RAMBOLL

ENVIRONMENT
& HEALTH

Via Email and WDNR Submittal Portal

Mr. Joseph Martinez, Hydrogeologist
Wisconsin Department of Natural Resources
1027 West St. Paul Avenue
Milwaukee, WI 53232

SITE INVESTIGATION WORK PLAN
FORMER WERNERS CLEANERS
6415 28TH AVENUE, KENOSHA, WISCONSIN
BRRTS NO. 02-30-577102

Dear Mr. Martinez:

Ramboll Americas Engineering Solutions, Inc., on behalf of Bay Towel, Inc., submits the Wisconsin Administrative Code Chapter NR 716.09 *Site Investigation Work Plan* ("Work Plan") to perform site investigation activities at the subject site.

A copy of this Work Plan was uploaded to the WDNR's Remediation and Redevelopment Program Submittal Portal. A WDNR review fee is included with this submittal (enclosed). If you have any questions, please do not hesitate to contact me.

Sincerely yours,

Ramboll Americas Engineering Solutions, Inc.

Richard Mazurkiewicz
Managing Consultant

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rmazurkiewicz@ramboll.com

c: Jake Butz, Bay Towel, Inc.
Silje M. Roalsvik and Nancy Reid, Resolute Management, Inc.
Richard Baron, Foley, Baron, Metzger & Juip, PLLC

enclosed: WDNR Site Investigation Work Plan Review Fee Check ($700)
WAC NR 716.09 Site Investigation Work Plan

January 31, 2024

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Ref. 1940105592

WISCONSIN ADMINISTRATIVE CODE CHAPTER NR 716.09 SITE INVESTIGATION WORK PLAN

FORMER WERNERS CLEANERS
6415 28TH AVENUE
KENOSHA, WISCONSIN

BRRTS NO. 02-30-577102

Prepared for:
Bay Towel, Inc.

Prepared by:
Ramboll Americas Engineering Solutions, Inc.
Milwaukee, Wisconsin

Date:
January 31, 2024

Project Number:
1940105592

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FIGURES

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1. INTRODUCTION

Ramboll Americas Engineering Solutions, Inc. (Ramboll), on behalf of Bay Towel, Inc. (Bay Towel), has prepared this Site Investigation Work Plan ("Work Plan") to conduct a Wisconsin Administrative Code (WAC) Chapter (Ch.) NR 716 site investigation (SI) at the property located at 6415 28th Avenue in Kenosha County, Kenosha, Wisconsin (the "site"). The proposed SI is in response to the Wisconsin Department of Natural Resources (WDNR) Responsible Party letter dated June 30, 2023, requiring the site to be investigated due to a reported release of contaminants that were discovered at the site during underground storage tank (UST) removal activities in 2016. The purpose of the SI is to evaluate the source(s) and extent of chlorinated volatile organic compounds (CVOCs) discovered during UST removal.

1.1 Site Location and Description

The site (1.12 acres; Parcel No. 01-122-01-161-019) is currently owned by Christopher Diakoumakos according to the Kenosha County geographic information system website[1]. Historically, most of the site was covered by buildings reportedly used as a dry cleaner and other light industrial uses dating back to 1919. The site is currently a vacant parcel. The site is zoned as light manufacturing and is located in the southwest quarter of the northeast quarter of Section 1, Township 1 North, Range 22 East of the public land survey system (Wisconsin Transverse Mercator coordinates X=696499.60332, Y=236041.59831). A site location map is provided in Figure 1. The site is bordered by 64th Street to the north, a vacant parcel to the east, a residential property to the south, and 28th Avenue to the west.

1.2 Involved Parties

The following parties are involved with the site:

Responsible Party (RP):	Mr. John Butz[2] 2580 South Broadway Green Bay, WI 54307
Regulatory Agency/Project Manager:	WDNR Mr. Joseph Martinez 1027 West St. Paul Avenue Milwaukee, WI 53232 Phone: (414) 218-6042
Environmental Consultant:	Ramboll Americas Engineering Solutions, Inc. Mr. Richard Mazurkiewicz – Project Manager Ms. Jeanne Tarvin – Project Owner 234 West Florida Street, Fifth Floor Milwaukee, WI 53204 Phone: (262) 901-3502

The following primary subcontractors will provide services during the site investigation:

Driller:	On-Site Environmental Services, Inc. P.O. Box 280 Sun Prairie, WI 53590

[1] https://mapping.kenoshacountywi.gov/InteractiveMapping/?page=Page&views=Layers

[2] Mr. Christopher Diakoumakos 12315 60th Street Kenosha, WI 53144 is also listed as the RP on the WDNR BRRTS website.

	Phone: (608) 837-8992
Laboratory:	Pace Analytical Services, LLC 1241 Bellevue Street, Suite 9 Green Bay, WI 54302 Phone: (920) 469-2436

Note that although Mr. John Butz[3] is named as an RP, the site was historically used for dry cleaning services for decades before Bay Towel's purchase and Bay Towel is not solely responsible for the discovered impacts. However, Bay Towel is working in good faith with the WDNR and is initiating the site investigation activities described herein.

1.3 Background

On February 17, 2016, AECOM Technical Services, Inc. (AECOM) was retained by the City of Kenosha to provide limited site assessment activities associated with the closure and removal of three USTs at the site. The results of the limited assessment were documented in AECOM's March 2016 Limited Site Assessment for Underground Storage Tank Closure report (the "March 2016 report").

The March 2016 report states that three USTs were registered to the site in 1988, according to the Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP) UST database as follows:

- One 1,000-gallon leaded gasoline UST;
- One 2,000-gallon UST (contents unknown); and
- One 8,000-gallon fuel oil UST.

The 1,000 and 2,000-gallon USTs were listed on the DATCP database as removed and were not observed during the February 2016 UST removal and preceding building razing activities conducted in early February 2016. During building demolition activities in early February 2016, the site contractor uncovered three USTs. Two of these USTs were identified as unregistered USTs (one 300-gallon steel tank and one 550-gallon steel tank). The third tank, the registered 8,000-gallon UST, which had not been removed as reported in the DATCP database, was observed to be present on site and had been closed in place and filled with concrete.

The March 2016 report documented the removal of the 8,000-gallon fuel oil UST, one 550-gallon UST (contents unknown), and one 300-gallon UST (contents unknown). Soil samples were collected for volatile organic compound (VOC) analysis post-UST removal. Although there were no laboratory detections of petroleum-related VOCs in the soil samples collected, CVOCs were detected in the soil samples collected in the areas of the former USTs.

On April 15, 2016, the WDNR was notified of the assessment results that documented CVOCs (cis-1,2-dichloroethene [cis-1,2-DCE], tetrachloroethene [PCE], and trichloroethylene [TCE]) with one or more constituents above the WAC Ch. NR 720 Residual Contaminant Levels (RCLs)[4]. Subsequently, the WDNR assigned the Bureau for Remediation and Redevelopment Tracking System (BRRTS) No. 02-30-577102 to the site.

On August 22, 2023, the WDNR sent letters to five property owners (Figure 2) requesting access to investigate potential vapor intrusion of chlorinated compounds (including PCE and TCE) near the site. Two

[3] Bay Towel bought the property in 1980. The current property owner, Christopher Diakoumakos, bought the site in XXX.

[4] Cis-1,2-DCE, PCE, and TCE concentrations above WAC Ch. NR 720 groundwater protection pathway RCLs.

of the properties are located (6501 and 6505 28th Avenue) immediately south of the site, two properties are located (6605 and 6607 28th Avenue) near the Citgo retail gasoline station (BRRTS No. 03-30-002417, located at 2710 Roosevelt Road), and a letter was sent to the Citgo station. In their request for access to these properties, the WDNR proposed to collect sub-slab vapor samples from beneath the buildings and sample indoor air at each property to determine if the contamination reported at the site may be impacting buildings in the vicinity of the site. Note that the WDNR also identified the Citgo property as a potential source of CVOCs in the area.

Based on a review of the BRRTS file for the site, groundwater quality has not been evaluated to determine if groundwater has been adversely affected by CVOCs either on or off-site. To date, only soil samples were collected (post-UST removal) by AECOM in 2016, documenting CVOCs in the side wall and excavation bottom soil samples. As such, the site does not need to be investigated for petroleum-related compounds or metals including lead, semi-volatile organic compounds (SVOCs), or total petroleum hydrocarbons. Given the site is vacant, there is no vapor intrusion risk on site. The Citgo property (former Clark Station 1602) is listed as a BRRTS site (No. 03-30-002417) related to petroleum and CVOCs in soil and groundwater. Although CVOCs were detected in two monitoring wells located in the southwest portion of the Citgo station property in 2015, monitoring wells on the northern portion of the Citgo station (between the site and the impacted wells) were non-detect for CVOCs in 2015 suggesting that CVOC impacts on the two sites may not be related. It does not appear that additional groundwater sampling has been conducted at the Citgo station since 2015, based on WDNR's BRRTS online website. Groundwater flow on the Citgo station is to the southeast (Bartley, 2015). There are no other BRRTS activities/releases listed for the site on the BRRTS online database.

On November 9-10, 2023, The Sigma Group, Inc. (Sigma) deployed 10-day passive sampling devices in sanitary manholes and the shallow subsurface at locations in the right-of-way adjacent to the site and south of 28th Avenue (WDNR, 2023). Maps showing the locations of the shallow soil gas samples and the sanitary sewer manholes along with a table of summarized vapor analytical results are provided in Attachment A (WDNR, 2023).

Elevated PCE concentrations between 765 (SSG_02) and 33,000 (SSG_05) micrograms per cubic meter (µg/m^3) were detected in vapor samples collected from sanitary sewers adjacent to the site. The WDNR residential[5] sanitary sewer gas screening limit is 1,400 µg/m^3. TCE was also detected in sanitary manhole vapor samples collected adjacent to the site at concentrations ranging between 155 (SSG_02) to 350 µg/m^3 SSG_05), which are above the WDNR residential screening limit of 70 µg/m^3. In addition, a soil gas sample (SG_19) collected adjacent to the site had a reported PCE concentration of 1,420 µg/m^3, which is above the Residential Vapor Risk Screening Level.

Sigma also collected two sub-slab soil vapor and two indoor air samples from one residential home located adjacent (south) of the site (6501 28th Avenue). The sampling results at 6501 28th Avenue showed a detection of PCE in one of the sub-slab soil vapor samples and detections of PCE and TCE in the indoor air samples, however, the concentrations were below the residential screening criteria. Tables summarizing the residential sub-slab soil and indoor air vapor sampling results are provided in Attachment A.

[5] Although the site is zoned as light manufacturing, there are residential homes located adjacent to the south, north (across 64th Street), west (across 28th Avenue), east (across a vacant lot and beyond 27th Avenue).

2. GEOLOGY AND HYDROGEOLOGY

2.1 Geology

A topographic map (Figure 1) illustrates the area topography and features near the site. The regional topography of Kenosha County consists of gently undulating plains composed of glacial till. The site is in a relatively level area at an elevation of approximately 623 feet above mean sea level that locally dips gently to the west.

The site lies in the former glaciated part of southeastern Wisconsin. According to the United States Department of Agriculture Web Soil Survey, the surficial geology in the vicinity of the site consists of deposits of silty loam. The Pella silt loam originates from silty glaciofluvial deposits over calcareous lacustrine deposits and/or calcareous loamy till that forms at 0 to 2 percent slopes. The depth of the bedrock in the area is approximately 120 to 137 feet deep, based on nearby[6] potable well logs (8HV797 and 8HX125) reviewed on WDNR's *Well Construction Reports* website[7]. The bedrock beneath the site is Silurian dolomite (M.E. Ostrom, 1982).

2.2 Hydrogeology

The depth to groundwater is expected to range from 8 to 11 feet below ground surface (bgs), based on the observed depth of groundwater in the UST excavation noted in the March 2016 report and the 2015 measured groundwater depths stated in the latest groundwater monitoring report (Bartley, 2015) for the current Citgo Station listed in the WDNR's online BRRTS database. Locally, shallow groundwater flow at the site is anticipated to be to the west, based on the local topography. Regional groundwater flow is likely towards Lake Michigan, which is approximately 1.5 miles to the east of the site.

[6] Located approximately 1,260 feet to the east (8HV797) and 2,800 feet to the west (8HX125) of the site.

[7] https://wi-dnr.maps.arcgis.com/apps/LocalPerspective/index.html?appid=0cc1b8d9c40749ba9b9e5c2c90848e23.

3. INVESTIGATION ACTIVITIES AND SAMPLING RATIONALE

The following scope of services is intended to evaluate the nature and extent of CVOC impacts at the former Werner's Cleaners site. Figure 3 illustrates the site layout features and proposed SI boring locations. Given that groundwater quality has not been evaluated on-site and there is no evidence to support off-site migration of CVOCs from the site to the Citgo property, Ramboll proposes that the SI approach should be to first evaluate the soil and groundwater quality on-site to determine if impacted groundwater has migrated off-site and in what direction. Following this initial investigation approach, additional investigation may be required to define the magnitude and extent of potential soil and groundwater migration depending on the results of this initial site investigation.

Five soil borings (MW-1 through MW-5) will be advanced within the boundary of the former Werner's Cleaners site; one (MW-1) at the previously identified CVOC soil source area where the PCE soil impacts were reported during the site assessment in 2016 and four (MW-2 through MW-5) additional borings in the four cardinal directions around the documented impacts at the site (for delineation purposes). Soil samples will be collected from the interval of 0 to 4 feet below bgs, to evaluate contaminant concentrations within the shallow direct contact zone, and from the interval exhibiting the highest indication of field impact (to evaluate the nature and extent of impacts). Soil samples will be collected for laboratory analyses for VOCs.

After the collection of the soil samples, a WAC Ch. NR 141-compliant groundwater monitoring well will be constructed at each soil boring location to collect groundwater samples for evaluation of potential groundwater impacts at the site and to determine groundwater flow direction. The monitoring wells will be sampled for VOCs. Based on the soil and groundwater sample results from the on-site investigations, Ramboll will evaluate the potential for contaminant vapor migration from soil or groundwater into the adjacent subsurface utilities as well as onto the adjacent off-site properties following WDNR guidance *[Documenting the Investigation of Human-Made Preferential Pathways Including Utility Corridors (RR-649)* and *Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin, January 2018 (RR-800)]*. Ramboll will provide recommendations for further vapor intrusion evaluation and/or investigation as necessary. Ramboll will utilize the proper procedures and sample handling practices that are appropriate for soil and groundwater VOC sample collection. The proposed SI activities are discussed in further detail in the following sections.

3.1 Emerging Contaminants

The potential for per and -polyfluoroalkyl substances (PFAS) will be evaluated based on available information on the type of dry-cleaning operations conducted on-site and the results of this initial site investigation. Ramboll will attempt to obtain information about the type of dry cleaning that was conducted on-site. We are not recommending testing for PFAS at this time as the WDNR has no current standards related to PFAS except for direct contact RCLs for perfluorooctanoic acid (PFOA) and perfluoro-1-octanesulfonic acid (PFOS) in soil.

The potential for emerging contaminant 1,4-dioxane will be evaluated upon receipt of the laboratory analytical results to determine if 1,1,1-trichloroethane[8] is present in the soil and/or groundwater samples collected from the site. Note that 1,1,1-trichloroethane was not reported as being detected in soil in AECOM's March 2016 UST site assessment. If 1,1,1-trichloroethane is detected in samples collected during the SI activities at the site, 1,4-dioxane will be included in the sample analysis from

[8] 1,4-dioxane was often used as a stabilizer for chlorinated solvent 1,1,1-trichloroethane.

subsequent groundwater sampling events to determine if this emerging contaminant is present above WAC Ch. NR 140 Groundwater Standards.

3.2 Soil Sampling

Before implementing the field activities, Ramboll will prepare a site-specific Health and Safety Plan (HASP) to address health and safety issues related to the proposed field activities according to the Occupational Safety and Health Administration 29 Code of Federal Regulations 1926.20. Ramboll will review the site-specific HASP with all field personnel before commencing the field activities. A private utility locator (using ground penetrating radar and/or electromagnetic techniques) will clear all boring locations before commencing any drilling activities (the subcontracted driller will also perform a public utility locate).

Ramboll proposes to advance five soil borings (MW-1 through MW-5) using a direct push probe. All the soil borings will be advanced to an approximate depth of 15 to 20 feet bgs, based on the expected depth to groundwater (approximately 11 feet bgs). Soils will be continuously collected from polyvinyl chloride (PVC) liners held inside 5-foot long, 2-inch diameter stainless steel samplers. Soil characteristics will be recorded in the field and each direct-push soil core sample will be screened for total VOCs using a photoionization detector (PID) equipped with an 11.7 electron volt (eV) lamp[9]. The PID will be field zeroed and calibrated using 100 parts per million (ppm) isobutylene span gas in air and will be "bump tested" between each screening event for proper response according to the manufacturer's instructions. The PID readings, recorded as "Instrument Units," will be equivalent to parts per million, based on lamp energy and instrument calibration. The soil characteristics, PID readings, and any evidence of contamination will be recorded on the boring logs. Up to two vadose zone soil samples will be collected from each boring, one soil sample will be collected from the direct contact zone (approximately 0 to 4 feet bgs) and a second soil sample will be collected from the depth interval exhibiting the greatest evidence of impacts. If no appreciable impact is detected, then the soil sample will be collected from the depth interval just above the apparent groundwater table or from the boring terminus if groundwater is not encountered.

The soil samples to be analyzed in the laboratory for VOCs will consist of 10 grams of sample placed directly into a pre-weighed 40-milliliter (mL) vial containing 10 mL purge and trap grade methanol with a Teflon®-lined septa screw cap, consistent with EPA SW-846 Method 8260B. All of the sample containers will be securely sealed and labeled with the sample identification, date of collection, and intended analysis. The sample containers will be placed in resealable plastic bags and stored on ice in an insulated cooler. A laboratory-provided trip blank will accompany the samples inside the sample cooler to the laboratory. All soil samples (and the trip blank) will be submitted under chain of custody to a Wisconsin-certified laboratory and analyzed for VOCs using EPA SW-846 Method 8260B.

3.3 Groundwater Monitoring Well Construction and Sampling

Borings MW-1 through MW-5 will be completed as WAC Ch. NR 141 groundwater monitoring wells (2-inch diameter Schedule 40 PVC, 10 feet of factory-cut 0.010-inch slot size screen, with steel stick-up well pipe compartments). Monitoring wells MW-1 through MW-5 will be developed following WAC Ch. NR 141 after installation to re-establish the natural hydraulic flow conditions of the formations that were disturbed by the well installation and construction activities.

Before well purging and sampling, depth to groundwater and total well depth measurements (in all five wells) will be made using an electronic water level sensor (accuracy 0.01 foot). The wells will be

[9] Ionization potentials of CVOCs PCE is 9.32, TCE 9.5, and cis-1,2-dichloroethene 9.7 (Advanced Industrial Chemistry Corporation website, http://www.gcsrus.com/pdf/ionization_pot.pdf).

opened and allowed to equilibrate (15 to 20 minutes) before taking the groundwater elevation measurements. Following the collection of depth-to-groundwater measurements, the monitoring wells will be purged via low-flow groundwater sampling using a variable speed positive pressure bladder pump with polyethylene tubing and a multiparameter sonde. New pump tubing will be used for each well to prevent cross-contamination. Field measurements of water quality parameters, including temperature, dissolved oxygen (DO), power of hydrogen (pH), specific conductivity, oxidation-reduction potential (ORP), and turbidity will be recorded and stored in a tablet computer. The readings will be taken every 3 minutes during well purging before the collection of groundwater samples. The groundwater samples will be collected (directly from the pump tubing) upon stabilization of the groundwater quality parameters, which typically occurs when three consecutive readings that do not vary more than plus or minus 10 percent for turbidity and DO, plus or minus 3 percent for conductivity and temperature, plus or minus 10 microvolts for ORP, and plus or minus 0.1 for pH.

The groundwater samples to be analyzed in the laboratory for VOCs will consist of three 40-mL vials filled with no headspace. Each vial will have a laboratory-provided measure of hydrochloric acid preservative to reduce the pH value to less than 2. The vials will be closed with Teflon® septa screw caps. All of the sample containers will be securely sealed, and labeled with the sample identification, date of collection, and intended analysis. The sample containers will be placed in resealable plastic bags and stored on ice in an insulated container. A laboratory-provided trip blank will accompany the samples inside the sample container to the laboratory. All the water samples will be submitted under chain of custody to a Wisconsin-certified laboratory and analyzed for VOCs (EPA Method 8260B).

The groundwater sampling water level indicator and pump will be decontaminated between each sampling location using a non-phosphate detergent solution and triple-rinsed with potable water. New single-use polyethylene tubing or bailers (if required) will be utilized for sample collection for each well location. A new pair of nitrile gloves will be used during the collection of each sample to prevent cross-contamination.

3.4 Laboratory Quality Assurance/Quality Control Methods

Soil and groundwater samples will be collected following Sections 3.2 and 3.3 of this Work Plan. Sample chain-of-custody will be documented from the time of sample collection to the receipt of the sample by the analytical laboratory. Chain-of-custody documentation will comply with WAC Ch. NR 149, and will be submitted to the WDNR with the sample results.

After sample collection, each sample container will be labeled with the sample location identification, date of sample collection, and intended analysis. One replicate sample will be collected for every 10 or fewer groundwater samples and one trip blank will accompany each shipping container that contains volatile samples. The sample containers will be packed in laboratory-provided packaging and shipped on ice under chain-of-custody to the laboratory via overnight courier. A Wisconsin-certified laboratory will perform the analysis and will provide the results in a Data Level II reporting package.

3.5 Monitoring Well Elevation Survey

Ground and well-casing elevations for monitoring wells MW-1 through MW-5 will be surveyed by Ramboll personnel using an RTK GPS-Trimble GeoXH #5 (Model 7x) handheld receiver[10] to aid in the determination of groundwater flow direction and assessment of groundwater contaminant movement and distribution. The survey measurements will be verified in the field. The elevations will be referenced to an established benchmark using the National Geodetic Vertical Datum of 1988. The soil

[10] Horizontal 3 millimeters [mm] + 0.5 ppm root mean square [RMS]; vertical 3.5 mm + 0.5 ppm RMS.

boring/well locations will also be referenced to the NAD83 Wisconsin South State Plane Coordinate System in US feet. The survey data will be incorporated into the SI Report, as appropriate.

3.6 Screening for Vapors in Subsurface Utilities

Ramboll will screen all the accessible subsurface utility access points (i.e., catch basins, manholes, etc.) for vapors using a PID equipped[11] with an 11.7 eV lamp to determine if CVOC vapors are present and acting as a potential vapor migration pathway. Ramboll will confirm and assess utility locations in the field and add them to the site layout figure as appropriate. The PID will be field zeroed and calibrated using 100 ppm isobutylene span gas in air and will be "bump tested" between each screening event for proper response according to the manufacturer's instructions. The PID readings will be documented in the field and evaluated in conjunction with the groundwater analytical results and site characteristics to assess if further investigation and/or sampling within any of the utilities adjacent to the site is warranted.

The utility depth, top of flow line (noting if water is in utility), and utility invert bottom will be measured at each access point. The total utility depth and liquid surface depth will be noted using a water level indicator with measurements referenced from the ground surface. A length of tubing with low chemisorption (Teflon®, Nylaflow®, or similar) will be lowered into the utility access point and PID readings will be collected from the flow line (bottom), invert bottom, and at the utility cover rim (top). The readings will be taken after letting the PID run for 30 seconds to allow for purging of the sample tubing[12]. The sample tubing will be reused for each utility location unless the PID cannot achieve a premeasurement zero reading, upon which a new length of tubing will be used. Most of the utility access points at the site are "open" catch basins. Sanitary sewer manhole covers will be lifted using the "pick hole" just enough to measure depths and to allow for insertion of the sample tubing and not opened fully to affect the ambient air conditions inside the measured utility vault.

The vapor screening data will be evaluated to determine if volatile organic vapor is present within the utilities and if future vapor sampling to quantify CVOC vapor concentrations is warranted. The data obtained from the screened utility access points will be presented in the SI Report.

3.7 Sanitary Sewer Vapor Sampling

Ramboll will contact the City of Kenosha Public Works Department to obtain any plans/documentation they have related to the sanitary sewer including location, depth, etc. We will also request access to the sanitary sewer manholes for the collection of vapor samples to delineate the residential sanitary sewer screening levels impacts identified in Sigma's December 2023 sanitary sewer vapor investigation. Ramboll will collect a total of four sanitary vapor samples (one each to the west and north of the intersection of 64th Street and 28th Avenue and north and east of the intersection of 64th Street and 27th Avenue, see Figure 4). In addition, Ramboll will collect one storm sewer vapor sample from the manhole access immediately adjacent to the west boundary of the site (Figure 4) to assess potential vapor impacts to the adjacent storm sewer utility.

Sanitary and storm sewer sampling will consist of 10-day time-weighted average concentration passive sorbent monitoring, as described in the WDNR's 2023 Issues & Trends Vapor Intrusion Update. The utility depths will be gauged and screened with a PID as described in Section 3.6. The passive samplers will be placed approximately 12 inches above the top of the flow line. Ramboll will

[11] The PID readings, recorded as "Instrument Units," will be equivalent to parts per million, based on lamp energy and instrument calibration.

[12] Allows for purging approximately 40 feet of 0.19-inch inner diameter ¼-inch tubing at a rate of 450 centimeters per minute [MiniRae 3000 pump rate]).

use Waterloo Membrane Samplers-Solvent Extraction™ (WMS-SE™), which is a preferred sampler for a potentially wet environment (underground utilities). The WMS-SE™ samplers will be analyzed by passive solvent extraction (carbon disulfide) using Modified USEPA Method TO-17, for analysis of PCE and its degradation products TCE, *cis*-1,2-dichloroethylene, *trans*-1,2-dichloroethylene, and vinyl chloride. The passive vapor samples will be sent under chain of custody to a WDNR-accredited laboratory for analysis.

3.8 Subsurface Survey for Potential Sanitary Sewer Laterals On-site

Ramboll will inquire with the property owner regarding the demolition of the building and the status of the sanitary laterals to verify if they were removed and/or properly sealed at the site or demolition boundary. If the property owner cannot verify the removal and/or sealing of the sanitary sewer laterals, Ramboll will employ a subcontractor to perform a geophysical survey to determine if a sanitary sewer lateral remains on-site.

Ramboll will oversee a private utility locator who will perform a geophysical survey to search for potential sanitary sewer lateral lines on the site. The locators will utilize ground penetrating radio detecting and ranging locating equipment to determine the absence or presence of sanitary sewer laterals at the site. The locator will scan the area within and around the former building and where sanitary sewers are marked adjacent to the site during the public utility clearance.

If evidence of sanitary laterals is identified during the geophysical survey, further investigation, cleaning, and removal (if required) will be recommended including potential potholing or air knife investigation to confirm and access the sanitary laterals if present. The scope of work and cost for this task (further sanitary sewer lateral investigation, cleaning, and removal) will be provided under a separate proposal if this task is necessary based on the results of the geophysical survey.

3.9 Investigation-Derived Waste

Soil and groundwater generated during the field investigation will be placed into properly labeled 55-gallon Department of Transportation-approved drums, secured, and temporarily stored on-site for pickup and disposal at an approved waste facility. A sample of the soil from the drums will be collected for waste characterization (toxicity characteristic leaching procedure VOCs and paint filter) to facilitate disposal of the waste at a licensed disposal facility.

4. REPORTING

Ramboll will prepare a WAC Ch. NR 716 SI Report following the completion of the SI activities, which includes delineating the nature and extent of the soil, groundwater, and/or vapor impacts at the site. The SI Report will include the SI purpose and objectives, a site description, site history, a description of the site geology and hydrogeology, field sampling and analysis methodology, contaminant assessment, site contaminant characterization, human health and environmental risk screening assessment, data interpretations, necessary visual aids, tabulated data, and Ramboll's recommendations for completing the next steps in the site closure process. The SI Report will be submitted to the WDNR with a review fee. In addition, all laboratory results will be submitted to the WDNR within 10 days of receipt of the analytical data following WAC Ch. NR 716.14(2).

5. SCHEDULE

Ramboll will initiate the field activities after the WDNR approval of this Work Plan (the WDNR is given 60 days to respond to the Work Plan.) The drilling schedule is dependent on driller availability. Groundwater sampling will be approximately 1 week after monitoring well installation and well development. The SI Report will be submitted to the agency within 60 days after completion of the SI activities and receipt of all corresponding laboratory analytical results.

6. REFERENCES

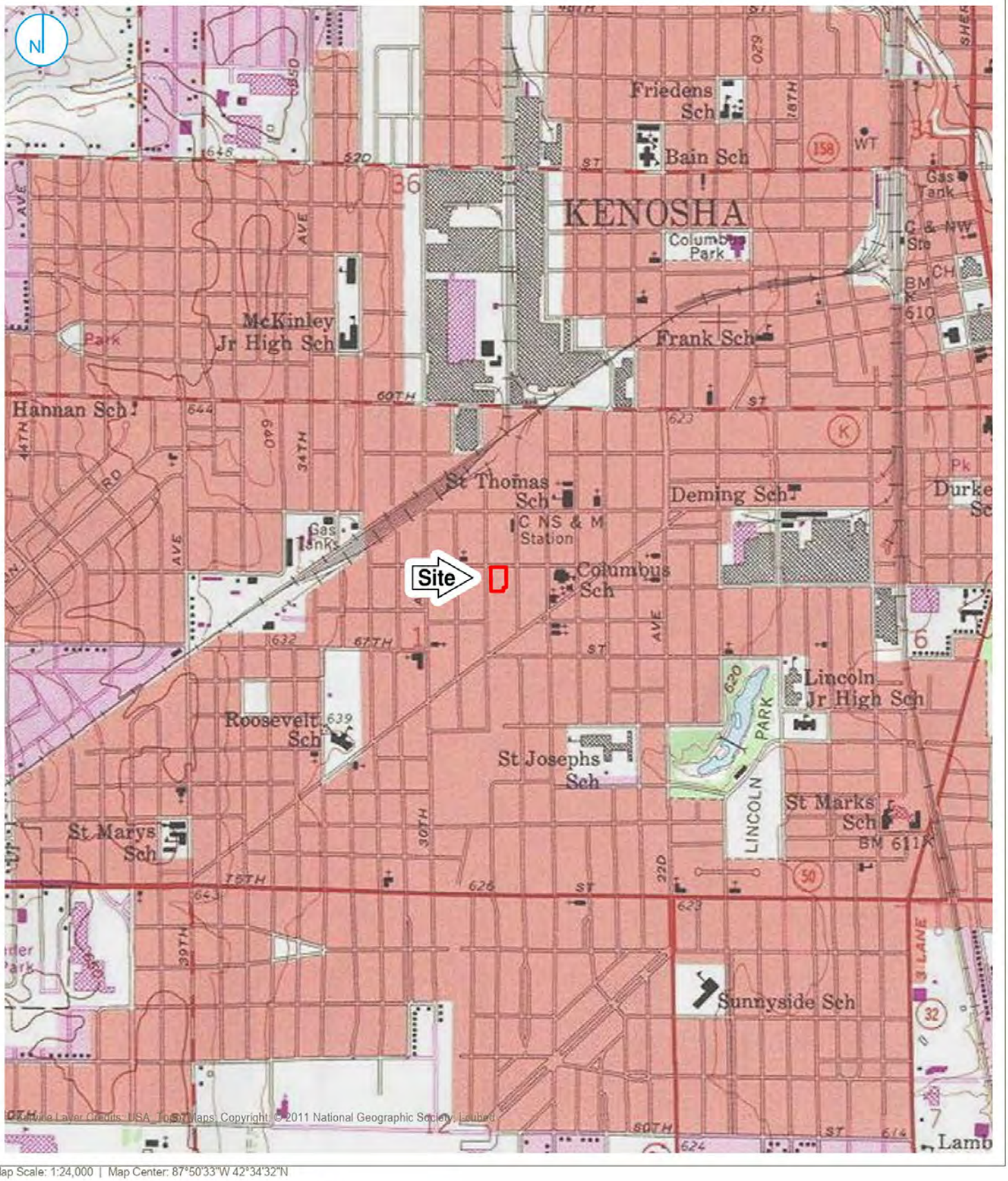
Jason E. Bartley, ReadEarth Consulting, Inc. *Results Letter Report No. 1*. February 19, 2015.

M.E. Ostrom, Bedrock Geology of Wisconsin, University of Wisconsin – Extension Geological and Natural History Survey. April 1981.

USDA Web Soil Survey, https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx, accessed December 7, 2023.

WDNR Bureau for Remediation and Redevelopment Tracking System (BRRTS), https://apps.dnr.wi.gov/botw/GetActivityDetail.do?dsn=577102&siteId=28765900&crumb=1, reviewed by Ramboll December 21, 2023.

FIGURES



PROJECT: 169000XXXX | DATED: 12/5/2023 | DESIGNER: CHURCHKE

C:\Users\ChurchKE\OneDrive - Ramboll\Documents\ArcGIS\Projects\WernersCleaners\WernersCleaners.aprx\Ramboll_ANSI_A_Site_Location

Map Scale: 1:24,000 | Map Center: 87°50'33"W 42°34'32"N

KEY MAP (not to scale)

PropertyBoundary

0 1,000 2,000 Feet

SITE LOCATION

Former Werner's Cleaners
6415 28th Ave., Kenosha, WI

FIGURE 1

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

RAMBOLL

RMAZURKIEWICZ 9/21/23 C:\USERS\RMAZURKIEWICZ\DESKTOP\CAD < SITE LAYOUT >

LEGEND

PROPERTY BOUNDARY (SITE)

PROPERTY BOUNDARY

(6415) PROPERTY ADDRESS

N

0 80

SCALE IN FEET

SOURCE:
AERIAL IMAGERY: Google™ earth. Image Date,09/18/2023
City of Kenosha GIS
Parcel Number 01-122-01-161-019
Property Owner Name: Christopher Diakoumakos per https://mapping.kenoshacountywi.gov/Interactive Mapping/?data_id=widget_93_output_config_0%3A0&page=Page&views=Layers.

SITE VICINITY

Former Werner's Cleaners
6415 28th Ave., Kenosha, WI

RAMBOLL

FIGURE
2

DRAFTED BY: RPM	DATE: 12/07/2023	PROJECT: 1940105592

RMAZURKIEWICZ 12/7/23 C:\USERS\RMAZURKIEWICZ\DESKTOP\FWC CAD < SITE LAYOUT >

LEGEND

PROPERTY BOUNDARY (APPROXIMATE)

FORMER DRY CLEANER UST LOCATIONS

FORMER DRY CLEANER BUILDING

PROPOSED GROUNDWATER MONITORING WELLS

ESTIMATED GROUNDWATER FLOW (BASED ON SITE/AREA TOPOLOGY)

SANITARY SEWER

STORM SEWER

CATCH BASIN

SANITARY ACCESS

Former Tank Information:
one 8,000-gallon fuel oil,
one 550-gallon contents unknown, and
one 300-gallon contents unknown bare steel underground storage tanks (USTs)
USTs removed February 17, 2016.

N

0 30
SCALE IN FEET

SOURCE:
AERIAL IMAGERY: Google™ earth. Image Date,09/18/2023
City of Kenosha GIS
Parcel Number 01-122-01-161-019
Property Owner Name: Christopher Diakoumakos per https://mapping.kenoshacountywi.gov/InteractiveMapping/?data_id=widget_93_output_config_0%3A0&page=Page&views=Layers.

SITE LAYOUT

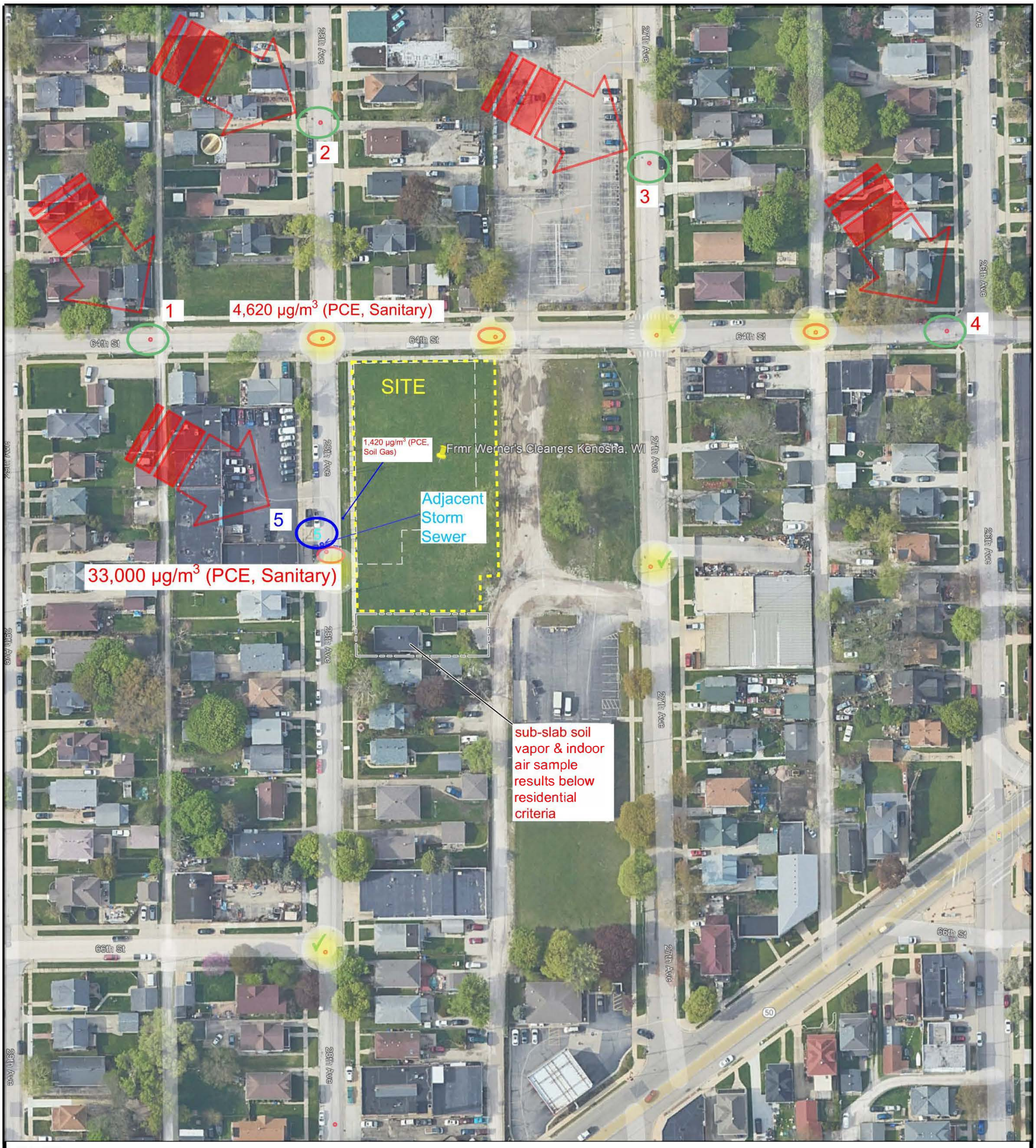
Former Werner's Cleaners
6415 28th Ave., Kenosha, WI

RAMBOLL

FIGURE
3

DRAFTED BY: RPM	DATE: 12/07/2023	PROJECT: 1940105592

RMAZURKIEWICZ 1/11/24 C:\USERS\RMAZURKIEWICZ\DESKTOP\FWC CAD < SITE LAYOUT >



LEGEND

- PROPERTY BOUNDARY (APPROXIMATE)
- FORMER BUILDING (APPROXIMATE)
- SIGMA DECEMBER 2023 SANITARY SEWER VAPOR SAMPLE LOCATION
- RESIDENTIAL SANITARY SEWER STANDARD EXCEEDANCES (PCE AND/OR TCE)
- √ SIGMA VAPOR SAMPLE BELOW RESIDENTIAL SANITARY SEWER STANDARDS
- 1 PROPOSED SEWER VAPOR IMPACT DELINEATION SAMPLE LOCATION
- 5 PROPOSED STORM SEWER VAPOR SAMPLE LOCATION

Former Tank Information (Site):
one 8,000-gallon fuel oil,
one 550-gallon contents unknown, and
one 300-gallon contents unknown bare steel underground storage tanks (USTs)
USTs removed February 17, 2016.

N

0 100
SCALE IN FEET

SOURCE:
AERIAL IMAGERY: Google™ earth. Image Date,09/18/2023
City of Kenosha GIS
Parcel Number 01-122-01-161-019
Property Owner Name: Christopher Diakoumakos per https://mapping.kenoshacountywi.gov/InteractiveMapping/?data_id=widget_93_output_config_0%3A0&page=Page&views=Layers.

PROPOSED SEWER SAMPLE LOCATIONS

Former Werner's Cleaners
6415 28th Ave., Kenosha, WI

RAMBOLL

FIGURE
4

DRAFTED BY: RPM	DATE: 01/17/2024	PROJECT: 1940105592

ATTACHMENT A

From Sigma Group, Vapor Sampling Results (December 13, 2023).

From Eurofins laboratory Report (December 11, 2023)

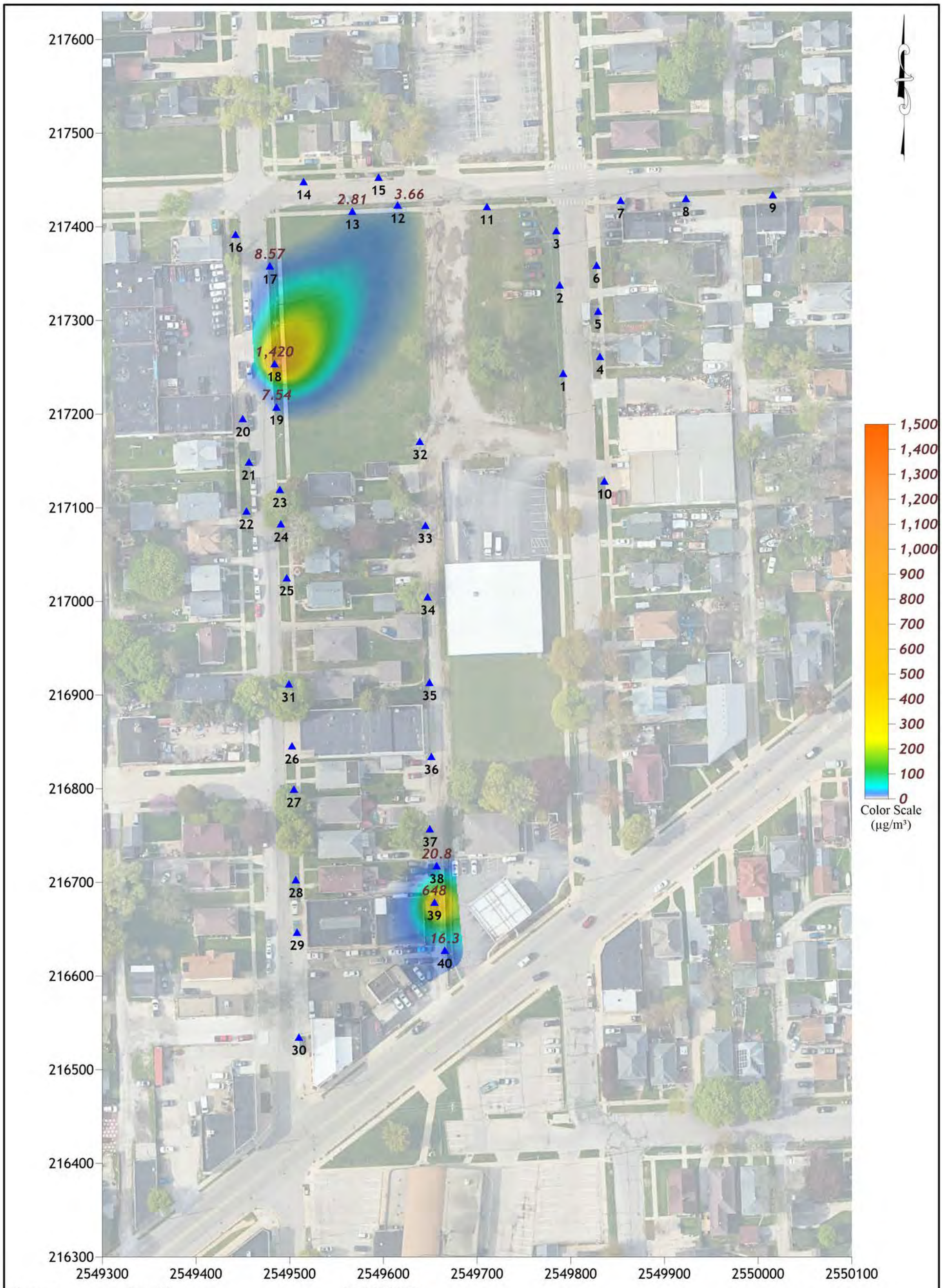


Table 1
Sub-slab Vapor Analytical Data
6501 28th Avenue
Werners Cleaners - 6415 28th Avenue, Kenosha, Wisconsin
Sigma Project No. 21985

Sample Type:		**Sub-slab Vapor Sample**		Residential Vapor Risk Screening Level [2] (AF=0.03)
Sample Identification:		06A_SSV_01_20231120	06A_SSV_01D_20231120	
Sample Date(s):		11/9/2023 - 11/20/2023		
Sampling/Analysis Method:		Beacon PSG Sampler/ EPA 8260C	WMS-VP	
Sample Duration (minutes):		15,770	15,800	
VOCs				
cis-1,2-Dichloroethene	µg/m^3	<1.20	<7	1,400
trans-1,2-Dichloroethene	µg/m^3	<1.44	<23	1,400
Tetrachloroethene (PCE)	µg/m^3	1.88	<2.4	1,400
Trichloroethene (TCE)	µg/m^3	<1.92	<3.8	70
Vinyl Chloride	µg/m^3	<0.78	<130	56

Notes:

1. Analytical units: µg/m^3 = micrograms per cubic meter

2. Residential Vapor Risk Screening Level = Risk-based concentrations based on VALs for **residential** air which has been adjusted with an **Attenuation Factor of 0.03** for the subslab vapor to ambient air pathway in a **residential** setting. VALs for residential indoor air based on WDNR publication RR-800 "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin" (dated January 2018) which in turn references EPA Region 3 Risk-Based Concentrations for residential air [Regional Screening Level (RSL) Summary Table (TR=1E-06, HQ=1) May 2023] and residential air in August 2023 "Wisconsin Vapor Quick Look-Up Table, Indoor Air Vapor Action Levels And Vapor Risk Screening Levels" publication RR-0136. VAL adjusted to 1-in-100,000 increase in lifetime cancer risk for carcinogens per WDNR publication RR-800; VAL is not adjusted for non-carcinogens (i.e., hazard index = 1).

5. NA = not analyzed

6. Laboratory flags:

7. Exceedances:
   - **BOLD** = concentration greater than residential Vapor Risk Screening Level
   - [ ] = concentration greater than small commercial Vapor Risk Screening Level
   - { } = concentration greater than large commercial / industrial Vapor Risk Screening Level

Data entered / updated by: RJA Date: 12/13/2023

Data checked by: SRM Date: 12/13/2023

Table 2
Indoor Air Analytical Data
6501 28th Avenue
Werners Cleaners VIZC - 6415 28th Avenue, Kenosha, Wisconsin
Sigma Project No. 21985

Sample Type:		Indoor Air Samples				VAL for Residential Indoor Air [2]
Sample Identification:		06A_IAB_01_20231120		06A_IA1_01_20231120		
Sample Date(s):		11/9/2023-11/20/2023		11/9/2023-11/20/2023		
Sampling/Analysis Method:		Beacon Chlorosorber Sampler/ TO-17	Radiello 130/ Modified TO-17	Beacon Chlorosorber Sampler/ TO-17	Radiello 130/ Modified TO-17	
Sample Duration (minutes):		15760		15740		
VOCs						
cis-1,2-Dichloroethene	µg/m^3	<0.0453	<0.1	<0.0454	<0.1	42
trans-1,2-Dichloroethene	µg/m^3	<0.0453	<0.21	<0.0454	<0.21	42
Tetrachloroethene (PCE)	µg/m^3	0.194	0.12	0.196	<0.11	42
Trichloroethene (TCE)	µg/m^3	0.0791 J	<0.092	0.0831 J	<0.092	2.1
Vinyl Chloride	µg/m^3	<0.0567	NA	<0.0567	NA	1.7

Notes:

1. Analytical units: µg/m^3 = micrograms per cubic meter

2. VAL for Residential Indoor Air = Vapor Action Level described in WDNR publication RR-800 "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin" (dated January 2018) which in turn references EPA Region 3 Risk-Based Concentrations for **residential** air [Regional Screening Level (RSL) Summary Table (TR=1E-06, HQ=1) May 2023] and **residential** air in August 2023 "Wisconsin Vapor Quick Look-Up Table, Indoor Air Vapor Action Levels And Vapor Risk Screening Levels" publication RR-0136. VAL adjusted to 1-in-100,000 increase in lifetime cancer risk for carcinogens per WDNR publication RR-800; VAL is not adjusted for non-carcinogens (i.e., hazard index = 1).

5. NA = not analyzed

6. Laboratory flags: J = Value reported below limit of quantitation (LOQ)

7. Exceedances: **BOLD** = concentration greater than residential Vapor Action Level
[ ] = concentration greater than small commercial Vapor Action Level
{ } = concentration greater than large commercial / industrial Vapor Action Level

Data entered / updated by: RJA Date: 12/12/2023

Data checked by: SRM Date: 1212/23

From Sigma Group, Vapor Sampling Results (December 13, 2023).

Table 3
Sanitary Sewer Gas Analytical Results
Werners Cleaners VIZC - 6415 28th Avenue, Kenosha, Wisconsin
Sigma Project No. 21985

Sample Type:		Sewer Gas Samples										Residential Sanitary Sewer Gas Screening Level [2] (AF=0.03)	Commercial/Industrial Sanitary Sewer Gas Screening Level [3] (AF = 0.03)
Sample Identification:		06R_SSG_01_20231120	06R_SSG_02_20231120	06R_SSG_03_20231120	06R_SSG_03D_20231120	06R_SSG_04_20231120	06R_SSG_05_20231120	06R_SSG_05D_20231120	06R_SSG_06_20231120	06R_SSG_06D_20231120	06R_SSG_07_20231120		
Sample Date(s):		11/9/2023-11/20/2023	11/9/2023-11/20/2023	11/9/2023-11/20/2023	11/9/2023 - 11/20/2023	11/9/2023-11/20/2023	11/9/2023-11/20/2023	11/9/2023-11/20/2023	11/9/2023-11/20/2023	11/9/2023-11/20/2023	11/9/2023-11/20/2023		
Sampling/Analysis Method:		Beacon Passive Sampler/TO-17	Beacon Passive Sampler/TO-17	Beacon Passive Sampler/TO-17	WMS SE/TO-17	Beacon Passive Sampler/TO-17	Beacon Passive Sampler/TO-17	WMS SE/TO-17	Beacon Passive Sampler/TO-17	WMS SE/TO-17	Beacon Passive Sampler/TO-17		
Sample Duration:		15800	15771	15757	15753	15739	15596	15596	15582	15582	15548		
VOCs													
Benzene	µg/m³	1.48 J	<1.21	1.21 J	<5.8	1.43 J	1.65 J	<5.8	17.3	<5.8	1.77 J	120	520
2-Butanone (MEK)	µg/m³	NA	NA	NA	<4.2	NA	NA	<4.3	NA	<4.3	NA	173,333	733,333
Carbon Tetrachloride	µg/m³	<0.743	<0.744	<0.745	<1.8	<0.746	<0.752	3.3	<0.753	<1.8	<0.755	160	680
Chlorobenzene	µg/m³	<0.376	<0.376	<0.377	<0.88	<0.377	<0.381	<0.89	<0.381	<0.89	<0.382	1,733	7,333
Chloromethane	µg/m³	NA	NA	NA	<10	NA	NA	<11	NA	<11	NA	3,133	13,000
Chloroform	µg/m³	**44.2**	8.26	**50.6**	19	**92.7**	13	16	1.99	6.4	4.56	41	180
Cyclohexane	µg/m³	NA	NA	NA	<1.6	NA	NA	<1.6	NA	<1.6	NA	210,000	866,666
1,2-Dibromoethane (EDB)	µg/m³	<0.819	<0.820	<0.821	NA	<0.822	<0.830	NA	<0.830	NA	<0.832	1.567	6.7
1,2-Dichlorobenzene	µg/m³	<0.426	<0.427	<0.427	<0.39	<0.427	<0.431	<0.39	<0.432	<0.39	<0.433	7,000	29,333
1,3-Dichlorobenzene	µg/m³	<0.426	<0.427	<0.427	<0.43	<0.427	<0.431	<0.44	<0.432	<0.44	<0.433	NS	NS
1,4-Dichlorobenzene	µg/m³	27.3	5.73	5.2	<0.43	17.6	1.97	2.4	<0.432	<0.43	<0.433	87	367
1,1-Dichloroethane	µg/m³	<0.376	<0.376	<0.377	<2.0	<0.377	<0.381	<2	<0.381	<2	<0.382	590	2,600
1,2-Dichloroethane	µg/m³	<0.570	<0.571	<0.572	<1.4	<0.572	<0.578	<1.4	<0.578	<1.4	<0.580	36	160
1,1-Dichloroethene	µg/m³	1.76 J	<0.970	<0.970	<9.1	<0.972	14.6	<2	<0.981	<9.2	<0.983	7,000	29,000
cis-1,2-Dichloroethene	µg/m³	402	107	102	90	179	60	32	5.32	74	<0.612	1,400	5,800
trans-1,2-Dichloroethene	µg/m³	109	19.5	18.2	<4	34.5	22.6	11	1.33 J	<4	<0.738	1,400	5,800
1,4-Dioxane	µg/m³	<0.779	<0.780	4.88	NA	<0.782	<0.789	NA	**201 D**	NA	<0.792	187	833
Ethylbenzene	µg/m³	1.01 J	<0.753	<0.753	<0.76	<0.754	1.41 J	2.6	<0.762	2.6	<0.764	370	1,600
Heptane	µg/m³	NA	NA	NA	1.7	NA	NA	<1.5	NA	<1.5	NA	14,000	60,000
Hexane	µg/m³	NA	NA	NA	<8.5	NA	NA	<8.5	NA	<8.6	NA	24,333	103,333
Isopropylbenzene	µg/m³	<0.770	<0.771	<0.772	NA	<0.773	<0.780	NA	<0.780	NA	<0.782	NS	NS
4-Methyl-2-pentanone (MIBK)	µg/m³	NA	NA	NA	<2.5	NA	NA	<2.6	NA	<2.6	NA	103,333	433,333
Methylene Chloride	µg/m³	9.43	3.83	5.08	NA	12.3	3.69	NA	<0.925	NA	10	21,000	88,000
2-Methylnaphthalene	µg/m³	1.55 J	0.536 J	<0.421	NA	0.929 J	<0.426	NA	<0.426	NA	<0.427	NS	NS
Methyl-tert-butyl ether	µg/m³	<1.28	<1.28	<1.28	<2	<1.28	<1.29	<2	<1.30	<2	<1.30	3,600	16,000
Naphthalene	µg/m³	1.30 J	<0.400	<0.400	<0.72	0.64 J	0.481 J	<0.73	<0.405	<0.73	<0.406	28	120
Propylbenzene	µg/m³	NA	NA	NA	<0.56	NA	NA	<0.56	NA	<0.56	NA	33,333	146,666
Styrene	µg/m³	NA	NA	NA	0.7	NA	NA	<0.71	NA	<0.71	NA	33333	146,666
1,1,2,2-Tetrachloroethane	µg/m³	0.986 J	<0.780	<0.781	<0.70	<0.782	<0.789	<0.71	<0.790	<0.71	<0.792	16	70
Tetrachloroethene (PCE)	µg/m³	**4,620 D**	765	545	990	714	**[22,600 D]**	**[33,000]**	41.5	230	11.5	1,400	5,800
Toluene	µg/m³	17.1	3.88 J	4.9	8.4	12	5.3	7.8	<1.62	9.9	3.18 J	170,000	730,000
1,2,3-Trichlorobenzene	µg/m³	<0.819	<0.820	<0.821	NA	<0.822	<0.830	NA	<0.830	NA	<0.832	NS	NS
1,2,4-Trichlorobenzene	µg/m³	<0.819	<0.820	<0.821	NA	<0.822	<0.830	NA	<0.830	NA	<0.832	70	293
1,1,1-Trichloroethane	µg/m³	<0.304	<0.305	<0.305	<2.1	<0.305	0.635	3.1	<0.308	<2.1	0.465 J	170,000	730,000
1,1,2-Trichlororethane	µg/m3	<0.968	<0.970	<0.970	<1.2	<0.972	<0.980	<1.2	<0.981	<1.2	<0.983	60	257
Trichloroethene (TCE)	µg/m³	**[324]**	**155**	52.8	45	**83.3**	**[1,240]**	**[350]**	5.79	50	1.25 J	70	290
1,2,3-Trichloropropane	µg/m³	<0.426	<0.427	<0.427	NA	<0.427	<0.431	NA	<0.432	NA	<0.433	10	43
1,1,2-Trichlorotrifluoroethane	µg/m³	0.421 J	<0.359	<0.360	NA	0.362 J	<0.364	NA	<0.364	NA	0.402 J	173,333	733,333
1,2,4-Trimethylbenzene	µg/m³	7.53	0.819 J	<0.772	1.5	1.32 J	10.2	10	<0.780	6.8	<0.782	2,100	8,800
1,3,5-Trimethylbenzene	µg/m³	1.98	<0.771	<0.772	<0.5	<0.773	3.34	3.7	<0.780	2.5	<0.782	2,100	8,800
Vinyl Chloride	µg/m³	12.2	5.78	5.26	<10	7.8	1.41	<11	<0.400	<11	<0.401	56	930
Xylenes, total	µg/m³	4.35J	<1.454	<1.454	<1.47	0.931J	7.62	15.1	<1.472	13.6	0.992J	3,500	15,000

Notes:

1. Analytical units: µg/m³ = micrograms per cubic meter

2. Residential Sanitary Sewer Gas Screening Level = Risk-based concentrations based on VALs for **residential** air which has been adjusted with an **Attenuation Factor of 0.03** for the sanitary sewer to ambient air pathway in a **residential** setting. VALs for residential indoor air based on WDNR publication RR-800 "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin" (dated January 2018) which in turn references EPA Region 3 Risk-Based Concentrations for residential air [Regional Screening Level (RSL) Summary Table (TR=1E-06, HQ=1) May 2023] and residential air in August 2023 "Wisconsin Vapor Quick Look-Up Table, Indoor Air Vapor Action Levels And Vapor Risk Screening Levels" publication RR-0136. VAL adjusted to 1-in-100,000 increase in lifetime cancer risk for carcinogens per WDNR publication RR-800; VAL is not adjusted for non-carcinogens (i.e., hazard index = 1).

3. Commercial/Industrial Sanitary Sewer Gas Screening Level = Risk-based concentrations based on VALs for **ommercial/industrial** air which has been adjusted with an **Attenuation Factor of 0.03** for the sanitary sewer gas to ambient air pathway in a **commerical/industrial** setting. VALs for commercial/industrial setting indoor air based on WDNR publication PUB-RR-800 "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin" (dated January 2018) which in turn references EPA Region 3 Risk-Based Concentrations for industrial air [Regional Screening Level (RSL) Summary Table (TR=1E-06, HQ=1) May 2023] and commercial/industrial air in August 2023 "Wisconsin Vapor Quick Look-Up Table, Indoor Air Vapor Action Levels And Vapor Risk Screening Levels" publication RR-0136. VAL adjusted to 1-in-100,000 increase in lifetime cancer risk for carcinogens per WDNR publication RR-800; VAL is not adjusted for non-carcinogens (i.e., hazard index = 1).

5. NA = not analyzed
6. Exceedances: **BOLD** = concentration greater than residential Sanitary Sewer Gas Screening Level
[ ] = concentration greater than commercial/industrial Sanitary Sewer Gas Screening Level
8. J = Value reported below limit of quantitation (LOQ).
9. D = Dilution required to report within calibration limits.

Data entered / updated by: RJA Date: 12/12/2023
Data checked by: SRM Date: 12/12/2023

From Sigma Group, Vapor Sampling Results (December 13, 2023).

Table 4
Shallow Soil Gas Analytical Results
Werners Cleaners VIZC - 6415 28th Avenue, Kenosha, Wisconsin
Sigma Project No. 21985

Sample Type:		Subslab Vapor Samples												
Sample Identification:		06R_SG_01_20 231120	06R_SG_02_20 231120	06R_SG_03_20 231120	06R_SG_04_20 231120	06R_SG_05_20 231120	06R_SG_06_20 231120	06R_SG_07_20 231120	06R_SG_08_20 231120	06R_SG_09_20 231120	06R_SG_10_20 231120	Residential Vapor Risk Screening Level [2] (AF=0.03)	Small Commercial Vapor Risk Screening Level [3] (AF = 0.03)	Large Commercial / Industrial Vapor Risk Screening Level [4] (AF = 0.01)
Sample Date(s):		11/9/23 - 11/20/2023	11/9/23 - 11/20/2023	11/9/23 - 11/20/2023	11/9/23 - 11/20/2023	11/9/23 - 11/20/2023	11/9/23 - 11/20/2023	11/9/23 - 11/20/2023	11/9/23 - 11/20/2023	11/9/23 - 11/20/2023	11/9/23 - 11/20/2023			
Sampling/Analysis Method:		Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C			
Sample Duration:		10d 22hr 5min	10d 22hr 4min	10d 22hr	10d 21hr 43min	10d 21hr 38min	10d 21hr 34min	10d 21hr 25min	10d 21hr 18min	10d 21hr 10min	10d 20hr 53min			
VOCs														
Benzene	µg/m^3	<3.00	<3.00	<3.00	<3.00	<3.00	<3.01	<3.01	<3.01	13.9	6.65	120	520	1,600
Carbon Tetrachloride	µg/m^3	<1.48	<1.48	<1.48	<1.48	<1.48	<1.48	<1.48	<1.48	<1.48	<1.49	160	680	2,000
Chlorobenzene	µg/m^3	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	1,733	7,333	22,000
Chloroform	µg/m^3	<1.82	<1.82	<1.82	<1.82	<1.82	<1.82	<1.82	<1.82	<1.82	<1.83	41	180	530
1,2-Dibromoethane (EDB)	µg/m^3	<1.63	<1.63	<1.63	<1.63	<1.63	<1.63	<1.63	<1.64	<1.64	<1.64	1.567	6.7	20
1,2-Dichlorobenzene	µg/m^3	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	7,000	29,333	88,000
1,3-Dichlorobenzene	µg/m^3	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	NS	NS	NS
1,4-Dichlorobenzene	µg/m^3	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	87	367	1,100
1,1-Dichloroethane	µg/m^3	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	590	2,600	7,700
1,2-Dichloroethane	µg/m^3	<1.14	<1.14	<1.14	<1.14	<1.14	<1.14	<1.14	<1.14	<1.14	<1.14	36	160	470
1,1-Dichloroethene	µg/m^3	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.94	7,000	29,000	88,000
cis-1,2-Dichloroethene	µg/m^3	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.21	1,400	5,800	18,000
trans-1,2-Dichloroethene	µg/m^3	<1.45	<1.45	<1.45	<1.45	<1.45	<1.45	<1.45	<1.45	<1.45	<1.45	1,400	5,800	18,000
1,4-Dioxane	µg/m^3	<1.55	<1.55	<1.55	<1.55	<1.55	<1.55	<1.56	<1.56	<1.56	<1.56	187	833	2,500
Ethylbenzene	µg/m^3	<1.87	<1.87	<1.87	<1.87	<1.87	<1.87	<1.88	<1.88	<1.88	<1.88	370	1,600	4,900
Isopropylbenzene	µg/m^3	<1.92	<1.92	<1.92	<1.92	<1.92	<1.92	<1.92	<1.92	<1.92	<1.92	NS	NS	NS
Methylene Chloride	µg/m^3	<1.82	<1.82	<1.82	<1.82	<1.82	<1.82	<1.82	<1.82	<1.82	<1.83	21,000	88,000	260,000
2-Methylnaphthalene	µg/m^3	<2.09	<2.09	<2.09	<2.09	<2.10	<2.10	<2.10	<2.10	<2.10	<2.10	NS	NS	NS
Methyl-tert-butyl ether	µg/m^3	<3.18	<3.18	<3.18	<3.18	<3.19	<3.19	<3.19	<3.19	<3.19	<3.19	3,600	16,000	47,000
Naphthalene	µg/m^3	<1.99	<1.99	<1.99	<1.99	<1.99	<1.99	<1.99	<1.99	<1.99	<2.00	28	120	360
1,1,2,2-Tetrachloroethane	µg/m^3	<1.55	<1.55	<1.55	<1.55	<1.55	<1.55	<1.56	<1.56	<1.56	<1.56	16	70	210
Tetrachloroethene (PCE)	µg/m^3	<1.55	<1.55	<1.55	<1.55	<1.55	<1.55	<1.56	<1.56	<1.56	<1.56	1,400	5,800	18,000
Toluene	µg/m^3	<3.97	<3.97	<3.98	<3.98	<3.98	<3.98	<3.98	<3.99	<3.99	<3.99	170,000	730,000	2,200,000
1,2,3-Trichlorobenzene	µg/m^3	<1.63	<1.63	<1.63	<1.63	<1.63	<1.63	<1.63	<1.64	<1.64	<1.64	NS	NS	NS
1,2,4-Trichlorobenzene	µg/m^3	<1.63	<1.63	<1.63	<1.63	<1.63	<1.63	<1.63	<1.64	<1.64	<1.64	70	293	880
1,1,1-Trichloroethane	µg/m^3	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	<0.61	170,000	730,000	2,200,000
1,1,2-Trichlororethane	µg/m3	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.94	60	257	770
Trichloroethene (TCE)	µg/m^3	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.93	<1.94	70	290	880
1,2,3-Trichloropropane	µg/m^3	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	10	43	129
1,1,2-Trichlorotrifluoroethane	µg/m^3	<0.71	<0.71	<0.71	<0.72	<0.72	<0.72	<0.72	<0.72	<0.72	<0.72	173,333	733,333	2,200,000
1,2,4-Trimethylbenzene	µg/m^3	<1.92	<1.92	<1.92	<1.92	<1.92	<1.92	<1.92	<1.92	<1.92	<1.92	2,100	8,800	26,000
1,3,5-Trimethylbenzene	µg/m^3	<1.92	<1.92	<1.92	<1.92	<1.92	<1.92	<1.92	<1.92	<1.92	<1.92	2,100	8,800	26,000
Vinyl Chloride	µg/m^3	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	56	930	2,800
Xylenes, total	µg/m^3	<3.62	<3.62	<3.62	<3.62	<3.62	<3.62	8.75	<3.62	<3.62	<3.62	3,500	15,000	44,000

Notes:

1. Analytical units: µg/m^3 = micrograms per cubic meter

2. Residential Vapor Risk Screening Level = Risk-based concentrations based on VALs for **residential** air which has been adjusted with an **Attenuation Factor of 0.03** for the shallow soil gas to indoor air pathway in a **residential** setting. VALs for residential indoor air based on WDNR publication RR-800 "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin" (dated January 2018) which in turn references EPA Region 3 Risk-Based Concentrations for residential air [Regional Screening Level (RSL) Summary Table (TR=1E-06, HQ=1) May 2023] and residential air in August 2023 "Wisconsin Vapor Quick Look-Up Table, Indoor Air Vapor Action Levels And Vapor Risk Screening Levels" publication RR-0136. VAL adjusted to 1-in-100,000 increase in lifetime cancer risk for carcinogens per WDNR publication RR-800; VAL is not adjusted for non-carcinogens (i.e., hazard index = 1).

3. Small Commercial Vapor Risk Screening Level = Risk-based concentrations based on VALs for **small commercial** air which has been adjusted with an **Attenuation Factor of 0.03** for the shallow soil gasr to indoorair pathway in a **small commercial** setting. VALs for small commercial setting indoor air based on WDNR publication PUB-RR-800 "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin" (dated January 2018) which in turn references EPA Region 3 Risk-Based Concentrations for industrial air [Regional Screening Level (RSL) Summary Table (TR=1E-06, HQ=1) May 2023] and small commercial air in August 2023 "Wisconsin Vapor Quick Look-Up Table, Indoor Air Vapor Action Levels And Vapor Risk Screening Levels" publication RR-0136. VAL adjusted to 1-in-100,000 increase in lifetime cancer risk for carcinogens per WDNR publication RR-800; VAL is not adjusted for non-carcinogens (i.e., hazard index = 1).

4. Large Commercial / Industrial Vapor Risk Screening Level = Risk-based concentrations based on VALs for **large commercial/industrial** air which has been adjusted with an **Attenuation Factor of 0.01** for the hallow soil gas to indoor air pathway in a **large commercial/industrial** setting. VALs for large commerical / industrial indoor air based on WDNR publication PUB-RR-800 "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin" (dated January 2018) which in turn references EPA Region 3 Risk-Based Concentrations for industrial air [Regional Screening Level (RSL) Summary Table (TR=1E-06, HQ=1) May 2023] and large commercial / industrial air in August 2023 "Wisconsin Vapor Quick Look-Up Table, Indoor Air Vapor Action Levels And Vapor Risk Screening Levels" publication RR-0136. VAL adjusted to 1-in-100,000 increase in lifetime cancer risk for carcinogens per WDNR publication RR-800; VAL is not adjusted for non-carcinogens (i.e., hazard index = 1).

5. NA = not analyzed

6. Laboratory flags:

7. Exceedances:
   BOLD = concentration greater than residential Vapor Risk Screening Level
   [ ] = concentration greater than small commercial Vapor Risk Screening Level
   { } = concentration greater than large commercial / industrial Vapor Risk Screening Level

Data entered / updated by: CRD Date: 12/7/2023
Data checked by: SRM Date: 12/7/2023

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From Sigma Group, Vapor Sampling Results (December 13, 2023).

Table 4
Shallow Soil Gas Analytical Results
Werners Cleaners VIZC - 6415 28th Avenue, Kenosha, Wisconsin
Sigma Project No. 21985

Sample Type:		Shallow Soil Gas Samples											Residential Vapor Risk Screening Level [2] (AF=0.03)	Small Commercial Vapor Risk Screening Level [3] (AF = 0.03)	Large Commercial / Industrial Vapor Risk Screening Level [4] (AF = 0.01)
Sample Identification:		06R_SG_11_20231120	06R_SG_12_20231120	06R_SG_13_20231120	06R_SG_14_20231120	06R_SG_15_20231120	06R_SG_16_20231120	06R_SG_17_20231120	06R_SG_17D_20231120	06R_SG_18_20231120	06R_SG_19_20231120	06R_SG_20_20231120			
Sample Date(s):		11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023			
Sampling/Analysis Method:		Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	WMS-LU/TO-17	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C			
Sample Duration:		10d 1hr 32min	10d 1hr 30min	10d 1hr 27min	10d 1hr 10min	10d 1hr 20min	10d 56min	10d 50min	10d 50min	10d 42min	10d 32min	10d 23min			
VOCs															
Benzene	µg/m^3	3.31	<3.26	<3.26	<3.26	<3.26	<3.26	<3.26	<19	5.08	<3.27	<3.27	120	520	1,600
2-Butanone (MEK)	µg/m^3	NA	NA	NA	NA	NA	NA	NA	<14	NA	NA	NA	173,333	733,333	2,200,000
Carbon Tetrachloride	µg/m^3	<1.60	<1.60	<1.61	<1.61	<1.61	<1.61	<1.61	<5.9	<1.61	<1.61	<1.61	160	680	2,000
Chlorobenzene	µg/m^3	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<2.9	<0.81	<0.82	<0.82	1,733	7,333	22,000
Chloromethane	µg/m^3	NA	NA	NA	NA	NA	NA	NA	<35	NA	NA	NA	3,133	13,000	39,000
Chloroform	µg/m^3	<1.97	<1.97	<1.97	<1.97	<1.97	<1.98	<1.98	<5.3	<1.98	<1.98	<1.98	41	180	530
Cyclohexane	µg/m^3	NA	NA	NA	NA	NA	NA	NA	<5.2	NA	NA	NA	210,000	866,666	2,600,000
1,2-Dibromoethane (EDB)	µg/m^3	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	NA	<1.78	<1.78	<1.78	1.567	6.7	20
1,2-Dichlorobenzene	µg/m^3	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<1.3	<0.92	<0.92	<0.92	7,000	29,333	88,000
1,3-Dichlorobenzene	µg/m^3	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<1.4	<0.92	<0.92	<0.92	NS	NS	NS
1,4-Dichlorobenzene	µg/m^3	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<1.4	<0.92	<0.92	<0.92	87	367	1,100
1,1-Dichloroethane	µg/m^3	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	<6.6	<0.81	<0.82	<0.82	590	2,600	7,700
1,2-Dichloroethane	µg/m^3	<1.23	<1.23	<1.23	<1.23	<1.23	<1.24	<1.24	<4.6	<1.24	<1.24	<1.24	36	160	470
1,1-Dichloroethene	µg/m^3	<2.09	<2.09	<2.09	<2.09	<2.09	<2.10	<2.10	<30	<2.10	<2.10	<2.10	7,000	29,000	88,000
cis-1,2-Dichloroethene	µg/m^3	<1.30	<1.30	<1.30	<1.30	<1.30	<1.31	<1.31	<5.4	3.63	<1.31	<1.31	1,400	5,800	18,000
trans-1,2-Dichloroethene	µg/m^3	<1.57	<1.57	<1.57	<1.57	<1.57	<1.57	<1.57	<13	<1.57	<1.57	<1.58	1,400	5,800	18,000
1,4-Dioxane	µg/m^3	<1.68	<1.68	<1.68	<1.69	<1.68	<1.69	<1.69	NA	<1.69	<1.69	<1.69	187	833	2,500
Ethylbenzene	µg/m^3	<2.03	<2.03	<2.03	<2.03	<2.03	<2.03	<2.04	NA	<2.04	<2.04	<2.04	370	1,600	4,900
Heptane	µg/m^3	NA	NA	NA	NA	NA	NA	NA	<4.9	NA	NA	NA	14,000	60,000	180,000
Hexane	µg/m^3	NA	NA	NA	NA	NA	NA	NA	<28	NA	NA	NA	24,333	103,333	310,000
Isopropylbenzene	µg/m^3	<2.08	<2.08	<2.08	<2.08	<2.08	<2.08	<2.08	NA	<2.09	<2.09	<2.09	NS	NS	NS
4-Methyl-2-pentanone (MIBK)	µg/m^3	NA	NA	NA	NA	NA	NA	NA	<8.2	NA	NA	NA	103,333	433,333	1,300,000
Methylene Chloride	µg/m^3	<1.97	<1.97	<1.97	<1.97	<1.97	<1.98	<1.98	NA	<1.98	<1.98	<1.98	21,000	88,000	260,000
2-Methylnaphthalene	µg/m^3	<2.27	<2.27	<2.27	<2.27	<2.27	<2.28	<2.28	NA	<2.28	<2.28	<2.28	NS	NS	NS
Methyl-tert-butyl ether	µg/m^3	<3.45	<3.45	<3.45	<3.46	<3.45	<3.46	<3.46	NA	<3.46	<3.46	<3.47	3,600	16,000	47,000
Naphthalene	µg/m^3	<2.16	<2.16	<2.16	<2.16	<2.16	<2.16	<2.16	<2.3	<2.16	<2.17	<2.17	28	120	360
Propylbenzene	µg/m^3	NA	NA	NA	NA	NA	NA	NA	<1.8	NA	NA	NA	33,333	146,666	440,000
Styrene	µg/m^3	NA	NA	NA	NA	NA	NA	NA	<2.3	NA	NA	NA	33,333	146,666	440,000
1,1,2,2-Tetrachloroethane	µg/m^3	<1.68	<1.68	<1.68	<1.69	<1.68	<1.69	<1.69	<2.3	<1.69	<1.69	<1.69	16	70	210
Tetrachloroethene (PCE)	µg/m^3	<1.68	3.66	2.81	<1.69	<1.68	<1.69	8.57	26	**1,420**	7.54	<1.69	1,400	5,800	18,000
Toluene	µg/m^3	<4.31	<4.31	<4.31	<4.32	<4.32	<4.32	<4.33	<3.5	<4.33	<4.33	<4.33	170,000	730,000	2,200,000
1,2,3-Trichlorobenzene	µg/m^3	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	NA	<1.78	<1.78	<1.78	NS	NS	NS
1,2,4-Trichlorobenzene	µg/m^3	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	NA	<1.78	<1.78	<1.78	70	293	880
1,1,1-Trichloroethane	µg/m^3	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66	<6.9	<0.66	<0.66	<0.66	170,000	730,000	2,200,000
1,1,2-Trichlororethane	µg/m3	<2.09	<2.09	<2.09	<2.09	<2.09	<2.10	<2.10	NA	<2.10	<2.10	<2.10	60	257	770
Trichloroethene (TCE)	µg/m^3	<2.09	<2.09	<2.09	<2.09	<2.09	<2.10	<2.10	NA	207	<2.10	<2.10	70	290	880
1,2,3-Trichloropropane	µg/m^3	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	<0.92	NA	<0.92	<0.92	<0.92	10	43	129
1,1,2-Trichlorotrifluoroethane	µg/m^3	<0.78	<0.78	<0.78	<0.78	<0.78	<0.78	<0.78	NA	<0.78	<0.78	<0.78	173,333	733,333	2,200,000
1,2,4-Trimethylbenzene	µg/m^3	<2.08	<2.08	<2.08	<2.08	<2.08	<2.08	<2.08	<1.5	<2.09	<2.09	<2.09	2,100	8,800	26,000
1,3,5-Trimethylbenzene	µg/m^3	<2.08	<2.08	<2.08	<2.08	<2.08	<2.08	<2.08	<1.6	<2.09	<2.09	<2.09	2,100	8,800	26,000
Vinyl Chloride	µg/m^3	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<34	<0.85	<0.86	<0.86	56	930	2,800
Xylenes, total	µg/m^3	<3.92	<3.92	<3.92	<3.92	<3.92	<3.94	<3.94	<4.8	<3.94	<3.94	<3.94	3,500	15,000	44,000

Notes:

1. Analytical units: µg/m^3 = micrograms per cubic meter

2. Residential Vapor Risk Screening Level = Risk-based concentrations based on VALs for **residential** air which has been adjusted with an **Attenuation Factor of 0.03** for the shallow soil gas to indoor air pathway in a **residential** setting. VALs for residential indoor air based on WDNR publication RR-800 "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin" (dated January 2018) which in turn references EPA Region 3 Risk-Based Concentrations for residential air [Regional Screening Level (RSL) Summary Table (TR=1E-06, HQ=1) May 2023] and residential air in August 2023 "Wisconsin Vapor Quick Look-Up Table, Indoor Air Vapor Action Levels And Vapor Risk Screening Levels" publication RR-0136. VAL adjusted to 1-in-100,000 increase in lifetime cancer risk for carcinogens per WDNR publication RR-800; VAL is not adjusted for non-carcinogens (i.e., hazard index = 1).

3. Small Commercial Vapor Risk Screening Level = Risk-based concentrations based on VALs for **small commercial** air which has been adjusted with an **Attenuation Factor of 0.03** for the shallow soil gasr to indoorair pathway in a **small commercial** setting. VALs for small commercial setting indoor air based on WDNR publication PUB-RR-800 "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin" (dated January 2018) which in turn references EPA Region 3 Risk-Based Concentrations for industrial air [Regional Screening Level (RSL) Summary Table (TR=1E-06, HQ=1) May 2023] and small commercial air in August 2023 "Wisconsin Vapor Quick Look-Up Table, Indoor Air Vapor Action Levels And Vapor Risk Screening Levels" publication RR-0136. VAL adjusted to 1-in-100,000 increase in lifetime cancer risk for carcinogens per WDNR publication RR-800; VAL is not adjusted for non-carcinogens (i.e., hazard index = 1).

4. Large Commercial / Industrial Vapor Risk Screening Level = Risk-based concentrations based on VALs for **large commercial/industrial** air which has been adjusted with an **Attenuation Factor of 0.01** for the hallow soil gas to indoor air pathway in a **large commercial/industrial** setting. VALs for large commerical / industrial indoor air based on WDNR publication PUB-RR-800 "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin" (dated January 2018) which in turn references EPA Region 3 Risk-Based Concentrations for industrial air [Regional Screening Level (RSL) Summary Table (TR=1E-06, HQ=1) May 2023] and large commercial / industrial air in August 2023 "Wisconsin Vapor Quick Look-Up Table, Indoor Air Vapor Action Levels And Vapor Risk Screening Levels" publication RR-0136. VAL adjusted to 1-in-100,000 increase in lifetime cancer risk for carcinogens per WDNR publication RR-800; VAL is not adjusted for non-carcinogens (i.e., hazard index = 1).

5. NA = not analyzed

6. Laboratory flags:

7. Exceedances: **BOLD** = concentration greater than residential Vapor Risk Screening Level
[ ] = concentration greater than small commercial Vapor Risk Screening Level
{ } = concentration greater than large commercial / industrial Vapor Risk Screening Level

Data entered / updated by: RJA Date: 12/13/2023
Data checked by: SRM Date: 12/13/2023

From Sigma Group, Vapor Sampling Results (December 13, 2023).

Table 4
Shallow Soil Gas Analytical Results
Werners Cleaners VIZC - 6415 28th Avenue, Kenosha, Wisconsin
Sigma Project No. 21985

Sample Type:		Shallow Soil Gas Samples												
Sample Identification:		06R_SG_21_20 231120	06R_SG_22_20 231120	06R_SG_23_20 231120	06R_SG_24_20 231120	06R_SG_25_20 231120	06R_SG_26_20 231120	06R_SG_27_20 231120	06R_SG_28_20 231120	06R_SG_29_20 231120	06R_SG_30_20 231120	Residential Vapor Risk Screening Level [2] (AF=0.03)	Small Commercial Vapor Risk Screening Level [3] (AF = 0.03)	Large Commercial / Industrial Vapor Risk Screening Level [4] (AF = 0.01)
Sample Date(s):		11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023			
Sampling/Analysis Method:		Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C			
Sample Duration:		9d 23hr 50min	9d 23hr 42min	9d 23hr 25min	9d 23hr 18min	9d 23hr 5min	9d 22hr 33min	9d 22hr 23min	9d 22hr 6min	9d 21hr 40min	9d 21hr 25min			
VOCs														
Benzene	µg/m^3	4.82	<3.28	<3.28	<3.29	<3.29	<3.30	<3.30	<3.30	<3.31	<3.31	120	520	1,600
Carbon Tetrachloride	µg/m^3	<1.62	<1.62	<1.62	<1.62	<1.62	<1.62	<1.63	<1.63	<1.63	<1.63	160	680	2,000
Chlorobenzene	µg/m^3	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.83	<0.83	1,733	7,333	22,000
Chloroform	µg/m^3	<1.99	<1.99	<1.99	<1.99	<1.99	<2.00	<2.00	<2.00	<2.00	<2.01	41	180	530
1,2-Dibromoethane (EDB)	µg/m^3	<1.78	<1.78	<1.78	<1.79	<1.79	<1.79	<1.79	<1.79	<1.80	<1.80	1.567	6.7	20
1,2-Dichlorobenzene	µg/m^3	<0.93	<0.93	<0.93	<0.93	<0.93	<0.93	<0.93	<0.93	<0.94	<0.94	7,000	29,333	88,000
1,3-Dichlorobenzene	µg/m^3	<0.93	<0.93	<0.93	<0.93	<0.93	<0.93	<0.93	<0.93	<0.94	<0.94	NS	NS	NS
1,4-Dichlorobenzene	µg/m^3	<0.93	<0.93	<0.93	<0.93	<0.93	<0.93	<0.93	<0.93	<0.94	<0.94	87	367	1,100
1,1-Dichloroethane	µg/m^3	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.82	<0.83	<0.83	590	2,600	7,700
1,2-Dichloroethane	µg/m^3	<1.24	<1.24	<1.24	<1.24	<1.24	<1.25	<1.25	<1.25	<1.25	<1.25	36	160	470
1,1-Dichloroethene	µg/m^3	<2.11	<2.11	<2.11	<2.11	<2.11	<2.12	<2.12	<2.12	<2.13	<2.13	7,000	29,000	88,000
cis-1,2-Dichloroethene	µg/m^3	<1.31	<1.31	<1.31	<1.31	<1.32	<1.32	<1.32	<1.32	<1.32	<1.32	1,400	5,800	18,000
trans-1,2-Dichloroethene	µg/m^3	<1.58	<1.58	<1.58	<1.58	<1.58	<1.59	<1.59	<1.59	<1.59	<1.60	1,400	5,800	18,000
1,4-Dioxane	µg/m^3	<1.69	<1.70	<1.70	<1.70	<1.70	<1.70	<1.71	<1.71	<1.71	<1.71	187	833	2,500
Ethylbenzene	µg/m^3	<2.04	<2.05	<2.05	<2.05	<2.05	<2.05	<2.06	<2.06	<2.06	<2.06	370	1,600	4,900
Isopropylbenzene	µg/m^3	<2.09	<2.09	<2.10	<2.10	<2.10	<2.10	<2.11	<2.11	<2.11	<2.11	NS	NS	NS
Methylene Chloride	µg/m^3	<1.99	<1.99	<1.99	<1.99	<1.99	<2.00	<2.00	<2.00	<2.00	<2.01	21,000	88,000	260,000
2-Methylnaphthalene	µg/m^3	<2.29	<2.29	<2.29	<2.29	<2.29	<2.30	<2.30	<2.30	<2.31	<2.31	NS	NS	NS
Methyl-tert-butyl ether	µg/m^3	<3.47	<3.48	<3.48	<3.48	<3.49	<3.49	<3.50	<3.50	<3.51	<3.51	3,600	16,000	47,000
Naphthalene	µg/m^3	<2.17	<2.17	<2.18	<2.18	<2.18	<2.18	<2.18	<2.19	<2.19	<2.19	28	120	360
1,1,2,2-Tetrachloroethane	µg/m^3	<1.69	<1.70	<1.70	<1.70	<1.70	<1.70	<1.71	<1.71	<1.71	<1.71	16	70	210
Tetrachloroethene (PCE)	µg/m^3	<1.69	<1.70	<1.70	<1.70	<1.70	<1.70	<1.71	<1.71	<1.71	<1.71	1,400	5,800	18,000
Toluene	µg/m^3	<4.34	<4.35	<4.35	<4.35	<4.36	<4.37	<4.37	<4.37	<4.38	<4.39	170,000	730,000	2,200,000
1,2,3-Trichlorobenzene	µg/m^3	<1.78	<1.78	<1.78	<1.79	<1.79	<1.79	<1.79	<1.79	<1.80	<1.80	NS	NS	NS
1,2,4-Trichlorobenzene	µg/m^3	<1.78	<1.78	<1.78	<1.79	<1.79	<1.79	<1.79	<1.79	<1.80	<1.80	70	293	880
1,1,1-Trichloroethane	µg/m^3	<0.66	<0.66	<0.66	<0.66	<0.66	<0.67	<0.67	<0.67	<0.67	<0.67	170,000	730,000	2,200,000
1,1,2-Trichlororethane	µg/m3	<2.11	<2.11	<2.11	<2.11	<2.11	<2.12	<2.12	<2.12	<2.13	<2.13	60	257	770
Trichloroethene (TCE)	µg/m^3	<2.11	<2.11	<2.11	<2.11	<2.11	<2.12	<2.12	<2.12	<2.13	<2.13	70	290	880
1,2,3-Trichloropropane	µg/m^3	<0.93	<0.93	<0.93	<0.93	<0.93	<0.93	<0.93	<0.93	<0.94	<0.94	10	43	129
1,1,2-Trichlorotrifluoroethane	µg/m^3	<0.78	<0.78	<0.78	<0.78	<0.78	<0.79	<0.79	<0.79	<0.79	<0.79	173,333	733,333	2,200,000
1,2,4-Trimethylbenzene	µg/m^3	<2.09	<2.09	<2.10	<2.10	<2.10	<2.10	<2.11	<2.11	<2.11	<2.11	2,100	8,800	26,000
1,3,5-Trimethylbenzene	µg/m^3	<2.09	<2.09	<2.10	<2.10	<2.10	<2.10	<2.11	<2.11	<2.11	<2.11	2,100	8,800	26,000
Vinyl Chloride	µg/m^3	<0.86	<0.86	<0.86	<0.86	<0.86	<0.86	<0.86	<0.86	<0.87	<0.87	56	930	2,800
Xylenes, total	µg/m^3	<3.94	<3.96	<3.96	<3.96	<3.96	<3.96	<3.98	<3.98	<3.98	<3.98	3,500	15,000	44,000

Notes:

1. Analytical units: µg/m^3 = micrograms per cubic meter

2. Residential Vapor Risk Screening Level = Risk-based concentrations based on VALs for **residential** air which has been adjusted with an **Attenuation Factor of 0.03** for the shallow soil gas to indoor air pathway in a **residential** setting. VALs for residential indoor air based on WDNR publication RR-800 "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin" (dated January 2018) which in turn references EPA Region 3 Risk-Based Concentrations for residential air [Regional Screening Level (RSL) Summary Table (TR=1E-06, HQ=1) May 2023] and residential air in August 2023 "Wisconsin Vapor Quick Look-Up Table, Indoor Air Vapor Action Levels And Vapor Risk Screening Levels" publication RR-0136. VAL adjusted to 1-in-100,000 increase in lifetime cancer risk for carcinogens per WDNR publication RR-800; VAL is not adjusted for non-carcinogens (i.e., hazard index = 1).

3. Small Commercial Vapor Risk Screening Level = Risk-based concentrations based on VALs for **small commercial** air which has been adjusted with an **Attenuation Factor of 0.03** for the shallow soil gasr to indoorair pathway in a **small commercial** setting. VALs for small commercial setting indoor air based on WDNR publication PUB-RR-800 "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin" (dated January 2018) which in turn references EPA Region 3 Risk-Based Concentrations for industrial air [Regional Screening Level (RSL) Summary Table (TR=1E-06, HQ=1) May 2023] and small commercial air in August 2023 "Wisconsin Vapor Quick Look-Up Table, Indoor Air Vapor Action Levels And Vapor Risk Screening Levels" publication RR-0136. VAL adjusted to 1-in-100,000 increase in lifetime cancer risk for carcinogens per WDNR publication RR-800; VAL is not adjusted for non-carcinogens (i.e., hazard index = 1).

4. Large Commercial / Industrial Vapor Risk Screening Level = Risk-based concentrations based on VALs for **large commercial/industrial** air which has been adjusted with an **Attenuation Factor of 0.01** for the hallow soil gas to indoor air pathway in a **large commercial/industrial** setting. VALs for large commerical / industrial indoor air based on WDNR publication PUB-RR-800 "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin" (dated January 2018) which in turn references EPA Region 3 Risk-Based Concentrations for industrial air [Regional Screening Level (RSL) Summary Table (TR=1E-06, HQ=1) May 2023] and large commercial / industrial air in August 2023 "Wisconsin Vapor Quick Look-Up Table, Indoor Air Vapor Action Levels And Vapor Risk Screening Levels" publication RR-0136. VAL adjusted to 1-in-100,000 increase in lifetime cancer risk for carcinogens per WDNR publication RR-800; VAL is not adjusted for non-carcinogens (i.e., hazard index = 1).

5. NA = not analyzed

6. Laboratory flags:

7. Exceedances:
   BOLD = concentration greater than residential Vapor Risk Screening Level
   [ ] = concentration greater than small commercial Vapor Risk Screening Level
   { } = concentration greater than large commercial / industrial Vapor Risk Screening Level

Data entered / updated by: CRD Date: 12/7/2023
Data checked by: SRM Date: 12/7/2023

I:\Wisconsin Dept of Natural Resources\21985 - Werners Cleaners VIZC\095 Data\Shallow Soil Gas Data\Shallow Soil Gas 1 (3)

From Sigma Group, Vapor Sampling Results (December 13, 2023).

Table 4
Shallow Soil Gas Analytical Results
Werners Cleaners VIZC - 6415 28th Avenue, Kenosha, Wisconsin
Sigma Project No. 21985

Sample Type:		Shallow Soil Gas Samples												Residential Vapor Risk Screening Level [2] (AF=0.03)	Small Commercial Vapor Risk Screening Level [3] (AF = 0.03)	Large Commercial / Industrial Vapor Risk Screening Level [4] (AF = 0.01)
Sample Identification:		06R_SG_31_20231120	06R_SG_31D_20231120	06R_SG_32_20231120	06R_SG_33_20231120	06R_SG_34_20231120	06R_SG_35_20231120	06R_SG_35D_20231120	06R_SG_36_20231120	06R_SG_37_20231120	06R_SG_38_20231120	06R_SG_39_20231120	06R_SG_40_20231120			
Sample Date(s):		11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023	11/10/23-11/20/2023			
Sampling/Analysis Method:		Beacon PS6/EPA 8260C	WMS-LU/TO-17	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	WMS-LU/TO-17	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C	Beacon PS6/EPA 8260C			
Sample Duration:		9d 21hr 50min	9d 23hr 40min	9d 23hr 9min	9d 23hr 10min	9d 23hr 1min	9d 23hr	9d 23hr	9d 22hr 41min	9d 22hr 30min	9d 22hr 25min	9d 22hr 23min	9d 22hr 20min			
VOCs																
Benzene	µg/m^3	<3.31	<19	<3.29	<3.29	<3.29	<3.29	<19	3.84	3.81	4.56	<3.30	<3.31	120	520	1,600
2-Butanone (MEK)	µg/m^3	NA	<14	NA	NA	NA	NA	<14	NA	NA	NA	NA	NA	173,333	733,333	2,200,000
Carbon Tetrachloride	µg/m^3	<1.63	<5.9	<1.62	<1.62	<1.62	<1.62	<5.9	<1.62	<1.63	<1.63	<1.63	<1.63	160	680	2,000
Chlorobenzene	µg/m^3	<0.82	<2.9	<0.82	<0.82	<0.82	<0.82	<2.9	<0.82	<0.82	<0.82	<0.82	<0.83	1,733	7,333	22,000
Chloromethane	µg/m^3	NA	<35	NA	NA	NA	NA	<35	NA	NA	NA	NA	NA	3,133	13,000	39,000
Chloroform	µg/m^3	<2.00	<5.3	<1.99	<1.99	<1.99	<1.99	<5.4	<2.00	<2.00	<2.00	<2.00	<2.01	41	180	530
Cyclohexane	µg/m^3	NA	<5.3	NA	NA	NA	NA	<5.3	NA	NA	NA	NA	NA	210,000	866,666	2,600,000
1,2-Dibromoethane (EDB)	µg/m^3	<1.80	NA	<1.79	<1.79	<1.79	<1.79	NA	<1.79	<1.79	<1.79	<1.79	<1.80	1.567	6.7	20
1,2-Dichlorobenzene	µg/m^3	<0.93	<1.3	<0.93	<0.93	<0.93	<0.93	<1.3	<0.93	<0.93	<0.93	<0.93	<0.94	7,000	29,333	88,000
1,3-Dichlorobenzene	µg/m^3	<0.93	<1.4	<0.93	<0.93	<0.93	<0.93	<1.4	<0.93	<0.93	<0.93	<0.93	<0.94	NS	NS	NS
1,4-Dichlorobenzene	µg/m^3	<0.93	<1.4	<0.93	<0.93	<0.93	<0.93	<1.4	<0.93	<0.93	<0.93	<0.93	<0.94	87	367	1,100
1,1-Dichloroethane	µg/m^3	<0.82	<6.7	<0.82	<0.82	<0.82	<0.82	<6.7	<0.82	<0.82	<0.82	<0.82	<0.83	590	2,600	7,700
1,2-Dichloroethane	µg/m^3	<1.25	<4.6	<1.24	<1.24	<1.25	<1.25	<4.6	<1.25	<1.25	<1.25	<1.25	<1.25	36	160	470
1,1-Dichloroethene	µg/m^3	<2.12	<30	<2.11	<2.11	<2.11	<2.11	<30	<2.12	<2.12	<2.12	<2.12	<2.13	7,000	29,000	88,000
cis-1,2-Dichloroethene	µg/m^3	<1.32	<5.4	<1.31	<1.31	<1.32	<1.32	<5.4	<1.32	<1.32	<1.32	13.5	<1.32	1,400	5,800	18,000
trans-1,2-Dichloroethene	µg/m^3	<1.59	<13	<1.58	<1.58	<1.58	<1.58	<13	<1.59	<1.59	<1.59	5.82	<1.60	1,400	5,800	18,000
1,4-Dioxane	µg/m^3	<1.71	NA	<1.70	<1.70	<1.70	<1.70	NA	<1.70	<1.70	<1.71	<1.71	<1.71	187	833	2,500
Ethylbenzene	µg/m^3	<2.06	NA	<2.05	<2.05	<2.05	<2.05	NA	<2.05	<2.06	<2.06	<2.06	<2.06	370	1,600	4,900
Heptane	µg/m^3	NA	<5	NA	NA	NA	NA	8.0	NA	NA	NA	NA	NA	14,000	60,000	180,000
Hexane	µg/m^3	NA	<28	NA	NA	NA	NA	<28	NA	NA	NA	NA	NA	24,333	103,333	310,000
Isopropylbenzene	µg/m^3	<2.11	NA	<2.10	<2.10	<2.10	<2.10	NA	<2.10	<2.10	<2.11	<2.11	<2.11	NS	NS	NS
4-Methyl-2-pentanone (MIBK)	µg/m^3	NA	<8.3	NA	NA	NA	NA	<8.3	NA	NA	NA	NA	NA	103,333	433,333	1,300,000
Methylene Chloride	µg/m^3	<2.00	NA	<1.99	<1.99	<1.99	<1.99	NA	<2.00	<2.00	<2.00	<2.00	<2.01	21,000	88,000	260,000
2-Methylnaphthalene	µg/m^3	<2.31	NA	<2.29	<2.29	<2.29	<2.29	NA	<2.30	<2.30	<2.30	<2.30	<2.31	NS	NS	NS
Methyl-tert-butyl ether	µg/m^3	<3.50	NA	<3.48	<3.48	<3.49	<3.49	NA	<3.49	<3.49	<3.50	<3.50	<3.51	3,600	16,000	47,000
Naphthalene	µg/m^3	<2.19	<2.3	<2.18	<2.18	<2.18	<2.18	<2.3	<2.18	<2.18	<2.18	<2.18	<2.19	28	120	360
Propylbenzene	µg/m^3	NA	<1.8	NA	NA	NA	NA	<1.8	NA	NA	NA	NA	NA	33,333	146,666	440,000
Styrene	µg/m^3	NA	<2.3	NA	NA	NA	NA	<2.3	NA	NA	NA	NA	NA	33,333	146,666	440,000
1,1,2,2-Tetrachloroethane	µg/m^3	<1.71	<2.3	<1.70	<1.70	<1.70	<1.70	<2.3	<1.70	<1.70	<1.71	<1.71	<1.71	16	70	210
Tetrachloroethene (PCE)	µg/m^3	<1.71	NA	<1.70	<1.70	<1.70	<1.70	NA	<1.70	<1.70	20.8	648	<1.71	1,400	5,800	18,000
Toluene	µg/m^3	<4.38	28	<4.36	<4.36	<4.36	<4.36	7.1	<4.36	<4.37	<4.37	<4.37	<4.39	170,000	730,000	2,200,000
1,2,3-Trichlorobenzene	µg/m^3	<1.80	NA	<1.79	<1.79	<1.79	<1.79	NA	<1.79	<1.79	<1.79	<1.79	<1.80	NS	NS	NS
1,2,4-Trichlorobenzene	µg/m^3	<1.80	NA	<1.79	<1.79	<1.79	<1.79	NA	<1.79	<1.79	<1.79	<1.79	<1.80	70	293	880
1,1,1-Trichloroethane	µg/m^3	<0.67	<7	<0.66	<0.66	<0.66	<0.66	<7	<0.67	<0.67	<0.67	<0.67	<0.67	170,000	730,000	2,200,000
1,1,2-Trichlororethane	µg/m3	<2.12	NA	<2.11	<2.11	<2.11	<2.11	NA	<2.12	<2.12	<2.12	<2.12	<2.13	60	257	770
Trichloroethene (TCE)	µg/m^3	<2.12	NA	<2.11	<2.11	<2.11	<2.11	NA	<2.12	<2.12	<2.12	**157**	<2.13	70	290	880
1,2,3-Trichloropropane	µg/m^3	<0.93	NA	<0.93	<0.93	<0.93	<0.93	NA	<0.93	<0.93	<0.93	<0.93	<0.94	10	43	129
1,1,2-Trichlorotrifluoroethane	µg/m^3	<0.79	NA	<0.78	<0.78	<0.78	<0.78	NA	<0.78	<0.79	<0.79	<0.79	<0.79	173,333	733,333	2,200,000
1,2,4-Trimethylbenzene	µg/m^3	<2.11	<1.5	<2.10	<2.10	<2.10	<2.10	<1.5	<2.10	<2.10	<2.11	<2.11	<2.11	2,100	8,800	26,000
1,3,5-Trimethylbenzene	µg/m^3	<2.11	<1.6	<2.10	<2.10	<2.10	<2.10	<1.7	<2.10	<2.10	<2.11	<2.11	<2.11	2,100	8,800	26,000
Vinyl Chloride	µg/m^3	<0.87	<34	<0.86	<0.86	<0.86	<0.86	<34	<0.86	<0.86	<0.86	<0.86	<0.87	56	930	2,800
Xylenes, total	µg/m^3	<3.98	<4.8	<3.96	<3.96	<3.96	<3.96	<4.8	<3.96	<3.98	<3.98	<3.98	<3.98	3,500	15,000	44,000

Notes:

1. Analytical units: µg/m^3 = micrograms per cubic meter

2. Residential Vapor Risk Screening Level = Risk-based concentrations based on VALs for **residential** air which has been adjusted with an **Attenuation Factor of 0.03** for the shallow soil gas to indoor air pathway in a **residential** setting. VALs for residential indoor air based on WDNR publication RR-800 "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin" (dated January 2018) which in turn references EPA Region 3 Risk-Based Concentrations for residential air [Regional Screening Level (RSL) Summary Table (TR=1E-06, HQ=1) May 2023] and residential air in August 2023 "Wisconsin Vapor Quick Look-Up Table, Indoor Air Vapor Action Levels And Vapor Risk Screening Levels" publication RR-0136. VAL adjusted to 1-in-100,000 increase in lifetime cancer risk for carcinogens per WDNR publication RR-800; VAL is not adjusted for non-carcinogens (i.e., hazard index = 1).

3. Small Commercial Vapor Risk Screening Level = Risk-based concentrations based on VALs for **small commercial** air which has been adjusted with an **Attenuation Factor of 0.03** for the shallow soil gasr to indoorair pathway in a **small commercial** setting. VALs for small commercial setting indoor air based on WDNR publication PUB-RR-800 "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin" (dated January 2018) which in turn references EPA Region 3 Risk-Based Concentrations for industrial air [Regional Screening Level (RSL) Summary Table (TR=1E-06, HQ=1) May 2023] and small commercial air in August 2023 "Wisconsin Vapor Quick Look-Up Table, Indoor Air Vapor Action Levels And Vapor Risk Screening Levels" publication RR-0136. VAL adjusted to 1-in-100,000 increase in lifetime cancer risk for carcinogens per WDNR publication RR-800; VAL is not adjusted for non-carcinogens (i.e., hazard index = 1).

4. Large Commercial / Industrial Vapor Risk Screening Level = Risk-based concentrations based on VALs for **large commercial/industrial** air which has been adjusted with an **Attenuation Factor of 0.01** for the hallow soil gas to indoor air pathway in a **large commercial/industrial** setting. VALs for large commerical / industrial indoor air based on WDNR publication PUB-RR-800 "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin" (dated January 2018) which in turn references EPA Region 3 Risk-Based Concentrations for industrial air [Regional Screening Level (RSL) Summary Table (TR=1E-06, HQ=1) May 2023] and large commercial / industrial air in August 2023 "Wisconsin Vapor Quick Look-Up Table, Indoor Air Vapor Action Levels And Vapor Risk Screening Levels" publication RR-0136. VAL adjusted to 1-in-100,000 increase in lifetime cancer risk for carcinogens per WDNR publication RR-800; VAL is not adjusted for non-carcinogens (i.e., hazard index = 1).

5. NA = not analyzed

6. Laboratory flags:

7. Exceedances: **BOLD** = concentration greater than residential Vapor Risk Screening Level
[ ] = concentration greater than small commercial Vapor Risk Screening Level
{ } = concentration greater than large commercial / industrial Vapor Risk Screening Level

Data entered / updated by: RJA Date: 12/13/2023
Data checked by: SRM Date: 12/13/2023

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