



2020 Annual Monitoring Report

**Wausau Water Supply NPL Site
Wausau, Wisconsin**

Wausau Group

August 13, 2021

GHD

900 Long Lake Road, Suite 200

St. Paul, Minnesota 55112, United States

T +1 651 639 0913 | E info-northamerica@ghd.com | ghd.com

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1. Introduction

GHD Services Inc. (GHD) has prepared this 2020 Annual Monitoring Report for the Wausau Water Supply National Priorities List (NPL) Site (Site) in Wausau, Wisconsin, on behalf of the Wausau Group of Responsible Parties (Group). This report presents the results of annual groundwater monitoring conducted at the Site in November 2020.

1.1 History

The Group initiated remedial action at the Site in the early 1990s in accordance with the September 29, 1990, Record of Decision (ROD) and the Consent Decree (CD) entered with the court on January 24, 1991. The final remedial action at the Site consisted of two soil vapor extraction (SVE) systems to address the source areas and groundwater extraction and treatment, utilizing existing municipal production wells (CW3 and CW6) and a remediation well (EW1). The Site location is shown on Figure 1 and a Site plan is presented on Figure 2.

Source area remediation was accomplished by the installation of SVE systems at Marathon Electric¹ (West Bank) and Wausau Chemical Corporation (East Bank) in January 1994. The SVE system at Marathon Electric operated until April 1996 when the West Bank source remediation was approved as complete. The East Bank SVE system was modified in 1996 and continued to operate through January 2001. The East Bank source remediation was approved as complete in 2007.

The groundwater remediation system consists of two municipal water supply wells (CW3 and CW6) and one extraction well installed at Marathon Electric (EW1). Air strippers, located at the Wausau water treatment plant, treat water from the municipal supply wells. Water from EW1 was treated by air stripping (over riprap on the riverbank) before discharging to the Wisconsin River.

The pumping rates for the three extraction wells were originally defined in the CD. The Groundwater Flow Model Report (CRA, May 1993), established a range of pumping rates that would maintain capture of the groundwater plume. Subsequently, in an August 4, 1995 letter, the United States Environmental Protection Agency (EPA) approved a pumping configuration range for the three extraction wells. Those pumping rates were:

- CW3: 65 hours per week at 1,200 gallons per minute (gpm) to 100 hours per week at 1,100 gpm
- CW6: 85 hours to 100 hours per week at 1,400 gpm
- EW1: 800 to 900 gpm continuously

EW1 stopped operating in July 2012 due to pump failure. Since EW1 has essentially completed its performance goal, the Group proposed a pilot study to confirm that the groundwater containment network of pumping wells will continue to be effective without the need for pumping EW1. The EW1 Shutdown Pilot Study Work Plan proposal was submitted to the EPA on September 3, 2013. The Pilot Study was conducted from the 4th quarter of 2013 through the 4th quarter of 2014 and the results were reported to the EPA in March 2015. Although the EPA have not yet provided a final approval of the EW1 shut down, potential effects of the shut-down have continued to be evaluated through the annual groundwater monitoring conducted each fall from 2015 through 2020.

From 1985 through 1996, as an interim remedial measure, additional groundwater remediation was provided by a groundwater extraction system operated by Wausau Chemical Corporation (WCC). The extraction system at WCC consisted of a series of shallow wells at the south end of WCC property. Groundwater from this system was treated by air stripping. This remediation was conducted in addition to the requirements of the ROD or the CD and operation ceased in 1996.

From 1993 through 2000 groundwater monitoring was conducted according to the Monitoring Program Plan (CRA, 1994). The Monitoring Program Plan consisted of a complex system of monthly, quarterly, semiannual, and annual monitoring. In June 2000, the Groundwater Monitoring Plan replaced the Monitoring Program Plan as the approved

¹ Marathon Electric was acquired by Regal Beloit Corporation and is now doing business at the Wausau plant under the Regal name.

groundwater monitoring program. The Groundwater Monitoring Plan consists of annual sampling of monitoring wells and quarterly sampling of EW1 (when operating).

The Groundwater Monitoring Plan requires an annual report on the activities occurring the previous calendar year. This report fulfills the requirement for 2020.

1.2 Monitoring Background

Groundwater monitoring at this Site is a combination of hydraulic and water quality monitoring designed to verify that the groundwater extraction wells are containing the contaminant plume and that groundwater quality is improving as a result of past source remedial actions and ongoing volatile organic compound (VOC) removal from the aquifer. Groundwater remediation at the Wausau Site has been ongoing for over 25 years. Aquifer remediation progress is a slow process but contaminant concentrations have been reduced significantly at the Site. The aquifer has been monitored annually and the data show a downward trend of VOC concentrations in groundwater. Because of the time necessary to achieve groundwater remediation, containment of contaminated groundwater is the primary measurable and achievable short-term objective.

For the purpose of evaluation, groundwater monitoring at Wausau has been divided into two areas, the East Bank and the West Bank of the Wisconsin River, corresponding to the two original source areas. The river forms a natural hydraulic division of the Site. During 2020, two groundwater extraction wells were operated to remove VOC contaminated groundwater. One extraction well is on the West Bank, (CW6) and one is on the East Bank (CW3) (see Figure 2).

1.3 Site Geology

The Site is underlain by glacial outwash and alluvial sediments that have filled in the pre glacial stream valley in which the Wisconsin River now flows. This alluvial aquifer ranges from 0 to 160 feet thick and has an irregular base and lateral boundaries. Relatively impermeable bedrock underlies the aquifer and forms its lateral boundaries within the pre-glacial valley. Six production wells in the Site area provide drinking water for the City of Wausau. These wells are screened in the glacial outwash and alluvial sand and gravel deposits that underlie and are adjacent to the Wisconsin River.

1.4 Groundwater Cleanup Standards

The Groundwater Monitoring Plan was developed to monitor compliance with cleanup standards for the groundwater at the Site. The groundwater cleanup standards for the Site are the EPA maximum drinking water contaminant levels (MCLs). The MCLs for the primary VOC contaminants of concern at the Site are:

Trichloroethylene (TCE)	5 µg/L
Tetrachloroethylene (PCE)	5 µg/L
cis 1,2 Dichloroethene (c12DCE)	70 µg/L
Vinyl chloride	2 µg/L

With the exception of vinyl chloride, these standards are the same as the Wisconsin Department of Natural Resources WDNR) Enforcement Standards (ES). The Wisconsin ES for vinyl chloride is 0.2 µg/L (WDNR Chapter NR 140).

2. 2020 Annual Monitoring

The 2020 annual groundwater monitoring event was conducted on November 18th and 19th. Monitoring was conducted in accordance with the Groundwater Monitoring Plan (GMP) with the revisions to the analyte list and

monitored locations approved by EPA in the years since the GMP was first approved in 2000. Table 2.1 presents the VOC analyte list and the monitored locations for the 2020 sampling event. These locations were proposed in the 2019 Annual Monitoring Report (GHD, 2020).

2.1 Water Level Monitoring

Table 2.2 presents the groundwater elevation data measured on November 18th and 19th, 2020. Water table contours based on these measurements are presented on Figure 3. Field staff measured water levels on the East Bank on November 19th while CW3, the East Bank remediation well was operating, and on the West Bank on November 18th while CW6, the West Bank remediation well, was operating. As explained in Section 1.1, EW1 was not operating during the 2020 monitoring event. Water levels in the City production wells were measured with the assistance of City staff.

The East Bank groundwater flow patterns are controlled by the operation of CW3. East Bank groundwater contours indicate a large cone of influence surrounding CW3 that fully captures the East Bank contaminant plume. Under natural conditions, groundwater on the East Bank flows in a south-southwest direction towards the Wisconsin River, as observed as recently as the 2017 sampling event when CW3 was not operating due to rehabilitation activities being conducted at the time of hydraulic monitoring.

West Bank contours depict a large cone of influence created by CW6 and CW10. Under natural conditions, West Bank groundwater would flow generally eastward and discharge to the Wisconsin River. Under pumping conditions however, groundwater flows toward the City supply wells.

2.2 Groundwater Sampling

Groundwater samples were analyzed for the Site-specific VOC list (see Table 2.1) by EPA Method 8260B. A summary of the groundwater sampling event, including field parameter measurements, is presented in Table 2.3.

Groundwater sampling was conducted according to the Quality Assurance Project Plan, (CRA, February 1994) as amended by a June 11, 1999, letter to the EPA. TestAmerica Laboratories, Inc., of Chicago, Illinois, analyzed all samples. Laboratory results will be submitted electronically in the Region V Electronic Data Deliverable (EDD) format for inclusion in the Region V EPA database. Copies of the laboratory report and data quality validation memoranda for the 2020 data are presented in Appendix A.

2.3 Extraction Well EW1 Sampling

EW1 did not operate during 2020; thus, influent and post treatment effluent samples were not collected. However, a sample was collected from EW1 during the annual monitoring event. No VOCs were detected in the EW1 sample.

3. Operation and Maintenance

Operation and maintenance activities reported in this section cover the City production wells, groundwater monitoring wells, and the annual inspection of the paved surfaces near the East Bank source area.

3.1 Monitoring Well Inspection

All Site monitoring wells were inspected during the November 2020 monitoring round. An inspection form was used to document the following well conditions:

Obscured by brush or other?

– Well ID visible?

- Protective cover and casing condition
- Well cap condition
- Lock condition
- Concrete seal condition
- Locking cover impeded by well riser?
- Ground condition (subsidence)
- Flush mount surface condition
- Flush mount bolt condition

Table 3.1 presents the results of the inspection. The inspection indicated that all wells were in good to satisfactory condition. Some minor repairs, as well as vegetation clearing were conducted at select wells in 2020. A few monitoring wells were identified for minor repairs that will be conducted in 2021.

3.2 City Production Wells

Both CW3 and CW6 operated as required in 2020. Table 3.2 presents 2020 pumping data for the six City wells. While only CW3 and CW6 are part of the remediation system, data for all City wells are presented, consistent with previous reports. The table shows, by month, the number of hours each well was operated, the number of gallons pumped from each well, and the average pumping rate while the pump was operating.

Recommended pumping rates for CW3 and CW6 were established in an August 4, 1995 letter from EPA. In accordance with the letter, pumping of CW3 was to be maintained between 65 hours per week at 1,200 gallons per minute (gpm) to 100 hours per week at 1,100 gpm. Pumping of CW6 was set at 85 hours per week at 1,400 gpm. CW3 and CW6 generally operate on alternate weekly schedules where CW6 operates on the weekdays and CW3 operates more on the weekends.

During 2020, CW3 operated for an average of 74.5 hours per week with an average pumping rate of 1,219 gpm, exceeding the requirements of 65 hours per week and average flow rate of 1,200 gpm.

CW6 pumped an average of 94.1 hours per week with an average pumping rate of 1,255 gpm in 2020. Although well rehabilitation is conducted on a regular basis, CW6 is no longer capable of pumping at the prescribed rate of 1,400 gpm. However, the pumping duration of CW6 has been increased to an average of more than 90 hours per week, which is greater than the requirement of 85 hours per week, thus offsetting the decreased pumping rate. The total volume of groundwater (368,419,000) pumped by CW 6 during 2020 was 99.2% of the EPA recommended volume of 371,000,000 gallons/year.

3.3 East Bank Source Area Pavement Inspection

The EPA and WDNR approved final closure of the East Bank source remediation SVE system in September 2007. As described in the Pavement Cover and Building Maintenance Plan, a requirement of the closure was an annual inspection of the paved areas surrounding the Wausau Chemical property. The purpose of the inspection is to monitor the integrity of the paved areas of the property and make recommendations to minimize rainwater infiltration and prevent direct human contact with soils. In August 2009 the entire pavement area was repaved with new asphalt and the street adjacent to the west side of the property, North River Drive, was repaved by the City of Wausau. Also, an approximately 2,800 square foot addition, with concrete floor and roof, was added to the south end of the building in 2009 2010. Inspections conducted during 2020 found the pavement to be in good condition. A copy of the pavement inspection log is provided in Appendix B.

4. Evaluation of Groundwater Monitoring Data

The objectives of the annual groundwater monitoring program are to monitor the long term improvement of groundwater quality and containment of the contaminant plume. Table 4.1 presents the laboratory results for monitoring well samples collected in November 2020. VOC concentration maps for the principle Site contaminants (TCE, c12DCE, PCE and vinyl chloride) are presented on Figures 4, 5, 6, and 7.

The 2020 data indicate that the VOC concentrations were stable or decreasing at most well locations. Of the 24 wells sampled, 17 wells exhibited lower or stable concentrations compared to 2019.

4.1 West Bank

The primary chlorinated VOC found in the West Bank groundwater is TCE, which was detected at 12 of the 13 West Bank monitoring wells, plus City well CW6. Monitoring wells with TCE concentrations greater than the MCL of 5 µg/L included R2D, R3D, W53A, W54, W55, and WSWD. Wells W53A, W54, and WSWD are located on or adjacent to the former landfill on Marathon Electric property (see Figure 4). R2D, R3D and W55 are located downgradient from Marathon Electric in the direction of groundwater flow toward CW6. The TCE concentration at CW6 (2.0 µg/L) was slightly lower than the 2019 concentration (2.4 µg/L) and was below the MCL.

TCE degradation product, c12DCE, was detected at 6 locations, however none of the c12DCE West Bank concentrations exceeded the cleanup standard of 70 µg/L. Neither PCE nor vinyl chloride were detected in West Bank well samples.

North of EW1 the West Bank plume is in the deeper portion of the aquifer. Three wells in the north portion of the West Bank plume exceeded the MCL for TCE. W55 had a TCE concentration of 15 µg/L, R2D had a concentration of 12 µg/L and R3D had a concentration of 12 µg/L. R2D is a deep aquifer well approximately 150 feet north of Marathon property. Recent decreasing TCE concentrations at that location indicate that the plume remnant that was in a stagnation zone between EW1 and CW6 continues to migrate north to CW6 since EW1 stopped pumping. This is supported by the generally increasing concentrations at W55 since 2012 (see the W55 trend graph in Appendix C). The concentration of 12 µg/L at R3D in 2020 was higher than in 2019 (1.1 µg/L) but remains several orders of magnitude lower than the period from 1999 to 2007 when concentrations ranged from 400 µg/L to 1,800 µg/L.

The historical data for R2D, R3D, and R4D are presented in the table below. Although total chlorinated VOCs are shown here, TCE comprises 90 to 100 percent of the concentrations listed. The remaining portion would be c12DCE. Review of these data indicates plume migration to the south during the 1990s and 2000s, from the R2D area to R3D, as groundwater moved toward EW1. When EW1 stopped pumping in 2012, VOC concentrations increased at R2D as the aquifer flow direction changed back to the north toward CW6. The shut-down of EW1 eliminated the groundwater flow divide between CW6 and EW1, which has resulted in a more effective reduction of VOC concentrations in the R2D/R3D area.

The increased concentration at R4D in 2019 may be due to increased infiltration of precipitation in the source area due to increased rainfall (2019 is the wettest year on record in Wausau since 1938, with over 48.1 inches of precipitation, compared to an average of approximately 33.3 inches per year from 1991 through 2018)². In 2020 this concentration (4.7 µg/L) again decreased to below the MCL. The increased concentration seen at R3D in 2020 is likely due to the increased concentrations seen at R4D in 2019 trending north in 2020 due to the pumping operations at CW6.

² National Weather Service, Final 2019 Precipitation Totals Across North Central & Northeast Wisconsin. Weather.gov, January 2020

Table 1 West Bank Total Chlorinated VOCs (µg/L)

Year	R4D	R3D	R2D
1996	540	2.0	1600
1997	65	5.0	720
1998	55	580	320
1999	33	1200	110
2000	58	1800	45
2001	13	1500	17
2002	36	1200	15
2003	38	980	10
2004	51	899	11
2005	56.5	400	7.5
2006	42	490	8.2
2007	1.3	280	9.9
2008	13	180	6.5
2009	22.9	92	7.3
2010	25.7	195.7	6.2
2011	27.6	203.1	11
2012	4.9	20.7	6.4
2013	16.6	4.8	20
March 2014	NA	73.7	18.2
May 2014	7.89	4.7	19.1
August 2014	NA	2.9	33.2
Nov 2014	1.8	2.6	47.2
2015	3.27	1.8	33.6
2016	5.97	2.0	22.9
2017	2.24	2.2	16.7
2018	0.68	2.1	15.9
2019	14	1.1	12.4
2020	4.7	13.1	13.1

Monitoring wells south of EW1 are in, or adjacent to, the old landfill, which is the principal West Bank source area. VOC contaminants are more prevalent in the shallower portion of the aquifer near the source area. Monitoring wells south of EW1 that exceeded the MCL for TCE included W53A, W54, and WSWD.

TCE concentrations at W53A and W54 have exhibited substantial fluctuations since the shut-down of EW1 in 2012 (see the trend graphs in Appendix C). These fluctuations are typical of source area wells where increased precipitation and water level changes could have a local effect on VOC content in the groundwater.

The overall areal extent of the West Bank contaminant plume has not changed significantly since EW1 was shutdown. TCE and c12DCE were essentially the only VOCs detected downgradient from the source area on the West Bank. Figures 4 and 5 present TCE and c12DCE concentrations, respectively. The contour lines on the figures show the approximate areas of concentrations exceeding the MCL. Charts showing historical chlorinated VOC concentrations for select West Bank wells are presented in Appendix C.

4.2 East Bank

East Bank VOC data are presented in Table 4.1. While PCE was the original contaminant on the East Bank, the presence of TCE, c12DCE, and vinyl chloride, at concentrations that exceed the PCE concentration in many wells, indicates an active natural biodegradation process. For example, at WW6, E24AR, and E37A the c12DCE concentrations were higher than the PCE and TCE concentrations.

PCE or one of its daughter products was detected at 7 of the 10 East Bank monitoring wells. Five monitoring wells had concentrations that exceeded the MCL of at least one VOC. East Bank contaminant concentrations continue to fluctuate, with increased concentrations in wells at or near the source, lower concentrations in mid plume wells, and increased concentrations farther downgradient at WW6. Total chlorinated VOC concentrations from 2012 through 2020 for key East Bank wells are shown below:

Table 2 East Bank Total Chlorinated VOCs (µg/L)

Well	2012	2013	2014	2015	2016	2017	2018	2019	2020
WC3B	3.47	0.26	6.31	2.86	0.55	13.4	71.4	480	8.2
WC5A	1.3	7.3	14.93	12.04	26.1	118.2	131.7	1.11	35.8
E24AR	3.86	22	222.5	136.8	152.1	78.05	6.73	5.18	4.37
E22A	25.41	104.9	12.5	8.03	123	21.85	10.22	1.6	10.3
E37A	68.06	4.67	3.73	1.61	1.75	3.4	23.41	1.62	5.65
WW6	45.48	45.8	51.9	67.6	8.03	8.54	37.6	29.4	24.41
CW3	3.58	2.62	3.03	3.15	3.0	NA	2.83	2.75	1.98

Charts showing historical chlorinated VOC concentrations for select East Bank wells are presented in Appendix C. Individual VOC concentrations for the shallow wells are presented for PCE, TCE, c12DCE, and vinyl chloride on Figures 4 through 7, respectively.

4.3 Hydraulic Capture

Hydraulic capture of the Site contaminant plumes is demonstrated by the water table contours illustrated on Figure 3. At nested well locations, the water table elevations for shallow and deep wells were similar, indicating horizontal flow and hydraulic containment of the shallow and deeper portions of the aquifer.

5. Site Groundwater Monitoring Plan

The current Site groundwater monitoring plan includes an annual monitoring event that is conducted in September or October. In the 2016 Annual Monitoring Report (AMR), we proposed a reduced groundwater sampling list for the East Bank. Therefore, beginning in 2017, a reduced number of wells were sampled and gauged for hydraulic monitoring. In 2020, 10 East Bank monitoring wells were sampled and water levels were measured at 15 East Bank wells as well as CW3. On the West Bank, 13 wells were sampled and water levels were measured at 23 monitoring wells and the City supply wells. All groundwater samples were analyzed for the Site-specific VOC list by EPA Method 8260B. Table 2.1 summarizes the current monitoring plan. During the annual monitoring event, all wells are inspected to document their condition, including: total depth, casing and grout, well ID, well cap, lock, concrete seal, and ground subsidence.

When EW1 was operating, monitoring was conducted quarterly and pre-treatment and post treatment water samples were collected and analyzed for Site-specific VOCs.

5.1 Proposed Groundwater Monitoring Plan Modifications

In February 2020, GHD proposed moving the annual groundwater monitoring event from the 4th quarter of the calendar year to August beginning with the 2021 event. This request was given preliminary verbal approval by USEPA and WDNR in a call with GHD on 4/8/21.

5.2 Abandonment of Monitoring Wells

As presented in the 2016 AMR, several wells were identified for potential sealing and abandonment. These wells and the justifications for their removal are listed below.

Table 3 East Bank Monitoring Wells Proposed for Sealing and Abandonment

Well No.	Justification
E22	Not sampled because it is clustered with E22A and it is not needed for groundwater elevation data.
IWD	Island well that is no longer monitored for chemical or water level data.
E26	Neither E26 nor E26A are sampled and only E26A is useful for groundwater elevation data.
WC3	Not sampled because it is clustered with WC3B and it is not needed for groundwater elevation data.
WC4	The deeper well of the WC4/WC4A cluster; neither well is sampled for VOC analysis and only WC4A is needed for elevation data.
WC5	Not sampled because it is clustered with WC5A and it is not needed for groundwater elevation data.

Table 4 West Bank Monitoring Wells Proposed for Sealing and Abandonment

Well No.	Justification
R3S	The shallow well in a cluster with R3D and W50. R3S is a dry well that does not provide chemical or elevation data.
W50	A mid-aquifer well clustered with R3D and R3S. Typically, it is not used for VOC sampling and it is not needed for elevation data. No VOCs were detected in the 2015 sample from W50.
W52A	The shallow well clustered with W52. W52A was sampled in 2016 and no VOCs were detected. It is not on the regular sampling list and is not needed for elevation data.
W53	A deep well in the source area clustered with W53A. It is not used for VOC sampling and it is not needed for elevation data.
W55A	The shallow well is clustered with W55, near CW6. W55A was sampled in 2015 and no VOCs were detected. It is not on the regular sampling list and is not needed for elevation data.
WSWS	Adjacent to the Wisconsin River, the shallow well clustered with WSWD, WSWS was sampled in 2016 and no VOCs were detected. It is not on the regular sampling list and is not needed for elevation data.

Monitoring wells WC3, WC4, WC5 and IWD were approved for abandonment by the USEPA on May 19, 2020. These four wells were abandoned on July 29, 2020 by a licensed driller under the supervision of GHD. Monitoring wells FVD-5 and R3S were abandon on May 27, 2020. A letter summarizing these activities was submitted to USEAP and WDNR on July 14, 2020. A letter summarizing all the 2020 well abandonment activities and abandonment reporting was submitted to the USEPA and WDNR on August 19, 2020.

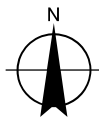
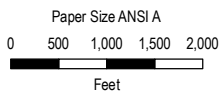
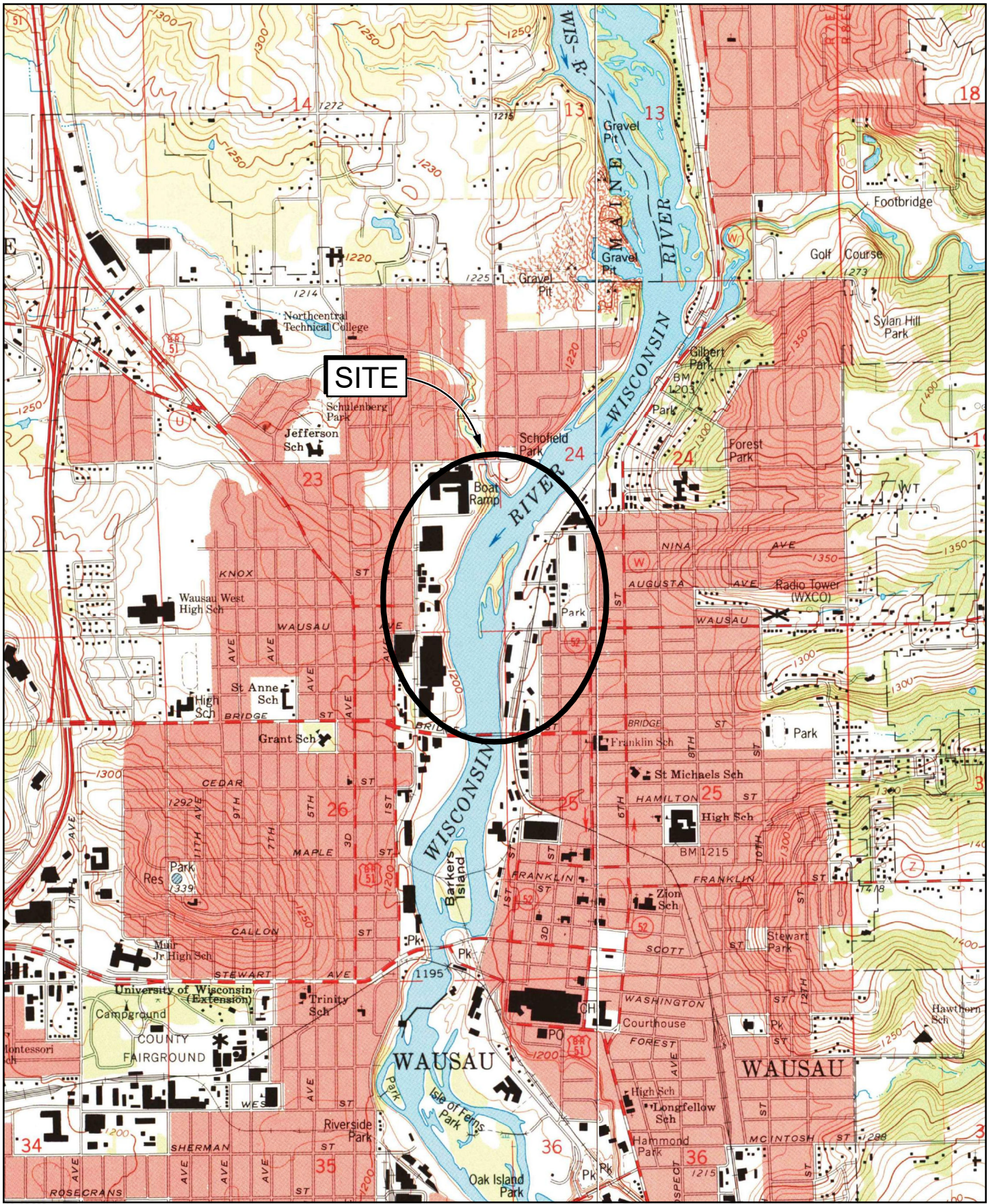
Upon approval of the permanent shutdown of EW1, the well and its associated treatment and discharge structures should also be sealed and properly dismantled.

6. Soil Vapor Evaluation

Soil vapor evaluation is ongoing at the Site. Due to the COVID-19 pandemic, no soil vapor samples were collected in 2020. It is anticipated that sampling may resume in 2021 as restrictions loosen. USEPA, WDNR and the Group are actively discussing the path forward for soil vapor evaluation at the Site. In 2021, the Group will submit preliminary data and evaluation of soil vapor evaluation at the Site to date. This Vapor Intrusion Report will be submitted to the USEPA and WDNR under separate cover at a later date in 2021.

Beginning in 2021, a separate annual summary of the Site’s soil vapor evaluation progress, upcoming evaluation work, and the proposed path forward will be prepared in addition to the Annual Monitoring Report. The 2020 Annual Vapor Intrusion Evaluation Report will be submitted to the USEPA and WDNR under separate cover at a later date in 2021.

Figures



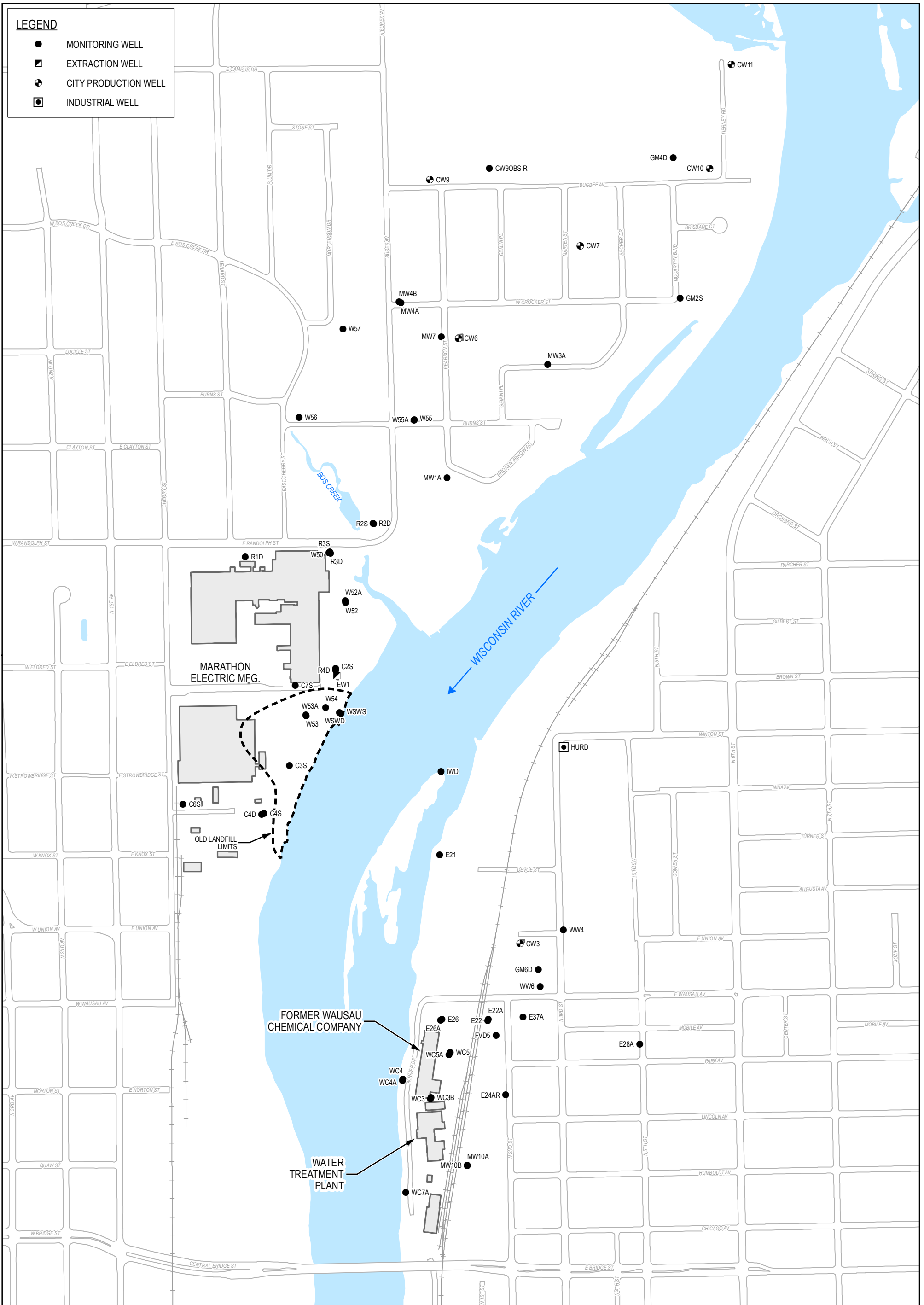
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WAUSAU, WISCONSIN

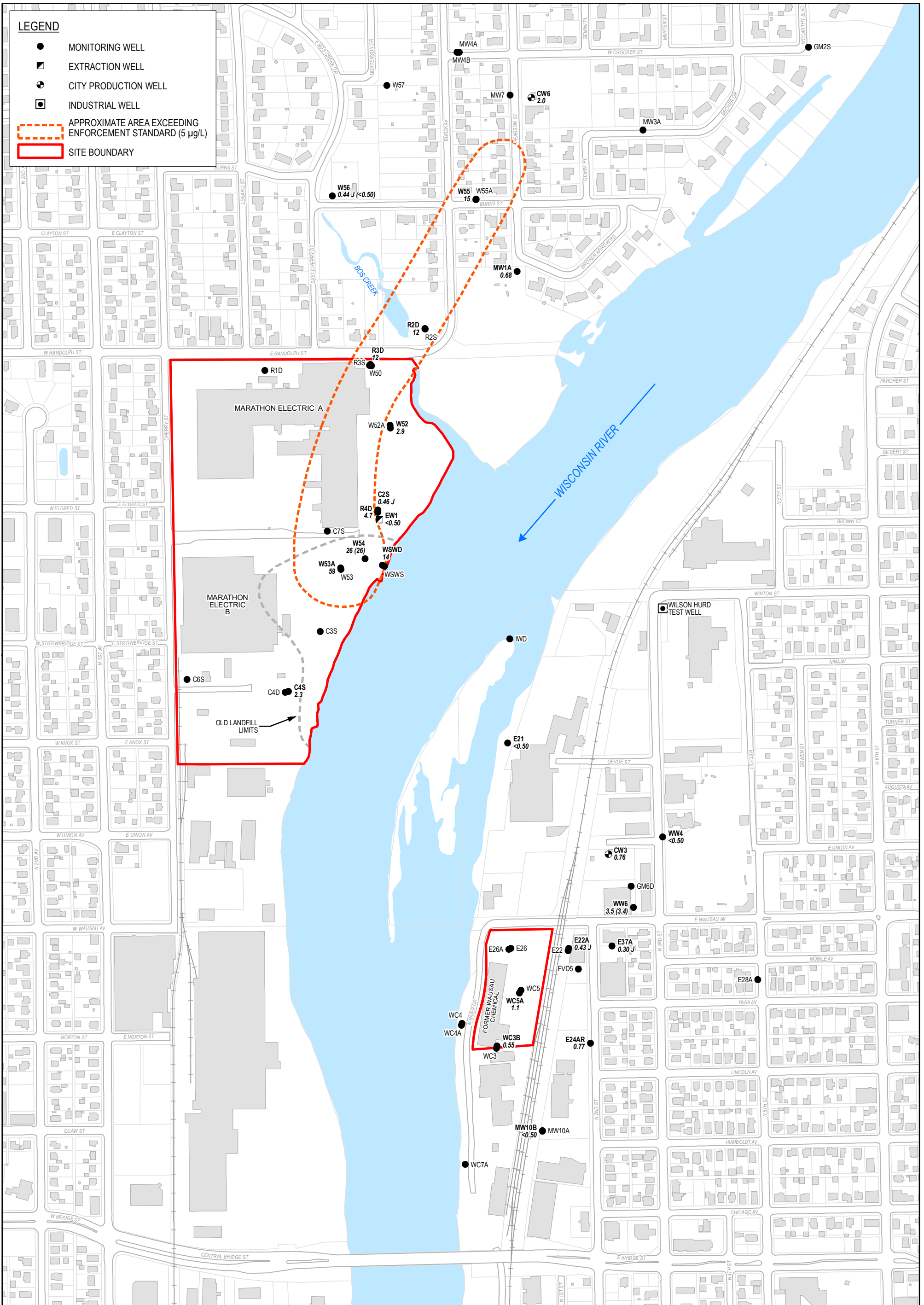
Project No. 003978-00
Revision No. -
Date 05/14/2021

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983 HARN
Grid: NAD 1983 HARN WISCRS Marathon County Feet

SITE LOCATION

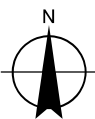
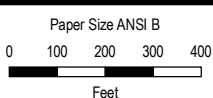
FIGURE 1





LEGEND

- MONITORING WELL
- EXTRACTION WELL
- ⊙ CITY PRODUCTION WELL
- ◻ INDUSTRIAL WELL
- APPROXIMATE AREA EXCEEDING ENFORCEMENT STANDARD (5 µg/L)
- ▭ SITE BOUNDARY

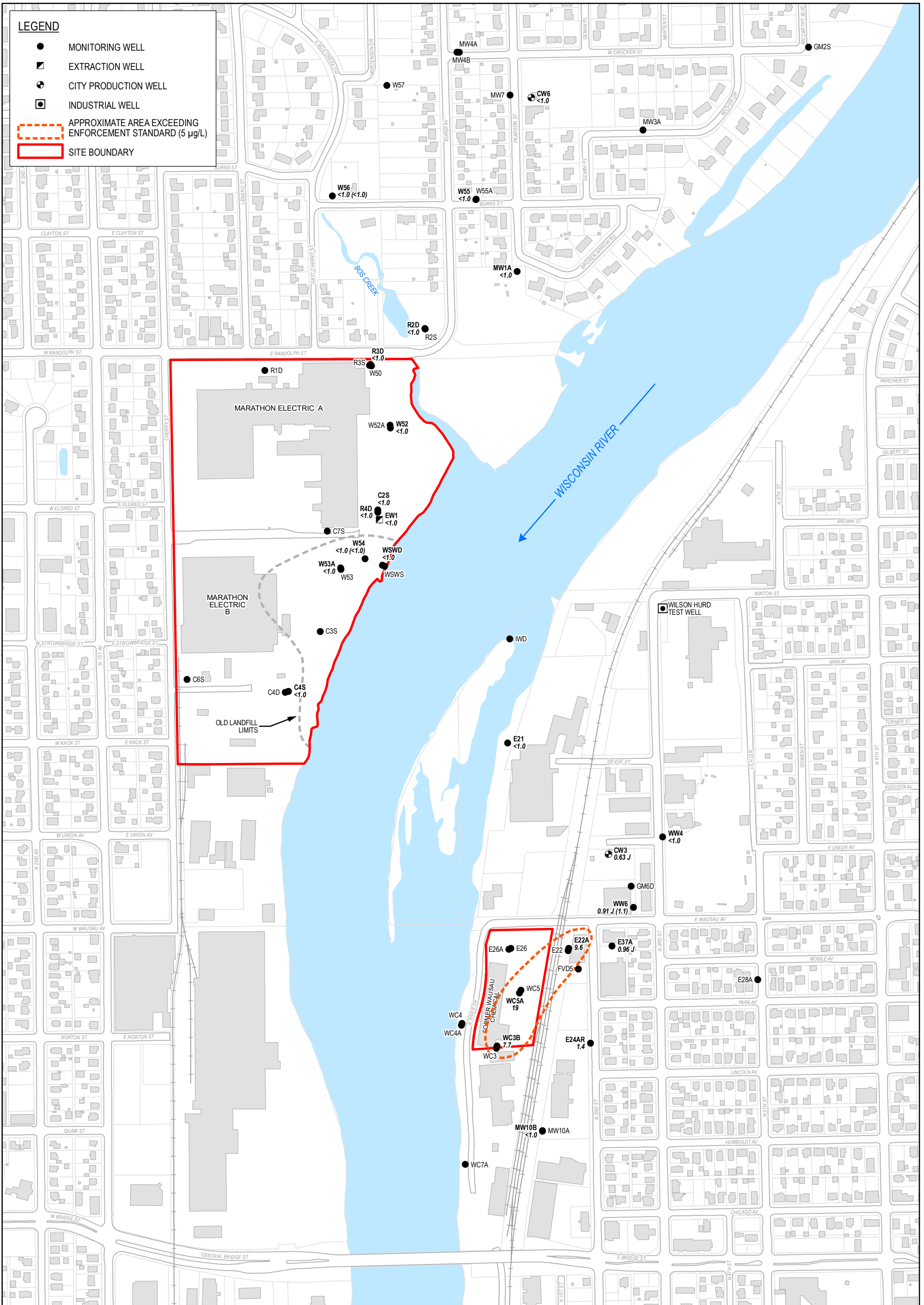


WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN

TRICHLOROETHENE
CONCENTRATIONS
NOVEMBER 2020

Project No. 003978-00
Revision No. -
Date 05/14/2021

FIGURE 4



Tables

Table 2.1

**2020 Groundwater Monitoring Plan
Wausau Water Supply NPL Site
Wausau, Wisconsin**

Monitoring Event	VOC Sample Locations		Laboratory Analysis	Groundwater Elevations	
	East Bank	West Bank		East Bank	West Bank
Annual - Fall	CW3, E21, E22A, E37A, E24AR, MW10B, WW4, WW6, WC3B, WC5A	EW1, CW6, R2D, R3D, R4D, C2S, C4S, W52, W53A, W54, W55, W56, WSWD, MW1A	Volatile Organic Compounds (VOC) Method 8260B	E21, E22A, E24AR, E26A, E28A, E37A, FVD5, GM6D, W.HURD, MW10B, WC3B, WC4A, WC5A, WC7, WW4, WW6, City Well CW3,	C3S, C4S, C6S, C7S, GM2S, GM4D, MW1A, MW3A, MW4A, MW7, R1D, R2D, R3D, R4D, W52, W53A, W54, W55, W56, W57, WSWD, CW9-OBS, City Wells CW6, CW9, CW10, CW11 (if pumping)

Site Specific VOC List

Acetone
Benzene
Carbon tetrachloride
Chloroform
1,1-Dichloroethene
cis-1,2-Dichloroethene
Ethylbenzene
Methylene chloride
Tetrachloroethene
Toluene
1,1,2-Trichloroethane
Trichloroethene
Vinyl chloride
Xylenes

**Groundwater Elevations - November 2020
Wausau Water Supply NPL Site
Wausau, Wisconsin**

	Reference Elevation	Water Level (ft BTOC)	Water Table Elevation (ft AMSL)
East Bank		11/19/2020	11/19/2020
CW3*	1202.15	16.60	1186
E21	1197.51	10.48	1187.03
E22A	1195.88	9.30	1186.58
E24AR	1209.33	22.66	1186.67
E26A	1199.13	12.33	1186.80
E28A	1211.60	24.65	1186.95
E37A	1197.84	11.15	1186.69
GM6D	1198.57	12.85	1185.72
W. HURD	1200.23	12.84	1187.39
MW10B	1210.37	23.66	1186.71
WC3B	1196.11	9.38	1186.73
WC4A	1196.57	9.53	1187.04
WC5A	1196.66	9.91	1186.75
WC7A	1196.77	10.01	1186.76
WW4	1200.34	14.44	1185.90
WW6	1200.53	13.06	1187.47
West Bank		11/18/2020	11/18/2020
CW6*	1220.33	24	1196
CW7	1224.14	NM	NA
CW9	1226.16	NM	NA
CW10	1218.49	NM	NA
CW11*	1216.51	14	1202 APPROX.
CW9 OBS R	1224.51	NM	NA
EW1	1218.04	30.11	1187.93
C2S	1219.05	31.12	1187.93
C3S	1220.58	33.16	1187.42
C4S	1216.70	28.82	1187.88
C6S	1221.58	33.50	1188.08
C7S	1220.87	32.98	1187.89
GM2S	1211.78	24.40	1187.38
GM4D	1216.35	29.37	1186.98
MW1A	1215.69	28.67	1187.02
MW3A	1220.87	34.01	1186.86
MW4A	1215.48	29.64	1185.84
MW7	1218.53	34.05	1184.48
R1D	1222.24	32.08	1190.16
R2D	1209.42	21.98	1187.44
R3D	1215.42	27.77	1187.65
R4D	1218.90	31.01	1187.89
W52	1219.16	31.41	1187.75
W53	1216.67	29.13	1187.54
W54	1216.08	28.18	1187.90
W55	1217.04	30.49	1186.55
W56	1200.01	12.79	1187.22
W57	1201.76	15.49	1186.27
WSWD	1193.02	5.13	1187.89
Wisconsin River	--	--	--

Notes:

- ft BTOC - Feet below top of casing
- ft AMSL - Feet above mean sea level
- * - Well was pumping
- NM - Not Measured
- NA - Not Available

Table 2.3

**Groundwater Sampling Summary - November 2020
Wausau Water Supply NPL Site
Wausau, Wisconsin**

Well	Date	pH	Conductivity (uS/cm)	Temperature (°C)	Water Clarity	Sample Type	Sample ID Number
East Bank CW3	11/19/2020	7.56	364	9.2	Clear	GRAB	W-201119-KJ-19
E21	11/19/2020	6.86	257	10.6	Clear	GRAB	W-201119-KJ-25 MS/MSD
E22A	11/19/2020	6.77	362	11.2	Clear	LOW FLOW	W-201119-KJ-20 MS/MSD
E24AR	11/19/2020	6.71	969	12.3	Clear	LOW FLOW	W-201119-KJ-29
E37A	11/19/2020	7.58	850	13.6	Clear	LOW FLOW	W-201119-KJ-22 W-201119-KJ-21 *FB*
MW-10B	11/19/2020	7.06	258	10.0	Clear	LOW FLOW	W-201119-KJ-28
WC3B	11/19/2020	7.66	259	12.3	Clear	LOW FLOW	W-201119-KJ-24
WC5A	11/19/2020	6.55	322	13.1	Clear	LOW FLOW	W-201119-KJ-23
WW4	11/19/2020	7.00	685	9.7	Clear	LOW FLOW	W-201119-KJ-18
WW6	11/19/2020	7.18	215	12.3	Clear	LOW FLOW	W-201119-KJ-26 W-201119-KJ-27 *DUP*

Table 2.3

**Groundwater Sampling Summary - November 2020
Wausau Water Supply NPL Site
Wausau, Wisconsin**

Well	Date	pH	Conductivity (uS/cm)	Temperature (°C)	Water Clarity	Sample Type	Sample ID Number
West Bank							
C2S	11/18/2020	7.06	863	13.7	Clear	LOW FLOW	W-201118-KJ-08
C4S	11/19/2020	7.06	1370	11.0	Clear	LOW FLOW	W-201119-KJ-30
CW6	11/18/2020	12.63	365	8.3	Clear	GRAB	W-201118-KJ-01
EW1	11/19/2020	8.50	334	11.2	Clear	GRAB	W-201119-KJ-17
MW-1A	11/19/2020	10.07	137	10.0	Clear	LOW FLOW	W-201119-KJ-14
R2D	11/18/2020	7.76	151	8.8	Clear	LOW FLOW	W-201118-KJ-06
R3D	11/18/2020	7.91	724	8.7	Clear	LOW FLOW	W-201118-KJ-04 W-201118-KJ-05 *EB*
R4D	11/18/2020	6.33	790	12.4	Clear	LOW FLOW	W-201118-KJ-09
W52	11/18/2020	7.86	524	11.0	Clear	LOW FLOW	W-201118-KJ-10
W53A	11/18/2020	7.15	3660	10.8	Clear	LOW FLOW	W-201118-KJ-11
W54	11/18/2020	7.69	1170	11.4	Clear	LOW FLOW	W-201119-KJ-15 W-201119-KJ-16 *DUP*
W55	11/19/2020	7.52	215	9.9	Clear	LOW FLOW	W-201119-KJ-12 W-201119-KJ-13 *FB*
W56	11/18/2020	9.63	950	9.0	Clear	LOW FLOW	W-201118-KJ-02 W-201118-KJ-03 *DUP*
WSWD	11/18/2020	7.42	746	10.5	Clear	LOW FLOW	W-201118-KJ-07

Notes:

uS/cm - microsiemens per centimeter

EB - Equipment Blank

DUP - Duplicate Sample

MS/MSD - Matrix Spike/Matrix Spike Duplicate

FB - Field Blank

Table 3.1

2020 Monitoring Well Inspection
 Wausau Water Supply NPL Site
 Wausau, Wisconsin

	CW3	E21	E22	E22A	E24AR	E26	E26A	E28A	E37A	GM6D	W. HURD	MW10A	MW10B	WC3B
Difficult to find? Brush need cutting?	City pump house	No/No	No/No	No/No	No/No	No/No	No/No	No/No	No/No	No/No	No/No	No/No	No/No	No/No
Clearly labeled on outside? ID tag visible?	NA	Yes	No	No	No	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No
Protop and Casing Condition	NA	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Good	Fair -rust	Good	Good
Surface seal visible? Concrete Condition? (Soil/sod covered?)	NA	No, sod covered	Yes, concrete in good condition	Yes, concrete in good condition	Yes, concrete in good condition	No, sod covered	No, sod covered	Yes, concrete surface - good	Damaged	Yes, concrete surface seal in asphalt	No, sod	No, covered with vegetation	No, covered with vegetation	Yes, concrete good
Well Cap Condition (inner/outer)	NA	Good	Good	Good	Good	Good	Good	Good	Damaged	Good	Good	Fair, rust	Fair, difficult to remove	Good
Does well riser inhibit the protop from being closed and locked?	NA	No	No	No	No	No	No	No	No	No	No	No	No	No
Lock Condition	NA	Good	Good	Good	Fair	Good	Fair	Fair	Fair	Good	Fair	Broken	None	Good
Ground subsidence?	NA	None	None	None	None	Soil - good	Soil - good	No subsidenc	No subsidenc	None	None	None	None	None
Flush Mount? Potential for ponded water?	NA	Above grade	Flush - No	Flush - No	Flush - No	Above grade	Above grade	Flush - No	Flush - No	Flush - No	Above grade, no	Above grade	Above grade	Flush - No
Flush Mount in impervious surface? (surface type)	NA	NA	Soil	Soil	Concrete pad in turf	NA	NA	Concrete sidewalk	Concrete	New concrete vault in asphalt	NA	NA	NA	Yes - Concrete
Flush Mount water tight?	NA	NA	No	No	Yes	NA	NA	Yes	No	Yes	NA	NA	NA	Yes
Notes												NEED NEW PROTOP CAP		

Table 3.1

2020 Monitoring Well Inspection
 Wausau Water Supply NPL Site
 Wausau, Wisconsin

	WC4A	WC5A	WC7	WW4	WW6	EW1	CW6	CW9 OBS R	CW10	CW11	C2S	C3S	C4S	C4D
Difficult to find? Brush need cutting?	No/No	No/No	No/No	No/No	No/No	Pump house	City pump house	No/No	No/No	No/No	No/No	No/No	No/No	No/No
Clearly labeled on outside? ID tag visible?	Yes	Yes	No, painted	No	Yes	No	Yes	USGS label	Yes	Yes	Yes	Yes	Yes	Yes
Protop and Casing Condition	Good	Good	Good	Good	Good	Good	NA	Good	NA	NA	Fair	Fair	Fair	Protop casing hinge rusted through
Surface seal visible? Concrete Condition? (Soil/sod covered?)	No, sod	No, gravel and soil	No, soil and grass	New concrete pad	Yes, asphalt - good condition	NA	NA	No, sod	NA	NA	Yes	No, sod	No, sod	Yes, concrete - good
Well Cap Condition (inner/outer)	Good	Good	Good	Good	Good	NA	NA	Good	NA	NA	Fair	Fair	Fair	Fair
Does well riser inhibit the protop from being closed and locked?	No	No	No	No	No	NA	NA	Yes	NA	NA	No	No	No	No
Lock Condition	Good	Good	Good	Good	Good	NA	NA	Good	NA	NA	Fair	Fair	Fair	Fair
Ground subsidence?	None	None	None	None	None	None	NA	None	NA	NA	None	None	None	None
Flush Mount? Potential for ponded water?	Above grade	Above grade	Above grade	Flush - No	Above grade	NA	NA	Above grade	NA	NA	Above grade	Above grade	Above grade	Above grade
Flush Mount in impervious surface? (surface type)	NA	NA	NA	New concrete pad in sod	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Flush Mount water tight?	NA	NA	NA	No	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Notes														

Table 3.1

**2020 Monitoring Well Inspection
Wausau Water Supply NPL Site
Wausau, Wisconsin**

	C6S	C7S	GM2S	GM4D	MW1A	MW3A	MW4A	MW4B	MW7	R1D	R2S	R2D	R3D	R4D
Difficult to find? Brush need cutting?	No/No	Yes/Yes	No/No	No/No	No/No	No/No	No/No	No/No	No/No	No/No	No/No	No/No	No/No	No/No
Clearly labeled on outside? ID tag visible?	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Protop and Casing Condition	Fair	Poor	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Fair
Surface seal visible? Concrete Condition? (Soil/sod covered?)	No, sod	Yes, concrete	New concrete pad	No, sod and leaf litter	No, gravel	Yes, concrete - good	Yes, concrete - good	Yes, concrete - good	Yes, concrete - good	No, sod	No, leaf litter	No, leaf litter	No, sod	No, sod and leaf litter
Well Cap Condition (inner/outer)	Fair	Poor	Good	Fair	Good	Good	Good	Good	Good	Fair, rust	Good	Good	Fair	Fair
Does well riser inhibit the protop from being closed and locked?	No	No	No	No	Yes	No	No	No	No	? Sticks up out of shroud 1"	No	No	No	Yes
Lock Condition	Good	broken	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Fair
Ground subsidence?	None	None	None	None	None	None	None	None	None	None	None	None	None	None
Flush Mount? Potential for ponded water?	Above grade	Above grade	New vault installed	Above grade	Above grade	Flush - No	Flush - No	Flush - No	Flush - No	Above grade	Above grade	Above grade	Above grade	Above grade
Flush Mount in impervious surface? (surface type)	NA	NA	Concrete pad in sod	NA	NA	Soil, grass	Soil, grass	Soil, grass	Grass boulevard	NA	NA	NA	NA	NA
Flush Mount water tight?	NA	NA	Yes	NA	NA	Yes	Yes	Yes	Yes	NA	NA	NA	NA	NA
Notes														

Table 3.1

**2020 Monitoring Well Inspection
Wausau Water Supply NPL Site
Wausau, Wisconsin**

	W50	W52	W52A	W53	W53A	W54	W55	W55A	W56	W57	WSWS	WSWD
Difficult to find? Brush need cutting?	No/No	No/No	No/No	No/No	No/No	No/No	No/No	No/No	No/No	No/No	No/No	No/No
Clearly labeled on outside? ID tag visible?	Yes	Yes	Yes	No	No	Yes	No	No	No	NA	Yes	Yes
Protop and Casing Condition	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Fair	NA	Good	Good
Surface seal visible? Concrete Condition? (Soil/sod covered?)	No, sod	No, soil	No, soil and grass	New concrete pad	Yes, concrete - fair	Yes, concrete - good	No - sod	No - sod	No - sod	NA	No - sod and leaf litter	No - sod and leaf litter
Well Cap Condition (inner/outer)	Fair	Fair	Fair	Good	Good	Good	Good	Poor, bolt stuck	Good	NA	Good	Good
Does well riser inhibit the protop from being closed and locked?	No	No	No	No	No	No	No	No	No	NA	No	No
Lock Condition	replaced	Fair	should replace	Good	Good	poor	no lock	no lock	no lock	NA	Fair	Fair
Ground subsidence?	None	None	None	None	None	None	None	None	None	NA	None	None
Flush Mount? Potential for ponded water?	Above grade	Above grade	Above grade	Flush - No	Flush - No	Flush - No	Flush - No	Flush - No	Flush - No	NA	Above grade	Above grade
Flush Mount in impervious surface? (surface type)	NA	NA	NA	Yes, new vault	Concrete	Concrete	Soil, grass	Soil, grass	Soil, grass	NA	NA	NA
Flush Mount water tight?	NA	NA	NA	Yes, new vault	Yes	Yes	Yes	Yes	Yes	NA	NA	NA
Notes												

**2020 City Well Pumping Summary
Wausau Water Supply NPL Site
Wausau, Wisconsin**

		Well CW-3	Well CW-6	Well CW-7	Well CW-9	Well CW-10	Well CW-11
January	Hours	313	428.8	142.5	138.7	210.1	0
	Gallons	26.076	33.926	17.148	7.071	42.940	0
	gpm	1388	1319	2006	850	3406	--
February	Hours	314.5	381	148.2	145.7	206.5	0
	Gallons	25.689	28.843	17.679	7.404	42.625	0
	gpm	1361	1262	1988	847	3440	--
March	Hours	246.7	496.9	112.4	117.2	198.7	76.5
	Gallons	18.957	37.594	13.255	6.004	40.812	11.885
	gpm	1281	1261	1965	854	3423	2589
April	Hours	356.9	359.8	114.3	166	98	93.6
	Gallons	24.644	27.521	13.045	8.544	20.157	16.392
	gpm	1151	1275	1902	858	3428	2919
May	Hours	380.6	362.3	156.6	217.5	130.9	132.6
	Gallons	25.889	26.873	18.738	11.167	24.337	23.225
	gpm	1134	1236	1994	856	3099	2919
June	Hours	339.3	380.1	217.6	239.1	90.7	189.5
	Gallons	25.081	28.988	26.089	11.979	18.704	33.117
	gpm	1232	1271	1998	835	3437	2913
July	Hours	313.5	428.7	224.1	224.5	249.7	77.3
	Gallons	23.444	32.5	25.117	11.425	51.179	13.509
	gpm	1246	1264	1868	848	3416	2913
August	Hours	345.3	397.5	248.8	245.4	157.7	177.7
	Gallons	27.025	29.425	29.86	12.546	32.258	31.133
	gpm	1304	1234	2000	852	3409	2920
September	Hours	290.2	428.8	187.8	173.8	172.3	133
	Gallons	20.69	32.095	22.637	8.927	35.341	23.264
	gpm	1188	1247	2009	856	3419	2915
October	Hours	338.5	404.2	179.3	191	97.3	117.5
	Gallons	23.863	29.944	21.809	9.798	19.936	20.519
	gpm	1175	1235	2027	855	3415	2910
November	Hours	361.8	356.3	178.6	179.3	86.5	88.1
	Gallons	24.341	26.445	21.573	9.24	17.706	15.403
	gpm	1121	1237	2013	859	3412	2914
December	Hours	272.1	467.3	147.4	151.4	92.7	145.9
	Gallons	17.526	34.265	17.009	7.844	18.973	25.494
	gpm	1074	1222	1923	863	3411	2912
Average hrs/week:		74.5	94.1	39.6	42.1	34.4	23.7
Average gpm:		1219	1255	1976	852	3396	2895

Notes:

Hours - Total hours pumped per month
Gallons - Millions of gallons pumped per month
gpm - Gallons per minute

Table 4.1

**Annual Groundwater Monitoring Event
Analytical Results - November 18-19, 2020
Wausau Water Supply NPL Site
Wausau, Wisconsin**

Sample Location:	CW3	E21	E22A	E24AR	E37A	MW10B	
Sample Name:	W-201119-KJ-19	W-201119-KJ-25	W-201119-KJ-20	W-201119-KJ-29	W-201119-KJ-22	W-201119-KJ-28	
Sample Date:	11/19/2020	11/19/2020	11/19/2020	11/19/2020	11/19/2020	11/19/2020	
Parameters	Units	WDNR ES	EB	EB	EB	EB	EB
Volatile Organic Compounds							
1,1,2-Trichloroethane	ug/L	200	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	ug/L	9,000	10 U	10 U	10 U	10 U	10 U
Benzene	ug/L	5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	ug/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	6	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
cis-1,2-Dichloroethene	ug/L	70	0.59 J	1.0 U	1.0 U	1.7	4.0
Ethylbenzene	ug/L	700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Methylene chloride	ug/L	5	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	ug/L	5	0.63 J	1.0 U	9.6	1.4	0.96 J
Toluene	ug/L	800	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	ug/L	5	0.76	0.50 U	0.43 J	0.77	0.30 J
Vinyl chloride	ug/L	0.2	1.0 U	1.0 U	1.0 U	0.50 J	0.39 J
Xylenes (total)	ug/L	2,000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

Note:

U - Not detected at the associated reporting limit

J - Estimated concentration

 -Detected

 -Concentration exceeded WDNR Enforcement Standard

EB - East Bank Well

WB - West Bank Well

Table 4.1

**Annual Groundwater Monitoring Event
Analytical Results - November 18-19, 2020
Wausau Water Supply NPL Site
Wausau, Wisconsin**

Sample Location:	WC3B	WC5A	WW4	WW6	WW6	C2S		
Sample Name:	W-201119-KJ-24	W-201119-KJ-23	W-201119-KJ-18	W-201119-KJ-26	W-201119-KJ-27	W-201118-KJ-08		
Sample Date:	11/19/2020	11/19/2020	11/19/2020	11/19/2020	11/19/2020 (Duplicate)	11/18/2020		
Parameters	EB	EB	EB	EB	EB	WB		
Units	WDNR ES							
Volatile Organic Compounds								
1,1,2-Trichloroethane	ug/L	200	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
1,1-Dichloroethene	ug/L	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
Acetone	ug/L	9,000	10 U	10 U	10 U	10 U	10 U	
Benzene	ug/L	5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	
Carbon tetrachloride	ug/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
Chloroform (Trichloromethane)	ug/L	6	2.0 U	0.50 J	2.0 U	2.0 U	2.0 U	
cis-1,2-Dichloroethene	ug/L	70	1.0 U	11	1.0 U	20	15	1.0 U
Ethylbenzene	ug/L	700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Methylene chloride	ug/L	5	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	ug/L	5	7.7	19	1.0 U	0.91 J	1.1	1.0 U
Toluene	ug/L	800	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	ug/L	5	0.55	1.1	0.50 U	3.5	3.4	0.46 J
Vinyl chloride	ug/L	0.2	1.0 U	4.2	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	2,000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

Note:

U - Not detected at the associated reporting limit

J - Estimated concentration

-Detected

-Concentration exceeded WDNR Enforcement Standard

EB - East Bank Well

WB - West Bank Well

Table 4.1

**Annual Groundwater Monitoring Event
Analytical Results - November 18-19, 2020
Wausau Water Supply NPL Site
Wausau, Wisconsin**

Sample Location:			C4S	CW6	EW1	MW1A	R2D	R3D
Sample Name:			W-201119-KJ-30	W-201118-KJ-01	W-201119-KJ-17	W-201119-KJ-14	W-201118-KJ-06	W-201118-KJ-04
Sample Date:			11/19/2020	11/18/2020	11/19/2020	11/19/2020	11/18/2020	11/18/2020
			WB	WB	WB	WB	WB	WB
Parameters	Units	WDNR ES						
Volatile Organic Compounds								
1,1,2-Trichloroethane	ug/L	200	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	ug/L	9,000	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	ug/L	5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	ug/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	6	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
cis-1,2-Dichloroethene	ug/L	70	1.0 U	1.0 U	1.0 U	1.0 U	1.1	1.1
Ethylbenzene	ug/L	700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Methylene chloride	ug/L	5	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	ug/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	800	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	ug/L	5	2.3	2.0	0.50 U	0.68	12	12
Vinyl chloride	ug/L	0.2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	2,000	1.0 U	1.0 U	1.0 U	0.47 J	1.0 U	1.0 U

Note:

U - Not detected at the associated reporting limit

J - Estimated concentration

-Detected

-Concentration exceeded WDNR Enforcement Standard

EB - East Bank Well

WB - West Bank Well

Table 4.1

**Annual Groundwater Monitoring Event
Analytical Results - November 18-19, 2020
Wausau Water Supply NPL Site
Wausau, Wisconsin**

Sample Location:			R4D	W52	W53A	W54	W54	W55
Sample Name:			W-201118-KJ-09	W-201118-KJ-10	W-201118-KJ-11	W-201119-KJ-15	W-201119-KJ-16	W-201119-KJ-12
Sample Date:			11/18/2020	11/18/2020	11/18/2020	11/19/2020	11/19/2020 (Duplicate)	11/19/2020
			WB	WB	WB	WB	WB	WB
Parameters	Units	WDNR ES						
Volatile Organic Compounds								
1,1,2-Trichloroethane	ug/L	200	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	ug/L	9,000	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	ug/L	5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	ug/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	6	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
cis-1,2-Dichloroethene	ug/L	70	1.0 U	0.67 J	1.0 U	2.0	1.8	17
Ethylbenzene	ug/L	700	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Methylene chloride	ug/L	5	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	ug/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	800	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	ug/L	5	4.7	2.9	59	26	26	15
Vinyl chloride	ug/L	0.2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	2,000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

Note:

U - Not detected at the associated reporting limit

J - Estimated concentration

-Detected

-Concentration exceeded WDNR Enforcement Standard

EB - East Bank Well

WB - West Bank Well

Table 4.1

**Annual Groundwater Monitoring Event
Analytical Results - November 18-19, 2020
Wausau Water Supply NPL Site
Wausau, Wisconsin**

Sample Location:	W56		W56		WSWD	
	W-201118-KJ-02		W-201118-KJ-03		W-201118-KJ-07	
Sample Name:						
Sample Date:	11/18/2020		11/18/2020 (Duplicate)		11/18/2020	
Parameters	Units	WDNR ES	WB	WB	WB	WB
Volatile Organic Compounds						
1,1,2-Trichloroethane	ug/L	200	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	7	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	ug/L	9,000	10 U	10 U	10 U	10 U
Benzene	ug/L	5	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	ug/L	5	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	6	2.0 U	2.0 U	2.0 U	2.0 U
cis-1,2-Dichloroethene	ug/L	70	1.0 U	1.0 U	0.61 J	0.61 J
Ethylbenzene	ug/L	700	0.50 U	0.50 U	0.50 U	0.50 U
Methylene chloride	ug/L	5	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	ug/L	5	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	800	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	ug/L	5	0.44 J	0.50 U	14	14
Vinyl chloride	ug/L	0.2	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	2,000	1.0 U	1.0 U	1.0 U	1.0 U

Note:

U - Not detected at the associated reporting limit

J - Estimated concentration

 -Detected

 -Concentration exceeded WDNR Enforcement Standard

EB - East Bank Well

WB - West Bank Well

Appendices

Appendix A

**November 18 and 19, 2020 Laboratory
Report and Data Quality Validation
Memorandum**



Memorandum

December 11, 2020

To: Chuck Ahrens, GHD

Ref. No.: 003978

From: ~~Grant Anderson~~
Grant Anderson/md/21

Tel: 612-524-6836

**Subject: Analytical Results and Reduced Data Validation
Groundwater Sampling Event
Wausau Superfund – Wausau, Wisconsin
November 2020**

1. Introduction

The following document details a reduced validation of analytical results for groundwater samples collected in support of the groundwater monitoring program at the Wausau Superfund Site in Wausau, Wisconsin during November 2020. Groundwater samples were submitted to Eurofins TestAmerica (TestAmerica), located in University Park, Illinois. A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

Standard GHD Services, Inc. (GHD) report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody forms, finished report forms, method blank data, recovery data from surrogate spikes/laboratory control samples (LCS)/matrix spike (MS) samples, and field QA/QC samples.

The QA/QC criteria by which these data have been assessed are outlined in the analytical method referenced in Table 3 and applicable guidance from the document entitled:

- i) "National Functional Guidelines for Organic Superfund Methods Data Review,"
EPA-540-R-2017-002, January 2017

Item i) will subsequently be referred to as the "Guidelines" in this Memorandum.

2. Sample Holding Time

The sample holding time criteria for the analyses are summarized in Table 3. The sample chain of custody documents and the analytical report were used to determine sample holding times. All samples were analyzed within the required holding times.

All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6°C).



3. Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

Laboratory method blanks were analyzed at a minimum frequency of one per 20 investigative samples and/or one per analytical batch.

All method blank results were non-detect, indicating that laboratory contamination was not a factor for this investigation.

4. Surrogate Spike Recoveries

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for organics are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices.

All samples submitted for volatile organic compound (VOC) determinations were spiked with the appropriate number of surrogate compounds prior to sample analysis.

Surrogate recoveries were assessed against laboratory control limits. All surrogate recoveries met the above criteria.

5. Laboratory Control Sample (LCS) Analyses

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects.

For this study, LCS were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

The LCS contained all compounds of interest. The LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

6. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of analytes of concern and analyzed as MS/MSD samples. The relative percent difference (RPD) between the MS and MSD is used to assess analytical precision. If the original sample concentration is significantly greater than the spike concentration, the recovery is not assessed.

MS/MSD analyses were performed as specified in Table 1. The laboratory performed additional MS/MSD analyses internally.



The MS/MSD samples were spiked with all compounds of interest. The percent recoveries and RPD values for investigative samples were within the laboratory control limits demonstrating acceptable analytical accuracy and precision.

7. Field QA/QC Samples

The field QA/QC consisted of two trip blank samples, one rinsate blank sample, two field blank samples and three field duplicate sample sets.

Trip Blank Sample Analysis

To evaluate contamination from sample collection, transportation, storage, and analytical activities, two trip blank samples were submitted to the laboratory for VOC analysis. All results were non-detect for the compounds of interest.

Rinsate Blank Sample Analysis

To assess field decontamination procedures, ambient conditions at the site and cleanliness of sample containers, one rinsate blank sample was submitted for analysis, as identified in Table 1. All results were non-detect for the compounds of interest.

Field Blank Sample Analysis

To assess ambient conditions at the site and cleanliness of sample containers, two field blank samples were submitted for analysis, as identified in Table 1. One of the field blanks yielded a detectable concentration of toluene. Table 4 lists the toluene detection. Associated sample results are qualified as noted in the table. The remaining field blank sample results were non-detect.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, three field duplicate sample sets were collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than 50 percent. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criteria is one times the RL value.

The field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision.

8. Analyte Reporting

The laboratory reported detected results down to the laboratory's method detection limit (MDL) for each analyte. Positive analyte detections less than the RL but greater than the MDL were qualified as estimated (J) in Table 2 unless qualified otherwise in this memorandum. Non-detect results were presented as non-detect at the RL in Table 2.



9. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable with the specific qualifications noted herein.

Table 1

**Sample Collection and Analysis Summary
Groundwater Sampling Event
Wausau Superfund Site
Wausau, Wisconsin
November 2020**

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters	Comments
Trip Blank #1	Lab	water	11/18/2020	00:00	Select VOC	Trip Blank
Trip Blank #2	Lab	water	11/19/2020	00:00	Select VOC	Trip Blank
W-201118-KJ-01	CW6	water	11/18/2020	10:48	Select VOC	
W-201118-KJ-02	W56	water	11/18/2020	14:35	Select VOC	
W-201118-KJ-03	W56	water	11/18/2020	14:36	Select VOC	Duplicate (KJ-02)
W-201118-KJ-04	R3D	water	11/18/2020	15:18	Select VOC	
W-201118-KJ-05	R3D	water	11/18/2020	14:45	Select VOC	Rinsate Blank
W-201118-KJ-06	R2D	water	11/18/2020	15:53	Select VOC	
W-201118-KJ-07	WSWD	water	11/18/2020	14:25	Select VOC	
W-201118-KJ-08	C2S	water	11/18/2020	14:52	Select VOC	
W-201118-KJ-09	R4D	water	11/18/2020	15:24	Select VOC	
W-201118-KJ-10	W52	water	11/18/2020	15:57	Select VOC	
W-201118-KJ-11	W53A	water	11/18/2020	16:20	Select VOC	
W-201119-KJ-12	W55	water	11/19/2020	08:20	Select VOC	
W-201119-KJ-13	W55	water	11/19/2020	08:25	Select VOC	Field Blank
W-201119-KJ-14	MW1A	water	11/19/2020	08:55	Select VOC	
W-201119-KJ-15	W54	water	11/19/2020	08:27	Select VOC	
W-201119-KJ-16	W54	water	11/19/2020	08:28	Select VOC	Duplicate (KJ-15)
W-201119-KJ-17	EW1	water	11/19/2020	08:23	Select VOC	
W-201119-KJ-18	WW4	water	11/19/2020	09:25	Select VOC	
W-201119-KJ-19	CW3	water	11/19/2020	09:00	Select VOC	
W-201119-KJ-20	E22A	water	11/19/2020	10:09	Select VOC	MS/MSD
W-201119-KJ-21	E37A	water	11/19/2020	10:27	Select VOC	Field Blank
W-201119-KJ-22	E37A	water	11/19/2020	10:56	Select VOC	
W-201119-KJ-23	WC5A	water	11/19/2020	12:12	Select VOC	
W-201119-KJ-24	WC3B	water	11/19/2020	12:29	Select VOC	
W-201119-KJ-25	E21	water	11/19/2020	12:55	Select VOC	MS/MSD
W-201119-KJ-26	WW6	water	11/19/2020	13:36	Select VOC	
W-201119-KJ-27	WW6	water	11/19/2020	13:37	Select VOC	
W-201119-KJ-28	MW10B	water	11/19/2020	14:04	Select VOC	Duplicate (KJ-26)
W-201119-KJ-29	E24AR	water	11/19/2020	14:32	Select VOC	
W-201119-KJ-30	C4S	water	11/19/2020	15:04	Select VOC	

Notes:

VOC - Volatile Organic Compounds

MS/MSD - Matrix Spike/Matrix Spike Duplicate

Table 2

**Validated Analytical Results Summary
Groundwater Sampling Event
Wausau Superfund Site
Wausau, Wisconsin
November 2020**

Location ID:	C2S	C4S	CW3	CW6	E21	E22A	E24AR	E37A	E37A	EW1
Sample Name:	W-201118-KJ-08	W-201119-KJ-30	W-201119-KJ-19	W-201118-KJ-01	W-201119-KJ-25	W-201119-KJ-20	W-201119-KJ-29	W-201119-KJ-22	W-201119-KJ-21	W-201119-KJ-17
Sample Date:	11/18/2020	11/19/2020	11/19/2020	11/18/2020	11/19/2020	11/19/2020	11/19/2020	11/19/2020	11/19/2020	11/19/2020

Parameters	Unit	C2S	C4S	CW3	CW6	E21	E22A	E24AR	E37A	E37A	EW1
Volatile Organic Compounds											
1,1,2-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
cis-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	0.59 J	1.0 U	1.0 U	1.0 U	1.7	4.0	1.0 U	1.0 U
Ethylbenzene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Methylene chloride	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	µg/L	1.0 U	1.0 U	0.63 J	1.0 U	1.0 U	9.6	1.4	0.96 J	1.0 U	1.0 U
Toluene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.17 J	0.50 U
Trichloroethene	µg/L	0.46 J	2.3	0.76	2.0	0.50 U	0.43 J	0.77	0.30 J	0.50 U	0.50 U
Vinyl chloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.50 J	0.39 J	1.0 U	1.0 U
Xylenes (total)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

Table 2

**Validated Analytical Results Summary
Groundwater Sampling Event
Wausau Superfund Site
Wausau, Wisconsin
November 2020**

Location ID:	MW10B	MW1A	R2D	R3D	R3D	R4D	W52	W53A	W54	W54	
Sample Name:	W-201119-KJ-28	W-201119-KJ-14	W-201118-KJ-06	W-201118-KJ-04	W-201118-KJ-05	W-201118-KJ-09	W-201118-KJ-10	W-201118-KJ-11	W-201119-KJ-15	W-201119-KJ-16	
Sample Date:	11/19/2020	11/19/2020	11/18/2020	11/18/2020	11/18/2020	11/18/2020	11/18/2020	11/18/2020	11/19/2020	11/19/2020 Duplicate	
Parameters	Unit										
Volatile Organic Compounds											
1,1,2-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
cis-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.1	1.1	1.0 U	1.0 U	0.67 J	1.0 U	2.0	1.8
Ethylbenzene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Methylene chloride	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	µg/L	0.50 U	0.68	12	12	0.50 U	4.7	2.9	59	26	26
Vinyl chloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	µg/L	1.0 U	0.47 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

Table 2

**Validated Analytical Results Summary
Groundwater Sampling Event
Wausau Superfund Site
Wausau, Wisconsin
November 2020**

Location ID:	W55	W55	W56	W56	WC3B	WC5A	WSWD	WW4	WW6	WW6	
Sample Name:	W-201119-KJ-12	W-201119-KJ-13	W-201118-KJ-02	W-201118-KJ-03	W-201119-KJ-24	W-201119-KJ-23	W-201118-KJ-07	W-201119-KJ-18	W-201119-KJ-26	W-201119-KJ-27	
Sample Date:	11/19/2020	11/19/2020	11/18/2020	11/18/2020 Duplicate	11/19/2020	11/19/2020	11/18/2020	11/19/2020	11/19/2020	11/19/2020 Duplicate	
Parameters	Unit										
Volatile Organic Compounds											
1,1,2-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Carbon tetrachloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	0.50 J	2.0 U	2.0 U	2.0 U	2.0 U
cis-1,2-Dichloroethene	µg/L	17	1.0 U	1.0 U	1.0 U	1.0 U	11	0.61 J	1.0 U	20	15
Ethylbenzene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Methylene chloride	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Tetrachloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	7.7	19	1.0 U	1.0 U	0.91 J	1.1
Toluene	µg/L	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	µg/L	15	0.50 U	0.44 J	0.50 U	0.55	1.1	14	0.50 U	3.5	3.4
Vinyl chloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.2	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

Notes:

- U - Not detected at the associated reporting limit
- J - Estimated concentration

Table 3

**Analytical Method and Holding Time Criteria
Groundwater Sampling Event
Wausau Superfund Site
Wausau, Wisconsin
November 2020**

Parameter	Method	Matrix	Holding Time	
			Collection to Extraction (Days)	Collection or Extraction to Analysis (Days)
Volatile Organic Compounds (VOC)	SW-846 8260B	Water	-	14

Notes:

Method Reference:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986,
with subsequent revisions

Table 4

**Qualified Sample Data Due to Analyte Concentrations in the Field Blanks
Groundwater Sampling Event
Wausau Superfund Site
Wausau, Wisconsin
November 2020**

Parameter	Rinse Blank ID	Blank Date (dd/mm/yyyy)	Analyte	Blank Result	Associated Sample ID	Original Result	Qualified Result	Units
VOC	W-201119-KJ-21	11/19/2020	Toluene	0.17J	W-201119-KJ-16	0.17 J	0.50 U	ug/L
					W-201119-KJ-17	0.36 J	0.50 U	ug/L
					W-201119-KJ-18	0.19 J	0.50 U	ug/L
					W-201119-KJ-19	0.15 J	0.50 U	ug/L
					W-201119-KJ-23	0.18 J	0.50 U	ug/L
					W-201119-KJ-24	0.22 J	0.50 U	ug/L
					W-201119-KJ-25	0.16 J	0.50 U	ug/L
					W-201119-KJ-26	0.16 J	0.50 U	ug/L
					W-201119-KJ-27	0.17 J	0.50 U	ug/L
					W-201119-KJ-28	0.16 J	0.50 U	ug/L
					W-201119-KJ-29	0.15 J	0.50 U	ug/L
					W-201119-KJ-30	0.17 J	0.50 U	ug/L

Notes:

- U - Not detected at the associated reporting limit
- J - Estimated concentration
- VOC - Volatile Organic Compounds

ANALYTICAL REPORT

Eurofins TestAmerica, Chicago
2417 Bond Street
University Park, IL 60484
Tel: (708)534-5200

Laboratory Job ID: 500-191467-1
Client Project/Site: Wausau - 003978

For:
GHD Services Inc.
1801 Old Highway 8 NW
Suite 114
St. Paul, Minnesota 55112

Attn: Mr. Grant Anderson



Authorized for release by:
12/3/2020 2:39:28 PM

Richard Wright, Senior Project Manager
(708)746-0045
Richard.Wright@Eurofinset.com

LINKS

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The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Job ID: 500-191467-1

Laboratory: Eurofins TestAmerica, Chicago

Narrative

**Job Narrative
500-191467-1**

Receipt

The samples were received on 11/20/2020 9:40 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.0° C and 1.9° C.

GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Detection Summary

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: Trip Blank #1

Lab Sample ID: 500-191467-1

No Detections.

Client Sample ID: Trip Blank #2

Lab Sample ID: 500-191467-2

No Detections.

Client Sample ID: W-201118-KJ-01

Lab Sample ID: 500-191467-3

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	2.0		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-201118-KJ-02

Lab Sample ID: 500-191467-4

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	0.44	J	0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-201118-KJ-03

Lab Sample ID: 500-191467-5

No Detections.

Client Sample ID: W-201118-KJ-04

Lab Sample ID: 500-191467-6

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.1		1.0	0.41	ug/L	1		8260B	Total/NA
Trichloroethene	12		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-201118-KJ-05

Lab Sample ID: 500-191467-7

No Detections.

Client Sample ID: W-201118-KJ-06

Lab Sample ID: 500-191467-8

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.1		1.0	0.41	ug/L	1		8260B	Total/NA
Trichloroethene	12		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-201118-KJ-07

Lab Sample ID: 500-191467-9

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.61	J	1.0	0.41	ug/L	1		8260B	Total/NA
Trichloroethene	14		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-201118-KJ-08

Lab Sample ID: 500-191467-10

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	0.46	J	0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-201118-KJ-09

Lab Sample ID: 500-191467-11

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	4.7		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-201118-KJ-10

Lab Sample ID: 500-191467-12

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.67	J	1.0	0.41	ug/L	1		8260B	Total/NA
Trichloroethene	2.9		0.50	0.16	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago

Detection Summary

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201118-KJ-11

Lab Sample ID: 500-191467-13

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	59		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-201119-KJ-12

Lab Sample ID: 500-191467-14

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	17		1.0	0.41	ug/L	1		8260B	Total/NA
Trichloroethene	15		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-201119-KJ-13

Lab Sample ID: 500-191467-15

No Detections.

Client Sample ID: W-201119-KJ-14

Lab Sample ID: 500-191467-16

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	0.68		0.50	0.16	ug/L	1		8260B	Total/NA
Xylenes, Total	0.47	J	1.0	0.22	ug/L	1		8260B	Total/NA

Client Sample ID: W-201119-KJ-15

Lab Sample ID: 500-191467-17

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.0		1.0	0.41	ug/L	1		8260B	Total/NA
Trichloroethene	26		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-201119-KJ-16

Lab Sample ID: 500-191467-18

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.8		1.0	0.41	ug/L	1		8260B	Total/NA
Toluene	0.17	J	0.50	0.15	ug/L	1		8260B	Total/NA
Trichloroethene	26		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-201119-KJ-17

Lab Sample ID: 500-191467-19

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.36	J	0.50	0.15	ug/L	1		8260B	Total/NA

Client Sample ID: W-201119-KJ-18

Lab Sample ID: 500-191467-20

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.19	J	0.50	0.15	ug/L	1		8260B	Total/NA

Client Sample ID: W-201119-KJ-19

Lab Sample ID: 500-191467-21

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.59	J	1.0	0.41	ug/L	1		8260B	Total/NA
Tetrachloroethene	0.63	J	1.0	0.37	ug/L	1		8260B	Total/NA
Toluene	0.15	J	0.50	0.15	ug/L	1		8260B	Total/NA
Trichloroethene	0.76		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-201119-KJ-20

Lab Sample ID: 500-191467-22

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	9.6		1.0	0.37	ug/L	1		8260B	Total/NA
Trichloroethene	0.43	J	0.50	0.16	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago

Detection Summary

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201119-KJ-21

Lab Sample ID: 500-191467-23

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.17	J	0.50	0.15	ug/L	1		8260B	Total/NA

Client Sample ID: W-201119-KJ-22

Lab Sample ID: 500-191467-24

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	4.0		1.0	0.41	ug/L	1		8260B	Total/NA
Tetrachloroethene	0.96	J	1.0	0.37	ug/L	1		8260B	Total/NA
Trichloroethene	0.30	J	0.50	0.16	ug/L	1		8260B	Total/NA
Vinyl chloride	0.39	J	1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: W-201119-KJ-23

Lab Sample ID: 500-191467-25

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Chloroform	0.50	J	2.0	0.37	ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	11		1.0	0.41	ug/L	1		8260B	Total/NA
Tetrachloroethene	19		1.0	0.37	ug/L	1		8260B	Total/NA
Toluene	0.18	J	0.50	0.15	ug/L	1		8260B	Total/NA
Trichloroethene	1.1		0.50	0.16	ug/L	1		8260B	Total/NA
Vinyl chloride	4.2		1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: W-201119-KJ-24

Lab Sample ID: 500-191467-26

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	7.7		1.0	0.37	ug/L	1		8260B	Total/NA
Toluene	0.22	J	0.50	0.15	ug/L	1		8260B	Total/NA
Trichloroethene	0.55		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-201119-KJ-25

Lab Sample ID: 500-191467-27

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.16	J	0.50	0.15	ug/L	1		8260B	Total/NA

Client Sample ID: W-201119-KJ-26

Lab Sample ID: 500-191467-28

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	20		1.0	0.41	ug/L	1		8260B	Total/NA
Tetrachloroethene	0.91	J	1.0	0.37	ug/L	1		8260B	Total/NA
Toluene	0.16	J	0.50	0.15	ug/L	1		8260B	Total/NA
Trichloroethene	3.5		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-201119-KJ-27

Lab Sample ID: 500-191467-29

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	15		1.0	0.41	ug/L	1		8260B	Total/NA
Tetrachloroethene	1.1		1.0	0.37	ug/L	1		8260B	Total/NA
Toluene	0.17	J	0.50	0.15	ug/L	1		8260B	Total/NA
Trichloroethene	3.4		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-201119-KJ-28

Lab Sample ID: 500-191467-30

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.16	J	0.50	0.15	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago

Detection Summary

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201119-KJ-29

Lab Sample ID: 500-191467-31

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.7		1.0	0.41	ug/L	1		8260B	Total/NA
Tetrachloroethene	1.4		1.0	0.37	ug/L	1		8260B	Total/NA
Toluene	0.15	J	0.50	0.15	ug/L	1		8260B	Total/NA
Trichloroethene	0.77		0.50	0.16	ug/L	1		8260B	Total/NA
Vinyl chloride	0.50	J	1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: W-201119-KJ-30

Lab Sample ID: 500-191467-32

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.17	J	0.50	0.15	ug/L	1		8260B	Total/NA
Trichloroethene	2.3		0.50	0.16	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago

Method Summary

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CHI
5030B	Purge and Trap	SW846	TAL CHI

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CHI = Eurofins TestAmerica, Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200



Sample Summary

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
500-191467-1	Trip Blank #1	Water	11/18/20 00:00	11/20/20 09:40	
500-191467-2	Trip Blank #2	Water	11/19/20 00:00	11/20/20 09:40	
500-191467-3	W-201118-KJ-01	Water	11/18/20 10:48	11/20/20 09:40	
500-191467-4	W-201118-KJ-02	Water	11/18/20 14:35	11/20/20 09:40	
500-191467-5	W-201118-KJ-03	Water	11/18/20 14:36	11/20/20 09:40	
500-191467-6	W-201118-KJ-04	Water	11/18/20 15:18	11/20/20 09:40	
500-191467-7	W-201118-KJ-05	Water	11/18/20 14:45	11/20/20 09:40	
500-191467-8	W-201118-KJ-06	Water	11/18/20 15:53	11/20/20 09:40	
500-191467-9	W-201118-KJ-07	Water	11/18/20 14:25	11/20/20 09:40	
500-191467-10	W-201118-KJ-08	Water	11/18/20 14:52	11/20/20 09:40	
500-191467-11	W-201118-KJ-09	Water	11/18/20 15:24	11/20/20 09:40	
500-191467-12	W-201118-KJ-10	Water	11/18/20 15:57	11/20/20 09:40	
500-191467-13	W-201118-KJ-11	Water	11/18/20 16:20	11/20/20 09:40	
500-191467-14	W-201119-KJ-12	Water	11/19/20 08:20	11/20/20 09:40	
500-191467-15	W-201119-KJ-13	Water	11/19/20 08:25	11/20/20 09:40	
500-191467-16	W-201119-KJ-14	Water	11/19/20 08:55	11/20/20 09:40	
500-191467-17	W-201119-KJ-15	Water	11/19/20 08:27	11/20/20 09:40	
500-191467-18	W-201119-KJ-16	Water	11/19/20 08:28	11/20/20 09:40	
500-191467-19	W-201119-KJ-17	Water	11/19/20 08:23	11/20/20 09:40	
500-191467-20	W-201119-KJ-18	Water	11/19/20 09:25	11/20/20 09:40	
500-191467-21	W-201119-KJ-19	Water	11/19/20 09:00	11/20/20 09:40	
500-191467-22	W-201119-KJ-20	Water	11/19/20 10:09	11/20/20 09:40	
500-191467-23	W-201119-KJ-21	Water	11/19/20 10:27	11/20/20 09:40	
500-191467-24	W-201119-KJ-22	Water	11/19/20 10:56	11/20/20 09:40	
500-191467-25	W-201119-KJ-23	Water	11/19/20 12:12	11/20/20 09:40	
500-191467-26	W-201119-KJ-24	Water	11/19/20 12:29	11/20/20 09:40	
500-191467-27	W-201119-KJ-25	Water	11/19/20 12:55	11/20/20 09:40	
500-191467-28	W-201119-KJ-26	Water	11/19/20 13:36	11/20/20 09:40	
500-191467-29	W-201119-KJ-27	Water	11/19/20 13:37	11/20/20 09:40	
500-191467-30	W-201119-KJ-28	Water	11/19/20 14:04	11/20/20 09:40	
500-191467-31	W-201119-KJ-29	Water	11/19/20 14:32	11/20/20 09:40	
500-191467-32	W-201119-KJ-30	Water	11/19/20 15:04	11/20/20 09:40	

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: Trip Blank #1

Lab Sample ID: 500-191467-1

Date Collected: 11/18/20 00:00

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/01/20 22:54	1
Benzene	<0.15		0.50	0.15	ug/L			12/01/20 22:54	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/01/20 22:54	1
Chloroform	<0.37		2.0	0.37	ug/L			12/01/20 22:54	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			12/01/20 22:54	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/01/20 22:54	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/01/20 22:54	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/01/20 22:54	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/01/20 22:54	1
Toluene	<0.15		0.50	0.15	ug/L			12/01/20 22:54	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/01/20 22:54	1
Trichloroethene	<0.16		0.50	0.16	ug/L			12/01/20 22:54	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/01/20 22:54	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/01/20 22:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	103		72 - 124		12/01/20 22:54	1
Dibromofluoromethane	95		75 - 120		12/01/20 22:54	1
1,2-Dichloroethane-d4 (Surr)	98		75 - 126		12/01/20 22:54	1
Toluene-d8 (Surr)	97		75 - 120		12/01/20 22:54	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: Trip Blank #2

Lab Sample ID: 500-191467-2

Date Collected: 11/19/20 00:00

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/01/20 23:19	1
Benzene	<0.15		0.50	0.15	ug/L			12/01/20 23:19	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/01/20 23:19	1
Chloroform	<0.37		2.0	0.37	ug/L			12/01/20 23:19	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			12/01/20 23:19	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/01/20 23:19	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/01/20 23:19	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/01/20 23:19	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/01/20 23:19	1
Toluene	<0.15		0.50	0.15	ug/L			12/01/20 23:19	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/01/20 23:19	1
Trichloroethene	<0.16		0.50	0.16	ug/L			12/01/20 23:19	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/01/20 23:19	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/01/20 23:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	106		72 - 124		12/01/20 23:19	1
Dibromofluoromethane	93		75 - 120		12/01/20 23:19	1
1,2-Dichloroethane-d4 (Surr)	98		75 - 126		12/01/20 23:19	1
Toluene-d8 (Surr)	99		75 - 120		12/01/20 23:19	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201118-KJ-01

Lab Sample ID: 500-191467-3

Date Collected: 11/18/20 10:48

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/01/20 23:45	1
Benzene	<0.15		0.50	0.15	ug/L			12/01/20 23:45	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/01/20 23:45	1
Chloroform	<0.37		2.0	0.37	ug/L			12/01/20 23:45	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			12/01/20 23:45	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/01/20 23:45	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/01/20 23:45	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/01/20 23:45	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/01/20 23:45	1
Toluene	<0.15		0.50	0.15	ug/L			12/01/20 23:45	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/01/20 23:45	1
Trichloroethene	2.0		0.50	0.16	ug/L			12/01/20 23:45	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/01/20 23:45	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/01/20 23:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	105		72 - 124		12/01/20 23:45	1
Dibromofluoromethane	94		75 - 120		12/01/20 23:45	1
1,2-Dichloroethane-d4 (Surr)	98		75 - 126		12/01/20 23:45	1
Toluene-d8 (Surr)	99		75 - 120		12/01/20 23:45	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201118-KJ-02

Lab Sample ID: 500-191467-4

Date Collected: 11/18/20 14:35

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/02/20 00:11	1
Benzene	<0.15		0.50	0.15	ug/L			12/02/20 00:11	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/02/20 00:11	1
Chloroform	<0.37		2.0	0.37	ug/L			12/02/20 00:11	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			12/02/20 00:11	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/02/20 00:11	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/02/20 00:11	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/02/20 00:11	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/02/20 00:11	1
Toluene	<0.15		0.50	0.15	ug/L			12/02/20 00:11	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/02/20 00:11	1
Trichloroethene	0.44	J	0.50	0.16	ug/L			12/02/20 00:11	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/02/20 00:11	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/02/20 00:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	104		72 - 124		12/02/20 00:11	1
Dibromofluoromethane	93		75 - 120		12/02/20 00:11	1
1,2-Dichloroethane-d4 (Surr)	98		75 - 126		12/02/20 00:11	1
Toluene-d8 (Surr)	99		75 - 120		12/02/20 00:11	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201118-KJ-03

Lab Sample ID: 500-191467-5

Date Collected: 11/18/20 14:36

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/02/20 00:36	1
Benzene	<0.15		0.50	0.15	ug/L			12/02/20 00:36	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/02/20 00:36	1
Chloroform	<0.37		2.0	0.37	ug/L			12/02/20 00:36	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			12/02/20 00:36	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/02/20 00:36	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/02/20 00:36	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/02/20 00:36	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/02/20 00:36	1
Toluene	<0.15		0.50	0.15	ug/L			12/02/20 00:36	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/02/20 00:36	1
Trichloroethene	<0.16		0.50	0.16	ug/L			12/02/20 00:36	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/02/20 00:36	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/02/20 00:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	104		72 - 124		12/02/20 00:36	1
Dibromofluoromethane	93		75 - 120		12/02/20 00:36	1
1,2-Dichloroethane-d4 (Surr)	98		75 - 126		12/02/20 00:36	1
Toluene-d8 (Surr)	100		75 - 120		12/02/20 00:36	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201118-KJ-04

Lab Sample ID: 500-191467-6

Date Collected: 11/18/20 15:18

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/02/20 01:02	1
Benzene	<0.15		0.50	0.15	ug/L			12/02/20 01:02	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/02/20 01:02	1
Chloroform	<0.37		2.0	0.37	ug/L			12/02/20 01:02	1
cis-1,2-Dichloroethene	1.1		1.0	0.41	ug/L			12/02/20 01:02	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/02/20 01:02	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/02/20 01:02	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/02/20 01:02	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/02/20 01:02	1
Toluene	<0.15		0.50	0.15	ug/L			12/02/20 01:02	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/02/20 01:02	1
Trichloroethene	12		0.50	0.16	ug/L			12/02/20 01:02	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/02/20 01:02	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/02/20 01:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	107		72 - 124		12/02/20 01:02	1
Dibromofluoromethane	93		75 - 120		12/02/20 01:02	1
1,2-Dichloroethane-d4 (Surr)	97		75 - 126		12/02/20 01:02	1
Toluene-d8 (Surr)	99		75 - 120		12/02/20 01:02	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201118-KJ-05

Lab Sample ID: 500-191467-7

Date Collected: 11/18/20 14:45

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/02/20 01:27	1
Benzene	<0.15		0.50	0.15	ug/L			12/02/20 01:27	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/02/20 01:27	1
Chloroform	<0.37		2.0	0.37	ug/L			12/02/20 01:27	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			12/02/20 01:27	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/02/20 01:27	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/02/20 01:27	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/02/20 01:27	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/02/20 01:27	1
Toluene	<0.15		0.50	0.15	ug/L			12/02/20 01:27	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/02/20 01:27	1
Trichloroethene	<0.16		0.50	0.16	ug/L			12/02/20 01:27	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/02/20 01:27	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/02/20 01:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		72 - 124		12/02/20 01:27	1
Dibromofluoromethane	94		75 - 120		12/02/20 01:27	1
1,2-Dichloroethane-d4 (Surr)	97		75 - 126		12/02/20 01:27	1
Toluene-d8 (Surr)	97		75 - 120		12/02/20 01:27	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201118-KJ-06

Lab Sample ID: 500-191467-8

Date Collected: 11/18/20 15:53

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/02/20 01:53	1
Benzene	<0.15		0.50	0.15	ug/L			12/02/20 01:53	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/02/20 01:53	1
Chloroform	<0.37		2.0	0.37	ug/L			12/02/20 01:53	1
cis-1,2-Dichloroethene	1.1		1.0	0.41	ug/L			12/02/20 01:53	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/02/20 01:53	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/02/20 01:53	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/02/20 01:53	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/02/20 01:53	1
Toluene	<0.15		0.50	0.15	ug/L			12/02/20 01:53	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/02/20 01:53	1
Trichloroethene	12		0.50	0.16	ug/L			12/02/20 01:53	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/02/20 01:53	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/02/20 01:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	105		72 - 124		12/02/20 01:53	1
Dibromofluoromethane	95		75 - 120		12/02/20 01:53	1
1,2-Dichloroethane-d4 (Surr)	97		75 - 126		12/02/20 01:53	1
Toluene-d8 (Surr)	98		75 - 120		12/02/20 01:53	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201118-KJ-07

Lab Sample ID: 500-191467-9

Date Collected: 11/18/20 14:25

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/02/20 02:18	1
Benzene	<0.15		0.50	0.15	ug/L			12/02/20 02:18	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/02/20 02:18	1
Chloroform	<0.37		2.0	0.37	ug/L			12/02/20 02:18	1
cis-1,2-Dichloroethene	0.61	J	1.0	0.41	ug/L			12/02/20 02:18	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/02/20 02:18	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/02/20 02:18	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/02/20 02:18	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/02/20 02:18	1
Toluene	<0.15		0.50	0.15	ug/L			12/02/20 02:18	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/02/20 02:18	1
Trichloroethene	14		0.50	0.16	ug/L			12/02/20 02:18	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/02/20 02:18	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/02/20 02:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	103		72 - 124		12/02/20 02:18	1
Dibromofluoromethane	96		75 - 120		12/02/20 02:18	1
1,2-Dichloroethane-d4 (Surr)	97		75 - 126		12/02/20 02:18	1
Toluene-d8 (Surr)	100		75 - 120		12/02/20 02:18	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201118-KJ-08

Lab Sample ID: 500-191467-10

Date Collected: 11/18/20 14:52

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/02/20 02:43	1
Benzene	<0.15		0.50	0.15	ug/L			12/02/20 02:43	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/02/20 02:43	1
Chloroform	<0.37		2.0	0.37	ug/L			12/02/20 02:43	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			12/02/20 02:43	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/02/20 02:43	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/02/20 02:43	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/02/20 02:43	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/02/20 02:43	1
Toluene	<0.15		0.50	0.15	ug/L			12/02/20 02:43	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/02/20 02:43	1
Trichloroethene	0.46	J	0.50	0.16	ug/L			12/02/20 02:43	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/02/20 02:43	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/02/20 02:43	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		72 - 124		12/02/20 02:43	1
Dibromofluoromethane	94		75 - 120		12/02/20 02:43	1
1,2-Dichloroethane-d4 (Surr)	99		75 - 126		12/02/20 02:43	1
Toluene-d8 (Surr)	99		75 - 120		12/02/20 02:43	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201118-KJ-09

Lab Sample ID: 500-191467-11

Date Collected: 11/18/20 15:24

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/02/20 03:09	1
Benzene	<0.15		0.50	0.15	ug/L			12/02/20 03:09	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/02/20 03:09	1
Chloroform	<0.37		2.0	0.37	ug/L			12/02/20 03:09	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			12/02/20 03:09	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/02/20 03:09	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/02/20 03:09	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/02/20 03:09	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/02/20 03:09	1
Toluene	<0.15		0.50	0.15	ug/L			12/02/20 03:09	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/02/20 03:09	1
Trichloroethene	4.7		0.50	0.16	ug/L			12/02/20 03:09	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/02/20 03:09	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/02/20 03:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	106		72 - 124		12/02/20 03:09	1
Dibromofluoromethane	94		75 - 120		12/02/20 03:09	1
1,2-Dichloroethane-d4 (Surr)	98		75 - 126		12/02/20 03:09	1
Toluene-d8 (Surr)	100		75 - 120		12/02/20 03:09	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201118-KJ-10

Lab Sample ID: 500-191467-12

Date Collected: 11/18/20 15:57

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/02/20 03:34	1
Benzene	<0.15		0.50	0.15	ug/L			12/02/20 03:34	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/02/20 03:34	1
Chloroform	<0.37		2.0	0.37	ug/L			12/02/20 03:34	1
cis-1,2-Dichloroethene	0.67	J	1.0	0.41	ug/L			12/02/20 03:34	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/02/20 03:34	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/02/20 03:34	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/02/20 03:34	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/02/20 03:34	1
Toluene	<0.15		0.50	0.15	ug/L			12/02/20 03:34	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/02/20 03:34	1
Trichloroethene	2.9		0.50	0.16	ug/L			12/02/20 03:34	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/02/20 03:34	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/02/20 03:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		72 - 124		12/02/20 03:34	1
Dibromofluoromethane	95		75 - 120		12/02/20 03:34	1
1,2-Dichloroethane-d4 (Surr)	98		75 - 126		12/02/20 03:34	1
Toluene-d8 (Surr)	98		75 - 120		12/02/20 03:34	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201118-KJ-11

Lab Sample ID: 500-191467-13

Date Collected: 11/18/20 16:20

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/02/20 04:00	1
Benzene	<0.15		0.50	0.15	ug/L			12/02/20 04:00	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/02/20 04:00	1
Chloroform	<0.37		2.0	0.37	ug/L			12/02/20 04:00	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			12/02/20 04:00	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/02/20 04:00	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/02/20 04:00	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/02/20 04:00	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/02/20 04:00	1
Toluene	<0.15		0.50	0.15	ug/L			12/02/20 04:00	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/02/20 04:00	1
Trichloroethene	59		0.50	0.16	ug/L			12/02/20 04:00	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/02/20 04:00	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/02/20 04:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		72 - 124		12/02/20 04:00	1
Dibromofluoromethane	93		75 - 120		12/02/20 04:00	1
1,2-Dichloroethane-d4 (Surr)	96		75 - 126		12/02/20 04:00	1
Toluene-d8 (Surr)	98		75 - 120		12/02/20 04:00	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201119-KJ-12

Lab Sample ID: 500-191467-14

Date Collected: 11/19/20 08:20

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/02/20 04:26	1
Benzene	<0.15		0.50	0.15	ug/L			12/02/20 04:26	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/02/20 04:26	1
Chloroform	<0.37		2.0	0.37	ug/L			12/02/20 04:26	1
cis-1,2-Dichloroethene	17		1.0	0.41	ug/L			12/02/20 04:26	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/02/20 04:26	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/02/20 04:26	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/02/20 04:26	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/02/20 04:26	1
Toluene	<0.15		0.50	0.15	ug/L			12/02/20 04:26	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/02/20 04:26	1
Trichloroethene	15		0.50	0.16	ug/L			12/02/20 04:26	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/02/20 04:26	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/02/20 04:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	105		72 - 124		12/02/20 04:26	1
Dibromofluoromethane	96		75 - 120		12/02/20 04:26	1
1,2-Dichloroethane-d4 (Surr)	98		75 - 126		12/02/20 04:26	1
Toluene-d8 (Surr)	99		75 - 120		12/02/20 04:26	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201119-KJ-13

Lab Sample ID: 500-191467-15

Date Collected: 11/19/20 08:25

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/02/20 04:51	1
Benzene	<0.15		0.50	0.15	ug/L			12/02/20 04:51	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/02/20 04:51	1
Chloroform	<0.37		2.0	0.37	ug/L			12/02/20 04:51	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			12/02/20 04:51	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/02/20 04:51	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/02/20 04:51	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/02/20 04:51	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/02/20 04:51	1
Toluene	<0.15		0.50	0.15	ug/L			12/02/20 04:51	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/02/20 04:51	1
Trichloroethene	<0.16		0.50	0.16	ug/L			12/02/20 04:51	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/02/20 04:51	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/02/20 04:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		72 - 124		12/02/20 04:51	1
Dibromofluoromethane	92		75 - 120		12/02/20 04:51	1
1,2-Dichloroethane-d4 (Surr)	97		75 - 126		12/02/20 04:51	1
Toluene-d8 (Surr)	99		75 - 120		12/02/20 04:51	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201119-KJ-14

Lab Sample ID: 500-191467-16

Date Collected: 11/19/20 08:55

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/02/20 05:17	1
Benzene	<0.15		0.50	0.15	ug/L			12/02/20 05:17	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/02/20 05:17	1
Chloroform	<0.37		2.0	0.37	ug/L			12/02/20 05:17	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			12/02/20 05:17	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/02/20 05:17	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/02/20 05:17	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/02/20 05:17	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/02/20 05:17	1
Toluene	<0.15		0.50	0.15	ug/L			12/02/20 05:17	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/02/20 05:17	1
Trichloroethene	0.68		0.50	0.16	ug/L			12/02/20 05:17	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/02/20 05:17	1
Xylenes, Total	0.47 J		1.0	0.22	ug/L			12/02/20 05:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		72 - 124		12/02/20 05:17	1
Dibromofluoromethane	95		75 - 120		12/02/20 05:17	1
1,2-Dichloroethane-d4 (Surr)	99		75 - 126		12/02/20 05:17	1
Toluene-d8 (Surr)	98		75 - 120		12/02/20 05:17	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201119-KJ-15

Lab Sample ID: 500-191467-17

Date Collected: 11/19/20 08:27

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/03/20 01:14	1
Benzene	<0.15		0.50	0.15	ug/L			12/03/20 01:14	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/03/20 01:14	1
Chloroform	<0.37		2.0	0.37	ug/L			12/03/20 01:14	1
cis-1,2-Dichloroethene	2.0		1.0	0.41	ug/L			12/03/20 01:14	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/03/20 01:14	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/03/20 01:14	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/03/20 01:14	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/03/20 01:14	1
Toluene	<0.15		0.50	0.15	ug/L			12/03/20 01:14	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/03/20 01:14	1
Trichloroethene	26		0.50	0.16	ug/L			12/03/20 01:14	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/03/20 01:14	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/03/20 01:14	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	112		72 - 124		12/03/20 01:14	1
Dibromofluoromethane	92		75 - 120		12/03/20 01:14	1
1,2-Dichloroethane-d4 (Surr)	95		75 - 126		12/03/20 01:14	1
Toluene-d8 (Surr)	102		75 - 120		12/03/20 01:14	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201119-KJ-16

Lab Sample ID: 500-191467-18

Date Collected: 11/19/20 08:28

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/03/20 01:39	1
Benzene	<0.15		0.50	0.15	ug/L			12/03/20 01:39	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/03/20 01:39	1
Chloroform	<0.37		2.0	0.37	ug/L			12/03/20 01:39	1
cis-1,2-Dichloroethene	1.8		1.0	0.41	ug/L			12/03/20 01:39	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/03/20 01:39	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/03/20 01:39	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/03/20 01:39	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/03/20 01:39	1
Toluene	0.17	J	0.50	0.15	ug/L			12/03/20 01:39	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/03/20 01:39	1
Trichloroethene	26		0.50	0.16	ug/L			12/03/20 01:39	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/03/20 01:39	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/03/20 01:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	113		72 - 124		12/03/20 01:39	1
Dibromofluoromethane	90		75 - 120		12/03/20 01:39	1
1,2-Dichloroethane-d4 (Surr)	94		75 - 126		12/03/20 01:39	1
Toluene-d8 (Surr)	100		75 - 120		12/03/20 01:39	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201119-KJ-17

Lab Sample ID: 500-191467-19

Date Collected: 11/19/20 08:23

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/03/20 02:04	1
Benzene	<0.15		0.50	0.15	ug/L			12/03/20 02:04	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/03/20 02:04	1
Chloroform	<0.37		2.0	0.37	ug/L			12/03/20 02:04	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			12/03/20 02:04	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/03/20 02:04	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/03/20 02:04	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/03/20 02:04	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/03/20 02:04	1
Toluene	0.36	J	0.50	0.15	ug/L			12/03/20 02:04	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/03/20 02:04	1
Trichloroethene	<0.16		0.50	0.16	ug/L			12/03/20 02:04	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/03/20 02:04	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/03/20 02:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	114		72 - 124		12/03/20 02:04	1
Dibromofluoromethane	93		75 - 120		12/03/20 02:04	1
1,2-Dichloroethane-d4 (Surr)	94		75 - 126		12/03/20 02:04	1
Toluene-d8 (Surr)	101		75 - 120		12/03/20 02:04	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201119-KJ-18

Lab Sample ID: 500-191467-20

Date Collected: 11/19/20 09:25

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/03/20 02:29	1
Benzene	<0.15		0.50	0.15	ug/L			12/03/20 02:29	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/03/20 02:29	1
Chloroform	<0.37		2.0	0.37	ug/L			12/03/20 02:29	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			12/03/20 02:29	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/03/20 02:29	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/03/20 02:29	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/03/20 02:29	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/03/20 02:29	1
Toluene	0.19	J	0.50	0.15	ug/L			12/03/20 02:29	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/03/20 02:29	1
Trichloroethene	<0.16		0.50	0.16	ug/L			12/03/20 02:29	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/03/20 02:29	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/03/20 02:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	114		72 - 124		12/03/20 02:29	1
Dibromofluoromethane	94		75 - 120		12/03/20 02:29	1
1,2-Dichloroethane-d4 (Surr)	95		75 - 126		12/03/20 02:29	1
Toluene-d8 (Surr)	101		75 - 120		12/03/20 02:29	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201119-KJ-19

Lab Sample ID: 500-191467-21

Date Collected: 11/19/20 09:00

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/03/20 02:54	1
Benzene	<0.15		0.50	0.15	ug/L			12/03/20 02:54	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/03/20 02:54	1
Chloroform	<0.37		2.0	0.37	ug/L			12/03/20 02:54	1
cis-1,2-Dichloroethene	0.59	J	1.0	0.41	ug/L			12/03/20 02:54	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/03/20 02:54	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/03/20 02:54	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/03/20 02:54	1
Tetrachloroethene	0.63	J	1.0	0.37	ug/L			12/03/20 02:54	1
Toluene	0.15	J	0.50	0.15	ug/L			12/03/20 02:54	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/03/20 02:54	1
Trichloroethene	0.76		0.50	0.16	ug/L			12/03/20 02:54	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/03/20 02:54	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/03/20 02:54	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	111		72 - 124		12/03/20 02:54	1
Dibromofluoromethane	90		75 - 120		12/03/20 02:54	1
1,2-Dichloroethane-d4 (Surr)	92		75 - 126		12/03/20 02:54	1
Toluene-d8 (Surr)	100		75 - 120		12/03/20 02:54	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201119-KJ-20

Lab Sample ID: 500-191467-22

Date Collected: 11/19/20 10:09

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/02/20 15:47	1
Benzene	<0.15		0.50	0.15	ug/L			12/02/20 15:47	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/02/20 15:47	1
Chloroform	<0.37		2.0	0.37	ug/L			12/02/20 15:47	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			12/02/20 15:47	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/02/20 15:47	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/02/20 15:47	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/02/20 15:47	1
Tetrachloroethene	9.6		1.0	0.37	ug/L			12/02/20 15:47	1
Toluene	<0.15		0.50	0.15	ug/L			12/02/20 15:47	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/02/20 15:47	1
Trichloroethene	0.43 J		0.50	0.16	ug/L			12/02/20 15:47	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/02/20 15:47	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/02/20 15:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	98		72 - 124		12/02/20 15:47	1
Dibromofluoromethane	92		75 - 120		12/02/20 15:47	1
1,2-Dichloroethane-d4 (Surr)	97		75 - 126		12/02/20 15:47	1
Toluene-d8 (Surr)	99		75 - 120		12/02/20 15:47	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201119-KJ-21

Lab Sample ID: 500-191467-23

Date Collected: 11/19/20 10:27

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/03/20 03:19	1
Benzene	<0.15		0.50	0.15	ug/L			12/03/20 03:19	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/03/20 03:19	1
Chloroform	<0.37		2.0	0.37	ug/L			12/03/20 03:19	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			12/03/20 03:19	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/03/20 03:19	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/03/20 03:19	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/03/20 03:19	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/03/20 03:19	1
Toluene	0.17	J	0.50	0.15	ug/L			12/03/20 03:19	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/03/20 03:19	1
Trichloroethene	<0.16		0.50	0.16	ug/L			12/03/20 03:19	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/03/20 03:19	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/03/20 03:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	113		72 - 124		12/03/20 03:19	1
Dibromofluoromethane	92		75 - 120		12/03/20 03:19	1
1,2-Dichloroethane-d4 (Surr)	95		75 - 126		12/03/20 03:19	1
Toluene-d8 (Surr)	103		75 - 120		12/03/20 03:19	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201119-KJ-22

Lab Sample ID: 500-191467-24

Date Collected: 11/19/20 10:56

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/03/20 03:44	1
Benzene	<0.15		0.50	0.15	ug/L			12/03/20 03:44	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/03/20 03:44	1
Chloroform	<0.37		2.0	0.37	ug/L			12/03/20 03:44	1
cis-1,2-Dichloroethene	4.0		1.0	0.41	ug/L			12/03/20 03:44	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/03/20 03:44	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/03/20 03:44	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/03/20 03:44	1
Tetrachloroethene	0.96 J		1.0	0.37	ug/L			12/03/20 03:44	1
Toluene	<0.15		0.50	0.15	ug/L			12/03/20 03:44	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/03/20 03:44	1
Trichloroethene	0.30 J		0.50	0.16	ug/L			12/03/20 03:44	1
Vinyl chloride	0.39 J		1.0	0.20	ug/L			12/03/20 03:44	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/03/20 03:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	112		72 - 124		12/03/20 03:44	1
Dibromofluoromethane	93		75 - 120		12/03/20 03:44	1
1,2-Dichloroethane-d4 (Surr)	95		75 - 126		12/03/20 03:44	1
Toluene-d8 (Surr)	101		75 - 120		12/03/20 03:44	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201119-KJ-23

Lab Sample ID: 500-191467-25

Date Collected: 11/19/20 12:12

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/03/20 04:09	1
Benzene	<0.15		0.50	0.15	ug/L			12/03/20 04:09	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/03/20 04:09	1
Chloroform	0.50	J	2.0	0.37	ug/L			12/03/20 04:09	1
cis-1,2-Dichloroethene	11		1.0	0.41	ug/L			12/03/20 04:09	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/03/20 04:09	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/03/20 04:09	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/03/20 04:09	1
Tetrachloroethene	19		1.0	0.37	ug/L			12/03/20 04:09	1
Toluene	0.18	J	0.50	0.15	ug/L			12/03/20 04:09	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/03/20 04:09	1
Trichloroethene	1.1		0.50	0.16	ug/L			12/03/20 04:09	1
Vinyl chloride	4.2		1.0	0.20	ug/L			12/03/20 04:09	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/03/20 04:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	115		72 - 124		12/03/20 04:09	1
Dibromofluoromethane	92		75 - 120		12/03/20 04:09	1
1,2-Dichloroethane-d4 (Surr)	93		75 - 126		12/03/20 04:09	1
Toluene-d8 (Surr)	101		75 - 120		12/03/20 04:09	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201119-KJ-24

Lab Sample ID: 500-191467-26

Date Collected: 11/19/20 12:29

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/03/20 04:34	1
Benzene	<0.15		0.50	0.15	ug/L			12/03/20 04:34	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/03/20 04:34	1
Chloroform	<0.37		2.0	0.37	ug/L			12/03/20 04:34	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			12/03/20 04:34	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/03/20 04:34	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/03/20 04:34	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/03/20 04:34	1
Tetrachloroethene	7.7		1.0	0.37	ug/L			12/03/20 04:34	1
Toluene	0.22	J	0.50	0.15	ug/L			12/03/20 04:34	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/03/20 04:34	1
Trichloroethene	0.55		0.50	0.16	ug/L			12/03/20 04:34	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/03/20 04:34	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/03/20 04:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	115		72 - 124		12/03/20 04:34	1
Dibromofluoromethane	91		75 - 120		12/03/20 04:34	1
1,2-Dichloroethane-d4 (Surr)	94		75 - 126		12/03/20 04:34	1
Toluene-d8 (Surr)	104		75 - 120		12/03/20 04:34	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201119-KJ-25

Lab Sample ID: 500-191467-27

Date Collected: 11/19/20 12:55

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/03/20 04:59	1
Benzene	<0.15		0.50	0.15	ug/L			12/03/20 04:59	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/03/20 04:59	1
Chloroform	<0.37		2.0	0.37	ug/L			12/03/20 04:59	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			12/03/20 04:59	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/03/20 04:59	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/03/20 04:59	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/03/20 04:59	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/03/20 04:59	1
Toluene	0.16	J	0.50	0.15	ug/L			12/03/20 04:59	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/03/20 04:59	1
Trichloroethene	<0.16		0.50	0.16	ug/L			12/03/20 04:59	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/03/20 04:59	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/03/20 04:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	114		72 - 124		12/03/20 04:59	1
Dibromofluoromethane	92		75 - 120		12/03/20 04:59	1
1,2-Dichloroethane-d4 (Surr)	94		75 - 126		12/03/20 04:59	1
Toluene-d8 (Surr)	101		75 - 120		12/03/20 04:59	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201119-KJ-26

Lab Sample ID: 500-191467-28

Date Collected: 11/19/20 13:36

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/03/20 05:24	1
Benzene	<0.15		0.50	0.15	ug/L			12/03/20 05:24	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/03/20 05:24	1
Chloroform	<0.37		2.0	0.37	ug/L			12/03/20 05:24	1
cis-1,2-Dichloroethene	20		1.0	0.41	ug/L			12/03/20 05:24	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/03/20 05:24	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/03/20 05:24	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/03/20 05:24	1
Tetrachloroethene	0.91 J		1.0	0.37	ug/L			12/03/20 05:24	1
Toluene	0.16 J		0.50	0.15	ug/L			12/03/20 05:24	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/03/20 05:24	1
Trichloroethene	3.5		0.50	0.16	ug/L			12/03/20 05:24	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/03/20 05:24	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/03/20 05:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	111		72 - 124		12/03/20 05:24	1
Dibromofluoromethane	93		75 - 120		12/03/20 05:24	1
1,2-Dichloroethane-d4 (Surr)	95		75 - 126		12/03/20 05:24	1
Toluene-d8 (Surr)	100		75 - 120		12/03/20 05:24	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201119-KJ-27

Lab Sample ID: 500-191467-29

Date Collected: 11/19/20 13:37

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/03/20 05:49	1
Benzene	<0.15		0.50	0.15	ug/L			12/03/20 05:49	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/03/20 05:49	1
Chloroform	<0.37		2.0	0.37	ug/L			12/03/20 05:49	1
cis-1,2-Dichloroethene	15		1.0	0.41	ug/L			12/03/20 05:49	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/03/20 05:49	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/03/20 05:49	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/03/20 05:49	1
Tetrachloroethene	1.1		1.0	0.37	ug/L			12/03/20 05:49	1
Toluene	0.17 J		0.50	0.15	ug/L			12/03/20 05:49	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/03/20 05:49	1
Trichloroethene	3.4		0.50	0.16	ug/L			12/03/20 05:49	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/03/20 05:49	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/03/20 05:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	113		72 - 124		12/03/20 05:49	1
Dibromofluoromethane	93		75 - 120		12/03/20 05:49	1
1,2-Dichloroethane-d4 (Surr)	92		75 - 126		12/03/20 05:49	1
Toluene-d8 (Surr)	100		75 - 120		12/03/20 05:49	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201119-KJ-28

Lab Sample ID: 500-191467-30

Date Collected: 11/19/20 14:04

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/03/20 06:13	1
Benzene	<0.15		0.50	0.15	ug/L			12/03/20 06:13	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/03/20 06:13	1
Chloroform	<0.37		2.0	0.37	ug/L			12/03/20 06:13	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			12/03/20 06:13	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/03/20 06:13	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/03/20 06:13	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/03/20 06:13	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/03/20 06:13	1
Toluene	0.16	J	0.50	0.15	ug/L			12/03/20 06:13	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/03/20 06:13	1
Trichloroethene	<0.16		0.50	0.16	ug/L			12/03/20 06:13	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/03/20 06:13	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/03/20 06:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	114		72 - 124		12/03/20 06:13	1
Dibromofluoromethane	92		75 - 120		12/03/20 06:13	1
1,2-Dichloroethane-d4 (Surr)	93		75 - 126		12/03/20 06:13	1
Toluene-d8 (Surr)	100		75 - 120		12/03/20 06:13	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201119-KJ-29

Lab Sample ID: 500-191467-31

Date Collected: 11/19/20 14:32

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/03/20 06:38	1
Benzene	<0.15		0.50	0.15	ug/L			12/03/20 06:38	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/03/20 06:38	1
Chloroform	<0.37		2.0	0.37	ug/L			12/03/20 06:38	1
cis-1,2-Dichloroethene	1.7		1.0	0.41	ug/L			12/03/20 06:38	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/03/20 06:38	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/03/20 06:38	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/03/20 06:38	1
Tetrachloroethene	1.4		1.0	0.37	ug/L			12/03/20 06:38	1
Toluene	0.15 J		0.50	0.15	ug/L			12/03/20 06:38	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/03/20 06:38	1
Trichloroethene	0.77		0.50	0.16	ug/L			12/03/20 06:38	1
Vinyl chloride	0.50 J		1.0	0.20	ug/L			12/03/20 06:38	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/03/20 06:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	115		72 - 124		12/03/20 06:38	1
Dibromofluoromethane	92		75 - 120		12/03/20 06:38	1
1,2-Dichloroethane-d4 (Surr)	94		75 - 126		12/03/20 06:38	1
Toluene-d8 (Surr)	103		75 - 120		12/03/20 06:38	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201119-KJ-30

Lab Sample ID: 500-191467-32

Date Collected: 11/19/20 15:04

Matrix: Water

Date Received: 11/20/20 09:40

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			12/03/20 07:03	1
Benzene	<0.15		0.50	0.15	ug/L			12/03/20 07:03	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/03/20 07:03	1
Chloroform	<0.37		2.0	0.37	ug/L			12/03/20 07:03	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			12/03/20 07:03	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/03/20 07:03	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/03/20 07:03	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/03/20 07:03	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/03/20 07:03	1
Toluene	0.17	J	0.50	0.15	ug/L			12/03/20 07:03	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/03/20 07:03	1
Trichloroethene	2.3		0.50	0.16	ug/L			12/03/20 07:03	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/03/20 07:03	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/03/20 07:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	118		72 - 124		12/03/20 07:03	1
Dibromofluoromethane	91		75 - 120		12/03/20 07:03	1
1,2-Dichloroethane-d4 (Surr)	94		75 - 126		12/03/20 07:03	1
Toluene-d8 (Surr)	103		75 - 120		12/03/20 07:03	1

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Reported value was between the limit of detection and the limit of quantitation.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

QC Association Summary

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

GC/MS VOA

Analysis Batch: 574717

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-191467-1	Trip Blank #1	Total/NA	Water	8260B	
500-191467-2	Trip Blank #2	Total/NA	Water	8260B	
500-191467-3	W-201118-KJ-01	Total/NA	Water	8260B	
500-191467-4	W-201118-KJ-02	Total/NA	Water	8260B	
500-191467-5	W-201118-KJ-03	Total/NA	Water	8260B	
500-191467-6	W-201118-KJ-04	Total/NA	Water	8260B	
500-191467-7	W-201118-KJ-05	Total/NA	Water	8260B	
500-191467-8	W-201118-KJ-06	Total/NA	Water	8260B	
500-191467-9	W-201118-KJ-07	Total/NA	Water	8260B	
500-191467-10	W-201118-KJ-08	Total/NA	Water	8260B	
500-191467-11	W-201118-KJ-09	Total/NA	Water	8260B	
500-191467-12	W-201118-KJ-10	Total/NA	Water	8260B	
500-191467-13	W-201118-KJ-11	Total/NA	Water	8260B	
500-191467-14	W-201119-KJ-12	Total/NA	Water	8260B	
500-191467-15	W-201119-KJ-13	Total/NA	Water	8260B	
500-191467-16	W-201119-KJ-14	Total/NA	Water	8260B	
MB 500-574717/6	Method Blank	Total/NA	Water	8260B	
LCS 500-574717/4	Lab Control Sample	Total/NA	Water	8260B	
500-191467-16 MS	W-201119-KJ-14	Total/NA	Water	8260B	
500-191467-16 MSD	W-201119-KJ-14	Total/NA	Water	8260B	

Analysis Batch: 574890

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-191467-22	W-201119-KJ-20	Total/NA	Water	8260B	
MB 500-574890/7	Method Blank	Total/NA	Water	8260B	
LCS 500-574890/5	Lab Control Sample	Total/NA	Water	8260B	
500-191467-22 MS	W-201119-KJ-20	Total/NA	Water	8260B	
500-191467-22 MSD	W-201119-KJ-20	Total/NA	Water	8260B	

Analysis Batch: 574990

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-191467-17	W-201119-KJ-15	Total/NA	Water	8260B	
500-191467-18	W-201119-KJ-16	Total/NA	Water	8260B	
500-191467-19	W-201119-KJ-17	Total/NA	Water	8260B	
500-191467-20	W-201119-KJ-18	Total/NA	Water	8260B	
500-191467-21	W-201119-KJ-19	Total/NA	Water	8260B	
500-191467-23	W-201119-KJ-21	Total/NA	Water	8260B	
500-191467-24	W-201119-KJ-22	Total/NA	Water	8260B	
500-191467-25	W-201119-KJ-23	Total/NA	Water	8260B	
500-191467-26	W-201119-KJ-24	Total/NA	Water	8260B	
500-191467-27	W-201119-KJ-25	Total/NA	Water	8260B	
500-191467-28	W-201119-KJ-26	Total/NA	Water	8260B	
500-191467-29	W-201119-KJ-27	Total/NA	Water	8260B	
500-191467-30	W-201119-KJ-28	Total/NA	Water	8260B	
500-191467-31	W-201119-KJ-29	Total/NA	Water	8260B	
500-191467-32	W-201119-KJ-30	Total/NA	Water	8260B	
MB 500-574990/6	Method Blank	Total/NA	Water	8260B	
LCS 500-574990/4	Lab Control Sample	Total/NA	Water	8260B	
500-191467-27 MS	W-201119-KJ-25	Total/NA	Water	8260B	
500-191467-27 MSD	W-201119-KJ-25	Total/NA	Water	8260B	

Eurofins TestAmerica, Chicago

Surrogate Summary

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		BFB (72-124)	DBFM (75-120)	DCA (75-126)	TOL (75-120)
500-191467-1	Trip Blank #1	103	95	98	97
500-191467-2	Trip Blank #2	106	93	98	99
500-191467-3	W-201118-KJ-01	105	94	98	99
500-191467-4	W-201118-KJ-02	104	93	98	99
500-191467-5	W-201118-KJ-03	104	93	98	100
500-191467-6	W-201118-KJ-04	107	93	97	99
500-191467-7	W-201118-KJ-05	101	94	97	97
500-191467-8	W-201118-KJ-06	105	95	97	98
500-191467-9	W-201118-KJ-07	103	96	97	100
500-191467-10	W-201118-KJ-08	102	94	99	99
500-191467-11	W-201118-KJ-09	106	94	98	100
500-191467-12	W-201118-KJ-10	101	95	98	98
500-191467-13	W-201118-KJ-11	102	93	96	98
500-191467-14	W-201119-KJ-12	105	96	98	99
500-191467-15	W-201119-KJ-13	102	92	97	99
500-191467-16	W-201119-KJ-14	102	95	99	98
500-191467-16 MS	W-201119-KJ-14	99	95	96	98
500-191467-16 MSD	W-201119-KJ-14	99	96	96	98
500-191467-17	W-201119-KJ-15	112	92	95	102
500-191467-18	W-201119-KJ-16	113	90	94	100
500-191467-19	W-201119-KJ-17	114	93	94	101
500-191467-20	W-201119-KJ-18	114	94	95	101
500-191467-21	W-201119-KJ-19	111	90	92	100
500-191467-22	W-201119-KJ-20	98	92	97	99
500-191467-22 MS	W-201119-KJ-20	96	95	96	98
500-191467-22 MSD	W-201119-KJ-20	98	96	97	99
500-191467-23	W-201119-KJ-21	113	92	95	103
500-191467-24	W-201119-KJ-22	112	93	95	101
500-191467-25	W-201119-KJ-23	115	92	93	101
500-191467-26	W-201119-KJ-24	115	91	94	104
500-191467-27	W-201119-KJ-25	114	92	94	101
500-191467-27 MS	W-201119-KJ-25	108	94	95	102
500-191467-27 MSD	W-201119-KJ-25	108	94	92	101
500-191467-28	W-201119-KJ-26	111	93	95	100
500-191467-29	W-201119-KJ-27	113	93	92	100
500-191467-30	W-201119-KJ-28	114	92	93	100
500-191467-31	W-201119-KJ-29	115	92	94	103
500-191467-32	W-201119-KJ-30	118	91	94	103
LCS 500-574717/4	Lab Control Sample	100	95	97	97
LCS 500-574890/5	Lab Control Sample	97	92	96	97
LCS 500-574990/4	Lab Control Sample	107	96	93	101
MB 500-574717/6	Method Blank	102	93	98	98
MB 500-574890/7	Method Blank	99	93	96	97
MB 500-574990/6	Method Blank	115	90	93	99

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane
DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

QC Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 500-574717/6
Matrix: Water
Analysis Batch: 574717

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acetone	<1.7		10	1.7	ug/L			12/01/20 22:29	1
Benzene	<0.15		0.50	0.15	ug/L			12/01/20 22:29	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/01/20 22:29	1
Chloroform	<0.37		2.0	0.37	ug/L			12/01/20 22:29	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			12/01/20 22:29	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/01/20 22:29	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/01/20 22:29	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/01/20 22:29	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/01/20 22:29	1
Toluene	<0.15		0.50	0.15	ug/L			12/01/20 22:29	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/01/20 22:29	1
Trichloroethene	<0.16		0.50	0.16	ug/L			12/01/20 22:29	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/01/20 22:29	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/01/20 22:29	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
4-Bromofluorobenzene (Surr)	102		72 - 124		12/01/20 22:29	1
Dibromofluoromethane	93		75 - 120		12/01/20 22:29	1
1,2-Dichloroethane-d4 (Surr)	98		75 - 126		12/01/20 22:29	1
Toluene-d8 (Surr)	98		75 - 120		12/01/20 22:29	1

Lab Sample ID: LCS 500-574717/4
Matrix: Water
Analysis Batch: 574717

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
Acetone	50.0	65.1		ug/L		130	40 - 143
Benzene	50.0	51.2		ug/L		102	70 - 120
Carbon tetrachloride	50.0	49.8		ug/L		100	59 - 133
Chloroform	50.0	47.0		ug/L		94	70 - 120
cis-1,2-Dichloroethene	50.0	48.9		ug/L		98	70 - 125
1,1-Dichloroethene	50.0	48.0		ug/L		96	67 - 122
Ethylbenzene	50.0	50.2		ug/L		100	70 - 123
Methylene Chloride	50.0	50.3		ug/L		101	69 - 125
Tetrachloroethene	50.0	50.6		ug/L		101	70 - 128
Toluene	50.0	50.1		ug/L		100	70 - 125
1,1,2-Trichloroethane	50.0	49.5		ug/L		99	71 - 130
Trichloroethene	50.0	50.7		ug/L		101	70 - 125
Vinyl chloride	50.0	48.0		ug/L		96	64 - 126
Xylenes, Total	100	95.4		ug/L		95	70 - 125

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	100		72 - 124
Dibromofluoromethane	95		75 - 120
1,2-Dichloroethane-d4 (Surr)	97		75 - 126
Toluene-d8 (Surr)	97		75 - 120

QC Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 500-191467-16 MS

Matrix: Water

Analysis Batch: 574717

Client Sample ID: W-201119-KJ-14

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	<1.7		50.0	55.1		ug/L		110	40 - 143
Benzene	<0.15		50.0	51.5		ug/L		103	70 - 120
Carbon tetrachloride	<0.38		50.0	48.7		ug/L		97	59 - 133
Chloroform	<0.37		50.0	47.2		ug/L		94	70 - 120
cis-1,2-Dichloroethene	<0.41		50.0	49.4		ug/L		99	70 - 125
1,1-Dichloroethene	<0.39		50.0	48.3		ug/L		97	67 - 122
Ethylbenzene	<0.18		50.0	51.5		ug/L		103	70 - 123
Methylene Chloride	<1.6		50.0	51.3		ug/L		103	69 - 125
Tetrachloroethene	<0.37		50.0	51.8		ug/L		104	70 - 128
Toluene	<0.15		50.0	51.2		ug/L		102	70 - 125
1,1,2-Trichloroethane	<0.35		50.0	49.4		ug/L		99	71 - 130
Trichloroethene	0.68		50.0	52.6		ug/L		104	70 - 125
Vinyl chloride	<0.20		50.0	45.9		ug/L		92	64 - 126
Xylenes, Total	0.47	J	100	97.5		ug/L		97	70 - 125

Surrogate	MS %Recovery	MS Qualifier	MS Limits
4-Bromofluorobenzene (Surr)	99		72 - 124
Dibromofluoromethane	95		75 - 120
1,2-Dichloroethane-d4 (Surr)	96		75 - 126
Toluene-d8 (Surr)	98		75 - 120

Lab Sample ID: 500-191467-16 MSD

Matrix: Water

Analysis Batch: 574717

Client Sample ID: W-201119-KJ-14

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	<1.7		50.0	53.4		ug/L		107	40 - 143	3	20
Benzene	<0.15		50.0	50.4		ug/L		101	70 - 120	2	20
Carbon tetrachloride	<0.38		50.0	47.9		ug/L		96	59 - 133	2	20
Chloroform	<0.37		50.0	45.7		ug/L		91	70 - 120	3	20
cis-1,2-Dichloroethene	<0.41		50.0	47.9		ug/L		96	70 - 125	3	20
1,1-Dichloroethene	<0.39		50.0	45.9		ug/L		92	67 - 122	5	20
Ethylbenzene	<0.18		50.0	50.1		ug/L		100	70 - 123	3	20
Methylene Chloride	<1.6		50.0	48.8		ug/L		98	69 - 125	5	20
Tetrachloroethene	<0.37		50.0	50.7		ug/L		101	70 - 128	2	20
Toluene	<0.15		50.0	49.4		ug/L		99	70 - 125	3	20
1,1,2-Trichloroethane	<0.35		50.0	48.3		ug/L		97	71 - 130	2	20
Trichloroethene	0.68		50.0	51.2		ug/L		101	70 - 125	3	20
Vinyl chloride	<0.20		50.0	45.6		ug/L		91	64 - 126	1	20
Xylenes, Total	0.47	J	100	94.9		ug/L		94	70 - 125	3	20

Surrogate	MSD %Recovery	MSD Qualifier	MSD Limits
4-Bromofluorobenzene (Surr)	99		72 - 124
Dibromofluoromethane	96		75 - 120
1,2-Dichloroethane-d4 (Surr)	96		75 - 126
Toluene-d8 (Surr)	98		75 - 120

QC Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 500-574890/7
Matrix: Water
Analysis Batch: 574890

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acetone	<1.7		10	1.7	ug/L			12/02/20 11:32	1
Benzene	<0.15		0.50	0.15	ug/L			12/02/20 11:32	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/02/20 11:32	1
Chloroform	<0.37		2.0	0.37	ug/L			12/02/20 11:32	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			12/02/20 11:32	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/02/20 11:32	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/02/20 11:32	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/02/20 11:32	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/02/20 11:32	1
Toluene	<0.15		0.50	0.15	ug/L			12/02/20 11:32	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/02/20 11:32	1
Trichloroethene	<0.16		0.50	0.16	ug/L			12/02/20 11:32	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/02/20 11:32	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/02/20 11:32	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
4-Bromofluorobenzene (Surr)	99		72 - 124		12/02/20 11:32	1
Dibromofluoromethane	93		75 - 120		12/02/20 11:32	1
1,2-Dichloroethane-d4 (Surr)	96		75 - 126		12/02/20 11:32	1
Toluene-d8 (Surr)	97		75 - 120		12/02/20 11:32	1

Lab Sample ID: LCS 500-574890/5
Matrix: Water
Analysis Batch: 574890

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
Acetone	50.0	58.5		ug/L		117	40 - 143
Benzene	50.0	48.5		ug/L		97	70 - 120
Carbon tetrachloride	50.0	47.7		ug/L		95	59 - 133
Chloroform	50.0	43.3		ug/L		87	70 - 120
cis-1,2-Dichloroethene	50.0	45.2		ug/L		90	70 - 125
1,1-Dichloroethene	50.0	47.3		ug/L		95	67 - 122
Ethylbenzene	50.0	47.6		ug/L		95	70 - 123
Methylene Chloride	50.0	46.6		ug/L		93	69 - 125
Tetrachloroethene	50.0	50.3		ug/L		101	70 - 128
Toluene	50.0	46.7		ug/L		93	70 - 125
1,1,2-Trichloroethane	50.0	44.3		ug/L		89	71 - 130
Trichloroethene	50.0	49.8		ug/L		100	70 - 125
Vinyl chloride	50.0	48.7		ug/L		97	64 - 126
Xylenes, Total	100	89.2		ug/L		89	70 - 125

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	97		72 - 124
Dibromofluoromethane	92		75 - 120
1,2-Dichloroethane-d4 (Surr)	96		75 - 126
Toluene-d8 (Surr)	97		75 - 120

QC Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 500-191467-22 MS

Matrix: Water

Analysis Batch: 574890

Client Sample ID: W-201119-KJ-20

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	<1.7		50.0	48.4		ug/L		97	40 - 143
Benzene	<0.15		50.0	48.2		ug/L		96	70 - 120
Carbon tetrachloride	<0.38		50.0	46.7		ug/L		93	59 - 133
Chloroform	<0.37		50.0	43.6		ug/L		87	70 - 120
cis-1,2-Dichloroethene	<0.41		50.0	47.1		ug/L		94	70 - 125
1,1-Dichloroethene	<0.39		50.0	46.9		ug/L		94	67 - 122
Ethylbenzene	<0.18		50.0	47.2		ug/L		94	70 - 123
Methylene Chloride	<1.6		50.0	48.3		ug/L		97	69 - 125
Tetrachloroethene	9.6		50.0	58.2		ug/L		97	70 - 128
Toluene	<0.15		50.0	47.6		ug/L		95	70 - 125
1,1,2-Trichloroethane	<0.35		50.0	45.4		ug/L		91	71 - 130
Trichloroethene	0.43	J	50.0	49.0		ug/L		97	70 - 125
Vinyl chloride	<0.20		50.0	52.1		ug/L		104	64 - 126
Xylenes, Total	<0.22		100	89.5		ug/L		89	70 - 125

Surrogate	MS %Recovery	MS Qualifier	MS Limits
4-Bromofluorobenzene (Surr)	96		72 - 124
Dibromofluoromethane	95		75 - 120
1,2-Dichloroethane-d4 (Surr)	96		75 - 126
Toluene-d8 (Surr)	98		75 - 120

Lab Sample ID: 500-191467-22 MSD

Matrix: Water

Analysis Batch: 574890

Client Sample ID: W-201119-KJ-20

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	<1.7		50.0	51.9		ug/L		104	40 - 143	7	20
Benzene	<0.15		50.0	49.3		ug/L		99	70 - 120	2	20
Carbon tetrachloride	<0.38		50.0	47.9		ug/L		96	59 - 133	3	20
Chloroform	<0.37		50.0	45.0		ug/L		90	70 - 120	3	20
cis-1,2-Dichloroethene	<0.41		50.0	47.3		ug/L		95	70 - 125	0	20
1,1-Dichloroethene	<0.39		50.0	47.4		ug/L		95	67 - 122	1	20
Ethylbenzene	<0.18		50.0	48.5		ug/L		97	70 - 123	3	20
Methylene Chloride	<1.6		50.0	48.7		ug/L		97	69 - 125	1	20
Tetrachloroethene	9.6		50.0	60.2		ug/L		101	70 - 128	3	20
Toluene	<0.15		50.0	48.5		ug/L		97	70 - 125	2	20
1,1,2-Trichloroethane	<0.35		50.0	47.0		ug/L		94	71 - 130	3	20
Trichloroethene	0.43	J	50.0	49.8		ug/L		99	70 - 125	2	20
Vinyl chloride	<0.20		50.0	50.1		ug/L		100	64 - 126	4	20
Xylenes, Total	<0.22		100	92.3		ug/L		92	70 - 125	3	20

Surrogate	MSD %Recovery	MSD Qualifier	MSD Limits
4-Bromofluorobenzene (Surr)	98		72 - 124
Dibromofluoromethane	96		75 - 120
1,2-Dichloroethane-d4 (Surr)	97		75 - 126
Toluene-d8 (Surr)	99		75 - 120

QC Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 500-574990/6
Matrix: Water
Analysis Batch: 574990

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB	MB	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acetone	<1.7		10	1.7	ug/L			12/02/20 23:34	1
Benzene	<0.15		0.50	0.15	ug/L			12/02/20 23:34	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			12/02/20 23:34	1
Chloroform	<0.37		2.0	0.37	ug/L			12/02/20 23:34	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			12/02/20 23:34	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			12/02/20 23:34	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			12/02/20 23:34	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			12/02/20 23:34	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			12/02/20 23:34	1
Toluene	<0.15		0.50	0.15	ug/L			12/02/20 23:34	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			12/02/20 23:34	1
Trichloroethene	<0.16		0.50	0.16	ug/L			12/02/20 23:34	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			12/02/20 23:34	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			12/02/20 23:34	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
4-Bromofluorobenzene (Surr)	115		72 - 124		12/02/20 23:34	1
Dibromofluoromethane	90		75 - 120		12/02/20 23:34	1
1,2-Dichloroethane-d4 (Surr)	93		75 - 126		12/02/20 23:34	1
Toluene-d8 (Surr)	99		75 - 120		12/02/20 23:34	1

Lab Sample ID: LCS 500-574990/4
Matrix: Water
Analysis Batch: 574990

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
Acetone	50.0	37.4		ug/L		75	40 - 143
Benzene	50.0	46.9		ug/L		94	70 - 120
Carbon tetrachloride	50.0	44.2		ug/L		88	59 - 133
Chloroform	50.0	46.2		ug/L		92	70 - 120
cis-1,2-Dichloroethene	50.0	46.4		ug/L		93	70 - 125
1,1-Dichloroethene	50.0	42.9		ug/L		86	67 - 122
Ethylbenzene	50.0	50.2		ug/L		100	70 - 123
Methylene Chloride	50.0	43.2		ug/L		86	69 - 125
Tetrachloroethene	50.0	50.6		ug/L		101	70 - 128
Toluene	50.0	47.9		ug/L		96	70 - 125
1,1,2-Trichloroethane	50.0	45.2		ug/L		90	71 - 130
Trichloroethene	50.0	48.7		ug/L		97	70 - 125
Vinyl chloride	50.0	47.6		ug/L		95	64 - 126
Xylenes, Total	100	92.9		ug/L		93	70 - 125

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	107		72 - 124
Dibromofluoromethane	96		75 - 120
1,2-Dichloroethane-d4 (Surr)	93		75 - 126
Toluene-d8 (Surr)	101		75 - 120

QC Sample Results

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 500-191467-27 MS

Matrix: Water

Analysis Batch: 574990

Client Sample ID: W-201119-KJ-25

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	<1.7		50.0	39.9		ug/L		80	40 - 143
Benzene	<0.15		50.0	53.2		ug/L		106	70 - 120
Carbon tetrachloride	<0.38		50.0	49.1		ug/L		98	59 - 133
Chloroform	<0.37		50.0	51.1		ug/L		102	70 - 120
cis-1,2-Dichloroethene	<0.41		50.0	51.9		ug/L		104	70 - 125
1,1-Dichloroethene	<0.39		50.0	48.7		ug/L		97	67 - 122
Ethylbenzene	<0.18		50.0	56.9		ug/L		114	70 - 123
Methylene Chloride	<1.6		50.0	49.4		ug/L		99	69 - 125
Tetrachloroethene	<0.37		50.0	57.9		ug/L		116	70 - 128
Toluene	0.16	J	50.0	54.5		ug/L		109	70 - 125
1,1,2-Trichloroethane	<0.35		50.0	51.9		ug/L		104	71 - 130
Trichloroethene	<0.16		50.0	54.8		ug/L		110	70 - 125
Vinyl chloride	<0.20		50.0	50.6		ug/L		101	64 - 126
Xylenes, Total	<0.22		100	104		ug/L		104	70 - 125

Surrogate	MS %Recovery	MS Qualifier	MS Limits
4-Bromofluorobenzene (Surr)	108		72 - 124
Dibromofluoromethane	94		75 - 120
1,2-Dichloroethane-d4 (Surr)	95		75 - 126
Toluene-d8 (Surr)	102		75 - 120

Lab Sample ID: 500-191467-27 MSD

Matrix: Water

Analysis Batch: 574990

Client Sample ID: W-201119-KJ-25

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	<1.7		50.0	37.3		ug/L		75	40 - 143	7	20
Benzene	<0.15		50.0	50.3		ug/L		101	70 - 120	6	20
Carbon tetrachloride	<0.38		50.0	46.6		ug/L		93	59 - 133	5	20
Chloroform	<0.37		50.0	48.5		ug/L		97	70 - 120	5	20
cis-1,2-Dichloroethene	<0.41		50.0	48.2		ug/L		96	70 - 125	7	20
1,1-Dichloroethene	<0.39		50.0	45.5		ug/L		91	67 - 122	7	20
Ethylbenzene	<0.18		50.0	53.3		ug/L		107	70 - 123	6	20
Methylene Chloride	<1.6		50.0	46.1		ug/L		92	69 - 125	7	20
Tetrachloroethene	<0.37		50.0	54.0		ug/L		108	70 - 128	7	20
Toluene	0.16	J	50.0	51.3		ug/L		102	70 - 125	6	20
1,1,2-Trichloroethane	<0.35		50.0	49.0		ug/L		98	71 - 130	6	20
Trichloroethene	<0.16		50.0	51.1		ug/L		102	70 - 125	7	20
Vinyl chloride	<0.20		50.0	51.8		ug/L		104	64 - 126	2	20
Xylenes, Total	<0.22		100	98.9		ug/L		99	70 - 125	5	20

Surrogate	MSD %Recovery	MSD Qualifier	MSD Limits
4-Bromofluorobenzene (Surr)	108		72 - 124
Dibromofluoromethane	94		75 - 120
1,2-Dichloroethane-d4 (Surr)	92		75 - 126
Toluene-d8 (Surr)	101		75 - 120

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: Trip Blank #1

Date Collected: 11/18/20 00:00

Date Received: 11/20/20 09:40

Lab Sample ID: 500-191467-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574717	12/01/20 22:54	PMF	TAL CHI

Client Sample ID: Trip Blank #2

Date Collected: 11/19/20 00:00

Date Received: 11/20/20 09:40

Lab Sample ID: 500-191467-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574717	12/01/20 23:19	PMF	TAL CHI

Client Sample ID: W-201118-KJ-01

Date Collected: 11/18/20 10:48

Date Received: 11/20/20 09:40

Lab Sample ID: 500-191467-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574717	12/01/20 23:45	PMF	TAL CHI

Client Sample ID: W-201118-KJ-02

Date Collected: 11/18/20 14:35

Date Received: 11/20/20 09:40

Lab Sample ID: 500-191467-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574717	12/02/20 00:11	PMF	TAL CHI

Client Sample ID: W-201118-KJ-03

Date Collected: 11/18/20 14:36

Date Received: 11/20/20 09:40

Lab Sample ID: 500-191467-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574717	12/02/20 00:36	PMF	TAL CHI

Client Sample ID: W-201118-KJ-04

Date Collected: 11/18/20 15:18

Date Received: 11/20/20 09:40

Lab Sample ID: 500-191467-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574717	12/02/20 01:02	PMF	TAL CHI

Client Sample ID: W-201118-KJ-05

Date Collected: 11/18/20 14:45

Date Received: 11/20/20 09:40

Lab Sample ID: 500-191467-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574717	12/02/20 01:27	PMF	TAL CHI

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201118-KJ-06

Lab Sample ID: 500-191467-8

Date Collected: 11/18/20 15:53

Matrix: Water

Date Received: 11/20/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574717	12/02/20 01:53	PMF	TAL CHI

Client Sample ID: W-201118-KJ-07

Lab Sample ID: 500-191467-9

Date Collected: 11/18/20 14:25

Matrix: Water

Date Received: 11/20/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574717	12/02/20 02:18	PMF	TAL CHI

Client Sample ID: W-201118-KJ-08

Lab Sample ID: 500-191467-10

Date Collected: 11/18/20 14:52

Matrix: Water

Date Received: 11/20/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574717	12/02/20 02:43	PMF	TAL CHI

Client Sample ID: W-201118-KJ-09

Lab Sample ID: 500-191467-11

Date Collected: 11/18/20 15:24

Matrix: Water

Date Received: 11/20/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574717	12/02/20 03:09	PMF	TAL CHI

Client Sample ID: W-201118-KJ-10

Lab Sample ID: 500-191467-12

Date Collected: 11/18/20 15:57

Matrix: Water

Date Received: 11/20/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574717	12/02/20 03:34	PMF	TAL CHI

Client Sample ID: W-201118-KJ-11

Lab Sample ID: 500-191467-13

Date Collected: 11/18/20 16:20

Matrix: Water

Date Received: 11/20/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574717	12/02/20 04:00	PMF	TAL CHI

Client Sample ID: W-201119-KJ-12

Lab Sample ID: 500-191467-14

Date Collected: 11/19/20 08:20

Matrix: Water

Date Received: 11/20/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574717	12/02/20 04:26	PMF	TAL CHI

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201119-KJ-13

Lab Sample ID: 500-191467-15

Date Collected: 11/19/20 08:25

Matrix: Water

Date Received: 11/20/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574717	12/02/20 04:51	PMF	TAL CHI

Client Sample ID: W-201119-KJ-14

Lab Sample ID: 500-191467-16

Date Collected: 11/19/20 08:55

Matrix: Water

Date Received: 11/20/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574717	12/02/20 05:17	PMF	TAL CHI

Client Sample ID: W-201119-KJ-15

Lab Sample ID: 500-191467-17

Date Collected: 11/19/20 08:27

Matrix: Water

Date Received: 11/20/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574990	12/03/20 01:14	EMA	TAL CHI

Client Sample ID: W-201119-KJ-16

Lab Sample ID: 500-191467-18

Date Collected: 11/19/20 08:28

Matrix: Water

Date Received: 11/20/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574990	12/03/20 01:39	EMA	TAL CHI

Client Sample ID: W-201119-KJ-17

Lab Sample ID: 500-191467-19

Date Collected: 11/19/20 08:23

Matrix: Water

Date Received: 11/20/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574990	12/03/20 02:04	EMA	TAL CHI

Client Sample ID: W-201119-KJ-18

Lab Sample ID: 500-191467-20

Date Collected: 11/19/20 09:25

Matrix: Water

Date Received: 11/20/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574990	12/03/20 02:29	EMA	TAL CHI

Client Sample ID: W-201119-KJ-19

Lab Sample ID: 500-191467-21

Date Collected: 11/19/20 09:00

Matrix: Water

Date Received: 11/20/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574990	12/03/20 02:54	EMA	TAL CHI

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201119-KJ-20

Lab Sample ID: 500-191467-22

Date Collected: 11/19/20 10:09

Matrix: Water

Date Received: 11/20/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574890	12/02/20 15:47	PMF	TAL CHI

Client Sample ID: W-201119-KJ-21

Lab Sample ID: 500-191467-23

Date Collected: 11/19/20 10:27

Matrix: Water

Date Received: 11/20/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574990	12/03/20 03:19	EMA	TAL CHI

Client Sample ID: W-201119-KJ-22

Lab Sample ID: 500-191467-24

Date Collected: 11/19/20 10:56

Matrix: Water

Date Received: 11/20/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574990	12/03/20 03:44	EMA	TAL CHI

Client Sample ID: W-201119-KJ-23

Lab Sample ID: 500-191467-25

Date Collected: 11/19/20 12:12

Matrix: Water

Date Received: 11/20/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574990	12/03/20 04:09	EMA	TAL CHI

Client Sample ID: W-201119-KJ-24

Lab Sample ID: 500-191467-26

Date Collected: 11/19/20 12:29

Matrix: Water

Date Received: 11/20/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574990	12/03/20 04:34	EMA	TAL CHI

Client Sample ID: W-201119-KJ-25

Lab Sample ID: 500-191467-27

Date Collected: 11/19/20 12:55

Matrix: Water

Date Received: 11/20/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574990	12/03/20 04:59	EMA	TAL CHI

Client Sample ID: W-201119-KJ-26

Lab Sample ID: 500-191467-28

Date Collected: 11/19/20 13:36

Matrix: Water

Date Received: 11/20/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574990	12/03/20 05:24	EMA	TAL CHI

Lab Chronicle

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Client Sample ID: W-201119-KJ-27

Lab Sample ID: 500-191467-29

Date Collected: 11/19/20 13:37

Matrix: Water

Date Received: 11/20/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574990	12/03/20 05:49	EMA	TAL CHI

Client Sample ID: W-201119-KJ-28

Lab Sample ID: 500-191467-30

Date Collected: 11/19/20 14:04

Matrix: Water

Date Received: 11/20/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574990	12/03/20 06:13	EMA	TAL CHI

Client Sample ID: W-201119-KJ-29

Lab Sample ID: 500-191467-31

Date Collected: 11/19/20 14:32

Matrix: Water

Date Received: 11/20/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574990	12/03/20 06:38	EMA	TAL CHI

Client Sample ID: W-201119-KJ-30

Lab Sample ID: 500-191467-32

Date Collected: 11/19/20 15:04

Matrix: Water

Date Received: 11/20/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	574990	12/03/20 07:03	EMA	TAL CHI

Laboratory References:

TAL CHI = Eurofins TestAmerica, Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: Wausau - 003978

Job ID: 500-191467-1

Laboratory: Eurofins TestAmerica, Chicago

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State	999580010	08-31-21

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Address: _____

Regulatory Program: DW NPDES RCRA Other:

TAL-8210

Client Contact		Project Manager: <u>Grant Anderson</u>		Site Contact: <u>Karl Seukin</u>		Date: <u>11/19/2020</u>		COC No: <u>2</u>	
Company Name: <u>640</u>		Tel/Email:		Lab Contact:		Carrier: <u>Fedex</u>		2 of 3 COCs	
Address: <u>1901 Old Hwy 8</u>		Analysis Turnaround Time		Filtered Sample (Y/N) Perform MS/MSD (Y/N) <u>VOCS</u>				Sampler: For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.: <u>500-191467</u>	
City/State/Zip: <u>New Brighton, MD</u>		<input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS							
Phone: <u>507-272-8071</u>		TAT if different from Below _____							
Fax:		<input type="checkbox"/> 2 weeks							
Project Name: <u>WauSaw</u>		<input type="checkbox"/> 1 week							
Site: <u>003978</u>		<input type="checkbox"/> 2 days							
P O #		<input type="checkbox"/> 1 day							
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Sample Specific Notes:
<u>W-20118-KS-11</u>		<u>11/19/2020</u>	<u>1620</u>	<u>G</u>	<u>W</u>	<u>3</u>	<u>N</u>	<u>N</u>	
<u>W-20114-KS-12</u>		<u>11/19/2020</u>	<u>0820</u>						
<u>-13</u>			<u>0825</u>						
<u>-14</u>			<u>0855</u>						
<u>-15</u>			<u>0827</u>						
<u>-16</u>			<u>0828</u>						
<u>-17</u>			<u>0823</u>						
<u>-18</u>			<u>0925</u>						
<u>-19</u>			<u>0900</u>						
<u>-20</u>			<u>1009</u>						<u>MS/MSD</u>
<u>-21</u>			<u>1027</u>						
<u>-22</u>			<u>1056</u>						
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____					Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)				
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.					<input type="checkbox"/> Return to Client <input type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months				
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown									
Special Instructions/QC Requirements & Comments:									
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____ Corr'd: _____		Therm ID No.:			
Relinquished by: <u>[Signature]</u>		Company: <u>640</u>		Date/Time: <u>11/19/2020 1600</u>		Received by:		Date/Time:	
Relinquished by:		Company:		Date/Time:		Received by:		Date/Time:	
Relinquished by:		Company:		Date/Time:		Received Laboratory by: <u>[Signature]</u>		Date/Time: <u>11/20/20 0940</u>	

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Chain of Custody Record 439767 eurofins

Environment Testing
TestAmerica

TAL-8210

Address: _____

Regulatory Program: DW NPDES RCRA Other:

Client Contact	Project Manager: Grant Anderson	Site Contact: Kel Sakin	Date: 11/19/2020
Company Name: GHD	Tel/Email:	Lab Contact:	Carrier: Felix
Address: 1801 Old Hwy 8	Analysis Turnaround Time		
City/State/Zip: New Brighton, MA	<input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS		
Phone: 507-272-8071	TAT if different from Below _____		
Fax:	<input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		
Project Name: WAVSAV	Filtered Sample (Y/N) Perform MS / MSD (Y/N) VOCS		
Site: 003978			
P O #			

COC No: **3**

3 of **3** COCs

Sampler:

For Lab Use Only:

Walk-in Client:

Lab Sampling:

Job / SDG No.: **500-191467**

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Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N) Perform MS / MSD (Y/N)	Sample Specific Notes
W-201119-KS-23	11/19/20	1212	G	W	3	N X	
-24		1229			3	N	
-25		1255			9	Y	MS/MSD
-26		1336			3	N	
-27		1357			3		
-28		1404			3		
-29		1432			3		
-30		1504			3		

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return to Client Disposal by Lab Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: Yes No Custody Seal No.: _____ Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:
Relinquished by:	Company:	Date/Time:	Received by:
Relinquished by:	Company:	Date/Time:	Received by: Shirley Smith
			Company: ETA-CHE
			Date/Time: 11/20/20 0940

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 500-191467-1

Login Number: 191467

List Source: Eurofins TestAmerica, Chicago

List Number: 1

Creator: Scott, Sherri L

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.9,1.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Appendix B

Wausau Chemical Pavement Inspection Report

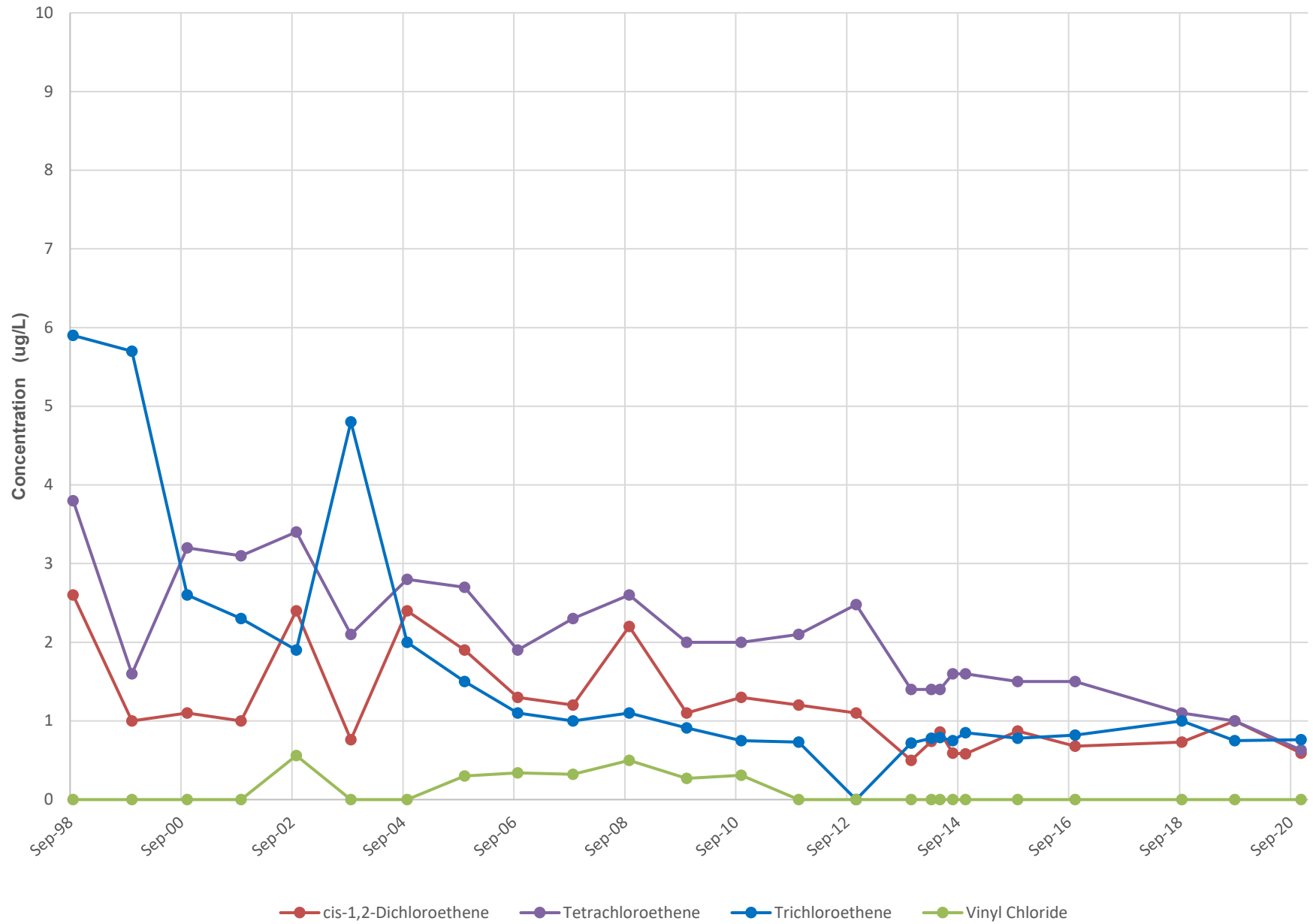
**Pavement Barrier Inspection Log
Former Wausau Chemical Corporation**

Inspection Date	Inspector	Condition of Cap	Recommendations	Have Recommendations From Previous Inspection Been Implemented?
8/29/2011	Rob Flashinski	Pavement was completely replaced in 2009. Three cracks starting to form, but have not penetrated.	No action required.	Yes.
7/2/2012	Rob Flashinski	Overall condition is very good. Recent work by the gas company has been patched thoroughly. All existing cracks have been filled.	None.	None Existed.
5/21/2013	Rob Flashinski	No change in appearance.	None.	Yes.
11/6/2013	Rob Flashinski	Overall condition is still good. Some hairline type cracks starting to form on the ends of previously filled cracks and near gas company asphalt work.	Nothing at this point. The hairline cracks will likely need attention in the spring.	Yes.
11/7/2014	Rob Flashinski	Overall condition is still good. Some hairline type cracks still exist on the ends of previously filled cracks and asphalt work by gas meter is starting to show again, but no cracks have formed.	Nothing at this point. Expect that some tar caulking will be needed in the spring.	Yes.
10/16/2015	Rob Flashinski	Overall condition is still good. Existing Cracks were sealed by Advanced Seal Coatings.	Nothing at this point.	Yes.
9/14/2016	Rob Flashinski	Overall condition is still good. Prior repair work is still in good condition also	Nothing at this point.	Yes.
8/14/2017	Rob Flashinski	Overall condition is still good. Some signs of asphalt aging.	Nothing.	Yes.
10/30/2018	Rob Flashinski	Overall condition is decent, however, more noticeable cracking is evident.	Filled cracks with asphalt filler in 2018	Yes.
10/29/2019	Charles Ahrens - GHD	Good condition. Cracks filled in 2018 are still in good shape.	No repairs necessary.	Yes.

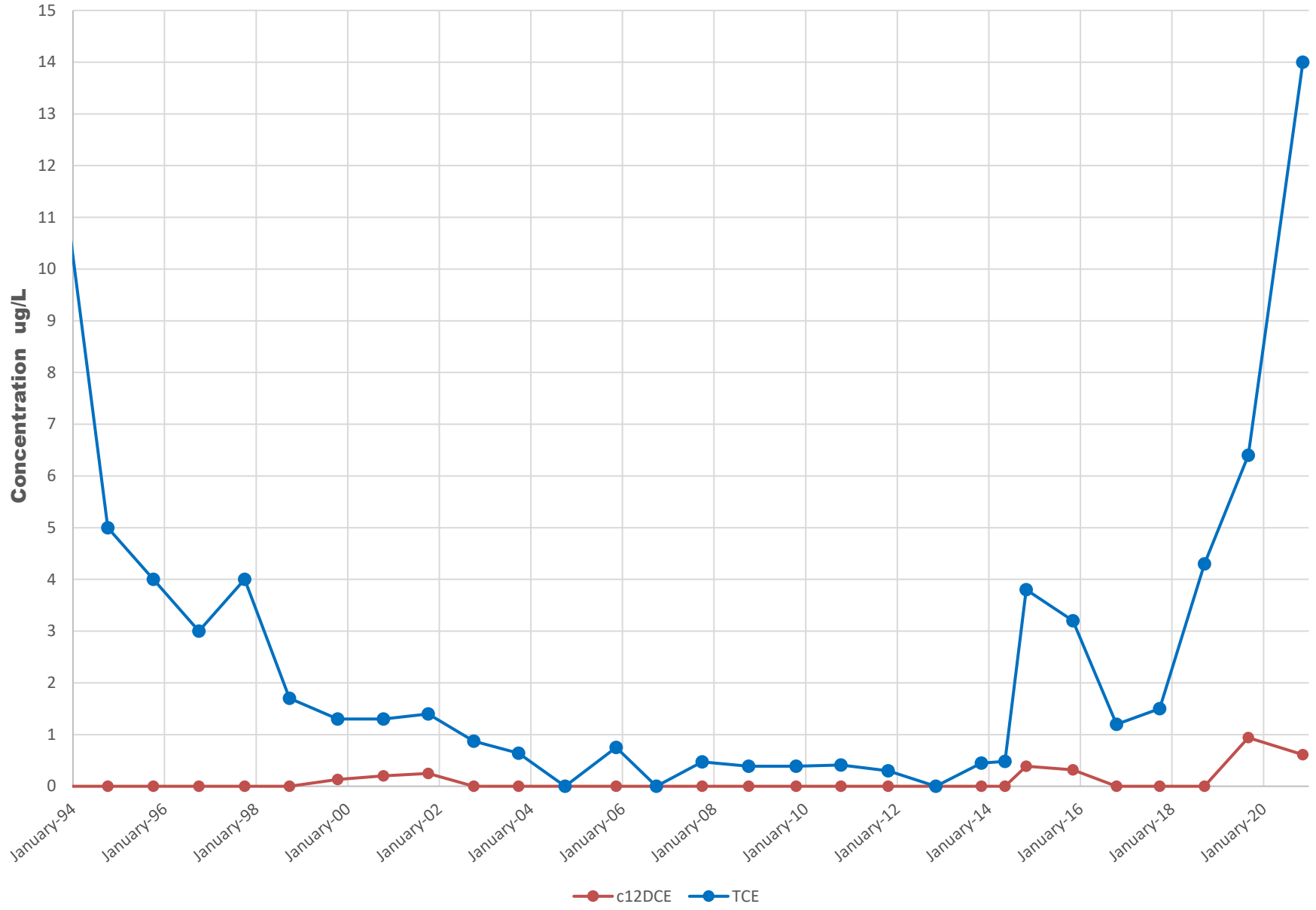
Appendix C

Total Chlorinated VOC Concentration Charts

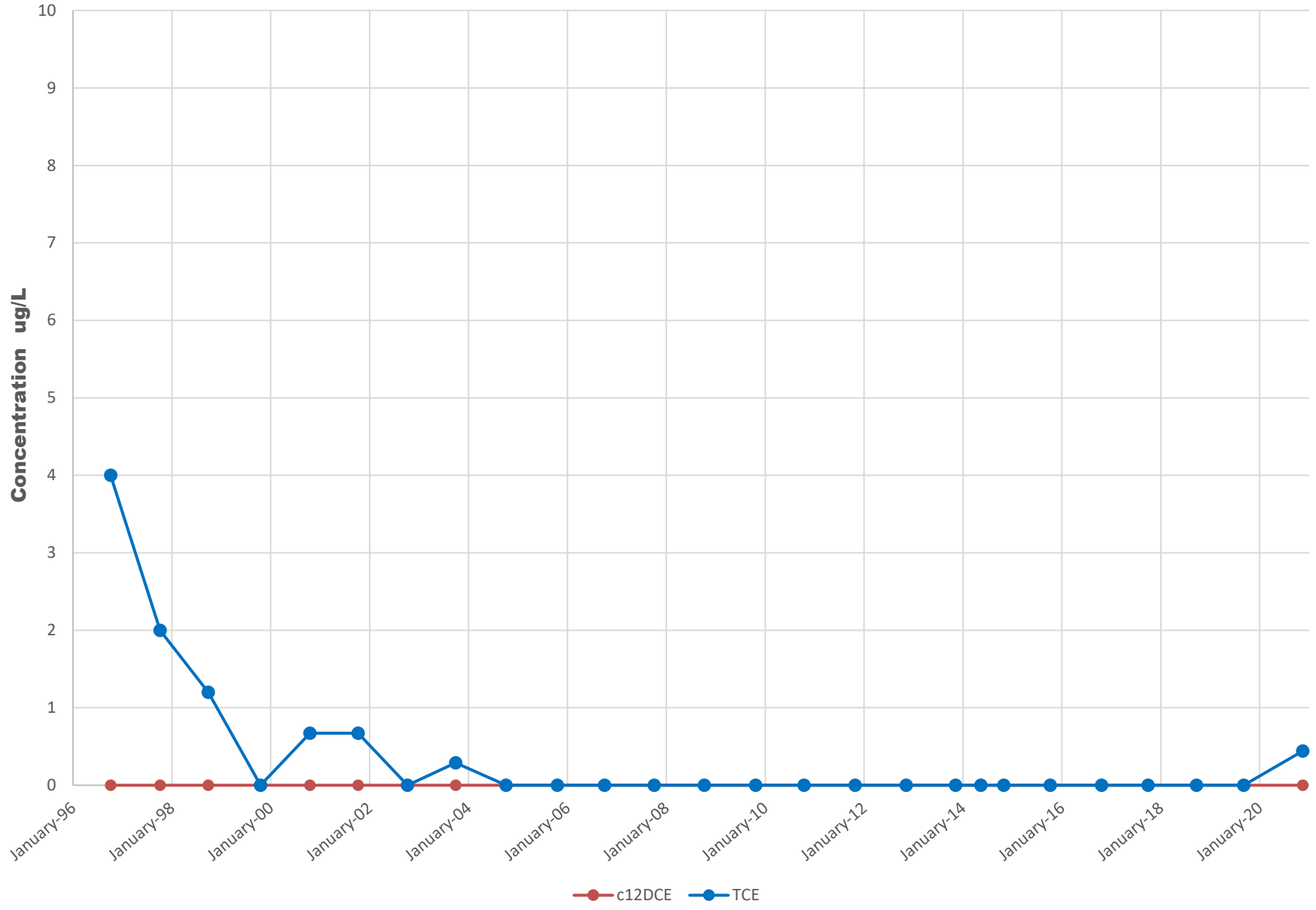
CW-3



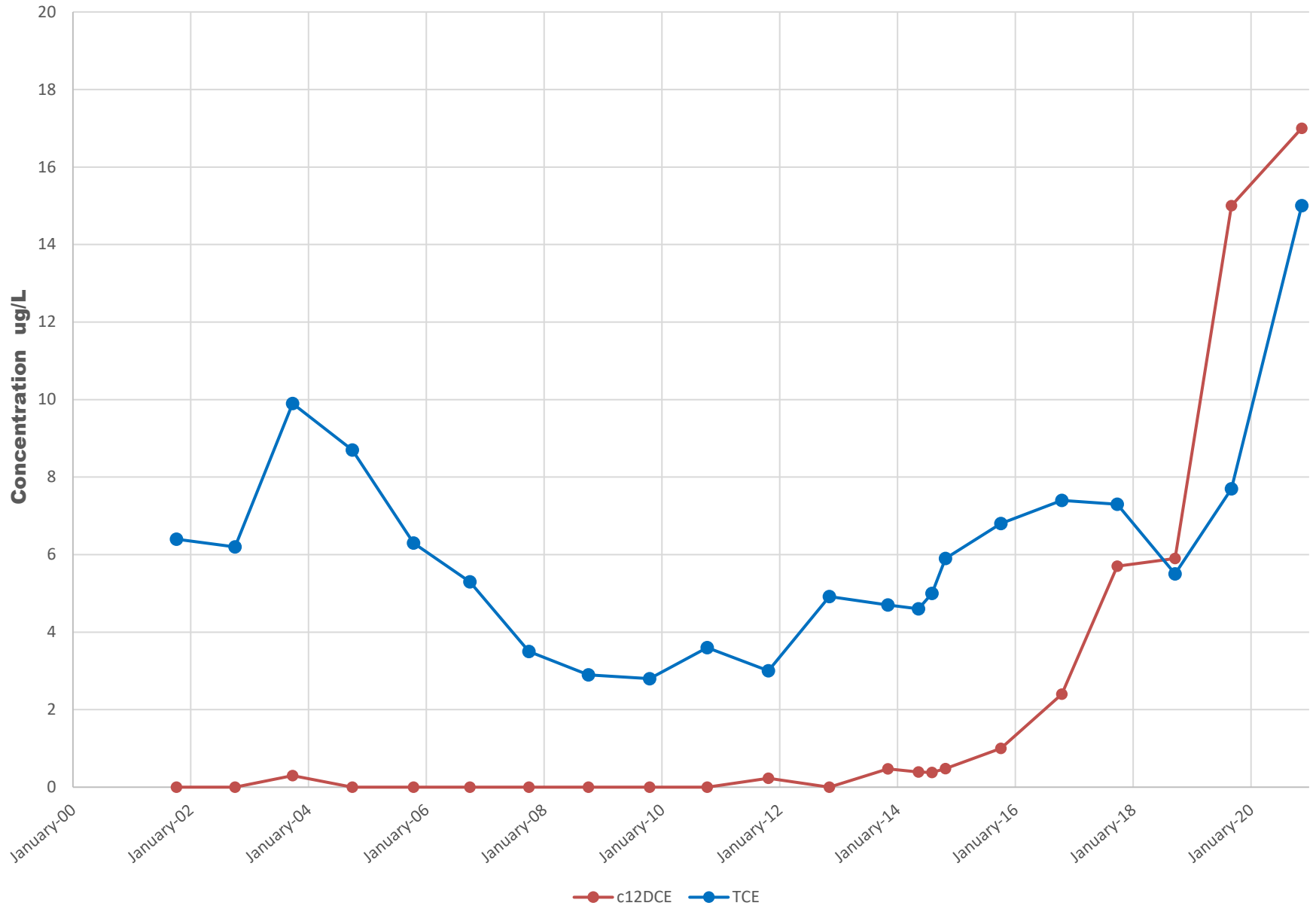
WSWD



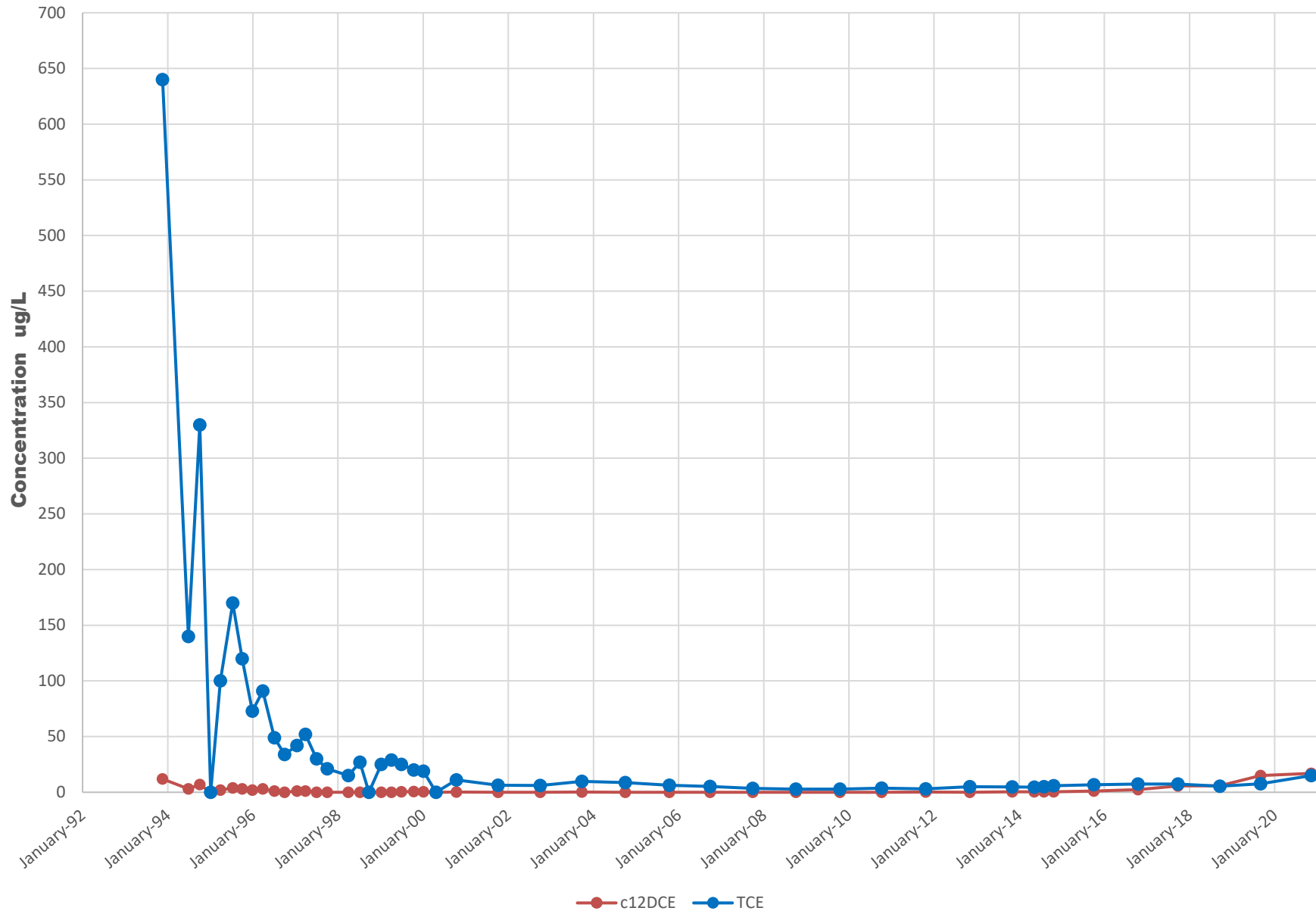
W56



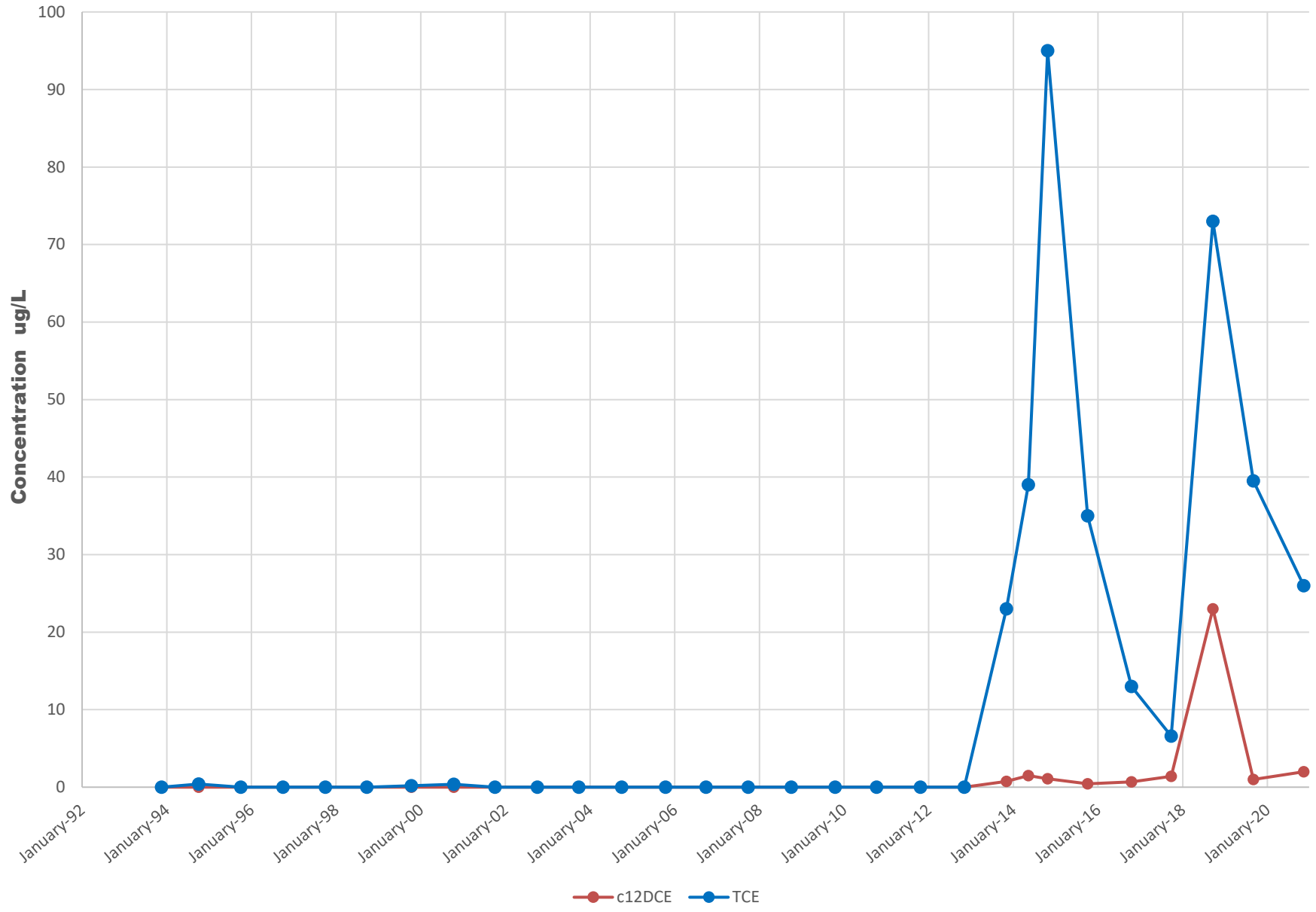
W55 Since 2000



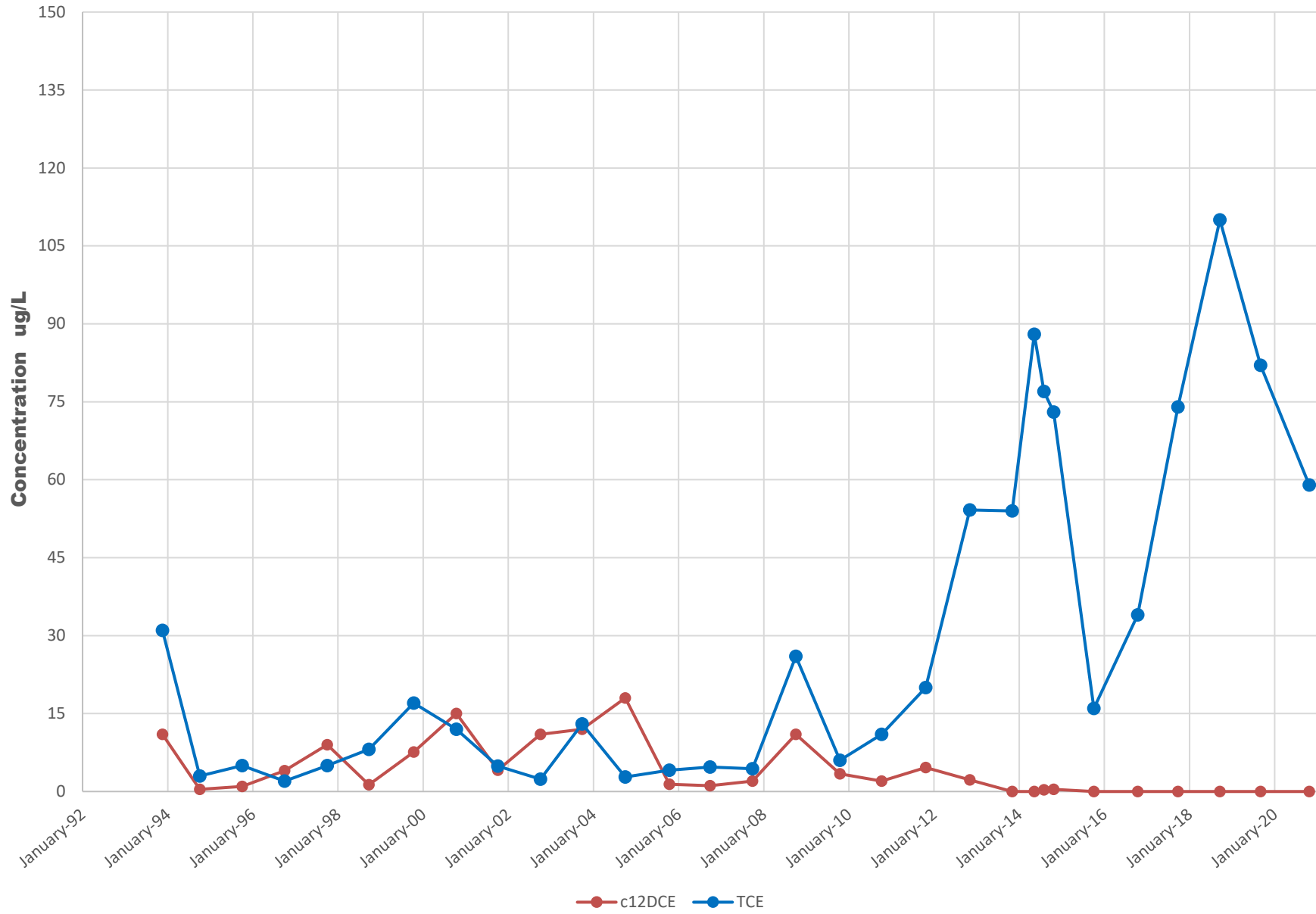
W55 All Data



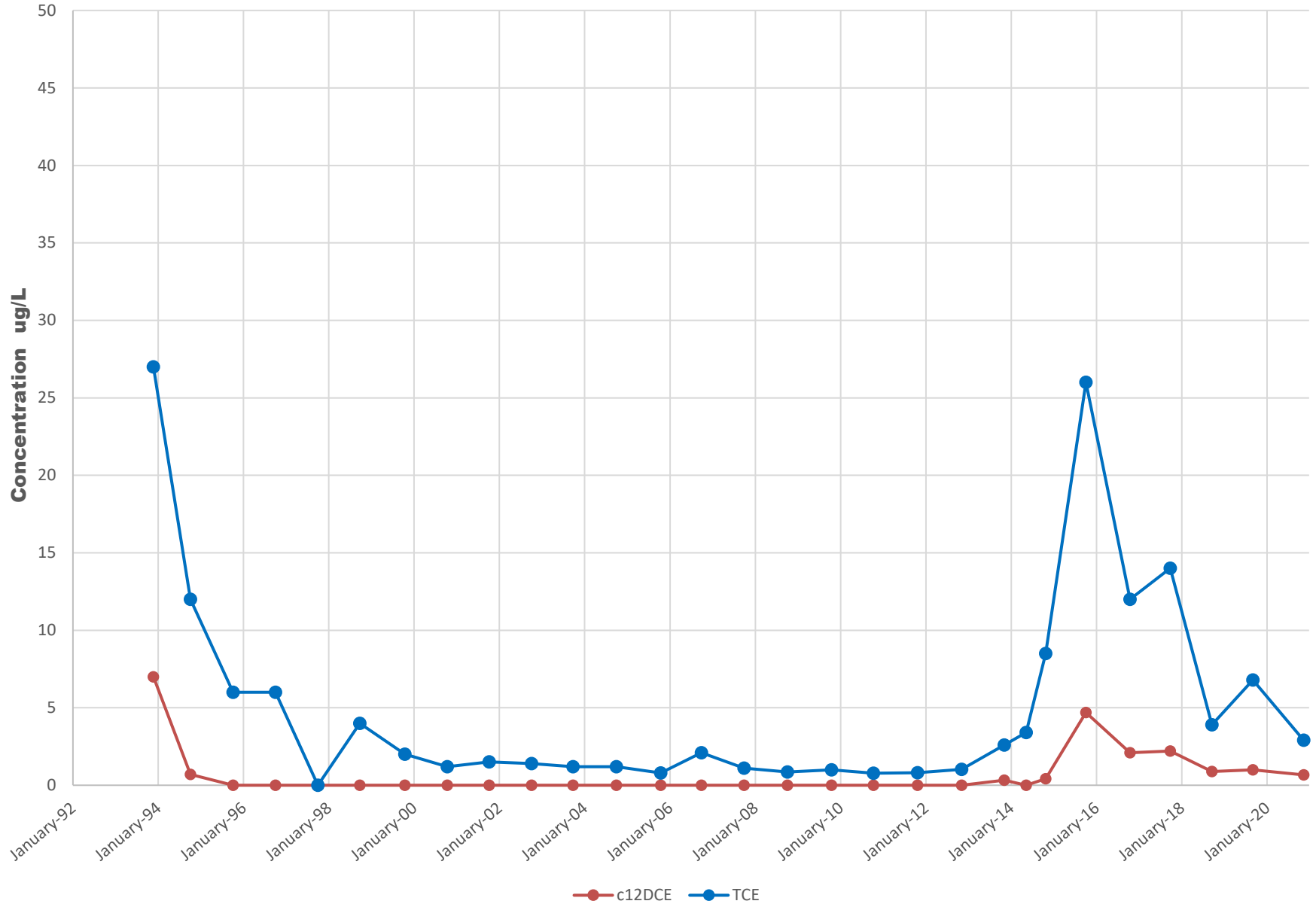
W54



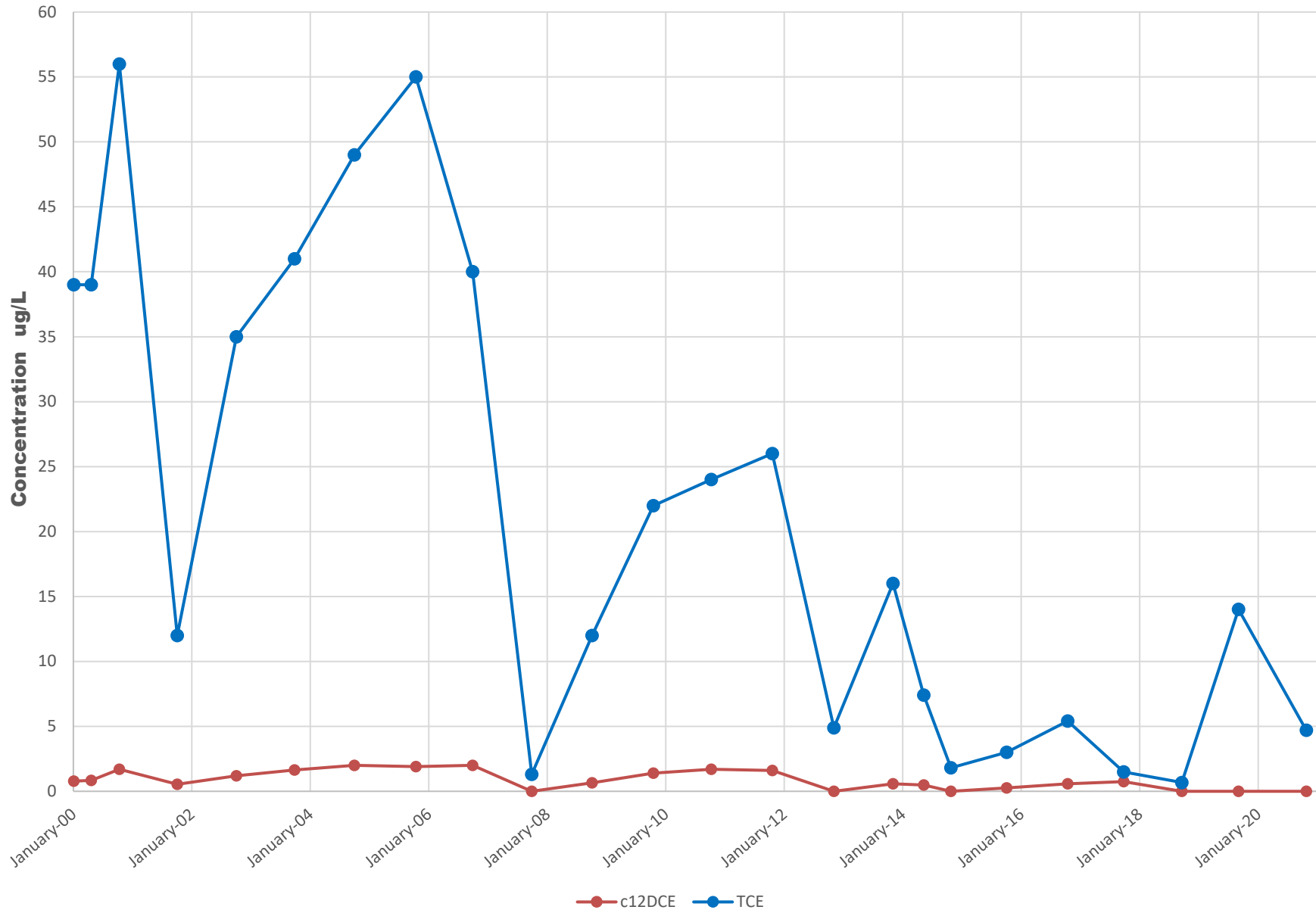
W53A



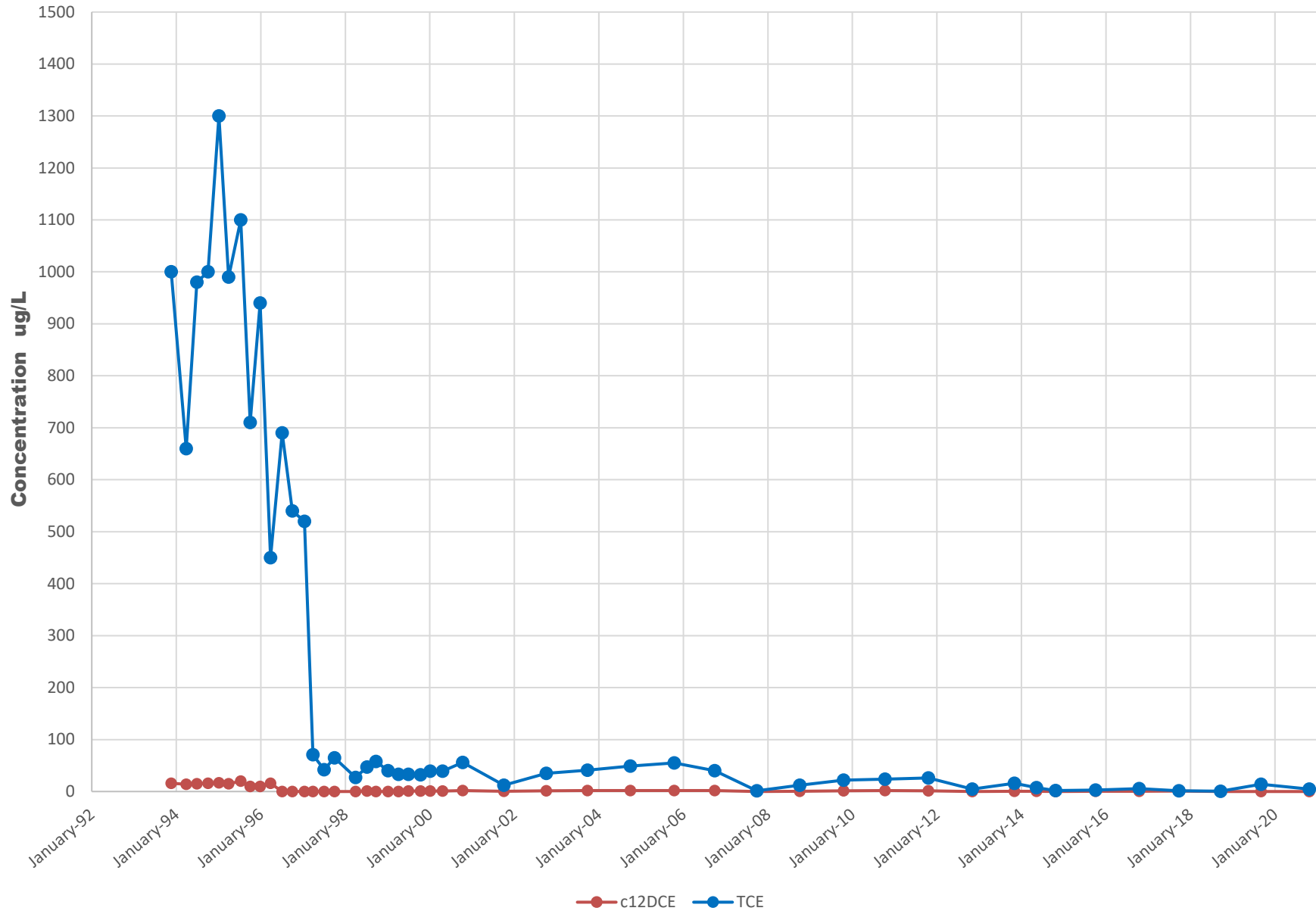
W52



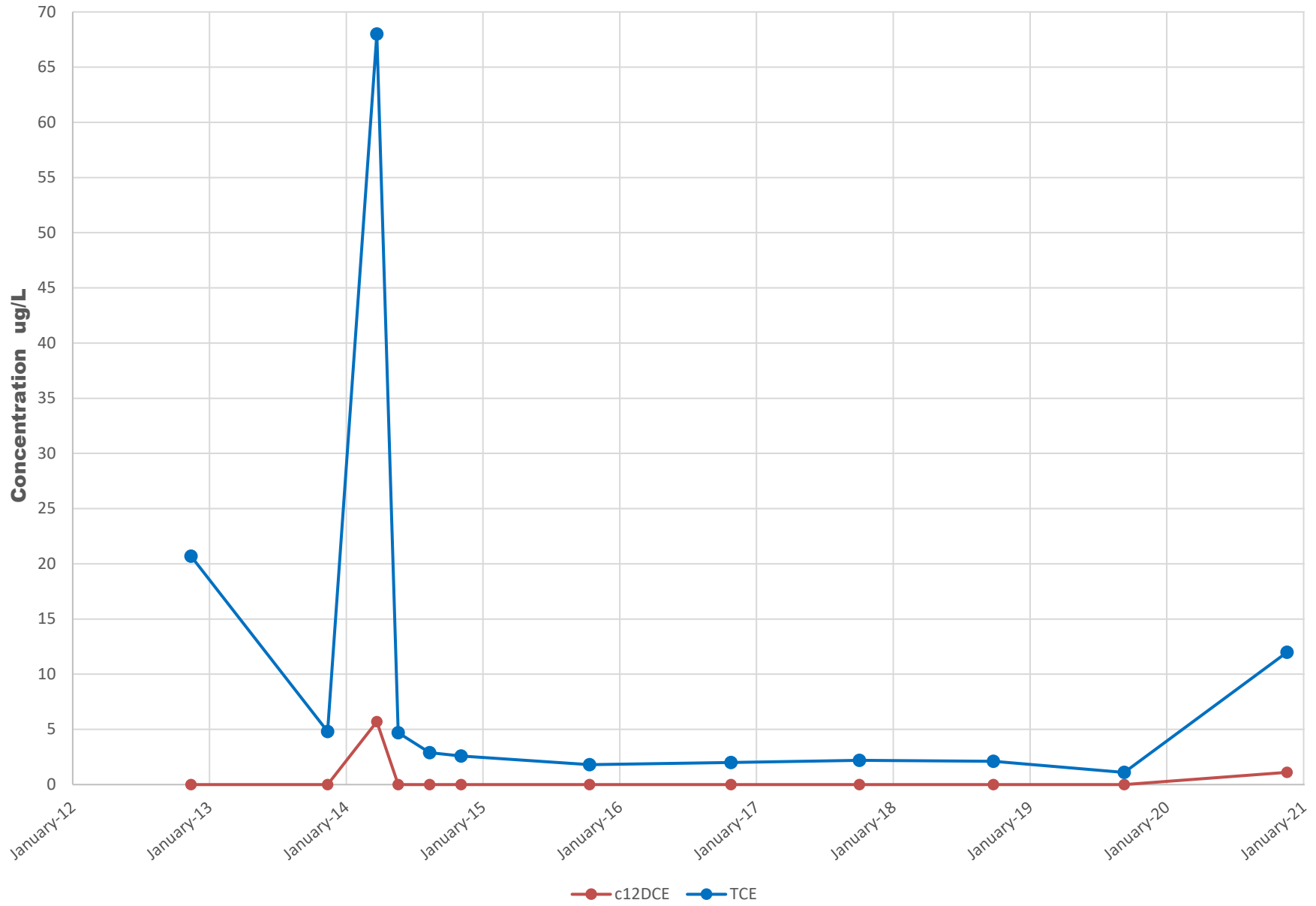
R4D Since 2000



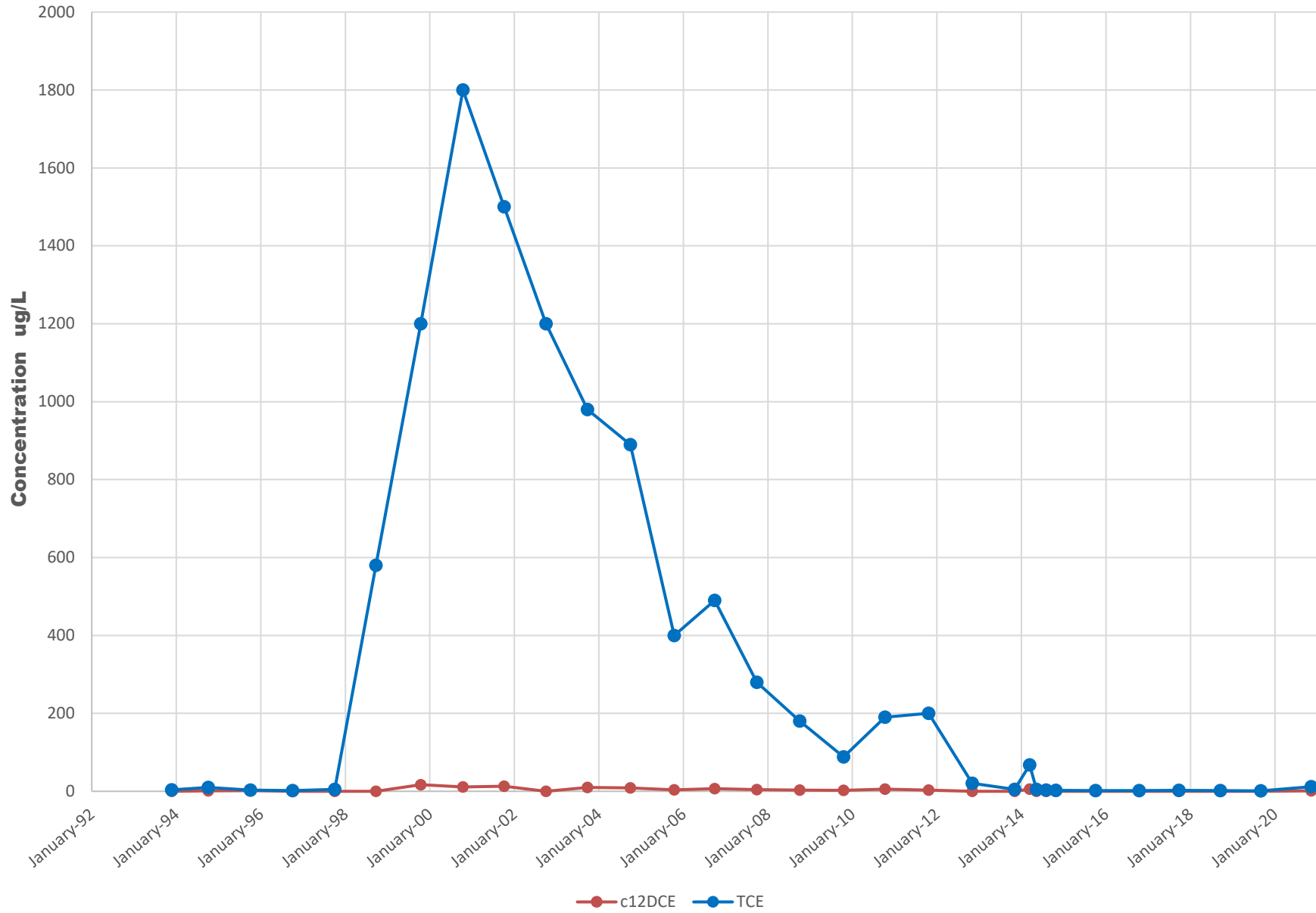
R4D All Data



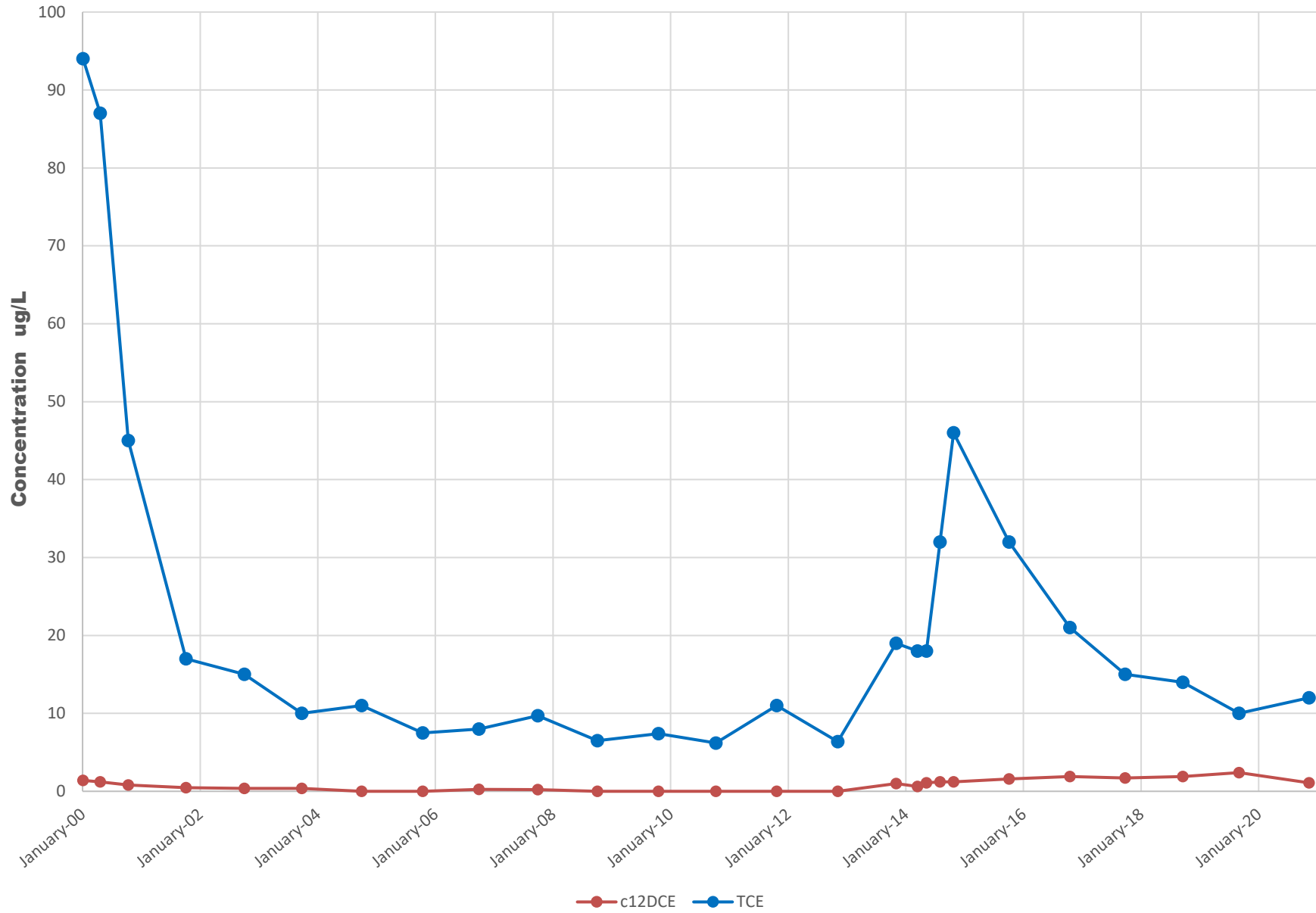
R3D Since 2011



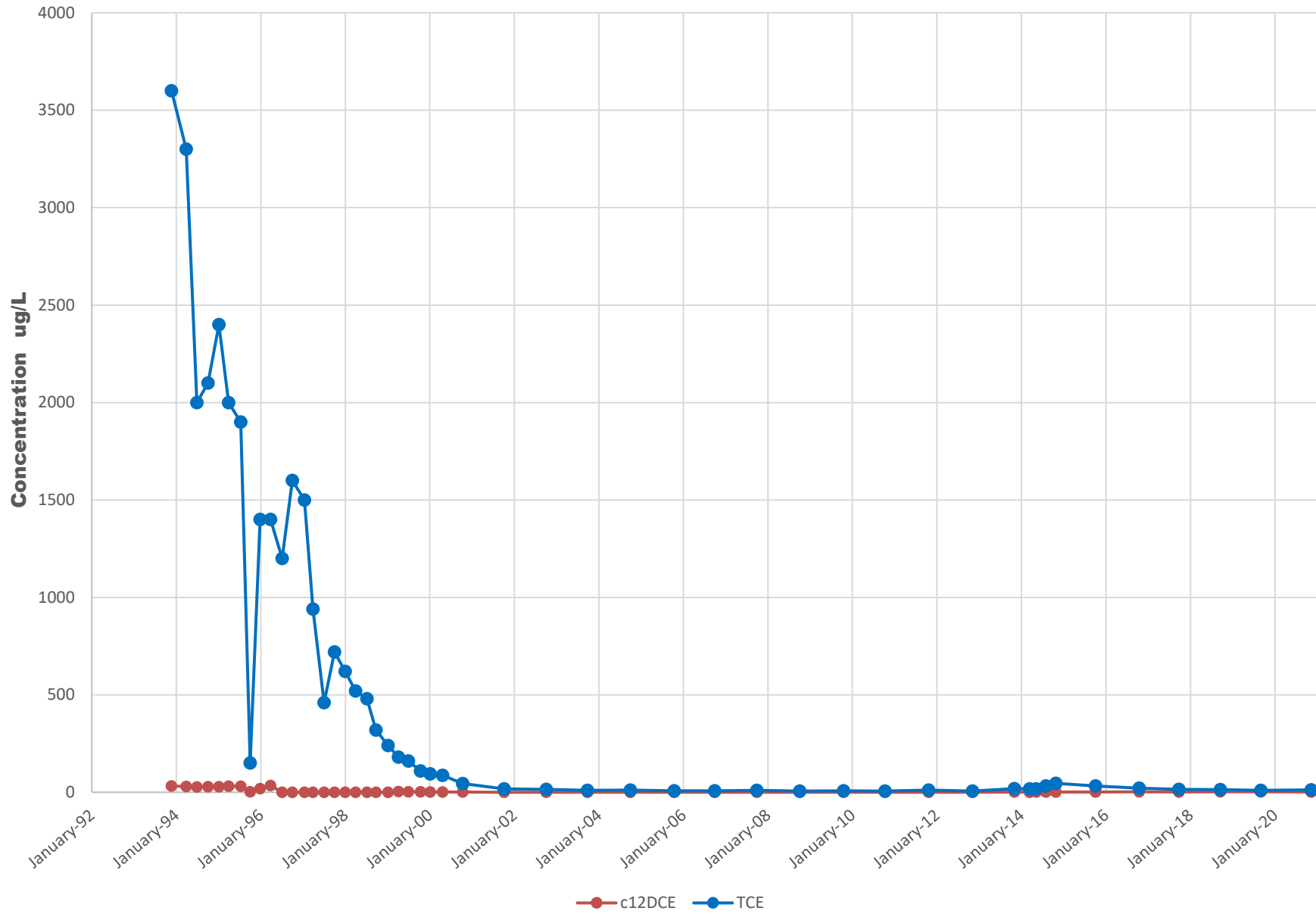
R3D All Data



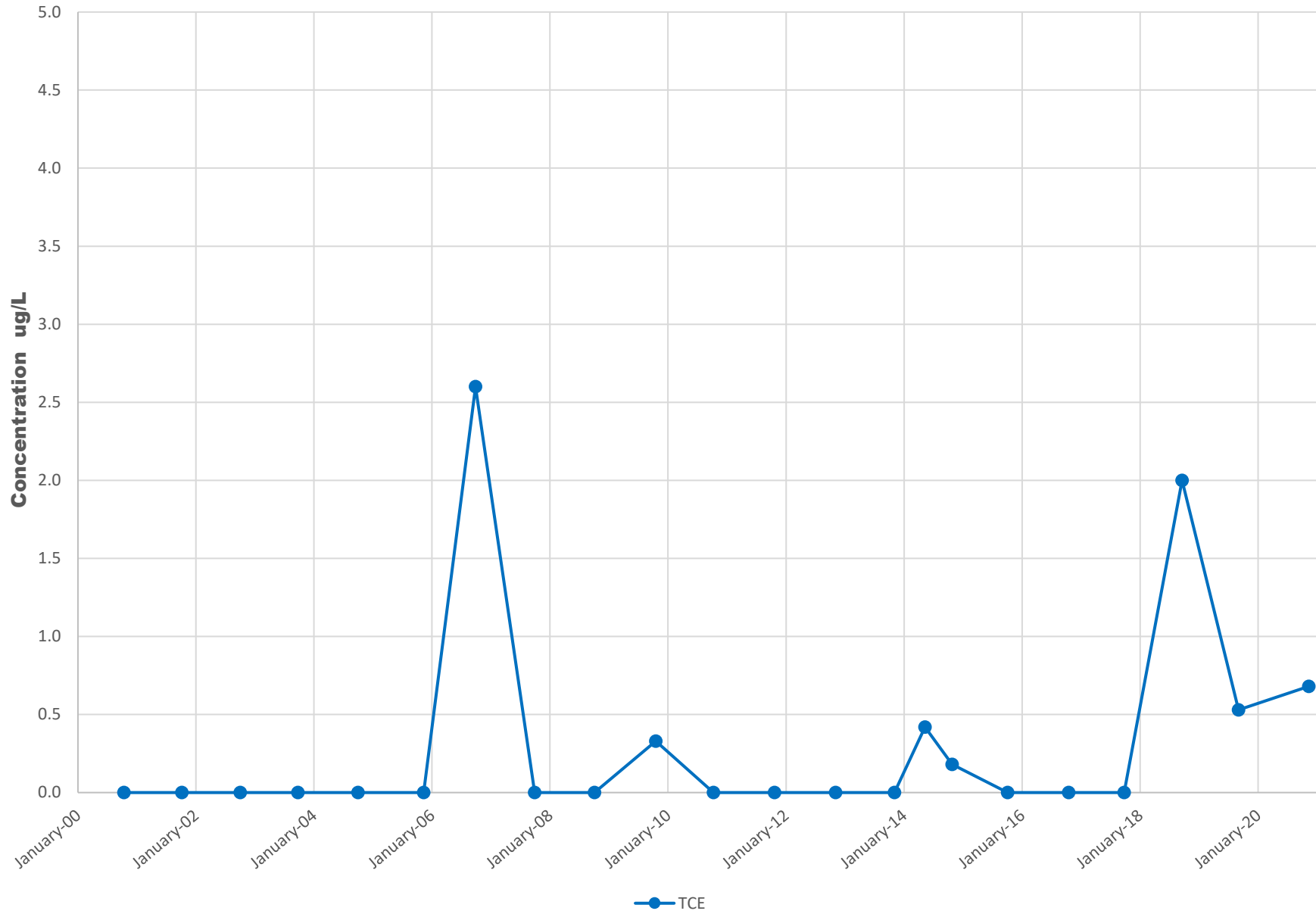
R2D Since 2000



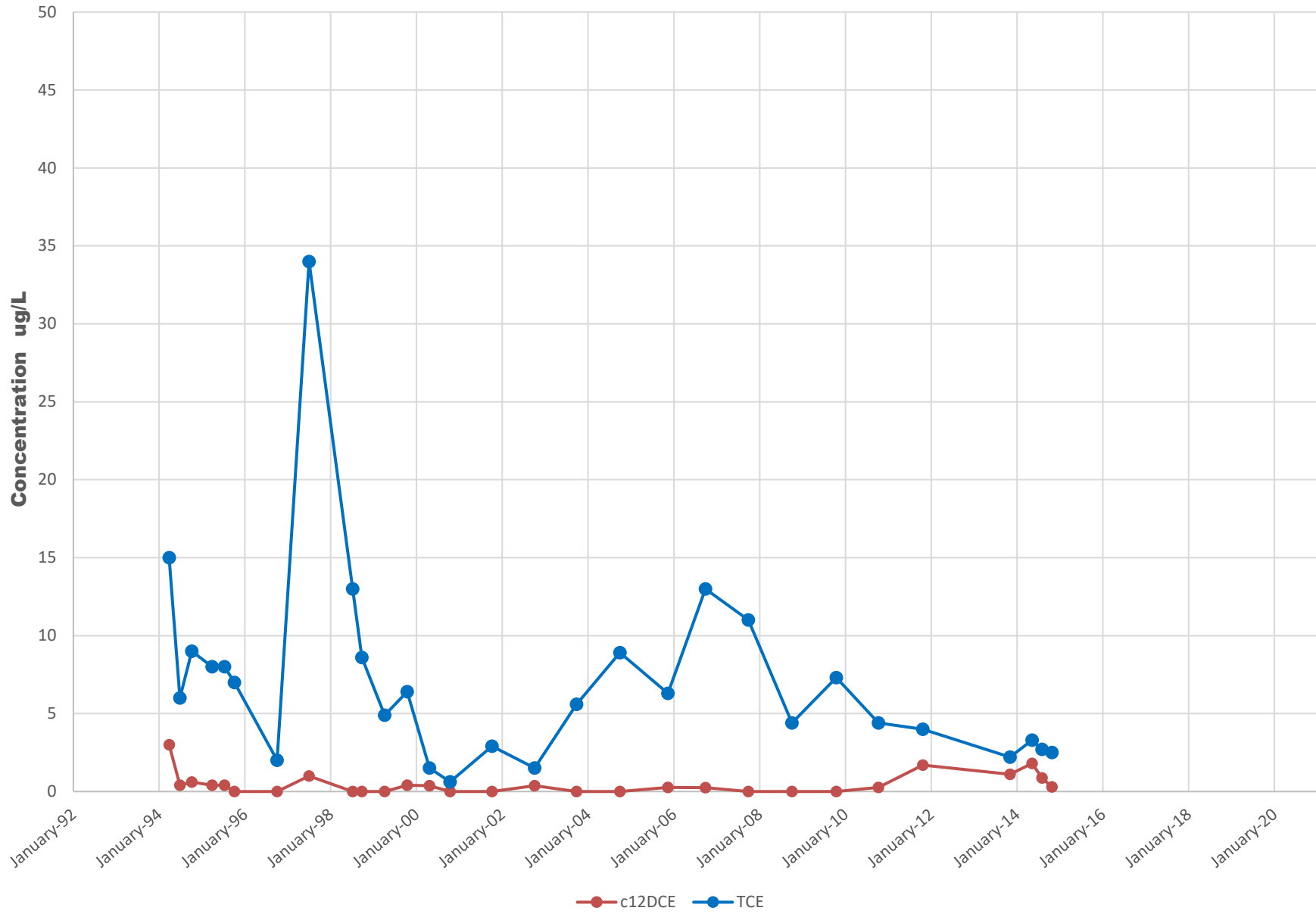
R2D All Data



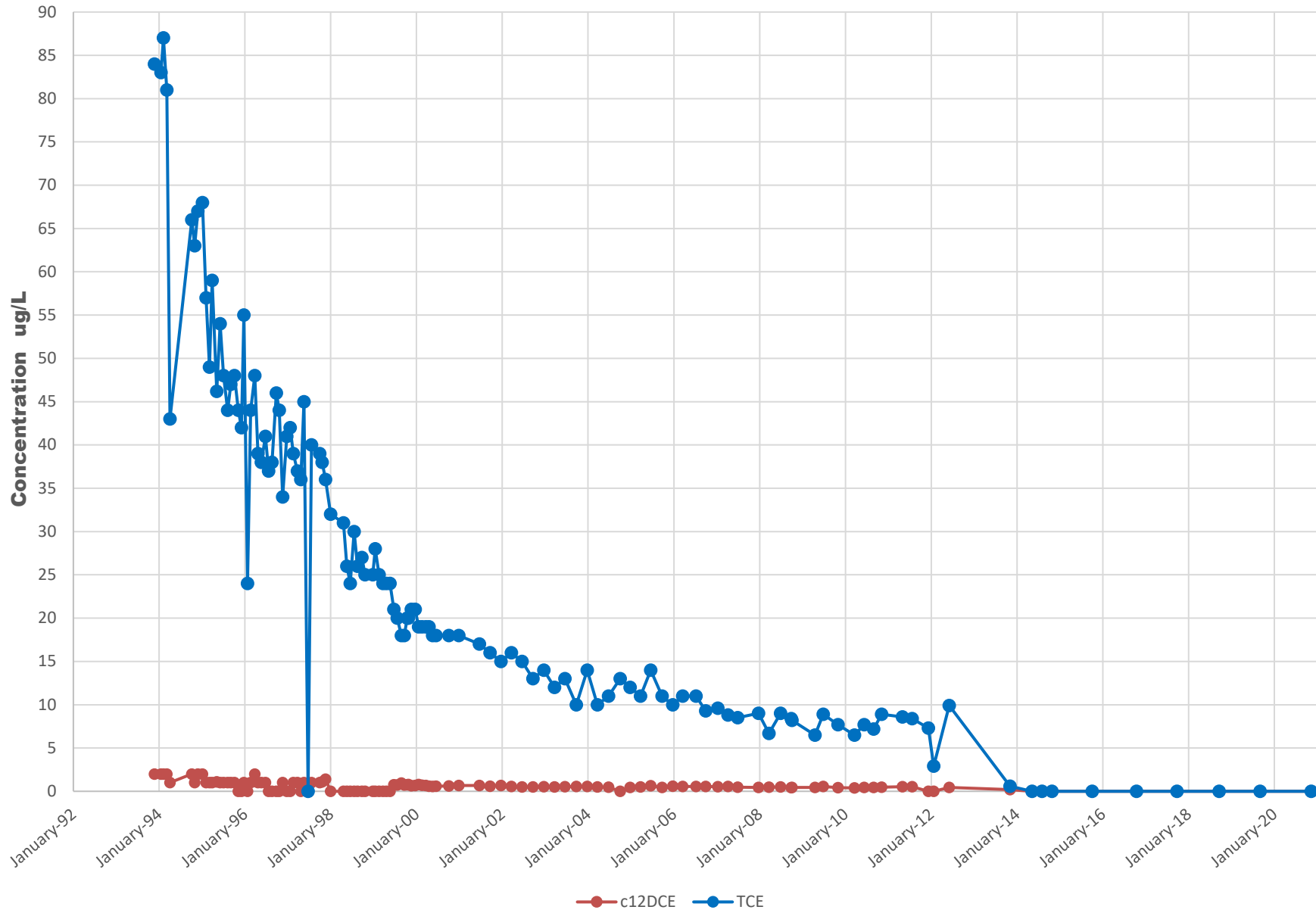
MW1A



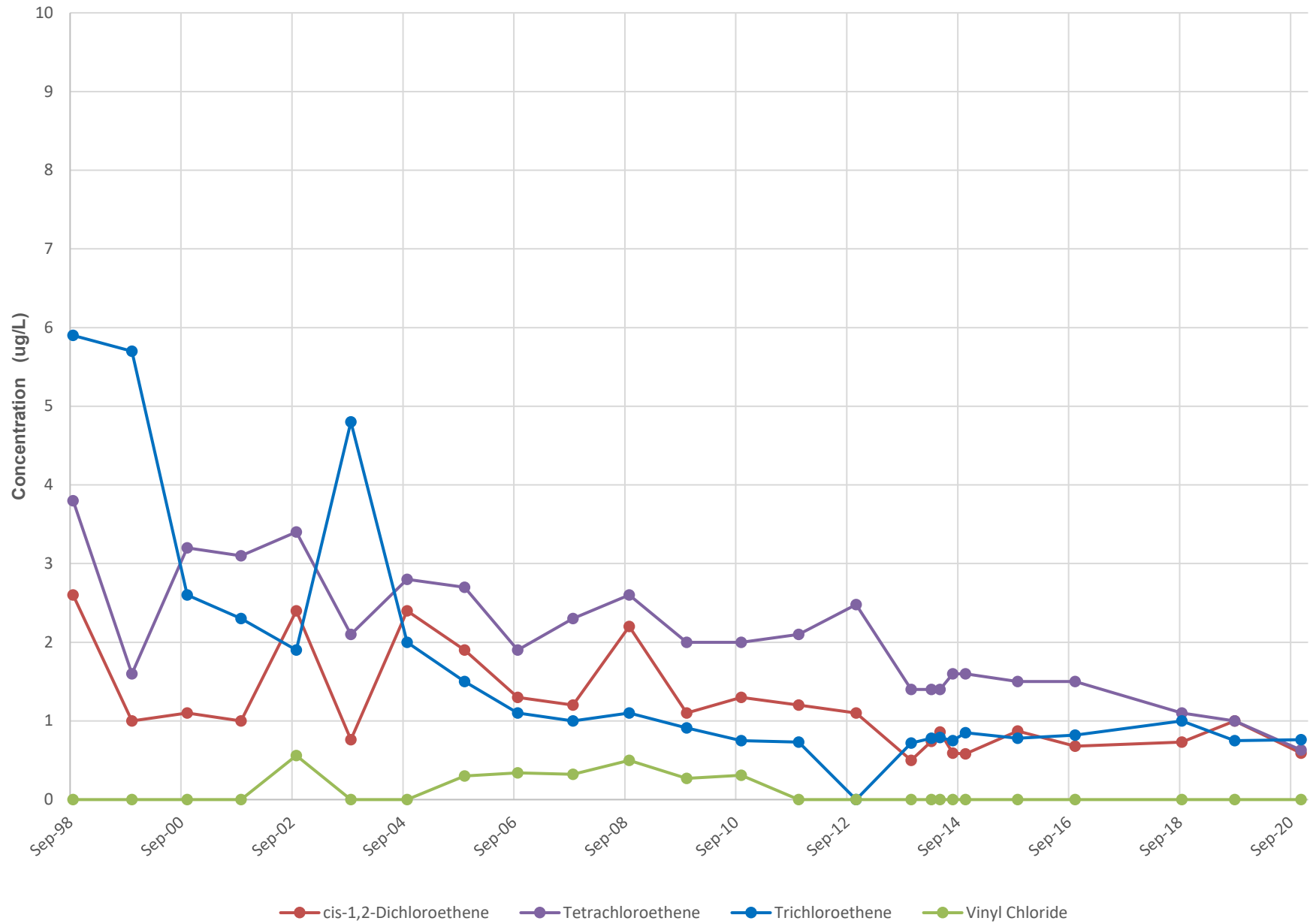
IWD



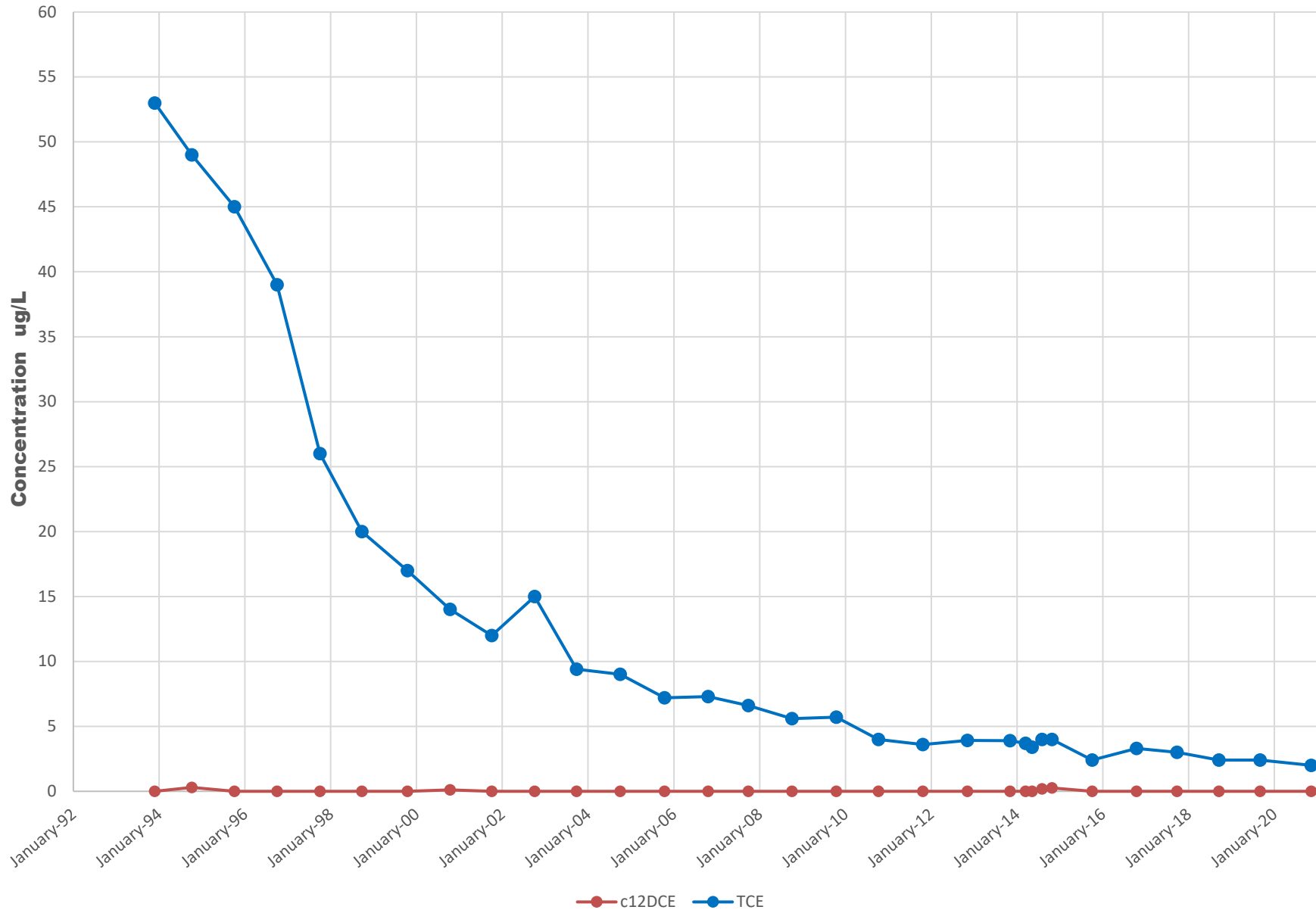
EW-1



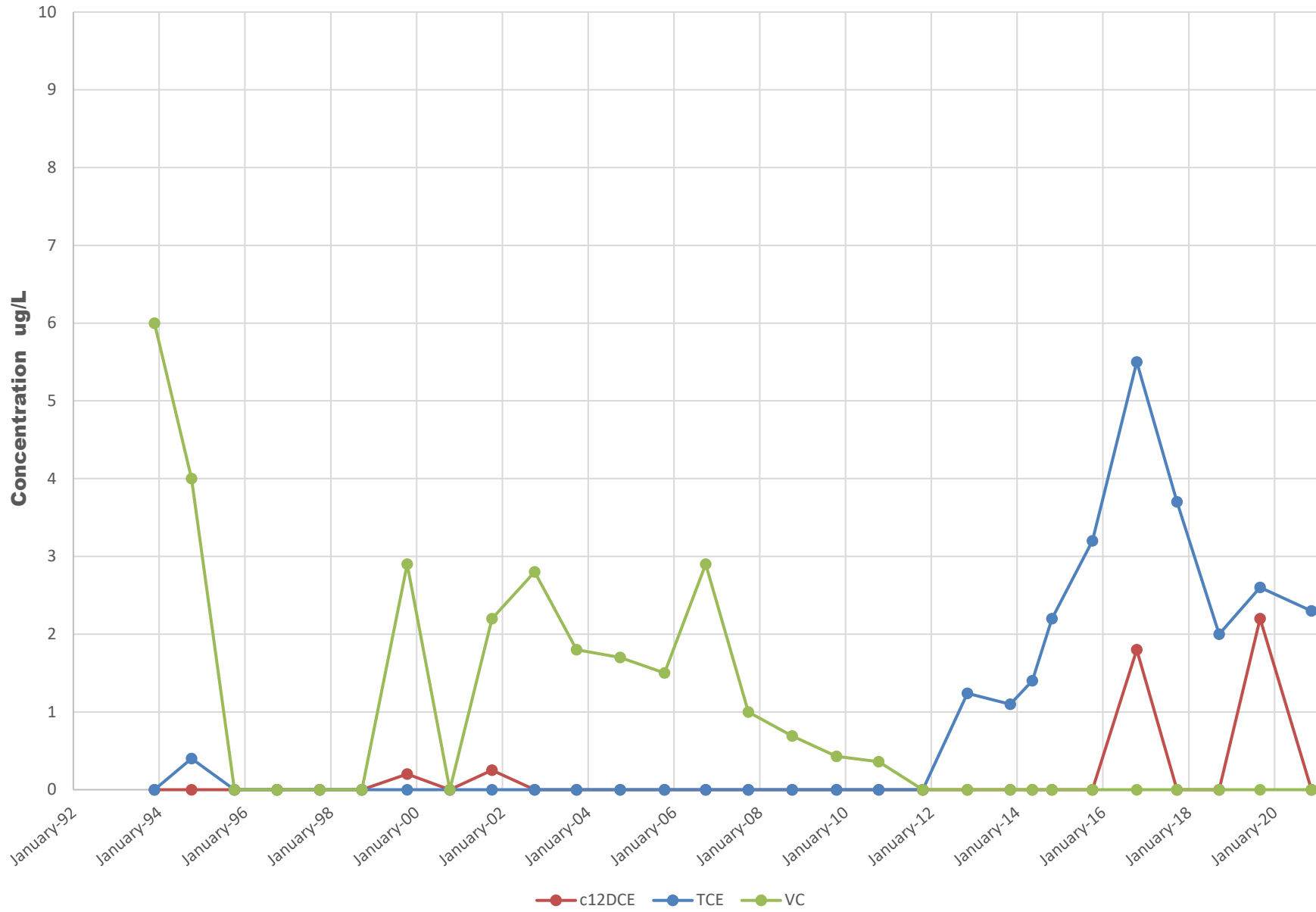
CW-3



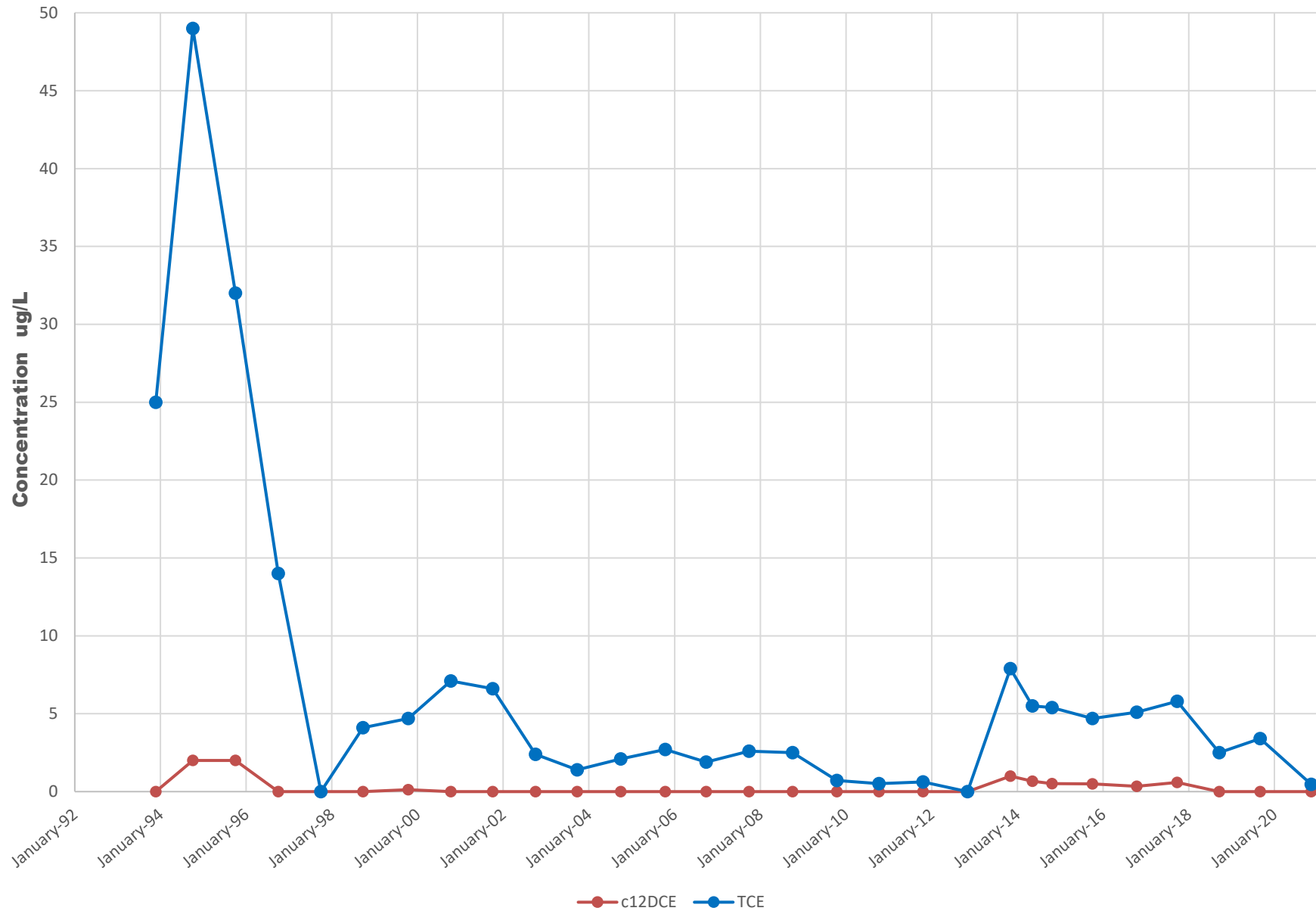
CW6



C4S



C2S





ghd.com

→ **The Power of Commitment**