromoform	25 4	113	0.0023	<0 029	<0 029	<0 029	<0 029	<0 029	<0 029	<0 029	<0 029	<0 029	<0 029	<0.029	<0 029
tert-Butylbenzene	183	183	NE	<0 026	<0 026	<0 026	<0 026	<0 026	<0 026	<0.026	<0 026	<0 026	<0 026	<0 026	<0 026
sec-Butylbenzene	145	145	NE	<0 033	<0 033	<0 033	<0 033	<0 033	<0 033	<0 033	<0 033	<0 033	<0 033	<0.033	<0 033
n-Butylbenzene	108	108	NE	<0 04	<0 04	<0 04	<0 04	<0 04	<0 04	<0 04	<0 04	<0 04	<0 04	<0.04	<0 04
Carbon Tetrachloride	0 916	4 03	0.0039	<0.016	<0.016	<0.016	<0.016	<0 016	<0.016	<0.016	<0 016	<0.016	<0.016	<0.016	<0.016
Chlorobenzene	370	761	0.1358	<0 013	<0 013	<0.013	<0 013	<0 013	<0 013	<0 013	<0 013	<0 013	<0 013	<0.013	<0 013
Chloroethane	NE	NE	0.2266	<0 091	<0 091	<0.091	<0 091	<0 091	<0 091	<0 091	<0 091	<0 091	<0 091	<0.091	<0 091
Chloroform	0 454	1.98	0.0033	<0 035	<0 035	<0.035	<0 035	<0 035	<0 035	<0 035	<0 035	<0 035	<0 035	<0.035	<0.035
Chloromethane	159	669	0.0155	<0.076	<0.076	<0.076	<0.076	<0 076	<0 076	<0.076	<0 076	<0.076	<0.076	<0.076	<0.076
2-Chlorotoluene	907	907	NE	<0.015	<0.015	<0.015	<0.015	<0 015	<0 015	<0.015	<0 015	<0.015	<0.015	<0.015	<0.015
4-Chlorotoluene	253	253	NE	<0.018	<0.018	<0.018	<0.018	<0 018	<0 018	<0.018	<0 018	<0.018	<0.018	<0.018	<0.018
1,2-Dibromo-3-chloropropane	0 008	0.092	0.0002	<0.058	<0.058	<0.058	<0.058	<0 058	<0 058	<0.058	<0 058	<0.058	<0.058	<0.058	<0.058
Dibromochloromethane	8 28	38.9	0.032	<0.025	<0.025	<0.025	<0.025	<0 025	<0 025	<0.025	<0 025	<0.025	<0.025	<0.025	<0.025
1,4-Dichlorobenzene	3 74	16.4	0.144	<0.037	<0.037	<0.037	<0.037	<0 037	<0 037	<0.037	<0 037	<0.037	<0.037	<0.037	<0.037
1,3-Dichlorobenzene	297	297	1.1528	<0 037	<0.037	<0.037	<0.037	<0 037	<0 037	<0.037	<0 037	<0.037	<0 037	<0.037	<0.037
1,2-Dichlorobenzene	376	376	1 168	<0.028	<0.028	<0.028	<0.028	<0 028	<0 028	<0.028	<0 028	<0.028	<0.028	<0.028	<0.028
Dichlorodifluoromethane	126	530	3.0863	<0.048	<0.048	<0.048	<0.048	<0 048	<0 048	<0.048	<0 048	<0.048	<0.048	<0.048	<0.048
1,2-Dichloroethane	0.652	2.87	0.0028	<0.038	<0.038	<0.038	<0.038	<0 038	<0 038	<0.038	<0 038	<0.038	<0.038	<0.038	<0.038
1,1-Dichloroethane	5 06	22 2	0.4834	<0.034	<0.034	<0.034	<0.034	<0 034	<0 034	<0.034	<0 034	<0.034	<0.034	<0.034	<0.034
1,1-Dichloroethene	320	1,190	0.005	<0.022	<0.022	<0.022	<0.022	<0 022	<0 022	<0.022	<0 022	<0.022	<0.022	<0.022	<0.022
cis-1,2-Dichloroethene	156	2,340	0.0412	<0.032	<0.032	<0.032	<0.032	<0 032	<0 032	<0.032	<0 032	<0.032	<0.032	<0.032	<0.032
trans-1,2-Dichloroethene	1,560	1,850	0.0626	<0.028	<0.028	<0.028	<0.028	<0 028	<0 028	<0.028	<0 028	<0.028	<0.028	<0.028	<0.028
1,2-Dichloropropane	0 406	1.78	0.0033	<0.035	<0.035	<0.035	<0.035	<0 035	<0.035	<0.035	<0 035	<0.035	<0.035	<0.035	<0.035
1,3-Dichloropropane	1,490	1,490	NE	<0.025	<0.025	<0.025	<0.025	<0 025	<0 025	<0.025	<0 025	<0.025	<0.025	<0.025	<0.025
trans-1,3-Dichloropropene	1,510	1,510	0.0003	<0.022	<0.022	<0.022	<0.022	<0 022	<0 022	<0.022	<0 022	<0.022	<0.022	<0.022	<0.022
cis-1,3-Dichloropropene	1,210	1,210	0.0003	<0.039	<0.039	<0.039	<0.039	<0 039	<0 039	<0.039	<0 039	<0.039	<0.039	<0.039	<0.039
Di-isopropyl ether	2,260	2,260	NE	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
EDB (1,2-Dibromoethane)	NE	NE	0.0000282	<0.023	<0.023	<0.023	<0.023	<0 023	<0 023	<0.023	<0 023	<0.023	<0.023	<0.023	<0.023
Ethylbenzene	8 02	35.4	1.57	<0.035	<0.035	<0.035	<0.035	<0 035	<0 035	<0.035	<0 035	<0.035	<0.035	<0.035	<0.035
Hexachlorobutadiene	1 63	7 19	NE	<0.085	<0.085	<0.085	<0.085	<0 085	<0 085	<0.085	<0 085	<0 085	<0.085	<0.085	<0.085
Isopropylbenzene	NE	NE	NE	<0.034	<0.034	<0.034	<0.034	<0 034	<0 034	<0.034	<0 034	<0.034	<0.034	<0.034	<0.034
p-Isopropyltoluene	162	162	NE	<0.029	<0.029	<0.029	<0.029	<0 029	<0 029	<0.029	<0 029	<0.029	<0.029	<0.029	<0.029
Methylene chloride	61 8	1,150	0.0026	<0.15	<0 15	<0 15	<0.15	<0 15	<0 15	<0 15	<0 15	<0 15	<0 15	<0.15	<0.15
Methyl tert-butyl ether	63 8	282	0 027	<0.05	<0.05	<0.05	<0.05	<0 05	<0.05	<0.05	<0 05	<0.05	<0.05	<0.05	<0.05
Naphthalene	5 52	24.1	0.6582	<0.094	<0.094	<0.094	<0.094	<0 094	<0.094	<0.094	<0 094	<0.094	<0.094	<0.094	<0.094
n-Propylbenzene	NE	NE	NE	<0.033	<0.033	<0.033	<0.033	<0 033	<0 033	<0.033	<0 033	<0.033	<0 033	<0.033	<0.033
1,1,2,2-Tetrachloroethane	0 81	3.6	0.0002	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028	<0 028	<0.028	<0.028	<0.028	<0.028
1,1,1,2-Tetrachloroethane	2 78	12.3	0.0534	<0.028	<0.028	<0.028	<0.028	<0 028	<0 028	<0.028	<0 028	<0.028	<0.028	<0.028	<0.028
Tetrachloroethene	33	145	0.0045	<0.032	<0.032	<0.032	<0.032	<0 032	<0 032	<0.032	<0 032	<0.032	<0.032	<0.032	<0.032
Toluene	818	818	1.1072	<0.032	<0.032	<0.032	<0.032	<0 032	<0 032	<0.032	<0 032	<0.032	<0.032	<0.032	<0.032
1,2,4-Trichlorobenzene	24	113	0.408	<0.064	<0.064	<0.064	<0.064	<0.064	<0 064	<0.064	<0 064	<0.064	<0.064	<0.064	<0.064
1,2,3-Trichlorobenzene	62 6	934	NE	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0 066	<0 066	<0.066	<0.066	<0.066
1,1,1-Trichloroethane	640	640	0.1402	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
1,1,2-Trichloroethane	1 59	7.01	0.0032	<0.033	<0.033	<0.033	<0.033	<0 033	<0.033	<0.033	<0 033	<0.033	<0.033	<0.033	<0.033
Trichloroethene (TCE)	1 3	8.41	0.0036	<0.041	<0.041	<0.041	<0.041	<0 041	<0 041	<0.041	<0 041	<0.041	<0.041	<0.041	<0.041
Trichlorofluoromethane	1,230	1,230	NE	<0.041	<0.041	<0.041	<0.041	<0 041	<0.041	<0.041	<0 041	<0.041	<0.041	<0.041	<0.041
1,2,4-Trimethylbenzene	219	219	NE	<0.025	<0.025	<0.025	<0.025	<0 025	<0.025	<0.025	<0 025	<0.025	<0.025	<0.025	<0.025
1,3,5-Trimethylbenzene	182	182	NE	<0.032	<0.032	<0.032	<0.032	<0 032	<0.032	<0.032	<0 032	<0.032	<0.032	<0.032	<0.032
Total Trimethylbenzenes	NE	NE	1.3821	<0.032	<0.032	<0.032	<0.032	<0 032	<0 032	<0.032	<0 032	<0.032	<0.032	<0.032	<0.032
Vinyl Chloride	0.067	2.08	0.0001	<0.019	<0.019	<0.019	<0.019	<0 019	<0.019	<0.019	<0 019	<0.019	<0.019	<0.019	<0.019
m&p-Xylene	NE	NE	NE	<0.072	<0.072	<0.072	<0.072	<0 072	<0 072	<0.072	<0 072	<0.072	<0.072	<0.072	<0.072
o-Xylene	434	434	NE	<0.044	<0.044	<0.044	<0.044	<0 044	<0 044	<0.044	<0 044	<0.044	<0.044	<0.044	<0.044
Total Xylenes	NE	NE	3.96	<0.072	<0.072	<0.072	<0.072	<0 072	<0.072	<0.072	<0 072	<0.072	<0.072	<0.072	<0.072

Key:

mg/kg - Milligrams per kilogram
RCL - Residual Contaminant Level per Chapter NR 720, Wis. Adm. Code
NE - Not Established by Chapter NR 720, Wis. Adm. Code
J - Detected between the Limit of Detection (LOD) and the Limit of Quantitation (LOQ)
Bold - Direct Contact Residual Contaminant Level (RCL) Exceeded
Italic - Groundwater Pathway RCL Exceeded

TABLE 2
GROUNDWATER ANALYTICAL RESULTS
East Fifth Street, Shawano, WI
Project ID 6997-03-00

Sample ID:			TW1	TW3	TW5	TW6
Date:			7/20/2017	7/20/2017	7/20/2017	7/20/2017
Volatile Organic Compounds (ug/L)	NR 140 ES	NR 140 PAL				
Benzene	5	0.5	<0.17	<0.17	<0.17	<0.17
Bromobenzene	NE	NE	<0.43	<0.43	<0.43	<0.43
Bromodichloromethane	0.6	0.06	<0.31	<0.31	<0.31	<0.31
Bromoform	4.4	0.44	<0.49	<0.49	<0.49	<0.49
tert-Butylbenzene	NE	NE	<0.39	<0.39	<0.39	<0.39
sec-Butylbenzene	NE	NE	<0.24	<0.24	<0.24	<0.24
n-Butylbenzene	NE	NE	<0.34	<0.34	<0.34	<0.34
Carbon Tetrachloride	5	0.5	<0.21	<0.21	<0.21	<0.21
Chlorobenzene	NE	NE	<0.27	<0.27	<0.27	<0.27
Chloroethane	400	80	<0.5	<0.5	<0.5	<0.5
Chloroform	6	0.6	<0.96	<0.96	<0.96	<0.96
Chloromethane	30	3	<1.3	<1.3	<1.3	<1.3
2-Chlorotoluene	NE	NE	<0.36	<0.36	<0.36	<0.36
4-Chlorotoluene	NE	NE	<0.35	<0.35	<0.35	<0.35
1,2-Dibromo-3-chloropropane	0.2	0.02	<1.88	<1.88	<1.88	<1.88
Dibromochloromethane	60	6	<0.45	<0.45	<0.45	<0.45
1,4-Dichlorobenzene	75	15	<0.42	<0.42	<0.42	<0.42
1,3-Dichlorobenzene	600	120	<0.45	<0.45	<0.45	<0.45
1,2-Dichlorobenzene	600	60	<0.34	<0.34	<0.34	<0.34
Dichlorodifluoromethane	1,000	200	<0.38	<0.38	<0.38	<0.38
1,2-Dichloroethane	5	0.5	<0.45	<0.45	<0.45	<0.45
1,1-Dichloroethane	850	85	<0.42	<0.42	<0.42	<0.42
1,1-Dichloroethene	7	0.7	<0.46	<0.46	<0.46	<0.46
cis-1,2-Dichloroethene	70	7	<0.41	<0.41	<0.41	1.76
trans-1,2-Dichloroethene	100	20	<0.35	<0.35	<0.35	<0.35
1,2-Dichloropropane	5	0.5	<0.39	<0.39	<0.39	<0.39
1,3-Dichloropropane	NE	NE	<0.49	<0.49	<0.49	<0.49
trans-1,3-Dichloropropene	0.4	0.04	<0.42	<0.42	<0.42	<0.42
cis-1,3-Dichloropropene	0.4	0.04	<0.21	<0.21	<0.21	<0.21
Di-isopropyl ether	NE	NE	<0.26	<0.26	<0.26	<0.26
EDB (1,2-Dibromoethane)	0.05	0.005	<0.34	<0.34	<0.34	<0.34
Ethylbenzene	700	140	<0.2	<0.2	<0.2	<0.2
Hexachlorobutadiene	NE	NE	<1.47	<1.47	<1.47	<1.47
Isopropylbenzene	NE	NE	<0.29	<0.29	<0.29	<0.29
p-Isopropyltoluene	NE	NE	<0.28	<0.28	<0.28	<0.28
Methylene chloride	5	0.5	<0.94	<0.94	<0.94	<0.94
Methyl tert-butyl ether	60	12	7.1	1.61[1]	<0.82	<0.82
Naphthalene	100	10	<2.17	<2.17	<2.17	<2.17
n-Propylbenzene	NE	NE	<0.19	<0.19	<0.19	<0.19
1,1,2,2-Tetrachloroethane	0.2	0.02	<0.69	<0.69	<0.69	<0.69
1,1,1,2-Tetrachloroethane	70	7	<0.47	<0.47	<0.47	<0.47
Tetrachloroethene	5	0.5	<0.48	<0.48	*1.62*	<0.48
Toluene	800	160	<0.67	<0.67	<0.67	<0.67
1,2,4-Trichlorobenzene	70	14	<1.29	<1.29	<1.29	<1.29
1,2,3-Trichlorobenzene	NE	NE	<0.83	<0.83	<0.83	<0.83
1,1,1-Trichloroethane	200	40	<0.35	<0.35	<0.35	<0.35
1,1,2-Trichloroethane	5	0.5	<0.65	<0.65	<0.65	<0.65
Trichloroethene (TCE)	5	0.5	<0.45	<0.45	<0.45	<0.45
Trichlorofluoromethane	NE	NE	<0.64	<0.64	<0.64	<0.64
1,2,4-Trimethylbenzene	NE	NE	<1.14	<1.14	<1.14	<1.14
1,3,5-Trimethylbenzene	NE	NE	<0.91	<0.91	<0.91	<0.91
Vinyl Chloride	0.2	0.02	<0.19	<0.19	<0.19	<0.19
m&p-Xylene	NE	NE	<1.56	<1.56	<1.56	<1.56
o-Xylene	NE	NE	<0.39	<0.39	<0.39	<0.39

Key:

ug/L	Micrograms per liter
ES	Enforcement Standard per Chapter NR 140, Wis. Adm. Code
PAL	Preventive Action Limit per Chapter NR 140, Wis. Adm. Code
NE	Not Established by Chapter NR 140, Wis. Adm. Code
J	Detected between the Limit of Detection (LOD) and the Limit of Quantitation (LOQ)
---	Not Analyzed
Bold	Exceeds Enforcement Standard
Italic	Exceeds Preventive Action Limit

7.0 CONCLUSIONS AND RECOMMENDATIONS

Groundwater

Based on the results of the Phase 2.5 subsurface investigation, groundwater within the Site boundaries, of approximately STA 15+00 to 17+00 in the project corridor, is impacted with residual contamination related to the closed Grosskopf Bus Company LUST Site (BRRTS #03-59-001935); and the open Fifth & Ellis Phantom ERP Site (BRRTS #02-59-563634). Groundwater samples collected from each of the four temporary wells (TW1, TW3, TW5, and TW6) had the presence of either MTBE, PCE, or cis-1,2-DCE. Most notably, the concentrations of PCE (1.62 ug/l) detected in Temporary Well TW-5 are in excess of the Chapter NR 140, Wis. Adm. Code PAL of 0.5 ug/l. Concentrations of MTBE and cis-1,2-dichloroethene in TW1, TW3, and TW6 are below the Chapter NR 140 Wis. Adm. Code regulatory standards.

Based on the depth of saturated soils encountered during the completion of the soil borings, it is anticipated that groundwater will be encountered between 6.5 and 8 fbg during the City of Shawano water and sanitary sewer reconstruction project. Since concentrations of PCE were detected in excess of the Chapter NR 140 PAL regulatory standard in TW-5, if dewatering is necessary during the City of Shawano water and sanitary sewer utility reconstruction portion of the project, the groundwater should be properly disposed at a wastewater treatment plant. REL recommends that the City of Shawano Wastewater Treatment Plant be contacted for acceptance of the groundwater, and permission be obtained for groundwater during dewatering, to be discharged to the existing sanitary sewer system.

Dewatering should not be a concern during the WisDOT grading project because the excavation depths are planned to be shallower and above the anticipated groundwater table depth, thus groundwater is not anticipated to be encountered.

Soil

Based on the analytical results of soil samples collected from both above and below the anticipated groundwater table during the Phase 2.5 subsurface investigation, soil does not appear to be impacted with residual contamination within the Site boundaries (i.e., STA 15+00 to 17+00) in the project corridor. As a result, REL recommends no special handling or management of shallow unsaturated soils (e.g, above 6 fbg) during both the WisDOT grading project and the City of Shawano water and sanitary sewer utility reconstruction project.

However, given the detections of contaminants in groundwater within the Site boundaries and the depth of the proposed excavation for the City of Shawano water and sanitary sewer utility reconstruction project, REL recommends that saturated soils below the groundwater table be replaced/backfilled within the utility trenches. If the soils are determined to be geotechnically unsuitable for backfill within the trenches, it is recommended they be disposed at an appropriate disposal facility.

It is recommended that Mr. Rick Joslin, the WDNR project manager for the open Fifth & Ellis Phantom ERP site, be notified of the results of the Phase 2.5 for inclusion in the case file and of the pending utility reconstruction at the Site.

Lastly, it is recommended that the WisDOT's Standard Special Provision be inserted into the specification, which states that if contaminated material is encountered during the project, the work shall be halted and the engineer notified.

8.0 REFERENCES

United States Geological Service (USGS), 7.5-minute quadrangle map, Shawano Quadrangle, 1982.

Wisconsin Department of Natural Resources (WDNR), "Comprehensive Environmental Cleanup Code," *Wisconsin Administrative Code,* Chapter NR 700, November 2013.

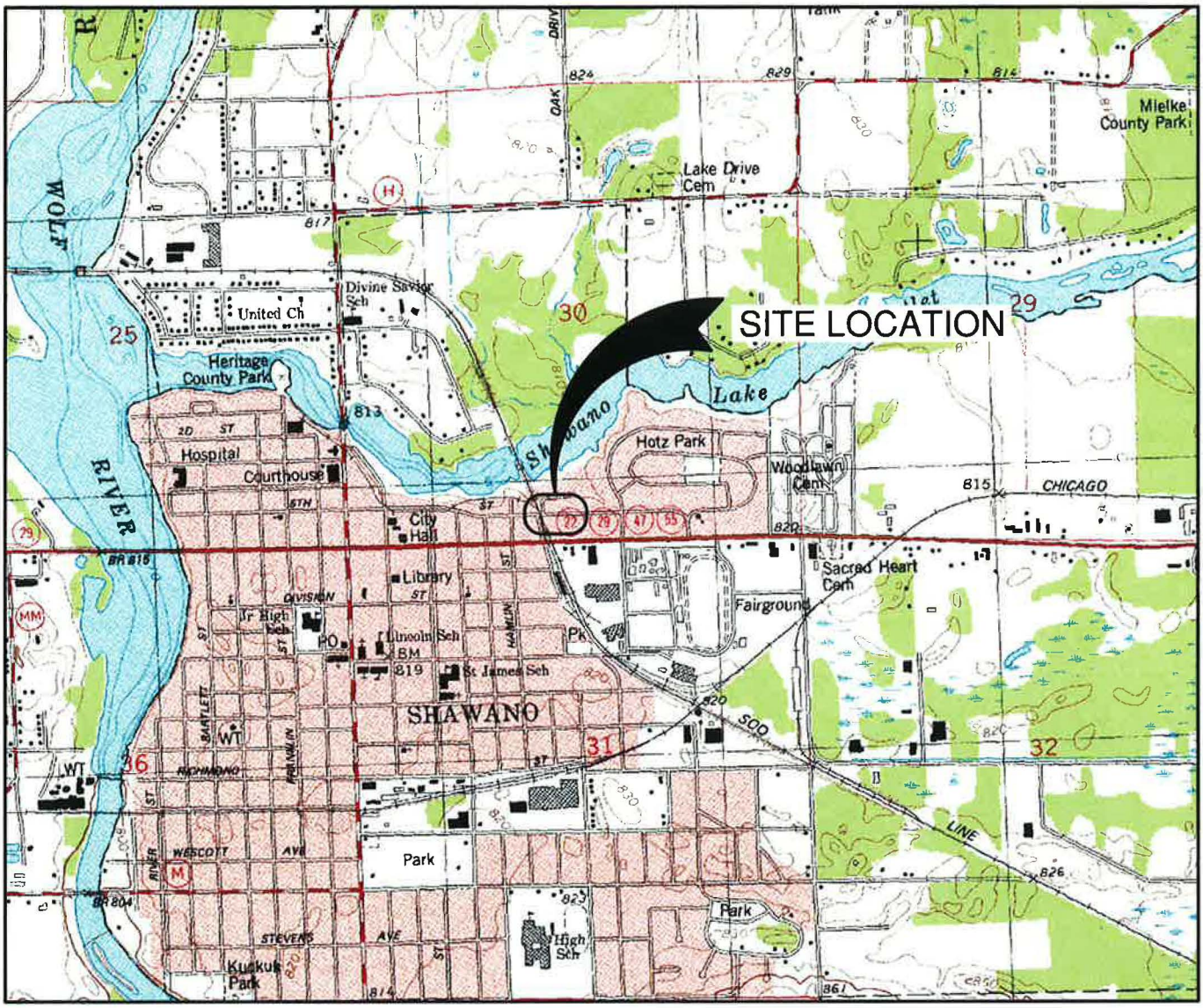
Wisconsin Department of Natural Resources (WDNR), "Groundwater Quality," *Wisconsin Administrative Code,* Chapter NR 140, February 2017.

Wisconsin Department of Natural Resources (WDNR), *Groundwater Sampling Desk Guidance,* Publication PUBL-DG-037 96, 1996.

Wisconsin Department of Natural Resources (WDNR), *Groundwater Sampling Field Manual*, Publication DG-038 96, September 1996.

Wisconsin Department of Natural Resources (WDNR), *Guidance for Conducting Environmental Response Actions,* Publication SW-157 92, March 1992.

Wisconsin Department of Transportation (WisDOT), Facilities Development Manual, Chapter 21, Section 355, December 22, 2011.



MAP USED - SHAWANO QUAD - 1982

SITE LOCATION MAP

EAST FIFTH STREET
SHAWANO, WI
SHAWANO COUNTY
PROJECT I.D. 6697-03-00

1" = 2000'

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FIGURE 1

File: R:\4200\4281\4281016\dwg(2014)\LOCATION SKETCH ENVIRONMENTAL.dwg
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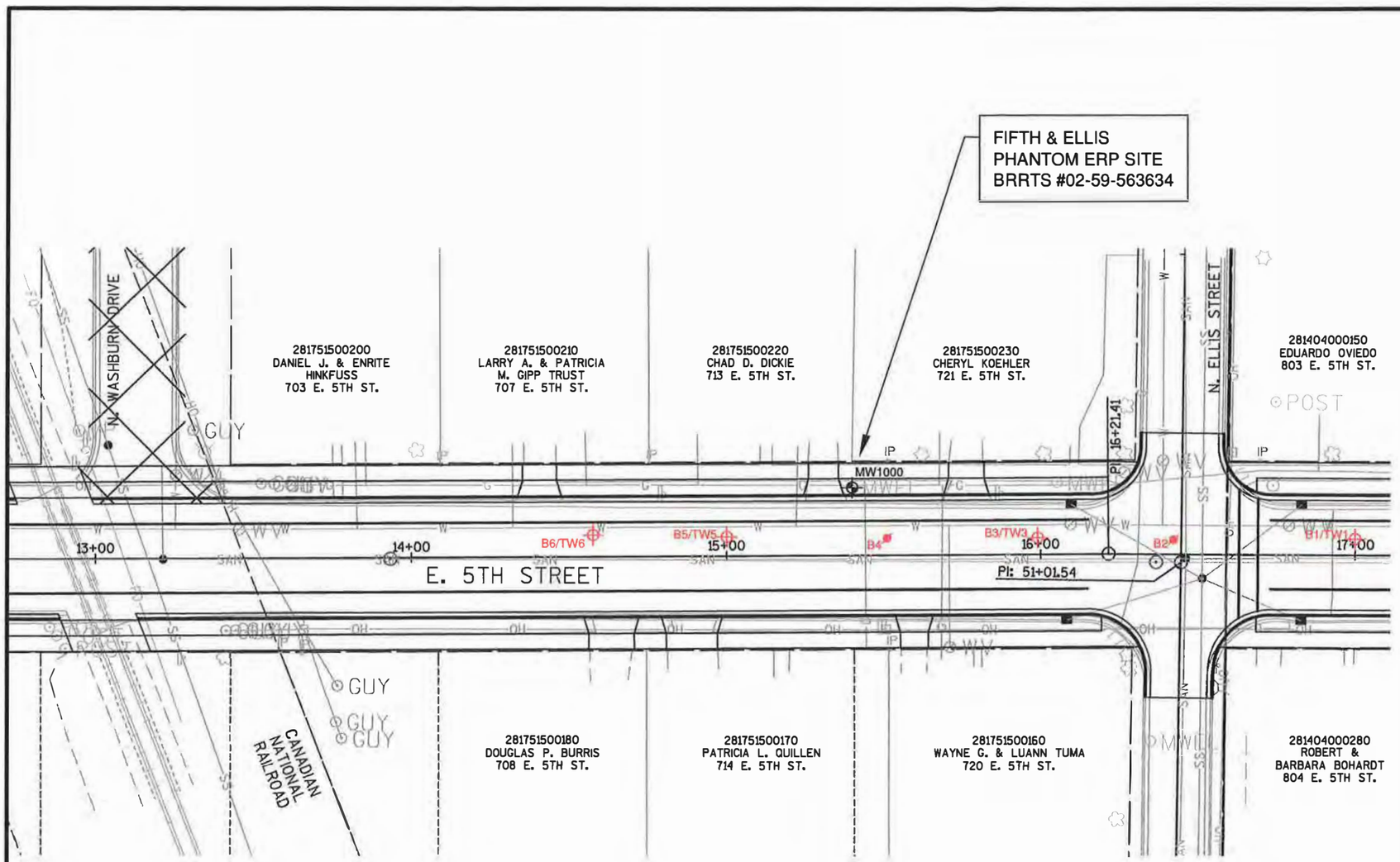

NORTH

0' 40' 80'

SCALE IN FEET

LEGEND

B2 SOIL BORING LOCATION

B1/TW1 SOIL BORING AND TEMPORARY WELL LOCATION

EAST FIFTH STREET
SHAWANO, WI
SHAWANO COUNTY
PROJECT I.D. 6697-03-00

SOIL BORING AND TEMPORARY WELL LOCATIONS

FIGURE 2

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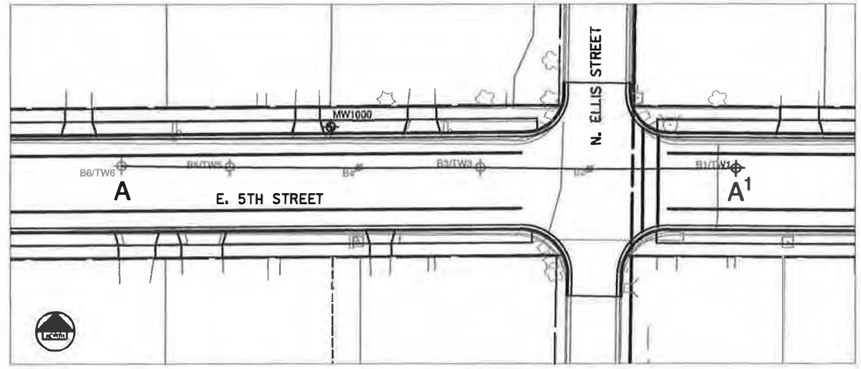
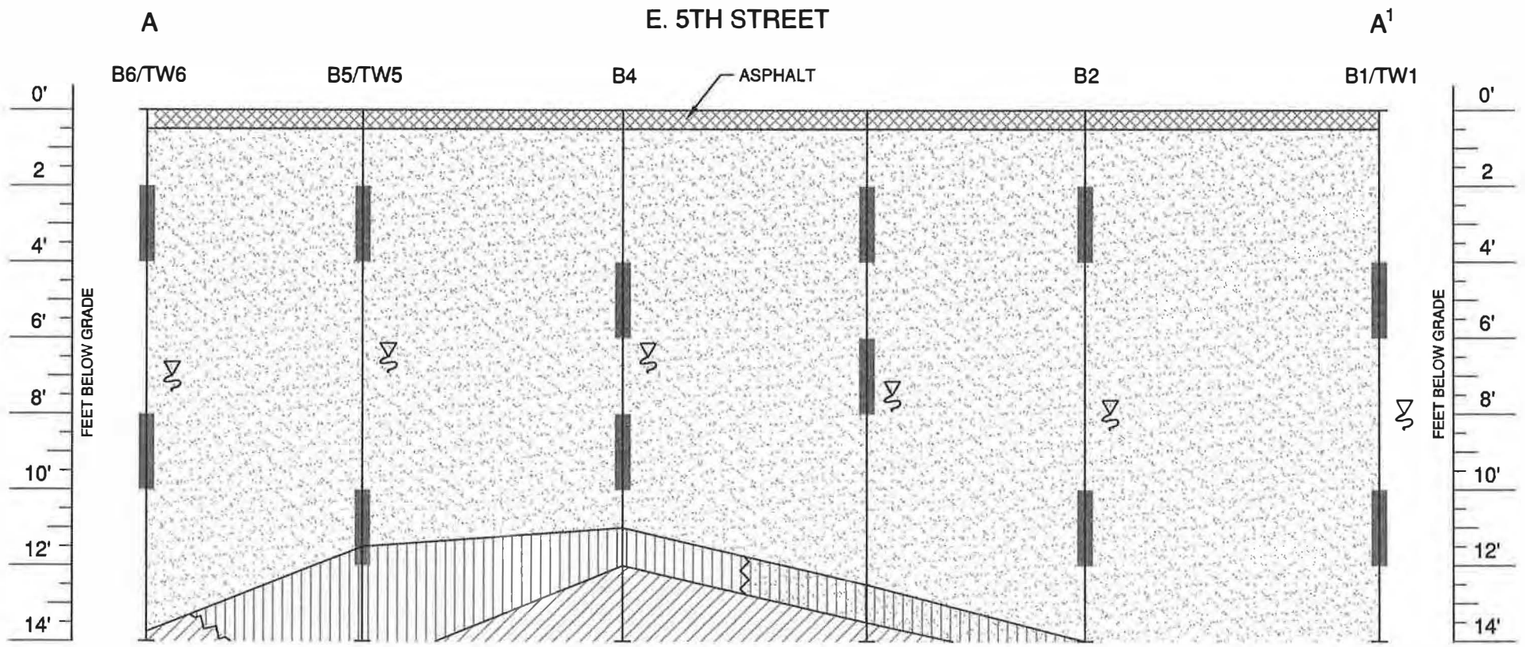
File: R:\4200\4281\4281016\dwg(2014)\4281016_ENVIRONMENTAL.dwg
Plot Date: Aug 19, 2017 - 9:44am





LEGEND

- LAB SOIL SAMPLE INTERVALS
- SAND, POORLY GRADED (SP)
- SILTY SAND, SAND-SILT MIXTURE (SM)
- SILT, SILTS AND VERY FINE SAND (ML)
- SILTY CLAY, MEDIUM PLASTICITY (CL)
- GROUNDWATER ENCOUNTERED

EAST FIFTH STREET
SHAWANO, WI
SHAWANO COUNTY
PROJECT I.D. 6697-03-00

GEOLOGICAL CROSS SECTION

FIGURE 3

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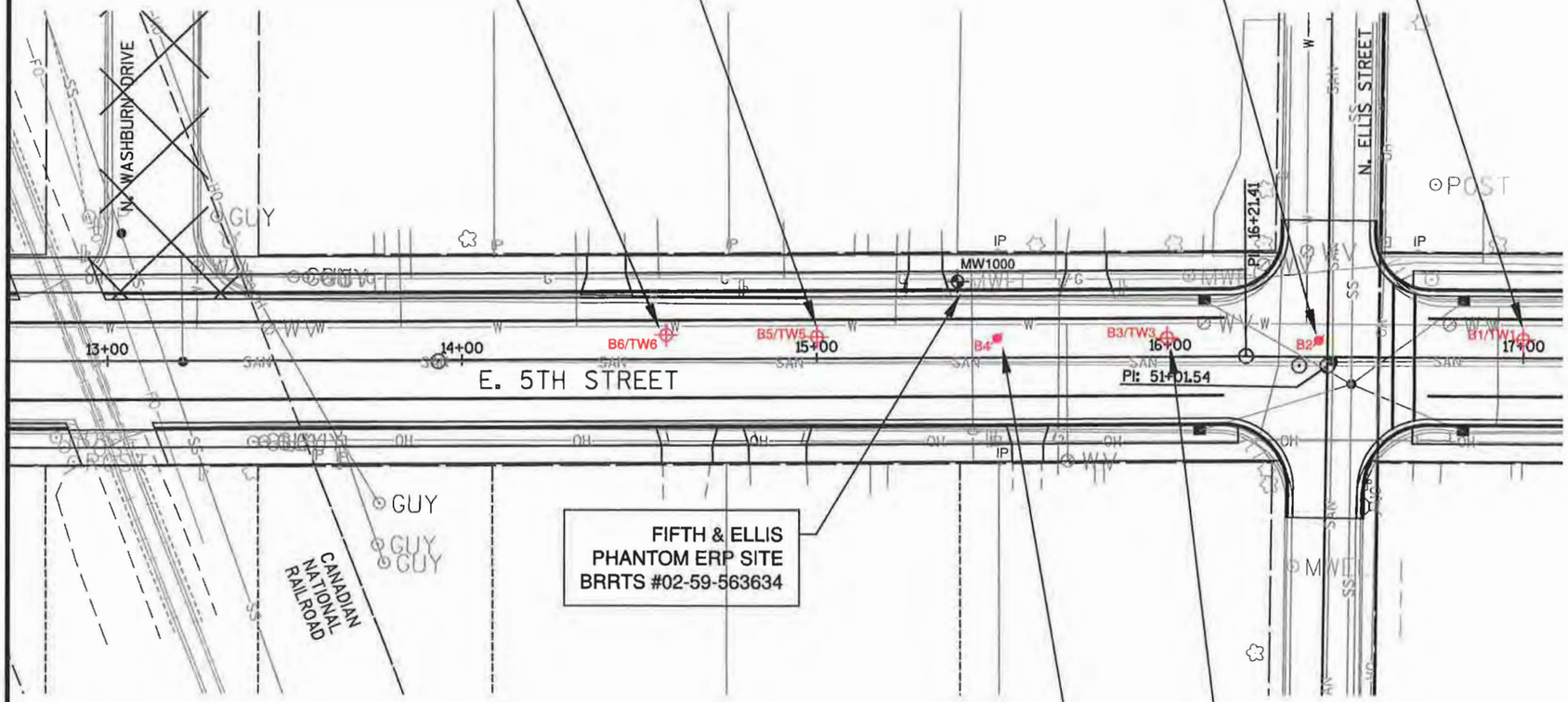
File: R:\4200\4281\4281016\dwg(2014)\4281016_ENVIRONMENTAL.dwg
Plot Date: Aug 28, 2017 - 10:49am

DEPTH (FT)	2-4	10-12
VOCs (mg/kg)	ND	ND

DEPTH (FT)	4-6	10-12
VOCs (mg/kg)	ND	ND

DEPTH (FT)	2-4	8-10
VOCs (mg/kg)	ND	ND

DEPTH (FT)	2-4	10-12
VOCs (mg/kg)	ND	ND



DEPTH (FT)	2-4	6-8
VOCs (mg/kg)	ND	ND

DEPTH (FT)	4-6	8-10
VOCs (mg/kg)	ND	ND

NORTH

0' 40' 80'

SCALE IN FEET

LEGEND

B2	SOIL BORING LOCATION
B1/TW1	SOIL BORING AND TEMPORARY WELL LOCATION
VOCs	VOLATILE ORGANIC COMPOUNDS
mg/kg	MILLIGRAMS PER KILOGRAM
FT	FEET
ND	NOT DETECTABLE ABOVE LABORATORY DETECTION LIMITS
BOLD	CONCENTRATIONS > NR 720 RCLS

EAST FIFTH STREET
SHAWANO, WI
SHAWANO COUNTY
PROJECT I.D. 6697-03-00

SOIL QUALITY MAP

FIGURE 4

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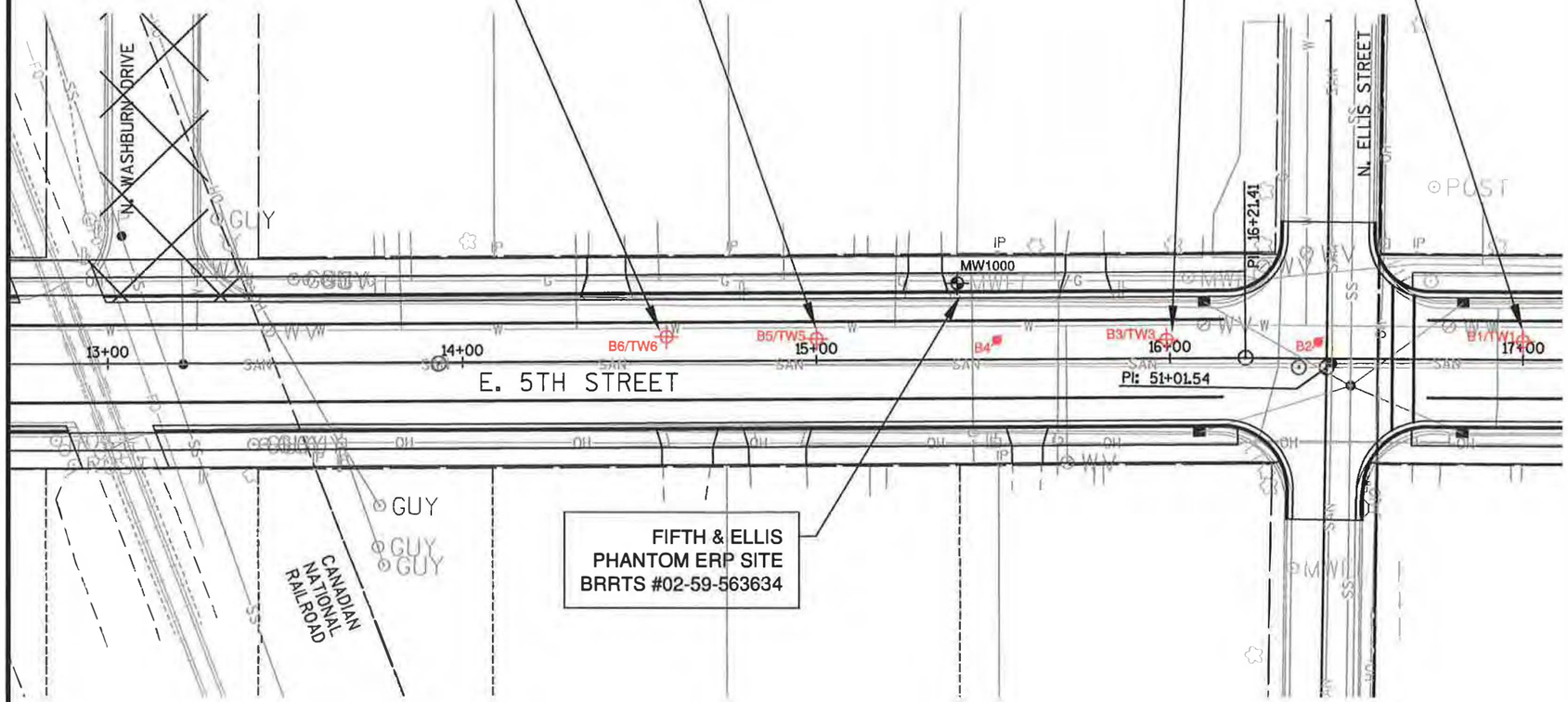
File: R:\4200\4281\4281016\dwg(2014)\4281016_ENVIRONMENTAL.dwg
Plot Date: Aug 26, 2017 - 8:51am

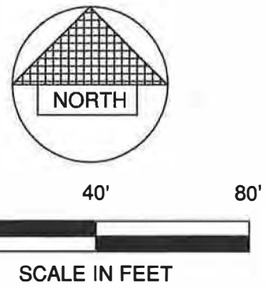
DATE	7/20/2017
PCE (mg/L)	*1.62*

DATE	7/20/2017
MTBE (mg/L)	7.1

DATE	7/20/2017
cis-1, 2 DCE (mg/L)	1.76

DATE	7/20/2017
MTBE (mg/L)	1.61 J





LEGEND

B2	SOIL BORING LOCATION
B1/TW1	SOIL BORING AND TEMPORARY WELL LOCATION
VOCs	VOLATILE ORGANIC COMPOUNDS
cis-1, 2 DCE	cis-1, 2 DICHLORETHENE
PCE	TETRACHLOROETHENE
MTBE	METHYL TERT-BUTYL ETHER
mg/L	MILLIGRAMS PER LITER
FT	FEET
ND	NOT DETECTABLE ABOVE LABORATORY DETECTION LIMITS
ITALIC	CONCENTRATIONS > NR 140 PAL
BOLD	CONCENTRATIONS > NR 140 ES

EAST FIFTH STREET
SHAWANO, WI
SHAWANO COUNTY
PROJECT I.D. 6697-03-00

GROUNDWATER QUALITY MAP

FIGURE 5

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File: R:\4200\4281\4281016\dwg(2014)\4281016_ENVIRONMENTAL.dwg
Plot Date: Aug 19, 2017 - 11:03am

A

APPENDIX A

SITE PHOTOS

Photographic Log

Site Location: East 5th Street, Shawano, WI	Project No.: 4281-016

Photo No.: 1	Date: 7/20/17

Direction Photo Taken:
East

Description:
Drill rig set up on B1

Photographic Log

Site Location: East 5th Street, Shawano, WI	Project No.: 4281-016

Photo No.: 2	Date: 7/20/17

Direction Photo Taken:
East

Description:
Drill rig set up on B2

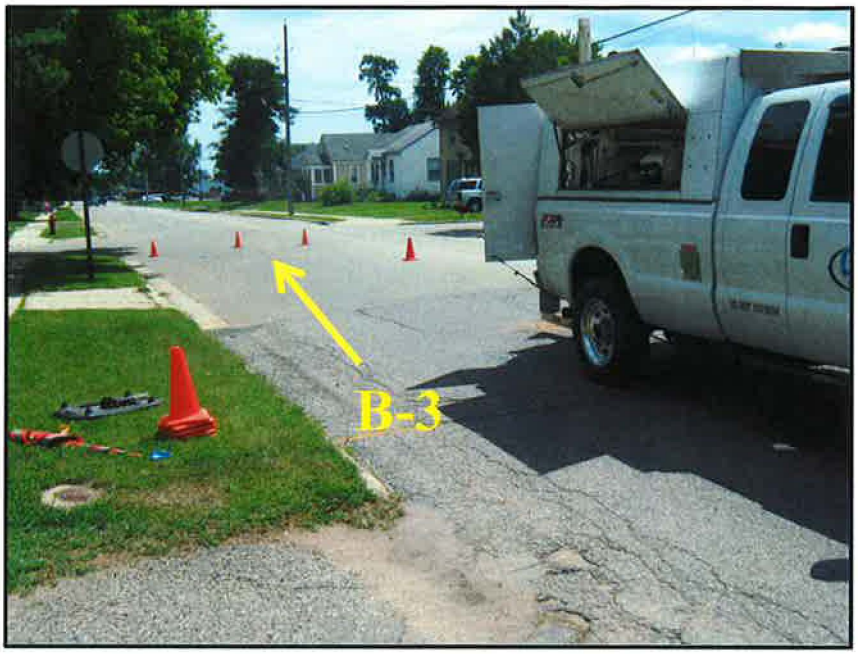
Photographic Log

Site Location: East 5th Street, Shawano, WI	Project No.: 4281-016

Photo No.: 3	Date: 7/20/17

Direction Photo Taken: East

Description: Drill rig set up on B4, arrow marking location of B3



Photographic Log

Site Location: East 5th Street, Shawano, WI	Project No.: 4281-016

Photo No.: 4	Date: 7/20/17

Direction Photo Taken: South

Description: Drill rig set up on B5

Photographic Log

Site Location: East 5th Street, Shawano, WI	**Project No.: 4281-016**

Photo No.: 5	**Date: 7/20/17**
Direction Photo Taken: South	
Description: Safety cone marking the location of B6	

B

APPENDIX B

REL STANDARD OPERATING PROCEDURES FOR SOIL AND GROUNDWATER SAMPLE COLLECTION

STANDARD OPERATING PROCEDURE 1
Soil Sample Collection

Initiator: Approved:

1.0 Purpose

The purpose of this standard operating procedure (SOP) is to describe the procedures for the collection of representative soil samples. Sampling locations and depths are assumed to be those that can be reached with the use of direct-push (i.e., Geoprobe®), hollow stem auger (HSA), and hand auger drilling methods.

These are standard (i.e., typically applicable) operating procedures which may be varied or changed as required, dependent upon site conditions, equipment limitations or limitations imposed by the procedure. In all instances, the actual procedures used should be documented and described in an appropriate site report.

2.0 Equipment

- Sampling and Analysis Plan (SAP)
- Health and Safety Plan (HSP)
- Field book
- Waterproof ink pen and permanent marker
- Camera
- Utility knife
- Plastic Sheeting
- 55-gallon steel drums
- Bentonite

- Hand auger
- Assorted geology supplies (e.g., hand lens, grain size card, etc.)
- Field boring log forms
- Munsell soil color chart
- Photoionization detector (PID)
- Ziploc® bags
- Stainless steel, plastic, or other appropriate homogenization bucket, bowl or pan
- Appropriate soil sample containers provided by the laboratory
- EZ Draw plastic syringes
- Sample labels
- Appropriate personal protective equipment (PPE) (i.e, disposable gloves, steel toe boots, hard hat, safety glasses)
- Insulated cooler, ice, and chain-of-custody seals
- Decontamination equipment (SOP-3)

3.0 Preparation Procedures

1. Review proposed sample locations and mark with stakes, flags, or marking paint. If required, the proposed locations may be adjusted based on site access, property boundaries, utilities, or subsurface obstructions.
2. Confirm that all utilities have been cleared before beginning work.
3. Complete sample container labels with the sample identification number, the analysis type, sampler's initials, and date on appropriate sample containers.

4. Set up soil sample log table in field book as follows:

Sample ID	Depth	T/T (Time Taken)	T/A (Time Analyzed)	PID Reading	Odor	Sample Description

5. This SOP assumes soil samples to be collected using Geoprobe®, HSA, or hand auger. Soil samples will be obtained at standard sampling intervals for the method used to collect the samples (i.e., two-foot intervals for Geoprobe®, 2.5-foot intervals for HSA, and 1-foot intervals for hand augering).
6. If refusal occurs, up to two additional attempts should be made, slightly varying the position of the sampling device. If it becomes obvious that major subsurface impediment is precluding sampling, an alternate sampling location should be selected, if necessary.
7. Photograph boring location.

4.0 Sample Collection Methods

1. Once soil sample is retrieved from the Geoprobe®, HSA, or hand auger, place the retrieval device (i.e., plastic sleeve, split spoon, barrel of hand auger) containing the soil column on a sheet of plastic and begin to expose the soil in preparation for sample collection. Soil sampling must commence immediately once the sample is exposed. All soil samples must be handled with disposable gloves. Soil sample containers will be filled in the order of the most volatile to least volatile in the following order: volatile organic compounds (VOCs), gasoline range organics (GRO), diesel range organics (DRO), semi-volatile organic compounds (SVOCs), polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), pesticides, herbicides, cyanide, total organic carbon (TOC), metals, and percent solids.

2. Immediately collect VOCs portion of the soil samples first using a clean Pace Analytical Services, Inc., EZ draw plastic syringe from a discrete location within the sample interval. Insert the syringe into the soil to obtain 10 grams of soil and continue pushing until the soil column inside the syringe is to the mark labeled "10" and stop drawing soil. Wipe all debris from the outside of the syringe. Immediately remove the cap from a tared, 40-milliliter (mL) vial containing a laboratory pre-measured volume of methanol and insert the soil sample into the vial with the syringe. Be careful to avoid splashing any preservative out of the sample vial by holding the vial at an angle while slowly extruding the soil core into the vial. Replace cap on vial and secure tightly. Gently swirl the sample vial to completely immerse the soil in the methanol. Soil and methanol ratio is 1:1 (i.e., 10 grams of soil to 10 mL of methanol).
3. Next, collect the GRO soil samples, if specified in the SAP, using the same syringe and preservation procedure as for VOCs, described in Step 2.
4. Collect the DRO soil samples next, if specified in the SAP, using the same plastic syringe from a discrete location within the sample interval. Insert the syringe into the soil to obtain 10 grams of soil and continue pushing until the soil column inside the syringe is to the mark labeled "10" and stop drawing soil. Wipe all debris from the outside of the syringe. Immediately remove the cap from an unpreserved, tared 40-mL vial and insert the soil sample into the vial with the syringe. Replace cap on vial and close tightly.
5. Discard the used syringe in a plastic bag.
6. Describe soil in accordance with American Society Testing Materials (ASTM) D2488 soil logging on a field boring log form.
7. Place the remainder of the soil into a stainless steel, plastic, or other appropriate homogenization container, and mix thoroughly with a stainless steel spoon to obtain a homogenous sample representative of the entire sampling interval in preparation for the collection of SVOCs, PAHs, PCBs, pesticides, herbicides, cyanide, total organic carbon (TOC), metals, and/or percent solids, as specified in the SAP.

8. Begin filling the appropriate sample containers with soil using a stainless steel spoon in a manner to minimize the headspace (e.g., the containers must be completely filled) and secure the caps tightly.
9. Place remaining soil in a Ziploc® bag for field screening analysis and follow the soil field screening procedures in SOP-5.
10. Finish labeling sample containers with the time of collection. Place the samples in bubble-wrap bags. Then place the bubble wrapped samples in a Ziploc® bag. Label Ziploc® bags with sample identifications and project number. Place soil samples in an insulated cooler and chill to 4° C.
11. Complete sample log table in the field book.
12. Dispose of used sample sleeve in a plastic bag and decontaminate soil sampling equipment (i.e., stainless steel spoons and homogenizing bowls) in accordance with SOP-3.
13. Continue drilling to the next sampling interval and collect samples as described in Steps 1 through 12 and as defined in the specified SAP.
14. Upon reaching the final depth of the borehole and the completion of soil sample collection, abandon the borehole with bentonite.
15. Move to next proposed sample/borehole location.

STANDARD OPERATING PROCEDURE 2
Groundwater Sample Collection

Initiator: Approved:

1.0 Purpose

The purpose of this standard operating procedure (SOP) is to describe the procedures for the collection of representative groundwater samples.

These are standard (i.e., typically applicable) operating procedures which may be varied or changed as required, dependent upon site conditions, equipment limitations or limitations imposed by the procedure. In all instances, the actual procedures used should be documented and described in an appropriated site report.

2.0 Equipment

- Sampling and Analysis Plan (SAP)
- Health and Safety Plan (HSP)
- Field book
- Waterproof ink pen and permanent marker
- Tool Box (includes at a minimum socket wrench, screwdriver, pliers, hammer, scissors, flashlight)
- Keys for well cap locks
- Electronic water-level indicator
- Calculator
- Appropriate laboratory sample containers
- Sample labels

- Low Flow pump controller, submersible pump and appropriate tubing
- Flow cell
- Water quality multi-meter (e.g., YSI 556 multi meter) for measuring temperature, specific conductance, pH, dissolved oxygen (DO) and oxidation reduction potential (ORP) or separate individual meters may also be used
- Single check valve disposable bailers
- Sampling tips for disposable bailers
- Nylon rope
- Appropriate personal protective equipment (PPE)
- 5-gallon plastic pails
- 55-gallon steel drums
- Insulated cooler, chain-of-custody seals, Ziploc® bags
- Decontamination equipment (SOP-3)

3.0 Procedures

3.1 Field Preparation

1. Start at the least known or suspected contaminated well and continue in order of increasing contaminant concentrations. Disposable gloves should be worn at all times. Gloves should be changed immediately prior to sample collection and in between wells.
2. Lay plastic sheeting, or other suitable material, around the well to minimize the likelihood of contamination of equipment from ground surface material adjacent to the well.
3. Remove protective well cap (i.e., flushmount or Pro-top cover).
4. Remove locking well casing cap.
5. Allow water levels to stabilize for between 15 to 30 minutes prior to collecting water level measurements.

6. Set up water level measurement data table in fieldbook as follows:

Well ID	Depth to Bottom	Depth to Water	Time Collected	Purge Volume

7. Set up field indicator parameter table in fieldbook as follows:

Well ID	Time	Temperature	pH	Specific Conductance

Note: Indicator parameters maybe recorded during purging to monitor stabilization; however, according to WDNR guidance, wells may be sampled once the required well volume has been removed. If recording stabilization indicator parameters, at least three or more measurements are necessary.

8. Measure depth to water (DTW) in well in accordance with SOP-4.

9. Measure total depth of well (depth to bottom [DTB]) and record in the field book.

10. Calculate well purge volume as described in Section 3.2.

11. Prepare and proceed with purging and sampling the wells with the methods specified in the SAP. Purging and sampling methods are described in Section 3.5.

3.2 Determination of Well Purge Volume

1. Determine the volume of water to be purged as follows:

a. For wells that can be purged dry, purge the well dry once and allow it to recover.

b. For wells that cannot be purged dry, purge 4 well volumes and allow it to recover.

Calculate the volume to be purged using the following equation:

$$V = \pi \times (D/2)^2 \times H \times 4 \times 7.48 \text{ gallons/ft}^3$$

Where: V = Total purge volume (i.e., four well volumes in gallons)

π = Pi (3.14)

D = Inside diameter of well casing (feet)

H = Feet of water in well (depth to well bottom minus depth to water)

3.3 Analytical Sampling Order

1. Upon completion of purging, fill sample bottles in the following order:
   a) Volatile Organic Compounds (VOCs)
   b) Non-filtered, non-preserved (e.g., semi-volatile organic compounds [SVOCs], polynuclear aromatic hydrocarbons [PAHs], pesticides, herbicides, PCBs, sulfate, chloride, total chromium VI)
   c) Non-filtered, preserved (e.g., total organic carbon [TOC], nitrogen series [ammonia, nitrates, nitrites, etc.], total metals, cyanide)
   d) Filtered, non-preserved (e.g., dissolved chromium VI)
   e) Filtered , preserved (e.g., dissolved metals except chromium VI)

3.4 Special Considerations for VOC Sampling

The following procedures should be followed when filling VOC containers:

1. Open one vial at a time, set cap in a clean place, and begin collecting the sample.
2. When filling a VOC vial, tip it at a slight angle and allow a steady stream of water to run down its inner wall.
3. Fill the vial until it appears that it is ready to overflow and a positive meniscus forms on the top of the vial.

4. Check that the cap has not been contaminated (splashed) and carefully cap the vial. Place the cap directly over the top and screw down firmly. Do not over tighten.
5. Invert the sample vial and tap gently to check for air bubbles. If an air bubble appears, discard the sample and fill another VOC vial. It is imperative that no entrapped air is in the sample vial. If air bubbles persist, an unpreserved sample will be collected. This sample shall be noted as such in the field log book and on the chain-of-custody form.
6. Immediately place the sample vial in a protective bubble-wrap bag and place into the cooler.

3.5 Field Filtering

Filtering in the field is an essential part of a sampling program for the determination of the concentration of dissolved inorganic constituents in a sample (i.e., dissolved metals). Field filtering will be performed when analyzing for dissolved metals regardless of the purging and sampling techniques. The following procedures should be followed when field filtering:

1. Set up filtering apparatus as specified by manufacturer.
2. Place a 0.45 micron membrane filter on the filtering apparatus.
3. Flush the membrane filter with approximately 500 mL of reagent grade water.
4. Place a 0.45 micron membrane filter on the filtering apparatus.
5. Collect sample to be filtered in transfer vessel. *Note: If possible, collect an additional 150 mL of sample for pre-rinsing membrane filter.*
6. Gently pour 150 mL of unfiltered sample into the filter apparatus and begin filtering. Discard the first 150 mL of sample.
7. Continue filtering the sample until sufficient volume has been obtained (approximately 250 mL).
8. Place the filtered sample into a previously preserved sample bottle and tightly close cap.

9. Dispose of the membrane filter and decontaminate the transfer vessel and filtering apparatus and store for future use.

3.6 Purging and Sampling Methods

3.6.1 Disposable Bailer

This method describes purging and sampling with a disposable bailer. The quality of the samples collected with a bailer highly depends on the skill and care of the operator using it. Take great care when lowering a bailer in and out of the water column. Carefully lift the bailer up and out of the well without allowing it to bang against the casing and use a bottom emptying device to dispense samples.

1. Equipment needed includes a disposable bailer, nylon rope, scissors, and plastic sheeting.
2. Attach the nylon rope to the bailer and slowly lower until the bailer is completely submerged, being careful not to drop the bailer to the water, causing turbulence and the possible loss of volatile organic contaminants.
3. Pull bailer out ensuring that the rope either falls onto a clean area of the plastic sheeting, or is wound on a reel or hand, and never touches the ground.
4. Empty the bailer into a graduated vessel or container of known volume (e.g., 5-gallon plastic bucket) in order to determine the number of bails necessary to achieve the required purge volume.
5. Samples may be periodically collected to determine if field parameters such as pH, temperature, and specific conductance have stabilized.
6. Thereafter, pour the purge water into a 55-gallon drum that is temporarily stored on-site pending proper disposal arrangements.

7. Purge well until specified volume of water has been removed and/or until field parameters, such as temperature, pH, specific conductance have stabilized.
8. After removing the appropriate purge volume from the well, allow monitoring well to recharge. Assemble and label appropriate sample containers.
9. Lower the bailer slowly and gently into the well, taking care not to contact the casing side or to splash the bailer into the water. Stop lowering at a point adjacent to the screen. Do not allow bailer to contact the bottom of the well screen.
10. Allow bailer to fill and then slowly and gently retrieve bailer from the well avoiding contact with the casing.
11. Remove cap from sample container, insert appropriate sampling tip (i.e., bottom emptying device) into bottom of the bailer and begin to slowly fill the pre-labeled sample container or filtering device. Fill sample containers in the order specified in Section 3.3, Analytical Sampling Order.
12. Filter and preserve samples if required by SAP.
13. Cap the sample container tightly and place pre-labeled sample container in a bubble-wrap bag. Then place the bubble wrapped sample in a Ziploc® bag. Label Ziploc® bag with the sample identification and project number. Place groundwater sample in an insulated cooler and chill to 4° C.
14. Replace the well casing cap and well protective cover.
15. Log all samples in the field book.

3.6.2 Submersible Pump and Bailer

This method describes purging with a submersible pump and sampling with a disposable bailer. This method may be appropriate when low-flow pumping equipment is not available or the monitoring point goes dry while low flow purging and sensitive samples will be collected.

1. Assemble pump and tubing, and slowly lower the pump in the water column of the well. Place discharge tube in a graduated vessel or container of known volume in order to measure the amount of water removed from the well to achieve the required purge volume.
2. Apply power source to pump and begin pumping. Periodically collect samples to measure if field parameters such as pH, temperature, and specific conductance have stabilized.
3. During purging of the well, slowly lower the pump so that, after four well volumes are purged, the pump's inlet is within approximately 1 foot of the bottom of the well in order to remove stagnant water before collecting samples with a bailer.
4. Purge well until specified volume of water has been removed and/or until field parameters, such as temperature, pH, specific conductance have stabilized. *Note: If you are collecting sensitive samples (i.e., VOCs or trace metals), keep the purging rate as low as possible.*
5. Pour the purge water into a 55-gallon drum that is temporarily stored on-site pending proper disposal arrangements.
6. After removing the appropriate purge volume from the well, allow the well to recharge. Assemble and label appropriate sample containers.
7. Remove pump and tubing and fully decontaminate pump in accordance with SOP-3 prior to setting into the next sample well. Dispose of tubing.
8. Attach a nylon rope to a clean disposable bailer.
9. Lower the bailer slowly and gently into the well, taking care not to contact the casing side or to splash the bailer into the water. Stop lowering at a point adjacent to the screen.
10. Allow bailer to fill and then slowly and gently retrieve bailer from the well avoiding contact with the casing. Do not allow the bailer to contact the bottom of the well.
11. Remove cap from sample container, insert appropriate sampling tip (i.e., bottom emptying device) into bottom of the bailer and begin to slowly fill the pre-labeled sample container or filtering device.
12. Filter and preserve samples if required by SAP.

13. Cap the sample container tightly and place pre-labeled sample container in a bubble-wrap bag. Then place the bubble wrapped sample in a Ziploc® bag. Label Ziploc® bag with the sample identification and project number. Place groundwater sample in an insulated cooler and chill to 4° C.
14. Replace the well casing cap and well protective cover.
15. Log all samples in the field book.

3.6.3 Submersible Pump

This method describes purging and sampling with a submersible pump. This method may be appropriate when low-flow pumping equipment is not available and sensitive samples will be collected.

1. Assemble pump and tubing, and slowly lower the pump in the water column of the well. Place discharge tube in a graduated vessel or container of known volume in order to measure the amount of water removed from the well to achieve the required purge volume.
2. Apply power source to pump and begin pumping. Periodically collect samples to measure if field parameters such as pH, temperature, and specific conductance have stabilized.
3. During purging of the well, slowly lower the pump so that, after four well volumes are purged, the pump's inlet is within approximately 1 foot of the bottom of the well in order to remove stagnant water before collecting samples.
4. Purge well until specified volume of water has been removed and/or until field parameters, such as temperature, pH, specific conductance have stabilized. *Note: If you are collecting sensitive samples (i.e., VOCs or trace metals), keep the purging rate as low as possible.*
5. Pour the purge water into a 55-gallon drum that is temporarily stored on-site pending proper disposal arrangements.

6. After removing the appropriate purge volume from the well, allow monitoring well to recharge. Assemble and label appropriate sample containers.
7. Carefully move pump to just above the screened section.
8. Attach gate valve (or other flow control device) to hose (if not already fitted), and reduce flow of water to a manageable sampling rate (several hundred milliliters per minute is preferred).
9. If gate valve or other flow-control device is not available, run the water down the side of a clean jar and fill the sample containers from a jar.
10. Remove cap from sample container and slowly fill the pre-labeled sample container or filtering device.
11. Filter and preserve samples if required by SAP.
12. Cap the sample container tightly and place pre-labeled sample container in a bubble-wrap bag. Then place the bubble wrapped sample in a Ziploc® bag. Label Ziploc® bag with the sample identification and project number. Place groundwater sample in an insulated cooler and chill to 4° C.
13. Remove pump and assembly and fully decontaminate pump in accordance with SOP 3 prior to setting into the next sample well. Dispose of tubing.
14. Replace the well casing cap and well protective cover.
15. Log all samples in the field book.

3.6.4 Low Flow Purging and Sampling

This method describes purging and sampling with a submersible pump and low flow pump controller. Low flow purging and sampling results in collection of groundwater samples from monitoring wells that are representative of groundwater conditions in the geological formation. This is accomplished by setting the intake velocity of the sampling pump to a flow rate that limits drawdown inside the well casing. The prescribed low flow rate has three primary benefits:

1) It minimizes the disturbance of sediment in the bottom of the well, thereby producing a sample with low turbidity.

2) The technique minimizes the aeration of the groundwater sample during collection, which improves the sample quality for VOC analysis.

3) The technique significantly reduces the volume of groundwater purged from a well thereby reducing the costs associated with treatment and disposal of investigative waste.

Problems that may be encountered using this technique include difficulty in sampling wells with insufficient yield, failure of one or more key indicator parameters to stabilize, and the cascading of water or the formation of air bubbles in the tubing.

The low flow purging and sampling technique is described as follows:

1. Measure DTW in each well as described in Section 3.1, Field Preparation.

2. Review well construction diagram in the field book or the well construction form to determine the screen length and the depth to bottom of the well. Calculate the depth of mid-screen of the well as the pumping level will need to be at the middle of the well screen.

3. Assemble tubing to pump, and slowly lower the pump into the water column of the well. Once the pump and tubing are placed within the well and fixed to the well screen, set up the water quality multi-meter probe and flow through cell. Assemble and label appropriate sample containers.

4. Set the pumping rate with control device so it is between 0.1 to 0.5 liters per minute. The goal is to achieve minimal drawdown (< 0.1 m) during purging.

5. Once the equipment is in place, begin purging the well. (Note: After the pump is turned on

set the flow rate and do not alter it throughout the development process.) Note your start time as soon as the pump is turned on and containerize purge water in a graduated container so the purge volume can be determined following completion of development. Make sure the time that the indicator parameters are taken is documented.

6. Record indicator parameters for temperature, pH, dissolved oxygen, specific conductance, and oxidation-reduction potential (ORP), time, and turbidity, if applicable. Set up the following table in the site's field book to record all necessary information:

Well ID:		**Pumping Rate:**		**Pump Start Time:**		
Time	Temperature	Specific Conductance	DO	pH	ORP	Turbidity
Total Volume Pumped:				Sample Collection Time:		

Note: Total Volume Pumped is the volume removed upon collection of third consecutive reading (i.e. last measurement).

7. Measurements should be taken every three to five minutes and stabilization is achieved after all parameters have stabilized for three successive readings.

8. In general, the order of stabilization is pH, and specific conductance, followed by oxidation-reduction potential, dissolved oxygen and turbidity. Three successive readings should be within plus or minus 0.1 standard units (su) for pH, 3% for conductivity, 10 mV for oxidation-reduction potential, and 10% for turbidity and DO. Three successive readings for temperature are not required. If, after 2 hours of purging, stabilization has not been achieved, groundwater samples will be collected from the well as described below. Documentation of steps to achieve stabilization shall be recorded in field book.

9. *Note: DO and turbidity usually require the longest time for stabilization.*

10. Once parameters have stabilized, disconnect the flow through cell and begin collecting samples in the order as specified in Section 3.3, Analytical Sampling Order. The flow can be decreased if needed to allow attachment of any filtering devices and to minimize aeration of the samples. Record the pumping rate so you have a reference for the next sampling event.

11. Remove cap from sample container and slowly fill the pre-labeled sample container or filtering device.

12. Filter and preserve samples if required by SAP.

13. Cap the sample container tightly and place pre-labeled sample container in a bubble-wrap bag. Then place the bubble wrapped sample in a Ziploc® bag. Label Ziploc® bag with the sample identification and project number. Place groundwater sample in an insulated cooler and chill to 4° C.

14. Remove pump and assembly and fully decontaminate low flow sampling equipment in accordance with SOP-3 prior to purging the next sample well. Dispose of tubing.

15. Replace the well casing cap and well protective cover.

16. Log all samples in the field book.

C

APPENDIX C

WDNR SOIL BORING LOGS

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☐ Other [x] _____

Page 1 of 1

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
East 5th Street City of Shawano		B1

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
First Name: Darren Last Name: Prentice Firm: Geiss Soil and Samples, LLC	7/20/2017	7/20/2017	Geoprobe

WI Unique Well No.	DNR Well ID No.	Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
_ _ _ _ _ _	_ _ _		_____ Feet MSL	_____ Feet MSL	2 inches

Local Grid Origin ☐ (estimated: [x]) or Boring Location [x]
State Plane _____ N, _____ E
SE 1/4 of SW 1/4 of Section 30, T 27 N, R 16 E

Lat ° ' "
Long ° ' "

Local Grid Location
☐ N ☐ E
_____ Feet ☐ S _____ Feet ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
	SHAWANO	59	City of Shawano

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
	15		0.0 - 2.0	6" ASPHALT underlain by 6" BASE COURSE, underlain by SAND, poorly graded, fine, yellowish brown (10YR5/6), dry, no odor	SP			89.6						
	15		2.0 - 4.0	SAND, poorly graded, fine, yellowish brown (10YR5/6), dry, no odor	SP			110.2						
	8		4.0 - 6.0	SAND, poorly graded, fine, moist at 6fbg, yellowish brown (10YR4/4), no odor	SP			129.1						
	8		6.0 - 8.0	SAND, poorly graded, fine, yellowish brown (10YR4/4), wet at 8fbg, no odor	SP			112.4						
	20		8.0 - 10.0	SAND, poorly graded, fine, yellowish brown (10YR4/4), wet, no odor	SP			57.3						
	20		10.0 - 12.0	SAND, poorly graded, fine, yellowish brown (10YR4/4), wet, no odor	SP			69.4						
	24		12.0 - 14.0	SAND, poorly graded, fine, yellowish brown (10YR4/4), wet, no odor	SP			53.3						
			14.0 - 14.1	End of boring at 14 feet										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
Allan Gustafson	Robert E. Lee & Associates, Inc.

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☐ Other [x] _____

Facility/Project Name: East 5th Street City of Shawano	License/Permit/Monitoring Number:	Boring Number: B2	
Boring Drilled By: Name of crew chief (first, last) and Firm First Name: Darren Last Name: Prentice Firm: Geiss Soil and Samples, LLC	Date Drilling Started: 7/20/2017	Date Drilling Completed: 7/20/2017	Drilling Method: Geoprobe
WI Unique Well No.: _ _ _ _ _ _	DNR Well ID No.: _ _ _ _	Well Name:	Final Static Water Level: _____ Feet MSL
Surface Elevation: _____ Feet MSL	Borehole Diameter: _____ inches		
Local Grid Origin ☐ (estimated: [X]) or Boring Location [X] State Plane _____ N, _____ E SE 1/4 of SW 1/4 of Section 30, T 27 N, R 16 E	Lat ° ' " Long ° ' "	Local Grid Location ☐ N ☐ E _____ Feet ☐ S _____ Feet ☐ W	
Facility ID	County: SHAWANO	County Code: 59	Civil Town/City/ or Village: City of Shawano

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
	16			0.0 - 2.0 ASPHALT underlain by BASE COURSE to 4", SAND, poorly graded, fine, loose, dark yellowish brown (10YR4/4) dry, no odor	SP			60.2						
	24			2.0 - 4.0 SAND, poorly graded, fine, loose, dark yellowish brown (10YR4/4) dry, no odor, clay lenses near 3fbg	SP			68.0						
				4.0 - 6.0 NO RECOVERY - pushed rock										
	2			6.0 - 8.0 SAND, poorly graded, fine, dark yellowish brown (10YR4/4), moist near 6fbg becoming wet at 8fbg, no odor	SP			58.6						
				8.0 - 10.0 NO RECOVERY										
	8			10.0 - 12.0 SAND, poorly graded, fine, dark yellowish brown (10YR4/4), wet, no odor	SP			64.0						
	16			12.0 - 14.0 SAND (as above) to 13fbg, changing to SAND with gravel to 13.5fbg, changing to silty clay, high plasticity, soft, wet, 10YR 4/4 dark yellowish brown	SP			20.3						
				14.0 - 14.1 End of boring at 14 feet										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
Alan Gustafson	Robert E. Lee & Associates, Inc.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☐ Other [x] _____

Page 1 of 1

Facility/Project Name: East 5th Street City of Shawano	License/Permit/Monitoring Number:	Boring Number: B3
Boring Drilled By: Name of crew chief (first, last) and Firm — First Name: Darren Last Name: Prentice — Firm: Geiss Soil and Samples, LLC	Date Drilling Started: 7/20/2017	Date Drilling Completed: 7/20/2017 — Drilling Method: Geoprobe
WI Unique Well No. _____ DNR Well ID No. _____ Well Name:	Final Static Water Level: _____ Feet MSL	Surface Elevation: _____ Feet MSL — Borehole Diameter: 2 inches
Local Grid Origin ☐ (estimated: [X]) or Boring Location [X] — State Plane _____ N, _____ E — SE 1/4 of SW 1/4 of Section 30, T 27 N, R 16 E	Lat ° ' " — Long ° ' "	Local Grid Location: ☐ N ☐ E _____ Feet ☐ S _____ Feet ☐ W
Facility ID	County: SHAWANO — County Code: 59	Civil Town/City/ or Village: City of Shawano

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
	14		0.0 - 2.0	6" ASPHALT underlain by 8" BASE COURSE, no odor				30.1						
	24		2.0 - 4.0	SAND, poorly graded, fine, loose, trace fine to medium gravel, yellowish brown (10YR5/6), dry, no odor	SP			29.8						
	4		4.0 - 6.0	SAND, poorly graded, fine, loose, trace fine to medium gravel, yellowish brown (10YR5/6), dry, no odor	SP			20.9						
	24		6.0 - 8.0	SAND, poorly graded, fine, loose, trace fine to medium gravel, yellowish brown (10YR5/6) to 7fbg, underlain by SAND, dark yellowish brown (10YR4/6), wet at 7.5fbg, no odor	SP SP			19.5						
	12		8.0 - 10.0	SAND, poorly graded, fine, loose, trace fine to medium gravel, dark yellowish brown (10YR4/6), wet, no odor	SP			7.9						
	20		10.0 - 12.0	SAND, poorly graded, fine, loose, trace fine to medium gravel, dark yellowish brown (10YR4/6), wet, no odor	SM			9.0						
	24		12.0 - 14.0	SAND, poorly graded, fine, loose, trace fine to medium gravel, dark yellowish brown (10YR4/6) to 12.5fbg, underlain by SANDY SILT, dark yellowish brown (10YR4/4) to 13.5fbg, underlain by SILTY CLAY, soft, medium to high plasticity, wet, no odor				7.3						
			14.0 - 14.1	End of boring at 14 feet										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: Alan Gustafson — Firm: Robert E. Lee & Associates, Inc.

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☐ Other [x] _____

Facility/Project Name: East 5th Street City of Shawano	License/Permit/Monitoring Number	Boring Number: B4	
Boring Drilled By: Name of crew chief (first, last) and Firm First Name: Darren Last Name: Prentice Firm: Geiss Soil and Samples, LLC	Date Drilling Started: 7/20/2017	Date Drilling Completed: 7/20/2017	Drilling Method: Geoprobe
WI Unique Well No. _ _ _ _ _ _ _ / DNR Well ID No. _ _ _ _ / Well Name	Final Static Water Level: _____ Feet MSL	Surface Elevation: _____ Feet MSL	Borehole Diameter: 2 inches
Local Grid Origin ☐ (estimated: ☒) or Boring Location ☒ State Plane _____ N, _____ E SE 1/4 of SW 1/4 of Section 30, T 27 N, R 16 E	Lat ° ' " Long ° ' "	Local Grid Location _____ Feet ☐ N ☐ S _____ Feet ☐ E ☐ W	
Facility ID	County: SHAWANO	County Code: 59	Civil Town/City/ or Village: City of Shawano

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
	12		0.0 - 2.0	6" ASPHALT, underlain by SAND FILL, dark brown (10YR3/3), dry, no odor	SP			6.6						
	24		2.0 - 4.0	SAND, poorly graded, fine, loose, yellowish brown (10YR5/8), dry, no odor	SP			19.1						
	8		4.0 - 6.0	SAND, poorly graded, fine, loose, yellowish brown (10YR5/8), dry, no odor to 5.5fbg, underlain by 3" SAND, with silt, underlain by SAND, poorly graded, medium, yellowish brown (10YR5/8), no odor	SP SP			28.4						
	24		6.0 - 8.0	SAND, poorly graded, medium, yellowish brown (10YR5/8), wet at 6.5fbg, no odor	SP			8.8						
	12		8.0 - 10.0	SAND, poorly graded, fine to medium, yellowish brown, (10YR5/8), wet, no odor	SP			11.4						
	18		10.0 - 12.0	SAND, poorly graded, fine to medium, yellowish brown, (10YR5/8), wet, no odor to 11fbg, changing to SILT, fine, wet, no odor	CL			5.5						
	12		12.0 - 14.0	SILTY CLAY, medium to high plasticity, firm to hard, no odor				6.3						
			14.0 - 14.1	End of boring at 14 feet										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: Alan Gustafson Firm: Robert E. Lee & Associates, Inc.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☐ Other [x] _____

Page 1 of 1

Facility/Project Name: East 5th Street City of Shawano	License/Permit/Monitoring Number:	Boring Number: B5
Boring Drilled By: Name of crew chief (first, last) and Firm First Name: Darren Last Name: Prentice Firm: Geiss Soil and Samples, LLC	Date Drilling Started: 7/20/2017	Date Drilling Completed: 7/20/2017
Drilling Method: Geoprobe	WI Unique Well No.:	DNR Well ID No.:
Well Name:	Final Static Water Level: _____ Feet MSL	Surface Elevation: _____ Feet MSL
Borehole Diameter: 2 inches	Local Grid Origin ☐ (estimated: lat/long) or Boring Location [x] State Plane _____ N, _____ E SE 1/4 of SW 1/4 of Section 30, T 27 N, R 16 E	Lat ° ' " Long ° ' "
Local Grid Location: _____ Feet ☐ N ☐ S _____ Feet ☐ E ☐ W	Facility ID:	County: SHAWANO
County Code: 59	Civil Town/City/ or Village: City of Shawano	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
	12		0.0 - 2.0	6" ASPHALT, underlain by dark brown SAND FILL to 1fbg, changing to SAND, poorly graded, fine, loose, dark yellowish brown (10YR4/6), dry, no odor	SP			37.0						
	18		2.0 - 4.0	SAND, poorly graded, fine, loose, dark yellowish brown (10YR4/6), dry, no odor	SP			38.2						
	20		4.0 - 6.0	SAND, poorly graded, fine, loose, dark yellowish brown (10YR4/6), dry, no odor	SP			30.9						
	18		6.0 - 8.0	SAND, poorly graded, fine, loose, dark yellowish brown (10YR4/6), moist at 6.5fbg, becoming wet at 7.5fbg, no odor	SP			12.2						
	20		8.0 - 10.0	SAND, poorly graded, fine, loose, dark yellowish brown (10YR4/6), wet, no odor	SP			5.1						
	16		10.0 - 12.0	SAND, poorly graded, fine, loose, dark yellowish brown (10YR4/6), wet, no odor to 11.5fbg, underlain by SILT, non-plastic, some fine sand, trace clay, wet, no odor	ML			12.7						
	18		12.0 - 14.0	SILT, non-plastic, some fine sand, trace clay, wet, no odor				11.0						
			14.0 - 14.1	End of boring at 14 feet										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: Alan Gustafson Firm: Robert E. Lee & Associates, Inc.

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☐ Other [x] _____

Page 1 of 1

Facility/Project Name: East 5th Street City of Shawano	License/Permit/Monitoring Number:	Boring Number: B6	
Boring Drilled By: Name of crew chief (first, last) and Firm First Name: Darren Last Name: Prentice Firm: Geiss Soil and Samples, LLC	Date Drilling Started: 7/20/2017	Date Drilling Completed: 7/20/2017	Drilling Method: Geoprobe
WI Unique Well No.	DNR Well ID No.	Well Name	Final Static Water Level: _____ Feet MSL
Surface Elevation: _____ Feet MSL	Borehole Diameter: 2 inches		
Local Grid Origin ☐ (estimated: [x]) or Boring Location [x] State Plane _____ N, _____ E SE 1/4 of SW 1/4 of Section 30, T 27 N, R 16 E	Lat ° ' " Long ° ' "	Local Grid Location ☐ N ☐ E _____ Feet ☐ S _____ Feet ☐ W	
Facility ID	County: SHAWANO	County Code: 59	Civil Town/City/ or Village: City of Shawano

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
	12			0.0 - 2.0 6" ASPHALT, underlain by dark brown SAND FILL to 1.5fbg, changing to SAND, poorly graded, fine, loose, dark yellowish brown (10YR4/6) dry, no odor	SP			19.1						
	18			2.0 - 4.0 SAND, poorly graded, fine to medium, loose, yellowish brown (10YR5/8), dry, no odor	SP			13.8						
	12			4.0 - 6.0 SAND, poorly graded, fine to medium, loose, yellowish brown (10YR5/8), dry, no odor	SP			12.1						
	20			6.0 - 8.0 SAND, poorly graded, fine to medium, loose, yellowish brown (10YR5/8), wet at 7fbg, no odor	SP			16.3						
	18			8.0 - 10.0 SAND, poorly graded, fine to medium, loose, yellowish brown (10YR5/8), wet, no odor	SP			19.8						
	12			10.0 - 12.0 SAND, poorly graded, fine to medium, loose, yellowish brown (10YR5/8), 11fbg, underlain by SANDY SILT, fine, brown (10YR4/3), wet, no odor	SP			12.4						
	20			12.0 - 14.0 SAND, poorly graded, medium, loose, brown (10YR4/3), to 13.75fbg, underlain by SILTY CLAY, medium to high plasticity, soft, wet, no odor	SP			13.8						
				14.0 - 14.1 End of boring at 14 feet										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: Alan Gustafson Firm: Robert E. Lee & Associates, Inc.

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

D

APPENDIX D

WDNR BOREHOLE ABANDONMENT FORMS

State of Wis. Dept. of Natural Resources
dnr.wi.gov

Well / Drillhole / Borehole Filling & Sealing

Form 3300-005 (R 4/08) Page 1 of 2

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☐ Verification Only of Fill and Seal

Route to:
☐ Drinking Water ☐ Watershed/Wastewater ☐ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

1. Well Location Information

County	WI Unique Well # of Removed Well	Hicap #
SHAWANO	_ _ _ _ _	

Latitude / Longitude (Degrees and Minutes) — Method Code (see instructions)
_ _ ° _ _ ' _ _ . _ _ _ 'N
_ _ ° _ _ ' _ _ . _ _ _ 'W

¼ / ¼	¼	Section	Township	Range
or Govt Lot #			N	☐ E ☐ W

Well Street Address: East 5th Street

Well City, Village or Town	Well ZIP Code
City of Shawano	54166-
Subdivision Name	Lot #

Reason For Removal From Service — WI Unique Well # of Replacement Well: _ _ _ _ _

2. Facility / Owner Information

Facility Name
Facility ID (FID or PWS)
License/Permit/Monitoring #
Original Well Owner
Present Well Owner
Mailing Address of Present Owner

City of Present Owner	State	ZIP Code

3. Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 7/20/2017
If a Well Construction Report is available, please attach.

Construction Type:
[X] Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (specify): _____

Formation Type:
☐ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
14	
Lower Drillhole Diameter (in.)	Casing Depth (ft.)
2	

Was well annular space grouted? ☐ Yes ☐ No ☐ Unknown

If yes, to what depth (feet)?	Depth to Water (feet)

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☐ Yes	☐ No	[X] N/A
Liner(s) removed?	☐ Yes	☐ No	[X] N/A
Screen removed?	☐ Yes	☐ No	[X] N/A
Casing left in place?	☐ Yes	☐ No	[X] N/A
Was casing cut off below surface?	☐ Yes	☐ No	[X] N/A
Did sealing material rise to surface?	[X] Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	[X] No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	[X] N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☐ Yes	☐ No	[X] N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
[X] Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Clay-Sand Slurry (11 lb./gal. wt.)
☐ Sand-Cement (Concrete) Grout ☐ Bentonite-Sand Slurry " "
☐ Concrete ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
[X] Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

5. Material Used To Fill Well / Drillhole

	From (ft.)	To (ft.)	Cubic Feet	
Asphalt Patch	Surface	0.5	0.01	
3/8" Bentonite Holeplug	0.5	14	0.3	

6. Comments

Boring B1/TW1

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing (mm/dd/yyyy)
Darren Prentice - Geiss Soil & Samples, LLC		7/20/2017

Street or Route	Telephone Number
1250 Centennial Centre Blvd	(920) 544-4416

City	State	ZIP Code	Signature of Person Doing Work	Date Signed
Hobart	WI	54155-	Adam Prentice	7/21/2017

DNR Use Only

Date Received	Noted By

Comments

State of Wis , Dept of Natural Resources
dnr.wi.gov

Well / Drillhole / Borehole Filling & Sealing

Form 3300-005 (R 4/08)

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☐ Verification Only of Fill and Seal

Route to:
☐ Drinking Water ☐ Watershed/Wastewater ☐ Remediation/Redevelopment
☐ Waste Management ☐ Other:

1. Well Location Information

County	WI Unique Well # of Removed Well	Hicap #
SHAWANO		

Latitude / Longitude (Degrees and Minutes) — Method Code (see instructions)
__ __ ° __ __ . __ __ __ 'N
__ __ ° __ __ . __ __ __ 'W

¼ / ¼	¼	Section	Township	Range
or Gov't Lot #			N	☐ E ☐ W

Well Street Address: East 5th Street

Well City, Village or Town	Well ZIP Code
City of Shawano	54166-

Subdivision Name	Lot #

Reason For Removal From Service — WI Unique Well # of Replacement Well: __ __ __ __ __

2. Facility / Owner Information

Facility Name

Facility ID (FID or PWS)

License/Permit/Monitoring #

Original Well Owner

Present Well Owner

Mailing Address of Present Owner

City of Present Owner	State	ZIP Code

3. Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 7/20/2017

If a Well Construction Report is available, please attach.

Construction Type:
[X] Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (specify):

Formation Type:
☐ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
14	

Lower Drillhole Diameter (in.)	Casing Depth (ft.)
2	

Was well annular space grouted? ☐ Yes ☐ No ☐ Unknown

If yes, to what depth (feet)?	Depth to Water (feet)

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☐ Yes	☐ No	[X] N/A
Liner(s) removed?	☐ Yes	☐ No	[X] N/A
Screen removed?	☐ Yes	☐ No	[X] N/A
Casing left in place?	☐ Yes	☐ No	[X] N/A
Was casing cut off below surface?	☐ Yes	☐ No	[X] N/A
Did sealing material rise to surface?	[X] Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	[X] No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	[X] N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☐ Yes	☐ No	[X] N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
[X] Screened & Poured (Bentonite Chips) ☐ Other (Explain):

Sealing Materials
☐ Neat Cement Grout ☐ Clay-Sand Slurry (11 lb./gal. wt.)
☐ Sand-Cement (Concrete) Grout ☐ Bentonite-Sand Slurry " "
☐ Concrete ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
[X] Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

5. Material Used To Fill Well / Drillhole

	From (ft.)	To (ft.)	Cubic Feet	
Asphalt Patch	Surface	0.5	0.01	
3/8" Bentonite Holeplug	0.5	14	0.3	

6. Comments

Boring B2

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing (mm/dd/yyyy)
Darren Prentice - Geiss Soil & Samples, LLC		7/20/2017

Street or Route	Telephone Number
1250 Centennial Centre Blvd	(920) 544-4416

City	State	ZIP Code
Hobart	WI	54155-

Signature of Person Doing Work: Alan Mustafa — Date Signed: 7/21/2017

DNR Use Only

Date Received	Noted By

Comments

State of Wis , Dept of Natural Resources
dnr wi gov

Well / Drillhole / Borehole Filling & Sealing

Form 3300-005 (R 4/08)

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☐ Verification Only of Fill and Seal

Route to: ☐ Drinking Water ☐ Watershed/Wastewater ☐ Remediation/Redevelopment ☐ Waste Management ☐ Other:

1. Well Location Information

County	WI Unique Well # of Removed Well	Hicap #
SHAWANO		

Latitude / Longitude (Degrees and Minutes) — — ° — — · — — — 'N; — — ° — — · — — — 'W

Method Code (see instructions)

¼ / ¼	¼	Section	Township	Range	
or Gov't Lot #			N		☐ E ☐ W

Well Street Address: East 5th Street

Well City, Village or Town: City of Shawano

Well ZIP Code: 54166-

Subdivision Name

Lot #

Reason For Removal From Service

WI Unique Well # of Replacement Well

2. Facility / Owner Information

Facility Name

Facility ID (FID or PWS)

License/Permit/Monitoring #

Original Well Owner

Present Well Owner

Mailing Address of Present Owner

City of Present Owner | State | ZIP Code

3. Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 7/20/2017

If a Well Construction Report is available, please attach.

Construction Type:
[X] Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (specify):

Formation Type:
☐ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
14	
Lower Drillhole Diameter (in.)	**Casing Depth (ft.)**
2	

Was well annular space grouted? ☐ Yes ☐ No ☐ Unknown

If yes, to what depth (feet)?	Depth to Water (feet)

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☐ Yes	☐ No	[X] N/A
Liner(s) removed?	☐ Yes	☐ No	[X] N/A
Screen removed?	☐ Yes	☐ No	[X] N/A
Casing left in place?	☐ Yes	☐ No	[X] N/A
Was casing cut off below surface?	☐ Yes	☐ No	[X] N/A
Did sealing material rise to surface?	[X] Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	[X] No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	[X] N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☐ Yes	☐ No	[X] N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
[X] Screened & Poured (Bentonite Chips) ☐ Other (Explain):

Sealing Materials
☐ Neat Cement Grout ☐ Clay-Sand Slurry (11 lb./gal. wt.)
☐ Sand-Cement (Concrete) Grout ☐ Bentonite-Sand Slurry " "
☐ Concrete ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
[X] Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

5. Material Used To Fill Well / Drillhole

	From (ft.)	To (ft.)	Cubic Feet	
Asphalt Patch	Surface	0.5	0.01	
3/8" Bentonite Holeplug	0.5	14	0.3	

6. Comments

Boring B3/TW3

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing (mm/dd/yyyy)
Darren Prentice - Geiss Soil & Samples, LLC		7/20/2017

Street or Route	Telephone Number
1250 Centennial Centre Blvd	(920) 544-4416

City	State	ZIP Code
Hobart	WI	54155-

Signature of Person Doing Work: Alan Gustafson

Date Signed: 7/21/2017

DNR Use Only

Date Received	Noted By

Comments

State of Wis , Dept of Natural Resources
dnr.wi.gov

Well / Drillhole / Borehole Filling & Sealing

Form 3300-005 (R 4/08)

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☐ Verification Only of Fill and Seal

Route to:
☐ Drinking Water ☐ Watershed/Wastewater ☐ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

1. Well Location Information

County	WI Unique Well # of Removed Well	Hicap #
SHAWANO		

Latitude / Longitude (Degrees and Minutes) — Method Code (see instructions)
__ __ ° __ __ . __ __ __ 'N
__ __ ° __ __ . __ __ __ 'W

¼ / ¼	¼	Section	Township	Range
or Gov't Lot #			N	☐ E ☐ W

Well Street Address: East 5th Street

Well City, Village or Town: City of Shawano — Well ZIP Code: 54166-

Subdivision Name — Lot #

Reason For Removal From Service — WI Unique Well # of Replacement Well: __ __ __ __ __

2. Facility / Owner Information

Facility Name

Facility ID (FID or PWS)

License/Permit/Monitoring #

Original Well Owner

Present Well Owner

Mailing Address of Present Owner

City of Present Owner — State — ZIP Code

3. Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 7/20/2017

If a Well Construction Report is available, please attach.

Construction Type:
[X] Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (specify): _____

Formation Type:
☐ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
14	
Lower Drillhole Diameter (in.)	**Casing Depth (ft.)**
2	

Was well annular space grouted? ☐ Yes ☐ No ☐ Unknown

If yes, to what depth (feet)?	Depth to Water (feet)

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☐ Yes	☐ No	[X] N/A
Liner(s) removed?	☐ Yes	☐ No	[X] N/A
Screen removed?	☐ Yes	☐ No	[X] N/A
Casing left in place?	☐ Yes	☐ No	[X] N/A
Was casing cut off below surface?	☐ Yes	☐ No	[X] N/A
Did sealing material rise to surface?	[X] Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	[X] No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	[X] N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☐ Yes	☐ No	[X] N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
[X] Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Clay-Sand Slurry (11 lb./gal. wt.)
☐ Sand-Cement (Concrete) Grout ☐ Bentonite-Sand Slurry " "
☐ Concrete ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
[X] Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

5. Material Used To Fill Well / Drillhole

	From (ft.)	To (ft.)	Cubic Feet	
Asphalt Patch	Surface	0.5	0.01	
3/8" Bentonite Holeplug	0.5	14	0.3	

6. Comments

Boring B4

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing (mm/dd/yyyy)
Darren Prentice - Geiss Soil & Samples, LLC		7/20/2017

Street or Route	Telephone Number
1250 Centennial Centre Blvd	(920) 544-4416

City	State	ZIP Code
Hobart	WI	54155-

Signature of Person Doing Work: Alan Gustafson — Date Signed: 7/21/2017

DNR Use Only

Date Received	Noted By

Comments

State of Wis , Dept of Natural Resources
dnr wi gov

Well / Drillhole / Borehole Filling & Sealing

Form 3300-005 (R 4/08)

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☐ Verification Only of Fill and Seal

Route to: ☐ Drinking Water ☐ Watershed/Wastewater ☐ Remediation/Redevelopment ☐ Waste Management ☐ Other:

1. Well Location Information

County	WI Unique Well # of Removed Well	Hicap #
SHAWANO		

Latitude / Longitude (Degrees and Minutes) ___ ° ___ ' ___ ___ ___ 'N ___ ___ ° ___ ' ___ ___ ___ 'W

Method Code (see instructions)

¼ / ¼	¼	Section	Township	Range
or Gov't Lot #			N	☐ E ☐ W

Well Street Address: East 5th Street

Well City, Village or Town: City of Shawano

Well ZIP Code: 54166-

Subdivision Name

Lot #

Reason For Removal From Service

WI Unique Well # of Replacement Well

2. Facility / Owner Information

Facility Name

Facility ID (FID or PWS)

License/Permit/Monitoring #

Original Well Owner

Present Well Owner

Mailing Address of Present Owner

City of Present Owner | State | ZIP Code

3. Well / Drillhole / Borehole Information

☐ Monitoring Well ☐ Water Well [X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 7/20/2017

If a Well Construction Report is available, please attach.

Construction Type: [X] Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (specify):

Formation Type: ☐ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
14	
Lower Drillhole Diameter (in.)	**Casing Depth (ft.)**
2	

Was well annular space grouted? ☐ Yes ☐ No ☐ Unknown

If yes, to what depth (feet)?	Depth to Water (feet)

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☐ Yes	☐ No	[X] N/A
Liner(s) removed?	☐ Yes	☐ No	[X] N/A
Screen removed?	☐ Yes	☐ No	[X] N/A
Casing left in place?	☐ Yes	☐ No	[X] N/A
Was casing cut off below surface?	☐ Yes	☐ No	[X] N/A
Did sealing material rise to surface?	[X] Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	[X] No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	[X] N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☐ Yes	☐ No	[X] N/A

Required Method of Placing Sealing Material

☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped [X] Screened & Poured (Bentonite Chips) ☐ Other (Explain):

Sealing Materials

☐ Neat Cement Grout ☐ Clay-Sand Slurry (11 lb./gal wt.)
☐ Sand-Cement (Concrete) Grout ☐ Bentonite-Sand Slurry
☐ Concrete ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:

[X] Bentonite Chips ☐ Bentonite - Cement Grout ☐ Granular Bentonite ☐ Bentonite - Sand Slurry

5. Material Used To Fill Well / Drillhole

	From (ft.)	To (ft.)	Cubic Feet	
Asphalt Patch	Surface	0.5	0.01	
3/8" Bentonite Holeplug	0.5	14	0.3	

6. Comments

Boring B5/TW5

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing (mm/dd/yyyy)
Darren Prentice - Geiss Soil & Samples, LLC		7/20/2017

Street or Route	Telephone Number
1250 Centennial Centre Blvd	(920) 544-4416

City	State	ZIP Code	Signature of Person Doing Work	Date Signed
Hobart	WI	54155-		7/21/2017

DNR Use Only

Date Received	Noted By

Comments

State of Wis , Dept of Natural Resources
dnr wi gov

Well / Drillhole / Borehole Filling & Sealing

Form 3300-005 (R 4/08)

Notice: Completion of this report is required by chs 160, 281, 283, 289, 291-293, 295, and 299, Wis Stats , and ch NR 141 Wis Adm Code In accordance with chs 281, 289, 291-293, 295, and 299 Wis Stats , failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved Personally identifiable information on this form is not intended to be used for any other purpose Return form to the appropriate DNR office and bureau See instructions on reverse for more information

☐ Verification Only of Fill and Seal

Route to:
☐ Drinking Water ☐ Watershed/Wastewater ☐ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

1. Well Location Information

County	WI Unique Well # of Removed Well	Hicap #
SHAWANO	_ _ _ _ _	

Latitude / Longitude (Degrees and Minutes) — Method Code (see instructions)
__ __ ° __ __ . __ __ __ 'N
__ __ ° __ __ . __ __ __ 'W

¼ / ¼	¼	Section	Township	Range
or Gov't Lot #			N	☐ E ☐ W

Well Street Address: East 5th Street

Well City, Village or Town	Well ZIP Code
City of Shawano	54166-
Subdivision Name	Lot #

Reason For Removal From Service — WI Unique Well # of Replacement Well: _ _ _ _ _

2. Facility / Owner Information

Facility Name
Facility ID (FID or PWS)
License/Permit/Monitoring #
Original Well Owner
Present Well Owner
Mailing Address of Present Owner

City of Present Owner	State	ZIP Code

3. Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
[X] Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 7/20/2017

If a Well Construction Report is available, please attach.

Construction Type:
[X] Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (specify): _____

Formation Type:
☐ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
14	
Lower Drillhole Diameter (in.)	Casing Depth (ft.)
2	

Was well annular space grouted? ☐ Yes ☐ No ☐ Unknown

If yes, to what depth (feet)?	Depth to Water (feet)

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☐ Yes	☐ No	[X] N/A
Liner(s) removed?	☐ Yes	☐ No	[X] N/A
Screen removed?	☐ Yes	☐ No	[X] N/A
Casing left in place?	☐ Yes	☐ No	[X] N/A
Was casing cut off below surface?	☐ Yes	☐ No	[X] N/A
Did sealing material rise to surface?	[X] Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	[X] No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	[X] N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☐ Yes	☐ No	[X] N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
[X] Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Clay-Sand Slurry (11 lb./gal. wt.)
☐ Sand-Cement (Concrete) Grout ☐ Bentonite-Sand Slurry " "
☐ Concrete ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
[X] Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

5. Material Used To Fill Well / Drillhole

	From (ft.)	To (ft.)	Cubic Feet	
Asphalt Patch	Surface	0.5	0.01	
3/8" Bentonite Holeplug	0.5	14	0.3	

6. Comments

Boring B6/TW6

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing (mm/dd/yyyy)
Darren Prentice - Geiss Soil & Samples, LLC		7/20/2017

Street or Route	Telephone Number
1250 Centennial Centre Blvd	(920) 544-4416

City	State	ZIP Code
Hobart	WI	54155-

Signature of Person Doing Work: Adam Dustofson
Date Signed: 7/21/2017

DNR Use Only

Date Received	Noted By

Comments

E

APPENDIX E

SOIL LABORATORY ANALYTICAL REPORT

Synergy Environmental Lab, INC.

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

NICOLE LAPLANT
ROBERT E. LEE & ASSOCIATES
1250 CENTENNIAL CENTRE BLVD
HOBART, WI 54155

Report Date *31-Jul-17*

Project Name E. 5TH STREET
Project # 4281-016

Invoice # E33299

Lab Code 5033299A
Sample ID B1 4-6'
Sample Matrix Soil
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	86.3	%			1	5021		7/24/2017	NJC	1
Organic										
VOC's										
Benzene	< 0.03	mg/kg	0.03	0.096	1	524.2		7/25/2017	CJR	1
Bromobenzene	< 0.025	mg/kg	0.025	0.081	1	524.2		7/25/2017	CJR	1
Bromodichloromethane	< 0.074	mg/kg	0.074	0.24	1	524.2		7/25/2017	CJR	1
Bromoform	< 0.029	mg/kg	0.029	0.092	1	524.2		7/25/2017	CJR	1
tert-Butylbenzene	< 0.026	mg/kg	0.026	0.084	1	524.2		7/25/2017	CJR	1
sec-Butylbenzene	< 0.033	mg/kg	0.033	0.1	1	524.2		7/25/2017	CJR	1
n-Butylbenzene	< 0.04	mg/kg	0.04	0.13	1	524.2		7/25/2017	CJR	1
Carbon Tetrachloride	< 0.016	mg/kg	0.016	0.053	1	524.2		7/25/2017	CJR	1
Chlorobenzene	< 0.013	mg/kg	0.013	0.04	1	524.2		7/25/2017	CJR	1
Chloroethane	< 0.091	mg/kg	0.091	0.29	1	524.2		7/25/2017	CJR	1
Chloroform	< 0.035	mg/kg	0.035	0.11	1	524.2		7/25/2017	CJR	1
Chloromethane	< 0.076	mg/kg	0.076	0.24	1	524.2		7/25/2017	CJR	1
2-Chlorotoluene	< 0.015	mg/kg	0.015	0.047	1	524.2		7/25/2017	CJR	1
4-Chlorotoluene	< 0.018	mg/kg	0.018	0.057	1	524.2		7/25/2017	CJR	1
1,2-Dibromo-3-chloropropane	< 0.058	mg/kg	0.058	0.18	1	524.2		7/25/2017	CJR	1
Dibromochloromethane	< 0.025	mg/kg	0.025	0.079	1	524.2		7/25/2017	CJR	1
1,4-Dichlorobenzene	< 0.037	mg/kg	0.037	0.12	1	524.2		7/25/2017	CJR	1
1,3-Dichlorobenzene	< 0.037	mg/kg	0.037	0.12	1	524.2		7/25/2017	CJR	1
1,2-Dichlorobenzene	< 0.028	mg/kg	0.028	0.088	1	524.2		7/25/2017	CJR	1
Dichlorodifluoromethane	< 0.048	mg/kg	0.048	0.15	1	524.2		7/25/2017	CJR	1
1,2-Dichloroethane	< 0.038	mg/kg	0.038	0.12	1	524.2		7/25/2017	CJR	1
1,1-Dichloroethane	< 0.034	mg/kg	0.034	0.11	1	524.2		7/25/2017	CJR	1
1,1-Dichloroethene	< 0.022	mg/kg	0.022	0.069	1	524.2		7/25/2017	CJR	1
cis-1,2-Dichloroethene	< 0.032	mg/kg	0.032	0.1	1	524.2		7/25/2017	CJR	1
trans-1,2-Dichloroethene	< 0.028	mg/kg	0.028	0.09	1	524.2		7/25/2017	CJR	1

Project Name E. 5TH STREET
Proiect # 4281-016

Invoice # E33299

Lab Code 5033299A
Sample ID B1 4-6'
Sample Matrix Soil
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
1,2-Dichloropropane	< 0.035	mg/kg	0.035	0.11	1	524.2		7/25/2017	CJR	1
1,3-Dichloropropane	< 0.025	mg/kg	0.025	0.079	1	524.2		7/25/2017	CJR	1
trans-1,3-Dichloropropene	< 0.022	mg/kg	0.022	0.068	1	524.2		7/25/2017	CJR	1
cis-1,3-Dichloropropene	< 0.039	mg/kg	0.039	0.12	1	524.2		7/25/2017	CJR	1
Di-isopropyl ether	< 0.01	mg/kg	0.01	0.032	1	524.2		7/25/2017	CJR	1
EDB (1,2-Dibromoethane)	< 0.023	mg/kg	0.023	0.072	1	524.2		7/25/2017	CJR	1
Ethylbenzene	< 0.035	mg/kg	0.035	0.11	1	524.2		7/25/2017	CJR	1
Hexachlorobutadiene	< 0.085	mg/kg	0.085	0.27	1	524.2		7/25/2017	CJR	1
Isopropylbenzene	< 0.034	mg/kg	0.034	0.11	1	524.2		7/25/2017	CJR	1
p-Isopropyltoluene	< 0.029	mg/kg	0.029	0.093	1	524.2		7/25/2017	CJR	1
Methylene chloride	< 0.15	mg/kg	0.15	0.46	1	524.2		7/25/2017	CJR	1
Methyl tert-butyl ether (MTBE)	< 0.05	mg/kg	0.05	0.16	1	524.2		7/25/2017	CJR	1
Naphthalene	< 0.094	mg/kg	0.094	0.3	1	524.2		7/25/2017	CJR	1
n-Propylbenzene	< 0.033	mg/kg	0.033	0.1	1	524.2		7/25/2017	CJR	1
1,1,2,2-Tetrachloroethane	< 0.028	mg/kg	0.028	0.88	1	524.2		7/25/2017	CJR	1
1,1,1,2-Tetrachloroethane	< 0.028	mg/kg	0.028	0.09	1	524.2		7/25/2017	CJR	1
Tetrachloroethene	< 0.032	mg/kg	0.032	0.1	1	524.2		7/25/2017	CJR	1
Toluene	< 0.032	mg/kg	0.032	0.1	1	524.2		7/25/2017	CJR	1
1,2,4-Trichlorobenzene	< 0.064	mg/kg	0.064	0.2	1	524.2		7/25/2017	CJR	1
1,2,3-Trichlorobenzene	< 0.066	mg/kg	0.066	0.21	1	524.2		7/25/2017	CJR	1
1,1,1-Trichloroethane	< 0.03	mg/kg	0.03	0.96	1	524.2		7/25/2017	CJR	1
1,1,2-Trichloroethane	< 0.033	mg/kg	0.033	0.11	1	524.2		7/25/2017	CJR	1
Trichloroethene (TCE)	< 0.041	mg/kg	0.041	0.13	1	524.2		7/25/2017	CJR	1
Trichlorofluoromethane	< 0.041	mg/kg	0.041	0.13	1	524.2		7/25/2017	CJR	1
1,2,4-Trimethylbenzene	< 0.025	mg/kg	0.025	0.08	1	524.2		7/25/2017	CJR	1
1,3,5-Trimethylbenzene	< 0.032	mg/kg	0.032	0.1	1	524.2		7/25/2017	CJR	1
Vinyl Chloride	< 0.019	mg/kg	0.019	0.062	1	524.2		7/25/2017	CJR	1
m&p-Xylene	< 0.072	mg/kg	0.072	0.23	1	524.2		7/25/2017	CJR	1
o-Xylene	< 0.044	mg/kg	0.044	0.14	1	524.2		7/25/2017	CJR	1
SUR - Toluene-d8	101	Rec %			1	524.2		7/25/2017	CJR	1
SUR - Dibromofluoromethane	105	Rec %			1	524.2		7/25/2017	CJR	1
SUR - 1,2-Dichloroethane-d4	105	Rec %			1	524.2		7/25/2017	CJR	1
SUR - 4-Bromofluorobenzene	104	Rec %			1	524.2		7/25/2017	CJR	1

Project Name E. 5TH STREET
Project # 4281-016

Invoice # E33299

Lab Code 5033299B
Sample ID B1 10-12'
Sample Matrix Soil
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	83.6	%			1	5021		7/24/2017	NJC	1
Organic										
VOC's										
Benzene	< 0.03	mg/kg	0.03	0.096	1	524.2		7/25/2017	CJR	1
Bromobenzene	< 0.025	mg/kg	0.025	0.081	1	524.2		7/25/2017	CJR	1
Bromodichloromethane	< 0.074	mg/kg	0.074	0.24	1	524.2		7/25/2017	CJR	1
Bromoform	< 0.029	mg/kg	0.029	0.092	1	524.2		7/25/2017	CJR	1
tert-Butylbenzene	< 0.026	mg/kg	0.026	0.084	1	524.2		7/25/2017	CJR	1
sec-Butylbenzene	< 0.033	mg/kg	0.033	0.1	1	524.2		7/25/2017	CJR	1
n-Butylbenzene	< 0.04	mg/kg	0.04	0.13	1	524.2		7/25/2017	CJR	1
Carbon Tetrachloride	< 0.016	mg/kg	0.016	0.053	1	524.2		7/25/2017	CJR	1
Chlorobenzene	< 0.013	mg/kg	0.013	0.04	1	524.2		7/25/2017	CJR	1
Chloroethane	< 0.091	mg/kg	0.091	0.29	1	524.2		7/25/2017	CJR	1
Chloroform	< 0.035	mg/kg	0.035	0.11	1	524.2		7/25/2017	CJR	1
Chloromethane	< 0.076	mg/kg	0.076	0.24	1	524.2		7/25/2017	CJR	1
2-Chlorotoluene	< 0.015	mg/kg	0.015	0.047	1	524.2		7/25/2017	CJR	1
4-Chlorotoluene	< 0.018	mg/kg	0.018	0.057	1	524.2		7/25/2017	CJR	1
1,2-Dibromo-3-chloropropane	< 0.058	mg/kg	0.058	0.18	1	524.2		7/25/2017	CJR	1
Dibromochloromethane	< 0.025	mg/kg	0.025	0.079	1	524.2		7/25/2017	CJR	1
1,4-Dichlorobenzene	< 0.037	mg/kg	0.037	0.12	1	524.2		7/25/2017	CJR	1
1,3-Dichlorobenzene	< 0.037	mg/kg	0.037	0.12	1	524.2		7/25/2017	CJR	1
1,2-Dichlorobenzene	< 0.028	mg/kg	0.028	0.088	1	524.2		7/25/2017	CJR	1
Dichlorodifluoromethane	< 0.048	mg/kg	0.048	0.15	1	524.2		7/25/2017	CJR	1
1,2-Dichloroethane	< 0.038	mg/kg	0.038	0.12	1	524.2		7/25/2017	CJR	1
1,1-Dichloroethane	< 0.034	mg/kg	0.034	0.11	1	524.2		7/25/2017	CJR	1
1,1-Dichloroethene	< 0.022	mg/kg	0.022	0.069	1	524.2		7/25/2017	CJR	1
cis-1,2-Dichloroethene	< 0.032	mg/kg	0.032	0.1	1	524.2		7/25/2017	CJR	1
trans-1,2-Dichloroethene	< 0.028	mg/kg	0.028	0.09	1	524.2		7/25/2017	CJR	1
1,2-Dichloropropane	< 0.035	mg/kg	0.035	0.11	1	524.2		7/25/2017	CJR	1
1,3-Dichloropropane	< 0.025	mg/kg	0.025	0.079	1	524.2		7/25/2017	CJR	1
trans-1,3-Dichloropropene	< 0.022	mg/kg	0.022	0.068	1	524.2		7/25/2017	CJR	1
cis-1,3-Dichloropropene	< 0.039	mg/kg	0.039	0.12	1	524.2		7/25/2017	CJR	1
Di-isopropyl ether	< 0.01	mg/kg	0.01	0.032	1	524.2		7/25/2017	CJR	1
EDB (1,2-Dibromoethane)	< 0.023	mg/kg	0.023	0.072	1	524.2		7/25/2017	CJR	1
Ethylbenzene	< 0.035	mg/kg	0.035	0.11	1	524.2		7/25/2017	CJR	1
Hexachlorobutadiene	< 0.085	mg/kg	0.085	0.27	1	524.2		7/25/2017	CJR	1
Isopropylbenzene	< 0.034	mg/kg	0.034	0.11	1	524.2		7/25/2017	CJR	1
p-Isopropyltoluene	< 0.029	mg/kg	0.029	0.093	1	524.2		7/25/2017	CJR	1
Methylene chloride	< 0.15	mg/kg	0.15	0.46	1	524.2		7/25/2017	CJR	1
Methyl tert-butyl ether (MTBE)	< 0.05	mg/kg	0.05	0.16	1	524.2		7/25/2017	CJR	1
Naphthalene	< 0.094	mg/kg	0.094	0.3	1	524.2		7/25/2017	CJR	1
n-Propylbenzene	< 0.033	mg/kg	0.033	0.1	1	524.2		7/25/2017	CJR	1
1,1,2,2-Tetrachloroethane	< 0.028	mg/kg	0.028	0.88	1	524.2		7/25/2017	CJR	1
1,1,1,2-Tetrachloroethane	< 0.028	mg/kg	0.028	0.09	1	524.2		7/25/2017	CJR	1
Tetrachloroethene	< 0.032	mg/kg	0.032	0.1	1	524.2		7/25/2017	CJR	1
Toluene	< 0.032	mg/kg	0.032	0.1	1	524.2		7/25/2017	CJR	1
1,2,4-Trichlorobenzene	< 0.064	mg/kg	0.064	0.2	1	524.2		7/25/2017	CJR	1
1,2,3-Trichlorobenzene	< 0.066	mg/kg	0.066	0.21	1	524.2		7/25/2017	CJR	1
1,1,1-Trichloroethane	< 0.03	mg/kg	0.03	0.96	1	524.2		7/25/2017	CJR	1

Project Name E. 5TH STREET
Project # 4281-016

Invoice # E33299

Lab Code 5033299B
Sample ID B1 10-12'
Sample Matrix Soil
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
1,1,2-Trichloroethane	< 0.033	mg/kg	0.033	0.11	1	524.2		7/25/2017	CJR	1
Trichloroethene (TCE)	< 0.041	mg/kg	0.041	0.13	1	524.2		7/25/2017	CJR	1
Trichlorofluoromethane	< 0.041	mg/kg	0.041	0.13	1	524.2		7/25/2017	CJR	1
1,2,4-Trimethylbenzene	< 0.025	mg/kg	0.025	0.08	1	524.2		7/25/2017	CJR	1
1,3,5-Trimethylbenzene	< 0.032	mg/kg	0.032	0.1	1	524.2		7/25/2017	CJR	1
Vinyl Chloride	< 0.019	mg/kg	0.019	0.062	1	524.2		7/25/2017	CJR	1
m&p-Xylene	< 0.072	mg/kg	0.072	0.23	1	524.2		7/25/2017	CJR	1
o-Xylene	< 0.044	mg/kg	0.044	0.14	1	524.2		7/25/2017	CJR	1
SUR - 1,2-Dichloroethane-d4	104	Rec %			1	524.2		7/25/2017	CJR	1
SUR - 4-Bromofluorobenzene	106	Rec %			1	524.2		7/25/2017	CJR	1
SUR - Dibromofluoromethane	102	Rec %			1	524.2		7/25/2017	CJR	1
SUR - Toluene-d8	103	Rec %			1	524.2		7/25/2017	CJR	1

Project Name E. 5TH STREET
Project # 4281-016

Invoice # E33299

Lab Code 5033299C
Sample ID B2 2-4'
Sample Matrix Soil
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	91 7	%			1	5021		7/24/2017	NJC	1
Organic										
VOC's										
Benzene	< 0 03	mg/kg	0 03	0 096	1	524 2		7/25/2017	CJR	1
Bromobenzene	< 0 025	mg/kg	0 025	0 081	1	524.2		7/25/2017	CJR	1
Bromodichloromethane	< 0 074	mg/kg	0 074	0 24	1	524 2		7/25/2017	CJR	1
Bromoform	< 0 029	mg/kg	0.029	0.092	1	524 2		7/25/2017	CJR	1
tert-Butylbenzene	< 0 026	mg/kg	0.026	0 084	1	524 2		7/25/2017	CJR	1
sec-Butylbenzene	< 0.033	mg/kg	0 033	0.1	1	524 2		7/25/2017	CJR	1
n-Butylbenzene	< 0 04	mg/kg	0 04	0 13	1	524 2		7/25/2017	CJR	1
Carbon Tetrachloride	< 0.016	mg/kg	0 016	0 053	1	524 2		7/25/2017	CJR	1
Chlorobenzene	< 0.013	mg/kg	0 013	0.04	1	524.2		7/25/2017	CJR	1
Chloroethane	< 0 091	mg/kg	0.091	0 29	1	524.2		7/25/2017	CJR	1
Chloroform	< 0 035	mg/kg	0.035	0 11	1	524.2		7/25/2017	CJR	1
Chloromethane	< 0 076	mg/kg	0.076	0 24	1	524 2		7/25/2017	CJR	1
2-Chlorotoluene	< 0.015	mg/kg	0.015	0 047	1	524.2		7/25/2017	CJR	1
4-Chlorotoluene	< 0 018	mg/kg	0.018	0.057	1	524.2		7/25/2017	CJR	1
1,2-Dibromo-3-chloropropane	< 0.058	mg/kg	0 058	0.18	1	524 2		7/25/2017	CJR	1
Dibromochloromethane	< 0.025	mg/kg	0 025	0.079	1	524.2		7/25/2017	CJR	1
1,4-Dichlorobenzene	< 0.037	mg/kg	0.037	0.12	1	524.2		7/25/2017	CJR	1
1,3-Dichlorobenzene	< 0.037	mg/kg	0.037	0 12	1	524 2		7/25/2017	CJR	1
1,2-Dichlorobenzene	< 0.028	mg/kg	0 028	0 088	1	524.2		7/25/2017	CJR	1
Dichlorodifluoromethane	< 0.048	mg/kg	0 048	0 15	1	524.2		7/25/2017	CJR	1
1,2-Dichloroethane	< 0.038	mg/kg	0 038	0.12	1	524.2		7/25/2017	CJR	1
1,1-Dichloroethane	< 0.034	mg/kg	0.034	0.11	1	524.2		7/25/2017	CJR	1
1,1-Dichloroethene	< 0.022	mg/kg	0.022	0.069	1	524.2		7/25/2017	CJR	1
cis-1,2-Dichloroethene	< 0 032	mg/kg	0.032	0 1	1	524.2		7/25/2017	CJR	1
trans-1,2-Dichloroethene	< 0 028	mg/kg	0.028	0 09	1	524.2		7/25/2017	CJR	1
1,2-Dichloropropane	< 0 035	mg/kg	0.035	0.11	1	524 2		7/25/2017	CJR	1
1,3-Dichloropropane	< 0.025	mg/kg	0.025	0.079	1	524.2		7/25/2017	CJR	1
trans-1,3-Dichloropropene	< 0.022	mg/kg	0 022	0.068	1	524.2		7/25/2017	CJR	1
cis-1,3-Dichloropropene	< 0.039	mg/kg	0 039	0 12	1	524.2		7/25/2017	CJR	1
Di-isopropyl ether	< 0 01	mg/kg	0 01	0 032	1	524 2		7/25/2017	CJR	1
EDB (1,2-Dibromoethane)	< 0 023	mg/kg	0.023	0 072	1	524 2		7/25/2017	CJR	1
Ethylbenzene	< 0 035	mg/kg	0.035	0.11	1	524 2		7/25/2017	CJR	1
Hexachlorobutadiene	< 0 085	mg/kg	0 085	0 27	1	524 2		7/25/2017	CJR	1
Isopropylbenzene	< 0.034	mg/kg	0 034	0.11	1	524.2		7/25/2017	CJR	1
p-Isopropyltoluene	< 0.029	mg/kg	0 029	0 093	1	524 2		7/25/2017	CJR	1
Methylene chloride	< 0 15	mg/kg	0 15	0 46	1	524 2		7/25/2017	CJR	1
Methyl tert-butyl ether (MTBE)	< 0 05	mg/kg	0 05	0 16	1	524 2		7/25/2017	CJR	1
Naphthalene	< 0 094	mg/kg	0 094	0 3	1	524 2		7/25/2017	CJR	1
n-Propylbenzene	< 0 033	mg/kg	0 033	0 1	1	524 2		7/25/2017	CJR	1
1,1,2,2-Tetrachloroethane	< 0 028	mg/kg	0 028	0 88	1	524 2		7/25/2017	CJR	1
1,1,1,2-Tetrachloroethane	< 0 028	mg/kg	0 028	0 09	1	524 2		7/25/2017	CJR	1
Tetrachloroethene	< 0 032	mg/kg	0 032	0 1	1	524 2		7/25/2017	CJR	1
Toluene	< 0 032	mg/kg	0 032	0 1	1	524 2		7/25/2017	CJR	1
1,2,4-Trichlorobenzene	< 0 064	mg/kg	0 064	0 2	1	524 2		7/25/2017	CJR	1
1,2,3-Trichlorobenzene	< 0 066	mg/kg	0 066	0 21	1	524 2		7/25/2017	CJR	1
1,1,1-Trichloroethane	< 0 03	mg/kg	0 03	0 96	1	524 2		7/25/2017	CJR	1

Project Name E. 5TH STREET
Project # 4281-016

Invoice # E33299

Lab Code 5033299C
Sample ID B2 2-4'
Sample Matrix Soil
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
1,1,2-Trichloroethane	< 0.033	mg/kg	0.033	0.11	1	524.2		7/25/2017	CJR	I
Trichloroethene (TCE)	< 0.041	mg/kg	0.041	0.13	1	524.2		7/25/2017	CJR	I
Trichlorofluoromethane	< 0.041	mg/kg	0.041	0.13	1	524.2		7/25/2017	CJR	I
1,2,4-Trimethylbenzene	< 0.025	mg/kg	0.025	0.08	1	524.2		7/25/2017	CJR	I
1,3,5-Trimethylbenzene	< 0.032	mg/kg	0.032	0.1	1	524.2		7/25/2017	CJR	I
Vinyl Chloride	< 0.019	mg/kg	0.019	0.062	1	524.2		7/25/2017	CJR	I
m&p-Xylene	< 0.072	mg/kg	0.072	0.23	1	524.2		7/25/2017	CJR	I
o-Xylene	< 0.044	mg/kg	0.044	0.14	1	524.2		7/25/2017	CJR	I
SUR - Toluene-d8	101	Rec %			1	524.2		7/25/2017	CJR	I
SUR - 1,2-Dichloroethane-d4	101	Rec %			1	524.2		7/25/2017	CJR	I
SUR - 4-Bromofluorobenzene	105	Rec %			1	524.2		7/25/2017	CJR	I
SUR - Dibromofluoromethane	101	Rec %			1	524.2		7/25/2017	CJR	I

Project Name E. 5TH STREET
Project # 4281-016

Invoice # E33299

Lab Code 5033299D
Sample ID B2 10-12'
Sample Matrix Soil
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	84 5	%			1	5021		7/24/2017	NHC	1
Organic										
VOC's										
Benzene	< 0 03	mg/kg	0.03	0.096	1	524.2		7/26/2017	CJR	1
Bromobenzene	< 0 025	mg/kg	0.025	0.081	1	524.2		7/26/2017	CJR	1
Bromodichloromethane	< 0 074	mg/kg	0.074	0 24	1	524.2		7/26/2017	CJR	1
Bromoform	< 0.029	mg/kg	0.029	0.092	1	524.2		7/26/2017	CJR	1
tert-Butylbenzene	< 0 026	mg/kg	0.026	0.084	1	524.2		7/26/2017	CJR	1
sec-Butylbenzene	< 0.033	mg/kg	0.033	0.1	1	524.2		7/26/2017	CJR	1
n-Butylbenzene	< 0.04	mg/kg	0 04	0.13	1	524.2		7/26/2017	CJR	1
Carbon Tetrachloride	< 0 016	mg/kg	0 016	0 053	1	524.2		7/26/2017	CJR	1
Chlorobenzene	< 0 013	mg/kg	0 013	0.04	1	524.2		7/26/2017	CJR	1
Chloroethane	< 0 091	mg/kg	0 091	0 29	1	524.2		7/26/2017	CJR	1
Chloroform	< 0 035	mg/kg	0 035	0 11	1	524.2		7/26/2017	CJR	1
Chloromethane	< 0 076	mg/kg	0 076	0.24	1	524.2		7/26/2017	CJR	1
2-Chlorotoluene	< 0 015	mg/kg	0 015	0.047	1	524.2		7/26/2017	CJR	1
4-Chlorotoluene	< 0.018	mg/kg	0 018	0.057	1	524.2		7/26/2017	CJR	1
1,2-Dibromo-3-chloropropane	< 0.058	mg/kg	0.058	0 18	1	524.2		7/26/2017	CJR	1
Dibromochloromethane	< 0 025	mg/kg	0.025	0 079	1	524.2		7/26/2017	CJR	1
1,4-Dichlorobenzene	< 0 037	mg/kg	0 037	0.12	1	524.2		7/26/2017	CJR	1
1,3-Dichlorobenzene	< 0 037	mg/kg	0.037	0.12	1	524.2		7/26/2017	CJR	1
1,2-Dichlorobenzene	< 0 028	mg/kg	0 028	0 088	1	524.2		7/26/2017	CJR	1
Dichlorodifluoromethane	< 0 048	mg/kg	0.048	0 15	1	524.2		7/26/2017	CJR	1
1,2-Dichloroethane	< 0 038	mg/kg	0.038	0 12	1	524 2		7/26/2017	CJR	1
1,1-Dichloroethane	< 0 034	mg/kg	0 034	0 11	1	524 2		7/26/2017	CJR	1
1,1-Dichloroethene	< 0 022	mg/kg	0 022	0.069	1	524 2		7/26/2017	CJR	1
cis-1,2-Dichloroethene	< 0.032	mg/kg	0.032	0.1	1	524 2		7/26/2017	CJR	1
trans-1,2-Dichloroethene	< 0 028	mg/kg	0 028	0 09	1	524 2		7/26/2017	CJR	1
1,2-Dichloropropane	< 0 035	mg/kg	0 035	0 11	1	524 2		7/26/2017	CJR	1
1,3-Dichloropropane	< 0 025	mg/kg	0 025	0.079	1	524.2		7/26/2017	CJR	1
trans-1,3-Dichloropropene	< 0 022	mg/kg	0 022	0.068	1	524 2		7/26/2017	CJR	1
cis-1,3-Dichloropropene	< 0 039	mg/kg	0 039	0.12	1	524 2		7/26/2017	CJR	1
Di-isopropyl ether	< 0 01	mg/kg	0.01	0.032	1	524 2		7/26/2017	CJR	1
EDB (1,2-Dibromoethane)	< 0 023	mg/kg	0 023	0 072	1	524 2		7/26/2017	CJR	1
Ethylbenzene	< 0 035	mg/kg	0 035	0 11	1	524 2		7/26/2017	CJR	1
Hexachlorobutadiene	< 0 085	mg/kg	0 085	0 27	1	524 2		7/26/2017	CJR	1
Isopropylbenzene	< 0 034	mg/kg	0 034	0 11	1	524 2		7/26/2017	CJR	1
p-Isopropyltoluene	< 0 029	mg/kg	0 029	0 093	1	524 2		7/26/2017	CJR	1
Methylene chloride	< 0 15	mg/kg	0 15	0 46	1	524 2		7/26/2017	CJR	1
Methyl tert-butyl ether (MTBE)	< 0 05	mg/kg	0 05	0 16	1	524 2		7/26/2017	CJR	1
Naphthalene	< 0 094	mg/kg	0.094	0 3	1	524 2		7/26/2017	CJR	1
n-Propylbenzene	< 0 033	mg/kg	0 033	0 1	1	524 2		7/26/2017	CJR	1
1,1,2,2-Tetrachloroethane	< 0 028	mg/kg	0 028	0 88	1	524 2		7/26/2017	CJR	1
1,1,1,2-Tetrachloroethane	< 0 028	mg/kg	0 028	0 09	1	524 2		7/26/2017	CJR	1
Tetrachloroethene	< 0 032	mg/kg	0 032	0 1	1	524 2		7/26/2017	CJR	1
Toluene	< 0 032	mg/kg	0 032	0 1	1	524 2		7/26/2017	CJR	1
1,2,4-Trichlorobenzene	< 0 064	mg/kg	0 064	0 2	1	524 2		7/26/2017	CJR	1
1,2,3-Trichlorobenzene	< 0 066	mg/kg	0 066	0 21	1	524 2		7/26/2017	CJR	1
1,1,1-Trichloroethane	< 0 03	mg/kg	0 03	0 96	1	524 2		7/26/2017	CJR	1

Project Name E. 5TH STREET
Project # 4281-016

Invoice # E33299

Lab Code 5033299D
Sample ID B2 10-12'
Sample Matrix Soil
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
1,1,2-Trichloroethane	< 0.033	mg/kg	0.033	0.11	1	524.2		7/26/2017	CJR	1
Trichloroethene (TCE)	< 0.041	mg/kg	0.041	0.13	1	524.2		7/26/2017	CJR	1
Trichlorofluoromethane	< 0.041	mg/kg	0.041	0.13	1	524.2		7/26/2017	CJR	1
1,2,4-Trimethylbenzene	< 0.025	mg/kg	0.025	0.08	1	524.2		7/26/2017	CJR	1
1,3,5-Trimethylbenzene	< 0.032	mg/kg	0.032	0.1	1	524.2		7/26/2017	CJR	1
Vinyl Chloride	< 0.019	mg/kg	0.019	0.062	1	524.2		7/26/2017	CJR	1
m&p-Xylene	< 0.072	mg/kg	0.072	0.23	1	524.2		7/26/2017	CJR	1
o-Xylene	< 0.044	mg/kg	0.044	0.14	1	524.2		7/26/2017	CJR	1
SUR - Toluene-d8	101	Rec %			1	524.2		7/26/2017	CJR	1
SUR - Dibromofluoromethane	103	Rec %			1	524.2		7/26/2017	CJR	1
SUR - 1,2-Dichloroethane-d4	99	Rec %			1	524.2		7/26/2017	CJR	1
SUR - 4-Bromofluorobenzene	108	Rec %			1	524.2		7/26/2017	CJR	1

Project Name E. 5TH STREET
Project # 4281-016

Invoice # E33299

Lab Code 5033299E
Sample ID B3 2-4'
Sample Matrix Soil
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	94 3	%			1	5021		7/24/2017	NJC	I
Organic										
VOC's										
Benzene	< 0.03	mg/kg	0 03	0.096	1	524 2		7/26/2017	CJR	I
Bromobenzene	< 0 025	mg/kg	0 025	0.081	1	524.2		7/26/2017	CJR	I
Bromodichloromethane	< 0.074	mg/kg	0.074	0.24	1	524.2		7/26/2017	CJR	I
Bromoform	< 0 029	mg/kg	0.029	0.092	1	524.2		7/26/2017	CJR	I
tert-Butylbenzene	< 0 026	mg/kg	0.026	0.084	1	524.2		7/26/2017	CJR	I
sec-Butylbenzene	< 0 033	mg/kg	0 033	0.1	1	524.2		7/26/2017	CJR	I
n-Butylbenzene	< 0 04	mg/kg	0.04	0.13	1	524.2		7/26/2017	CJR	I
Carbon Tetrachloride	< 0 016	mg/kg	0.016	0 053	1	524 2		7/26/2017	CJR	I
Chlorobenzene	< 0 013	mg/kg	0 013	0 04	1	524 2		7/26/2017	CJR	I
Chloroethane	< 0 091	mg/kg	0 091	0 29	1	524 2		7/26/2017	CJR	I
Chloroform	< 0.035	mg/kg	0.035	0 11	1	524 2		7/26/2017	CJR	I
Chloromethane	< 0 076	mg/kg	0.076	0 24	1	524.2		7/26/2017	CJR	I
2-Chlorotoluene	< 0.015	mg/kg	0.015	0 047	1	524.2		7/26/2017	CJR	I
4-Chlorotoluene	< 0.018	mg/kg	0.018	0.057	1	524.2		7/26/2017	CJR	I
1,2-Dibromo-3-chloropropane	< 0 058	mg/kg	0 058	0.18	1	524.2		7/26/2017	CJR	I
Dibromochloromethane	< 0.025	mg/kg	0.025	0.079	1	524.2		7/26/2017	CJR	I
1,4-Dichlorobenzene	< 0.037	mg/kg	0.037	0.12	1	524.2		7/26/2017	CJR	I
1,3-Dichlorobenzene	< 0.037	mg/kg	0 037	0.12	1	524.2		7/26/2017	CJR	I
1,2-Dichlorobenzene	< 0.028	mg/kg	0.028	0 088	1	524.2		7/26/2017	CJR	I
Dichlorodifluoromethane	< 0.048	mg/kg	0.048	0.15	1	524.2		7/26/2017	CJR	I
1,2-Dichloroethane	< 0.038	mg/kg	0 038	0.12	1	524.2		7/26/2017	CJR	I
1,1-Dichloroethane	< 0 034	mg/kg	0 034	0.11	1	524.2		7/26/2017	CJR	I
1,1-Dichloroethene	< 0 022	mg/kg	0.022	0 069	1	524.2		7/26/2017	CJR	I
cis-1,2-Dichloroethene	< 0.032	mg/kg	0.032	0.1	1	524.2		7/26/2017	CJR	I
trans-1,2-Dichloroethene	< 0.028	mg/kg	0 028	0 09	1	524.2		7/26/2017	CJR	I
1,2-Dichloropropane	< 0.035	mg/kg	0 035	0.11	1	524.2		7/26/2017	CJR	I
1,3-Dichloropropane	< 0.025	mg/kg	0.025	0.079	1	524.2		7/26/2017	CJR	I
trans-1,3-Dichloropropene	< 0.022	mg/kg	0 022	0.068	1	524.2		7/26/2017	CJR	I
cis-1,3-Dichloropropene	< 0.039	mg/kg	0 039	0.12	1	524.2		7/26/2017	CJR	I
Di-isopropyl ether	< 0 01	mg/kg	0 01	0.032	1	524.2		7/26/2017	CJR	I
EDB (1,2-Dibromoethane)	< 0 023	mg/kg	0 023	0.072	1	524.2		7/26/2017	CJR	I
Ethylbenzene	< 0.035	mg/kg	0 035	0 11	1	524.2		7/26/2017	CJR	I
Hexachlorobutadiene	< 0 085	mg/kg	0 085	0 27	1	524 2		7/26/2017	CJR	I
Isopropylbenzene	< 0 034	mg/kg	0 034	0.11	1	524.2		7/26/2017	CJR	I
p-Isopropyltoluene	< 0 029	mg/kg	0 029	0 093	1	524 2		7/26/2017	CJR	I
Methylene chloride	< 0 15	mg/kg	0 15	0.46	1	524 2		7/26/2017	CJR	I
Methyl tert-butyl ether (MTBE)	< 0 05	mg/kg	0 05	0 16	1	524.2		7/26/2017	CJR	I
Naphthalene	< 0 094	mg/kg	0 094	0.3	1	524.2		7/26/2017	CJR	I
n-Propylbenzene	< 0 033	mg/kg	0 033	0.1	1	524.2		7/26/2017	CJR	I
1,1,2,2-Tetrachloroethane	< 0 028	mg/kg	0 028	0 88	1	524 2		7/26/2017	CJR	I
1,1,1,2-Tetrachloroethane	< 0 028	mg/kg	0 028	0 09	1	524 2		7/26/2017	CJR	I
Tetrachloroethene	< 0 032	mg/kg	0 032	0.1	1	524 2		7/26/2017	CJR	I
Toluene	< 0 032	mg/kg	0 032	0 1	1	524 2		7/26/2017	CJR	I
1,2,4-Trichlorobenzene	< 0 064	mg/kg	0 064	0 2	1	524 2		7/26/2017	CJR	I
1,2,3-Trichlorobenzene	< 0 066	mg/kg	0 066	0 21	1	524 2		7/26/2017	CJR	I
1,1,1-Trichloroethane	< 0 03	mg/kg	0 03	0 96	1	524 2		7/26/2017	CJR	I

Project Name E. 5TH STREET
Project # 4281-016

Invoice # E33299

Lab Code 5033299E
Sample ID B3 2-4'
Sample Matrix Soil
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
1,1,2-Trichloroethane	< 0.033	mg/kg	0.033	0.11	1	524.2		7/26/2017	CJR	1
Trichloroethene (TCE)	< 0.041	mg/kg	0.041	0.13	1	524.2		7/26/2017	CJR	1
Trichlorofluoromethane	< 0.041	mg/kg	0.041	0.13	1	524.2		7/26/2017	CJR	1
1,2,4-Trimethylbenzene	< 0.025	mg/kg	0.025	0.08	1	524.2		7/26/2017	CJR	1
1,3,5-Trimethylbenzene	< 0.032	mg/kg	0.032	0.1	1	524.2		7/26/2017	CJR	1
Vinyl Chloride	< 0.019	mg/kg	0.019	0.062	1	524.2		7/26/2017	CJR	1
m&p-Xylene	< 0.072	mg/kg	0.072	0.23	1	524.2		7/26/2017	CJR	1
o-Xylene	< 0.044	mg/kg	0.044	0.14	1	524.2		7/26/2017	CJR	1
SUR - 1,2-Dichloroethane-d4	100	Rec %			1	524.2		7/26/2017	CJR	1
SUR - 4-Bromofluorobenzene	104	Rec %			1	524.2		7/26/2017	CJR	1
SUR - Dibromofluoromethane	102	Rec %			1	524.2		7/26/2017	CJR	1
SUR - Toluene-d8	101	Rec %			1	524.2		7/26/2017	CJR	1

Project Name E. 5TH STREET
Project # 4281-016

Invoice # E33299

Lab Code 5033299F
Sample ID B3 6-8'
Sample Matrix Soil
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	87.3	%			1	5021		7/24/2017	NJC	1
Organic										
VOC's										
Benzene	< 0.03	mg/kg	0.03	0.096	1	524.2		7/26/2017	CJR	1
Bromobenzene	< 0.025	mg/kg	0.025	0.081	1	524.2		7/26/2017	CJR	1
Bromodichloromethane	< 0.074	mg/kg	0.074	0.24	1	524.2		7/26/2017	CJR	1
Bromoform	< 0.029	mg/kg	0.029	0.092	1	524.2		7/26/2017	CJR	1
tert-Butylbenzene	< 0.026	mg/kg	0.026	0.084	1	524.2		7/26/2017	CJR	1
sec-Butylbenzene	< 0.033	mg/kg	0.033	0.1	1	524.2		7/26/2017	CJR	1
n-Butylbenzene	< 0.04	mg/kg	0.04	0.13	1	524.2		7/26/2017	CJR	1
Carbon Tetrachloride	< 0.016	mg/kg	0.016	0.053	1	524.2		7/26/2017	CJR	1
Chlorobenzene	< 0.013	mg/kg	0.013	0.04	1	524.2		7/26/2017	CJR	1
Chloroethane	< 0.091	mg/kg	0.091	0.29	1	524.2		7/26/2017	CJR	1
Chloroform	< 0.035	mg/kg	0.035	0.11	1	524.2		7/26/2017	CJR	1
Chloromethane	< 0.076	mg/kg	0.076	0.24	1	524.2		7/26/2017	CJR	1
2-Chlorotoluene	< 0.015	mg/kg	0.015	0.047	1	524.2		7/26/2017	CJR	1
4-Chlorotoluene	< 0.018	mg/kg	0.018	0.057	1	524.2		7/26/2017	CJR	1
1,2-Dibromo-3-chloropropane	< 0.058	mg/kg	0.058	0.18	1	524.2		7/26/2017	CJR	1
Dibromochloromethane	< 0.025	mg/kg	0.025	0.079	1	524.2		7/26/2017	CJR	1
1,4-Dichlorobenzene	< 0.037	mg/kg	0.037	0.12	1	524.2		7/26/2017	CJR	1
1,3-Dichlorobenzene	< 0.037	mg/kg	0.037	0.12	1	524.2		7/26/2017	CJR	1
1,2-Dichlorobenzene	< 0.028	mg/kg	0.028	0.088	1	524.2		7/26/2017	CJR	1
Dichlorodifluoromethane	< 0.048	mg/kg	0.048	0.15	1	524.2		7/26/2017	CJR	1
1,2-Dichloroethane	< 0.038	mg/kg	0.038	0.12	1	524.2		7/26/2017	CJR	1
1,1-Dichloroethane	< 0.034	mg/kg	0.034	0.11	1	524.2		7/26/2017	CJR	1
1,1-Dichloroethene	< 0.022	mg/kg	0.022	0.069	1	524.2		7/26/2017	CJR	1
cis-1,2-Dichloroethene	< 0.032	mg/kg	0.032	0.1	1	524.2		7/26/2017	CJR	1
trans-1,2-Dichloroethene	< 0.028	mg/kg	0.028	0.09	1	524.2		7/26/2017	CJR	1
1,2-Dichloropropane	< 0.035	mg/kg	0.035	0.11	1	524.2		7/26/2017	CJR	1
1,3-Dichloropropane	< 0.025	mg/kg	0.025	0.079	1	524.2		7/26/2017	CJR	1
trans-1,3-Dichloropropene	< 0.022	mg/kg	0.022	0.068	1	524.2		7/26/2017	CJR	1
cis-1,3-Dichloropropene	< 0.039	mg/kg	0.039	0.12	1	524.2		7/26/2017	CJR	1
Di-isopropyl ether	< 0.01	mg/kg	0.01	0.032	1	524.2		7/26/2017	CJR	1
EDB (1,2-Dibromoethane)	< 0.023	mg/kg	0.023	0.072	1	524.2		7/26/2017	CJR	1
Ethylbenzene	< 0.035	mg/kg	0.035	0.11	1	524.2		7/26/2017	CJR	1
Hexachlorobutadiene	< 0.085	mg/kg	0.085	0.27	1	524.2		7/26/2017	CJR	1
Isopropylbenzene	< 0.034	mg/kg	0.034	0.11	1	524.2		7/26/2017	CJR	1
p-Isopropyltoluene	< 0.029	mg/kg	0.029	0.093	1	524.2		7/26/2017	CJR	1
Methylene chloride	< 0.15	mg/kg	0.15	0.46	1	524.2		7/26/2017	CJR	1
Methyl tert-butyl ether (MTBE)	< 0.05	mg/kg	0.05	0.16	1	524.2		7/26/2017	CJR	1
Naphthalene	< 0.094	mg/kg	0.094	0.3	1	524.2		7/26/2017	CJR	1
n-Propylbenzene	< 0.033	mg/kg	0.033	0.1	1	524.2		7/26/2017	CJR	1
1,1,2,2-Tetrachloroethane	< 0.028	mg/kg	0.028	0.88	1	524.2		7/26/2017	CJR	1
1,1,1,2-Tetrachloroethane	< 0.028	mg/kg	0.028	0.09	1	524.2		7/26/2017	CJR	1
Tetrachloroethene	< 0.032	mg/kg	0.032	0.1	1	524.2		7/26/2017	CJR	1
Toluene	< 0.032	mg/kg	0.032	0.1	1	524.2		7/26/2017	CJR	1
1,2,4-Trichlorobenzene	< 0.064	mg/kg	0.064	0.2	1	524.2		7/26/2017	CJR	1
1,2,3-Trichlorobenzene	< 0.066	mg/kg	0.066	0.21	1	524.2		7/26/2017	CJR	1
1,1,1-Trichloroethane	< 0.03	mg/kg	0.03	0.96	1	524.2		7/26/2017	CJR	1

Project Name E. 5TH STREET
Project # 4281-016

Invoice # E33299

Lab Code 5033299F
Sample ID B3 6-8'
Sample Matrix Soil
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
1,1,2-Trichloroethane	< 0.033	mg/kg	0.033	0.11	1	524.2		7/26/2017	CJR	I
Trichloroethene (TCE)	< 0.041	mg/kg	0.041	0.13	1	524.2		7/26/2017	CJR	I
Trichlorofluoromethane	< 0.041	mg/kg	0.041	0.13	1	524.2		7/26/2017	CJR	I
1,2,4-Trimethylbenzene	< 0.025	mg/kg	0.025	0.08	1	524.2		7/26/2017	CJR	I
1,3,5-Trimethylbenzene	< 0.032	mg/kg	0.032	0.1	1	524.2		7/26/2017	CJR	I
Vinyl Chloride	< 0.019	mg/kg	0.019	0.062	1	524.2		7/26/2017	CJR	I
m&p-Xylene	< 0.072	mg/kg	0.072	0.23	1	524.2		7/26/2017	CJR	I
o-Xylene	< 0.044	mg/kg	0.044	0.14	1	524.2		7/26/2017	CJR	I
SUR - Dibromofluoromethane	103	Rec %			1	524.2		7/26/2017	CJR	I
SUR - 1,2-Dichloroethane-d4	101	Rec %			1	524.2		7/26/2017	CJR	I
SUR - 4-Bromofluorobenzene	105	Rec %			1	524.2		7/26/2017	CJR	I
SUR - Toluene-d8	100	Rec %			1	524.2		7/26/2017	CJR	I

Project Name E. 5TH STREET
Project # 4281-016

Invoice # E33299

Lab Code 5033299G
Sample ID B4 4-6'
Sample Matrix Soil
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	85 5	%			1	5021		7/24/2017	NJC	1
Organic										
VOC's										
Benzene	< 0 03	mg/kg	0.03	0 096	1	524 2		7/26/2017	CJR	1
Bromobenzene	< 0.025	mg/kg	0.025	0.081	1	524.2		7/26/2017	CJR	1
Bromodichloromethane	< 0.074	mg/kg	0.074	0.24	1	524.2		7/26/2017	CJR	1
Bromoform	< 0.029	mg/kg	0.029	0.092	1	524 2		7/26/2017	CJR	1
tert-Butylbenzene	< 0.026	mg/kg	0.026	0 084	1	524 2		7/26/2017	CJR	1
sec-Butylbenzene	< 0.033	mg/kg	0.033	0 1	1	524 2		7/26/2017	CJR	1
n-Butylbenzene	< 0.04	mg/kg	0.04	0 13	1	524 2		7/26/2017	CJR	1
Carbon Tetrachloride	< 0.016	mg/kg	0.016	0.053	1	524 2		7/26/2017	CJR	1
Chlorobenzene	< 0.013	mg/kg	0.013	0.04	1	524 2		7/26/2017	CJR	1
Chloroethane	< 0 091	mg/kg	0.091	0.29	1	524.2		7/26/2017	CJR	1
Chloroform	< 0.035	mg/kg	0.035	0 11	1	524 2		7/26/2017	CJR	1
Chloromethane	< 0.076	mg/kg	0.076	0 24	1	524 2		7/26/2017	CJR	1
2-Chlorotoluene	< 0.015	mg/kg	0.015	0.047	1	524 2		7/26/2017	CJR	1
4-Chlorotoluene	< 0 018	mg/kg	0.018	0.057	1	524.2		7/26/2017	CJR	1
1,2-Dibromo-3-chloropropane	< 0 058	mg/kg	0.058	0 18	1	524 2		7/26/2017	CJR	1
Dibromochloromethane	< 0 025	mg/kg	0.025	0.079	1	524 2		7/26/2017	CJR	1
1,4-Dichlorobenzene	< 0 037	mg/kg	0 037	0 12	1	524 2		7/26/2017	CJR	1
1,3-Dichlorobenzene	< 0 037	mg/kg	0.037	0 12	1	524 2		7/26/2017	CJR	1
1,2-Dichlorobenzene	< 0 028	mg/kg	0.028	0.088	1	524 2		7/26/2017	CJR	1
Dichlorodifluoromethane	< 0 048	mg/kg	0.048	0 15	1	524 2		7/26/2017	CJR	1
1,2-Dichloroethane	< 0.038	mg/kg	0.038	0 12	1	524 2		7/26/2017	CJR	1
1,1-Dichloroethane	< 0.034	mg/kg	0.034	0 11	1	524.2		7/26/2017	CJR	1
1,1-Dichloroethene	< 0.022	mg/kg	0.022	0.069	1	524.2		7/26/2017	CJR	1
cis-1,2-Dichloroethene	< 0.032	mg/kg	0.032	0 1	1	524 2		7/26/2017	CJR	1
trans-1,2-Dichloroethene	< 0 028	mg/kg	0.028	0.09	1	524.2		7/26/2017	CJR	1
1,2-Dichloropropane	< 0.035	mg/kg	0.035	0.11	1	524 2		7/26/2017	CJR	1
1,3-Dichloropropane	< 0 025	mg/kg	0.025	0.079	1	524 2		7/26/2017	CJR	1
trans-1,3-Dichloropropene	< 0 022	mg/kg	0.022	0.068	1	524 2		7/26/2017	CJR	1
cis-1,3-Dichloropropene	< 0.039	mg/kg	0 039	0.12	1	524 2		7/26/2017	CJR	1
Di-isopropyl ether	< 0 01	mg/kg	0.01	0.032	1	524 2		7/26/2017	CJR	1
EDB (1.2-Dibromoethane)	< 0 023	mg/kg	0 023	0 072	1	524 2		7/26/2017	CJR	1
Ethylbenzene	< 0 035	mg/kg	0.035	0 11	1	524 2		7/26/2017	CJR	1
Hexachlorobutadiene	< 0 085	mg/kg	0.085	0 27	1	524 2		7/26/2017	CJR	1
Isopropylbenzene	< 0 034	mg/kg	0 034	0 11	1	524 2		7/26/2017	CJR	1
p-Isopropyltoluene	< 0 029	mg/kg	0.029	0 093	1	524 2		7/26/2017	CJR	1
Methylene chloride	< 0 15	mg/kg	0.15	0 46	1	524 2		7/26/2017	CJR	1
Methyl tert-butyl ether (MTBE)	< 0 05	mg/kg	0 05	0 16	1	524 2		7/26/2017	CJR	1
Naphthalene	< 0 094	mg/kg	0.094	0 3	1	524 2		7/26/2017	CJR	1
n-Propylbenzene	< 0 033	mg/kg	0.033	0 1	1	524 2		7/26/2017	CJR	1
1,1,2,2-Tetrachloroethane	< 0 028	mg/kg	0 028	0 88	1	524 2		7/26/2017	CJR	1
1,1,1,2-Tetrachloroethane	< 0 028	mg/kg	0 028	0 09	1	524 2		7/26/2017	CJR	1
Tetrachloroethene	< 0 032	mg/kg	0 032	0 1	1	524 2		7/26/2017	CJR	1
Toluene	< 0 032	mg/kg	0 032	0 1	1	524 2		7/26/2017	CJR	1
1,2,4-Trichlorobenzene	< 0 064	mg/kg	0 064	0 2	1	524 2		7/26/2017	CJR	1
1,2,3-Trichlorobenzene	< 0 066	mg/kg	0 066	0 21	1	524 2		7/26/2017	CJR	1
1,1,1-Trichloroethane	< 0 03	mg/kg	0 03	0 96	1	524 2		7/26/2017	CJR	1

Project Name E. 5TH STREET
Project # 4281-016

Invoice # E33299

Lab Code 5033299G
Sample ID B4 4-6'
Sample Matrix Soil
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
1,1,2-Trichloroethane	< 0.033	mg/kg	0.033	0.11	1	524.2		7/26/2017	CJR	1
Trichloroethene (TCE)	< 0.041	mg/kg	0.041	0.13	1	524.2		7/26/2017	CJR	1
Trichlorofluoromethane	< 0.041	mg/kg	0.041	0.13	1	524.2		7/26/2017	CJR	1
1,2,4-Trimethylbenzene	< 0.025	mg/kg	0.025	0.08	1	524.2		7/26/2017	CJR	1
1,3,5-Trimethylbenzene	< 0.032	mg/kg	0.032	0.1	1	524.2		7/26/2017	CJR	1
Vinyl Chloride	< 0.019	mg/kg	0.019	0.062	1	524.2		7/26/2017	CJR	1
m&p-Xylene	< 0.072	mg/kg	0.072	0.23	1	524.2		7/26/2017	CJR	1
o-Xylene	< 0.044	mg/kg	0.044	0.14	1	524.2		7/26/2017	CJR	1
SUR - Toluene-d8	101	Rec %			1	524.2		7/26/2017	CJR	1
SUR - Dibromofluoromethane	103	Rec %			1	524.2		7/26/2017	CJR	1
SUR - 1,2-Dichloroethane-d4	103	Rec %			1	524.2		7/26/2017	CJR	1
SUR - 4-Bromofluorobenzene	108	Rec %			1	524.2		7/26/2017	CJR	1

Project Name E. 5TH STREET **Invoice #** E33299
Project # 4281-016

Lab Code 5033299H
Sample ID B4 8-10'
Sample Matrix Soil
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	84 3	%			1	5021		7/24/2017	NJC	1
Organic										
VOC's										
Benzene	< 0.03	mg/kg	0.03	0 096	1	524 2		7/26/2017	CJR	1
Bromobenzene	< 0.025	mg/kg	0.025	0.081	1	524 2		7/26/2017	CJR	1
Bromodichloromethane	< 0.074	mg/kg	0.074	0 24	1	524 2		7/26/2017	CJR	1
Bromoform	< 0.029	mg/kg	0.029	0.092	1	524 2		7/26/2017	CJR	1
tert-Butylbenzene	< 0.026	mg/kg	0.026	0.084	1	524.2		7/26/2017	CJR	1
sec-Butylbenzene	< 0.033	mg/kg	0 033	0 1	1	524 2		7/26/2017	CJR	1
n-Butylbenzene	< 0.04	mg/kg	0.04	0 13	1	524 2		7/26/2017	CJR	1
Carbon Tetrachloride	< 0.016	mg/kg	0.016	0 053	1	524 2		7/26/2017	CJR	1
Chlorobenzene	< 0.013	mg/kg	0 013	0.04	1	524 2		7/26/2017	CJR	1
Chloroethane	< 0.091	mg/kg	0 091	0.29	1	524 2		7/26/2017	CJR	1
Chloroform	< 0.035	mg/kg	0.035	0.11	1	524 2		7/26/2017	CJR	1
Chloromethane	< 0.076	mg/kg	0.076	0.24	1	524 2		7/26/2017	CJR	1
2-Chlorotoluene	< 0.015	mg/kg	0.015	0.047	1	524 2		7/26/2017	CJR	1
4-Chlorotoluene	< 0.018	mg/kg	0 018	0.057	1	524 2		7/26/2017	CJR	1
1,2-Dibromo-3-chloropropane	< 0.058	mg/kg	0.058	0.18	1	524 2		7/26/2017	CJR	1
Dibromochloromethane	< 0.025	mg/kg	0 025	0 079	1	524 2		7/26/2017	CJR	1
1,4-Dichlorobenzene	< 0.037	mg/kg	0.037	0.12	1	524 2		7/26/2017	CJR	1
1,3-Dichlorobenzene	< 0.037	mg/kg	0 037	0.12	1	524 2		7/26/2017	CJR	1
1,2-Dichlorobenzene	< 0.028	mg/kg	0 028	0.088	1	524 2		7/26/2017	CJR	1
Dichlorodifluoromethane	< 0.048	mg/kg	0 048	0.15	1	524 2		7/26/2017	CJR	1
1,2-Dichloroethane	< 0.038	mg/kg	0 038	0 12	1	524 2		7/26/2017	CJR	1
1,1-Dichloroethane	< 0.034	mg/kg	0 034	0.11	1	524 2		7/26/2017	CJR	1
1,1-Dichloroethene	< 0.022	mg/kg	0.022	0.069	1	524 2		7/26/2017	CJR	1
cis-1,2-Dichloroethene	< 0.032	mg/kg	0.032	0.1	1	524.2		7/26/2017	CJR	1
trans-1,2-Dichloroethene	< 0.028	mg/kg	0 028	0.09	1	524.2		7/26/2017	CJR	1
1,2-Dichloropropane	< 0.035	mg/kg	0.035	0.11	1	524.2		7/26/2017	CJR	1
1,3-Dichloropropane	< 0.025	mg/kg	0.025	0 079	1	524.2		7/26/2017	CJR	1
trans-1,3-Dichloropropene	< 0.022	mg/kg	0.022	0 068	1	524 2		7/26/2017	CJR	1
cis-1,3-Dichloropropene	< 0.039	mg/kg	0.039	0 12	1	524 2		7/26/2017	CJR	1
Di-isopropyl ether	< 0.01	mg/kg	0.01	0.032	1	524 2		7/26/2017	CJR	1
EDB (1,2-Dibromoethane)	< 0 023	mg/kg	0 023	0 072	1	524 2		7/26/2017	CJR	1
Ethylbenzene	< 0.035	mg/kg	0 035	0.11	1	524 2		7/26/2017	CJR	1
Hexachlorobutadiene	< 0 085	mg/kg	0 085	0 27	1	524 2		7/26/2017	CJR	1
Isopropylbenzene	< 0 034	mg/kg	0 034	0.11	1	524 2		7/26/2017	CJR	1
p-Isopropyltoluene	< 0 029	mg/kg	0.029	0 093	1	524 2		7/26/2017	CJR	1
Methylene chloride	< 0 15	mg/kg	0 15	0.46	1	524 2		7/26/2017	CJR	1
Methyl tert-butyl ether (MTBE)	< 0.05	mg/kg	0.05	0 16	1	524 2		7/26/2017	CJR	1
Naphthalene	< 0 094	mg/kg	0 094	0 3	1	524 2		7/26/2017	CJR	1
n-Propylbenzene	< 0.033	mg/kg	0 033	0 1	1	524 2		7/26/2017	CJR	1
1,1,2,2-Tetrachloroethane	< 0.028	mg/kg	0 028	0 88	1	524 2		7/26/2017	CJR	1
1,1,1,2-Tetrachloroethane	< 0 028	mg/kg	0 028	0.09	1	524 2		7/26/2017	CJR	1
Tetrachloroethene	< 0.032	mg/kg	0 032	0.1	1	524 2		7/26/2017	CJR	1
Toluene	< 0.032	mg/kg	0 032	0 1	1	524 2		7/26/2017	CJR	1
1,2,4-Trichlorobenzene	< 0.064	mg/kg	0 064	0 2	1	524 2		7/26/2017	CJR	1
1,2,3-Trichlorobenzene	< 0 066	mg/kg	0 066	0 21	1	524 2		7/26/2017	CJR	1
1,1,1-Trichloroethane	< 0 03	mg/kg	0 03	0 96	1	524 2		7/26/2017	CJR	1

Project Name E. 5TH STREET
Project # 4281-016

Invoice # E33299

Lab Code 5033299H
Sample ID B4 8-10'
Sample Matrix Soil
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
1,1,2-Trichloroethane	< 0.033	mg/kg	0.033	0.11	1	524.2		7/26/2017	CJR	1
Trichloroethene (TCE)	< 0.041	mg/kg	0.041	0.13	1	524.2		7/26/2017	CJR	1
Trichlorofluoromethane	< 0.041	mg/kg	0.041	0.13	1	524.2		7/26/2017	CJR	1
1,2,4-Trimethylbenzene	< 0.025	mg/kg	0.025	0.08	1	524.2		7/26/2017	CJR	1
1,3,5-Trimethylbenzene	< 0.032	mg/kg	0.032	0.1	1	524.2		7/26/2017	CJR	1
Vinyl Chloride	< 0.019	mg/kg	0.019	0.062	1	524.2		7/26/2017	CJR	1
m&p-Xylene	< 0.072	mg/kg	0.072	0.23	1	524.2		7/26/2017	CJR	1
o-Xylene	< 0.044	mg/kg	0.044	0.14	1	524.2		7/26/2017	CJR	1
SUR - 1,2-Dichloroethane-d4	102	Rec %			1	524.2		7/26/2017	CJR	1
SUR - 4-Bromofluorobenzene	102	Rec %			1	524.2		7/26/2017	CJR	1
SUR - Dibromofluoromethane	101	Rec %			1	524.2		7/26/2017	CJR	1
SUR - Toluene-d8	102	Rec %			1	524.2		7/26/2017	CJR	1

Project Name E. 5TH STREET
Project # 4281-016

Invoice # E33299

Lab Code 50332991
Sample ID B5 2-4'
Sample Matrix Soil
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	94.3	%			1	5021		7/24/2017	NJC	1
Organic										
VOC's										
Benzene	< 0.03	mg/kg	0.03	0.096	1	524.2		7/26/2017	CJR	1
Bromobenzene	< 0.025	mg/kg	0.025	0.081	1	524.2		7/26/2017	CJR	1
Bromodichloromethane	< 0.074	mg/kg	0.074	0.24	1	524.2		7/26/2017	CJR	1
Bromoform	< 0.029	mg/kg	0.029	0.092	1	524.2		7/26/2017	CJR	1
tert-Butylbenzene	< 0.026	mg/kg	0.026	0.084	1	524.2		7/26/2017	CJR	1
sec-Butylbenzene	< 0.033	mg/kg	0.033	0.1	1	524.2		7/26/2017	CJR	1
n-Butylbenzene	< 0.04	mg/kg	0.04	0.13	1	524.2		7/26/2017	CJR	1
Carbon Tetrachloride	< 0.016	mg/kg	0.016	0.053	1	524.2		7/26/2017	CJR	1
Chlorobenzene	< 0.013	mg/kg	0.013	0.04	1	524.2		7/26/2017	CJR	1
Chloroethane	< 0.091	mg/kg	0.091	0.29	1	524.2		7/26/2017	CJR	1
Chloroform	< 0.035	mg/kg	0.035	0.11	1	524.2		7/26/2017	CJR	1
Chloromethane	< 0.076	mg/kg	0.076	0.24	1	524.2		7/26/2017	CJR	1
2-Chlorotoluene	< 0.015	mg/kg	0.015	0.047	1	524.2		7/26/2017	CJR	1
4-Chlorotoluene	< 0.018	mg/kg	0.018	0.057	1	524.2		7/26/2017	CJR	1
1,2-Dibromo-3-chloropropane	< 0.058	mg/kg	0.058	0.18	1	524.2		7/26/2017	CJR	1
Dibromochloromethane	< 0.025	mg/kg	0.025	0.079	1	524.2		7/26/2017	CJR	1
1,4-Dichlorobenzene	< 0.037	mg/kg	0.037	0.12	1	524.2		7/26/2017	CJR	1
1,3-Dichlorobenzene	< 0.037	mg/kg	0.037	0.12	1	524.2		7/26/2017	CJR	1
1,2-Dichlorobenzene	< 0.028	mg/kg	0.028	0.088	1	524.2		7/26/2017	CJR	1
Dichlorodifluoromethane	< 0.048	mg/kg	0.048	0.15	1	524.2		7/26/2017	CJR	1
1,2-Dichloroethane	< 0.038	mg/kg	0.038	0.12	1	524.2		7/26/2017	CJR	1
1,1-Dichloroethane	< 0.034	mg/kg	0.034	0.11	1	524.2		7/26/2017	CJR	1
1,1-Dichloroethene	< 0.022	mg/kg	0.022	0.069	1	524.2		7/26/2017	CJR	1
cis-1,2-Dichloroethene	< 0.032	mg/kg	0.032	0.1	1	524.2		7/26/2017	CJR	1
trans-1,2-Dichloroethene	< 0.028	mg/kg	0.028	0.09	1	524.2		7/26/2017	CJR	1
1,2-Dichloropropane	< 0.035	mg/kg	0.035	0.11	1	524.2		7/26/2017	CJR	1
1,3-Dichloropropane	< 0.025	mg/kg	0.025	0.079	1	524.2		7/26/2017	CJR	1
trans-1,3-Dichloropropene	< 0.022	mg/kg	0.022	0.068	1	524.2		7/26/2017	CJR	1
cis-1,3-Dichloropropene	< 0.039	mg/kg	0.039	0.12	1	524.2		7/26/2017	CJR	1
Di-isopropyl ether	< 0.01	mg/kg	0.01	0.032	1	524.2		7/26/2017	CJR	1
EDB (1,2-Dibromoethane)	< 0.023	mg/kg	0.023	0.072	1	524.2		7/26/2017	CJR	1
Ethylbenzene	< 0.035	mg/kg	0.035	0.11	1	524.2		7/26/2017	CJR	1
Hexachlorobutadiene	< 0.085	mg/kg	0.085	0.27	1	524.2		7/26/2017	CJR	1
Isopropylbenzene	< 0.034	mg/kg	0.034	0.11	1	524.2		7/26/2017	CJR	1
p-Isopropyltoluene	< 0.029	mg/kg	0.029	0.093	1	524.2		7/26/2017	CJR	1
Methylene chloride	< 0.15	mg/kg	0.15	0.46	1	524.2		7/26/2017	CJR	1
Methyl tert-butyl ether (MTBE)	< 0.05	mg/kg	0.05	0.16	1	524.2		7/26/2017	CJR	1
Naphthalene	< 0.094	mg/kg	0.094	0.3	1	524.2		7/26/2017	CJR	1
n-Propylbenzene	< 0.033	mg/kg	0.033	0.1	1	524.2		7/26/2017	CJR	1
1,1,2,2-Tetrachloroethane	< 0.028	mg/kg	0.028	0.88	1	524.2		7/26/2017	CJR	1
1,1,1,2-Tetrachloroethane	< 0.028	mg/kg	0.028	0.09	1	524.2		7/26/2017	CJR	1
Tetrachloroethene	< 0.032	mg/kg	0.032	0.1	1	524.2		7/26/2017	CJR	1
Toluene	< 0.032	mg/kg	0.032	0.1	1	524.2		7/26/2017	CJR	1
1,2,4-Trichlorobenzene	< 0.064	mg/kg	0.064	0.2	1	524.2		7/26/2017	CJR	1
1,2,3-Trichlorobenzene	< 0.066	mg/kg	0.066	0.21	1	524.2		7/26/2017	CJR	1
1,1,1-Trichloroethane	< 0.03	mg/kg	0.03	0.96	1	524.2		7/26/2017	CJR	1

Project Name E. 5TH STREET
Project # 4281-016

Invoice # E33299

Lab Code 50332991
Sample ID B5 2-4'
Sample Matrix Soil
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
1,1,2-Trichloroethane	< 0.033	mg/kg	0.033	0.11	1	524.2		7/26/2017	CJR	1
Trichloroethene (TCE)	< 0.041	mg/kg	0.041	0.13	1	524.2		7/26/2017	CJR	1
Trichlorofluoromethane	< 0.041	mg/kg	0.041	0.13	1	524.2		7/26/2017	CJR	1
1,2,4-Trimethylbenzene	< 0.025	mg/kg	0.025	0.08	1	524.2		7/26/2017	CJR	1
1,3,5-Trimethylbenzene	< 0.032	mg/kg	0.032	0.1	1	524.2		7/26/2017	CJR	1
Vinyl Chloride	< 0.019	mg/kg	0.019	0.062	1	524.2		7/26/2017	CJR	1
m&p-Xylene	< 0.072	mg/kg	0.072	0.23	1	524.2		7/26/2017	CJR	1
o-Xylene	< 0.044	mg/kg	0.044	0.14	1	524.2		7/26/2017	CJR	1
SUR - Toluene-d8	102	Rec %			1	524.2		7/26/2017	CJR	1
SUR - 1,2-Dichloroethane-d4	99	Rec %			1	524.2		7/26/2017	CJR	1
SUR - 4-Bromofluorobenzene	108	Rec %			1	524.2		7/26/2017	CJR	1
SUR - Dibromofluoromethane	103	Rec %			1	524.2		7/26/2017	CJR	1

Project Name E. 5TH STREET
Project # 4281-016

Invoice # E33299

Lab Code 5033299J
Sample ID B5 10-12'
Sample Matrix Soil
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	83.2	%			1	5021		7/24/2017	NJC	1
Organic										
VOC's										
Benzene	< 0.03	mg/kg	0.03	0.096	1	8260B		7/28/2017	CJR	1
Bromobenzene	< 0.025	mg/kg	0.025	0.081	1	8260B		7/28/2017	CJR	1
Bromodichloromethane	< 0.074	mg/kg	0.074	0.24	1	8260B		7/28/2017	CJR	1
Bromoform	< 0.029	mg/kg	0.029	0.092	1	8260B		7/28/2017	CJR	1
tert-Butylbenzene	< 0.026	mg/kg	0.026	0.084	1	8260B		7/28/2017	CJR	1
sec-Butylbenzene	< 0.033	mg/kg	0.033	0.1	1	8260B		7/28/2017	CJR	1
n-Butylbenzene	< 0.04	mg/kg	0.04	0.13	1	8260B		7/28/2017	CJR	1
Carbon Tetrachloride	< 0.016	mg/kg	0.016	0.053	1	8260B		7/28/2017	CJR	1
Chlorobenzene	< 0.013	mg/kg	0.013	0.04	1	8260B		7/28/2017	CJR	1
Chloroethane	< 0.091	mg/kg	0.091	0.29	1	8260B		7/28/2017	CJR	1
Chloroform	< 0.035	mg/kg	0.035	0.11	1	8260B		7/28/2017	CJR	1
Chloromethane	< 0.076	mg/kg	0.076	0.24	1	8260B		7/28/2017	CJR	1
2-Chlorotoluene	< 0.015	mg/kg	0.015	0.047	1	8260B		7/28/2017	CJR	1
4-Chlorotoluene	< 0.018	mg/kg	0.018	0.057	1	8260B		7/28/2017	CJR	1
1,2-Dibromo-3-chloropropane	< 0.058	mg/kg	0.058	0.18	1	8260B		7/28/2017	CJR	1
Dibromochloromethane	< 0.025	mg/kg	0.025	0.079	1	8260B		7/28/2017	CJR	1
1,4-Dichlorobenzene	< 0.037	mg/kg	0.037	0.12	1	8260B		7/28/2017	CJR	1
1,3-Dichlorobenzene	< 0.037	mg/kg	0.037	0.12	1	8260B		7/28/2017	CJR	1
1,2-Dichlorobenzene	< 0.028	mg/kg	0.028	0.088	1	8260B		7/28/2017	CJR	1
Dichlorodifluoromethane	< 0.048	mg/kg	0.048	0.15	1	8260B		7/28/2017	CJR	1
1,2-Dichloroethane	< 0.038	mg/kg	0.038	0.12	1	8260B		7/28/2017	CJR	1
1,1-Dichloroethane	< 0.034	mg/kg	0.034	0.11	1	8260B		7/28/2017	CJR	1
1,1-Dichloroethene	< 0.022	mg/kg	0.022	0.069	1	8260B		7/28/2017	CJR	1
cis-1,2-Dichloroethene	< 0.032	mg/kg	0.032	0.1	1	8260B		7/28/2017	CJR	1
trans-1,2-Dichloroethene	< 0.028	mg/kg	0.028	0.09	1	8260B		7/28/2017	CJR	1
1,2-Dichloropropane	< 0.035	mg/kg	0.035	0.11	1	8260B		7/28/2017	CJR	1
1,3-Dichloropropane	< 0.025	mg/kg	0.025	0.079	1	8260B		7/28/2017	CJR	1
trans-1,3-Dichloropropene	< 0.022	mg/kg	0.022	0.068	1	8260B		7/28/2017	CJR	1
cis-1,3-Dichloropropene	< 0.039	mg/kg	0.039	0.12	1	8260B		7/28/2017	CJR	1
Di-isopropyl ether	< 0.01	mg/kg	0.01	0.032	1	8260B		7/28/2017	CJR	1
EDB (1,2-Dibromoethane)	< 0.023	mg/kg	0.023	0.072	1	8260B		7/28/2017	CJR	1
Ethylbenzene	< 0.035	mg/kg	0.035	0.11	1	8260B		7/28/2017	CJR	1
Hexachlorobutadiene	< 0.085	mg/kg	0.085	0.27	1	8260B		7/28/2017	CJR	1
Isopropylbenzene	< 0.034	mg/kg	0.034	0.11	1	8260B		7/28/2017	CJR	1
p-Isopropyltoluene	< 0.029	mg/kg	0.029	0.093	1	8260B		7/28/2017	CJR	1
Methylene chloride	< 0.15	mg/kg	0.15	0.46	1	8260B		7/28/2017	CJR	1
Methyl tert-butyl ether (MTBE)	< 0.05	mg/kg	0.05	0.16	1	8260B		7/28/2017	CJR	1
Naphthalene	< 0.094	mg/kg	0.094	0.3	1	8260B		7/28/2017	CJR	1
n-Propylbenzene	< 0.033	mg/kg	0.033	0.1	1	8260B		7/28/2017	CJR	1
1,1,2,2-Tetrachloroethane	< 0.028	mg/kg	0.028	0.88	1	8260B		7/28/2017	CJR	1
1,1,1,2-Tetrachloroethane	< 0.028	mg/kg	0.028	0.09	1	8260B		7/28/2017	CJR	1
Tetrachloroethene	< 0.032	mg/kg	0.032	0.1	1	8260B		7/28/2017	CJR	1
Toluene	< 0.032	mg/kg	0.032	0.1	1	8260B		7/28/2017	CJR	1
1,2,4-Trichlorobenzene	< 0.064	mg/kg	0.064	0.2	1	8260B		7/28/2017	CJR	1
1,2,3-Trichlorobenzene	< 0.066	mg/kg	0.066	0.21	1	8260B		7/28/2017	CJR	1
1,1,1-Trichloroethane	< 0.03	mg/kg	0.03	0.96	1	8260B		7/28/2017	CJR	1

Project Name E. 5TH STREET
Project # 4281-016

Invoice # E33299

Lab Code 5033299J
Sample ID B5 10-12'
Sample Matrix Soil
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
1,1,2-Trichloroethane	< 0.033	mg/kg	0.033	0.11	1	8260B		7/28/2017	CJR	1
Trichloroethene (TCE)	< 0.041	mg/kg	0.041	0.13	1	8260B		7/28/2017	CJR	1
Trichlorofluoromethane	< 0.041	mg/kg	0.041	0.13	1	8260B		7/28/2017	CJR	1
1,2,4-Trimethylbenzene	< 0.025	mg/kg	0.025	0.08	1	8260B		7/28/2017	CJR	1
1,3,5-Trimethylbenzene	< 0.032	mg/kg	0.032	0.1	1	8260B		7/28/2017	CJR	1
Vinyl Chloride	< 0.019	mg/kg	0.019	0.062	1	8260B		7/28/2017	CJR	1
m&p-Xylene	< 0.072	mg/kg	0.072	0.23	1	8260B		7/28/2017	CJR	1
o-Xylene	< 0.044	mg/kg	0.044	0.14	1	8260B		7/28/2017	CJR	1
SUR - Toluene-d8	101	Rec %			1	8260B		7/28/2017	CJR	1
SUR - Dibromofluoromethane	101	Rec %			1	8260B		7/28/2017	CJR	1
SUR - 1,2-Dichloroethane-d4	102	Rec %			1	8260B		7/28/2017	CJR	1
SUR - 4-Bromofluorobenzene	103	Rec %			1	8260B		7/28/2017	CJR	1

Project Name E. 5TH STREET
Project # 4281-016

Invoice # E33299

Lab Code 5033299K
Sample ID B6 2-4'
Sample Matrix Soil
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	93 0	%			1	5021		7/24/2017	NJC	1
Organic										
VOC's										
Benzene	< 0 03	mg/kg	0.03	0.096	1	8260B		7/28/2017	CJR	1
Bromobenzene	< 0 025	mg/kg	0 025	0.081	1	8260B		7/28/2017	CJR	1
Bromodichloromethane	< 0 074	mg/kg	0.074	0.24	1	8260B		7/28/2017	CJR	1
Bromoform	< 0.029	mg/kg	0.029	0.092	1	8260B		7/28/2017	CJR	1
tert-Butylbenzene	< 0 026	mg/kg	0.026	0.084	1	8260B		7/28/2017	CJR	1
sec-Butylbenzene	< 0 033	mg/kg	0.033	0 1	1	8260B		7/28/2017	CJR	1
n-Butylbenzene	< 0 04	mg/kg	0.04	0 13	1	8260B		7/28/2017	CJR	1
Carbon Tetrachloride	< 0 016	mg/kg	0.016	0 053	1	8260B		7/28/2017	CJR	1
Chlorobenzene	< 0 013	mg/kg	0.013	0.04	1	8260B		7/28/2017	CJR	1
Chloroethane	< 0 091	mg/kg	0 091	0 29	1	8260B		7/28/2017	CJR	1
Chloroform	< 0 035	mg/kg	0 035	0 11	1	8260B		7/28/2017	CJR	1
Chloromethane	< 0 076	mg/kg	0 076	0 24	1	8260B		7/28/2017	CJR	1
2-Chlorotoluene	< 0 015	mg/kg	0 015	0 047	1	8260B		7/28/2017	CJR	1
4-Chlorotoluene	< 0 018	mg/kg	0.018	0.057	1	8260B		7/28/2017	CJR	1
1,2-Dibromo-3-chloropropane	< 0.058	mg/kg	0 058	0 18	1	8260B		7/28/2017	CJR	1
Dibromochloromethane	< 0 025	mg/kg	0 025	0.079	1	8260B		7/28/2017	CJR	1
1,4-Dichlorobenzene	< 0 037	mg/kg	0.037	0 12	1	8260B		7/28/2017	CJR	1
1,3-Dichlorobenzene	< 0 037	mg/kg	0 037	0.12	1	8260B		7/28/2017	CJR	1
1,2-Dichlorobenzene	< 0 028	mg/kg	0 028	0 088	1	8260B		7/28/2017	CJR	1
Dichlorodifluoromethane	< 0 048	mg/kg	0 048	0.15	1	8260B		7/28/2017	CJR	1
1,2-Dichloroethane	< 0.038	mg/kg	0.038	0.12	1	8260B		7/28/2017	CJR	1
1,1-Dichloroethane	< 0.034	mg/kg	0.034	0 11	1	8260B		7/28/2017	CJR	1
1,1-Dichloroethene	< 0.022	mg/kg	0.022	0.069	1	8260B		7/28/2017	CJR	1
cis-1,2-Dichloroethene	< 0 032	mg/kg	0.032	0.1	1	8260B		7/28/2017	CJR	1
trans-1,2-Dichloroethene	< 0 028	mg/kg	0.028	0 09	1	8260B		7/28/2017	CJR	1
1,2-Dichloropropane	< 0 035	mg/kg	0.035	0 11	1	8260B		7/28/2017	CJR	1
1,3-Dichloropropane	< 0 025	mg/kg	0.025	0 079	1	8260B		7/28/2017	CJR	1
trans-1,3-Dichloropropene	< 0 022	mg/kg	0.022	0 068	1	8260B		7/28/2017	CJR	1
cis-1,3-Dichloropropene	< 0 039	mg/kg	0.039	0.12	1	8260B		7/28/2017	CJR	1
Di-isopropyl ether	< 0 01	mg/kg	0.01	0.032	1	8260B		7/28/2017	CJR	1
EDB (1,2-Dibromoethane)	< 0.023	mg/kg	0 023	0.072	1	8260B		7/28/2017	CJR	1
Ethylbenzene	< 0 035	mg/kg	0 035	0.11	1	8260B		7/28/2017	CJR	1
Hexachlorobutadiene	< 0 085	mg/kg	0 085	0 27	1	8260B		7/28/2017	CJR	1
Isopropylbenzene	< 0 034	mg/kg	0 034	0 11	1	8260B		7/28/2017	CJR	1
p-Isopropyltoluene	< 0 029	mg/kg	0 029	0 093	1	8260B		7/28/2017	CJR	1
Methylene chloride	< 0 15	mg/kg	0 15	0 46	1	8260B		7/28/2017	CJR	1
Methyl tert-butyl ether (MTBE)	< 0 05	mg/kg	0.05	0 16	1	8260B		7/28/2017	CJR	1
Naphthalene	< 0 094	mg/kg	0 094	0.3	1	8260B		7/28/2017	CJR	1
n-Propylbenzene	< 0 033	mg/kg	0 033	0.1	1	8260B		7/28/2017	CJR	1
1,1,2,2-Tetrachloroethane	< 0 028	mg/kg	0 028	0 88	1	8260B		7/28/2017	CJR	1
1,1,1,2-Tetrachloroethane	< 0 028	mg/kg	0 028	0 09	1	8260B		7/28/2017	CJR	1
Tetrachloroethene	< 0 032	mg/kg	0 032	0 1	1	8260B		7/28/2017	CJR	1
Toluene	< 0 032	mg/kg	0 032	0 1	1	8260B		7/28/2017	CJR	1
1,2,4-Trichlorobenzene	< 0 064	mg/kg	0 064	0 2	1	8260B		7/28/2017	CJR	1
1,2,3-Trichlorobenzene	< 0 066	mg/kg	0 066	0 21	1	8260B		7/28/2017	CJR	1
1,1,1-Trichloroethane	< 0 03	mg/kg	0 03	0 96	1	8260B		7/28/2017	CJR	1

Project Name E. 5TH STREET
Project # 4281-016

Invoice # E33299

Lab Code 5033299K
Sample ID B6 2-4'
Sample Matrix Soil
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
1,1,2-Trichloroethane	< 0.033	mg/kg	0.033	0.11	1	8260B		7/28/2017	CJR	1
Trichloroethene (TCE)	< 0.041	mg/kg	0.041	0.13	1	8260B		7/28/2017	CJR	1
Trichlorofluoromethane	< 0.041	mg/kg	0.041	0.13	1	8260B		7/28/2017	CJR	1
1,2,4-Trimethylbenzene	< 0.025	mg/kg	0.025	0.08	1	8260B		7/28/2017	CJR	1
1,3,5-Trimethylbenzene	< 0.032	mg/kg	0.032	0.1	1	8260B		7/28/2017	CJR	1
Vinyl Chloride	< 0.019	mg/kg	0.019	0.062	1	8260B		7/28/2017	CJR	1
m&p-Xylene	< 0.072	mg/kg	0.072	0.23	1	8260B		7/28/2017	CJR	1
o-Xylene	< 0.044	mg/kg	0.044	0.14	1	8260B		7/28/2017	CJR	1
SUR - 1,2-Dichloroethane-d4	104	Rec %			1	8260B		7/28/2017	CJR	1
SUR - 4-Bromofluorobenzene	102	Rec %			1	8260B		7/28/2017	CJR	1
SUR - Dibromofluoromethane	99	Rec %			1	8260B		7/28/2017	CJR	1
SUR - Toluene-d8	100	Rec %			1	8260B		7/28/2017	CJR	1

Project Name E. 5TH STREET **Invoice #** E33299
Project # 4281-016

Lab Code 5033299L
Sample ID B6 8-10'
Sample Matrix Soil
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	85 0	%			1	5021		7/24/2017	NJC	1
Organic										
VOC's										
Benzene	< 0 03	mg/kg	0.03	0.096	1	8260B		7/28/2017	CJR	1
Bromobenzene	< 0 025	mg/kg	0 025	0 081	1	8260B		7/28/2017	CJR	1
Bromodichloromethane	< 0 074	mg/kg	0 074	0 24	1	8260B		7/28/2017	CJR	1
Bromoform	< 0 029	mg/kg	0.029	0 092	1	8260B		7/28/2017	CJR	1
tert-Butylbenzene	< 0.026	mg/kg	0.026	0 084	1	8260B		7/28/2017	CJR	1
sec-Butylbenzene	< 0 033	mg/kg	0.033	0.1	1	8260B		7/28/2017	CJR	1
n-Butylbenzene	< 0 04	mg/kg	0 04	0 13	1	8260B		7/28/2017	CJR	1
Carbon Tetrachloride	< 0 016	mg/kg	0.016	0.053	1	8260B		7/28/2017	CJR	1
Chlorobenzene	< 0 013	mg/kg	0 013	0 04	1	8260B		7/28/2017	CJR	1
Chloroethane	< 0 091	mg/kg	0 091	0 29	1	8260B		7/28/2017	CJR	1
Chloroform	< 0 035	mg/kg	0.035	0 11	1	8260B		7/28/2017	CJR	1
Chloromethane	< 0 076	mg/kg	0.076	0 24	1	8260B		7/28/2017	CJR	1
2-Chlorotoluene	< 0 015	mg/kg	0.015	0 047	1	8260B		7/28/2017	CJR	1
4-Chlorotoluene	< 0 018	mg/kg	0.018	0.057	1	8260B		7/28/2017	CJR	1
1,2-Dibromo-3-chloropropane	< 0.058	mg/kg	0.058	0.18	1	8260B		7/28/2017	CJR	1
Dibromochloromethane	< 0 025	mg/kg	0.025	0.079	1	8260B		7/28/2017	CJR	1
1,4-Dichlorobenzene	< 0 037	mg/kg	0 037	0.12	1	8260B		7/28/2017	CJR	1
1,3-Dichlorobenzene	< 0 037	mg/kg	0.037	0 12	1	8260B		7/28/2017	CJR	1
1,2-Dichlorobenzene	< 0 028	mg/kg	0.028	0 088	1	8260B		7/28/2017	CJR	1
Dichlorodifluoromethane	< 0 048	mg/kg	0.048	0.15	1	8260B		7/28/2017	CJR	1
1,2-Dichloroethane	< 0 038	mg/kg	0 038	0.12	1	8260B		7/28/2017	CJR	1
1,1-Dichloroethane	< 0 034	mg/kg	0 034	0.11	1	8260B		7/28/2017	CJR	1
1,1-Dichloroethene	< 0 022	mg/kg	0 022	0.069	1	8260B		7/28/2017	CJR	1
cis-1,2-Dichloroethene	< 0 032	mg/kg	0 032	0 1	1	8260B		7/28/2017	CJR	1
trans-1,2-Dichloroethene	< 0 028	mg/kg	0 028	0.09	1	8260B		7/28/2017	CJR	1
1,2-Dichloropropane	< 0 035	mg/kg	0 035	0.11	1	8260B		7/28/2017	CJR	1
1,3-Dichloropropane	< 0 025	mg/kg	0.025	0.079	1	8260B		7/28/2017	CJR	1
trans-1,3-Dichloropropene	< 0 022	mg/kg	0 022	0 068	1	8260B		7/28/2017	CJR	1
cis-1,3-Dichloropropene	< 0 039	mg/kg	0 039	0.12	1	8260B		7/28/2017	CJR	1
Di-isopropyl ether	< 0 01	mg/kg	0.01	0 032	1	8260B		7/28/2017	CJR	1
EDB (1,2-Dibromoethane)	< 0 023	mg/kg	0 023	0 072	1	8260B		7/28/2017	CJR	1
Ethylbenzene	< 0 035	mg/kg	0 035	0.11	1	8260B		7/28/2017	CJR	1
Hexachlorobutadiene	< 0 085	mg/kg	0 085	0 27	1	8260B		7/28/2017	CJR	1
Isopropylbenzene	< 0 034	mg/kg	0 034	0 11	1	8260B		7/28/2017	CJR	1
p-Isopropyltoluene	< 0 029	mg/kg	0 029	0 093	1	8260B		7/28/2017	CJR	1
Methylene chloride	< 0 15	mg/kg	0 15	0 46	1	8260B		7/28/2017	CJR	1
Methyl tert-butyl ether (MTBE)	< 0 05	mg/kg	0 05	0 16	1	8260B		7/28/2017	CJR	1
Naphthalene	< 0 094	mg/kg	0 094	0 3	1	8260B		7/28/2017	CJR	1
n-Propylbenzene	< 0 033	mg/kg	0 033	0 1	1	8260B		7/28/2017	CJR	1
1,1,2,2-Tetrachloroethane	< 0 028	mg/kg	0 028	0 88	1	8260B		7/28/2017	CJR	1
1,1,1,2-Tetrachloroethane	< 0 028	mg/kg	0 028	0 09	1	8260B		7/28/2017	CJR	1
Tetrachloroethene	< 0 032	mg/kg	0 032	0 1	1	8260B		7/28/2017	CJR	1
Toluene	< 0 032	mg/kg	0 032	0 1	1	8260B		7/28/2017	CJR	1
1,2,4-Trichlorobenzene	< 0 064	mg/kg	0 064	0 2	1	8260B		7/28/2017	CJR	1
1,2,3-Trichlorobenzene	< 0 066	mg/kg	0 066	0 21	1	8260B		7/28/2017	CJR	1
1,1,1-Trichloroethane	< 0 03	mg/kg	0 03	0 96	1	8260B		7/28/2017	CJR	1

Project Name E. 5TH STREET
Proiect # 4281-016

Invoice # E33299

Lab Code 5033299L
Sample ID B6 8-10'
Sample Matrix Soil
Sample Date 7/20/2017

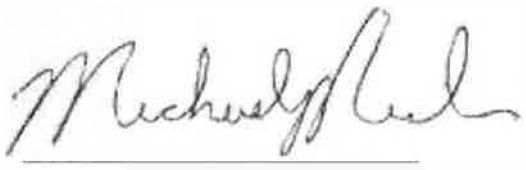
	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
1,1,2-Trichloroethane	< 0.033	mg/kg	0.033	0.11	1	8260B		7/28/2017	CJR	1
Trichloroethene (TCE)	< 0.041	mg/kg	0.041	0.13	1	8260B		7/28/2017	CJR	1
Trichlorofluoromethane	< 0.041	mg/kg	0.041	0.13	1	8260B		7/28/2017	CJR	1
1,2,4-Trimethylbenzene	< 0.025	mg/kg	0.025	0.08	1	8260B		7/28/2017	CJR	1
1,3,5-Trimethylbenzene	< 0.032	mg/kg	0.032	0.1	1	8260B		7/28/2017	CJR	1
Vinyl Chloride	< 0.019	mg/kg	0.019	0.062	1	8260B		7/28/2017	CJR	1
m&p-Xylene	< 0.072	mg/kg	0.072	0.23	1	8260B		7/28/2017	CJR	1
o-Xylene	< 0.044	mg/kg	0.044	0.14	1	8260B		7/28/2017	CJR	1
SUR - Toluene-d8	100	Rec %			1	8260B		7/28/2017	CJR	1
SUR - 1,2-Dichloroethane-d4	105	Rec %			1	8260B		7/28/2017	CJR	1
SUR - 4-Bromofluorobenzene	107	Rec %			1	8260B		7/28/2017	CJR	1
SUR - Dibromofluoromethane	101	Rec %			1	8260B		7/28/2017	CJR	1

"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



Robert E. Lee & Associates, Inc.
Engineering, Surveying, Environmental Services
1250 Centennial Centre Blvd
Hobart, WI 54155
920.662.9641 FAX 920.662.9141

To ensure the proper handling of samples, please see the back for instructions.

CHAIN OF CUSTODY RECORD

COC # **202266**

Client: Cedar Corp

Project Name: E. 5th Street

Project Number: 4281-06 BID #: 8330

Environmental Program:
☐ LUST ☐ SDWA ☐ WPDES ☐ RCRA ☐ OTHER

Requested Turnaround Time
☒ Normal (Data DWS) ☐ Rush
Date Needed: _____
Rushes accepted only w/prior notification

*Preservation Code
N = Nitric Acid (red) O = Sodium Hydroxide
H = Hydrochloric Acid U = Unpreserved (white)
M = Methanol S = Sulfuric Acid (green)

Sampler: Nicole LaPlant

Sample Type (Matrix)
DW = Drinking Water
GW = Groundwater
WW = Wastewater
Soil, Oil, Sludge, Air, Other

Analyses Required:
(Note special detection limits or methods)

Sample Name	Date	Time		Comp	Grab	Sample Type	No. Of Containers	Filtered? (Y/N)	Preservation* (Code)	VOCs	Laboratory Sample I.D.	Remarks:
B1 4-6	7/20/17	1102	A/P		X	SOIL	2	N	M	X	5233299 A	
B1 10-12'		1109	A/P		X					X	B	
B2 2-4'		1035	A/P		X					X	C	
B2 10-12'		1045	A/P		X					X	D	
B3 2-4'		1105	A/P		X					X	E	
B3 6-8'		1112	A/P		X					X	F	
B4 4-6'		1148	A/P		X					X	G	
B4 8-10'		1152	A/P		X					X	H	
B5 2-4'		1220	A/P		X					X	I	
B5 10-12'		1225	A/P		X					X	J	
B6 2-4'		1255	A/P		X					X	K	
B6 8-10	↓	1305	A/P		X	↓	↓			X	L	

Report to: Nicole LaPlant
Company: Robert E. Lee & Associates
Address: 1250 Centennial Centre Blvd.
Hobart, WI 54155
Telephone: 920-662-9641

Invoice to: Nicole LaPlant
Company: Robert E. Lee & Associates
Address: 1250 Centennial Centre Blvd.
Hobart, WI 54155
Telephone: 920-662-9641

Relinquished By	Date	Time	Received By	Date	Time
1) Alan Trethyn	7/21/17	11:22 A/P	Laura Christensen	7/21/17	11:22 A/P
2)		A/P			A/P
3)		A/P			A/P
Received by Lab				11:30	A = AM P = PM

Laboratory Receiving Notes
Temperature of Contents 4 °C
Custody Seal Intact Yes
Sample Condition good
Sample pH

F

APPENDIX F

GROUNDWATER LABORATORY ANALYTICAL REPORT

Synergy Environmental Lab, INC.

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

NICOLE LAPLANT
ROBERT E. LEE & ASSOCIATES
1250 CENTENNIAL CENTRE BLVD
HOBART. WI 54155

Report Date *28-Jul-17*

Project Name EAST 5TH STREET
Proiect # 4281-016

Invoice # E33300

Lab Code 5033300A
Sample ID TW1
Sample Matrix Water
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Organic										
VOC's										
Benzene	< 0 17	ug/l	0.17	0 55	1	8260B		7/26/2017	CJR	1
Bromobenzene	< 0 43	ug/l	0.43	1 37	1	8260B		7/26/2017	CJR	1
Bromodichloromethane	< 0 31	ug/l	0 31	1	1	8260B		7/26/2017	CJR	1
Bromoform	< 0 49	ug/l	0 49	1 56	1	8260B		7/26/2017	CJR	1
tert-Butylbenzene	< 0 39	ug/l	0 39	1 23	1	8260B		7/26/2017	CJR	1
sec-Butylbenzene	< 0 24	ug/l	0.24	0.76	1	8260B		7/26/2017	CJR	1
n-Butylbenzene	< 0 34	ug/l	0 34	1 08	1	8260B		7/26/2017	CJR	1
Carbon Tetrachloride	< 0 21	ug/l	0 21	0 68	1	8260B		7/26/2017	CJR	1
Chlorobenzene	< 0 27	ug/l	0 27	0 86	1	8260B		7/26/2017	CJR	1
Chloroethane	< 0 5	ug/l	0 5	1 6	1	8260B		7/26/2017	CJR	1
Chloroform	< 0 96	ug/l	0 96	3 04	1	8260B		7/26/2017	CJR	1
Chloromethane	< 1 3	ug/l	1 3	4 15	1	8260B		7/26/2017	CJR	1
2-Chlorotoluene	< 0 36	ug/l	0 36	1 15	1	8260B		7/26/2017	CJR	1
4-Chlorotoluene	< 0 35	ug/l	0 35	1 11	1	8260B		7/26/2017	CJR	1
1,2-Dibromo-3-chloropropane	< 1 88	ug/l	1 88	5 98	1	8260B		7/26/2017	CJR	1
Dibromochloromethane	< 0 45	ug/l	0 45	1 44	1	8260B		7/26/2017	CJR	1
1,4-Dichlorobenzene	< 0 42	ug/l	0 42	1 34	1	8260B		7/26/2017	CJR	1
1,3-Dichlorobenzene	< 0 45	ug/l	0 45	1 43	1	8260B		7/26/2017	CJR	1
1,2-Dichlorobenzene	< 0 34	ug/l	0 34	1 09	1	8260B		7/26/2017	CJR	1
Dichlorodifluoromethane	< 0 38	ug/l	0 38	1 2	1	8260B		7/26/2017	CJR	1
1,2-Dichloroethane	< 0 45	ug/l	0 45	1 43	1	8260B		7/26/2017	CJR	1
1,1-Dichloroethane	< 0 42	ug/l	0 42	1 34	1	8260B		7/26/2017	CJR	1
1,1-Dichloroethene	< 0 46	ug/l	0 46	1 47	1	8260B		7/26/2017	CJR	1
cis-1,2-Dichloroethene	< 0 41	ug/l	0 41	1 29	1	8260B		7/26/2017	CJR	1
trans-1,2-Dichloroethene	< 0 35	ug/l	0 35	1 12	1	8260B		7/26/2017	CJR	1
1,2-Dichloropropane	< 0 39	ug/l	0 39	1 24	1	8260B		7/26/2017	CJR	1
1,3-Dichloropropane	< 0 49	ug/l	0 49	1 55	1	8260B		7/26/2017	CJR	1
trans-1,3-Dichloropropene	< 0 42	ug/l	0 42	1 33	1	8260B		7/26/2017	CJR	1
cis-1,3-Dichloropropene	< 0 21	ug/l	0 21	0 65	1	8260B		7/26/2017	CJR	1

Project Name EAST 5TH STREET
Project # 4281-016

Invoice # E33300

Lab Code 5033300A
Sample ID TW1
Sample Matrix Water
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Di-isopropyl ether	< 0.26	ug/l	0.26	0.83	1	8260B		7/26/2017	CJR	I
EDB (1,2-Dibromoethane)	< 0.34	ug/l	0.34	1.09	1	8260B		7/26/2017	CJR	I
Ethylbenzene	< 0.2	ug/l	0.2	0.63	1	8260B		7/26/2017	CJR	I
Hexachlorobutadiene	< 1.47	ug/l	1.47	4.68	1	8260B		7/26/2017	CJR	I
Isopropylbenzene	< 0.29	ug/l	0.29	0.93	1	8260B		7/26/2017	CJR	I
p-Isopropyltoluene	< 0.28	ug/l	0.28	0.91	1	8260B		7/26/2017	CJR	I
Methylene chloride	< 0.94	ug/l	0.94	2.98	1	8260B		7/26/2017	CJR	I
Methyl tert-butyl ether (MTBE)	7.1	ug/l	0.82	2.6	1	8260B		7/26/2017	CJR	I
Naphthalene	< 2.17	ug/l	2.17	6.9	1	8260B		7/26/2017	CJR	I
n-Propylbenzene	< 0.19	ug/l	0.19	0.62	1	8260B		7/26/2017	CJR	I
1,1,2,2-Tetrachloroethane	< 0.69	ug/l	0.69	2.21	1	8260B		7/26/2017	CJR	I
1,1,1,2-Tetrachloroethane	< 0.47	ug/l	0.47	1.48	1	8260B		7/26/2017	CJR	I
Tetrachloroethene	< 0.48	ug/l	0.48	1.52	1	8260B		7/26/2017	CJR	I
Toluene	< 0.67	ug/l	0.67	2.13	1	8260B		7/26/2017	CJR	I
1,2,4-Trichlorobenzene	< 1.29	ug/l	1.29	4.1	1	8260B		7/26/2017	CJR	I
1,2,3-Trichlorobenzene	< 0.83	ug/l	0.83	2.63	1	8260B		7/26/2017	CJR	I
1,1,1-Trichloroethane	< 0.35	ug/l	0.35	1.11	1	8260B		7/26/2017	CJR	I
1,1,2-Trichloroethane	< 0.65	ug/l	0.65	2.06	1	8260B		7/26/2017	CJR	I
Trichloroethene (TCE)	< 0.45	ug/l	0.45	1.43	1	8260B		7/26/2017	CJR	I
Trichlorofluoromethane	< 0.64	ug/l	0.64	2.04	1	8260B		7/26/2017	CJR	I
1,2,4-Trimethylbenzene	< 1.14	ug/l	1.14	3.63	1	8260B		7/26/2017	CJR	I
1,3,5-Trimethylbenzene	< 0.91	ug/l	0.91	2.9	1	8260B		7/26/2017	CJR	I
Vinyl Chloride	< 0.19	ug/l	0.19	0.62	1	8260B		7/26/2017	CJR	I
m&p-Xylene	< 1.56	ug/l	1.56	4.95	1	8260B		7/26/2017	CJR	I
o-Xylene	< 0.39	ug/l	0.39	1.25	1	8260B		7/26/2017	CJR	I
SUR - Toluene-d8	105	REC %			1	8260B		7/26/2017	CJR	I
SUR - 1,2-Dichloroethane-d4	100	REC %			1	8260B		7/26/2017	CJR	I
SUR - 4-Bromofluorobenzene	105	REC %			1	8260B		7/26/2017	CJR	I
SUR - Dibromofluoromethane	105	REC %			1	8260B		7/26/2017	CJR	I

Project Name EAST 5TH STREET
Project # 4281-016

Invoice # E33300

Lab Code 5033300B
Sample ID TW3
Sample Matrix Water
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Organic										
VOC's										
Benzene	< 0.17	ug/l	0.17	0.55	1	8260B		7/25/2017	CJR	
Bromobenzene	< 0.43	ug/l	0.43	1.37	1	8260B		7/25/2017	CJR	
Bromodichloromethane	< 0.31	ug/l	0.31	1	1	8260B		7/25/2017	CJR	
Bromoform	< 0.49	ug/l	0.49	1.56	1	8260B		7/25/2017	CJR	
tert-Butylbenzene	< 0.39	ug/l	0.39	1.23	1	8260B		7/25/2017	CJR	
sec-Butylbenzene	< 0.24	ug/l	0.24	0.76	1	8260B		7/25/2017	CJR	
n-Butylbenzene	< 0.34	ug/l	0.34	1.08	1	8260B		7/25/2017	CJR	
Carbon Tetrachloride	< 0.21	ug/l	0.21	0.68	1	8260B		7/25/2017	CJR	
Chlorobenzene	< 0.27	ug/l	0.27	0.86	1	8260B		7/25/2017	CJR	
Chloroethane	< 0.5	ug/l	0.5	1.6	1	8260B		7/25/2017	CJR	
Chloroform	< 0.96	ug/l	0.96	3.04	1	8260B		7/25/2017	CJR	
Chloromethane	< 1.3	ug/l	1.3	4.15	1	8260B		7/25/2017	CJR	
2-Chlorotoluene	< 0.36	ug/l	0.36	1.15	1	8260B		7/25/2017	CJR	
4-Chlorotoluene	< 0.35	ug/l	0.35	1.11	1	8260B		7/25/2017	CJR	
1,2-Dibromo-3-chloropropane	< 1.88	ug/l	1.88	5.98	1	8260B		7/25/2017	CJR	
Dibromochloromethane	< 0.45	ug/l	0.45	1.44	1	8260B		7/25/2017	CJR	
1,4-Dichlorobenzene	< 0.42	ug/l	0.42	1.34	1	8260B		7/25/2017	CJR	
1,3-Dichlorobenzene	< 0.45	ug/l	0.45	1.43	1	8260B		7/25/2017	CJR	
1,2-Dichlorobenzene	< 0.34	ug/l	0.34	1.09	1	8260B		7/25/2017	CJR	
Dichlorodifluoromethane	< 0.38	ug/l	0.38	1.2	1	8260B		7/25/2017	CJR	
1,2-Dichloroethane	< 0.45	ug/l	0.45	1.43	1	8260B		7/25/2017	CJR	
1,1-Dichloroethane	< 0.42	ug/l	0.42	1.34	1	8260B		7/25/2017	CJR	
1,1-Dichloroethene	< 0.46	ug/l	0.46	1.47	1	8260B		7/25/2017	CJR	
cis-1,2-Dichloroethene	< 0.41	ug/l	0.41	1.29	1	8260B		7/25/2017	CJR	
trans-1,2-Dichloroethene	< 0.35	ug/l	0.35	1.12	1	8260B		7/25/2017	CJR	
1,2-Dichloropropane	< 0.39	ug/l	0.39	1.24	1	8260B		7/25/2017	CJR	
1,3-Dichloropropane	< 0.49	ug/l	0.49	1.55	1	8260B		7/25/2017	CJR	
trans-1,3-Dichloropropene	< 0.42	ug/l	0.42	1.33	1	8260B		7/25/2017	CJR	
cis-1,3-Dichloropropene	< 0.21	ug/l	0.21	0.65	1	8260B		7/25/2017	CJR	
Di-isopropyl ether	< 0.26	ug/l	0.26	0.83	1	8260B		7/25/2017	CJR	
EDB (1,2-Dibromoethane)	< 0.34	ug/l	0.34	1.09	1	8260B		7/25/2017	CJR	
Ethylbenzene	< 0.2	ug/l	0.2	0.63	1	8260B		7/25/2017	CJR	
Hexachlorobutadiene	< 1.47	ug/l	1.47	4.68	1	8260B		7/25/2017	CJR	
Isopropylbenzene	< 0.29	ug/l	0.29	0.93	1	8260B		7/25/2017	CJR	
p-Isopropyltoluene	< 0.28	ug/l	0.28	0.91	1	8260B		7/25/2017	CJR	
Methylene chloride	< 0.94	ug/l	0.94	2.98	1	8260B		7/25/2017	CJR	
Methyl tert-butyl ether (MTBE)	1.61 "J"	ug/l	0.82	2.6	1	8260B		7/25/2017	CJR	
Naphthalene	< 2.17	ug/l	2.17	6.9	1	8260B		7/25/2017	CJR	
n-Propylbenzene	< 0.19	ug/l	0.19	0.62	1	8260B		7/25/2017	CJR	
1,1,2,2-Tetrachloroethane	< 0.69	ug/l	0.69	2.21	1	8260B		7/25/2017	CJR	
1,1,1,2-Tetrachloroethane	< 0.47	ug/l	0.47	1.48	1	8260B		7/25/2017	CJR	
Tetrachloroethene	< 0.48	ug/l	0.48	1.52	1	8260B		7/25/2017	CJR	
Toluene	< 0.67	ug/l	0.67	2.13	1	8260B		7/25/2017	CJR	
1,2,4-Trichlorobenzene	< 1.29	ug/l	1.29	4.1	1	8260B		7/25/2017	CJR	
1,2,3-Trichlorobenzene	< 0.83	ug/l	0.83	2.63	1	8260B		7/25/2017	CJR	
1,1,1-Trichloroethane	< 0.35	ug/l	0.35	1.11	1	8260B		7/25/2017	CJR	
1,1,2-Trichloroethane	< 0.65	ug/l	0.65	2.06	1	8260B		7/25/2017	CJR	
Trichloroethene (TCE)	< 0.45	ug/l	0.45	1.43	1	8260B		7/25/2017	CJR	
Trichlorofluoromethane	< 0.64	ug/l	0.64	2.04	1	8260B		7/25/2017	CJR	
1,2,4-Trimethylbenzene	< 1.14	ug/l	1.14	3.63	1	8260B		7/25/2017	CJR	

Project Name EAST 5TH STREET
Project # 4281-016

Invoice # E33300

Lab Code 5033300B
Sample ID TW3
Sample Matrix Water
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
1,3,5-Trimethylbenzene	< 0.91	ug/l	0.91	2.9	1	8260B		7/25/2017	CJR	I
Vinyl Chloride	< 0.19	ug/l	0.19	0.62	1	8260B		7/25/2017	CJR	I
m&p-Xylene	< 1.56	ug/l	1.56	4.95	1	8260B		7/25/2017	CJR	I
o-Xylene	< 0.39	ug/l	0.39	1.25	1	8260B		7/25/2017	CJR	I
SUR - Dibromofluoromethane	105	REC %			1	8260B		7/25/2017	CJR	I
SUR - 1,2-Dichloroethane-d4	94	REC %			1	8260B		7/25/2017	CJR	I
SUR - 4-Bromofluorobenzene	91	REC %			1	8260B		7/25/2017	CJR	I
SUR - Toluene-d8	91	REC %			1	8260B		7/25/2017	CJR	I

Project Name EAST 5TH STREET
Project # 4281-016

Invoice # E33300

Lab Code 5033300C
Sample ID TW5
Sample Matrix Water
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Organic										
VOC's										
Benzene	< 0.17	ug/l	0.17	0.55	1	8260B		7/25/2017	CJR	I
Bromobenzene	< 0.43	ug/l	0.43	1.37	1	8260B		7/25/2017	CJR	I
Bromodichloromethane	< 0.31	ug/l	0.31	1	1	8260B		7/25/2017	CJR	I
Bromoform	< 0.49	ug/l	0.49	1.56	1	8260B		7/25/2017	CJR	I
tert-Butylbenzene	< 0.39	ug/l	0.39	1.23	1	8260B		7/25/2017	CJR	I
sec-Butylbenzene	< 0.24	ug/l	0.24	0.76	1	8260B		7/25/2017	CJR	I
n-Butylbenzene	< 0.34	ug/l	0.34	1.08	1	8260B		7/25/2017	CJR	I
Carbon Tetrachloride	< 0.21	ug/l	0.21	0.68	1	8260B		7/25/2017	CJR	I
Chlorobenzene	< 0.27	ug/l	0.27	0.86	1	8260B		7/25/2017	CJR	I
Chloroethane	< 0.5	ug/l	0.5	1.6	1	8260B		7/25/2017	CJR	I
Chloroform	< 0.96	ug/l	0.96	3.04	1	8260B		7/25/2017	CJR	I
Chloromethane	< 1.3	ug/l	1.3	4.15	1	8260B		7/25/2017	CJR	I
2-Chlorotoluene	< 0.36	ug/l	0.36	1.15	1	8260B		7/25/2017	CJR	I
4-Chlorotoluene	< 0.35	ug/l	0.35	1.11	1	8260B		7/25/2017	CJR	I
1,2-Dibromo-3-chloropropane	< 1.88	ug/l	1.88	5.98	1	8260B		7/25/2017	CJR	I
Dibromochloromethane	< 0.45	ug/l	0.45	1.44	1	8260B		7/25/2017	CJR	I
1,4-Dichlorobenzene	< 0.42	ug/l	0.42	1.34	1	8260B		7/25/2017	CJR	I
1,3-Dichlorobenzene	< 0.45	ug/l	0.45	1.43	1	8260B		7/25/2017	CJR	I
1,2-Dichlorobenzene	< 0.34	ug/l	0.34	1.09	1	8260B		7/25/2017	CJR	I
Dichlorodifluoromethane	< 0.38	ug/l	0.38	1.2	1	8260B		7/25/2017	CJR	I
1,2-Dichloroethane	< 0.45	ug/l	0.45	1.43	1	8260B		7/25/2017	CJR	I
1,1-Dichloroethane	< 0.42	ug/l	0.42	1.34	1	8260B		7/25/2017	CJR	I
1,1-Dichloroethene	< 0.46	ug/l	0.46	1.47	1	8260B		7/25/2017	CJR	I
cis-1,2-Dichloroethene	< 0.41	ug/l	0.41	1.29	1	8260B		7/25/2017	CJR	I
trans-1,2-Dichloroethene	< 0.35	ug/l	0.35	1.12	1	8260B		7/25/2017	CJR	I
1,2-Dichloropropane	< 0.39	ug/l	0.39	1.24	1	8260B		7/25/2017	CJR	I
1,3-Dichloropropane	< 0.49	ug/l	0.49	1.55	1	8260B		7/25/2017	CJR	I
trans-1,3-Dichloropropene	< 0.42	ug/l	0.42	1.33	1	8260B		7/25/2017	CJR	I
cis-1,3-Dichloropropene	< 0.21	ug/l	0.21	0.65	1	8260B		7/25/2017	CJR	I
Di-isopropyl ether	< 0.26	ug/l	0.26	0.83	1	8260B		7/25/2017	CJR	I
EDB (1,2-Dibromoethane)	< 0.34	ug/l	0.34	1.09	1	8260B		7/25/2017	CJR	I
Ethylbenzene	< 0.2	ug/l	0.2	0.63	1	8260B		7/25/2017	CJR	I
Hexachlorobutadiene	< 1.47	ug/l	1.47	4.68	1	8260B		7/25/2017	CJR	I
Isopropylbenzene	< 0.29	ug/l	0.29	0.93	1	8260B		7/25/2017	CJR	I
p-Isopropyltoluene	< 0.28	ug/l	0.28	0.91	1	8260B		7/25/2017	CJR	I
Methylene chloride	< 0.94	ug/l	0.94	2.98	1	8260B		7/25/2017	CJR	I
Methyl tert-butyl ether (MTBE)	< 0.82	ug/l	0.82	2.6	1	8260B		7/25/2017	CJR	I
Naphthalene	< 2.17	ug/l	2.17	6.9	1	8260B		7/25/2017	CJR	I
n-Propylbenzene	< 0.19	ug/l	0.19	0.62	1	8260B		7/25/2017	CJR	I
1,1,2,2-Tetrachloroethane	< 0.69	ug/l	0.69	2.21	1	8260B		7/25/2017	CJR	I
1,1,1,2-Tetrachloroethane	< 0.47	ug/l	0.47	1.48	1	8260B		7/25/2017	CJR	I
Tetrachloroethene	1.62	ug/l	0.48	1.52	1	8260B		7/25/2017	CJR	I
Toluene	< 0.67	ug/l	0.67	2.13	1	8260B		7/25/2017	CJR	I
1,2,4-Trichlorobenzene	< 1.29	ug/l	1.29	4.1	1	8260B		7/25/2017	CJR	I
1,2,3-Trichlorobenzene	< 0.83	ug/l	0.83	2.63	1	8260B		7/25/2017	CJR	I
1,1,1-Trichloroethane	< 0.35	ug/l	0.35	1.11	1	8260B		7/25/2017	CJR	I
1,1,2-Trichloroethane	< 0.65	ug/l	0.65	2.06	1	8260B		7/25/2017	CJR	I
Trichloroethene (TCE)	< 0.45	ug/l	0.45	1.43	1	8260B		7/25/2017	CJR	I
Trichlorofluoromethane	< 0.64	ug/l	0.64	2.04	1	8260B		7/25/2017	CJR	I
1,2,4-Trimethylbenzene	< 1.14	ug/l	1.14	3.63	1	8260B		7/25/2017	CJR	I

Project Name EAST 5TH STREET
Project # 4281-016

Invoice # E33300

Lab Code 5033300C
Sample ID TW5
Sample Matrix Water
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
1,3,5-Trimethylbenzene	< 0.91	ug/l	0.91	2.9	1	8260B		7/25/2017	CJR	1
Vinyl Chloride	< 0.19	ug/l	0.19	0.62	1	8260B		7/25/2017	CJR	1
m&p-Xylene	< 1.56	ug/l	1.56	4.95	1	8260B		7/25/2017	CJR	1
o-Xylene	< 0.39	ug/l	0.39	1.25	1	8260B		7/25/2017	CJR	1
SUR - Toluene-d8	93	REC %			1	8260B		7/25/2017	CJR	1
SUR - 1,2-Dichloroethane-d4	107	REC %			1	8260B		7/25/2017	CJR	1
SUR - 4-Bromofluorobenzene	90	REC %			1	8260B		7/25/2017	CJR	1
SUR - Dibromofluoromethane	106	REC %			1	8260B		7/25/2017	CJR	1

Project Name EAST 5TH STREET
Project # 4281-016

Invoice # E33300

Lab Code 5033300D
Sample ID TW6
Sample Matrix Water
Sample Date 7/20/2017

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Organic										
VOC's										
Benzene	< 0.17	ug/l	0.17	0.55	1	8260B		7/26/2017	CJR	I
Bromobenzene	< 0.43	ug/l	0.43	1.37	1	8260B		7/26/2017	CJR	I
Bromodichloromethane	< 0.31	ug/l	0.31	1	1	8260B		7/26/2017	CJR	I
Bromoform	< 0.49	ug/l	0.49	1.56	1	8260B		7/26/2017	CJR	I
tert-Butylbenzene	< 0.39	ug/l	0.39	1.23	1	8260B		7/26/2017	CJR	I
sec-Butylbenzene	< 0.24	ug/l	0.24	0.76	1	8260B		7/26/2017	CJR	I
n-Butylbenzene	< 0.34	ug/l	0.34	1.08	1	8260B		7/26/2017	CJR	I
Carbon Tetrachloride	< 0.21	ug/l	0.21	0.68	1	8260B		7/26/2017	CJR	I
Chlorobenzene	< 0.27	ug/l	0.27	0.86	1	8260B		7/26/2017	CJR	I
Chloroethane	< 0.5	ug/l	0.5	1.6	1	8260B		7/26/2017	CJR	I
Chloroform	< 0.96	ug/l	0.96	3.04	1	8260B		7/26/2017	CJR	I
Chloromethane	< 1.3	ug/l	1.3	4.15	1	8260B		7/26/2017	CJR	I
2-Chlorotoluene	< 0.36	ug/l	0.36	1.15	1	8260B		7/26/2017	CJR	I
4-Chlorotoluene	< 0.35	ug/l	0.35	1.11	1	8260B		7/26/2017	CJR	I
1,2-Dibromo-3-chloropropane	< 1.88	ug/l	1.88	5.98	1	8260B		7/26/2017	CJR	I
Dibromochloromethane	< 0.45	ug/l	0.45	1.44	1	8260B		7/26/2017	CJR	I
1,4-Dichlorobenzene	< 0.42	ug/l	0.42	1.34	1	8260B		7/26/2017	CJR	I
1,3-Dichlorobenzene	< 0.45	ug/l	0.45	1.43	1	8260B		7/26/2017	CJR	I
1,2-Dichlorobenzene	< 0.34	ug/l	0.34	1.09	1	8260B		7/26/2017	CJR	I
Dichlorodifluoromethane	< 0.38	ug/l	0.38	1.2	1	8260B		7/26/2017	CJR	I
1,2-Dichloroethane	< 0.45	ug/l	0.45	1.43	1	8260B		7/26/2017	CJR	I
1,1-Dichloroethane	< 0.42	ug/l	0.42	1.34	1	8260B		7/26/2017	CJR	I
1,1-Dichloroethene	< 0.46	ug/l	0.46	1.47	1	8260B		7/26/2017	CJR	I
cis-1,2-Dichloroethene	1.76	ug/l	0.41	1.29	1	8260B		7/26/2017	CJR	I
trans-1,2-Dichloroethene	< 0.35	ug/l	0.35	1.12	1	8260B		7/26/2017	CJR	I
1,2-Dichloropropane	< 0.39	ug/l	0.39	1.24	1	8260B		7/26/2017	CJR	I
1,3-Dichloropropane	< 0.49	ug/l	0.49	1.55	1	8260B		7/26/2017	CJR	I
trans-1,3-Dichloropropene	< 0.42	ug/l	0.42	1.33	1	8260B		7/26/2017	CJR	I
cis-1,3-Dichloropropene	< 0.21	ug/l	0.21	0.65	1	8260B		7/26/2017	CJR	I
Di-isopropyl ether	< 0.26	ug/l	0.26	0.83	1	8260B		7/26/2017	CJR	I
EDB (1,2-Dibromoethane)	< 0.34	ug/l	0.34	1.09	1	8260B		7/26/2017	CJR	I
Ethylbenzene	< 0.2	ug/l	0.2	0.63	1	8260B		7/26/2017	CJR	I
Hexachlorobutadiene	< 1.47	ug/l	1.47	4.68	1	8260B		7/26/2017	CJR	I
Isopropylbenzene	< 0.29	ug/l	0.29	0.93	1	8260B		7/26/2017	CJR	I
p-Isopropyltoluene	< 0.28	ug/l	0.28	0.91	1	8260B		7/26/2017	CJR	I
Methylene chloride	< 0.94	ug/l	0.94	2.98	1	8260B		7/26/2017	CJR	I
Methyl tert-butyl ether (MTBE)	< 0.82	ug/l	0.82	2.6	1	8260B		7/26/2017	CJR	I
Naphthalene	< 2.17	ug/l	2.17	6.9	1	8260B		7/26/2017	CJR	I
n-Propylbenzene	< 0.19	ug/l	0.19	0.62	1	8260B		7/26/2017	CJR	I
1,1,2,2-Tetrachloroethane	< 0.69	ug/l	0.69	2.21	1	8260B		7/26/2017	CJR	I
1,1,1,2-Tetrachloroethane	< 0.47	ug/l	0.47	1.48	1	8260B		7/26/2017	CJR	I
Tetrachloroethene	< 0.48	ug/l	0.48	1.52	1	8260B		7/26/2017	CJR	I
Toluene	< 0.67	ug/l	0.67	2.13	1	8260B		7/26/2017	CJR	I
1,2,4-Trichlorobenzene	< 1.29	ug/l	1.29	4.1	1	8260B		7/26/2017	CJR	I
1,2,3-Trichlorobenzene	< 0.83	ug/l	0.83	2.63	1	8260B		7/26/2017	CJR	I
1,1,1-Trichloroethane	< 0.35	ug/l	0.35	1.11	1	8260B		7/26/2017	CJR	I
1,1,2-Trichloroethane	< 0.65	ug/l	0.65	2.06	1	8260B		7/26/2017	CJR	I
Trichloroethene (TCE)	< 0.45	ug/l	0.45	1.43	1	8260B		7/26/2017	CJR	I
Trichlorofluoromethane	< 0.64	ug/l	0.64	2.04	1	8260B		7/26/2017	CJR	I
1,2,4-Trimethylbenzene	< 1.14	ug/l	1.14	3.63	1	8260B		7/26/2017	CJR	I

Project Name EAST 5TH STREET
Project # 4281-016

Invoice # E33300

Lab Code 5033300D
Sample ID TW6
Sample Matrix Water
Sample Date 7/20/2017

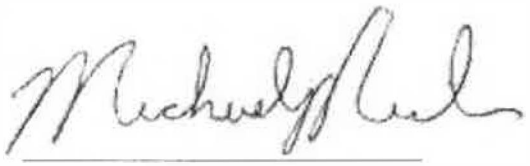
	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
1,3,5-Trimethylbenzene	< 0.91	ug/l	0.91	2.9	1	8260B		7/26/2017	CJR	1
Vinyl Chloride	< 0.19	ug/l	0.19	0.62	1	8260B		7/26/2017	CJR	1
m&p-Xylene	< 1.56	ug/l	1.56	4.95	1	8260B		7/26/2017	CJR	1
o-Xylene	< 0.39	ug/l	0.39	1.25	1	8260B		7/26/2017	CJR	1
SUR - Toluene-d8	102	REC %			1	8260B		7/26/2017	CJR	1
SUR - 1,2-Dichloroethane-d4	103	REC %			1	8260B		7/26/2017	CJR	1
SUR - 4-Bromofluorobenzene	103	REC %			1	8260B		7/26/2017	CJR	1
SUR - Dibromofluoromethane	104	REC %			1	8260B		7/26/2017	CJR	1

"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



Robert E. Lee & Associates, Inc.
Engineering, Surveying, Environmental Services
1250 Centennial Centre Blvd.
Hobart, WI 54155
920.662.9641 FAX 920.662.9411

To ensure the proper handling of samples, please see the back for instructions.

CHAIN OF CUSTODY RECORD

COC # 202267

Client: Cedar Corp
Project Name: East 5th Street
Project Number: 4281-016 | BID #: 8330

Environmental Program:
☐ LUST ☐ SDWA ☐ WPDES ☐ RCRA ☐ OTHER ____

Requested Turnaround Time
☒ Normal (10 15 DAYS) ☐ Rush
Date Needed: ____
Rushes accepted only w/prior notification

*Preservation Code
N = Nitric Acid (red) O = Sodium Hydroxide
H = Hydrochloric Acid U = Unpreserved (white)
M = Methanol S = Sulfuric Acid (green)

Sampler: Nicole LaPlant

Sample Type (Matrix)
DW = Drinking Water
GW = Groundwater
WW = Wastewater
Soil, Oil, Sludge, Air, Other

Analyses Required:
(Note special detection limits or methods)

Sample Name	Date	Time	A/P	Comp	Grab	Sample Type	No. Of Containers	Filtered? (Y/N)	Preservation *(Code)	VOC	Laboratory Sample I.D.	Remarks:
TW1	7/20/17	10:25	A/P		X	GW	3	N	H	X	[illegible]	503320 A
TW3	"	11:20	A/P		X	"	"	"	"	X		B
TW5	"	12:35	A/P		X	"	"	"	"	X		C
TW6	"	13:15	A/P		X	"	"	"	"	X		D
			A/P									
			A/P									
			A/P									
			A/P									
			A/P									
			A/P									
			A/P									
			A/P									

Report to: Nicole LaPlant
Company: Robert E. Lee & Associates
Address: 1250 Centennial Centre Blvd.
Hobart, WI 54155
Telephone: 920-662-9641

Invoice to: Nicole LaPlant
Company: Robert E. Lee & Associates
Address: 1250 Centennial Centre Blvd.
Hobart, WI 54155
Telephone: 920-662-9641

Relinquished By	Date	Time	Received By	Date	Time
1) Dan Gustafson	7/21/17	11:22 A/P	Grace Christen	7/21/17	11:32 A/P
2)		A/P			A/P
3)		A/P			A/P

Received by Lab ____ A = AM P = PM

Laboratory Receiving Notes
Temperature of Contents 4 °C
Custody Seal Intact YES
Sample Condition good
Sample pH ____