
PREPARED BY

EnviroForensics, LLC
P.O. Box 128
Oconomowoc, WI 53066



January 2, 2024

Wisconsin Department of Natural Resources
2984 Shawano Ave
Green Bay, WI 54313-6727

**Subject: Supplemental Further Investigative Work Scope
Former Algoma Cleaners
111 Steele Street
Algoma, WI 54201
BRRTS# 02-31-564071 (Allyn Property)**

Dear Ms. Campoli:

EnviroForensics, LLC (EnviroForensics) is providing you with this Supplemental Further Site Investigation (FSI) Work Scope to conduct additional site investigation activities at Algoma Cleaners, formerly located at 111 Steele Street in Algoma, Wisconsin (Site). This work scope is supplemental to the Further Investigation Work Scope presented by us on August 10, 2022.

The purpose of this additional investigative work is to determine the degree and extent of groundwater and possible soil vapor impacts based on the current site data. The Site layout and surrounding properties along with the current extent of groundwater impacts are depicted on **Figure 1**.

We have substantially completed the original work as proposed in our August 10, 2022 work scope document. However, we feel that additional work is required to determine the extent of impacts which may lead to groundwater use restrictions or other restrictions related to vapor intrusion for additional off-site properties. This work should be completed before we issue our site investigation report (SIR).

We have not completed the final round of groundwater monitoring as proposed in our previous work scope because all concentrations of chlorinated volatile organic compounds (CVOCs) in the existing monitoring wells over the past three or more monitoring events are stable.

We propose to install four (4) new groundwater monitoring wells at the proposed locations shown in red on **Figure 1**. We are planning to sample the new wells at least twice depending on the results of the initial round of sampling and perform another round of sampling for all site monitoring wells.

It is hopeful that the data from these wells will define the extent of groundwater impacts and will not implicate further properties for vapor intrusion sampling.

We also intend to further evaluate the vapor intrusion risk to adjacent properties within close proximity to site soil impacts or the groundwater plume where concentrations in groundwater exceed the groundwater enforcement standard (ES).

We understand that this additional data will be needed for eventual case closure.

FURTHER SITE INVESTIGATION ACTIVITIES

Access Coordination

EnviroForensics will consult with City of Algoma officials to determine if City owned property can be accessed and what requirements are needed. In addition, access will be needed from current private property owners where wells will be installed and vapor sampling will be performed.

Monitoring Well Installation, Development, and Sampling

Two (2) temporary wells (TW-1 and TW-2), eight (8) water table monitoring wells designated MW-1 through MW-8 and two (2) piezometers (PZ-1 and PZ-2) were installed during previous phases of the Site investigation at the locations depicted on **Figure 1**. The lateral extent of the CVOC plume is not defined either up-gradient or down-gradient to the direction of groundwater flow by the existing well network.

EnviroForensics proposes to direct the installation of four (4) additional monitoring wells to further delineate the CVOC impacts in groundwater. The new water table wells will be labeled MW-9 through MW-12.

The monitoring wells are proposed at the following locations:

- One (1) water table monitoring well located northwest of existing well MW-7 to define the extent of CVOC impacts in the down-gradient direction of groundwater flow, and determine if additional vapor screening is needed to evaluate the potential risk of vapor intrusion to the adjacent residential condominium complex at 123 Navarino Street.
- One (1) water table monitoring well located further down-gradient near the existing commercial building located at 248 2nd Street to determine the overall extent of groundwater impacts in the down-gradient direction of groundwater flow. We will

attempt to located this well on City of Algoma right of way adjacent to an existing bike path.

- Two (2) water table monitoring wells spaced along 2nd Street to determine the up-gradient extent of groundwater impacts above the enforcement standard (ES) detected in existing monitoring wells MW-1 and MW-2.

Direct-push borings will be performed initially at each proposed well location to log soil lithology. The borings will be advanced to the water table. The borings will then be over-drilled using a 4.25-inch inner diameter hollow-stem auger (HSA) to facilitate well installation. Soil cuttings will be staged in 55-gallon steel drums pending characterization for off-site disposal.

Wells will be constructed of 2-inch diameter, 0.010-inch slotted PVC well screen, with PVC riser extending to the ground surface. The water table wells will be constructed with 10-foot long screens that intersect the water table. Sand pack materials will be placed from the bottom of the screen up to two feet above the well screen. A bentonite seal will extend from the top of the sand pack to approximately 1 foot below ground surface. Expandable locking caps and locks will be placed on each well. Flush-mount well boxes will be installed to protect the wells.

Upon completing the installation of the new monitoring wells, a licensed surveyor will record the elevation and location of each monitoring well by standard surveying methods. A vertical elevation survey will be conducted to establish the elevation of each monitoring well relative to above mean sea level (amsl). The horizontal and vertical grid coordinates of each monitoring well will be recorded to within 0.5 foot and 0.01 foot, respectively. Horizontal coordinates will be referenced to the State Plane Coordinate System.

Well Development

The newly installed monitoring wells will be developed in accordance with the procedures and requirements detailed in WAC Chapter NR 141. The wells will be surged with a surge block and pumped during the development process to remove fines from the sand pack until the water runs clear or 10 well volumes are removed. If the monitoring well(s) can be purged dry, the well(s) will be surged and then slowly purged dry using a disposable bailer(s). Non-dedicated development equipment will be decontaminated between each monitoring well. Development water will be temporarily stored in 55-gallon drums for categorization and disposal.

Groundwater Sampling

EnviroForensics proposes to conduct two (2) groundwater sampling events of the new wells and one (1) additional event of the entire monitoring well network that will include depth to

water measurements and sample collection to track contaminant trends. Once the new monitoring wells are installed, the monitoring network will consist of twelve (12) shallow water table wells and two (2) deeper piezometers.

Well caps will be removed at least 15 minutes prior to collecting water level measurements to allow groundwater in the monitoring well to equilibrate with the atmospheric pressure. The depth to water in each well will be measured to the nearest 0.01 of a foot using an electronic sounding device and recorded on sampling forms prior to sample collection activities.

EnviroForensics anticipates groundwater purging and sampling using standard low-flow methods. If low-flow methods are not suitable due to limited recharge rates, purging and sampling will be completed using new, disposable bailers. Field parameters including pH, specific conductivity, temperature, oxidation-reduction potential (ORP), and dissolved oxygen (DO) will be measured during purging and recorded on a field sampling form. Wells that purge dry will be allowed to recharge for a minimum of four (4) hours prior to sample collection.

Groundwater samples will be transferred directly into laboratory-provided containers containing hydrochloric acid preservative and placed into a cooler with ice. Samples will be submitted under appropriate chain-of-custody procedures to a state-certified laboratory for analysis of VOCs according to U.S. EPA SW Method 8260. For quality assurance/quality control (QA/QC) purposes, duplicate and equipment blank samples will be collected at a frequency of one (1) sample per ten (10) investigative samples during each monitoring event. Purge water will be temporarily stored in 55-gallon drums.

Vapor Intrusion Assessments

The sanitary sewer main has been ruled out as a vapor migration path based on past sampling results. The vapor intrusion risk to the Site building has been mitigated by installation and operation of a sub-slab depressurization system (SSDS). Additional actions to address data gaps related to investigation of the vapor intrusion pathway are proposed below.

Off-Site Property Assessment

Per WDNR Publication RR-800: *Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin*, the risk of vapor intrusion must be assessed in buildings that are within 100 feet of unsaturated soil contaminated with chlorinated volatile organic compounds (CVOCs), overlie groundwater with CVOC concentrations above enforcement standards (ESs), or where groundwater with CVOC concentrations above the preventive action limit (PAL) contacts the building foundation.

Additional vapor intrusion assessments will be based on the distances from soil impacts and whether buildings are located above groundwater impacts greater than the ES (refer to attached **Figure 1** showing groundwater impacts and **Figure 2** showing soil impacts). Our initial assessment based on existing data is as follows:

1. The commercial structure adjacent to and north of the Site building is within 100 feet of soil contaminated with CVOCs. This building has the address of 420 2nd Street on **Figure 1**, and may consist of several structures or additions having separate foundations. Due to its location adjacent to the subject Site (which has an operating SSDS). It is likely that any vapors from soil source materials are being controlled by the Site SSDS. However, to rule out a vapor intrusion risk, we recommend to install two sub-slab ports within the southeast portion of that building as shown on **Figure 3** to measure negative pressures that may be induced by the SSDS. If negative pressure is not detected, then sub-slab vapor samples should be collected from those ports on two (2) occasions, once during the heating months and once during the non-heating months. If negative pressure is detected, then the SSDS should be shut down for 2-4 weeks prior to collecting the sub-slab samples;
2. The commercial structure located at 117 Steele Street had one sub-slab sample collected from location VP-103 shown located on **Figure 2** and attached **Figure 3**. This sample did not contain CVOCs in concentrations exceeding residential vapor risk screening levels (VRSLs). However, WDNR requires a minimum of two samples (one during the heating months and one during the non-heating months) to rule out a vapor risk and an additional sample location for the size of the building. Therefore, one (1) additional vapor port will be installed as shown on **Figure 3**. Vapor port VP-103 will be sampled once more in the non-heating months and new vapor port will be sampled twice, once in the heating months and once in the non-heating months;
3. The residential structure located at 109 Steele Street to the east of the Site was sampled once during the heating months and did not contain CVOCs in concentrations exceeding the residential VRSLs. Samples should be collected from existing locations VP-101 and VP-102 shown on **Figure 3** again in the non-heating months to confirm that there is no vapor risk;
4. The commercial structure located at 422 2nd Street further to the west of the Site building is within 100 feet of soil impacts. If the new water table wells located along 2nd Street do not contain concentrations of CVOCs above the ES, and the vapor results from samples collected from the building at 117 Steele Street do not contain concentrations of CVOCs above the VRSL, then additional vapor sampling at this building will not be warranted; and

5. The residential condominium complex located at 123 Navarino Street is down-gradient of groundwater impacts but greater than 100 feet from soil impacts. If the new proposed well adjacent to this building does not contain groundwater impacts greater than the ES, then vapor sampling of this building complex is not warranted.

Indoor Air Sampling

Although the WDNR recommends sampling indoor air paired with sampling sub-slab vapor, we are not proposing to sample indoor air at this time. We do not feel that sampling of indoor air is warranted at this time because of the low, residual, concentrations of CVOCs in soil and groundwater, the fact that previous sub-slab samples of adjacent structures have had very minimal detections of CVOCs, and for cost concerns. If the results of future sub-slab sampling indicate higher concentrations of CVOCs than past results, then we will re-evaluate the need for additional indoor air sampling.

Sub-Slab Vapor Sampling

Stainless steel Vapor Pin[®] sub-slab vapor sampling ports will be installed to facilitate vapor sample collection. Either temporary or permanent ports will be installed depending on access permissions and slab integrity. To ensure that the sub-slab vapor samples are representative of subsurface conditions, water dam leak testing will be performed at each sample port. The integrity of the sample tubing and fittings will be verified prior to sample collection by conducting a negative pressure test.

All samples will be collected through dedicated polyethylene tubing connected to the sub-slab vapor sampling port. Ambient air will be purged from the tubing prior to initiating sample collection. Vapor beneath the concrete slab will then be drawn into a 1-liter vacuum canister fitted with a laboratory supplied regulator that limits the flow rate to approximately 200 milliliters per minute (mL/min). Samples will be identified by project number, address, and unique ID (e.g., 200036-115-SSV-1). Following the completion of sampling activities, the canisters will be submitted to an environmental laboratory for analysis of select VOCs related to dry cleaning solvent according to U.S. EPA Method TO-15. The analytical results of the sub-slab vapor samples will be compared to Vapor Risk Screening Levels (VRSLs) established by WDNR.

Sample Results Notifications

Following each VI sampling event, EnviroForensics will prepare a sample results notification for the property owner in accordance with WDNR regulations. The letter-format notifications will

include a description of the sampling procedures, a figure depicting the sample locations, and a results summary table with comparisons to WDNR screening/action levels.

Investigation-Derived Media Management

Investigation-derived media (IDM) will consist of soil cuttings and groundwater generated during well development and purging prior to sample collection. Soil cuttings and groundwater will be placed in separate 55-gallon steel drums. Two (2) composite soil samples will be collected for profiling. Groundwater analytical results will be used for characterization and profiling. Based on the concentrations of contaminants detected in previous soil and monitoring well samples, EnviroForensics anticipates that all IDM will be characterized as non-hazardous. The cost estimate does not include disposal of any hazardous waste. A licensed contractor will be retained to transfer the IDM off-site for proper disposal.

Data Evaluation

The soil sample and groundwater monitoring data will be evaluated and summarized with comparison to regulatory standards as laboratory results are received. Data summary tables and preliminary figures will be generated for purposes of data visualization and discussion with project stakeholders. Further data analysis and interpretation will be incorporated into future work plans, as needed, and into a comprehensive report to be prepared at the conclusion of the Site investigation.

SCHEDULE

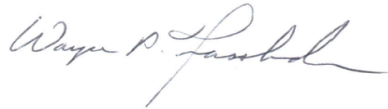
Field activities will be combined as much as possible to minimize the number of mobilizations:

1. Access coordination will begin immediately upon authorization to proceed, along with contracting and scheduling for private utility clearance, drilling, surveying, and IDM management;
2. Monitoring well installation and development can be completed within 6-8 weeks of gaining property access;
3. The first round of groundwater sampling and the first sub-slab vapor intrusion assessment sampling event will be performed in the non-heating month of May, 2024;
4. The second round of groundwater sampling and the second vapor intrusion sampling event will be performed during the heating month of December, 2024;
5. Results reports will be prepared and submitted to the WDNR and off-site property owners within 10 days of receiving the analytical laboratory reports;

6. A final SIR update will be provided 60 days of receiving final groundwater and vapor analytical data;
7. IDM will be removed from the Site as soon as permitting is completed and pick up can be arranged; and
8. Data evaluation and project management will be ongoing.

If you have any questions or require additional information, please do not hesitate to contact me at (262) 490-6472 or wfassbender@enviroforensics.com.

Sincerely,
EnviroForensics, LLC

A handwritten signature in black ink that reads "Wayne P. Fassbender".

Wayne Fassbender, PG
Senior Project Manager

Attachments

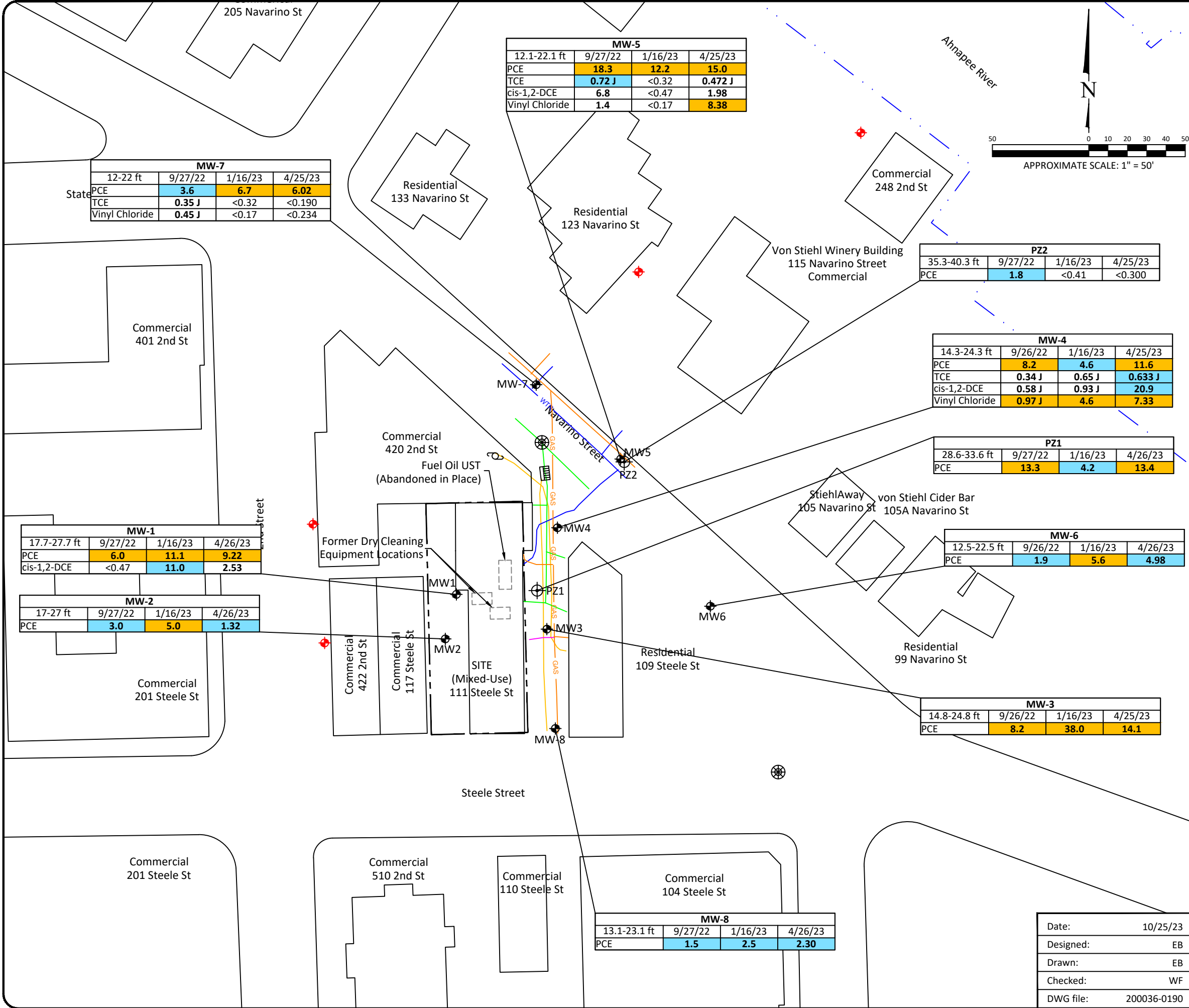
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Figure 1 – Extent of Groundwater Impacts Showing the Proposed Locations of New Monitoring Wells

Figure 2 – Source Area Delineation Boring Locations and Soil Sample Results

Figure 3 – Vapor Intrusion Analytical Results Map With Proposed Locations of Additional Sub-Slab Vapor Ports

Copy: John Emery, Algoma Cleaners
Andrew Skwierawski, Halling & Cayo, S.C.



MW-5			
12.1-22.1 ft	9/27/22	1/16/23	4/25/23
PCE	18.3	12.2	15.0
TCE	0.72 J	<0.32	0.472 J
cis-1,2-DCE	6.8	<0.47	1.98
Vinyl Chloride	1.4	<0.17	8.38

MW-7			
12-22 ft	9/27/22	1/16/23	4/25/23
PCE	3.6	6.7	6.02
TCE	0.35 J	<0.32	<0.190
Vinyl Chloride	0.45 J	<0.17	<0.234

MW-1			
17.7-27.7 ft	9/27/22	1/16/23	4/26/23
PCE	6.0	11.1	9.22
cis-1,2-DCE	<0.47	11.0	2.53

MW-2			
17-27 ft	9/27/22	1/16/23	4/26/23
PCE	3.0	5.0	1.32

PZ2			
35.3-40.3 ft	9/27/22	1/16/23	4/25/23
PCE	1.8	<0.41	<0.300

MW-4			
14.3-24.3 ft	9/26/22	1/16/23	4/25/23
PCE	8.2	4.6	11.6
TCE	0.34 J	0.65 J	0.633 J
cis-1,2-DCE	0.58 J	0.93 J	20.9
Vinyl Chloride	0.97 J	4.6	7.33

PZ1			
28.6-33.6 ft	9/27/22	1/16/23	4/26/23
PCE	13.3	4.2	13.4

MW-6			
12.5-22.5 ft	9/26/22	1/16/23	4/26/23
PCE	1.9	5.6	4.98

MW-3			
14.8-24.8 ft	9/26/22	1/16/23	4/25/23
PCE	8.2	38.0	14.1

MW-8			
13.1-23.1 ft	9/27/22	1/16/23	4/26/23
PCE	1.5	2.5	2.30

Legend

- Property boundary
- GAS
- WTR
- UGT
- STM
- Unknown utility
- Utility Pole
- Catch Basin
- Manhole
- MW-1
- PZ1
- Proposed monitoring well location

Analyte	Public Health Preventive Action Limit	Public Health Enforcement Standard
PCE	0.5	5
TCE	0.5	5
cis-1,2-DCE	7	70
Vinyl Chloride	0.02	0.2

- Note:
- Bolded and orange shaded values exceed the Public Health Enforcement Standard
 - Bolded and blue shaded values exceed the Public Health Preventive Action Limit
 - Bolded values are above detection limits
 - J = Analyte concentration less than laboratory detection limits
 - Samples analyzed using EPA SW-846 Method 8260
 - All results reported in units of micrograms per liter (µg/L)
 - PCE = Tetrachloroethene
 - TCE = Trichloroethene
 - cis-1,2-DCE = cis-1,2-Dichloroethene

EXTENT OF GROUNDWATER IMPACTS SHOWING THE PROPOSED LOCATIONS OF NEW MONITORING WELLS

111 Steele Street
Algoma, Wisconsin

Date:	10/25/23
Designed:	EB
Drawn:	EB
Checked:	WF
DWG file:	200036-0190

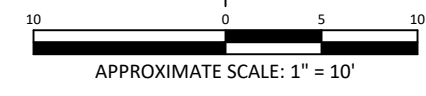


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Figure	1
Project	200036

Legend

- Property boundary
- GAS - Underground gas utility line
- WTR - Underground water utility line
- UGT - Fiber optics line
- STM - Underground storm utility line
- Unknown utility
- Utility Pole
- Catch Basin
- Manhole
- Floor Drain
- MW1 - Monitoring well
- B1 - Soil Boring
- PZ1 - Piezometer
- VP101 - Sub-slab sample



Analyte	Soil to Groundwater Residual Contaminant Level	Residential Residual Contaminant Level	Industrial Residual Contaminant Level
PCE	4.5	33,000	145,000
TCE	3.6	1,300	8,410
cis-1,2-DCE	41.2	156,000	2,340,000

- Note:
- Bolded and blue shaded values exceed the Soil to Groundwater Residual Contaminant Level
 - Bolded values are above detection limits
 - J = Analyte concentration less than laboratory detection limits
 - Samples analyzed using EPA SW-846 Method 8260
 - All results reported in units of micrograms per liter (µg/L)
 - PCE = Tetrachloroethene
 - TCE = Trichloroethene
 - cis-1,2-DCE = cis-1,2-Dichloroethene
 - ND = Not detected
 - VOCs = Violate Organic Compounds

B10			
8/29/22	6-8 ft	10-12 ft	13-15 ft
PCE	194	<39	<39
cis-1,2-DCE	45 J	<27	<27

B11		
8/29/22	2.5-5 ft	5-7 ft
PCE	2,440	<39
TCE	102 J	<39
cis-1,2-DCE	46 J	<27

B9		
8/29/22	4-6 ft	10-12 ft
PCE	60 J	<39

B12		
8/29/22	0.5-2.5 ft	8-10 ft
PCE	2,390	<39

B7		
8/29/22	4-6 ft	12-14 ft
PCE	254	<39

B13		
8/29/22	3-5 ft	8-10 ft
PCE	1,680	<39

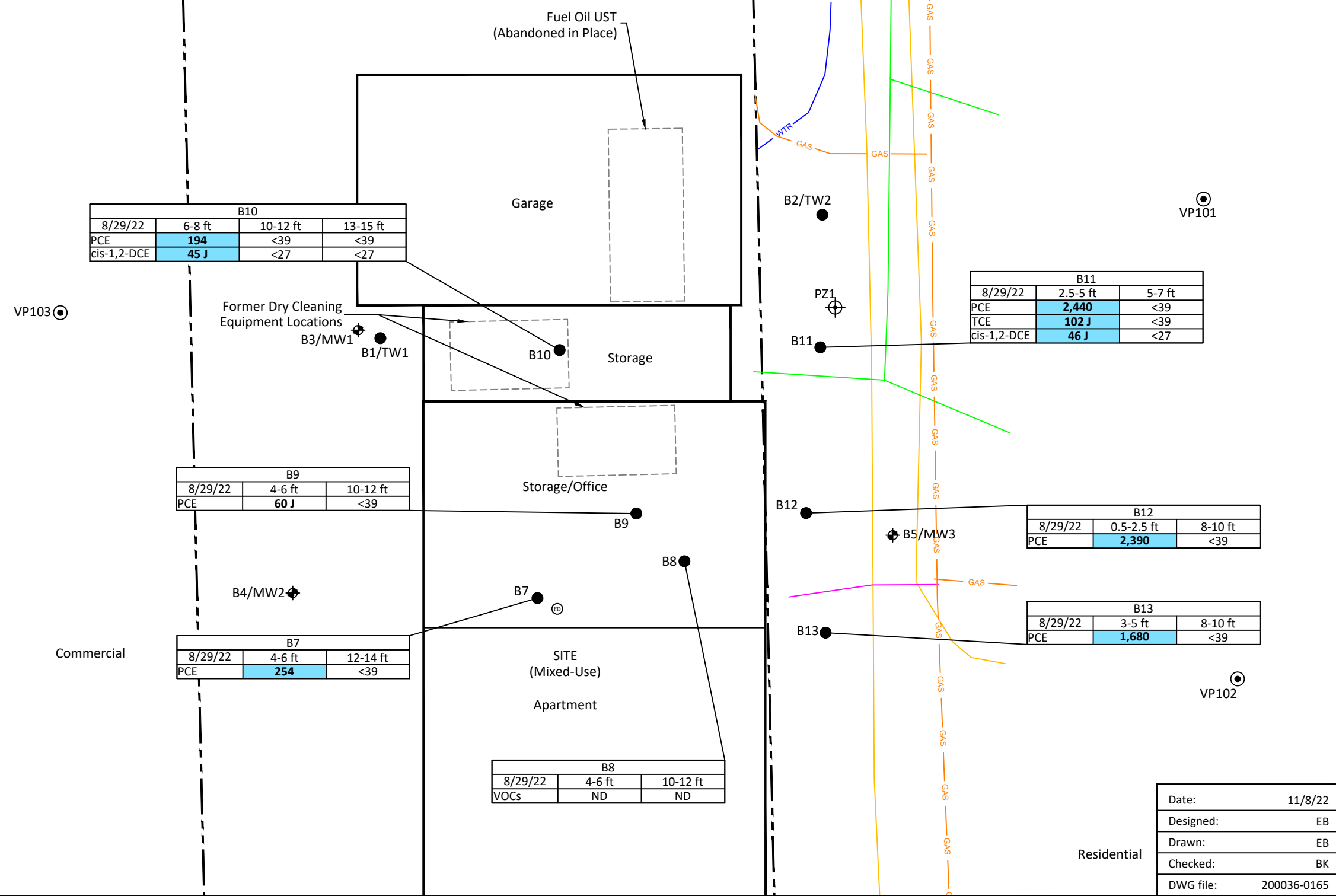
B8		
8/29/22	4-6 ft	10-12 ft
VOCs	ND	ND

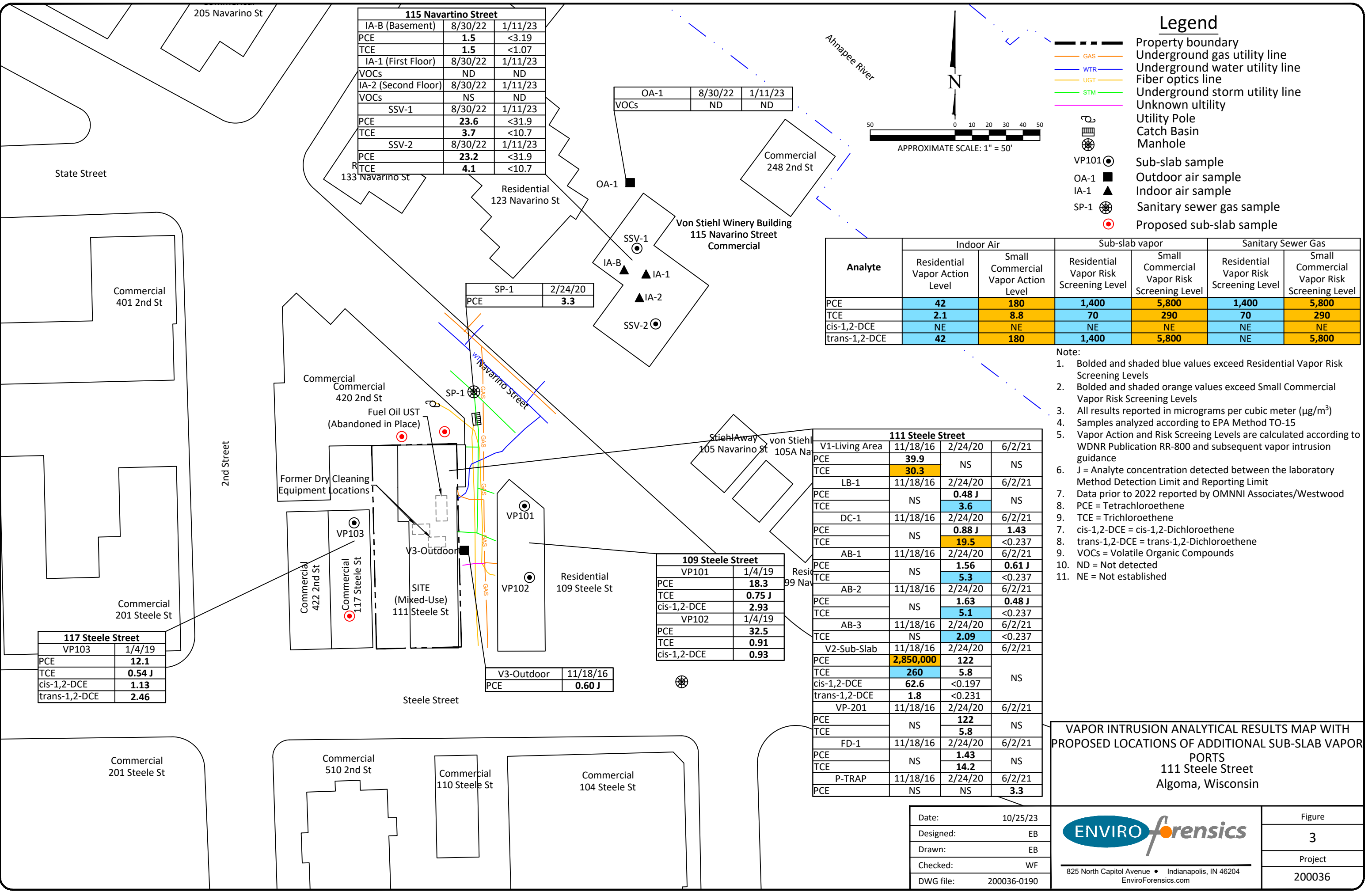
Date:	11/8/22
Designed:	EB
Drawn:	EB
Checked:	BK
DWG file:	200036-0165

SOURCE AREA DELINEATION BORING LOCATIONS AND SOIL SAMPLE RESULTS

111 Steele Street
Algoma, Wisconsin

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	2
	Project
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115 Navarino Street		
IA-B (Basement)	8/30/22	1/11/23
PCE	1.5	<3.19
TCE	1.5	<1.07
IA-1 (First Floor)	8/30/22	1/11/23
VOCs	ND	ND
IA-2 (Second Floor)	8/30/22	1/11/23
VOCs	NS	ND
SSV-1	8/30/22	1/11/23
PCE	23.6	<31.9
TCE	3.7	<10.7
SSV-2	8/30/22	1/11/23
PCE	23.2	<31.9
TCE	4.1	<10.7

OA-1		
VOCs	8/30/22	1/11/23
VOCs	ND	ND

SP-1	
PCE	2/24/20
PCE	3.3

Analyte	Indoor Air		Sub-slab vapor		Sanitary Sewer Gas	
	Residential Vapor Action Level	Small Commercial Vapor Action Level	Residential Vapor Risk Screening Level	Small Commercial Vapor Risk Screening Level	Residential Vapor Risk Screening Level	Small Commercial Vapor Risk Screening Level
PCE	42	180	1,400	5,800	1,400	5,800
TCE	2.1	8.8	70	290	70	290
cis-1,2-DCE	NE	NE	NE	NE	NE	NE
trans-1,2-DCE	42	180	1,400	5,800	NE	5,800

- Note:
1. Bolded and shaded blue values exceed Residential Vapor Risk Screening Levels
 2. Bolded and shaded orange values exceed Small Commercial Vapor Risk Screening Levels
 3. All results reported in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$)
 4. Samples analyzed according to EPA Method TO-15
 5. Vapor Action and Risk Screening Levels are calculated according to WDNR Publication RR-800 and subsequent vapor intrusion guidance
 6. J = Analyte concentration detected between the laboratory Method Detection Limit and Reporting Limit
 7. Data prior to 2022 reported by OMNNI Associates/Westwood
 8. PCE = Tetrachloroethene
 9. TCE = Trichloroethene
 7. cis-1,2-DCE = cis-1,2-Dichloroethene
 8. trans-1,2-DCE = trans-1,2-Dichloroethene
 9. VOCs = Volatile Organic Compounds
 10. ND = Not detected
 11. NE = Not established

117 Steele Street	
VP103	1/4/19
PCE	12.1
TCE	0.54 J
cis-1,2-DCE	1.13
trans-1,2-DCE	2.46

V3-Outdoor	
PCE	11/18/16
PCE	0.60 J

109 Steele Street		
VP101	1/4/19	
PCE	18.3	
TCE	0.75 J	
cis-1,2-DCE	2.93	
VP102	1/4/19	
PCE	32.5	
TCE	0.91	
cis-1,2-DCE	0.93	

111 Steele Street			
V1-Living Area	11/18/16	2/24/20	6/2/21
PCE	39.9	NS	NS
TCE	30.3		
LB-1	11/18/16	2/24/20	6/2/21
PCE	NS	0.48 J	NS
TCE		3.6	NS
DC-1	11/18/16	2/24/20	6/2/21
PCE	NS	0.88 J	1.43
TCE		19.5	<0.237
AB-1	11/18/16	2/24/20	6/2/21
PCE	NS	1.56	0.61 J
TCE	NS	5.3	<0.237
AB-2	11/18/16	2/24/20	6/2/21
PCE	NS	1.63	0.48 J
TCE		5.1	<0.237
AB-3	11/18/16	2/24/20	6/2/21
TCE	NS	2.09	<0.237
V2-Sub-Slab	11/18/16	2/24/20	6/2/21
PCE	2,850,000	122	
TCE	260	5.8	NS
cis-1,2-DCE	62.6	<0.197	
trans-1,2-DCE	1.8	<0.231	
VP-201	11/18/16	2/24/20	6/2/21
PCE	NS	122	NS
TCE		5.8	
FD-1	11/18/16	2/24/20	6/2/21
PCE	NS	1.43	NS
TCE		14.2	
P-TRAP	11/18/16	2/24/20	6/2/21
PCE	NS	NS	3.3

VAPOR INTRUSION ANALYTICAL RESULTS MAP WITH PROPOSED LOCATIONS OF ADDITIONAL SUB-SLAB VAPOR PORTS
111 Steele Street
Algoma, Wisconsin

Date:	10/25/23
Designed:	EB
Drawn:	EB
Checked:	WF
DWG file:	200036-0190



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Figure	3
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