

October 16, 2023  
AECOM Project Number: **60428891**  
**BRRTs:**  
02-45-560221Ethan Keller  
Hydrogeologist  
Remediation and Redevelopment Bureau  
Wisconsin Department of Natural Resources  
Oshkosh Service Center  
625 E CTY Y, Suite 700  
Oshkosh, WI, 54901**Subject: Work Plan Addendum for Additional Vapor Intrusion Monitoring and Characterization for the former FV Steel and Wire Company Site located at 111 N. Douglas Street, Hortonville, WI**

Dear, Mr. Keller,

On behalf of the former FV Steel and Wire Company (FVSW), AECOM Technical Services, Inc. (AECOM) is providing the Wisconsin Department of Natural Resources (WDNR) this Vapor Intrusion Work Plan (VI Work Plan) for additional characterization of the above referenced site. This additional site characterization is being conducted under BRRTS Case No. 02-45-560221.

## 1. Involved Parties Information

The following parties continue to be participants in the environmental site assessments.

<u>Responsible Party</u>	<u>Consultant</u>	<u>Laboratory (Air Monitoring)</u>
FV Steel and Wire Chad Erdmann Environment Manager 288 Argentina Ave Bartonville, IL 61607 309-697-7165	AECOM Gary Braun - Project Manager 1555 N RiverCenter Drive, Milwaukee, WI 53212 414-526-6224	Eurofins Environment Testing Air Toxins 180 Blue Ravine Road, Suite B Folsom, CA 95630 916-985-1000

## 2. Site and Investigation Background

The subject property (Figure 1) was used for agricultural and rural residential purposes until development in 1948 as a manufacturing facility for various steel and wire products under the name Wire Products Company (Phase I ESA report by Clayton Group Service, 2005). The company changed its name to Fox Valley Steel and Wire Company in 1995. In 2001, the company (except for the subject property) was sold to Monroe Acquisition Corporation, who leased the property and continued to operate steel and wire products manufacturing operations under the name "Fox Valley Steel & Wire" until 2014. The original Fox Valley Steel and Wire Company retained ownership of the subject property during the company ownership changes and in 2001 changed its name to FV Steel and Wire Company. The current owner of the property is "111 N. Douglas, LLC" who established ownership on March 5, 2018.

AECOM's initial vapor intrusion work plan was proposed to WDNR in AECOM's December 27, 2021 submittal. The initial VI investigation focused on western portion of Building D that is inferred to be located above an area where trichloroethene (TCE) and 1,1-Dichloroethene are present in shallow groundwater at concentrations that exceed Enforcement Standards (ES) of 5 ug/L and 7 ug/L, respectively. The notice to proceed for the VI Work Plan was received in WDNR correspondence dated January 26, 2022. Additional information was provided in January 31, 2023 and June 1, 2023 email addendums.

The initial sub-slab monitoring event was conducted in November 2022. The November 2022 sampling results indicated concentrations of trichloroethene (TCE) exceeded the Industrial Vapor Risk Screening Level (VRSL) of 880 ug/m<sup>3</sup> at five of the six sub-slab locations (with the exception of SS-6). As a result, an additional six sub-slab monitoring points, along with three indoor air monitoring points were proposed in January 2023 for implementation of February 2023 (winter) and June 2023 (summer) monitoring events. The VI monitoring events conducted over the past 11-months were scheduled to accommodate seasonal variations of precipitation and water table fluctuations, as well seasonal variabilities related to HVAC system operations.

The indoor air monitoring event conducted in February 2023 indicated low concentrations of tetrachloroethene (PCE; maximum concentration of 2.6 ug/m<sup>3</sup>) and TCE (maximum concentration of 2.1 ug/m<sup>3</sup>) that were below the Large Commercial Vapor Action Levels (VALs) of 180 ug/m<sup>3</sup> and 8.8 ug/m<sup>3</sup>, respectively. The February 2023 indoor air samples were collected using summa canisters deployed for approximately 24-hours.

Pursuant to AECOM's June 1, 2023 email to WDNR, the June 2023 indoor air monitoring event was conducted using Waterloo's Membrane Samplers (WMS) for 7-day deployments using EPA-Method TO-17 extraction. The change of sampling method was based on WDNR's recommendation for passive samplers that are deployed for longer durations. AECOM subcontracted Eurofins' Air Laboratory for procurement of the WMS samplers and TO-17 extraction. The June 2023 indoor air monitoring results indicated there was only one detection above reporting limits of PCE at 1.0 ug/m<sup>3</sup> at monitoring point IA-1 in Building E. There were no detections of target analytes in Building D (East or West) during the June 2023 monitoring event. As a result of the indoor air monitoring concentrations below VALs, no immediate actions have been deemed necessary to address indoor air quality.

The sub-slab sampling results conducted in June 2023 included 12 monitoring points - four points in Building D-West, six points in Building D-East, and two points in Building E, as illustrated on Figure 2. Results were similar to the previous sampling results conducted in Nov-2022 and Feb-2023. TCE was found to exceed the VRSL at six sampling points. Some variations in concentrations were observed between the colder weather sampling events conducted in November 2022 and February 2023, compared to the warmer weather in June 2023, which is expected. Expansion of the current sub-slab monitoring program does not appear to be necessary considering TCE VRSL exceedances appear to be delineated in both Buildings D and E. A sub-slab sample location in the building east of Building D is not believed to be necessary due to a foundation being present between Building D and Building C (to the east). However, to demonstrate this, a single sub-slab monitoring point will be advanced in Building C as a confirmation sample.

The lone outlier of the June 2023 sub-slab monitoring that is not believed to be related to the shallow groundwater impairment previously discussed, is the detection of the inert gas dichlorodifluoromethane (freon-12) at SS-8. The June 2023 concentration was observed to be 34,000 ug/m<sup>3</sup> underlying Building E. Building E is the newest of the site buildings and was found to have foam board insulation underlying the concrete slab during vapor pin installation. The foam board insulation is believed to be the source of the freon-12 detections since it is one of the two main fluorocarbons [trichlorofluoromethane (CFC-11) and dichlorodifluoromethane (CFC-12)] that are used in the manufacturing of rigid insulation. There has been no known use of refrigerants routinely used historically or facility-use involving automotive repair. The sub-slab detections of dichlorodifluoromethane detections are below the Large Commercial VRSL of 44,000 ug/m<sup>3</sup>. Based on the presence of foam board underlying the Building E concrete slab, the use of freon-12 in the manufacturing of rigid insulation, the lack refrigerant use or storage historically, and concentrations less than vapor screening levels, additional investigation is not warranted.

### 3. Scope of Work

The scope of work for additional VI monitoring includes continued indoor air sampling (four events), sub-slab sampling (two events), and a sub-slab depressurization system pilot test.

#### 3.1 Indoor Air Sampling

In accordance with WDNR correspondence, AECOM will follow the proposed revisions to the RR-800 guidance for the indoor air monitoring. Each event will span a 10-day period using three deployed WMS passive samplers in Building

D-West, Building D-East and Building E. Three of the four proposed indoor air monitoring events will be conducted during the following cold weather assessment periods:

- 1) Nov. 15<sup>th</sup> -Dec 31<sup>st</sup> 2023
- 2) January 2024
- 3) March 1<sup>st</sup> – April 15<sup>th</sup>, 2024

The fourth sampling event will occur during warmer weather (June 2024), assuming a sub-slab depressurization system is not operational.

During each indoor air monitoring event, AECOM personnel will conduct site reconnaissance to document existing conditions and collect required samples during each heating/cooling season. Site reconnaissance will include the location description, chemical inventory of each building, and field PID readings of sample locations. The WMS samplers will be deployed at the breathing level of about 5 feet above the floor to mimic worker breathing and air movement zones, but placed in a location to avoid damage and/or interference.

### 3.2 Sub-Slab Vapor Sampling

Twelve sub-slab vapor samples (i.e., SS-1 through SS-12) will be attempted to be collected via Vapor Pins™ that have previously been installed through the concrete floor slab of Buildings D and E. The existing sub-slab vapor sample locations, as illustrated on Figure 2, will be located and attempt to be sampled. Sampling will be dependent on tenant clearance to insure safe working conditions. A thirteen sub-slab vapor pin will be advanced in Building C. Prior to initiating sample collection, each sub-slab vapor pin will be leak tested utilizing a water dam method. The sample train will also be leak tested to document the integrity of the tubing and fittings.

Field records will be completed for each sample, to record the following information: unique sample name, sample location reference, and sample date, sampler's name(s), sample collection date and time, field PID readings from the vapor pin, SUMMA® canister serial number, sampling flow rate, minimum purge volume, sampling start and end times, canister start and end pressures, and weather conditions, including barometric pressure. The vapor pins will be left in place after the second sampling event and appropriately capped for use during possible subsequent vapor sampling events.

### 3.3 Sub-Slab Depressurization System Pilot Test

The sub-slab depressurization (SSD) system pilot test will be conducted to identify the building's sub-slab physical characteristics, including optimal extraction point positions, concentrations of discharge, radius of capture zone(s), and airflow requirement that will be used to scale SSD system design.

AECOM will conduct the pilot study as a stepped-interval test, using three incremental steps. At each step, the vacuum level applied to the sub-slab extraction point (SSEP) wellhead will increase, which in-turn increases the vacuum applied to the sub-slab environment. During each step of the test, sub-slab vacuum levels will be measured at the existing sub-slab vapor points (SS-1 through SS-13). Additional sub-slab points maybe installed to determine vacuum influence between existing points based on field observations. Any sub-slab points installed during the pilot test will be abandoned after completion of testing.

The SSD will be conducted using an electric motor connected to the SSEP through the concrete floor. A manifold bleed valve will be used to adjust vacuum levels at the blower, while a Magnehelic™ differential pressure gage will be used to measure vacuum levels (inch WC) at the blower. Extracted vapors will be discharged to the outside atmosphere through a nearby door.

Vacuum probe data will also be used to create distance-drawdown curves for the steady-state condition observed during the later times of each step test. The distance-drawdown curves will then be used to determine design parameters including a radius of influence (ROI).

### 3.4 Laboratory Analytical Methods

Sub-slab samples from each vapor point will be collected in laboratory-provided and certified clean 1-liter SUMMA® canisters, using laboratory-supplied flow regulators, and flow rates of 200 milliliters per minute (mL/min) for a 5-minute sample period. Sub-slab vapors will be analyzed using EPA Method TO-15. As mentioned, indoor air samples will be collected using the passive permeation WMS samplers using time-weighted concentration averages. The indoor air samples will be analyzed for the following target analyte list:

- 1,1-Dichloroethane
- 1,1-Dichloroethene
- 1,2-Dichloroethane
- cis-1,2-Dichloroethene
- Tetrachloroethene
- Trichloroethene
- Vinyl chloride

Sub-slab and indoor air samples will be sent by courier under chain-of-custody (COC) control to, Eurofins Environment Testing Northern California, LLC (*Eurofins Air Toxics*) in Folsom, California.

### 3.5 Deliverable

After each sampling event, AECOM will prepare a letter report with a summary of the vapor results for submittal to WDNR. A map of sampling locations, tabulated analytical results, and laboratory reports will be provided during each submittal.

## 4. Health and Safety Plan

A site-specific Health and Safety Plan has been prepared for site investigation activities and contains a summary of known site contaminants and other site hazards, emergency resources available, personnel protection, and emergency procedures required for this project. Field personnel will be familiar with the Plan prior to beginning the fieldwork.

## 5. Schedule

Field tasks are anticipated to commence in November 2023. A schedule of the sampling plan is below.

Project Phase	Date (Month starting)
Work Plan Submission to WDNR	October 2023
Indoor Air Sampling-1 Cool Season	Nov 15 <sup>th</sup> -Dec 31 <sup>st</sup> , 2023
Indoor Air Sampling-2 Cool Season	January 2024
Sub-Slab Sampling-1 Cool Season	January 2024
Indoor Air Sampling-3 Cool Season	March 1 <sup>st</sup> – April 15 <sup>th</sup> , 2024
Indoor Air Sampling-4 Warm Season	June 2024
Sub-Slab Sampling-2 Warm Season	June 2024

AECOM will notify WDNR of significant changes to the site investigation schedule.

## 6. Assumptions

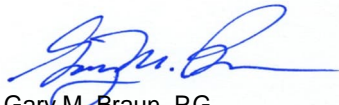
This work plan was prepared assuming the following:

- Site representatives will arrange for unrestricted access to all areas of the building during normal business hours, and there are no delays in obtaining access.
- This Work Plan will be submitted to the WDNR for review and comments received within 30 days as shown in the above schedule.
- AECOM's scope of work and report format is acceptable to the WDNR.

A schedule adjustment may be necessary if changes to these assumptions occur during the investigation.

If you have any questions regarding the information contained in this work plan, please contact Gary at [Gary.Braun@aecom.com](mailto:Gary.Braun@aecom.com) or (414) 526-6224 at your convenience.

Regards,



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Attachments:

- Figure 1 – Site Location Map
- Figure 2 – Vapor Intrusion Sampling Map



**Site Location**  
111 N. Douglas Ave.  
Hortonville, WI

**Legend**

— Site Boundary



0 210 420  
Feet

1 inch = 333 feet

Prepared by:

**AECOM**

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**Drawn:** MO 9/20/2023

**Approved:** GB 9/20/2023

**Scale:** 1:4,000

**Project No:** 60428891

**Figure No:** 1

- Legend
- X Sub Slap Point
  - Indoor Air Sample
  - ▨ Garage Door
  - ⊗ Manhole
  - Structural Pier
  - - - Breezeway
  - ▲ In-Wall Exhaust Fan (near ceiling)

**Figure 2 - Vapor Intrusion Sample Location Map**  
 Former FV Steel & Wire Company Site, Hortonville, WI

