Vapor Intrusion Investigation Technical Memorandum for the

Hamburg – Unadilla Street Contamination Site

Pinckney, Livingston County, Michigan

Facility ID 47000013

April 2022

Prepared For:

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

REMEDIATION AND REDEVELOPMENT DIVISION

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TABLE OF CONTENTS

Section **Page**

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

SECTION 1
INTRODUCTION

At the request of the Michigan Department of Environment, Great Lakes, and Energy (EGLE) Remediation and Redevelopment Division (RRD), Weston Solutions of Michigan, Inc. (WESTON) has prepared this *Vapor Intrusion (VI) Investigation Technical Memorandum (Tech Memo)* for the Hamburg-Unadilla Street Contamination Site (Site) in Pinckney, Livingston County, Michigan (**Figure 1**) to describe the VI Investigation completed from 2018 through 2021 and its findings.

1.1 SITE HISTORY

The ACO – Pittsfield Products Inc. Facility (ACO) is located in a residential area in Pinckney, Livingston County, Michigan. ACO, located at 461 Dexter Road, caused historic releases of chlorinated solvents, primarily trichloroethene (TCE), into soils and groundwater from its metal finishing operations. Since 1992, ACO conducted evaluation of groundwater contamination for purposes of implementing interim response activities to reduce the mass of chlorinated solvents in the groundwater that migrated approximately 1/3 of a mile from the ACO plant. In late December 1995, a consent decree was signed between EGLE and ACO to evaluate and address the contamination via groundwater treatment utilizing granulated activated carbon (GAC). The groundwater remediation system has been in continuous operation as of the writing of this report. ACO submits progress reports to EGLE as required by the consent decree.

Quantum Environmental was contracted by ACO to develop and maintain a groundwater treatment system for the Site. In 1995, the groundwater treatment system was installed in several phases as a means to reduce the mass of the chlorinated solvent solvents in the groundwater contamination plume. As part of this system, five recovery wells have been installed as part of two carbon filtration systems utilizing two and three stages of GAC. Pumped groundwater and purge water collected from monitoring wells exceeding EGLE Residential Drinking Water Criteria (DWC) is passed through the two activated carbon systems at the ACO facility. The treated effluent is discharged on the north side of ACO's property and must meet the general permit conditions and effluent limitations as described in Groundwater Discharge Permit No. GW1310039. In June 2016, EGLE notified ACO to investigate the volatilization to indoor air pathway (VIAP) due to groundwater concentrations exceeding generic volatilization to indoor air criteria.

On June 11, 2018, at the request of the Michigan Department of Health and Human Services (MDHHS), EGLE conducted an emergency evaluation of sub-slab soil gas and indoor air for Light of the World Academy (LOWA) to determine if vapor intrusion was occurring into the school building situated over the center of the groundwater contamination plume. While ACO was presented a scope of work to perform this task, it elected not to perform the work. EGLE installed two soil gas sub-slab vapor pins and collected four indoor air samples for 24-hour analysis. No TCE or related chlorinated solvents were detected in soil gas under the building or the indoor air.

During September and October 2018, by EGLE request, Quantum Environmental installed and sampled five soil gas wells over the center of the plume as a first step to evaluate the volatilization to indoor air pathway (VIAP) using EGLE provided site-specific volatilization to indoor air criteria ([VIAC] **Appendix A**). A concentration of 340 ug/m^3 TCE in soil gas at basement depth over the center of the plume was detected, exceeding the site-specific VIAC of 67 µg/m^3. A neighborhood public meeting was held by EGLE

and MDHHS on October 24, 2018 to inform residents of potential vapor intrusion issues from ACO's groundwater contamination plume. EGLE contracted Weston Solutions of Michigan, Inc. (WESTON) in November 2018 to evaluate the VIAP for residences over and near the groundwater contamination plume emanating from the ACO facility. EGLE focused its efforts to obtain access for residences near high concentrations of TCE in the groundwater and shallow water table areas over the plume. EGLE obtained access to 18 residences and LOWA school to enter the buildings for purposes of collecting sub-slab soil gas and indoor air samples.

1.2 OBJECTIVES

The primary objectives of EGLE's limited scope VIAP investigation are:

- Evaluate the VIAP in residential areas over and near the groundwater contamination plume to determine if the VIAP poses risk to occupants of the residences and a school.
- If exposure or substantial risk is identified, mitigate indoor air via treatment technologies and perform necessary monitoring and maintenance of the remedy selected.
- Develop the initial [VIAP] conceptual site model (CSM) to include potential preferential (utility) vapor migration pathways as a basis for further evaluation of the VIAP.

As a response to these objectives, WESTON performed the following VI investigation activities from 2018 through 2021:

- Initial site assessment and access coordination to residential homes and the Light of the World Academy (LOWA) school.
- Installation and sampling of sub-slab Vapor Pins® at 18 residential homes.
- Sampling of indoor air at 16 residential homes.
- Installation and sampling of five sub-slab Vapor Pins® at the LOWA school.
- Sampling of indoor air co-located with sub-slab soil gas at the LOWA school.
- Mitigation of elevated sub-slab TCE concentrations at 450 Magic St using air purifying units (APUs) and a sub-slab depressurization system (SSDS).
- Operation and Maintenance (O&M) activities for SSDS at 450 Magic St.
- Obtained utility maps (**Appendix B**) and develop a pictorial CSM for the facility.

1.3 REPORT ORGANIZATION

Section 2 describes the Site setting. **Section 3** summarizes the completed VI investigation activities. **Section 4** presents the mitigative measures including installation and O&M. **Section 5** presents the CSM. **Section 6** presents conclusions and recommendations based on the VI investigation findings. The appendices include laboratory analytical data, building surveys, photos, O&M checklists and sampling forms.

SECTION 2
SITE SETTING

The physical characteristics of the Site, including geology and groundwater flow conditions from ACO's reports and area well logs, were evaluated to aid in the understanding of contaminant fate and transport, along with risks to potential receptors, as summarized in the following subsections.

2.1 SITE SETTING AND GEOLOGY

The Site is located in a residential area of the Village of Pinckney, Livingston County, Michigan. The village is approximately 1.6 square miles in size. The area is predominated by residential homes, a school, and commercial, agricultural, and industrial areas. Residents and businesses in the village are on a municipal water supply and sewers.

Surface soil in the area is predominated by shallow sandy loam deposits. Based on residential well logs, alternating layers of clay, sand and gravel underlie the Site at varying depths up to approximately 100 feet below ground surface (ft bgs). Bedrock sandstone is present at depths ranging from 80 to 150 ft bgs.

2.2 SITE HYDROLOGY

A shallow unconfined aquifer and a deeper confined glacial drift aquifer are present below the Site. Groundwater elevations collected by Quantum Environmental as part of ACO's routine groundwater monitoring indicate the depth to groundwater is relatively shallow, ranging from 4 to 23 ft bgs. Groundwater flow in the shallow aquifer is generally to the southwest. A zone of capture exists in the vicinity of recovery well RW-3 that intercepts and treats the leading edge of the plume via a two stage GAC system. Four recovery wells closer to the ACO plant capture and route contaminated groundwater to a three stage GAC treatment system. Treated effluent from both GAC systems are discharged on the north side of ACO's property to infiltrate back into the groundwater under ACO's groundwater discharge permit. Groundwater in the confined aquifer is not captured by the pumping wells. Reinjected groundwater infiltrates into the shallow aquifer.

Honey Creek is a tributary of the Huron River drainage system and located approximately 2/3 of a mile southwest of the ACO facility. ACO collects annual samples from the storm water outfall to Honey Creek due to suspected groundwater contamination infiltration into the storm sewer system near the ACO plant. Low concentrations of cis-1,2 dichloroethylene, a bacterial breakdown of TCE, are intermittently detected in the outfall. Honey Creek includes a dammed Mill Pond that likely influences the shallow groundwater flow direction. Honey Creek flows to the southeast to the larger Portage Lake approximately 2 1/4 miles southeast of the ACO facility.

SECTION 3
VAPOR INTRUSION INVESTIGATION ACTIVITIES

WESTON completed VI investigation activities for the LOWA school and the residences granting access from November 2018 through August 2021. Primary tasks included sub-slab Vapor Pin® installation, sub-slab soil gas sampling with paired indoor air sampling, and residential building assessments. Soil Gas & indoor air sampling was paused in 2020 into 2021 due to Covid-19 restrictions. **Figure 2** summarizes residential sampling locations where access was granted.

3.1 VAPOR PIN® INSTALLATION AND SAMPLING

Sub-slab Vapor Pins® were installed by WESTON in a total of 18 residential homes in the area around the ACO Facility. In addition to residential homes, five sub-slab Vapor Pins® were installed in the LOWA school in order to evaluate VI risk in areas to represent the building footprint. At the request of the LOWA school, vapor pins were not installed in the Gymnasium floor.

Sub-slab Vapor Pins® were installed following the Standard Operating Procedures (SOPs) described in the *Standard Operating Procedure Installation and Extraction of the Vapor Pin®* (Cox-Colvin, 2016), per below.

- A hammer drill was used with a 1-1/2 inch diameter hammer bit to drill at least 1-3/4 inches into the slab of the basement, or the lowest level of the home (where applicable).
    - During all drilling activities, a wet/dry vacuum equipped with a high efficiency particulate air (HEPA) filter was used to collect drill cuttings.
- Once the initial depth was achieved, a 5/8-inch diameter drill bit was used to drill the slab into the underlying sub-slab soil.
    - In some homes, a flush mount installation was not able to be achieved due to a lack of sufficient slab concrete thickness. In this situation, the Vapor Pin® was installed as a stick-up construction through the sub-slab.
- The Vapor Pin® assembly (including stainless steel Vapor Pin® and silicone seal sleeve) was placed into the drill hole and tapped into place using the installation tool.
- A protective silicone cap was placed on the Vapor Pin® to prevent vapor loss, and a plastic cover was placed over the entire flush mount.

Once each Vapor Pin® was installed, the sub-slab seal was evaluated using the Standard Operating Procedures (SOPs) described in the *2013 MDEQ Technical Guidance* (MDEQ-RRD, 2013), per below.

- The Vapor Pin® and sample apparatus was purged prior to sample collection to ensure the samples were representative of subsurface conditions, using the following procedure:
    - The aboveground sample tubing and flow regulator assembly was connected to the vapor well sample train. Sampling lines were connected through a helium shroud and the enclosure was placed on the ground covering the Vapor Pin® flush mount.
    - Prior to sampling, a leak test was conducted to ensure that the sample train was sealed, ensuring that leaks were not present that would allow ambient air into the sample.
    - Helium tracer gas was introduced into the shroud assembly and a helium detector was used to verify that the enclosure contains helium.

- A 50 cubic centimeter (cc) syringe was connected to the sample port line and three volumes of air were purged from the sample train. The valve on the sample train was closed and a helium detector was connected to the sample train. The helium detector was then used to determine if helium had entered the sample train. The leak test was considered successful if the helium concentration in the sampling train was less than 10 percent (%) of the concentration of helium in the helium rich environment. The helium detector was then used to verify that helium remained within the shroud.

- Following confirmation that the sample train was properly sealed, the regulator assembly was connected to the laboratory supplied 1-liter Bottle-Vac™ sampler and the relevant time and vacuum information was recorded in the field notes.
- The valve on the regulator was opened to collect the sample, set to a flow rate of less than 200 milliliter per minute (ml/min). The vacuum gauge and sampling rate was monitored until no vacuum remained (approximately 10 minutes). The Bottle-Vac™ was then removed from the regulator and sealed with a paraffin wax film sheet.

Sub-slab samples were collected quarterly at most locations to evaluate seasonal and temporal fluctuations in indoor air concentrations. All sub-slab soil gas samples were held under proper chain of custody procedures and submitted to the EGLE Environmental Laboratory for analysis by U.S. EPA Method TO-15 for the full list of VOCs. Soil gas sampling sheets are provided in **Appendix C**.

3.2 INDOOR AIR SAMPLING

To evaluate communication of the sub-slab soil gas with indoor air, paired indoor air samples were collected at 16 of the 18 residential homes where sub-slab Vapor Pins® were installed. Indoor air samples were not collected at two homes due to their location outside of the plume footprint. Paired indoor air samples were also collected at five locations within the LOWA school. Sampling was attempted on a quarterly basis to evaluate seasonal and temporal fluctuations in indoor air concentrations. Due to lack of responses from some residents and Covid-19 restrictions, not all locations were sampled on a quarterly basis.

Prior to sample collection, indoor air building surveys were completed for each residence (**Appendix D**). The surveys utilized EGLE forms to evaluate the building construction, occupancy, household activities (e.g., cleaning, new textiles, painting, etc.) and inventory of consumer products stored in the home (crafts, paint, petroleum products, cleaning products, insecticides, gun cleaners among others). The surveys are necessary to differentiate chemical vapors from household products and/or activities from those related to subsurface soil gas contamination. Any products that were identified as having potential to interfere with the sampling results (i.e. heavy solvents) were removed and placed in sealed totes prior to sampling and replaced after sampling was completed. In cases where consumer products were contaminating the indoor air sample at levels of concern, the residents were advised to store products out of the house.

Indoor air samples were collected over a period of 24-hours to represent residential exposure assumptions using a laboratory supplied 6-L Summa™ canister with regulator. Canisters were placed in the lowest level of the home at a height representative of the breathing zone. Indoor air samples were held under proper chain of custody procedures and submitted to the EGLE Environmental Laboratory for analysis by U.S. EPA Method TO-15 for the full list of VOCs.

3.3 SITE-SPECIFIC VIAC

Site-specific VIAC were developed for the site in July 2018 based on known site conditions and EGLE's conceptual site model for the vapor intrusion pathway (**Appendix A**). In June 2021, the site-specific criteria was revised to better reflect the unique residential structure conditions identified during sampling including dirt floor basements, dirt floor crawl spaces, sumps, and non-masonry basement walls (**Appendix F**). In addition, the depth to groundwater under seasonally high conditions was included for each unique category of residential structure condition.

3.4 RESULTS

Analytical results for sub-slab soil gas and indoor air sampling are summarized in **Table 1** and presented on **Figure 3** for residential sampling excluding the LOWA school (**Figure 4**) and 450 Magic Street (**Figure 5**). Laboratory analytical results are provided in **Appendix E**. Results were initially compared to EGLE site-specific VIAC established July 2018 and subsequently compared to the revised June 8, 2021 including samples collected from 2018 through 2021. EGLE- MDHHS Interim Action Screening Levels for soil gas and indoor air were used to determine the speed at which actions to address acute vapor short term exposure risks were initiated and not used as criteria for compliance purposes.

The primary contaminant of concern (COC) for the Site is TCE, a short-term toxicant. TCE was detected in sub-slab soil gas greatly above site-specific criteria at one residence – 450 Magic St. As a result of this exceedance, mitigation measures were taken at the residence and are discussed further in **Section 4**.

No other compounds were detected above the original July 2018 site-specific criteria. However, revised site-specific VIAC established in June 2021 that was modified to reflect special building circumstances and hydrology considerations, revealed exceedances of PCE and/or TCE in sub-slab soil gas samples at two additional residences – 810 E Hamburg St and 408 E Unadilla St. PCE and/or TCE detections above site-specific VIAC at these residences indicate a vapor intrusion risk is present. Indoor air sampling at both residences did not detect TCE above the laboratory reporting limit of 1.6 ug/m^3, and signaled that actions to address short term exposure risks were not necessary at the time of sampling in 2019.

Five compounds were detected above MDHHS Interim Action Screening levels for indoor air:

- 1,2,4-Trichlorobenzene
- 1,4-Dichlorobenzene
- Benzene
- Chloroform
- Ethylbenzene

These compounds found in the indoor air did not originate from the chlorinated solvent groundwater contamination plume, and are likely a result of household products, consumer goods, insecticide use and/or other activities. Additionally, these detected compounds do not show good correlation with soil gas data which supports an indoor source.

SECTION 4
MITIGATIVE MEASURES

As a result of TCE sub-slab soil gas concentrations well above its site-specific criterion of 67 ug/m^3, immediate measures were taken at 450 Magic St to mitigate the acute vapor hazard, including deployment of air purifying units (APUs), installation of a sub-slab depressurization system (SSDS) with pressure field extension testing. Operation and Maintenance(O&M) of the vapor mitigation SSDS requires periodic pressure readings, stack samples, and system checks.

4.1 SSDS INSTALLATION AND INITIAL SAMPLING

Sub-slab soil gas analytical results from 450 Magic Street, received on November 7, 2018, detected TCE concentrations at 7,300 ug/m^3, well above the site-specific criteria for TCE. The indoor air sample did not detect TCE. On November 8, 2018, WESTON mobilized to the Site to deploy an EGLE supplied APU as an interim measure to address vapor intrusion risks prior to installation of an SSDS. Compliance, Inc was contracted by WESTON to install a SSDS at 450 Magic Street, and mobilized to the site on November 13, 2018 to complete installation. After installation and SSDS pressure field extension testing, the APU was turned off.

The SSDS was installed using a 4-inch extraction point installed through the concrete slab along the southern wall of the basement. The extraction hole was drilled to a depth sufficient to access the sub-slab soil. Polyvinyl chloride (PVC) piping was connected from the extraction point to a RadonAway® fan installed on the exterior of the building. Vent stack piping extends above the roof line to exhaust sub-slab vapors to the atmosphere. A sample port was installed on the exterior vent stack piping to facilitate O&M sampling activities. The sump located in the southeast side of the basement was also sealed to prevent short circuiting the sub-slab vacuum pressure field. Representative photos of the SSDS installation are provided in **Appendix G**.

As part of the installation, four additional Vapor Pins® were installed for pressure field extension (PFE) testing to monitor the vacuum induced by the SSDS fan across the building slab. Differential pressure readings during the initial start-up at each Vapor Pin® ranged from -0.02 inches water column (in. wc.) to -0.62 in. wc., indicating sufficient vacuum was present beneath the slab. After installation of the SSDS was completed, post-mitigation indoor air and soil gas sampling was completed to evaluate the effectiveness of the system on November 20, 2018. Soil gas samples were collected from the stack sample port using a 1-liter Bottle-Vac™. Indoor air samples were collected over a 24-hour period from the basement and first floor living room using 6-L Summas. All samples were submitted to the EGLE laboratory for TO-15 analysis of VOCs. Sampling results indicated the SSDS was extracting TCE from the sub-slab at concentrations below EGLE Air Quality Division (AQD) permit exemptions, and TCE was not detected in the indoor air when the SSDS was performing to specifications.

4.2 O&M ACTIVITIES

To evaluate the effectiveness of the SSDS system, O&M sampling was completed at 450 Magic St in several rounds from 2019 through 2021. **Table 2** summarizes O&M sampling data for each round, **Figure 5** shows TCE results for each round, and O&M inspection forms are included in **Appendix H**. The initial O&M sampling completed from 2-3 July 2019 identified TCE breakthrough into the indoor air at a concentration

of 4.9 ug/ m^3 which exceeded MDHHS Interim Action Screening Levels. An APU was deployed in the finished basement to mitigate the immediate health risk. On 12 July 2019, WESTON collected a water sample from the sump located in the basement to be analyzed for VOCs. TCE was detected at a concentration 4.6 ug/l, above its site-specific criteria indicating that contaminated groundwater was entering the sump posing indoor air risk and reducing the efficiency of the SSDS. An indoor air sample collected on 12 July 2019 found TCE concentrations at 3.0 ug/ m^3 which exceeded MDHHS Interim Action Screening Levels. The APUs were turned off during all sampling rounds to obtain a representative indoor air sample. The sump was resealed after the resident had replaced the sump pump prior to collecting an indoor air sample on 25 July 2019 which did not identify TCE above reporting limits. An APU was deployed from 12 July 2019 through 23 August 2019. The APU was turned off during all 24-hour sampling periods. An additional O&M round completed on 28-29 August 2019 did not identify TCE above reporting limits in the indoor air sample.

In October 2019, the resident complained of excessive noise from the SSDS fan. On 16 October 2019 the SSDS fan was replaced with an AMG Eagle Extreme Fan. Differential pressure readings from the stack manometer and each Vapor Pin® demonstrated sufficient vacuum after the fan was replaced, indicating the system was still effective at mitigating sub-slab TCE soil gas concentrations.

O&M sampling completed on 5-6 November 2019 did not identify TCE above reporting limits in the indoor air sample. In January 2020, the resident complained of excessive noise from the replacement fan, and modifications were made on 23 January 2020, which included mounting the fan away from the building and placing additional insulating materials on the system piping. O&M indoor air sampling completed on 6-7 February 2020 detected TCE at 3.4 ug/m^3 above its 2 ug/ m^3 health screening level. An APU was deployed to mitigate the immediate health risk. On 4 March 2020, a water sample was collected from the sump in the basement. TCE was detected at a concentration of 8.4 ug/L, above its site-specific criterion. This indicated contaminated groundwater was in contact with the building and entering the sump, therefore contributing to TCE in the indoor air. The sump was resealed and a secondary APU was deployed on the first floor of the residence. Subsequent indoor air samples collected on 12 March 2020 and 24 March 2020 were below TCE health screening levels or below TCE reporting limits.

Additional O&M sampling activities were not completed from 2020 into 2021 due to the COVID-19 pandemic and federal and local mandates restricting in-person operations. APUs remained at the residence throughout 2020 and 2021 to ensure that any potential breakthrough from TCE in the sump water was mitigated. O&M sampling resumed on 10-11 August 2021 and did not identify TCE above reporting limits in the indoor air sample.

On 14 December 2021, WESTON met with ACO consultant representatives to transition O&M activities. During this site visit, the SSDS fan stopped operating at 450 Magic St. One 24-hour indoor air sample was deployed to assess TCE concentrations when the SSDS fan was not operating while WESTON coordinated with a contractor (Compliance, Inc.) to repair/replace the fan. Results from this sample did not identify TCE above reporting limits. The SSDS fan was replaced on 21 December 2021 and follow-up indoor air and stack samples were collected. TCE was not detected above laboratory reporting limits in the second indoor air sample and was detected at a concentration of 3.6 ug/m^3 in the stack sample. When the SSDS is working properly, effluent stack concentrations demonstrate the SSDS is removing TCE vapors from the sub-slab at concentrations below EGLE AQD permit exemptions.

WESTON developed an O&M manual to transfer operational responsibility of the SSDS to ACO's consultant and to provide to the property owner. The O&M manual use is limited to the property at 450 Magic St and is not included in this report for privacy reasons.

SECTION 5
CONCEPTUAL SITE MODEL

Evaluating the VIAP requires a robust conceptual site model to include multiple factors relevant to risk of exposure to sub-surface soil gas contaminants into structures. Physical site characteristics such as the area of releases to soils and groundwater, depth to groundwater, vertical distribution of the groundwater contaminant plume within the aquifer, soil types, and soil moisture contribute significantly to the potential for VI. Other factors contributing to the likelihood of VI include building occupancy and construction, building use, preferential sub-surface pathways and heating and cooling systems. VIAP evaluation for chlorinated solvent releases utilize Interstate Technology and Regulatory Council (ITRC) and EGLE guidance recommending investigation of receptor structures within 100 feet of non-petroleum vapor sources, with the boundary of vapor sources beginning from known points (soil borings and/or monitoring wells) where VOC concentrations are above the residential criteria, moving outwards. This concept is known as the lateral inclusion zone (LIZ), which is used to make decisions on where to investigate potential receptors to vapor intrusion by relying on fully delineated boundaries of soil and groundwater vapor sources.

The Site has a generally flat topography with mixed paved and unpaved residential areas. Soil in the area is predominated by shallow sandy loam deposits. Based upon residential well logs, alternating layers of clay, sand and gravel exist below the Site at varying depths up to approximately 100 ft bgs. Groundwater flow in the shallow aquifer is generally to the southwest. A zone of capture exists in the vicinity of recovery well RW-3 within the leading edge of the plume. Groundwater in the confined aquifer is not captured by the pumping wells and is not likely recharged by treated groundwater discharge as allowed by the permit.

Groundwater near the ACO facility is shallow (less than 5 ft in some areas), is seasonally in contact with the basement at 450 Magic St where a SSDS is installed and is potentially in contact with other residences in the area not yet evaluated (**Figure 6**). At 450 Magic St, contaminated groundwater enters the sump during seasonally wet periods. Contaminated groundwater making contact with the basement reduces or negates the effectiveness of the SSDS resulting in vapor intrusion of TCE into the indoor air. In high water table areas, utility corridors may also be in contact with contaminated groundwater and present a potential preferential pathway during seasonally high groundwater fluctuation and soil gas migration. Of the five soil gas wells installed by ACO, three of the five soil gas wells closest to the water table over the contaminated groundwater plume, are above the site-specific criterion for TCE.

TCE site-specific VIAC includes risks for short-term and long-term health effects. The 2021 revised VIAP site-specific criteria for 18 residences and 1 school takes into consideration water table elevations and individual building structure characteristics to include the presence of stone masonry walls and dirt floors in a structure. During EGLE's investigation of the VIAP, 5 residences denied access for sub-slab soil gas and indoor air sampling. Other residences in the area have not been sampled due to lack of response from the residents. Residences not yet evaluated may be at risk for VI exposure due to their proximity to the contaminant plume and shallow groundwater near the ACO facility and should be evaluated for the VIAP. In addition, there are numerous residences within the 100-foot vapor source LIZ that are connected to underground utilities which could potentially convey contaminated water and/or vapors that have not yet been evaluated for VI risk.

SECTION 6
CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

The investigation activities completed between 2018 and 2021 have produced sampling data from 18 residences and a school that was used to evaluate the VIAP in the residential areas over and near the groundwater contamination plume. The sampling data was evaluated for seasonal variability and provided guidance as to where VI posed a risk to occupants of these structures and the area in general. At the residence where a vapor mitigation SSDS was installed, VI of TCE into the structure from soil gas and contaminated water in contact with the structure was confirmed by indoor air sampling results. Vapor intrusion (VI) was documented to occur during periods when the sump was continuously running due to a high water table. In this situation, the SSDS was not removing vapors from beneath the entire basement slab. The O&M for the SSDS included vapor pin and stack pressure readings and sampling from paired stack soil gas and indoor air samples to evaluate the effectiveness of the SSDS in mitigating VI risks to the occupant.

Sub-slab PCE and TCE detections above the revised site-specific VIAC at 810 E Hamburg Rd and 409 E Unadilla St indicate a vapor intrusion risk is present at these residences. While indoor air sampling did not detect TCE above the laboratory reporting limit of 1.6 ug/m^3, the reporting limit is close to the 2.0 ug/m^3 site-specific VIAC for TCE, adding uncertainty to whether TCE is present in the indoor air at low concentrations.

Groundwater flows to the southwest. The TCE plume tends to go deeper through the residential area towards the west-southwest. Groundwater in contact with residences near the ACO facility poses the largest risk for VI of contaminants into structures. This pathway has not been evaluated at several residences near the ACO facility and from a number of residences over the western half of the plume. An evaluation of the vertical distribution of contaminants at the top of the water table and within the plume could be used to develop a line of evidence to determine where VI risk is more likely to occur within the LIZ. The evaluation of sub-surface utilities (i.e., water, sanitary and storm sewer systems) and their connections as preferential pathways, for contaminated groundwater or vapor in soils to migrate into residences has not been completed.

6.2 RECOMMENDATIONS

WESTON recommends the following activities:

- Because TCE is an acute toxicant, monthly subslab soil gas and indoor air samples should be collected at 810 E Hamburg St and 408 E Unadilla St during low pressure weather fronts to further evaluate risk, or alternatively install presumptive mitigation systems.
    - If TCE or PCE is detected above site-specific VIAC during monthly monitoring, or any TCE is detected in indoor air above laboratory reporting limits, a vapor mitigation system shall be installed. An APU should be temporarily deployed until a SSDS or other appropriate vapor mitigation can be installed.
- Obtain access to residences which have not been evaluated for VI, with priority on areas of high water table locations closest to the ACO facility and within the groundwater plume footprint.

- For locations where access is denied, install additional soil gas wells to evaluate soil gas concentrations at depths which are representative of the VIAP for the surrounding structures.

- O&M at 450 Magic St on a quarterly basis: If the water table is high, more frequent O&M visits are necessary. Communication with the homeowner is necessary to determine if/when the sump is running.
    - Collection of sump groundwater samples in the spring during high water season.
        - If the sump is continuously running, groundwater is considered in contact with the building, reducing the effectiveness of the SSDS. At a minimum, monthly monitoring to include pressure readings, stack samples, and indoor air sampling is recommended. An automated sump alert system notifying the consultant of high water levels should be installed, if feasible.
    - Collection of paired stack and indoor air samples.
    - Utilize a contingency plan to address TCE VI to include deployment of APU's to bridge periods of potential VI into a structure, while a long-term solution to address seasonal high-water table is developed.

- Continue quarterly sampling at residences with access agreements in place until analysis of the sampling results indicate TCE will not exceed its site-specific VIAC and VI is not expected to occur.
    - Collection of paired sub-slab and indoor air samples.

- Evaluation of shallow groundwater and soil vapor sources in contact with sub-surface utility corridors near the ACO facility and their connections to structures.

- Evaluation of the vertical distribution of contaminants within the aquifer affected by the groundwater pump and treat system as it applies to the presence or absence of a clean water zone at the top of the aquifer.

- Adjust the VIAP sampling plan as necessary to accommodate changes in the CSM or updated VIAP guidance.

- Update to the conceptual site model on an ongoing basis to evaluate data gaps and priorities for VIAP investigation until the investigation is complete.

FIGURES

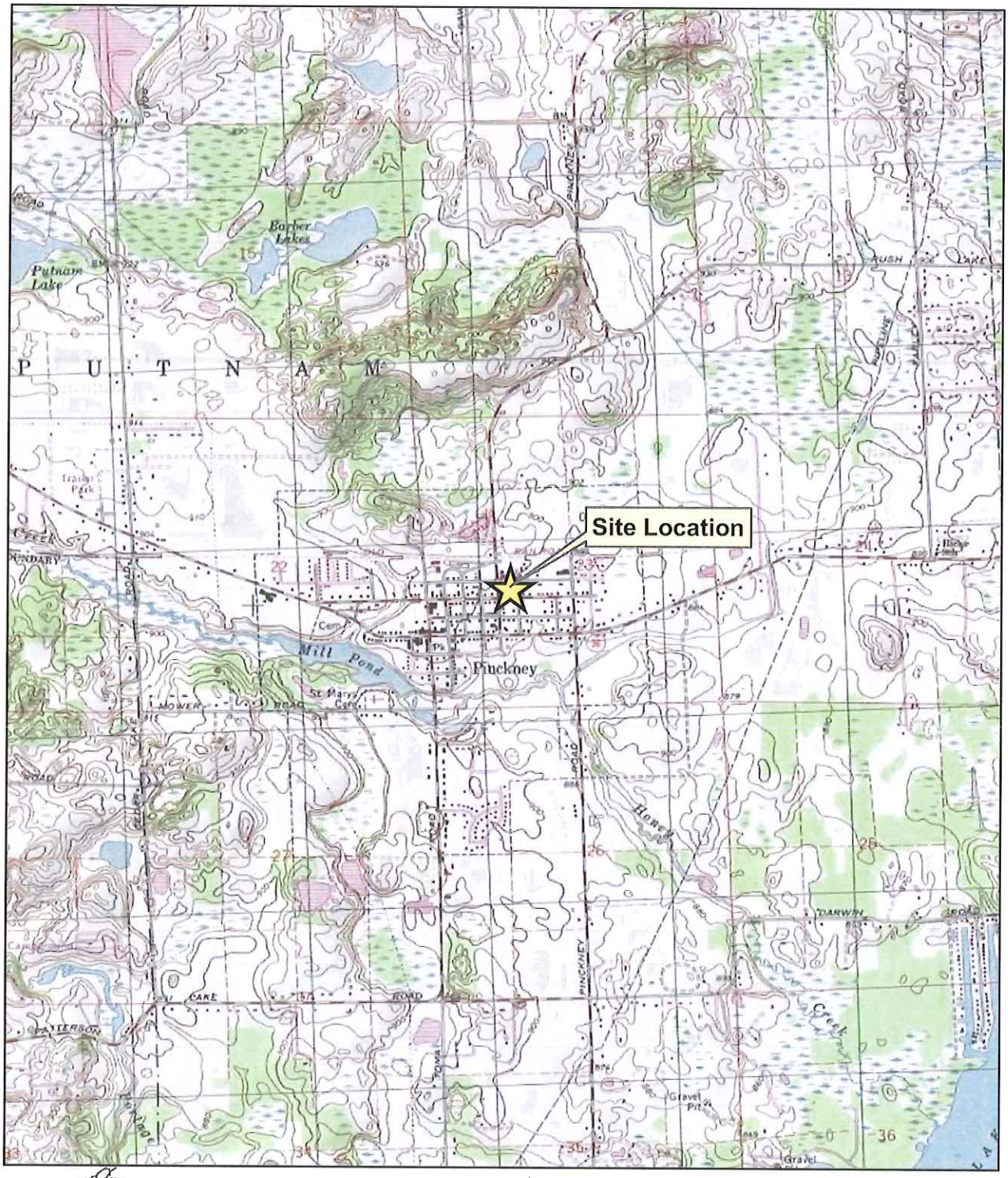

Figure: 1

WESTON SOLUTIONS
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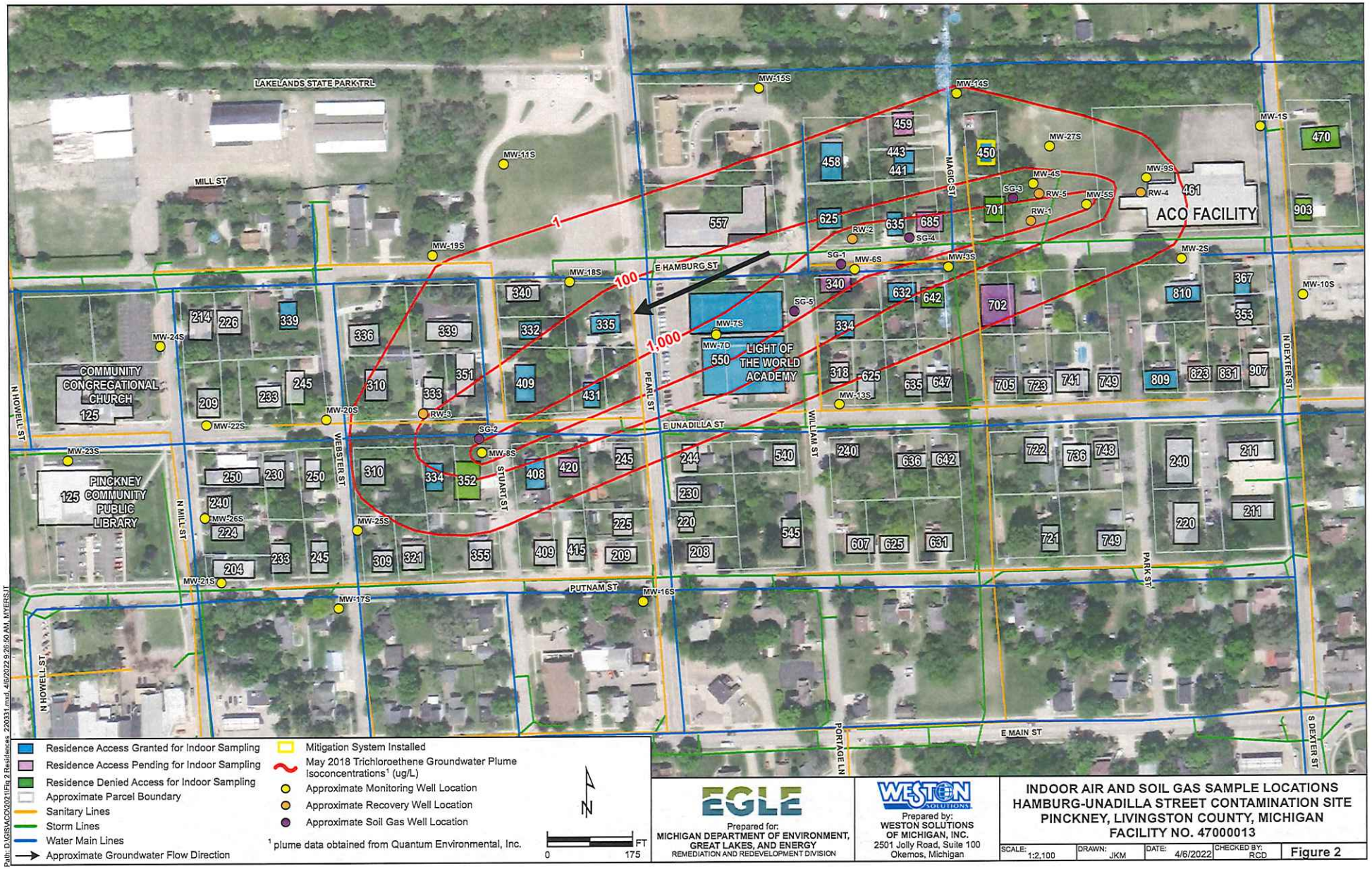
SITE LOCATION MAP
HAMBURG-UNADILLA STREET CONTAMINATION SITE
PINCKNEY, LIVINGSTON COUNTY, MI
FACILITY NO. 47000013

Path: D:\GIS\ACO\2021\Fig 1 - Site Location_220215.mxd, 2/15/2022 11:46:07 AM, MYERS.JT


LAKELANDS STATE PARK TRL
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STUART ST
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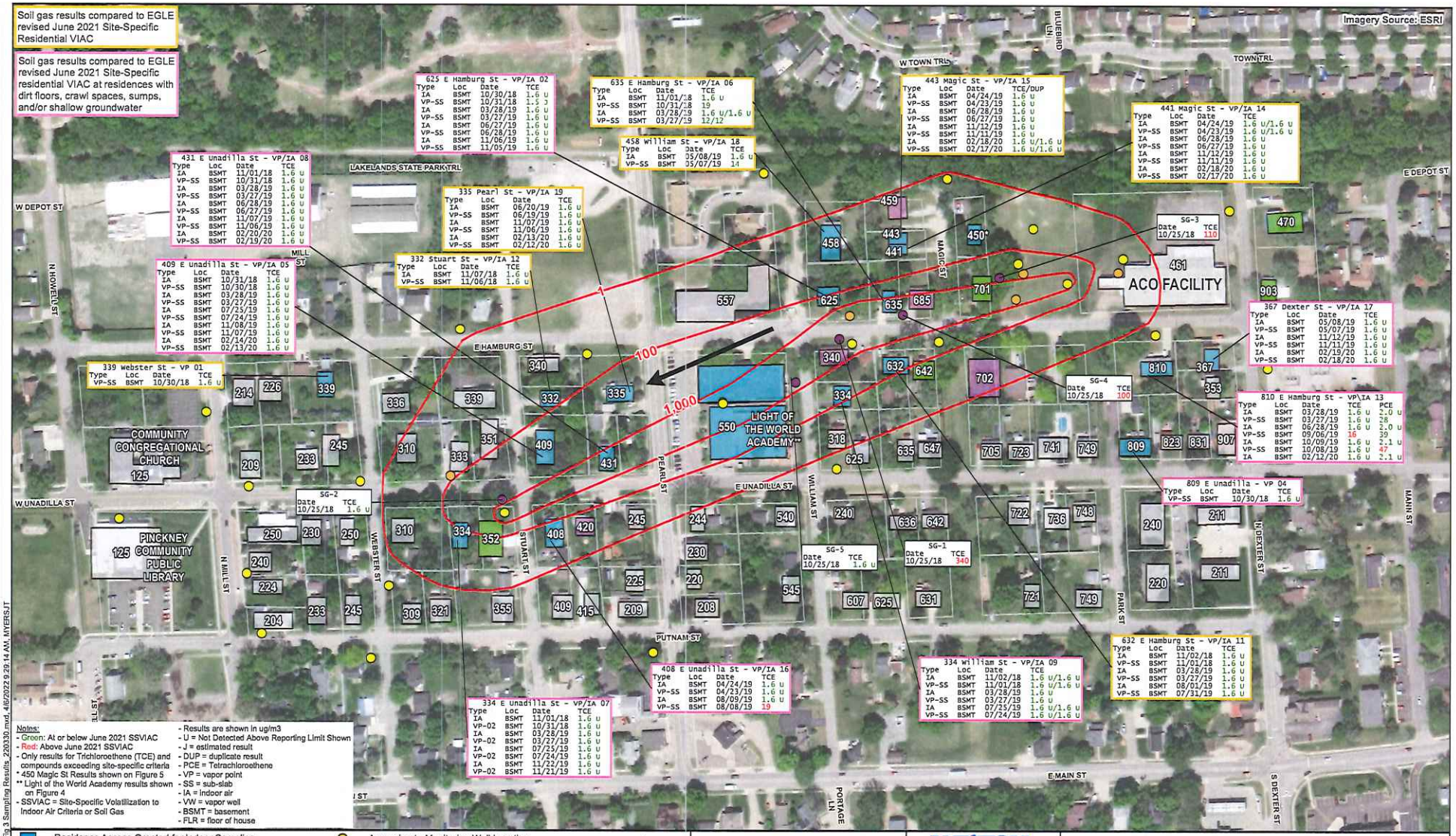
S DEXTER ST
COMMUNITY CONGREGATIONAL CHURCH
PINCKNEY COMMUNITY PUBLIC LIBRARY
LIGHT OF THE WORLD ACADEMY
ACO FACILITY
MW-1S
MW-2S
MW-3S
MW-4S
MW-5S
MW-6S
MW-7S
MW-7D
MW-8S
MW-9S
MW-10S
MW-11S
MW-13S
MW-14S
MW-15S
MW-16S
MW-17S
MW-18S
MW-19S
MW-20S
MW-21S
MW-22S
MW-23S
MW-24S
MW-25S
MW-26S
MW-27S
RW-1
RW-2
RW-3
RW-4
RW-5
SG-1
SG-2
SG-3
SG-4
SG-5
1
100
1,000
Residence Access Granted for Indoor Sampling
Residence Access Pending for Indoor Sampling
Residence Denied Access for Indoor Sampling
Approximate Parcel Boundary
Sanitary Lines
Storm Lines
Water Main Lines
Approximate Groundwater Flow Direction
Mitigation System Installed
May 2018 Trichloroethene Groundwater Plume Isoconcentrations[1] (ug/L)
Approximate Monitoring Well Location
Approximate Recovery Well Location
Approximate Soil Gas Well Location
[1] plume data obtained from Quantum Environmental, Inc.
N
0
175
FT
EGLE
Prepared for:
MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
REMEDIATION AND REDEVELOPMENT DIVISION
WESTON SOLUTIONS
Prepared by:
WESTON SOLUTIONS OF MICHIGAN, INC.
2501 Jolly Road, Suite 100
Okemos, Michigan
INDOOR AIR AND SOIL GAS SAMPLE LOCATIONS
HAMBURG-UNADILLA STREET CONTAMINATION SITE
PINCKNEY, LIVINGSTON COUNTY, MICHIGAN
FACILITY NO. 47000013
SCALE: 1:2,100
DRAWN: JKM
DATE: 4/6/2022
CHECKED BY: RCD
Figure 2
Path: D:\GIS\ACO\2021\Fig 2 Residences 220331.mxd, 4/6/2022 8:26:50 AM, MYERS,IT



Path: D:\GIS\ACO\2021\Fig 3 Sampling Results_220330.mxd, 4/6/2022 9:29:14 AM, MYERS,JT

EGLE

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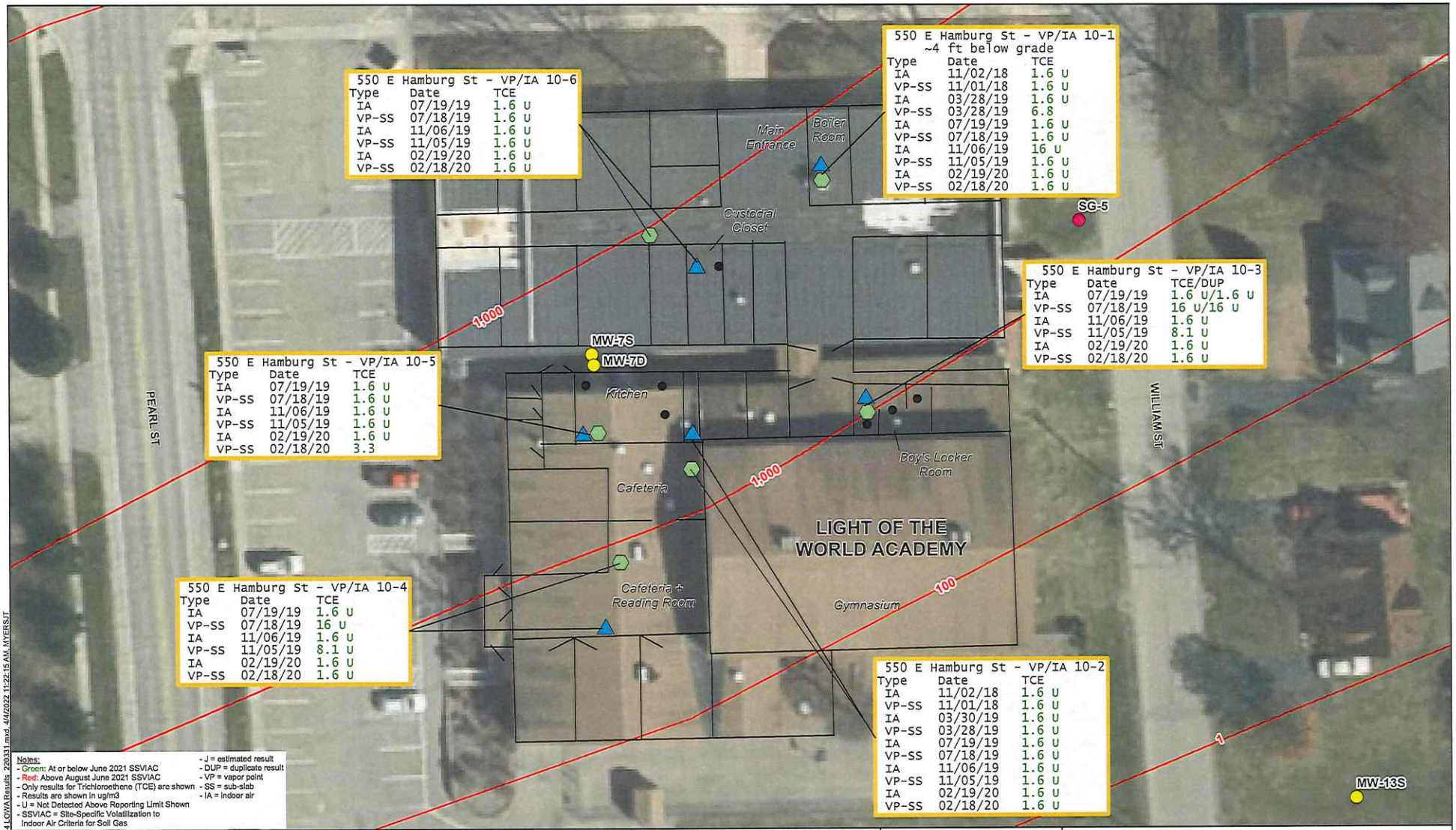
MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
REMEDIATION AND REDEVELOPMENT DIVISION

WESTON SOLUTIONS

Prepared by:
WESTON SOLUTIONS OF MICHIGAN, INC.
2501 Jolly Road, Suite 100
Okemos, Michigan

RESIDENTIAL INDOOR AIR AND SOIL GAS SAMPLING RESULTS
HAMBURG-UNADILLA STREET CONTAMINATION SITE
PINCKNEY, LIVINGSTON COUNTY, MICHIGAN
FACILITY NO. 47000013

SCALE:	DRAWN:	DATE:	CHECKED BY:	
1:2,400	JKM	4/6/2022	RCD	Figure 3



Notes:
- Green: At or below June 2021 SSVIAC
- Red: Above August June 2021 SSVIAC
- Only results for Trichloroethene (TCE) are shown
- Results are shown in ug/m3
- U = Not Detected Above Reporting Limit Shown
- SSVIAC = Site-Specific Volatilization to Indoor Air Criteria for Soil Gas
- J = estimated result
- DUP = duplicate result
- VP = vapor point
- SS = sub-slab
- IA = indoor air

Approximate Monitoring Well Location
Approximate Soil Gas Well Location
Approximate Vapor Pin Location
Approximate Indoor Air Sample Location
May 2018 Trichloroethene Groundwater Plume Isoconcentrations[1] (ug/L)
Floor Drain
[1] plume data obtained from Quantum Environmental, Inc.

N
0 30 FT

EGLE
Prepared for:
MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
REMEDIATION AND REDEVELOPMENT DIVISION

WESTON SOLUTIONS
Prepared by:
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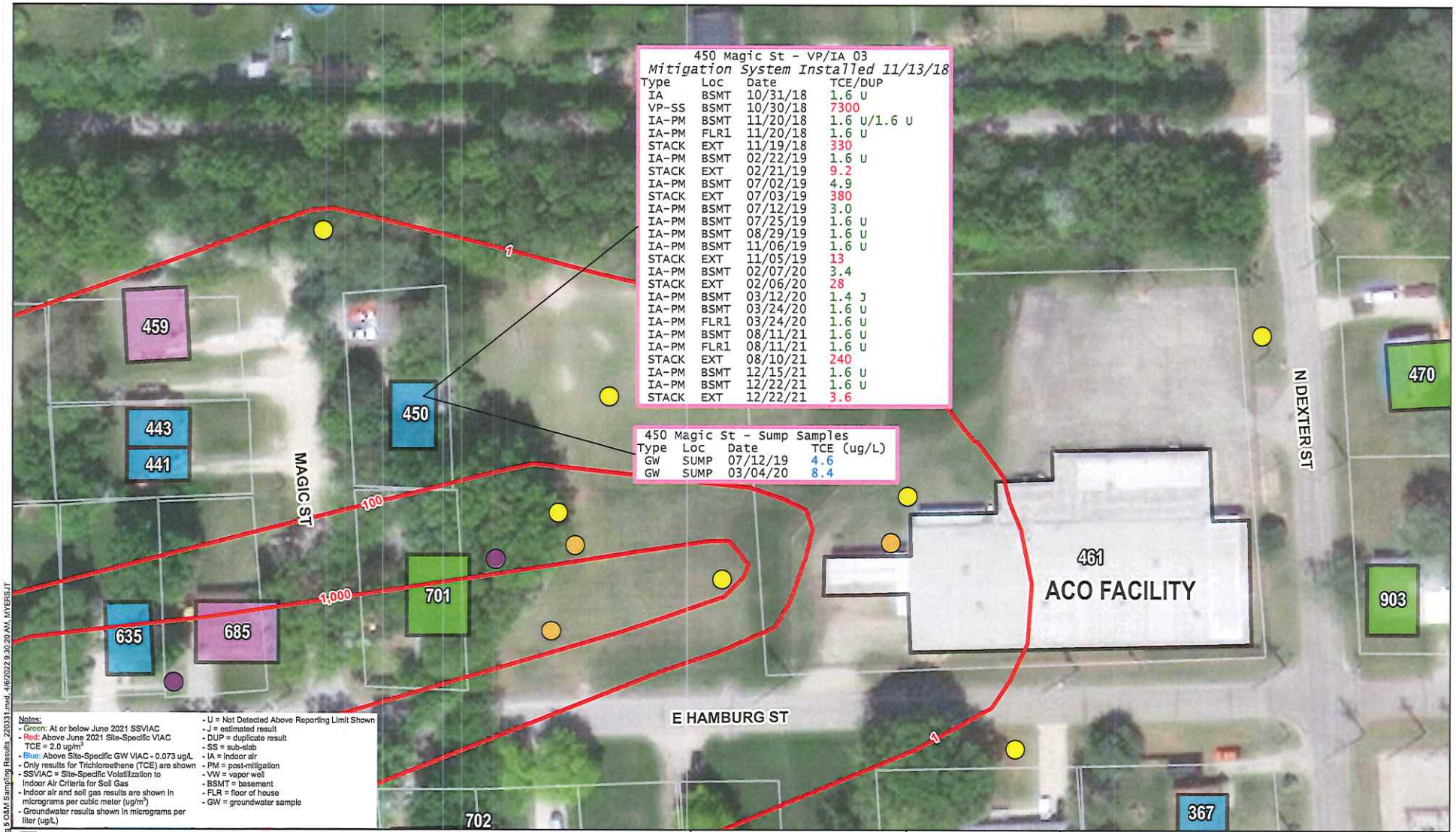
Okemos, Michigan

LIGHT OF THE WORLD ACADEMY TCE SAMPLING RESULTS
HAMBURG-UNADILLA STREET CONTAMINATION SITE
PINCKNEY, LIVINGSTON COUNTY, MICHIGAN
FACILITY NO. 47000013

SCALE:	DRAWN:	DATE:	CHECKED BY:	
1:360	JKM	4/4/2022	RCD	Figure 4

Path: D:\GIS\ACO\2021\Fig 4 LOWA Results_220331.mxd 4/4/2022 11:22:15 AM MYERS JT



Path: D:\GIS\ACO\2021\Fig 5 O&M Sampling Results_220331.mxd, 4/6/2022 9:30:20 AM, MYERS.JT

EGLE

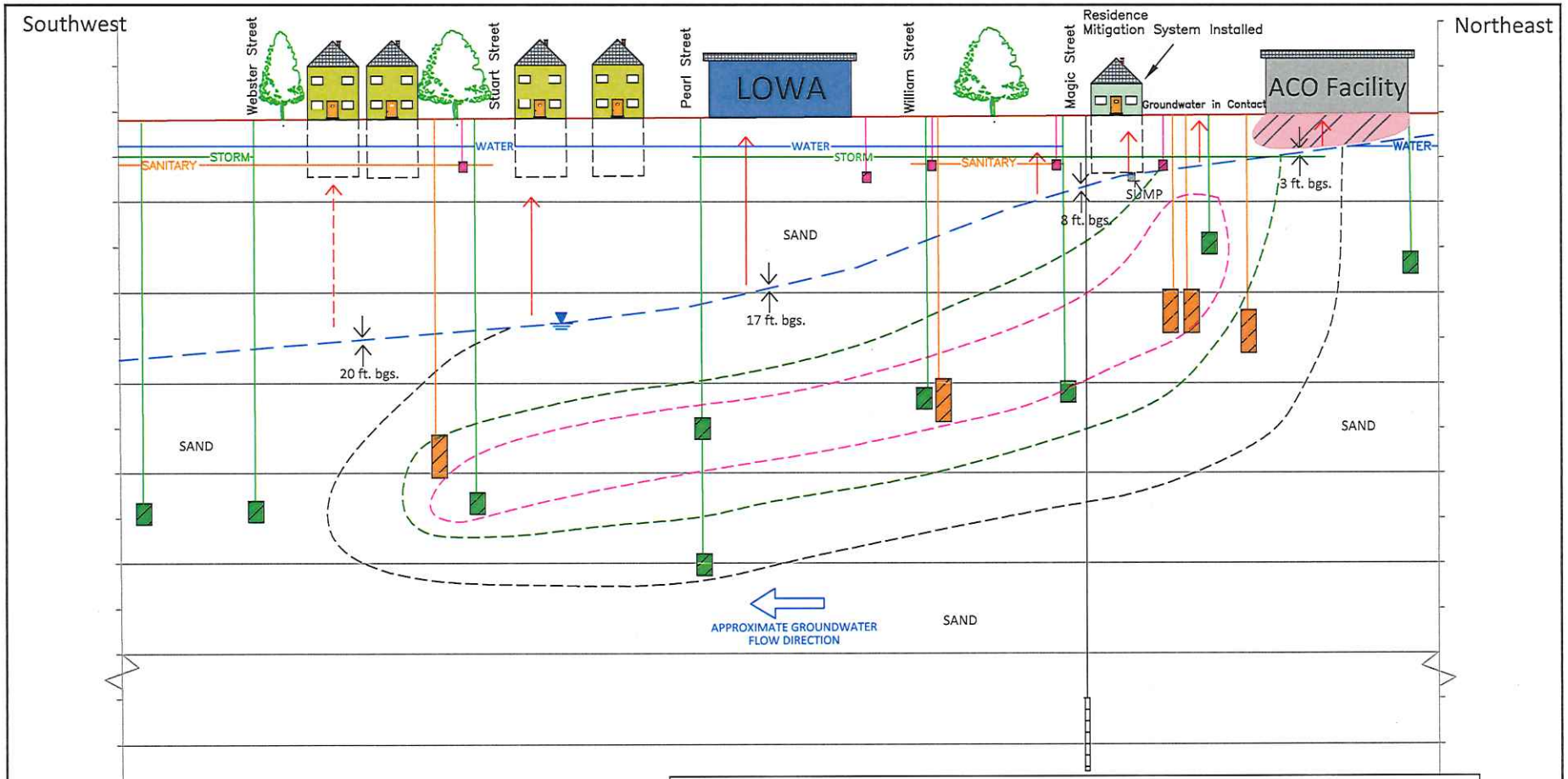
Prepared for:
MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
REMEDIATION AND REDEVELOPMENT DIVISION

WESTON SOLUTIONS

Prepared by:
WESTON SOLUTIONS OF MICHIGAN, INC.
2501 Jolly Road, Suite 100
Okemos, Michigan

450 MAGIC STREET VAPOR MITIGATION SOIL GAS AND INDOOR AIR TCE SAMPLING RESULTS
HAMBURG-UNADILLA STREET CONTAMINATION SITE
PINCKNEY, LIVINGSTON COUNTY, MICHIGAN
FACILITY NO. 47000013

SCALE:	DRAWN:	DATE:	CHECKED BY:	
1:720	JKM	4/6/2022	RCD	Figure 5



Legend

- > 1 ug/L APPROXIMATE TCE IN GROUNDWATER
- > 100 ug/L APPROXIMATE TCE IN GROUNDWATER
- > 1000 ug/L APPROXIMATE TCE IN GROUNDWATER
- SUSPECTED VAPOR MIGRATION
- VAPOR MIGRATION
- IMPACTED SOILS CONTRIBUTING TO VAPOR INTRUSION
- LOWA — LIGHT OF THE WORLD ACADEMY
- bgs. — BELOW GROUND SURFACE
- APPROXIMATE AVERAGE WATER TABLE
- SOIL GAS WELL
- GROUNDWATER MONITORING WELL
- RECOVERY WELL
- RESIDENTIAL WELL

THIS CSM APPLIES TO THE GROUNDWATER CHLORINATED SOLVENT VAPOR SOURCE. SOILS VAPOR SOURCES ARE PRESENT BUT NOT DELINEATED. A UTILITY SURVEY NEAR THE KNOWN AND SUSPECTED VAPOR SOURCES HAS NOT BEEN COMPLETED.

NOTES:

1. GROUNDWATER PLUME EXTENT APPROXIMATED BASED ON RESULTS OF NOVEMBER 2019 GROUNDWATER SAMPLES COLLECTED BY QUANTUM
2. RESIDENTIAL WELL NOT USED FOR DRINKING WATER - ALL RESIDENCES CONNECTED TO MUNICIPAL WATER SUPPLY FUNDED BY THE STATE OF MICHIGAN AS THE RESULT OF ACO'S GROUNDWATER CONTAMINATION PLUME
3. SCREENS DEPTHS ARE APPROXIMATE

WESTON SOLUTIONS OF MICHIGAN, INC.
2501 JOLLY ROAD
SUITE 100
OKEMOS, MI 48864

PRELIMINARY CONCEPTUAL SITE MODEL
HAMBURG - UNADILLA ST. CONTAMINATION SITE
FACILITY NO. 47000013
PINCKNEY, LIVINGSTON COUNTY, MICHIGAN

SCALE:	DRAWN:	DATE:	CHECKED BY:	
NOT TO SCALE	OSM	3/2022	CD	FIGURE 6

TABLES

Table 1
Soil Gas and Indoor Air Analytical Results Oct 2018 - Dec 2021
Hamburg-Unadilla St Contamination Site
Putnam Township, Livingston County, MI
Facility No. 47000013

Location	Units	EGLE Revised 2021 Site-Specific Residential VIAC - Soil Gas	EGLE Revised June 2021 Site-Specific Residential VIAC - Soil Gas for **Dirt Floors, Crawl Spaces, Sumps, Shallow Groundwater	367 DEXTER ST**					
Sample Date				5/8/2019	5/7/2019	11/12/2019	11/11/2019	2/19/2020	2/18/2020
FieldSampleID				IA17-367 Dexter-050819	19VP-17-SS	IA17-367DEXTER-111219	19VP-17-SS	IA17-367DEXTER-021920	19VP-17-SS
SampleType				Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas
Lab Report Number				1905094	1905095	1911171	1911171	2002119	2002118
1,1,1-Trichloroethane	ug/m³	170,000	5,000	1.6 U	1.6 U	1.7 U	1.6 U	1.7 U	1.6 U
1,1-Dichloroethane	ug/m³	530	16	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,2,3-Trimethylbenzene	ug/m³	NC	NC	1.5 U	**11**	1.5 U	**1.4 J**	1.5 U	1.5 U
1,2,4-Trichlorobenzene	ug/m³	NC	NC	3.7 U	3.7 U	3.7 U	3.7 U	3.8 U	3.7 U
1,2,4-Trimethylbenzene	ug/m³	NC	NC	1.5 U	**46**	1.5 U	**21**	1.5 U	1.5 U
1,2-Dichloroethane	ug/m³	33	0.98	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,3,5-Trimethylbenzene	ug/m³	NC	NC	1.5 U	**18**	1.5 U	1.5 U	1.5 U	1.5 U
1,3-Butadiene	ug/m³	NC	NC	0.66 U	0.66 U	0.67 U	0.66 U	0.68 U	0.67 U
1,4-Dichlorobenzene	ug/m³	NC	NC	1.8 U	1.8 U	1.8 U	**2.9**	1.8 U	1.8 U
2,2,4-Trimethylpentane	ug/m³	NC	NC	1.4 U	**3.8**	1.4 U	1.4 U	1.4 U	1.4 U
2-Butanone (MEK)	ug/m³	170,000	5,000	15 U	15 U	15 U	15 U	15 U	15 U
4-Methyl-2-pentanone	ug/m³	27,000	820	4.1 U	4.1 U	4.1 U	4.1 U	4.2 U	4.1 U
Acetonitrile	ug/m³	NC	NC	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Acrylonitrile	ug/m³	NC	NC	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Benzene	ug/m³	NC	NC	**1.1**	**3.4**	**0.99**	**1.0**	**0.92 J**	0.96 U
Carbon tetrachloride	ug/m³	150	4.5	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Chlorobenzene	ug/m³	1,700	52	1.4 U	1.4 U	1.4 U	**12**	1.4 U	1.4 U
Chloroform	ug/m³	37	1.1	**5.4**	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Chloromethane	ug/m³	3,100	94	**1.1**	0.62 U	**0.99**	**0.61 J**	**1.6**	0.62 U
cis-1,2-Dichloroethene	ug/m³	280	8.3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Cyclohexane	ug/m³	NC	NC	1.0 U	**11**	**0.89 J**	1.0 U	1.1 U	1.0 U
Dichlorodifluoromethane	ug/m³	NC	NC	**2.2**	**2.4**	**2.3**	**2.4**	**2.3**	**2.6**
Ethylbenzene	ug/m³	NC	NC	1.3 U	**10**	1.3 U	1.3 U	1.3 U	1.3 U
Hexane	ug/m³	NC	NC	3.5 U	**26**	3.6 U	3.5 U	3.6 U	3.5 U
Isopropylbenzene	ug/m³	NC	NC	1.5 U	**1.3 J**	1.5 U	**2.1**	1.5 U	1.5 U
m,p-Xylene	ug/m³	NC	NC	**2.8**	**49**	**2.8**	**5.2**	**1.9**	**1.7**
Methylene chloride	ug/m³	21,000	630	1.0 U	1.0 U	1.1 U	1.0 U	1.1 U	1.0 U
Naphthalene (VOC)	ug/m³	NC	NC	26 U	26 U	26 U	26 U	27 U	26 U
n-Propylbenzene	ug/m³	NC	NC	1.5 U	**3.4**	1.5 U	**3.4**	1.5 U	1.5 U
o-Xylene	ug/m³	NC	NC	**1.4**	**13**	**1.7**	**2.1**	1.3 U	**1.2 J**
Styrene	ug/m³	NC	NC	**1.5**	**11**	1.3	1.3 U	1.3 U	**1.1 J**
Tetrachloroethene (PCE)	ug/m³	1,400	41	2.0 U	**19**	2.1 U	**6.8**	2.1 U	**3.1**
Toluene	ug/m³	NC	NC	**4.7**	**18**	**3.1**	**2.2**	**2.0**	**1.6**
trans-1,2-Dichloroethylene	ug/m³	2,800	83	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Trichloroethene (TCE)	ug/m³	67	2.0	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Trichlorofluoromethane	ug/m³	15000	15000	**2.1**	**1.6 J**	**1.9**	**1.6 J**	**1.7**	1.7 U

Table 1
Soil Gas and Indoor Air Analytical Results Oct 2018 - Dec 2021
Hamburg-Unadilla St Contamination Site
Putnam Township, Livingston County, MI
Facility No. 47000013

Location	Units	EGLE Revised 2021 Site-Specific Residential VIAC - Soil Gas	EGLE Revised June 2021 Site-Specific Residential VIAC - Soil Gas for **Dirt Floors, Crawl Spaces, Sumps, Shallow Groundwater	550 E HAMBURG ST - LIGHT OF THE WORLD ACADEMY (LOWA)							
Sample Date				11/2/2018	11/1/2018	11/2/2018	11/1/2018	3/29/2019	3/28/2019	3/30/2019	3/28/2019
FieldSampleID				IA10-550 E HAMBURG ST-110218-BOILER	18VP-10-SS-01	IA10-550 E HAMBURG ST-110218-MAINTENANCE	18VP-10-SS-02	IA10-550 EHAMBURG-032819-BR	18VP-10-SS-01	IA10-550EHAMBURG-033019-MT	18VP-10-SS-02
SampleType				Indoor Air (Boiler Room)	Sub-Slab Soil Gas	Indoor Air (Maintenance Room)	Sub-Slab Soil Gas	Indoor Air (Boiler Room)	Sub-Slab Soil Gas	Indoor Air (Maintenance Room)	Sub-Slab Soil Gas
Lab Report Number				1811033	1811023	1811033	1811023	1903207	1903206	1904001	1903206
1,1,1-Trichloroethane	ug/m^3	170,000	5,000	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
1,1-Dichloroethane	ug/m^3	530	16	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,2,3-Trimethylbenzene	ug/m^3	NC	NC	NA	NA	NA	NA	1.5 U	1.5 U	1.5 U	1.5 U
1,2,4-Trichlorobenzene	ug/m^3	NC	NC	2.2 U	2.2 U	2.2 U	2.2 U	3.7 U	3.7 U	3.7 U	3.7 U
1,2,4-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	**2.3**	1.5 U	**2.2**	1.5 U	**2.2**	1.5 U	**3.9**
1,2-Dichloroethane	ug/m^3	33	0.98	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,3,5-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	**1.3 J**
1,3-Butadiene	ug/m^3	NC	NC	0.66 U	0.66 U	0.66 U	0.66 U	0.67 U	0.66 U	0.67 U	0.66 U
1,4-Dichlorobenzene	ug/m^3	NC	NC	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
2,2,4-Trimethylpentane	ug/m^3	NC	NC	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
2-Butanone (MEK)	ug/m^3	170,000	5,000	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
4-Methyl-2-pentanone	ug/m^3	27,000	820	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U
Acetonitrile	ug/m^3	NC	NC	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Acrylonitrile	ug/m^3	NC	NC	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Benzene	ug/m^3	NC	NC	0.95 U	0.95 U	0.95 U	0.95 U	0.96 U	0.95 U	0.96 U	0.95 U
Carbon tetrachloride	ug/m^3	150	4.5	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Chlorobenzene	ug/m^3	1,700	52	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Chloroform	ug/m^3	37	1.1	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Chloromethane	ug/m^3	3,100	94	**1.1**	**0.61 J**	**1.1**	0.62 U	**0.74**	0.62 U	**0.73**	0.62 U
cis-1,2-Dichloroethene	ug/m^3	280	8.3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Cyclohexane	ug/m^3	NC	NC	NA	NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane	ug/m^3	NC	NC	**2.0**	**3.6**	**3.9**	**56**	**2.3**	**2.7**	**5.5**	**41**
Ethylbenzene	ug/m^3	NC	NC	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Hexane	ug/m^3	NC	NC	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U
Isopropylbenzene	ug/m^3	NC	NC	NA	NA	NA	NA	1.5 U	1.5 U	1.5 U	1.5 U
m,p-Xylene	ug/m^3	NC	NC	1.3 U	**1.9**	1.3 U	**1.9**	1.3 U	**2.0**	1.3 U	**4.8**
Methylene chloride	ug/m^3	21,000	630	1.0 U	1.0 U	**2.6**	1.0 U	1.0 U	**1.1**	1.0 U	1.0 U
Naphthalene (VOC)	ug/m^3	NC	NC	NA	NA	NA	NA	26 U	26 U	26 U	26 U
n-Propylbenzene	ug/m^3	NC	NC	NA	NA	NA	NA	1.5 U	1.5 U	1.5 U	1.5 U
o-Xylene	ug/m^3	NC	NC	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	**1.2 J**	1.3 U	1.3 U
Styrene	ug/m^3	NC	NC	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Tetrachloroethene (PCE)	ug/m^3	1,400	41	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Toluene	ug/m^3	NC	NC	**19**	**2.7**	1.1 U	**2.4**	**21**	**2.9**	**1.3**	**1.0 J**
trans-1,2-Dichloroethylene	ug/m^3	2,800	83	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Trichloroethene (TCE)	ug/m^3	67	2.0	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	**6.8**	1.6 U	1.6 U
Trichlorofluoromethane	ug/m^3	15000	15000	**1.5 J**	1.7 U	**1.6 J**	1.7 U	1.7 U	1.7 U	**1.5 J**	1.7 U

Table 1
Soil Gas and Indoor Air Analytical Results Oct 2018 - Dec 2021
Hamburg-Unadilla St Contamination Site
Putnam Township, Livingston County, MI
Facility No. 47000013

Location	Units	EGLE Revised 2021 Site-Specific Residential VIAC - Soil Gas	EGLE Revised June 2021 Site-Specific Residential VIAC - Soil Gas for **Dirt Floors, Crawl Spaces, Sumps, Shallow Groundwater	550 E HAMBURG ST - LOWA							
Sample Date				7/19/2019	7/18/2019	7/19/2019	7/18/2019	7/19/2019	7/19/2019	7/18/2019	7/18/2019
FieldSampleID				IA10-550HAMBURG-1-071919	18VP-10-SS-1	IA10-550HAMBURG-2-071919	18VP-10-SS-2	IA10-550HAMBURG-3-071919	IA10-550HAMBURG-3-071919-DUP	19VP-10-SS-3	19VP-10-SS-3-DUP
SampleType				Indoor Air (Boiler Room)	Sub-Slab Soil Gas	Indoor Air (Maintenance Room)	Sub-Slab Soil Gas	Indoor Air (Boys Locker Room)	Indoor Air (Boys Locker Room)	Sub-Slab Soil Gas	Sub-Slab Soil Gas
Lab Report Number				1907193	1907192	1907193	1907192	1907193	1907193	1907192	1907192
1,1,1-Trichloroethane	ug/m^3	170,000	5,000	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	16 U	16 U
1,1-Dichloroethane	ug/m^3	530	16	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	12 U	12 U
1,2,3-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	**4.4**	1.5 U	**4.6**	1.5 U	1.5 U	15 U	15 U
1,2,4-Trichlorobenzene	ug/m^3	NC	NC	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	37 U	37 U
1,2,4-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	**22**	1.5 U	**22**	**1.6**	**1.6**	**22**	**15**
1,2-Dichloroethane	ug/m^3	33	0.98	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	12 U	12 U
1,3,5-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	**5.3**	1.5 U	**6.2**	1.5 U	1.5 U	15 U	15 U
1,3-Butadiene	ug/m^3	NC	NC	0.67 U	0.67 U	0.67 U	0.67 U	0.67 U	0.67 U	6.7 U	6.7 U
1,4-Dichlorobenzene	ug/m^3	NC	NC	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	18 U	18 U
2,2,4-Trimethylpentane	ug/m^3	NC	NC	1.4 U	**1.3 J**	1.4 U	**11**	1.4 U	1.4 U	14 U	14 U
2-Butanone (MEK)	ug/m^3	170,000	5,000	**85**	15 U	15 U	15 U	15 U	15 U	150 U	150 U
4-Methyl-2-pentanone	ug/m^3	27,000	820	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	41 U	41 U
Acetonitrile	ug/m^3	NC	NC	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	17 U	17 U
Acrylonitrile	ug/m^3	NC	NC	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	11 U	11 U
Benzene	ug/m^3	NC	NC	0.96 U	**1.1**	0.96 U	0.96 U	0.96 U	0.96 U	9.6 U	9.6 U
Carbon tetrachloride	ug/m^3	150	4.5	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	19 U	19 U
Chlorobenzene	ug/m^3	1,700	52	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	14 U	14 U
Chloroform	ug/m^3	37	1.1	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	15 U	15 U
Chloromethane	ug/m^3	3,100	94	**0.78**	0.62 U	**0.70**	0.62 U	**0.81**	**0.79**	6.2 U	6.2 U
cis-1,2-Dichloroethene	ug/m^3	280	8.3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	12 U	12 U
Cyclohexane	ug/m^3	NC	NC	**2.0**	1.0 U	1.0 U	**1.3**	1.0 U	1.0 U	10 U	10 U
Dichlorodifluoromethane	ug/m^3	NC	NC	**3.5**	**2.3**	**7.2**	**8.0**	**19**	**20**	**990**	**880**
Ethylbenzene	ug/m^3	NC	NC	1.3 U	**10**	1.3 U	**13**	1.3 U	1.3 U	**14**	13 U
Hexane	ug/m^3	NC	NC	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	35 U	35 U
Isopropylbenzene	ug/m^3	NC	NC	1.5 U	**1.5**	1.5 U	**1.4 J**	1.5 U	1.5 U	15 U	15 U
m,p-Xylene	ug/m^3	NC	NC	**2.1**	**41**	1.3 U	**58**	1.3 U	1.3 U	**40**	**20**
Methylene chloride	ug/m^3	21,000	630	**1.2**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U
Naphthalene (VOC)	ug/m^3	NC	NC	26 U	26 U	26 U	26 U	26 U	26 U	260 U	260 U
n-Propylbenzene	ug/m^3	NC	NC	1.5 U	**4.0**	1.5 U	**3.5**	1.5 U	1.5 U	15 U	15 U
o-Xylene	ug/m^3	NC	NC	1.3 U	**18**	1.3 U	**25**	1.3 U	1.3 U	**19**	13 U
Styrene	ug/m^3	NC	NC	1.3 U	**6.6**	1.3 U	**5.2**	1.3 U	1.3 U	13 U	13 U
Tetrachloroethene (PCE)	ug/m^3	1,400	41	2.0 U	**2.4**	2.0 U	**2.0**	2.0 U	2.0 U	**24**	20 U
Toluene	ug/m^3	NC	NC	**230**	**25**	**1.5**	**26**	**2.4**	**2.3**	**29**	**14**
trans-1,2-Dichloroethylene	ug/m^3	2,800	83	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	12 U	12 U
Trichloroethene (TCE)	ug/m^3	67	2.0	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	16 U	16 U
Trichlorofluoromethane	ug/m^3	15000	15000	**3.0**	**1.5 J**	1.7 U	1.7 U	1.7 U	1.7 U	17 U	17 U

Table 1
Soil Gas and Indoor Air Analytical Results Oct 2018 - Dec 2021
Hamburg-Unadilla St Contamination Site
Putnam Township, Livingston County, MI
Facility No. 47000013

Location	Units	EGLE Revised 2021 Site-Specific Residential VIAC - Soil Gas	EGLE Revised June 2021 Site-Specific Residential VIAC - Soil Gas for **Dirt Floors, Crawl Spaces, Sumps, Shallow Groundwater	550 E HAMBURG ST - LOWA					
Sample Date				7/19/2019	7/18/2019	7/19/2019	7/18/2019	7/19/2019	7/18/2019
FieldSampleID				IA10-550HAMBURG-4-071919	19VP-10-SS-4	IA10-550HAMBURG-5-071919	19VP-10-SS-5	IA10-550HAMBURG-6-071919	19VP-10-SS-6
SampleType				Indoor Air (Hallway)	Sub-Slab Soil Gas	Indoor Air (Kitchen)	Sub-Slab Soil Gas	Indoor Air (Janitors Closet)	Sub-Slab Soil Gas
Lab Report Number				1907193	1907192	1907193	1907192	1907193	1907192
1,1,1-Trichloroethane	ug/m^3	170,000	5,000	1.6 U	16 U	1.6 U	1.6 U	1.6 U	1.6 U
1,1-Dichloroethane	ug/m^3	530	16	1.2 U	12 U	1.2 U	1.2 U	1.2 U	1.2 U
1,2,3-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	15 U	1.5 U	**4.8**	1.5 U	**4.1**
1,2,4-Trichlorobenzene	ug/m^3	NC	NC	3.7 U	37 U	3.7 U	3.7 U	3.7 U	3.7 U
1,2,4-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	**22**	1.5 U	**20**	**1.3 J**	**22**
1,2-Dichloroethane	ug/m^3	33	0.98	1.2 U	12 U	1.2 U	1.2 U	1.2 U	1.2 U
1,3,5-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	15 U	1.5 U	**6.2**	1.5 U	**6.2**
1,3-Butadiene	ug/m^3	NC	NC	0.67 U	6.7 U	0.67 U	0.67 U	0.67 U	0.67 U
1,4-Dichlorobenzene	ug/m^3	NC	NC	1.8 U	18 U	1.8 U	1.8 U	1.8 U	**2.9**
2,2,4-Trimethylpentane	ug/m^3	NC	NC	1.4 U	14 U	1.4 U	1.4 U	1.4 U	**2.4**
2-Butanone (MEK)	ug/m^3	170,000	5,000	15 U	150 U	15 U	**25**	15 U	15 U
4-Methyl-2-pentanone	ug/m^3	27,000	820	4.1 U	41 U	4.1 U	4.1 U	4.1 U	4.1 U
Acetonitrile	ug/m^3	NC	NC	1.7 U	17 U	1.7 U	1.7 U	1.7 U	1.7 U
Acrylonitrile	ug/m^3	NC	NC	1.1 U	11 U	1.1 U	1.1 U	1.1 U	1.1 U
Benzene	ug/m^3	NC	NC	0.96 U	**16**	0.96 U	**12**	0.96 U	**4.0**
Carbon tetrachloride	ug/m^3	150	4.5	1.9 U	19 U	1.9 U	1.9 U	1.9 U	1.9 U
Chlorobenzene	ug/m^3	1,700	52	1.4 U	14 U	1.4 U	1.4 U	1.4 U	1.4 U
Chloroform	ug/m^3	37	1.1	1.5 U	15 U	1.5 U	1.5 U	1.5 U	1.5 U
Chloromethane	ug/m^3	3,100	94	**0.72**	6.2 U	**0.70**	0.62 U	**0.81**	**0.81**
cis-1,2-Dichloroethene	ug/m^3	280	8.3	1.2 U	12 U	1.2 U	1.2 U	1.2 U	1.2 U
Cyclohexane	ug/m^3	NC	NC	1.0 U	**11**	1.0 U	**9.0**	1.0 U	**3.5**
Dichlorodifluoromethane	ug/m^3	NC	NC	**6.6**	**660**	**6.8**	**22**	**15**	**13**
Ethylbenzene	ug/m^3	NC	NC	1.3 U	**21**	1.3 U	**15**	1.3 U	**13**
Hexane	ug/m^3	NC	NC	3.5 U	**33 J**	3.5 U	**37**	3.5 U	**9.5**
Isopropylbenzene	ug/m^3	NC	NC	1.5 U	15 U	1.5 U	**2.6**	1.5 U	**2.3**
m,p-Xylene	ug/m^3	NC	NC	1.3 U	**45**	1.3 U	**42**	**1.4**	**43**
Methylene chloride	ug/m^3	21,000	630	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U
Naphthalene (VOC)	ug/m^3	NC	NC	26 U	260 U	26 U	26 U	26 U	26 U
n-Propylbenzene	ug/m^3	NC	NC	1.5 U	15 U	1.5 U	**4.5**	1.5 U	**4.1**
o-Xylene	ug/m^3	NC	NC	1.3 U	**18**	1.3 U	**16**	1.3 U	**19**
Styrene	ug/m^3	NC	NC	1.3 U	13 U	1.3 U	**5.0**	1.3 U	**7.1**
Tetrachloroethene (PCE)	ug/m^3	1,400	41	2.0 U	20 U	2.0 U	2.0 U	2.0 U	**4.1**
Toluene	ug/m^3	NC	NC	**1.2**	**65**	**1.2**	**51**	**5.4**	**36**
trans-1,2-Dichloroethylene	ug/m^3	2,800	83	1.2 U	12 U	1.2 U	1.2 U	1.2 U	1.2 U
Trichloroethene (TCE)	ug/m^3	67	2.0	1.6 U	16 U	1.6 U	1.6 U	1.6 U	1.6 U
Trichlorofluoromethane	ug/m^3	15000	15000	1.7 U	17 U	**1.5 J**	**1.4 J**	**1.8**	**1.5 J**

Table 1
Soil Gas and Indoor Air Analytical Results Oct 2018 - Dec 2021
Hamburg-Unadilla St Contamination Site
Putnam Township, Livingston County, MI
Facility No. 47000013

Location	Units	EGLE Revised 2021 Site-Specific Residential VIAC - Soil Gas	EGLE Revised June 2021 Site-Specific Residential VIAC - Soil Gas for **Dirt Floors, Crawl Spaces, Sumps, Shallow Groundwater	550 E HAMBURG ST - LOWA							
Sample Date				11/6/2019	11/5/2019	11/6/2019	11/5/2019	11/6/2019	11/5/2019	11/6/2019	11/5/2019
FieldSampleID				IA10-550HAMBURG-1-110619	18VP-10-SS-1	IA10-550HAMBURG-2-110619	18VP-10-SS-2	IA10-550HAMBURG-3-110619	19VP-10-SS-3	IA10-550HAMBURG-4-110619	19VP-10-SS-4
SampleType				Indoor Air (Boiler Room)	Sub-Slab Soil Gas	Indoor Air (Maintenance Room)	Sub-Slab Soil Gas	Indoor Air (Boys Locker Room)	Sub-Slab Soil Gas	Indoor Air (Hallway)	Sub-Slab Soil Gas
Lab Report Number				1911129	1911127	1911129	1911127	1911129	1911127	1911129	1911127
1,1,1-Trichloroethane	ug/m³	170,000	5,000	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	8.2 U	1.7 U	8.2 U
1,1-Dichloroethane	ug/m³	530	16	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	6.1 U	1.2 U	6.1 U
1,2,3-Trimethylbenzene	ug/m³	NC	NC	1.5 U	**2.4**	1.5 U	**2.5**	1.5 U	7.4 U	1.5 U	7.4 U
1,2,4-Trichlorobenzene	ug/m³	NC	NC	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	19 U	3.7 U	19 U
1,2,4-Trimethylbenzene	ug/m³	NC	NC	1.5 U	1.5 U	1.5 U	**9.4**	1.5 U	**9.7**	1.5 U	**10**
1,2-Dichloroethane	ug/m³	33	0.98	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	6.1 U	1.2 U	6.1 U
1,3,5-Trimethylbenzene	ug/m³	NC	NC	1.5 U	**2.4**	1.5 U	**2.6**	1.5 U	7.4 U	1.5 U	7.4 U
1,3-Butadiene	ug/m³	NC	NC	0.66 U	0.66 U	0.66 U	0.66 U	0.66 U	3.3 U	0.67 U	3.3 U
1,4-Dichlorobenzene	ug/m³	NC	NC	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	9.0 U	1.8 U	9.0 U
2,2,4-Trimethylpentane	ug/m³	NC	NC	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	7.0 U	1.4 U	7.0 U
2-Butanone (MEK)	ug/m³	170,000	5,000	15 U	15 U	15 U	15 U	15 U	74 U	15 U	74 U
4-Methyl-2-pentanone	ug/m³	27,000	820	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	20 U	4.1 U	20 U
Acetonitrile	ug/m³	NC	NC	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	8.4 U	1.7 U	8.4 U
Acrylonitrile	ug/m³	NC	NC	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	5.4 U	1.1 U	5.4 U
Benzene	ug/m³	NC	NC	0.96 U	0.96 U	0.96 U	0.96 U	0.96 U	4.8 U	**1.0**	4.8 U
Carbon tetrachloride	ug/m³	150	4.5	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	9.4 U	1.9 U	9.4 U
Chlorobenzene	ug/m³	1,700	52	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	6.9 U	1.4 U	6.9 U
Chloroform	ug/m³	37	1.1	1.5 U	**1.8**	1.5 U	1.5 U	1.5 U	7.3 U	1.5 U	7.3 U
Chloromethane	ug/m³	3,100	94	**0.98**	0.62 U	**0.96**	0.62 U	**0.97**	3.1 U	**0.53 J**	3.1 U
cis-1,2-Dichloroethene	ug/m³	280	8.3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	5.9 U	1.2 U	5.9 U
Cyclohexane	ug/m³	NC	NC	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.2 U	1.0 U	5.2 U
Dichlorodifluoromethane	ug/m³	NC	NC	**2.2**	**2.9**	**4.3**	**56**	**3.9**	**520**	**4.4**	**1200**
Ethylbenzene	ug/m³	NC	NC	1.3 U	**2.1**	1.3 U	**2.2**	1.3 U	6.5 U	1.3 U	6.5 U
Hexane	ug/m³	NC	NC	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	18 U	3.6 U	18 U
Isopropylbenzene	ug/m³	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	7.4 U	1.5 U	7.4 U
m,p-Xylene	ug/m³	NC	NC	1.3 U	**8.6**	1.3 U	**9.0**	1.3 U	**8.9**	1.3 U	**10**
Methylene chloride	ug/m³	21,000	630	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5.2 U	1.1 U	5.2 U
Naphthalene (VOC)	ug/m³	NC	NC	26 U	26 U	26 U	26 U	26 U	130 U	26 U	130 U
n-Propylbenzene	ug/m³	NC	NC	1.5 U	1.5 U	1.5 U	**1.3 J**	1.5 U	7.4 U	1.5 U	7.4 U
o-Xylene	ug/m³	NC	NC	1.3 U	**4.5**	1.3 U	**4.8**	1.3 U	**6.7**	1.3 U	**7.4**
Styrene	ug/m³	NC	NC	1.3 U	**1.2 J**	1.3 U	**1.2 J**	1.3 U	6.4 U	1.3 U	6.4 U
Tetrachloroethene (PCE)	ug/m³	1,400	41	2.0 U	**14**	2.0 U	2.0 U	2.0 U	10 U	2.1 U	10 U
Toluene	ug/m³	NC	NC	**15**	**3.1**	**1.4**	**2.6**	**1.2**	5.6 U	**1.4**	5.6 U
trans-1,2-Dichloroethylene	ug/m³	2,800	83	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	5.9 U	1.2 U	5.9 U
Trichloroethene (TCE)	ug/m³	67	2.0	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	8.1 U	1.6 U	8.1 U
Trichlorofluoromethane	ug/m³	15000	15000	1.7 U	1.7 U	**1.4 J**	1.7 U	1.7 U	8.4 U	1.7 U	8.4 U

Table 1
Soil Gas and Indoor Air Analytical Results Oct 2018 - Dec 2021
Hamburg-Unadilla St Contamination Site
Putnam Township, Livingston County, MI
Facility No. 47000013

Location	Units	EGLE Revised 2021 Site-Specific Residential VIAC - Soil Gas	EGLE Revised June 2021 Site-Specific Residential VIAC - Soil Gas for **Dirt Floors, Crawl Spaces, Sumps, Shallow Groundwater	550 E HAMBURG ST - LOWA							
Sample Date				11/6/2019	11/5/2019	11/6/2019	11/5/2019	2/19/2020	2/18/2020	2/19/2020	2/18/2020
FieldSampleID				IA10-550HAMBURG-5-110619	19VP-10-SS-5	IA10-550HAMBURG-6-110619	19VP-10-SS-6	IA10-550HAMBURG-1-021920	18VP-10-SS-1	IA10-550HAMBURG-2-021920	18VP-10-SS-2
SampleType				Indoor Air (Kitchen)	Sub-Slab Soil Gas	Indoor Air (Janitors Closet)	Sub-Slab Soil Gas	Indoor Air (Boiler Room)	Sub-Slab Soil Gas	Indoor Air (Maintenance Room)	Sub-Slab Soil Gas
Lab Report Number				1911129	1911127	1911129	1911127	2002119	2002118	2002119	2002118
1,1,1-Trichloroethane	ug/m^3	170,000	5,000	1.6 U	1.6 U	1.6 U	1.6 U	1.7 U	1.6 U	1.7 U	1.6 U
1,1-Dichloroethane	ug/m^3	530	16	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,2,3-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	**2.0**	1.5 U	**2.4**	1.5 U	1.5 U	1.5 U	1.5 U
1,2,4-Trichlorobenzene	ug/m^3	NC	NC	3.7 U	3.7 U	3.7 U	3.7 U	3.8 U	3.7 U	3.8 U	3.7 U
1,2,4-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	**7.2**	1.5 U	**8.9**	1.5 U	1.5 U	1.5 U	1.5 U
1,2-Dichloroethane	ug/m^3	33	0.98	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,3,5-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	**2.1**	1.5 U	**2.5**	1.5 U	1.5 U	1.5 U	1.5 U
1,3-Butadiene	ug/m^3	NC	NC	0.66 U	0.66 U	0.66 U	0.66 U	0.68 U	0.67 U	0.68 U	0.67 U
1,4-Dichlorobenzene	ug/m^3	NC	NC	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
2,2,4-Trimethylpentane	ug/m^3	NC	NC	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
2-Butanone (MEK)	ug/m^3	170,000	5,000	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
4-Methyl-2-pentanone	ug/m^3	27,000	820	4.1 U	4.1 U	4.1 U	4.1 U	4.2 U	**4.1**	4.2 U	4.1 U
Acetonitrile	ug/m^3	NC	NC	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Acrylonitrile	ug/m^3	NC	NC	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Benzene	ug/m^3	NC	NC	0.96 U	0.96 U	0.96 U	0.96 U	0.98 U	0.96 U	0.98 U	**0.84 J**
Carbon tetrachloride	ug/m^3	150	4.5	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Chlorobenzene	ug/m^3	1,700	52	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Chloroform	ug/m^3	37	1.1	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Chloromethane	ug/m^3	3,100	94	**0.98**	0.62 U	**1.1**	0.62 U	**1.3**	**0.54 J**	**1.5**	**0.83**
cis-1,2-Dichloroethene	ug/m^3	280	8.3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Cyclohexane	ug/m^3	NC	NC	1.0 U	1.0 U	1.0 U	1.0 U	1.1 U	1.0 U	1.1 U	1.0 U
Dichlorodifluoromethane	ug/m^3	NC	NC	**4.9**	**48**	**3.4**	**12**	**2.4**	**2.6**	**3.8**	**7.9**
Ethylbenzene	ug/m^3	NC	NC	1.3 U	**1.9**	1.3 U	**2.0**	1.3 U	1.3 U	1.3 U	1.3 U
Hexane	ug/m^3	NC	NC	3.5 U	3.5 U	3.5 U	3.5 U	3.6 U	3.5 U	3.6 U	3.5 U
Isopropylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
m,p-Xylene	ug/m^3	NC	NC	1.3 U	**7.7**	1.3 U	**8.5**	1.3 U	**2.0**	1.3 U	1.3 U
Methylene chloride	ug/m^3	21,000	630	1.0 U	1.0 U	1.0 U	1.0 U	1.1 U	1.0 U	1.1 U	1.0 U
Naphthalene (VOC)	ug/m^3	NC	NC	26 U	26 U	26 U	26 U	27 U	26 U	27 U	26 U
n-Propylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
o-Xylene	ug/m^3	NC	NC	1.3 U	**4.1**	1.3 U	**4.6**	1.3 U	**1.3**	1.3 U	1.3 U
Styrene	ug/m^3	NC	NC	1.3 U	**1.1 J**	1.3 U	**1.2 J**	1.3 U	**1.5**	1.3 U	1.3 U
Tetrachloroethene (PCE)	ug/m^3	1,400	41	2.0 U	2.0 U	2.0 U	2.0 U	2.1 U	2.0 U	2.1 U	2.0 U
Toluene	ug/m^3	NC	NC	**1.0 J**	**2.4**	**2.1**	**3.6**	**13**	**1.7**	1.2 U	**3.4**
trans-1,2-Dichloroethylene	ug/m^3	2,800	83	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Trichloroethene (TCE)	ug/m^3	67	2.0	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Trichlorofluoromethane	ug/m^3	15000	15000	**1.8**	**1.5 J**	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U

Table 1
Soil Gas and Indoor Air Analytical Results Oct 2018 - Dec 2021
Hamburg-Unadilla St Contamination Site
Putnam Township, Livingston County, MI
Facility No. 47000013

Location	Units	EGLE Revised 2021 Site-Specific Residential VIAC - Soil Gas	EGLE Revised June 2021 Site-Specific Residential VIAC - Soil Gas for **Dirt Floors, Crawl Spaces, Sumps, Shallow Groundwater	550 E HAMBURG ST - LOWA							
Sample Date				2/19/2020	2/18/2020	2/19/2020	2/18/2020	2/19/2020	2/18/2020	2/19/2020	2/18/2020
FieldSampleID				IA10-550HAMBURG-3-021920	19VP-10-SS-3	IA10-550HAMBURG-4-021920	19VP-10-SS-4	IA10-550HAMBURG-5-021920	19VP-10-SS-5	IA10-550HAMBURG-6-021920	19VP-10-SS-6
SampleType				Indoor Air (Boys Locker Room)	Sub-Slab Soil Gas	Indoor Air (Hallway)	Sub-Slab Soil Gas	Indoor Air (Kitchen)	Sub-Slab Soil Gas	Indoor Air (Janitors Closet)	Sub-Slab Soil Gas
Lab Report Number				2002119	2002118	2002119	2002118	2002119	2002118	2002119	2002118
1,1,1-Trichloroethane	ug/m^3	170,000	5,000	1.7 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.7 U	1.6 U
1,1-Dichloroethane	ug/m^3	530	16	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,2,3-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.9
1,2,4-Trichlorobenzene	ug/m^3	NC	NC	3.8 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.8 U	3.7 U
1,2,4-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	2.8	1.5 U	1.5 U	1.5 U	5.6
1,2-Dichloroethane	ug/m^3	33	0.98	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,3,5-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	2.4
1,3-Butadiene	ug/m^3	NC	NC	0.68 U	0.67 U	0.66 U	0.67 U	0.67 U	0.67 U	0.68 U	0.67 U
1,4-Dichlorobenzene	ug/m^3	NC	NC	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
2,2,4-Trimethylpentane	ug/m^3	NC	NC	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
2-Butanone (MEK)	ug/m^3	170,000	5,000	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
4-Methyl-2-pentanone	ug/m^3	27,000	820	4.2 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.2 U	4.1 U
Acetonitrile	ug/m^3	NC	NC	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Acrylonitrile	ug/m^3	NC	NC	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Benzene	ug/m^3	NC	NC	0.98 U	0.96 U	0.95 U	0.96 U	0.80 J	0.96 U	0.98 U	0.82 J
Carbon tetrachloride	ug/m^3	150	4.5	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Chlorobenzene	ug/m^3	1,700	52	1.4 U	1.4 U	1.4 U	1.5	1.4 U	1.4 U	1.4 U	1.4 U
Chloroform	ug/m^3	37	1.1	1.5 U	1.5 U	1.4 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Chloromethane	ug/m^3	3,100	94	1.3	0.76	0.61 U	0.72	0.72	0.71	1.3	0.62
cis-1,2-Dichloroethene	ug/m^3	280	8.3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.5	1.2 U	1.2 U
Cyclohexane	ug/m^3	NC	NC	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.1 U	1.0 U
Dichlorodifluoromethane	ug/m^3	NC	NC	4.1	140	4.0	270	4.1	20	3.1	8.2
Ethylbenzene	ug/m^3	NC	NC	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Hexane	ug/m^3	NC	NC	3.6 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.6 U	3.5 U
Isopropylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
m,p-Xylene	ug/m^3	NC	NC	1.3 U	3.1	1.3 U	2.1	1.3 U	3.0	1.3 U	4.4
Methylene chloride	ug/m^3	21,000	630	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.1 U	1.0 U
Naphthalene (VOC)	ug/m^3	NC	NC	27 U	26 U	26 U	26 U	26 U	26 U	27 U	26 U
n-Propylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
o-Xylene	ug/m^3	NC	NC	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.5	1.3 U	2.5
Styrene	ug/m^3	NC	NC	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.5	1.3 U	1.3 U
Tetrachloroethene (PCE)	ug/m^3	1,400	41	2.1 U	2.0 U	2.0 U	2.0 U	2.0 U	20	2.1 U	17
Toluene	ug/m^3	NC	NC	1.2 U	1.8	1.1 U	0.95 J	1.1 U	1.5	1.2	2.0
trans-1,2-Dichloroethylene	ug/m^3	2,800	83	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Trichloroethene (TCE)	ug/m^3	67	2.0	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	3.3	1.6 U	1.6 U
Trichlorofluoromethane	ug/m^3	15000	15000	1.7 U	1.7 U	1.7 U	1.7 U	1.4 J	1.7 U	1.7 U	1.7 U

Table 1
Soil Gas and Indoor Air Analytical Results Oct 2018 - Dec 2021
Hamburg-Unadilla St Contamination Site
Putnam Township, Livingston County, MI
Facility No. 47000013

Location	Units	EGLE Revised 2021 Site-Specific Residential VIAC - Soil Gas	EGLE Revised June 2021 Site-Specific Residential VIAC - Soil Gas for **Dirt Floors, Crawl Spaces, Sumps, Shallow Groundwater	625 E HAMBURG ST **(Dirt Floor)									
Sample Date				10/31/2018	10/30/2018	3/28/2019	3/27/2019	6/28/2019	6/27/2019	11/6/2019	11/5/2019	2/12/2020	2/11/2020
FieldSampleID				IA02-625 E HAMBURG ST - 103118	18VP-02-SS	IA02-625E HAMBURG-032819	18VP-02-SS	IA02-625HAMBURG-062819	18VP-02-SS	IA02-625HAMBURG-110619	18VP-02-SS	IA02-625HAMBURG-021220	18VP-2-SS
SampleType				Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas
Lab Report Number				1811001	1811001	1903207	1903206	1907002	1907001	1911129	1911127	2002098	2002098
1,1,1-Trichloroethane	ug/m^3	170,000	5,000	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.7 U	1.6 U
1,1-Dichloroethane	ug/m^3	530	16	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,2,3-Trimethylbenzene	ug/m^3	NC	NC	NA	NA	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	**3.2**	1.5 U	1.5 U
1,2,4-Trichlorobenzene	ug/m^3	NC	NC	2.2 U	2.2 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.8 U	3.7 U
1,2,4-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	**4.8**	1.5 U	1.5 U	1.5 U	**2.0**	1.5 U	**15**	1.5 U	1.5 U
1,2-Dichloroethane	ug/m^3	33	0.98	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,3,5-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	**1.8**	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	**4.6**	1.5 U	1.5 U
1,3-Butadiene	ug/m^3	NC	NC	0.66 U	0.66 U	0.67 U	0.66 U	0.66 U	0.66 U	0.66 U	0.66 U	0.68 U	0.67 U
1,4-Dichlorobenzene	ug/m^3	NC	NC	1.8 U	1.8 U	1.8 U	1.8 U	**9.9**	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
2,2,4-Trimethylpentane	ug/m^3	NC	NC	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	**3.3**	1.4 U	1.4 U
2-Butanone (MEK)	ug/m^3	170,000	5,000	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
4-Methyl-2-pentanone	ug/m^3	27,000	820	4.1 U	4.0 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.2 U	4.1 U
Acetonitrile	ug/m^3	NC	NC	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Acrylonitrile	ug/m^3	NC	NC	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Benzene	ug/m^3	NC	NC	0.95 U	**3.4**	**0.82 J**	0.95 U	0.96 U	0.96 U	0.96 U	0.96 U	0.98 U	0.96 U
Carbon tetrachloride	ug/m^3	150	4.5	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Chlorobenzene	ug/m^3	1,700	52	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Chloroform	ug/m^3	37	1.1	1.4 U	1.4 U	1.5 U	1.5 U	**2.4**	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Chloromethane	ug/m^3	3,100	94	0.61 U	0.61 U	**0.75**	0.62 U	0.62 U	**1.3**	**1.0**	0.62 U	**1.3**	**1.1**
cis-1,2-Dichloroethene	ug/m^3	280	8.3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Cyclohexane	ug/m^3	NC	NC	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.1 U	1.0 U
Dichlorodifluoromethane	ug/m^3	NC	NC	**2.1**	**2.2**	**2.3**	**2.3**	**1.8**	**1.4 J**	**2.4**	**2.4**	**2.3**	**2.0**
Ethylbenzene	ug/m^3	NC	NC	1.3 U	**3.5**	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	**9.7**	1.3 U	1.3 U
Hexane	ug/m^3	NC	NC	3.5 U	**13**	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.6 U	3.5 U
Isopropylbenzene	ug/m^3	NC	NC	NA	NA	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
m,p-Xylene	ug/m^3	NC	NC	1.3 U	**8.7**	1.3 U	**1.2 J**	1.3 U	**1.3**	1.3 U	**42**	1.3 U	**1.6**
Methylene chloride	ug/m^3	21,000	630	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.1 U	1.0 U
Naphthalene (VOC)	ug/m^3	NC	NC	NA	NA	26 U	26 U	26 U	26 U	26 U	26 U	27 U	26 U
n-Propylbenzene	ug/m^3	NC	NC	NA	NA	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	**2.3**	1.5 U	1.5 U
o-Xylene	ug/m^3	NC	NC	1.3 U	**3.1**	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	**18**	1.3 U	1.3 U
Styrene	ug/m^3	NC	NC	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	**1.1 J**	1.3 U	1.3 U
Tetrachloroethene (PCE)	ug/m^3	1,400	41	2.0 U	**7.6**	2.0 U	**12**	2.0 U	**3.7**	2.0 U	**6.6**	2.1 U	**2.7**
Toluene	ug/m^3	NC	NC	**2.6**	**13**	**1.2**	**1.9**	1.1 U	1.1 U	**1.5**	**11**	**1.0 J**	**1.5**
trans-1,2-Dichloroethylene	ug/m^3	2,800	83	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Trichloroethene (TCE)	ug/m^3	67	2.0	1.6 U	**1.5 J**	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Trichlorofluoromethane	ug/m^3	15000	15000	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U

Table 1
Soil Gas and Indoor Air Analytical Results Oct 2018 - Dec 2021
Hamburg-Unadilla St Contamination Site
Putnam Township, Livingston County, MI
Facility No. 47000013

Location	Units	EGLE Revised 2021 Site-Specific Residential VIAC - Soil Gas	EGLE Revised June 2021 Site-Specific Residential VIAC - Soil Gas for **Dirt Floors, Crawl Spaces, Sumps, Shallow Groundwater	632 E HAMBURG ST					
Sample Date				11/2/2018	11/1/2018	3/28/2019	3/27/2019	8/1/2019	7/31/2019
FieldSampleID				IA11-632 E HAMBURG ST-110218	18VP-11-SS	IA11-632 EHAMBURG-032819	18VP-11-SS	IA11-632HAMBURG-080119	18VP-11-SS
SampleType				Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas
Lab Report Number				1811033	1811023	1903207	1903206	1908019	1908019
1,1,1-Trichloroethane	ug/m^3	170,000	5,000	1.6 U	1.6 U	1.6 U	1.6 U	1.7 U	1.6 U
1,1-Dichloroethane	ug/m^3	530	16	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,2,3-Trimethylbenzene	ug/m^3	NC	NC	NA	NA	1.5 U	1.5 U	1.5 U	1.5 U
1,2,4-Trichlorobenzene	ug/m^3	NC	NC	2.2 U	2.2 U	3.7 U	3.7 U	3.7 U	3.7 U
1,2,4-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	**5.2**	1.5 U	1.5 U	1.5 U	**3.8**
1,2-Dichloroethane	ug/m^3	33	0.98	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,3,5-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	**1.5**	1.5 U	1.5 U	1.5 U	**1.7**
1,3-Butadiene	ug/m^3	NC	NC	0.66 U	0.66 U	0.67 U	0.66 U	0.67 U	0.66 U
1,4-Dichlorobenzene	ug/m^3	NC	NC	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
2,2,4-Trimethylpentane	ug/m^3	NC	NC	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
2-Butanone (MEK)	ug/m^3	170,000	5,000	15 U	**15**	15 U	15 U	15 U	15 U
4-Methyl-2-pentanone	ug/m^3	27,000	820	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U
Acetonitrile	ug/m^3	NC	NC	1.7 U	1.7 U	1.7 U	1.7 U	**2.2**	1.7 U
Acrylonitrile	ug/m^3	NC	NC	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Benzene	ug/m^3	NC	NC	**1.2**	**2.1**	**1.3**	0.95 U	**2.1**	0.96 U
Carbon tetrachloride	ug/m^3	150	4.5	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Chlorobenzene	ug/m^3	1,700	52	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Chloroform	ug/m^3	37	1.1	1.5 U	1.5 U	**1.5**	1.5 U	**2.5**	1.5 U
Chloromethane	ug/m^3	3,100	94	**2.3**	**0.75**	**1.4**	0.62 U	**2.4**	0.62 U
cis-1,2-Dichloroethene	ug/m^3	280	8.3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Cyclohexane	ug/m^3	NC	NC	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane	ug/m^3	NC	NC	**2.5**	**1.7**	**2.2**	**2.2**	**2.3**	**2.4**
Ethylbenzene	ug/m^3	NC	NC	1.3 U	**2.3**	1.3 U	1.3 U	1.3 U	**10**
Hexane	ug/m^3	NC	NC	3.5 U	**4.9**	3.5 U	3.5 U	3.6 U	3.5 U
Isopropylbenzene	ug/m^3	NC	NC	NA	NA	1.5 U	1.5 U	1.5 U	1.5 U
m,p-Xylene	ug/m^3	NC	NC	**1.2 J**	**5.2**	**1.6**	**1.1 J**	**1.9**	**55**
Methylene chloride	ug/m^3	21,000	630	**3.4**	1.0 U	1.0 U	1.0 U	1.1 U	1.0 U
Naphthalene (VOC)	ug/m^3	NC	NC	NA	NA	26 U	26 U	26 U	26 U
n-Propylbenzene	ug/m^3	NC	NC	NA	NA	1.5 U	1.5 U	1.5 U	1.5 U
o-Xylene	ug/m^3	NC	NC	1.3 U	**2.9**	1.3 U	1.3 U	**1.2 J**	**21**
Styrene	ug/m^3	NC	NC	1.3 U	1.3 U	**1.5**	1.3 U	**2.0**	**1.1 J**
Tetrachloroethene (PCE)	ug/m^3	1,400	41	2.0 U	2.0 U	2.0 U	2.0 U	2.1 U	**2.3**
Toluene	ug/m^3	NC	NC	**11**	**10**	**4.2**	**1.2**	**8.4**	**2.5**
trans-1,2-Dichloroethylene	ug/m^3	2,800	83	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Trichloroethene (TCE)	ug/m^3	67	2.0	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Trichlorofluoromethane	ug/m^3	15000	15000	**1.5 J**	1.7 U	1.7 U	**2.0**	1.7 U	1.7 U

Table 1
Soil Gas and Indoor Air Analytical Results Oct 2018 - Dec 2021
Hamburg-Unadilla St Contamination Site
Putnam Township, Livingston County, MI
Facility No. 47000013

Location	Units	EGLE Revised 2021 Site-Specific Residential VIAC - Soil Gas	EGLE Revised June 2021 Site-Specific Residential VIAC - Soil Gas for **Dirt Floors, Crawl Spaces, Sumps, Shallow Groundwater	635 E HAMBURG ST					
Sample Date				11/1/2018	10/31/2018	3/28/2019	3/28/2019	3/27/2019	3/27/2019
FieldSampleID				IA06-635 E.Hamburg St.-110118	18VP-06-SS	IA06-635 EHAMBURG-032819	IA06-635 EHAMBURG-032819-DUP	18VP-06-SS	18VP-06-SS-DUP
SampleType				Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)	Indoor Air (Basement)	Sub-Slab Soil Gas	Sub-Slab Soil Gas
Lab Report Number				1811024	1811001	1903207	1903207	1903206	1903206
1,1,1-Trichloroethane	ug/m^3	170,000	5,000	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
1,1-Dichloroethane	ug/m^3	530	16	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,2,3-Trimethylbenzene	ug/m^3	NC	NC	NA	NA	1.5 U	1.5 U	1.5 U	1.5 U
1,2,4-Trichlorobenzene	ug/m^3	NC	NC	2.2 U	2.2 U	3.7 U	3.7 U	3.7 U	3.7 U
1,2,4-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	**5.0**	1.5 U	1.5 U	1.5 U	1.5 U
1,2-Dichloroethane	ug/m^3	33	0.98	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,3,5-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	**1.4 J**	1.5 U	1.5 U	1.5 U	1.5 U
1,3-Butadiene	ug/m^3	NC	NC	0.65 U	**0.96**	0.67 U	0.67 U	0.66 U	0.66 U
1,4-Dichlorobenzene	ug/m^3	NC	NC	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
2,2,4-Trimethylpentane	ug/m^3	NC	NC	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
2-Butanone (MEK)	ug/m^3	170,000	5,000	15 U	15 U	15 U	15 U	15 U	15 U
4-Methyl-2-pentanone	ug/m^3	27,000	820	4.0 U	4.0 U	4.1 U	4.1 U	4.1 U	4.1 U
Acetonitrile	ug/m^3	NC	NC	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Acrylonitrile	ug/m^3	NC	NC	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Benzene	ug/m^3	NC	NC	0.95 U	**6.1**	0.96 U	0.96 U	0.95 U	0.95 U
Carbon tetrachloride	ug/m^3	150	4.5	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Chlorobenzene	ug/m^3	1,700	52	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Chloroform	ug/m^3	37	1.1	1.4 U	1.4 U	1.5 U	1.5 U	1.5 U	1.5 U
Chloromethane	ug/m^3	3,100	94	**1.3**	**0.56 J**	**0.71**	**0.66**	0.62 U	0.62 U
cis-1,2-Dichloroethene	ug/m^3	280	8.3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Cyclohexane	ug/m^3	NC	NC	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane	ug/m^3	NC	NC	**3.1**	**2.5**	**2.3**	**2.2**	**2.2**	**2.2**
Ethylbenzene	ug/m^3	NC	NC	1.3 U	**4.2**	1.3 U	1.3 U	1.3 U	1.3 U
Hexane	ug/m^3	NC	NC	3.5 U	**14**	3.5 U	3.5 U	3.5 U	3.5 U
Isopropylbenzene	ug/m^3	NC	NC	NA	NA	1.5 U	1.5 U	1.5 U	1.5 U
m,p-Xylene	ug/m^3	NC	NC	1.3 U	**8.1**	1.3 U	1.3 U	1.3 U	**1.2 J**
Methylene chloride	ug/m^3	21,000	630	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Naphthalene (VOC)	ug/m^3	NC	NC	NA	NA	26 U	26 U	26 U	26 U
n-Propylbenzene	ug/m^3	NC	NC	NA	NA	1.5 U	1.5 U	1.5 U	1.5 U
o-Xylene	ug/m^3	NC	NC	1.3 U	**3.1**	1.3 U	1.3 U	1.3 U	1.3 U
Styrene	ug/m^3	NC	NC	1.3 U	**1.5**	1.3 U	1.3 U	1.3 U	1.3 U
Tetrachloroethene (PCE)	ug/m^3	1,400	41	2.0 U	**140**	2.0 U	2.0 U	**14**	**14**
Toluene	ug/m^3	NC	NC	**2.5**	**18**	1.1 U	1.1 U	**1.6**	**1.6**
trans-1,2-Dichloroethylene	ug/m^3	2,800	83	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Trichloroethene (TCE)	ug/m^3	67	2.0	1.6 U	**19**	1.6 U	1.6 U	**12**	**12**
Trichlorofluoromethane	ug/m^3	15000	15000	**1.7**	**1.5 J**	1.7 U	**1.4 J**	1.7 U	1.7 U

Table 1
Soil Gas and Indoor Air Analytical Results Oct 2018 - Dec 2021
Hamburg-Unadilla St Contamination Site
Putnam Township, Livingston County, MI
Facility No. 47000013

Location	Units	EGLE Revised 2021 Site-Specific Residential VIAC - Soil Gas	EGLE Revised June 2021 Site-Specific Residential VIAC - Soil Gas for **Dirt Floors, Crawl Spaces, Sumps, Shallow Groundwater	810 E HAMBURG ST**						
Sample Date				3/28/2019	3/27/2019	6/28/2019	9/6/2019	10/9/2019	10/8/2019	2/12/2020
FieldSampleID				IA13-810E HAMBURG-032819	18VP-13-SS	IA13-810HAMBURG-062819	18VP-13-SS	IA13-810 E Hamburg St-100919	19VP-13-SS	IA13-810HAMBURG-021220
SampleType				Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)
Lab Report Number				1903195	1903195	1907002	1909069	1910102	1910102	2002098
1,1,1-Trichloroethane	ug/m^3	170,000	5,000	1.6 U	1.6 U	1.6 U	1.7 U	1.7 U	1.7 U	1.7 U
1,1-Dichloroethane	ug/m^3	530	16	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,2,3-Trimethylbenzene	ug/m^3	NC	NC	1.4 J	1.5 U	3.5	1.5 U	1.5 U	1.5 U	1.5 U
1,2,4-Trichlorobenzene	ug/m^3	NC	NC	3.7 U	3.7 U	3.7 U	3.8 U	3.8 U	3.8 U	3.8 U
1,2,4-Trimethylbenzene	ug/m^3	NC	NC	5.5	1.5 U	16	1.5 U	2.1	1.5 U	1.5 U
1,2-Dichloroethane	ug/m^3	33	0.98	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,3,5-Trimethylbenzene	ug/m^3	NC	NC	1.8	1.5 U	4.4	1.5 U	1.5 U	1.5 U	1.5 U
1,3-Butadiene	ug/m^3	NC	NC	0.66 U	0.66 U	0.66 U	0.67 U	0.67 U	0.67 U	0.68 U
1,4-Dichlorobenzene	ug/m^3	NC	NC	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
2,2,4-Trimethylpentane	ug/m^3	NC	NC	6.9	1.4 U	23	1.4 U	2.6	1.4 U	1.8
2-Butanone (MEK)	ug/m^3	170,000	5,000	15 U	15 U	15 U	15 U	15 U	15 U	15 U
4-Methyl-2-pentanone	ug/m^3	27,000	820	4.1 U	4.1 U	4.1 U	4.2 U	4.1 U	4.1 U	4.2 U
Acetonitrile	ug/m^3	NC	NC	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Acrylonitrile	ug/m^3	NC	NC	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Benzene	ug/m^3	NC	NC	4.0	2.0	25	0.97 U	3.3	0.97 U	3.6
Carbon tetrachloride	ug/m^3	150	4.5	1.9 U	2.5	1.9 U	2.4	1.9 U	1.7 J	1.9 U
Chlorobenzene	ug/m^3	1,700	52	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Chloroform	ug/m^3	37	1.1	2.0	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	4.0
Chloromethane	ug/m^3	3,100	94	1.6	0.62 U	1.2	0.63 U	0.73	0.63 U	1.1
cis-1,2-Dichloroethene	ug/m^3	280	8.3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Cyclohexane	ug/m^3	NC	NC	6.2	2.7	4.4	1.0 U	1.5	1.0 U	4.4
Dichlorodifluoromethane	ug/m^3	NC	NC	2.0	2.4	1.7	1.8	2.4	2.2	2.3
Ethylbenzene	ug/m^3	NC	NC	3.0	1.6	18	1.8	1.8	1.3 U	1.3 U
Hexane	ug/m^3	NC	NC	27	11	33	3.6 U	7.3	3.6 U	12
Isopropylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
m,p-Xylene	ug/m^3	NC	NC	11	3.6	57	7.2	5.4	3.5	2.9
Methylene chloride	ug/m^3	21,000	630	1.5	1.0 U	1.7	1.1 U	1.1 U	1.1 U	1.1 U
Naphthalene (VOC)	ug/m^3	NC	NC	26 U	26 U	26 U	27 U	26 U	26 U	27 U
n-Propylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	2.9	1.5 U	1.5 U	1.5 U	1.5 U
o-Xylene	ug/m^3	NC	NC	4.0	1.8	18	1.8	2.3	1.3 U	1.1 J
Styrene	ug/m^3	NC	NC	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Tetrachloroethene (PCE)	ug/m^3	1,400	41	2.0 U	28	2.0 U	39	2.1 U	47	2.1 U
Toluene	ug/m^3	NC	NC	19	6.1	85	1.0 J	12	1.1 U	7.7
trans-1,2-Dichloroethylene	ug/m^3	2,800	83	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Trichloroethene (TCE)	ug/m^3	67	2.0	1.6 U	1.6 U	1.6 U	16	1.6 U	1.6 U	1.6 U
Trichlorofluoromethane	ug/m^3	15000	15000	8.1	2.7	1.7	2.1	4.4	2.2	2.2

Table 1
Soil Gas and Indoor Air Analytical Results Oct 2018 - Dec 2021
Hamburg-Unadilla St Contamination Site
Putnam Township, Livingston County, MI
Facility No. 47000013

Location	Units	EGLE Revised 2021 Site-Specific Residential VIAC - Soil Gas	EGLE Revised June 2021 Site-Specific Residential VIAC - Soil Gas for **Dirt Floors, Crawl Spaces, Sumps, Shallow Groundwater	334 E UNADILLA ST **(Dirt Floor)					
Sample Date				11/1/2018	10/31/2018	3/28/2019	3/27/2019	7/25/2019	7/24/2019
FieldSampleID				IA07-334 E. Unadilla St.-110118	18VP-07-SS	IA07-334 EUNADILLA-032819	18VP-07-02	IA07-334Unadilla-072519	18VP-07-SS
SampleType				Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas
Lab Report Number				1811024	1811001	1903207	1903206	1907236	1907236
1,1,1-Trichloroethane	ug/m^3	170,000	5,000	1.6 U	1.6 U	1.6 U	1.6 U	1.7 U	1.7 U
1,1-Dichloroethane	ug/m^3	530	16	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,2,3-Trimethylbenzene	ug/m^3	NC	NC	NA	NA	1.5 U	1.5 U	1.5 U	1.5 U
1,2,4-Trichlorobenzene	ug/m^3	NC	NC	2.2 U	2.2 U	3.7 U	3.7 U	3.8 U	3.8 U
1,2,4-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	**2.1**	1.5 U	1.5 U	1.5 U	**1.3 J**
1,2-Dichloroethane	ug/m^3	33	0.98	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,3,5-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
1,3-Butadiene	ug/m^3	NC	NC	0.65 U	0.65 U	0.67 U	0.66 U	0.67 U	0.67 U
1,4-Dichlorobenzene	ug/m^3	NC	NC	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
2,2,4-Trimethylpentane	ug/m^3	NC	NC	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
2-Butanone (MEK)	ug/m^3	170,000	5,000	15 U	15 U	15 U	15 U	15 U	15 U
4-Methyl-2-pentanone	ug/m^3	27,000	820	4.0 U	**3.8 J**	4.1 U	4.1 U	4.1 U	4.1 U
Acetonitrile	ug/m^3	NC	NC	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Acrylonitrile	ug/m^3	NC	NC	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Benzene	ug/m^3	NC	NC	**0.86 J**	0.95 U	**0.93 J**	0.95 U	**0.96 J**	0.97 U
Carbon tetrachloride	ug/m^3	150	4.5	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Chlorobenzene	ug/m^3	1,700	52	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Chloroform	ug/m^3	37	1.1	1.4 U	1.4 U	1.5 U	1.5 U	1.5 U	1.5 U
Chloromethane	ug/m^3	3,100	94	**1.2**	**0.94**	**0.65**	0.62 U	**0.53 J**	0.63 U
cis-1,2-Dichloroethene	ug/m^3	280	8.3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Cyclohexane	ug/m^3	NC	NC	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane	ug/m^3	NC	NC	**3.4**	**2.6**	**2.3**	**2.3**	**2.3**	**2.4**
Ethylbenzene	ug/m^3	NC	NC	1.3 U	**1.7**	1.3 U	1.3 U	1.3 U	**2.2**
Hexane	ug/m^3	NC	NC	3.5 U	3.5 U	3.5 U	3.5 U	3.6 U	3.6 U
Isopropylbenzene	ug/m^3	NC	NC	NA	NA	1.5 U	1.5 U	1.5 U	1.5 U
m,p-Xylene	ug/m^3	NC	NC	1.3 U	**4.6**	1.3 U	1.3 U	1.3 U	**8.5**
Methylene chloride	ug/m^3	21,000	630	1.0 U	1.0 U	1.0 U	1.0 U	1.1 U	1.1 U
Naphthalene (VOC)	ug/m^3	NC	NC	NA	NA	26 U	26 U	27 U	27 U
n-Propylbenzene	ug/m^3	NC	NC	NA	NA	1.5 U	1.5 U	1.5 U	1.5 U
o-Xylene	ug/m^3	NC	NC	1.3 U	**2.2**	1.3 U	1.3 U	1.3 U	**2.9**
Styrene	ug/m^3	NC	NC	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Tetrachloroethene (PCE)	ug/m^3	1,400	41	2.0 U	2.0 U	2.0 U	5.3	2.1 U	2.1 U
Toluene	ug/m^3	NC	NC	**1.4**	**5.7**	**1.1**	**0.99 J**	**1.8**	**2.1**
trans-1,2-Dichloroethylene	ug/m^3	2,800	83	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Trichloroethene (TCE)	ug/m^3	67	2.0	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Trichlorofluoromethane	ug/m^3	15000	15000	**1.8**	1.7 U	**2.9**	1.7 U	1.7 U	1.7 U

Table 1
Soil Gas and Indoor Air Analytical Results Oct 2018 - Dec 2021
Hamburg-Unadilla St Contamination Site
Putnam Township, Livingston County, MI
Facility No. 47000013

Location	Units	EGLE Revised 2021 Site-Specific Residential VIAC - Soil Gas	EGLE Revised June 2021 Site-Specific Residential VIAC - Soil Gas for **Dirt Floors, Crawl Spaces, Sumps, Shallow Groundwater	334 E UNADILLA ST **(Dirt Floor)				408 E UNADILLA ST **(Dirt Floor)			
Sample Date				11/22/2019	11/22/2019	11/21/2019	11/21/2019	4/24/2019	4/23/2019	8/9/2019	8/8/2019
FieldSampleID				IA07-334UNADILLA-112219	IA07-334UNADILLA-112219-DUP	18VP-07-SS	18VP-07-SS-DUP	IA16-408 E Unadilla St.-042419	19VP-16-SS	IA16-408UNADILLA-080919	18VP-16-SS
SampleType				Indoor Air (Basement)	Indoor Air (Basement)	Sub-Slab Soil Gas	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas
Lab Report Number				1911332	1911332	1911332	1911332	1904181	1904182	1908121	1908121
1,1,1-Trichloroethane	ug/m³	170,000	5,000	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
1,1-Dichloroethane	ug/m³	530	16	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,2,3-Trimethylbenzene	ug/m³	NC	NC	1.5 U	1.5 U	2.4	1.6	1.5 U	1.4 U	1.3 J	1.7
1,2,4-Trichlorobenzene	ug/m³	NC	NC	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.6 U	3.7 U	3.7 U
1,2,4-Trimethylbenzene	ug/m³	NC	NC	1.5 U	1.5 U	6.3	4.3	1.5 U	1.4 U	4.2	6.4
1,2-Dichloroethane	ug/m³	33	0.98	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,3,5-Trimethylbenzene	ug/m³	NC	NC	1.5 U	1.5 U	1.7	1.5 U	1.5 U	1.4 U	1.3 J	2.1
1,3-Butadiene	ug/m³	NC	NC	0.66 U	0.66 U	0.67 U	0.67 U	0.66 U	0.62 J	0.67 U	0.67 U
1,4-Dichlorobenzene	ug/m³	NC	NC	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	2.1	1.8 U
2,2,4-Trimethylpentane	ug/m³	NC	NC	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
2-Butanone (MEK)	ug/m³	170,000	5,000	15 U	15 U	15 U	15 U	15 U	14 U	15 U	15 U
4-Methyl-2-pentanone	ug/m³	27,000	820	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.0 U	4.1 U	4.1 U
Acetonitrile	ug/m³	NC	NC	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.6 U	1.7 U	1.7 U
Acrylonitrile	ug/m³	NC	NC	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Benzene	ug/m³	NC	NC	0.95 U	0.95 U	0.98	0.96 U	0.95 U	1.7	0.96	0.96 U
Carbon tetrachloride	ug/m³	150	4.5	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U
Chlorobenzene	ug/m³	1,700	52	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Chloroform	ug/m³	37	1.1	1.5 U	1.5 U	1.5 U	1.5 U	1.9	1.4 U	1.5 U	1.5 U
Chloromethane	ug/m³	3,100	94	1.2	1.3	0.62 U	0.62 U	1.3	0.61 U	0.90	0.62 U
cis-1,2-Dichloroethene	ug/m³	280	8.3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Cyclohexane	ug/m³	NC	NC	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.4	1.3	1.0 U
Dichlorodifluoromethane	ug/m³	NC	NC	2.2	2.4	2.2	2.4	1.9	1.5	2.5	2.2
Ethylbenzene	ug/m³	NC	NC	1.3 U	1.3 U	1.8	1.3 U	1.3 U	1.3 U	1.3	11
Hexane	ug/m³	NC	NC	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	4.9	3.5 U	3.5 U
Isopropylbenzene	ug/m³	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.4 U	1.5 U	1.5 U
m,p-Xylene	ug/m³	NC	NC	1.3 U	1.3 U	6.8	4.0	1.3 U	1.2 J	4.5	41
Methylene chloride	ug/m³	21,000	630	1.0 U	1.0 U	1.0 U	1.0 U	1.2	1.0 U	2.9	1.0 U
Naphthalene (VOC)	ug/m³	NC	NC	26 U	26 U	26 U	26 U	26 U	26 U	51	26 U
n-Propylbenzene	ug/m³	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.4 U	1.5 U	1.5 U
o-Xylene	ug/m³	NC	NC	1.3 U	1.3 U	4.3	3.1	1.3 U	1.3 U	2.2	12
Styrene	ug/m³	NC	NC	1.3 U	1.3 U	2.5	1.9	1.3 U	1.2 U	3.1	1.7
Tetrachloroethene (PCE)	ug/m³	1,400	41	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Toluene	ug/m³	NC	NC	1.1 U	1.1 U	7.7	4.4	8.3	4.8	16	7.6
trans-1,2-Dichloroethylene	ug/m³	2,800	83	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Trichloroethene (TCE)	ug/m³	67	2.0	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	19
Trichlorofluoromethane	ug/m³	15000	15000	1.7 U	1.7 U	1.7 U	1.7 U	1.5 J	1.4 J	1.9	2.1

Table 1
Soil Gas and Indoor Air Analytical Results Oct 2018 - Dec 2021
Hamburg-Unadilla St Contamination Site
Putnam Township, Livingston County, MI
Facility No. 47000013

Location	Units	EGLE Revised 2021 Site-Specific Residential VIAC - Soil Gas	EGLE Revised June 2021 Site-Specific Residential VIAC - Soil Gas for **Dirt Floors, Crawl Spaces, Sumps, Shallow Groundwater	409 E UNADILLA ST **(Dirt Floor)					
Sample Date				10/31/2018	10/30/2018	3/28/2019	3/27/2019	7/25/2019	7/24/2019
FieldSampleID				IA05-409 E UNADILLA ST - 103118	18VP-05-SS	IA05-409 EUNADILLA-032819	18VP-05-SS	IA05-409Unadilla-072519	18VP-05-SS
SampleType				Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas
Lab Report Number				1811001	1811001	1903207	1903206	1907236	1907236
1,1,1-Trichloroethane	ug/m^3	170,000	5,000	1.6 U	1.6 U	1.6 U	1.6 U	1.7 U	1.7 U
1,1-Dichloroethane	ug/m^3	530	16	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,2,3-Trimethylbenzene	ug/m^3	NC	NC	NA	NA	1.5 U	1.5 U	1.5 U	1.5 U
1,2,4-Trichlorobenzene	ug/m^3	NC	NC	**4.7**	2.2 U	3.7 U	3.7 U	3.8 U	3.8 U
1,2,4-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	**24**	1.5 U	1.5 U	1.5 U	**1.5**
1,2-Dichloroethane	ug/m^3	33	0.98	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,3,5-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	**11**	1.5 U	1.5 U	1.5 U	1.5 U
1,3-Butadiene	ug/m^3	NC	NC	0.66 U	0.66 U	0.67 U	0.66 U	0.67 U	0.67 U
1,4-Dichlorobenzene	ug/m^3	NC	NC	**2.2**	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
2,2,4-Trimethylpentane	ug/m^3	NC	NC	1.4 U	**93**	1.4 U	1.4 U	1.4 U	1.4 U
2-Butanone (MEK)	ug/m^3	170,000	5,000	15 U	15 U	15 U	15 U	15 U	15 U
4-Methyl-2-pentanone	ug/m^3	27,000	820	4.1 U	4.0 U	4.1 U	4.1 U	4.1 U	4.1 U
Acetonitrile	ug/m^3	NC	NC	1.7 U	**6.9**	1.7 U	1.7 U	1.7 U	1.7 U
Acrylonitrile	ug/m^3	NC	NC	1.1 U	**2.6**	1.1 U	1.1 U	1.1 U	1.1 U
Benzene	ug/m^3	NC	NC	0.95 U	**6.6**	0.96 U	**0.93 J**	0.97 U	0.97 U
Carbon tetrachloride	ug/m^3	150	4.5	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Chlorobenzene	ug/m^3	1,700	52	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Chloroform	ug/m^3	37	1.1	1.4 U	1.4 U	1.5 U	1.5 U	1.5 U	1.5 U
Chloromethane	ug/m^3	3,100	94	0.61 U	0.61 U	**0.62**	**0.53 J**	0.63 U	**0.84**
cis-1,2-Dichloroethene	ug/m^3	280	8.3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Cyclohexane	ug/m^3	NC	NC	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane	ug/m^3	NC	NC	**6.8**	**4.3**	**4.7**	**3.3**	**10**	**8.9**
Ethylbenzene	ug/m^3	NC	NC	**8.9**	**20**	1.3 U	1.3 U	1.3 U	**1.3**
Hexane	ug/m^3	NC	NC	**3.4 J**	**13**	3.5 U	3.5 U	**7.4**	3.6 U
Isopropylbenzene	ug/m^3	NC	NC	NA	NA	1.5 U	1.5 U	1.5 U	1.5 U
m,p-Xylene	ug/m^3	NC	NC	**22**	**200**	1.3 U	**1.4**	**1.2 J**	**5.1**
Methylene chloride	ug/m^3	21,000	630	1.0 U	1.0 U	1.0 U	1.0 U	1.1 U	1.1 U
Naphthalene (VOC)	ug/m^3	NC	NC	NA	NA	26 U	26 U	27 U	27 U
n-Propylbenzene	ug/m^3	NC	NC	NA	NA	1.5 U	1.5 U	1.5 U	1.5 U
o-Xylene	ug/m^3	NC	NC	**4.3**	**73**	1.3 U	1.3 U	1.3 U	**1.9**
Styrene	ug/m^3	NC	NC	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Tetrachloroethene (PCE)	ug/m^3	1,400	41	2.0 U	**6.3**	2.0 U	2.0 U	2.1 U	**20**
Toluene	ug/m^3	NC	NC	**6.3**	**20**	**2.6**	**2.9**	**4.0**	**4.6**
trans-1,2-Dichloroethylene	ug/m^3	2,800	83	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Trichloroethene (TCE)	ug/m^3	67	2.0	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Trichlorofluoromethane	ug/m^3	15000	15000	**1.6 J**	**1.5 J**	**2.1**	1.7 U	1.7 U	**2.4**

Table 1
Soil Gas and Indoor Air Analytical Results Oct 2018 - Dec 2021
Hamburg-Unadilla St Contamination Site
Putnam Township, Livingston County, MI
Facility No. 47000013

Location	Units	EGLE Revised 2021 Site-Specific Residential VIAC - Soil Gas	EGLE Revised June 2021 Site-Specific Residential VIAC - Soil Gas for **Dirt Floors, Crawl Spaces, Sumps, Shallow Groundwater	409 E UNADILLA ST **(Dirt Floor)				431 E UNADILLA ST **(Dirt Floor)			
Sample Date				11/8/2019	11/7/2019	2/14/2020	2/13/2020	10/31/2018	11/1/2018	3/28/2019	3/27/2019
FieldSampleID				IA05-409UNADILLA-110819	18VP-05-SS	IA05-409UNIDILLA-021420	18VP-5-SS	18VP-08-SS	IA08-431 E. Unadilla St.-110118	IA08-431 EUNADILLA-032819	18VP-08-SS
SampleType				Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas	Sub-Slab Soil Gas	Indoor Air (Basement)	Indoor Air (Basement)	Sub-Slab Soil Gas
Lab Report Number				1911127	1911127	2002098	2002098	1811001	1811024	1903207	1903206
1,1,1-Trichloroethane	ug/m^3	170,000	5,000	1.6 U	1.6 U	1.7 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
1,1-Dichloroethane	ug/m^3	530	16	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,2,3-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.8	1.5 U	1.5 U	NA	NA	1.5 U	1.5 U
1,2,4-Trichlorobenzene	ug/m^3	NC	NC	3.7 U	3.7 U	3.8 U	3.7 U	2.2 U	2.2 U	3.7 U	3.7 U
1,2,4-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	7.9	1.5 U	1.5 U	2.5	1.5 U	1.5 U	1.5 U
1,2-Dichloroethane	ug/m^3	33	0.98	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,3,5-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.8	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
1,3-Butadiene	ug/m^3	NC	NC	0.66 U	0.66 U	0.68 U	0.67 U	0.65 U	0.65 U	0.67 U	0.66 U
1,4-Dichlorobenzene	ug/m^3	NC	NC	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
2,2,4-Trimethylpentane	ug/m^3	NC	NC	1.4 U	1.4 U	1.4 U	1.4 U	2.6	1.4 U	1.4 U	1.4 U
2-Butanone (MEK)	ug/m^3	170,000	5,000	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
4-Methyl-2-pentanone	ug/m^3	27,000	820	4.1 U	4.1 U	4.2 U	4.1 U	4.0 U	4.0 U	4.1 U	4.1 U
Acetonitrile	ug/m^3	NC	NC	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Acrylonitrile	ug/m^3	NC	NC	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Benzene	ug/m^3	NC	NC	0.96 U	0.96 U	0.98 U	0.96 U	2.6	0.95 U	0.96 U	0.95 U
Carbon tetrachloride	ug/m^3	150	4.5	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Chlorobenzene	ug/m^3	1,700	52	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Chloroform	ug/m^3	37	1.1	1.5 U	1.5 U	1.5 U	1.5 U	1.4 U	1.9	1.5 U	1.5 U
Chloromethane	ug/m^3	3,100	94	0.85	0.62 U	1.8	0.89	0.74	0.88	0.60 J	0.62 U
cis-1,2-Dichloroethene	ug/m^3	280	8.3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Cyclohexane	ug/m^3	NC	NC	1.0 U	1.0 U	1.1 U	1.0 U	NA	NA	1.0 U	1.0 U
Dichlorodifluoromethane	ug/m^3	NC	NC	3.7	3.9	3.2	2.9	3.5	3.7	2.3	2.5
Ethylbenzene	ug/m^3	NC	NC	1.3 U	1.4	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Hexane	ug/m^3	NC	NC	3.5 U	3.5 U	3.6 U	3.5 U	6.0	3.5 U	3.5 U	3.5 U
Isopropylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	NA	NA	1.5 U	1.5 U
m,p-Xylene	ug/m^3	NC	NC	1.3 U	5.7	1.3 U	1.5	4.6	1.3 U	1.3 U	1.9
Methylene chloride	ug/m^3	21,000	630	1.0 U	1.0 U	1.1 U	1.0 U	1.0 U	2.6	2.0	1.6
Naphthalene (VOC)	ug/m^3	NC	NC	26 U	26 U	27 U	26 U	NA	NA	26 U	26 U
n-Propylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	NA	NA	1.5 U	1.5 U
o-Xylene	ug/m^3	NC	NC	1.3 U	3.5	1.3 U	1.3 U	2.2	1.3 U	1.3 U	1.3 U
Styrene	ug/m^3	NC	NC	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Tetrachloroethene (PCE)	ug/m^3	1,400	41	2.0 U	5.7	2.1 U	16	2.0 U	2.0 U	2.0 U	2.0 U
Toluene	ug/m^3	NC	NC	2.5	2.4	1.5	1.6	7.6	2.5	2.9	1.6
trans-1,2-Dichloroethylene	ug/m^3	2,800	83	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Trichloroethene (TCE)	ug/m^3	67	2.0	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Trichlorofluoromethane	ug/m^3	15000	15000	1.5 J	1.7 U	3.3	1.7 U	1.7 U	1.9	1.6 J	1.7 U

Table 1
Soil Gas and Indoor Air Analytical Results Oct 2018 - Dec 2021
Hamburg-Unadilla St Contamination Site
Putnam Township, Livingston County, MI
Facility No. 47000013

Location	Units	EGLE Revised 2021 Site-Specific Residential VIAC - Soil Gas	EGLE Revised June 2021 Site-Specific Residential VIAC - Soil Gas for **Dirt Floors, Crawl Spaces, Sumps, Shallow Groundwater	431 E UNADILLA ST **(Dirt Floor)						809 E UNADILLA ST **(Dirt Floor)
Sample Date				6/28/2019	6/27/2019	11/7/2019	11/6/2019	2/20/2020	2/19/2020	10/30/2018
FieldSampleID				IA08-431UNADILLA-062819	18VP-08-SS	IA08-431UNADILLA-110719	18VP-08-SS	IA08-431UNADILLA-022020	18VP-8-SS	18VP-04-SS
SampleType				Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas	Sub-Slab Soil Gas
Lab Report Number				1907002	1907001	1911129	1911127	2002118	2002118	1811001
1,1,1-Trichloroethane	ug/m^3	170,000	5,000	**3.0**	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
1,1-Dichloroethane	ug/m^3	530	16	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,2,3-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	NA
1,2,4-Trichlorobenzene	ug/m^3	NC	NC	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	2.2 U
1,2,4-Trimethylbenzene	ug/m^3	NC	NC	**3.1**	**2.0**	1.5 U	**3.9**	1.5 U	**2.5**	**3.8**
1,2-Dichloroethane	ug/m^3	33	0.98	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,3,5-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	**1.3 J**
1,3-Butadiene	ug/m^3	NC	NC	0.66 U	0.66 U	0.66 U	0.66 U	0.67 U	0.67 U	0.66 U
1,4-Dichlorobenzene	ug/m^3	NC	NC	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
2,2,4-Trimethylpentane	ug/m^3	NC	NC	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	**1.9**
2-Butanone (MEK)	ug/m^3	170,000	5,000	15 U	15 U	15 U	15 U	15 U	**4900**	15 U
4-Methyl-2-pentanone	ug/m^3	27,000	820	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.0 U
Acetonitrile	ug/m^3	NC	NC	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Acrylonitrile	ug/m^3	NC	NC	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Benzene	ug/m^3	NC	NC	0.96 U	0.96 U	0.96 U	0.96 U	0.96 U	0.96 U	**3.7**
Carbon tetrachloride	ug/m^3	150	4.5	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Chlorobenzene	ug/m^3	1,700	52	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Chloroform	ug/m^3	37	1.1	**1.7**	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.4 U
Chloromethane	ug/m^3	3,100	94	**2.1**	**0.73**	**0.95**	0.62 U	**1.0**	0.62 U	0.61 U
cis-1,2-Dichloroethene	ug/m^3	280	8.3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Cyclohexane	ug/m^3	NC	NC	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA
Dichlorodifluoromethane	ug/m^3	NC	NC	**1.7**	**1.7**	**2.3**	**2.7**	**2.2**	**2.6**	**2.1**
Ethylbenzene	ug/m^3	NC	NC	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	**3.7**
Hexane	ug/m^3	NC	NC	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	**14**
Isopropylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	NA
m,p-Xylene	ug/m^3	NC	NC	1.3 U	**1.2 J**	1.3 U	**3.6**	1.3 U	**1.1 J**	**10**
Methylene chloride	ug/m^3	21,000	630	1.0 U	1.0 U	1.0 U	1.0 U	**1.2**	1.0 U	**3.4**
Naphthalene (VOC)	ug/m^3	NC	NC	26 U	26 U	26 U	26 U	26 U	26 U	NA
n-Propylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	NA
o-Xylene	ug/m^3	NC	NC	1.3 U	1.3 U	1.3 U	**2.3**	1.3 U	1.3 U	**3.8**
Styrene	ug/m^3	NC	NC	**1.5**	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Tetrachloroethene (PCE)	ug/m^3	1,400	41	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Toluene	ug/m^3	NC	NC	**2.9**	1.1 U	1.1 U	**1.3**	1.1 U	**1.1**	**13**
trans-1,2-Dichloroethylene	ug/m^3	2,800	83	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Trichloroethene (TCE)	ug/m^3	67	2.0	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Trichlorofluoromethane	ug/m^3	15000	15000	1.7 U	1.7 U	1.7 U	1.7 U	**2.3**	1.7 U	**2.5**

Table 1
Soil Gas and Indoor Air Analytical Results Oct 2018 - Dec 2021
Hamburg-Unadilla St Contamination Site
Putnam Township, Livingston County, MI
Facility No. 47000013

Location	Units	EGLE Revised 2021 Site-Specific Residential VIAC - Soil Gas	EGLE Revised June 2021 Site-Specific Residential VIAC - Soil Gas for **Dirt Floors, Crawl Spaces, Sumps, Shallow Groundwater	441 MAGIC ST					
Sample Date				4/24/2019	4/24/2019	4/23/2019	4/23/2019	6/28/2019	6/27/2019
FieldSampleID				IA14-441 Magic St.-042419	IA14-441 Magic St.-042419-Dup	19VP-14-SS	19VP-14-SS-DUP	IA14-441MAGIC-062819	19VP-14-SS
SampleType				Indoor Air (Basement)	Indoor Air (Basement)	Sub-Slab Soil Gas	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas
Lab Report Number				1904181	1904181	1904182	1904182	1907002	1907001
1,1,1-Trichloroethane	ug/m^3	170,000	5,000	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
1,1-Dichloroethane	ug/m^3	530	16	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,2,3-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.4 U	1.4 U	1.5 U	1.5 U
1,2,4-Trichlorobenzene	ug/m^3	NC	NC	3.7 U	3.7 U	3.6 U	3.6 U	3.7 U	3.7 U
1,2,4-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	**3.9**	1.4 U	**3.0**	**2.1**
1,2-Dichloroethane	ug/m^3	33	0.98	1.2 U	1.2 U	1.2 U	1.2 U	**2.9**	1.2 U
1,3,5-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	**1.9**	1.4 U	1.5 U	1.5 U
1,3-Butadiene	ug/m^3	NC	NC	0.66 U	0.66 U	0.65 U	0.65 U	0.66 U	0.66 U
1,4-Dichlorobenzene	ug/m^3	NC	NC	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
2,2,4-Trimethylpentane	ug/m^3	NC	NC	1.4 U	1.4 U	**1.3 J**	1.4 U	1.4 U	1.4 U
2-Butanone (MEK)	ug/m^3	170,000	5,000	15 U	15 U	14 U	14 U	15 U	15 U
4-Methyl-2-pentanone	ug/m^3	27,000	820	4.1 U	4.1 U	4.0 U	4.0 U	4.1 U	4.1 U
Acetonitrile	ug/m^3	NC	NC	1.7 U	1.7 U	1.6 U	1.6 U	1.7 U	1.7 U
Acrylonitrile	ug/m^3	NC	NC	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Benzene	ug/m^3	NC	NC	0.95 U	0.95 U	**2.1**	**1.4**	0.96 U	0.96 U
Carbon tetrachloride	ug/m^3	150	4.5	1.9 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U
Chlorobenzene	ug/m^3	1,700	52	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Chloroform	ug/m^3	37	1.1	1.4 U	1.4 U	1.4 U	1.4 U	**3.9**	1.5 U
Chloromethane	ug/m^3	3,100	94	**1.3**	**1.3**	0.61 U	0.61 U	**1.6**	**1.3**
cis-1,2-Dichloroethene	ug/m^3	280	8.3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Cyclohexane	ug/m^3	NC	NC	1.0 U	1.0 U	**1.2**	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane	ug/m^3	NC	NC	**1.8**	**1.6**	**1.4 J**	**1.4 J**	**1.6**	**1.5**
Ethylbenzene	ug/m^3	NC	NC	1.3 U	1.3 U	**3.5**	**1.3**	**1.9**	1.3 U
Hexane	ug/m^3	NC	NC	3.5 U	3.5 U	**4.0**	3.4 U	3.5 U	3.5 U
Isopropylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.4 U	1.4 U	1.5 U	1.5 U
m,p-Xylene	ug/m^3	NC	NC	1.3 U	1.3 U	**18**	**2.2**	**5.5**	**1.5**
Methylene chloride	ug/m^3	21,000	630	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Naphthalene (VOC)	ug/m^3	NC	NC	26 U	26 U	26 U	26 U	26 U	26 U
n-Propylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.4 U	1.4 U	1.5 U	1.5 U
o-Xylene	ug/m^3	NC	NC	1.3 U	1.3 U	**7.3**	**1.2 J**	**2.8**	1.3 U
Styrene	ug/m^3	NC	NC	1.3 U	1.3 U	1.2 U	1.2 U	**1.1 J**	1.3 U
Tetrachloroethene (PCE)	ug/m^3	1,400	41	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	**6.0**
Toluene	ug/m^3	NC	NC	**1.8**	**1.8**	**7.4**	**4.0**	**6.1**	**1.1**
trans-1,2-Dichloroethylene	ug/m^3	2,800	83	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Trichloroethene (TCE)	ug/m^3	67	2.0	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Trichlorofluoromethane	ug/m^3	15000	15000	1.7 U	1.7 U	1.6 U	1.6 U	1.7 U	1.7 U

Table 1
Soil Gas and Indoor Air Analytical Results Oct 2018 - Dec 2021
Hamburg-Unadilla St Contamination Site
Putnam Township, Livingston County, MI
Facility No. 47000013

Location	Units	EGLE Revised 2021 Site-Specific Residential VIAC - Soil Gas	EGLE Revised June 2021 Site-Specific Residential VIAC - Soil Gas for **Dirt Floors, Crawl Spaces, Sumps, Shallow Groundwater	441 MAGIC ST				443 MAGIC ST			
Sample Date				11/12/2019	11/11/2019	2/18/2020	2/17/2020	4/24/2019	4/23/2019	6/28/2019	6/27/2019
FieldSampleID				IA14-441MAGIC-111219	19VP-14-SS	IA14-441MAGIC-021820	19VP-14-SS	IA15-443 Magic St.-042419	19VP-15-SS	IA15-443MAGIC-062819	19VP-15-SS
SampleType				Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air(Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas
Lab Report Number				1911171	1911171	2002119	2002118	1904181	1904182	1907002	1907001
1,1,1-Trichloroethane	ug/m^3	170,000	5,000	1.6 U	1.6 U	1.7 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
1,1-Dichloroethane	ug/m^3	530	16	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,2,3-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.4 U	1.5 U	1.5 U
1,2,4-Trichlorobenzene	ug/m^3	NC	NC	3.7 U	3.7 U	3.8 U	3.7 U	3.7 U	3.6 U	3.7 U	3.7 U
1,2,4-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	2.7	1.5 U	1.5 U	1.5 U	2.6	1.7	1.8
1,2-Dichloroethane	ug/m^3	33	0.98	1.0 J	1.2 U	1.6	1.2 U	1.2 U	1.2 U	1.0 J	1.2 U
1,3,5-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.2 J	1.5 U	1.5 U
1,3-Butadiene	ug/m^3	NC	NC	0.66 U	0.66 U	0.68 U	0.67 U	0.66 U	0.65 U	0.66 U	0.66 U
1,4-Dichlorobenzene	ug/m^3	NC	NC	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
2,2,4-Trimethylpentane	ug/m^3	NC	NC	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
2-Butanone (MEK)	ug/m^3	170,000	5,000	15 U	15 U	15 U	15 U	15 U	14 U	15 U	15 U
4-Methyl-2-pentanone	ug/m^3	27,000	820	4.1 U	4.1 U	4.2 U	4.1 U	4.1 U	4.0 U	4.1 U	4.1 U
Acetonitrile	ug/m^3	NC	NC	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.6 U	1.7 U	1.7 U
Acrylonitrile	ug/m^3	NC	NC	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Benzene	ug/m^3	NC	NC	0.96 U	0.96 U	0.98 U	0.96 U	0.95 U	8.6	0.96 U	0.96 U
Carbon tetrachloride	ug/m^3	150	4.5	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U	1.9 U
Chlorobenzene	ug/m^3	1,700	52	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Chloroform	ug/m^3	37	1.1	1.9	1.5 U	1.5 U	1.5 U	1.4 U	1.4 U	1.3 J	1.5 U
Chloromethane	ug/m^3	3,100	94	1.8	0.62 U	1.6	0.52 J	1.2	0.61 U	1.3	0.72
cis-1,2-Dichloroethene	ug/m^3	280	8.3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Cyclohexane	ug/m^3	NC	NC	1.0 U	1.0 U	1.1 U	1.0 U	1.0 U	5.8	1.0 U	1.0 U
Dichlorodifluoromethane	ug/m^3	NC	NC	2.3	2.4	2.2	2.5	1.8	1.4 J	1.6	1.5
Ethylbenzene	ug/m^3	NC	NC	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	5.9	1.3 U	1.3 U
Hexane	ug/m^3	NC	NC	3.5 U	3.5 U	3.6 U	3.5 U	3.5 U	14	3.5 U	3.5 U
Isopropylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.4 U	1.5 U	1.5 U
m,p-Xylene	ug/m^3	NC	NC	1.3	2.3	1.3 U	1.5	1.3 U	11	2.8	1.3
Methylene chloride	ug/m^3	21,000	630	1.0 U	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Naphthalene (VOC)	ug/m^3	NC	NC	26 U	26 U	27 U	26 U	26 U	26 U	26 U	26 U
n-Propylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.4 U	1.5 U	1.5 U
o-Xylene	ug/m^3	NC	NC	1.3 U	1.6	1.3 U	1.2 J	1.3 U	4.3	1.3	1.3 U
Styrene	ug/m^3	NC	NC	1.3 U	1.3 U	1.3 U	2.0	1.3 U	1.2 U	1.3 U	1.3 U
Tetrachloroethene (PCE)	ug/m^3	1,400	41	2.0 U	2.0 U	2.1 U	16	2.0 U	2.0 U	2.0 U	2.0 U
Toluene	ug/m^3	NC	NC	2.1	1.1 U	2.0	1.4	1.4	25	3.6	1.1
trans-1,2-Dichloroethylene	ug/m^3	2,800	83	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Trichloroethene (TCE)	ug/m^3	67	2.0	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Trichlorofluoromethane	ug/m^3	15000	15000	1.7 U	1.7	1.7 U	1.7 U	1.7 U	1.6	1.7 U	2.2

Table 1
Soil Gas and Indoor Air Analytical Results Oct 2018 - Dec 2021
Hamburg-Unadilla St Contamination Site
Putnam Township, Livingston County, MI
Facility No. 47000013

Location	Units	EGLE Revised 2021 Site-Specific Residential VIAC - Soil Gas	EGLE Revised June 2021 Site-Specific Residential VIAC - Soil Gas for **Dirt Floors, Crawl Spaces, Sumps, Shallow Groundwater	443 MAGIC ST					
Sample Date				11/12/2019	11/11/2019	2/18/2020	2/18/2020	2/17/2020	2/17/2020
FieldSampleID				IA15-443MAGIC-111219	19VP-15-SS	IA15-443MAGIC-021820	IA15-443MAGIC-021820-DUP	19VP-15-SS	19VP-15-SS-DUP
SampleType				Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)	Indoor Air (Basement)	Sub-Slab Soil Gas	Sub-Slab Soil Gas
Lab Report Number				1911171	1911171	2002119	2002119	2002118	2002118
1,1,1-Trichloroethane	ug/m^3	170,000	5,000	1.7 U	1.6 U	1.7 U	1.7 U	1.6 U	1.6 U
1,1-Dichloroethane	ug/m^3	530	16	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,2,3-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
1,2,4-Trichlorobenzene	ug/m^3	NC	NC	3.7 U	3.7 U	3.8 U	3.8 U	3.7 U	3.7 U
1,2,4-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	2.8	1.5 U	1.5 U	1.5 U	1.5 U
1,2-Dichloroethane	ug/m^3	33	0.98	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,3,5-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
1,3-Butadiene	ug/m^3	NC	NC	0.67 U	0.66 U	0.68 U	0.68 U	0.67 U	0.67 U
1,4-Dichlorobenzene	ug/m^3	NC	NC	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
2,2,4-Trimethylpentane	ug/m^3	NC	NC	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
2-Butanone (MEK)	ug/m^3	170,000	5,000	15 U	15 U	15 U	15 U	15 U	15 U
4-Methyl-2-pentanone	ug/m^3	27,000	820	4.1 U	4.1 U	4.2 U	4.2 U	4.1 U	4.1 U
Acetonitrile	ug/m^3	NC	NC	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Acrylonitrile	ug/m^3	NC	NC	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Benzene	ug/m^3	NC	NC	1.0	0.96 U	0.98 U	0.98 U	0.96 U	0.96 U
Carbon tetrachloride	ug/m^3	150	4.5	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Chlorobenzene	ug/m^3	1,700	52	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Chloroform	ug/m^3	37	1.1	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Chloromethane	ug/m^3	3,100	94	0.66	0.62 U	1.2	1.2	0.62 U	0.62 U
cis-1,2-Dichloroethene	ug/m^3	280	8.3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Cyclohexane	ug/m^3	NC	NC	1.0 U	1.0 U	1.1 U	1.1 U	1.0 U	1.0 U
Dichlorodifluoromethane	ug/m^3	NC	NC	2.3	2.5	2.3	2.4	2.4	2.5
Ethylbenzene	ug/m^3	NC	NC	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Hexane	ug/m^3	NC	NC	3.6 U	3.5 U	3.6 U	3.6 U	3.5 U	3.5 U
Isopropylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
m,p-Xylene	ug/m^3	NC	NC	1.4	2.7	1.3 U	1.3 U	2.0	1.6
Methylene chloride	ug/m^3	21,000	630	1.1 U	1.0 U	1.1 U	1.1 U	1.4	1.0 U
Naphthalene (VOC)	ug/m^3	NC	NC	26 U	26 U	27 U	27 U	26 U	26 U
n-Propylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
o-Xylene	ug/m^3	NC	NC	1.3 U	1.9	1.3 U	1.3 U	1.5	1.4
Styrene	ug/m^3	NC	NC	1.3 U	1.3 U	1.3 U	1.3 U	4.1	3.2
Tetrachloroethene (PCE)	ug/m^3	1,400	41	2.1 U	3.3	2.1 U	2.1 U	2.0 U	2.0 U
Toluene	ug/m^3	NC	NC	1.8	1.2	1.2 U	1.2 U	1.6	1.4
trans-1,2-Dichloroethylene	ug/m^3	2,800	83	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Trichloroethene (TCE)	ug/m^3	67	2.0	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Trichlorofluoromethane	ug/m^3	15000	15000	1.7 U	3.1	1.7 U	1.7 U	1.6 J	1.7

Table 1
Soil Gas and Indoor Air Analytical Results Oct 2018 - Dec 2021
Hamburg-Unadilla St Contamination Site
Putnam Township, Livingston County, MI
Facility No. 47000013

Location	Units	EGLE Revised 2021 Site-Specific Residential VIAC - Soil Gas	EGLE Revised June 2021 Site-Specific Residential VIAC - Soil Gas for **Dirt Floors, Crawl Spaces, Sumps, Shallow Groundwater	450 MAGIC ST**- MITIGATION SYSTEM INSTALLED 11/13/2018							
Sample Date				10/31/2018	10/30/2018	11/20/2018	11/20/2018	11/20/2018	11/19/2018	2/22/2019	2/21/2019
FieldSampleID				IA03-450 MAGIC ST - 103118	18VP-03-SS	IA03-450 MAGIC ST-112018	IA03-450 MAGIC ST-112018 DUP	IA03-450 MAGIC ST-112018 LR	STACK-450 MAGIC ST-111918	IA03-450MAGIC-022219	STACK-450MAGIC-022119
SampleType				Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)	Indoor Air (Basement)	Indoor Air (1st Floor)	SSDS Stack Discharge*	Indoor Air (Basement)	SSDS Stack Discharge*
Lab Report Number				1811001	1811001	1811209	1811209	1811209	1811208	1902123	1902123
1,1,1-Trichloroethane	ug/m^3	170,000	5,000	1.6 U	**11**	1.6 U	1.6 U	1.6 U	1.6 U	**1.4 J**	1.7 U
1,1-Dichloroethane	ug/m^3	530	16	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,2,3-Trimethylbenzene	ug/m^3	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	ug/m^3	NC	NC	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U
1,2,4-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	**2.9**	1.5 U	1.5 U	1.5 U	**3.5**	1.5 U	1.5 U
1,2-Dichloroethane	ug/m^3	33	0.98	**1.6**	1.2 U	**1.3**	**1.4**	**2.7**	1.2 U	**1.9**	1.2 U
1,3,5-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
1,3-Butadiene	ug/m^3	NC	NC	0.66 U	0.66 U	0.67 U	0.67 U	0.67 U	0.65 U	0.67 U	0.67 U
1,4-Dichlorobenzene	ug/m^3	NC	NC	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
2,2,4-Trimethylpentane	ug/m^3	NC	NC	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
2-Butanone (MEK)	ug/m^3	170,000	5,000	15 U	**22**	15 U	15 U	15 U	15 U	15 U	15 U
4-Methyl-2-pentanone	ug/m^3	27,000	820	4.1 U	4.0 U	4.1 U	4.1 U	4.1 U	4.0 U	4.1 U	4.1 U
Acetonitrile	ug/m^3	NC	NC	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Acrylonitrile	ug/m^3	NC	NC	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Benzene	ug/m^3	NC	NC	0.95 U	**5.4**	0.96 U	**0.82 J**	**0.93 J**	0.94 U	**0.92 J**	0.97 U
Carbon tetrachloride	ug/m^3	150	4.5	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Chlorobenzene	ug/m^3	1,700	52	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Chloroform	ug/m^3	37	1.1	1.4 U	**5.0**	1.5 U	1.5 U	1.5 U	1.4 U	1.5 U	1.5 U
Chloromethane	ug/m^3	3,100	94	0.61 U	0.61 U	**0.59 J**	**0.56 J**	**0.68**	0.61 U	**1.7**	0.63 U
cis-1,2-Dichloroethene	ug/m^3	280	8.3	1.2 U	**250**	1.2 U	1.2 U	1.2 U	**6.2**	1.2 U	1.2 U
Cyclohexane	ug/m^3	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	ug/m^3	NC	NC	**5.5**	**5.0**	**5.1**	**5.3**	**5.6**	**3.4**	**7.6**	**4.3**
Ethylbenzene	ug/m^3	NC	NC	1.3 U	**4.7**	1.3 U	1.3 U	1.3 U	**1.3**	1.3 U	1.3 U
Hexane	ug/m^3	NC	NC	3.5 U	**5.9**	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.6 U
Isopropylbenzene	ug/m^3	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
m,p-Xylene	ug/m^3	NC	NC	**1.5**	**7.0**	**1.2 J**	1.3	1.3	**5.6**	1.3 U	1.3 U
Methylene chloride	ug/m^3	21,000	630	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.1 U
Naphthalene (VOC)	ug/m^3	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	ug/m^3	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	ug/m^3	NC	NC	1.3 U	**2.9**	1.3 U	1.3 U	1.3 U	**3.0**	1.3 U	1.3 U
Styrene	ug/m^3	NC	NC	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Tetrachloroethene (PCE)	ug/m^3	1,400	41	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.1 U
Toluene	ug/m^3	NC	NC	**4.5**	**20**	**3.9**	**4.0**	**5.3**	**4.2**	**5.0**	1.1 U
trans-1,2-Dichloroethylene	ug/m^3	2,800	83	1.2 U	**11**	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Trichloroethene (TCE)	ug/m^3	67	2.0	1.6 U	**7300**	1.6 U	1.6 U	1.6 U	**330**	1.6 U	**9.2**
Trichlorofluoromethane	ug/m^3	15000	15000	**1.6 J**	1.7 U	**1.4 J**	**1.5 J**	**1.5 J**	1.7 U	**1.5 J**	1.7 U

Table 1
Soil Gas and Indoor Air Analytical Results Oct 2018 - Dec 2021
Hamburg-Unadilla St Contamination Site
Putnam Township, Livingston County, MI
Facility No. 47000013

Location	Units	EGLE Revised 2021 Site-Specific Residential VIAC - Soil Gas	EGLE Revised June 2021 Site-Specific Residential VIAC - Soil Gas for **Dirt Floors, Crawl Spaces, Sumps, Shallow Groundwater	450 MAGIC ST** - MITIGATION SYSTEM INSTALLED 11/13/2018							
Sample Date				7/3/2019	7/2/2019	7/12/2019	7/25/2019	8/29/2019	11/6/2019	11/5/2019	2/7/2020
FieldSampleID				IA03-450MAGIC-070319	STACK-450MAGIC-070219	IA03-450 MAGIC ST-071219	IA03-450Magic-072519	IA03-450MAGIC-082919	IA03-450MAGIC-110619	STACK-450MAGIC-110519	IA03-450MAGIC-020720
SampleType				Indoor Air (Basement)	SSDS Stack Discharge*	Indoor Air (Basement)	Indoor Air (Basement)	Indoor Air (Basement)	Indoor Air (Basement)	SSDS Stack Discharge*	Indoor Air (Basement)
Lab Report Number				1907026	1907027	1907103	1907236	1908389	1911129	1911127	2002055
1,1,1-Trichloroethane	ug/m^3	170,000	5,000	4.0	4.6	2.8	1.7 U	2.4	1.6 U	1.6 U	1.6 U
1,1-Dichloroethane	ug/m^3	530	16	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,2,3-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5	1.5 U
1,2,4-Trichlorobenzene	ug/m^3	NC	NC	3.7 U	3.7 U	3.7 U	3.8 U	3.7 U	3.7 U	3.7 U	3.7 U
1,2,4-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.6	1.5 U	1.5 U	1.5 U	1.5 U	7.0	1.5 U
1,2-Dichloroethane	ug/m^3	33	0.98	9.5	3.9	6.5	1.0 J	2.0	2.7	1.2 U	1.5
1,3,5-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.8	1.5 U
1,3-Butadiene	ug/m^3	NC	NC	0.67 U	0.67 U	0.67 U	0.67 U	0.67 U	0.66 U	0.66 U	0.67 U
1,4-Dichlorobenzene	ug/m^3	NC	NC	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
2,2,4-Trimethylpentane	ug/m^3	NC	NC	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.5	1.4 U
2-Butanone (MEK)	ug/m^3	170,000	5,000	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
4-Methyl-2-pentanone	ug/m^3	27,000	820	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U
Acetonitrile	ug/m^3	NC	NC	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Acrylonitrile	ug/m^3	NC	NC	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Benzene	ug/m^3	NC	NC	0.96 U	1.4	0.96 U	0.97 U	0.96 U	0.96 U	1.0	0.93 J
Carbon tetrachloride	ug/m^3	150	4.5	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Chlorobenzene	ug/m^3	1,700	52	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Chloroform	ug/m^3	37	1.1	1.3 J	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Chloromethane	ug/m^3	3,100	94	1.7	0.76	1.4	0.62 J	1.1	1.0	0.62 U	0.84
cis-1,2-Dichloroethene	ug/m^3	280	8.3	1.2 U	20	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Cyclohexane	ug/m^3	NC	NC	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane	ug/m^3	NC	NC	24	13	18	25	16	8.1	4.4	5.8
Ethylbenzene	ug/m^3	NC	NC	1.3	50	1.3 U	1.3 U	1.3 U	1.3 U	5.4	1.3 U
Hexane	ug/m^3	NC	NC	3.5 U	3.5 U	3.5 U	3.6 U	3.5 U	3.5 U	3.5 U	3.5 U
Isopropylbenzene	ug/m^3	NC	NC	1.5 U	1.8	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
m,p-Xylene	ug/m^3	NC	NC	2.8	160	2.4	2.7	2.1	1.3	18	1.3 U
Methylene chloride	ug/m^3	21,000	630	1.0 U	1.0 U	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U
Naphthalene (VOC)	ug/m^3	NC	NC	26 U	26 U	26 U	27 U	26 U	26 U	26 U	26 U
n-Propylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
o-Xylene	ug/m^3	NC	NC	1.5	95	1.3	1.4	1.2 J	1.3 U	7.4	1.3 U
Styrene	ug/m^3	NC	NC	1.1 J	7.2	1.3 U	1.3 U	1.1 J	1.3 U	1.6	1.3 U
Tetrachloroethene (PCE)	ug/m^3	1,400	41	2.0 U	2.3	2.0 U	2.1 U	2.3	2.0 U	2.0 U	2.0 U
Toluene	ug/m^3	NC	NC	11	6.6	7.5	1.9	5.7	2.8	9.6	2.3
trans-1,2-Dichloroethylene	ug/m^3	2,800	83	1.2 U	1.9	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Trichloroethene (TCE)	ug/m^3	67	2.0	4.9	380	3.0	1.6 U	1.6 U	1.6 U	13	3.4
Trichlorofluoromethane	ug/m^3	15000	15000	4.2	3.1	3.1	1.5 J	1.7	3.2	1.7 U	1.7 U

Table 1
Soil Gas and Indoor Air Analytical Results Oct 2018 - Dec 2021
Hamburg-Unadilla St Contamination Site
Putnam Township, Livingston County, MI
Facility No. 47000013

Location				450 MAGIC ST** - MITIGATION SYSTEM INSTALLED 11/13/2018										
Sample Date	Units	EGLE Revised 2021 Site-Specific Residential VIAC - Soil Gas	EGLE Revised June 2021 Site-Specific Residential VIAC - Soil Gas for **Dirt Floors, Crawl Spaces, Sumps, Shallow Groundwater	2/6/2020	3/12/2020	3/24/2020	3/24/2020	8/10/2021	8/11/2021	8/11/2021	12/15/2021	12/22/2021	12/22/2021
FieldSampleID				STACK-450MAGIC-020620	IA03-450MAGIC-031220	IA03-450MAGICST-032420	IA03-450MAGICST-FLR1 032420	STACK-450MAGICST-081021	IA03-450MAGICST-081121	IA03-450MAGICST-081121-LR	IA03-450MAGIC-121521	IA03-450MAGIC-122221	STACK-450MAGIC-122221
SampleType				SSDS Stack Discharge*	Indoor Air (Basement)	Indoor Air (Basement	Indoor Air (1st Floor)	SSDS Stack Discharge*	Indoor Air (Basement)	Indoor Air (1st Floor)	Indoor Air (Basement)	Indoor Air (Basement)	SSDS Stack Discharge*
Lab Report Number				2002055	2003113	2003176	2003176	2108120	2108102	2108102	2112182	2112240	2112240
1,1,1-Trichloroethane	ug/m^3	170,000	5,000	1.7 U	1.6 U	1.7 U	1.7 U	1.6	2.4	1.6 U	1.6 U	1.6 U	1.6 U
1,1-Dichloroethane	ug/m^3	530	16	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,2,3-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	3.0	1.4 U	1.4 U	1.4 U	1.5 U	1.5 U
1,2,4-Trichlorobenzene	ug/m^3	NC	NC	3.8 U	3.7 U	3.7 U	3.7 U	3.6 U	3.6 U	3.6 U	3.6 U	3.7 U	3.7 U
1,2,4-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	17	1.4 U	1.4 U	1.4 U	1.5 U	1.5 U
1,2-Dichloroethane	ug/m^3	33	0.98	1.2 U	1.3	1.2 U	1.4	1.2 U	4.6	8.4	1.5	1.3	1.2 U
1,3,5-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	4.6	1.4 U	1.4 U	1.4 U	1.5 U	1.5 U
1,3-Butadiene	ug/m^3	NC	NC	0.68 U	0.67 U	0.67 U	0.67 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.66 U
1,4-Dichlorobenzene	ug/m^3	NC	NC	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
2,2,4-Trimethylpentane	ug/m^3	NC	NC	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
2-Butanone (MEK)	ug/m^3	170,000	5,000	15 U	15 U	15 U	15 U	14 U	14 U	14 U	14 U	15 U	15 U
4-Methyl-2-pentanone	ug/m^3	27,000	820	4.2 U	4.1 U	4.1 U	4.1 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.1 U
Acetonitrile	ug/m^3	NC	NC	1.7 U	1.7 U	1.7 U	1.7 U	1.6 U	1.6 U	1.6 U	1.6 U	1.7 U	1.7 U
Acrylonitrile	ug/m^3	NC	NC	1.1 U	1.1 U	1.1 U	1.1 U0.97 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Benzene	ug/m^3	NC	NC	0.98	0.96 U	0.97 U	2.0 U	0.94 U	0.94 U	0.94 U	0.94 U	0.94 U	0.95 U
Carbon tetrachloride	ug/m^3	150	4.5	1.9 U	1.9 U	1.9 U	1.4 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U	1.9 U
Chlorobenzene	ug/m^3	1,700	52	1.4 U	1.4 U	1.4 U	0.80 U	1.4 U	1.3 U	1.3 U	1.4 U	1.4 U	1.4 U
Chloroform	ug/m^3	37	1.1	1.5 U	1.5 U	1.5 U	0.63 U	1.7	4.0	1.4	1.5	1.2 J	1.4 U
Chloromethane	ug/m^3	3,100	94	1.8	1.3	0.64	0.61 J	1.1	0.81	0.83	0.90	1.0	0.61 U
cis-1,2-Dichloroethene	ug/m^3	280	8.3	2.6	1.2 U	1.2 U	1.4 U	5.5	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Cyclohexane	ug/m^3	NC	NC	1.1 U	1.0 U	1.0 U	2.6 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane	ug/m^3	NC	NC	3.4	8.7	7.4	6.6	19	24	8.5	7.9	6.1	3.5
Ethylbenzene	ug/m^3	NC	NC	1.3 U	1.3 U	2.8	3.8	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Hexane	ug/m^3	NC	NC	3.6 U	3.5 U	3.6 U	3.6 U	3.5 U	3.4 U	3.4 U	3.5 U	3.5 U	3.5 U
Isopropylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.5 U	1.5 U
m,p-Xylene	ug/m^3	NC	NC	1.3 U	1.3 U	11	15	2.5	2.1	1.3	1.3	1.2 J	1.3 U
Methylene chloride	ug/m^3	21,000	630	1.1 U	1.0 U	1.1 U	1.1 U	1.0 U	1.0 U	1.0 U	1.1	1.0 U	1.0 U
Naphthalene (VOC)	ug/m^3	NC	NC	27 U	26 U	26 U	26 U	26 U	26 U	26 U	26 U	26 U	26 U
n-Propylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.9	1.4 U	1.4 U	1.4 U	1.5 U	1.5 U
o-Xylene	ug/m^3	NC	NC	1.3 U	1.3 U	3.7	4.8	1.7	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Styrene	ug/m^3	NC	NC	1.3 U	1.3 U	1.3 U	1.3 U	1.7	1.6	1.4	1.3 U	1.3 U	1.3 U
Tetrachloroethene (PCE)	ug/m^3	1,400	41	2.1 U	2.0 U	2.1 U	2.1 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Toluene	ug/m^3	NC	NC	1.4	1.5	0.97 J	0.98	2.0	4.1	2.8	2.0	1.6	1.1 U
trans-1,2-Dichloroethylene	ug/m^3	2,800	83	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Trichloroethene (TCE)	ug/m^3	67	2.0	28	1.4 J	1.6 U	1.6 U	240	1.6 U	1.6 U	1.6 U	1.6 U	3.6
Trichlorofluoromethane	ug/m^3	15000	15000	1.7 U	1.7 U	1.7 U	1.7 U	1.4 J	2.2	2.7	1.4 J	1.7 U	1.7 U

Table 1
Soil Gas and Indoor Air Analytical Results Oct 2018 - Dec 2021
Hamburg-Unadilla St Contamination Site
Putnam Township, Livingston County, MI
Facility No. 47000013

Location				335 PEARL ST						332 STUART ST	
Sample Date	Units	EGLE Revised 2021 Site-Specific Residential VIAC - Soil Gas	EGLE Revised June 2021 Site-Specific Residential VIAC - Soil Gas for **Dirt Floors, Crawl Spaces, Sumps, Shallow Groundwater	6/20/2019	6/19/2019	11/7/2019	11/6/2019	2/13/2020	2/12/2020	11/7/2018	11/6/2018
FieldSampleID				IA19-335 PEARL-062019	19VP-19-SS	IA19-335PEARL-110719	19VP-19-SS	IA19-335PEARL-021320	18VP-19-SS	IA12-332 STUART ST-110718	18VP-12-SS
SampleType				Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas
Lab Report Number				1906185	1906185	1911129	1911127	2002098	2002098	1811048	1811047
1,1,1-Trichloroethane	ug/m^3	170,000	5,000	1.6 U	1.6 U	1.6 U	1.6 U	1.7 U	1.6 U	1.6 U	1.6 U
1,1-Dichloroethane	ug/m^3	530	16	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,2,3-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.9	1.5 U	1.5 U	NA	NA
1,2,4-Trichlorobenzene	ug/m^3	NC	NC	3.7 U	3.7 U	3.7 U	3.7 U	3.8 U	3.7 U	2.2 U	2.2 U
1,2,4-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	3.7	1.5 U	8.2	1.5 U	1.5 U	1.5 U	6.6
1,2-Dichloroethane	ug/m^3	33	0.98	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,3,5-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.8	1.5 U	1.5 U	1.5 U	2.6
1,3-Butadiene	ug/m^3	NC	NC	0.66 U	0.66 U	0.66 U	0.66 U	0.68 U	0.67 U	0.67 U	1.8
1,4-Dichlorobenzene	ug/m^3	NC	NC	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
2,2,4-Trimethylpentane	ug/m^3	NC	NC	1.4 U	6.9	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
2-Butanone (MEK)	ug/m^3	170,000	5,000	15 U	15 U	15 U	15 U	15 U	15 U	15 U	22
4-Methyl-2-pentanone	ug/m^3	27,000	820	4.1 U	4.1 U	4.1 U	4.1 U	4.2 U	4.1 U	4.1 U	4.1 U
Acetonitrile	ug/m^3	NC	NC	1.7 U	1.6 J	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Acrylonitrile	ug/m^3	NC	NC	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Benzene	ug/m^3	NC	NC	0.87 J	3.4	0.96 U	0.96 U	1.3	0.96 U	0.96 U	8.8
Carbon tetrachloride	ug/m^3	150	4.5	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Chlorobenzene	ug/m^3	1,700	52	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Chloroform	ug/m^3	37	1.1	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Chloromethane	ug/m^3	3,100	94	0.62 U	0.62 U	1.2	0.62 U	1.9	0.62 U	2.2	0.62 U
cis-1,2-Dichloroethene	ug/m^3	280	8.3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Cyclohexane	ug/m^3	NC	NC	1.0 U	3.1	1.0 U	1.0 U	1.1 U	1.0 U	NA	NA
Dichlorodifluoromethane	ug/m^3	NC	NC	2.2	2.0	2.4	2.3	2.4	2.1	2.1	2.5
Ethylbenzene	ug/m^3	NC	NC	1.3 U	2.6	1.3 U	1.5	1.3 U	1.3 U	1.3 U	8.3
Hexane	ug/m^3	NC	NC	3.5 U	11	3.5 U	3.5 U	3.6 U	3.5 U	3.5 U	19
Isopropylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	NA	NA
m,p-Xylene	ug/m^3	NC	NC	1.3 U	5.7	1.3 U	6.1	1.3 U	2.4	2.6	14
Methylene chloride	ug/m^3	21,000	630	1.0 U	1.0 U	1.0 U	1.0 U	1.1 U	1.0 U	1.0 U	1.0 U
Naphthalene (VOC)	ug/m^3	NC	NC	26 U	26 U	26 U	26 U	27 U	26 U	NA	NA
n-Propylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	NA	NA
o-Xylene	ug/m^3	NC	NC	1.3 U	3.6	1.3 U	3.5	1.3 U	1.3 U	1.1 J	5.5
Styrene	ug/m^3	NC	NC	1.3 U	2.0	1.3 U	1.1 J	1.3 U	1.3 U	1.3 U	1.3
Tetrachloroethene (PCE)	ug/m^3	1,400	41	2.0 U	3.2	2.0 U	2.0 U	2.1 U	2.4	2.0 U	36
Toluene	ug/m^3	NC	NC	1.2	7.7	1.3	1.8	2.2	1.2	4.6	31
trans-1,2-Dichloroethylene	ug/m^3	2,800	83	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Trichloroethene (TCE)	ug/m^3	67	2.0	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Trichlorofluoromethane	ug/m^3	15000	15000	4.6	1.9	1.7	1.7	1.5 J	1.7 U	1.7	1.4 J

Table 1
Soil Gas and Indoor Air Analytical Results Oct 2018 - Dec 2021
Hamburg-Unadilla St Contamination Site
Putnam Township, Livingston County, MI
Facility No. 47000013

Location	Units	EGLE Revised 2021 Site-Specific Residential VIAC - Soil Gas	EGLE Revised June 2021 Site-Specific Residential VIAC - Soil Gas for **Dirt Floors, Crawl Spaces, Sumps, Shallow Groundwater	339 WEBSTER ST	334 WILLIAM ST **					
Sample Date				10/30/2018	11/2/2018	11/2/2018	11/1/2018	11/1/2018	3/28/2019	3/27/2019
FieldSampleID				18VP-01-SS	IA09-334 Williams St.-110218	IA09-334 Williams St.-110218-D	18VP-09-SS	18VP-09-SS-D	IA09-334 WILLIAM-032819	18VP-09-SS
SampleType				Sub-Slab Soil Gas	Indoor Air (Basement)	Indoor Air (Basement)	Sub-Slab Soil Gas	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas
Lab Report Number				1811001	1811024	1811024	1811023	1811023	1903207	1903206
1,1,1-Trichloroethane	ug/m³	170,000	5,000	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
1,1-Dichloroethane	ug/m³	530	16	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,2,3-Trimethylbenzene	ug/m³	NC	NC	NA	NA	NA	NA	NA	1.5 U	1.5 U
1,2,4-Trichlorobenzene	ug/m³	NC	NC	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	3.7 U	3.7 U
1,2,4-Trimethylbenzene	ug/m³	NC	NC	3.3	1.5 U	1.5 U	3.3	4.1	1.5 U	1.5 U
1,2-Dichloroethane	ug/m³	33	0.98	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,3,5-Trimethylbenzene	ug/m³	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.2 J	1.5 U	1.5 U
1,3-Butadiene	ug/m³	NC	NC	0.66 U	0.65 U	0.65 U	0.95	0.66 U	0.67 U	0.66 U
1,4-Dichlorobenzene	ug/m³	NC	NC	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
2,2,4-Trimethylpentane	ug/m³	NC	NC	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
2-Butanone (MEK)	ug/m³	170,000	5,000	15 U	15 U	15 U	23	25	15 U	15 U
4-Methyl-2-pentanone	ug/m³	27,000	820	4.0 U	4.0 U	4.0 U	4.1 U	4.1 U	4.1 U	4.1 U
Acetonitrile	ug/m³	NC	NC	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Acrylonitrile	ug/m³	NC	NC	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Benzene	ug/m³	NC	NC	2.6	0.95 U	0.95 U	11	6.3	1.2	0.95 U
Carbon tetrachloride	ug/m³	150	4.5	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Chlorobenzene	ug/m³	1,700	52	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Chloroform	ug/m³	37	1.1	1.4 U	1.4 U	1.4 U	1.5 U	1.5 U	1.5 U	1.5 U
Chloromethane	ug/m³	3,100	94	0.61 U	1.5	1.3	0.68	0.62 U	0.73	0.62 U
cis-1,2-Dichloroethene	ug/m³	280	8.3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Cyclohexane	ug/m³	NC	NC	NA	NA	NA	NA	NA	1.0 U	1.0 U
Dichlorodifluoromethane	ug/m³	NC	NC	2.2	3.5	3.4	1.6	1.7	2.3	2.3
Ethylbenzene	ug/m³	NC	NC	1.6	1.3 U	1.3 U	6.7	7.5	1.3 U	1.3 U
Hexane	ug/m³	NC	NC	5.7	3.5 U	3.5 U	36	19	3.5 U	3.5 U
Isopropylbenzene	ug/m³	NC	NC	NA	NA	NA	NA	NA	1.5 U	1.5 U
m,p-Xylene	ug/m³	NC	NC	4.3	1.3 U	1.3 U	8.4	10	1.3 U	1.3 U
Methylene chloride	ug/m³	21,000	630	1.0 U	1.2	4.4	1.0 U	1.2	1.0 U	1.0 U
Naphthalene (VOC)	ug/m³	NC	NC	NA	NA	NA	NA	NA	26 U	26 U
n-Propylbenzene	ug/m³	NC	NC	NA	NA	NA	NA	NA	1.5 U	1.5 U
o-Xylene	ug/m³	NC	NC	1.9	1.3 U	1.3 U	4.1	5.0	1.3 U	1.3 U
Styrene	ug/m³	NC	NC	1.2 J	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Tetrachloroethene (PCE)	ug/m³	1,400	41	35	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Toluene	ug/m³	NC	NC	11	3.3	2.9	26	19	2.2	1.1
trans-1,2-Dichloroethylene	ug/m³	2,800	83	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Trichloroethene (TCE)	ug/m³	67	2.0	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Trichlorofluoromethane	ug/m³	15000	15000	2.2	3.9	3.5	1.5 J	1.6 J	2.2	1.7 U

Table 1
Soil Gas and Indoor Air Analytical Results Oct 2018 - Dec 2021
Hamburg-Unadilla St Contamination Site
Putnam Township, Livingston County, MI
Facility No. 47000013

Location	Units	EGLE Revised 2021 Site-Specific Residential VIAC - Soil Gas	EGLE Revised June 2021 Site-Specific Residential VIAC - Soil Gas for **Dirt Floors, Crawl Spaces, Sumps, Shallow Groundwater	334 WILLIAM ST **				458 WILLIAM ST	
Sample Date				7/25/2019	7/25/2019	7/24/2019	7/24/2019	5/8/2019	5/7/2019
FieldSampleID				IA09-334Williams-072519	IA09-334Williams-072519-DUP	18VP-09-SS	18VP-09-SS-DUP	IA18-458 Williams-050819	19VP-18-SS
SampleType				Indoor Air (Basement)	Indoor Air (Basement)	Sub-Slab Soil Gas	Sub-Slab Soil Gas	Indoor Air (Basement)	Sub-Slab Soil Gas
Lab Report Number				1907236	1907236	1907236	1907236	1905094	1905095
1,1,1-Trichloroethane	ug/m^3	170,000	5,000	1.7 U	1.7 U	1.7 U	1.7 U	1.6 U	**40**
1,1-Dichloroethane	ug/m^3	530	16	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	**1.1 J**
1,2,3-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	**5.6**
1,2,4-Trichlorobenzene	ug/m^3	NC	NC	3.8 U	3.8 U	3.8 U	3.8 U	3.7 U	3.7 U
1,2,4-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	**1.3 J**	1.5 U	**21**
1,2-Dichloroethane	ug/m^3	33	0.98	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,3,5-Trimethylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	**6.1**
1,3-Butadiene	ug/m^3	NC	NC	0.67 U	0.67 U	0.67 U	0.67 U	0.66 U	0.66 U
1,4-Dichlorobenzene	ug/m^3	NC	NC	**2.2**	**2.2**	1.8 U	**1.5 J**	1.8 U	1.8 U
2,2,4-Trimethylpentane	ug/m^3	NC	NC	1.4 U	1.4 U	**37**	1.4 U	1.4 U	1.4 U
2-Butanone (MEK)	ug/m^3	170,000	5,000	15 U	15 U	15 U	15 U	15 U	**20**
4-Methyl-2-pentanone	ug/m^3	27,000	820	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U
Acetonitrile	ug/m^3	NC	NC	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Acrylonitrile	ug/m^3	NC	NC	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Benzene	ug/m^3	NC	NC	**1.1**	**1.2**	**0.90 J**	0.97 U	**2.4**	**16**
Carbon tetrachloride	ug/m^3	150	4.5	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Chlorobenzene	ug/m^3	1,700	52	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Chloroform	ug/m^3	37	1.1	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Chloromethane	ug/m^3	3,100	94	**0.64**	**0.66**	**0.53 J**	0.63 U	**0.71**	0.62 U
cis-1,2-Dichloroethene	ug/m^3	280	8.3	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	**18**
Cyclohexane	ug/m^3	NC	NC	1.0 U	1.0 U	**38**	1.0 U	1.0 U	**9.4**
Dichlorodifluoromethane	ug/m^3	NC	NC	**2.3**	**2.3**	**2.5**	**2.4**	**2.3**	**2.3**
Ethylbenzene	ug/m^3	NC	NC	1.3 U	1.3 U	**1.8**	1.3 U	1.3 U	**13**
Hexane	ug/m^3	NC	NC	3.6 U	3.6 U	**200**	3.6 U	3.5 U	**36**
Isopropylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	**1.6**
m,p-Xylene	ug/m^3	NC	NC	1.3 U	1.3 U	**5.4**	**3.9**	**2.1**	**25**
Methylene chloride	ug/m^3	21,000	630	1.1 U	1.1 U	1.1 U	1.1 U	1.0 U	1.0 U
Naphthalene (VOC)	ug/m^3	NC	NC	27 U	27 U	27 U	27 U	26 U	**26**
n-Propylbenzene	ug/m^3	NC	NC	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	**3.3**
o-Xylene	ug/m^3	NC	NC	1.3 U	1.3 U	**1.7**	**1.5**	**1.2 J**	**16**
Styrene	ug/m^3	NC	NC	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	**12**
Tetrachloroethene (PCE)	ug/m^3	1,400	41	2.1 U	2.1 U	2.1 U	2.1 U	2.0 U	**52**
Toluene	ug/m^3	NC	NC	**6.1**	**6.3**	**1.8**	**1.5**	**4.4**	**45**
trans-1,2-Dichloroethylene	ug/m^3	2,800	83	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Trichloroethene (TCE)	ug/m^3	67	2.0	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	**14**
Trichlorofluoromethane	ug/m^3	15000	15000	**3.9**	**3.9**	**2.0**	**2.0**	1.7 U	1.7 U

Table 1

Soil Gas and Indoor Air Analytical Results Oct 2018 - Dec 2021

Hamburg-Unadilla St Contamination Site

Putnam Township, Livingston County, MI

Facility No. 47000013

Notes:

Only parameters detected in one or more sample are shown

Parameters with detections are bolded

PCE and TCE detections are **bolded and underlined**

IA = Indoor Air Sample

SS = Sub-Slab Sample

DUP = Duplicate Sample

J = Analyte was positively identified. Value is an estimate.

ug/m^3 = Micrograms per cubic meter

**= EGLE revised June 2021 SSVIAC used for comparison at residences with dirt floors, crawl spaces, sumps, and/or shallow groundwater

*Stack samples compared to June 2021 Site-Specific Residential VIAC

Table 2
Vapor Intrusion Mitigation System Start-Up and Monitoring Results
Hamburg-Unadilla Streets Contamination Site
Pinckney, Michigan
Facility No. 47000013

Street Address	Mitigation Contractor	Date/Time of System Start	APU Start/End	Pre-Installation PFE Test Results (in.wc.)	Initial Post-Installation PFE Test Results (in.wc.)	Vapor Pin^{R} PID Screening Readings (PPM VOCs in Air)		Initial Pre-Mitigation Indoor Air and Sub-slab Sample TCE Results (ug/m^3)	Post-Mitigation Indoor Air Sample TCE Result (ug/m^3)	Initial Post-Mitigation Stack Sample TCE Result (ug/m^3)
450 Magic St	Compliance Inc.	**11/13/2018:** 1455	**11/8/2018:** **11/13/2018:** 1845	**11/13/2018** GP501 fan at extr pt= 4.01 SS-Orig= -0.71 SS-01= -0.01 SS-02= -0.06 SS-03= -0.02 SS-04= -0.29 (After Sump sealed)	**11/20/2018** Fan at extr pt. SS-Orig= -0.62 SS-01= -0.02 SS-02= -0.06 SS-02= -0.06 SS-03= -0.02 SS-04= -0.28	**11/13/2018:** Max AA = 0.347 SS-01= 186.2 SS-02= 17.58 SS-03= 2.788 SS-04= 7.353	**11/19/2018** Max AA= 0.185 SS=14.81 SS-01=3.826 SS-02=40.71 SS-03=5.586 SS-04=23.74	**10/31/2018:** Bsmt= <1.6 **10/30/2018** VP-SS= 7300	**11/20/2018** Bsmt= <1.6 LR= <1.6	**11/19/2018** ***330***

Notes:
< = indicates the compound was not detected above the reporting limit shown.

AA= Ambient air
LR=Living Room
APU = Air purifying unit
TCE = Trichloroethylene
PFE = Pressure field extension
PID = Photoionization detector
Bsmt = Basement

Orig = Original vapor pin installed and sampled in the basement slab
SS = Subslab Vapor Pin^{R} location
PPM = Parts per million
VOC = Volatile organic compound
ug/m^3 = Micrograms per cubic meter
in wc = Inches of water column
value exceeds site specific criteria
value exceeds DHHS health screening levels (RIASL)
RIASL = recommended interim action screening level
= Differential pressure readings less than 0.02 inches of water indicate SSDS incluence is reduced at monitoring point

Vacuum readings are indicated with a "-" minus sign. Positive pressure readings are indicated by a "+" plus sign.

Table 2
Vapor Intrusion Mitigation System Start-Up and Monitoring Results
Hamburg-Unadilla Streets Contamination Site
Pinckney, Michigan
Facility No. 47000013

First round O&M (Feb 2019)					Second Round O&M (July 2019)					Resamples (July 2019)		
PID readings (ppb)	Pressure Readings (in w.c.)	Stack Manometer (in w.c.)	Indoor Air Sample TCE Result (ug/m3)	Stack Sample TCE Result (ug/m3)	PID readings (ppb)	Pressure Readings (in w.c.)	Stack Manometer (in w.c.)	Indoor Air Sample TCE Result (ug/m3)	Stack Sample TCE Result (ug/m3)	Indoor Air Sample TCE Result (ug/m3)	Sump Water Sample TCE Result (ug/L)	Indoor Air Sample TCE Result (ug/m3)
2/21/2019 VP-SS= 484 SS-01= 880 SS-02= 546 SS-03= 150 SS-04= 450	2/21/2019 VP-SS= -0.495 SS-01= -0.013 SS-02= -0.048 SS-03= -0.016 SS-04= -0.215	2/21/2019 4.1	2/22/2019 <1.6	2/21/2019 9.2	7/2/2019 VP-SS= 1565 SS-01= 50 SS-02= 303 SS-03= 202 SS-04= 1472	7/2/2019 VP-SS= -0.019 SS-01= +0.001 SS-02= +0.001 SS-03= -0.036 SS-04= -0.397	7/2/2019 3.8	7/3/2019 *4.9*	7/2/2019 *380*	7/12/2019 *3.0*	7/12/2019 *4.6*	7/25/2019 <1.6 U

Notes:
< = indicates the compound was not detected above the reporting limit shown.

AA= Ambient air
LR=Living Room
APU = Air purifying unit
TCE = Trichloroethylene
PFE = Pressure field extension
PID = Photoionization detector
Bsmt = Basement

Orig = Original vapor pin installed and sampled in the basement slab
SS = Subslab Vapor Pin^{R} location
PPM = Parts per million
VOC = Volatile organic compound
ug/m^3 = Micrograms per cubic meter
in wc = Inches of water column
value exceeds site specific criteria
value exceeds DHHS health screening levels (RIASL)
RIASL = recommended interim action screening level
= Differential pressure readings less than 0.02 inches of water indicate SSDS incluence is reduced at monitoring point

Vacuum readings are indicated with a "-" minus sign. Positive pressure readings are indicated by a "+" plus sign.

Table 2
Vapor Intrusion Mitigation System Start-Up and Monitoring Results
Hamburg-Unadilla Streets Contamination Site
Pinckney, Michigan
Facility No. 47000013

Resample (August 2019)			Pre-Fan Switch (October 2019)		Post-Fan Switch (October 2019)		Third Round O&M (November 2019)				
Pressure Readings (in w.c.)	Stack Manometer (in w.c.)	Indoor Air Sample TCE Result (ug/m3)	Pressure Readings (in w.c.)	Stack Manometer (in w.c.)	Pressure Readings (in w.c.)	Stack Manometer (in w.c.)	PID readings (ppb)	Pressure Readings (in w.c.)	Stack Manometer (in w.c.)	Indoor Air Sample TCE Result (ug/m3)	Stack Sample TCE Result (ug/m3)
8/28/2019 VP-SS=-0.407 SS-01= -0.00 SS-02= -0.025 SS-03= -0.0005 SS-04= -0.157	8/28/2019 3.8	8/29/2019 <1.6	10/16/2019 VP-SS= -0.49 SS-01= 0.00 SS-02= -0.03 SS-03= -0.06 SS-04= -0.21	10/16/2019 4.1	10/16/2019 VP-SS= -.057 SS-01= 0.00 SS-02= -0.03 SS-03= -0.00 SS-04= -0.23	10/16/2019 4.7	11/5/2019 VP-SS= 114 SS-01= 168 SS-02= 125 SS-03= 150 SS-04= 121	11/5/2019 VP-SS= -0.452 SS-01= -0.000 SS-02= -0.001 SS-03= -0.030 SS-04= -0.181	11/5/2019 4.7	11/6/2019 <1.6	11/5/2019 ***13***

Notes:
< = indicates the compound was not detected above the reporting limit shown.

AA= Ambient air	Orig = Original vapor pin installed and sampled in the basement slab
LR=Living Room	SS = Subslab Vapor Pin^{R} location
APU = Air purifying unit	PPM = Parts per million
TCE = Trichloroethylene	VOC = Volatile organic compound
PFE = Pressure field extension	ug/m^3 = Micrograms per cubic meter
PID = Photoionization detector	in wc = Inches of water column
Bsmt = Basement	***value exceeds site specific criteria***
	value exceeds DHHS health screening levels (RIASL)
	RIASL = recommended interim action screening level
	= Differential pressure readings less than 0.02 inches of water indicate SSDS incluence is reduced at monitoring point

Vacuum readings are indicated with a "-" minus sign. Positive pressure readings are indicated by a "+" plus sign.

Table 2
Vapor Intrusion Mitigation System Start-Up and Monitoring Results
Hamburg-Unadilla Streets Contamination Site
Pinckney, Michigan
Facility No. 47000013

Fourth Round O&M (Feburary 2020)					APU Deployment & Sump Sampling (March 2020)				Resamples (March 2020)		
PID readings (ppb)	Pressure Readings (in w.c.)	Stack Manometer (in w.c.)	Indoor Air Sample TCE Result (ug/m3)	Stack Sample TCE Result (ug/m3)	PID readings (ppb)	Pressure Readings (in w.c.)	Stack Manometer (in w.c.)	Sump Water Sample TCE Result (ug/L)	Indoor Air Basement Sample TCE Result (ug/m3)	Indoor Air Basement Sample TCE Result (ug/m3)	Indoor Air First Floor Sample TCE Result (ug/m3)
2/6/2020	2/6/2020				3/4/2020	3/4/2020					
VP-SS= 1241	VP-SS= -0.002				VP-SS= 207	VP-SS= -0.003					
SS-01= 0	SS-01= -0.007	2/6/2020	2/7/2020	2/6/2020	SS-01= 220	SS-01= -0.001	3/4/2020	3/4/2020	3/12/2020	3/24/2020	3/24/2020
SS-02= H2O	SS-02= -0.122	4.7	***3.4***	***28***	SS-02= H2O	SS-02= -0.465	4.7	***8.4***	1.4 J	<1.6	<1.6
SS-03= 0	SS-03= -0.087				SS-03= H2O	SS-03= -0.621					
SS-04= 0	SS-04= +0.115				SS-04= H2O	SS-04= +0.571					

Notes:

< = indicates the compound was not detected above the reporting limit shown.

AA= Ambient air
LR=Living Room
APU = Air purifying unit
TCE = Trichloroethylene
PFE = Pressure field extension
PID = Photoionization detector
Bsmt = Basement

Orig = Original vapor pin installed and sampled in the basement slab
SS = Subslab Vapor Pin^{R} location
PPM = Parts per million
VOC = Volatile organic compound
ug/m^3 = Micrograms per cubic meter
in wc = Inches of water column
value exceeds site specific criteria
value exceeds DHHS health screening levels (RIASL)
RIASL = recommended interim action screening level
= Differential pressure readings less than 0.02 inches of water indicate SSDS incluence is reduced at monitoring point

Vacuum readings are indicated with a "-" minus sign. Positive pressure readings are indicated by a "+" plus sign.

Table 2
Vapor Intrusion Mitigation System Start-Up and Monitoring Results
Hamburg-Unadilla Streets Contamination Site
Pinckney, Michigan
Facility No. 47000013

Fifth Round O&M (August 2021)					System nonoperational due to defective fan (December 2021)	Sixth Round O&M Post-Fan Replacement (December 2021)				
PID readings (ppb)	Pressure Readings (in w.c.)	Stack Manometer (in w.c.)	Indoor Air Sample TCE Result (ug/m3)	Stack Sample TCE Result (ug/m3)	Indoor Air Sample TCE Result (ug/m3)	PID readings (ppb)	Pressure Readings (in w.c.)	Stack Manometer (in w.c.)	Indoor Air Sample TCE Result (ug/m3)	Stack Sample TCE Result (ug/m3)
8/10/2021 VP-SS= 75 SS-01= 81 SS-02= 102 SS-03= 73 SS-04= 35	8/10/2021 VP-SS= -0.60 SS-01= -0.01 SS-02= -0.07 SS-03= -0.01 SS-04= +0.32	8/10/2021 4.5	8/11/2021 <1.6	8/10/2021 ***240***	12/15/2021 <1.6	12/21/2021 VP-SS= 261 SS-01= 225 SS-02= 291 SS-03= 241 SS-04= 339	12/21/2021 VP-SS= -0.496 SS-01= -0.0 SS-02= -0.030 SS-03= -0.003 SS-04= -0.215	12/21/2021 4.3	12/22/2021 <1.6	12/22/2021 ***3.6***

Notes:
< = indicates the compound was not detected above the reporting limit shown.

AA= Ambient air
LR=Living Room
APU = Air purifying unit
TCE = Trichloroethylene
PFE = Pressure field extension
PID = Photoionization detector
Bsmt = Basement

Orig = Original vapor pin installed and sampled in the basement slab
SS = Subslab Vapor Pin^{R} location
PPM = Parts per million
VOC = Volatile organic compound
ug/m^3 = Micrograms per cubic meter
in wc = Inches of water column
value exceeds site specific criteria
value exceeds DHHS health screening levels (RIASL)
RIASL = recommended interim action screening level
= Differential pressure readings less than 0.02 inches of water indicate SSDS incluence is reduced at monitoring point

Vacuum readings are indicated with a "-" minus sign. Positive pressure readings are indicated by a "+" plus sign.

APPENDIX A
SITE SPECIFIC VIAC – JULY 2018

RICK SNYDER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING DISTRICT OFFICE

C. HEIDI GRETHER
DIRECTOR

July 3, 2018

Ms. Emma Fosdick
Pittsfield Products, Inc.
P.O. Box 1027
Ann Arbor, MI 48103

Dear Ms. Fosdick:

SUBJECT: Site-Specific Criteria Evaluation for the ACO Part 201 Facility and Request to Expedite Evaluation of the Volatilization to Indoor Air Pathway (VIAP)
At 461 North Dexter Street, Pinckney, Livingston County, Michigan
Facility ID No.: 47000013; 94-77806-CE

Attached to this letter are tables that contain site-specific volatilization to indoor air criteria (VIAC) under Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), or site-specific screening levels (SSTLs) under Part 213, Leaking Underground Storage Tanks, of the NREPA, which represent the Department of Environmental Quality's (DEQ) determination of values that reflect best available information regarding the toxicity and exposure risks posed by the hazardous substances present at the above-mentioned address that constitute the "property." These values may be used as site-specific criteria without further documentation, or other values may be developed by a person consistent with the statutory provisions for development of site-specific criteria or SSTLs and provided for DEQ approval.

Residential site-specific criteria were included in the evaluation based on information provided and the DEQ's conceptual site model of this facility. Exceedances of these site-specific residential criteria will require restrictions or institutional controls for closure or aid in the determination of off-site migration. Nonresidential site-specific criteria do not explicitly include an exposure time. Continuous 24-hour per day exposure may not be representative of worker exposure in commercial or industrial settings. Nonresidential site-specific VIAC may be adjusted for some hazardous substances to reflect a reasonable maximum worker exposure of 12-hour per day. Please contact me if adjustment is needed.

Additional hazardous substances were included in the site-specific evaluation that were not explicitly requested. These hazardous substances may be components of historic releases not fully delineated. The preemptive site-specific evaluation of these substances was provided in an attempt to limit the potential need for future resubmittal for this facility.

Releases of trichloroethylene and other contaminants from the ACO facility may volatilize into the indoor air of residents and a school over the groundwater contamination plume. The VIAP is a "Covered Matter" pursuant to Section 6.2 of the above referenced Consent Decree. This section accounts for response activities necessary to protect the public health, safety, welfare, or the environment not recognized at the time the Consent Decree was signed.

The DEQ are requesting that Pittsfield Products Inc. take immediate measures, within two weeks, to evaluate the VIAP for the off-property residential areas over the groundwater contamination plume. The site-specific criteria threshold for evaluation of the VIAP for trichloroethylene in groundwater not in contact with a residential structure is 7.7 ug/l which is far less than the maximum concentration of 5,400 ug/l detected for this contaminant in 2018.

The DEQ is willing to work with Pittsfield Products, Inc. ACO Division within the framework of the requirements of the Consent Decree to allocate remaining funds from the Escrow Account so that response activities priorities are adjusted to immediately address the VIAP.

If you have any questions regarding this communication and application of the attached site-specific criteria tables to evaluate the vapor intrusion pathway, please do not hesitate to call me at 517-284-5160, or e-mail me at taylorr@michigan.gov.

Sincerely,

Rebecca Taylor
Senior Environmental Quality Analyst
Lansing District Office
Remediation and Redevelopment Division

Attachment
Cc/w attachment: Mr. Bill Stapleton Hooper Hathaway, P.C.
Mr. Keith Gadway, Quantum Environmental, Inc.
Ms. Lisa Quiggle, MDHHS
Mr. Matt Bolang, LCHD
Cc: Mr. David O'Donnell, DEQ
Ms. Lisa Agosta, DEQ
Mr. Dennis Eagle, DEQ
Mr. David LaBrecue, DEQ

ACO (Pittsfield Products, Inc) July 2, 2018

Table 1. Nonresidential Volatilization to Indoor Air Criteria (VIAC). The following are restricted site-specific criteria that apply to a nonresidential structure (< 50,000 ft^2) with a **slab-on-grade**, the depth to groundwater submitted for this site (i.e. 2.2 ft), and USDA soil type of **sand**.

CAS#	Hazardous Substance	Groundwater In Contact (GWIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m^3)
67641	Acetone	2.0E+05 (SE) st	3.1E+06 st	1.0E+06 st
78933	2-Butanone (MEK)	12,000 (SE) dev	3.7E+05 (SE) dev	1.7E+05 (SE) dev
56235	Carbon tetrachloride	9.5 ca	8.7 (M) ca	360 ca
108907	Chlorobenzene	110 nc	1,400 nc	2,600 nc
75003	Chloroethane	5,200 nc	5,800 nc	2.0E+05 nc
67663	Chloroform	3.1 ca	7.4 (M) ca	87 ca
75343	1,1-Dichloroethane	40 ca	74 ca	1,200 ca
107062	1,2-Dichloroethane	5.1 ca	23 (M) ca	77 ca
75354	1,1-Dichloroethylene	250 nc	220 nc	10,000 nc
156592	cis-1,2-Dichloroethylene	14 nc	37 (M) nc	410 nc
156605	trans-1,2-Dichloroethylene	94 nc	210 nc	4,100 nc
75092	Methylene chloride	1,100 nc	2,300 nc	31,000 nc
127184	Tetrachloroethylene	35 (SE) st	74 (SE) st	1,400 (SE) st
71556	1,1,1-Trichloroethane	5,900 (SE) st	7,500 (SE) st	2.3E+05 (SE) st
79005	1,1,2-Trichloroethane	0.95 (M) nc	6.6 (M) nc	10 nc
79016	Trichloroethylene	1.6 (SE) dev	4.0 (M) (SE) dev	67 (SE) dev
75014	Vinyl chloride	10 ca	8.2 (M) ca	450 ca

**Soil gas site-specific criteria are applicable for all depths.

- Acceptable Air Values (AAV) endpoint basis used for site-specific criterion: (ca) = Carcinogenetic; (nc) = Non-Carcinogenetic; (dev) = Developmental; (mut) = Mutagenic cancer; (st) = Short-term (i.e., less than chronic exposure): Agency for Toxic Substances and Disease Registry Inhalation Minimum Risk Level for Acute Inhalation or Intermediate Inhalation exposure durations; U.S. Environmental Protection Agency Integrated Risk Information System Reference Concentration for short-term exposure; or Air Quality Division Acute Initial Threshold Screening Level.
- Footnote M: Site-specific criterion may be below target detection limits (TDL). In accordance with Sec. 20120a(10) when the TDL for a hazardous substance is greater than the developed cleanup criterion, the criterion is the TDL.
- Footnote SE: Site-specific criteria based on single event exposure; therefore, sampling methods should reflect shorter exposure scenarios.

Table 2. Residential Volatilization to Indoor Air Criteria (VIAC). The following are unrestricted site-specific criteria that apply to a residential **house** with a **basement**, the depth to groundwater submitted for this site (i.e. 15.9 ft) and USDA soil type of **sand**.

CAS#	Hazardous Substance	Groundwater Not In Contact (GWNIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m³)
67641	Acetone	1.6E+07 st	2.6E+05 st	1.0E+06 st
78933	2-Butanone (MEK)	2.0E+06 (SE) dev	31,000 (SE) dev	1.7E+05 (SE) dev
56235	Carbon tetrachloride	6.8 ca	0.31 (M) ca	150 ca
108907	Chlorobenzene	680 nc	82 nc	1,700 nc
75003	Chloroethane	8,200 nc	330 nc	1.4E+05 nc
67663	Chloroform	9.5 ca	0.26 (M) ca	37 ca
75343	1,1-Dichloroethane	83 ca	2.6 (M) ca	530 ca
107062	1,2-Dichloroethane	26 ca	0.82 (M) ca	33 ca
75354	1,1-Dichloroethylene	210 nc	12 (M) nc	7,000 nc
156592	cis-1,2-Dichloroethylene	59 nc	2.1 (M) nc	280 nc
156605	trans-1,2-Dichloroethylene	250 nc	12 (M) nc	2,800 nc
75092	Methylene chloride	4,800 nc	130 nc	21,000 nc
127184	Tetrachloroethylene	120 (SE) st	6.2 (M) (SE) st	1,400 (SE) st
71556	1,1,1-Trichloroethane	11,000 (SE) st	450 (SE) st	1.7E+05 (SE) st
79005	1,1,2-Trichloroethane	10 nc	0.37 (M) nc	7.0 nc
79016	Trichloroethylene	7.7 (SE) dev	0.33 (M) (SE) dev	67 (SE) dev
75014	Vinyl chloride	1.2 mut	8.2E-02 (M) mut	54 mut

**Soil gas site-specific criteria are applicable for all depths.

- Acceptable Air Values (AAV) endpoint basis used for site-specific criterion: (ca) = Carcinogenetic; (nc) = Non-Carcinogenetic; (dev) = Developmental; (mut) = Mutagenic cancer; (st) = Short-term (i.e., less than chronic exposure): Agency for Toxic Substances and Disease Registry Inhalation Minimum Risk Level for Acute Inhalation or Intermediate Inhalation exposure durations; U.S. Environmental Protection Agency Integrated Risk Information System Reference Concentration for short-term exposure; or Air Quality Division Acute Initial Threshold Screening Level.
- Footnote M: Site-specific criterion may be below target detection limits (**TDL**). In accordance with Sec. 20120a(10) when the TDL for a hazardous substance is greater than the developed cleanup criterion, the criterion is the TDL.
- Footnote **SE**: Site-specific criteria based on single event exposure; therefore, sampling methods should reflect shorter exposure scenarios.

Table 3. Residential Volatilization to Indoor Air Criteria (VIAC). The following are unrestricted site-specific criteria that apply to a residential **house** with a **basement**, the depth to groundwater submitted for this site (i.e. 11.2 ft) and USDA soil type of **sand**.

CAS#	Hazardous Substance	Groundwater Not In Contact (GWNIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m³)
67641	Acetone	1.3E+07 st	2.6E+05 st	1.0E+06 st
78933	2-Butanone (MEK)	1.6E+06 (SE) dev	31,000 (SE) dev	1.7E+05 (SE) dev
56235	Carbon tetrachloride	5.7 ca	0.31 (M) ca	150 ca
108907	Chlorobenzene	570 nc	82 nc	1,700 nc
75003	Chloroethane	7,100 nc	330 nc	1.4E+05 nc
67663	Chloroform	8.0 ca	0.26 (M) ca	37 ca
75343	1,1-Dichloroethane	71 ca	2.6 (M) ca	530 ca
107062	1,2-Dichloroethane	22 ca	0.82 (M) ca	33 ca
75354	1,1-Dichloroethylene	180 nc	12 (M) nc	7,000 nc
156592	cis-1,2-Dichloroethylene	50 nc	2.1 (M) nc	280 nc
156605	trans-1,2-Dichloroethylene	210 nc	12 (M) nc	2,800 nc
75092	Methylene chloride	4,100 nc	130 nc	21,000 nc
127184	Tetrachloroethylene	100 (SE) st	6.2 (M) (SE) st	1,400 (SE) st
71556	1,1,1-Trichloroethane	9,100 (SE) st	450 (SE) st	1.7E+05 (SE) st
79005	1,1,2-Trichloroethane	8.5 nc	0.37 (M) nc	7.0 nc
79016	Trichloroethylene	6.5 (SE) dev	0.33 (M) (SE) dev	67 (SE) dev
75014	Vinyl chloride	1.0 (M) mut	8.2E-02 (M) mut	54 mut

**Soil gas site-specific criteria are applicable for all depths.

- Acceptable Air Values (AAV) endpoint basis used for site-specific criterion: **(ca)** = Carcinogenetic; **(nc)** = Non-Carcinogenetic; **(dev)** = Developmental; **(mut)** = Mutagenic cancer; **(st)** = Short-term (i.e., less than chronic exposure): Agency for Toxic Substances and Disease Registry Inhalation Minimum Risk Level for Acute Inhalation or Intermediate Inhalation exposure durations; U.S. Environmental Protection Agency Integrated Risk Information System Reference Concentration for short-term exposure; or Air Quality Division Acute Initial Threshold Screening Level.
- Footnote **M**: Site-specific criterion may be below target detection limits **(TDL)**. In accordance with Sec. 20120a(10) when the TDL for a hazardous substance is greater than the developed cleanup criterion, the criterion is the TDL.
- Footnote **SE**: Site-specific criteria based on single event exposure; therefore, sampling methods should reflect shorter exposure scenarios.

Table 4. Residential Volatilization to Indoor Air Criteria (VIAC). The following are unrestricted site-specific criteria that apply to a residential **house** with a **basement**, the depth to groundwater submitted for this site (i.e. 4.74 ft) and USDA soil type of **sand**.

CAS#	Hazardous Substance	Groundwater In Contact (GWIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m³)
67641	Acetone	50,000 (SE) st	2.6E+05 st	1.0E+06 st
78933	2-Butanone (MEK)	2,600 (SE) dev	31,000 (SE) dev	1.7E+05 (SE) dev
56235	Carbon tetrachloride	0.41 (M) ca	0.31 (M) ca	150 ca
108907	Chlorobenzene	33 nc	82 nc	1,700 nc
75003	Chloroethane	620 nc	330 nc	1.4E+05 nc
67663	Chloroform	0.49 (M) ca	0.26 (M) ca	37 ca
75343	1,1-Dichloroethane	4.7 ca	2.6 (M) ca	530 ca
107062	1,2-Dichloroethane	1.4 ca	0.82 (M) ca	33 ca
75354	1,1-Dichloroethylene	18 nc	12 (M) nc	7,000 nc
156592	cis-1,2-Dichloroethylene	3.4 nc	2.1 (M) nc	280 nc
156605	trans-1,2-Dichloroethylene	2.9 nc	12 (M) nc	2,800 nc
75092	Methylene chloride	79 (SE) st	130 nc	21,000 nc
127184	Tetrachloroethylene	1.5 (SE) st	6.2 (M) (SE) st	1,400 (SE) st
71556	1,1,1-Trichloroethane	180 (SE) st	450 (SE) st	1.7E+05 (SE) st
79005	1,1,2-Trichloroethane	0.47 (M) nc	0.37 (M) nc	7.0 nc
79016	Trichloroethylene	7.3E-02 (M) (SE) dev	0.33 (M) (SE) dev	67 (SE) dev
75014	Vinyl chloride	0.12 (M) mut	8.2E-02 (M) mut	54 mut

**Soil gas site-specific criteria are applicable for all depths.

- Acceptable Air Values (AAV) endpoint basis used for site-specific criterion: (ca) = Carcinogenetic; (nc) = Non-Carcinogenetic; (dev) = Developmental; (mut) = Mutagenic cancer; (st) = Short-term (i.e., less than chronic exposure): Agency for Toxic Substances and Disease Registry Inhalation Minimum Risk Level for Acute Inhalation or Intermediate Inhalation exposure durations; U.S. Environmental Protection Agency Integrated Risk Information System Reference Concentration for short-term exposure; or Air Quality Division Acute Initial Threshold Screening Level.
- Footnote M: Site-specific criterion may be below target detection limits (TDL). In accordance with Sec. 20120a(10) when the TDL for a hazardous substance is greater than the developed cleanup criterion, the criterion is the TDL.
- Footnote SE: Site-specific criteria based on single event exposure; therefore, sampling methods should reflect shorter exposure scenarios.

GRETCHEN WHITMER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY
LANSING DISTRICT OFFICE

LIESL EICHLER CLARK
DIRECTOR

June 8, 2021

Ms. Emma Fosdick, President
Pittsfield Products
P.O. Box 1027
Ann Arbor, Michigan 48106

SUBJECT: Transmittal of Updated Site-Specific Criteria for Evaluation of the Volatilization to Indoor Air Pathway for the ACO Pittsfield Products Facility at 461 Dexter Road, Pinckney, Livingston County, Michigan; Facility ID No.: 47000013

Dear Ms. Fosdick:

Attached to this communication are tables that contain site-specific volatilization to indoor air criteria (SSVIAC) that are updated by the Michigan Department of Environment, Great Lakes, and Energy (EGLE), Remediation and Redevelopment Division, Toxicology Unit, to address unique conditions of certain residences discovered by EGLE's consultant while evaluating the volatilization to indoor air pathway (VIAP), which included documentation of interior building surveys for residences and a school over or near the chlorinated solvent groundwater contamination plume undergoing treatment by ACO Pittsfield Products (ACO) pursuant to Consent Decree 94-77806-CE.

On March 18, 2021, ACO accepted EGLE's July 3, 2018, SSVIAC developed for this facility via e-mail to EGLE's project manager from its consultant. These SSVIAC were developed based on EGLE's conceptual site model for the VIAP at the time prior to entering residences to install sub-slab vapor pins for collection of soil gas samples with co-located indoor air samples.

The unique residential structure conditions discovered by EGLE's consultant include dirt floor basements, dirt floor crawl spaces, sumps, and non-masonry basement walls. The depth to groundwater under seasonally high conditions is included for the identified residential structures on the criteria tables. The SSVIAC were developed pursuant to Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), that become necessary when assumptions used to develop generic Part 201 criteria or published volatilization to indoor air screening levels do not apply.

The site-specific tables attached to this communication include hazardous substances not explicitly requested that may be components of the historic releases from the ACO facility and/or bacterial breakdown of these chemicals, or chemicals associated with facility operations. The pre-emptive site-specific evaluation of these substances was provided to limit the potential need for future revisions of the SSVIAC for this facility.

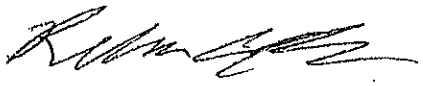
The non-residential SSVIAC do not specifically include an exposure time. Continuous 24-hour per day exposure times may not be representative of worker exposure in commercial or industrial settings. The non-residential SSVIAC may be adjusted for some hazardous substances to reflect a reasonable maximum worker exposure of 12 hours per day. Please contact me if an adjustment is needed.

Site-specific criteria for the VIAP must be used at this facility to define the nature and extent of contamination for purposes of evaluating the VIAP. The Part 201 NREPA Administrative Rules describe conditions that must exist for generic criteria to apply at a facility for the Groundwater Volatilization to Indoor Air Criteria (GVIIC) and Soil Volatilization to Indoor Air Criteria (SVIIC), R 299.14(2) and R 299.24(2), respectively. If those conditions are not met and therefore the generic criteria do not apply, a site-specific evaluation of the inhalation risks must be conducted using the process established in Section 20120b. The Part 201 Rules specifically allow the use of representative soil gas concentrations to demonstrate compliance with the VIAP, R 299.14(5) and R299.24(5), respectively, as a site-specific evaluation. At this facility, the conditions described in Part 201 Administrative Rules that would allow for the use of GVIIC and SVIIC are not met and generic criteria do not address acute exposure concerns for trichloroethylene (TCE), which is an acute toxicant.

If ACO wishes to develop its own SSVIAC, it must use the process established in Part 201 under Section 20120a(2) and Section 20120b for EGLE's review and approval. Alternatively, ACO may accept and confirm in writing that ACO proposes the use of EGLE's May 20, 2021, revised SSVIAC.

If you have any questions regarding application of the attached site-specific criteria tables to be used to evaluate the VIAP and monitor the effectiveness of the installed sub-slab depressurization mitigation system, please do not hesitate to call me at 517-284-5160, or via e-mail at taylorr@michigan.gov.

Sincerely,



Rebecca Taylor
Senior Environmental Quality Analyst
Lansing District Office
Remediation and Redevelopment Division

Attachment
cc: Mr. Matt Bolang, Livingston County Health Department
Mr. William J. Stapleton, Hooper, Hathaway, Prince, Beuche & Wallace
Mr. Keith Gadway, Quantum Environmental, Inc.
Ms. Alexandra Rafalski, Michigan Department of Health and Human Services
Mr. Andrew Prins, Michigan Department of Attorney General
Mr. David LaBrecque, EGLE
Ms. Barbara Cowles, EGLE
Ms. Jaclyn Merchant, EGLE
Mr. William Depew, EGLE

Depth to Groundwater of 4.5 feet: 450 Magic Street-basement with sump; 701 E. Hamburg -crawl space, no sump; 367 Dexter and 810 E. Hamburg- Sumps in basements

Table 1. Residential Volatilization to Indoor Air Criteria (VIAC). The following are **restricted** site-specific criteria that apply to a residential house with a **dirt-floor crawlspace that extends 4.5 feet below grade** foundation, the depth to groundwater submitted for this site (i.e. 4.72 ft), and USDA soil type of **sand**. The Groundwater separation distance of 0.22 feet was determined by subtracted the depth of groundwater below grade (4.72 feet) from the depth of construction below grade (4.5 feet).

CAS#	Hazardous Substance	Shallow Groundwater (µg/L)	Soil (µg/kg)	Soil Vapor** (µg/m³)
67641	Acetone	50,000 (FF) st	27,000 (EE) st	31,000 (EE) st
78933	2-Butanone (MEK)	2,600 (DD) dev	3,800 (DD) dev	5,000 (DD) dev
56235	Carbon tetrachloride	0.17 (M) ca	6.3E-02 (M) ca	4.5 ca
108907	Chlorobenzene	2.8 nc	13 (M) nc	52 nc
75003	Chloroethane	140 nc	35 (M) nc	4,200 nc
67663	Chloroform	5.0E-02 (M) ca	3.9E-02 (M) ca	1.1 ca
74873	Chloromethane	3.0 (M) nc	0.61 (M) nc	94 nc
75343	1,1-Dichloroethane	0.66 (M) ca	0.35 (M) ca	16 ca
107062	1,2-Dichloroethane	7.5E-02 (M) ca	0.11 (M) ca	0.98 ca
75354	1,1-Dichloroethylene	7.0 nc	1.6 (M) nc	210 nc
156592	cis-1,2-Dichloroethylene	0.36 (M) nc	0.26 (M) nc	8.3 nc
156605	trans-1,2-Dichloroethylene	3.0 nc	1.5 (M) nc	83 nc
108101	4-Methyl-2-pentanone (MIBK)	200 (FF) st	540 (M) (EE) st	820 (EE) st
75092	Methylene chloride	79 (FF) st	14 (M) nc	630 nc
127184	Tetrachloroethylene	1.5 (FF) st	1.5 (M) (EE) st	41 (EE) st
71556	1,1,1-Trichloroethane	180 (FF) st	79 (EE) st	5,000 (EE) st
79005	1,1,2-Trichloroethane	2.2E-02 (M) nc	6.4E-02 (M) nc	0.21 nc
79016	Trichloroethylene	7.3E-02 (M) (DD) dev	5.5E-02 (M) (DD) dev	2.0 (DD) dev
75014	Vinyl chloride	5.1E-02 (MM) (M) mut	8.4E-03 (MM) (M) mut	1.6 (MM) mut

Table 2. Residential Volatilization to Indoor Air Criteria (VIAC). The following are **unrestricted** site-specific criteria that apply to a residential house with a **basement** foundation, the depth to groundwater submitted for this site (i.e. 4.72 ft), and USDA soil type of **sand**.

CAS#	Hazardous Substance	Shallow Groundwater (µg/L)	Soil (µg/kg)	Soil Vapor** (µg/m³)
67641	Acetone	50,000 (FF) st	2.6E+05 (EE) st	1.0E+06 (EE) st
78933	2-Butanone (MEK)	2,600 (DD) dev	31,000 (DD) dev	1.7E+05 (DD) dev
56235	Carbon tetrachloride	0.41 (M) ca	0.31 (M) ca	150 ca
108907	Chlorobenzene	33 nc	82 nc	1,700 nc
75003	Chloroethane	620 nc	330 nc	1.4E+05 nc
67663	Chloroform	0.49 (M) ca	0.26 (M) ca	37 ca
74873	Chloromethane	15 nc	6.9 (M) nc	3,100 nc
75343	1,1-Dichloroethane	4.7 ca	2.6 (M) ca	530 ca
107062	1,2-Dichloroethane	1.4 ca	0.82 (M) ca	33 ca
75354	1,1-Dichloroethylene	18 nc	12 (M) nc	7,000 nc
156592	cis-1,2-Dichloroethylene	3.4 nc	2.1 (M) nc	280 nc
156605	trans-1,2-Dichloroethylene	16 nc	12 (M) nc	2,800 nc
108101	4-Methyl-2-pentanone (MIBK)	200 (FF) st	3,300 (EE) st	27,000 (EE) st
75092	Methylene chloride	79 (FF) st	130 nc	21,000 nc
127184	Tetrachloroethylene	1.5 (FF) st	6.2 (M) (EE) st	1,400 (EE) st
71556	1,1,1-Trichloroethane	180 (FF) st	450 (EE) st	1.7E+05 (EE) st
79005	1,1,2-Trichloroethane	0.47 (M) nc	0.37 (M) nc	7.0 nc
79016	Trichloroethylene	7.3E-02 (M) (DD) dev	0.33 (M) (DD) dev	67 (DD) dev
75014	Vinyl chloride	0.12 (MM) (M) mut	8.2E-02 (MM) (M) mut	54 (MM) mut

Depth to Groundwater of 6 feet: 809 E. Unadilla – No sump, basement with partial dirt floor.

Table 3. Residential Volatilization to Indoor Air Criteria (VIAC). The following are **restricted** site-specific criteria that apply to a residential house with a **dirt-floor basement that extends 8 feet below grade** foundation, the depth to groundwater submitted for this site (i.e. 6 ft), and USDA soil type of **sand**.

CAS#	Hazardous Substance	Shallow Groundwater (µg/L)	Soil (µg/kg)	Soil Vapor** (µg/m^3)
67641	Acetone	50,000 (FF) st	16,000 (EE) st	31,000 (EE) st
78933	2-Butanone (MEK)	2,600 (DD) dev	2,200 (DD) dev	5,000 (DD) dev
56235	Carbon tetrachloride	0.17 (M) ca	3.4E-02 (M) ca	4.5 ca
108907	Chlorobenzene	2.8 nc	7.2 (M) nc	52 nc
75003	Chloroethane	140 nc	20 (M) nc	4,200 nc
67663	Chloroform	5.0E-02 (M) ca	2.2E-02 (M) ca	1.1 ca
74873	Chloromethane	3.0 (M) nc	0.36 (M) nc	94 nc
75343	1,1-Dichloroethane	0.66 (M) ca	0.20 (M) ca	16 ca
107062	1,2-Dichloroethane	7.5E-02 (M) ca	6.1E-02 (M) ca	0.98 ca
75354	1,1-Dichloroethylene	7.0 nc	0.91 (M) nc	210 nc
156592	cis-1,2-Dichloroethylene	0.36 (M) nc	0.15 (M) nc	8.3 nc
156605	trans-1,2-Dichloroethylene	3.0 nc	0.87 (M) nc	83 nc
108101	4-Methyl-2-pentanone (MIBK)	200 (FF) st	300 (M) (EE) st	820 (EE) st
75092	Methylene chloride	79 (FF) st	8.3 (M) nc	630 nc
127184	Tetrachloroethylene	1.5 (FF) st	0.78 (M) (EE) st	41 (EE) st
71556	1,1,1-Trichloroethane	180 (FF) st	44 (M) (EE) st	5,000 (EE) st
79005	1,1,2-Trichloroethane	2.2E-02 (M) nc	3.5E-02 (M) nc	0.21 nc
79016	Trichloroethylene	7.3E-02 (M) (DD) dev	3.1E-02 (M) (DD) dev	2.0 (DD) dev
75014	Vinyl chloride	5.1E-02 (MM) (M) mut	4.9E-03 (MM) (M) mut	1.6 (MM) mut

Table 4. Residential Volatilization to Indoor Air Criteria (VIAC). The following are **unrestricted** site-specific criteria that apply to a residential house with a **basement** foundation, the depth to groundwater submitted for this site (i.e. 6 ft), and USDA soil type of **sand**.

CAS#	Hazardous Substance	Shallow Groundwater (µg/L)	Soil (µg/kg)	Soil Vapor** (µg/m³)
67641	Acetone	50,000 (FF) st	2.6E+05 (EE) st	1.0E+06 (EE) st
78933	2-Butanone (MEK)	2,600 (DD) dev	31,000 (DD) dev	1.7E+05 (DD) dev
56235	Carbon tetrachloride	0.41 (M) ca	0.31 (M) ca	150 ca
108907	Chlorobenzene	33 nc	82 nc	1,700 nc
75003	Chloroethane	620 nc	330 nc	1.4E+05 nc
67663	Chloroform	0.49 (M) ca	0.26 (M) ca	37 ca
74873	Chloromethane	15 nc	6.9 (M) nc	3,100 nc
75343	1,1-Dichloroethane	4.7 ca	2.6 (M) ca	530 ca
107062	1,2-Dichloroethane	1.4 ca	0.82 (M) ca	33 ca
75354	1,1-Dichloroethylene	18 nc	12 (M) nc	7,000 nc
156592	cis-1,2-Dichloroethylene	3.4 nc	2.1 (M) nc	280 nc
156605	trans-1,2-Dichloroethylene	16 nc	12 (M) nc	2,800 nc
108101	4-Methyl-2-pentanone (MIBK)	200 (FF) st	3,300 (EE) st	27,000 (EE) st
75092	Methylene chloride	79 (FF) st	130 nc	21,000 nc
127184	Tetrachloroethylene	1.5 (FF) st	6.2 (M) (EE) st	1,400 (EE) st
71556	1,1,1-Trichloroethane	180 (FF) st	450 (EE) st	1.7E+05 (EE) st
79005	1,1,2-Trichloroethane	0.47 (M) nc	0.37 (M) nc	7.0 nc
79016	Trichloroethylene	7.3E-02 (M) (DD) dev	0.33 (M) (DD) dev	67 (DD) dev
75014	Vinyl chloride	0.12 (MM) (M) mut	8.2E-02 (MM) (M) mut	54 (MM) mut

Depth to Groundwater of 9.5 feet: 441 Magic Street- basement, covered sump; 443 Magic Street- 8'basement, no sump; 632 E Hamburg and 535 E. Hamburg – 8 foot basements, sumps.

Table 5. Residential Volatilization to Indoor Air Criteria (VIAC). The following are **unrestricted** site-specific criteria that apply to a residential house with a **basement** foundation, the depth to groundwater submitted for this site (i.e. 9.5 ft), and USDA soil type of **sand**.

CAS#	Hazardous Substance	Shallow Groundwater (µg/L)	Soil (µg/kg)	Soil Vapor** (µg/m^3)
67641	Acetone	50,000 (FF) st	2.6E+05 (EE) st	1.0E+06 (EE) st
78933	2-Butanone (MEK)	2,600 (DD) dev	31,000 (DD) dev	1.7E+05 (DD) dev
56235	Carbon tetrachloride	0.41 (M) ca	0.31 (M) ca	150 ca
108907	Chlorobenzene	33 nc	82 nc	1,700 nc
75003	Chloroethane	620 nc	330 nc	1.4E+05 nc
67663	Chloroform	0.49 (M) ca	0.26 (M) ca	37 ca
74873	Chloromethane	15 nc	6.9 (M) nc	3,100 nc
75343	1,1-Dichloroethane	4.7 ca	2.6 (M) ca	530 ca
107062	1,2-Dichloroethane	1.4 ca	0.82 (M) ca	33 ca
75354	1,1-Dichloroethylene	18 nc	12 (M) nc	7,000 nc
156592	cis-1,2-Dichloroethylene	3.4 nc	2.1 (M) nc	280 nc
156605	trans-1,2-Dichloroethylene	16 nc	12 (M) nc	2,800 nc
108101	4-Methyl-2-pentanone (MIBK)	200 (FF) st	3,300 (EE) st	27,000 (EE) st
75092	Methylene chloride	79 (FF) st	130 nc	21,000 nc
127184	Tetrachloroethylene	1.5 (FF) st	6.2 (M) (EE) st	1,400 (EE) st
71556	1,1,1-Trichloroethane	180 (FF) st	450 (EE) st	1.7E+05 (EE) st
79005	1,1,2-Trichloroethane	0.47 (M) nc	0.37 (M) nc	7.0 nc
79016	Trichloroethylene	7.3E-02 (M) (DD) dev	0.33 (M) (DD) dev	67 (DD) dev
75014	Vinyl chloride	0.12 (MM) (M) mut	8.2E-02 (MM) (M) mut	54 (MM) mut

Depth to Groundwater of 12 feet: 334 William Street; 625 E. Hamburg
One house is a poured wall basement with a sump; the other is a poured wall basement with sump and attached crawl space (built over a barn foundation).

Table 6. Residential Volatilization to Indoor Air Criteria (VIAC). The following are **restricted** site-specific criteria that apply to a residential house with a **dirt-floor crawlspace that extends 4.5 feet below grade** foundation, the depth to groundwater submitted for this site (i.e. 12 ft), and USDA soil type of **sand**. The Groundwater separation distance of 7.5 feet was determined by subtracted the depth of groundwater below grade (12 feet) from the depth of construction below grade (4.5 feet).

CAS#	Hazardous Substance	Groundwater Not In Contact (µg/L)	Soil (µg/kg)	Soil Vapor** (µg/m³)
67641	Acetone	1.4E+07 (EE) st	27,000 (EE) st	31,000 (EE) st
78933	2-Butanone (MEK)	2.0E+06 (DD) dev	3,800 (DD) dev	5,000 (DD) dev
56235	Carbon tetrachloride	8.6 ca	6.3E-02 (M) ca	4.5 ca
108907	Chlorobenzene	810 nc	13 (M) nc	52 nc
75003	Chloroethane	9,000 nc	35 (M) nc	4,200 nc
67663	Chloroform	11 ca	3.9E-02 (M) ca	1.1 ca
74873	Chloromethane	190 nc	0.61 (M) nc	94 nc
75343	1,1-Dichloroethane	97 ca	0.35 (M) ca	16 ca
107062	1,2-Dichloroethane	29 ca	0.11 (M) ca	0.98 ca
75354	1,1-Dichloroethylene	240 nc	1.6 (M) nc	210 nc
156592	cis-1,2-Dichloroethylene	68 nc	0.26 (M) nc	8.3 nc
156605	trans-1,2-Dichloroethylene	280 nc	1.5 (M) nc	83 nc
108101	4-Methyl-2-pentanone (MIBK)	2.3E+05 (EE) st	540 (M) (EE) st	820 (EE) st
75092	Methylene chloride	5,300 nc	14 (M) nc	630 nc
127184	Tetrachloroethylene	160 (EE) st	1.5 (M) (EE) st	41 (EE) st
71556	1,1,1-Trichloroethane	13,000 (EE) st	79 (EE) st	5,000 (EE) st
79005	1,1,2-Trichloroethane	12 nc	6.4E-02 (M) nc	0.21 nc
79016	Trichloroethylene	9.4 (DD) dev	5.5E-02 (M) (DD) dev	2.0 (DD) dev
75014	Vinyl chloride	1.3 (MM) mut	8.4E-03 (MM) (M) mut	1.6 (MM) mut

Table 7. Residential Volatilization to Indoor Air Criteria (VIAC). The following are **unrestricted** site-specific criteria that apply to a residential house with a **basement** foundation, the depth to groundwater submitted for this site (i.e. 12 ft), and USDA soil type of **sand**.

CAS#	Hazardous Substance	Groundwater Not In Contact (µg/L)	Soil (µg/kg)	Soil Vapor** (µg/m³)
67641	Acetone	1.4E+07 (EE) st	2.6E+05 (EE) st	1.0E+06 (EE) st
78933	2-Butanone (MEK)	1.7E+06 (DD) dev	31,000 (DD) dev	1.7E+05 (DD) dev
56235	Carbon tetrachloride	5.9 ca	0.31 (M) ca	150 ca
108907	Chlorobenzene	590 nc	82 nc	1,700 nc
75003	Chloroethane	7,300 nc	330 nc	1.4E+05 nc
67663	Chloroform	8.3 ca	0.26 (M) ca	37 ca
74873	Chloromethane	170 nc	6.9 (M) nc	3,100 nc
75343	1,1-Dichloroethane	73 ca	2.6 (M) ca	530 ca
107062	1,2-Dichloroethane	23 ca	0.82 (M) ca	33 ca
75354	1,1-Dichloroethylene	180 nc	12 (M) nc	7,000 nc
156592	cis-1,2-Dichloroethylene	52 nc	2.1 (M) nc	280 nc
156605	trans-1,2-Dichloroethylene	220 nc	12 (M) nc	2,800 nc
108101	4-Methyl-2-pentanone (MIBK)	1.7E+05 (EE) st	3,300 (EE) st	27,000 (EE) st
75092	Methylene chloride	4,200 nc	130 nc	21,000 nc
127184	Tetrachloroethylene	110 (EE) st	6.2 (M) (EE) st	1,400 (EE) st
71556	1,1,1-Trichloroethane	9,400 (EE) st	450 (EE) st	1.7E+05 (EE) st
79005	1,1,2-Trichloroethane	8.8 nc	0.37 (M) nc	7.0 nc
79016	Trichloroethylene	6.7 (DD) dev	0.33 (M) (DD) dev	67 (DD) dev
75014	Vinyl chloride	1.0 (MM) (M) mut	8.2E-02 (MM) (M) mut	54 (MM) mut

Depth to Groundwater of 13.7 feet: 332 Stuart Street-8' basement with sump

Table 8. Residential Volatilization to Indoor Air Criteria (VIAC). The following are **unrestricted** site-specific criteria that apply to a residential house with a **basement** foundation, the depth to groundwater submitted for this site (i.e. 13.7 ft), and USDA soil type of **sand**.

CAS#	Hazardous Substance	Groundwater Not In Contact (µg/L)	Soil (µg/kg)	Soil Vapor** (µg/m³)
67641	Acetone	1.5E+07 (EE) st	2.6E+05 (EE) st	1.0E+06 (EE) st
78933	2-Butanone (MEK)	1.9E+06 (DD) dev	31,000 (DD) dev	1.7E+05 (DD) dev
56235	Carbon tetrachloride	6.3 ca	0.31 (M) ca	150 ca
108907	Chlorobenzene	630 nc	82 nc	1,700 nc
75003	Chloroethane	7,700 nc	330 nc	1.4E+05 nc
67663	Chloroform	8.8 ca	0.26 (M) ca	37 ca
74873	Chloromethane	180 nc	6.9 (M) nc	3,100 nc
75343	1,1-Dichloroethane	78 ca	2.6 (M) ca	530 ca
107062	1,2-Dichloroethane	24 ca	0.82 (M) ca	33 ca
75354	1,1-Dichloroethylene	200 nc	12 (M) nc	7,000 nc
156592	cis-1,2-Dichloroethylene	55 nc	2.1 (M) nc	280 nc
156605	trans-1,2-Dichloroethylene	230 nc	12 (M) nc	2,800 nc
108101	4-Methyl-2-pentanone (MIBK)	1.9E+05 (EE) st	3,300 (EE) st	27,000 (EE) st
75092	Methylene chloride	4,500 nc	130 nc	21,000 nc
127184	Tetrachloroethylene	110 (EE) st	6.2 (M) (EE) st	1,400 (EE) st
71556	1,1,1-Trichloroethane	10,000 (EE) st	450 (EE) st	1.7E+05 (EE) st
79005	1,1,2-Trichloroethane	9.4 nc	0.37 (M) nc	7.0 nc
79016	Trichloroethylene	7.1 (DD) dev	0.33 (M) (DD) dev	67 (DD) dev
75014	Vinyl chloride	1.1 (MM) mut	8.2E-02 (MM) (M) mut	54 (MM) mut

Depth to Groundwater of 15.5 feet: School at 550 E. Hamburg-5- foot basement (no sump); Residence at 458 William Street.- 8' basement., no sump.

Table 9. Residential Volatilization to Indoor Air Criteria (VIAC). The following are **unrestricted** site-specific criteria that apply to a residential house with a **basement** foundation, the depth to groundwater submitted for this site (i.e. 15.5 ft), and USDA soil type of **sand**.

CAS#	Hazardous Substance	Groundwater Not In Contact (µg/L)	Soil (µg/kg)	Soil Vapor** (µg/m³)
67641	Acetone	1.6E+07 (EE) st	2.6E+05 (EE) st	1.0E+06 (EE) st
78933	2-Butanone (MEK)	2.0E+06 (DD) dev	31,000 (DD) dev	1.7E+05 (DD) dev
56235	Carbon tetrachloride	6.7 ca	0.31 (M) ca	150 ca
108907	Chlorobenzene	670 nc	82 nc	1,700 nc
75003	Chloroethane	8,100 nc	330 nc	1.4E+05 nc
67663	Chloroform	9.4 ca	0.26 (M) ca	37 ca
74873	Chloromethane	190 nc	6.9 (M) nc	3,100 nc
75343	1,1-Dichloroethane	82 ca	2.6 (M) ca	530 ca
107062	1,2-Dichloroethane	26 ca	0.82 (M) ca	33 ca
75354	1,1-Dichloroethylene	210 nc	12 (M) nc	7,000 nc
156592	cis-1,2-Dichloroethylene	59 nc	2.1 (M) nc	280 nc
156605	trans-1,2-Dichloroethylene	240 nc	12 (M) nc	2,800 nc
108101	4-Methyl-2-pentanone (MIBK)	2.0E+05 (EE) st	3,300 (EE) st	27,000 (EE) st
75092	Methylene chloride	4,700 nc	130 nc	21,000 nc
127184	Tetrachloroethylene	120 (EE) st	6.2 (M) (EE) st	1,400 (EE) st
71556	1,1,1-Trichloroethane	11,000 (EE) st	450 (EE) st	1.7E+05 (EE) st
79005	1,1,2-Trichloroethane	10 nc	0.37 (M) nc	7.0 nc
79016	Trichloroethylene	7.6 (DD) dev	0.33 (M) (DD) dev	67 (DD) dev
75014	Vinyl chloride	1.2 (MM) mut	8.2E-02 (MM) (M) mut	54 (MM) mut

Depth to Groundwater of 16 feet: 409 E. Unadilla- 8' basement, dirt near stone walls (thin concrete), No sump, abandoned well in corner- crawl space under kitchen; 431 E. Unadilla.-Michigan basement, stone walls, sump, concrete floor.

Table 10. Residential Volatilization to Indoor Air Criteria (VIAC). The following are **restricted** site-specific criteria that apply to a residential house with a **dirt-floor crawlspace that extends 3 feet below grade** foundation, the depth to groundwater submitted for this site (i.e. 16 ft), and USDA soil type of **sand**. The Groundwater separation distance of 13 feet was determined by subtracted the depth of groundwater below grade (12 feet) from the depth of construction below grade (3 feet).

CAS#	Hazardous Substance	Groundwater Not In Contact (µg/L)	Soil (µg/kg)	Soil Vapor** (µg/m³)
67641	Acetone	2.1E+07 (EE) st	27,000 (EE) st	31,000 (EE) st
78933	2-Butanone (MEK)	2.7E+06 (DD) dev	3,800 (DD) dev	5,000 (DD) dev
56235	Carbon tetrachloride	11 ca	6.3E-02 (M) ca	4.5 ca
108907	Chlorobenzene	1,000 nc	13 (M) nc	52 nc
75003	Chloroethane	11,000 nc	35 (M) nc	4,200 nc
67663	Chloroform	14 ca	3.9E-02 (M) ca	1.1 ca
74873	Chloromethane	240 nc	0.61 (M) nc	94 nc
75343	1,1-Dichloroethane	120 ca	0.35 (M) ca	16 ca
107062	1,2-Dichloroethane	37 ca	0.11 (M) ca	0.98 ca
75354	1,1-Dichloroethylene	310 nc	1.6 (M) nc	210 nc
156592	cis-1,2-Dichloroethylene	85 nc	0.26 (M) nc	8.3 nc
156605	trans-1,2-Dichloroethylene	360 nc	1.5 (M) nc	83 nc
108101	4-Methyl-2-pentanone (MIBK)	3.1E+05 (EE) st	540 (M) (EE) st	820 (EE) st
75092	Methylene chloride	6,700 nc	14 (M) nc	630 nc
127184	Tetrachloroethylene	200 (EE) st	1.5 (M) (EE) st	41 (EE) st
71556	1,1,1-Trichloroethane	17,000 (EE) st	79 (EE) st	5,000 (EE) st
79005	1,1,2-Trichloroethane	16 nc	6.4E-02 (M) nc	0.21 nc
79016	Trichloroethylene	12 (DD) dev	5.5E-02 (M) (DD) dev	2.0 (DD) dev
75014	Vinyl chloride	1.6 (MM) mut	8.4E-03 (MM) (M) mut	1.6 (MM) mut

Table 11. Residential Volatilization to Indoor Air Criteria (VIAC). The following are **restricted** site-specific criteria that apply to a residential house with a **partial dirt-floor basement that extends 8 feet below grade** foundation, the depth to groundwater submitted for this site (i.e. 16 ft), and USDA soil type of **sand**.

CAS#	Hazardous Substance	Groundwater Not In Contact (µg/L)	Soil (µg/kg)	Soil Vapor** (µg/m³)
67641	Acetone	1.0E+07 (EE) st	16,000 (EE) st	31,000 (EE) st
78933	2-Butanone (MEK)	1.4E+06 (DD) dev	2,200 (DD) dev	5,000 (DD) dev
56235	Carbon tetrachloride	5.6 ca	3.4E-02 (M) ca	4.5 ca
108907	Chlorobenzene	530 nc	7.2 (M) nc	52 nc
75003	Chloroethane	5,900 nc	20 (M) nc	4,200 nc
67663	Chloroform	7.4 ca	2.2E-02 (M) ca	1.1 ca
74873	Chloromethane	130 nc	0.36 (M) nc	94 nc
75343	1,1-Dichloroethane	64 ca	0.20 (M) ca	16 ca
107062	1,2-Dichloroethane	19 ca	6.1E-02 (M) ca	0.98 ca
75354	1,1-Dichloroethylene	160 nc	0.91 (M) nc	210 nc
156592	cis-1,2-Dichloroethylene	44 nc	0.15 (M) nc	8.3 nc
156605	trans-1,2-Dichloroethylene	190 nc	0.87 (M) nc	83 nc
108101	4-Methyl-2-pentanone (MIBK)	1.6E+05 (EE) st	300 (M) (EE) st	820 (EE) st
75092	Methylene chloride	3,500 nc	8.3 (M) nc	630 nc
127184	Tetrachloroethylene	100 (EE) st	0.78 (M) (EE) st	41 (EE) st
71556	1,1,1-Trichloroethane	8,800 (EE) st	44 (M) (EE) st	5,000 (EE) st
79005	1,1,2-Trichloroethane	8.1 nc	3.5E-02 (M) nc	0.21 nc
79016	Trichloroethylene	6.2 (DD) dev	3.1E-02 (M) (DD) dev	2.0 (DD) dev
75014	Vinyl chloride	0.83 (MM) (M) mut	4.9E-03 (MM) (M) mut	1.6 (MM) mut

Table 12. Residential Volatilization to Indoor Air Criteria (VIAC). The following are **unrestricted** site-specific criteria that apply to a residential house with a **basement** foundation, the depth to groundwater submitted for this site (i.e. 16 ft), and USDA soil type of **sand**.

CAS#	Hazardous Substance	Groundwater Not In Contact (µg/L)	Soil (µg/kg)	Soil Vapor** (µg/m³)
67641	Acetone	1.7E+07 (EE) st	2.6E+05 (EE) st	1.0E+06 (EE) st
78933	2-Butanone (MEK)	2.0E+06 (DD) dev	31,000 (DD) dev	1.7E+05 (DD) dev
56235	Carbon tetrachloride	6.8 ca	0.31 (M) ca	150 ca
108907	Chlorobenzene	680 nc	82 nc	1,700 nc
75003	Chloroethane	8,300 nc	330 nc	1.4E+05 nc
67663	Chloroform	9.5 ca	0.26 (M) ca	37 ca
74873	Chloromethane	190 nc	6.9 (M) nc	3,100 nc
75343	1,1-Dichloroethane	84 ca	2.6 (M) ca	530 ca
107062	1,2-Dichloroethane	26 ca	0.82 (M) ca	33 ca
75354	1,1-Dichloroethylene	210 nc	12 (M) nc	7,000 nc
156592	cis-1,2-Dichloroethylene	59 nc	2.1 (M) nc	280 nc
156605	trans-1,2-Dichloroethylene	250 nc	12 (M) nc	2,800 nc
108101	4-Methyl-2-pentanone (MIBK)	2.1E+05 (EE) st	3,300 (EE) st	27,000 (EE) st
75092	Methylene chloride	4,800 nc	130 nc	21,000 nc
127184	Tetrachloroethylene	120 (EE) st	6.2 (M) (EE) st	1,400 (EE) st
71556	1,1,1-Trichloroethane	11,000 (EE) st	450 (EE) st	1.7E+05 (EE) st
79005	1,1,2-Trichloroethane	10 nc	0.37 (M) nc	7.0 nc
79016	Trichloroethylene	7.7 (DD) dev	0.33 (M) (DD) dev	67 (DD) dev
75014	Vinyl chloride	1.2 (MM) mut	8.2E-02 (MM) (M) mut	54 (MM) mut

Depth to Groundwater of 16.7 feet: 408 E. Unadilla-fieldstone walls, cement floor, no sump, 8' basement; 334 E. Unadilla-Dirt floor, no sump, fieldstone walls, 8' basement

Table 13. Residential Volatilization to Indoor Air Criteria (VIAC). The following are **restricted** site-specific criteria that apply to a residential house with a **dirt-floor basement that extends 8 feet below grade** foundation, the depth to groundwater submitted for this site (i.e. 16.7 ft), and USDA soil type of **sand**.

CAS#	Hazardous Substance	Groundwater Not In Contact (µg/L)	Soil (µg/kg)	Soil Vapor** (µg/m³)
67641	Acetone	1.1E+07 (EE) st	16,000 (EE) st	31,000 (EE) st
78933	2-Butanone (MEK)	1.4E+06 (DD) dev	2,200 (DD) dev	5,000 (DD) dev
56235	Carbon tetrachloride	5.8 ca	3.4E-02 (M) ca	4.5 ca
108907	Chlorobenzene	550 nc	7.2 (M) nc	52 nc
75003	Chloroethane	6,100 nc	20 (M) nc	4,200 nc
67663	Chloroform	7.6 ca	2.2E-02 (M) ca	1.1 ca
74873	Chloromethane	130 nc	0.36 (M) nc	94 nc
75343	1,1-Dichloroethane	65 ca	0.20 (M) ca	16 ca
107062	1,2-Dichloroethane	20 ca	6.1E-02 (M) ca	0.98 ca
75354	1,1-Dichloroethylene	160 nc	0.91 (M) nc	210 nc
156592	cis-1,2-Dichloroethylene	46 nc	0.15 (M) nc	8.3 nc
156605	trans-1,2-Dichloroethylene	190 nc	0.87 (M) nc	83 nc
108101	4-Methyl-2-pentanone (MIBK)	1.6E+05 (EE) st	300 (M) (EE) st	820 (EE) st
75092	Methylene chloride	3,600 nc	8.3 (M) nc	630 nc
127184	Tetrachloroethylene	110 (EE) st	0.78 (M) (EE) st	41 (EE) st
71556	1,1,1-Trichloroethane	9,100 (EE) st	44 (M) (EE) st	5,000 (EE) st
79005	1,1,2-Trichloroethane	8.4 nc	3.5E-02 (M) nc	0.21 nc
79016	Trichloroethylene	6.3 (DD) dev	3.1E-02 (M) (DD) dev	2.0 (DD) dev
75014	Vinyl chloride	0.86 (MM) (M) mut	4.9E-03 (MM) (M) mut	1.6 (MM) mut

Table 14. Residential Volatilization to Indoor Air Criteria (VIAC). The following are **unrestricted** site-specific criteria that apply to a residential house with a **basement** foundation, the depth to groundwater submitted for this site (i.e. 16.7 ft), and USDA soil type of **sand**.

CAS#	Hazardous Substance	Groundwater Not In Contact (µg/L)	Soil (µg/kg)	Soil Vapor** (µg/m³)
67641	Acetone	1.7E+07 (EE) st	2.6E+05 (EE) st	1.0E+06 (EE) st
78933	2-Butanone (MEK)	2.1E+06 (DD) dev	31,000 (DD) dev	1.7E+05 (DD) dev
56235	Carbon tetrachloride	7.0 ca	0.31 (M) ca	150 ca
108907	Chlorobenzene	700 nc	82 nc	1,700 nc
75003	Chloroethane	8,400 nc	330 nc	1.4E+05 nc
67663	Chloroform	9.8 ca	0.26 (M) ca	37 ca
74873	Chloromethane	190 nc	6.9 (M) nc	3,100 nc
75343	1,1-Dichloroethane	86 ca	2.6 (M) ca	530 ca
107062	1,2-Dichloroethane	27 ca	0.82 (M) ca	33 ca
75354	1,1-Dichloroethylene	220 nc	12 (M) nc	7,000 nc
156592	cis-1,2-Dichloroethylene	61 nc	2.1 (M) nc	280 nc
156605	trans-1,2-Dichloroethylene	250 nc	12 (M) nc	2,800 nc
108101	4-Methyl-2-pentanone (MIBK)	2.1E+05 (EE) st	3,300 (EE) st	27,000 (EE) st
75092	Methylene chloride	4,900 nc	130 nc	21,000 nc
127184	Tetrachloroethylene	130 (EE) st	6.2 (M) (EE) st	1,400 (EE) st
71556	1,1,1-Trichloroethane	11,000 (EE) st	450 (EE) st	1.7E+05 (EE) st
79005	1,1,2-Trichloroethane	11 nc	0.37 (M) nc	7.0 nc
79016	Trichloroethylene	7.9 (DD) dev	0.33 (M) (DD) dev	67 (DD) dev
75014	Vinyl chloride	1.2 (MM) mut	8.2E-02 (MM) (M) mut	54 (MM) mut

Depth to Groundwater of 18 feet: 339 Webster Street-poured concrete basement, 8' deep, sump.

Table 15. Residential Volatilization to Indoor Air Criteria (VIAC). The following are **unrestricted** site-specific criteria that apply to a residential house with a **basement** foundation, the depth to groundwater submitted for this site (i.e. 18 ft), and USDA soil type of **sand**.

CAS#	Hazardous Substance	Groundwater Not In Contact (µg/L)	Soil (µg/kg)	Soil Vapor** (µg/m^3)
67641	Acetone	1.8E+07 (EE) st	2.6E+05 (EE) st	1.0E+06 (EE) st
78933	2-Butanone (MEK)	2.2E+06 (DD) dev	31,000 (DD) dev	1.7E+05 (DD) dev
56235	Carbon tetrachloride	7.3 ca	0.31 (M) ca	150 ca
108907	Chlorobenzene	730 nc	82 nc	1,700 nc
75003	Chloroethane	8,800 nc	330 nc	1.4E+05 nc
67663	Chloroform	10 ca	0.26 (M) ca	37 ca
74873	Chloromethane	200 nc	6.9 (M) nc	3,100 nc
75343	1,1-Dichloroethane	89 ca	2.6 (M) ca	530 ca
107062	1,2-Dichloroethane	28 ca	0.82 (M) ca	33 ca
75354	1,1-Dichloroethylene	220 nc	12 (M) nc	7,000 nc
156592	cis-1,2-Dichloroethylene	63 nc	2.1 (M) nc	280 nc
156605	trans-1,2-Dichloroethylene	260 nc	12 (M) nc	2,800 nc
108101	4-Methyl-2-pentanone (MIBK)	2.3E+05 (EE) st	3,300 (EE) st	27,000 (EE) st
75092	Methylene chloride	5,100 nc	130 nc	21,000 nc
127184	Tetrachloroethylene	130 (EE) st	6.2 (M) (EE) st	1,400 (EE) st
71556	1,1,1-Trichloroethane	12,000 (EE) st	450 (EE) st	1.7E+05 (EE) st
79005	1,1,2-Trichloroethane	11 nc	0.37 (M) nc	7.0 nc
79016	Trichloroethylene	8.3 (DD) dev	0.33 (M) (DD) dev	67 (DD) dev
75014	Vinyl chloride	1.2 (MM) mut	8.2E-02 (MM) (M) mut	54 (MM) mut

Depth to Groundwater of 2.2 feet: ACO Plant

Table 16. Nonresidential Volatilization to Indoor Air Criteria (VIAC). The following are **restricted** site-specific criteria that apply to a **nonresidential structure with <50,000 ft² of continuously open space** that has a **slab-on-grade** foundation, the depth to groundwater submitted for this site (i.e. 2.2 ft), and USDA soil type of **sand**.

CAS#	Hazardous Substance	Shallow Groundwater (µg/L)	Soil (µg/kg)	Soil Vapor** (µg/m³)
67641	Acetone	2.0E+05 (FF) st	3.1E+06 (EE) st	1.0E+06 (EE) st
78933	2-Butanone (MEK)	12,000 (DD) dev	3.7E+05 (DD) dev	1.7E+05 (DD) dev
56235	Carbon tetrachloride	9.5 ca	8.7 (M) ca	360 ca
108907	Chlorobenzene	110 nc	1,400 nc	2,600 nc
75003	Chloroethane	5,200 nc	5,800 nc	2.0E+05 nc
67663	Chloroform	3.1 ca	7.4 (M) ca	87 ca
74873	Chloromethane	110 nc	120 (M) nc	4,600 nc
75343	1,1-Dichloroethane	40 ca	74 ca	1,200 ca
107062	1,2-Dichloroethane	5.1 ca	23 (M) ca	77 ca
75354	1,1-Dichloroethylene	250 nc	220 nc	10,000 nc
156592	cis-1,2-Dichloroethylene	14 nc	37 (M) nc	410 nc
156605	trans-1,2-Dichloroethylene	110 nc	210 nc	4,100 nc
108101	4-Methyl-2-pentanone (MIBK)	1,400 (FF) st	40,000 (EE) st	27,000 (EE) st
75092	Methylene chloride	1,100 nc	2,300 nc	31,000 nc
127184	Tetrachloroethylene	35 (FF) st	74 (EE) st	1,400 (EE) st
71556	1,1,1-Trichloroethane	5,900 (FF) st	7,500 (EE) st	2.3E+05 (EE) st
79005	1,1,2-Trichloroethane	0.95 (M) nc	6.6 (M) nc	10 nc
79016	Trichloroethylene	1.6 (DD) dev	4.0 (M) (DD) dev	67 (DD) dev
75014	Vinyl chloride	10 ca	8.2 (M) ca	450 ca

Table 17. Residential Volatilization to Indoor Air Criteria (VIAC). The following are **unrestricted** site-specific criteria that apply to a residential house with a **basement** foundation, the depth to groundwater submitted for this site (i.e. 2.2 ft), and USDA soil type of **sand**.

CAS#	Hazardous Substance	Shallow Groundwater (µg/L)	Soil (µg/kg)	Soil Vapor** (µg/m³)
67641	Acetone	50,000 (FF) st	2.6E+05 (EE) st	1.0E+06 (EE) st
78933	2-Butanone (MEK)	2,600 (DD) dev	31,000 (DD) dev	1.7E+05 (DD) dev
56235	Carbon tetrachloride	0.41 (M) ca	0.31 (M) ca	150 ca
108907	Chlorobenzene	33 nc	82 nc	1,700 nc
75003	Chloroethane	620 nc	330 nc	1.4E+05 nc
67663	Chloroform	0.49 (M) ca	0.26 (M) ca	37 ca
74873	Chloromethane	15 nc	6.9 (M) nc	3,100 nc
75343	1,1-Dichloroethane	4.7 ca	2.6 (M) ca	530 ca
107062	1,2-Dichloroethane	1.4 ca	0.82 (M) ca	33 ca
75354	1,1-Dichloroethylene	18 nc	12 (M) nc	7,000 nc
156592	cis-1,2-Dichloroethylene	3.4 nc	2.1 (M) nc	280 nc
156605	trans-1,2-Dichloroethylene	16 nc	12 (M) nc	2,800 nc
108101	4-Methyl-2-pentanone (MIBK)	200 (FF) st	3,300 (EE) st	27,000 (EE) st
75092	Methylene chloride	79 (FF) st	130 nc	21,000 nc
127184	Tetrachloroethylene	1.5 (FF) st	6.2 (M) (EE) st	1,400 (EE) st
71556	1,1,1-Trichloroethane	180 (FF) st	450 (EE) st	1.7E+05 (EE) st
79005	1,1,2-Trichloroethane	0.47 (M) nc	0.37 (M) nc	7.0 nc
79016	Trichloroethylene	7.3E-02 (M) (DD) dev	0.33 (M) (DD) dev	67 (DD) dev
75014	Vinyl chloride	0.12 (MM) (M) mut	8.2E-02 (MM) (M) mut	54 (MM) mut

FOOTNOTES

**Soil vapor site-specific volatilization to indoor air criteria (SSVIAC) are applicable for all depths.

- Acceptable Air Values (AAV) endpoint basis used for SSVIAC: **(ca)** = Carcinogenetic; **(nc)** = Non-Carcinogenetic; **(dev)** = Developmental; **(mut)** = Mutagenic cancer; **(st)** = Short-term (i.e., less than chronic exposure).
- Footnote **(#)**: Acceptable air concentrations (AAC) cannot be adjusted to a 12-hour exposure time for hazardous substance.
- Footnote **AA**: Health-based groundwater SSVIAC are not available due to insufficient toxicological data. Dissolved-phase methane in groundwater is not explosive; however, if liberated and allowed to accumulate in an enclosed structure the principle health and safety concerns are explosive, flammable, and asphyxiant properties of gas phase methane. The acceptable groundwater concentration is the flammability and explosivity screening level **(FESL)** of 10,000 µg/L.
- Footnote **C**: The health-based SSVIAC exceeds the chemical-specific soil saturation screening level **(Csat)**. Because this table does not list Csat values both were provided, with the calculated (health-based) value listed first and Csat provided in parenthesis. The person proposing or implementing response activity must document whether additional response activity is required to control non aqueous phase liquid **(NAPL)** to protect against risks associated with NAPL by using methods appropriate for the NAPL present.
- Footnote **CC**: Insufficient chemical-physical input parameters have been identified to allow the development of a health-based SSVIAC using standard methods. The health based SSVIAC for groundwater is developed based solely on the approach that the department uses for shallow groundwater. If groundwater detections are present, soil vapor may be the most appropriate media to evaluate risk posed from the VIAP.
- Footnote **DATA**: Insufficient physical chemical parameters to calculate a health based SSVIAC for specified media. If detections are present in specified media, health-based soil vapor SSVIAC should be used to evaluate risk.
- Footnote **DD**: Hazardous substance causes developmental effects. Residential SSVIAC are protective of both prenatal exposure using a pregnant female receptor and postnatal exposure using a child receptor. Nonresidential SSVIAC are protective of prenatal exposure using a pregnant female receptor. Prenatal developmental effects may occur after an acute (i.e. short-term) or full-term exposure.
- Footnote **EE**: The acceptable air concentration **(AAC)** for the volatile hazardous substances is not derived using standard methods. The hazardous substance may cause adverse human health effects for less than chronic exposures (i.e. short-term or acute). The AAC for these hazardous substances is the acute or intermediate minimum risk level (MRL) developed by the Agency for Toxic Substances and Disease Registry (ATSDR), a United States Environmental Protection Agency Integrated Risk Information System (IRIS) acute reference concentration, or EGLE's Air Quality Division acute initial threshold screening level (ITSL).
- Footnote **FF**: The AAC for the volatile hazardous substances are based on toxicity values that have been identified to have the potential to cause adverse human health effects for less than chronic exposures (i.e. short-term or acute). The short-term exposure for shallow groundwater health based SSVIAC are based on modification of the standard methods by the department to develop applicable shallow groundwater values.
- Footnote **GG**: Health-based SSVIAC for soil vapor are not available due to insufficient toxicological data. The soil vapor value addresses the health and safety concerns of explosive, flammable, and asphyxiant properties of gas phase methane. The acceptable soil vapor concentration is derived based on 25% of the lower explosive level **(LEL)** for methane.
- Footnote **GW**: The calculated health based SSVIAC for a hazardous substance based upon shallow groundwater is considered protective when it is greater than the calculated value for groundwater.
- Footnote **ID**: Requires further evaluation to determine the appropriate media to sample.
- Footnote **J**: Hazardous substance may be present in several isomer forms. Isomer-specific concentrations must be added together for comparison to criteria.
- Footnote **JT**: Hazardous substance may be present in several isomer forms. The health-based SSVIAC may be used for the individual isomer provided that it is the sole isomer detected; however, when multiple isomers are detected in a medium, the isomer-specific concentrations must be added together and compared to the most restrictive health-based SSVIAC of the detected isomers.
- Footnote **M**: The health based SSVIAC may be below target detection limits **(TDL)**. In accordance with Sec. 20120a(10) when the TDL for a hazardous substance is greater than the developed health-based SSVIAC, the TDL is used to evaluate the risk posed from the pathway.
- Footnote **MM**: Hazardous substance is a carcinogen with a mutagenic mode of action. The cancer potency values used in calculating health-based SSVIAC are modified using age-dependent adjustment factors for those carcinogenic chemicals identified as mutagenic.
- Footnote **NA**: The hazardous substance does not meet the department's definition of a volatile; therefore, no health based SSVIAC were developed.
- Footnote **NR**: The hazardous substance has not been previously evaluated by the Remediation and Redevelopment Division Toxicology Unit. The identification, collection, and evaluation of toxicological literature and chemical-physical data cannot be completed within the timeframe requested.
- Footnote **S**: Calculated health-based SSVIAC exceeds the hazardous substance-specific water solubility limit; therefore, the water solubility limit is used to evaluate the risk posed from the pathway. When this occurs the basis for the screening level is noted as "sol".
- Footnote **TX**: The Remediation and Redevelopment Division Toxicology Unit has not identified an inhalation toxicity value for the hazardous substance.