DECEMBER 3, 2021

2020 ANNUAL GROUNDWATER MONITORING REPORT

ARKEMA COATING RESINS
340 RAILROAD STREET
SAUKVILLE, WISCONSIN 53080
WDNR FID#: 246004330
BRRTS #: 02-46-000767

ENDPOINT PROJECT NO. 341-021-002:001

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2020 Annual Groundwater Monitoring Report

Arkema Coating Resins
340 Railroad Street
Saukville, Wisconsin

December 3, 2021

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GLOSSARY

amsl	Above mean sea level
AOC	Area of Concern
Arkema	Arkema Coating Resins
BETX	Benzene, Ethylbenzene, Toluene, and Total Xylenes
CCP	CCP Composites US
CMS	Corrective Measures Study
COC	Chain-of-Custody
CVOC	Chlorinated Volatile Organic Compounds
cis-1,2 - DCE	cis-1,2-dichloroethene
EDD	Electronic Data Download
Endpoint	Endpoint Solutions Corp.
ES	WAC Chapter NR 140 Enforcement Standard
ft	Feet
Freeman	Freeman Chemical Corporation
gpm	Gallons per Minute
GEMS	Groundwater and Environmental Monitoring System
GWMP	Groundwater Monitoring Plan
MDL	Method Detection Limit
MPPE	Macro-Porous Polymer Extraction
µg/kg	Micrograms per Kilogram
µg/L	Micrograms per Liter
msl	Mean Sea Level
PAL	WAC Chapter NR 140 Preventive Action Limit
PCB	Polychlorinated Biphenyl
POTW	Publicly Owned Treatment Works
RC	Ranney Collector
RCRA	Resource Conservation and Recovery Act
Reaction water	Esterification water
RFI	RCRA Facility Investigation
SVE	Soil Vapor Extraction
SVOC	Semi-Volatile Organic Compound
trans-1,2-DCE	trans-1,2-dichloroethene
1,1,1 - TCA	1,1,1-trichloroethane
TCE	Trichloroethene
TOTAL	Total Petrochemicals - the former owner of CCP
URS	URS Corp.
USEPA	United States Environmental Protection Agency
VC	Vinyl Chloride
VOC	Volatile Organic Compounds
WAC	Wisconsin Administrative Code
WDNR	Wisconsin Department of Natural Resources
WDWPC	Wisconsin Department of Water Pollution Control
WPDES	Wisconsin Pollutant Discharge Elimination System

EXECUTIVE SUMMARY

The purpose of this Annual Report is to summarize the groundwater data collected during the previous year of sampling at the Arkema Coating Resins (Arkema) Saukville facility (the "Saukville Facility"), discuss any changes to the monitoring network during the previous year, evaluate the effectiveness of the existing on-site extraction system and determine whether any changes to the monitoring or extraction networks are necessary to maintain control of the contaminants in the subsurface. In July 2011, the ownership of the real property of the Saukville Facility was transferred from CCP Composites US (CCP) to Arkema. On December 31, 2015, Arkema idled the Saukville Facility, and responsibility for operating and maintaining the groundwater extraction system was transferred to RETIA USA LLC, a legacy site services group owned by Total Petrochemicals & Refining USA, Inc. (TOTAL), the former owner of CCP.

No changes to the Wisconsin Department of Natural Resources (WDNR) approved 2005 Revised Groundwater Monitoring Plan (GWMP) for the Saukville facility occurred in 2020. A summary of the revised 2005 GWMP is presented below.

WINTER QUARTER

The Winter quarterly sampling event is performed in January and is limited to the sampling of Municipal Water Supply Well No. 1 (**MW-1**).

SPRING QUARTER

The Spring quarterly sampling event is performed in April and includes sampling the receptor monitoring points and the perimeter monitoring points on and surrounding the Saukville Facility, in addition to groundwater elevation measurements from all wells in the monitoring network.

The following exceptions to the 2005 revised GWMP occurred during the Spring 2020 sampling event.

- Samples could not be collected from the following locations due to COVID-19 restrictions: **MW-1**, **MW-3**, **MW-4**, **POTW-E**, **POTW-I**, **POTW-S** and **PW-08**.

SUMMER QUARTER

The Summer quarterly sampling event is performed in July and is limited to the sampling of **MW-1**.

The following exceptions to the 2005 revised GWMP occurred during the Summer 2020 sampling event.

- Samples were also collected from the following locations due to COVID-19 restrictions being lifted: **MW-3**, **MW-4**, **POTW-E**, **POTW-I**, and **POTW-S**.

FALL QUARTER

The Fall quarterly sampling event is performed in October and includes sampling the receptor monitoring points, the perimeter monitoring points and the remediation progress points on and

surrounding the Saukville Facility. Groundwater elevation measurements are collected from all wells in the monitoring network.

Results of the groundwater sampling performed in 2020 indicate that contaminant concentrations are generally consistent with the trends observed during previous years and no contaminants of concern were detected in the Municipal Water Supply Wells **MW-1**, **MW-3** and **MW-4** screened in the deep dolomite aquifer.

The groundwater extraction system currently operating at the Saukville Facility was designed to minimize the downward migration of impacts from the glacial drift and shallow dolomite aquifers to the deep dolomite aquifer and to control the off-site migration of impacts from within the glacial drift, shallow dolomite, and deep dolomite aquifers. Results of the groundwater sampling conducted in 2020 continue to indicate the extraction system is operating as designed.

In 2020, the perimeter monitoring wells remained generally free of detectable concentrations of VOCs. However, impacts from off-site sources continue to be detected in several upgradient perimeter monitoring wells, as well as several on-site monitoring wells. In addition, elevated concentrations of contaminants continue to be detected in the shallow dolomite aquifer along the southern fence line of the Saukville Facility. However, the results from the glacial drift monitoring points along the southern fence line are free of detections.

Groundwater samples collected in 2020 from the on-site remediation progress points continue to indicate that contaminants are effectively being contained on-site and are slowly being removed from the subsurface through the active extraction system.

SYSTEM MAINTENANCE

System maintenance activities performed in 2020 included:

- Replacing the pump in RC-2;
- Replacing the power feed to RC-2;
- Replacing the power feed to W-28;
- Replacing pumps in W-31, W-34 and W-35; and,
- Replacing the power feed to W-34.

1.0 INTRODUCTION

Arkema Resin Coatings (Arkema) operated a polyester, acrylic and alkyd resin manufacturing facility located at 340 Railroad Street in Saukville, Wisconsin (the "Saukville Facility"). The location of the Saukville Facility is depicted on **Figure 1**. In 2011, Arkema purchased the Saukville Facility from CCP Composites US (CCP). Although Arkema purchased the Saukville Facility, the responsibility for operating and maintaining the groundwater extraction system remained with CCP. Prior to 1991, the Saukville Facility was owned and operated by Freeman Chemical Corporation (Freeman). The Saukville Facility was initially operated as a cannery until 1949 when Freeman installed resin manufacturing equipment. Alkyd, polyester and urethane synthetic resins have been manufactured at the Saukville Facility since 1949. On December 31, 2015, Arkema idled the Saukville Facility, and responsibility for operating and maintaining the groundwater extraction system was transferred to RETIA USA LLC, a legacy site services group owned by Total Petrochemicals & Refining Inc. (TOTAL), the former owner of CCP.

From 1952 to 1968, esterification water (reaction water) produced as a byproduct of the resin manufacturing process was disposed in a dry well formerly located on the western edge of the Saukville Facility with approval from the Wisconsin Division of Water Pollution Control (WDWPC). In 1968, the dry well method of disposal for the reaction water was replaced with an on-site hazardous waste incinerator, located south of the main office. The original hazardous waste incinerator was replaced in the early 1990s with a new hazardous waste incinerator east of the existing tank farm. The hazardous waste incinerator was in operation until 2003 when a macro-porous polymer extraction (MPPE) system was added to the process to render the hazardous reaction water non-hazardous. The incinerator continued to operate as a non-hazardous incinerator to dispose of the post-MPPE, non-hazardous reaction water, until October 2004. From October 2004 to 2014, reaction water was disposed off-site via deep well injection in Texas after transport by rail.

Three (3) Areas of Concern (AOCs) were identified on the Saukville Facility during the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI). The three (3) AOCs are as follows:

AOC No. 1 – Former Urethane Laboratory/Former Liquids Incinerator Area

The former liquids incinerator was used to dispose reaction water from 1968 to 1989. AOC No. 1 is located on the northeast portion of the Saukville Facility immediately south of the office building in the vicinity of the former solid waste incinerator and the former soil vapor extraction (SVE) system near monitoring well **W-47**. In addition to being identified as an AOC in the Consent Order, AOC No. 1 is also regulated by the Wisconsin Department of Natural Resources (WDNR) under a *Closure Plan Modification (RMT – April 1992)* related to the former hazardous waste incinerator.

AOC No. 2 – Former Dry Well

The former dry well was used from approximately 1952 through 1968 to dispose of reaction water as approved by the WDWPC. AOC No. 2 is located in the west-central portion of the Saukville Facility near monitoring well **W-06A** along the west fence line.

AOC No. 3 – Former Tank Farm Storage Area

An aboveground storage tank (AST) containment dike consisting of an earthen berm utilized for the storage of raw materials and finished product formerly occupied this area. AOC No. 3 is located near the center of the Saukville Facility to the east and south of the existing non-hazardous liquid waste incinerator, in the vicinity of the existing concrete AST containment dike.

The existing layout of the Saukville Facility, including the location of monitoring points and AOCs, is depicted on the Existing Site Layout included as **Figure 2**.

In compliance with the 1987 Corrective Action Order on Consent (Docket #V-W-88-R-002), October 19, 1987, 3008h order for RCRA, quarterly groundwater monitoring is required to be performed and reported for specific wells. RETIA USA LLC retains the obligation to remediate the site as determined in the Consent Order.

Groundwater samples were collected and submitted to Eurofins TestAmerica located in Chicago, Illinois under standard chain-of-custody (COC) procedures by Endpoint Solutions Corp. (Endpoint) personnel for all 2020 sampling events. The field data and results were compiled by Endpoint. All results were submitted on a quarterly basis to the WDNR. Exceedances of the Wisconsin Administrative Code (WAC) Chapter NR 140 Preventive Action Limits (PALs) and Enforcement Standards (ESs) were reported quarterly in accordance with WAC Chapter NR 508. This report was prepared to summarize the results of the groundwater monitoring during the 2020 calendar year and to compare the results from the 2020 sampling events with those from previous years.

2.0 PURPOSE AND SCOPE

This document presents a summary of the data collected during the quarterly, semi-annual and annual groundwater sampling events conducted during 2020, and provides an evaluation of the historical groundwater elevation and quality trends at the Saukville Facility. The water quality data has been submitted to the WDNR in the quarterly reports. Additionally, electronic data downloads (EDDs) of the analytical data are submitted to the WDNR Bureau of Waste Management Groundwater and Environmental Monitoring System (GEMS) on a quarterly basis. Copies of the analytical result summary tables created for each of the quarterly events in 2020 are included in **Appendix A**.

The contents of this report include the following:

- A summary of the site groundwater monitoring program, and contaminant concentrations by individual sample point;
- Isoconcentration maps for select contaminants in groundwater in the glacial drift and shallow dolomite units;
- Time versus concentration plots of selected volatile organic compounds (VOCs) in groundwater in selected wells;
- An evaluation of the trends in groundwater quality for each of the monitoring groups;
- An evaluation of the effectiveness of the containment of the groundwater impacts by the on-site groundwater extraction system, based on groundwater flow and quality data; and,
- An estimate of the total VOC mass removed by the extraction system since 1992.

3.0 SITE HYDROGEOLOGY

3.1 DESCRIPTION OF HYDROGEOLOGIC UNITS

The geology at the Saukville Facility has been divided into three (3) distinct hydrogeologic units. These units include the unconsolidated glacial drift deposits, the shallow dolomite unit consisting of the Silurian dolomite to approximately 100 feet below the ground surface (ft bgs), and the deep dolomite unit consisting of Silurian dolomite between approximately 100 ft and 600 ft bgs. A detailed description of the three (3) units is provided below.

3.1.1 GLACIAL DRIFT

The glacial drift unit consists of a complex succession of fill and glaciolacustrine deposits that is underlain by a glacial till. The materials that compose this unit have been extensively used as fill at the Saukville Facility. Both the till and the glaciolacustrine deposits are considered to be part of a partially confining hydrostratigraphic unit.

The total thickness of the glacial drift varies between ten (10) ft and thirty (30) ft in the vicinity of the Saukville Facility, but the glacial drift is generally on the order of ten (10) ft thick beneath the Saukville Facility. Glaciolacustrine deposits are up to twenty (20) ft thick on the western side of the Saukville Facility, and consist of interbedded sands, silts and clays. The clay is soft to medium hard, gray, and plastic to slightly plastic. Between five (5) ft and twenty-five (25) ft of glacial till is present beneath the eastern side of the Saukville Facility. The till is composed of interbedded silty sands and sandy gravel. The sandy gravel varies from loose to very dense, is brown to gray, and is typically well-graded.

The stratigraphic order of the deposits from the ground surface is generally sand and silt overlying a laterally continuous layer of laminated silt and clay (glaciolacustrine deposits) above dense clay (glacial till). A thin layer of sand and gravel (glacial outwash) lies between this till unit and bedrock.

3.1.2 SHALLOW DOLOMITE

The glacial deposits are unconformably underlain by fractured, thin- to massive-bedded Silurian dolomite, with a total thickness of approximately 600 ft in the area, which includes the deep dolomite aquifer.

The uppermost 100 ft of the Silurian dolomite in the Saukville area tends to have a lower permeability than the underlying deep dolomite aquifer. Occasionally, transmissive zones are encountered in the shallow dolomite, such as at monitoring well **W-24A**, which extracts groundwater at 40 gallons per minute (gpm) and yet shows little drawdown.

3.1.3 DEEP DOLOMITE

The deep dolomite aquifer is defined as the Silurian dolomite from approximately 100 ft to 600 ft bgs. The dominant lithology in the deep dolomite aquifer in the Saukville area is the Racine Formation. Municipal wells in the vicinity of the Saukville Facility are typically cased to

approximately 100 ft bgs, and are completed in the Silurian dolomite to depths in the range of 450 ft to 550 ft bgs.

Several solution features have been identified in the dolomite beneath the Saukville Facility. An apparent sinkhole, filled with glacial deposits, which extends to a depth of approximately 200 ft bgs, was encountered on the eastern edge of the Saukville Facility during the installation of wells **W-3A**, **W-3B**, and **W-20**. The aerial extent of the sinkhole was further defined based on the seismic refraction survey performed by Minnesota Geophysical Associates. Further evidence of the karstic features includes solution enlarged joints in the dolomite observed during the borehole video logging of deep pumping well **W-30**. These observations, coupled with the hydraulic response of the aquifer during pumping tests in Saukville, suggest that groundwater flow in the Silurian dolomite is primarily fracture controlled in the vicinity of the Saukville Facility.

3.2 GROUNDWATER LEVELS AND FLOW PATTERNS IN 2020

Groundwater levels in the monitoring wells were measured prior to purging and sampling during the Spring and Fall sampling events. **Table 1 – 2020 Summary of Groundwater Level Measurements** presents a summary of the water level measurements collected in 2020. The water level data collected in 2020 was used to develop water table maps for the glacial drift unit, and potentiometric surface maps for the shallow and deep dolomite units. These maps were created using groundwater elevation data from the Fall 2020 sampling event and are attached as **Figure 3** and **Figure 4**.

Groundwater elevations at the Saukville Facility are influenced by the active groundwater extraction systems. A total of eight (8) extraction points in the glacial drift, four (4) shallow dolomite extraction wells, and one (1) deep dolomite extraction well are actively pumped to contain the extent of impacts. **Table 2 – 2020 Summary of Well Running Times and Volume Removed**, provides a summary of the annual pump running times and an estimate of the volume of groundwater removed by each well during 2020. A review of the estimated volumes removed indicates that the majority of groundwater extraction during 2020 occurred in the deep dolomite unit. Approximately 78,840,000 gallons of groundwater were removed from the deep dolomite aquifer through near-continuous pumping of **W-30.** Due to the shutdown of production at the Saukville facility, the discharge from **W-30** is no longer needed for non-contact cooling water (NCCW). Therefore, the pumping rate has been reduced to approximately 150 to 200 gallons per minute (gpm). Approximately 2,576,589 gallons of groundwater were removed from the glacial drift aquifer, and approximately 20,628,787 gallons of groundwater were removed from the shallow dolomite aquifer during 2020. In total, approximately 102,045,376 gallons of groundwater were removed from the glacial drift, shallow dolomite and deep dolomite aquifers at the Saukville Facility in 2020. With the exception of the groundwater extracted from deep dolomite well **W-30**, all extracted groundwater is discharged to the Saukville publicly-owned treatment works (POTW). Groundwater extracted from the deep dolomite aquifer via **W-30**, is discharged to the Milwaukee River via Outfall 001 under limits imposed by a Wisconsin Pollutant Discharge Elimination System (WPDES) general industrial permit. The Saukville POTW discharges its effluent to the Milwaukee River.

In order to evaluate the continued effectiveness of the on-site groundwater extraction system, annual pump run times and volume removal rates were evaluated. A summary of the trends observed are as follows.

Glacial Drift Unit

Extraction Point	Hours		
	2019	**2020**	**Change**
W-31	14.2	110.0	+95.8
W-32	1,307.2	1,044.7	-262.5
W-33	0.3	0.0	-0.3
W-34	0.0	4,567.5	+4,567.5
W-35	4.6	51.4	+46.8
RC-1	6,722.4	907.4	-5,815.0
RC-2	4,562.0	7,532.6	+2,970.6
RC-3	6,858.5	5,739.6	-1,118.9
TOTALS	**19,469.2**	**19,953.2**	**+484.0**

Shallow Dolomite Unit

Extraction Point	Hours		
	2019	**2020**	**Change**
W-21A	7,783.0	8,803.7	+1,020.7
W-24A	3,656.7	5,719.2	+2,062.5
W-28	0.0	1,886.5	+1,886.5
W-29	4,117.6	7,805.5	+3,687.9
Totals	**15,557.3**	**24,214.9**	**+8,657.6**

Appendix B includes plots of Pump Run Time Trends from 1992 – 2020.

Following the upgrades to the groundwater extraction system completed in 2019, the extraction system continues to operate reliably.

3.2.1 Groundwater Elevation Trends

Groundwater elevation trends from 1995 to 2020 were also evaluated as part of this Annual Report. The water levels tend to follow a general trend where increases are observed during the Spring and Summer quarters and decreases are observed during the Fall and Winter quarters. The water level measurements continue to indicate that dewatering of the on-site glacial deposits is occurring, there is convergent flow within the shallow dolomite unit towards the extraction wells and the on-site extraction system is controlling off-site migration of groundwater in the glacial drift.

3.2.2 Glacial Drift Hydrogeologic Unit

Monitoring well **W-20** is constructed as a piezometer within the glacial drift present in the sinkhole identified in the northeast corner of the Saukville Facility, and the hydraulic head within this well is representative of groundwater flow in the shallow dolomite unit. Therefore, water levels from monitoring well **W-20** were not used to construct the water table maps, but have been used to construct the potentiometric surface maps for the shallow dolomite unit.

The water table occurs in the glacial drift unit. The water table beneath the Saukville Facility generally slopes from the southwest to the northeast, towards the Milwaukee River. However, on-site shallow groundwater flow is diverted towards the Ranney Collectors (RCs) and the active on-site extraction network.

3.2.3 Shallow Dolomite Unit

The piezometers constructed at the Saukville Facility have been completed at varying depths in the dolomite. The shallow dolomite and deep dolomite are typically mapped as one (1) unit. In general, the potentiometric surface in the shallow and deep dolomite aquifers indicate a steep cone of depression in the vicinity of deep dolomite well **W-30**. The continuous pumping at deep dolomite well **W-30** appears to have dewatered the shallow dolomite in the vicinity of shallow dolomite extraction well **W-28**. The influence of pumping **W-30** appears to extend approximately over 50% of the Saukville Facility, as well as the adjoining Saukville Feed Mill and JT Roofing properties to the west.

3.2.4 Deep Dolomite Unit

Well **W-30** has a bottom elevation of approximately 215 ft above mean sea level (amsl), and was previously utilized to provide non-contact cooling water (NCCW) extracted from deep dolomite unit. Since production at the Saukville Facility ceased at the end of 2015, the pumping rate of **W-30** has been reduced to approximately 150 gpm. Based on the results of the groundwater modeling conducted during the RFI, groundwater flow in the deep dolomite unit in the Saukville area is towards well **W-30**, and the three (3) existing off-site Saukville municipal water supply wells (**MW-1**, **MW-3** and **MW-4**). Only one (1) on-site data point (**W-30**) is available to document flow direction in the deep dolomite unit. Therefore, there is insufficient data to prepare potentiometric surface maps for the deep dolomite unit. However, groundwater on the Saukville Facility exhibits a strong downward flow from the glacial deposits and the shallow dolomite unit to the deep dolomite unit due to the continuous pumping of well **W-30**. At all three (3) of the glacial drift/shallow dolomite nested pairs (**W-18A**/**W-22**, **W-43**/**W-38** and **W-16A**/**W-40**), the groundwater elevation in the glacial drift wells is three (3) to ten (10) feet higher than the groundwater elevation measured in the paired shallow dolomite wells.

3.3 GROUNDWATER GRADIENTS

3.3.1 HORIZONTAL GRADIENTS

3.3.1.1 GLACIAL DRIFT AQUIFER

In 2020, the groundwater in the glacial drift aquifer flowed eastward with a horizontal gradient of 0.023 ft/ft as measured between monitoring wells W-27 to W-08R. According to information included in the *Site Conditions and Construction Report* (Hatcher Incorporated – February 15, 1988), the permeability of the glacial deposits was measured to range between 1.2×10^{-8} to 5.5×10^{-8} centimeters per second (cm/sec).

3.3.1.2 SHALLOW DOLOMITE AQUIFER

In 2020, the groundwater in the shallow dolomite unit exhibited convergent flow towards deep dolomite pumping well **W-30**. The gradient appears steeper to the west of **W-30** as compared to the east, based on the natural west to east flow in the dolomite aquifers. The hydraulic gradient ranged from 0.327 ft/ft to the west of **W-30** to 0.143 ft/ft to the east of **W-30**. According to information included in the *Site Conditions and Construction Report* (Hatcher Incorporated – February 15, 1988), the natural potentiometric gradient in the dolomite aquifer was 0.0125 ft/ft from the center of the Saukville Facility to the Milwaukee River prior to the onset of pumping from the extraction system and deep dolomite well.

3.3.2 VERTICAL GRADIENT

The vertical gradient between the glacial drift and shallow dolomite aquifers was calculated using the groundwater elevations measured in nested pairs during the Fall 2020 sampling event.

Glacial Drift		Shallow Dolomite		Gradient	
Well ID	**Water Elevation**	**Well ID**	**Water Elevation**	**Downwards**	**Upwards**
W-18A	766.42	W-22	760.52	0.15	
W-43	763.90	W-38	754.43	0.26	
W-16A	759.65	W-40	756.35	0.11	
W-3B	744.48	W-3A	744.59	0.00	
W-49	752.85	W-50	750.78	0.13	
W-51	759.81	W-52	752.06	0.40	

Hydrogeologic calculations are summarized in **Appendix C**.

4.0 GROUNDWATER MONITORING PROGRAM

4.1 PROGRAM DESCRIPTION

The groundwater monitoring network at the Saukville Facility includes 46 monitoring points consisting of 21 glacial drift wells, 14 shallow dolomite wells, five (5) deep dolomite wells, three (3) RCs, and three (3) sample points at the Village of Saukville POTW. The monitoring points are further grouped according to four (4) sampling objectives: receptor points, perimeter monitoring points, remediation progress points, and groundwater elevation monitoring points. The organization of the monitoring wells by monitoring objective is summarized in **Table 3 – Modified Groundwater Monitoring Plan Summary**.

Receptor monitoring points include three (3) municipal water supply wells (**MW-1**, **MW-3**, and **MW-4**), POTW influent, effluent, and sludge (**POTW-I**, **POTW-E** and **POTW-S**), and three (3) Ranney Collectors (**RC-1**, **RC-2** and **RC-3**). The RCs are essentially multi-legged French drains installed within the unconsolidated glacial deposits, which intercept shallow groundwater and drain by gravity to a centralized manhole equipped with a discharge pump. The receptor monitoring points are sampled semi-annually during the Spring and Fall quarterly sampling events. municipal water supply well **MW-2** was abandoned by CCP in November 2004 following transfer of the **MW-2** property from the Village of Saukville to CCP. At the request of the Village of Saukville, Municipal water supply well **MW-1** is sampled on a quarterly basis.

Perimeter monitoring points include monitoring wells which are located both on and off the Saukville Facility, or beyond, the edge of the extent of the known impacts. These monitoring points provide necessary information to define the extent of the plume. The perimeter monitoring points are sampled semi-annually during the Spring and Fall sampling events.

Remediation progress points are monitoring wells and extraction wells located within the area of impacts. These wells provide an indication regarding the effectiveness of the on-site extraction wells. The remediation progress points are sampled annually during the Fall sampling event.

Each of the monitoring points is also grouped based on hydrogeologic unit monitored. The hydrogeologic units monitored at the Saukville Facility include: glacial drift; shallow dolomite; and deep dolomite units. This subdivision allows for more effective evaluation of the on-site groundwater flow and quality trends.

4.2 CHANGES IN MONITORING NETWORK

Since the onset of the monitoring program, three (3) monitoring points have been abandoned. Monitoring well **W-25** (shallow dolomite) was abandoned due to damage to the well caused by construction of an addition to the Village of Saukville's Oscar Grady Library. Glacial drift monitoring well **W-37** was formerly located to the east of the Saukville Facility within the adjoining Ozaukee Christian School ballfield. **W-37** was abandoned in 1996 during the remediation of the Church Ballfield (identified as AOC 5). As part of the remediation of AOC 5, a leg of **RC-3** was extended to the north, terminating within approximately ten (10) feet of the former **W-37** location. The WDNR approved the abandonment of **W-37**. Municipal water supply well **MW-2** (deep

dolomite) was abandoned following transfer of ownership from the Village of Saukville to CCP in 2004. These wells have not been replaced since the remaining monitoring network is providing sufficient data for plume assessment.

In July 2005, the WDNR approved a revised GWMP for the Saukville facility. The revised GWMP reflected the abandonment of the two (2) perimeter monitoring points (**W-25** and **W-37**), the abandonment of the Village water supply well (**MW-2**), the addition of five (5) new perimeter monitoring points (**W-49**, **W-50**, **W-51**, **W-52** and **W-53**), and historical concentration trends for the existing monitoring network.

4.3 SAMPLING SCHEDULE

Table 3 – Modified Groundwater Sampling Plan Summary presents the sampling schedule that was developed as part of the revised GWMP, submitted to, and approved by the WDNR, along with the analytical methods used each quarter. The methods and associated parameters are listed in **Table 4 – Summary of Analytes and Methods**. The analytical testing was performed by Eurofins TestAmerica located in Chicago, Illinois (WI Certification # 999580010). The following methods were used to analyze the submitted samples:

VOC	SW846 8260B
Semi-Volatile Organic Compounds (SVOC)	SW846 8270D
Metals	SW846 6010C
Polychlorinated Biphenyls (PCBs)	SW846 8082A

5.0 GROUNDWATER QUALITY

5.1 VOC SAMPLING RESULTS

The tabulated results of the VOC concentrations in each well and the supporting laboratory data were presented in each of the four (4) quarterly reports. Copies of the result summary tables included in each of the quarterly reports are attached in **Appendix A**.

The individual detected VOCs in the glacial drift, and the shallow dolomite unit for 2020 are depicted on **Figure 5 – VOC Detections - Glacial Drift Aquifer – Fall 2020** and **Figure 6 – VOC Detections - Shallow and Deep Dolomite Aquifers – Fall 2020**. A discussion of the VOC detections during 2020 follows.

5.1.1 MUNICIPAL WATER SUPPLY WELLS

Results of the groundwater samples collected from the Municipal Water Supply Wells during 2020 were as follows:

- Winter 2020 – No VOCs were detected in the sample collected from municipal well **MW-1**, the blind duplicate or the associated trip blank.
- Spring 2020 – No samples were collected from the three (3) municipal wells **(MW-1**, **MW-3** and **MW-4)** due to COVID-19 access restrictions implemented by the Village of Saukville.
- Summer 2020 – COVID-19 access restrictions were lifted by the Village of Saukville; therefore, the three (3) municipal wells **(MW-1, MW-3** and **MW-4)** scheduled to be sampled during the Spring sampling event were sampled during the Fall sampling event instead. No VOCs were detected in any of the samples collected from municipal well **MW-1**, **MW-3** and **MW-4,** the blind duplicate from MW-4 **(DUP1-20-3)** or the associated trip blank **(TB1-20-3)**.
- Fall 2020 – No VOCs were detected in the samples collected from the three (3) municipal wells **(MW-1, MW-3** and **MW-4)**, the blind duplicate sample submitted from MW-4 **(DUP-1-20-4)** or the associated trip blanks **TB1-20-4, TB2-20-4** and **TB3-20-4**.

5.1.2 POTW

Samples are collected from the Village of Saukville POTW during the Spring and Fall sampling events per the revised GWMP. Samples of the influent (**POTW-I**), effluent (**POTW-E**) and sludge (**POTW-S**) could not be collected during the Spring 2020 sampling event due to COVID-19 access restrictions implemented by the Village of Saukville. The COVID-19 access restrictions were lifted prior to the Summer sampling event; therefore, the samples scheduled to be collected during the Spring sampling event were collected during the Summer sampling event instead. During 2020, the total VOC concentration in the **POTW-I** samples ranged between 0.39 micrograms per liter (µg/L) during the Fall 2020 sampling event and 80.66 µg/L during the Summer 2020 sampling event. Individual constituents detected in the **POTW-I** samples included: toluene during both sampling events; with the addition of total xylenes, chloroform and ethylbenzene during the Summer sampling event. The reported concentrations of chloroform and ethylbenzene during the Summer

sampling event are estimated along with the concentration of toluene during the Fall sampling event.

VOCs were not detected in either of the **POTW-E** samples collected during the 2020 Summer and Fall sampling events.

The total VOC concentrations in the **POTW-S** samples ranged from 1,100 µg/L during the Fall sampling event to 8,813.6 µg/L during the Summer sampling event, mostly entirely of toluene. During the Summer sampling event 1,2-Dichloropropane and an estimated concentration of total xylenes were also detected. The **POTW-S** sample collected in Summer was diluted 10 times while the sample collected in Fall was diluted 50 times due to the presence of high organic content.

5.1.3 RANNEY COLLECTORS

Ranney Collectors (RCs) are wells with horizontal slotted stainless-steel pipes that stretch out like spider legs (French Drains) and drain water from soil by gravity to the center well casing where the pump is located. The approximate layout of each of the RC legs are depicted on **Figure 2** through **Figure 15**. All three (3) Ranney Collectors were sampled from their central collection manholes during both the Spring and Fall sampling events.

- RC-1 – The samples collected from Ranney Collector **RC-1** contained no VOCs in the sample collected during the Spring 2020 sampling event and 0.49 µg/L total VOCs in the sample collected during the Fall 2020 sampling event. The Fall sample contained an estimated concentration of tetrachloroethene (PCE) during the Fall 2020 sampling event. Ranney Collector **RC-1** is located on the eastern portion of the Saukville Facility and collects groundwater to the east of AOCs 1 and 3.
- RC-2 –The samples collected from Ranney Collector **RC-2** during the Spring 2020 contained no VOCs and 22.97 µg/L total VOCs in the sample collected during the Fall 2020 sampling event. The Fall sample contained elevated concentrations of cis-1,2-dichloroethene, vinyl chloride (VC), trichlorofluoromethane, total xylenes, trichloroethene (TCE) and benzene. Ranney Collector **RC-2** is located in the southwest corner of the Saukville Facility with a single leg which extends to the north along the west side of AOC 2.
- RC-3 – Total VOC concentrations in the samples collected from Ranney Collector **RC-3** ranged between 55.75 µg/L during the Fall 2020 sampling event and 29,638 µg/L during the Spring 2020 sampling event. Both samples contained elevated concentrations of total xylenes, ethylbenzene, toluene and benzene. Ranney Collector **RC-3** is located near the center of the Saukville Facility with legs which extending to the east and southwest of AOC 1 and to south in between AOCs 2 and 3.

5.1.4 Detected Contaminants in the Glacial Drift Unit

The distribution of VOCs detected in the glacial drift aquifer in 2020 is depicted on **Figure 5 – VOC Detections - Glacial Drift Aquifer – Fall 2020**. Monitoring points in the glacial drift unit include the following:

Perimeter Monitoring

- **W-01A**, **W-03B**, **W-04A**, **W-08R**, **W-16A**, **W-27**, **W-49** and **W-51**.

Remediation Progress

- **W-06A**, **W-19A**, **W-41**, **W-42**, **W-43** and **W-47**.

As discussed in **Section 3.2.2**, monitoring well **W-20** is completed in the glacial drift deposit within the sinkhole in the shallow dolomite unit, and therefore, the results obtained from **W-20** are more representative of the water quality in the shallow dolomite aquifer. Isoconcentration contours in the glacial drift unit do not include total VOC concentrations in the RCs as the RC samples are composite groundwater samples that are collected from broad areas of the Saukville Facility through radial collection lines.

The distribution of VOCs in the groundwater in the glacial drift in 2020 are generally similar to the distribution observed in the past. In general, the impacts observed in the glacial drift aquifer are closely related to the three (3) on-site AOCs. Exceedances for benzene, ethylbenzene, toluene and xylenes are primarily located in AOCs Nos. 1 and 2.

Chlorinated VOCs (CVOCs), primarily in the form of TCE, cis-1,2-dichloroethene and VC, were detected in the groundwater samples collected from glacial drift wells **W-19A** and **W-27**. TCE was detected at concentrations of 15 µg/L to 93 µg/L in the samples collected from **W-27** during the Spring 2020 and Fall 2020 sampling events, respectively. TCE was detected at a concentration of 6.0 µg/L in the sample collected from **W-19A** during the Fall 2020 sampling event. All of these concentrations exceeded the ES. Both of these wells are located hydrogeologically upgradient of the Saukville Facility. These results continue to indicate an off-site, upgradient source of the CVOC impacts. Ongoing investigation activities are proceeding on the upgradient site identified by the WDNR as the Northern Signal Laubenstein property (BRRTS #: 02-46-535604).

5.1.4.1 Perimeter Monitoring Group – Glacial Drift

In general, VOC concentrations in the glacial drift perimeter monitoring wells have not changed significantly since 1995. No detectable VOC constituents were reported in the samples collected from the following glacial drift monitoring well in 2020: **W-01A, W-04A, W-49** and **W-51**. These monitoring points are located either on the Saukville Facility or hydrogeologically downgradient of the Saukville Facility.

The samples collected from glacial drift perimeter monitoring wells **W-03B**, **W-08R** and **W-16A** during the Spring 2020 sampling event contained estimated concentration of methylene chloride. These estimated concentrations of methylene chloride exceeded its PAL and were not detected during the Fall 2020 sampling event. Based on a review of the laboratory quality assurance/quality

control (QA/QC) data, the methylene chloride concentrations are the result of laboratory contamination.

The following provides a discussion of the character and concentration of contaminants detected in glacial drift perimeter monitoring wells sampled in 2020.

W-27

The sample collected from upgradient glacial drift monitoring well **W-27** during the Spring sampling event contained an elevated concentration of TCE and an estimated concentration of methylene chloride. The sample collected during the Fall sampling event contained elevated concentrations of TCE, cis-1,2-dichloroethene and an estimated concentration of 1,1,1-trichloroethane. The concentrations of TCE detected in the samples collected during the Spring and Fall 2020 sampling events both exceeded its enforcement standard (ES), while the estimated concentration of methylene chloride detected in during the Spring sampling event and the concentration of cis-1,2-dichloroethene detected during the Fall 2020 sampling event exceeded their respective preventive action limits (PALs).

It should be noted, perimeter monitoring point **W-27** is located upgradient of the Saukville Facility on the JT Roofing (former Laubenstein Roofing and Northern Signal) property. CVOCs have never been utilized at the Saukville Facility. However, a chlorinated solvent degreasing pit was historically located at the former Northern Signal site in the general vicinity of perimeter monitoring point **W-27**.

According to information contained on the WDNR Bureau of Remediation and Redevelopment Tracking System (BRRTS) online database, the Northern Signal/Laubenstein Property is identified as an open environmental repair program (ERP) site (BRRTS # 02-46-535604) and on August 8, 2020, WDNR approved the Site Investigation Workplan. It should be noted that there is also an open leaking underground storage tank (LUST) case at the JT Roofing property (BRRTS # 03-46-218762). The WDNR indicates that diesel fuel has impacted the soil and fractured bedrock on this property.

5.1.4.2 Remediation Progress Group

Six (6) glacial drift remediation progress wells (**W-6A**, **W-19A**, **W-41**, **W-42**, **W-43** and **W-47**) are sampled annually during the Fall sampling event. In general, these wells are located on the footprint of the Saukville Facility within the identified AOCs; however, **W-19A** is located hydrogeologically upgradient of the Saukville Facility on the JT Roofing property near a privy which was reportedly utilized as the disposal location for spent CVOC solvents.

Overall, contaminant concentrations in the glacial drift remediation progress wells have been relatively stable since 1995, with annual variance in the range of a standard deviation. A discussion of the specific contaminant concentrations observed in the glacial drift remediation progress wells during 2020 is as follows.

- The groundwater sample collected from glacial drift remediation progress monitoring well **W-06A** contained the highest detectable concentrations of total xylenes (87,000 µg/L),

toluene (30,000 µg/L), ethylbenzene (21,000 µg/L), total trimethylbenzenes (670 µg/L) and benzene (86 µg/L). In addition, the groundwater sample collected contained detectable concentrations of isopropylbenzene (420 µg/L), 2,4-dimethylphenol (130 µg/L), n-propylbenzene (120 µg/L), 3&4-methylphenol (67 µg/L), 2-methylphenol (58 µg/L), barium (46 µg/L), arsenic (31 µg/L), 1,4-dioxane (31 µg/L), naphthalene (14 µg/L) and estimated concentrations of 1,2-dichlorobenzene (1.3 µg/L), diethyl phthalate (1.3 µg/L), di-n-butyl phthalate (0.91 µg/L) and 2-methylnaphthalate (0.35 µg/L). The concentrations of total xylenes, toluene, ethylbenzene, total trimethylbenzene, benzene, arsenic and 1,4-dioxane exceeded their respective ESs, while the concentration of naphthalene exceeded its PAL. Glacial drift remediation progress monitoring well **W-06A** is located along the west fence of the Saukville facility within AOC 3 near the former dry well.

- The groundwater sample collected from glacial drift remediation progress point **W-19A** contained detectable concentrations of cis-1,2-dichloroethene (7.9 µg/L), TCE (6.0 µg/L), VC (3.2 µg/L) and 2-chlorotoluene (2.1 µg/L). The concentrations of TCE and VC exceeded their respective ESs, while the concentration of cis-1,2-dichloroethene exceeded its PAL. Glacial drift remediation progress point **W-19A** is located to the west (upgradient) of the Saukville Facility on the adjoining JT Roofing (former Northern Signal) property near the former privy reported utilized to dispose of spent CVOC solvents.
- The groundwater sample collected from glacial drift remediation progress monitoring point **W-41** contained no detectable VOC constituents. Glacial drift remediation progress monitoring point **W-41** is located in the southwest corner of the Saukville Facility south of AOC 2.
- The groundwater sample collected from glacial drift remediation progress monitoring well **W-42** contained detectable concentrations of xylenes (2,900 µg/L), total trimethylbenzenes (328 µg/L), benzene (44 µg/L), naphthalene (37 µg/L), isopropylbenzene (25 µg/L), toluene (23 µg/L), n-propylbenzene (18 µg/L) and ethylbenzene (11 µg/L). The concentrations of total xylenes and benzene exceed their respective ESs, while the concentrations of total trimethylbenzenes and naphthalene exceeded their respective PALs. Glacial drift remediation progress monitoring well **W-42** is located along the west fence of the Saukville Facility between AOCs 1 and 2.
- The groundwater sample collected from glacial drift remediation progress monitoring well **W-43** contained detectable concentrations of barium (10 µg/L), total trimethylbenzenes (10 µg/L), isopropylbenzene (9.1 µg/L), sec-butylbenzene (8.8 µg/L), n-propylbenzene (7.5 µg/L), p-isopropyltoluene (4.7 µg/L), tert-butylbenzene (2.8 µg/L), n-butylbenzene (2.4 µg/L) and benzene (1.0 µg/L) and estimated concentrations of acetophenone (2.8 µg/L), fluorene (0.98 µg/L), dibenzofuran (0.80 µg/L), phenanthrene (0.67 µg/L) and acenaphthene (0.63 µg/L). The concentration of benzene exceeded its respective PAL. Glacial drift remediation progress monitoring well **W-43** is located adjacent to the southwest corner of the tank farm near AOC 3.
- The groundwater sample collected from glacial drift remediation progress monitoring well **W-47** contained detectable concentrations of total xylenes (2,400 µg/L), isopropylbenzene

(260 µg/L), 2,4-dimethylphenol (170 µg/L), total trimethylbenzenes (167.5 µg/L), barium (50 µg/L), ethylbenzene (40 µg/L), naphthalene (11 - 26 µg/L), n-propylbenzene (15 µg/L), benzene (9.6 µg/L), PCE (5.8 µg/l) and toluene (4.5 µg/L) and estimated concentrations of acetophenone (13 µg/L), tert-butylbenzene (2.7 µg/L), sec-butylbenzene (2.1 µg/L) and 2-methylnaphthalene (2.0 µg/L). The concentrations of total xylenes, benzene and PCE exceeded their respective ESs, while the concentrations of total trimethylbenzenes and naphthalene exceeded their respective PALs. Monitoring well **W-47** is the only sampling point with samples analyzed for PCBs. No PCB cogeners were detected in the sample collected from monitoring well **W-47**. Glacial drift remediation progress monitoring well **W-47** is located in the northeast portion of the Saukville Facility within AOC 1 in the vicinity of the former hazardous waste incinerator.

5.1.5 Detected Contaminants in the Shallow Dolomite Unit

VOC concentrations detected in the shallow dolomite aquifer in 2020 are shown on **Figure 6- VOC Detections – Shallow and Deep Dolomite Aquifers – Fall 2020**. Monitoring points in shallow dolomite unit include the following:

Perimeter Monitoring

W-03A, **W-07**, **W-20**, **W-22**, **W-23**, **W-40**, **W-50** and **W-52**.

Remediation Progress

W-21A, **W-24A**, **W-28**, **W-29** and **W-38**.

The overall horizontal extent of the contaminants observed in the shallow dolomite wells is generally the same as observed in previous years. More details regarding the results of the sampling are presented in the following sections.

5.1.5.1 Perimeter Monitoring Group – Shallow Dolomite

In general, VOC concentrations in the shallow dolomite perimeter monitoring wells have not changed significantly since 1995. No detectable concentrations of VOCs were noted in the following wells during the Spring and Fall 2020 sampling events: **W-20** and **W-50.**

The samples collected from glacial drift perimeter monitoring wells **W-03A**, **W-22, W-23** and **W-40** during the Spring 2020 sampling event contained estimated concentrations of methylene chloride. These estimated concentrations of methylene chloride are assumed to be the result of laboratory contamination and are not expected to be indicative of the shallow dolomite aquifer.

A discussion of the specific contaminant concentrations observed in the shallow dolomite perimeter monitoring wells during 2020 is as follows.

- The groundwater sample collected from perimeter shallow dolomite monitoring point **W-7** during the Fall 2020 sampling contained an estimated concentration of PCE (0.39 µg/L) which is below its PAL. No detectable concentrations of VOCs were noted during the Spring

2020 sampling event. Shallow dolomite monitoring point **W-7** is located east of the Saukville Facility.

- The groundwater samples collected from perimeter shallow dolomite monitoring point **W-23** during the Spring 2020 sampling event contained estimated concentrations of cis-1,2-dichloroethene (0.87 µg/L), VC (0.24 µg/L) and benzene (0.17 µg/L) and the groundwater sample collected during the Fall 2020 sampling event contained estimated concentrations of cis-1,2-dichloroethene (0.89 µg/L), VC (0.43 µg/L) and benzene (0.25 µg/L). The detected estimated concentration of VC in both sampling events exceeded its ES. Shallow dolomite monitoring point **W-23** is located along the south fence of the Saukville Facility away from former production areas.
- The groundwater samples collected from perimeter shallow dolomite piezometer **W-52** during the Spring 2020 sampling event contained detectable concentrations of trichlorofluoromethane (91 µg/L), cis-1,2-dichloroethene (12 µg/L), benzene (12 µg/L), VC (7.7 µg/L), trans-1,2-dichloroethene (1.0 µg/L) and TCE (0.60 µg/L) and estimated concentrations of methylene chloride (1.8 µg/L) and naphthalene (0.36 µg/L). The Fall 2020 sampling event contained detectable concentrations of trichlorofluoromethane (22 µg/L), benzene (12 µg/L), cis-1,2-dichloroethene (10 µg/L) and VC (5.6 µg/L) and estimated concentrations of trans-1,2-dichloroethene (0.68 µg/L), TCE (0.43 µg/L) and toluene (0.17 µg/L). The concentrations of benzene and VC detected during both sampling events exceeded their respective ESs. The concentration of cis-1,2-dichloroethene detected during both sampling events and the detections of methylene chloride and TCE in the Spring 2020 sampling event exceeded their respective PALs. Shallow dolomite piezometer **W-52** is located along the south fence of the Saukville Facility away from former production areas.

5.1.5.2 Remediation Progress Group – Shallow Dolomite

In general, the contaminant concentrations detected in the shallow dolomite remediation progress wells indicate a stable trend since 1995. Specific contaminants observed in the shallow dolomite remediation progress wells during 2020 are as follows.

- The groundwater sample collected from shallow dolomite extraction well **W-21A** contained detectable concentrations of ethylbenzene (4,700 µg/L), total xylenes (2,500 µg/L), benzene (920 µg/L), barium (280 µg/L), 1,4-dioxane (50 µg/L), isopropylbenzene (67 µg/L), toluene (31 µg/L), naphthalene (23 - 24 µg/L), arsenic (22 µg/L), 2,4-dimethylphenol (18 µg/L), n-propylbenzene (13 µg/L), acetophenone (11 µg/L) and estimated concentrations of total trimethylbenzenes (51.8 µg/L), chlorobenzene (4.8 µg/L), phenol (4.3 µg/L), 1,2-dichlorobenzene (1.7 µg/L), 2-methylphenol (0.41 µg/L) and 2-methylnaphthalene (0.26 µg/L). The concentrations of ethylbenzene, total xylenes, benzene, arsenic and VC exceeded their respective ESs while the concentration of naphthalene exceeded its PAL. Shallow dolomite extraction well **W-21A** is located north of AOC 3 and south of AOC 1. During 2020, it is estimated approximately 1,056,443 gallons of groundwater were pumped from shallow dolomite extraction well **W-21A**.

- The groundwater sample collected from shallow dolomite extraction well **W-24A** contained elevated concentrations of barium (100 µg/L), cis-1,2-dichloroethene (22 µg/L), VC (11 µg/L), TCE (2.9 µg/L), and estimated concentrations of 1,4-dioxane (11 µg/L), bis(2-ethylhexyl) phthalate (5.3 µg/L) and trans-1,2-dichloroethene (0.37 µg/L). The concentrations of VC and 1,4-dioxane exceeded their respective ESs, while the concentrations of bis(2-ethylhexyl) phthalate and TCE and exceeded their respective PALs. Shallow dolomite extraction well **W-24A** is located in the southwest corner of the Saukville Facility, south of AOC 2. During 2020, it is estimated approximately 13,725,996 gallons of groundwater were pumped from shallow dolomite extraction well **W-24A**.
- The groundwater sample collected from shallow dolomite extraction well **W-28** contained elevated concentrations of barium (270 µg/L), benzene (3.4 µg/L), total xylenes (3.4 µg/L) and the estimated concentrations of cis-1,2-dichlorothene (0.45 µg/L) and VC (0.44 µg/L). The concentration of VC exceeded its ES while the concentration of benzene exceeded its PAL. Shallow dolomite extraction well **W-28** is located in the western portion of the Saukville Facility, southwest of AOC 1. During 2020, it is estimated approximately 226,384 gallons of groundwater were pumped from shallow dolomite extraction well **W-28**.
- The groundwater sample collected from shallow dolomite extraction well **W-29** contained elevated concentrations of total xylenes (270 µg/L), barium (220 µg/L), benzene (120 µg/L), ethylbenzene (74 µg/L), 2,4-dimethylphenol (32 µg/L), styrene (16 µg/L), total trimethylbenzenes (8.2 µg/L) and isopropylbenzene (3.1 µg/L) and the estimated concentrations of 1,4-dioxane (13 µg/L), phenol (4.3 µg/L), arsenic (4.1 µg/L), 2-methylphenol (0.93 µg/L), naphthalene (0.85 µg/L), 3&4-methylphenol (0.56 µg/L) and toluene (0.47 µg/L). The concentrations of benzene and 1,4-dioxane exceeded their respective ESs while the concentrations of styrene and arsenic exceeded their respective PALs. Shallow dolomite extraction well **W-29** is located in the western portion of the Saukville facility, west of AOC 3. During 2020, it is estimated approximately 5,619,964 gallons of groundwater were pumped from shallow dolomite extraction well **W-29**.
- The groundwater sample collected from shallow dolomite remediation progress point **W-38** contained detectable concentrations of benzene (890 µg/L), isopropylbenzene (33 µg/L), n-propylbenzene (6.8 µg/L) and estimated concentrations of total trimethylbenzenes (1.5 µg/L), sec-butylbenzene (1.0 µg/L), ethylbenzene (0.91 µg/L), n-butylbenzene (0.90 µg/L) and total xylenes (0.61 µg/L). the concentration of benzene exceeded its ES. Shallow dolomite remediation progress point **W-38** is located adjacent to the southwest corner of the tank farm near AOC 3.

5.1.6 Detected Contaminants in the Deep Dolomite Unit

VOC concentrations detected in the shallow dolomite aquifer in 2020 are shown on **Figure 6 - VOC Detections – Shallow and Deep Dolomite Aquifers – Fall 2020**. In general, the contaminant concentrations detected in the deep dolomite monitoring points are consistent with results observed since sampling of these wells began. Besides the three (3) municipal water supply wells (**MW-1**, **MW-2** and **MW-3**), the only deep dolomite wells sampled as part of the groundwater

monitoring program are deep dolomite extraction well **W-30** and deep dolomite monitoring well **PW-08** located on the former Northern Signal property.

- Due to access restrictions associated with the COVID-19 pandemic a sample could not be collected from the **PW-08** deep dolomite monitoring point on the JT Roofing property during the Spring 2020 sampling event. Access to deep dolomite perimeter monitoring point **PW-08** was allowed during the Fall 2020 sampling event. The groundwater sample collected from deep dolomite monitoring point **PW-08** during the Fall 2020 sampling event did not contain any detectable VOC constituents. Deep dolomite perimeter monitoring point **PW-08** is located hydrogeologically upgradient to the Saukville Facility on the JT Roofing property. During the initial investigations conducted at the Saukville Facility in the 1980s, it was determined that a large washout existed at the base of the casing of **PW-08**, located approximately 30 ft bgs. Hydrogeologic tests indicated a direct hydraulic connection between **PW-08** and the former Municipal Well No. 2 (**MW-2**). The washout area at the base of the casing was theorized to be the entry point for contaminants to the deep dolomite aquifer. Therefore, Freeman Chemical installed a new surface casing to a depth of 104 ft bgs, resolving the washout condition at the base of the original casing.
- The groundwater sample collected from deep dolomite pumping well **W-30** during the Fall 2020 sampling event contained detectable concentrations of barium (96 µg/L), trichlorofluoromethane (2.1 µg/L), benzene (1.4 µg/L) and estimated concentrations of 1,4-dioxane (8.6 µg/L), arsenic (4.0 µg/L) and cis-1,2-dichlorothene (0.56 µg/L). The concentration of 1,4-dioxane exceeded its ES while the concentrations of arsenic and benzene exceeded their respective PALs. Deep dolomite pumping well **W-30** is no longer utilized for non-contact cooling water at the Saukville Facility. As such, the pumping rate has been reduced to approximately 200 gpm. The groundwater pumped from deep dolomite extraction well W-30 is discharged to the Milwaukee River via Outfall 001 under the limitations of a Wisconsin Pollutant Discharge Elimination System (WPDES) discharge permit.

5.2 VOC Distribution

In general, benzene, ethylbenzene and xylene are the primary VOC constituents detected in the groundwater at the Saukville Facility. CVOCs emanating from the upgradient offsite source at the former Northern Signal site (current JT Roofing property) continue to be detected in the glacial drift and shallow dolomite aquifers at the Site.

5.2.1 Glacial Drift Aquifer

Isoconcentration maps for benzene, ethylbenzene, toluene and xylenes in the glacial drift aquifer are presented as **Figures 7, 8, 9 and 10**, respectively. Trichloroethene and vinyl chloride detections in the glacial drift aquifer are shown on **Figure 11**.

Based on an evaluation of the results of the Fall 2020 groundwater sampling event, the VOC impacts in the glacial drift aquifer are generally located on the western side of the Saukville Facility between AOCs 1 and 2. In general, benzene is detected at the lowest overall concentrations of all the BTEX

constituents in the glacial drift aquifer with concentrations generally less than 100 µg/L. The general extent of benzene in the glacial drift aquifer extends from AOC 2 to the northeast towards AOC 1.

Ethylbenzene and toluene concentrations in the glacial drift aquifer were typically non-detect with the exception of glacial drift remediation progress well **W-06A** located in AOC 2. The concentrations of ethylbenzene and toluene in the groundwater sample collected from **W-06A** were 21,000 µg/L and 30,000 µg/L, respectively.

Total xylene was detected at the highest concentrations and over the most widespread extent of any of the BETX constituents in the glacial drift. The highest concentration of total xylenes was detected in **W-06A** (87,000 µg/L) within AOC 2. The extent of the total xylene contamination extends to the northeast to glacial drift remediation progress point **W-42** (2,900 µg/L) and glacial drift remediation progress point **W-47** (2,400 µg/L) in AOC 1.

CVOCs, in the form of trichloroethene (TCE) and vinyl chloride (VC) were detected in off-site upgradient glacial drift monitoring wells during the 2020 sampling events. The highest TCE concentrations in the glacial drift aquifer were detected in perimeter monitoring points **W-27** (93 µg/L) and **W-19A** (6.0 µg/L) during the Fall sampling event. The concentrations of TCE detected in **W-19A** and **W-27** exceed their respective ESs. VC was also detected at a concentration above its respective ES in the sample collected from **W-19A** (3.9 µg/L). It should also be noted that VC and other CVOC breakdown products were also detected in the samples collected in the glacial drift by Ranney Collectors **RC-2** and **RC-3**.

5.2.2 Shallow Dolomite Aquifer

Overall, the concentrations of the contaminants detected in the shallow dolomite aquifer are significantly less than the concentrations detected in the overlying glacial drift aquifer, indicating the lower permeability of the shallow dolomite relative to the glacial drift deposits and the dense clay till present at the base of the glacial drift deposits are acting as a partial aquitard preventing downward migration of high concentration contaminants into the shallow dolomite unit. In general, benzene and CVOCs were the only contaminants detected in the shallow dolomite aquifer in 2020. Specific observations are as follows:

- Benzene concentrations were detected in the shallow dolomite aquifer at concentrations approximately an order of magnitude higher than the concentrations of benzene detected in the glacial drift aquifer. The highest benzene concentration was detected in shallow dolomite piezometer **W-21A** (920 µg/L), located north of AOC 3. The extent of benzene detected in the shallow dolomite extends to the south fence line at shallow dolomite piezometer **W-52** (12 µg/L) and to the west at **W-38** (890 µg/L), to the east at **W-29** extraction well location (120 µg/L) and to the north at **W-28** (3.4 µg/L).
- Toluene was not detected in any of the shallow dolomite monitoring points at concentrations which exceeded its PAL. Elevated concentrations of ethylbenzene and total xylenes were detected in the shallow dolomite aquifer at the **W-21A** and **W-29** locations,

with the concentrations of ethylbenzene (4,700 µg/L) and total xylenes (2,500 µg/L), respectively exceeding their respective ESs.

- TCE and VC were detected above their respective PAL and ES in the shallow dolomite groundwater sample collected from W-214A located in the southwest corner of the Saukville Facility. Degradation products, including c-1,2-DCE and VC were detected above PAL and/or ES concentrations in shallow dolomite extraction well W-21A located north of AOC 3 and shallow dolomite monitoring points W-52 and W-23 located along the south fence line of the Saukville Facility**.**

The concentrations of BTEX constituents in the shallow dolomite aquifer is presented on **Figure 12**. CVOC detections in the shallow dolomite aquifer are shown on **Figure 13**. In contrast to the location of the VOC impacts in the glacial drift aquifer, the VOC impacts in the shallow dolomite aquifer are located near the center of the Site, whereas the impacts in the glacial drift aquifer are more concentrated between AOC 1 and AOC 2.

5.2.3 Deep Dolomite Aquifer

The **W-30** wellhead is located in the northwest portion of the Saukville Facility immediately downgradient from the Saukville Feed property. The Saukville Feed property was historically a bulk petroleum storage facility with documented releases to the subsurface. While bedrock was encountered at relatively shallow depths during investigative activities at the Saukville Feed Mill site, investigation of the migration of petroleum into the bedrock was never performed. As such, it is our opinion the petroleum contamination associated with the former bulk storage facility upgradient of the **W-30** wellhead location could be contributing to the concentration of benzene detected in the groundwater in the deep dolomite aquifer in **W-30** (1.4 µg/L).

5.3 Metals Results and Distribution

A total of eight (8) on-site remediation progress wells are scheduled to be sampled for dissolved arsenic and barium on an annual basis during the Fall groundwater sampling event. The wells scheduled to be sampled for metals include: glacial drift monitoring wells **W-06A**, **W-43** and **W-47**; shallow dolomite extraction wells **W-21A**, **W-24A**, **W-28** and **W-29**; and, deep dolomite pumping well **W-30**. The samples were field-filtered with a disposable 0.45-micron pore size filter. The results of the metals analyses are depicted on **Figure 14 - Metals in Groundwater – Fall 2020**. A discussion of the results follows.

5.3.1 Arsenic

Four (4) of the seven (7) wells sampled during the Fall 2020 sampling event contained detectable concentrations of dissolved arsenic. The concentration of dissolved arsenic detected ranged between an estimated concentration of 4.0 µg/L in deep dolomite extraction well **W-30** to 31 µg/L in glacial drift remediation progress point **W-06A**. The estimated concentration of dissolved arsenic reported in the samples collected from deep dolomite extraction well **W-30** and shallow dolomite extraction well **W-29** exceeded its PAL of 1 µg/L, while the concentration of dissolved arsenic detected in the samples collected from glacial drift remediation progress point **W-06A** and shallow dolomite extraction well **W-21A** exceeded its ES of 10 µg/L.

The distribution of dissolved arsenic detections at the Saukville Facility do not appear to indicate the presence of a specific source or sources for the elevated concentrations of dissolved arsenic in the groundwater. The concentration trends for arsenic have been relatively stable since the onset of analyzing for arsenic in 1994. It should be noted that naturally occurring arsenic has been detected in Wisconsin at concentrations similar to those detected in the groundwater at the Saukville Facility.

5.3.2 BARIUM

All seven (7) of the groundwater samples submitted for dissolved barium analysis during the Fall 2020 sampling event contained detectable concentrations of barium. However, while dissolved barium was detected in all of the samples submitted, none of the reported concentrations exceeded its PAL of 400 µg/L.

5.4 SVOC RESULTS AND DISTRIBUTION

A total of eight (8) on-site remediation progress monitoring points are scheduled to be sampled on an annual basis during the Fall sampling event for SVOCs. The wells scheduled to be sampled for SVOCs include glacial drift monitoring wells **W-06A**, **W-43** and **W-47**, shallow dolomite extraction wells **W-21A**, **W-24A**, **W-28** and **W-29**, and deep dolomite extraction well **W-30**.

With the exception of the sample submitted from glacial drift remediation progress point **W-47**, all of the samples submitted for SVOC analysis were analyzed without dilution. The sample submitted from the glacial drift remediation progress well **W-47** was analyzed following a 1:10 dilution.

The sample submitted from shallow dolomite extraction well **W-28** was the only sample which did not contain any detectable SVOC constituents. The remainder of the samples submitted for SVOC analysis contained at last one (1) SVOC constituent reported above the LOD. While the sample collected from glacial drift remediation progress point contained detectable concentrations of several SVOC constituents, one of the reported concentrations exceeded any PALs or ESs. The remaining six (6) samples submitted for SVOC analysis contained at least one (1) SVOC constituent detected at a concentration which exceeded a PAL and/or an ES as discussed below.

- The samples submitted from glacial drift remediation progress point **W-06A**, shallow dolomite extraction wells **W-21A**, **W-24A** and **W-29** and deep dolomite extraction well **W-30** contained concentrations of 1,4-dioxane which exceeded its ES of 3 µg/L. 1,4-dioxane was primarily used to stabilize 1,1,1-trichloroetane (1,1,1-TCA). Production of 1,4-dioxane spiked in the 1980s as the use of TCE was phased out in favor of 1,1,1-TCA. In 1985, approximately 90% of the 1,4-dioxane produced was used as a stabilizer for 1,1,1-TCA. The use of 1,1,1-TCA and 1,4-dioxane drop precipitously post-1995 pursuant to limitations enacted by the 1987 Montreal Protocol. As 1,1,1-TCA was never utilized at the Saukville Facility, it is our opinion the source of 1,4-dioxane detected in the groundwater at the Saukville Facility is not located onsite. Rather, as the adjoining to the west former Northern Signal facility historically operated a TCE vapor degreaser, the possibility exists for 1,1,1-TCA stabilized with 1,4-dioxane to also have been used in the vapor degreaser. Furthermore, it has been reported that waste solvents from the vapor degreaser were

disposed to the subsurface via a privy on the former Northern Signal site. As such, we request the WDNR instruct the responsible party (RP) for the former Northern Signal site to evaluate for the presence of 1,1,1-TCA and 1,4-dioxane as part of the ongoing investigation on the site related to BRRTS #: 02-46-535604.

- Samples submitted from glacial drift remediation progress points **W-06A** and **W-47** and shallow dolomite extraction well **W-21A** contained concentrations of naphthalene which exceeded its Pal of 10 µg/L.
- The sample submitted from shallow dolomite extraction well **W-24A** contained an estimated concentration of bis(2-ethylhexyl)phthalate which exceeded its PAL of 0.6 µg/L.

SVOC detections in groundwater are depicted on **Figure 15 - SVOCs in Groundwater – Fall 2020**.

5.5 PCB RESULTS

The sample collected from glacial drift monitoring point **W-47** is the only sample analyze for seven (7) PCB cogeners during the Fall 2020 sampling event. No PCB cogeners were detected in the sample submitted from **W-47** during this sampling event**.**

Historical individual contaminant trends for selected parameters in selected wells are attached in **Appendix D**.

6.0 CONTAMINANT CONTAINMENT

6.1 CONTAINMENT OF GROUNDWATER IMPACTS

The discussion in this section combines groundwater flow and quality trends from the receptor, perimeter and remediation progress wells in the glacial drift and dolomite, to present an evaluation of the effectiveness of the containment at the Saukville Facility.

6.1.1 GLACIAL DRIFT UNIT

Based on the results of the laboratory analyses performed during 2020 on the groundwater samples collected from the glacial drift perimeter monitoring wells, the groundwater contamination resulting from historical on-site operations is contained within the bounds of the Saukville Facility. Samples collected from off-site, upgradient glacial drift monitoring wells **W-19A** and **W-27** continue to contain the highest concentrations of CVOCs. CVOCs have not historically been detected in the downgradient or sidegradient perimeter monitoring points in the glacial drift aquifer.

6.1.2 SHALLOW DOLOMITE UNIT

Downgradient shallow dolomite monitoring points (**W-03A**, **W-20, W-40** and **W-50**) continue to be free of detectable concentrations of VOCs. During the Fall 2020 sampling event, **W-07** contained an estimated detection of PCE (0.39 µg/L) which is just over its MDL of 0.37 µg/L. The groundwater samples collected from shallow dolomite monitoring point **W-52** and shallow dolomite extraction well **W-24A**, located along the south fence line of the Saukville Facility continued to contain elevated concentrations of several VOC constituents above their respective PALs and ESs. Since shallow dolomite monitoring point **W-52** was installed in 2005, elevated concentrations of benzene and VC have been detected and reported. The concentrations of benzene and VC detected in the samples collected from **W-52** exceeded their respective ESs during both sampling events in 2020, while the concentration of TCE detected in the sample collected from **W-24A** during the Fall 2020 sampling event exceeded its PAL. Additionally, since its installation, the detected concentration of benzene is **W-52** has varied between approximately 9 µg/L and 23 µg/L (See page **D-44** in **Appendix D**).

6.1.3 DEEP DOLOMITE UNIT

No VOCs were detected in the deep dolomite receptor municipal wells (**MW-1, MW-3** and **MW-4**) in 2020. However, in the sample collected from **W-30** during the Fall 2020 sampling event, concentrations of trichlorofluoromethane (2.1 µg/L), benzene (1.4 µg/L) and an estimated concentration of cis-1,2-dichloroethene (0.56 µg/L) were detected. The concentration of benzene exceeded its PAL.

Production at the Saukville Facility was idled at the beginning of 2015. As part of the preparations for idling the Facility, a bypass was added to the **W-30** piping to remove the flow from the water jackets surrounding the kettles. Therefore, the groundwater pumped by **W-30** is no longer utilized onsite as non-contact cooling water and flow has been reduced to approximately 150 GPM.

Evaluating groundwater measurements collected from the deep dolomite pumping well **W-30** in April and October of each year since 2004 indicates the groundwater elevation in **W-30** has fluctuated between 533.44 and 690.76 ft amsl with an overall average elevation of 618.95 ft amsl. During 2020, the groundwater elevation in **W-30** was 686.14 ft amsl in April and 691.92 ft amsl in October, ranging from 68 to 73 feet above the average elevation from the previous 12 years.

The convergent flow observed around **W-30**, the relatively stable total VOC concentrations in the extracted groundwater, and the continued non-detectable concentrations of VOCs in the municipal wells indicate that the migration of the impacted groundwater in the deep dolomite aquifer continues to be effectively controlled by on-site extraction.

The adjoining upgradient Saukville Feed Supply site is the former location of a bulk petroleum fuel storage and distribution facility which contained numerous large aboveground storage tanks (ASTs). The WDNR opened a leaking underground storage tank (LUST) case (03-46-174724) in September 1997 due to soil and groundwater contaminated with leaded and unleaded gasoline and diesel fuel. In July 2005, WDNR closed the LUST case. A review of the available geographic information system (GIS) Registry submittal indicates soil with benzene concentrations as high as 1,100 micrograms per kilogram (µg/kg) were detected within approximately six (6) feet of the shallow dolomite surface. However, the investigation did not include any sampling within the bedrock to evaluate whether contamination was migrating downwards in the groundwater in cracks and solution channels.

6.1.4 Mass Removal Estimates

Utilizing annual pumping rates along with average total VOC concentration data, an estimate of total VOC mass removal has been prepared. The estimated total is based on individual total VOC mass removal trend plots for each extraction well. Since 1992, approximately 483 pounds of total VOCs are estimated to have been removed from the aquifers beneath the Saukville Facility, including: approximately 243.8 pounds from the glacial drift, approximately 191.4 pounds from the shallow dolomite and approximately 47.9 pounds from the deep dolomite. In 2020, it is estimated nearly 30.85 pounds of VOCs were removed, including approximately 22.4 pounds from the glacial drift, approximately 6.75 pounds from the shallow dolomite and approximately 1.69 pounds from the deep dolomite.

VOC removal trends are shown on the graphs included as **Appendix E.**

7.0 CONCLUSIONS

The purpose of the quarterly groundwater sampling program is to document the effectiveness of the remediation system. Per the recommendations included in the Corrective Measures Study (CMS) (Woodward-Clyde, 1996), the recommended corrective measure strategy involves the following groundwater hydraulic control elements:

- Continued operation of the Ranney Collector system to dewater unconsolidated soil and maintain hydraulic control of the shallow groundwater system;
- Continued operation of the shallow dolomite wells to maintain hydraulic control of the shallow groundwater system and prevent contamination of the deep dolomite aquifer; and,
- Continued operation of the deep dolomite pumping well to maintain the effective site-wide hydraulic control and provide an inward gradient for capture and recovery of off-site contaminated groundwater.

The results of the quarterly groundwater sampling performed in 2020, as summarized in this annual report, indicate the existing extraction system operating at the Saukville facility continues to effectively control off-site migration of the groundwater impacts in the glacial drift aquifer while reducing the volume of contaminants present in the groundwater. The results from shallow dolomite perimeter monitoring point **W-52** continue to indicate elevated concentrations of CVOCs and benzene along the south fence line of the Saukville facility. The elevated CVOC concentrations in **W-52** can be attributed to the upgradient source on the JT Roofing property. It is assumed the elevated benzene concentrations detected in the samples collected from **W-52** are indicative of the southern extent of the benzene contamination present in the shallow dolomite at AOC 3. As shown on page **D-44**, once the aquifer equilibrated following installation in 2005, the concentration of benzene in the groundwater samples collected from **W-52** ranged between 8.9 µg/L to 23 µg/L, with an average concentration of 13.12 µg/L over the past 23 sampling events, indicating a stable trend. As such, it is our opinion as long as the existing groundwater extraction system continues to operate, the benzene contamination detected at the **W-52** location does not constitute an expending plume margin which would require additional investigation and/or remediation. Should the concentration of benzene in samples collected from **W-52** increase in the future, additional extraction may be deemed necessary.

At the **W-51/W-52** well nest, groundwater elevations indicate a downward migration from the glacial aquifer to the shallow dolomite aquifer (vertical gradient of 0.40 ft/ft). The shallow dolomite aquifer is present approximately 21-ft bgs with approximately eight (8) to nine (9) feet of non-contaminated water present within the glacial drift aquifer above the shallow dolomite aquifer. The adjoining residences are supplied with potable water via the Village municipal distribution system. Therefore, the potential groundwater exposure pathway is not complete. In addition, due to the presence of the uncontaminated glacial drift aquifer above the shallow dolomite aquifer and the downward vertical gradient, the potential vapor intrusion threat from the contaminants in the shallow dolomite is not complete. We recommend continuing to monitor the concentrations of contaminants in **W-51** and **W-52** semi-annually as required in the modified GWMP.

8.0 REFERENCES

ELM Consulting, LLC. Modified Groundwater Monitoring Plan – Cook Composites and Polymers Co. July 2005.

Endpoint Solutions Corp. (Endpoint) 2020a. Report of Results – Winter 2020 Groundwater Sampling Event. March 3, 2020.

Endpoint 2020b. Report of Results – Spring 2020 Groundwater Sampling Event. December 11, 2020.

Endpoint 2020c. Report of Results – Summer 2020 Groundwater Sampling Event. December 11, 2020.

Endpoint 2020d. Report of Results – Fall 2020 Groundwater Sampling Event. February xx, 2021.

Hatcher Incorporated. Summary – Hydrologic Assessment Activities. January 11, 1985.

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RMT, Inc. Closure Plan Modification. April 1992.

Wisconsin Administrative Code Chapter NR 140 – Groundwater Quality.

Wisconsin Department of Natural Resources. RCRA 3008(h) Corrective Action Order. September 3, 1987.

Wisconsin Department of Natural Resources. 2005 Proposed Modified Groundwater Monitoring Plan, Cook Composites and Polymers Co. – Approval Letter. July 2005.

Woodward-Clyde. Corrective Measures Study – On-Site Areas of Concern 1, 2 and 3. September 17, 1996.

TABLES

Table 1

2020 Summary of Groundwater Level Measurements (ft, msl)
Arkema Coating Resins
Saukville, Wisconsin

GEOLOGIC UNIT	WELL ID	TOC	Apr-20	Oct-20
Glacial	W-1A	768.55	763.22	761.08
Glacial	W-3B	770.32	748.21	744.48
Glacial	W-4A	767.55	758.68	756.28
Glacial	W-6A	773.27	769.34	768.30
Glacial	W-8R	759.71	752.58	746.93
Glacial	W-14B	773.07	767.46	765.04
Glacial	W-16A	768.74	763.43	759.65
Glacial	W-18A	772.07	768.24	766.42
Glacial	W-19A	775.48	769.20	766.31
Glacial	W-20	767.91	746.58	743.74
Glacial	W-27	775.70	769.77	768.48
Glacial	W-37	Well Abondoned 8/1996		
Glacial	W-41	773.73	764.54	762.61
Glacial	W-42	774.40	764.20	762.12
Glacial	W-43	768.44	764.22	763.90
Glacial	W-44	769.30	762.62	762.28
Glacial	W-45	767.97	755.06	755.36
Glacial	W-46	766.17	760.63	760.88
Glacial	W-47	771.22	763.33	763.81
Glacial	W-48	773.37	764.69	762.88
Glacial	W-49	765.83	756.59	752.85
Glacial	W-51	773.48	762.66	759.81
Glacial	W-53	773.12	763.26	762.41
Shallow Dolomite	W-3A	769.31	748.00	744.59
Shallow Dolomite	W-7	759.32	752.19	746.77
Shallow Dolomite	W-21A*	769.22		
Shallow Dolomite	W-22	772.29	761.60	760.52
Shallow Dolomite	W-23	768.90	749.99	748.34
Shallow Dolomite	W-24A*	772.45		
Shallow Dolomite	W-25	Well Abondoned 7/1997		
Shallow Dolomite	W-28*	772.41		
Shallow Dolomite	W-29*	765.45		
Shallow Dolomite	W-38	768.75	754.81	754.43
Shallow Dolomite	W-39	782.19	761.66	760.73
Shallow Dolomite	W-40	767.95	757.35	756.35
Shallow Dolomite	W-50	765.74	753.87	750.78
Shallow Dolomite	W-52	773.01	753.34	752.06
Deep Dolomite	MW-1	766	NA	675
Deep Dolomite	MW-2	Well Abandoned 12/2004		
Deep Dolomite	MW-3	756	NA	529
Deep Dolomite	MW-4	771	NA	665
Deep Dolomite	PW-08	775.66	NA	742.45
Deep Dolomite	W-30*	771.64	686.14	691.92

* = Extraction Well
ft - feet
msl - mean sea level
NM - Not measured
TOC = top of casing
Access to measure water levels in W-21A, W-24A, W-28 and W-29 removed to provide sampling access from ground surface.
NA - No Access

TABLE 2
2020 SUMMARY OF WELL RUNNING TIMES AND VOLUME REMOVED
ARKEMA COATING RESINS
SAUKVILLE, WISCONSIN

Hydrogeologic Unit	Well ID	Yearly Running Times (hours) Post-Upgrades 1/2/2020	Yearly Running Times (hours) Post-Upgrades 1/4/2021	Annual Total (hours)	Pumping Rate (gpm)	Volume Removed (gal)	Comments
Glacial Drift	W-31	100,400.2	100,510.2	110.0	0.07	462	Continued pumping assists in controlling off-site migration.
	W-32	13,610.5	14,655.2	1,044.7	0.07	4,388	
	W-33	32,750.8	32,750.8	0.0	0.07	0	
	W-34	7,846.4	12,413.9	4,567.5	0.07	19,183	
	W-35	469.2	520.6	51.4	0.07	216	
	RC-1	56,732.7	57,640.1	907.4	3	163,340	
	RC-2	68,600.1	76,132.7	7,532.6	3	1,355,866	
	RC-3	58,517.0	64,256.6	5,739.6	3	1,033,134	
						2,576,589	**Total Removed from Glacial Drift**
Shallow	W-21A	69,563.1	78,366.8	8,803.7	2	1,056,443	Pumping is contributing to the creation of a large dewatered area in the overlying glacial drift.
	W-24A	12,876.4	18,595.6	5,719.2	40	13,725,996	
	W-28	157.6	2,044.2	1,886.5	2	226,384	
	W-29	46,743.4	54,548.9	7,805.5	12	5,619,964	
						20,628,787	**Total Removed from Shallow Dolomite**
Deep	W-30	4,183	12,968	8,760	150	**78,840,000**	**Total Removed from Deep Dolomite**
						102,045,376	**Total Removed from All Aquifers**

gpm - Gallons Per Minute
gal - Gallons

Table 3

Modified Groundwater Monitoring Plan Summary
Arkema Coating Resins
Saukville, Wisconsin

Monitoring Objective	Sampling Point	Sampling Event				Parameters	Duplicates		Sample Method
		January	April	July	October		Blind	MS/MSD	
Receptor Monitoring Points	MW-1	X	X	X	X	8260			Tap
	MW-3		X		X	8260		X	Tap
	MW-4		X		X	8260	DUP1		Tap
	RC-1		X		X	8021			Manhole
	RC-2		X		X	8021			Manhole
	RC-3		X		X	8021			Manhole
	POTW-I		X		X	8260			Trough
	POTW-E		X		X	8260			Aeration
	POTW-S		X		X	8260			Sink
Perimeter Monitoring Points	W-01A		X		X	8260			Bailer
	W-03A		X		X	8260	DUP3		Pump
	W-03B		X		X	8260			Pump
	W-04A		X		X	8260			Bailer
	W-07		X		X	8260			Bailer
	W-08R		X		X	8260			Bailer
	W-16A		X		X	8260			Bailer
	W-20		X		X	8260			Pump
	W-22		X		X	8260			Pump
	W-23		X		X	8260	DUP2		Pump
	W-27		X		X	8260			Pump
	W-40		X		X	8260			Pump
	W-49		X		X	8260			Bailer
	W-50		X		X	8260			Bailer
	W-51		X		X	8260			Bailer
	W-52		X		X	8260			Bailer
	PW-08		X		X	8260			Pump
Remediation Progress Point	W-06A				X	Appendix IX 8260, Appendix IX 8270, 7060, 6010			Bailer
	W-19A				X	8260	X		Bailer
	W-21A				X	Appendix IX 8260, Appendix IX 8270, 7060, 6010			Tap
	W-24A				X	Appendix IX 8260, Appendix IX 8270, 7060, 6010			Tap
	W-28				X	Appendix IX 8260, Appendix IX 8270, 7060, 6010			Tap
	W-29				X	Appendix IX 8260, Appendix IX 8270, 7060, 6010			Tap
	W-30				X	Appendix IX 8260, Appendix IX 8270, 7060, 6010	X		Tap
	W-38				X	8260			Pump
	W-41				X	8260		X	Bailer
	W-42				X	8260			Bailer
	W-43				X	Appendix IX 8260, Appendix IX 8270, 7060, 6010			Bailer
	W-47				X	Appendix IX 8260, Appendix IX 8270, 7060, 6010, 8081	X (8081)		Peristaltic

MS/MSD: Matrix Spike/Matrix Spike Duplicate
WPDES: Wisconsin Pollution Discharge Elimination System

TABLE 4

SUMMARY OF ANALYTES AND METHODS

Volatile Organic Compounds by Method 8260		
Chloroethane	1,1,1-Trichloroethane	2-Hexanone
Chloromethane	Carbon Tetrachloride	4-Methyl-2-Pentanone
Bromomethane	Vinyl Acetate	Tetrachloroethene
Vinyl Chloride	Bromodichloromethane	Toluene[1]
Methylene Chloride	1,1,2,2-Tetrachloroethane	Chlrorbenzene[1]
Acetone	1,2-Dichloropropane	Ethylbenzene[1]
Carbon Disulfide	trans-1,2-Dichloropropene	Styrene
1,1-Dichloroethene	Trichloroethene	Xylenes (total)[1]
1,1-Dichloroethane	Dibromochloromethane	1,4-Dichlorobenzene[1]
1,2-Dichloroethene (total)	1,1,2-Trichloroethane	1,3-Dichlorobenzene[1]
Chloroform	Benzene	1,2-Dichlorobenzene[1]
1,2-Dichlroethane	cis-1,3-Dichloropropene	
2-Butanone	Bromoform	

Volatile Organic Compounds by Method 8021[1]
Benzene
Toluene
Ethylbenzene
Chlorobenzene
Xylenes (total)
1,4-Dichlorobenzene
1,3-Dichlorobenzene
1,2-Dichlorobenzene

Semivolatile Organic Compounds by Method 8270[2]
1,4-Dioxane
2,4-Dimethylphenol
2-Methylnaphthalene
2-Methylphenol
4-Methylphenol
Acetophenone
bis(2-ethylhexyl)phthalate
Naphthalene
Phenanthrene
Phenol

Polychlorinated Biphenyls (PCBs) by Method 8080[3]
Arochlor 1016
Arochlor 1221
Arochlor 1232
Arochlor 1242
Arochlor 1248
Arochlor 1254
Arochlor 1260

Metals by Methods 7060, 6010[2]
Barium
Arsenic

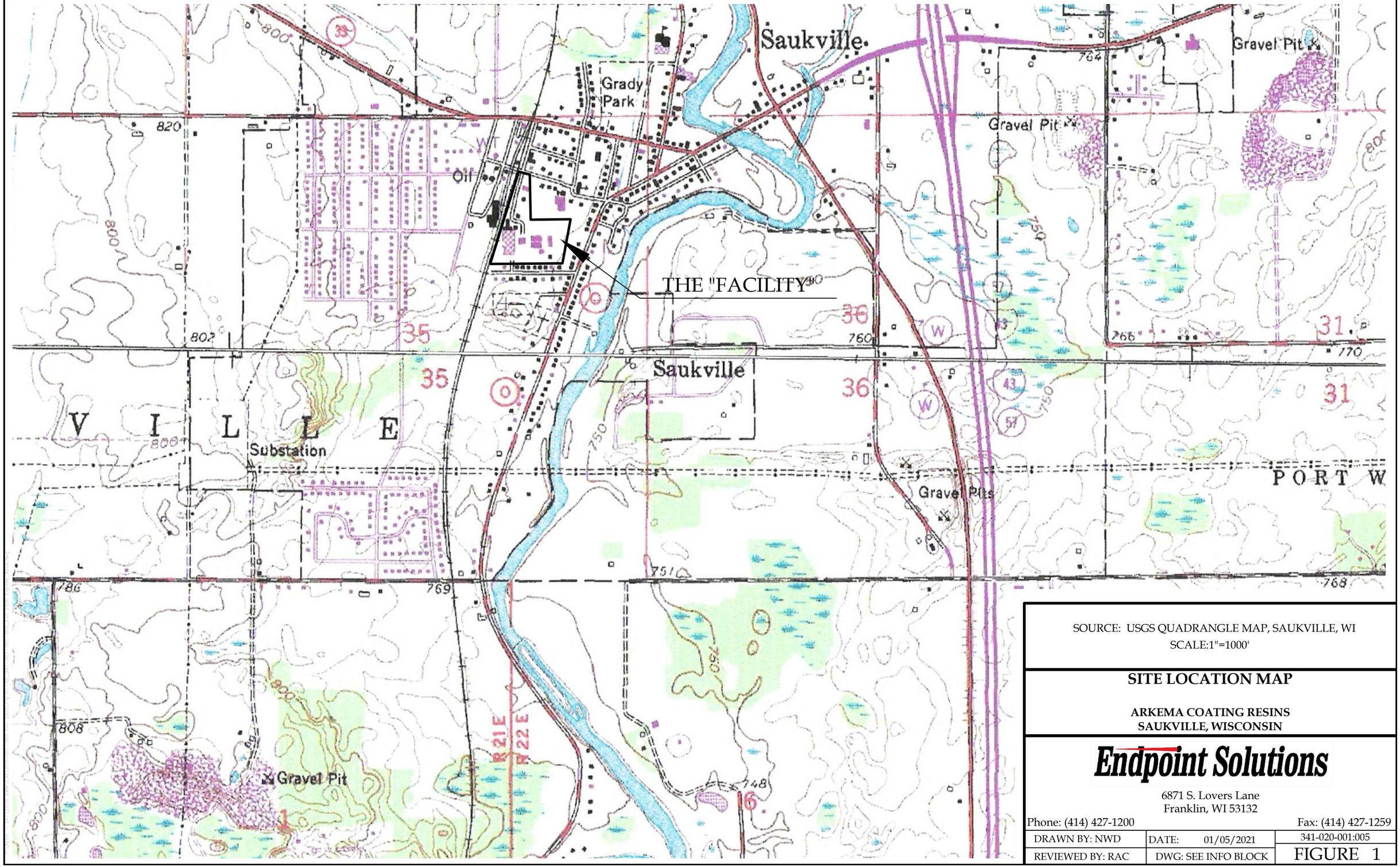
NOTES

[1] Volatile organic compounds

[2] Analyzed annually at wells W-06A, W-43, W-47, W-21A, W-24A, W-28, W-29, and W-30.

[3] Only well W-47 is analyzed for PCBs.

FIGURES



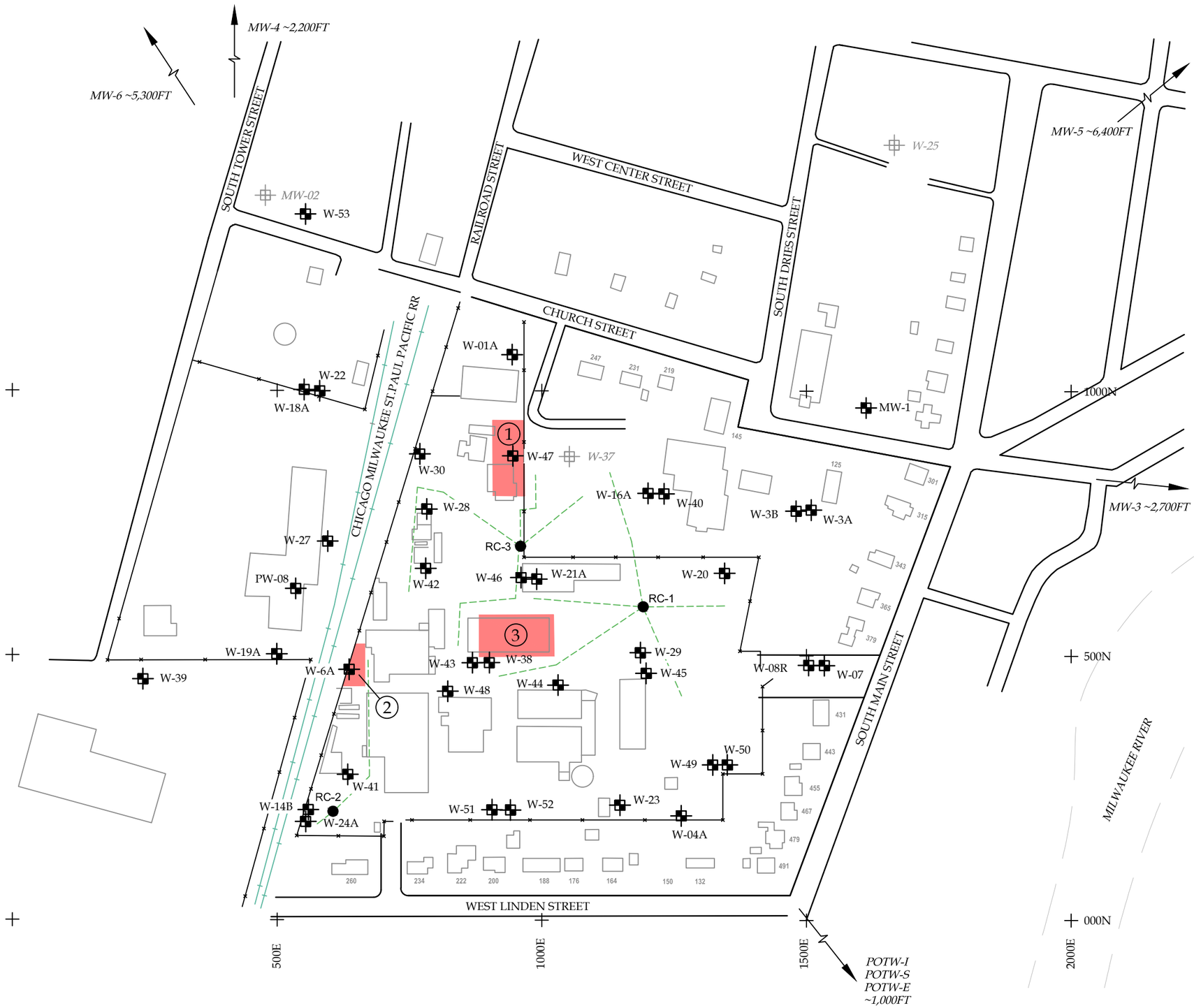
SOURCE: USGS QUADRANGLE MAP, SAUKVILLE, WI
SCALE:1"=1000'

SITE LOCATION MAP

ARKEMA COATING RESINS
SAUKVILLE, WISCONSIN

Endpoint Solutions
6871 S. Lovers Lane
Franklin, WI 53132
Phone: (414) 427-1200 Fax: (414) 427-1259

DRAWN BY: NWD	DATE: 01/05/2021	341-020-001:005
REVIEWED BY: RAC	DWG: SEE INFO BLOCK	FIGURE 1



LEGEND

- BUILDING
- ROAD
- FENCE
- RAILROAD
- W-18A — MONITORING WELL LOCATION AND NUMBER
- W-25 — ABANDONED WELL LOCATION AND NUMBER
- RANNEY COLLECTOR
- ① — AREA OF CONCERN

NOTES

1. BASE MAP WAS DEVELOPED FROM DRAWINGS PROVIDED BY RMT, INC.
2. W-37 WAS ABANDONED AUGUST 2, 1996.
3. W-25 WAS ABANDONED JULY 29, 1997.
4. MW-02 WAS ABANDONED NOVEMBER 2004.

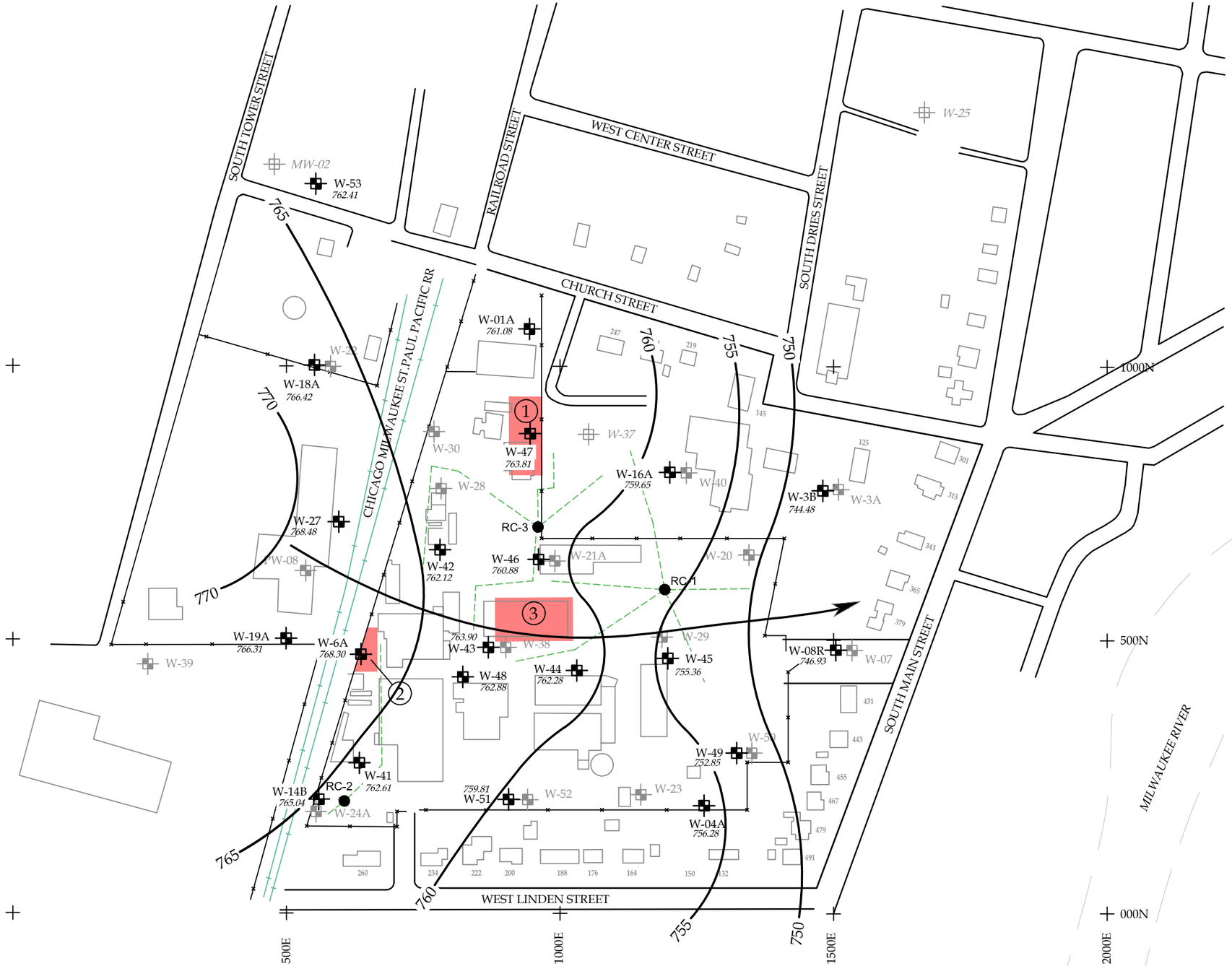
0 200' 400' 600'

EXISTING SITE LAYOUT

ARKEMA COATING RESINS
SAUKVILLE, WISCONSIN

Endpoint Solutions
6871 S. Lovers Lane
Franklin, WI 53132
Phone: (414) 427-1200 Fax: (414) 427-1259

DRAWN BY: NWD	DATE: 03/30/2021	341-020-001:005
REVIEWED BY: RAC	DWG: SEE INFO BLOCK	FIGURE 2



LEGEND

W-18A	MONITORING WELL LOCATION AND NUMBER
W-18A	ABANDONED WELL LOCATION AND NUMBER
	GROUNDWATER FLOW DIRECTION
NM	NOT MEASURED
	CONTOUR INTERVAL = 5 FEET
	RANNEY COLLECTOR
①	AREA OF CONCERN

NOTES

1. BASE MAP WAS DEVELOPED FROM DRAWINGS PROVIDED BY RMT, INC.
2. W-37 WAS ABANDONED AUGUST 2, 1996.
3. W-25 WAS ABANDONED JULY 29, 1997.
4. MW-02 WAS ABANDONED NOVEMBER 2004.

SCALE:1"=200'

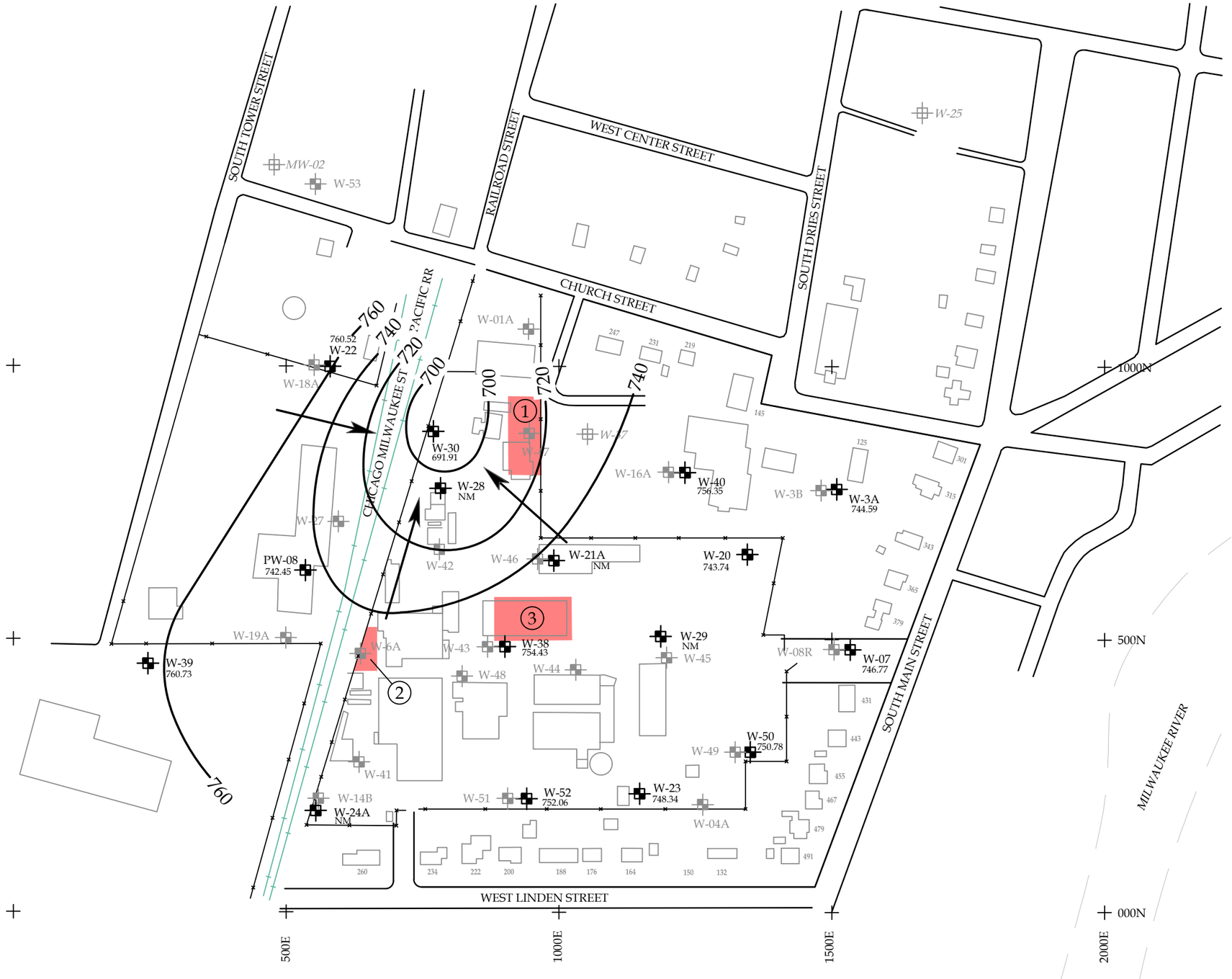
0 200' 400' 600'

WATER TABLE MAP
GLACIAL DRIFT AQUIFER - FALL 2020

ARKEMA COATING RESINS
SAUKVILLE, WISCONSIN

Endpoint Solutions
6871 S. Lovers Lane
Franklin, WI 53132
Phone: (414) 427-1200 Fax: (414) 427-1259

DRAWN BY: NWD	DATE: 01/05/2021	341-020-001:005
REVIEWED BY: RAC	DWG: FALL 2020 FIGURES	FIGURE 3



LEGEND

W-18A	MONITORING WELL LOCATION AND NUMBER
W-18A	ABANDONED WELL LOCATION AND NUMBER
	GROUNDWATER FLOW DIRECTION
NM	NOT MEASURED
	CONTOUR INTERVAL = 20 FEET
1	AREA OF CONCERN

NOTES

1. BASE MAP WAS DEVELOPED FROM DRAWINGS PROVIDED BY RMT, INC.
2. W-37 WAS ABANDONED AUGUST 2, 1996.
3. W-25 WAS ABANDONED JULY 29, 1997.
4. MW-02 WAS ABANDONED NOVEMBER 2004.

SCALE:1"=200'

0 200' 400' 600'

POTENTIOMETRIC SURFACE MAP
SHALLOW AND DEEP DOLOMITE AQUIFERS - FALL 2020
ARKEMA COATING RESINS
SAUKVILLE, WISCONSIN

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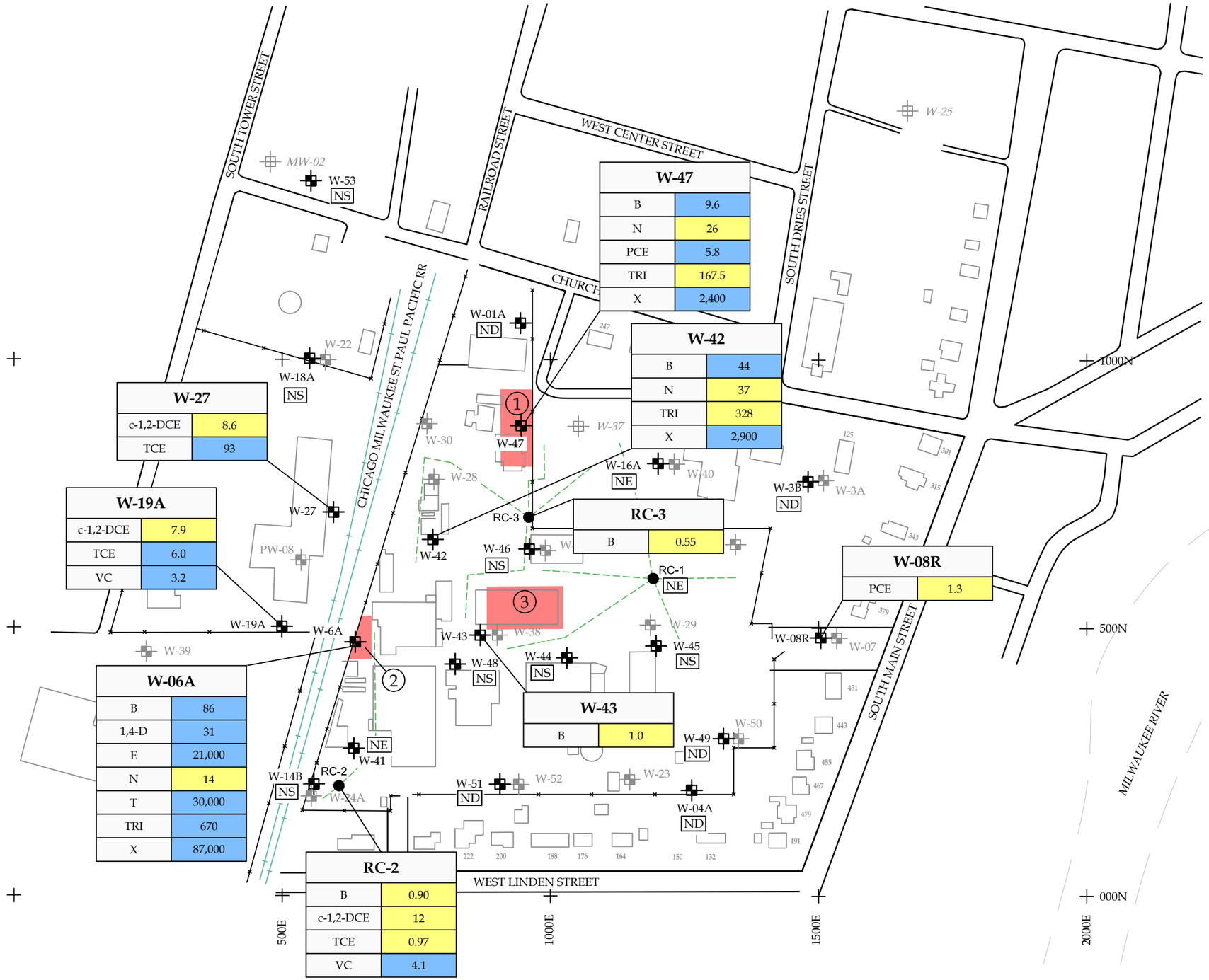
REVIEWED BY: RAC	DWG: FALL 2020 FIGURES	FIGURE 4



LEGEND

- W-18A — MONITORING WELL LOCATION AND NUMBER
- *W-18A* — ABANDONED WELL LOCATION AND NUMBER
- RANNEY COLLECTOR
- ① — AREA OF CONCERN

B	Benzene
c-1,2-DCE	cis-1,2-Dichloroethene
1,4-D	1,4-Dioxane
E	Ethylbenzene
N	Naphthalene
PCE	Tetrachloroethene
T	Toluene
TCE	Trichloroethene
TRI	1,2,4 & 1,3,5-Trimethylbenzene
VC	Vinyl Chloride
X	Xylenes, Total

ND	Not Detected
NE	No Exceedances
NS	Not Sampled
	PAL Exceedance
	ES Exceedance

NOTES

1. BASE MAP WAS DEVELOPED FROM DRAWINGS PROVIDED BY RMT, INC.
2. W-37 WAS ABANDONED AUGUST 2, 1996.
3. W-25 WAS ABANDONED JULY 29, 1997.
4. MW-02 WAS ABANDONED NOVEMBER 2004.

SCALE:1"=200'

0 200' 400' 600'

VOC & SVOC EXCEEDANCES (ug/L)
GLACIAL DRIFT AQUIFER - FALL 2020
ARKEMA COATING RESINS
SAUKVILLE, WISCONSIN

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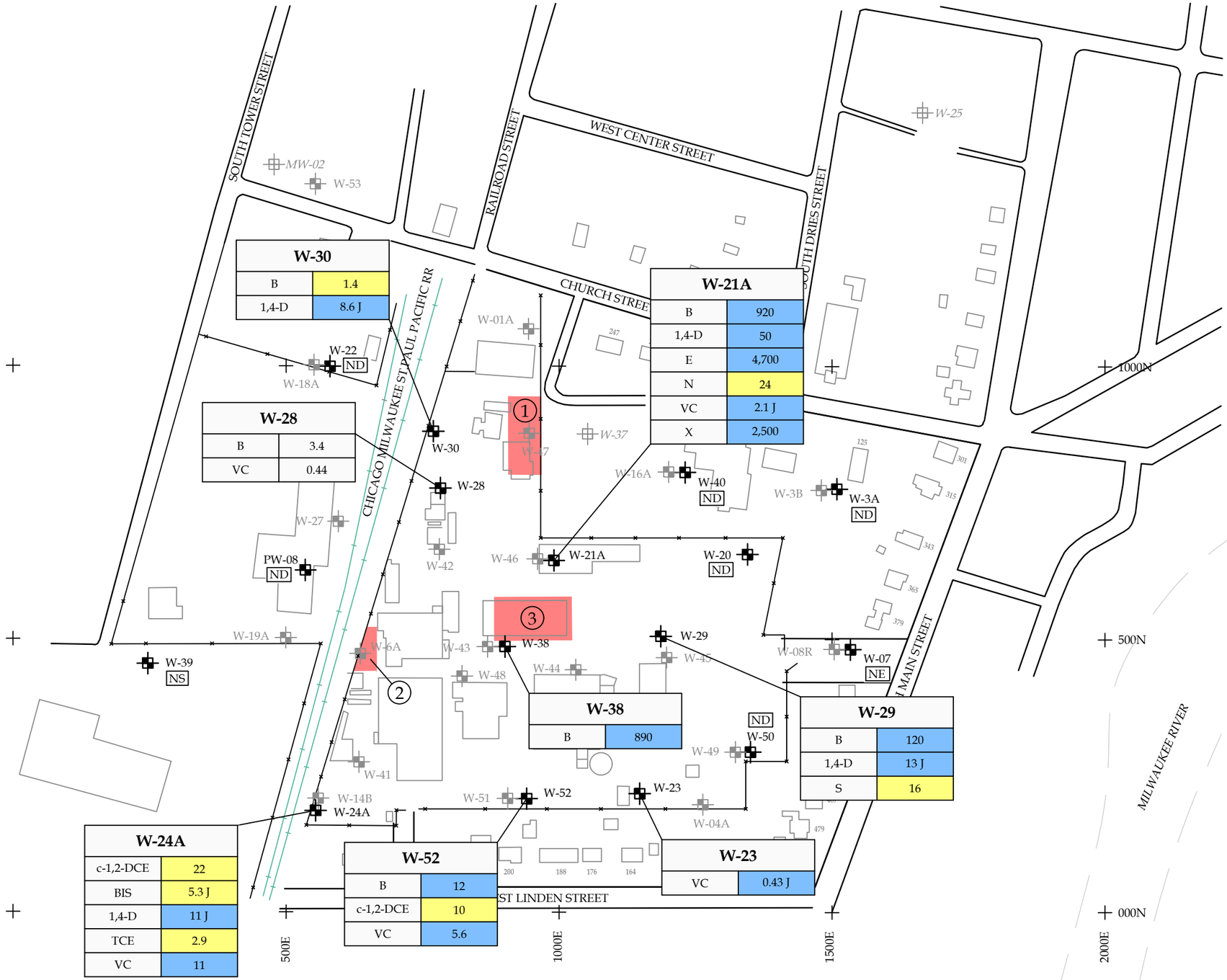
DRAWN BY: NWD	DATE: 03/30/2021	341-020-001:005
REVIEWED BY: RAC	DWG: FALL 2020 FIGURES	FIGURE 5



LEGEND

W-18A — MONITORING WELL LOCATION AND NUMBER

W-18A — ABANDONED WELL LOCATION AND NUMBER

① — AREA OF CONCERN

B	Benzene
BIS	Bis(2-ethylhexyl)phthalate
c-1,2-DCE	cis-1,2-Dichloroethene
1,4-D	1,4-Dioxane
E	Ethylbenzene
N	Naphthalene
S	Styrene
TCE	Trichloroethene
VC	Vinyl Chloride
X	Total Xylenes

ND	Not Detected
NE	No Exceedances
NS	Not Sampled
J	Estimated Value
	PAL Exceedance
	ES Exceedance

NOTES

1. BASE MAP WAS DEVELOPED FROM DRAWINGS PROVIDED BY RMT, INC.
2. W-37 WAS ABANDONED AUGUST 2, 1996.
3. W-25 WAS ABANDONED JULY 29, 1997.
4. MW-02 WAS ABANDONED NOVEMBER 2004.

SCALE:1"=200'

0 200' 400' 600'

VOC & SVOC EXCEEDANCES (ug/L) SHALLOW AND DEEP DOLOMITE AQUIFERS - FALL 2020

ARKEMA COATING RESINS
SAUKVILLE, WISCONSIN

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REVIEWED BY: RAC	DWG: FALL 2020 FIGURES	FIGURE 6

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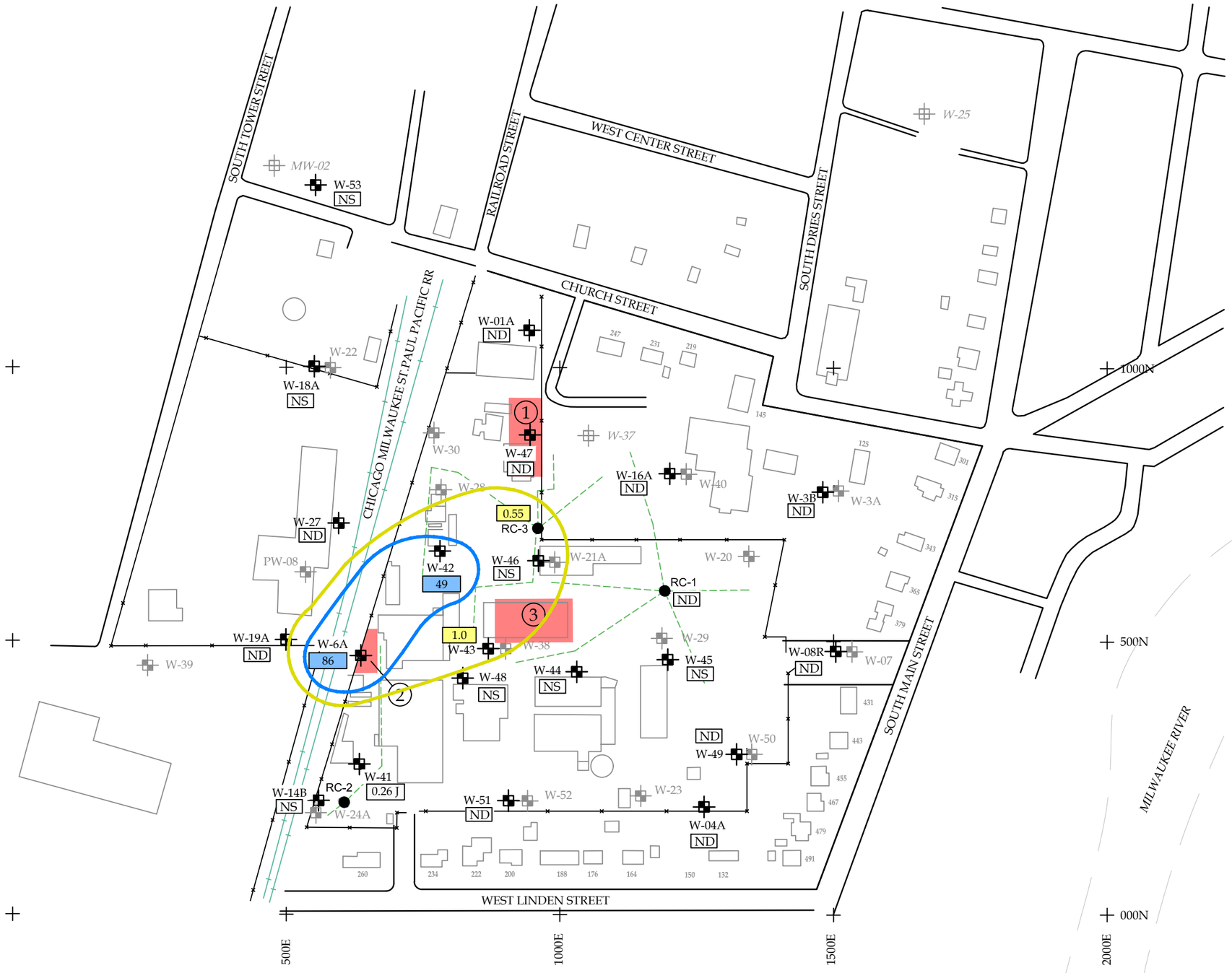

LEGEND

- W-18A — MONITORING WELL LOCATION AND NUMBER
- *W-18A* — ABANDONED WELL LOCATION AND NUMBER
- APPROXIMATE EXTENT OF ES EXCEEDANCES
- APPROXIMATE EXTENT OF PAL EXCEEDANCES
- RANNEY COLLECTOR
- ① — AREA OF CONCERN

ND	Not Detected
NS	Not Sampled
	PAL Exceedance
	ES Exceedance

NOTES

1. BASE MAP WAS DEVELOPED FROM DRAWINGS PROVIDED BY RMT, INC.
2. W-37 WAS ABANDONED AUGUST 2, 1996.
3. W-25 WAS ABANDONED JULY 29, 1997.
4. MW-02 WAS ABANDONED NOVEMBER 2004.

SCALE:1"=200'

0 200' 400' 600'

BENZENE IN GROUNDWATER (ug/L)
GLACIAL DRIFT AQUIFER - FALL 2020
ARKEMA COATING RESINS
SAUKVILLE, WISCONSIN

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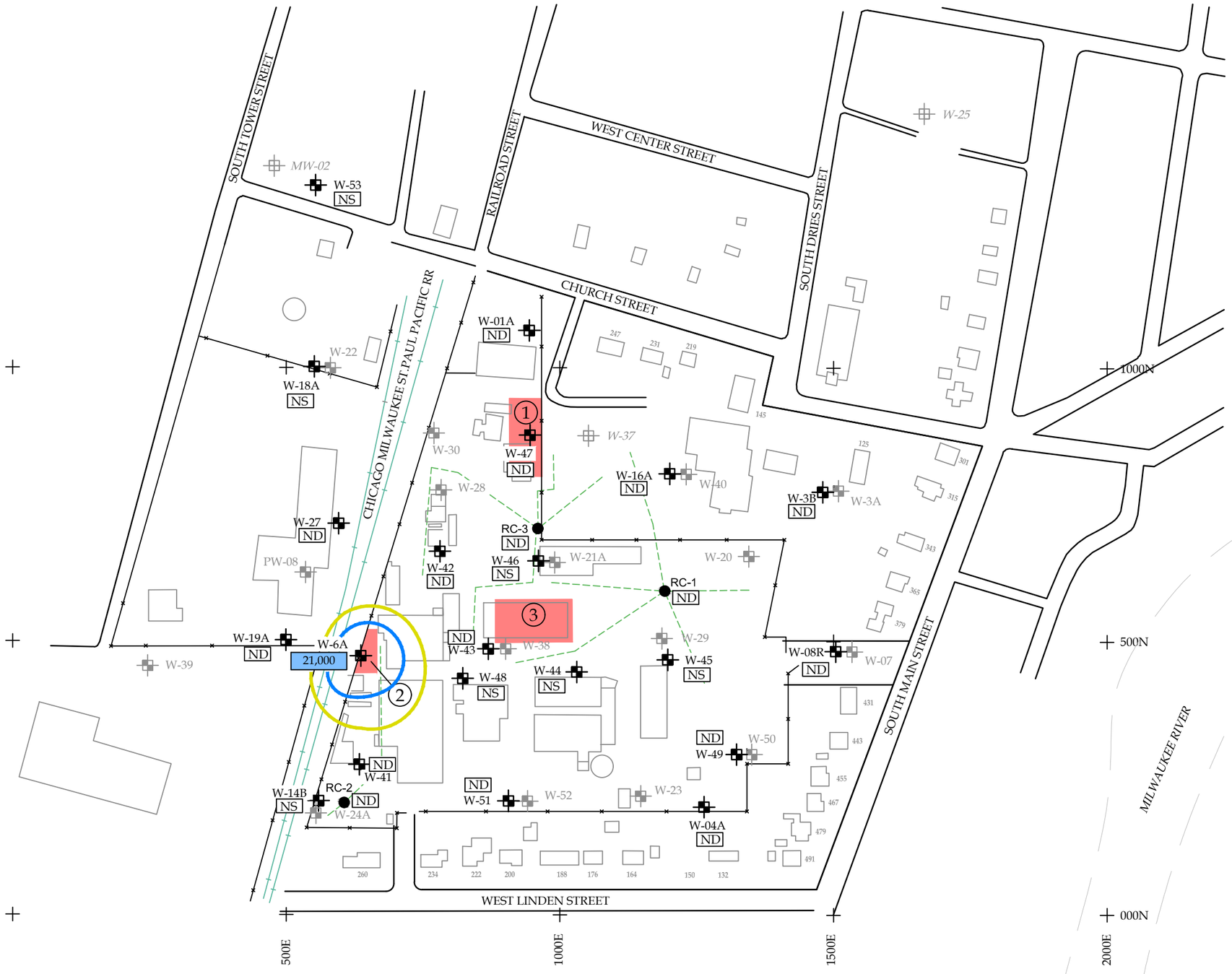
REVIEWED BY: RAC	DWG: FALL 2020 FIGURES	FIGURE 7

P:\Rmta - 341\2020 GWM\CAD\020-001-005 Fall 2020\Fall 2020 Figures.dwg



LEGEND

- W-18A — MONITORING WELL LOCATION AND NUMBER
- W-18A — ABANDONED WELL LOCATION AND NUMBER
- APPROXIMATE EXTENT OF ES EXCEEDANCES
- APPROXIMATE EXTENT OF PAL EXCEEDANCES
- RANNEY COLLECTOR
- ① AREA OF CONCERN

ND	Not Detected
NS	Not Sampled
	PAL Exceedance
	ES Exceedance

NOTES

1. BASE MAP WAS DEVELOPED FROM DRAWINGS PROVIDED BY RMT, INC.
2. W-37 WAS ABANDONED AUGUST 2, 1996.
3. W-25 WAS ABANDONED JULY 29, 1997.
4. MW-02 WAS ABANDONED NOVEMBER 2004.

SCALE:1"=200'

0 200' 400' 600'

ETHYLBENZENE IN GROUNDWATER (ug/L)
GLACIAL DRIFT AQUIFER - FALL 2020

ARKEMA COATING RESINS
SAUKVILLE, WISCONSIN

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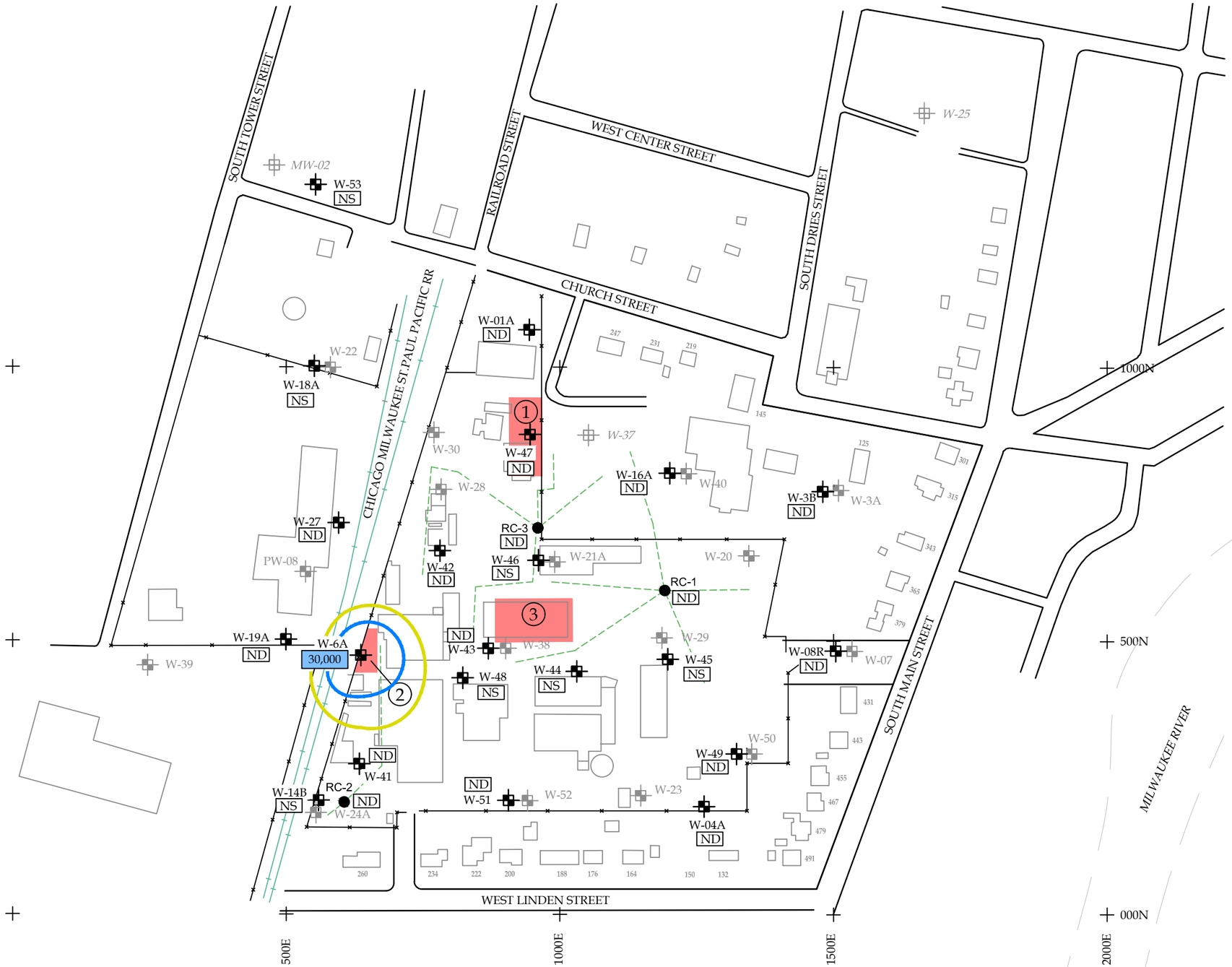
REVIEWED BY: RAC	DWG: FALL 2020 FIGURES	FIGURE 8



LEGEND

- W-18A — MONITORING WELL LOCATION AND NUMBER
- *W-18A* — ABANDONED WELL LOCATION AND NUMBER
- APPROXIMATE EXTENT OF ES EXCEEDANCES
- APPROXIMATE EXTENT OF PAL EXCEEDANCES
- RANNEY COLLECTOR
- ① — AREA OF CONCERN

ND	Not Detected
NS	Not Sampled
	PAL Exceedance
	ES Exceedance

NOTES

1. BASE MAP WAS DEVELOPED FROM DRAWINGS PROVIDED BY RMT, INC.
2. W-37 WAS ABANDONED AUGUST 2, 1996.
3. W-25 WAS ABANDONED JULY 29, 1997.
4. MW-02 WAS ABANDONED NOVEMBER 2004.

SCALE:1"=200'

0 200' 400' 600'

TOLUENE IN GROUNDWATER (ug/L)
GLACIAL DRIFT AQUIFER - FALL 2020
ARKEMA COATING RESINS
SAUKVILLE, WISCONSIN

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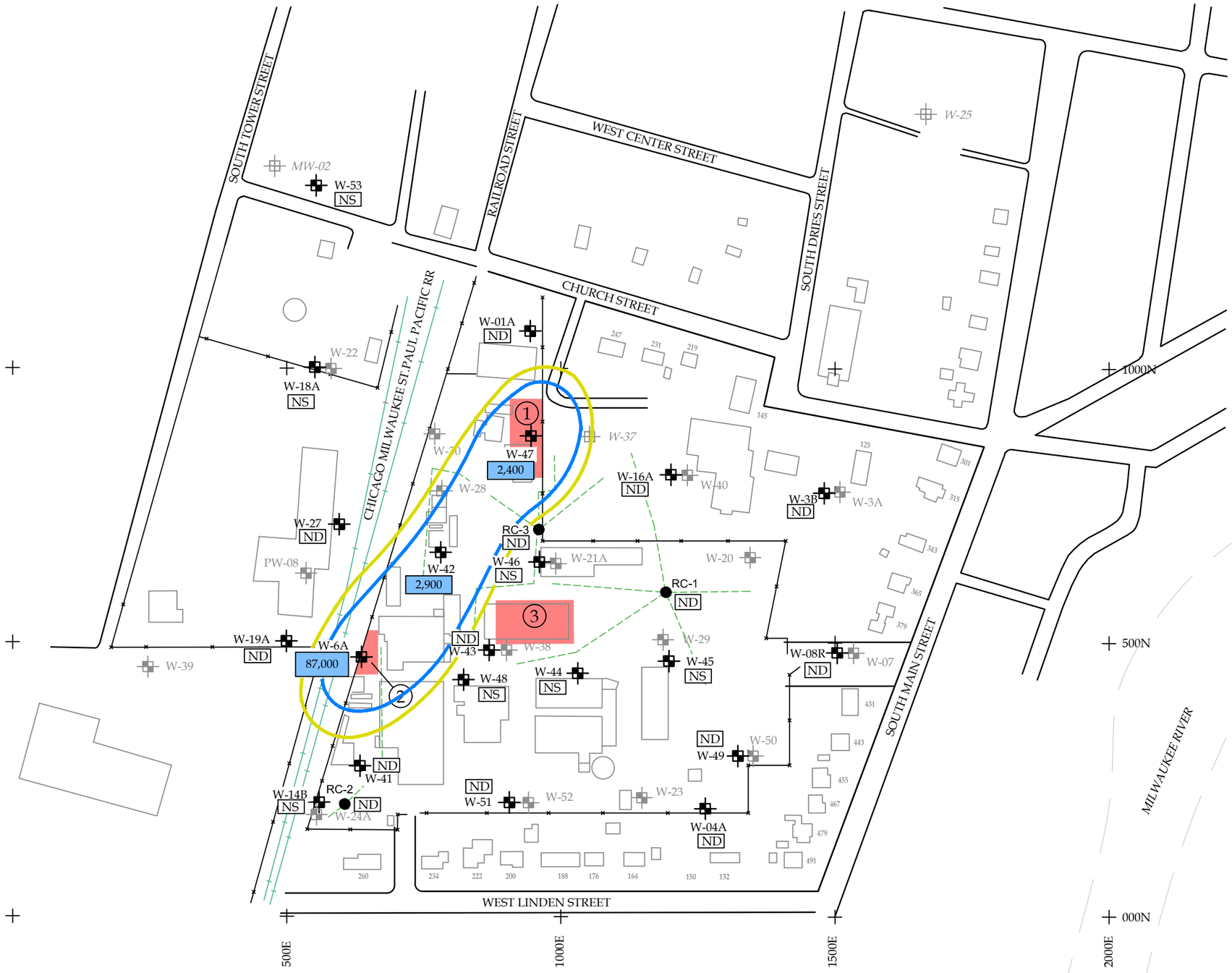
REVIEWED BY: RAC	DWG: FALL 2020 FIGURES	FIGURE 9



LEGEND

- W-18A — MONITORING WELL LOCATION AND NUMBER
- *W-18A* — ABANDONED WELL LOCATION AND NUMBER
- APPROXIMATE EXTENT OF ES EXCEEDANCES
- APPROXIMATE EXTENT OF PAL EXCEEDANCES
- RANNEY COLLECTOR
- ① AREA OF CONCERN

ND	Not Detected
NS	Not Sampled
	PAL Exceedance
	ES Exceedance

NOTES

1. BASE MAP WAS DEVELOPED FROM DRAWINGS PROVIDED BY RMT, INC.
2. W-37 WAS ABANDONED AUGUST 2, 1996.
3. W-25 WAS ABANDONED JULY 29, 1997.
4. MW-02 WAS ABANDONED NOVEMBER 2004.

SCALE:1"=200'

0 200' 400' 600'

TOTAL XYLENES IN GROUNDWATER (ug/L)
GLACIAL DRIFT AQUIFER - FALL 2020
ARKEMA COATING RESINS
SAUKVILLE, WISCONSIN

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REVIEWED BY: RAC	DWG: FALL 2020 FIGURES	FIGURE 10

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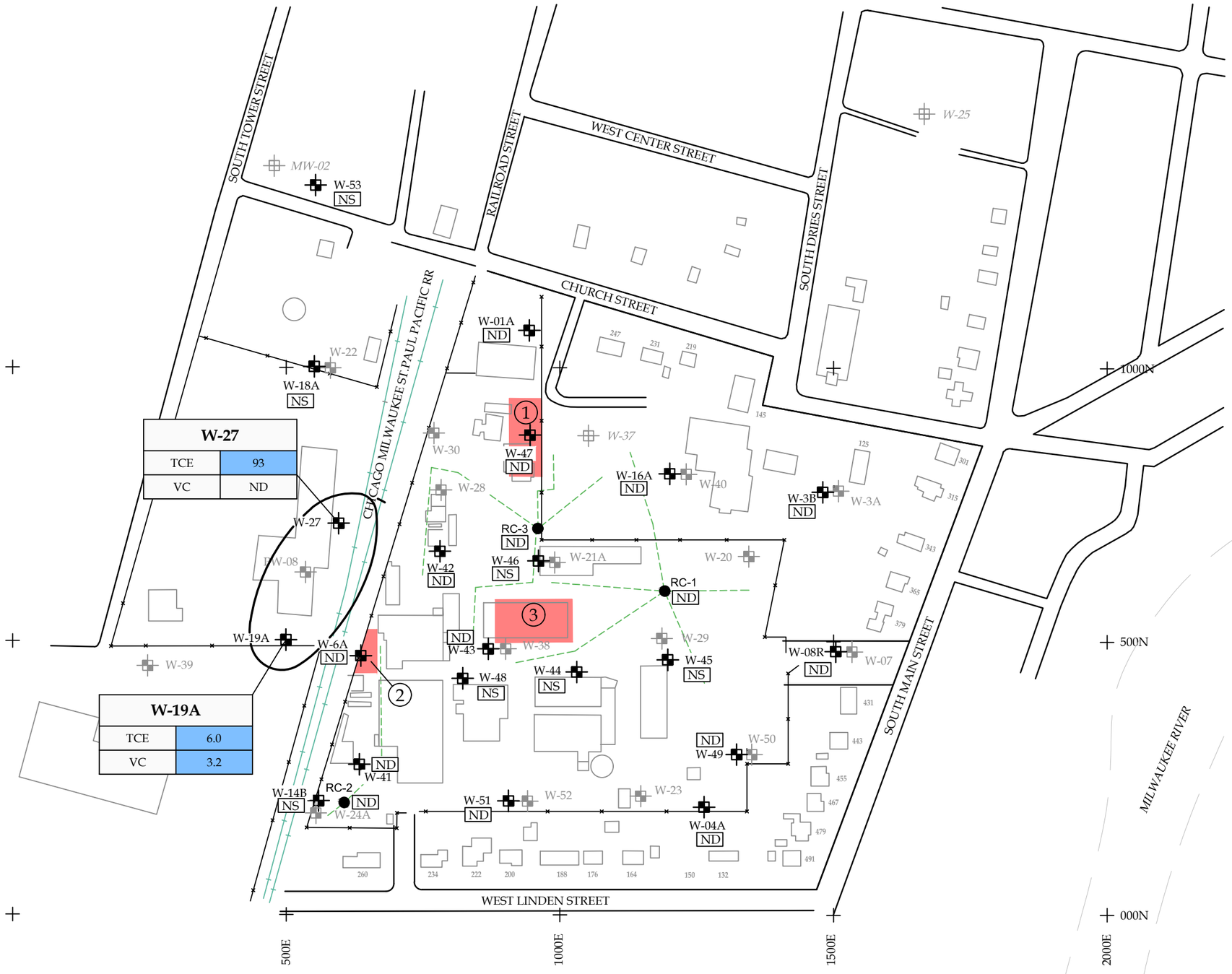

LEGEND

- W-18A — MONITORING WELL LOCATION AND NUMBER
- *W-18A* — ABANDONED WELL LOCATION AND NUMBER
- APPROXIMATE EXTENT OF GROUNDWATER CONTAINING TCE & VC
- RANNEY COLLECTOR
- ① — AREA OF CONCERN

TCE	Trichloroethene
VC	Vinyl Chloride

ND	Not Detected
NS	Not Sampled
	PAL Exceedance
	ES Exceedance

NOTES

1. BASE MAP WAS DEVELOPED FROM DRAWINGS PROVIDED BY RMT, INC.
2. W-37 WAS ABANDONED AUGUST 2, 1996.
3. W-25 WAS ABANDONED JULY 29, 1997.
4. MW-02 WAS ABANDONED NOVEMBER 2004.

SCALE:1"=200'

0 200' 400' 600'

TCE AND VC IN GROUNDWATER (ug/L)
GLACIAL DRIFT AQUIFER - FALL 2020

ARKEMA COATING RESINS
SAUKVILLE, WISCONSIN

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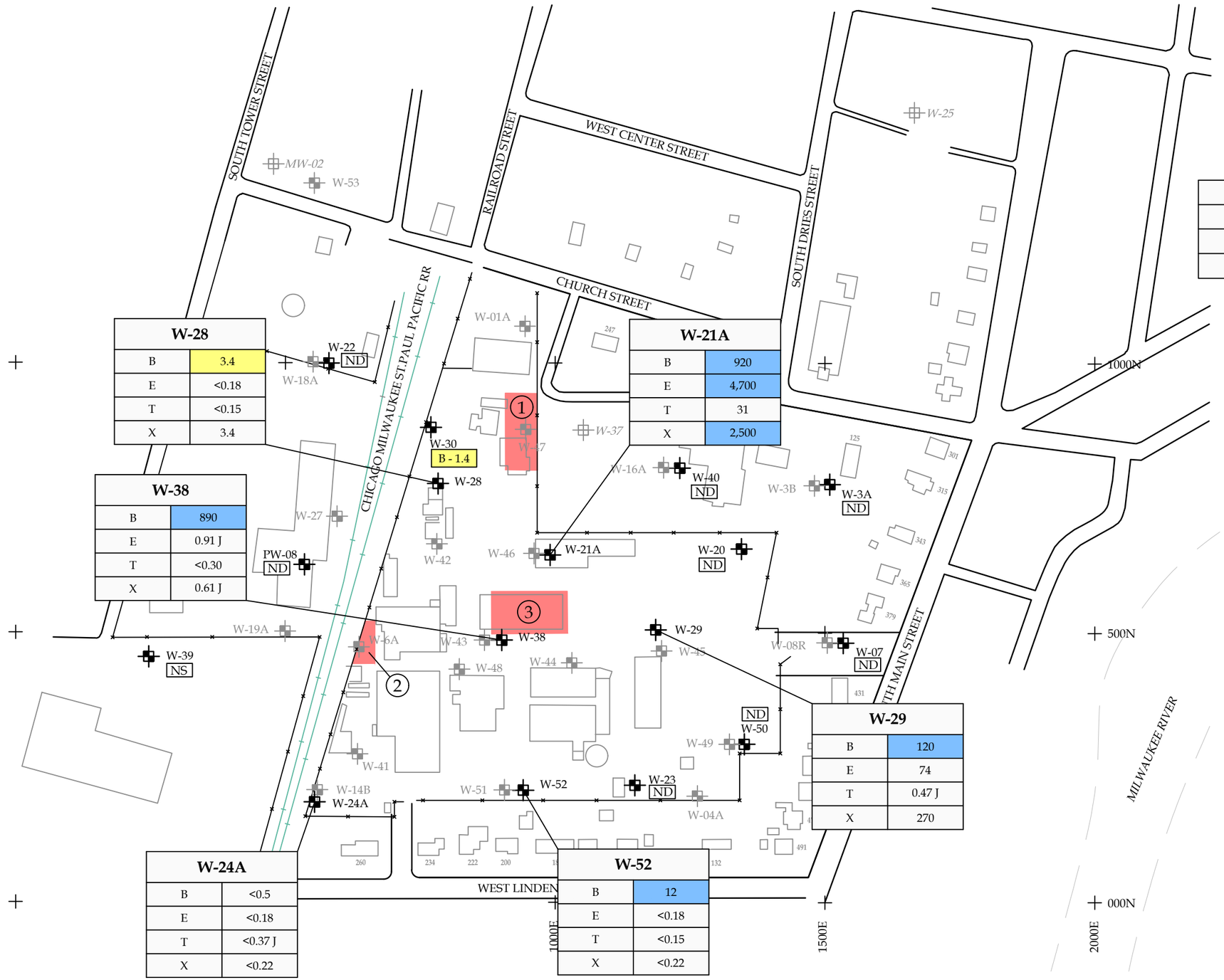
REVIEWED BY: RAC	DWG: FALL 2020 FIGURES	FIGURE 11



W-28	
B	3.4
E	<0.18
T	<0.15
X	3.4

W-21A	
B	920
E	4,700
T	31
X	2,500

W-38	
B	890
E	0.91 J
T	<0.30
X	0.61 J

W-29	
B	120
E	74
T	0.47 J
X	270

W-24A	
B	<0.5
E	<0.18
T	<0.37 J
X	<0.22

W-52	
B	12
E	<0.18
T	<0.15
X	<0.22

LEGEND

W-18A — MONITORING WELL LOCATION AND NUMBER

W-18A — ABANDONED WELL LOCATION AND NUMBER

① — AREA OF CONCERN

B	Benzene
E	EthylBenzene
T	Toluene
X	Total Xylenes

ND	Not Detected
NS	Not Sampled
J	Estimated Value
	PAL Exceedance
	ES Exceedance

NOTES

1. BASE MAP WAS DEVELOPED FROM DRAWINGS PROVIDED BY RMT, INC.
2. W-37 WAS ABANDONED AUGUST 2, 1996.
3. W-25 WAS ABANDONED JULY 29, 1997.
4. MW-02 WAS ABANDONED NOVEMBER 2004.

SCALE:1"=200'

0 200' 400' 600'

BTEX IN GROUNDWATER (ug/L) SHALLOW AND DEEP DOLOMITE AQUIFERS - FALL 2020

ARKEMA COATING RESINS
SAUKVILLE, WISCONSIN

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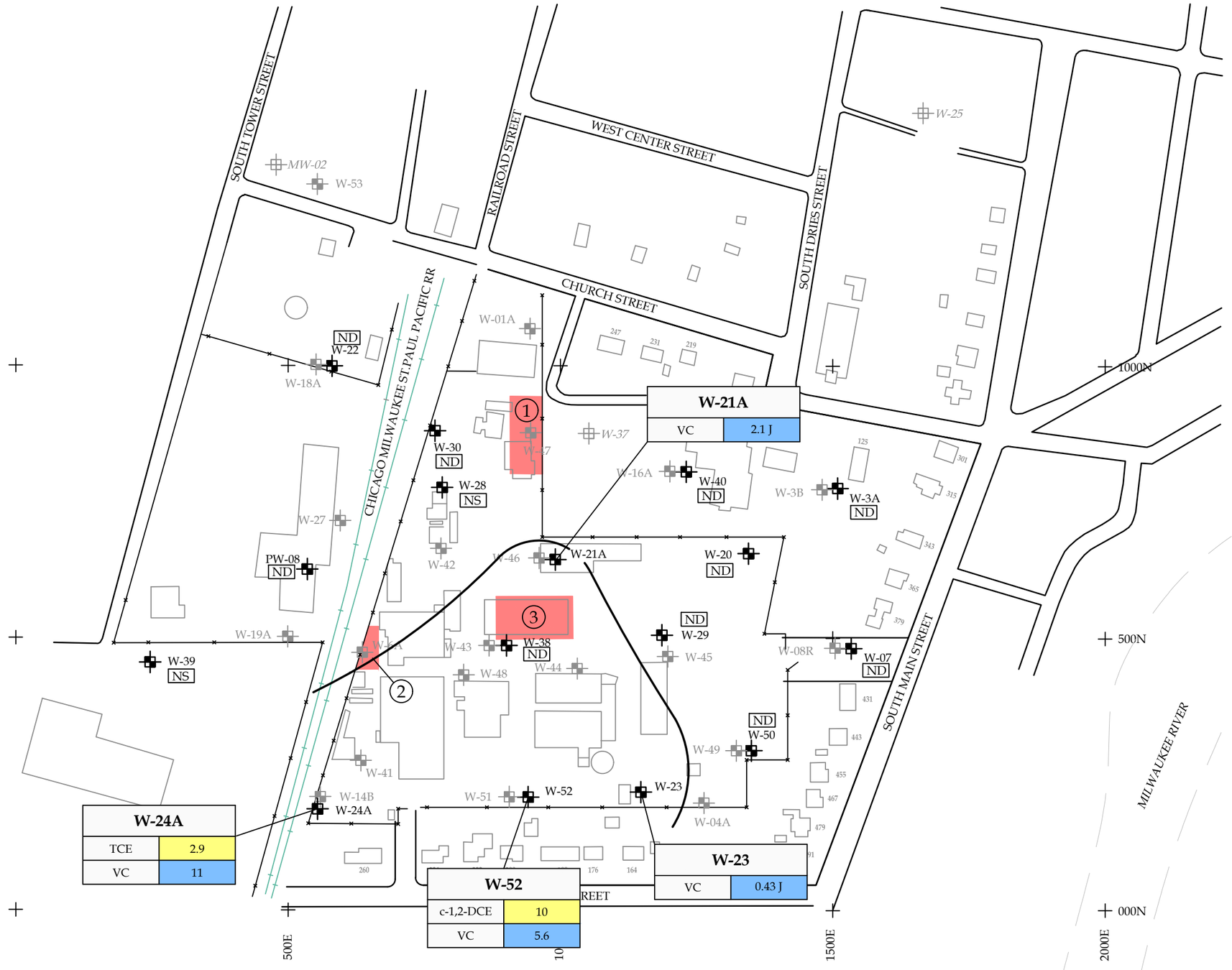
DRAWN BY: NWD	DATE: 10/01/2021	341-020-001:005
REVIEWED BY: RAC	DWG: FALL 2020 FIGURES	FIGURE 12



LEGEND

- W-18A — MONITORING WELL LOCATION AND NUMBER
- *W-18A* — ABANDONED WELL LOCATION AND NUMBER
- APPROXIMATE EXTENT OF CVOCs IN EXCESS OF PALs AND ESs
- ① — AREA OF CONCERN

c-1,2-DCE	cis-1,2-Dichloroethene
TCE	Trichloroethene
VC	Vinyl Chloride

ND	Not Detected
NS	Not Sampled
J	Estimated Value
	PAL Exceedance
	ES Exceedance

NOTES

1. BASE MAP WAS DEVELOPED FROM DRAWINGS PROVIDED BY RMT, INC.
2. W-37 WAS ABANDONED AUGUST 2, 1996.
3. W-25 WAS ABANDONED JULY 29, 1997.
4. MW-02 WAS ABANDONED NOVEMBER 2004.

SCALE:1"=200'

0 200' 400' 600'

CVOCs IN GROUNDWATER (ug/L) SHALLOW AND DEEP DOLOMITE AQUIFERS - FALL 2020

ARKEMA COATING RESINS
SAUKVILLE, WISCONSIN

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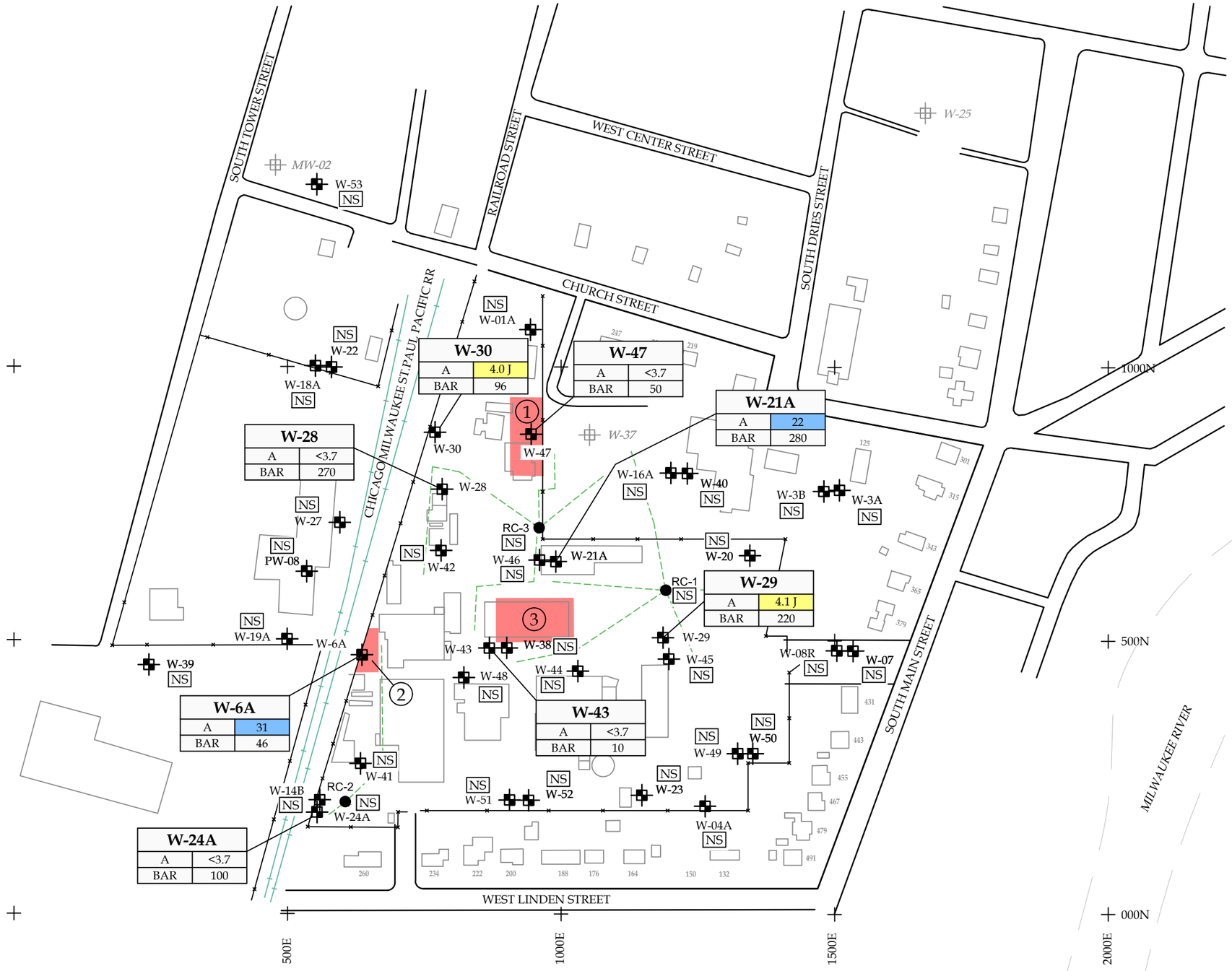
REVIEWED BY: RAC	DWG: FALL 2020 FIGURES	FIGURE 13



LEGEND

W-18A	MONITORING WELL LOCATION AND NUMBER
W-18A	ABANDONED WELL LOCATION AND NUMBER
	APPROXIMATE EXTENT OF ES EXCEEDANCES
	APPROXIMATE EXTENT OF PAL EXCEEDANCES
	RANNEY COLLECTOR
①	AREA OF CONCERN

A	Arsenic
BAR	Barium
NA	Not Analyzed due to inssuficient sample volume
ND	Not Detected
NS	Not Sampled
	PAL Exceedance
	ES Exceedance

NOTES

1. BASE MAP WAS DEVELOPED FROM DRAWINGS PROVIDED BY RMT, INC.
2. W-37 WAS ABANDONED AUGUST 2, 1996.
3. W-25 WAS ABANDONED JULY 29, 1997.
4. MW-02 WAS ABANDONED NOVEMBER 2004.

SCALE:1"=200'

0 200' 400' 600'

METALS IN GROUNDWATER (ug/L) COMBINED GLACIAL DRIFT AND DOLOMITE AQUIFERS -FALL 2020
ARKEMA COATING RESINS
SAUKVILLE, WISCONSIN

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REVIEWED BY: RAC	DWG: FALL 2020 FIGURES	FIGURE 14

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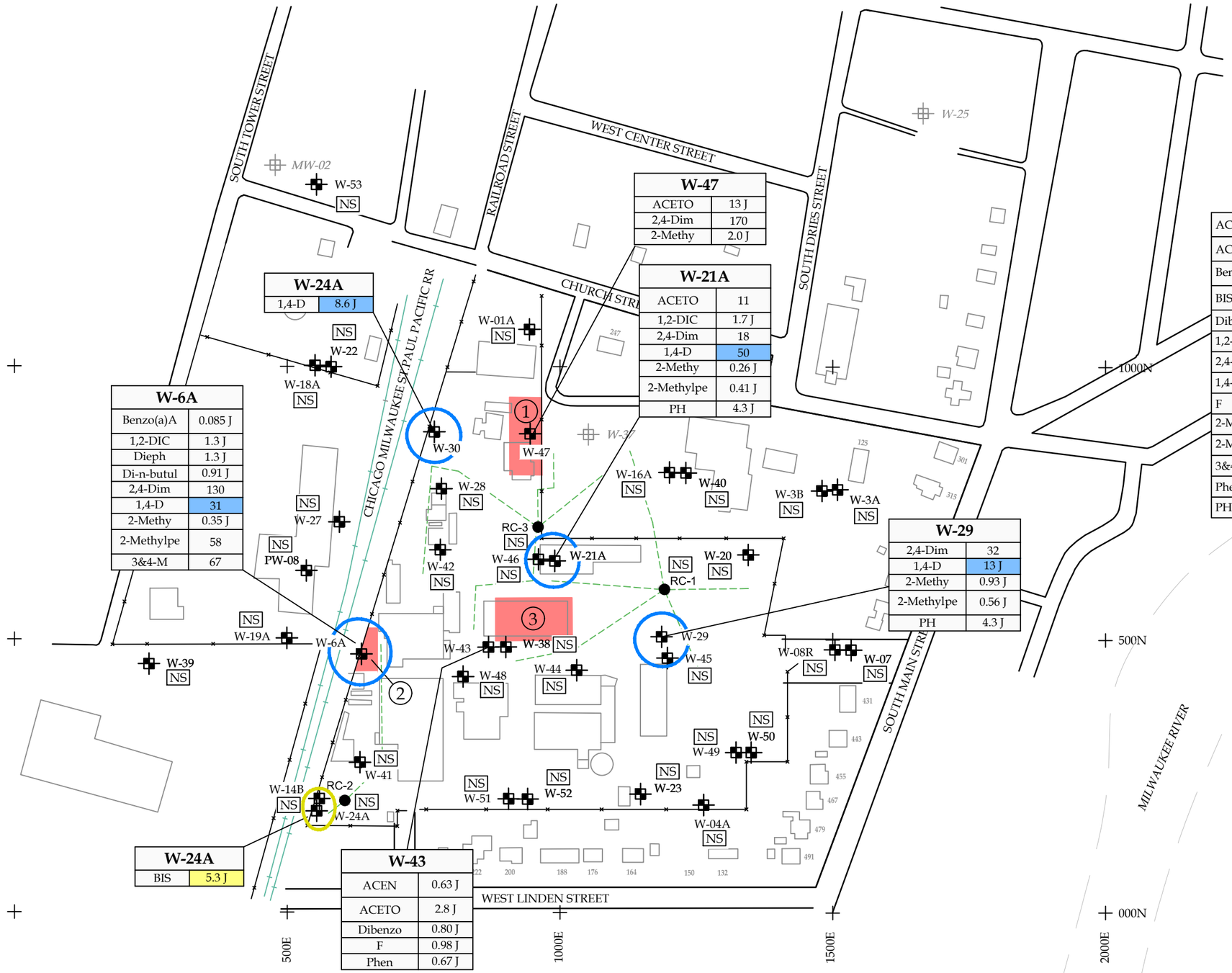

LEGEND

- W-18A — MONITORING WELL LOCATION AND NUMBER
- *W-18A* — ABANDONED WELL LOCATION AND NUMBER
- APPROXIMATE EXTENT OF ES EXCEEDANCES
- APPROXIMATE EXTENT OF PAL EXCEEDANCES
- RANNEY COLLECTOR
- ① — AREA OF CONCERN

ACEN	Acenaphthene
ACETO	Acetophenone
Benzo(a)A	Benzo(a)anthracene
BIS	bis(2-ethylhexyl)phthalate
Dibenzo	Dibenzofuran
1,2-DIC	1,2-Dichlorobenzene
2,4-D	2,4-Dimethylphenol
1,4-D	1,4-Dioxane
F	Flourene
2-Methy	2-Methylnaphthalene
2-Methype	2-Methylphenol
3&4-M	3&4 Methylphenol
Phen	Phenanthrene
PH	Phenol

ND	Not Analyzed
NS	Not Sampled
J	Estimated Value
	PAL Exceedance
	ES Exceedance

NOTES

1. BASE MAP WAS DEVELOPED FROM DRAWINGS PROVIDED BY RMT, INC.
2. W-37 WAS ABANDONED AUGUST 2, 1996.
3. W-25 WAS ABANDONED JULY 29, 1997.
4. MW-02 WAS ABANDONED NOVEMBER 2004.

SCALE:1"=200'

0 200' 400' 600'

SVOCs IN GROUNDWATER (ug/L) COMBINED GLACIAL DRIFT AND DOLOMITE AQUIFERS - FALL 2020
ARKEMA COATING RESINS
SAUKVILLE, WISCONSIN

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Franklin, WI 53132
Phone: (414) 427-1200 Fax: (414) 427-1259

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APPENDIX A

QUARTERLY REPORT SUMMARY TABLES

January 2020
Municipal Water Supply Wells - VOC Results
Arkema Coating Resins
Saukville, Wisconsin

		Sample ID		MW-1-20-1	DUP1-20-1	TB1-20-1
		Collection Date		1/21/2020	1/21/2020	1/21/2020
		Laboratory ID		5037404A	5037404B	5037404C
		Duplicate Parent			(MW1-20-1)	
		Monitoring Objective		Receptor		
		Hydrogeologic Unit		Deep Dolomite		
		Dilution		1	1	1
Parameter	PAL	ES	Units			
Acetone	1,800	9,000	µg/L	<5.01	<5.01	<5.01
Benzene	0.5	5	µg/L	<0.22	<0.22	<0.22
Bromodichloromethane	0.06	0.6	µg/L	<0.93	<0.93	<0.93
Bromoform	0.44	4.4	µg/L	<0.45	<0.45	<0.45
Bromomethane	1	10	µg/L	<0.99	<0.99	<0.99
Carbon disulfide	200	1,000	µg/L	<0.29	<0.29	<0.29
Carbon tetrachloride	0.5	5	µg/L	<0.31	<0.31	<0.31
Chlorobenzene	20	100	µg/L	<0.26	<0.26	<0.26
Chloroethane	80	400	µg/L	<0.61	<0.61	<0.61
Chloroform	0.6	6	µg/L	<0.26	<0.26	<0.26
Dibromochloromethane	6	60	µg/L	<0.22	<0.22	<0.22
1,4-Dichlorobenzene	15	75	µg/L	<0.7	<0.7	<0.7
1,3-Dichlorobenzene	120	600	µg/L	<0.85	<0.85	<0.85
1,2-Dichlorobenzene	60	600	µg/L	<0.86	<0.86	<0.86
1,2-Dichloroethane	0.5	5	µg/L	<0.25	<0.25	<0.25
1,1-Dichloroethane	85	850	µg/L	<0.36	<0.36	<0.36
1,1-Dichloroethene	0.7	7	µg/L	<0.42	<0.42	<0.42
cis-1,2-Dichloroethene	7	70	µg/L	<0.37	<0.37	<0.37
trans-1,2-Dichloroethene	20	100	µg/L	<0.34	<0.34	<0.34
1,2-Dichloropropane	0.5	5	µg/L	<0.44	<0.44	<0.44
trans-1,3-Dichloropropene	0.04	0.4	µg/L	<0.32	<0.32	<0.32
cis-1,3-Dichloropropene	0.04	0.4	µg/L	<0.26	<0.26	<0.26
Ethylbenzene	140	700	µg/L	<0.26	<0.26	<0.26
2-Hexanone	-	-	µg/L	<1.44	<1.44	<1.44
Methyl ethyl ketone (MEK)	800	4,000	µg/L	<4.17	<4.17	<4.17
4-Methyl-2-pentanone (MIBK)	50	500	µg/L	<3.95	<3.95	<3.95
Methylene chloride	0.5	5	µg/L	<1.32	<1.32	<1.32
Styrene	10	100	µg/L	<0.26	<0.26	<0.26
1,1,2,2-Tetrachloroethane	0.02	0.2	µg/L	<0.3	<0.3	<0.3
1,1,1,2-Tetrachloroethane	7	70	µg/L	<0.35	<0.35	<0.35
Tetrachloroethene (PCE)	0.5	5	µg/L	<0.38	<0.38	<0.38
Toluene	160	800	µg/L	<0.19	<0.19	<0.19
1,1,1-Trichloroethane	40	200	µg/L	<0.33	<0.33	<0.33
Trichloroethene (TCE)	0.5	5	µg/L	<0.3	<0.3	<0.3
Vinyl Acetate	-	-	µg/L	<2.26	<2.26	<2.26
Vinyl Chloride	0.02	0.2	µg/L	<0.2	<0.2	<0.2
m&p-Xylene	400	2,000	µg/L	<0.43	<0.43	<0.43
o-Xylene			µg/L	<0.29	<0.29	<0.29
Total VOCs			µg/L	0.0	0.0	0.0

Indicates concentration in exceedance of Wisconsin Administrative Code Chapter NR140 Preventive Action Limit (PAL)

Indicates concentration in exceedance of Wisconsin Administrative Code Chapter NR140 Enforcement Standard (ES)

-- Indicates PAL and ES do not exist

VOC - volatile organic compound

µg/L - micrograms per liter

April 2020

Municipal Water Supply Wells - VOC Results
Arkema Coating Resins
Saukville, Wisconsin

			Sample ID	MW-1-20-2	MW-3-20-2	MW-4-20-2	DUP1-20-2	TB1-20-2	
			Collection Date	NOT SAMPLED DUE TO COVID19 PANDEMIC RESTRICTIONS				4/6/2020	
			Laboratory ID					500-180440-9	
			Duplicate Parent				(MW-4-20-2)		
			Monitoring Objective	Receptor	Receptor	Receptor			
			Hydrogeologic Unit	Deep Dolomite	Deep Dolomite	Deep Dolomite			
			Dilution						
Parameter	PAL	ES	Units						
Benzene	0.5	5	µg/L					<0.15	
Bromobenzene	-	-	µg/L					<0.36	
Bromochloromethane	-	-	µg/L					<0.43	
Bromodichloromethane	0.06	0.6	µg/L					<0.37	
Bromoform	0.44	4.4	µg/L					<0.48	
Bromomethane	1	10	µg/L					<0.80	*
Carbon tetrachloride	0.5	5	µg/L					<0.38	
Chlorobenzene (Monochlorobenzene)	20	100	µg/L					<0.39	
Chloroethane	80	400	µg/L					<0.51	
Chloroform	0.6	6	µg/L					<0.37	
Chloromethane	3	30	µg/L					<0.32	
2-Chlorotoluene	-	-	µg/L					<0.31	
4-Chlorotoulene	-	-	µg/L					<0.35	
cis-1,2-Dichloroethene	7	70	µg/L					<0.41	
cis-1,3-Dichloropropene	0.04	0.4	µg/L					<0.42	
Dibromochloromethane	6	60	µg/L					<0.49	
1,2-Dibromo-3-Chloropropane	0.02	0.2	µg/L					<2.0	
1,2-Dichloroethane	0.5	5	µg/L					<0.39	
Dibromomethane	0.005	0.05	µg/L					<0.27	
1,2-Dichlorobenzene	60	600	µg/L					<0.33	
1,3-Dichlorobenzene	120	600	µg/L					<0.40	
1,4-Dichlorobenzene	15	75	µg/L					<0.36	
Dichlorodifluoromethane	200	1,000	µg/L					<0.67	
1,1-Dichloroethane	85	850	µg/L					<0.41	
1,2-Dibromoethane	20	100	µg/L					<0.39	
1,1-Dichloroethene	0.7	7	µg/L					<0.39	
1,2-Dichloropropane	0.5	5	µg/L					<0.43	
1,3-Dichloropropane	0.04	0.4	µg/L					<0.36	
2,2-Dichloropropane	-	-	µg/L					<0.44	
1,1-Dichloropropene	-	-	µg/L					<0.30	
Ethylbenzene	140	700	µg/L					<0.18	
Hexachlorobutadene	-	-	µg/L					<0.45	
Isopropylbenzene	-	-	µg/L					<0.39	
Isopropyl ether	-	-	µg/L					<0.28	
Methylene Chloride	0.5	5	µg/L					<1.6	
Methyl tert-butyl ether (MTBE)	12	60	µg/L					<0.39	
Naphthalene	10	100	µg/L					<0.34	
n-Butylbenzene	-	-	µg/L					<0.39	
N-Propylbenzene	-	-	µg/L					<0.41	
p-Isopropyltoluene	-	-	µg/L					<0.36	
sec-Butylbenzene	-	-	µg/L					<0.40	
Styrene	10	100	µg/L					<0.39	
tert-Butylbenzene	-	-	µg/L					<0.40	
1,1,1,2-Tetrachloroethane	7	70	µg/L					<0.46	
1,1,2,2-Tetrachloroethane	0.02	0.2	µg/L					<0.40	
Tetrachloroethene (PCE)	0.5	5	µg/L					<0.37	
Toluene	160	800	µg/L					<0.15	
trans-1,2-Dichloroethene	20	100	µg/L					<0.35	
trans-1,3-Dichloropropene	0.04	0.4	µg/L					<0.36	
1,2,3-Trichlorobenzene	-	-	µg/L					<0.46	
1,2,4-Trichlorobenzene	14	70	µg/L					<0.34	
1,1,1-Trichloroethane	40	200	µg/L					<0.38	
1,1,2-Trichloroethane	0.5	5	µg/L					<0.35	
Trichloroethene (TCE)	0.5	5	µg/L					<0.16	
Trichlorofluoromethane	698	3,490	µg/L					<0.43	
1,2,3-Trichloropropane	12	60	µg/L					<0.41	
1,2,4-Trimethylbenzene	96	480	µg/L					<0..36	
1,3,5-Trimethylbenzene			µg/L					<0.25	
Vinyl Chloride	0.02	0.2	µg/L					<0.20	
Xylenes, Total	400	2,000	µg/L					<0.22	
Total VOCs			µg/L	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	
Previous Results			µg/L	0.0	0.0	0.0			
Date				January-20	Oct-19	Oct-19			
Dissolved Oxygen			mg/L						
pH									
Conductivity			mS/cm						
Temperature			°C						
Oxidation-Reduction Potential			mV						

Indicates concentration in exceedance of Wisconsin Administrative Code Chapter NR140 Preventive Action Limit (PAL)
Indicates concentration in exceedance of Wisconsin Administrative Code Chapter NR140 Enforcement Standard (ES)

VOC - volatile organic compound
µg/L - micrograms per liter
mg/L - milligrams per liter
mS/cm - millisiemens per centimeter
°C - degrees celsius
mV - millivolts
* - Lab Control Spike (LCS) or Lab Control Spike Duplicate (LCSD) is outside acceptance limits

April 2020

POTW-VOC Results
Arkema Coating Resins
Saukville, Wisconsin

Sample ID		POTW-I-20-2	POTW-E-20-2	POTW-S-20-2
Collection Date		**NOT SAMPLED DUE TO COVID19 RESTRICTIONS**		
Laboratory ID				
Duplicate Parent				
Monitoring Objective		Receptor	Receptor	Receptor
Hydrogeologic Unit		POTW	POTW	POTW
Dilution				
Parameter	Units			
Acetone	µg/L			
Benzene	µg/L			
Bromochloromethane	µg/L			
Bromoform	µg/L			
Bromomethane	µg/L			
Carbon disulfide	µg/L			
Carbon tetrachloride	µg/L			
Chlorobenzene	µg/L			
Chloroethane	µg/L			
Chloroform	µg/L			
Dibromochloromethane	µg/L			
1,4-Dichlorobenzene	µg/L			
1,3-Dichlorobenzene	µg/L			
1,2-Dichlorobenzene	µg/L			
1,2-Dichloroethane	µg/L			
1,1-Dichloroethane	µg/L			
1,1-Dichloroethene	µg/L			
cis-1,2-Dichloroethene	µg/L			
trans-1,2-Dichloroethene	µg/L			
1,2-Dichloropropane	µg/L			
trans-1,3-Dichloropropene	µg/L			
cis-1,3-Dichloropropene	µg/L			
Ethylbenzene	µg/L			
2-Hexanone	µg/L			
Methyl ethyl ketone (MEK)	µg/L			
Methyl isobutyl ketone (MIBK)	µg/L			
Methylene chloride	µg/L			
Styrene	µg/L			
1,1,2,2-Tetrachloroethane	µg/L			
1,1,1,2-Tetrachloroethane	µg/L			
Tetrachloroethene (PCE)	µg/L			
Toluene	µg/L			
1,1,1-Trichloroethane	µg/L			
Trichloroethene (TCE)	µg/L			
Vinyl Acetate	µg/L			
Vinyl Chloride	µg/L			
m&p-Xylene	µg/L			
o-Xylene	µg/L			
Total VOCs	µg/L	**0.00**	**0.00**	**0**
Previous Results	µg/L	27.39	0.00	5,600
Date		Oct-19	Oct-19	Oct-19

VOC - volatile organic compound

µg/L - micrograms per liter

POTW - Publicly Owned Treatment Works

A-3
12/3/2021

April 2020

Ranney Collector-VOC Results
Arkema Coating Resins
Saukville, Wisconsin

		Sample ID		RC-1-20-2	RC-2-20-2	RC-3-20-2
		Collection Date		4/6/2020	4/6/2020	4/6/2020
		Laboratory ID		500-180440-6	500-180440-7	500-180440-8
		Duplicate Parent				
		Monitoring Objective		Receptor	Receptor	Receptor
		Hydrogeologic Unit		Glacial Drift	Glacial Drift	Glacial Drift
		Dilution		1	1	10/50/100
Parameter	PAL	ES	Units			
Benzene	0.5	5	µg/L	<0.15	<0.15	**21**
Bromobenzene	-	-	µg/L	<0.36	<0.36	<3.6
Bromochloromethane	-	-	µg/L	<0.43	<0.43	<4.3
Bromodichloromethane	0.06	0.6	µg/L	<0.37	<0.37	<3.7
Bromoform	0.44	4.4	µg/L	<0.48	<0.48	<4.8
Bromomethane	1	10	µg/L	<0.80 *	<0.80 *	<8.0 *
Carbon tetrachloride	0.5	5	µg/L	<0.38	<0.38	<3.8
Chlorobenzene (Monochlorobenzene)	20	100	µg/L	<0.39	<0.39	<3.9
Chloroethane	80	400	µg/L	<0.51	<0.51	<5.1
Chloroform	0.6	6	µg/L	<0.37	<0.37	<3.7
Chloromethane	3	30	µg/L	<0.32	<0.32	<3.2
2-Chlorotoluene	-	-	µg/L	<0.31	<0.31	<3.1
4-Chlorotoulene	-	-	µg/L	<0.35	<0.35	<3.5
cis-1,2-Dichloroethene	7	70	µg/L	<0.41	<0.41	<4.1
cis-1,3-Dichloropropene	0.04	0.4	µg/L	<0.42	<0.42	<4.2
Dibromochloromethane	6	60	µg/L	<0.49	<0.49	<4.9
1,2-Dibromo-3-Chloropropane	0.02	0.2	µg/L	<2.0	<2.0	<20
1,2-Dichloroethane	0.5	5	µg/L	<0.39	<0.39	<3.9
Dibromomethane	0.005	0.05	µg/L	<0.27	<0.27	<2.7
1,2-Dichlorobenzene	60	600	µg/L	<0.33	<0.33	**8.1 J**
1,3-Dichlorobenzene	120	600	µg/L	<0.40	<0.40	<4.0
1,4-Dichlorobenzene	15	75	µg/L	<0.36	<0.36	<3.6
Dichlorodifluoromethane	200	1,000	µg/L	<0.67	<0.67	<6.7
1,1-Dichloroethane	85	850	µg/L	<0.41	<0.41	<4.1
1,2-Dibromoethane	20	100	µg/L	<0.39	<0.39	<3.9
1,1-Dichloroethene	0.7	7	µg/L	<0.39	<0.39	<3.9
1,2-Dichloropropane	0.5	5	µg/L	<0.43	<0.43	<4.3
1,3-Dichloropropane	0.04	0.4	µg/L	<0.36	<0.36	<3.6
2,2-Dichloropropane	-	-	µg/L	<0.44	<0.44	<4.4
1,1-Dichloropropene	-	-	µg/L	<0.30	<0.30	<3.0
Ethylbenzene	140	700	µg/L	<0.18	<0.18	**3,400**
Hexachlorobutadene	-	-	µg/L	<0.45	<0.45	<4.5
Isopropylbenzene	-	-	µg/L	<0.39	<0.39	**130**
Isopropyl ether	-	-	µg/L	<0.28	<0.28	<2.8
Methylene Chloride	0.5	5	µg/L	<1.6	<1.6	<16
Methyl tert-butyl ether (MTBE)	12	60	µg/L	<0.39	<0.39	<3.9
Naphthalene	10	100	µg/L	<0.34	<0.34	**4.2 J**
n-Butylbenzene	-	-	µg/L	<0.39	<0.39	<3.9
N-Propylbenzene	-	-	µg/L	<0.41	<0.41	**7.7 J**
p-Isopropyltoluene	-	-	µg/L	<0.36	<0.36	<3.6
sec-Butylbenzene	-	-	µg/L	<0.40	<0.40	<4.0
Styrene	10	100	µg/L	<0.39	<0.39	<3.9
tert-Butylbenzene	-	-	µg/L	<0.40	<0.40	<4.0
1,1,1,2-Tetrachloroethane	7	70	µg/L	<0.46	<0.46	<4.6
1,1,2,2-Tetrachloroethane	0.02	0.2	µg/L	<0.40	<0.40	<4.0
Tetrachloroethene (PCE)	0.5	5	µg/L	<0.37	<0.37	<3.7
Toluene	160	800	µg/L	<0.15	<0.15	**3,000**
trans-1,2-Dichloroethene	20	100	µg/L	<0.35	<0.35	<3.5
trans-1,3-Dichloropropene	0.04	0.4	µg/L	<0.36	<0.36	<3.6
1,2,3-Trichlorobenzene	-	-	µg/L	<0.46	<0.46	<4.6
1,2,4-Trichlorobenzene	14	70	µg/L	<0.34	<0.34	<3.4
1,1,1-Trichloroethane	40	200	µg/L	<0.38	<0.38	<3.8
1,1,2-Trichloroethane	0.5	5	µg/L	<0.35	<0.35	<3.5
Trichloroethene (TCE)	0.5	5	µg/L	<0.16	<0.16	<1.6
Trichlorofluoromethane	698	3,490	µg/L	<0.43	<0.43	<4.3
1,2,3-Trichloropropane	12	60	µg/L	<0.41	<0.41	<4.1
1,2,4-Trimethylbenzene	96	480	µg/L	<0..36	<0..36	**48**
1,3,5-Trimethylbenzene			µg/L	<0.25	<0.25	**19**
Vinyl Chloride	0.02	0.2	µg/L	<0.20	<0.20	<2.0
Xylenes, Total	400	2,000	µg/L	<0.22	<0.22	**23,000**
Total VOCs			µg/L	**0.00**	**0.00**	**29,638**
Previous Results			µg/L	1,979.3	0.00	13,240
Date				Oct-19	Oct-19	Oct-19

Indicates concentration in exceedance of Wisconsin Administrative Code Chapter NR140 Preventive Action Limit (PAL)
Indicates concentration in exceedance of Wisconsin Administrative Code Chapter NR140 Enforcement Standard (ES)

VOC - volatile organic compound
µg/L - micrograms per liter
J - Results reported is less than the Reporting Limit (RL) but greater than or equal to the Method Detection Limit (MDL) and the concentration is an approxin
* - Lab Control Spike (LCS) or Lab Control Spike Duplicate (LCSD) is outside acceptance limits

Perimeter - Glacial Drift Monitoring Wells - VOC Results
Arkema Coating Resins
Saukville, Wisconsin

Sample ID				W-01A-20-2	W-03B-20-2	W-04A-20-2	W-08R-20-2	W-16A-20-2	W-27-20-2	W-49-20-2	W-51-19-2
Collection Date				4/6/2020	4/7/2020	4/7/2020	4/6/2020	4/6/2020	4/7/2020	4/6/2020	4/7/2020
Laboratory ID				500-180440-1	500-180440-20	500-180440-13	500-180440-3	500-180440-22	500-180440-17	500-180440-4	500-180440-14
Duplicate Parent											
Monitoring Objective				Perimeter	Perimeter	Perimeter	Perimeter	Perimeter	Perimeter	Perimeter	Perimeter
Hydrogeologic Unit				Glacial Drift	Glacial Drift	Glacial Drift	Glacial Drift	Glacial Drift	Glacial Drift	Glacial Drift	Glacial Drift
Dilution				1	1	1	1	1	1	1	1
Parameter	PAL	ES	Units								
Benzene	0.5	5	µg/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Bromobenzene	-	-	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36
Bromochloromethane	-	-	µg/L	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
Bromodichloromethane	0.06	0.6	µg/L	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
Bromoform	0.44	4.4	µg/L	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48
Bromomethane	1	10	µg/L	<0.80 F1*	<0.80 *	<0.80 *	<0.80 *	<0.80 *	<0.80 *	<0.80 *	<0.80 *
Carbon tetrachloride	0.5	5	µg/L	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
Chlorobenzene (Monochlorobenzene)	20	100	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
Chloroethane	80	400	µg/L	<0.51 F1	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51
Chloroform	0.6	6	µg/L	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
Chloromethane	3	30	µg/L	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32
2-Chlorotoluene	-	-	µg/L	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31
4-Chlorotoulene	-	-	µg/L	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35
cis-1,2-Dichloroethene	7	70	µg/L	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41
cis-1,3-Dichloropropene	0.04	0.4	µg/L	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42
Dibromochloromethane	6	60	µg/L	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49
1,2-Dibromo-3-Chloropropane	0.02	0.2	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2-Dichloroethane	0.5	5	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
Dibromomethane	0.005	0.05	µg/L	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
1,2-Dichlorobenzene	60	600	µg/L	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
1,3-Dichlorobenzene	120	600	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
1,4-Dichlorobenzene	15	75	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36
Dichlorodifluoromethane	200	1,000	µg/L	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67
1,1-Dichloroethane	85	850	µg/L	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41
1,2-Dibromoethane	20	100	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
1,1-Dichloroethene	0.7	7	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
1,2-Dichloropropane	0.5	5	µg/L	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
1,3-Dichloropropane	0.04	0.4	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36
2,2-Dichloropropane	-	-	µg/L	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44
1,1-Dichloropropene	-	-	µg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	140	700	µg/L	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18
Hexachlorobutadene	-	-	µg/L	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45
Isopropylbenzene	-	-	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
Isopropyl ether	-	-	µg/L	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28
Methylene Chloride	0.5	5	µg/L	<1.6	**1.9 J**	<1.6	<1.6	**1.8 J**	**2.1 J**	<1.6	<1.6
Methyl tert-butyl ether (MTBE)	12	60	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
Naphthalene	10	100	µg/L	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34
n-Butylbenzene	-	-	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
N-Propylbenzene	-	-	µg/L	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41
p-Isopropyltoluene	-	-	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36
sec-Butylbenzene	-	-	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Styrene	10	100	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
tert-Butylbenzene	-	-	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
1,1,1,2-Tetrachloroethane	7	70	µg/L	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46
1,1,2,2-Tetrachloroethane	0.02	0.2	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Tetrachloroethene (PCE)	0.5	5	µg/L	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
Toluene	160	800	µg/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
trans-1,2-Dichloroethene	20	100	µg/L	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35
trans-1,3-Dichloropropene	0.04	0.4	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36
1,2,3-Trichlorobenzene	-	-	µg/L	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46
1,2,4-Trichlorobenzene	14	70	µg/L	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34
1,1,1-Trichloroethane	40	200	µg/L	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
1,1,2-Trichloroethane	0.5	5	µg/L	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35
Trichloroethene (TCE)	0.5	5	µg/L	<0.16	<0.16	<0.16	<0.16	<0.16	**15**	<0.16	<0.16
Trichlorofluoromethane	698	3,490	µg/L	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
1,2,3-Trichloropropane	12	60	µg/L	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41
1,2,4-Trimethylbenzene	96	480	µg/L	<0..36	<0..36	<0..36	<0..36	<0..36	<0..36	<0..36	<0..36
1,3,5-Trimethylbenzene			µg/L	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Vinyl Chloride	0.02	0.2	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Xylenes, Total	400	2,000	µg/L	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22
Total VOCs			µg/L	**0.00**	**1.90**	**0.00**	**0.00**	**1.80**	**17.10**	**0.00**	**0.00**
Previous Results			µg/L	0.00	0.00	0.00	0.28	0.00	73.69	0.00	38
Date				Oct-18	Oct-18	Oct-18	Oct-18	Oct-19	Oct-19	Oct-19	Oct-19
Dissolved Oxygen			mg/L	8.94	0.98	9.42	5.90	5.42	6.15	7.47	4.12
pH				8.62	7.41	7.50	8.12	7.23	7.62	7.94	7.22
Conductivity			mS/cm	0.521	0.743	0.821	0.456	0.413	0.607	0.580	1.532
Temperature			°C	9.20	10.83	8.74	7.69	9.14	11.64	7.70	10.95
Oxidation-Reduction Potential			mV	-182.6	-349.4	-176.8	-244.1	-218.7	-122.4	-223.8	-230.3

Indicates concentration in exceedance of Wisconsin Administrative Code Chapter NR140 Preventive Action Limit (PAL)
Indicates concentration in exceedance of Wisconsin Administrative Code Chapter NR140 Enforcement Standard (ES)

VOC - volatile organic compound
µg/L - micrograms per liter
mg/L - milligrams per liter
mS/cm - millisiemens per centimeter
°C - degrees celsius
mV - millivolts
J - Results reported is less than the Reporting Limit (RL) but greater than or equal to the Method Detection Limit (MDL) and the concentration is an approximate value.
F1 - Matrix Spike (MS) / Matrix Spike Duplicate (MSD) recovery exceeds control limits.
* - Lab Control Spike (LCS) or Lab Control Spike Duplicate (LCSD) is outside acceptance limits

Perimeter - Shallow and Deep Dolomite Wells - VOC Results
Arkema Coating Resins
Saukville, Wisconsin

Sample ID				W-03A-20-2	DUP3-20-2	W-07-20-2	W-20-20-2	W-22-20-2	W-23-20-2	DUP2-20-2	W-40-20-2	W-50-20-2	W-52-20-2	PW-08-20-2
Collection Date				4/7/2020	4/7/2020	4/6/2020	4/7/2020	4/7/2020	4/7/2020	4/7/2020	4/8/2020	4/6/2020	4/7/2020	NOT SAMPLED DUE TO COVID19 RESTRICTIONS
Laboratory ID				500-180440-18	500-180440-19	500-180440-2	500-180440-10	500-180440-16	500-180440-11	500-180440-12	500-180440-21	500-180440-5	500-180440-15	
Duplicate Parent					(W-03A-20-2)					(W-23-20-2)				
Monitoring Objective				Perimeter	Perimeter	Perimeter	Perimeter	Perimeter	Perimeter		Perimeter	Perimeter	Perimeter	Perimeter
Hydrogeologic Unit				Shallow Dolomite	Glacial Drift	Shallow Dolomite	Shallow Dolomite	Shallow Dolomite	Shallow Dolomite		Shallow Dolomite	Shallow Dolomite	Shallow Dolomite	Deep Dolomite
Dilution				1	1	1	1	1	1	1	1	1	1	
Parameter	PAL	ES	Units											
Benzene	0.5	5	µg/L	<0.15	<0.15	<0.15	<0.15	<0.15	**0.17 J**	**0.17 J**	<0.15	<0.15	**12**	
Bromobenzene	-	-	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	
Bromochloromethane	-	-	µg/L	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	
Bromodichloromethane	0.06	0.6	µg/L	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	
Bromoform	0.44	4.4	µg/L	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	
Bromomethane	1	10	µg/L	<0.80 *	<0.80	<0.80 *	<0.80 *	<0.80 *	<0.80 *	<0.80 *	<0.80	<0.80 *	<0.80 *	
Carbon tetrachloride	0.5	5	µg/L	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	
Chlorobenzene (Monochlorobenzene)	20	100	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	
Chloroethane	80	400	µg/L	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	
Chloroform	0.6	6	µg/L	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	
Chloromethane	3	30	µg/L	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	
2-Chlorotoluene	-	-	µg/L	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31	
4-Chlorotoulene	-	-	µg/L	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	
cis-1,2-Dichloroethene	7	70	µg/L	<0.41	<0.41	<0.41	<0.41	<0.41	**0.87 J**	**0.84 J**	<0.41	<0.41	**12**	
cis-1,3-Dichloropropene	0.04	0.4	µg/L	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42	
Dibromochloromethane	6	60	µg/L	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49	
1,2-Dibromo-3-Chloropropane	0.02	0.2	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	
1,2-Dichloroethane	0.5	5	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	
Dibromomethane	0.005	0.05	µg/L	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	
1,2-Dichlorobenzene	60	600	µg/L	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	
1,3-Dichlorobenzene	120	600	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	
1,4-Dichlorobenzene	15	75	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	
Dichlorodifluoromethane	200	1,000	µg/L	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	
1,1-Dichloroethane	85	850	µg/L	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	
1,2-Dibromoethane	20	100	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	
1,1-Dichloroethene	0.7	7	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	
1,2-Dichloropropane	0.5	5	µg/L	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	
1,3-Dichloropropane	0.04	0.4	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	
2,2-Dichloropropane	-	-	µg/L	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	
1,1-Dichloropropene	-	-	µg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	
Ethylbenzene	140	700	µg/L	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	
Hexachlorobutadene	-	-	µg/L	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	
Isopropylbenzene	-	-	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	
Isopropyl ether	-	-	µg/L	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28	
Methylene Chloride	0.5	5	µg/L	**2.1 J**	**1.8 J**	<1.6	<1.6	**2.0 J**	<1.6	<1.6	**1.9 J**	<1.6	**1.8 J**	
Methyl tert-butyl ether (MTBE)	12	60	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	
Naphthalene	10	100	µg/L	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	**0.36 JB**	
n-Butylbenzene	-	-	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	
N-Propylbenzene	-	-	µg/L	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	
p-Isopropyltoluene	-	-	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	
sec-Butylbenzene	-	-	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	
Styrene	10	100	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	
tert-Butylbenzene	-	-	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	
1,1,1,2-Tetrachloroethane	7	70	µg/L	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	
1,1,2,2-Tetrachloroethane	0.02	0.2	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	
Tetrachloroethene (PCE)	0.5	5	µg/L	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	
Toluene	160	800	µg/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	
trans-1,2-Dichloroethene	20	100	µg/L	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	**1.0**	
trans-1,3-Dichloropropene	0.04	0.4	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	
1,2,3-Trichlorobenzene	-	-	µg/L	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	
1,2,4-Trichlorobenzene	14	70	µg/L	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	
1,1,1-Trichloroethane	40	200	µg/L	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	
1,1,2-Trichloroethane	0.5	5	µg/L	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	
Trichloroethene (TCE)	0.5	5	µg/L	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	**0.60**	
Trichlorofluoromethane	698	3,490	µg/L	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	**91**	
1,2,3-Trichloropropane	12	60	µg/L	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	
1,2,4-Trimethylbenzene	96	480	µg/L	<0..36	<0..36	<0..36	<0..36	<0..36	<0..36	<0..36	<0..36	<0..36	<0..36	
1,3,5-Trimethylbenzene			µg/L	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	
Vinyl Chloride	0.02	0.2	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	**0.24 J**	**0.24 J**	<0.20	<0.20	**7.7**	
Xylenes, Total	400	2,000	µg/L	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	
Total VOCs			µg/L	**2.10**	**1.80**	**0.00**	**0.00**	**2.00**	**1.28**	**1.25**	**1.90**	**0.00**	**126.46**	**0.00**
Previous Results			µg/L	0.00		0.00	0.00	0.00	1.30	1.41	0.00	0.00	88.81	0.00
Date				Oct-19		Oct-19	Oct-19	Oct-19	Oct-19		Oct-19	Oct-19	Oct-19	Oct-19
Dissolved Oxygen			mg/L	1.43		7.76	1.71	7.96	1.50		1.62	2.84	3.95	
pH				8.15		8.16	7.83	7.25	7.02		7.14	8.32	7.21	
Conductivity			mS/cm	0.262		0.434	0.411	0.789	1.675		0.559	0.614	1.059	
Temperature			°C	11.50		8.51	10.82	12.32	10.73		11.28	9.19	11.90	
Oxidation-Reduction Potential			mV	-340.9		-206.3	-358.9	-182.8	-357.2		-350.0	-300.8	-240.3	

Indicates concentration in exceedance of Wisconsin Administrative Code Chapter NR140 Preventive Action Limit (PAL)
Indicates concentration in exceedance of Wisconsin Administrative Code Chapter NR140 Enforcement Standard (ES)

* - Lab Control Spike (LCS) or Lab Control Spike Duplicate (LCSD) is outside acceptance limits
µg/L - micrograms per liter
mg/L - milligrams per liter
mS/cm - millisiemens per centimeter
°C - degrees celsius
mV - millivolts
J - Results reported is less than the Reporting Limit (RL) but greater than or equal to the Method Detection Limit (MDL) and the concentration is an approximate value.
B - Compound was found in the blank and sample.
* - Lab Control Spike (LCS) or Lab Control Spike Duplicate (LCSD) is outside acceptance limits

July 2020

Municipal Water Supply Wells - VOC Results
Arkema Coating Resins
Saukville, Wisconsin

		Sample ID		MW-1-20-3	MW-3-20-3	MW-4-20-3	DUP1-20-3	TB1-20-3
		Collection Date		7/7/2020	7/7/2020	7/7/2020	7/7/2020	7/7/2020
		Laboratory ID		500-184536-5	500-184536-4	500-184536-6	500-184536-7	500-184536-8
		Duplicate Parent					(MW-4-20-3)	
		Monitoring Objective		Receptor	Receptor	Receptor		
		Hydrogeologic Unit		Deep Dolomite	Deep Dolomite	Deep Dolomite		
		Dilution		1	1	1	1	1
Parameter	PAL	ES	Units					
Benzene	0.5	5	µg/L	<0.15	<0.15	<0.15	<0.15	<0.15
Bromobenzene	-	-	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36
Bromochloromethane	-	-	µg/L	<0.43	<0.43	<0.43	<0.43	<0.43
Bromodichloromethane	0.06	0.6	µg/L	<0.37	<0.37	<0.37	<0.37	<0.37
Bromoform	0.44	4.4	µg/L	<0.48	<0.48	<0.48	<0.48	<0.48
Bromomethane	1	10	µg/L	<0.80	<0.80	<0.80	<0.80	<0.80
Carbon tetrachloride	0.5	5	µg/L	<0.38	<0.38	<0.38	<0.38	<0.38
Chlorobenzene (Monochlorobenzene)	20	100	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39
Chloroethane	80	400	µg/L	<0.51	<0.51	<0.51	<0.51	<0.51
Chloroform	0.6	6	µg/L	<0.37	<0.37	<0.37	<0.37	<0.37
Chloromethane	3	30	µg/L	<0.32	<0.32	<0.32	<0.32	<0.32
2-Chlorotoluene	-	-	µg/L	<0.31	<0.31	<0.31	<0.31	<0.31
4-Chlorotoulene	-	-	µg/L	<0.35	<0.35	<0.35	<0.35	<0.35
cis-1,2-Dichloroethene	7	70	µg/L	<0.41	<0.41	<0.41	<0.41	<0.41
cis-1,3-Dichloropropene	0.04	0.4	µg/L	<0.42	<0.42	<0.42	<0.42	<0.42
Dibromochloromethane	6	60	µg/L	<0.49	<0.49	<0.49	<0.49	<0.49
1,2-Dibromo-3-Chloropropane	0.02	0.2	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
1,2-Dichloroethane	0.5	5	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39
Dibromomethane	0.005	0.05	µg/L	<0.27	<0.27	<0.27	<0.27	<0.27
1,2-Dichlorobenzene	60	600	µg/L	<0.33	<0.33	<0.33	<0.33	<0.33
1,3-Dichlorobenzene	120	600	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40
1,4-Dichlorobenzene	15	75	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36
Dichlorodifluoromethane	200	1,000	µg/L	<0.67	<0.67	<0.67	<0.67	<0.67
1,1-Dichloroethane	85	850	µg/L	<0.41	<0.41	<0.41	<0.41	<0.41
1,2-Dibromoethane	20	100	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39
1,1-Dichloroethene	0.7	7	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39
1,2-Dichloropropane	0.5	5	µg/L	<0.43	<0.43	<0.43	<0.43	<0.43
1,3-Dichloropropane	0.04	0.4	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36
2,2-Dichloropropane	-	-	µg/L	<0.44	<0.44	<0.44	<0.44	<0.44
1,1-Dichloropropene	-	-	µg/L	<0.30	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	140	700	µg/L	<0.18	<0.18	<0.18	<0.18	<0.18
Hexachlorobutadene	-	-	µg/L	<0.45	<0.45	<0.45	<0.45	<0.45
Isopropylbenzene	-	-	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39
Isopropyl ether	-	-	µg/L	<0.28	<0.28	<0.28	<0.28	<0.28
Methylene Chloride	0.5	5	µg/L	<1.6	<1.6	<1.6	<1.6	<1.6
Methyl tert-butyl ether (MTBE)	12	60	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39
Naphthalene	10	100	µg/L	<0.34	<0.34	<0.34	<0.34	<0.34
n-Butylbenzene	-	-	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39
N-Propylbenzene	-	-	µg/L	<0.41	<0.41	<0.41	<0.41	<0.41
p-Isopropyltoluene	-	-	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36
sec-Butylbenzene	-	-	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40
Styrene	10	100	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39
tert-Butylbenzene	-	-	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40
1,1,1,2-Tetrachloroethane	7	70	µg/L	<0.46	<0.46	<0.46	<0.46	<0.46
1,1,2,2-Tetrachloroethane	0.02	0.2	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40
Tetrachloroethene (PCE)	0.5	5	µg/L	<0.37	<0.37	<0.37	<0.37	<0.37
Toluene	160	800	µg/L	<0.15	<0.15	<0.15	<0.15	<0.15
trans-1,2-Dichloroethene	20	100	µg/L	<0.35	<0.35	<0.35	<0.35	<0.35
trans-1,3-Dichloropropene	0.04	0.4	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36
1,2,3-Trichlorobenzene	-	-	µg/L	<0.46	<0.46	<0.46	<0.46	<0.46
1,2,4-Trichlorobenzene	14	70	µg/L	<0.34	<0.34	<0.34	<0.34	<0.34
1,1,1-Trichloroethane	40	200	µg/L	<0.38	<0.38	<0.38	<0.38	<0.38
1,1,2-Trichloroethane	0.5	5	µg/L	<0.35	<0.35	<0.35	<0.35	<0.35
Trichloroethene (TCE)	0.5	5	µg/L	<0.16	<0.16	<0.16	<0.16	<0.16
Trichlorofluoromethane	698	3,490	µg/L	<0.43	<0.43	<0.43	<0.43	<0.43
1,2,3-Trichloropropane	12	60	µg/L	<0.41	<0.41	<0.41	<0.41	<0.41
1,2,4-Trimethylbenzene	96	480	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36
1,3,5-Trimethylbenzene				<0.25	<0.25	<0.25	<0.25	<0.25
Vinyl Chloride	0.02	0.2	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20
Xylenes, Total	400	2,000	µg/L	<0.22	<0.22	<0.22	<0.22	<0.22
Total VOCs			µg/L	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Indicates concentration in exceedance of Wisconsin Administrative Code Chapter NR140 Preventive Action Limit (PAL)
Indicates concentration in exceedance of Wisconsin Administrative Code Chapter NR140 Enforcement Standard (ES)

VOC - volatile organic compound
µg/L - micrograms per liter
mg/L - milligrams per liter

July 2020

POTW-VOC Results
Arkema Coating Resins
Saukville, Wisconsin

Sample ID		POTW-I-20-3	POTW-E-20-3	POTW-S-20-3
Collection Date		7/7/2020	7/7/2020	7/7/2020
Laboratory ID		500-184536-2	500-184536-1	500-184536-3
Duplicate Parent				
Monitoring Objective		Receptor	Receptor	Receptor
Hydrogeologic Unit		POTW	POTW	POTW
Dilution		1	1	10
Parameter	Units			
Benzene	µg/L	<0.15	<0.15	<1.5
Bromobenzene	µg/L	<0.36	<0.36	<3.6
Bromochloromethane	µg/L	<0.43	<0.43	<4.3
Bromodichloromethane	µg/L	<0.37	<0.37	<3.7
Bromoform	µg/L	<0.48	<0.48	<4.8
Bromomethane	µg/L	<0.80	<0.80	<8.0
Carbon tetrachloride	µg/L	<0.38	<0.38	<3.8
Chlorobenzene (Monochlorobenzene)	µg/L	<0.39	<0.39	<3.9
Chloroethane	µg/L	<0.51	<0.51	<5.1
Chloroform	µg/L	**1.2 J**	<0.37	<3.7
Chloromethane	µg/L	<0.32	<0.32	<3.2
2-Chlorotoluene	µg/L	<0.31	<0.31	<3.1
4-Chlorotoulene	µg/L	<0.35	<0.35	<3.5
cis-1,2-Dichloroethene	µg/L	<0.41	<0.41	<4.1
cis-1,3-Dichloropropene	µg/L	<0.42	<0.42	<4.2
Dibromochloromethane	µg/L	<0.49	<0.49	<4.9
1,2-Dibromo-3-Chloropropane	µg/L	<2.0	<2.0	<20 *
1,2-Dichloroethane	µg/L	<0.39	<0.39	<3.9
Dibromomethane	µg/L	<0.27	<0.27	<2.7
1,2-Dichlorobenzene	µg/L	<0.33	<0.33	<3.3
1,3-Dichlorobenzene	µg/L	<0.40	<0.40	<4.0
1,4-Dichlorobenzene	µg/L	<0.36	<0.36	<3.6
Dichlorodifluoromethane	µg/L	<0.67	<0.67	<6.7
1,1-Dichloroethane	µg/L	<0.41	<0.41	<4.1
1,2-Dibromoethane	µg/L	<0.39	<0.39	<3.9
1,1-Dichloroethene	µg/L	<0.39	<0.39	<3.9
1,2-Dichloropropane	µg/L	<0.43	<0.43	**10**
1,3-Dichloropropane	µg/L	<0.36	<0.36	<3.6
2,2-Dichloropropane	µg/L	<0.44	<0.44	<4.4
1,1-Dichloropropene	µg/L	<0.30	<0.30	<3.0
Ethylbenzene	µg/L	**0.46 J**	<0.18	<1.8
Hexachlorobutadene	µg/L	<0.45	<0.45	<4.5
Isopropylbenzene	µg/L	<0.39	<0.39	<3.9
Isopropyl ether	µg/L	<0.28	<0.28	<2.8
Methylene Chloride	µg/L	<1.6	<1.6	<16
Methyl tert-butyl ether (MTBE)	µg/L	<0.39	<0.39	<3.9
Naphthalene	µg/L	<0.34	<0.34	<3.4
n-Butylbenzene	µg/L	<0.39	<0.39	<3.9
N-Propylbenzene	µg/L	<0.41	<0.41	<4.1
p-Isopropyltoluene	µg/L	<0.36	<0.36	<3.6
sec-Butylbenzene	µg/L	<0.40	<0.40	<4.0
Styrene	µg/L	<0.39	<0.39	<3.9
tert-Butylbenzene	µg/L	<0.40	<0.40	<4.0
1,1,1,2-Tetrachloroethane	µg/L	<0.46	<0.46	<4.6
1,1,2,2-Tetrachloroethane	µg/L	<0.40	<0.40	<4.0
Tetrachloroethene (PCE)	µg/L	<0.37	<0.37	<3.7
Toluene	µg/L	**71**	<0.15	**8,800**
trans-1,2-Dichloroethene	µg/L	<0.35	<0.35	<3.5
trans-1,3-Dichloropropene	µg/L	<0.36	<0.36	<3.6
1,2,3-Trichlorobenzene	µg/L	<0.46	<0.46	<4.6
1,2,4-Trichlorobenzene	µg/L	<0.34	<0.34	<3.4
1,1,1-Trichloroethane	µg/L	<0.38	<0.38	<3.8
1,1,2-Trichloroethane	µg/L	<0.35	<0.35	<3.5
Trichloroethene (TCE)	µg/L	<0.16	<0.16	<1.6
Trichlorofluoromethane	µg/L	<0.43	<0.43	<4.3
1,2,3-Trichloropropane	µg/L	<0.41	<0.41	<4.1
1,2,4-Trimethylbenzene	µg/L	<0.36	<0.36	<3.6
1,3,5-Trimethylbenzene	µg/L	<0.25	<0.25	<2.5
Vinyl Chloride	µg/L	<0.20	<0.20	<2.0
Xylenes, Total	µg/L	**8.0**	<0.22	**3.6** J
Total VOCs	µg/L	**80.66**	**0.00**	**8,813.6**
Previous Results	µg/L	27.39	0.00	5,600
Date		Oct-19	Oct-19	Oct-19

VOC - volatile organic compound
µg/L - micrograms per liter
"J" - Result is less than the Reporting Limit (RL) but greater than or equal to the Method Detection Limit (MDL) and the concentration is an approximate value.
POTW - Publicly Owned Treatment Works
* - Lab Control Spike (LCS) or Lab Control Spike Duplicate (LCSD) is outside acceptance limits

October 2020

Municipal Water Supply Wells - VOC Results
Arkema Coating Resins
Saukville, Wisconsin

Sample ID				MW-1-20-4	MW-3-20-4	MW-4-20-4	DUP1-20-4	TB1-20-4	TB2-20-4	TB3-20-4
Collection Date				10/20/2020	10/20/2020	10/20/2020	10/20/2020	10/19/2020	10/20/2020	10/22/2020
Laboratory ID				500-189959-20	500-189959-19	500-189959-21	500-189959-22	500-189959-6	500-189959-34	500-189959-40
Duplicate Parent							(MW-4-20-4)			
Monitoring Objective				Receptor	Receptor	Receptor				
Hydrogeologic Unit				Deep Dolomite	Deep Dolomite	Deep Dolomite				
Dilution				1	1	1	1	1	1	1
Parameter	PAL	ES	Units							
Benzene	0.5	5	µg/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Bromobenzene	-	-	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36
Bromochloromethane	-	-	µg/L	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
Bromodichloromethane	0.06	0.6	µg/L	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
Bromoform	0.44	4.4	µg/L	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48
Bromomethane	1	10	µg/L	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80
Carbon tetrachloride	0.5	5	µg/L	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
Chlorobenzene (Monochlorobenzene)	20	100	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
Chloroethane	80	400	µg/L	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51
Chloroform	0.6	6	µg/L	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
Chloromethane	3	30	µg/L	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32
2-Chlorotoluene	-	-	µg/L	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31
4-Chlorotoulene	-	-	µg/L	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35
cis-1,2-Dichloroethene	7	70	µg/L	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41
cis-1,3-Dichloropropene	0.04	0.4	µg/L	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42
Dibromochloromethane	6	60	µg/L	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49
1,2-Dibromo-3-Chloropropane	0.02	0.2	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2-Dichloroethane	0.5	5	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
Dibromomethane	0.005	0.05	µg/L	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
1,2-Dichlorobenzene	60	600	µg/L	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
1,3-Dichlorobenzene	120	600	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
1,4-Dichlorobenzene	15	75	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36
Dichlorodifluoromethane	200	1,000	µg/L	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67
1,1-Dichloroethane	85	850	µg/L	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41
1,2-Dibromoethane	20	100	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
1,1-Dichloroethene	0.7	7	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
1,2-Dichloropropane	0.5	5	µg/L	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
1,3-Dichloropropane	0.04	0.4	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36
2,2-Dichloropropane	-	-	µg/L	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44
1,1-Dichloropropene	-	-	µg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	140	700	µg/L	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18
Hexachlorobutadiene	-	-	µg/L	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45
Isopropylbenzene	-	-	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
Isopropyl ether	-	-	µg/L	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28
Methylene Chloride	0.5	5	µg/L	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Methyl tert-butyl ether (MTBE)	12	60	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
Naphthalene	10	100	µg/L	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34
n-Butylbenzene	-	-	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
N-Propylbenzene	-	-	µg/L	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41
p-Isopropyltoluene	-	-	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36
sec-Butylbenzene	-	-	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Styrene	10	100	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
tert-Butylbenzene	-	-	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
1,1,1,2-Tetrachloroethane	7	70	µg/L	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46
1,1,2,2-Tetrachloroethane	0.02	0.2	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Tetrachloroethene (PCE)	0.5	5	µg/L	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
Toluene	160	800	µg/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
trans-1,2-Dichloroethene	20	100	µg/L	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35
trans-1,3-Dichloropropene	0.04	0.4	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36
1,2,3-Trichlorobenzene	-	-	µg/L	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46
1,2,4-Trichlorobenzene	14	70	µg/L	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34
1,1,1-Trichloroethane	40	200	µg/L	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
1,1,2-Trichloroethane	0.5	5	µg/L	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35
Trichloroethene (TCE)	0.5	5	µg/L	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16
Trichlorofluoromethane	698	3,490	µg/L	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
1,2,3-Trichloropropane	12	60	µg/L	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41
1,2,4-Trimethylbenzene	96	480	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36
1,3,5-Trimethylbenzene			µg/L	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Vinyl Chloride	0.02	0.2	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Xylenes, Total	400	2,000	µg/L	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22
Total VOCs			µg/L	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Previous Results			µg/L	0.0	0.0	0.0				
Date				July-20	Jul-20	Jul-20				
Dissolved Oxygen			mg/L	9.22	7.51	5.16				
pH				6.78	6.94	6.84				
Conductivity			mS/cm	0.470	0.538	0.445				
Temperature			°C	5.86	5.09	5.70				
Oxidation-Reduction Potential			mV	29.5	47.3	24.9				

Indicates concentration in exceedance of Wisconsin Administrative Code Chapter NR140 Preventive Action Limit (PAL)
Indicates concentration in exceedance of Wisconsin Administrative Code Chapter NR140 Enforcement Standard (ES)

VOC - volatile organic compound
µg/L - micrograms per liter
mg/L - milligrams per liter
mS/cm - millisiemens per centimeter
°C - degrees celsius
mV - millivolts

October 2020

POTW VOC Results
Arkema Coating Resins
Saukville, Wisconsin

	Sample ID	POTW-I-20-4	POTW-E-20-4	POTW-S-20-4
	Collection Date	10/20/2020	10/20/2020	10/20/2020
	Laboratory ID	500-189959-17	500-189959-16	500-189959-18
	Duplicate Parent			
	Monitoring Objective	Receptor	Receptor	Receptor
	Hydrogeologic Unit	POTW	POTW	POTW
	Dilution	1	1	5/50
Parameter	Units			
Benzene	µg/L	<0.15	<0.15	<0.73
Bromobenzene	µg/L	<0.36	<0.36	<1.8
Bromochloromethane	µg/L	<0.43	<0.43	<2.1
Bromodichloromethane	µg/L	<0.37	<0.37	<1.9
Bromoform	µg/L	<0.48	<0.48	<2.4
Bromomethane	µg/L	<0.80	<0.80	<4.0
Carbon tetrachloride	µg/L	<0.38	<0.38	<1.9
Chlorobenzene (Monochlorobenzene)	µg/L	<0.39	<0.39	<1.9
Chloroethane	µg/L	<0.51	<0.51	<2.5
Chloroform	µg/L	<0.37	<0.37	<1.9
Chloromethane	µg/L	<0.32	<0.32	<1.6
2-Chlorotoluene	µg/L	<0.31	<0.31	<1.6
4-Chlorotoulene	µg/L	<0.35	<0.35	<1.7
cis-1,2-Dichloroethene	µg/L	<0.41	<0.41	<2.0
cis-1,3-Dichloropropene	µg/L	<0.42	<0.42	<2.1
Dibromochloromethane	µg/L	<0.49	<0.49	<2.4
1,2-Dibromo-3-Chloropropane	µg/L	<2.0	<2.0	<10
1,2-Dichloroethane	µg/L	<0.39	<0.39	<1.9
Dibromomethane	µg/L	<0.27	<0.27	<1.4
1,2-Dichlorobenzene	µg/L	<0.33	<0.33	<1.7
1,3-Dichlorobenzene	µg/L	<0.40	<0.40	<2.0
1,4-Dichlorobenzene	µg/L	<0.36	<0.36	<1.8
Dichlorodifluoromethane	µg/L	<0.67	<0.67	<3.4
1,1-Dichloroethane	µg/L	<0.41	<0.41	<2.1
1,2-Dibromoethane	µg/L	<0.39	<0.39	<2.0
1,1-Dichloroethene	µg/L	<0.39	<0.39	<2.0
1,2-Dichloropropane	µg/L	<0.43	<0.43	<2.1
1,3-Dichloropropane	µg/L	<0.36	<0.36	<1.8
2,2-Dichloropropane	µg/L	<0.44	<0.44	<2.2
1,1-Dichloropropene	µg/L	<0.30	<0.30	<1.5
Ethylbenzene	µg/L	<0.18	<0.18	<0.92
Hexachlorobutadiene	µg/L	<0.45	<0.45	<2.2
Isopropylbenzene	µg/L	<0.39	<0.39	<1.9
Isopropyl ether	µg/L	<0.28	<0.28	<1.4
Methylene Chloride	µg/L	<1.6	<1.6	<8.2
Methyl tert-butyl ether (MTBE)	µg/L	<0.39	<0.39	<2.0
Naphthalene	µg/L	<0.34	<0.34	<1.7
n-Butylbenzene	µg/L	<0.39	<0.39	<1.9
N-Propylbenzene	µg/L	<0.41	<0.41	<2.1
p-Isopropyltoluene	µg/L	<0.36	<0.36	<1.8
sec-Butylbenzene	µg/L	<0.40	<0.40	<2.0
Styrene	µg/L	<0.39	<0.39	<1.9
tert-Butylbenzene	µg/L	<0.40	<0.40	<2.0
1,1,1,2-Tetrachloroethane	µg/L	<0.46	<0.46	<2.3
1,1,2,2-Tetrachloroethane	µg/L	<0.40	<0.40	<2.0
Tetrachloroethene (PCE)	µg/L	<0.37	<0.37	<1.9
Toluene	µg/L	**0.39 J**	<0.15	**1,100**
trans-1,2-Dichloroethene	µg/L	<0.35	<0.35	<1.7
trans-1,3-Dichloropropene	µg/L	<0.36	<0.36	<1.8
1,2,3-Trichlorobenzene	µg/L	<0.46	<0.46	<2.3
1,2,4-Trichlorobenzene	µg/L	<0.34	<0.34	<1.7
1,1,1-Trichloroethane	µg/L	<0.38	<0.38	<1.9
1,1,2-Trichloroethane	µg/L	<0.35	<0.35	<1.8
Trichloroethene (TCE)	µg/L	<0.16	<0.16	<0.82
Trichlorofluoromethane	µg/L	<0.43	<0.43	<2.1
1,2,3-Trichloropropane	µg/L	<0.41	<0.41	<2.1
1,2,4-Trimethylbenzene	µg/L	<0.36	<0.36	<1.8
1,3,5-Trimethylbenzene	µg/L	<0.25	<0.25	<1.3
Vinyl Chloride	µg/L	<0.20	<0.20	<1.0
Xylenes, Total	µg/L	<0.22	<0.22	<1.1
Total VOCs	µg/L	**0.39**	**0.00**	**1,100**
Previous Results	µg/L	40.74	0.00	3,700
Date		Jul-20	Jul-20	Jul-20

J - Results reported between the Limit of Detection (LOD) and the Limit of Quantitation (LOQ) are estimated.
VOC - volatile organic compound
µg/L - micrograms per liter

October 2020

Ranney Collector VOC Results
Arkema Coating Resins
Saukville, Wisconsin

			Sample ID	RC-1-20-4	RC-2-20-4	RC-3-20-4
			Collection Date	10/19/2020	10/19/2020	10/19/2020
			Laboratory ID	500-189959-14	500-189959-13	500-189959-15
			Duplicate Parent			
			Monitoring Objective	Receptor	Receptor	Receptor
			Hydrogeologic Unit	Glacial Drift	Glacial Drift	Glacial Drift
			Dilution	1	1	1
Parameter	PAL	ES	Units			
Benzene	0.5	5	µg/L	<0.15	**0.90**	**0.55**
Bromobenzene	-	-	µg/L	<0.36	<0.36	<0.36
Bromochloromethane	-	-	µg/L	<0.43	<0.43	<0.43
Bromodichloromethane	0.06	0.6	µg/L	<0.37	<0.37	<0.37
Bromoform	0.44	4.4	µg/L	<0.48	<0.48	<0.48
Bromomethane	1	10	µg/L	<0.80	<0.80	<0.80
Carbon tetrachloride	0.5	5	µg/L	<0.38	<0.38	<0.38
Chlorobenzene (Monochlorobenzene)	20	100	µg/L	<0.39	<0.39	<0.39
Chloroethane	80	400	µg/L	<0.51	<0.51	<0.51
Chloroform	0.6	6	µg/L	<0.37	<0.37	<0.37
Chloromethane	3	30	µg/L	<0.32	<0.32	<0.32
2-Chlorotoluene	-	-	µg/L	<0.31	<0.31	<0.31
4-Chlorotoulene	-	-	µg/L	<0.35	<0.35	<0.35
cis-1,2-Dichloroethene	7	70	µg/L	<0.41	**12**	<0.41
cis-1,3-Dichloropropene	0.04	0.4	µg/L	<0.42	<0.42	<0.42
Dibromochloromethane	6	60	µg/L	<0.49	<0.49	<0.49
1,2-Dibromo-3-Chloropropane	0.02	0.2	µg/L	<2.0	<2.0	<2.0
1,2-Dichloroethane	0.5	5	µg/L	<0.39	<0.39	<0.39
Dibromomethane	0.005	0.05	µg/L	<0.27	<0.27	<0.27
1,2-Dichlorobenzene	60	600	µg/L	<0.33	<0.33	<0.33
1,3-Dichlorobenzene	120	600	µg/L	<0.40	<0.40	<0.40
1,4-Dichlorobenzene	15	75	µg/L	<0.36	<0.36	<0.36
Dichlorodifluoromethane	200	1,000	µg/L	<0.67	<0.67	<0.67
1,1-Dichloroethane	85	850	µg/L	<0.41	<0.41	<0.41
1,2-Dibromoethane	20	100	µg/L	<0.39	<0.39	<0.39
1,1-Dichloroethene	0.7	7	µg/L	<0.39	<0.39	<0.39
1,2-Dichloropropane	0.5	5	µg/L	<0.43	<0.43	<0.43
1,3-Dichloropropane	0.04	0.4	µg/L	<0.36	<0.36	<0.36
2,2-Dichloropropane	-	-	µg/L	<0.44	<0.44	<0.44
1,1-Dichloropropene	-	-	µg/L	<0.30	<0.30	<0.30
Ethylbenzene	140	700	µg/L	<0.18	<0.18	**8.5**
Hexachlorobutadiene	-	-	µg/L	<0.45	<0.45	<0.45
Isopropylbenzene	-	-	µg/L	<0.39	<0.39	**1.2**
Isopropyl ether	-	-	µg/L	<0.28	<0.28	<0.28
Methylene Chloride	0.5	5	µg/L	<1.6	<1.6	<1.6
Methyl tert-butyl ether (MTBE)	12	60	µg/L	<0.39	<0.39	<0.39
Naphthalene	10	100	µg/L	<0.34	<0.34	<0.34
n-Butylbenzene	-	-	µg/L	<0.39	<0.39	<0.39
N-Propylbenzene	-	-	µg/L	<0.41	<0.41	<0.41
p-Isopropyltoluene	-	-	µg/L	<0.36	<0.36	<0.36
sec-Butylbenzene	-	-	µg/L	<0.40	<0.40	<0.40
Styrene	10	100	µg/L	<0.39	<0.39	<0.39
tert-Butylbenzene	-	-	µg/L	<0.40	<0.40	<0.40
1,1,1,2-Tetrachloroethane	7	70	µg/L	<0.46	<0.46	<0.46
1,1,2,2-Tetrachloroethane	0.02	0.2	µg/L	<0.40	<0.40	<0.40
Tetrachloroethene (PCE)	0.5	5	µg/L	**0.49** J	<0.37	<0.37
Toluene	160	800	µg/L	<0.15	<0.15	**9.7**
trans-1,2-Dichloroethene	20	100	µg/L	<0.35	<0.35	<0.35
trans-1,3-Dichloropropene	0.04	0.4	µg/L	<0.36	<0.36	<0.36
1,2,3-Trichlorobenzene	-	-	µg/L	<0.46	<0.46	<0.46
1,2,4-Trichlorobenzene	14	70	µg/L	<0.34	<0.34	<0.34
1,1,1-Trichloroethane	40	200	µg/L	<0.38	<0.38	<0.38
1,1,2-Trichloroethane	0.5	5	µg/L	<0.35	<0.35	<0.35
Trichloroethene (TCE)	0.5	5	µg/L	<0.16	**0.97**	**0.20** J
Trichlorofluoromethane	698	3,490	µg/L	<0.43	**3.2**	<0.43
1,2,3-Trichloropropane	12	60	µg/L	<0.41	<0.41	<0.41
1,2,4-Trimethylbenzene	96	480	µg/L	<0.36	<0.36	**0.60** J
1,3,5-Trimethylbenzene			µg/L	<0.25	<0.25	<0.25
Vinyl Chloride	0.02	0.2	µg/L	<0.20	**4.1**	<0.20
Xylenes, Total	400	2,000	µg/L	<0.22	**1.8**	**35**
Total VOCs			µg/L	**0.49**	**22.97**	**55.75**
Previous Results			µg/L	372.93	0.26	13,742
Date				Apr-20	Apr-20	Apr-20

VOC - volatile organic compound
µg/L - micrograms per liter

Perimeter - Glacial Drift Monitoring Wells - VOC Results
Arkema Coating Resins
Saukville, Wisconsin

				Sample ID	W-01A-20-4	W-03B-20-4	W-04A-20-4	W-08R-20-4	W-16A-20-4	W-27-20-4	W-49-20-4	W-51-20-4
				Collection Date	10/19/2020	10/22/2020	10/20/2020	10/19/2020	10/22/2020	10/22/2020	10/19/2020	10/20/2020
				Laboratory ID	500-189959-4	500-189959-43	500-189959-30	500-189959-2	500-189959-39	500-189959-45	500-189959-5	500-189959-32
				Duplicate Parent								
				Monitoring Objective	Perimeter	Perimeter	Perimeter	Perimeter	Perimeter	Perimeter	Perimeter	Perimeter
				Hydrogeologic Unit	Glacial Drift	Glacial Drift	Glacial Drift	Glacial Drift	Glacial Drift	Glacial Drift	Glacial Drift	Glacial Drift
				Dilution	1	1	1	1	1	1	1	1
Parameter	PAL	ES	Units									
Benzene	0.5	5	µg/L		<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Bromobenzene	-	-	µg/L		<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36
Bromochloromethane	-	-	µg/L		<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
Bromodichloromethane	0.06	0.6	µg/L		<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
Bromoform	0.44	4.4	µg/L		<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48
Bromomethane	1	10	µg/L		<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80
Carbon tetrachloride	0.5	5	µg/L		<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
Chlorobenzene (Monochlorobenzene)	20	100	µg/L		<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
Chloroethane	80	400	µg/L		<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51
Chloroform	0.6	6	µg/L		<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
Chloromethane	3	30	µg/L		<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32
2-Chlorotoluene	-	-	µg/L		<0.31	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31
4-Chlorotoulene	-	-	µg/L		<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35
cis-1,2-Dichloroethene	7	70	µg/L		<0.41	<0.41	<0.41	<0.41	<0.41	**8.6**	<0.41	<0.41
cis-1,3-Dichloropropene	0.04	0.4	µg/L		<0.42	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42
Dibromochloromethane	6	60	µg/L		<0.49	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49
1,2-Dibromo-3-Chloropropane	0.02	0.2	µg/L		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2-Dichloroethane	0.5	5	µg/L		<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
Dibromomethane	0.005	0.05	µg/L		<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
1,2-Dichlorobenzene	60	600	µg/L		<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
1,3-Dichlorobenzene	120	600	µg/L		<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
1,4-Dichlorobenzene	15	75	µg/L		<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36
Dichlorodifluoromethane	200	1,000	µg/L		<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67
1,1-Dichloroethane	85	850	µg/L		<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41
1,2-Dibromoethane	20	100	µg/L		<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
1,1-Dichloroethene	0.7	7	µg/L		<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
1,2-Dichloropropane	0.5	5	µg/L		<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
1,3-Dichloropropane	0.04	0.4	µg/L		<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36
2,2-Dichloropropane	-	-	µg/L		<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44
1,1-Dichloropropene	-	-	µg/L		<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	140	700	µg/L		<0.18	<0.18	<0.18	<0.18	**0.29 J**	<0.18	<0.18	<0.18
Hexachlorobutadiene	-	-	µg/L		<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45
Isopropylbenzene	-	-	µg/L		<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
Isopropyl ether	-	-	µg/L		<0.28	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28
Methylene Chloride	0.5	5	µg/L		<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Methyl tert-butyl ether (MTBE)	12	60	µg/L		<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
Naphthalene	10	100	µg/L		<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34
n-Butylbenzene	-	-	µg/L		<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
N-Propylbenzene	-	-	µg/L		<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41
p-Isopropyltoluene	-	-	µg/L		<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36
sec-Butylbenzene	-	-	µg/L		<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Styrene	10	100	µg/L		<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
tert-Butylbenzene	-	-	µg/L		<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
1,1,1,2-Tetrachloroethane	7	70	µg/L		<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46
1,1,2,2-Tetrachloroethane	0.02	0.2	µg/L		<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Tetrachloroethene (PCE)	0.5	5	µg/L		<0.37	<0.37	<0.37	**1.3**	<0.37	<0.37	<0.37	<0.37
Toluene	160	800	µg/L		<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
trans-1,2-Dichloroethene	20	100	µg/L		<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35
trans-1,3-Dichloropropene	0.04	0.4	µg/L		<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36
1,2,3-Trichlorobenzene	-	-	µg/L		<0.46	<0.46	<0.46 F2	<0.46	<0.46	<0.46	<0.46	<0.46
1,2,4-Trichlorobenzene	14	70	µg/L		<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34
1,1,1-Trichloroethane	40	200	µg/L		<0.38	<0.38	<0.38	<0.38	<0.38	**0.48 J**	<0.38	<0.38
1,1,2-Trichloroethane	0.5	5	µg/L		<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35
Trichloroethene (TCE)	0.5	5	µg/L		<0.16	<0.16	<0.16	<0.16	<0.16	**93**	<0.16	<0.16
Trichlorofluoromethane	698	3,490	µg/L		<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
1,2,3-Trichloropropane	12	60	µg/L		<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41
1,2,4-Trimethylbenzene	96	480	µg/L		<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36
1,3,5-Trimethylbenzene			µg/L		<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Vinyl Chloride	0.02	0.2	µg/L		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Xylenes, Total	400	2,000	µg/L		<0.22	<0.22	<0.22	<0.22	**0.29 J**	<0.22	<0.22	<0.22
Total VOCs			µg/L		**0.00**	**0.00**	**0.00**	**1.3**	**0.58**	**102.08**	**0.00**	**0.00**
Previous Results			µg/L		0.00	0.00	0.00	0.00	0.00	17.86	0.00	0.00
Date					Apr-20	Apr-20	Apr-20	Apr-20	Apr-20	Apr-20	Apr-20	Apr-20
Dissolved Oxygen			mg/L		4.10	0.85	4.92	6.43	4.27	4.41	3.78	4.53
pH					6.33	6.82	6.56	6.44	6.63	6.54	6.24	6.66
Conductivity			mS/cm		0.491	0.681	0.784	0.518	0.475	0.473	0.583	1.422
Temperature			°C		10.54	6.74	5.87	9.58	8.97	8.12	7.08	7.46
Oxidation-Reduction Potential			mV		72.4	-185.0	-54.1	28.6	-120.2	-49.6	99.0	3.3

Indicates concentration in exceedance of Wisconsin Administrative Code Chapter NR140 Preventive Action Limit (PAL)
Indicates concentration in exceedance of Wisconsin Administrative Code Chapter NR140 Enforcement Standard (ES)

J - Results reported between the Limit of Detection (LOD) and the Limit of Quantitation (LOQ) are estimated.
VOC - volatile organic compound
µg/L - micrograms per liter
mg/L - milligrams per liter
mS/cm - millisiemens per centimeter
°C - degrees celsius
mV - millivolts
F2 - Matrix Spike (MS) / Matrix Spike Duplicate (MSD) relative percent difference (RPD), a measure of the relative difference between two points exceeds control limits.

Perimeter - Shallow and Deep Dolomite Wells - VOC Results
Arkema Coating Resins
Saukville, Wisconsin

Sample ID				W-03A-20-4	DUP3-20-4	W-07-20-4	W-20-20-4	W-22-20-4	W-23-20-4	DUP2-20-4	W-40-20-4	W-50-20-4	W-52-20-4	PW-08-20-4
Collection Date				10/22/2020	10/22/2020	10/19/2020	10/20/2020	10/22/2020	10/20/2020	10/20/2020	10/22/2020	10/19/2020	10/20/2020	10/22/2020
Laboratory ID				500-189959-41	500-189959-42	500-189959-1	500-189959-37	500-189959-44	500-189959-29	500-189959-31	500-189959-38	500-189959-7	500-189959-33	500-189959-48
Duplicate Parent					(W-03A-20-4)					(W-23-20-4)				
Monitoring Objective				Perimeter	Perimeter	Perimeter	Perimeter	Perimeter	Perimeter		Perimeter	Perimeter	Perimeter	Perimeter
Hydrogeologic Unit				Shallow Dolomite	Glacial Drift	Shallow Dolomite	Shallow Dolomite	Shallow Dolomite	Shallow Dolomite		Shallow Dolomite	Shallow Dolomite	Shallow Dolomite	Deep Dolomite
Dilution				1	1	1	1	1	1	1	1	1	1	1
Parameter	PAL	ES	Units											
Benzene	0.5	5	µg/L	<0.15	<0.15	<0.15	<0.15	<0.15	**0.25 J**	**0.27 J**	<0.15	<0.15	**12**	<0.15
Bromobenzene	-	-	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36
Bromochloromethane	-	-	µg/L	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
Bromodichloromethane	0.06	0.6	µg/L	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
Bromoform	0.44	4.4	µg/L	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48
Bromomethane	1	10	µg/L	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80
Carbon tetrachloride	0.5	5	µg/L	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
Chlorobenzene (Monochlorobenzene)	20	100	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
Chloroethane	80	400	µg/L	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51
Chloroform	0.6	6	µg/L	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
Chloromethane	3	30	µg/L	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32
2-Chlorotoluene	-	-	µg/L	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31	<0.31
4-Chlorotoulene	-	-	µg/L	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35
cis-1,2-Dichloroethene	7	70	µg/L	<0.41	<0.41	<0.41	<0.41	<0.41	**0.85 J**	**0.89 J**	<0.41	<0.41	**10**	<0.41
cis-1,3-Dichloropropene	0.04	0.4	µg/L	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42	<0.42
Dibromochloromethane	6	60	µg/L	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49	<0.49
1,2-Dibromo-3-Chloropropane	0.02	0.2	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2-Dichloroethane	0.5	5	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
Dibromomethane	0.005	0.05	µg/L	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
1,2-Dichlorobenzene	60	600	µg/L	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
1,3-Dichlorobenzene	120	600	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
1,4-Dichlorobenzene	15	75	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36
Dichlorodifluoromethane	200	1,000	µg/L	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67
1,1-Dichloroethane	85	850	µg/L	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41
1,2-Dibromoethane	20	100	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
1,1-Dichloroethene	0.7	7	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
1,2-Dichloropropane	0.5	5	µg/L	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
1,3-Dichloropropane	0.04	0.4	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36
2,2-Dichloropropane	-	-	µg/L	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44
1,1-Dichloropropene	-	-	µg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	140	700	µg/L	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18
Hexachlorobutadiene	-	-	µg/L	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45
Isopropylbenzene	-	-	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
Isopropyl ether	-	-	µg/L	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28
Methylene Chloride	0.5	5	µg/L	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6	<1.6
Methyl tert-butyl ether (MTBE)	12	60	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
Naphthalene	10	100	µg/L	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34
n-Butylbenzene	-	-	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
N-Propylbenzene	-	-	µg/L	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41
p-Isopropyltoluene	-	-	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36
sec-Butylbenzene	-	-	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Styrene	10	100	µg/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
tert-Butylbenzene	-	-	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40 F1
1,1,1,2-Tetrachloroethane	7	70	µg/L	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46
1,1,2,2-Trachloroethane	0.02	0.2	µg/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Tetrachloroethene (PCE)	0.5	5	µg/L	<0.37	<0.37	**0.39 J**	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37
Toluene	160	800	µg/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	**0.17 J**	<0.15
trans-1,2-Dichloroethene	20	100	µg/L	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	**0.68 J**	<0.35
trans-1,3-Dichloropropene	0.04	0.4	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36
1,2,3-Trichlorobenzene	-	-	µg/L	<0.46	<0.46	<0.46 F2	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46	<0.46
1,2,4-Trichlorobenzene	14	70	µg/L	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34
1,1,1-Trichloroethane	40	200	µg/L	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
1,1,2-Trichloroethane	0.5	5	µg/L	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35	<0.35
Trichloroethene (TCE)	0.5	5	µg/L	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	<0.16	**0.43 J**	<0.16
Trichlorofluoromethane	698	3,490	µg/L	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43	**22**	<0.43
1,2,3-Trichloropropane	12	60	µg/L	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41	<0.41
1,2,4-Trimethylbenzene	96	480	µg/L	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36	<0.36
1,3,5-Trimethylbenzene			µg/L	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Vinyl Chloride	0.02	0.2	µg/L	<0.20	<0.20	<0.20	<0.20	<0.20	**0.43 J**	**0.27 J**	<0.20	<0.20	**5.6**	<0.20
Xylenes, Total	400	2,000	µg/L	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22
Total VOCs			µg/L	**0.00**	**0.00**	**0.39**	**0.00**	**0.00**	**1.53**	**1.43**	**0.00**	**0.00**	**50.88**	**0.00**
Previous Results			µg/L	0.00		0.00	0.00	0.00	0.63		0.00	0.00	44.69	0.00
Date				Apr-19		Apr-20	Apr-20	Apr-20	Apr-20		Apr-20	Apr-20	Apr-20	Oct-19
Dissolved Oxygen			mg/L	0.62	-----	5.52	0.50	1.47	0.60	-----	3.93	2.77	6.16	0.740
pH				7.56	-----	6.26	7.05	6.68	6.48	-----	6.86	6.92	6.65	7.77
Conductivity			mS/cm	0.237	-----	0.551	0.376	0.583	1.526	-----	0.498	0.512	1.058	0.138
Temperature			°C	6.46	-----	8.87	6.87	7.26	6.51	-----	8.14	5.47	7.17	8.32
Oxidation-Reduction Potential			mV	-349.8	-----	79.8	-100.3	-35.7	-90.2	-----	-222.6	90.4	-13.2	-48.5

Indicates concentration in exceedance of Wisconsin Administrative Code Chapter NR140 Preventive Action Limit (PAL)
Indicates concentration in exceedance of Wisconsin Administrative Code Chapter NR140 Enforcement Standard (ES)

J - Results reported between the Limit of Detection (LOD) and the Limit of Quantitation (LOQ) are estimated.
VOC - volatile organic compound
µg/L - micrograms per liter
mg/L - milligrams per liter
mS/cm - millisiemens per centimeter
°C - degrees celsius
mV - millivolts
F1 - Matrix Spike (MS) / Matrix Spike Duplicate (MSD) recovery exceeds control limits.
F2 - Matrix Spike (MS) / Matrix Spike Duplicate (MSD) relative percent difference (RPD), a measure of the relative difference between two points exceeds control limits.

Remediation Progress - Glacial Drift and Shallow Dolomite Wells - VOC Results
Arkema Coating Resins
Saukville, Wisconsin

			Sample ID	W-19A-20-4	DUP4-20-4	W-38-20-4	W-41-20-4	W-42-20-4
			Collection Date	10/22/2020	10/22/2020	10/20/2020	10/20/2020	10/19/2020
			Laboratory ID	500-189959-46	500-189959-47	500-189959-27	500-189959-35	500-189959-8
			Duplicate Parent		(W-19A-20-4)			
			Monitoring Objective	Remediation Progress		Remediation Progress	Remediation Progress	Remediation Progress
			Hydrogeologic Unit	Glacial Drift		Shallow Dolomite	Glacial Drift	Glacial Drift
			Dilution	1	1	2	1	5/50
Parameter	PAL	ES	Units					
Benzene	0.5	5	µg/L	<0.15	<0.15	**890**	<0.15	**44**
Bromobenzene	-	-	µg/L	<0.36	<0.36	<0.71	<0.36	<1.8
Bromochloromethane	-	-	µg/L	<0.43	<0.43	<0.86	<0.43	<2.1
Bromodichloromethane	0.06	0.6	µg/L	<0.37	<0.37	<0.74	<0.37	<1.9
Bromoform	0.44	4.4	µg/L	<0.48	<0.48	<0.97	<0.48	<2.4
Bromomethane	1	10	µg/L	<0.80	<0.80	<1.6	<0.80	<4.0
Carbon tetrachloride	0.5	5	µg/L	<0.38	<0.38	<0.77	<0.38	<1.9
Chlorobenzene (Monochlorobenzene)	20	100	µg/L	<0.39	<0.39	<0.77	<0.39	<1.9
Chloroethane	80	400	µg/L	<0.51	<0.51	<1.0	<0.51	<2.5
Chloroform	0.6	6	µg/L	<0.37	<0.37	<0.74	<0.37	<1.9
Chloromethane	3	30	µg/L	<0.32	<0.32	<0.64	<0.32	<1.6
2-Chlorotoluene	-	-	µg/L	**2.1**	**2.0**	<0.63	<0.31	<1.6
4-Chlorotoulene	-	-	µg/L	<0.35	<0.35	<0.70	<0.35	<1.7
cis-1,2-Dichloroethene	7	70	µg/L	**7.9**	**7.7**	<0.82	<0.41	<2.0
cis-1,3-Dichloropropene	0.04	0.4	µg/L	<0.42	<0.42	<0.83	<0.42	<2.1
Dibromochloromethane	6	60	µg/L	<0.49	<0.49	<0.98	<0.49	<2.4
1,2-Dibromo-3-Chloropropane	0.02	0.2	µg/L	<2.0	<2.0	<4.0	<2.0	<10
1,2-Dichloroethane	0.5	5	µg/L	<0.39	<0.39	<0.77	<0.39	<1.9
Dibromomethane	0.005	0.05	µg/L	<0.27	<0.27	<0.54	<0.27	<1.4
1,2-Dichlorobenzene	60	600	µg/L	<0.33	<0.33	<0.67	<0.33	<1.7
1,3-Dichlorobenzene	120	600	µg/L	<0.40	<0.40	<0.80	<0.40	<2.0
1,4-Dichlorobenzene	15	75	µg/L	<0.36	<0.36	<0.73	<0.36	<1.8
Dichlorodifluoromethane	200	1,000	µg/L	<0.67	<0.67	<1.3	<0.67	<3.4
1,1-Dichloroethane	85	850	µg/L	<0.41	<0.41	<0.82	<0.41	<2.1
1,2-Dibromoethane	20	100	µg/L	<0.39	<0.39	<0.78	<0.39	<2.0
1,1-Dichloroethene	0.7	7	µg/L	<0.39	<0.39	<0.78	<0.39	<2.0
1,2-Dichloropropane	0.5	5	µg/L	<0.43	<0.43	<0.86	<0.43	<2.1
1,3-Dichloropropane	0.04	0.4	µg/L	<0.36	<0.36	<0.72	<0.36	<1.8
2,2-Dichloropropane	-	-	µg/L	<0.44	<0.44	<0.89	<0.44	<2.2
1,1-Dichloropropene	-	-	µg/L	<0.30	<0.30	<0.59	<0.30	<1.5
Ethylbenzene	140	700	µg/L	<0.18	<0.18	**0.91 J**	<0.18	**11**
Hexachlorobutadiene	-	-	µg/L	<0.45	<0.45	<0.89	<0.45	<2.2
Isopropylbenzene	-	-	µg/L	<0.39	<0.39	**33**	<0.39	**25**
Isopropyl ether	-	-	µg/L	<0.28	<0.28	<0.55	<0.28	<1.4
Methylene Chloride	0.5	5	µg/L	<1.6	<1.6	<3.3	<1.6	<8.2
Methyl tert-butyl ether (MTBE)	12	60	µg/L	<0.39	<0.39	<0.79	<0.39	<2.0
Naphthalene	10	100	µg/L	<0.34	<0.34	<0.67	<0.34	**37**
n-Butylbenzene	-	-	µg/L	<0.39	<0.39	**0.90 J**	<0.39	<1.9
N-Propylbenzene	-	-	µg/L	<0.41	<0.41	**6.8**	<0.41	**18**
p-Isopropyltoluene	-	-	µg/L	<0.36	<0.36	<0.72	<0.36	<1.8
sec-Butylbenzene	-	-	µg/L	<0.40	<0.40	**1.0 J**	<0.40	<2.0
Styrene	10	100	µg/L	<0.39	<0.39	<0.77	<0.39	<1.9
tert-Butylbenzene	-	-	µg/L	<0.40	<0.40	<0.80	<0.40	<2.0
1,1,1,2-Tetrachloroethane	7	70	µg/L	<0.46	<0.46	<0.92	<0.46	<2.3
1,1,2,2-Tetrachloroethane	0.02	0.2	µg/L	<0.40	<0.40	<0.80	<0.40	<2.0
Tetrachloroethene (PCE)	0.5	5	µg/L	<0.37	<0.37	<0.74	<0.37	<1.9
Toluene	160	800	µg/L	<0.15	<0.15	<0.30	<0.15	**23**
trans-1,2-Dichloroethene	20	100	µg/L	<0.35	<0.35	<0.70	<0.35	<1.7
trans-1,3-Dichloropropene	0.04	0.4	µg/L	<0.36	<0.36	<0.72	<0.36	<1.8
1,2,3-Trichlorobenzene	-	-	µg/L	<0.46	<0.46	<0.92	<0.46	<2.3
1,2,4-Trichlorobenzene	14	70	µg/L	<0.34	<0.34	<0.68	<0.34	<1.7
1,1,1-Trichloroethane	40	200	µg/L	<0.38	<0.38	<0.76	<0.38	<1.9
1,1,2-Trichloroethane	0.5	5	µg/L	<0.35	<0.35	<0.70	<0.35	<1.8
Trichloroethene (TCE)	0.5	5	µg/L	**6.0**	**5.9**	<0.33	<0.16	<0.82
Trichlorofluoromethane	698	3,490	µg/L	<0.43	<0.43	<0.85	<0.43	<2.1
1,2,3-Trichloropropane	12	60	µg/L	<0.41	<0.41	<0.83	<0.41	<2.1
1,2,4-Trimethylbenzene	96	480	µg/L	<0.36	<0.36	**1.5 J**	<0.36	**300**
1,3,5-Trimethylbenzene			µg/L	<0.25	<0.25	<0.51	<0.25	**28**
Vinyl Chloride	0.02	0.2	µg/L	**3.2**	**2.9**	<0.41	<0.20	<1.0
Xylenes, Total	400	2,000	µg/L	<0.22	<0.22	**0.61 J**	<0.22	**2,900**
Total VOCs			µg/L	**19.20**	**18.50**	**934.72**	**0.00**	**3386.0**
Previous Results			µg/L	29.05		1,020	1.98	10,505.5
Date				Oct-19		Oct-19	Oct-19	Oct-19
Dissolved Oxygen			mg/L	6.26	-----	0.59	3.90	2.58
pH				6.58	-----	6.67	7.01	6.75
Conductivity			mS/cm	0.787	-----	3.412	0.401	2.816
Temperature			°C	7.65	-----	8.60	10.33	8.49
Oxidation-Reduction Potential				-2.1	-----	-191.2	-89.3	12.7

Indicates concentration in exceedance of Wisconsin Administrative Code Chapter NR140 Preventive Action Limit (PAL)
Indicates concentration in exceedance of Wisconsin Administrative Code Chapter NR140 Enforcement Standard (ES)

VOC - volatile organic compound
J - Results reported between the Limit of Detection (LOD) and the Limit of Quantitation (LOQ) are estimated.
NS - Not Sampled
µg/L - micrograms per liter
mg/L - milligrams per liter
mS/cm - millisiemens per centimeter
°C - degrees celsius
mV - millivolts

Remediation Progress - Glacial Drift, Shallow and Deep Dolomite Wells - Metals, SVOCs and PCBs Results
Arkema Coating Resins
Saukville, Wisconsin

			Sample ID	W-06A-20-4	W-21A-20-4	W-24A-20-4	W-28-20-4	W-29-20-4	W-30-20-4	DUP5-20-4	W-43-20-4	W-47-20-4	DUP6-20-4
			Collection Date	10/20/2020	10/20/2020	10/20/2020	10/20/2020	10/20/2020	10/19/2020	10/19/2020	10/20/2020	10/19/2020	10/19/2020
			Laboratory ID	500-189959-36	500-189959-24	500-189959-26	500-189959-23	500-189959-25	500-189959-11	500-189959-12	500-189959-28	500-189959-9	500-189959-10
			Duplicate Parent							(W-30-20-4)			(W-47-20-4)
			Monitoring Objective	Remediation Progress	Remediation Progress	Remediation Progress	Remediation Progress	Remediation Progress	Remediation Progress		Remediation Progress	Remediation Progress	
			Hydrogeologic Unit	Glacial Drift	Shallow Dolomite	Shallow Dolomite	Shallow Dolomite	Shallow Dolomite	Deep Dolomite		Glacial Drift	Glacial Drift	
Parameter	PAL	ES	Units										
Arsenic	1	10	µg/L	**31**	**22**	<3.7	<3.7	**4.1 J**	**4.0 J**	**3.9 J**	<3.7	<3.7	
Barium	400	2,000	µg/L	**46**	**280**	**100**	**270**	**220**	**96**	**97**	**10**	**50**	
Parameter	PAL	ES	Units										
Aroclor 1016	0.003	0.03	ug/L									<0.19	<0.22
Aroclor 1221			ug/L									<0.30	<0.33
Aroclor 1232			ug/L									<0.11	<0.12
Aroclor 1242			ug/L									<0.15	<0.17
Aroclor 1248			ug/L									<0.13	<0.14
Aroclor 1254			ug/L									<0.12	<0.14
Aroclor 1260			ug/L									<0.13	<0.14
Parameter	PAL	ES	Units										
Acenaphthene	-	-	µg/L	<0.40	<0.38	<0.37	<0.40	<0.39	<0.37	<0.38	**0.63 J**	<3.9	
Acetophenone	-	-	µg/L	<0.89	**11**	<0.84	<0.90	<0.87	<0.83	<0.86	**2.8 J**	**13 J**	
Benzo(a)anthracene	-	-	µg/L	**0.085 J**	<0.046	<0.046	<0.049	<0.047	<0.045	<0.047	<0.053	<0.48	
bis(2-ethylhexyl)phthalate	0.6	6	µg/L	<2.7	<2.6	**5.3 J**	<2.7	<2.6	<2.5	<2.6	<2.9	<26	
4-Chloro-3-methylphenol	-	-	µg/L	<2.4	<2.3	<2.3	<2.4	<2.4	<2.2	<2.3	<2.7	<24	
Dibenzofuran	-	-	µg/L	<0.38	<0.37	<0.36	<0.39	<0.38	<0.36	<0.37	**0.80 J**	<3.8	
1,2-Dichlorobenzene	60	600	µg/L	**1.3 J**	**1.7 J**	<0.30	<0.32	<0.31	<0.30	<0.31	<0.35	<3.2	
Diethyl phthalate	-	-	µg/L	**1.3 J**	<0.46	<0.39	<0.49	<0.47	<0.45	<0.47	<0.53	<4.8	
Di-n-butyl phthalate	-	-	µg/L	**0.91 J**	<0.84	<0.83	<0.88	<0.86	<0.82	<0.85	<0.97	<8.7	
2,4-Dimethylphenol	-	-	µg/L	**130**	**18**	<3.5	<3.7	**32**	<3.4	<3.6	<4.0	**170**	
1,4-Dioxane	0.3	3	µg/L	**31**	**50**	**11 J**	<7.6	**13 J**	**8.6 J**	**7.9 J**	<8.4	<75	
Fluorene	80	400	µg/L	<0.42	<0.40	<0.39	<0.42	<0.41	<0.39	<0.41	**0.98 J**	<4.1	
2-Methylnaphthalene	-	-	µg/L	**0.35 J**	**0.26 J**	<0.13	<0.14	<0.14	<0.13	<0.14	<0.16	**2.0 J**	
2-Methylphenol	-	-	µg/L	**58**	**0.41 J**	<0.32	<0.34	**0.93** J	<0.32	<0.33	<0.38	<3.4	
3 & 4 Methylphenol	-	-	µg/L	**67**	<0.46	<0.46	<0.49	**0.56** J	<0.45	<0.47	<0.53	<4.8	
Naphthalene	10	100	µg/L	**14**	**24**	<0.31	<0.33	**0.37 J**	<0.31	<0.32	<0.36	**11**	
Pentachlorophenol (PCP)	0.1	1	µg/L	<6.1	<5.9	<5.8	<6.2	<6.0	<5.7	<6.0	<6.8	<61	
Phenanthrene	-	-	µg/L	<0.38	<0.37	<0.36	<0.39	<0.38	<0.36	<0.37	**0.67 J**	<3.8	
Phenol	400	2,000	µg/L	<0.40	**4.3 J**	<0.37	<0.40	**4.3 J**	<0.37	<0.38	<0.44	<3.9	

Indicates concentration in exceedance of Wisconsin Administrative Code Chapter NR140 Preventive Action Limit (PAL)

Indicates concentration in exceedance of Wisconsin Administrative Code Chapter NR140 Enforcement Standard (ES)

J - Results reported between the Limit of Detection (LOD) and the Limit of Quantitation (LOQ) are estimated.
µg/L - micrograms per liter

October 2020

Remediation Progress - Glacial Drift, Shallow and Deep Dolomite Wells - VOC Results
Arkema Coating Resins
Saukville, Wisconsin

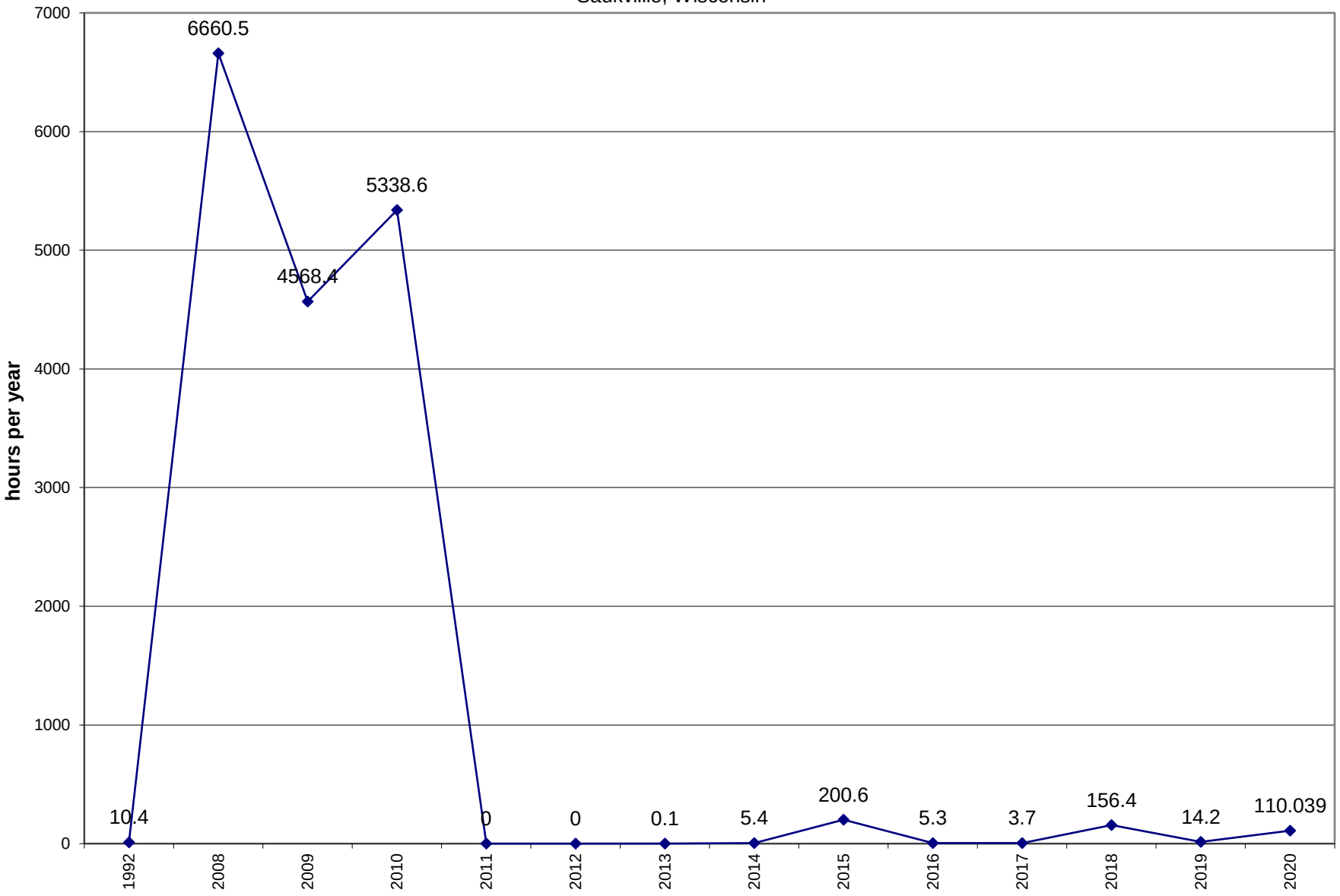
			Sample ID	W-06A-20-4	W-21A-20-4	W-24A-20-4	W-28-20-4	W-29-20-4	W-30-20-4	W-43-20-4	W-47-20-4
			Collection Date	10/20/20	10/20/2020	10/20/2020	10/20/2020	10/20/2020	10/19/2020	10/20/2020	10/19/2020
			Laboratory ID	500-189959-36	500-189959-24	500-189959-26	500-189959-23	500-189959-25	500-189959-11	500-189959-28	500-189959-9
			Duplicate Parent								
			Monitoring Objective	Remediation Progress	Remediation Progress	Remediation Progress	Remediation Progress	Remediation Progress	Remediation Progress	Remediation Progress	Remediation Progress
			Hydrogeologic Unit	Glacial Drift	Shallow Dolomite	Shallow Dolomite	Shallow Dolomite	Shallow Dolomite	Deep Dolomite	Glacial Drift	Glacial Drift
			Dilution	50	10/100	1	1	1/10	1	1	5/50
Parameter	PAL	ES	Units								
Benzene	0.5	5	µg/L	**86**	**920**	<0.15	**3.4**	**120**	**1.4**	**1.0**	**9.6**
Bromobenzene	-	-	µg/L	<18	<3.6	<0.36	<0.36	<0.36	<0.36	<0.36	<1.8
Bromodichloromethane	0.06	0.6	µg/L	<19	<3.7	<0.37	<0.36	<0.37	<0.37	<0.37	<1.9
Bromoform	0.44	4.4	µg/L	<24	<4.8	<0.48	<0.48	<0.48	<0.48	<0.48	<2.4
Bromomethane	1	10	µg/L	<40	<8.0	<0.80	<0.80	<0.80	<0.80	<0.80	<4.0
Carbon tetrachloride	0.5	5	µg/L	<19	<3.8	<0.38	<0.38	<0.38	<0.38	<0.38	<1.9
Chlorobenzene	20	100	µg/L	<19	**4.8 J**	<0.39	<0.39	<0.39	<0.39	<0.39	<1.9
Chloroethane	80	400	µg/L	<25	<5.1	<0.51	<0.51	<0.51	<0.51	<0.51	<2.5
Chloroform	0.6	6	µg/L	<19	<3.7	<0.37	<0.37	<0.37	<0.37	<0.37	<1.9
Chloromethane	3	30	µg/L	<16	<3.2	<0.32	<0.32	<0.32	<0.32	<0.32	<1.6
2-Chlorotoluene	-	-	µg/L	<16	<3.1	<0.31	<0.31	<0.31	<0.31	<0.31	<1.6
4-Chlorotoluene	-	-	µg/L	<17	<3.5	<0.35	<0.35	<0.35	<0.35	<0.35	<1.7
cis-1,2-Dichlorothene	-	-	µg/L	<20	<4.1	**22**	**0.45 J**	<0.41	**0.56 J**	<0.41	<2.0
cis-1,3-Dichloroprene	-	-	µg/L	<21	<4.2	<0.42	<0.42	<0.42	<0.42	<0.42	<2.1
Dibromochloromethane	6	60	µg/L	<24	<4.9	<0.49	<0.49	<0.49	<0.49	<0.49	<2.4
1,2-Dibromo-3-chloropropane	0.02	0.2	µg/L	<100	<20	<2.0	<2.0	<2.0	<2.0	<2.0	<10
1,2-Dibromoethane (EDB)	0.005	0.05	µg/L	<19	<3.9	<0.39	<0.39	<0.39	<0.39	<0.39	<1.9
Dibromomethane	-	-	µg/L	<14	<2.7	<0.27	<0.27	<0.27	<0.27	<0.27	<1.4
Dichlorodifluoromethane	200	1000	µg/L	<34	<6.7	<0.67	<0.67	<0.67	<0.67	<0.67	<3.4
1,1-Dichloroethane	85	850	µg/L	<21	<4.1	<0.41	<0.41	<0.41	<0.41	<0.41	<2.1
1,2-Dichloroethane	0.5	5	µg/L	<20	<3.9	<0.39	<0.39	<0.39	<0.39	<0.39	<2.0
1,1-Dichloroethene	0.7	7	µg/L	<20	<3.9	<0.39	<0.39	<0.39	<0.39	<0.39	<2.0
1,2-Dichloropropane	0.5	5	µg/L	<21	<4.3	<0.43	<0.43	<0.43	<0.43	<0.43	<2.1
Ethylbenzene	140	700	µg/L	**21,000**	**4,700**	<0.18	<0.18	**74**	<0.18	<0.18	**40**
Hexachlorobutadiene	-	-	µg/L	<22	<4.5	<0.45	<0.45	<0.45	<0.45	<0.45	<2.2
Isopropylbenzene	-	-	µg/L	**420**	**67**	<0.39	<0.39	**3.1**	<0.39	**9.1**	**260**
Methylene Chloride	0.5	5	µg/L	<82	<16	<1.6	<1.6	<1.6	<1.6	<1.6	<8.2
Methyl tert-butyl ether (MTBE)	12	60	µg/L	<20	<3.9	<0.39	<0.39	<0.39	<0.39	<0.39	<2.0
Naphthalene	10	100	µg/L	<17	**23**	<0.34	<0.34	**0.85 J**	<0.34	<0.34	**26**
n-Butylbenzene	-	-		<19	<3.9	<0.39	<0.39	<0.39	<0.39	**2.4**	<1.9
N-Propylbenzene	-	-	µg/L	**120**	**13**	<0.41	<0.41	<0.41	<0.41	**7.5**	**15**
p-Isopropyltoluene	-	-		<18	<3.6	<0.36	<0.36	<0.36	<0.36	**4.7**	<1.8
sec-Butylbenzene	-	-		<20	<4.0	<0.40	<0.40	<0.40	<0.40	**8.8**	**2.1 J**
Styrene	10	100	µg/L	<19	<3.9	<0.39	<0.39	**16**	<0.39	<0.39	<1.9
tert-Butylbenzene	-	-		<20	<4.0	<0.40	<0.40	<0.40	<0.40	**2.8**	**2.7 J**
1,1,1,2-Tetrachloroethane	7	70	µg/L	<23	<4.6	<0.46	<0.46	<0.46	<0.46	<0.46	<2.3
1,1,2,2-Tetrachloroethane	0.02	0.2	µg/L	<20	<4.0	<0.40	<0.40	<0.40	<0.40	<0.40	<2.0
Tetrachloroethene (PCE)	0.5	5	µg/L	<19	<3.7	<0.37	<0.37	<0.37	<0.37	<0.37	**5.8**
Toluene	160	800	µg/L	**30,000**	**31**	<0.15	<0.15	**0.47 J**	<0.15	<0.15	**4.5**
trans-1,2-Dichloroethene	20	100	µg/L	<17	<3.5	**0.37 J**	<0.35	<0.35	<0.35	<0.35	<1.7
trans-1,3-Dichloropropene	0.04	0.4	µg/L	<18	<3.6	<0.36	<0.36	<0.36	<0.36	<0.36	<1.8
1,1,1-Trichloroethane	40	200	µg/L	<19	<3.8	<0.38	<0.38	<0.38	<0.38	<0.38	<1.9
1,1,2-Trichloroethane	0.5	5	µg/L	<18	<3.5	<0.35	<0.35	<0.35	<0.35	<0.35	<1.8
Trichloroethene (TCE)	0.5	5	µg/L	<8.2	<1.6	**2.9**	<0.16	<0.16	<0.16	<0.16	<0.82
Trichlorofluoromethane	-	-	µg/L	<21	<4.3	<0.43	<0.43	<0.43	**2.1**	<0.43	<2.1
1,2,3-Trichloropropane	12	60	µg/L	<21	<4.1	<0.41	<0.41	<0.41	<0.41	<0.41	<2.1
1,2,4-Trimethylbenzene	96	480	µg/L	**480**	**45**	<0.36	<0.36	**5.6**	<0.36	**10**	**160**
1,3,5-Trimethylbenzene			µg/L	**190**	**6.8 J**	<0.25	<0.25	**2.6**	<0.25	<0.25	**7.5**
Vinyl Chloride	0.02	0.2	µg/L	<10	**2.1 J**	**11**	**0.44 J**	<0.20	<0.20	<0.20	<1.0
Xylenes, Total	400	2,000	µg/L	**87,000**	**2,500**	<0.22	**3.4**	**270**	<0.22	<0.22	**2,400**
Total VOCs			µg/L	**139,296**	**8,313**	**36.27**	**7.69**	**492.62**	**4.06**	**46.30**	**2,933**
Previous Results			µg/L	129,940	11,152.0	183.71	NS	56.57	36.71	10.3	16,841
Date				10/1/201	Oct-19	Oct-19	NS	Oct-19	Oct-19	Oct-19	Oct-19
Dissolved Oxygen			mg/L	3.98	NS	NS	NS	NS	1.86	6.48	1.78
pH				6.69	NS	NS	NS	NS	6.53	7.31	6.26
Conductivity			mS/cm	0.461	NS	NS	NS	NS	0.432	0.378	0.520
Temperature			°C	9.96	NS	NS	NS	NS	6.78	10.43	8.61
Oxidation-Reduction Potential			mV	-102.7	NS	NS	NS	NS	-78.9	-132.9	-90.6

Indicates concentration in exceedance of Wisconsin Administrative Code Chapter NR140 Preventive Action Limit (PAL)
Indicates concentration in exceedance of Wisconsin Administrative Code Chapter NR140 Enforcement Standard (ES)
J - Results reported between the Limit of Detection (LOD) and the Limit of Quantitation (LOQ) are estimated.
VOC - volatile organic compound
NA - Parameter not Analyzed
NS - Not Sampled or No Data
µg/L - micrograms per liter
mg/L - milligrams per liter
mS/cm - millisiemens per centimeter
°C - degrees celsius
mV - millivolts

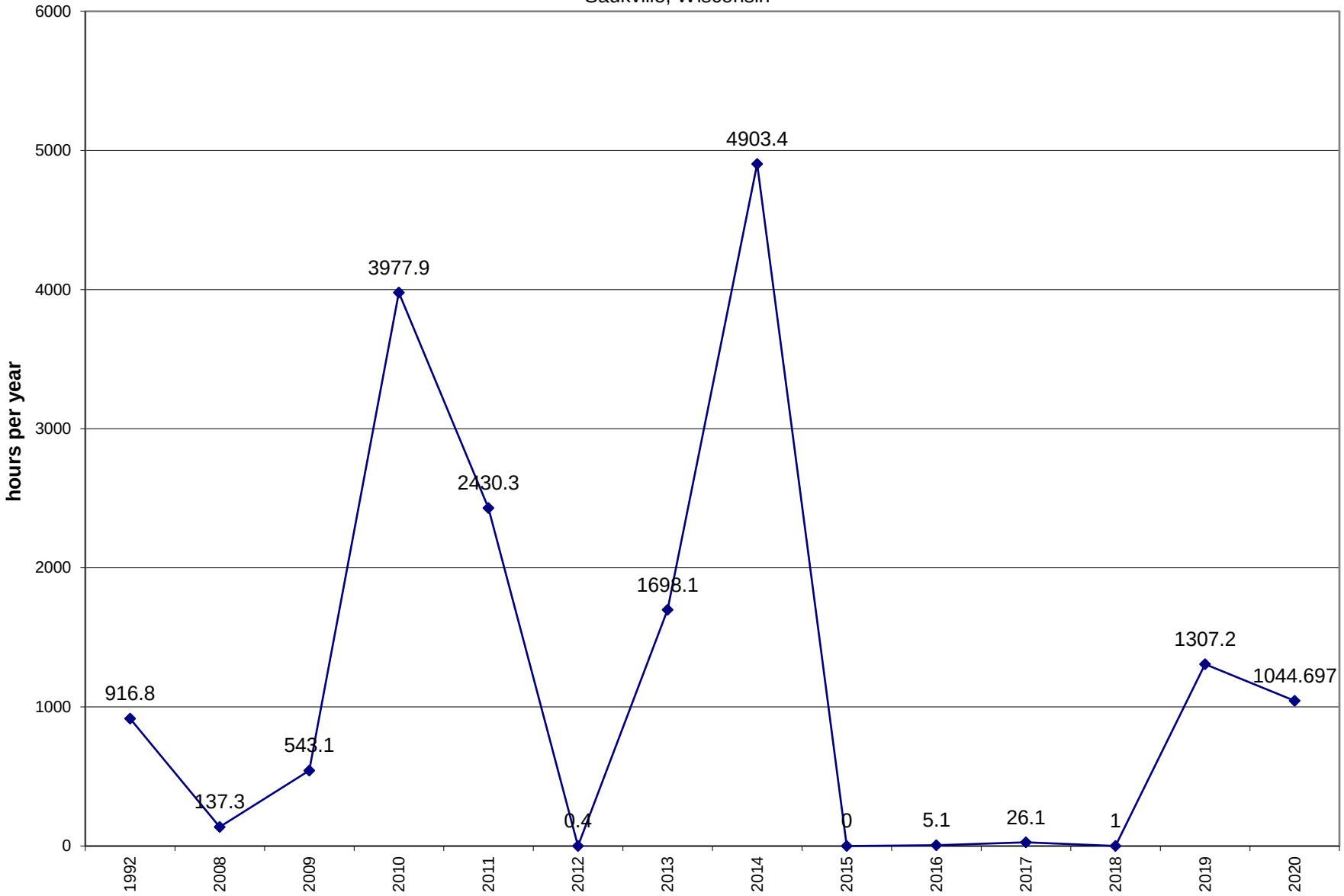
APPENDIX B

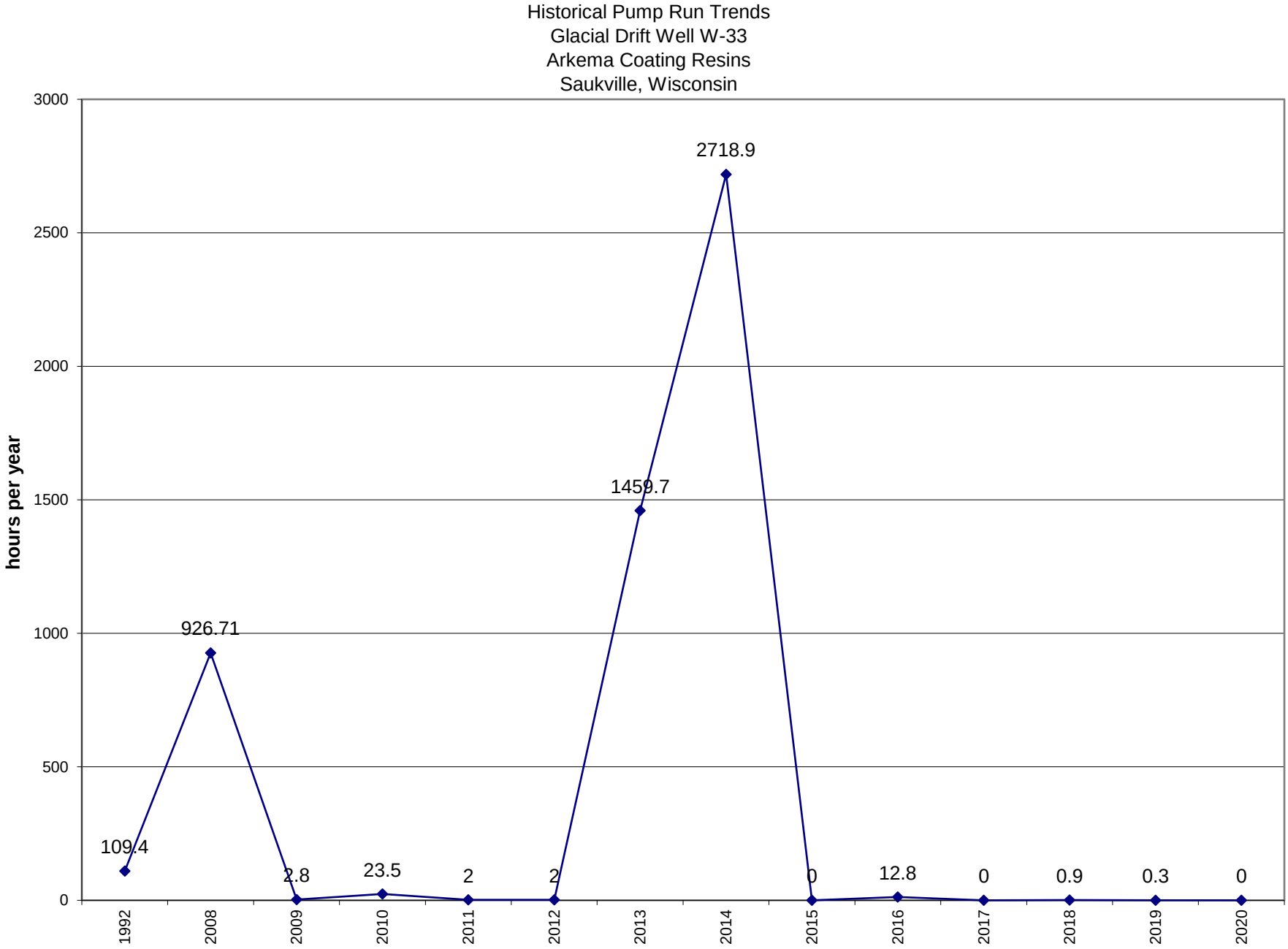
PUMP RUN TIME TRENDS: 1992 - 2020

Historical Pump Run Trends
Glacial Drift Well W-31
Arkema Coating Resins
Saukvillle, Wisconsin

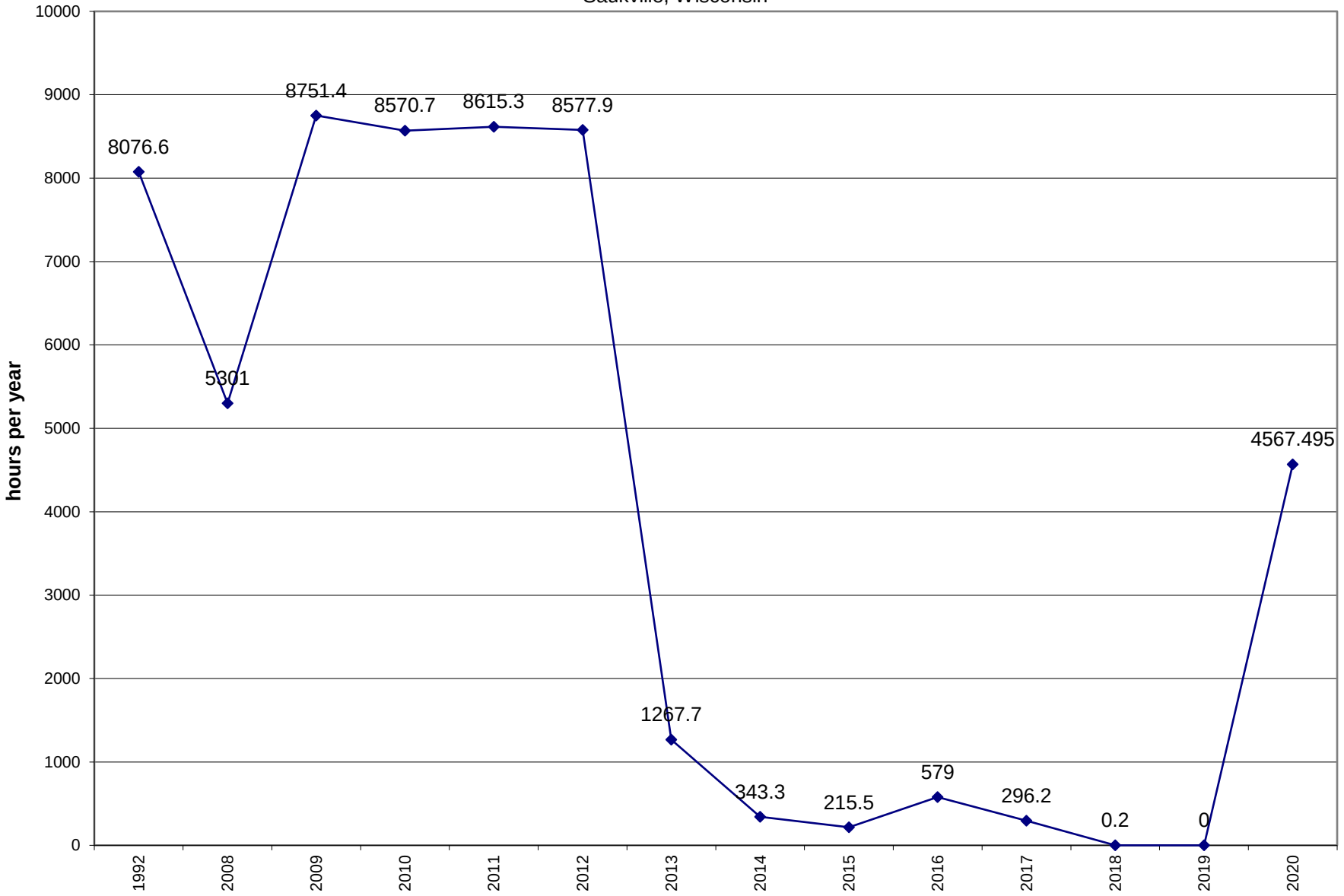


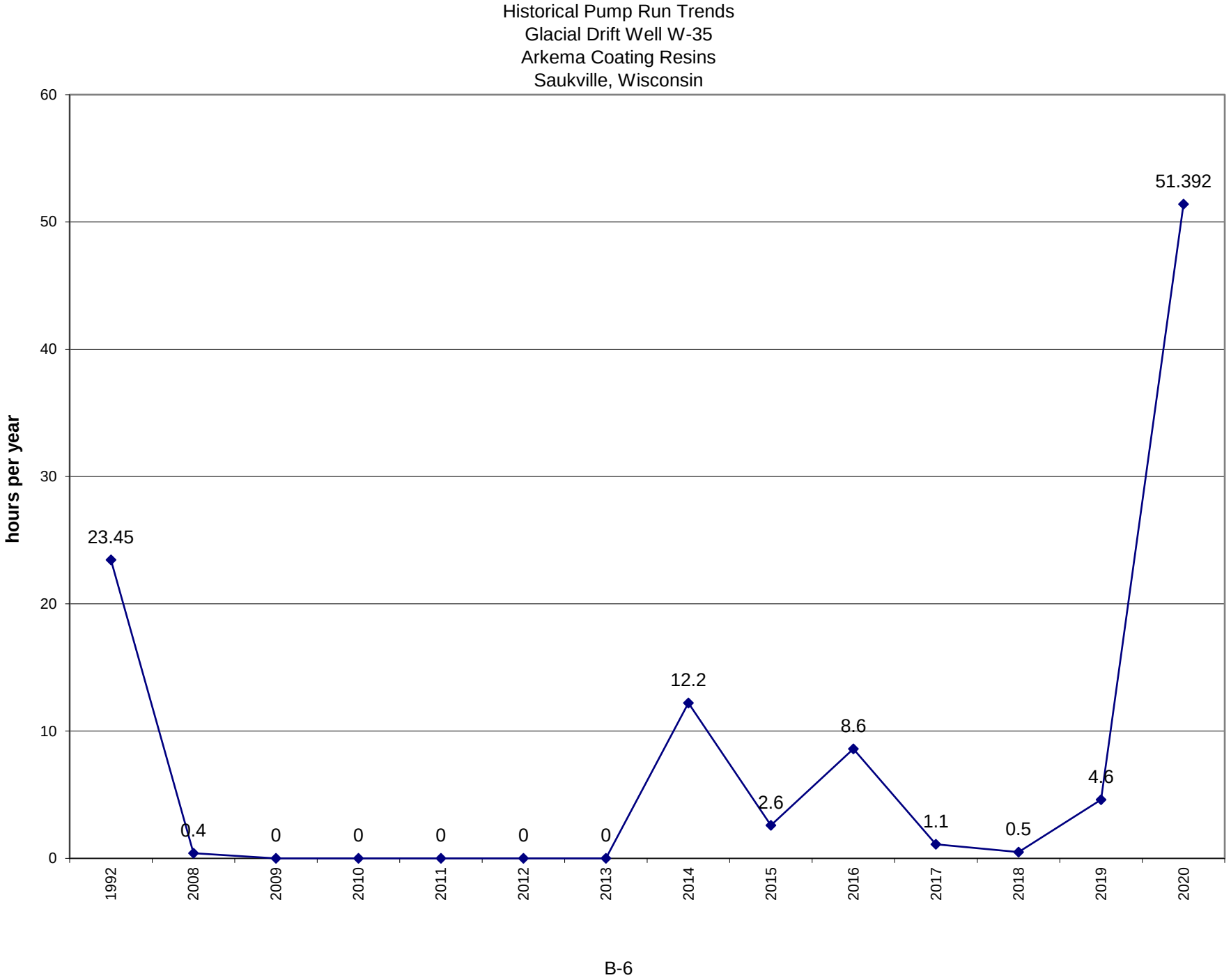
Historical Pump Run Trends
Glacial Drift Well W-32
Arkema Coating Resins
Saukville, Wisconsin

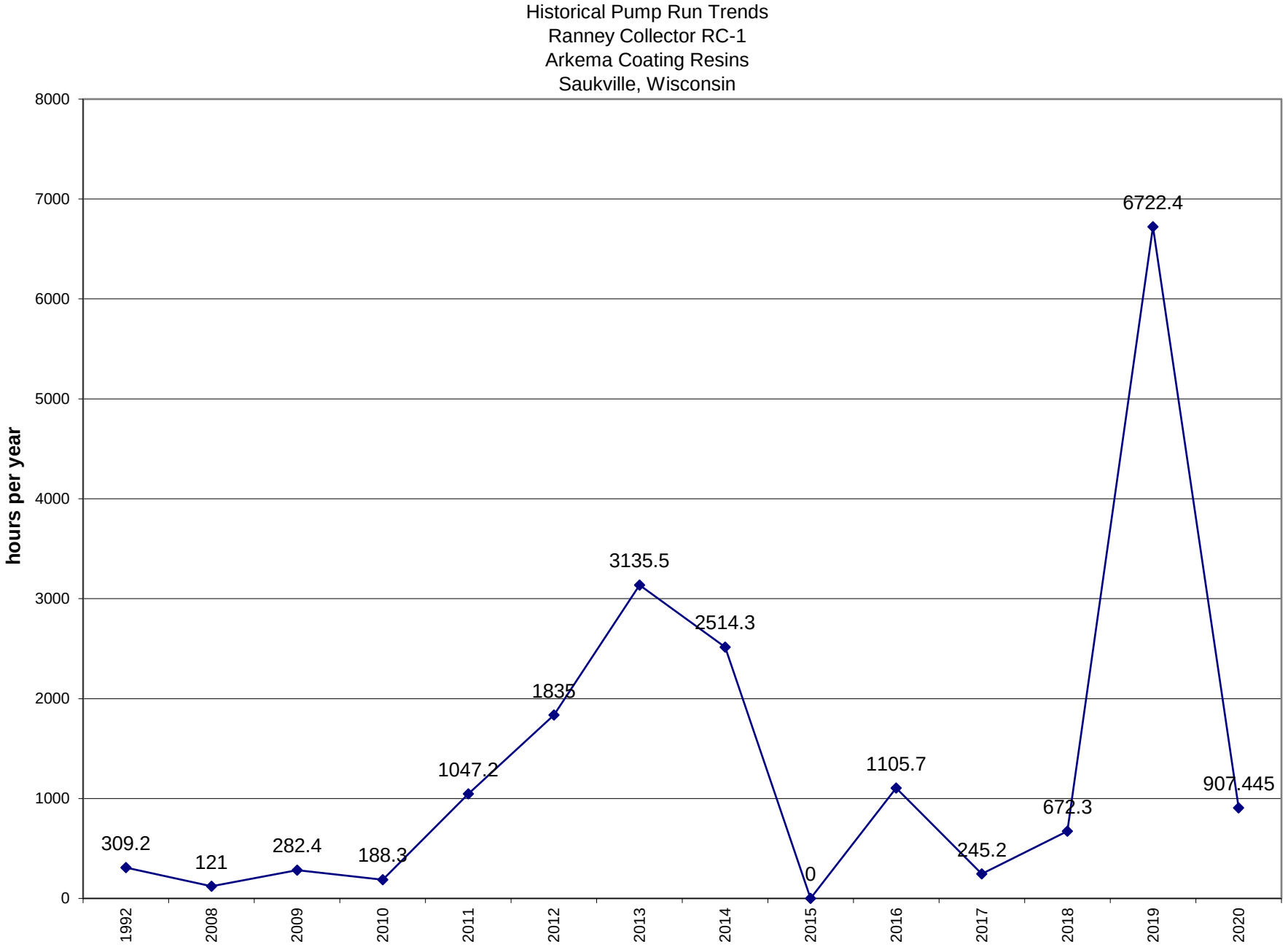


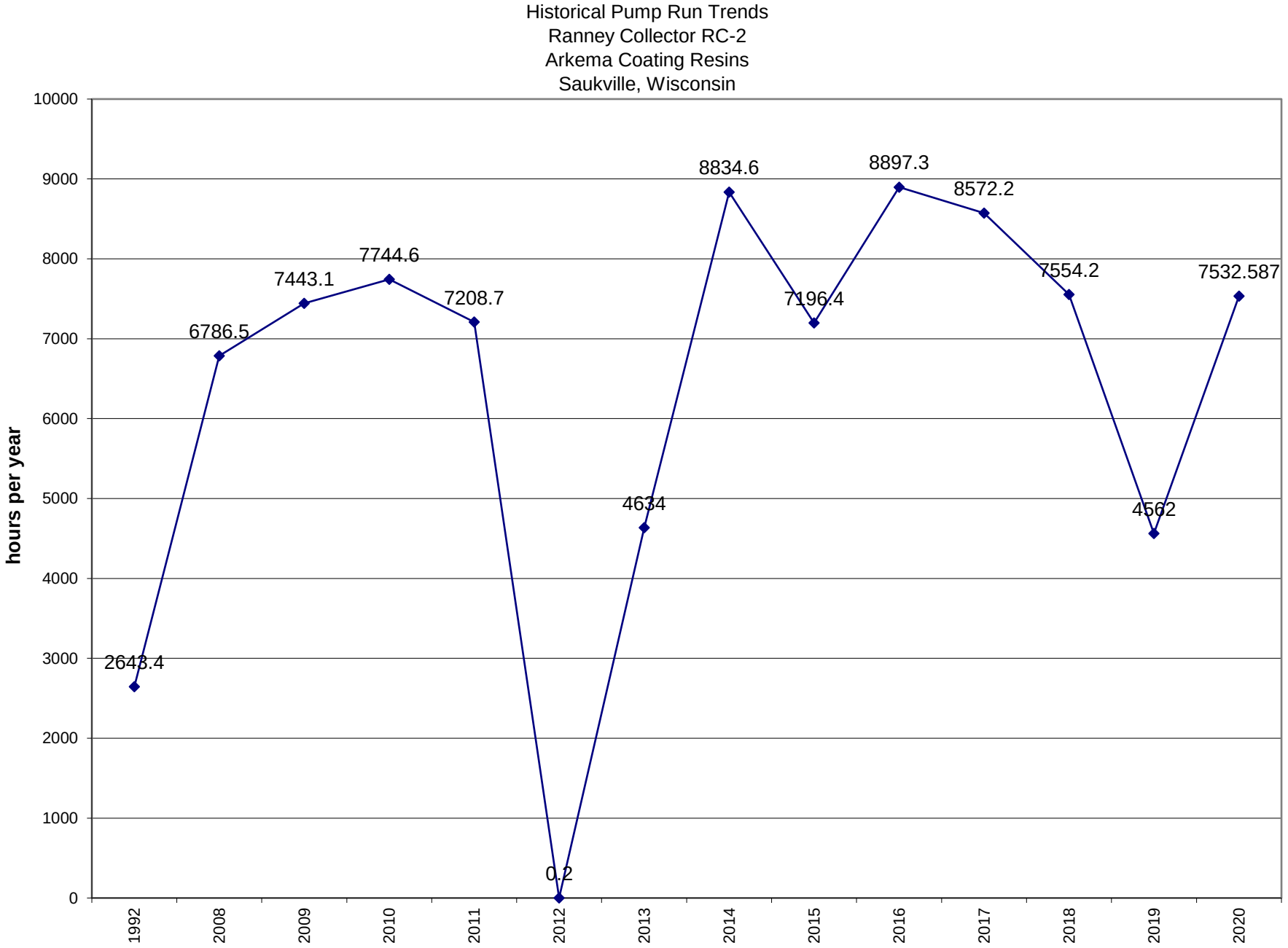

Historical Pump Run Trends
Glacial Drift Well W-33
Arkema Coating Resins
Saukville, Wisconsin
hours per year
3000
2500
2000
1500
1000
500
0
109.4
926.71
2.8
23.5
2
2
1459.7
2718.9
0
12.8
0
0.9
0.3
0
1992
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020

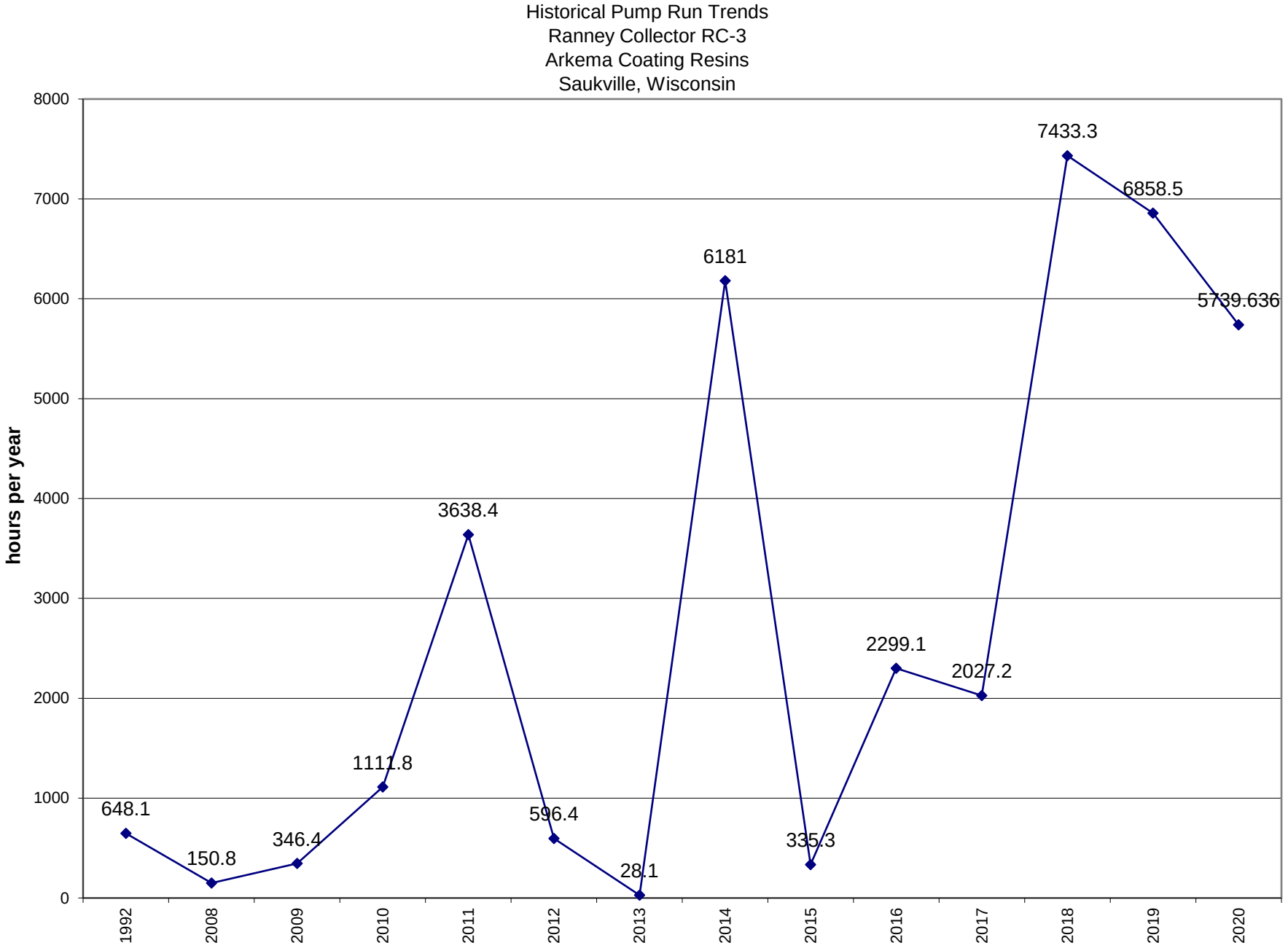
Historical Pump Run Trends
Glacial Drift Well W-34
Arkema Coating Resins
Saukville, Wisconsin



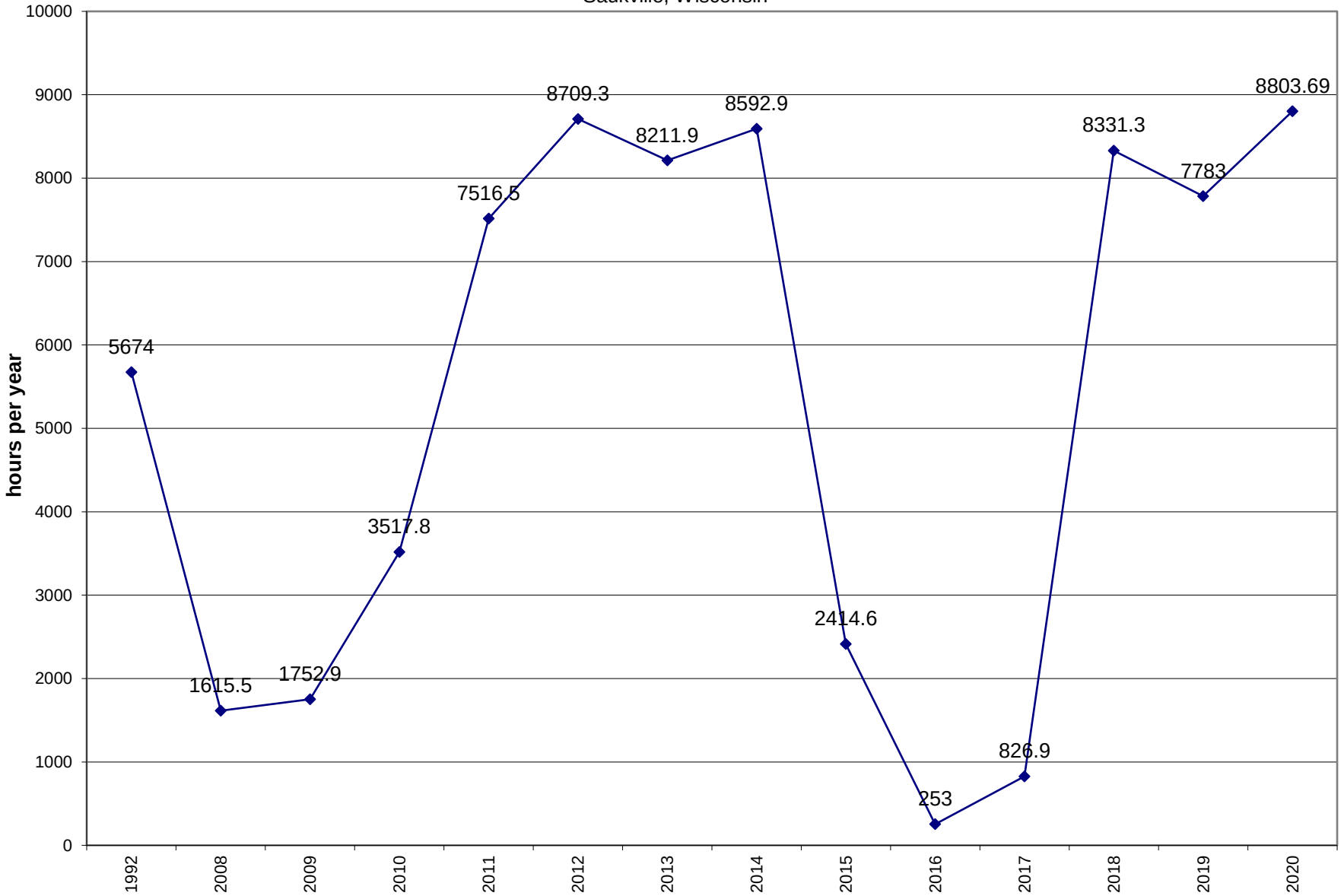

Historical Pump Run Trends
Glacial Drift Well W-35
Arkema Coating Resins
Saukville, Wisconsin
hours per year
60
50
40
30
20
10
0
23.45
0.4
0
0
0
0
0
12.2
2.6
8.6
1.1
0.5
4.6
51.392
1992
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020


Historical Pump Run Trends
Ranney Collector RC-1
Arkema Coating Resins
Saukville, Wisconsin
hours per year
8000
7000
6000
5000
4000
3000
2000
1000
0
309.2
121
282.4
188.3
1047.2
1835
3135.5
2514.3
0
1105.7
245.2
672.3
6722.4
907.445
1992
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020

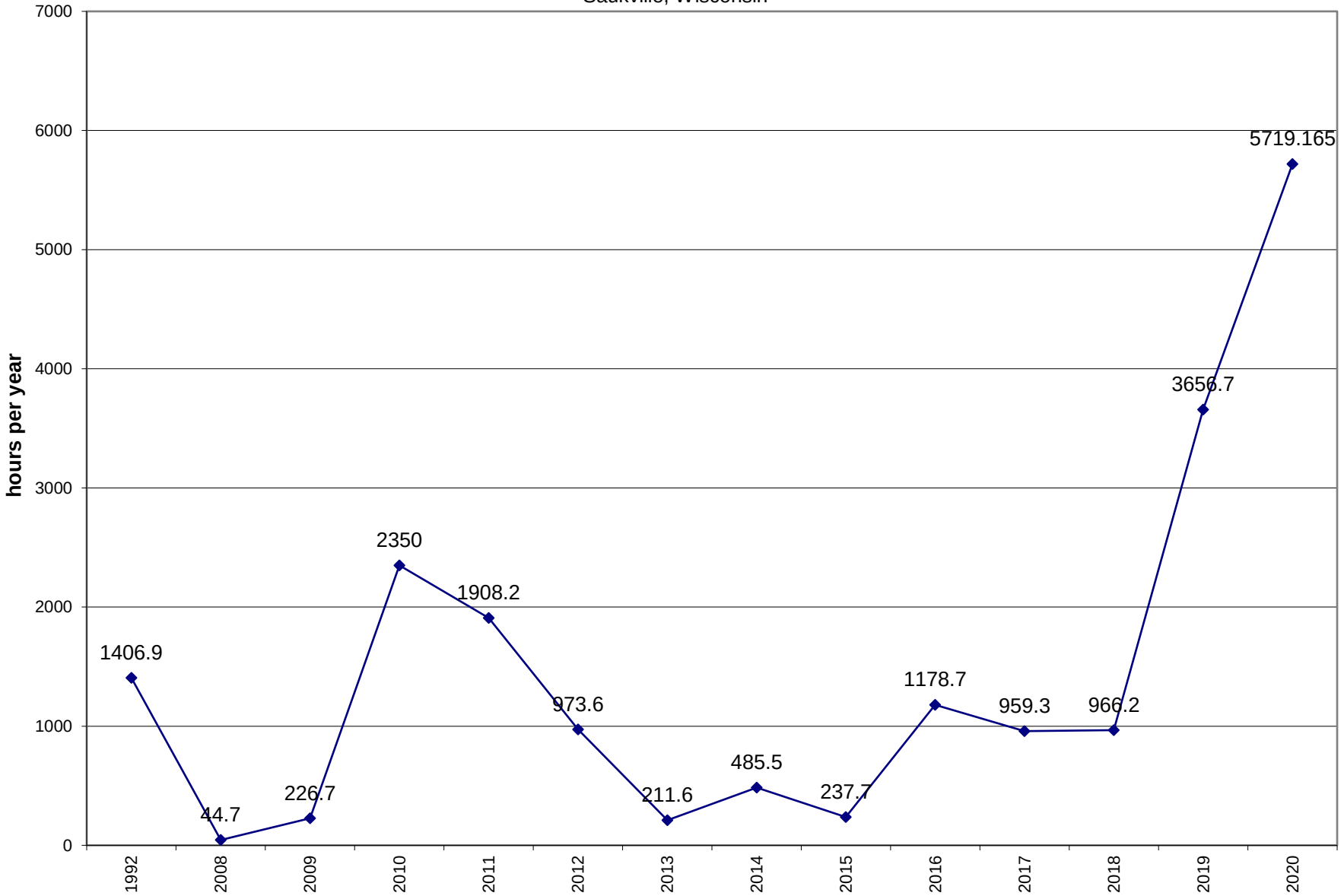

Historical Pump Run Trends
Ranney Collector RC-2
Arkema Coating Resins
Saukville, Wisconsin
hours per year
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
2643.4
6786.5
7443.1
7744.6
7208.7
0.2
4634
8834.6
7196.4
8897.3
8572.2
7554.2
4562
7532.587
1992
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020


Historical Pump Run Trends
Ranney Collector RC-3
Arkema Coating Resins
Saukville, Wisconsin
hours per year
8000
7000
6000
5000
4000
3000
2000
1000
0
648.1
150.8
346.4
1111.8
3638.4
596.4
28.1
6181
335.3
2299.1
2027.2
7433.3
6858.5
5739.636
1992
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020

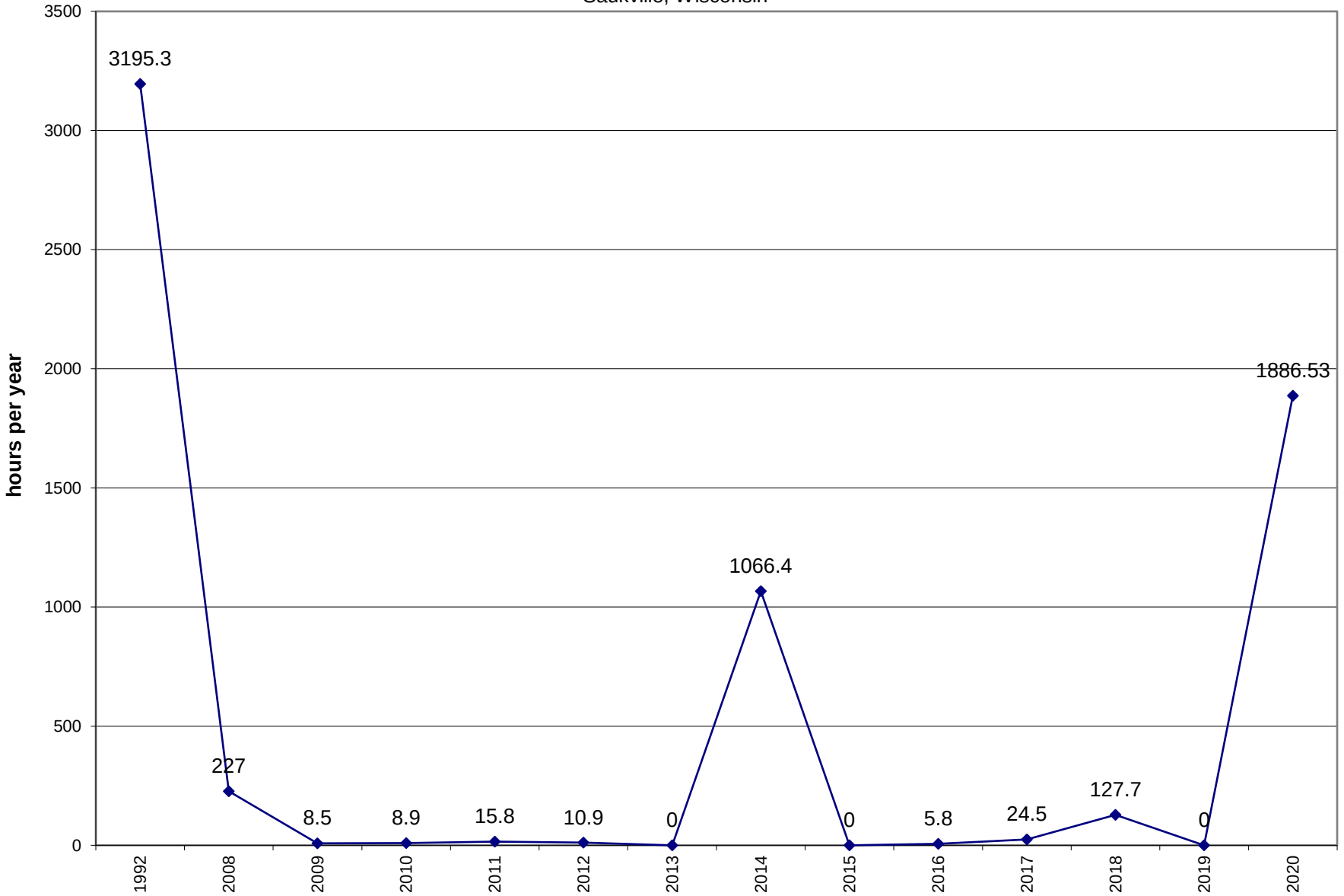
Historical Pump Run Trends
Shallow Dolomite Well W-21A
Arkema Coating Resins
Saukville, Wisconsin

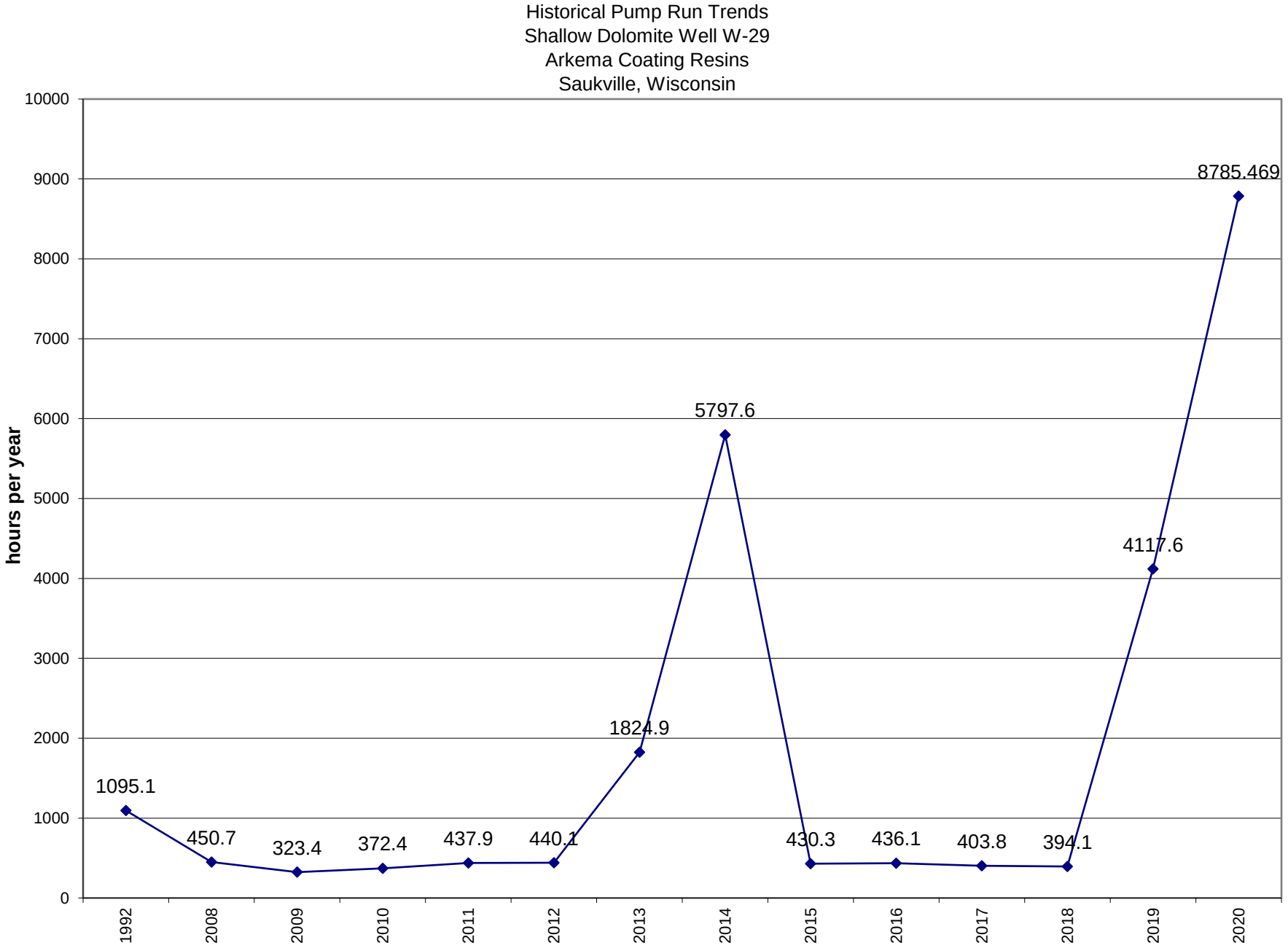


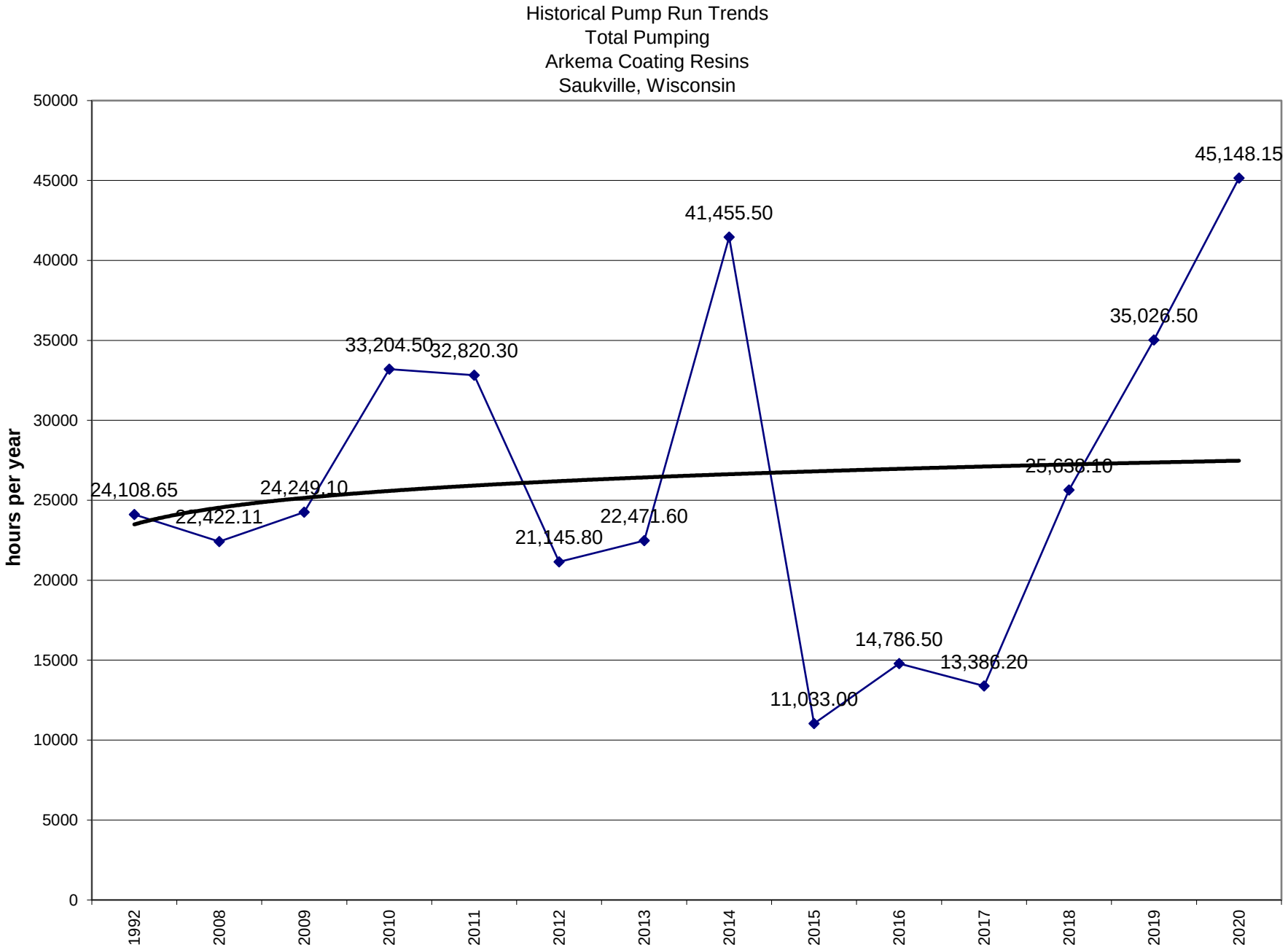
Historical Pump Run Trends
Shallow Dolomite Well W-24A
Arkema Coating Resins
Saukville, Wisconsin



Historical Pump Run Trends
Shallow Dolomite Well W-28
Arkema Coating Resins
Saukville, Wisconsin




Historical Pump Run Trends
Shallow Dolomite Well W-29
Arkema Coating Resins
Saukville, Wisconsin
hours per year
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
1095.1
450.7
323.4
372.4
437.9
440.1
1824.9
5797.6
430.3
436.1
403.8
394.1
4117.6
8785.469
1992
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020


Historical Pump Run Trends
Total Pumping
Arkema Coating Resins
Saukville, Wisconsin
hours per year
50000
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
1992
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
24,108.65
22,422.11
24,249.10
33,204.50
32,820.30
21,145.80
22,471.60
41,455.50
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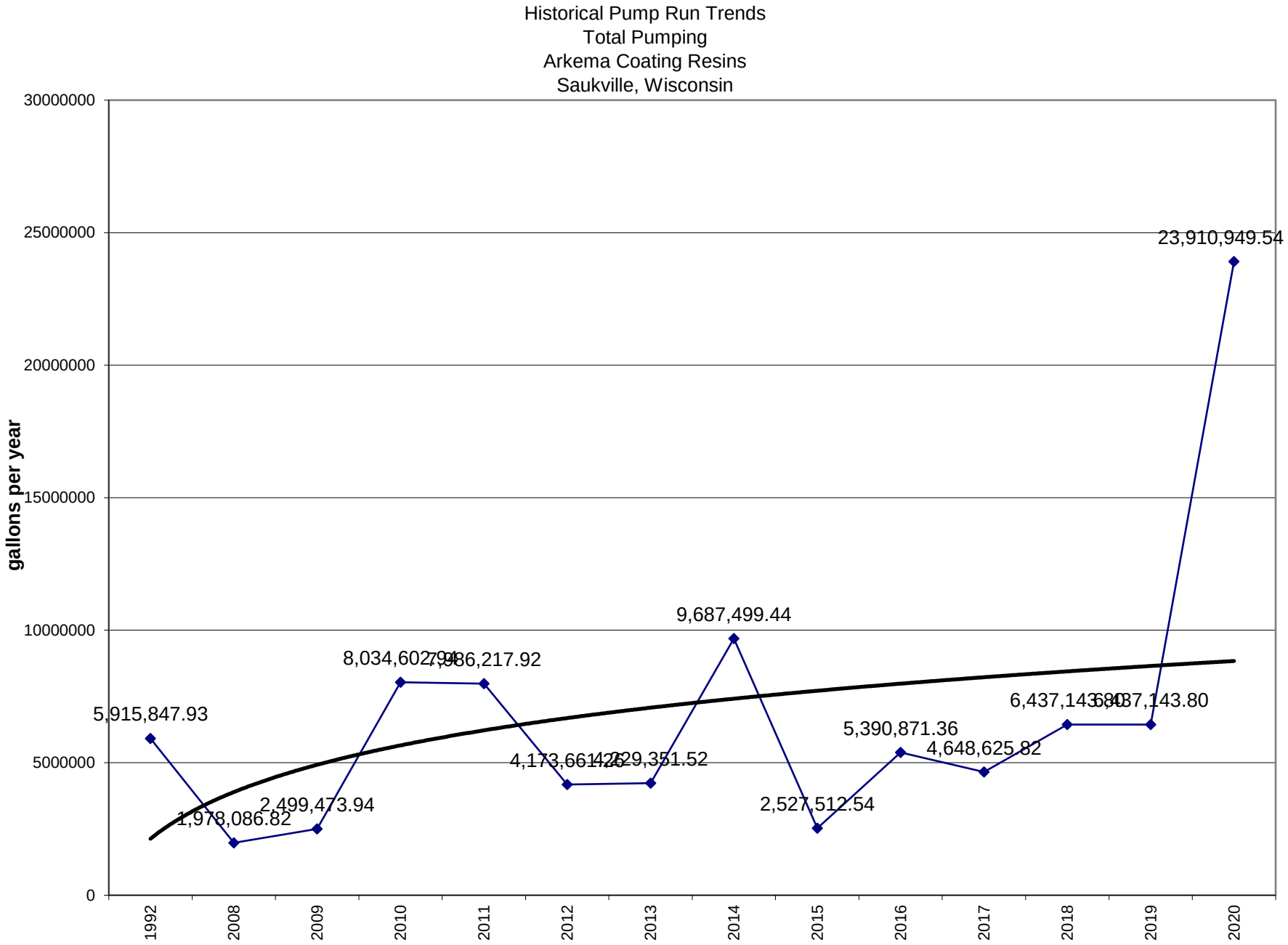
14,786.50
13,386.20
25,638.10
35,026.50
45,148.15


Historical Pump Run Trends
Total Pumping
Arkema Coating Resins
Saukville, Wisconsin
gallons per year
30000000
25000000
20000000
15000000
10000000
5000000
0
1992
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
5,915,847.93
1,978,086.82
2,499,473.94
8,034,602.94
7,986,217.92
4,173,661.26
4,229,351.52
9,687,499.44
2,527,512.54
5,390,871.36
4,648,625.82
6,437,143.80
6,437,143.80
23,910,949.54

APPENDIX C

HYDROGEOLOGIC CALCULATIONS

Hydrogeological Calculations
Fall 2020
Arkema Coating Resins
Saukville, Wisconsin

Horizontal Gradient

Glacial Drift Unit

$i = \frac{dH}{dL} = \frac{21.55}{950} = 0.023$ (eastward)

W-27	768.48
W-08R	746.93
dL	950

Shallow and Deep Dolomite Units

$i = \frac{dH}{dL} = \frac{68.6}{210} = 0.327$ eastward

W-22	760.52
W-30	691.92
dL	210

$i = \frac{dH}{dL} = \frac{64.43}{450} = 0.143$ westward

W-40	756.35
W-30	691.92
dL	450

Vertical Gradient

Between glacial drift unit and shallow dolomite unit

W-18A/W-22 Fall 2020 Water Level Data

D_{Center} (772.29-66) +(0.5*40) = 726.29

$Iv = \frac{S_{WL} - D_{WL}}{S_{WL} - D_{Center}}$ S_{WL} = 766.42 W-18A; D_{WL} = 760.52 W-22; 0.15 (downward)

W-3B/W-3A Fall 2020 Water Level Data

D_{Center} (769.31-234) +(0.5*147) = 608.81

$Iv = \frac{S_{WL} - D_{WL}}{S_{WL} - D_{Center}}$ S_{WL} = 744.48 W-3B; D_{WL} = 744.59 W-3A; 0.00

W-43/W-38 Fall 2020 Water Level Data

D_{Center} (768.75-49) +(0.5*16.8) = 728.15

$Iv = \frac{S_{WL} - D_{WL}}{S_{WL} - D_{Center}}$ S_{WL} = 763.90 W-43; D_{WL} = 754.43 W-38; 0.26 (downward)

W-49/W-50 Fall 2020 Water Level Data

D_{Center} (765.74-31) +(0.5*5) = 737.24

$Iv = \frac{S_{WL} - D_{WL}}{S_{WL} - D_{Center}}$ S_{WL} = 752.85 W-49; D_{WL} = 750.78 W-50; 0.13 (downward)

W-16A/W-40 Fall 2020 Water Level Data

D_{Center} (768.36-48) +(0.5*20) = 730.36

$Iv = \frac{S_{WL} - D_{WL}}{S_{WL} - D_{Center}}$ S_{WL} = 759.65 W-16A; D_{WL} = 756.35 W-40; 0.11 (downward)

W-51/W-52 Fall 2020 Water Level Data

D_{Center} (773.01-35) +(0.5*5) = 740.51

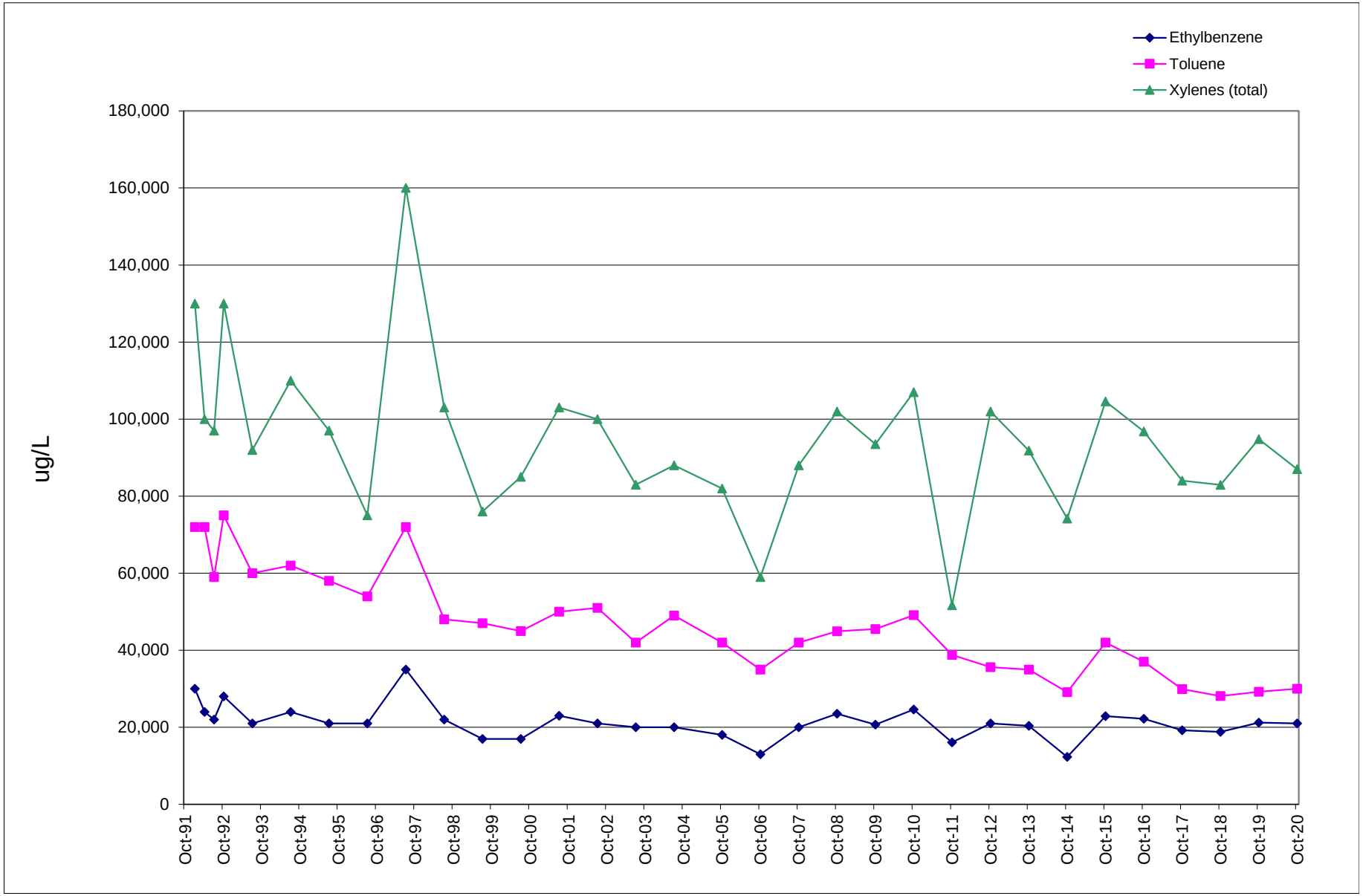
$Iv = \frac{S_{WL} - D_{WL}}{S_{WL} - D_{Center}}$ S_{WL} = 759.81 W-51; D_{WL} = 752.06 W-52; 0.40 (downward)

APPENDIX D

INDIVIDUAL CONTAMINANT TRENDS: 1992-2020

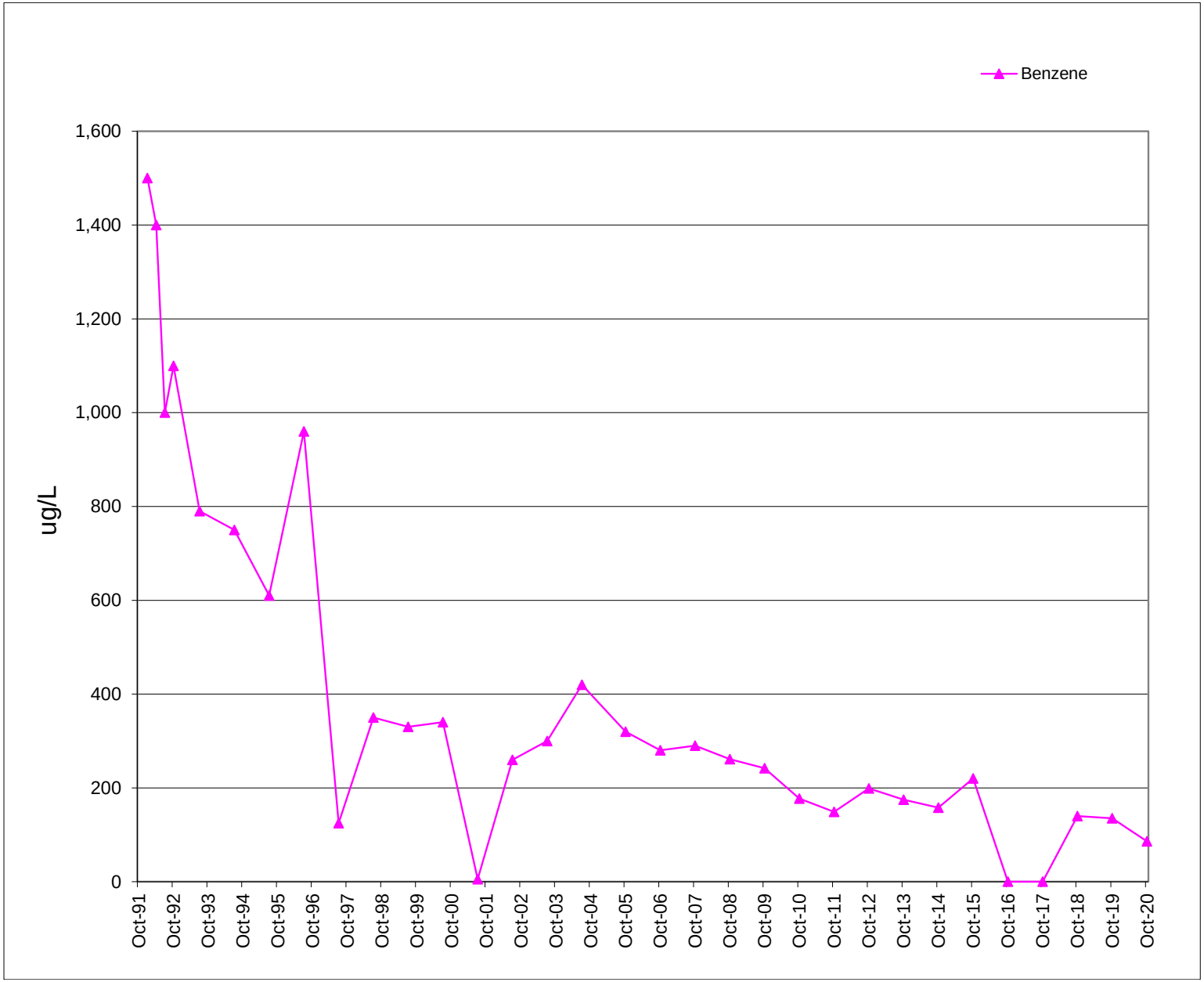
W-06A VOC

Remediation Progress - Glacial Drift



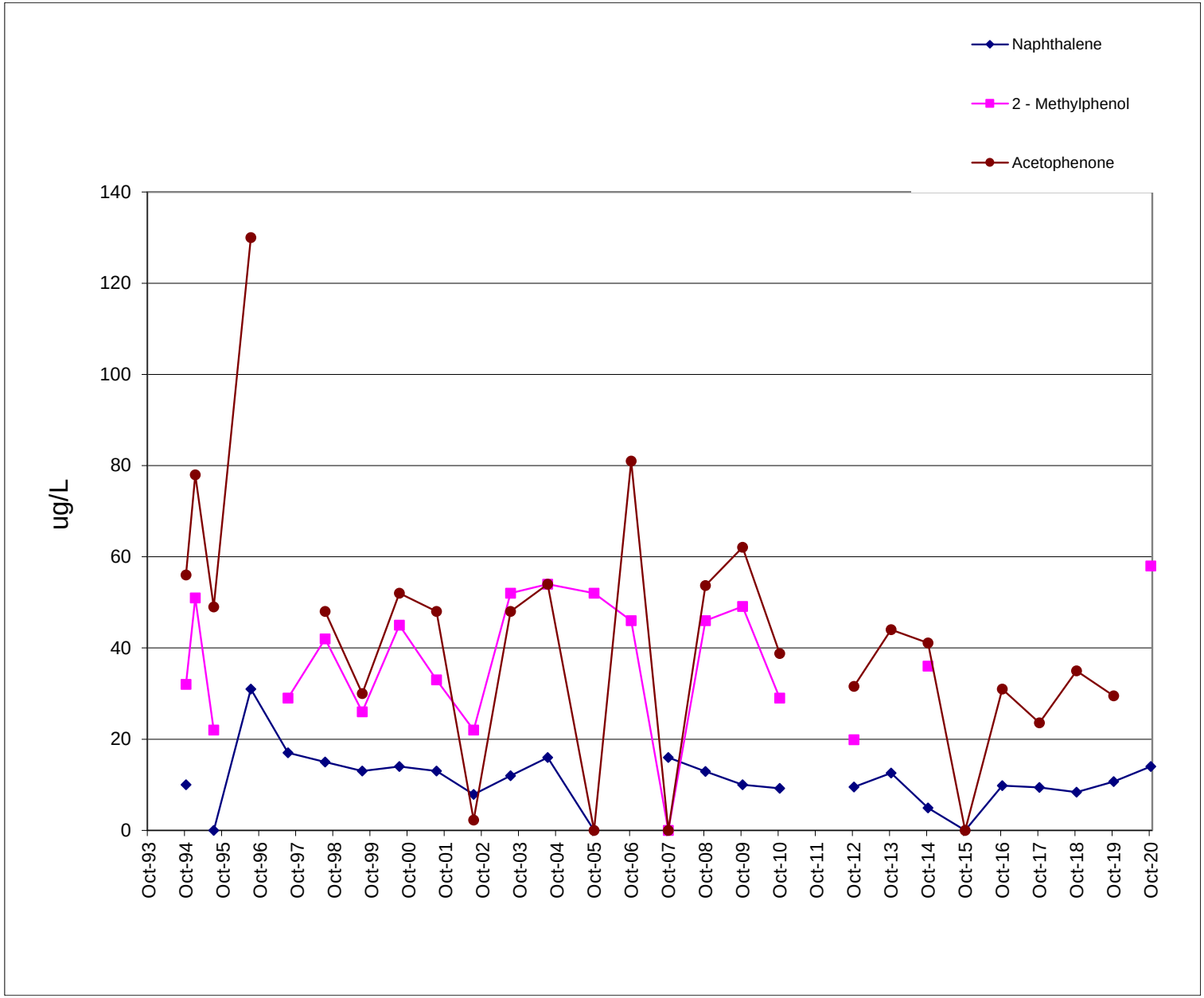
W-06A VOC

Remediation Progress - Glacial Drift



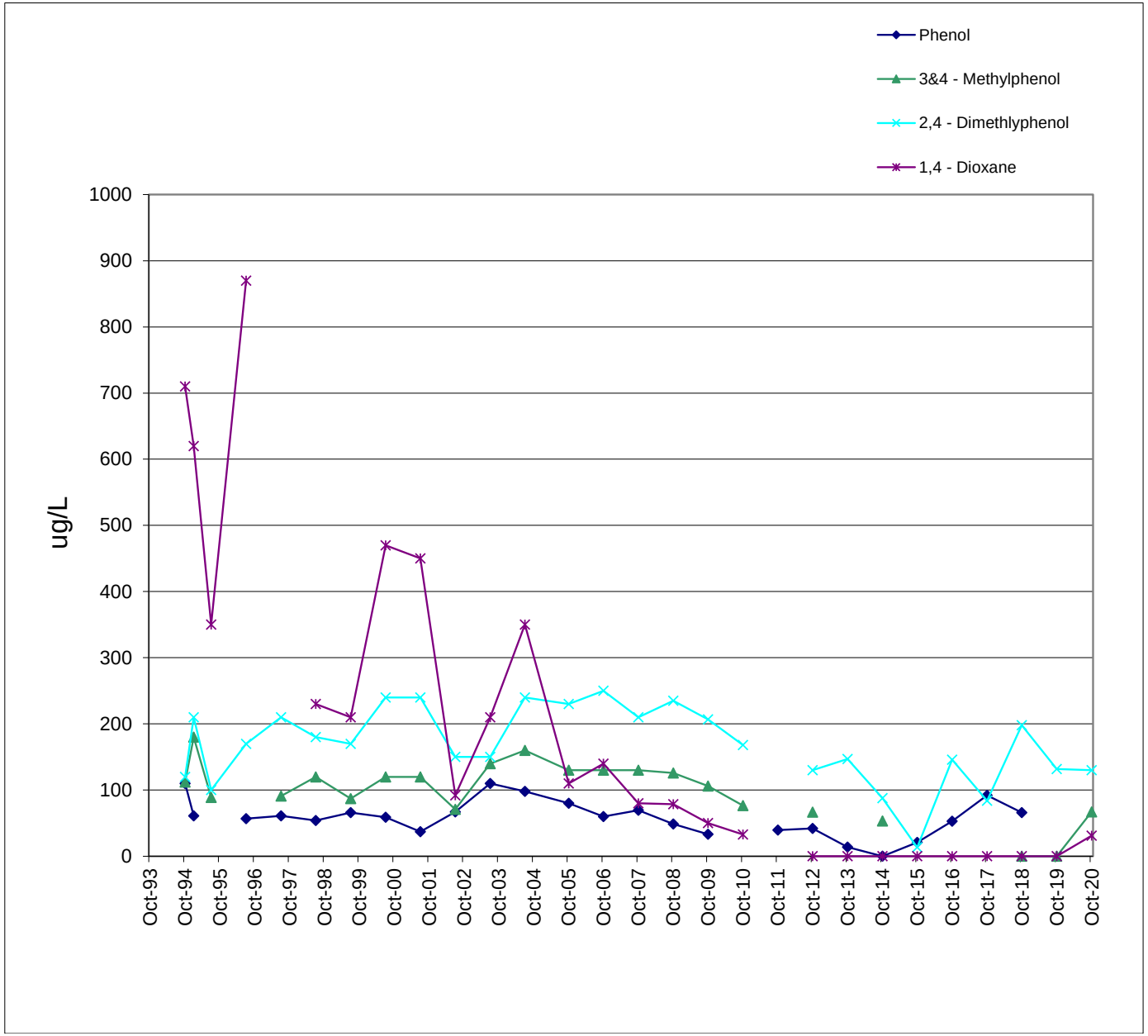
W-06A SVOC

Remediation Progress - Glacial Drift



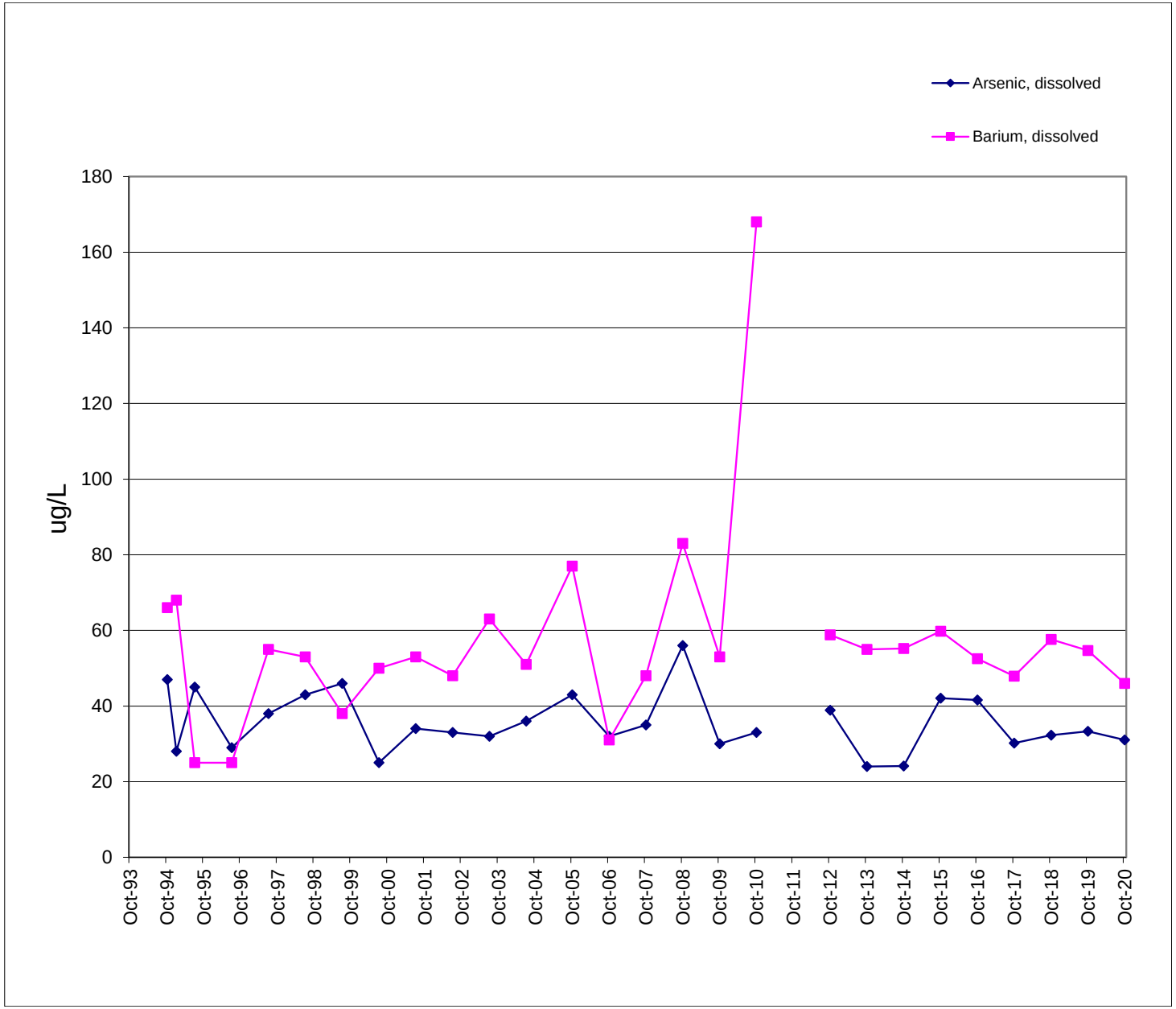
W-06A SVOC

Remediation Progress - Glacial Drift



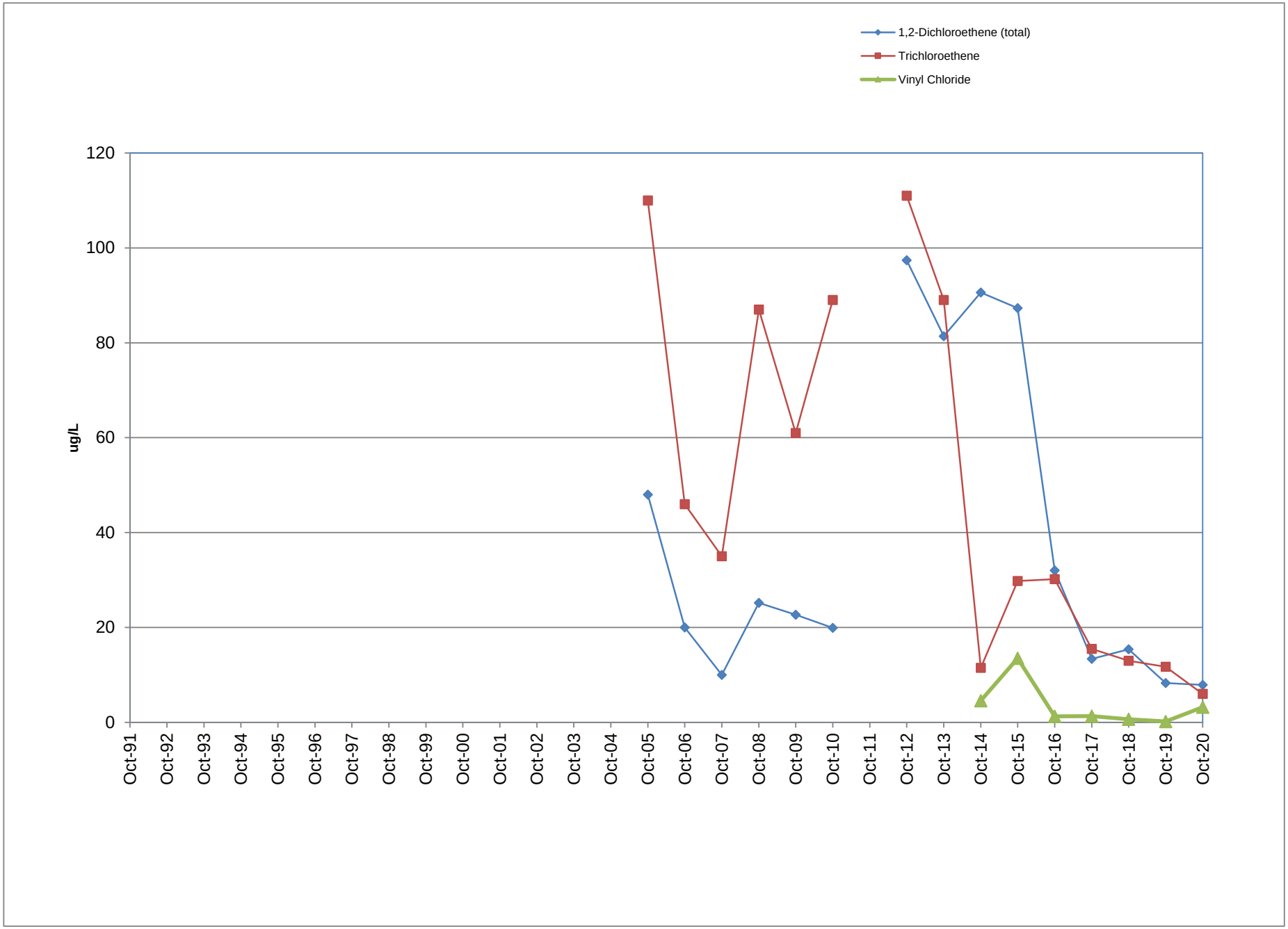
W-06A Metals

Remediation Progress - Glacial Drift



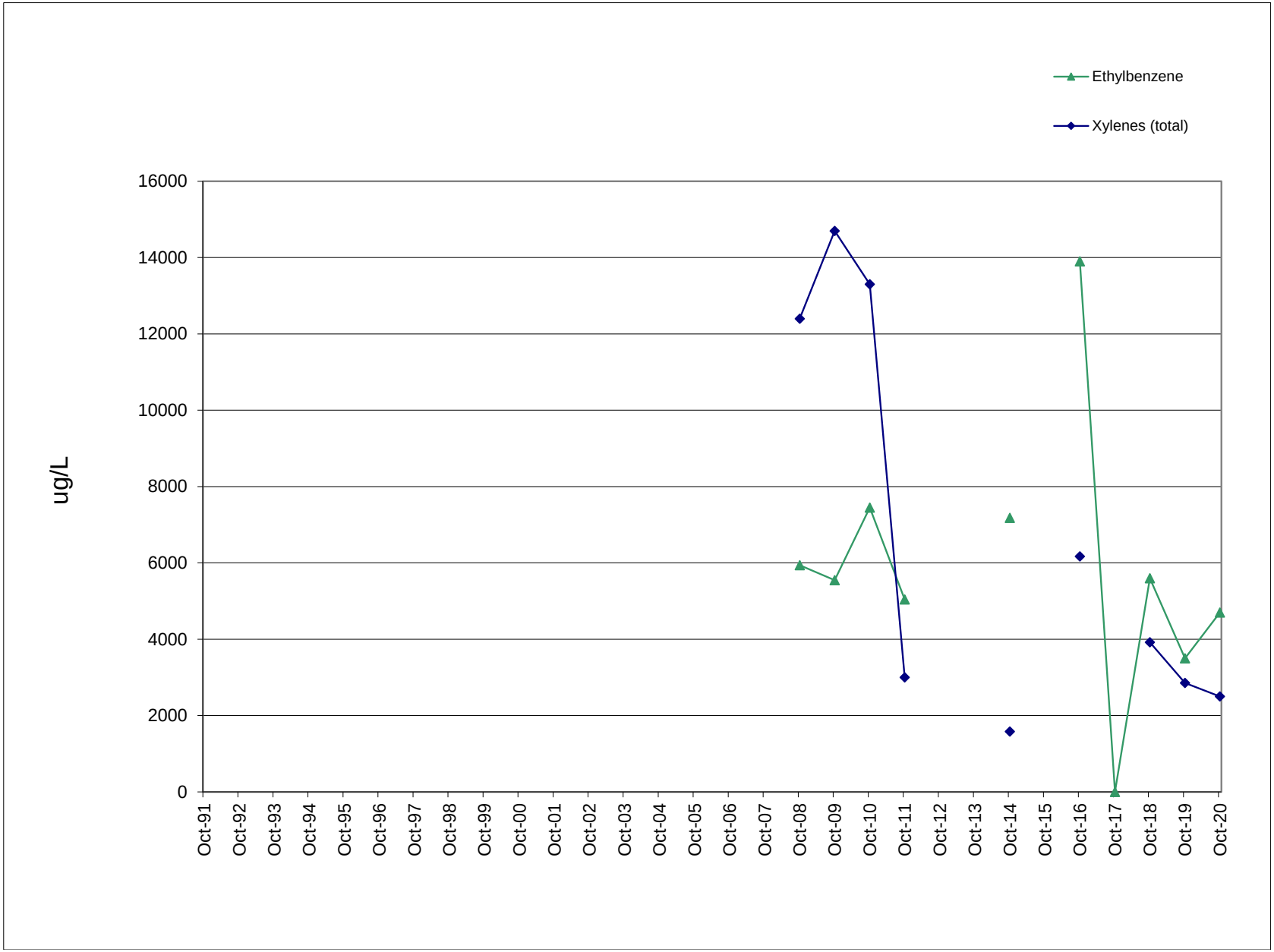
W-19A VOC

Remediation Progress - Glacial Drift



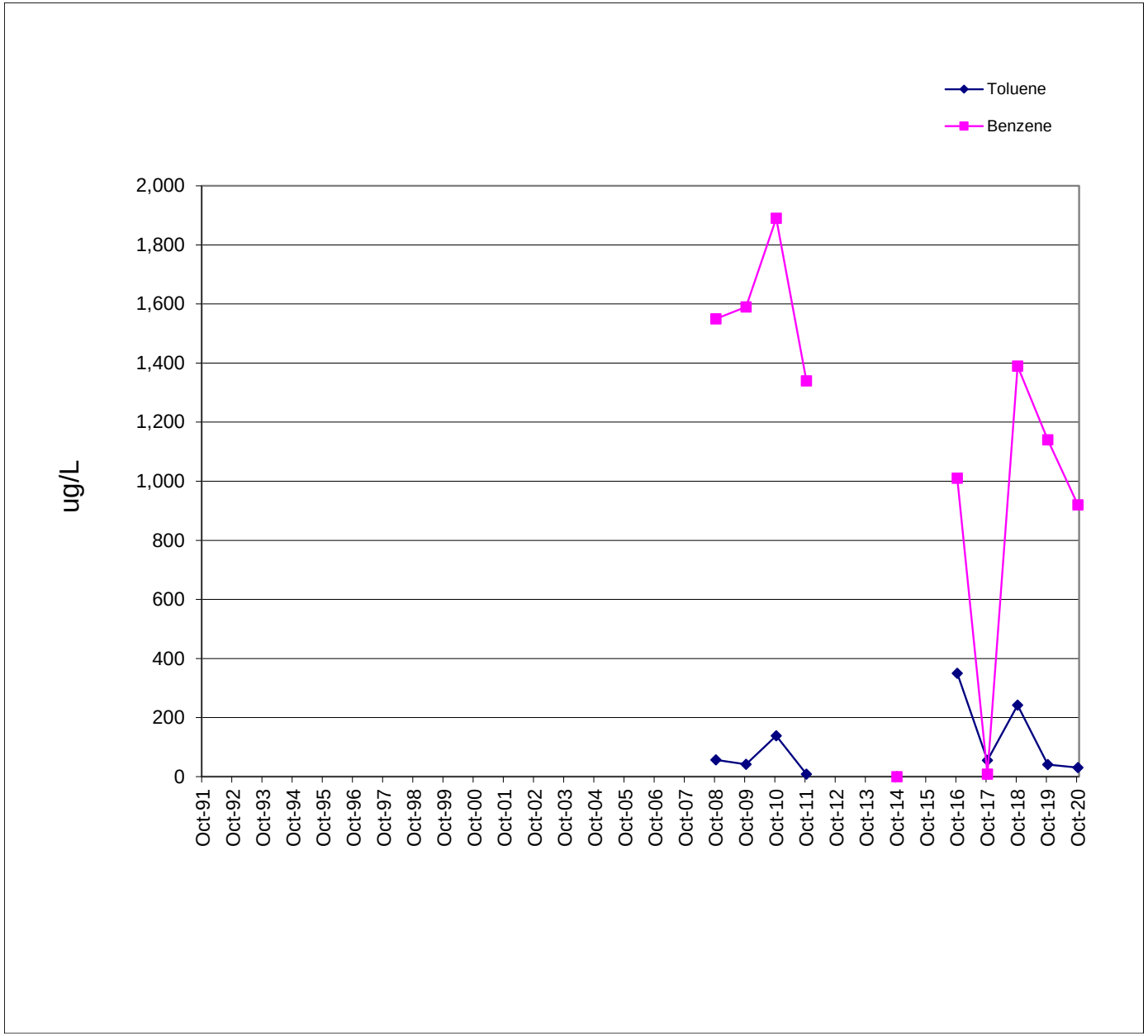
W-21A VOC

Remediation Progress - Shallow Dolomite



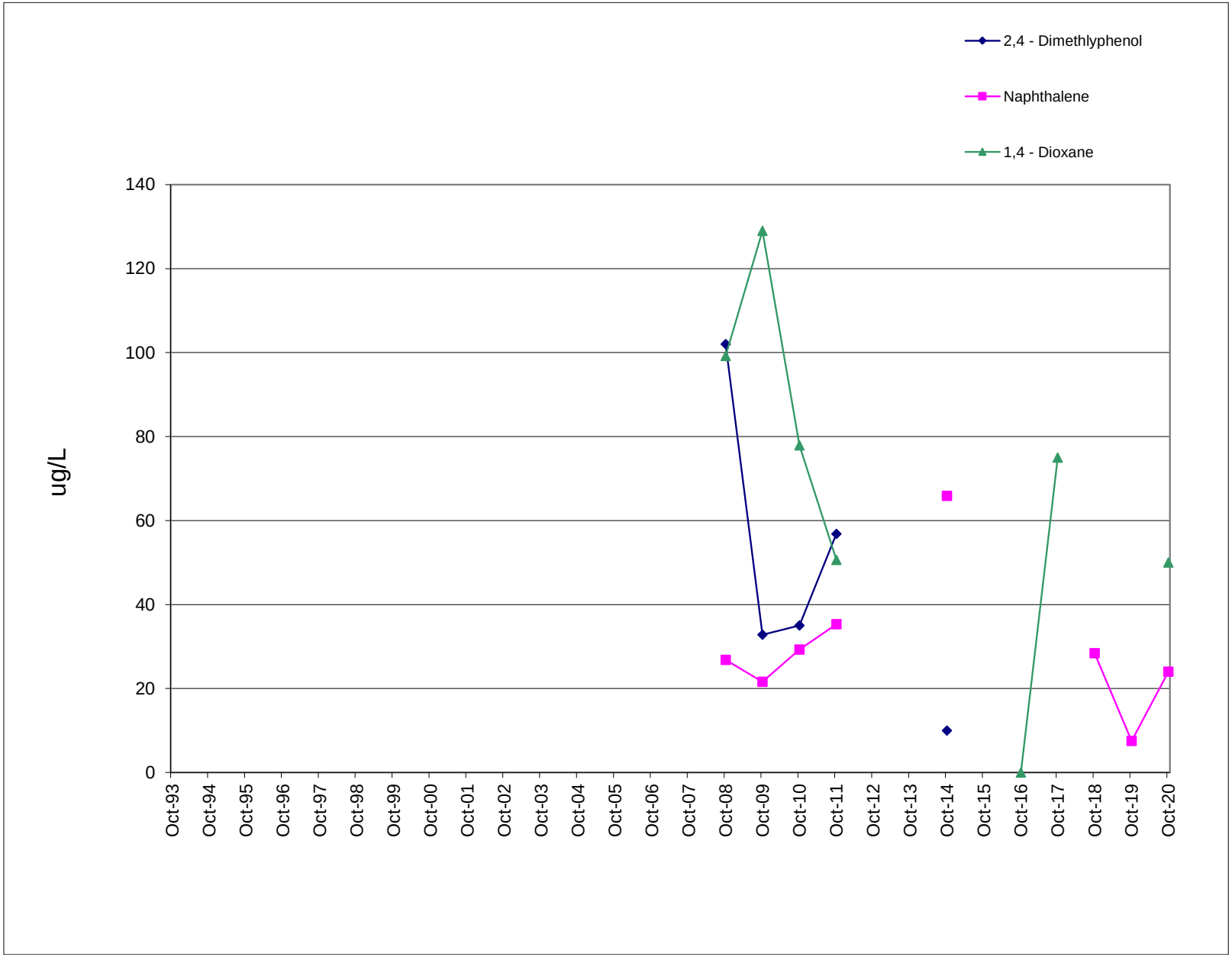
W-21A VOC

Remediation Progress - Shallow Dolomite



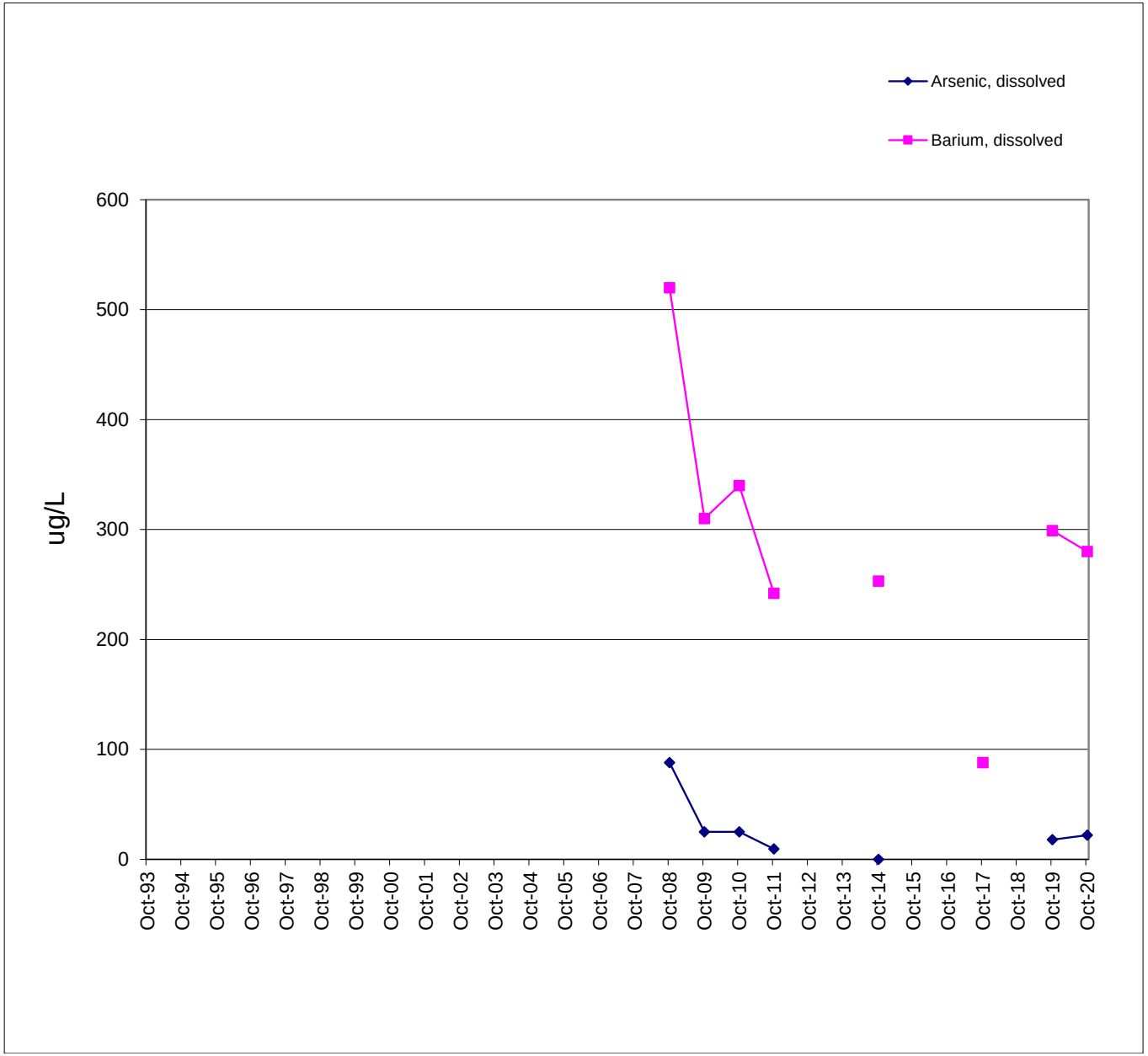
W-21A SVOC

Remediation Progress - Shallow Dolomite



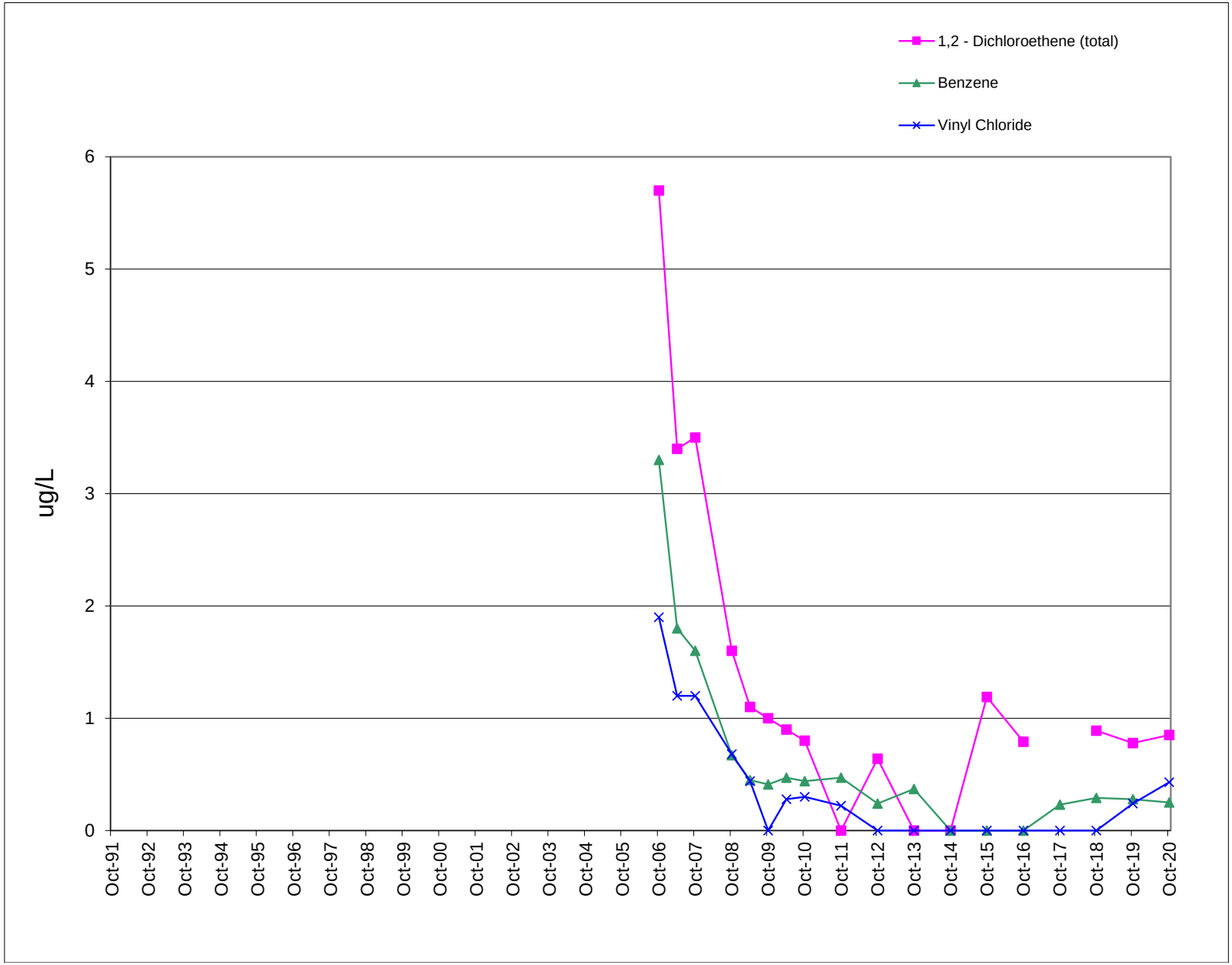
W-21A Metals

Remediation Progress - Shallow Dolomite



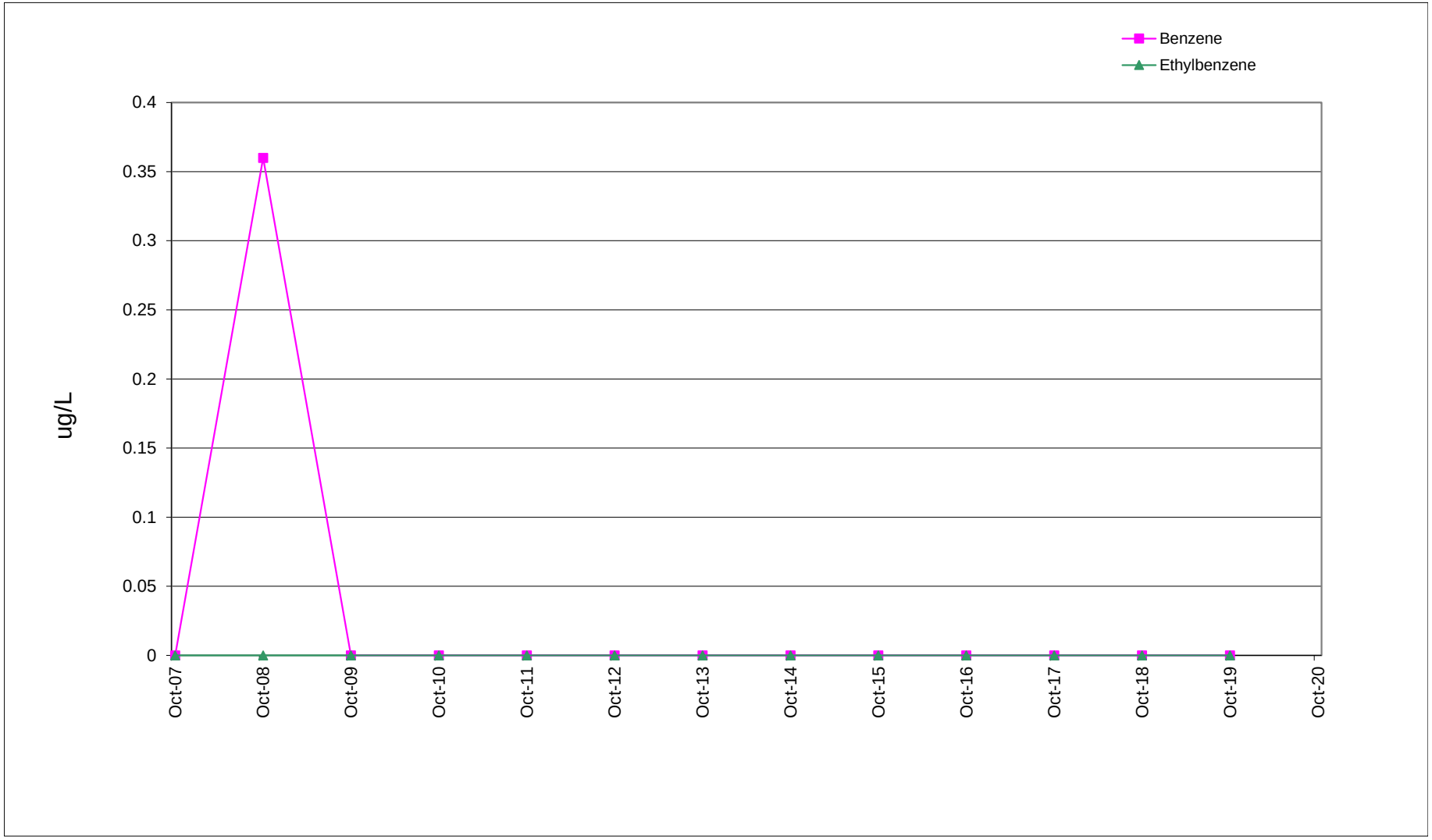
W-23 VOC

Perimeter - Shallow Dolomite



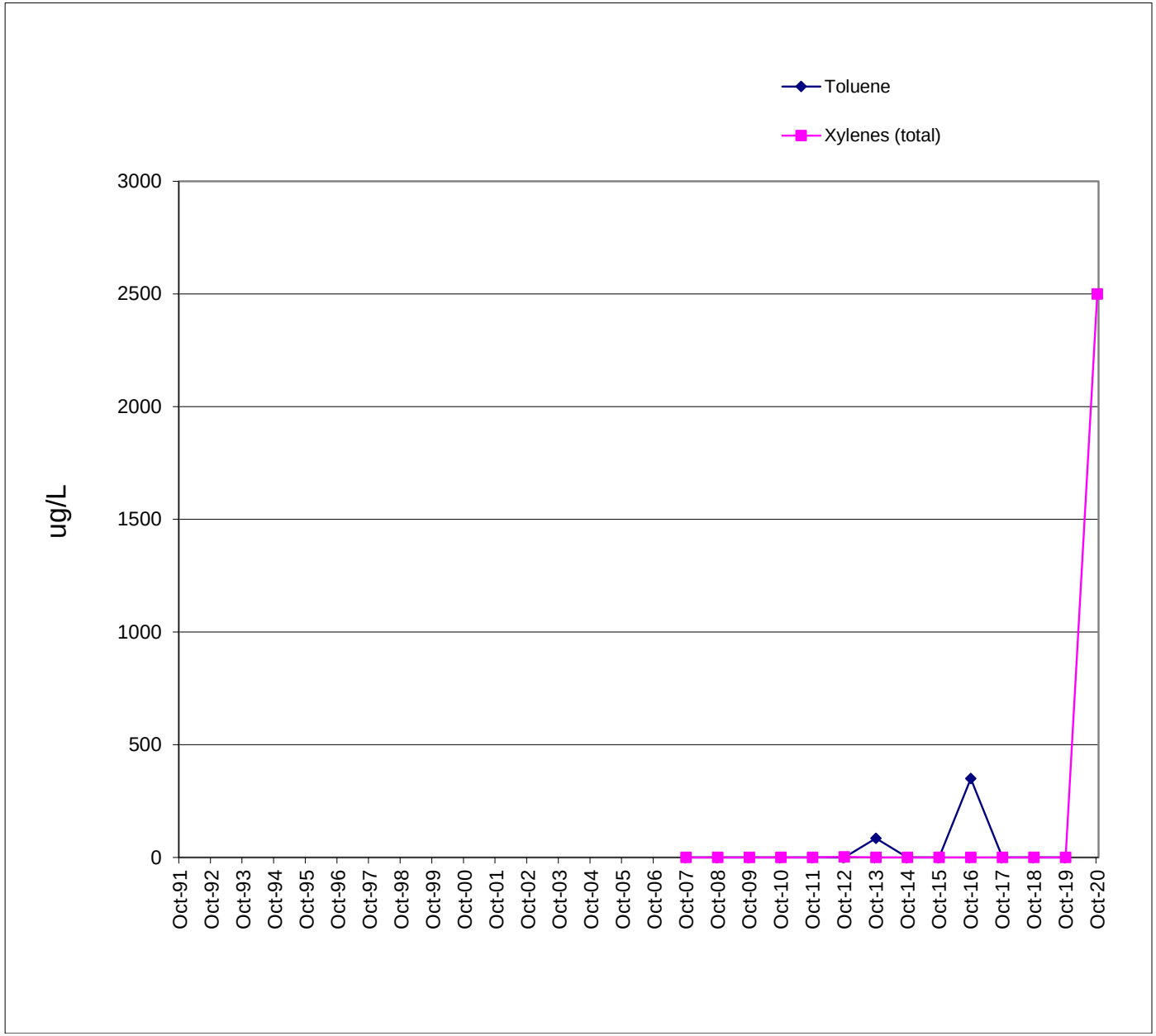
W-24A VOC

Remediation Progress - Shallow Dolomite



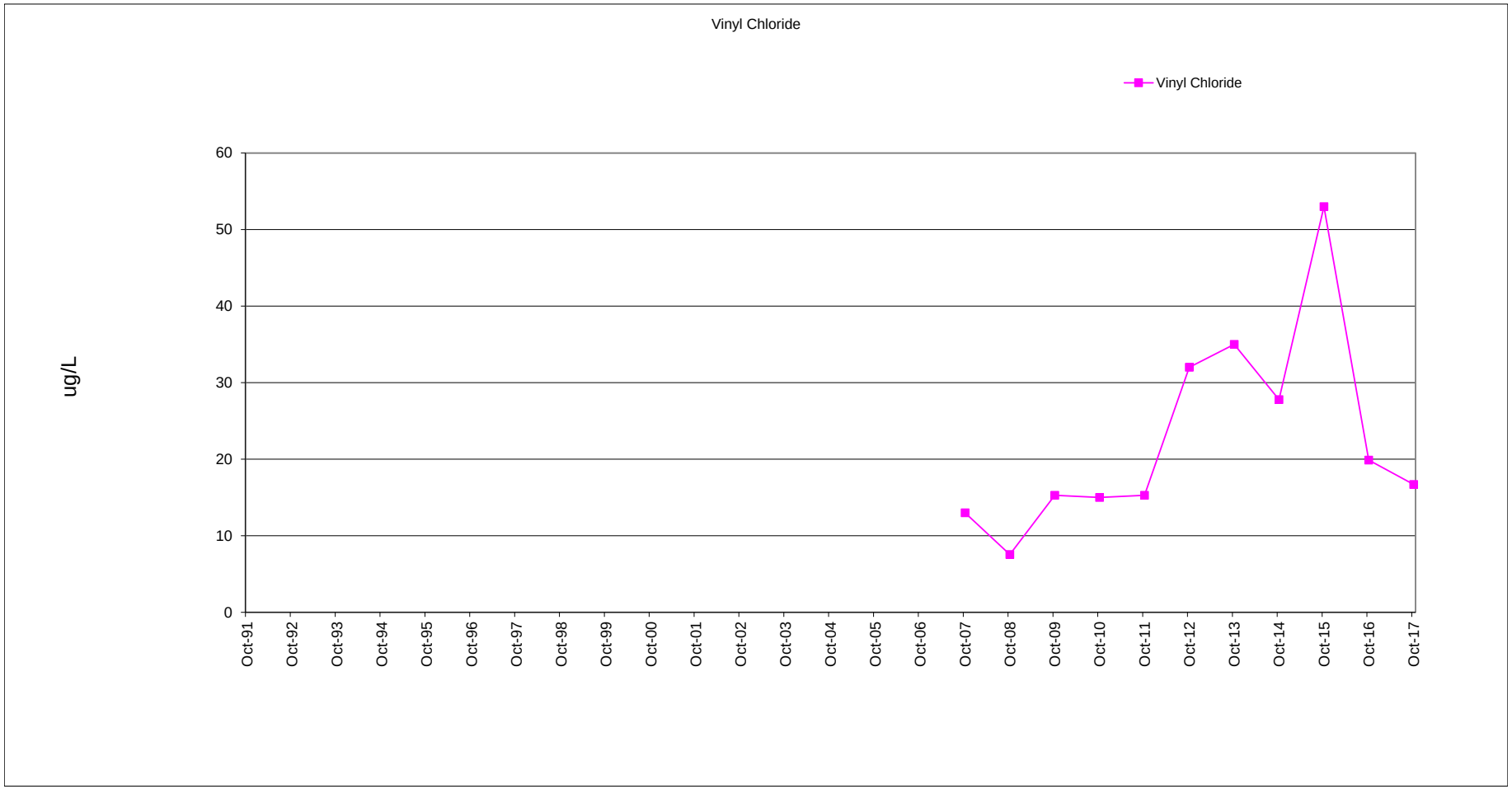
W-24A VOC

Remediation Progress - Shallow Dolomite



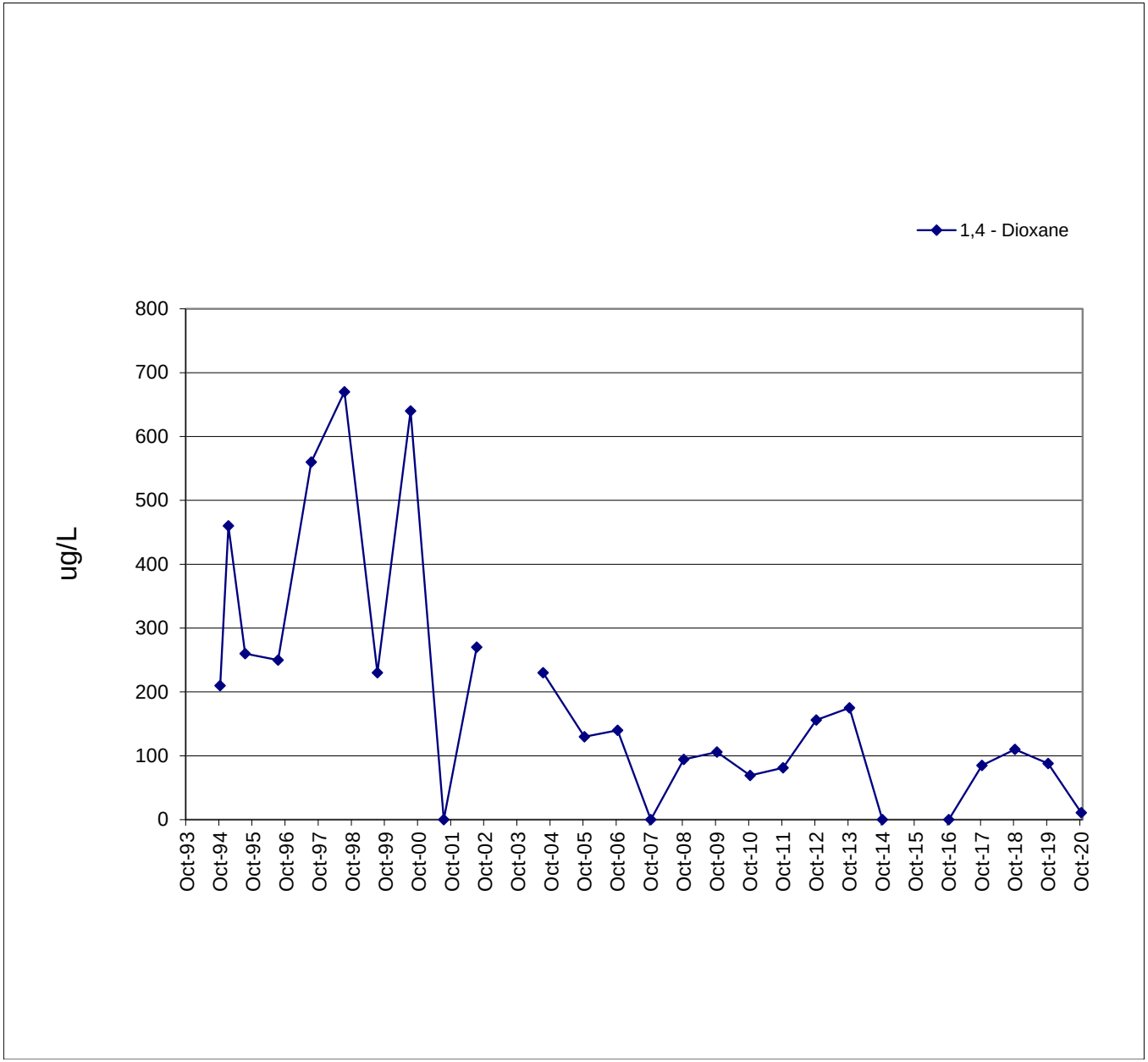
W-24A VOC

Remediation Progress - Shallow Dolomite



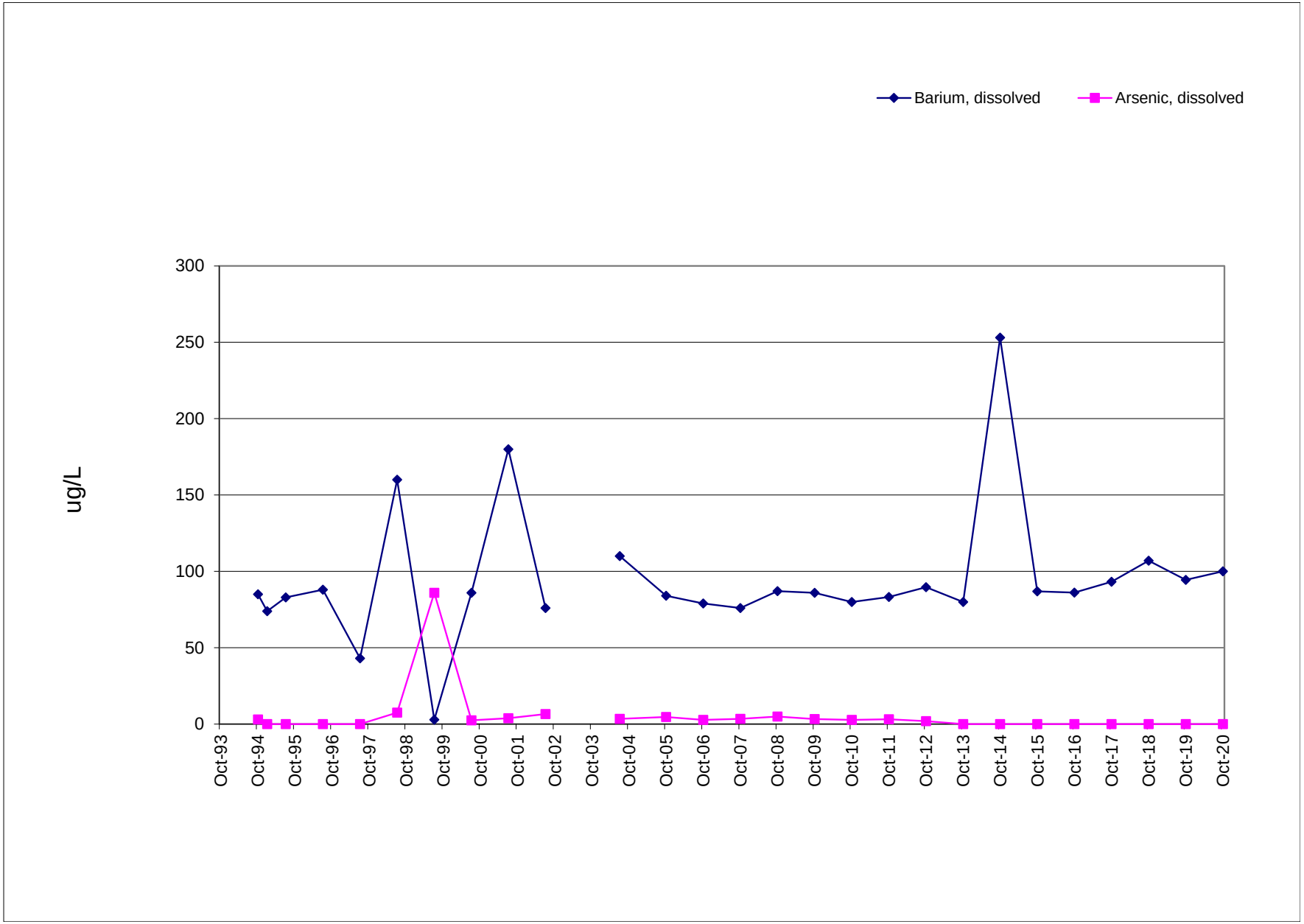
W-24 SVOC

Remediation Progress - Shallow Dolomite



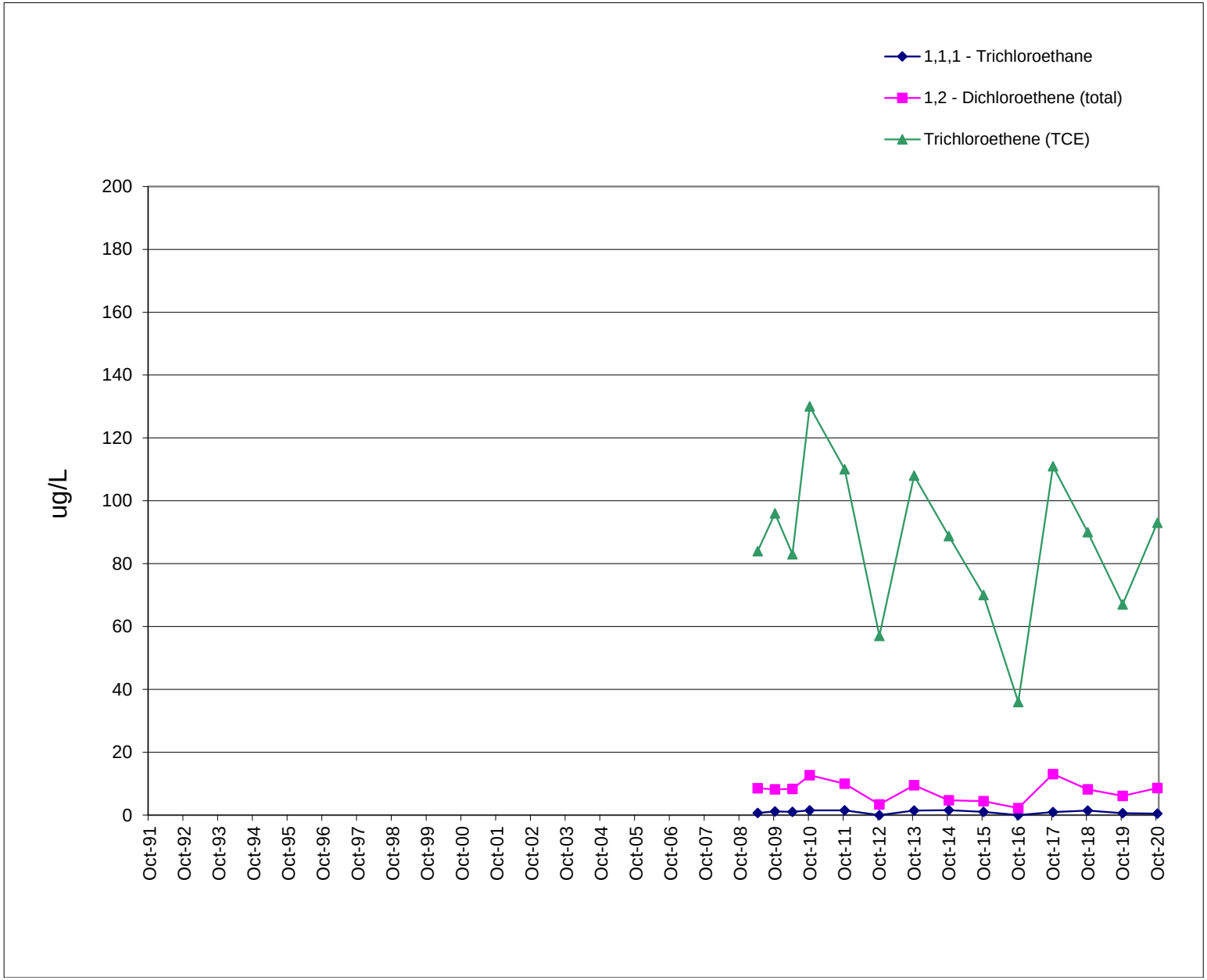
W-24 Metals

Remediation Progress - Shallow Dolomite



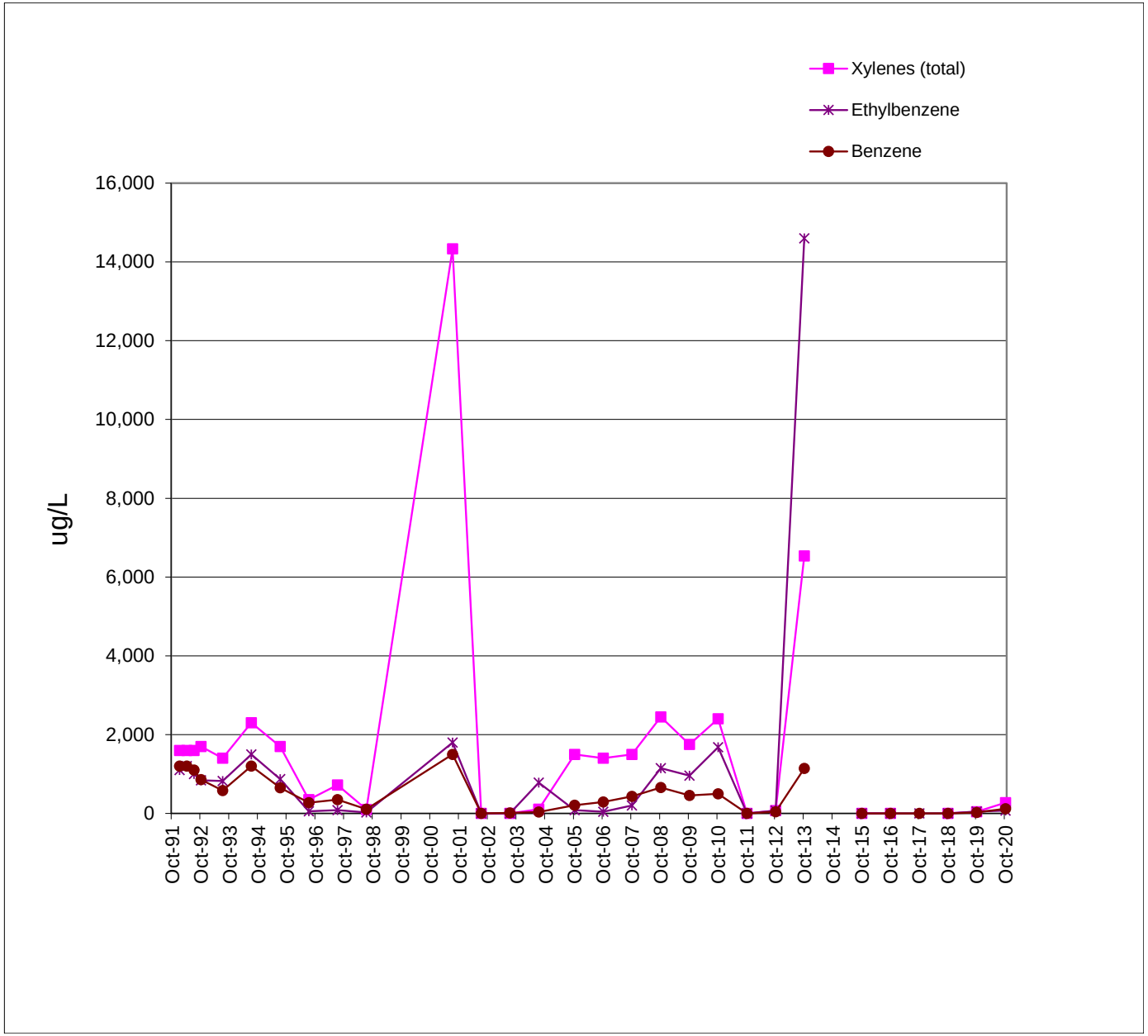
W-27 VOC

Perimeter - Glacial Drift



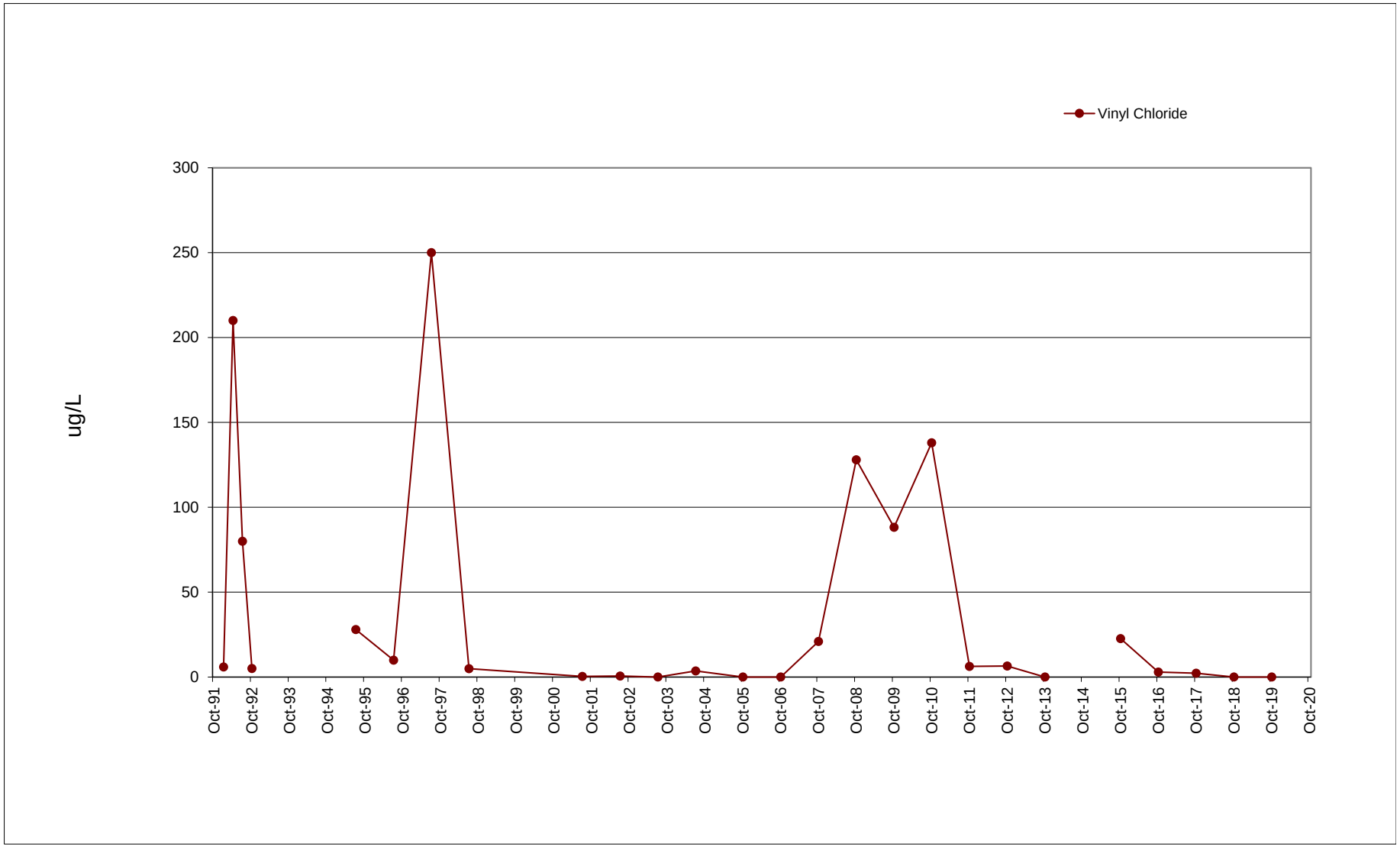
W-29 VOC

Remediation Progress - Shallow Dolomite



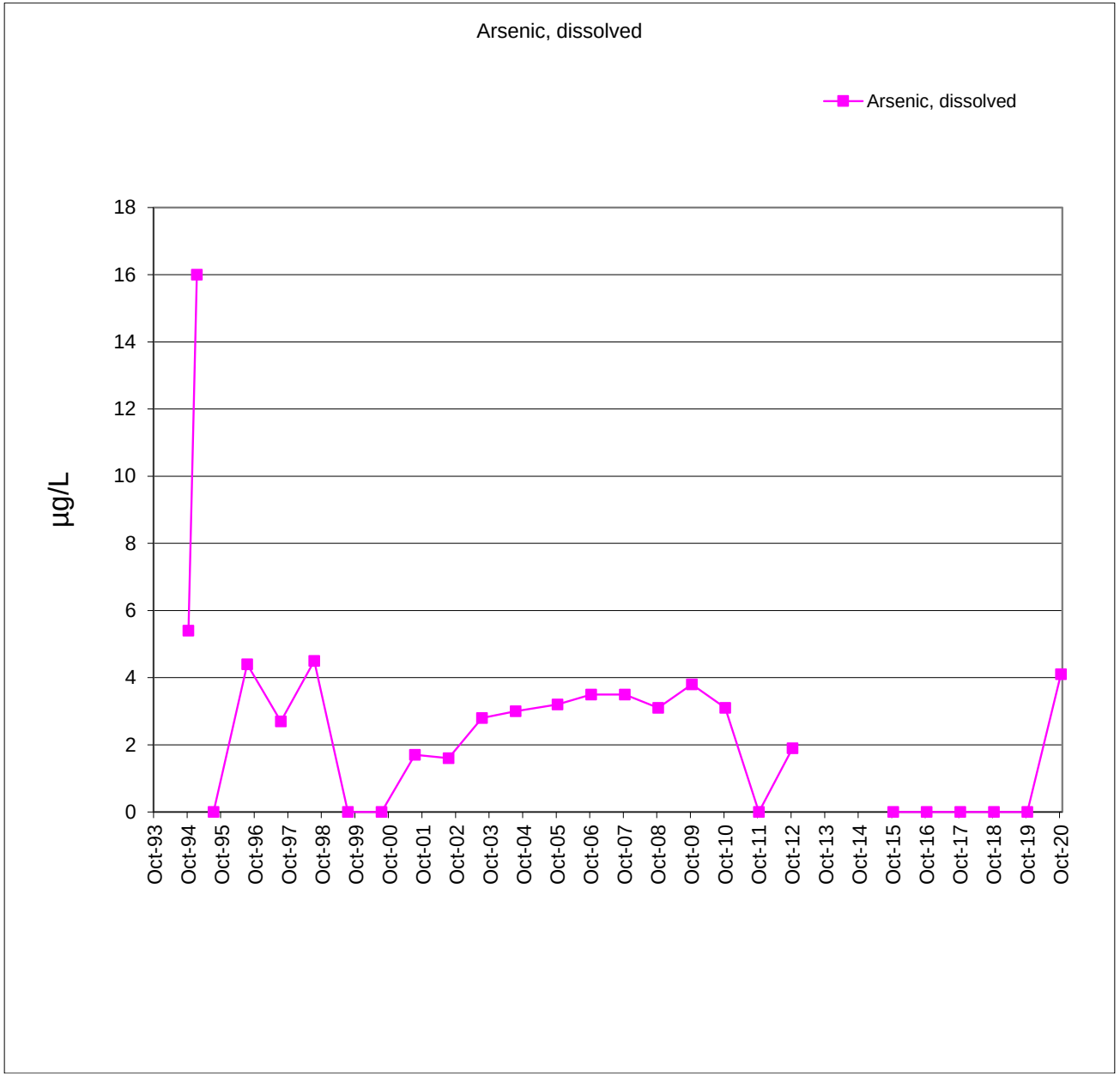
W-29 VOC

Remediation Progress - Shallow Dolomite



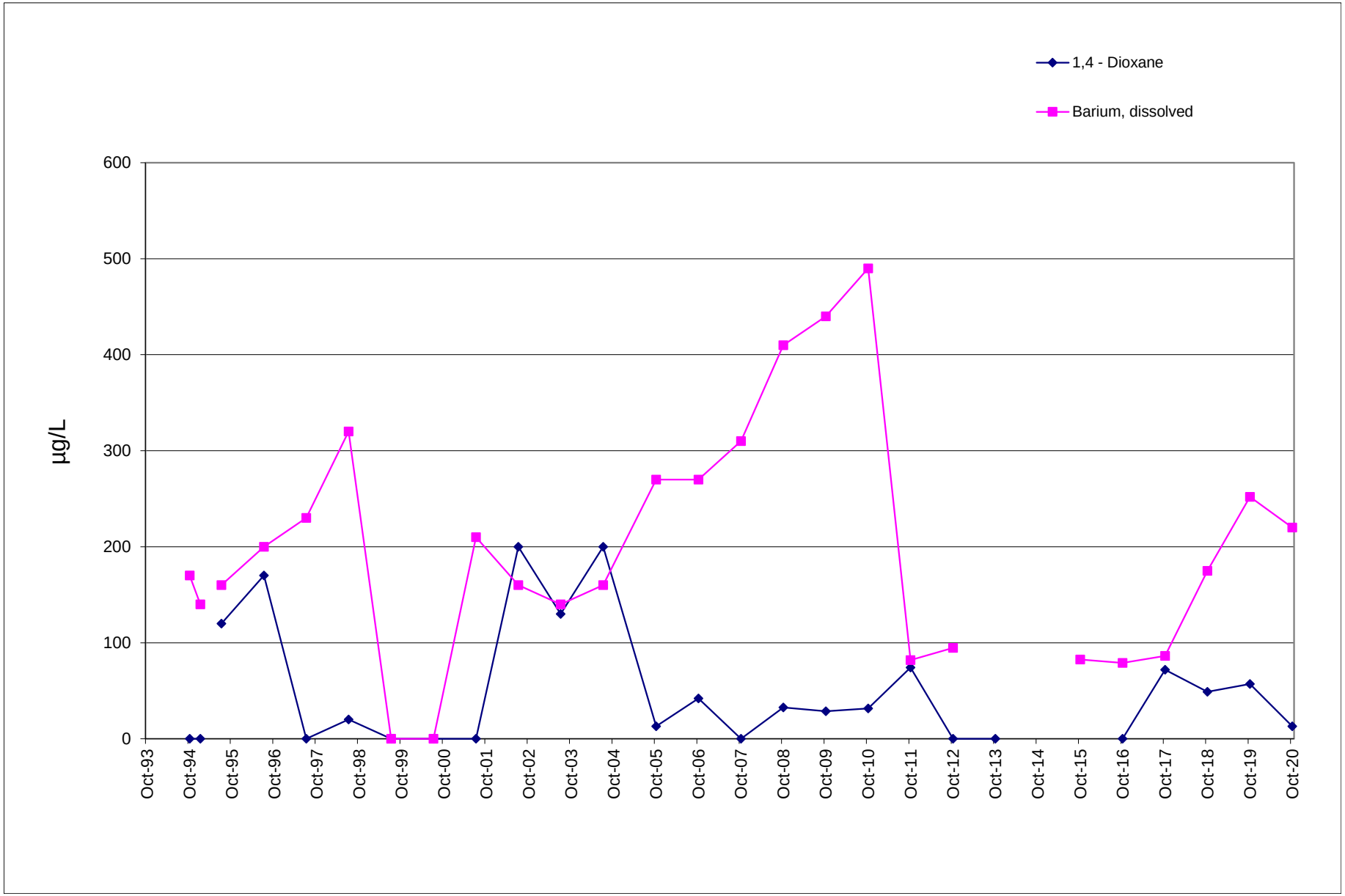
W-29 SVOC and Arsenic

Remediation Progress - Shallow Dolomite



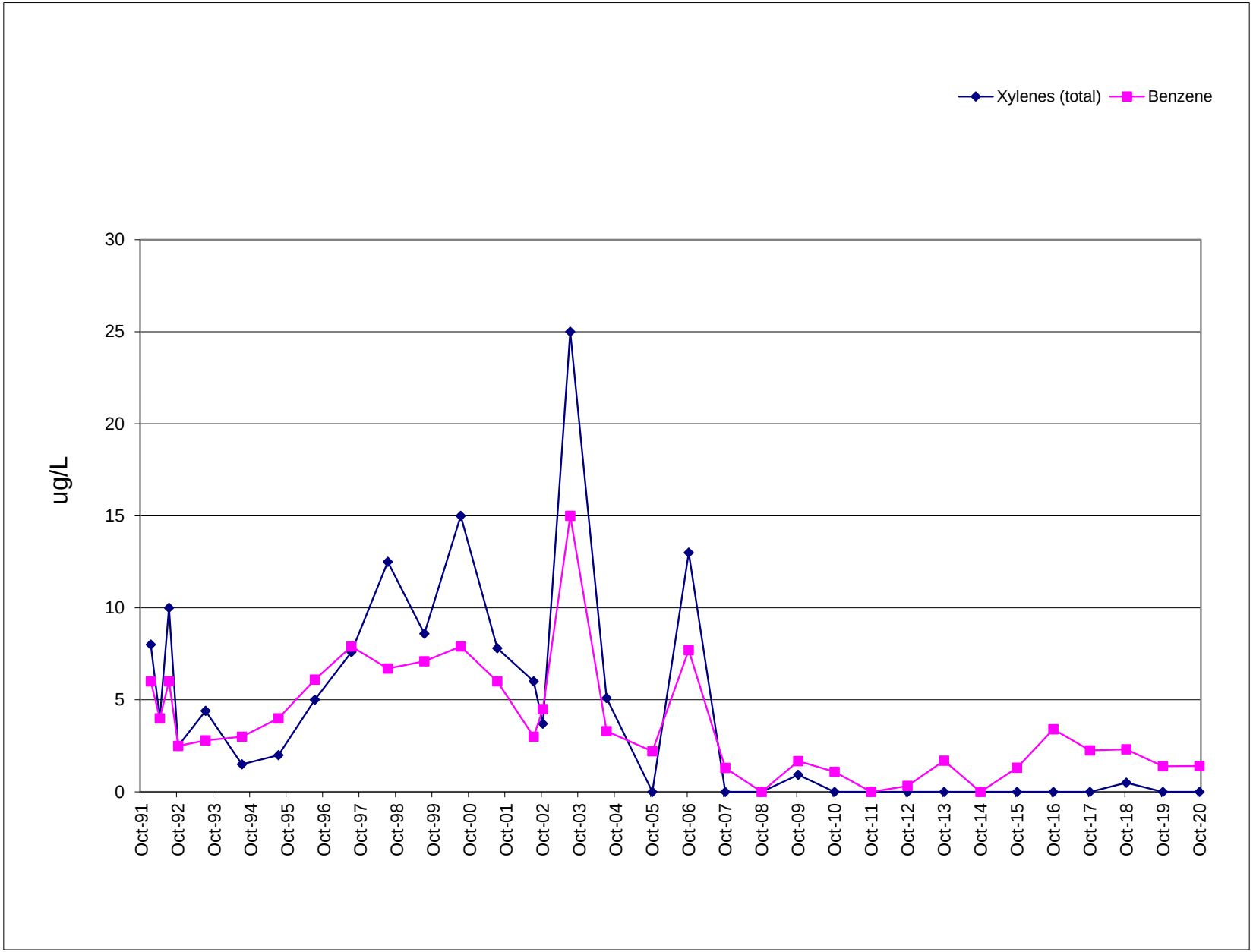
W-29 SVOC and Barium

Remediation Progress - Shallow Dolomite



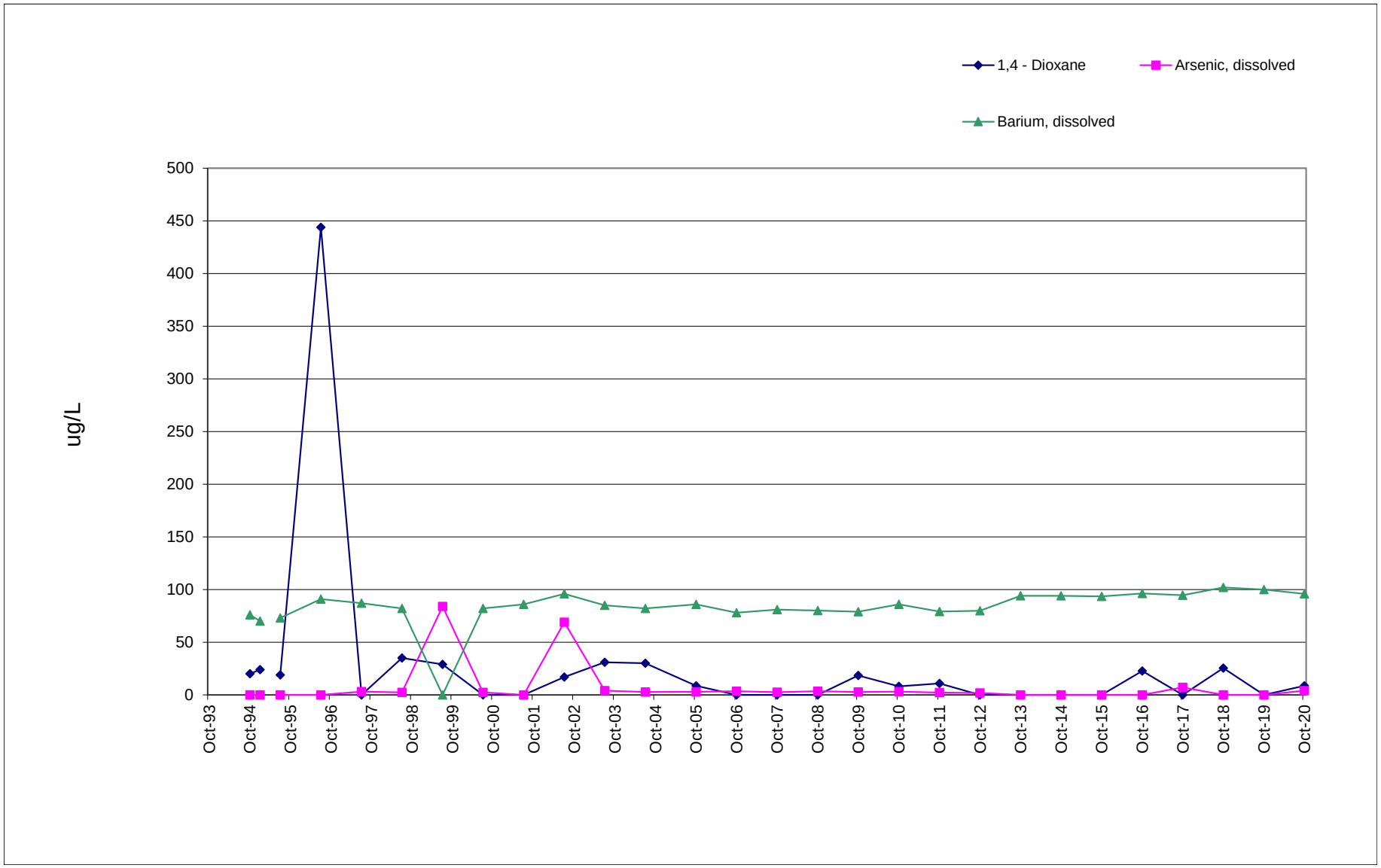
W-30 VOC

Remediation Progress - Deep Dolomite



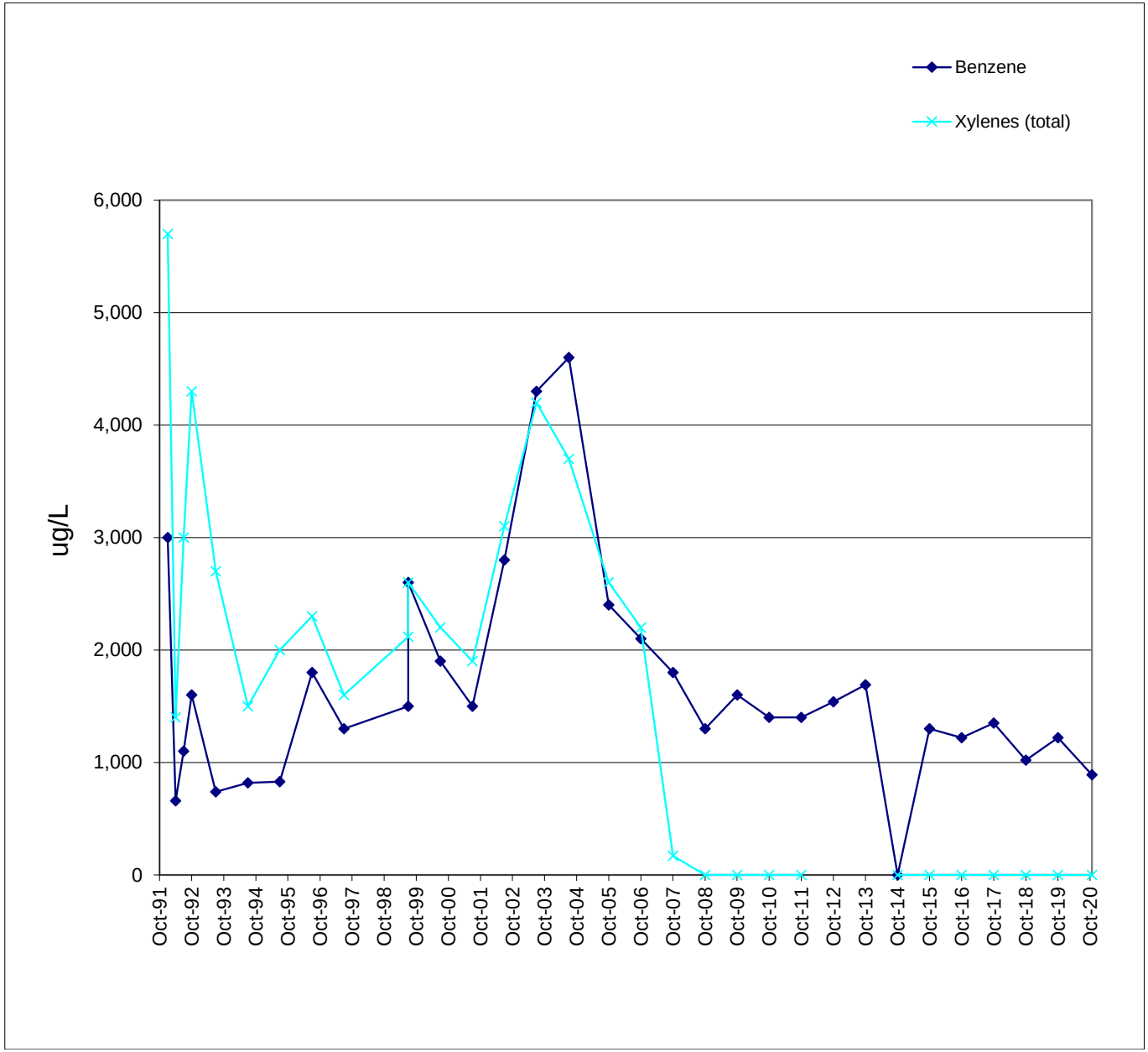
W-30 SVOC and Metals

Remediation Progress - Deep Dolomite



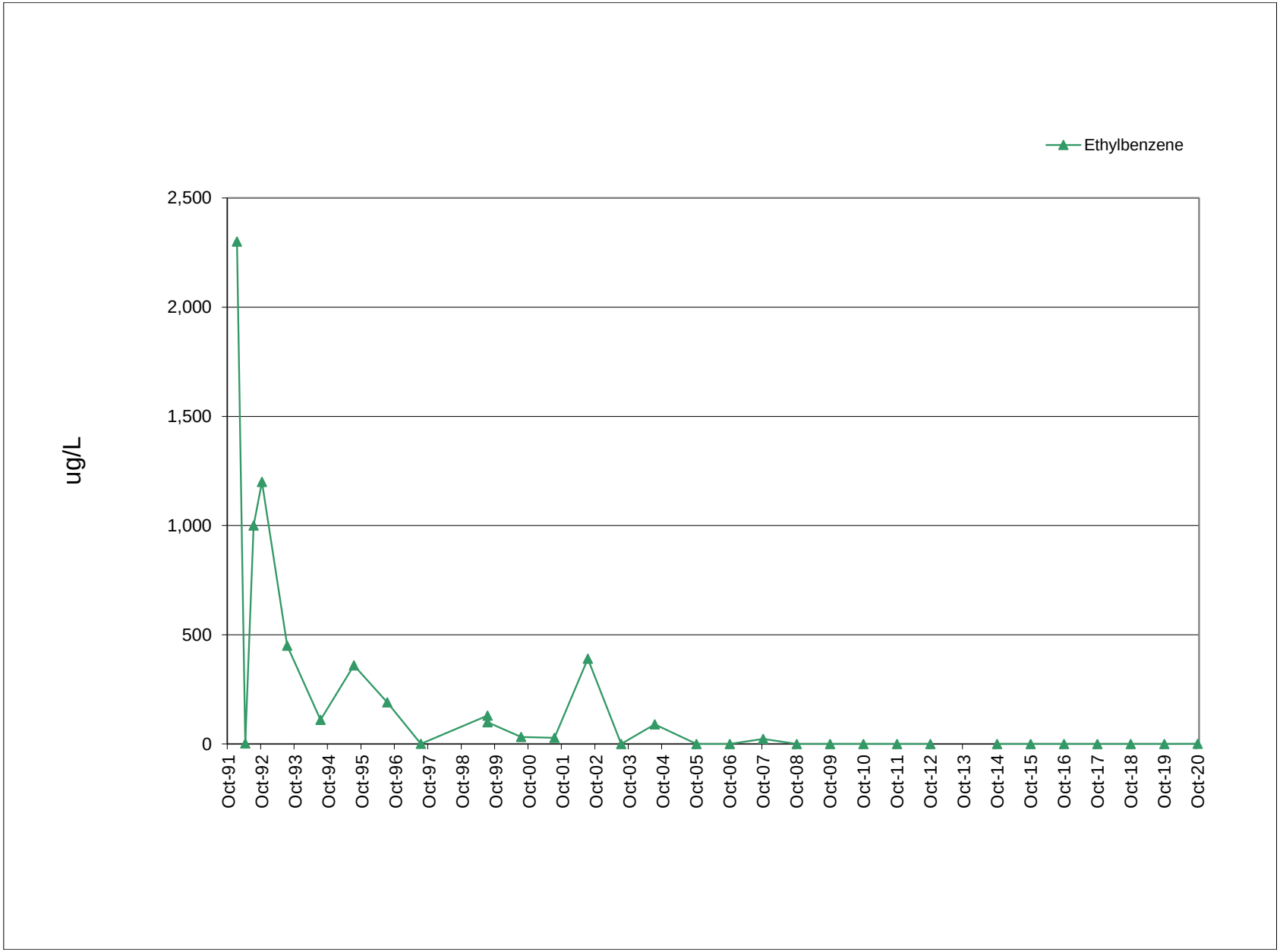
W-38 VOC

Remediation Progress - Shallow Dolomite



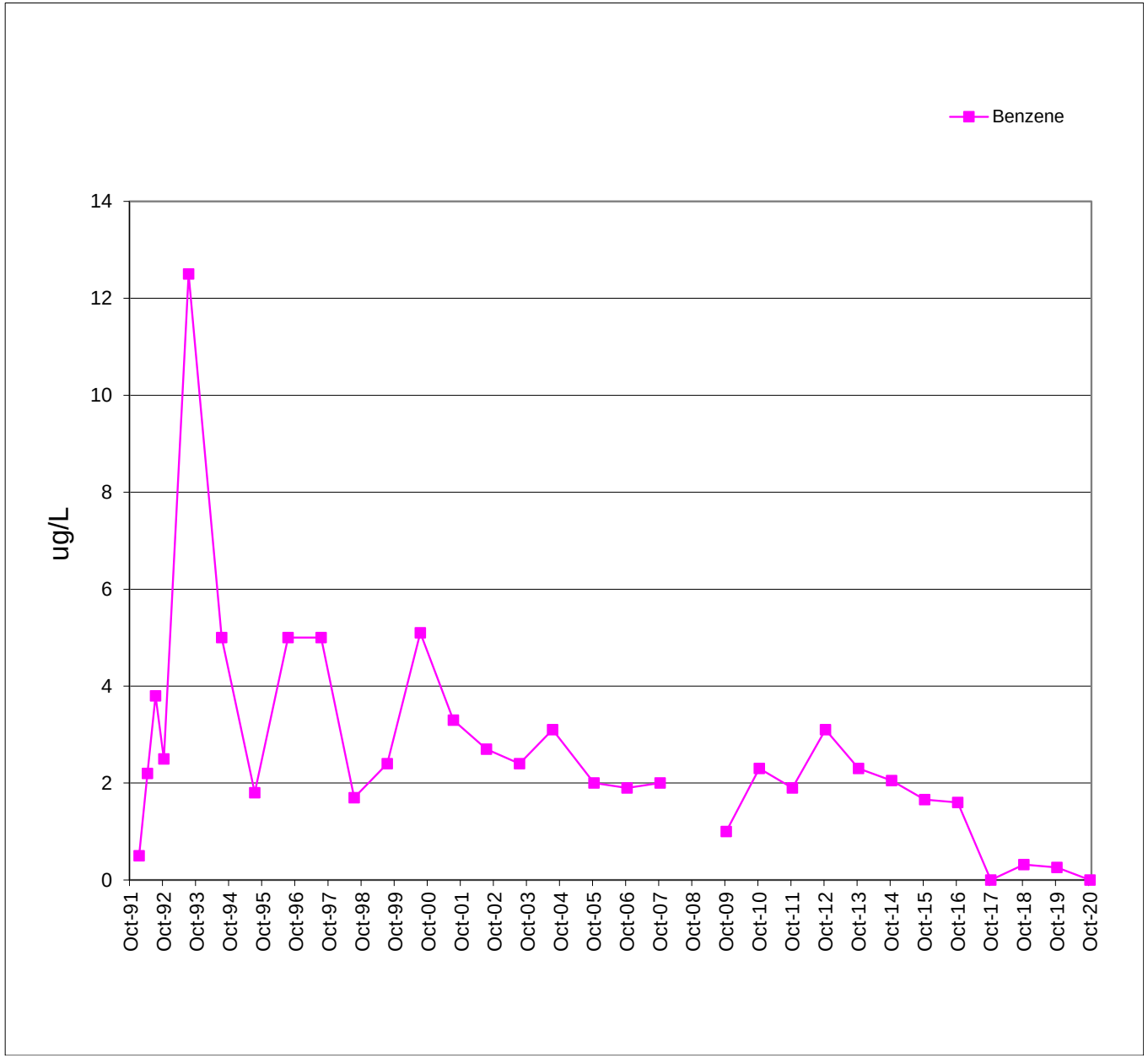
W-38 VOC

Remediation Progress - Shallow Dolomite



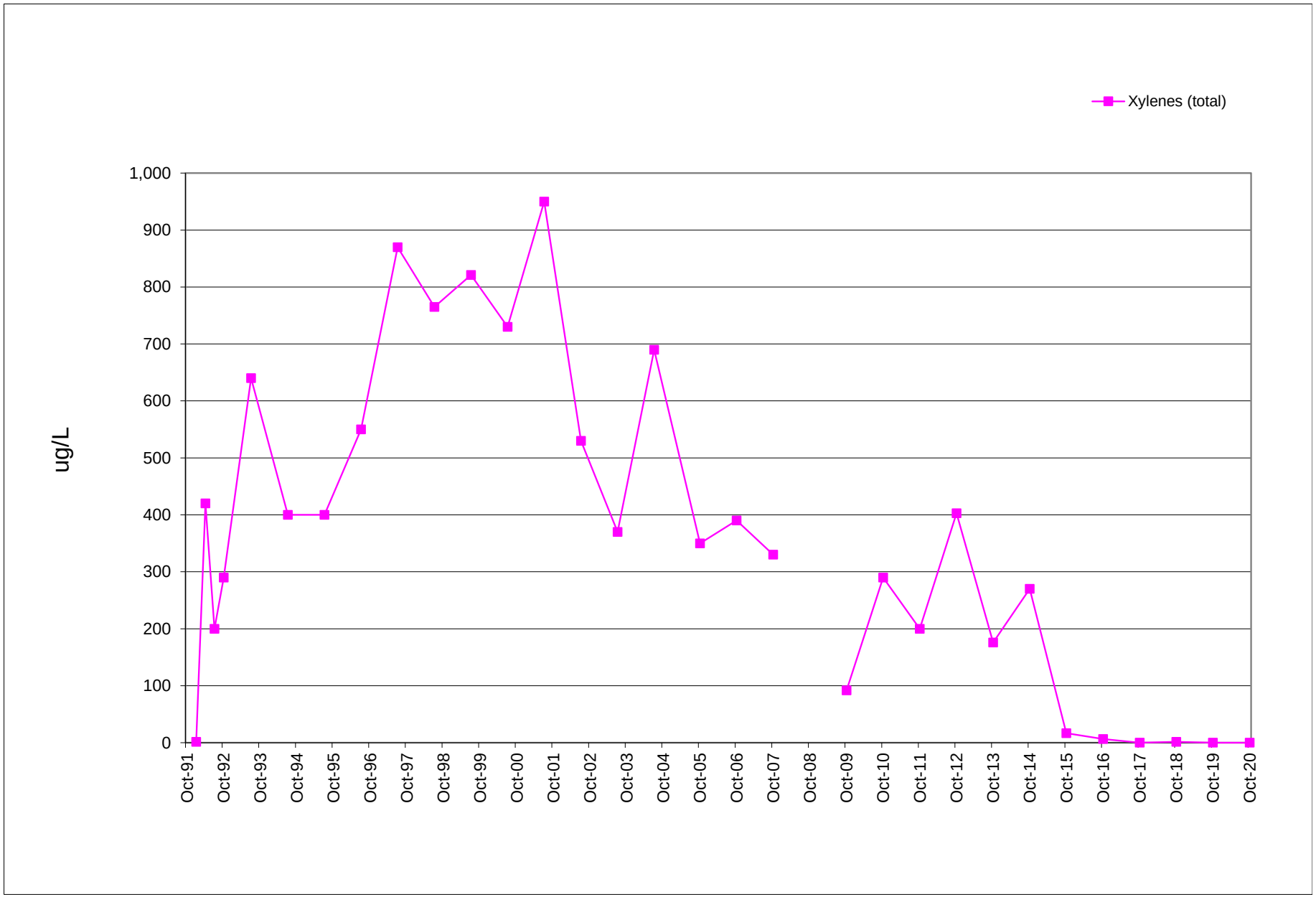
W-41 VOC

Remediation Progress - Glacial Drift



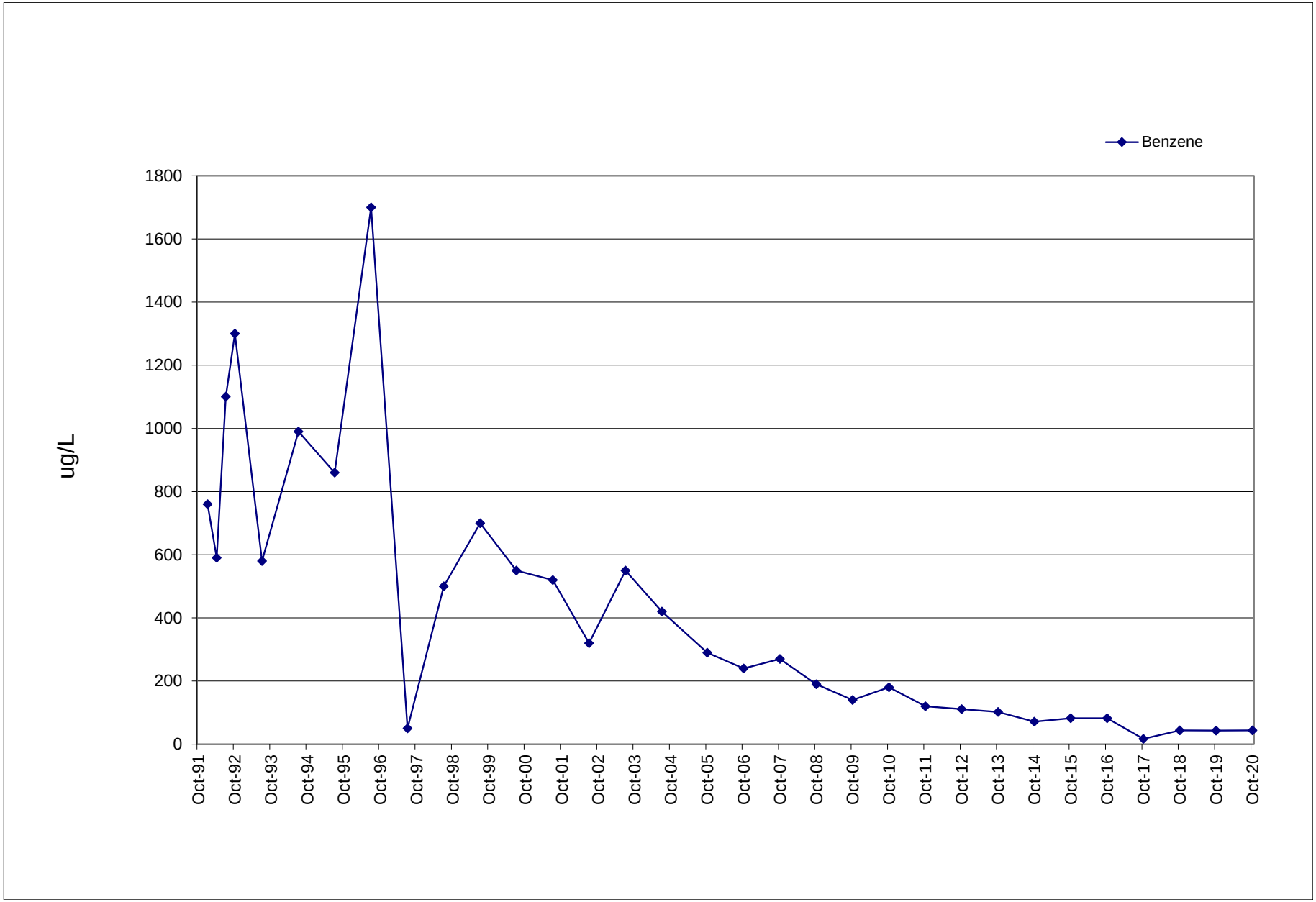
W-41 VOC

Remediation Progress - Glacial Drift



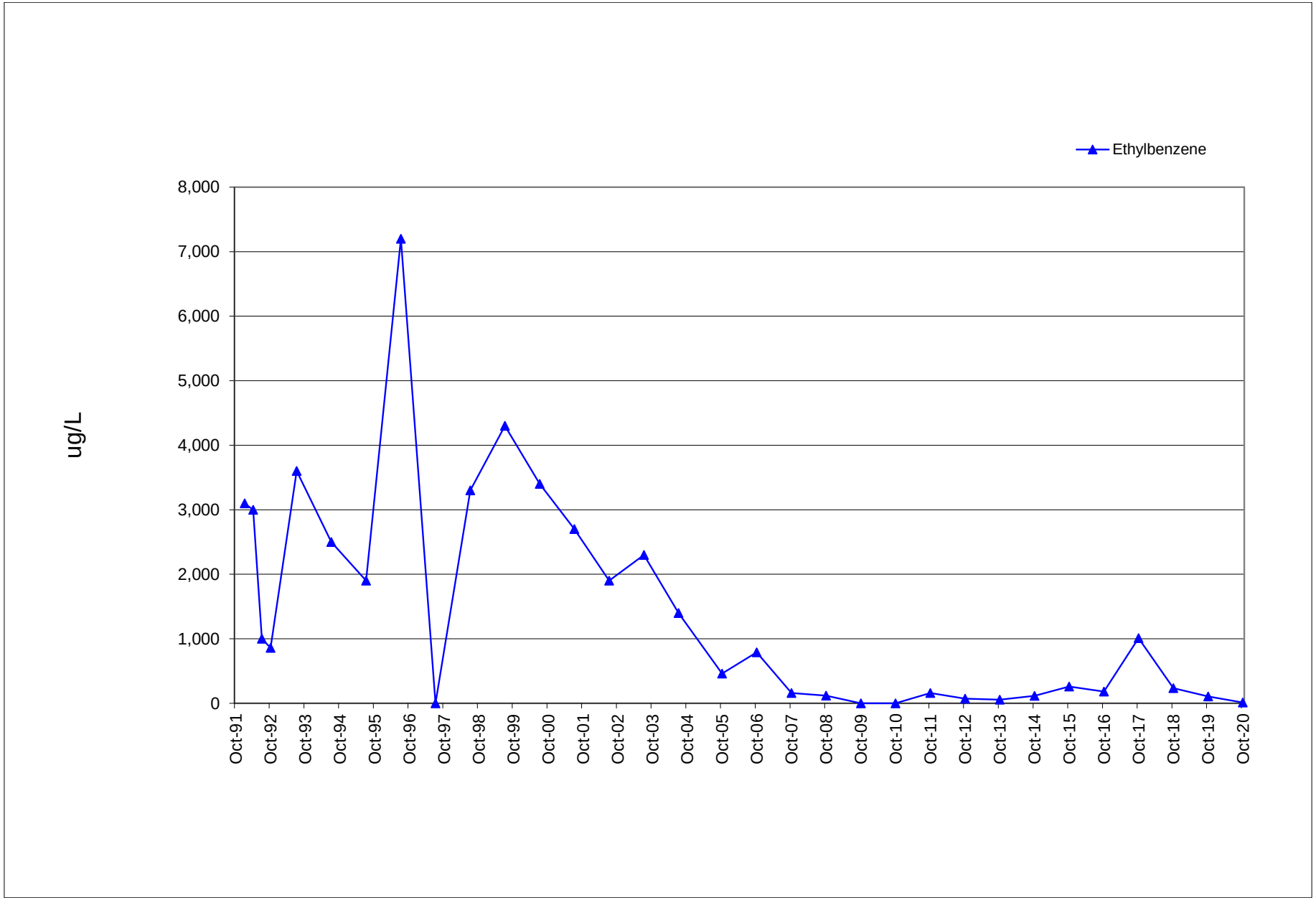
W-42 VOC

Remediation Progress - Glacial Drift



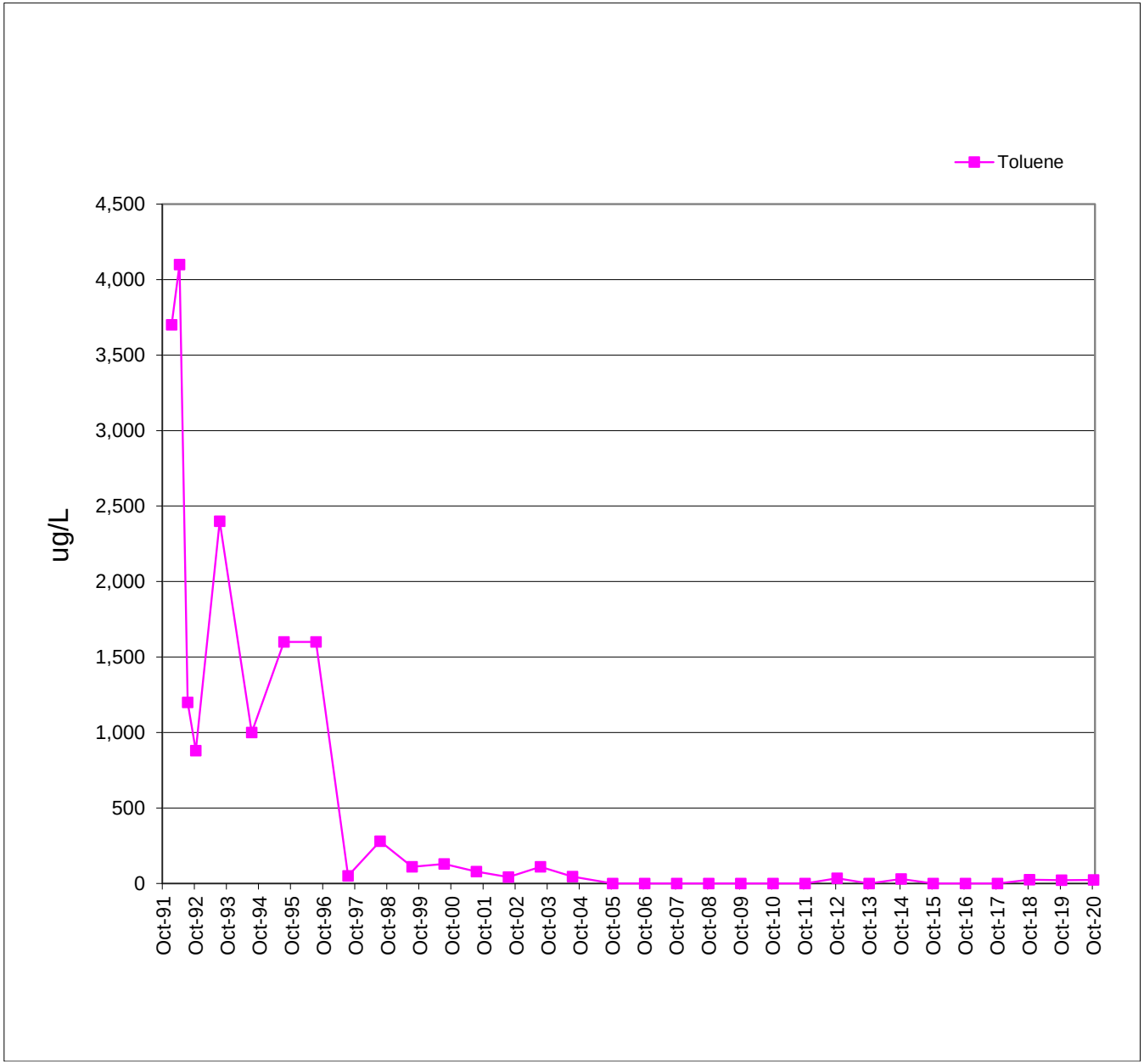
W-42 VOC

Remediation Progress - Glacial Drift



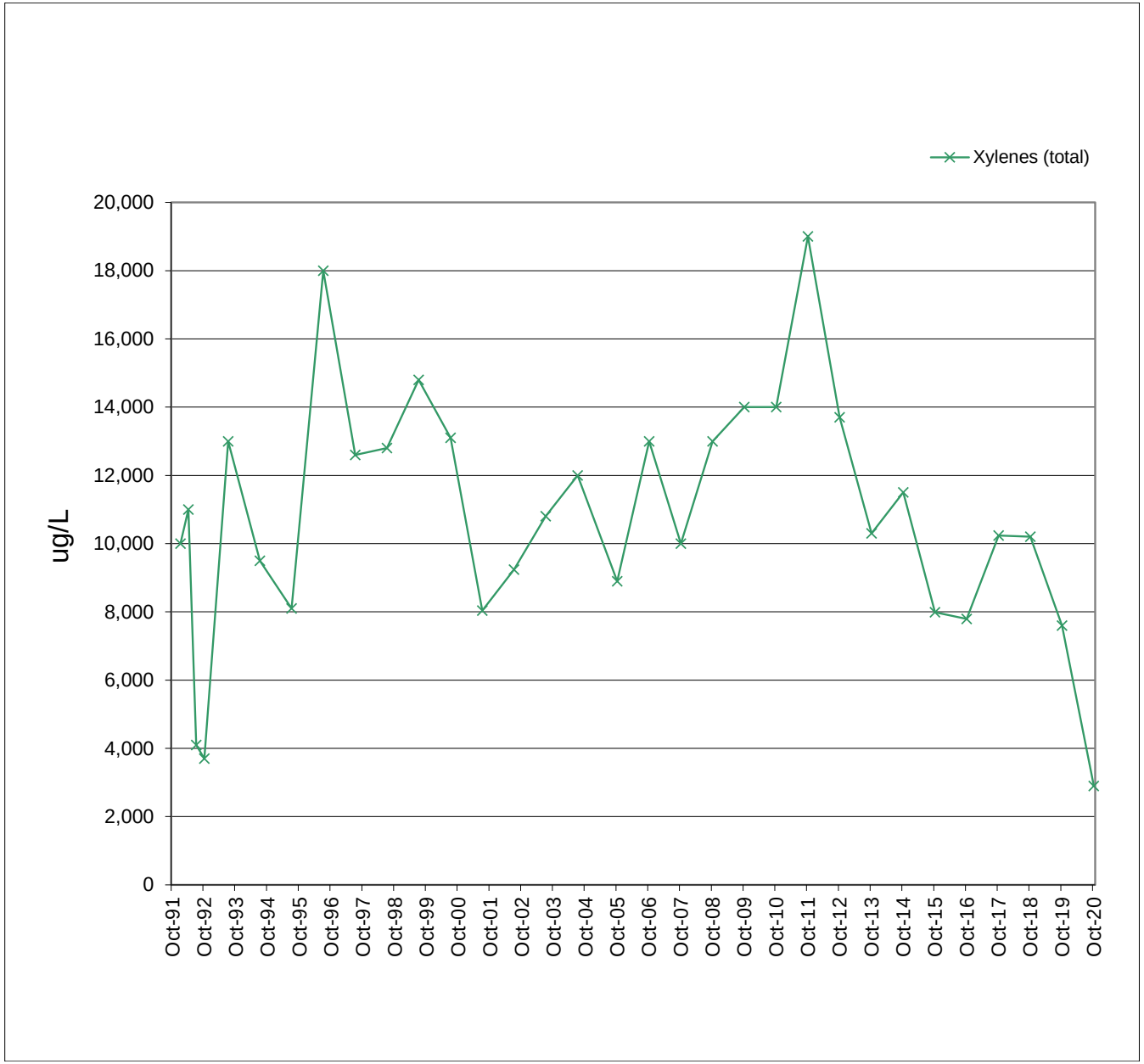
W-42 VOC

Remediation Progress - Glacial Drift



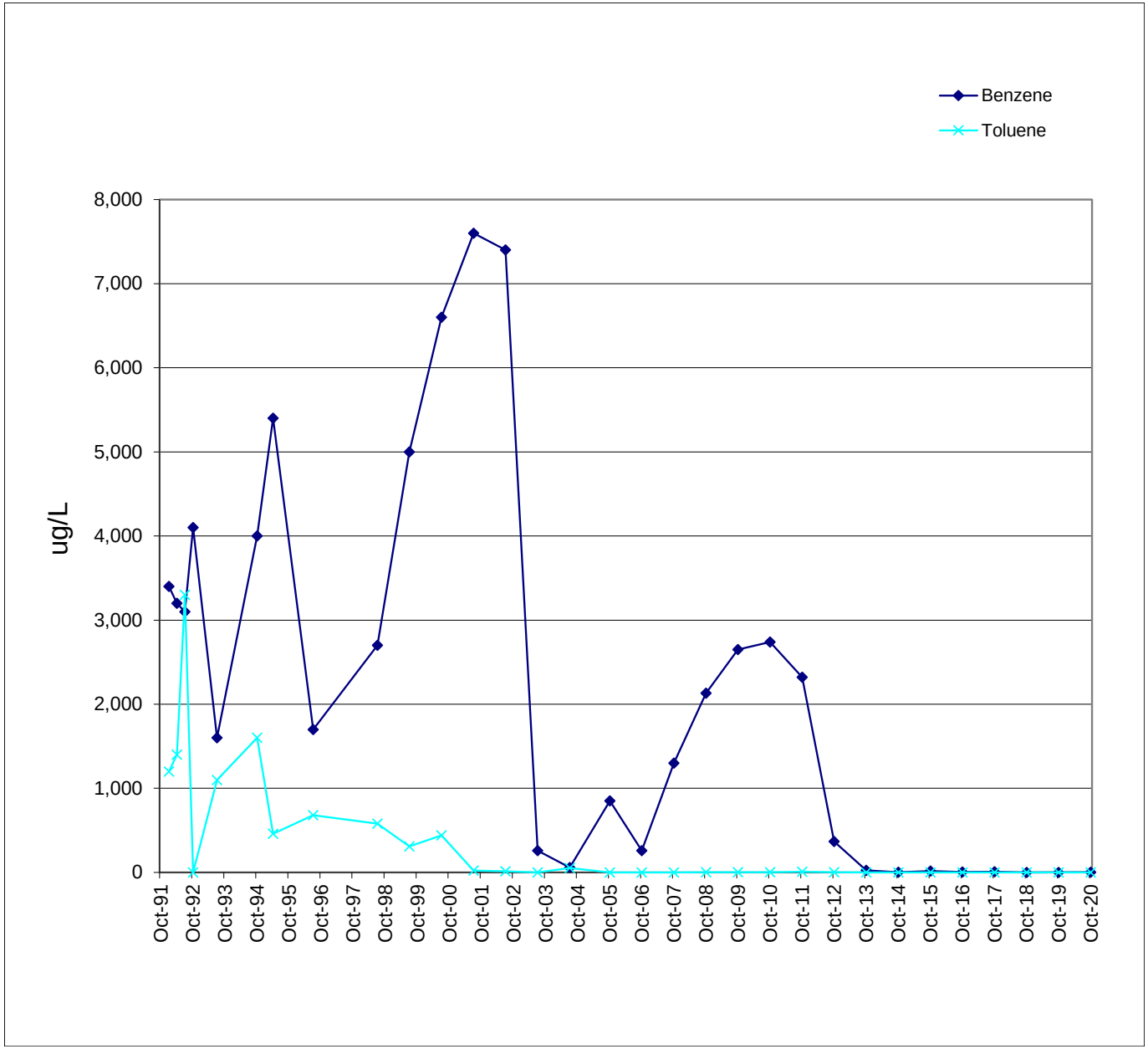
W-42 VOC

Remediation Progress - Glacial Drift



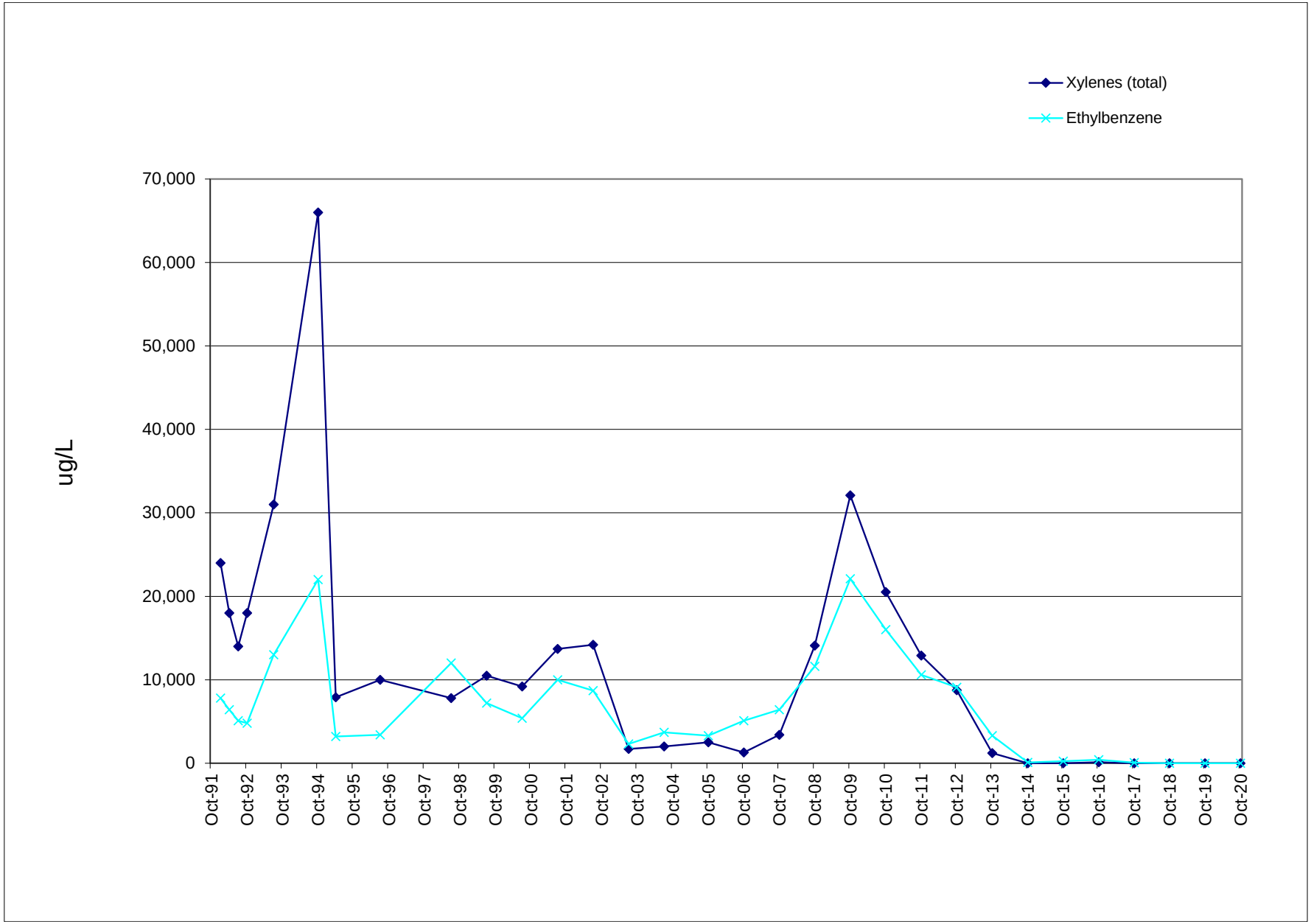
W-43 VOC

Remediation Progress - Glacial Drift



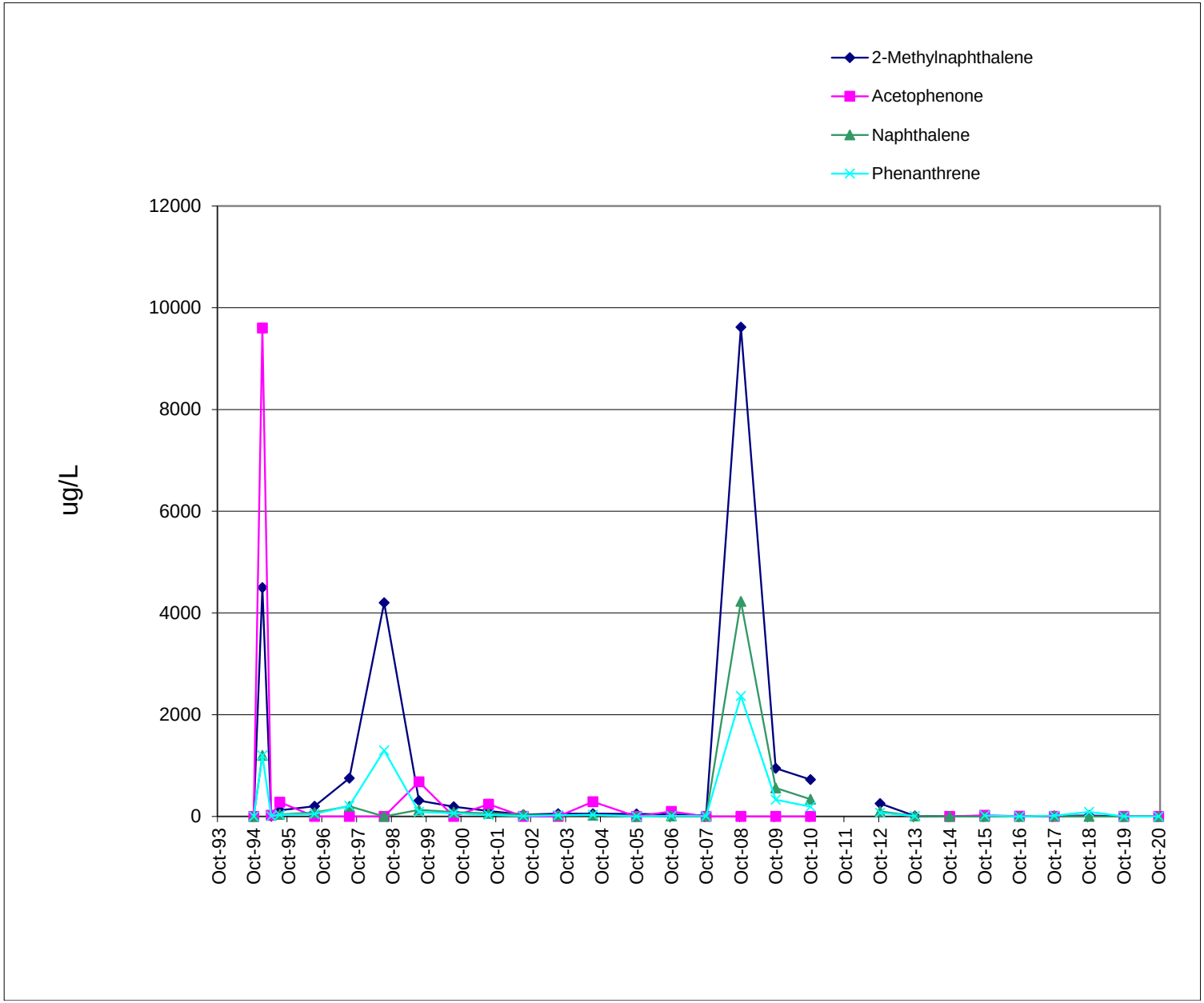
W-43 VOC

Remediation Progress - Glacial Drift



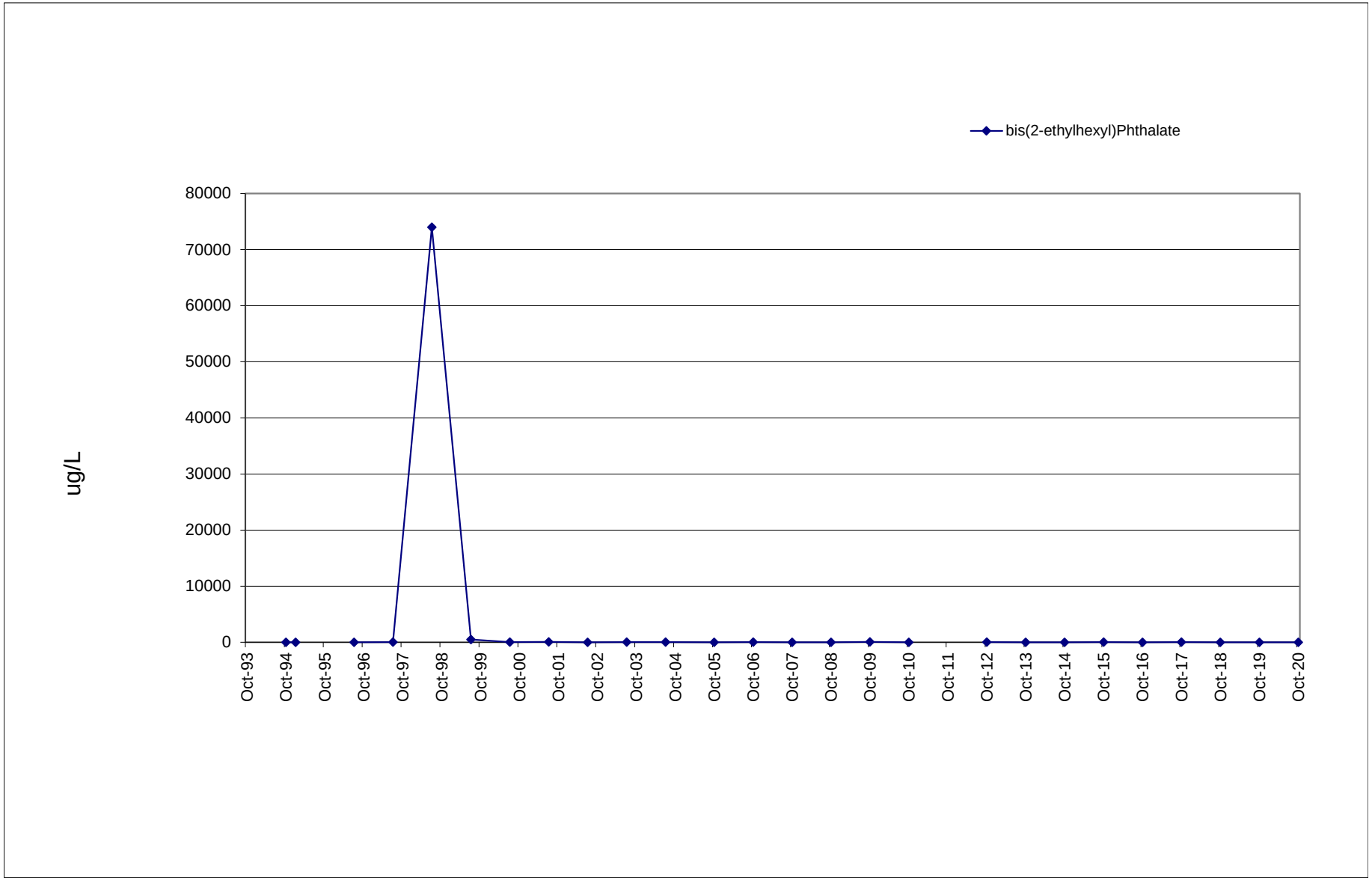
W-43 SVOC

Remediation Progress - Glacial Drift



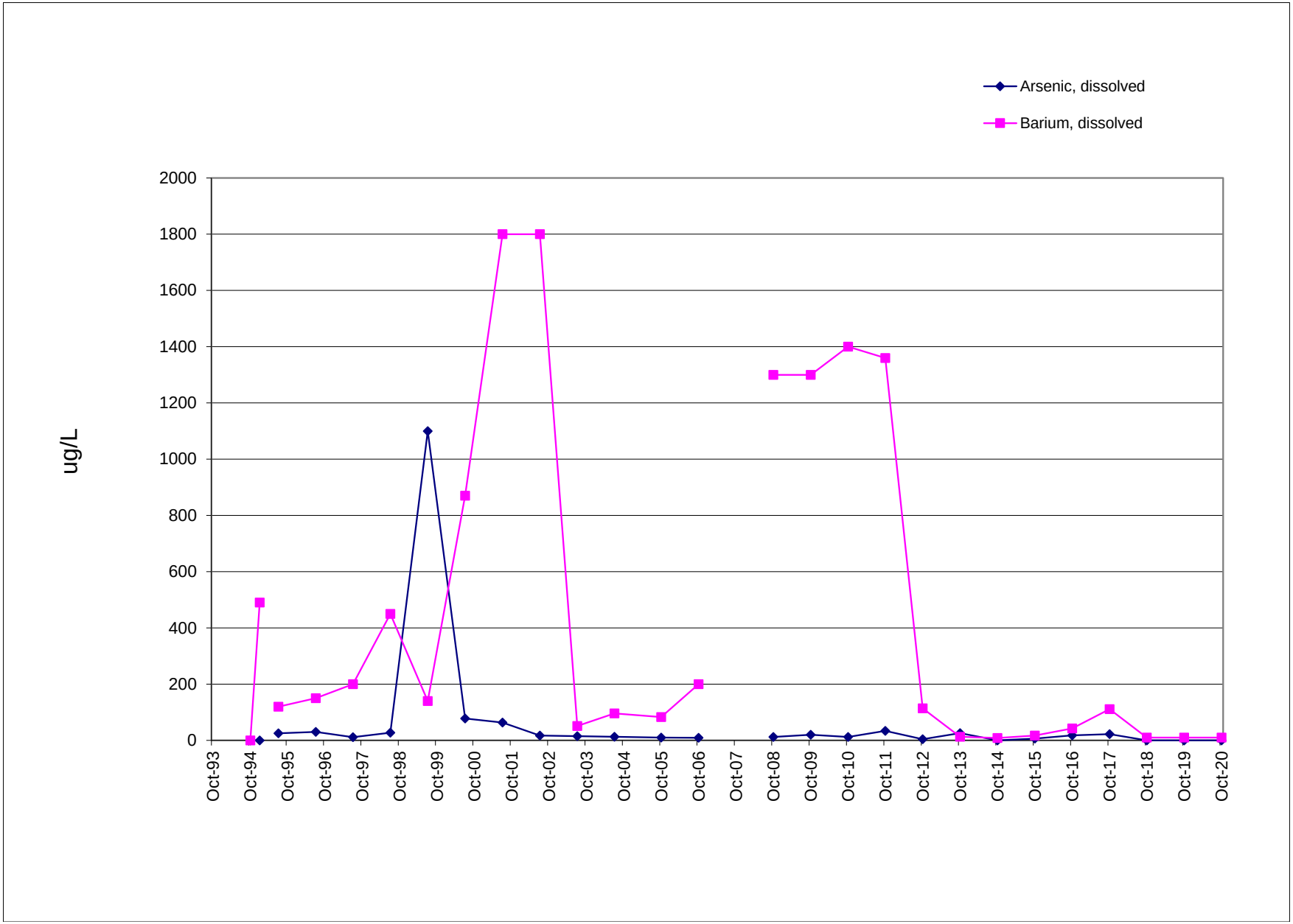
W-43 SVOC

Remediation Progress - Glacial Drift



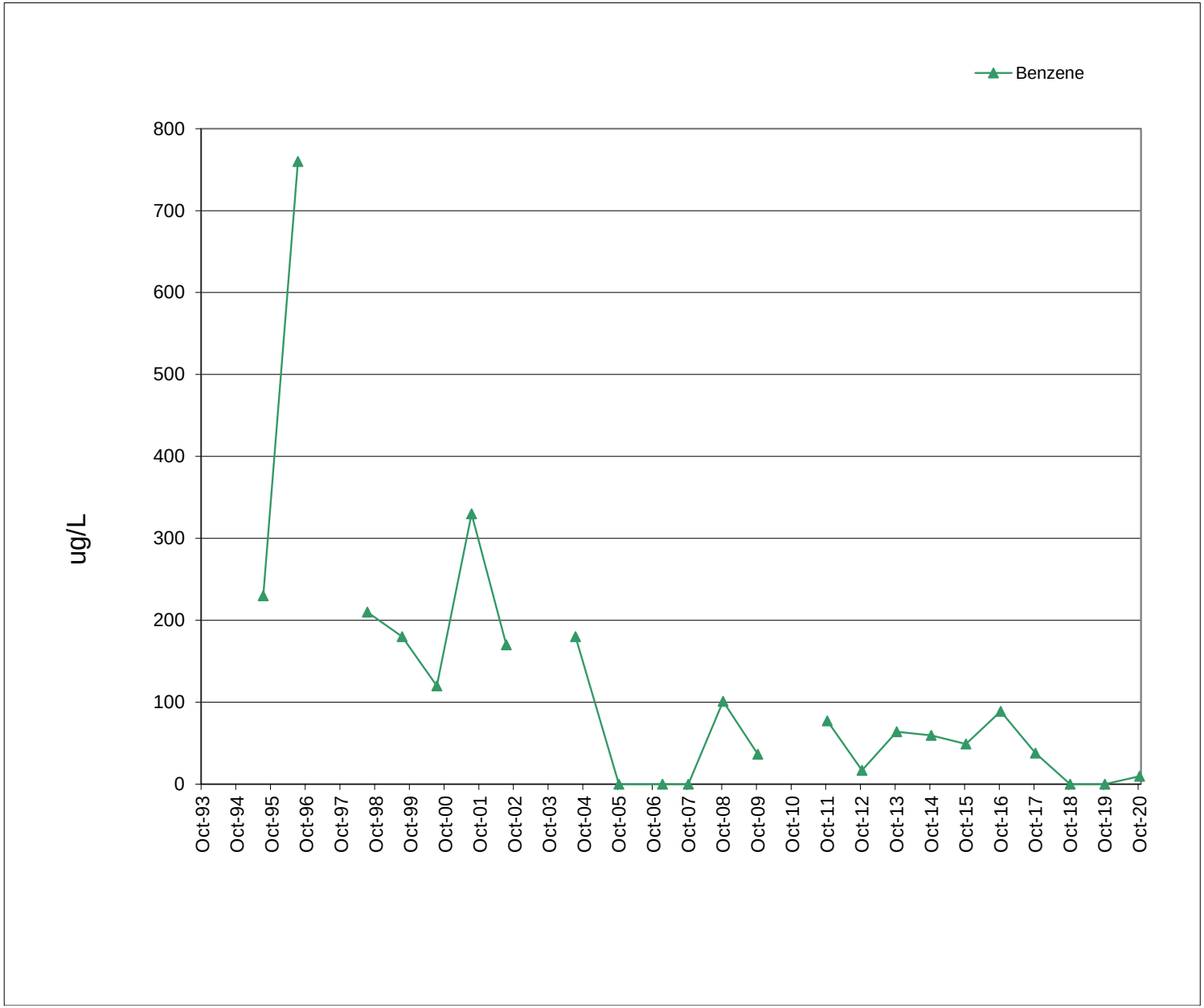
W-43 Metals

Remediation Progress - Glacial Drift



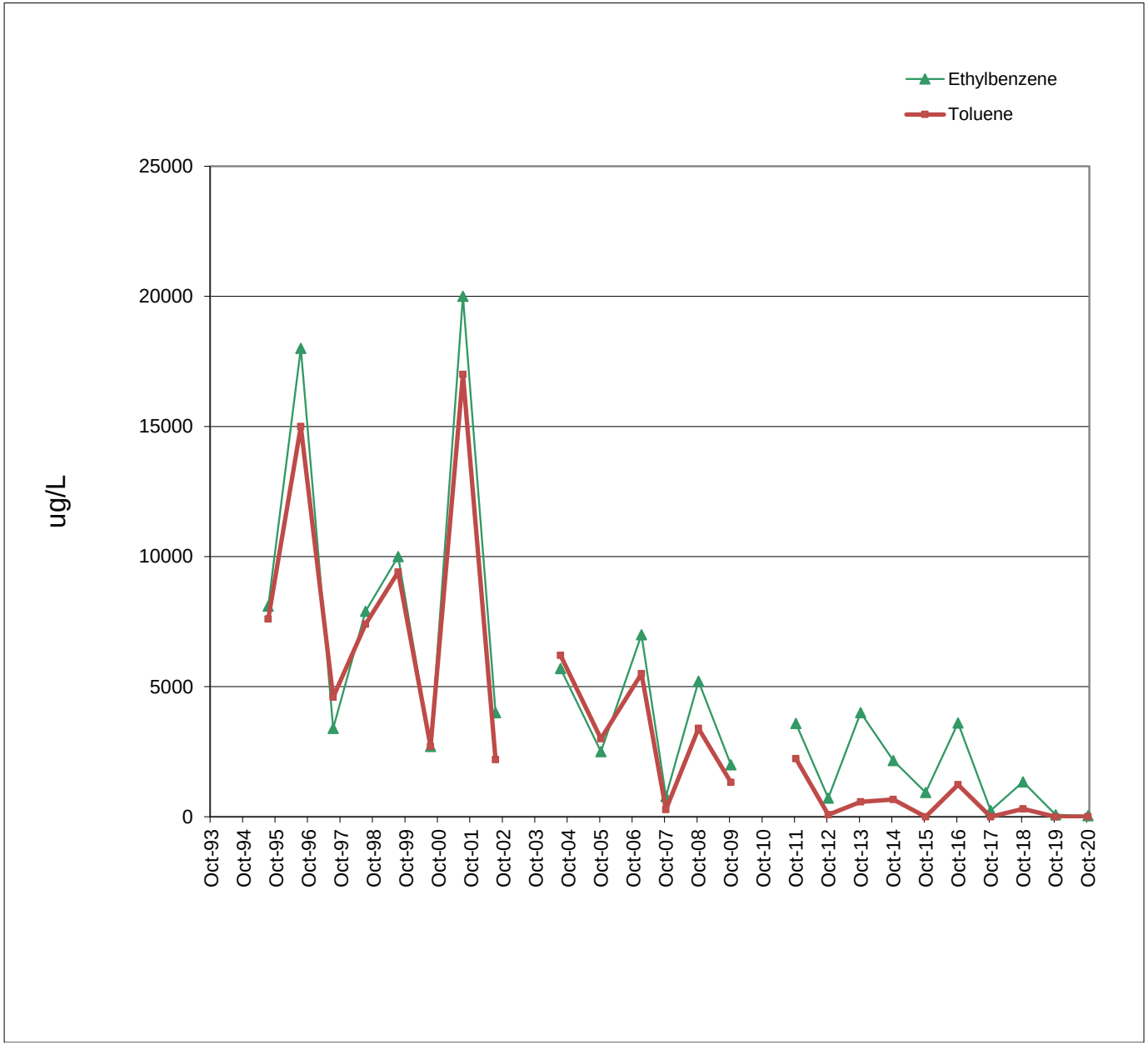
W-47 VOC

Remediation Progress - Glacial Drift



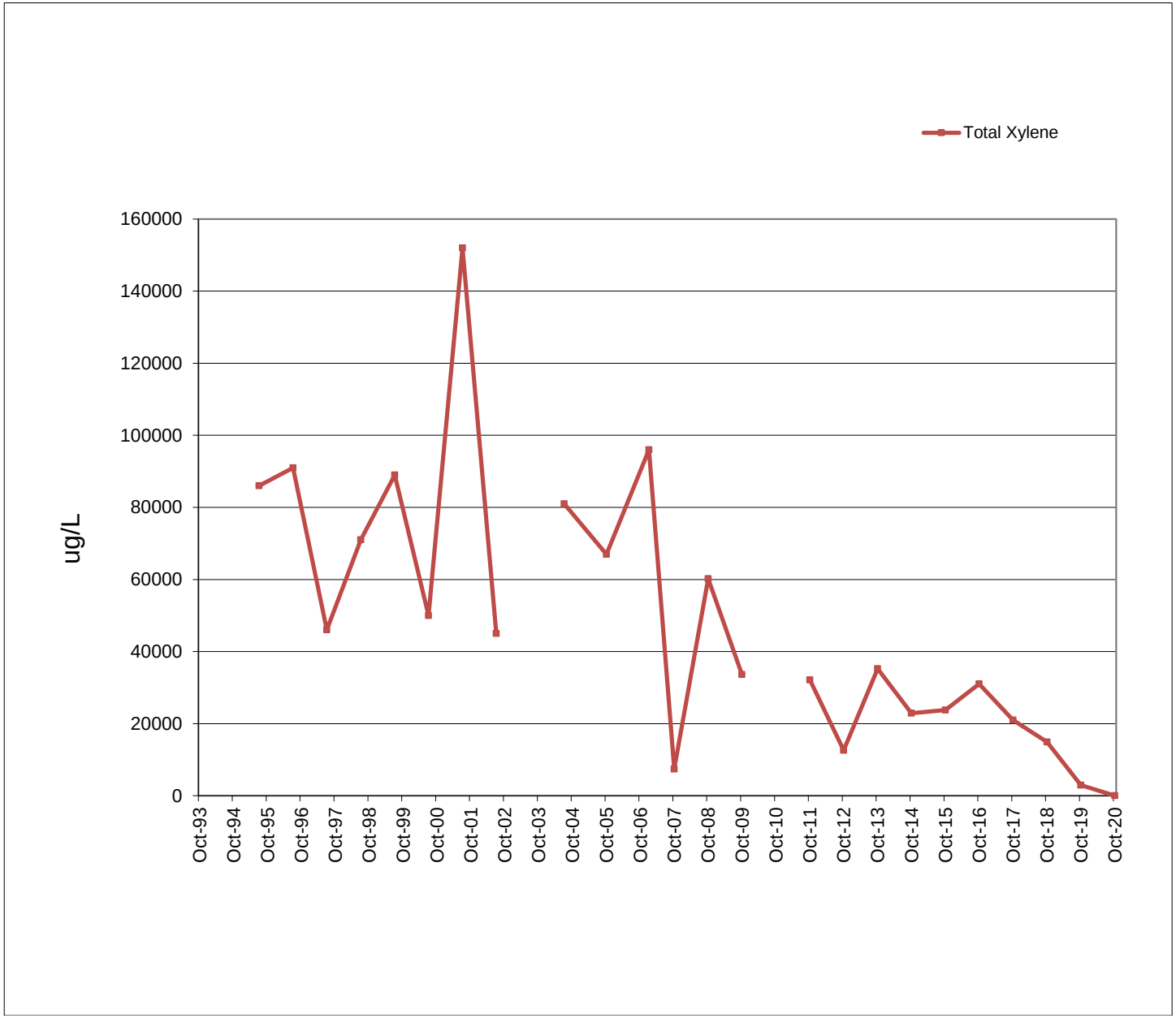
W-47 VOC

Remediation Progress - Glacial Drift



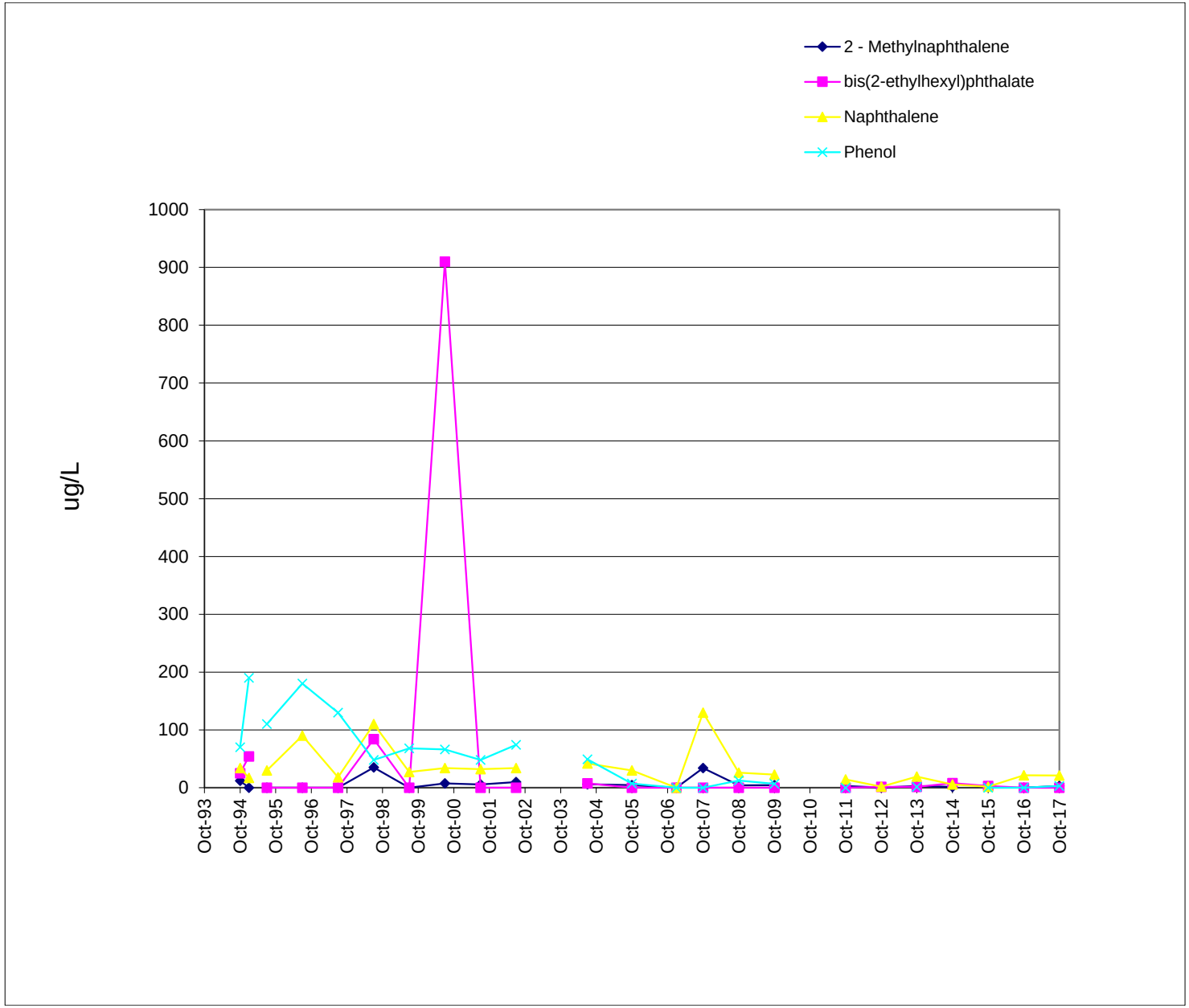
W-47 VOC

Remediation Progress - Glacial Drift



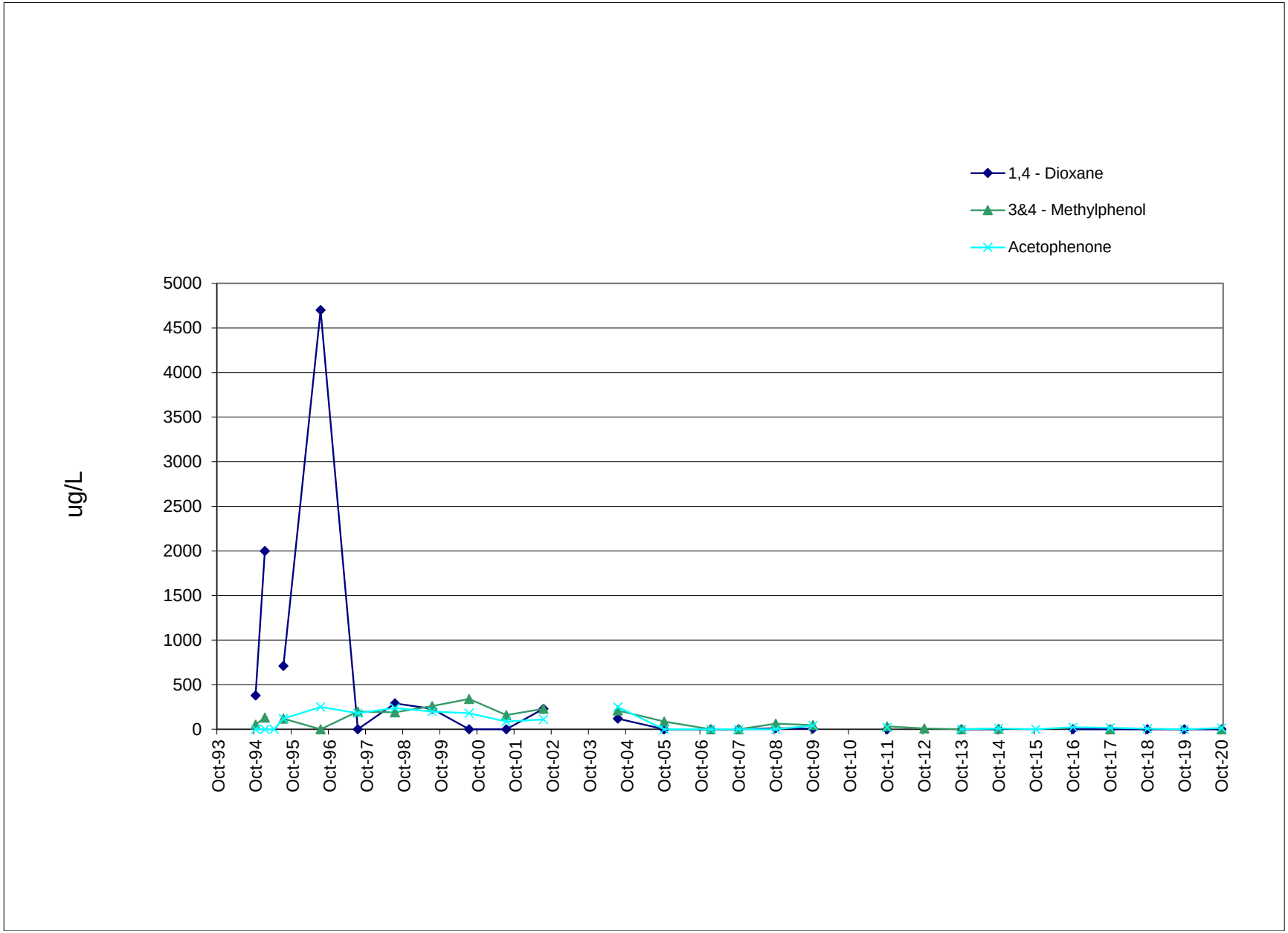
W-47 SVOC

Remediation Progress - Glacial Drift



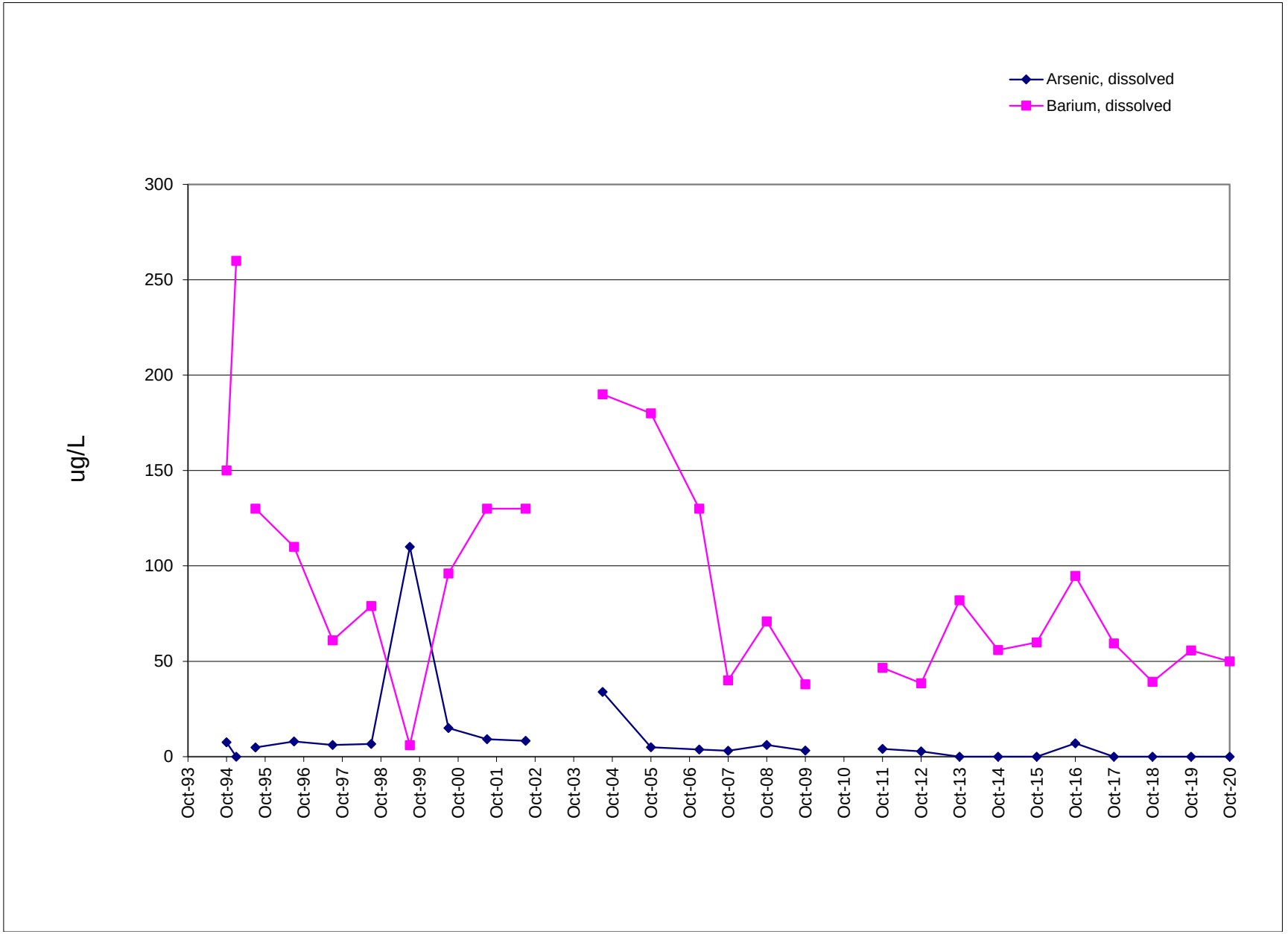
W-47 SVOC

Remediation Progress - Glacial Drift



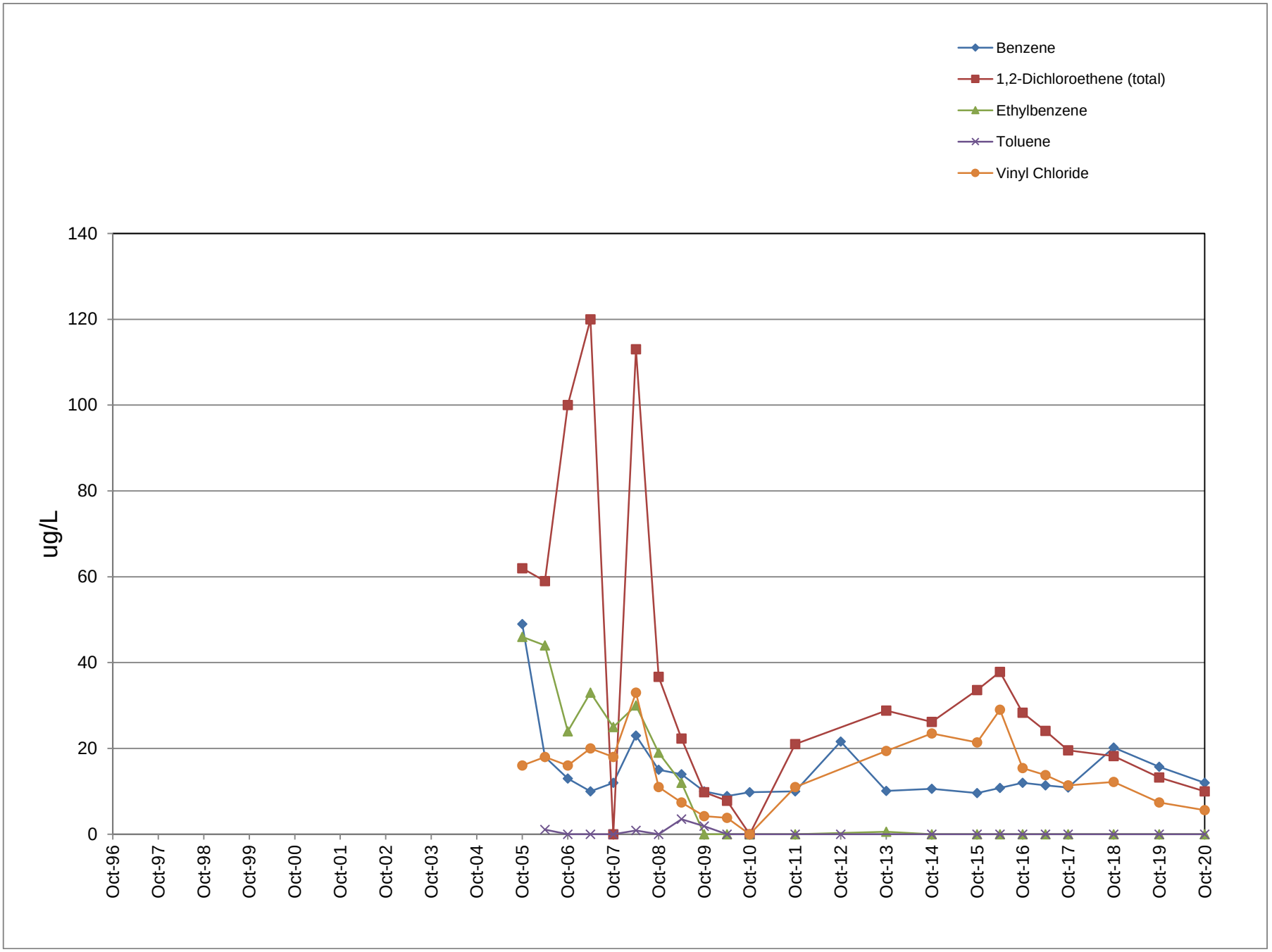
W-47 Metals

Remediation Progress - Glacial Drift



W-52 VOC

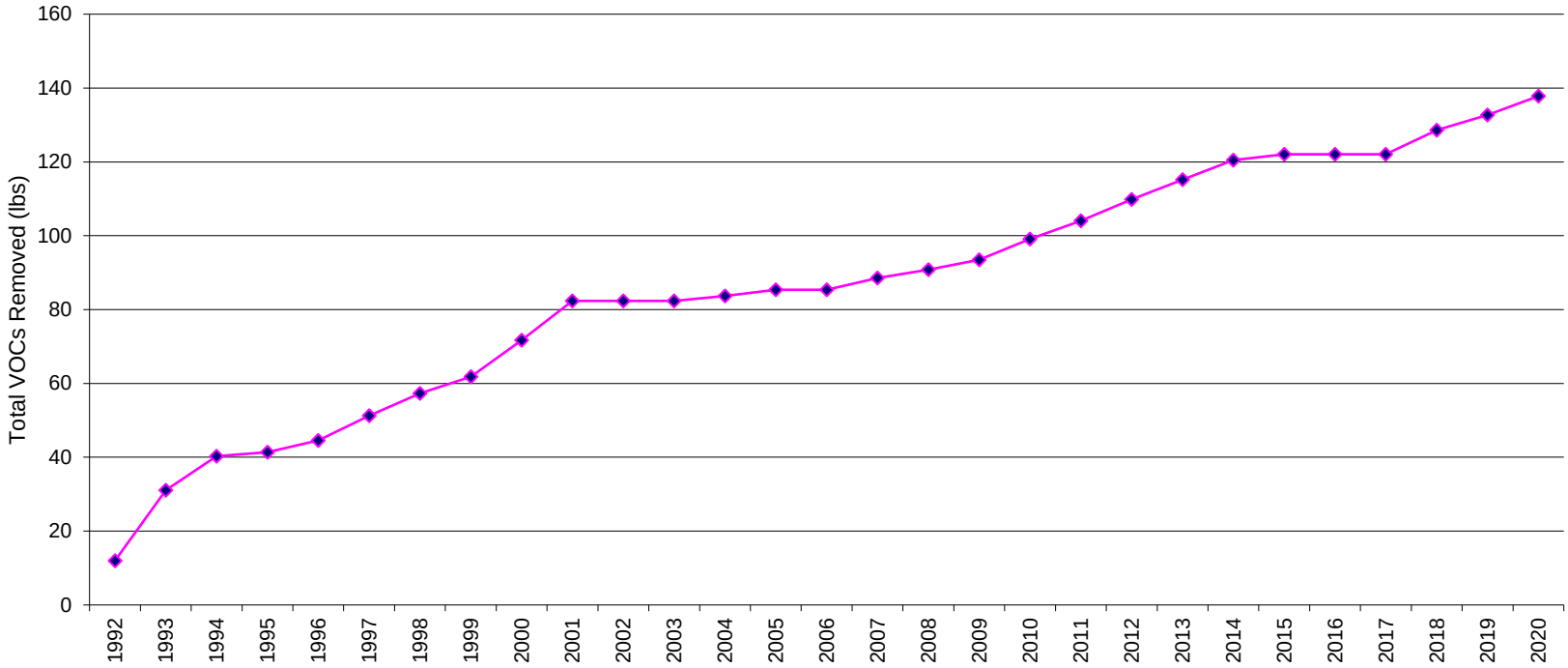
Perimeter - Glacial Drift



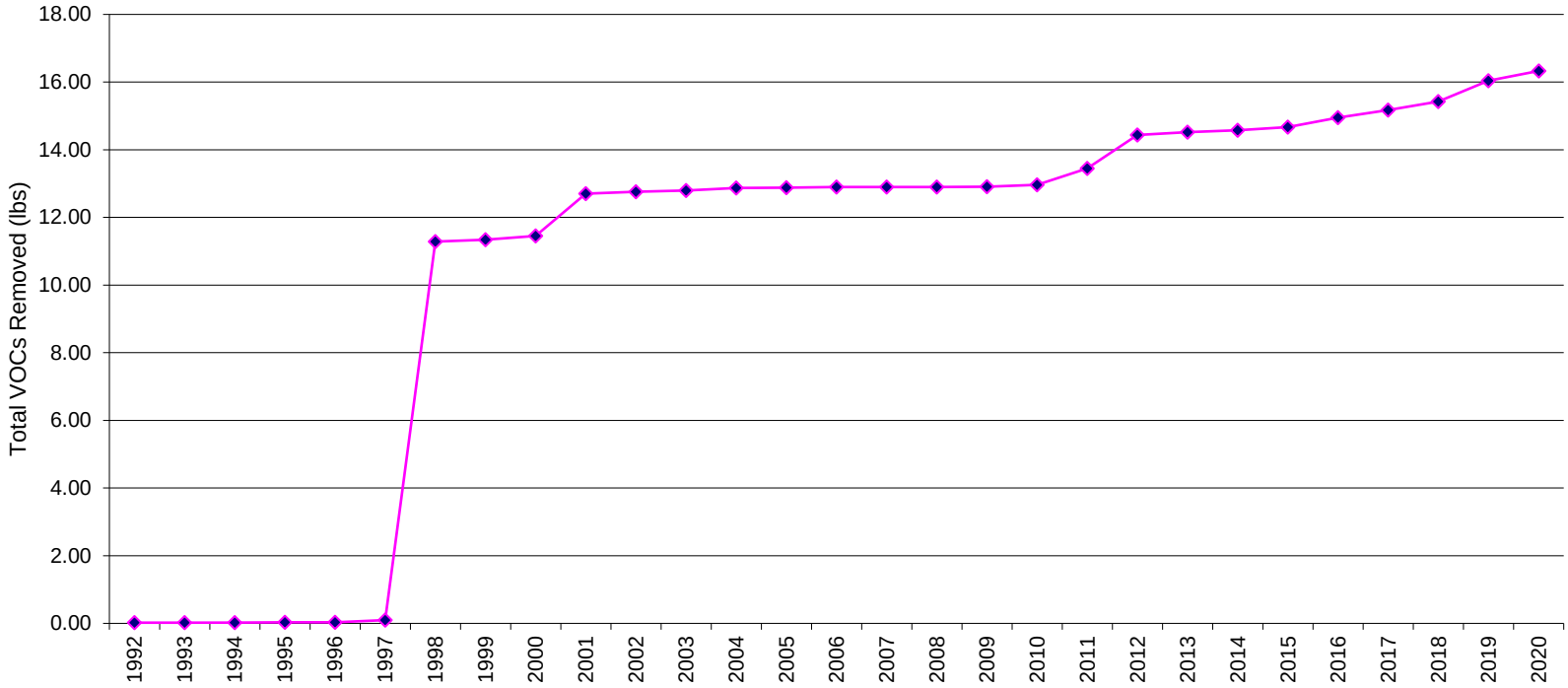
APPENDIX E

CUMULATIVE VOC MASS REMOVAL ESTIMATES

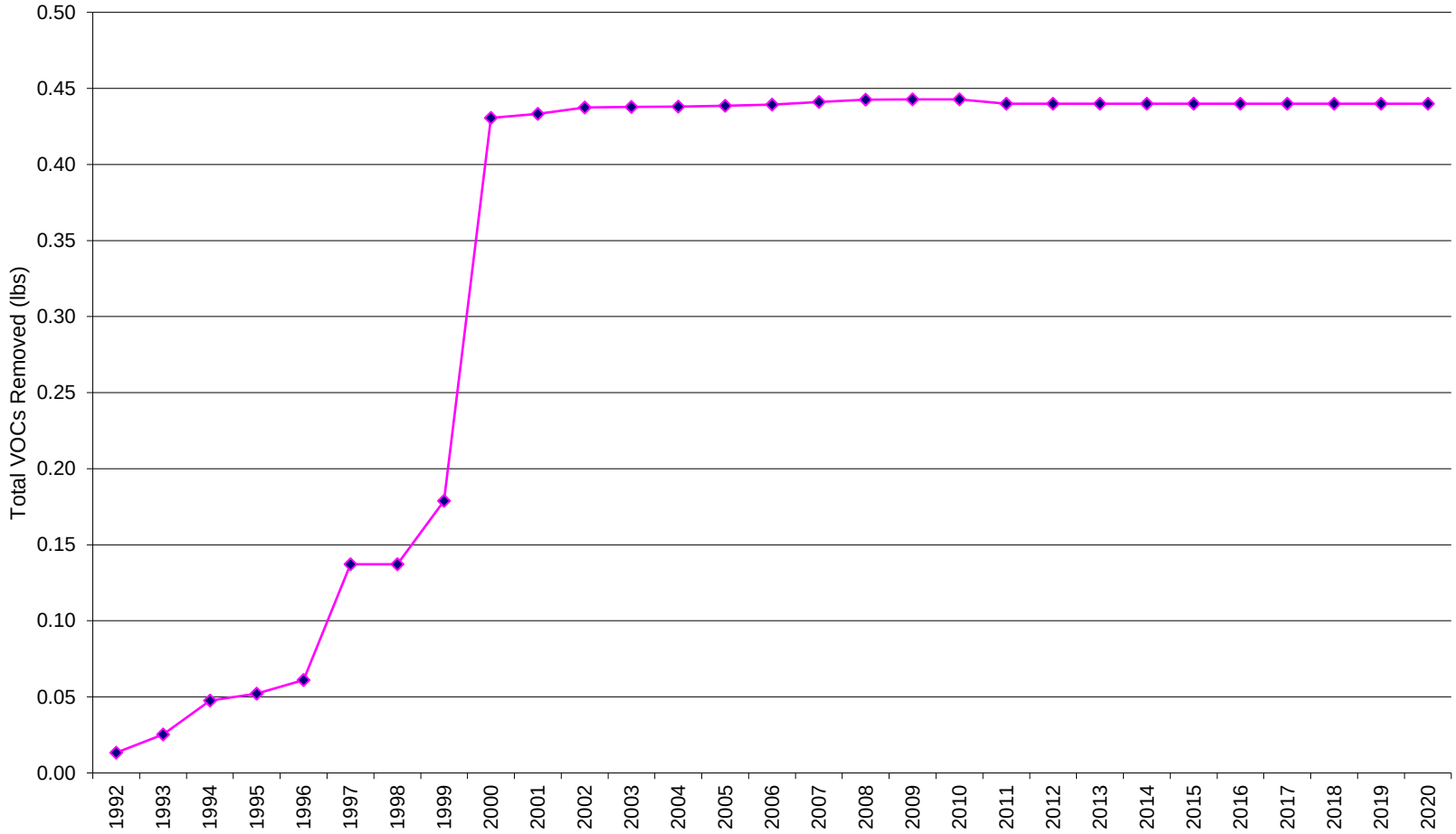
Cumulative Total VOC Removal
Shallow Dolomite Remediation Progress Well W-21A
Cook Composites and Polymers Co.
Saukville, Wisconsin



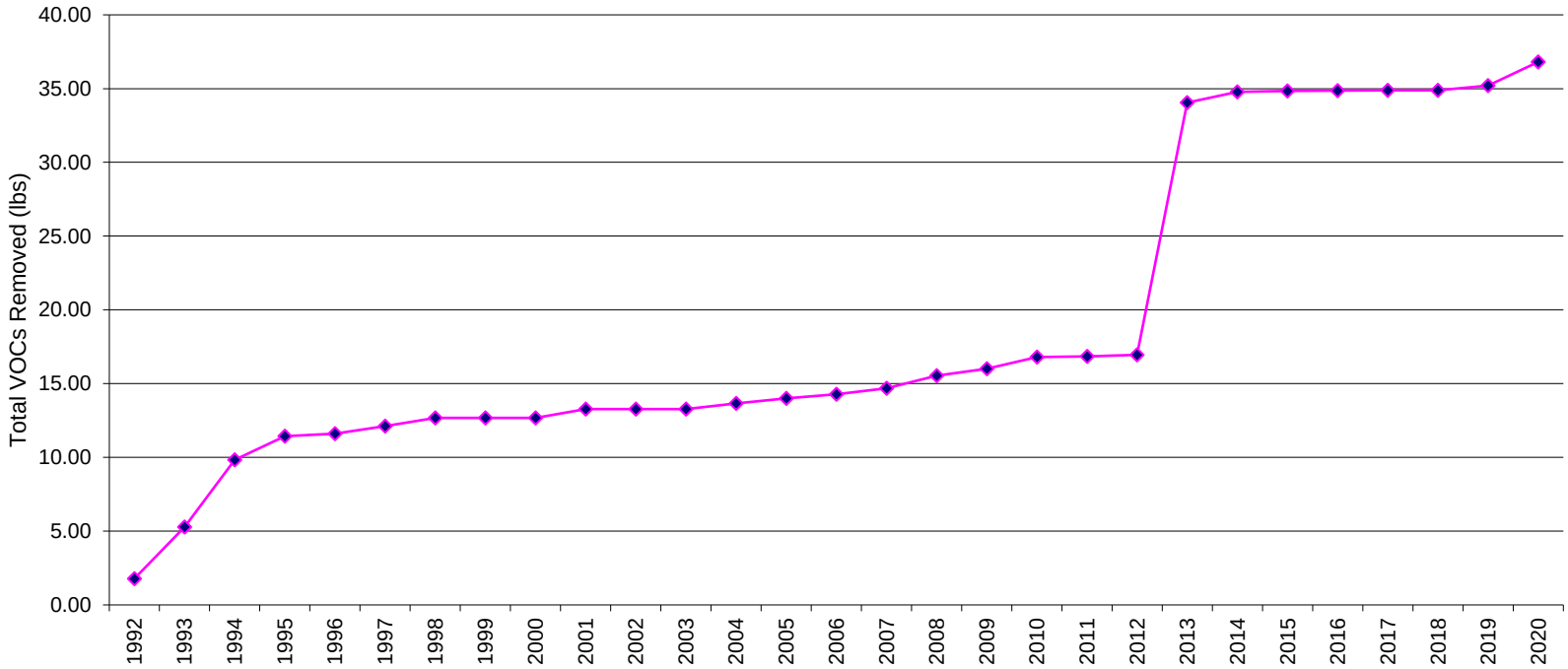
Cumulative Total VOC Removal
Shallow Dolomite Remediation Progress Well W-24A
Cook Composites and Polymers Co.
Saukville, Wisconsin



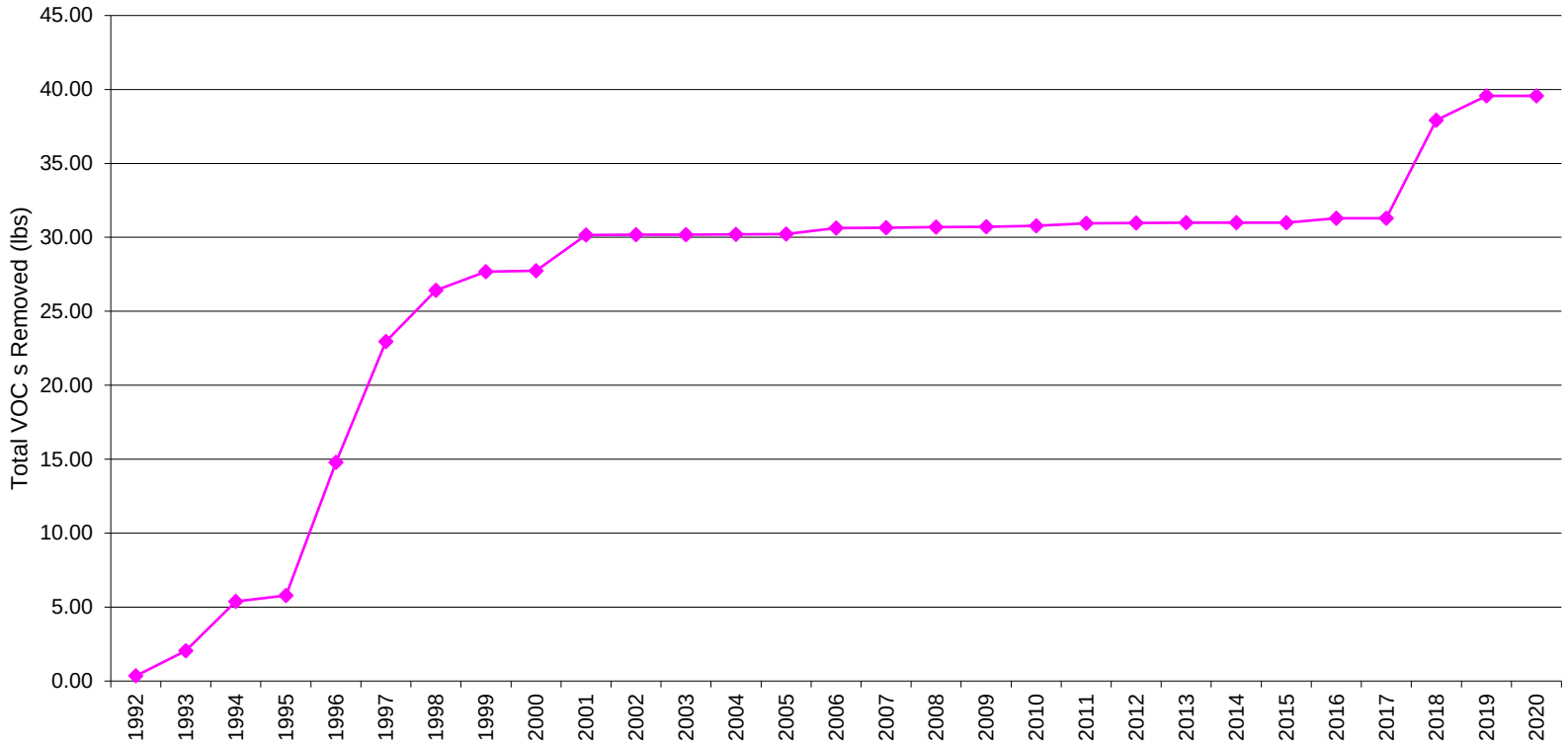
Cumulative Total VOC Removal
Shallow Dolomite Remediation Progress Well W-28
Cook Composites and Polymers Co.
Saukville, Wisconsin



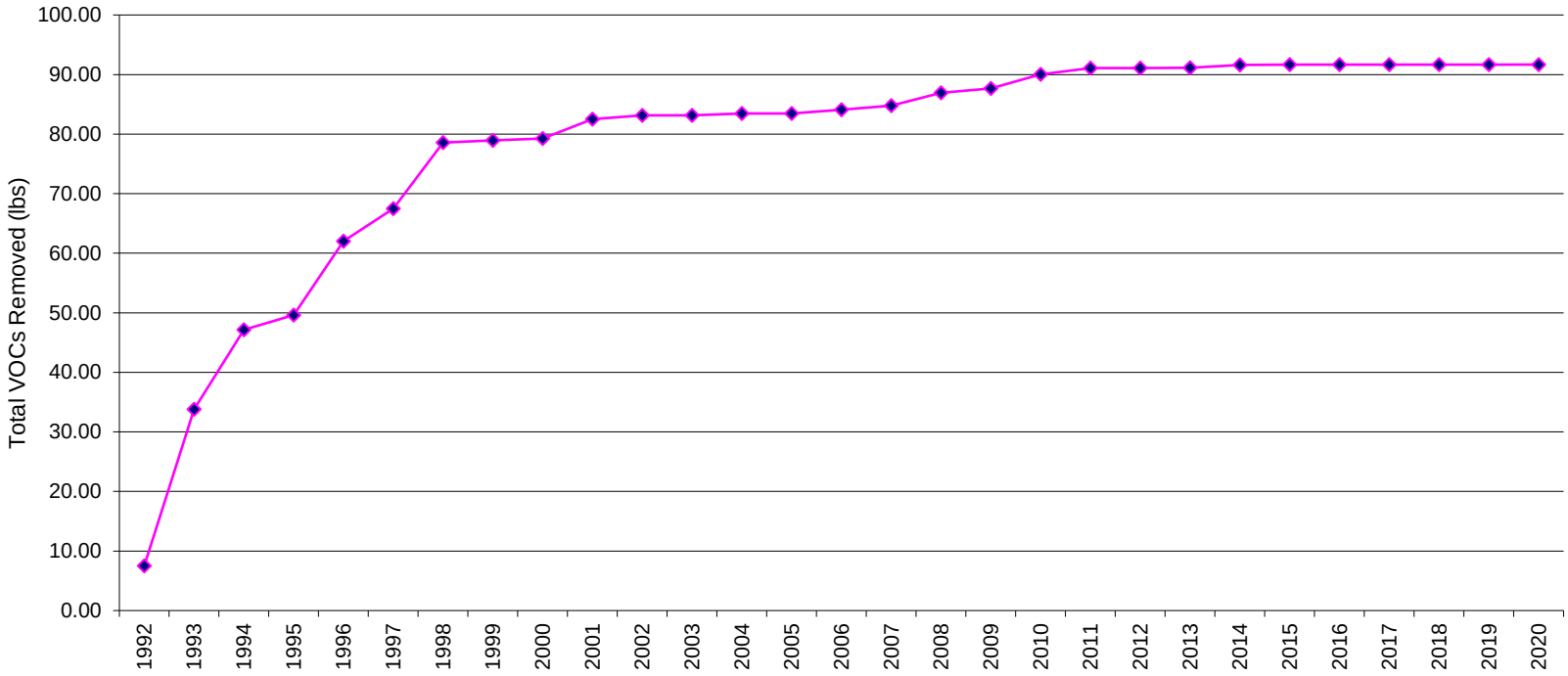
Cumulative Total VOC Removal
Shallow Dolomite Remediation Progress Well W-29
Cook Composites and Polymers Co.
Saukville, Wisconsin



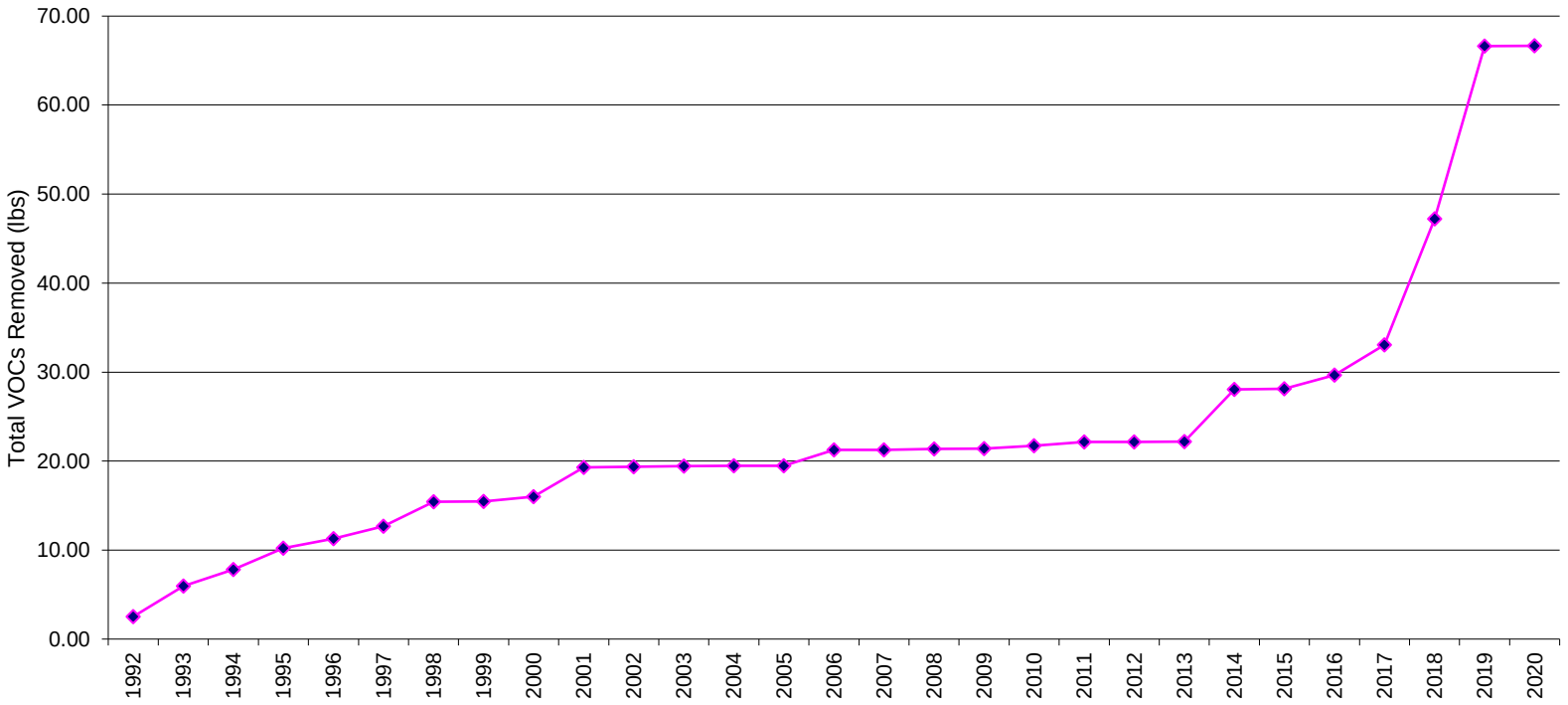
Cumulative Total VOC Removal
Glacial Ranney Collector RC-1
Cook Composites and Polymers Co.
Saukville, Wisconsin



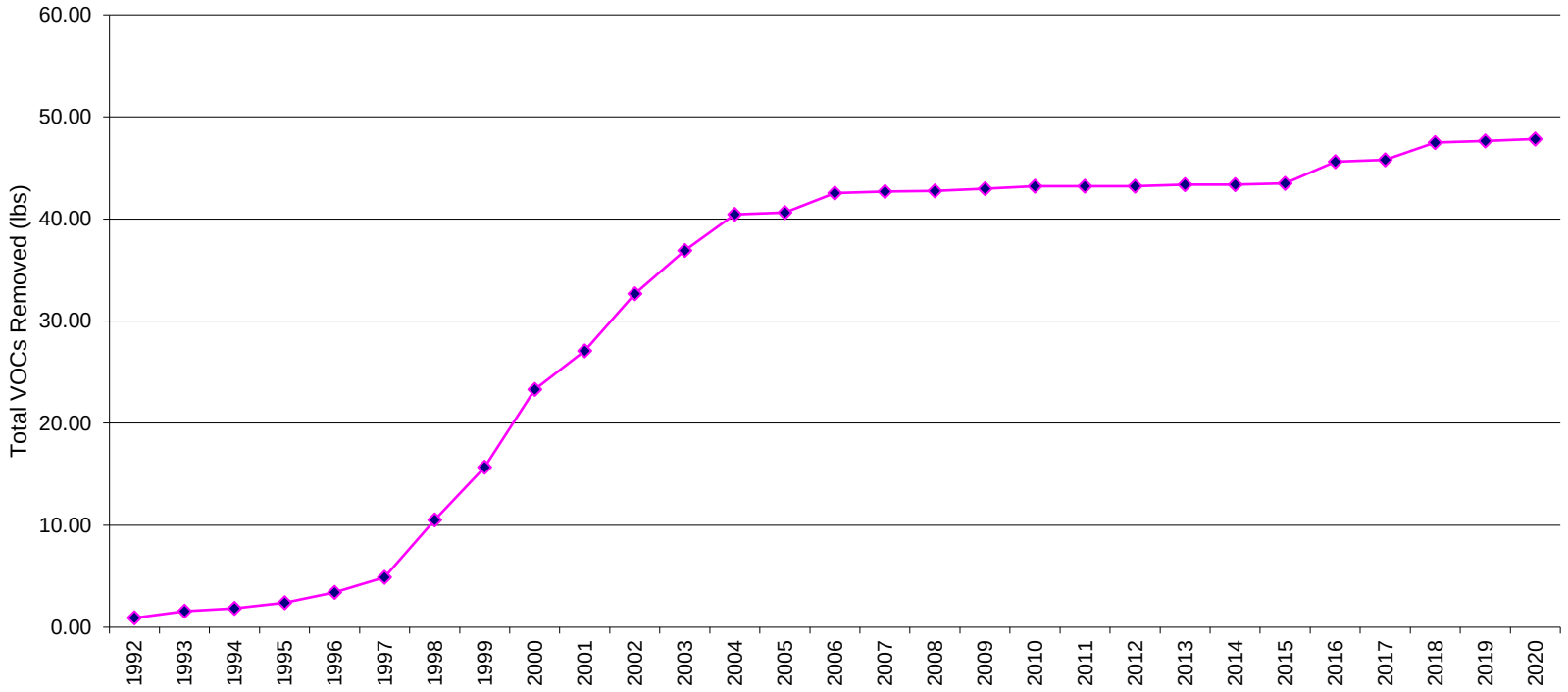
Cumulative Total VOC Removal
Glacial Ranney Collector RC-2
Cook Composites and Polymers Co.
Saukville, Wisconsin



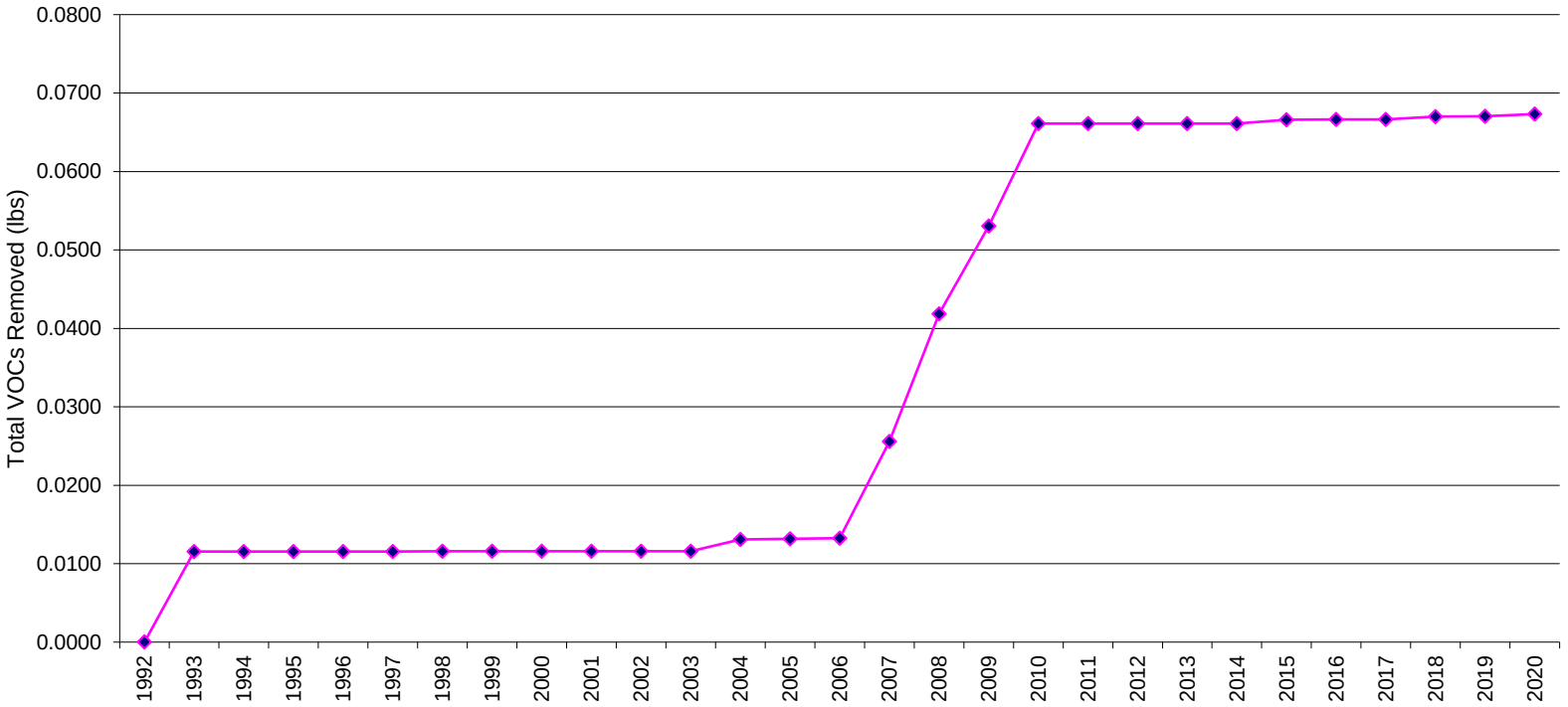
Cumulative Total VOC Removal
Glacial Ranney Collector RC-3
Cook Compoites and Polymers Co.
Saukville, Wisconsin



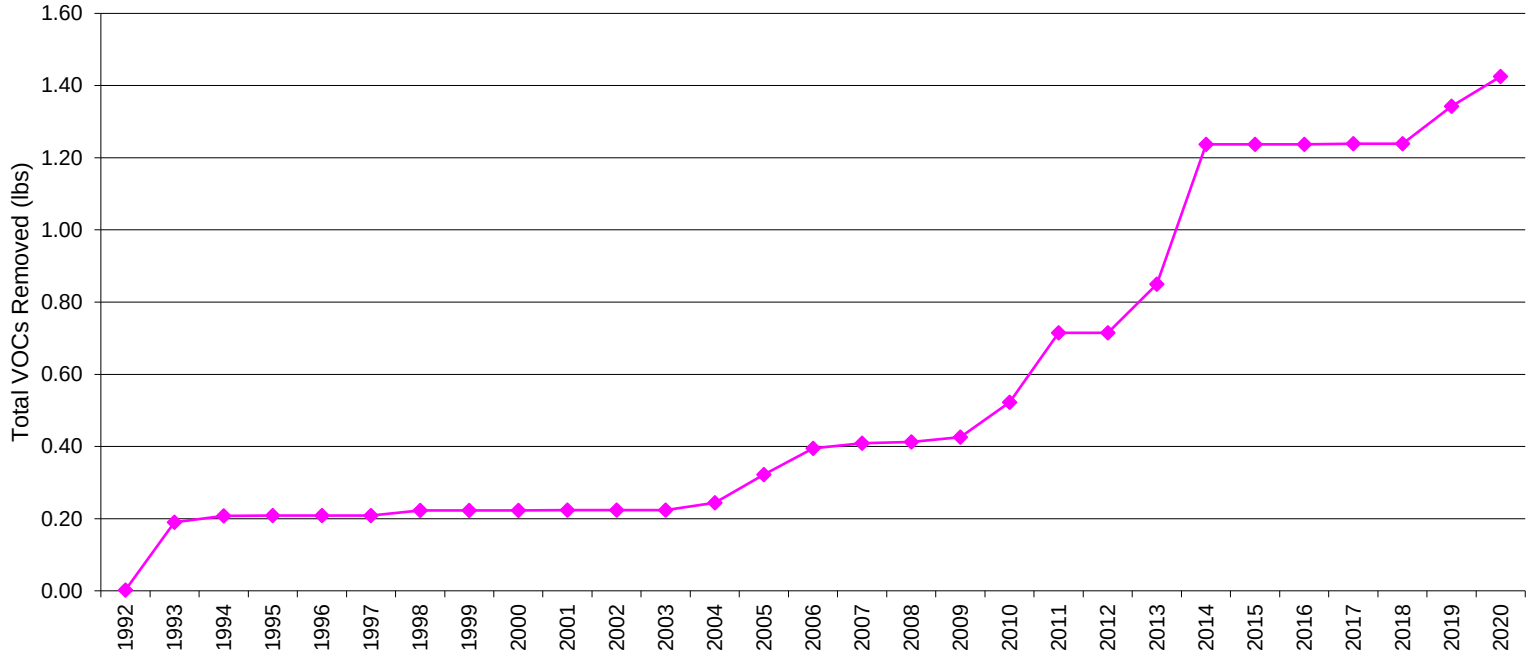
Cumulative Total VOC Removal
Deep Dolomite Well W-30
Cook Composites and Polymers Co.
Saukville, Wisconsin



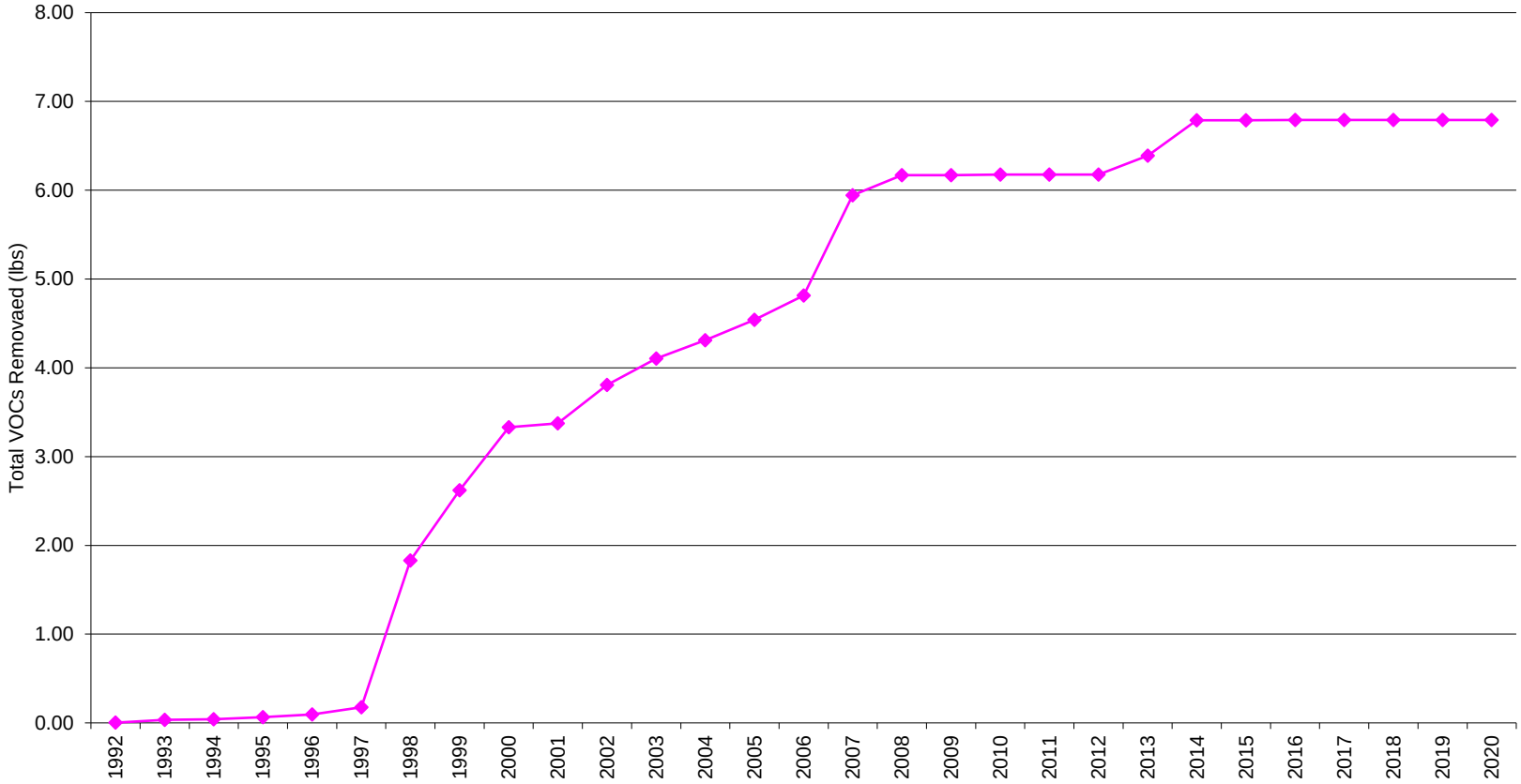
Cumulative Total VOC Removal
Glacial Extraction Well W-31
Cook Composites and Polymers Co.
Saukville, Wisconsin



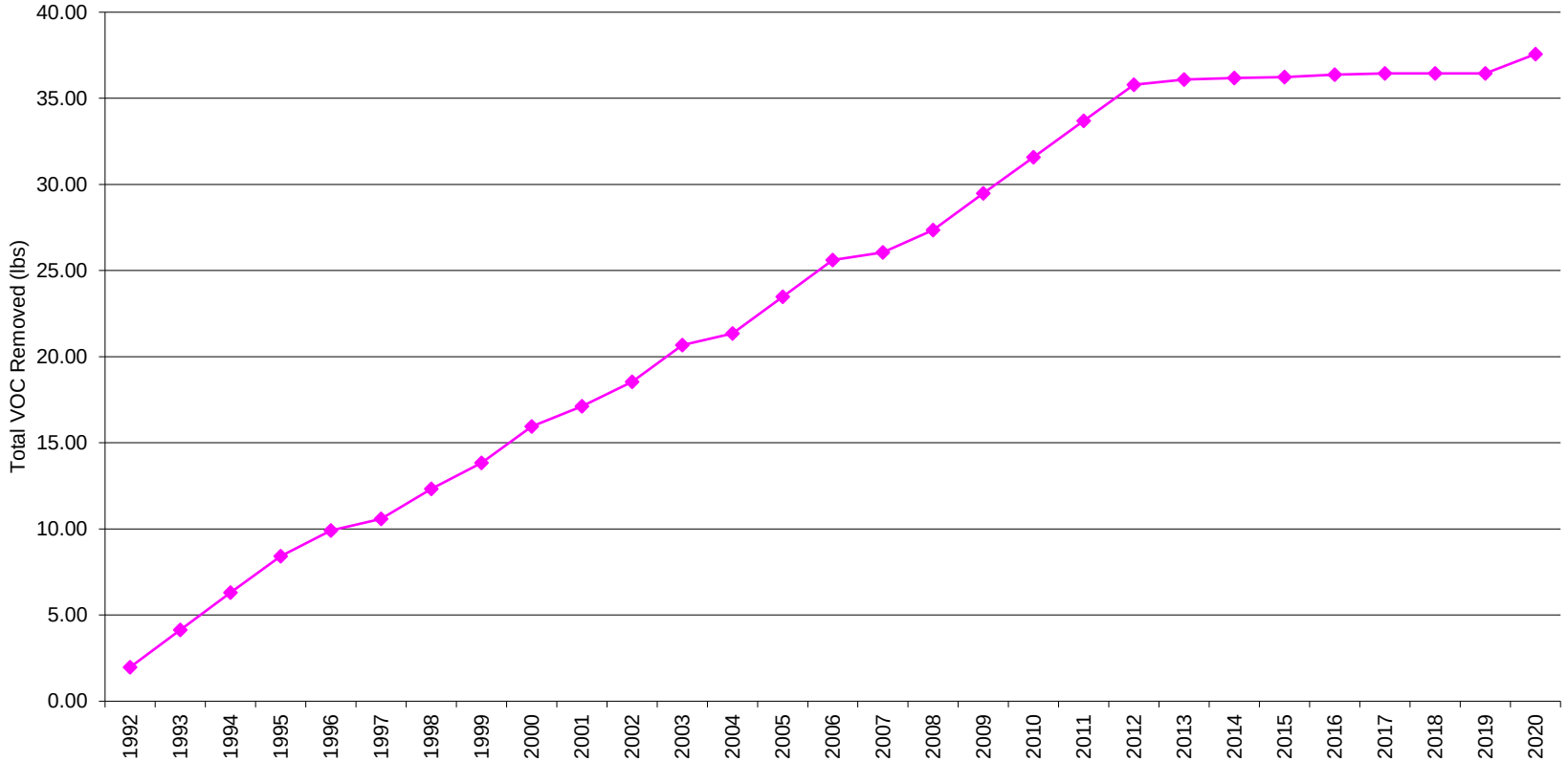
Cumulative Total VOC Removal
Glacial Extraction Well W-32
Cook Composites and Polymers Co.
Saukville, Wisconsin



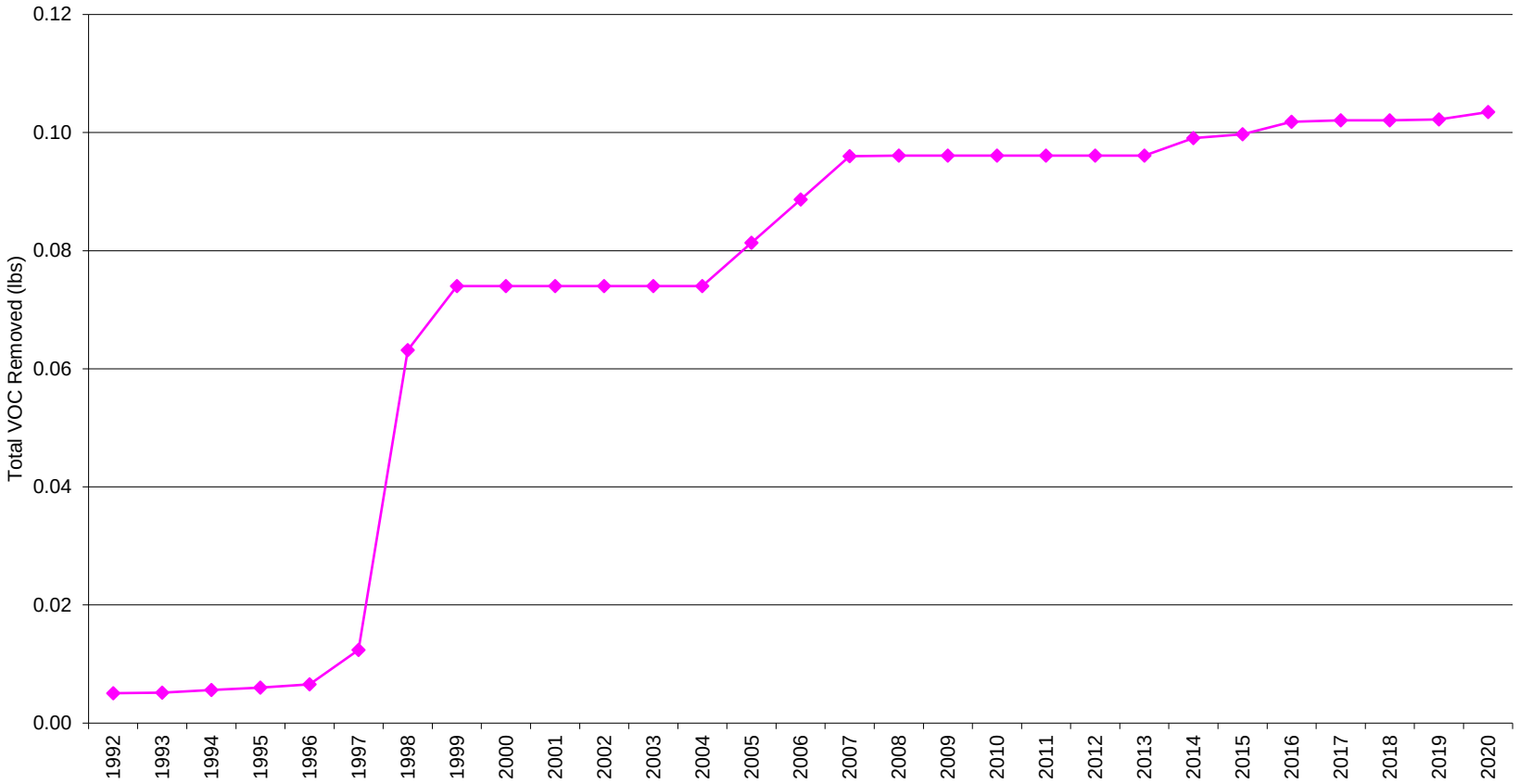
Cumulative Total VOC Removal
Glacial Extraction Well W-33
Cook Composites and Polymers Co



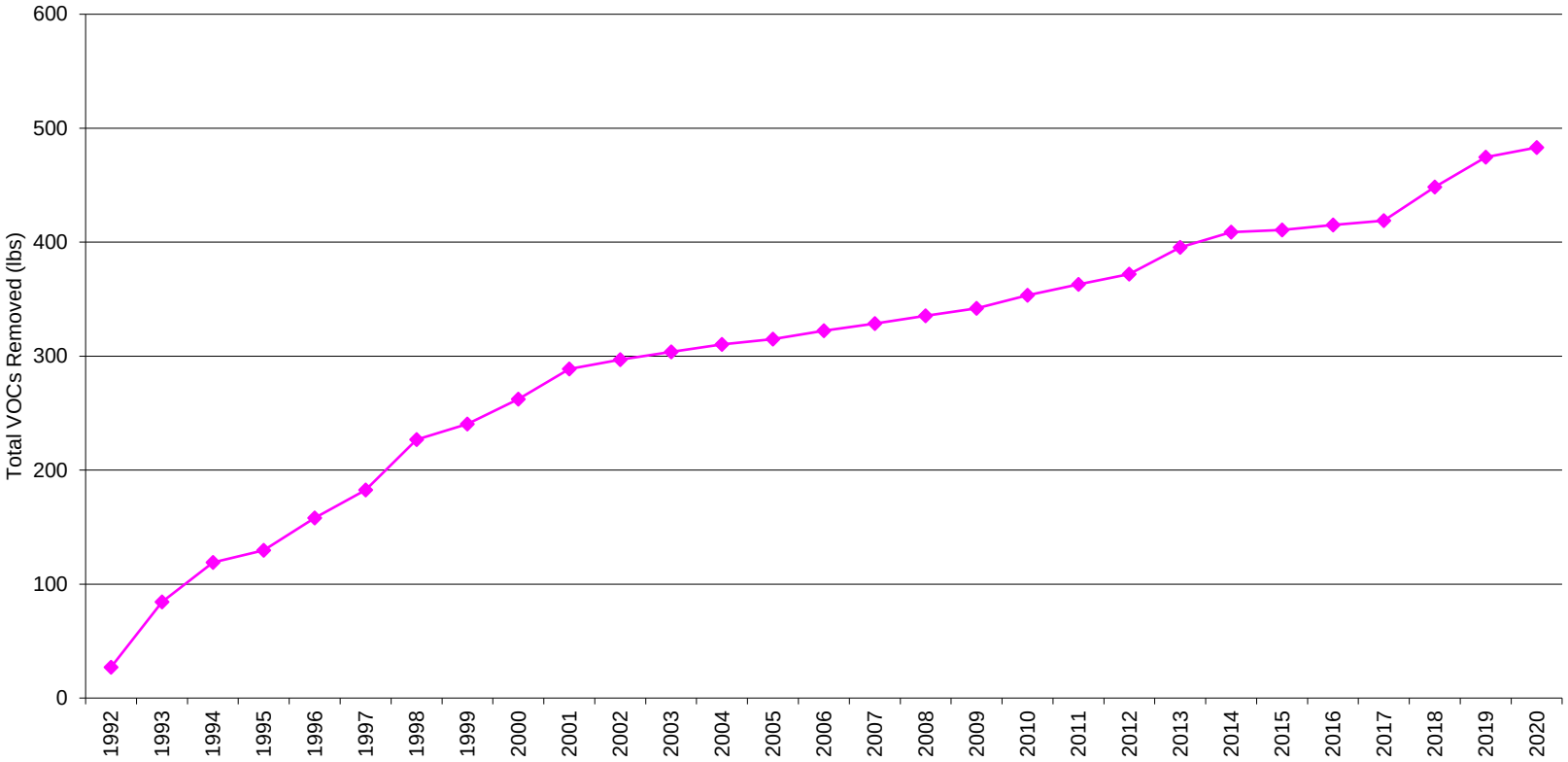
Cumulative Total VOC Removal
Glacial Extraction Well W-34
Cook Composites and Polymers Co.
Saukville, Wisconsin



Cumulative Total VOC Removal
Glacial Extraction Well W-35
Cook Composites and Polymers Co.
Saukville, Wisconsin



Cumulative Total VOC Removal
All Glacial, Shallow and Deep Dolomite Wells
Cook Composites and Polymers Co.
Saukville, Wisconsin



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