



July 30, 2021

Trevor Bannister
Wisconsin Department of Natural Resources
3911 Fish Hatchery Road
Fitchburg, Wisconsin 53711

**Re: Closure Sampling Plan
Former Day One Former Wear
3939 Lien Road, Madison, Wisconsin
BRRTS#: 02-13-564044**

Dear Mr. Bannister:

EnviroForensics, LLC (EnviroForensics) is pleased to provide the enclosed Closure Sampling Plan (Work Plan) for the Former Day One Formal Wear site located at 3939 Lien Road in Madison, Wisconsin. The Work Plan has been prepared in response to telephone conversations regarding the Site and reality of the financial and environmental disposition of the Site, and in accordance with the requirements of Wisconsin Administrative Code (WAC) Chapter NR 716. An electronic version of the Work Plan has been uploaded to the RR Program document submittal portal. Per WDNR guidance, the requirement to submit a paper copy of the Work Plan is currently suspended. On behalf of Marc, Inc, the property owner, EnviroForensics is requesting a formal review of the Work Plan and written response to the investigation approach described therein. Additionally, we are requesting a variance from the complete NR 716 Site Investigation Reporting requirement as there is no further investigation or remediation proposed and all site data is included in the Work Plan. The technical assistance review fee of \$700 will be submitted to the southeast region program associate.

Sincerely,
EnviroForensics, LLC

A handwritten signature in blue ink, appearing to read "Rob Hoverman".

Rob Hoverman, PG
Senior Project Manager

Copy: Suzanne Hanson, Marc, Inc.



CLOSURE SAMPLING PLAN

FORMER DAY ONE FORMAL WEAR, INC.

3939 LIEN ROAD

MADISON, WISCONSIN

WDNR BRRTS No: 02-13-564044

July 30, 2021

Prepared For:

SUZANNE HANSON

MARC, INC.

901 POST ROAD

MADISON, WISCONSIN 53713

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HYDROGEOLOGIST CERTIFICATION

"I, Rob Hoverman, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03 (1), Wis. Adm. Code, am registered in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code, or licensed in accordance with the requirements of ch. GHSS 3, Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

A handwritten signature in blue ink, appearing to read "Rob Hoverman".

Rob Hoverman, P. G.

7/30/2021

Date

Document Reference: Closure Sampling Plan
Former Day-One Formal Wear, Inc.
3939 Lien Rd, Madison, Wisconsin
July 30, 2021

1.0 INTRODUCTION

On behalf of MARC, Inc, EnviroForensics, LLC (EnviroForensics) has prepared this Closure Sampling Plan (Work Plan) to investigate the nature and extent of contamination at Former Day One Formal Wear located at 3939 Lien Road in Madison, Wisconsin (the Site). **Figure 1** shows the location of the Site.

1.1 Site Location and Information

Former Day One Formal Wear, Inc.

PLSS: NE 1/4 of the NW 1/4 of Sec 33, T08N, R10E, Dane County

X Coordinate (WTM91): 575626

Y Coordinate (WTM91): 294425

Parcel ID: 081033209158

Area = 0.93 Acres

1.2 Site and Surrounding Area Description

The Site is situated on the east side of Madison in an area of mixed commercial and industrial properties. The Site has a single-story metal and brick building that was presumably constructed in 1971. A church currently occupies the Site and includes offices, a kitchen, a small common area, restrooms, maintenances/utility rooms, and a sanctuary with no full-time staff. The building and asphalt parking areas cover almost the entire Site with a minimal grass strip on the east, south, and west property boundaries.

Lien Road borders the Site to the north, followed by a park, a City of Madison fire station to the east, a parking lot to the south, and an Aldi grocery store to the west. The topography in the immediate area of the Site is generally flat but sloping slightly to the south. **Figure 2** shows the Site layout and surrounding areas.

2.0 BACKGROUND AND INVESTIGATION SCOPING

2.1 Discovery and Investigation Summary

Investigation activities identified the dry cleaning solvent tetrachloroethene (PCE) and its breakdown chlorinated volatile organic compounds (CVOCs) at the MARC-East site during sampling conducted in preparation for a property transfer/ redevelopment. A review of information related to the past uses of the property identified a tenant that performed dry cleaning at the Site. Day One Formal Wear occupied the building from 1981 through 1989. The US EPA listed Day One Formal Wear as a small quantity generator of hazardous waste. Unaware of the former hazardous material activities conducted at the Site, MARC purchased the property in 1989. Sampling conducted at the Site confirms the presence of CVOCs at levels exceeding WDNR standards in the soil, groundwater, and sub-slab vapor.

Soil

Soil samples were collected at twelve locations at the Site. Data collected to date indicate the soil contamination is located primarily beneath the building at the Site. Soil contamination was identified in soils as shallow as one foot below the floor slab of the building to as deep as 19.5 feet. However, these samples would be considered saturated and not representative of soil contaminant mass. Generally, PCE concentrations in this soil exceed WDNR groundwater pathway residual contaminant levels RCLs. The extent of soil contamination is generally characterized. The sandy substrate would direct contaminants downward rather than dispersing horizontally. **Table 1** presents the soil analytical data, and **Figure 2** illustrates the extent of soil contamination. As shown on the modified cross-section from Seymour Environmental Services, Inc. (Seymour) in **Appendix A** and **Figure 2**, the soil contamination is generally limited to the soil below the Site building. Other detections in the soil outside the building footprint likely represent smear zone adsorption and not the source area.

Groundwater

The initial groundwater samples were collected from borings installed for geotechnical purposes and detected (CVOCs) in both the soil and groundwater. Seymour subsequently installed seven Geoprobe™ borings to collect groundwater samples from the water table aquifer. The probes were distributed across the property. Data from the temporary probes indicated that PCE and minor degradation products trichloroethene (TCE) and cis 1,2-trichloroethene contamination of the water table aquifer extends across nearly the entire property (**Figure 2**). The highest contaminant levels identified in the water table aquifer are located at the northeastern corner of the building. The investigation did not identify any free-

phase dense non-aqueous phase liquid (DNAPL) at the Site. Groundwater generally flows to the northwest toward Madison Well #15, though recent observations indicate the discontinued operation of Madison #15 disrupted previous observations.

Seymour installed five (5) NR141-compliant monitoring wells at the Site. These wells include three (3) water table wells and two (2) piezometers. **Figure 2** presents the locations, **Table 2** provides construction details, and **Table 3** presents groundwater level measurements. Groundwater generally flows to the northwest toward Madison Well #15, though recent observations indicate the discontinued operation of Madison #15 disrupted previous observations.

Analytical data from the monitoring wells show that the aforementioned CVOCs are widespread in the shallow groundwater at the Site. No other VOCs were identified in the groundwater at significant concentrations. Groundwater contamination exceeding NR140 standards is present within the water table aquifer (~15-30 feet bgs) across the Site but is only above the PAL in MW-1 on the downgradient side of the Site. However, data from the piezometers shows a downward vertical migration of the contaminants within the aquifer. PZ-1, at a depth of 55-60 feet below ground surface (bgs), shows elevated concentrations of CVOCs. The contaminant concentrations decline from 55 to 101 feet bgs, as shown on the cross-section in **Appendix A**. PCE is present in the groundwater at PZ-2, but the concentration is below the NR140 ESs. **Table 4** summarizes the groundwater analytical results.

Data from the monitoring wells confirms that groundwater at the Site is contaminated at concentrations above WDNR regulatory levels. The extent of contamination is characterized by PCE detected in Madison supply well #15 approximately 875 feet directly downgradient of the Site following the groundwater flow direction. Madison Well #15 has detections of PCE along with other VOCs unrelated to dry cleaning solvents. A memorandum conducted on behalf of the City of Madison¹, identified the former Day One Formal Wear as the likeliest source of the PCE. The following Section 2.2 provides further details on Madison Well #15. The contaminant concentrations in the groundwater on Site do not appear to be increasing based on data collected from the water table monitoring wells during the sampling events.

Vapor

On November 10, 2015, Seymour installed six probes in the building for sub-slab vapor sampling. The probes were distributed around the building to provide an overall picture of the

¹ AECOM, May 18, 2012, Technical Memorandum- Results of PCE Contaminate Source Inventory Unit Well 15, 3500 East Washington Ave, Madison, Wisconsin.

vapor levels beneath the slab. At each location, a hole was drilled through the concrete slab to a depth of ~10 inches. The concrete slab at the Site ranged from 4-4.5 inches thick and was underlain by 3/4" thick closed-cell foam. Each sampling point consisted of a stainless steel and Teflon probe sealed with hydraulic cement. **Figure 3** presents the sub-slab sampling locations. During the sub-slab vapor point installation, Seymour collected a sample of the underlying soil for VOC analysis. PCE was detected in 3 of the 4 soil samples; no other analytes were detected. PCE concentrations ranged from 115 to 484 $\mu\text{g}/\text{kg}$. These levels exceed the groundwater protection RCL. The highest PCE concentration was present in the soil sample collected from the center of the building in the northern part of the warehouse. **Table 1** presents the soil analytical data, which is included in and the areal extent of PCE identified in the soil under the building as shown on **Figure 2**.

Vapor sample analysis indicates that the sub-slab vapors contain dry cleaning chemicals. PCE was present in all six of the sub-slab vapor samples collected. PCE concentrations ranged from 2,206 to 351,656 μ/m^3 ; the sub-slab screening level for smaller commercial buildings is 6,000 μ/m^3 . The highest PCE levels noted were in the north-central part of the warehouse area and near the bathrooms. **Table 5** summarizes the results of the vapor analyses. **Figure 3** shows the sub-slab results and locations. PCE also was detected in the sample of the indoor air. The concentration present, 14.3 μ/m^3 , is below the indoor health advisory level for commercial buildings.

2.2 Potential Receptors

The nearest surface water body is the Starkweather Creek, approximately one half-mile south of the Site. Given its upgradient location and the apparent diving plume, Starkweather Creek is not a likely receptor.

The Site is located within the zone of contribution for Madison municipal water supply well #15. Compliance sampling conducted by the City of Madison shows that PCE and TCE are present in the groundwater produced from that well. The source of the TCE is unknown, while PCE appears to originate from the Former Day One Formal Wear release. PCE was discovered in the groundwater in 1987. Since that time, periodic sampling of the water from the well shows that the PCE level has risen to approximately 3.5 $\mu\text{g}/\text{l}$. In June 2013, Madison installed a well head treatment system at Madison Well #15. The treatment system used a packed tower air stripper to remove the PCE and TCE from the groundwater prior to distribution through the city water-supply system. The Madison Well #15 represents the extent of potential groundwater

contamination due to the diving nature of the PCE plume and location of the well with respect to the groundwater plume.

The Well Construction Information System [Well Construction Information System \(wi.gov\)](http://wi.gov) maintained by WDNR was accessed to search for potable water wells within ¼ mile of the Site. The WDNR identified five (5) well construction reports from the 1940s. One was located at or near the location of Madison #15 for the Sunny Side School which is no longer present. The remaining wells were for residential properties, which have since been redeveloped as commercial property. The City of Madison currently supplies all of Madison, including that property, with potable water. Given the age of the well records, redevelopment, and publicly supplied water these wells are not likely receptors.

2.3 Remedial Action

Under the direction of Seymour, Zander Solutions began installation of the mitigation system on February 29, 2016. A total of eight (8) extraction points were installed with four (4) fill samples collected for cVOC analysis. The pickup points were divided into four (4) subsets, with a separate blower for each leg. Startup testing confirmed that the system produced negative pressure across the entire building slab.

EnviroForensics installed a soil vapor extraction (SVE) system, which the WDNR previously approved to address subsurface contamination resulting from the PCE release. The primary objective of SVE is to remove contaminant mass from unsaturated soil. SVE may provide the additional benefit of vapor intrusion mitigation at the Site building during operation. As such, the previously installed sub-slab depressurization system (SSDS) was shut down but left in place as backup should the SVE system require prolonged downtime for repairs. **Table 6** provides a summary of the mass removal during the SVE operation.

EnviroForensics shut down the SVE because the extraction rates showed it was no longer cost effective to operate, and the effluent concentrations were well below vapor risk screening criteria. Once the SVE shut down occurred, select sub-slab vapor samples from previous locations with the highest concentrations were collected during the 3rd and 4th quarter from SS-5 and SS-3 respectively, corresponding with groundwater sampling from MW-3. A vapor sample collected from MW-2 during SVE operation showed little potential risk to off-Site receptors. Post-remedial sub-slab vapor samples showed the vapor concentrations were reduced by the remedial action and did not appear to pose potential vapor intrusion risk. **Table 5** presents the vapor analytical data. Groundwater sampling occurred quarterly during 2020 to monitor

groundwater flow direction and concentrations in MW-3. MW-3 was selected to cost effectively monitor changes in the plume that may have been affected by the recent shut down of the City of Madison Well #15. Previously, groundwater flow at the Site was directly towards Well #15 to the northwest.

2.4 Environmental Media Potentially Affected

As shown on **Figure 2** and the modified cross-section in **Appendix A**, the soil contamination is generally limited to the soil below the Site building. Other detections in soil outside of the building footprint likely represent smear zone adsorption and not the source area.

As previously discussed, groundwater has been affected in the shallow sand and gravel aquifer as well as deeper sandstone aquifer. Groundwater is generally encountered at 18 to 20 feet in the central and northern extent of the Site. Due to slight topographic changes and constructed loading dock areas, groundwater at the southern MW-3 has been observed from 13-15 feet.

Sub-slab vapor has been investigated and found sub-slab vapors prior to remediation above the vapor risk screening levels due to the presence of PCE in the subsurface. However, the PCE concentrations in the residual fill samples were relatively low, with a maximum of 4.2 milligrams per kilogram (mg/kg).

3.0 PROPOSED ACTIVITIES

The investigation activities detailed in the following sections have been developed to achieve the following objectives:

- Further define the nature of groundwater flow direction;
- Complete an off-site vapor intrusion assessment;
- Confirm Site vapor conditions post remediation; and
- Advance the Site toward case closure.

The proposed site investigation includes the following tasks:

- Coordinate access to an off-Site property;
- Advance soil borings and collect soil samples;
- Install temporary monitoring wells and collect groundwater samples;
- Sample sub-slab vapor at one off-Site property;
- Sample sub-slab vapor at the Site;
- Manage investigation-derived media; and
- Evaluate data and prepare a summary report.

3.1 Access Requirements

Access to the City of Madison fire station at 3945 Lien Road is required. EnviroForensics will initiate access with the Fire Station. If the access process with the City of Madison becomes burdensome, EnviroForensics will seek assistance from the WDNR.

3.2 Temporary Monitoring Well Installation Sampling

In accordance with safe work practices and as required by state law, EnviroForensics will contact Wisconsin Digger's Hotline subsurface utility protection service at least 72 hours prior to the anticipated onset of subsurface work at the Site. As a result, subsurface utilities and structures owned or managed by member companies and municipalities will be located by an independent contractor service. EnviroForensics will also consult with the City of Madison and contract with a private underground utility locating service to provide additional confidence regarding the position of potential underground hazards at the Site. The private locating service will use geophysical and electromagnetic equipment to locate underground utilities

across the entire Site. Utility information will be added to the Site plan and used to position investigative borings.

Four (4) direct-push soil borings will be advanced to the water table using direct-push methods at the locations shown on **Figure 2**. Soil cores will be continuously collected in 5-ft long by 1.5-inch diameter vinyl acetate plastic sample sleeves. Field screening at each 2-ft interval will be conducted using a photoionization detector (PID), the results of which will be recorded. Soil lithology will be continuously described in accordance with the Unified Soil Classification System (USCS) and recorded on boring logs.

One (1) soil sample will be collected from each boring location for laboratory analysis. Sample depths will be based on several criteria including relative PID readings; water table depth; and soil lithology below the depth of the previous samples. Samples will be collected in laboratory-supplied containers, labeled, logged on a chain-of-custody form, and submitted to a state-certified laboratory for the following analyses chlorinated volatile organic compounds (CVOCs) by USEPA SW-846 Test Method 8260. The cVOC list will include PCE TCE, cis-1,2-dichloroethene (cDCE), trans-1,2-dichloroethene (tDCE), and vinyl chloride (VC)

Any reusable sampling equipment that comes in contact with soil samples will be decontaminated with an Alconox detergent solution and triple rinsed with clean water between sampling intervals.

Upon completion of the soil borings a one-inch diameter temporary well will be installed across the water table. **Figure 2** depicts the locations of the temporary wells. The monitoring wells are positioned to fill out the current monitoring well network to understand the groundwater flow gradient as it relates to Madison Well No. 15.

Well construction will consist of 10 feet of 1-inch ID, 0.010-inch slotted PVC well screen, with PVC riser extending to the ground surface. The wells will be constructed such that the water table intersects the well screens. Based on information from surrounding sites, total well depths of around 20 feet are anticipated. 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. Traffic-rated flush-mount well boxes set in concrete will be installed to protect the wells.

Upon completion of 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 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.

The newly installed temporary monitoring wells will be developed in accordance with the procedures and requirements detailed in WAC Chapter NR 141. Monitoring wells will be surged with a check valve and pumped during the development process to remove fines from the sand pack until the water runs clear. 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.

3.3 Groundwater Monitoring

EnviroForensics personnel will remobilize to the Site and conduct four (4) groundwater monitoring events on a quarterly basis to include the four (4) temporary wells during the first event only and the existing network MW-1, MW-2, MW-3, PZ-1, and PZ-2. 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 field sampling forms prior to sample collection activities. Grab samples from the four (4) temporary wells will be collected using a peristaltic pump using new tubing for each location during the first event only. After the first event, the temporary wells will only be used to further understand the groundwater flow gradient and developing potentiometric surface maps.

EnviroForensics will install passive diffusion bags (PDBs) in the permanent monitoring wells and piezometers at least 30 days prior to a sampling event. A typical PDB consists of a 2-foot long low-density polyethylene (LDPE) lay-flat tube closed at both ends which contains deionized water. The PDB is positioned at the target horizon of the well (well screen) by attachment to a weighted line. VOCs move across the PDB membrane and equilibrate over time. The amount of time that the PDB should be left in the well prior to recovery depends on the time required by the PDB to equilibrate with water and the time required for the environmental disturbance caused by sampler deployment to return to ambient conditions. It is recommended that the PDB remain in the well for a minimum of two (2) weeks but can be left in the well much longer.

with no adverse effects on sample integrity (Water-Resources Investigations Report 01-4060, U. S. Geological Survey, D. Vroblesky, 2001).

Groundwater samples will be transferred directly into laboratory-provided containers 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 cVOCs by USEPA SW-846 Test Method 8260. For quality assurance/quality control (QA/QC) purposes, a duplicate will be collected at a frequency of one (1) sample per ten (10) investigative samples during the monitoring event.

3.4 Vapor Intrusion Assessment

VI assessments will include paired sub-slab vapor sampling at the Site and adjacent property at 3945 Lien Rd. The property locations are depicted on **Figure 3**. All VI assessment activities will be conducted in accordance with WDNR guidance, including Publication RR-800: *Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin*. The off-site assessment will be used to evaluate if the groundwater plume is causing a potential vapor intrusion exposure. The on-Site evaluation will be used to confirm the effectiveness of the past remedial action.

The proposed sampling plan at each structure per sampling event is listed in the table below.

Address	Property Use	Sub-Slab Vapor	1 st Event	2 nd Event	3 rd Event
3945 Lien Rd	Fire Station - Commercial	3	Sept 2021	Dec 2021	Feb 2022
3939 Lien Rd	Church - Commercial	5			

Sub-Slab Vapor Sampling

Permanent sub-slab vapor sampling ports SSV-1 and SSV-2 will be installed 3945 Lien Road at the locations shown on **Figure 3**. At the Site, six (6) existing sub-slab points include SS-1, SS-2, SS-3, SS-4, SS-5, and SS-6. The sampling ports will be capped during installation until sampling is initiated. 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 sampling collection by conducting a negative pressure test.

All samples will be collected through dedicated Teflon-lined polyethylene tubing connected to the sampling port. A graduated syringe will be utilized to purge ambient air 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 mL/min. Following the completion of sampling activities, the canisters will be submitted to an environmental laboratory for analysis of cVOCs via EPA Test Method TO-15. The analytical results of the sub-slab vapor samples will be compared to WDNR VRSLs.

3.5 Investigation-Derived Media Management

Investigation-derived media (IDM) will consist of soil from monitoring well installation, and groundwater from well development and sampling. The IDM generated by these activities will be placed in steel 55-gallon drums and staged at a location preferred by the Site owner. Based on the concentrations of COCs detected in samples to date, EnviroForensics anticipates all IDM will be characterized as non-hazardous. If arrangements cannot be made with the City of Madison, purge water from each event will be containerized. A licensed contractor will be retained to remove the soil and water drums from the Site for proper disposal.

4.0 REPORTING

4.1 Sample Results Notifications

In accordance with WDNR regulations, EnviroForensics will report property-specific sampling results to the Site owner and WDNR within 10 business days of receiving the laboratory reports. The sample results 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.

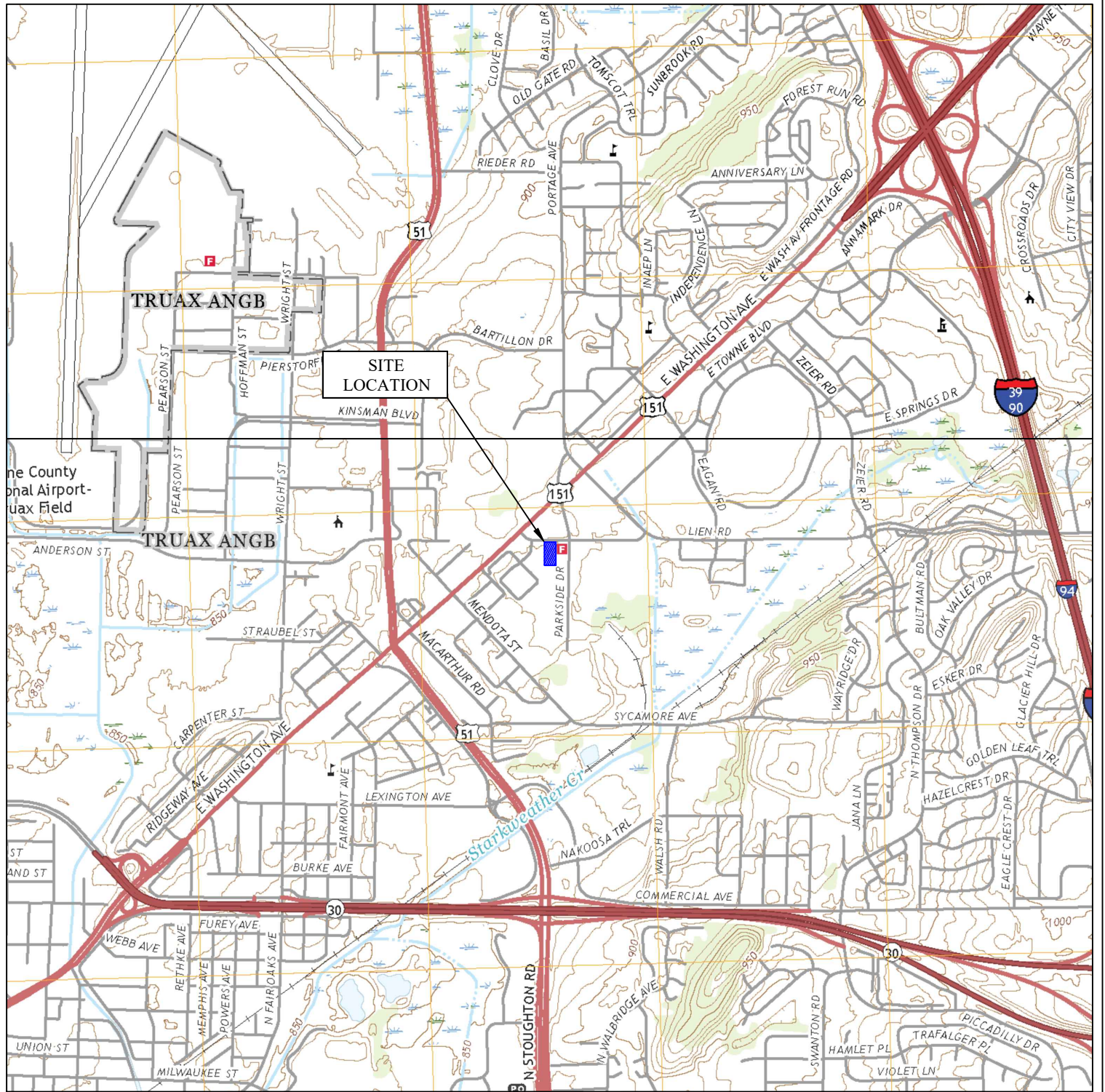
4.2 Report

EnviroForensics will evaluate and summarize the field observations and laboratory analytical data with comparisons to WDNR residual contaminant levels (soil), preventive action limits and enforcement standards (groundwater), and vapor risk screening levels (sub-slab vapor). As previously presented, the nature and extent of contamination has been defined to the degree practicable. The sampling described herein is meant as confirmation to set up closure for the Site; therefore, a summary report will be prepared. Appropriate tables, maps, figures, and attachments will be provided to aid data presentations and interpretation and the findings of the closure sampling and, assuming favorable results, recommend the Site move to closure. The summary report will be submitted to the WDNR for review and comment.

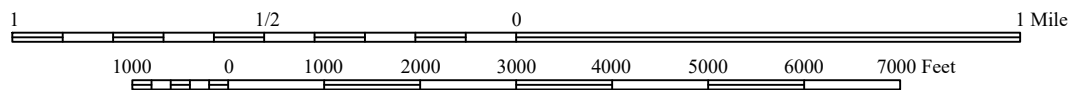
5.0 SCHEDULE

EnviroForensics will schedule the fieldwork immediately upon approval by WDNR of this Work Plan and anticipates that fieldwork will begin within one to two weeks of approval (assumed for late September). The temporary monitoring well installation and first vapor intrusion sampling event will be completed during the initial mobilization. The first groundwater sampling event will occur with 48-hours of the well development. The subsequent groundwater monitoring events will occur approximately every three (3) months thereafter. The second and third vapor intrusion sampling events will be in December 2021 and February 2022. IDM removal will be completed during a subsequent mobilization, as needed. Data evaluation will be ongoing during the investigation and the summary report will be completed upon receipt of the final groundwater monitoring event results.

FIGURES



Scale 1:24,000



Source: US Geological Survey, De Forest, Wisconsin, 7.5 Minute Series, 2018
 Source: US Geological Survey, Madison East, Wisconsin, 7.5 Minute Series, 2018

No.	Date	Revision	Approved

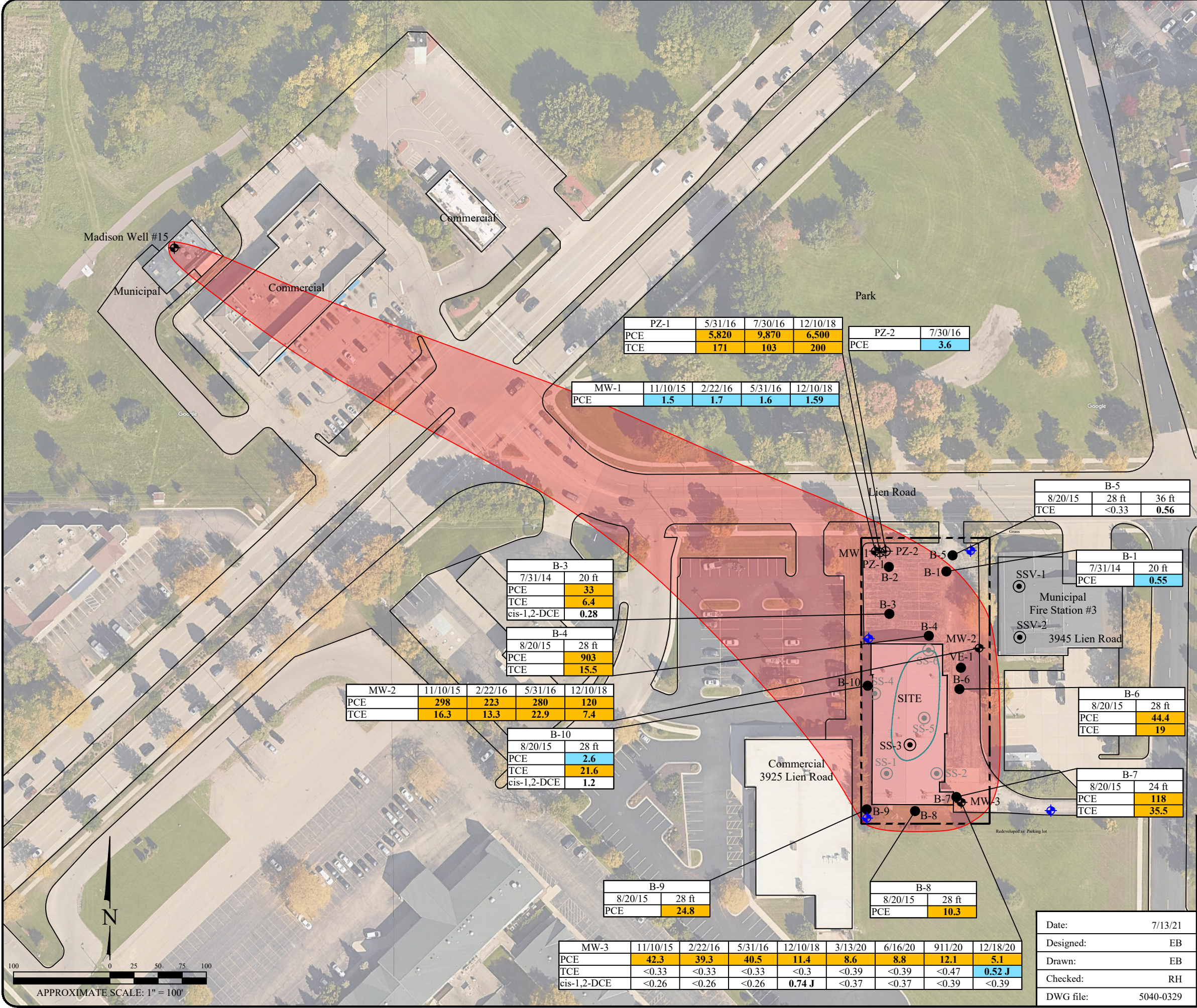


Date: 7/13/21
 Designed: EB
 Drawn: EB
 Checked: RH
 DWG file: 5040-0328

SITE TOPOGRAPHIC MAP

MARC East Property
 3939 Lien Road
 Madison, Wisconsin

Figure
1
Project
5040



Legend

- Property boundary
- B-1 ● Soil boring
- MW-1 ⊕ Monitoring well
- PZ-1 ⊕ Piezometer well
- SS-1 ⊙ Sub-slab sample (By Others)
- SS-3 ⊙ Sub-slab sample
- ⊕ Temporary monitoring well

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

- 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 contamination
- Extent of PCE soil contamination

PZ-1	5/31/16	7/30/16	12/10/18	PZ-2	7/30/16
PCE	5,820	9,870	6,500	PCE	3.6
TCE	171	103	200		

MW-1	11/10/15	2/22/16	5/31/16	12/10/18
PCE	1.5	1.7	1.6	1.59

B-5		
8/20/15	28 ft	36 ft
TCE	<0.33	0.56

B-3	
7/31/14	20 ft
PCE	33
TCE	6.4
cis-1,2-DCE	0.28

B-4	
8/20/15	28 ft
PCE	903
TCE	15.5

MW-2	11/10/15	2/22/16	5/31/16	12/10/18
PCE	298	223	280	120
TCE	16.3	13.3	22.9	7.4

B-10	
8/20/15	28 ft
PCE	2.6
TCE	21.6
cis-1,2-DCE	1.2

B-1	
7/31/14	20 ft
PCE	0.55

B-6	
8/20/15	28 ft
PCE	44.4
TCE	19

B-7	
8/20/15	24 ft
PCE	118
TCE	35.5

B-9	
8/20/15	28 ft
PCE	24.8

B-8	
8/20/15	28 ft
PCE	10.3

MW-3	11/10/15	2/22/16	5/31/16	12/10/18	3/13/20	6/16/20	9/11/20	12/18/20
PCE	42.3	39.3	40.5	11.4	8.6	8.8	12.1	5.1
TCE	<0.33	<0.33	<0.33	<0.3	<0.39	<0.39	<0.47	0.52 J
cis-1,2-DCE	<0.26	<0.26	<0.26	0.74 J	<0.37	<0.37	<0.39	<0.39

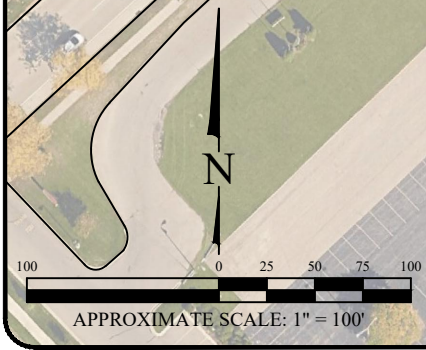
Date:	7/13/21
Designed:	EB
Drawn:	EB
Checked:	RH
DWG file:	5040-0329

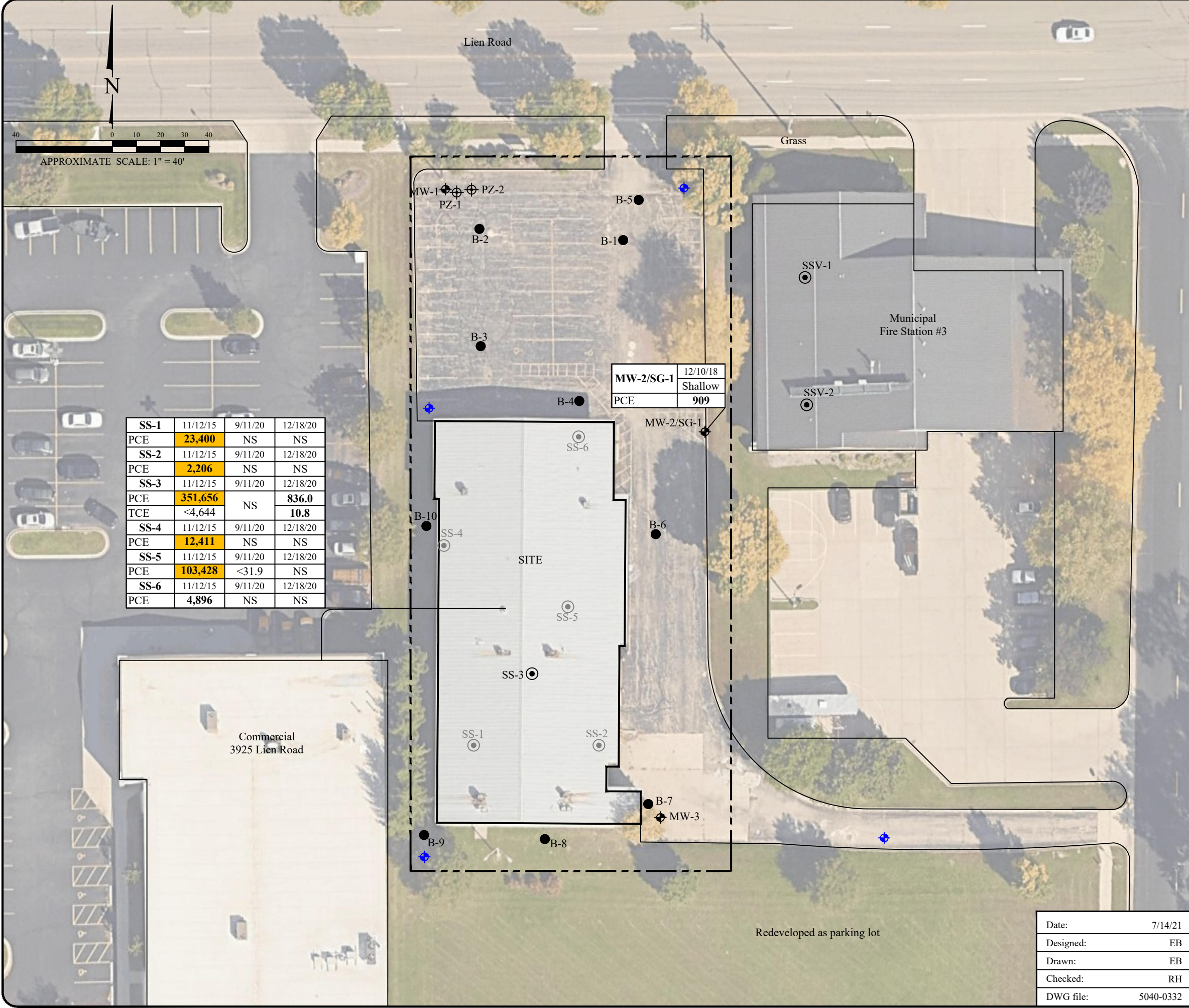
SITE MAP

Former Day One Formal Wear
3939 Lien Road
Madison, Wisconsin

825 North Capitol Avenue • Indianapolis, IN 46204
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Figure	2
Project	5040





Legend

- Property boundary
- B-1 ● Soil boring
- MW-1 ⊕ Monitoring well
- PZ-1 ⊕ Piezometer well
- SS-1 ⊙ Sub-slab sample (By Others)
- SS-3 ⊙ Sub-slab sample
- ⊕ Temporary monitoring well

Analytes	Commercial Sub-Slab Vapor Screening Level	Residential Sub-Slab Vapor Screening Level	Analytes	Commercial Soil Gas Screening Level
	PCE	6,000		1,400
TCE	290	70	Shallow	

- Notes:
- Bold, orange shaded concentrations exceed the applicable commercial screening level
 - Bold concentrations exceed laboratory reporting limits
 - Results reported in micrograms per meter cubed = $\mu\text{g}/\text{m}^3$
 - The vapor risk screening levels for small commercial structures are calculated in accordance with the procedures described in WDNR Publication RR-800 and subsequent guidance
 - The vapor risk screening levels for residential structures are calculated in accordance with the procedures described in WDNR Publication RR-800 and subsequent guidance
 - The Vapor Risk Screening Levels are based on U.S. E.P.A.'s Regional Screening Levels (RSL's) for non-residential indoor air with an attenuation factor of 0.01 for soil gas below large commercial buildings
 - PCE = Tetrachloroethene
 - TCE = Trichloroethene
 - NS = Not sampled

SS-1	11/12/15	9/11/20	12/18/20
PCE	23,400	NS	NS
SS-2	11/12/15	9/11/20	12/18/20
PCE	2,206	NS	NS
SS-3	11/12/15	9/11/20	12/18/20
PCE	351,656	NS	836.0
TCE	<4,644		10.8
SS-4	11/12/15	9/11/20	12/18/20
PCE	12,411	NS	NS
SS-5	11/12/15	9/11/20	12/18/20
PCE	103,428	<31.9	NS
SS-6	11/12/15	9/11/20	12/18/20
PCE	4,896	NS	NS

MW-2/SG-1	12/10/18
Shallow	
PCE	909

VAPOR INTRUSION ASSESSMENT MAP

Former Day One Formal Wear
3939 Lien Road
Madison, Wisconsin

Date:	7/14/21
Designed:	EB
Drawn:	EB
Checked:	RH
DWG file:	5040-0332

825 North Capitol Avenue • Indianapolis, IN 46204
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Figure	3
Project	5040

TABLES

TABLE 1
SOIL ANALYTICAL DATA
MARC East (Former Day One Formal Wear)
Madison, Wisconsin

Boring Identification	Sample Depth (feet bgs)	Sample Date	Tetrachloroethene	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride
			Chlorinated VOCs (µg/kg)				
Residual Contaminant Level - Industrial			145,000	8,410	2,340,000	1,850,000	2,080
Residual Contaminant Level - Non-Industrial			33,000	1,300	156,000	1,560,000	67
Residual Contaminant Level - Soil to Groundwater			4.5	3.6	41	62.6	0.1
B-1	19.5	7/31/2014	<25.0	<25.0	<25.0	<25.0	<25.0
B-2	19.5	7/31/2014	30.7	<25.0	<25.0	<25.0	<25.0
B-3	3.5	7/31/2014	<25.0	<25.0	<25.0	<25.0	<25.0
B-4	3	8/20/2015	<25.0	<25.0	<25.0	<25.0	<46.4
MW-1	17	10/20/2015	<25.0	<25.0	<25.0	<25.0	<25.0
MW-2	3-5	10/20/2015	<25.0	<25.0	<25.0	<25.0	<25.0
	8-10		<25.0	<25.0	<25.0	<25.0	<25.0
MW-3	1-3	10/20/2015	<25.0	<25.0	<25.0	<25.0	<25.0
	4-6		<25.0	<25.0	<25.0	<25.0	<25.0
	8-10		<25.0	<25.0	<25.0	<25.0	<25.0
SS-1	1.2	11/10/2015	<25.0	<25.0	<25.0	<25.0	<46.4
SS-3	1.2		484	<25.0	<25.0	<25.0	<46.4
SS-5	1.2		149	<25.0	<25.0	<25.0	<46.4
SS-6	1.2		115	<25.0	<25.0	<25.0	<46.4
VE-1	5	12/1/2016	<25.0	<25.0	<25.0	<25.0	<25.0
	10		<25.0	<25.0	<25.0	<25.0	<25.0
	15		112	<25.0	<25.0	<25.0	<25.0
	20		389	35.7	<25.0	<25.0	<25.0

Notes

WDNR Residual Contaminant Levels (RCLs) were calculated according to the procedures described in WDNR
Samples analyzed using EPA SW-846 Method 8260
Bolded values exceed laboratory detection levels
Bolded and **orange shaded** values exceed the Industrial Residual Contaminant Level
Bolded and **green shaded** values exceed the Non-Industrial Residual Contaminant Level
Bolded and **blue shaded** values exceed the Soil to Groundwater Residual Contaminant Level
µg/kg = micrograms per kilogram
bgs = below ground surface
J = Result is less than the reporting limit but greater than or equal to the method detection limit and the concentration
ND = Compound not detected above the laboratory method detection limit
NE = Not established
VOCs = Volatile Organic Compounds
* = Laboratory detection of p-Isopropyltoluene below applicable criteria
** = Saturated soil sample not applicable for comparison to residual contaminant levels
Samples/constituents not shown are below laboratory reporting limits

TABLE 2
 Well Construction Details
 MARC East (Former Day One Formal Wear)
 Madison, Wisconsin

Well ID	Date Installed	Firm	Well Diameter (inches)	TOC Elevation (feet AMSL)	Ground Elevation (feet AMSL)	Top Screen Elevation (feet AMSL)	Bottom Screen Elevation (feet AMSL)	Screened Interval (feet bgs)			Total Depth (feet bgs)
MW-1	10/20/2015	Seymour	2	873.15	873.41	858.5	843.5	14.65	-	29.65	29.65
MW-2	10/20/2015	Seymour	2	870.92	871.17	857.97	842.97	12.95	-	27.95	27.95
MW-3	10/20/2015	Seymour	2	868.32	868.61	858.27	843.27	10.05	-	25.05	25.05
PZ-1	5/26/2016	Seymour	2	873.06	873.37	817.32	812.32	55	-	60	60.74
PZ-2	7/19/2016	Seymour	2	872.82	873.26	772.82	767.82	100	-	105	105

TABLE 3
Groundwater Elevation Data
MARC East (Former Day One Formal Wear)
Madison, Wisconsin

Well ID	Consultant	Date	Top Screen Elevation (feet AMSL)	Bottom Screen Elevation (feet AMSL)	TOC Elevation (feet AMSL)	DTW (feet below TOC)	Groundwater Elevation (feet AMSL)
MW-1	Seymour	11/10/2015	858.5	843.5	873.15	21.26	851.89
	Seymour	2/22/2016	858.5	843.5	873.15	20.03	853.12
	Seymour	5/31/2016	858.5	843.5	873.15	20.00	853.15
	EnviroForensics	12/10/2018	858.5	843.5	873.15	18.33	854.82
	EnviroForensics	3/13/2020	858.5	843.5	873.15	18.53	854.62
	EnviroForensics	6/19/2020	858.5	843.5	873.15	17.58	855.57
	EnviroForensics	6/19/2020	858.5	843.5	873.15	17.58	855.57
	EnviroForensics	12/18/2020	858.5	843.5	873.15	19.17	853.98
MW-2	Seymour	11/10/2015	858.0	843.0	870.92	18.27	852.65
	Seymour	2/22/2016	858.0	843.0	870.92	17.25	853.67
	Seymour	5/31/2016	858.0	843.0	870.92	16.79	854.13
	EnviroForensics	12/10/2018	858.0	843.0	870.92	15.47	855.45
	EnviroForensics	3/13/2020	858.0	843.0	870.92	15.20	855.72
	EnviroForensics	6/19/2020	858.0	843.0	870.92	14.61	856.31
	EnviroForensics	12/18/2020	858.0	843.0	868.32	16.32	852.00
MW-3	Seymour	11/10/2015	858.3	843.3	868.32	14.81	853.51
	Seymour	2/22/2016	858.3	843.3	868.32	13.98	854.34
	Seymour	5/31/2016	858.3	843.3	868.32	13.03	855.29
	EnviroForensics	12/10/2018	858.3	843.3	868.32	11.89	856.43
	EnviroForensics	3/13/2020	858.3	843.3	868.32	12.35	855.97
	EnviroForensics	6/19/2020	858.3	843.3	868.32	11.09	857.23
	EnviroForensics	12/18/2020	858.3	843.3	868.32	13.01	855.31
PZ-1	Seymour	5/31/2016	813.3	808.3	873.06	19.75	853.31
	Seymour	7/30/2016	813.3	808.3	873.06	20.25	852.81
	EnviroForensics	12/10/2018	813.3	808.3	873.06	18.11	854.95
	EnviroForensics	3/13/2020	813.3	808.3	873.06	18.23	854.83
	EnviroForensics	6/19/2020	813.3	808.3	873.06	17.25	855.81
PZ-2	Seymour	7/30/2016	772.8	767.8	872.82	19.98	852.84
	EnviroForensics	12/10/2018	772.8	767.8	872.82	17.62	855.20
	EnviroForensics	3/13/2020	772.8	767.8	872.82	NA	--
	EnviroForensics	6/19/2020	772.8	767.8	872.82	16.62	856.20

Notes:

AMSL = Above Mean Sea Level

TOC = Top of Casing

NA = Not accessible

TABLE 4
Groundwater Analytical Results
MARC East (Former Day One Formal Wear)
Madison, Wisconsin

Monitoring Well	Depth	Sample Date	Tetrachloroethene	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride
Public Health Enforcement Standard			5	5	70	100	0.2
Public Health Preventive Action Limit			0.5	0.5	7	20	0.02
B-1	20	7/31/2014	0.55	<0.33	<0.26	<0.26	<0.18
B-3	20	7/31/2014	33	6.4	0.28	0.54	<0.18
B-4	28	8/20/2015	903	15.5	<2.6	<2.6	<1.8
B-5	28	8/20/2015	<0.50	<0.33	<0.26	<0.26	<0.18
B-5	36	8/20/2015	<0.50	0.56	<0.26	<0.26	<0.18
B-6	28	8/20/2015	44.4	19	<0.26	<0.26	<0.18
B-7	24	8/20/2015	118	35.5	<0.26	<0.26	<0.18
B-8	28	8/20/2015	10.3	<0.33	<0.26	<0.26	<0.18
B-9	28	8/20/2015	24.8	<0.33	<0.26	<0.26	<0.18
B-10	28	8/20/2015	2.6	21.6	1.2	<0.26	<0.18
MW-1	14.65-29.65	11/10/2015	1.5	<0.33	<0.26	<0.26	<0.18
		2/22/2016	1.7	<0.33	<0.26	<0.26	<0.18
		5/31/2016	1.6	<0.33	<0.26	<0.26	<0.18
		12/10/2018	1.59	<0.30	<0.37	<0.34	<0.20
MW-2	12.95-27.95	11/10/2015	298	16.3	<0.64	<0.64	<0.44
		2/22/2016	223	13.3	<0.64	<0.64	<0.44
		5/31/2016	280	22.9	<0.64	<0.64	<0.44
		12/10/2018	120	7.4	<0.37	<0.34	<0.20
MW-3	10.05-25.05	11/10/2015	42.3	<0.33	<0.26	<0.26	<0.18
		2/22/2016	39.3	<0.33	<0.26	<0.26	<0.18
		5/31/2016	40.5	<0.33	<0.26	<0.26	<0.18
		12/10/2018	11.4	<0.3	0.74 J	<0.34	<0.20
		3/13/2020	8.6	<0.39	<0.37	<0.47	<0.20
		6/19/2020	8.8	<0.39	<0.37	<0.47	<0.20
		9/11/2020	12.1	<0.47	<0.39	<0.37	<0.20
		12/18/2020	5.1	0.52 J	<0.39	<0.37	<0.2
PZ-1	55-60	5/31/2016	5820	171	<25.6	<25.7	<17.6
		7/30/2016	9870	103	<25.6	<25.7	<17.6
		12/10/2018	6500	200	<18.5	<17	<10
PZ-2	100-105	7/30/2016	3.6	<0.33	<0.26	<0.26	<0.18

Notes:

Samples analyzed using EPA SW-846 Method 8260

All concentrations reported in µg/L

Bolded and orange shaded values are above Public Health Enforcement Standards

Bolded and blue shaded values are above Public Health Preventive Action Limits

J= Concentration detected between the laboratory Reporting Limit and the Method Detection Limit

Table 5
 Sub-slab Vapor Results
 MARC East (Former Day One Formal Wear)
 Madison, Wisconsin

Sample Identification	Date Sampled	Tetrachloroethene	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride
INDOOR/ OUTDOOR AIR						
Residential Vapor Action Limit²		42	2.1	NE	NE	1.7
Small Commercial Vapor Action Limit¹		180	8.8	NE	NE	28
Indoor - Kitchen	11/12/15	14.47	<0.464	<0.342	<0.342	<0.220
Outdoor	11/12/15	<0.586	<0.464	<0.342	<0.342	<0.220
SUB-SLAB VAPOR						
Residential Vapor Risk Screening Level²		1,400	70	NE	NE	57
Small Commercial Vapor Risk Screening Level		6,000	290	NE	NE	930
SS-1	11/12/15	23,444	<464.4	<34.26	<342.65	<220.88
SS-2	11/12/15	2,206	<23.49	<17.33	<17.33	<11.17
SS-3	11/12/15	351,656	<4,644	<3,426	<3,426	<2,208
	12/18/20	836.0	10.8	<19.8	<39.6	<1.28
SS-4	11/12/15	12,411	<2,349	<1,733	<1,733	<1,117
SS-5	11/12/15	103,428	<2,349	<1,733	<1,733	<1,117
	09/11/20	<31.9	<10.7	<198	<396	<12.8
SS-6	11/12/15	4,896	<23.49	<17.33	<17.33	<11.17
Soil Gas Vapor Risk Screening Level¹		18,000	880	NE	NE	2,800
5040-SG-MW-2	12/10/2018	909	<10.7	<198	<396	<12.8

Notes:

Notes:

¹ The vapor risk screening levels for small commercial structures are calculated in accordance with the procedures described in WDNR Publication RR-800 and subsequent guidance

² The vapor risk screening levels for residential structures are calculated in accordance with the procedures described in WDNR Publication RR-800 and subsequent guidance

Samples analyzed according to EPA Method TO-15

All concentrations reported in units in micrograms per cubic meter = µg/m³

Only detected compounds are listed

Bolded values are above method detection limits

Bolded and blue shaded values exceed the residential Vapor Risk Screening Level

Bolded and orange shaded values exceed the small commercial Vapor Risk Screening Level

NE = Not Established

IA = Indoor Air

**TABLE 6
SVE MASS REMOVAL**

MARC, Inc.
Madison, Wisconsin

Period		System Data*				Constants (hide columns for reports)		Effluent Concentration ($\mu\text{g}/\text{m}^3$)					Total VOCs Removed During Period (pounds)	Cumulative VOCs Removed (pounds)
From Date	Sample Date	Hours Start	Hours Final	Total hours during period	Airflow Rate (scfm)	m^3/hr	lb/ μg	Tetrachloroethene	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride		
4/13/2018	4/13/2018	0	1.8	1.8	141	239.6	0.00000000220459	5,060	47.8	ND	ND	ND		
		VOCs Removed During Period (Pounds)								0.00481	0.00005	0.00000	0.00000	0.00000
4/13/2018	4/17/2018	1.8	92	90.2	140	237.9	0.00000000220459	851	26.3	ND	ND	ND		
		VOCs Removed During Period (Pounds)								0.040251598	0.00124397	0.00000	0.00000	0.00000
4/17/2018	5/11/2018	92	672	580.0	140	237.9	0.00000000220459	248	ND	ND	ND	ND		
		VOCs Removed During Period (Pounds)								0.07543	0.00000	0.00000	0.00000	0.00000
5/11/2018	7/25/2018	672	1008.8	336.8	140	237.9	0.00000000220459	415	ND	ND	ND	ND		
		VOCs Removed During Period (Pounds)								0.07329	0.00000	0.00000	0.00000	0.00000
7/25/2018	12/30/2018	1008.8	1117.7	108.9	140	237.9	0.00000000220459	739	ND	ND	ND	ND		
		VOCs Removed During Period (Pounds)								0.04220	0.00000	0.00000	0.00000	0.00000
12/30/2018	4/3/2019	1117.7	1190.3	72.6	140	237.9	0.00000000220459	86.1	ND	ND	ND	ND		
		VOCs Removed During Period (Pounds)								0.00328	0.00000	0.00000	0.00000	0.00000
4/3/2019	6/14/2019	1190.3	1252	61.7	140	237.9	0.00000000220459	733	ND	ND	ND	ND		
		VOCs Removed During Period (Pounds)								0.02372	0.00000	0.00000	0.00000	0.00000
6/14/2019	9/6/2019	1252	1444.6	192.6	146	248.1	0.00000000220459	118	5.35	ND	ND	ND		
		VOCs Removed During Period (Pounds)								0.01243	0.00056	0.00000	0.00000	0.00000
9/6/2019	12/6/2019	1444.6	1519.7	75.1	147	249.8	0.00000000220459	473	ND	ND	ND	ND		
		VOCs Removed During Period (Pounds)								0.01956	0.00000	0.00000	0.00000	0.00000
12/6/2019	3/13/2020	1519.7	1637.5	117.8	147	249.8	0.00000000220459	562	ND	ND	ND	ND		
		VOCs Removed During Period (Pounds)								0.03645	0.00000	0.00000	0.00000	0.00000
3/13/2020	6/19/2020	1637.5	1798	160.5	133	226.0	0.00000000220459	257	ND	ND	ND	ND		
		VOCs Removed During Period (Pounds)								0.02055	0.00000	0.00000	0.00000	0.00000

Notes:

ND = Not Detected above laboratory reporting limits

NA = Not Analyzed

$\mu\text{g}/\text{m}^3$ = micrograms per cubic meter

scfm = standard cubic feet per minute

* = estimated based on historical system performance

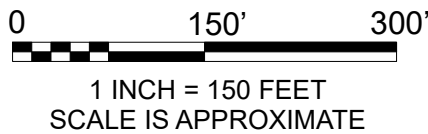
Constituents not shown are below laboratory detection limits

¹ = The hours meter reset from 9308.4 to 0.0 on 4/11/17

Constituents not presented contained concentration below laboratory reporting limits

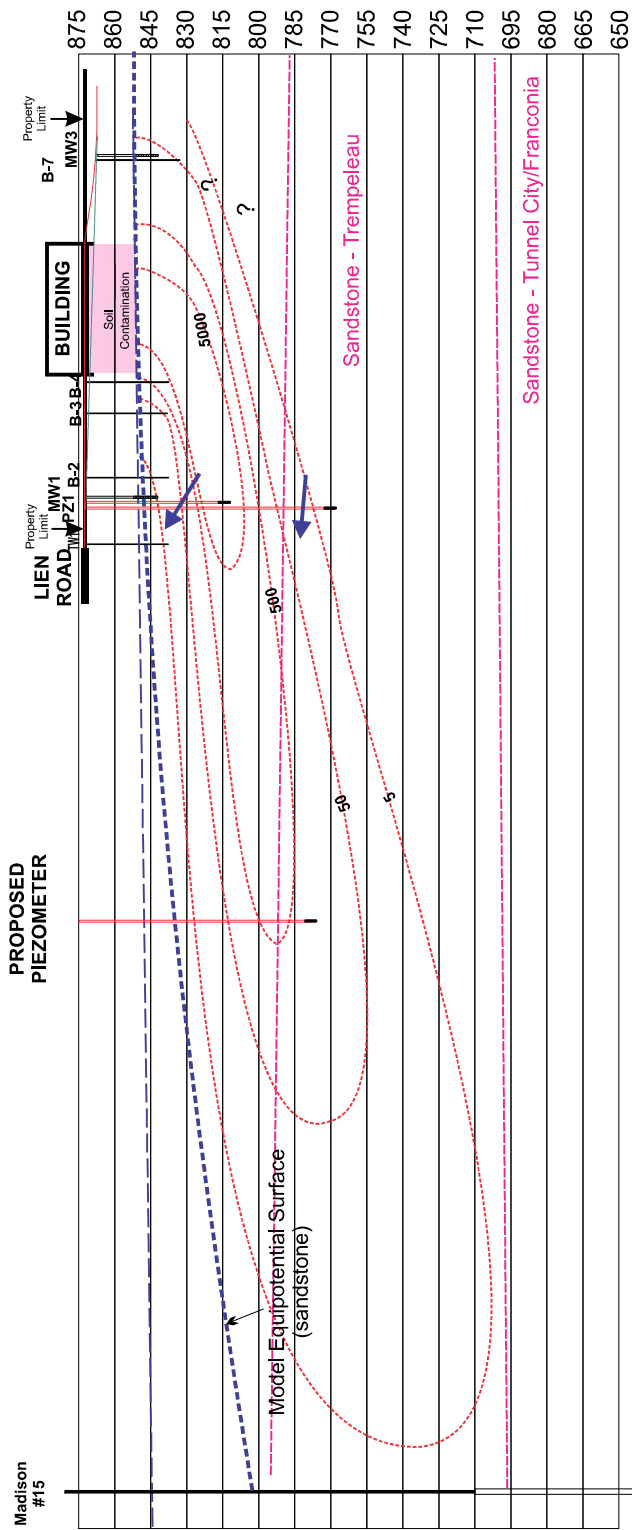
Bolded values are above detection limits

APPENDIX A



SSE

NNW



CROSS-SECTION / IDENTIFIED CONTAMINATION
MARC EAST PROPERTY
3939 Lien Road
Madison, Wisconsin

FIGURE
4