

## **Ken Ebbott**

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**From:** Ken Ebbott  
**Sent:** Tuesday, May 7, 2024 12:21 PM  
**To:** Schultz, Josie M - DNR; Roger Dulmes (imogenescc@yahoo.com); Roger Dulmes  
**Cc:** Ken Ebbott  
**Subject:** Imogenes Cleaning Center Vapor Assessment Work Plan BRRTS # 02-60-552193  
**Attachments:** Figures to DNR.pdf

Josie and Roger,

Below is the Work Plan for the additional work recently requested by the WDNR related to the Imogenes drycleaner site in Sheboygan.

I've reached out to the neighbor to the southwest and have a signed access agreement with her, and will obtain an access agreement with the adjacent neighbor to the north at the Sheboygan Paper Box & Specialty Company to conduct work on their property. I've visited both buildings, looked into some of the sewer manholes, and attached are maps showing the layout and proposed sample locations.

To keep costs down I am submitting this Work Plan without a fee, and in an email format. I'll print it out as a pdf document, and upload it to the WDNR Portal so it gets registered in the system.

### **BACKGROUND INFORMATION**

The Imogenes drycleaner site has completed a site investigation with investigation conducted from 2008 to 2011. There is a WDNR-approved remedial action plan involving injection of chemicals to facilitate reduction of residual tetrachloroethene (PCE) in soil and groundwater at the former drycleaning area of the building. Five groundwater monitoring wells and a temporary well exist at and adjacent to the Property and geoprobe soil borings have been advanced to adequately define the extent of impacted material at the site. A pilot test injection of sodium percarbonate was completed in 2014 with mixed results, but full scale injection has not yet been completed.

In 2010, a vapor mitigation system was installed in the adjacent building basement to the north, Sheboygan Paper Box & Specialty Company, to prevent migration of subfloor vapors into the breathing space of their basement. The system has operated since 2010 and the extraction fan was replaced in 2014 and again in 2024. Details regarding the vapor mitigation system are provided in the Work Plan below.

The project is enrolled in the drycleaner environmental repair fund (DERF) and has been reimbursed for eligible charges from the investigation and pilot test activities.

In 2020, a round of groundwater samples from the monitoring wells was obtained indicating elevated levels of PCE persist in the groundwater. Concentrations of the degradation product of PCE, trichloroethene (TCE) was not detected at levels above the NR 140 enforcement standard in the groundwater from the site monitoring wells, but detection limits have been elevated at some locations where high concentrations (15,800 to 27,800 ug/l) PCE were present in 2020 groundwater sampling results. TCE is a more significant concern for vapor intrusion to adjacent properties due to the risk of health concerns at lower concentrations than vapors containing PCE.

The facility is one of the few remaining active drycleaners in the area, and still utilizes PCE as the drycleaning fluid. The facility is also a busy laundromat.

### **WORK PLAN SCOPE AND METHODS**

Three tasks have been required by the WDNR for the project related to additional vapor assessment, including:

- A) Assessment of vapor chemistry in the adjacent sanitary sewer to the east
- B) Evaluation of indoor air chemistry and vapor mitigation system function at the adjacent Sheboygan Paper Box & Specialty Company building to the north
- C) Evaluation of subslab soil vapor chemistry beneath the 1514 to 1520 Saemann Avenue building to the southwest (Siebert Building)

Details regarding evaluation of these tasks are provided below.

#### **TASK A) SANITARY SEWER VAPOR SAMPLING**

There is a 42 inch diameter brick sanitary sewer that flows from north to south approximately 10 to 15 feet east of the eastern wall of the Imogenes building. The sewer line is approximately 15 feet deep and was constructed in 1901. Groundwater at the Imogenes site is variable but has been observed at depths of 4 to 11 feet below grade, with groundwater flow trending to the southeast toward the sanitary sewer.

Due to groundwater migration, there is a concern that the sanitary sewer backfill and pipe may contain vapors with elevated levels of drycleaning chemicals or associated breakdown products, particularly PCE and TCE.

The Imogene's building is a slab on grade concrete floored structure with a water and sewer lateral that enter the building off of Saemann Avenue to the south near the southeast corner of the building (**Figure 1**). The sanitary sewer line from Saeman Avenue is 18 inches in diameter, was installed in 1908, is approximately 11.75 feet deep, and flows to the east to connect with the main sanitary sewer line that flows to the south down 15<sup>th</sup> Street.

#### Sample Locations

There are four manholes proposed for testing that provide access to the sanitary sewer main line, as shown on **Figure 1** and listed below:

- SSG-SA-30-002 - Upgradient manhole in Calumet Avenue, north of the Imogenes building at the intersection of Sibley Court and Calumet Drive
- SSG-SA-20-015 - Upgradient manhole in Saemann Avenue, west of the Imogenes lateral connection with the sanitary approximately 180 feet west of the intersection of Saemann Avenue, N. 15<sup>th</sup> Street, and Calumet Avenue
- SSG-SA-30-001 - Downgradient in the intersection of Calumet, Saemann, and N. 15<sup>th</sup> Street
- SSG-SA-20-014 - Downgradient in N. 15<sup>th</sup> Street, approximately 168 feet south of Saemann

#### Sample Method and Analysis

Samples will be obtained using a passive charcoal sample tube with a 10-day collection period. The sampling media and collection materials will be obtained from the analytical laboratory, Eurofins, Folsom, California. As recommended by the laboratory and performed on other WDNR reviewed investigations, the Waterloo membrane sampler will be used for sampling due to the better performance in humid environments.

Per the WDNR Guidance in RR-649, the sampler will be hung within the sanitary sewer line approximately two feet above the water level in the pipe. Because the sewer is 42 inches in diameter (3.5 feet), there is a potential for significant fluctuation in water levels within the sewer, and keeping the sampler above the water surface is important, so raising the sampler higher than the guidance-recommended height of one foot above the water surface is

planned. The sampler will be hung from ladder rungs observed within the manholes using nylon fishing line. Access to the manholes will require the cooperation of the City of Sheboygan, as several of the manholes are located in traffic lanes that have a significant traffic activity.

Upon collection, the samples will be shipped to Eurofins, Folsom, California for analysis. Eurofins is working with the WDNR on several projects that utilize this passive vapor sampling method. A 10-day sample time is proposed with laboratory analysis for a short list of analytes related to drycleaning operations, which include the following:

- Tetrachloroethene (PCE)
- Trichloroethene (TCE)
- Cis – dichloroethene (DCE)
- Trans – dichloroethene (DCE)

As the WDNR is aware, vinyl chloride can NOT be tested using this analytical method, but based on previous findings, vinyl chloride is not expected to be present at significant concentrations for this project.

## **TASK B) BASEMENT AIR SAMPLING AND VAPOR MITIGATION SYSTEM EVALUATION AT 1505 SIBLEY COURT**

### Vapor Mitigation System

There is an existing vapor mitigation system operating since 2010 beneath the floor of the basement of the Sheboygan Paper Box & Specialty Company (Sheboygan Box) at 1505 Sibley Court, Sheboygan WI. The system consists of the following components, with the layout shown on **Figure 2**.

- Four 3-inch diameter PVC pipe extraction points (P-1 to P-4) cemented in place in the floor of the basement, approximately four feet north of the basement south wall.
- Approximately 50 feet of 3-inch diameter PVC header pipe that extends through the Sheboygan Box and Imogenes interior walls and extends outside off the Imogenes building southwest corner.
- Connection to a Radon-Away RP-265 electric extraction fan that draws air from the four subslab extraction points.
- Dedicated 15-amp electric service within the Imogenes building utility room which powers the extraction fan.
- One water manometer within the Imogenes building to provide visual verification of the fan operation. The current draw on the vapor mitigation system indicates 3.25 inches of water column is being pulled.
- Seven subslab vapor sample ports (VP-B to VP-H) consisting of an approximate 1/2" diameter drilled floor penetration sealed with a threaded nut. The vapor sample ports are located approximately 3 to 8 feet from the floor penetrations P-1 to P-4.

### Sheboygan Box Building and Basement Operations

The Sheboygan Box building and operations are spread across three floors containing 110,000 square feet. The building houses a factory, offices, and storage and dates to the late 1800's. Manufacturing operations are located on the first and second floors of the building, and the basement is used primarily for storage. The company has approximately 26 employees, mostly involved in the manufacturing process, who spend most of the day on the first or second floor, and only on rare occasions is the basement visited to access the storage space or service utility equipment.

The basement houses the building utilities, including a boiler with chemicals for water treatment in the northeast corner of the basement, as well as heating, ventilation, and air compression equipment along the west wall of the basement. Stored materials in the basement immediately adjacent to the vapor mitigation system consist primarily of former wooden patterns stored on built-in wooden shelving along the southeast basement wall. There are currently approximately 50 wheeled storage carts consisting of wood, steel and canvas that cover the vapor mitigation system area. The carts were formerly used by Advanced Disposal for storage of recycling materials, and potentially will be sold.

Storage of petroleum products, such as waste oil, lubricants, and grease, was observed in the basement, at locations further from the vapor mitigation system area, which is located near the building southeast corner. Internal walls divide the basement into sections, the basement in the immediate area of the vapor mitigation system consists of an approximately 60 foot north / south by 90 foot east / west space with several thick concrete support posts. The basement extends to the north an additional approximately 90 foot by 65 foot area, and to the west into a large approximately 90 foot by 120 foot area. The overall basement footprint is approximately 180 feet east / west by 125 feet north / south, and the basement height is roughly 9.5 feet.

The basement floor is concrete and extends approximately four feet below the exterior ground surface. There is no sump for dewatering the basement, and according to the owner, the building very rarely floods, the last time being in the 1990's after heavy rains.

There are several floor drains in the basement floor that were observed spaced roughly 50 to 100 feet apart located approximately 30 feet north of the south basement wall. The drains are expected to flow east and connect to the storm or sanitary sewer, but the owner did not know for certain.

There is also an elevator shaft that services all three floors of the building which extends approximately two feet below the basement floor. The elevator is located along Calumet on the east side of the basement, roughly 65 feet north of the southeast building corner. The elevator shaft has a floor drain, and the floor of the elevator shaft was dry.

The basement has a stairwell in the southeast corner which provides access to the first and second floors. This stairwell is the location of the only subslab vapor chemistry sample that has been obtained beneath the building, VP-A, where elevated concentrations of PCE were detected in 2009. VP-A was abandoned after sampling and is no longer present.

At ground level on the first floor is a doorway with access to the outside, which employees frequently use to exit the building during breaks. The door opens to a grassy area with a picnic table, immediately off the northeast corner of the Imogenes building, at the location of monitoring well MW-8 and PZ-9. The vapor mitigation system extraction point P-1 is located within the stairwell area. The approximate 12 foot by 14 foot stairwell is divided from the rest of the basement by a cement block wall with a large doorway opening to the basement room. In the stairwell at the base of the steps is an estimated 15-gallon vessel that stores condensate from an air compressor drain tube. The air compressor operates in the stairwell on the second floor.

#### Vapor Mitigation System Assessment

The Imogenes vapor mitigation system within the Sheboygan Box basement will be evaluated. The objective of the assessment will be to determine if the system provide capture of impacted subslab vapors beneath the building. The following items will be completed:

- Shifting of the hand carts covering the floor over the vapor mitigation system so the system components can be accessed and the basement floor viewed.
- Measurement of the Induced vacuum / gauge pressure in inches of water column at each of the four extraction point headers (P-1 to P-4).
- Measurement of field volatile organic gas content using a field photoionization detector (PID) at the Imogenes exhaust port and at each of the four floor penetrations (P-1 to P-4).
- Measurement of induced vacuum / gauge pressure in inches of water column and field VOC content at the seven vapor port floor penetrations VP-B to VP-H.
- Measurement of the field VOC content in the Sheboygan Box basement using a PID at other targeted locations, such as the stairwell, outside ambient air at the exit door, within the closest floor drain to the vapor mitigation system, etc.
- Assessment of the condition of the basement floor and the presence of cracks that could limit vapor system effectiveness.

- Evaluate the need for abandonment or resealing of the floor seal at any of the vapor mitigation system extraction or monitoring points.
- Preparation of a vapor mitigation system commission report, with recommendations for any necessary system enhancements, such as installation of a fan function alarm.
- Preparation of a vapor system inspection, operation, and maintenance manual.

### Air Laboratory Samples

While not typically required if acceptable vapor capture by the mitigation system is demonstrated, the WDNR has requested the indoor air of the Sheboygan Box basement be tested for drycleaning chemicals.

After completion of the vapor mitigation system assessment, we will revisit the need for chemical testing within the basement air, and discuss the matter with the WDNR. The continued use of PCE by the Imogenes facility, with standard building ventilation that includes communication through wall penetrations along the eastern wall of the Imogenes building near the Sheboygan Box stairwell door could result in the detection of chemicals that may not be representative of a migration pathway from the subsurface. There is a potential that any detection of drycleaning chemicals in the vapors of the basement could be due to outside ambient air entry to the basement via the stairwell doorway. If testing of the breathing space air of the Sheboygan Box building is needed, testing should be coordinated with Sheboygan Box to minimize the potential for entry of outside air to the basement from this area.

If the WDNR feels it necessary to test the basement vapors of the Sheboygan Box building, the following testing is proposed, as shown on **Figure 2**:

- IA-SB Basement 1 - Breathing height in basement above subslab VP-G
- IA-SB Stairwell 2 - Breathing height in base of stairwell approximately in center of space
- IA-SB Ambient 3 – outside air above the stairwell exterior door.

### Sample Method and Analysis

Samples will be obtained using a passive charcoal sample tube with a 10-day collection period. The sampling media and collection materials will be obtained from the analytical laboratory, Eurofins, Folsom, California, and will again utilize the Waterloo membrane sample media, due to the relatively high humidity of the basement air. The outside ambient air will utilize the same sampling method to allow for direct comparison of results.

Per the WDNR Guidance in RR-649, the indoor samplers will be hung at approximate breathing height (4 to 5 feet above the floor) within the basement using nylon fishing line. The exterior sampler will be hung at an approximate height of 9 to 10 feet above grade using nylon rope. The sampler will be secured in a weatherproof enclosure, and efforts will be made to deploy the sampler several feet above the entry door, just south of the Sheboygan Box building wall and east of the Imogenes building northeast corner.

Upon collection, the samples will be shipped to Eurofins, Folsom, California for analysis. Eurofins is working with the WDNR on several projects that utilize this passive vapor sampling method. A 10-day sample time is proposed with laboratory analysis for a short list of analytes related to drycleaning operations, which include the following:

- Tetrachloroethene (PCE)
- Trichloroethene (TCE)
- Cis – dichloroethene (DCE)
- Trans – dichloroethene (DCE)

As the WDNR is aware, vinyl chloride can NOT be tested using this analytical method, but based on previous findings, vinyl chloride is not expected to be present at significant concentrations for this project.

## **TASK C) SUBSLAB VAPOR SAMPLING 1520 SAEMANN AVENUE**

Although soil and groundwater chemistry results indicate impacts are not expected to have migrated to the west, the WDNR has requested testing of the subsurface vapors be completed at the 1514 / 1520 Saemann Avenue building. The building is a slab on grade structure with no basement or sump vault. The northeast corner of the building has an address of 1514 Saemann Avenue and is leased to a company that provides supplies, such as formula and diapers, to families in the area on a very limited operation basis, once a week for a few hours at a time. The rest of the building is occupied by Merry Maids, a professional cleaning company. The building houses their manager offices, reception area, cleaning supplies, and a washer and dryer.

### Sample Locations

Subslab vapor samples (**Figure 3**) are proposed for two locations within the approximately 50 by 100 foot rectangular building. One location (SS-2) is planned for installation within a bare concrete floor utility room near the building east center. The second location (SS-1) will be installed in the southern center of the building in an open employee break room area. The carpet in this area will be cut and peeled back to expose the concrete floor for installation of the vapor pin.

### Sample Method and Analysis

Samples will be obtained using 6-liter summa canisters from a vapor probe installed through the building floor. A hammer drill will be used to advance a small diameter hole through the floor, and a vapor pin or equivalent sampling device will be installed in the hole.

Observations on the adjacent floor integrity will be made, where possible, although most of the building floor is finished with carpet or tile. The exposed floor in the utility room appears to be in excellent condition.

Samples will be retained using a flow regulator for a 30-minute sample interval. The water dam method will be used to seal the floor penetration from communication with indoor air. Upon sampling, the vapor pin will be removed and the floor patched with cement.

Sampling materials will be obtained from the analytical laboratory, Pace Analytical (Pace), Mount Juliet, Tennessee.

Upon collection, the samples will be shipped to Pace for analysis using the NIOSH TO-15 test method, with laboratory analysis for a short list of analytes related to drycleaning operations, which will include the following:

- Tetrachloroethene (PCE)
- Trichloroethene (TCE)
- Cis – dichloroethene (DCE)
- Trans – dichloroethene (DCE)
- Vinyl Chloride

## **RESULTS AND COMMUNICATION OF FINDINGS**

For all three proposed tasks, as required by the WDNR, within 10 days of receipt of the results from the laboratory, the findings will be shared with the property owner, client, and WDNR. The results will be tabulated and compared to the WDNR Quick Look-up Values for air.

The information will include a map of the sample locations, a brief discussion of the findings, and the need for additional work, if any.

## **DRYCLEANER ENVIRONMENTAL REPAIR FUND (DERF) ELIGIBILITY**

The project is eligible for coverage under DERF, although the fund is currently not able to reimburse claims in a timely manner. As previously discussed, additional approval of the budget for this effort is not needed to continue to maintain potential coverage under DERF, if that option appears possible in the future.

## **SCHEDULE**

Upon review and approval of this Work Plan, we can begin the project work. We can assess the Sheboygan Box system, complete the subslab vapor sampling beneath the Siebert building, and conduct the utility vapor evaluations. Upon evaluation of the Sheboygan Box vapor system, we can discuss the need for indoor air sampling at their facility.

Including laboratory analytical allowances, the work should require two to three months for completion once approval has been provided.

I look forward to hearing from you with any questions or comments.

Thanks,

Ken Ebbott

Regards,

**Ken Ebbott, PG, CGWP**

**Senior Project Manager/Senior Geologist**

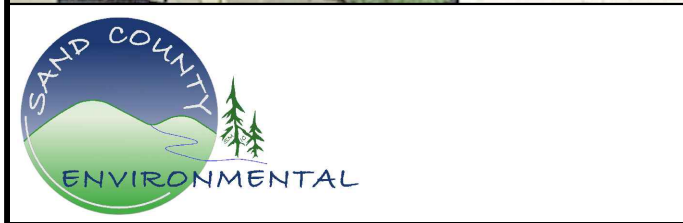
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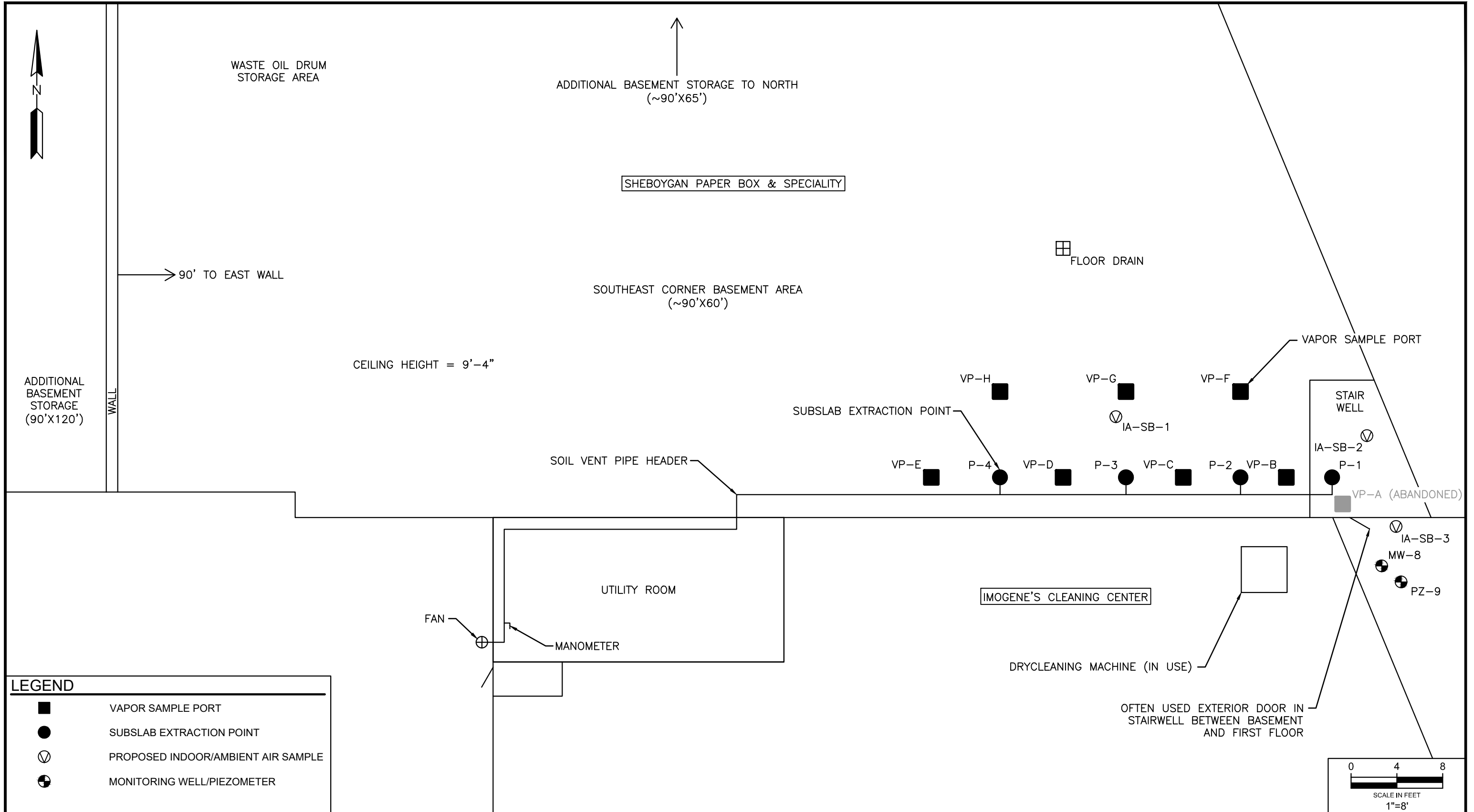


### SANITARY SEWER LAYOUT

CLIENT:	IMOGENE'S CLEANING CENTER	DATE:	MAY 2024
SITE:	IMOGENE'S CLEANING CENTER SHEBOYGAN COUNTY 1502 SAEMANN AVENUE SHEBOYGAN, WISCONSIN	DRAWN BY:	ASR
		APPROVED:	KE

**FIGURE 1**





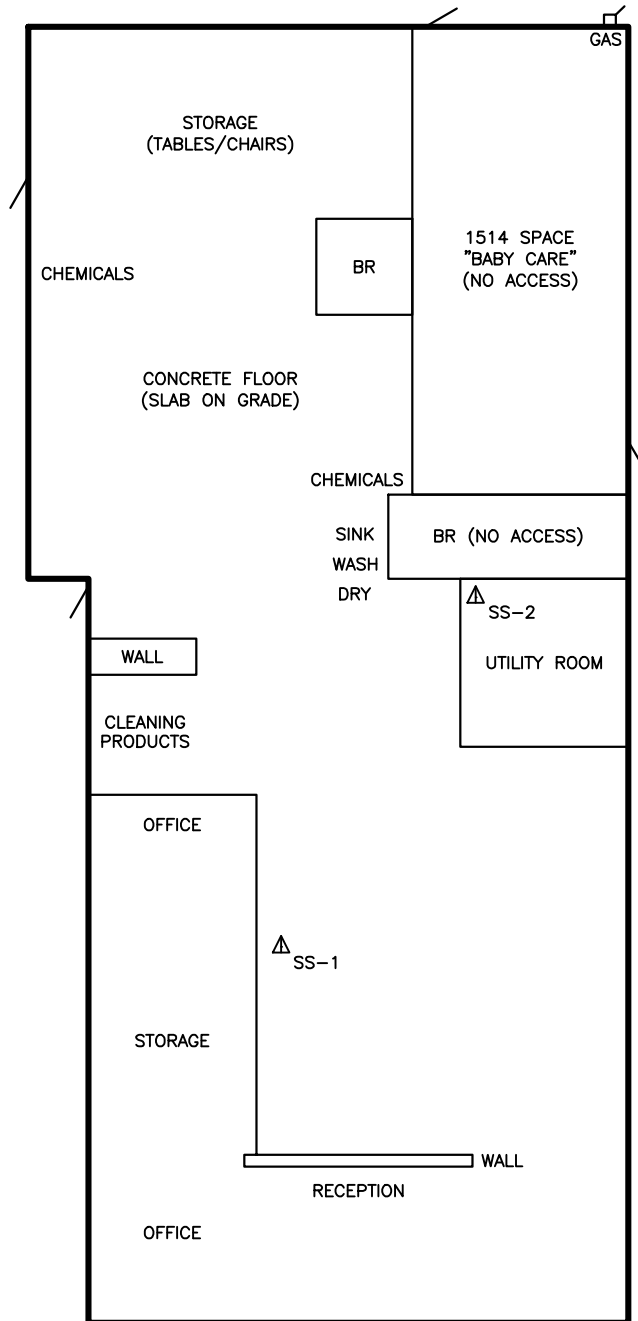
**VAPOR MITIGATION SYSTEM LAYOUT  
SHEBOYGAN PAPER BOX & SPECIALTY BUILDING BASEMENT**

CLIENT: IMOGENE'S CLEANING CENTER  
 SITE: IMOGENE'S CLEANING CENTER  
 SHEBOYGAN COUNTY  
 1502 SAEMANN AVENUE  
 SHEBOYGAN, WISCONSIN

DATE: MAY 2024  
 DRAWN BY: ASR  
 APPROVED: KE


**FIGURE 2**





SIEBERT RENTALS PROPERTY  
1520 SAEMANN AVENUE

**LEGEND**

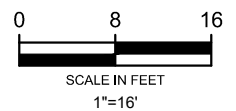
 PROPOSED SUB-SLAB VAPOR SAMPLE



SIEBERT RENTALS SAMPLING PLAN

CLIENT: IMOGENE'S CLEANING CENTER

SITE: IMOGENE'S CLEANING CENTER  
SHEBOYGAN COUNTY  
1502 SAEMANN AVENUE  
SHEBOYGAN, WISCONSIN



DRAWN BY: ASR      APPROVED: KE

DATE: APRIL 2024

**FIGURE 3**