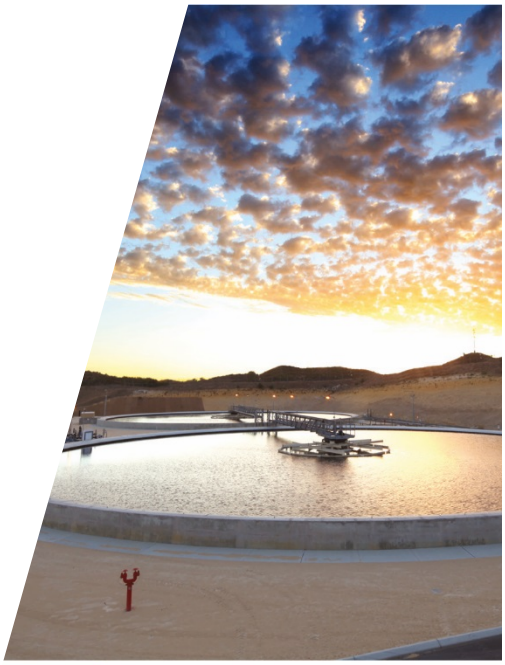
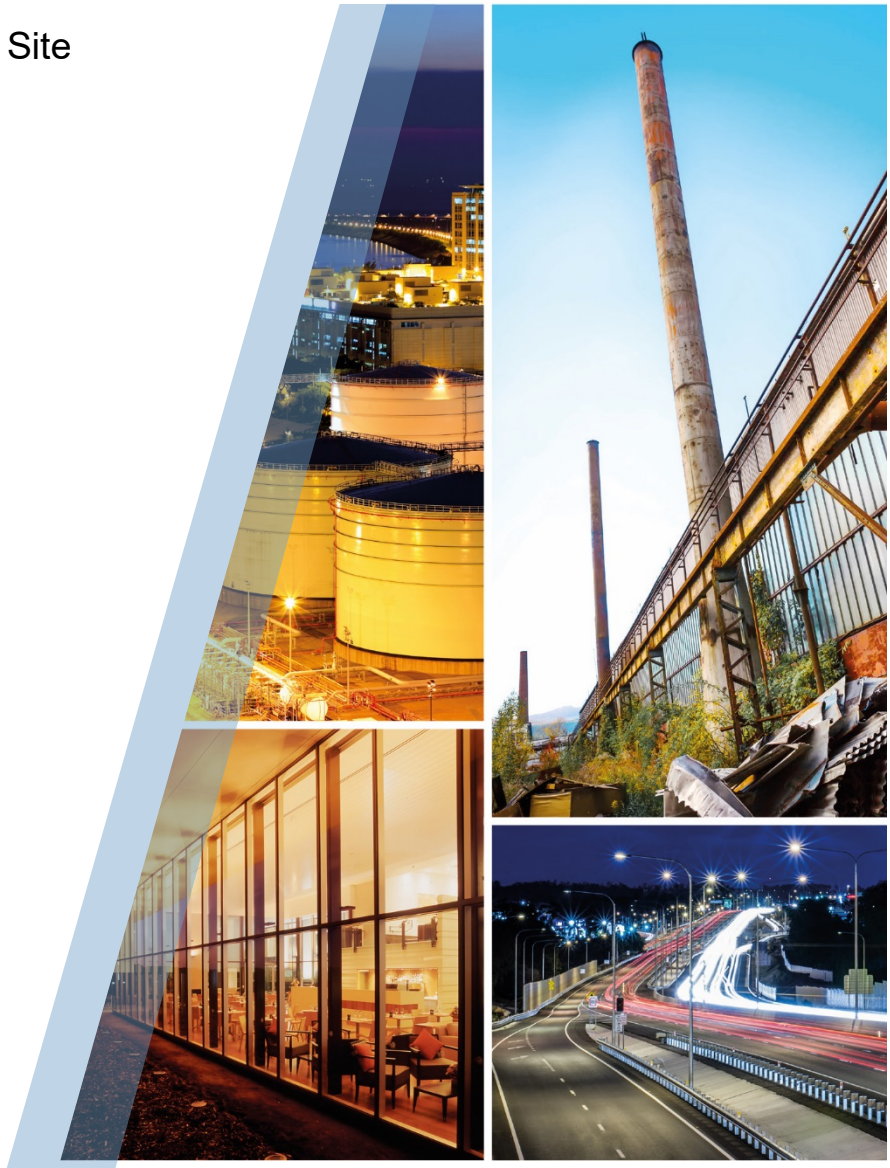


2019 Annual Monitoring Report

Wausau Water Supply NPL Site
Wausau, Wisconsin



GHD | 1801 Old Highway 8 Northwest Suite 114 St. Paul Minnesota 55112 USA | 003978 | Report No 42 | March 2, 2020

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1. Introduction

GHD Services Inc. (GHD) has prepared this 2019 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 September 2019.

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 1.1 and a Site plan is presented on Figure 1.2.

Source area remediation was accomplished by the installation of SVE systems at Marathon Electric[1] (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

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

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 2019.

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 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 2019.

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 2019, 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 1.2).

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. 2019 Annual Monitoring

The 2019 annual groundwater monitoring event was conducted on September 9th and 10th. 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 2019 sampling event. These locations were proposed in the 2018 Annual Monitoring Report (GHD, 2019).

2.1 Water Level Monitoring

Table 2.2 presents the groundwater elevation data measured on September 9th and 10th, 2019. Water table contours based on these measurements are presented on Figure 2.1. Field staff measured water levels on the East Bank on September 9 while CW3, the East Bank remediation well was operating, and on the West Bank on September 10 while CW6, the West Bank remediation well, was operating. As explained in Section 1.1, EW1 was not operating during the 2019 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 2019 data are presented in Appendix A.

2.3 Extraction Well EW1 Sampling

EW1 did not operate during 2019; 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 September 2019 monitoring round except for monitoring well W57, which could not be located by the field team due to heavy vegetation. 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. A few monitoring wells were identified for minor repairs that will be conducted in 2020.

3.2 City Production Wells

Both CW3 and CW6 operated as required in 2019. Table 3.2 presents 2019 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 2019, CW3 operated for an average of 71.4 hours per week with an average pumping rate of 1,276 gpm, exceeding the requirements of 65 hours per week and average flow rate of 1,200 gpm.

CW6 pumped an average of 96.3 hours per week with an average pumping rate of 1,346 gpm in 2019. 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 95 hours per week, which is considerably greater than the requirement of 85 hours per week, thus offsetting the decreased pumping rate. The total volume of groundwater pumped by CW-6 during 2019 was 9% higher than 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 2019 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 September 2019. VOC concentration

maps for the principle Site contaminants (TCE, c12DCE, PCE and vinyl chloride) are presented on Figures 4.1, 4.2, 4.3, and 4.4.

The 2019 data indicate that the VOC concentrations were stable or decreasing at most well locations. Of the 25 wells sampled, 20 wells exhibited lower or stable concentrations compared to 2018.

4.1 West Bank

The primary chlorinated VOC found in the West Bank groundwater is TCE, which was detected at 11 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, R4D, W52, 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 4.1). R2D, R4D and W55 are located downgradient from Marathon Electric in the direction of groundwater flow toward CW6. The TCE concentration at CW6 (2.4 µg/L) was the same as the 2018 concentration and was below the MCL.

TCE degradation product, c12DCE, was detected at six 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. Two wells in the north portion of the West Bank plume exceeded the MCL for TCE. W55 had a TCE concentration of 7.7 µg/L and the TCE concentration at R2D was 10 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 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]

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

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

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 4.1 and 4.2 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 the c12DCE concentration was 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. Two monitoring wells (WC3B and WW6) had concentrations that exceeded the MCL of at least one VOC. In addition, the vinyl chloride concentration at E24AR was below the MCL, but exceeded the Wisconsin ES of 0.2 µg/L. 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 (see Figures 4.3 and 4.4). Total chlorinated VOC concentrations from 2012 through 2019 for key East Bank wells are shown below:

	East Bank Total Chlorinated VOCs (µg/L)							
Well	2012	2013	2014	2015	2016	2017	2018	2019
WC3B	3.47	0.26	6.31	2.86	0.55	13.4	71.4	480
WC5A	1.3	7.3	14.93	12.04	26.1	118.2	131.7	1.11
E24AR	3.86	22	222.5	136.8	152.1	78.05	6.73	5.18
E22A	25.41	104.9	12.5	8.03	123	21.85	10.22	1.6
E37A	68.06	4.67	3.73	1.61	1.75	3.4	23.41	1.62
WW6	45.48	45.8	51.9	67.6	8.03	8.54	37.6	29.4
CW3	3.58	2.62	3.03	3.15	3.0	NA	2.83	2.75

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 4.1, 4.2, 4.3, and 4.4.

4.3 Hydraulic Capture

Hydraulic capture of the Site contaminant plumes is demonstrated by the water table contours illustrated on Figure 2.1. 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 2018, 10 East Bank monitoring wells were sampled and water levels were measured at 16 East Bank wells. On the West Bank, the same number of wells were sampled as before (14) and water levels were measured at 27 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

No additional monitoring plan modifications are proposed for 2020.

5.2 Proposed 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.

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

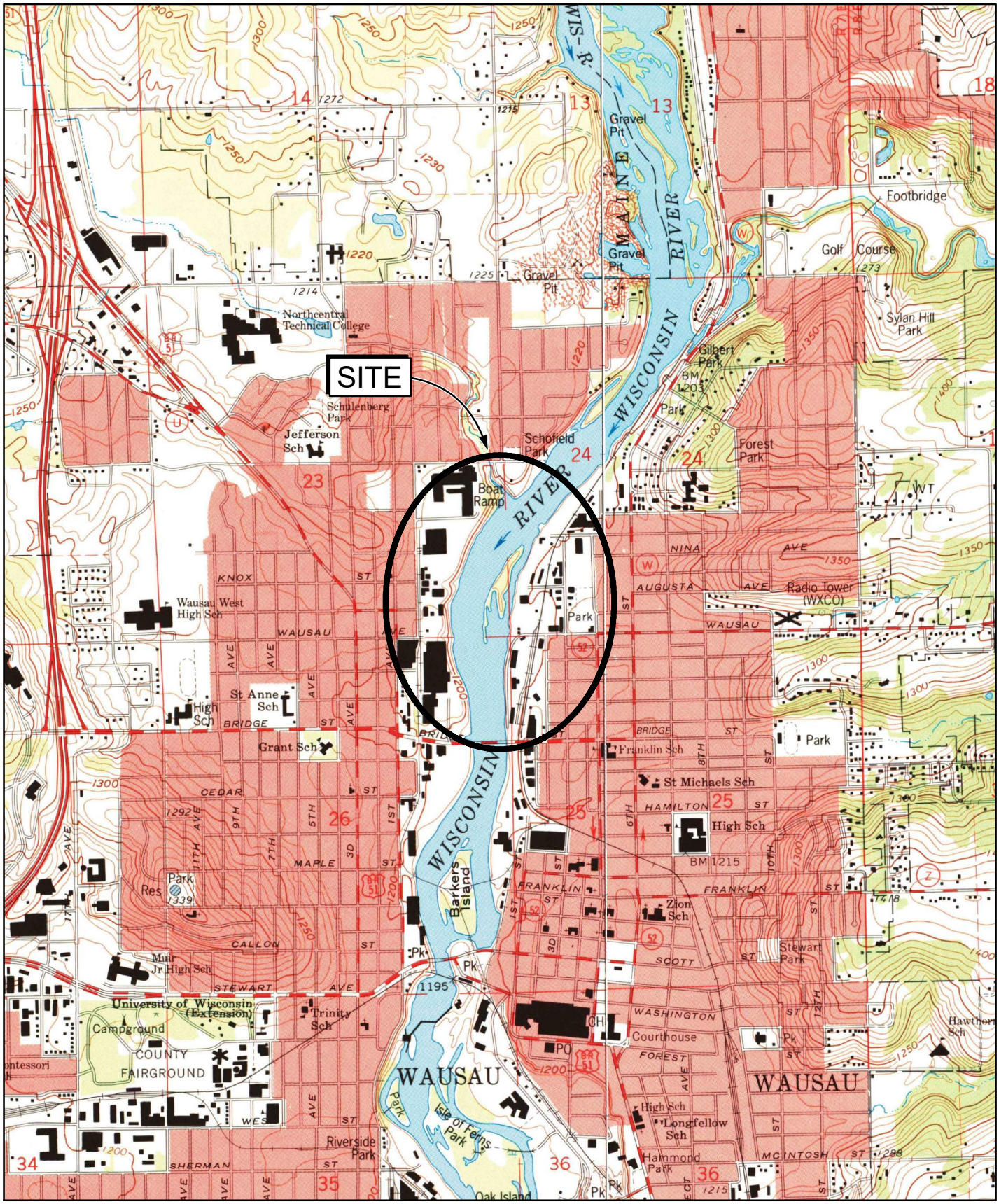
West Bank Monitoring Wells Proposed for Sealing and Abandonment	
Well No.	**Justification**
R3S	The shallow well in a cluster with R3D and W50. R3S is a dry well that does not provide chemical or elevation data.
W50	A mid- aquifer well clustered with R3D and R3S. Typically, it is not used for VOC sampling 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.

West Bank Monitoring Wells Proposed for Sealing and Abandonment	
Well No.	**Justification**
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.

Since the monitoring wells listed above are no longer needed to monitor aquifer conditions, they should be properly sealed and abandoned. Upon approval of this proposal, a work plan for the abandonment of these wells will be submitted to EPA and WDNR for approval.

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

WDNR approved the closure of the Wausau Energy Bulk Plant Site in April of 2018. Therefore, FVD5 should be abandoned because it is not needed for the Wausau Water Supply Site monitoring.



Source: USGS 7.5 Minute Quads - Wausau East; Wausau West

0 1,000 2,000 ft

N

GHD

WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN
2019 ANNUAL MONITORING REPORT

003978-00

Jan 2, 2020

SITE LOCATION

FIGURE 1.1

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LEGEND

- MONITORING WELL
- EXTRACTION WELL
- CITY PRODUCTION WELL
- INDUSTRIAL WELL

CW11
GM4D
CW9OBS R
CW10
CW9
GM2S
MW4B
MW4A
CW7
W57
MW7
CW6
MW3A
W56
W55
W55A
MW1A
R2D
R2S
R1D
W50
R3S
R3D
W52A
W52
C2S
R4D
EW1
C7S
W54
W53A
W53
WSWS
WSWD
C3S
IWD
C6S
C4S
C4D
E21
WILSON HURD
TEST WELL
WW4
CW3
GM6D
WW6
E26A
E26
E22A
E22
E37A
FVD5
E28A
WC5
WC5A
WC4
WC4A
WC3B
WC3
E24AR
MW10A
MW10B
WC7A

E CAMPUS DR
STONE ST
PLUM DR
MORTENSON DR
TIERNEY RD
BUGBEE AV
GEMINI PL
MARTEN ST
BECHER DR
MCCARTHY BLVD
BRISBANE CT
W BOS CREEK DR
E BOS CREEK DR
W CROCKER ST
LUCILLE ST
N 1ST AV
CHERRY ST
LENARD ST
BURNS ST
E BOS CREEK DR
BURER AV
PEARSON ST
BECHER DR
GEMINI PL
BURNS ST
CLAYTON ST
EAST CHERRY ST
BOS CREEK
BROKEN ARROW RD
E RANDOLPH ST
MARATHON ELECTRIC MFG.
ELDRED ST
STROWBRIDGE ST
N 2ND AV
N 1ST AV
CHERRY ST
KNOX ST
OLD LANDFILL LIMITS
WISCONSIN RIVER
N 5TH ST
N 3RD ST
DEVOE ST
E UNION AV
N 7TH ST
ORCHARD ST
PARCHER ST
GILBERT ST
BROWN ST
WINTON ST
N 6TH ST
NINA AV
TURNER ST
BIRCH ST
GOWEN ST
AUGUSTA AV
UNION AV
WAUSAU AV
NORTON ST
QUAW ST
N 3RD AV
BRIDGE ST
E WAUSAU AV
CENTER ST
MOBILE AV
PARK AV
LINCOLN AV
N 2ND ST
HUMBOLDT AV
CHICAGO AV
E BRIDGE ST
FORMER WAUSAU CHEMICAL CORPORATION
WATER TREATMENT PLANT

Source: Marathon County

0 500 ft

N

GHD

WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN
2019 ANNUAL MONITORING REPORT

SITE PLAN

003978-00
Jan 3, 2020

FIGURE 1.2

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LEGEND

- MONITORING WELL
- EXTRACTION WELL
- CITY PRODUCTION WELL
- INDUSTRIAL WELL
- 1187.19 GROUNDWATER ELEVATION
- GROUNDWATER CONTOUR
- APPROXIMATE EXTENT OF CONTAMINANT PLUME IN GROUNDWATER

CW11 ~1188
1182
1181
GM4D 1180.98
CW10 ~1168
CW9 ~1183
CW9OBS R 1181.11
CW7 ~1189
1184
1183
1182
1181
MW4A 1181.27
MW4B NM
GM2S 1182.34
W57 NM
MW7 1179.59
CW6 ~1160
1180
MW3A 1182.08
W56 1181.32
W55 1181.99
W55A NM
MW1A 1182.53
BOSS CREEK
R2D 1183.07
R2S NM
R1D 1184.27
W50 NM
R3S NM
R3D 1183.34
W52A NM
W52 1183.37
WISCONSIN RIVER
ELEVATION ~1181.8
MARATHON ELECTRIC MFG.
C2S 1183.50
R4D 1183.41
EW1 1183.46
C7S 1183.45
W54 1183.42
W53A NM
WSWS NM
WSWD 1183.33
W53 1183.53
C3S 1182.77
WILSON HURD TEST WELL 1182.54
IWD NM
C6S 1184.18
C4S 1183.15
C4D NM
OLD LANDFILL LIMITS
E21 1182.12
WW4 1180.61
CW3 ~1143
1180
1182
1183
1181
GM6D 1180.56
WW6 1180.50
FORMER WAUSAU CHEMICAL CORPORATION
E26 NM
E22A 1181.73
E37A 1181.62
E22 NM
E26A 1181.96
FVD5 1181.92
E28A 1183.84
WC5 NM
WC5A 1182.12
WC4 NM
WC4A 1182.43
WC3B 1182.39
WC3 NM
E24AR 1182.32
WATER TREATMENT PLANT
MW10A NM
MW10B 1182.49
WC7A 1182.53

Source: Marathon County

0 500 ft

N

GHD

WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN
2019 ANNUAL MONITORING REPORT

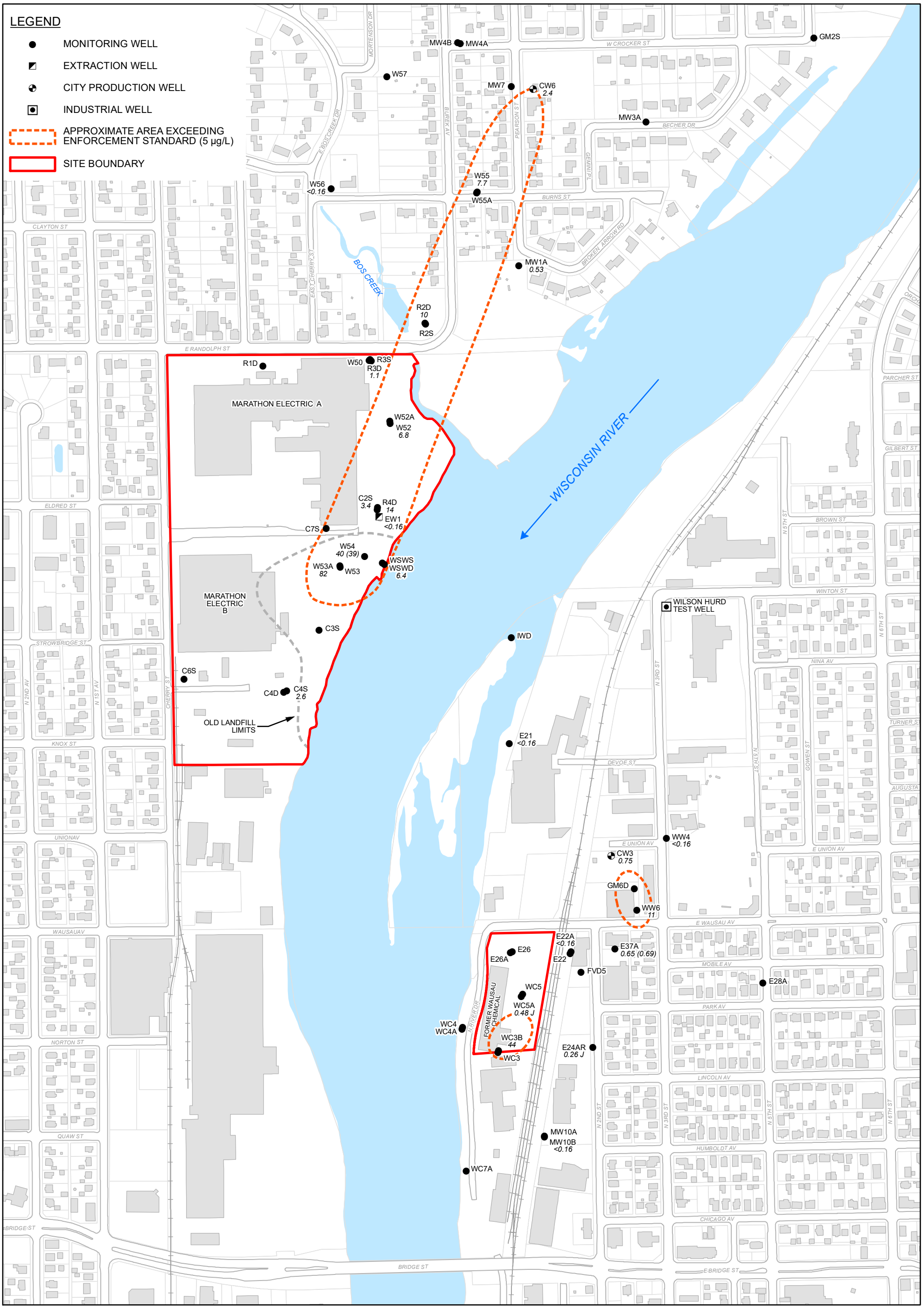
GROUNDWATER ELEVATIONS AND CONTOURS SEPTEMBER 2019

003978-00

Jan 3, 2020

FIGURE 2.1

GIS File: I:\GIS\Projects\6-chars\00----\0039--\003978\003978-REPORTS\003978-00(042)\003978-00(042)GIS-SP003.mxd



Source: Marathon County

0 200 400 ft

WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN
2019 ANNUAL MONITORING REPORT

TRICHLOROETHENE CONCENTRATIONS SEPTEMBER 2019

003978-00

Jan 3, 2020

FIGURE 4.1

GIS File: I:\GIS\Projects\6-chars\00----\0039--\003978\003978-REPORTS\003978-00(042)\003978-00(042)GIS-SP004.mxd

LEGEND

- MONITORING WELL
- EXTRACTION WELL
- CITY PRODUCTION WELL
- INDUSTRIAL WELL
- APPROXIMATE AREA EXCEEDING ENFORCEMENT STANDARD (70 µg/L)
- SITE BOUNDARY

MW4B MW4A W57 MW7 CW6 <0.41 GM2S MW3A W56 <0.41 W55 15 W55A MW1A <0.41 R2D 2.4 R2S R1D W50 R3S R3D <0.41 MARATHON ELECTRIC A W52A W52 1.0 C2S <0.41 R4D <0.41 EW1 <0.41 C7S W54 0.99 J (<0.41) W53A <0.41 W53 WSWS WSWD 0.94 J MARATHON ELECTRIC B C3S C6S C4D C4S 2.2 OLD LANDFILL LIMITS IWD E21 <0.41 WILSON HURD TEST WELL WW4 <0.41 CW3 1.0 GM6D WW6 14 E22A <0.41 E26 E26A E22 E37A 0.52 J (0.56 J) FVD5 E28A WC5 WC5A <41 WC4 WC4A WC3B 74 WC3 E24AR 3.6 MW10A MW10B <0.41 WC7A

MORTENSON DR, E BOS CREEK DR, BUREK AV, PEARSON ST, W CROCKER ST, BECHER DR, GEMINI PL, BURNS ST, BROKEN ARROW RD, CLAYTON ST, EAST CHERRY ST, BOS CREEK, E RANDOLPH ST, ELDRED ST, STROWBRIDGE ST, N 2ND AV, N 1ST AV, CHERRY ST, KNOX ST, UNION AV, WAUSAU AV, NORTON ST, QUAW ST, BRIDGE ST, WISCONSIN RIVER, N RIVER DR, FORMER WAUSAU CHEMICAL, DEVOE ST, E UNION AV, E WAUSAU AV, N 3RD ST, N 2ND ST, N 5TH ST, N 6TH ST, GOWEN ST, BROWN ST, WINTON ST, NINA AV, TURNER ST, AUGUSTA, PARCHER ST, GILBERT ST, MOBILE AV, PARK AV, LINCOLN AV, HUMBOLDT AV, CHICAGO AV, E BRIDGE ST

Source: Marathon County

0 200 400 ft

WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN
2019 ANNUAL MONITORING REPORT

CIS-1,2-DICHLOROETHENE CONCENTRATIONS SEPTEMBER 2019

003978-00

Jan 3, 2020

FIGURE 4.2

GIS File: I:\GIS\Projects\6-chars\00----\0039--\003978\003978-REPORTS\003978-00(042)\003978-00(042)GIS-SP005.mxd

LEGEND

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

MW4B MW4A GM2S W57 MW7 CW6 <0.37 MW3A W56 <0.37 W55 <0.37 W55A MW1A <0.37 R2D <0.37 R2S R1D W50 R3S R3D <0.37 MARATHON ELECTRIC A W52A W52 <0.37 C2S <0.37 R4D <0.37 EW1 <0.37 C7S W54 <0.37 (<0.37) W53A <0.37 W53 WSWS WSWD <0.37 MARATHON ELECTRIC B C3S C6S C4D C4S <0.37 OLD LANDFILL LIMITS IWD E21 <0.37 WW4 <0.37 CW3 1.0 GM6D WW6 3.9 E22A 1.6 E26 E26A E22 E37A 0.42 J (0.37 J) FVD5 E28A WC5 WC5A 0.63 J WC4 WC4A WC3B 350 WC3 E24AR 0.68 J MW10A MW10B <0.37 WC7A WILSON HURD TEST WELL

W57 W56 <0.37 W55 <0.37 W55A MW7 CW6 <0.37 MW3A MW1A <0.37 R2D <0.37 R2S

MW4B MW4A GM2S

W56 <0.37 W55 <0.37 W55A MW1A <0.37 R2D <0.37 R2S

R1D W50 R3S R3D <0.37 W52A W52 <0.37 C2S <0.37 R4D <0.37 EW1 <0.37 C7S W54 <0.37 (<0.37) W53A <0.37 W53 WSWS WSWD <0.37 C3S C6S C4D C4S <0.37 OLD LANDFILL LIMITS

IWD E21 <0.37 WW4 <0.37 CW3 1.0 GM6D WW6 3.9 E22A 1.6 E26 E26A E22 E37A 0.42 J (0.37 J) FVD5 E28A WC5 WC5A 0.63 J WC4 WC4A WC3B 350 WC3 E24AR 0.68 J MW10A MW10B <0.37 WC7A WILSON HURD TEST WELL

Source: Marathon County

0 200 400 ft

GHD

WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN
2019 ANNUAL MONITORING REPORT

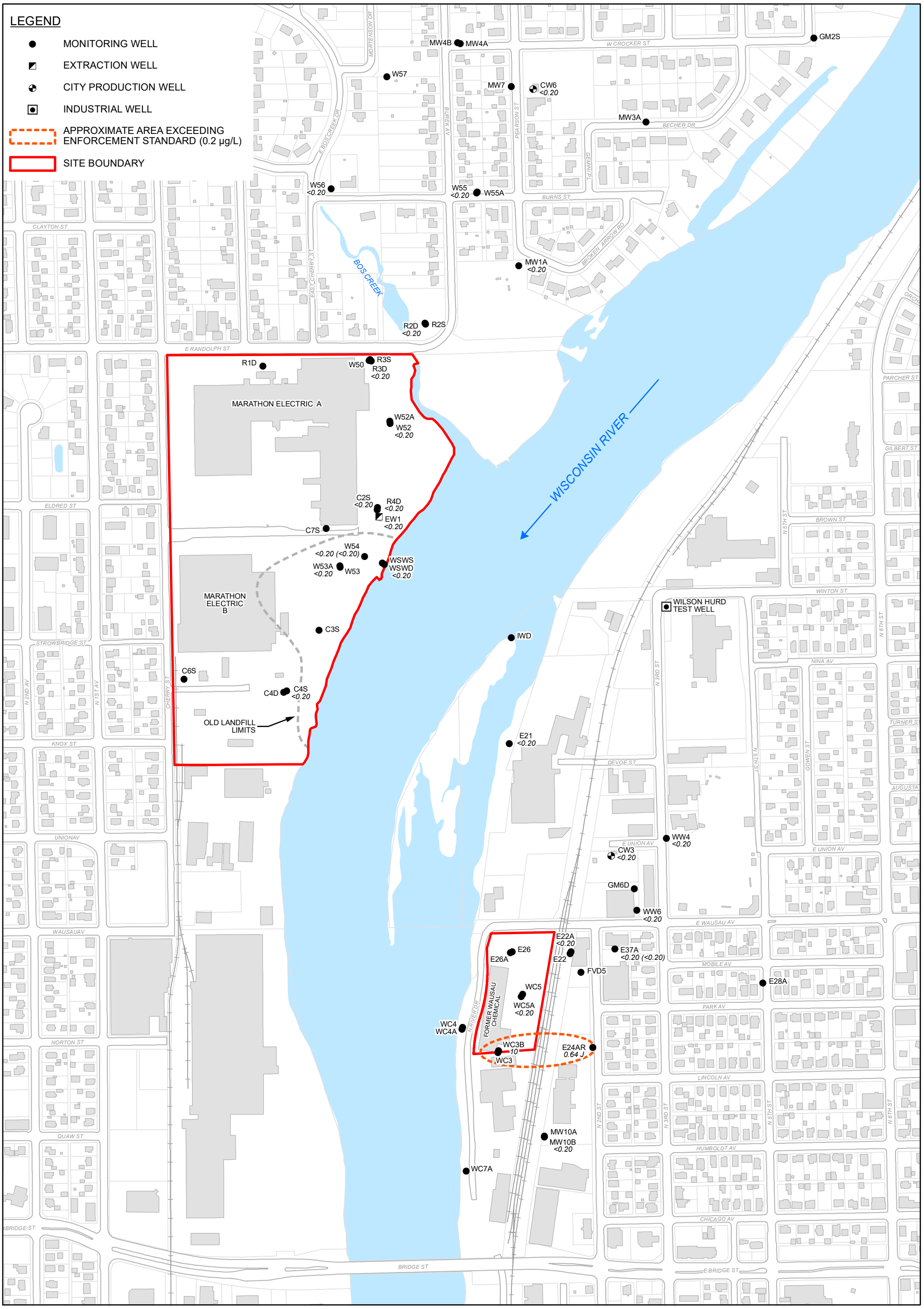
TETRACHLOROETHENE CONCENTRATIONS SEPTEMBER 2019

003978-00

Jan 3, 2020

FIGURE 4.3

GIS File: I:\GIS\Projects\6-chars\00----\0039--\003978\003978-REPORTS\003978-00(042)\003978-00(042)GIS-SP006.mxd



Source: Marathon County

0 200 400 ft

WAUSAU WATER SUPPLY NPL SITE
WAUSAU, WISCONSIN
2019 ANNUAL MONITORING REPORT

VINYL CHLORIDE CONCENTRATIONS SEPTEMBER 2019

003978-00

Jan 3, 2020

FIGURE 4.4

GIS File: I:\GIS\Projects\6-chars\00----\0039--\003978\003978-REPORTS\003978-00(042)\003978-00(042)GIS-SP007.mxd

Table 2.1

2019 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

Table 2.2

Groundwater Elevations - September 2019
Wausau Water Supply NPL Site
Wausau, Wisconsin

	Reference Elevation	Water Level (ft BTOC)	Water Table Elevation (ft AMSL)
East Bank		**9/9/2019**	**9/9/2019**
CW3*	1202.15	59	1143
E21	1197.51	15.39	1182.12
E22A	1195.88	14.15	1181.73
E24AR	1209.33	27.01	1182.32
E26A	1199.13	17.17	1181.96
E28A	1211.60	27.76	1183.84
E37A	1197.84	16.22	1181.62
FVD5	1198.89	16.97	1181.92
GM6D	1198.57	18.01	1180.56
W. HURD	1200.23	17.69	1182.54
MW10B	1210.37	27.88	1182.49
WC3B	1196.11	13.72	1182.39
WC4A	1196.57	14.14	1182.43
WC5A	1196.66	14.54	1182.12
WC7A	1196.77	14.24	1182.53
WW4	1200.34	19.73	1180.61
WW6	1200.53	20.03	1180.50
West Bank		**9/10/2019**	**9/10/2019**
CW6*	1220.33	60	1160
CW7	1224.14	35	1189 approx.
CW9	1226.16	43	1183 approx.
CW10*	1218.49	50	1168
CW11	1216.51	29	1188 approx.
CW9 OBS R	1224.51	43.40	1181.11
EW1	1218.04	34.58	1183.46
C2S	1219.05	35.55	1183.50
C3S	1220.58	37.81	1182.77

Table 2.2

Groundwater Elevations - September 2019
Wausau Water Supply NPL Site
Wausau, Wisconsin

	Reference Elevation	Water Level (ft BTOC)	Water Table Elevation (ft AMSL)
West Bank cont'd.			
C4S	1216.70	33.55	1183.15
C6S	1221.58	37.40	1184.18
C7S	1220.87	37.42	1183.45
GM2S	1211.78	29.44	1182.34
GM4D	1216.35	35.37	1180.98
MW1A	1215.69	33.16	1182.53
MW3A	1220.87	38.79	1182.08
MW4A	1215.48	34.21	1181.27
MW7	1218.53	38.94	1179.59
R1D	1222.24	37.97	1184.27
R2D	1209.42	26.35	1183.07
R3D	1215.42	32.08	1183.34
R4D	1218.90	35.49	1183.41
W52	1219.16	35.79	1183.37
W53	1216.67	33.14	1183.53
W54	1216.08	32.66	1183.42
W55	1217.04	35.05	1181.99
W56	1200.01	18.69	1181.32
W57	1201.76	NM	NM
WSWD	1193.02	9.69	1183.33
Wisconsin River	--	--	1181.8

Notes:

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

Table 2.3

Groundwater Sampling Summary - September 2019
Wausau Water Supply NPL Site
Wausau, Wisconsin

Well	Date	pH	Conductivity (uS/cm)	Temperature (ºC)	Water Clarity	Gallons Removed	Sample ID Number
East Bank							
CW3	9/9/2019	7.16	447	11.7	Clear	NA	W-190909-KJ-01
E21	9/9/2019	6.98	207	10.5	Clear	40	W-190909-KJ-03
E22A	9/9/2019	6.22	427	11.2	Clear	3	W-190909-KJ-09
E24AR	9/9/2019	7.00	560	11.,3	Clear	8	W-190909-KJ-08
E37A	9/10/2019	8.65	220	13.1	Clear	3	W-190909-KJ-17
E37A Duplicate	9/10/2019	--	--	--	--	--	W-190909-KJ-18
MW-10B	9/9/2019	6.53	951	9.3	Clear	18	W-190909-KJ-02
WC3B	9/9/2019	6.81	5206	13.2	Sl. Cloudy	3	W-190909-KJ-05
WC5A	9/9/2019	6.78	697	13.5	Sl. Cloudy	3	W-190909-KJ-04
WW4	9/9/2019	6.24	580	9.6	Clear	24	W-190909-KJ-06
WW6	9/9/2019	6.77	548	10.8	Clear	18	W-190909-KJ-07
West Bank							
C2S	9/10/2019	7.58	2091	16.7	Clear	3	W-190910-KJ-11
C4S	9/10/2019	7.43	1486	15.6	Sl. Cloudy	Grab	W-190910-KJ-21
CW6	9/10/2019	8.38	264	13.2	Clear	Grab	W-190910-KJ-10
EW1	9/10/2019	11.04	369	15.3	Clear	Grab	W-190910-KJ-24
Field Blank	9/10/2019	--	--	--	--	--	W-190910-KJ-25

Table 2.3

Groundwater Sampling Summary - September 2019
Wausau Water Supply NPL Site
Wausau, Wisconsin

Well	Date	pH	Conductivity (uS/cm)	Temperature (ºC)	Water Clarity	Gallons Removed	Sample ID Number
West Bank cont'd.							
MW-1A	9/10/2019	11.40	139	11.6	Clear	3	W-190910-KJ-16
R2D	9/10/2019	9.49	313	11.0	Clear	60	W-190910-KJ-20
R3D	9/10/2019	12.19	607	12.2	Clear	60	W-190910-KJ-23
R4D	9/10/2019	7.86	927	15.4	Clear	3	W-190910-KJ-12
W52	9/10/2019	10.13	231	12.8	Clear	3	W-190910-KJ-13
W53A	9/10/2019	8.90	1932	12.3	Clear	3	W-190910-KJ-14
W54	9/10/2019	10.68	706	12.2	Clear	18	W-190910-KJ-26
W54 Duplicate	9/10/2019	--	--	--	--	--	W-190910-KJ-27
Field Blank	9/10/2019	--	--	--	Clear	--	W-190910-KJ-28
W55	9/10/2019	8.72	196	13.6	Clear	3	W-190910-KJ-15
W56	9/10/2019	7.84	764	9.4	Clear	12	W-190910-KJ-19
WSWD	9/10/2019	9.37	331	13.4	Clear	3	W-190910-KJ-22

Notes:

uS/cm - microsiemens per centimeter

Table 3.1

2018 Monitoring Well Inspection
Wausau Water Supply NPL Site
Wausau, Wisconsin

	CW3	E21	E22	E22A	E24AR	E26
Difficult to find? Brush need cutting?	City pump house	No/No	No/No	No/No	No/No	No/Yes
Clearly labeled on outside? ID tag visible?	NA	Yes	No	No	No	Yes
Protop and Casing Condition	NA	Good	Good	Good	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
Well Cap Condition (inner/outer)	NA	Good	Good	Good	Good	Good
Does well riser inhibit the protop from being closed and locked?	NA	No	No	No	No	No
Lock Condition	NA	Good	Good	Good	Fair	Good
Ground subsidence?	NA	None	None	None	None	Soil - good
Flush Mount? Potential for ponded water?	NA	Above grade	Flush - No	Flush - No	Flush - No	Above grade
Flush Mount in impervious surface? (surface type)	NA	NA	Soil	Soil	Concrete pad in turf	NA
Flush Mount water tight?	NA	NA	No	No	Yes	NA
Notes			replace cover bolts	replace one bolt		clear brush

Table 3.1

2018 Monitoring Well Inspection
Wausau Water Supply NPL Site
Wausau, Wisconsin

	E26A	E28A	E37A	FVD5	GM6D	W. HURD
Difficult to find? Brush need cutting?	No/Yes	No/No	No/No	No/No	No/No	No/No
Clearly labeled on outside? ID tag visible?	Yes	No	No	Yes	Yes	Yes
Protop and Casing Condition	Fair	Fair	Good	Good	Good	Good
Surface seal visible? Concrete Condition? (Soil/sod covered?)	No, sod covered	Yes, concrete surface - good	Damaged	No, protop in gravel.	Yes, concrete surface seal in asphalt	No, sod
Well Cap Condition (inner/outer)	Good	Good	Damaged	Good	Good	Good
Does well riser inhibit the protop from being closed and locked?	No	No	No	No	No	No
Lock Condition	Fair	Fair	Fair	Good	Good	Fair
Ground subsidence?	Soil - good	No subsidence	No subsidence	None. New gravel.	None	None
Flush Mount? Potential for ponded water?	Above grade	Flush - No	Flush - No	Above grade	Flush - No	Above grade, no
Flush Mount in impervious surface? (surface type)	NA	Concrete sidewalk	Concrete	NA	New concrete vault in asphalt	NA
Flush Mount water tight?	NA	Yes	No	NA	Yes	NA
Notes	clear brush		repair flush mount vault			

Table 3.1

2018 Monitoring Well Inspection
Wausau Water Supply NPL Site
Wausau, Wisconsin

	IWD	MW10A	MW10B	WC3	WC3B	WC4
Difficult to find? Brush need cutting?	NA	No/No	No/No	No/No	No/No	No/No
Clearly labeled on outside? ID tag visible?	NA	Yes	Yes	Yes	No	Yes
Protop and Casing Condition	NA	Fair -rust	Good	Good	Good	Good
Surface seal visible? Concrete Condition? (Soil/sod covered?)	NA	No, covered with vegetation	No, covered with vegetation	No, sod	Yes, concrete good	No, sod
Well Cap Condition (inner/outer)	NA	Fair, rust	Fair, difficult to remove	Good	Good	Good
Does well riser inhibit the protop from being closed and locked?	NA	No	No	No	No	No
Lock Condition	NA	Broken	None	Good	Good	Good
Ground subsidence?	NA	None	None	None	None	None
Flush Mount? Potential for ponded water?	NA	Above grade	Above grade	Above grade	Flush - No	Above grade
Flush Mount in impervious surface? (surface type)	NA	NA	NA	-	Yes - Concrete	NA
Flush Mount water tight?	NA	NA	NA	-	Yes	NA
Notes						

Table 3.1

2018 Monitoring Well Inspection
Wausau Water Supply NPL Site
Wausau, Wisconsin

	WC4A	WC5	WC5A	WC7	WW4	WW6
Difficult to find? Brush need cutting?	No/No	No/Yes	No/Yes	No/No	No/No	No/No
Clearly labeled on outside? ID tag visible?	Yes	Yes	Yes	No, painted over	No	Yes
Protop and Casing Condition	Good	Good	Good	Good	Good	Good
Surface seal visible? Concrete Condition? (Soil/sod covered?)	No, sod	No, gravel and soil	No, gravel and soil	No, soil and grass	New concrete pad	Yes, asphalt - good condition
Well Cap Condition (inner/outer)	Good	Good	Good	Good	Good	Good
Does well riser inhibit the protop from being closed and locked?	No	No	No	No	No	No
Lock Condition	Good	Good	Good	Good	Good	Good
Ground subsidence?	None	None	None	None	None	None
Flush Mount? Potential for ponded water?	Above grade	Above grade	Above grade	Above grade	Flush - No	Above grade
Flush Mount in impervious surface? (surface type)	NA	NA	NA	NA	New concrete pad in sod	NA
Flush Mount water tight?	NA	NA	NA	NA	No	NA
Notes		clear brush	clear brush			repair protop

Table 3.1

2018 Monitoring Well Inspection
Wausau Water Supply NPL Site
Wausau, Wisconsin

	EW1	CW6	CW9 OBS R	C2S	C3S	C4S
Difficult to find? Brush need cutting?	Pump house	City pump house	No/No	No/No	No/No	No/No
Clearly labeled on outside? ID tag visible?	No	Yes	USGS label	Yes	Yes	Yes
Protop and Casing Condition	Good	NA	Good	Fair	Fair	Fair
Surface seal visible? Concrete Condition? (Soil/sod covered?)	NA	NA	No, sod	Yes	No, sod	No, sod
Well Cap Condition (inner/outer)	NA	NA	Good	Fair	Fair	Fair
Does well riser inhibit the protop from being closed and locked?	NA	NA	Yes	No	No	No
Lock Condition	NA	NA	Good	Fair	Fair	Fair
Ground subsidence?	None	NA	None	None	None	None
Flush Mount? Potential for ponded water?	NA	NA	Above grade	Above grade	Above grade	Above grade
Flush Mount in impervious surface? (surface type)	NA	NA	NA	NA	NA	NA
Flush Mount water tight?	NA	NA	NA	NA	NA	NA
Notes				clear brush		

Table 3.1

2018 Monitoring Well Inspection
Wausau Water Supply NPL Site
Wausau, Wisconsin

	C4D	C6S	C7S	GM2S	GM4D	MW1A
Difficult to find? Brush need cutting?	No/No	No/No	Yes/Yes	No/No	No/No	No/No
Clearly labeled on outside? ID tag visible?	Yes	Yes	Yes	Yes	Yes	No
Protop and Casing Condition	Protop casing hinge rusted through	Fair	Poor	Good	Good	Good
Surface seal visible? Concrete Condition? (Soil/sod covered?)	Yes, concrete - good	No, sod	Yes, concrete	New concrete pad	No, sod and leaf litter	No, gravel
Well Cap Condition (inner/outer)	Fair	Fair	Poor	Good	Fair	Good
Does well riser inhibit the protop from being closed and locked?	No	No	No	No	No	Yes
Lock Condition	Fair	Good	broken	Good	Good	Good
Ground subsidence?	None	None	None	None	None	None
Flush Mount? Potential for ponded water?	Above grade	Above grade	Above grade	New vault installed	Above grade	Above grade
Flush Mount in impervious surface? (surface type)	NA	NA	NA	Concrete pad in sod	NA	NA
Flush Mount water tight?	NA	NA	NA	Yes	NA	NA
Notes	repair protop		repair protop			

Table 3.1

2018 Monitoring Well Inspection
Wausau Water Supply NPL Site
Wausau, Wisconsin

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

Table 3.1

2018 Monitoring Well Inspection
Wausau Water Supply NPL Site
Wausau, Wisconsin

	R2D	R3S	R3D	R4D	W50	W52
Difficult to find? Brush need cutting?	No/No	No/No	No/No	No/Yes	No/No	No/No
Clearly labeled on outside? ID tag visible?	Yes	Yes	Yes	Yes	Yes	Yes
Protop and Casing Condition	Good	Good	Good	Fair	Fair	Fair
Surface seal visible? Concrete Condition? (Soil/sod covered?)	No, leaf litter	No, sod	No, sod	No, sod and leaf litter	No, sod	No, soil
Well Cap Condition (inner/outer)	Good	Fair	Fair	Fair	Fair	Fair
Does well riser inhibit the protop from being closed and locked?	No	No	No	Yes	No	No
Lock Condition	Good	Good	Good	Fair	replaced	Fair
Ground subsidence?	None	None	None	None	None	None
Flush Mount? Potential for ponded water?	Above grade	Above grade	Above grade	Above grade	Above grade	Above grade
Flush Mount in impervious surface? (surface type)	NA	NA	NA	NA	NA	NA
Flush Mount water tight?	NA	NA	NA	NA	NA	NA
Notes		dry well		clear brush		

Table 3.1

2018 Monitoring Well Inspection
Wausau Water Supply NPL Site
Wausau, Wisconsin

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

Table 3.1

2018 Monitoring Well Inspection
Wausau Water Supply NPL Site
Wausau, Wisconsin

	W56	W57	WSWS	WSWD
Difficult to find? Brush need cutting?	No/No	Yes - not found	No/No	No/No
Clearly labeled on outside? ID tag visible?	Yes	NA	Yes	Yes
Protop and Casing Condition	Good	NA	Good	Good
Surface seal visible? Concrete Condition? (Soil/sod covered?)	No - sod and leaf litter	NA	No - sod and leaf litter	No - sod and leaf litter
Well Cap Condition (inner/outer)	Good	NA	Good	Good
Does well riser inhibit the protop from being closed and locked?	No	NA	No	No
Lock Condition	Good	NA	Fair	Fair
Ground subsidence?	None	NA	None	None
Flush Mount? Potential for ponded water?	Above grade	NA	Above grade	Above grade
Flush Mount in impervious surface? (surface type)	NA	NA	NA	NA
Flush Mount water tight?	NA	NA	NA	NA
Notes		clear brush	replace lock	replace lock

Table 3.2

2018 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
	Hours	147.5	593	0	79	166.7	235.2
January	Gallons	11.881	47.851	0	4.049	30.233	41.129
	gpm	1342	1345	0	854	3023	2914
	Hours	297.3	375.6	0	210.8	208.2	233.1
February	Gallons	23.736	30.408	0	10.007	41.206	40.745
	gpm	1331	1349	0	791	3299	2913
	Hours	446	291.8	198.9	352.5	147	251
March	Gallons	32.54	23.203	23.586	16.51	28.998	43.909
	gpm	1216	1325	1976	781	3288	2916
	Hours	316.7	401.8	215	204.8	153.4	133.9
April	Gallons	22.665	32.037	25.707	9.535	33.317	23.444
	gpm	1193	1329	1993	776	3620	2918
	Hours	319.3	420.3	213.4	204.9	161.8	157.5
May	Gallons	22.865	32.685	25.582	9.754	31.8	27.551
	gpm	1193	1296	1998	793	3276	2915
	Hours	334.4	383.7	185.8	221.5	178.7	126.5
June	Gallons	26.814	31.29	22.124	10.496	34.924	22.091
	gpm	1336	1359	1985	790	3257	2911
	Hours	290.7	446.5	204.1	207	383.8	0
July	Gallons	21.235	36.454	23.769	9.575	74.996	0
	gpm	1217	1361	1941	771	3257	0
	Hours	333.9	406.4	236.7	246.5	364.6	0
August	Gallons	25.979	32.957	27.562	11.454	70.568	0
	gpm	1297	1352	1941	774	3226	0
	Hours	313.8	402	168.7	174.3	169.3	83.7
September	Gallons	24.60	32.811	19.946	8.257	33.827	14.651
	gpm	1307	1360	1971	790	3330	2917
	Hours	287.8	454.9	109.5	106.3	141.8	87.4
October	Gallons	22.291	37.192	13.241	5.11	28.53	15.27
	gpm	1291	1363	2015	801	3353	2912
	Hours	312.6	406.7	121.3	135.4	99	108.2
November	Gallons	23.997	33.113	14.663	6.896	20.036	18.927
	gpm	1279	1357	2015	849	3373	2915
	Hours	314.4	427.4	140.9	140.6	134.4	88.7
December	Gallons	25.763	34.5	17.453	7.161	30.104	15.293
	gpm	1366	1345	2064	849	3733	2874
Average hrs/week:		**71.4**	**96.3**	**34.5**	**43.9**	**44.4**	**28.9**
Average gpm:		**1276**	**1346**	**1984**	**794**	**3310**	**2912**

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 - September 9-10, 2019
Wausau Water Supply NPL Site
Wausau, Wisconsin

Location ID:			CW3	WC3B	WC5A	E21	E22A	E24AR	E37A	E37A
Sample Name:			W-190909-KJ-01	W-190909-KJ-05	W-190909-KJ-04	W-190909-KJ-03	W-190909-KJ-09	W-190909-KJ-08	W-190910-KJ-17	W-190910-KJ-18
Sample Date:			09/09/2019	09/09/2019	09/09/2019	09/09/2019	09/09/2019	09/09/2019	09/10/2019	09/10/2019
			EB	EB	EB	EB	EB	EB	EB	Duplicate
Parameters	**Unit**									
Volatile Organic Compounds		**WDNR ES**								
1,1,2-Trichloroethane	µg/L	200	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	7	1.0 U	2.2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	µg/L	9,000	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	µg/L	5	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	5	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	6	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	70	1.0	74	1.0 U	1.0 U	1.0 U	3.6	0.52 J	0.56 J
Ethylbenzene	µg/L	700	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	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	5	1.0	350	0.63 J	1.0 U	1.6	0.68 J	0.42 J	0.37 J
Toluene	µg/L	800	0.50 U	0.25 J	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	µg/L	5	0.75	44	0.48 J	0.50 U	0.50 U	0.26 J	0.65	0.69
Vinyl chloride	µg/L	0.2	1.0 U	10	1.0 U	1.0 U	1.0 U	0.64 J	1.0 U	1.0 U
Xylenes (total)	µg/L	2,000	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 4.1

Annual Groundwater Monitoring Event
Analytical Results - September 9-10, 2019
Wausau Water Supply NPL Site
Wausau, Wisconsin

Location ID:		WW4	WW6	MW10B	CW6	C2S	C4S	MW1A	R2D	R3D
Sample Name:		W-190909-KJ-06	W-190909-KJ-07	W-190909-KJ-02	W-190910-KJ-10	W-190910-KJ-11	W-190910-KJ-21	W-190910-KJ-16	W-190910-KJ-20	W-190910-KJ-23
Sample Date:		09/09/2019	09/09/2019	09/09/2019	09/10/2019	09/10/2019	09/10/2019	09/10/2019	09/10/2019	09/10/2019
		EB	EB	WB	WB	WB	WB	WB	WB	WB
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
1,1-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
Acetone	µg/L	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
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
Chloroform (Trichloromethane)	µg/L	2.0 U	0.52 J	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	14	1.0 U	1.0 U	1.0 U	2.2	1.0 U	2.4	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
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
Tetrachloroethene	µg/L	1.0 U	3.9	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
Trichloroethene	µg/L	0.50 U	11	0.50 U	2.4	3.4	2.6	0.53	10	1.1
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
Xylenes (total)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.43 J	1.0 U	1.0 U

Table 4.1

Annual Groundwater Monitoring Event
Analytical Results - September 9-10, 2019
Wausau Water Supply NPL Site
Wausau, Wisconsin

Location ID:		R4D	EW1	W52	W53A	W54	W54	W55	W56	WSWD
Sample Name:		W-190910-KJ-12	W-190910-KJ-24	W-190910-KJ-13	W-190910-KJ-14	W-190910-KJ-26	W-190910-KJ-27	W-190910-KJ-15	W-190910-KJ-19	W-190910-KJ-22
Sample Date:		09/10/2019	09/10/2019	09/10/2019	09/10/2019	09/10/2019	09/10/2019	09/10/2019	09/10/2019	09/10/2019
		WB	WB	WB	WB	WB	Duplicate	WB	WB	WB
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
1,1-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
Acetone	µg/L	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
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
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
cis-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0	1.0 U	0.99 J	1.0 U	15	1.0 U	0.94 J
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
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
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
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
Trichloroethene	µg/L	14	0.50 U	6.8	82	40	39	7.7	0.50 U	6.4
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
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

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

Appendix A
September 9 10, 2019 Laboratory Report and Data Quality Validation Memorandum

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

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

Laboratory Job ID: 500-169953-1
Client Project/Site: Wausau Superfund Site - 003978

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

Attn: Mr. Grant Anderson

Authorized for release by:
9/25/2019 9:27:09 AM

Richard Wright, Senior Project Manager
(708)534-5200
richard.wright@testamericainc.com

Table of Contents

Case Narrative

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

Job ID: 500-169953-1

Job ID: 500-169953-1

Laboratory: Eurofins TestAmerica, Chicago

Narrative

Job Narrative
500-169953-1

Receipt
The samples were received on 9/12/2019 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.6º C.

GC/MS VOA
Method(s) 8260B: The following sample was diluted to bring the concentration of target analytes within the calibration range: W-190909-KS-05 (500-169953-5). Elevated reporting limits (RLs) are provided.

Method(s) 8260B: Acetone was detected in the following samples: W-190909-KS-02 (500-169953-2), W-190909-KS-04 (500-169953-4), W-190909-KS-05 (500-169953-5), W-190909-KS-09 (500-169953-9), W-190910-KS-11 (500-169953-11), W-190910-KS-13 (500-169953-13), W-190910-KS-16 (500-169953-16), W-190910-KS-17 (500-169953-17), W-190910-KS-18 (500-169953-18) and W-190910-KS-25 (500-169953-25). The method blank associated with these samples were non-detect for Acetone. Acetone is known lab contaminant; therefore all low level detects for this compound should be suspected as lab contamination.

Method(s) 8260B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for 505878 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recoveries were within acceptance limits.

Method(s) 8260B: Methylene chloride was detected in the following samples: W-190910-KS-24 (500-169953-24), W-190910-KS-25 (500-169953-25), W-190910-KS-27 (500-169953-27), W-190910-KS-28 (500-169953-28) and Trip Blank (500-169953-29). The method blank associated with these samples was non-detect for Methylene chloride. Methylene chloride is known lab contaminant; therefore all low level detects for this compound should be suspected as lab contamination.

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

Detection Summary

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

Job ID: 500-169953-1

Client Sample ID: W-190909-KS-01 — Lab Sample ID: 500-169953-1

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.0		1.0	0.41	ug/L	1		8260B	Total/NA
Tetrachloroethene	1.0		1.0	0.37	ug/L	1		8260B	Total/NA
Trichloroethene	0.75		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-190909-KS-02 — Lab Sample ID: 500-169953-2

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Acetone	2.9	J	10	1.7	ug/L	1		8260B	Total/NA

Client Sample ID: W-190909-KS-03 — Lab Sample ID: 500-169953-3

No Detections.

Client Sample ID: W-190909-KS-04 — Lab Sample ID: 500-169953-4

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Acetone	2.2	J	10	1.7	ug/L	1		8260B	Total/NA
Tetrachloroethene	0.63	J	1.0	0.37	ug/L	1		8260B	Total/NA
Trichloroethene	0.48	J	0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-190909-KS-05 — Lab Sample ID: 500-169953-5

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Acetone	8.8	J	10	1.7	ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	74		1.0	0.41	ug/L	1		8260B	Total/NA
1,1-Dichloroethene	2.2		1.0	0.39	ug/L	1		8260B	Total/NA
Toluene	0.25	J	0.50	0.15	ug/L	1		8260B	Total/NA
Trichloroethene	44		0.50	0.16	ug/L	1		8260B	Total/NA
Vinyl chloride	10		1.0	0.20	ug/L	1		8260B	Total/NA
Tetrachloroethene - DL	350		10	3.7	ug/L	10		8260B	Total/NA

Client Sample ID: W-190909-KS-06 — Lab Sample ID: 500-169953-6

No Detections.

Client Sample ID: W-190909-KS-07 — Lab Sample ID: 500-169953-7

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Chloroform	0.52	J	2.0	0.37	ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	14		1.0	0.41	ug/L	1		8260B	Total/NA
Tetrachloroethene	3.9		1.0	0.37	ug/L	1		8260B	Total/NA
Trichloroethene	11		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-190909-KS-08 — Lab Sample ID: 500-169953-8

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	3.6		1.0	0.41	ug/L	1		8260B	Total/NA
Tetrachloroethene	0.68	J	1.0	0.37	ug/L	1		8260B	Total/NA
Trichloroethene	0.26	J	0.50	0.16	ug/L	1		8260B	Total/NA
Vinyl chloride	0.64	J	1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: W-190909-KS-09 — Lab Sample ID: 500-169953-9

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Acetone	2.3	J	10	1.7	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: W-190909-KS-09 (Continued) — Lab Sample ID: 500-169953-9

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	1.6		1.0	0.37	ug/L	1		8260B	Total/NA

Client Sample ID: W-190910-KS-10 — Lab Sample ID: 500-169953-10

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	2.4		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-190910-KS-11 — Lab Sample ID: 500-169953-11

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Acetone	3.6	J	10	1.7	ug/L	1		8260B	Total/NA
Trichloroethene	3.4		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-190910-KS-12 — Lab Sample ID: 500-169953-12

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	14		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-190910-KS-13 — Lab Sample ID: 500-169953-13

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Acetone	3.0	J	10	1.7	ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	1.0		1.0	0.41	ug/L	1		8260B	Total/NA
Trichloroethene	6.8		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-190910-KS-14 — Lab Sample ID: 500-169953-14

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	82		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-190910-KS-15 — Lab Sample ID: 500-169953-15

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
Trichloroethene	7.7		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-190910-KS-16 — Lab Sample ID: 500-169953-16

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Acetone	1.8	J	10	1.7	ug/L	1		8260B	Total/NA
Trichloroethene	0.53		0.50	0.16	ug/L	1		8260B	Total/NA
Xylenes, Total	0.43	J	1.0	0.22	ug/L	1		8260B	Total/NA

Client Sample ID: W-190910-KS-17 — Lab Sample ID: 500-169953-17

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Acetone	7.7	J	10	1.7	ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	0.52	J	1.0	0.41	ug/L	1		8260B	Total/NA
Tetrachloroethene	0.42	J	1.0	0.37	ug/L	1		8260B	Total/NA
Trichloroethene	0.65		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-190910-KS-18 — Lab Sample ID: 500-169953-18

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Acetone	3.4	J	10	1.7	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: W-190910-KS-18 (Continued) — Lab Sample ID: 500-169953-18

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.56	J	1.0	0.41	ug/L	1		8260B	Total/NA
Tetrachloroethene	0.37	J	1.0	0.37	ug/L	1		8260B	Total/NA
Trichloroethene	0.69		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-190910-KS-19 — Lab Sample ID: 500-169953-19

No Detections.

Client Sample ID: W-190910-KS-20 — Lab Sample ID: 500-169953-20

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.4		1.0	0.41	ug/L	1		8260B	Total/NA
Trichloroethene	10		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-190910-KS-21 — Lab Sample ID: 500-169953-21

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.2		1.0	0.41	ug/L	1		8260B	Total/NA
Trichloroethene	2.6		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-190910-KS-22 — Lab Sample ID: 500-169953-22

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.94	J	1.0	0.41	ug/L	1		8260B	Total/NA
Trichloroethene	6.4		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-190910-KS-23 — Lab Sample ID: 500-169953-23

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	1.1		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-190910-KS-24 — Lab Sample ID: 500-169953-24

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methylene Chloride	3.0	J	5.0	1.6	ug/L	1		8260B	Total/NA

Client Sample ID: W-190910-KS-25 — Lab Sample ID: 500-169953-25

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Acetone	6.3	J	10	1.7	ug/L	1		8260B	Total/NA
Methylene Chloride	3.0	J	5.0	1.6	ug/L	1		8260B	Total/NA

Client Sample ID: W-190910-KS-26 — Lab Sample ID: 500-169953-26

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.99	J	1.0	0.41	ug/L	1		8260B	Total/NA
Trichloroethene	40		0.50	0.16	ug/L	1		8260B	Total/NA

Client Sample ID: W-190910-KS-27 — Lab Sample ID: 500-169953-27

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methylene Chloride	2.8	J	5.0	1.6	ug/L	1		8260B	Total/NA
Trichloroethene	39		0.50	0.16	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

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

Job ID: 500-169953-1

Client Sample ID: W-190910-KS-28 — Lab Sample ID: 500-169953-28

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methylene Chloride	3.2	J F1	5.0	1.6	ug/L	1		8260B	Total/NA
Toluene	0.34	J	0.50	0.15	ug/L	1		8260B	Total/NA

Client Sample ID: Trip Blank — Lab Sample ID: 500-169953-29

Analyte	Result	Qualifier	LOQ	LOD	Unit	Dil Fac	D	Method	Prep Type
Methylene Chloride	2.8	J	5.0	1.6	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

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.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
500-169953-1	W-190909-KS-01	Water	09/09/19 13:41	09/12/19 09:00	
500-169953-2	W-190909-KS-02	Water	09/09/19 14:26	09/12/19 09:00	
500-169953-3	W-190909-KS-03	Water	09/09/19 15:22	09/12/19 09:00	
500-169953-4	W-190909-KS-04	Water	09/09/19 16:20	09/12/19 09:00	
500-169953-5	W-190909-KS-05	Water	09/09/19 16:50	09/12/19 09:00	
500-169953-6	W-190909-KS-06	Water	09/09/19 16:01	09/12/19 09:00	
500-169953-7	W-190909-KS-07	Water	09/09/19 16:18	09/12/19 09:00	
500-169953-8	W-190909-KS-08	Water	09/09/19 16:39	09/12/19 09:00	
500-169953-9	W-190909-KS-09	Water	09/09/19 16:10	09/12/19 09:00	
500-169953-10	W-190910-KS-10	Water	09/10/19 07:30	09/12/19 09:00	
500-169953-11	W-190910-KS-11	Water	09/10/19 08:35	09/12/19 09:00	
500-169953-12	W-190910-KS-12	Water	09/10/19 09:05	09/12/19 09:00	
500-169953-13	W-190910-KS-13	Water	09/10/19 09:30	09/12/19 09:00	
500-169953-14	W-190910-KS-14	Water	09/10/19 09:55	09/12/19 09:00	
500-169953-15	W-190910-KS-15	Water	09/10/19 10:20	09/12/19 09:00	
500-169953-16	W-190910-KS-16	Water	09/10/19 10:50	09/12/19 09:00	
500-169953-17	W-190910-KS-17	Water	09/10/19 08:07	09/12/19 09:00	
500-169953-18	W-190910-KS-18	Water	09/10/19 08:08	09/12/19 09:00	
500-169953-19	W-190910-KS-19	Water	09/10/19 08:38	09/12/19 09:00	
500-169953-20	W-190910-KS-20	Water	09/10/19 09:22	09/12/19 09:00	
500-169953-21	W-190910-KS-21	Water	09/10/19 10:58	09/12/19 09:00	
500-169953-22	W-190910-KS-22	Water	09/10/19 12:45	09/12/19 09:00	
500-169953-23	W-190910-KS-23	Water	09/10/19 13:06	09/12/19 09:00	
500-169953-24	W-190910-KS-24	Water	09/10/19 13:30	09/12/19 09:00	
500-169953-25	W-190910-KS-25	Water	09/10/19 13:31	09/12/19 09:00	
500-169953-26	W-190910-KS-26	Water	09/10/19 13:48	09/12/19 09:00	
500-169953-27	W-190910-KS-27	Water	09/10/19 13:49	09/12/19 09:00	
500-169953-28	W-190910-KS-28	Water	09/10/19 13:50	09/12/19 09:00	
500-169953-29	Trip Blank	Water	09/09/19 00:00	09/12/19 09:00	

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190909-KS-01
Lab Sample ID: 500-169953-1
Date Collected: 09/09/19 13:41
Matrix: Water
Date Received: 09/12/19 09:00

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			09/18/19 15:16	1
Benzene	<0.15		0.50	0.15	ug/L			09/18/19 15:16	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/18/19 15:16	1
Chloroform	<0.37		2.0	0.37	ug/L			09/18/19 15:16	1
cis-1,2-Dichloroethene	**1.0**		1.0	0.41	ug/L			09/18/19 15:16	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/18/19 15:16	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/18/19 15:16	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/18/19 15:16	1
Tetrachloroethene	**1.0**		1.0	0.37	ug/L			09/18/19 15:16	1
Toluene	<0.15		0.50	0.15	ug/L			09/18/19 15:16	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/18/19 15:16	1
Trichloroethene	**0.75**		0.50	0.16	ug/L			09/18/19 15:16	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/18/19 15:16	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/18/19 15:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*114*		*72 - 124*		*09/18/19 15:16*	*1*
Dibromofluoromethane	*91*		*75 - 120*		*09/18/19 15:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*93*		*75 - 126*		*09/18/19 15:16*	*1*
Toluene-d8 (Surr)	*100*		*75 - 120*		*09/18/19 15:16*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190909-KS-02
Lab Sample ID: 500-169953-2
Date Collected: 09/09/19 14:26
Matrix: Water
Date Received: 09/12/19 09:00

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	**2.9**	**J**	10	1.7	ug/L			09/18/19 15:41	1
Benzene	<0.15		0.50	0.15	ug/L			09/18/19 15:41	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/18/19 15:41	1
Chloroform	<0.37		2.0	0.37	ug/L			09/18/19 15:41	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			09/18/19 15:41	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/18/19 15:41	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/18/19 15:41	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/18/19 15:41	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			09/18/19 15:41	1
Toluene	<0.15		0.50	0.15	ug/L			09/18/19 15:41	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/18/19 15:41	1
Trichloroethene	<0.16		0.50	0.16	ug/L			09/18/19 15:41	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/18/19 15:41	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/18/19 15:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*111*		*72 - 124*		*09/18/19 15:41*	*1*
Dibromofluoromethane	*91*		*75 - 120*		*09/18/19 15:41*	*1*
1,2-Dichloroethane-d4 (Surr)	*93*		*75 - 126*		*09/18/19 15:41*	*1*
Toluene-d8 (Surr)	*101*		*75 - 120*		*09/18/19 15:41*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190909-KS-03
Lab Sample ID: 500-169953-3
Date Collected: 09/09/19 15:22
Matrix: Water
Date Received: 09/12/19 09:00

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			09/18/19 16:06	1
Benzene	<0.15		0.50	0.15	ug/L			09/18/19 16:06	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/18/19 16:06	1
Chloroform	<0.37		2.0	0.37	ug/L			09/18/19 16:06	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			09/18/19 16:06	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/18/19 16:06	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/18/19 16:06	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/18/19 16:06	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			09/18/19 16:06	1
Toluene	<0.15		0.50	0.15	ug/L			09/18/19 16:06	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/18/19 16:06	1
Trichloroethene	<0.16		0.50	0.16	ug/L			09/18/19 16:06	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/18/19 16:06	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/18/19 16:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*110*		*72 - 124*		*09/18/19 16:06*	*1*
Dibromofluoromethane	*90*		*75 - 120*		*09/18/19 16:06*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*75 - 126*		*09/18/19 16:06*	*1*
Toluene-d8 (Surr)	*102*		*75 - 120*		*09/18/19 16:06*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190909-KS-04
Lab Sample ID: 500-169953-4
Date Collected: 09/09/19 16:20
Matrix: Water
Date Received: 09/12/19 09:00

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	**2.2**	**J**	10	1.7	ug/L			09/18/19 16:31	1
Benzene	<0.15		0.50	0.15	ug/L			09/18/19 16:31	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/18/19 16:31	1
Chloroform	<0.37		2.0	0.37	ug/L			09/18/19 16:31	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			09/18/19 16:31	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/18/19 16:31	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/18/19 16:31	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/18/19 16:31	1
Tetrachloroethene	**0.63**	**J**	1.0	0.37	ug/L			09/18/19 16:31	1
Toluene	<0.15		0.50	0.15	ug/L			09/18/19 16:31	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/18/19 16:31	1
Trichloroethene	**0.48**	**J**	0.50	0.16	ug/L			09/18/19 16:31	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/18/19 16:31	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/18/19 16:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*112*		*72 - 124*		*09/18/19 16:31*	*1*
Dibromofluoromethane	*93*		*75 - 120*		*09/18/19 16:31*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*75 - 126*		*09/18/19 16:31*	*1*
Toluene-d8 (Surr)	*100*		*75 - 120*		*09/18/19 16:31*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190909-KS-05
Lab Sample ID: 500-169953-5
Date Collected: 09/09/19 16:50
Matrix: Water
Date Received: 09/12/19 09:00

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	**8.8**	**J**	10	1.7	ug/L			09/18/19 16:56	1
Benzene	<0.15		0.50	0.15	ug/L			09/18/19 16:56	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/18/19 16:56	1
Chloroform	<0.37		2.0	0.37	ug/L			09/18/19 16:56	1
cis-1,2-Dichloroethene	**74**		1.0	0.41	ug/L			09/18/19 16:56	1
1,1-Dichloroethene	**2.2**		1.0	0.39	ug/L			09/18/19 16:56	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/18/19 16:56	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/18/19 16:56	1
Toluene	**0.25**	**J**	0.50	0.15	ug/L			09/18/19 16:56	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/18/19 16:56	1
Trichloroethene	**44**		0.50	0.16	ug/L			09/18/19 16:56	1
Vinyl chloride	**10**		1.0	0.20	ug/L			09/18/19 16:56	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/18/19 16:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*111*		*72 - 124*		*09/18/19 16:56*	*1*
Dibromofluoromethane	*92*		*75 - 120*		*09/18/19 16:56*	*1*
1,2-Dichloroethane-d4 (Surr)	*94*		*75 - 126*		*09/18/19 16:56*	*1*
Toluene-d8 (Surr)	*100*		*75 - 120*		*09/18/19 16:56*	*1*

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	**350**		10	3.7	ug/L			09/18/19 17:22	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*115*		*72 - 124*		*09/18/19 17:22*	*10*
Dibromofluoromethane	*92*		*75 - 120*		*09/18/19 17:22*	*10*
1,2-Dichloroethane-d4 (Surr)	*94*		*75 - 126*		*09/18/19 17:22*	*10*
Toluene-d8 (Surr)	*100*		*75 - 120*		*09/18/19 17:22*	*10*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190909-KS-06
Lab Sample ID: 500-169953-6
Date Collected: 09/09/19 16:01
Matrix: Water
Date Received: 09/12/19 09:00

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			09/18/19 17:47	1
Benzene	<0.15		0.50	0.15	ug/L			09/18/19 17:47	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/18/19 17:47	1
Chloroform	<0.37		2.0	0.37	ug/L			09/18/19 17:47	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			09/18/19 17:47	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/18/19 17:47	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/18/19 17:47	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/18/19 17:47	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			09/18/19 17:47	1
Toluene	<0.15		0.50	0.15	ug/L			09/18/19 17:47	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/18/19 17:47	1
Trichloroethene	<0.16		0.50	0.16	ug/L			09/18/19 17:47	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/18/19 17:47	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/18/19 17:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*111*		*72 - 124*		*09/18/19 17:47*	*1*
Dibromofluoromethane	*92*		*75 - 120*		*09/18/19 17:47*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*75 - 126*		*09/18/19 17:47*	*1*
Toluene-d8 (Surr)	*101*		*75 - 120*		*09/18/19 17:47*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190909-KS-07
Lab Sample ID: 500-169953-7
Date Collected: 09/09/19 16:18
Matrix: Water
Date Received: 09/12/19 09:00

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			09/18/19 18:12	1
Benzene	<0.15		0.50	0.15	ug/L			09/18/19 18:12	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/18/19 18:12	1
Chloroform	**0.52**	**J**	2.0	0.37	ug/L			09/18/19 18:12	1
cis-1,2-Dichloroethene	**14**		1.0	0.41	ug/L			09/18/19 18:12	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/18/19 18:12	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/18/19 18:12	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/18/19 18:12	1
Tetrachloroethene	**3.9**		1.0	0.37	ug/L			09/18/19 18:12	1
Toluene	<0.15		0.50	0.15	ug/L			09/18/19 18:12	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/18/19 18:12	1
Trichloroethene	**11**		0.50	0.16	ug/L			09/18/19 18:12	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/18/19 18:12	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/18/19 18:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*116*		*72 - 124*		*09/18/19 18:12*	*1*
Dibromofluoromethane	*93*		*75 - 120*		*09/18/19 18:12*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*75 - 126*		*09/18/19 18:12*	*1*
Toluene-d8 (Surr)	*102*		*75 - 120*		*09/18/19 18:12*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190909-KS-08
Lab Sample ID: 500-169953-8
Date Collected: 09/09/19 16:39
Matrix: Water
Date Received: 09/12/19 09:00

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			09/18/19 18:37	1
Benzene	<0.15		0.50	0.15	ug/L			09/18/19 18:37	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/18/19 18:37	1
Chloroform	<0.37		2.0	0.37	ug/L			09/18/19 18:37	1
cis-1,2-Dichloroethene	**3.6**		1.0	0.41	ug/L			09/18/19 18:37	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/18/19 18:37	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/18/19 18:37	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/18/19 18:37	1
Tetrachloroethene	**0.68**	**J**	1.0	0.37	ug/L			09/18/19 18:37	1
Toluene	<0.15		0.50	0.15	ug/L			09/18/19 18:37	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/18/19 18:37	1
Trichloroethene	**0.26**	**J**	0.50	0.16	ug/L			09/18/19 18:37	1
Vinyl chloride	**0.64**	**J**	1.0	0.20	ug/L			09/18/19 18:37	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/18/19 18:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*116*		*72 - 124*		*09/18/19 18:37*	*1*
Dibromofluoromethane	*92*		*75 - 120*		*09/18/19 18:37*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*75 - 126*		*09/18/19 18:37*	*1*
Toluene-d8 (Surr)	*100*		*75 - 120*		*09/18/19 18:37*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190909-KS-09
Lab Sample ID: 500-169953-9
Date Collected: 09/09/19 16:10
Matrix: Water
Date Received: 09/12/19 09:00

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	**2.3**	**J**	10	1.7	ug/L			09/18/19 19:02	1
Benzene	<0.15		0.50	0.15	ug/L			09/18/19 19:02	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/18/19 19:02	1
Chloroform	<0.37		2.0	0.37	ug/L			09/18/19 19:02	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			09/18/19 19:02	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/18/19 19:02	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/18/19 19:02	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/18/19 19:02	1
Tetrachloroethene	**1.6**		1.0	0.37	ug/L			09/18/19 19:02	1
Toluene	<0.15		0.50	0.15	ug/L			09/18/19 19:02	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/18/19 19:02	1
Trichloroethene	<0.16		0.50	0.16	ug/L			09/18/19 19:02	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/18/19 19:02	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/18/19 19:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*116*		*72 - 124*		*09/18/19 19:02*	*1*
Dibromofluoromethane	*95*		*75 - 120*		*09/18/19 19:02*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*75 - 126*		*09/18/19 19:02*	*1*
Toluene-d8 (Surr)	*101*		*75 - 120*		*09/18/19 19:02*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190910-KS-10
Lab Sample ID: 500-169953-10

Date Collected: 09/10/19 07:30
Matrix: Water
Date Received: 09/12/19 09:00

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			09/18/19 19:27	1
Benzene	<0.15		0.50	0.15	ug/L			09/18/19 19:27	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/18/19 19:27	1
Chloroform	<0.37		2.0	0.37	ug/L			09/18/19 19:27	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			09/18/19 19:27	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/18/19 19:27	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/18/19 19:27	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/18/19 19:27	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			09/18/19 19:27	1
Toluene	<0.15		0.50	0.15	ug/L			09/18/19 19:27	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/18/19 19:27	1
Trichloroethene	**2.4**		0.50	0.16	ug/L			09/18/19 19:27	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/18/19 19:27	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/18/19 19:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*117*		*72 - 124*		*09/18/19 19:27*	*1*
Dibromofluoromethane	*93*		*75 - 120*		*09/18/19 19:27*	*1*
1,2-Dichloroethane-d4 (Surr)	*97*		*75 - 126*		*09/18/19 19:27*	*1*
Toluene-d8 (Surr)	*101*		*75 - 120*		*09/18/19 19:27*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190910-KS-11
Lab Sample ID: 500-169953-11

Date Collected: 09/10/19 08:35
Matrix: Water
Date Received: 09/12/19 09:00

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	**3.6**	**J**	10	1.7	ug/L			09/19/19 13:46	1
Benzene	<0.15		0.50	0.15	ug/L			09/19/19 13:46	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/19/19 13:46	1
Chloroform	<0.37		2.0	0.37	ug/L			09/19/19 13:46	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			09/19/19 13:46	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/19/19 13:46	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/19/19 13:46	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/19/19 13:46	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			09/19/19 13:46	1
Toluene	<0.15		0.50	0.15	ug/L			09/19/19 13:46	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/19/19 13:46	1
Trichloroethene	**3.4**		0.50	0.16	ug/L			09/19/19 13:46	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/19/19 13:46	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/19/19 13:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*110*		*72 - 124*		*09/19/19 13:46*	*1*
Dibromofluoromethane	*89*		*75 - 120*		*09/19/19 13:46*	*1*
1,2-Dichloroethane-d4 (Surr)	*94*		*75 - 126*		*09/19/19 13:46*	*1*
Toluene-d8 (Surr)	*99*		*75 - 120*		*09/19/19 13:46*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190910-KS-12
Lab Sample ID: 500-169953-12

Date Collected: 09/10/19 09:05
Matrix: Water
Date Received: 09/12/19 09:00

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			09/19/19 14:11	1
Benzene	<0.15		0.50	0.15	ug/L			09/19/19 14:11	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/19/19 14:11	1
Chloroform	<0.37		2.0	0.37	ug/L			09/19/19 14:11	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			09/19/19 14:11	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/19/19 14:11	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/19/19 14:11	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/19/19 14:11	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			09/19/19 14:11	1
Toluene	<0.15		0.50	0.15	ug/L			09/19/19 14:11	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/19/19 14:11	1
Trichloroethene	**14**		0.50	0.16	ug/L			09/19/19 14:11	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/19/19 14:11	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/19/19 14:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*109*		*72 - 124*		*09/19/19 14:11*	*1*
Dibromofluoromethane	*91*		*75 - 120*		*09/19/19 14:11*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*75 - 126*		*09/19/19 14:11*	*1*
Toluene-d8 (Surr)	*99*		*75 - 120*		*09/19/19 14:11*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190910-KS-13
Lab Sample ID: 500-169953-13

Date Collected: 09/10/19 09:30
Matrix: Water
Date Received: 09/12/19 09:00

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	**3.0**	**J**	10	1.7	ug/L			09/19/19 14:36	1
Benzene	<0.15		0.50	0.15	ug/L			09/19/19 14:36	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/19/19 14:36	1
Chloroform	<0.37		2.0	0.37	ug/L			09/19/19 14:36	1
cis-1,2-Dichloroethene	**1.0**		1.0	0.41	ug/L			09/19/19 14:36	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/19/19 14:36	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/19/19 14:36	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/19/19 14:36	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			09/19/19 14:36	1
Toluene	<0.15		0.50	0.15	ug/L			09/19/19 14:36	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/19/19 14:36	1
Trichloroethene	**6.8**		0.50	0.16	ug/L			09/19/19 14:36	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/19/19 14:36	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/19/19 14:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*111*		*72 - 124*		*09/19/19 14:36*	*1*
Dibromofluoromethane	*91*		*75 - 120*		*09/19/19 14:36*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*75 - 126*		*09/19/19 14:36*	*1*
Toluene-d8 (Surr)	*98*		*75 - 120*		*09/19/19 14:36*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190910-KS-14
Lab Sample ID: 500-169953-14

Date Collected: 09/10/19 09:55
Matrix: Water
Date Received: 09/12/19 09:00

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			09/19/19 15:02	1
Benzene	<0.15		0.50	0.15	ug/L			09/19/19 15:02	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/19/19 15:02	1
Chloroform	<0.37		2.0	0.37	ug/L			09/19/19 15:02	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			09/19/19 15:02	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/19/19 15:02	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/19/19 15:02	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/19/19 15:02	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			09/19/19 15:02	1
Toluene	<0.15		0.50	0.15	ug/L			09/19/19 15:02	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/19/19 15:02	1
Trichloroethene	**82**		0.50	0.16	ug/L			09/19/19 15:02	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/19/19 15:02	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/19/19 15:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*111*		*72 - 124*		*09/19/19 15:02*	*1*
Dibromofluoromethane	*90*		*75 - 120*		*09/19/19 15:02*	*1*
1,2-Dichloroethane-d4 (Surr)	*93*		*75 - 126*		*09/19/19 15:02*	*1*
Toluene-d8 (Surr)	*99*		*75 - 120*		*09/19/19 15:02*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190910-KS-15
Lab Sample ID: 500-169953-15
Date Collected: 09/10/19 10:20
Matrix: Water
Date Received: 09/12/19 09:00

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			09/19/19 15:27	1
Benzene	<0.15		0.50	0.15	ug/L			09/19/19 15:27	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/19/19 15:27	1
Chloroform	<0.37		2.0	0.37	ug/L			09/19/19 15:27	1
cis-1,2-Dichloroethene	**15**		1.0	0.41	ug/L			09/19/19 15:27	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/19/19 15:27	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/19/19 15:27	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/19/19 15:27	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			09/19/19 15:27	1
Toluene	<0.15		0.50	0.15	ug/L			09/19/19 15:27	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/19/19 15:27	1
Trichloroethene	**7.7**		0.50	0.16	ug/L			09/19/19 15:27	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/19/19 15:27	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/19/19 15:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*111*		*72 - 124*		*09/19/19 15:27*	*1*
Dibromofluoromethane	*91*		*75 - 120*		*09/19/19 15:27*	*1*
1,2-Dichloroethane-d4 (Surr)	*94*		*75 - 126*		*09/19/19 15:27*	*1*
Toluene-d8 (Surr)	*100*		*75 - 120*		*09/19/19 15:27*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190910-KS-16
Lab Sample ID: 500-169953-16

Date Collected: 09/10/19 10:50
Matrix: Water
Date Received: 09/12/19 09:00

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	**1.8**	**J**	10	1.7	ug/L			09/19/19 15:52	1
Benzene	<0.15		0.50	0.15	ug/L			09/19/19 15:52	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/19/19 15:52	1
Chloroform	<0.37		2.0	0.37	ug/L			09/19/19 15:52	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			09/19/19 15:52	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/19/19 15:52	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/19/19 15:52	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/19/19 15:52	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			09/19/19 15:52	1
Toluene	<0.15		0.50	0.15	ug/L			09/19/19 15:52	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/19/19 15:52	1
Trichloroethene	**0.53**		0.50	0.16	ug/L			09/19/19 15:52	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/19/19 15:52	1
Xylenes, Total	**0.43**	**J**	1.0	0.22	ug/L			09/19/19 15:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*109*		*72 - 124*		*09/19/19 15:52*	*1*
Dibromofluoromethane	*91*		*75 - 120*		*09/19/19 15:52*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*75 - 126*		*09/19/19 15:52*	*1*
Toluene-d8 (Surr)	*100*		*75 - 120*		*09/19/19 15:52*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190910-KS-17
Lab Sample ID: 500-169953-17

Date Collected: 09/10/19 08:07
Matrix: Water
Date Received: 09/12/19 09:00

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	**7.7**	**J**	10	1.7	ug/L			09/19/19 16:17	1
Benzene	<0.15		0.50	0.15	ug/L			09/19/19 16:17	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/19/19 16:17	1
Chloroform	<0.37		2.0	0.37	ug/L			09/19/19 16:17	1
cis-1,2-Dichloroethene	**0.52**	**J**	1.0	0.41	ug/L			09/19/19 16:17	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/19/19 16:17	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/19/19 16:17	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/19/19 16:17	1
Tetrachloroethene	**0.42**	**J**	1.0	0.37	ug/L			09/19/19 16:17	1
Toluene	<0.15		0.50	0.15	ug/L			09/19/19 16:17	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/19/19 16:17	1
Trichloroethene	**0.65**		0.50	0.16	ug/L			09/19/19 16:17	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/19/19 16:17	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/19/19 16:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*111*		*72 - 124*		*09/19/19 16:17*	*1*
Dibromofluoromethane	*90*		*75 - 120*		*09/19/19 16:17*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*75 - 126*		*09/19/19 16:17*	*1*
Toluene-d8 (Surr)	*99*		*75 - 120*		*09/19/19 16:17*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190910-KS-18
Lab Sample ID: 500-169953-18
Date Collected: 09/10/19 08:08
Matrix: Water
Date Received: 09/12/19 09:00

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	**3.4**	**J**	10	1.7	ug/L			09/19/19 16:42	1
Benzene	<0.15		0.50	0.15	ug/L			09/19/19 16:42	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/19/19 16:42	1
Chloroform	<0.37		2.0	0.37	ug/L			09/19/19 16:42	1
cis-1,2-Dichloroethene	**0.56**	**J**	1.0	0.41	ug/L			09/19/19 16:42	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/19/19 16:42	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/19/19 16:42	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/19/19 16:42	1
Tetrachloroethene	**0.37**	**J**	1.0	0.37	ug/L			09/19/19 16:42	1
Toluene	<0.15		0.50	0.15	ug/L			09/19/19 16:42	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/19/19 16:42	1
Trichloroethene	**0.69**		0.50	0.16	ug/L			09/19/19 16:42	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/19/19 16:42	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/19/19 16:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*110*		*72 - 124*		*09/19/19 16:42*	*1*
Dibromofluoromethane	*92*		*75 - 120*		*09/19/19 16:42*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*75 - 126*		*09/19/19 16:42*	*1*
Toluene-d8 (Surr)	*98*		*75 - 120*		*09/19/19 16:42*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190910-KS-19
Lab Sample ID: 500-169953-19

Date Collected: 09/10/19 08:38
Matrix: Water
Date Received: 09/12/19 09:00

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			09/19/19 17:07	1
Benzene	<0.15		0.50	0.15	ug/L			09/19/19 17:07	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/19/19 17:07	1
Chloroform	<0.37		2.0	0.37	ug/L			09/19/19 17:07	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			09/19/19 17:07	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/19/19 17:07	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/19/19 17:07	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/19/19 17:07	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			09/19/19 17:07	1
Toluene	<0.15		0.50	0.15	ug/L			09/19/19 17:07	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/19/19 17:07	1
Trichloroethene	<0.16		0.50	0.16	ug/L			09/19/19 17:07	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/19/19 17:07	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/19/19 17:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*111*		*72 - 124*		*09/19/19 17:07*	*1*
Dibromofluoromethane	*90*		*75 - 120*		*09/19/19 17:07*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*75 - 126*		*09/19/19 17:07*	*1*
Toluene-d8 (Surr)	*98*		*75 - 120*		*09/19/19 17:07*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190910-KS-20
Lab Sample ID: 500-169953-20

Date Collected: 09/10/19 09:22
Matrix: Water
Date Received: 09/12/19 09:00

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			09/19/19 17:32	1
Benzene	<0.15		0.50	0.15	ug/L			09/19/19 17:32	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/19/19 17:32	1
Chloroform	<0.37		2.0	0.37	ug/L			09/19/19 17:32	1
cis-1,2-Dichloroethene	**2.4**		1.0	0.41	ug/L			09/19/19 17:32	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/19/19 17:32	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/19/19 17:32	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/19/19 17:32	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			09/19/19 17:32	1
Toluene	<0.15		0.50	0.15	ug/L			09/19/19 17:32	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/19/19 17:32	1
Trichloroethene	**10**		0.50	0.16	ug/L			09/19/19 17:32	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/19/19 17:32	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/19/19 17:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*113*		*72 - 124*		*09/19/19 17:32*	*1*
Dibromofluoromethane	*91*		*75 - 120*		*09/19/19 17:32*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*75 - 126*		*09/19/19 17:32*	*1*
Toluene-d8 (Surr)	*99*		*75 - 120*		*09/19/19 17:32*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190910-KS-21
Lab Sample ID: 500-169953-21

Date Collected: 09/10/19 10:58
Matrix: Water
Date Received: 09/12/19 09:00

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			09/19/19 17:57	1
Benzene	<0.15		0.50	0.15	ug/L			09/19/19 17:57	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/19/19 17:57	1
Chloroform	<0.37		2.0	0.37	ug/L			09/19/19 17:57	1
cis-1,2-Dichloroethene	**2.2**		1.0	0.41	ug/L			09/19/19 17:57	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/19/19 17:57	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/19/19 17:57	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/19/19 17:57	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			09/19/19 17:57	1
Toluene	<0.15		0.50	0.15	ug/L			09/19/19 17:57	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/19/19 17:57	1
Trichloroethene	**2.6**		0.50	0.16	ug/L			09/19/19 17:57	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/19/19 17:57	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/19/19 17:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*111*		*72 - 124*		*09/19/19 17:57*	*1*
Dibromofluoromethane	*89*		*75 - 120*		*09/19/19 17:57*	*1*
1,2-Dichloroethane-d4 (Surr)	*93*		*75 - 126*		*09/19/19 17:57*	*1*
Toluene-d8 (Surr)	*101*		*75 - 120*		*09/19/19 17:57*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190910-KS-22
Lab Sample ID: 500-169953-22
Date Collected: 09/10/19 12:45
Matrix: Water
Date Received: 09/12/19 09:00

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			09/19/19 18:23	1
Benzene	<0.15		0.50	0.15	ug/L			09/19/19 18:23	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/19/19 18:23	1
Chloroform	<0.37		2.0	0.37	ug/L			09/19/19 18:23	1
cis-1,2-Dichloroethene	**0.94**	**J**	1.0	0.41	ug/L			09/19/19 18:23	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/19/19 18:23	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/19/19 18:23	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/19/19 18:23	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			09/19/19 18:23	1
Toluene	<0.15		0.50	0.15	ug/L			09/19/19 18:23	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/19/19 18:23	1
Trichloroethene	**6.4**		0.50	0.16	ug/L			09/19/19 18:23	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/19/19 18:23	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/19/19 18:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*114*		*72 - 124*		*09/19/19 18:23*	*1*
Dibromofluoromethane	*91*		*75 - 120*		*09/19/19 18:23*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*75 - 126*		*09/19/19 18:23*	*1*
Toluene-d8 (Surr)	*100*		*75 - 120*		*09/19/19 18:23*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190910-KS-23
Lab Sample ID: 500-169953-23
Date Collected: 09/10/19 13:06
Matrix: Water
Date Received: 09/12/19 09:00

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			09/19/19 18:48	1
Benzene	<0.15		0.50	0.15	ug/L			09/19/19 18:48	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/19/19 18:48	1
Chloroform	<0.37		2.0	0.37	ug/L			09/19/19 18:48	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			09/19/19 18:48	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/19/19 18:48	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/19/19 18:48	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/19/19 18:48	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			09/19/19 18:48	1
Toluene	<0.15		0.50	0.15	ug/L			09/19/19 18:48	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/19/19 18:48	1
Trichloroethene	**1.1**		0.50	0.16	ug/L			09/19/19 18:48	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/19/19 18:48	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/19/19 18:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*110*		*72 - 124*		*09/19/19 18:48*	*1*
Dibromofluoromethane	*92*		*75 - 120*		*09/19/19 18:48*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*75 - 126*		*09/19/19 18:48*	*1*
Toluene-d8 (Surr)	*100*		*75 - 120*		*09/19/19 18:48*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190910-KS-24
Lab Sample ID: 500-169953-24
Date Collected: 09/10/19 13:30
Matrix: Water
Date Received: 09/12/19 09:00

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			09/20/19 16:36	1
Benzene	<0.15		0.50	0.15	ug/L			09/20/19 16:36	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/20/19 16:36	1
Chloroform	<0.37		2.0	0.37	ug/L			09/20/19 16:36	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			09/20/19 16:36	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/20/19 16:36	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/20/19 16:36	1
Methylene Chloride	**3.0**	**J**	5.0	1.6	ug/L			09/20/19 16:36	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			09/20/19 16:36	1
Toluene	<0.15		0.50	0.15	ug/L			09/20/19 16:36	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/20/19 16:36	1
Trichloroethene	<0.16		0.50	0.16	ug/L			09/20/19 16:36	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/20/19 16:36	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/20/19 16:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*112*		*72 - 124*		*09/20/19 16:36*	*1*
Dibromofluoromethane	*99*		*75 - 120*		*09/20/19 16:36*	*1*
1,2-Dichloroethane-d4 (Surr)	*112*		*75 - 126*		*09/20/19 16:36*	*1*
Toluene-d8 (Surr)	*89*		*75 - 120*		*09/20/19 16:36*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190910-KS-25
Lab Sample ID: 500-169953-25
Date Collected: 09/10/19 13:31
Matrix: Water
Date Received: 09/12/19 09:00

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	**6.3**	**J**	10	1.7	ug/L			09/20/19 17:03	1
Benzene	<0.15		0.50	0.15	ug/L			09/20/19 17:03	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/20/19 17:03	1
Chloroform	<0.37		2.0	0.37	ug/L			09/20/19 17:03	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			09/20/19 17:03	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/20/19 17:03	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/20/19 17:03	1
Methylene Chloride	**3.0**	**J**	5.0	1.6	ug/L			09/20/19 17:03	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			09/20/19 17:03	1
Toluene	<0.15		0.50	0.15	ug/L			09/20/19 17:03	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/20/19 17:03	1
Trichloroethene	<0.16		0.50	0.16	ug/L			09/20/19 17:03	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/20/19 17:03	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/20/19 17:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*113*		*72 - 124*		*09/20/19 17:03*	*1*
Dibromofluoromethane	*100*		*75 - 120*		*09/20/19 17:03*	*1*
1,2-Dichloroethane-d4 (Surr)	*109*		*75 - 126*		*09/20/19 17:03*	*1*
Toluene-d8 (Surr)	*92*		*75 - 120*		*09/20/19 17:03*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190910-KS-26
Lab Sample ID: 500-169953-26
Date Collected: 09/10/19 13:48
Matrix: Water
Date Received: 09/12/19 09:00

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			09/22/19 14:13	1
Benzene	<0.15		0.50	0.15	ug/L			09/22/19 14:13	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/22/19 14:13	1
Chloroform	<0.37		2.0	0.37	ug/L			09/22/19 14:13	1
cis-1,2-Dichloroethene	**0.99**	**J**	1.0	0.41	ug/L			09/22/19 14:13	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/22/19 14:13	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/22/19 14:13	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/22/19 14:13	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			09/22/19 14:13	1
Toluene	<0.15		0.50	0.15	ug/L			09/22/19 14:13	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/22/19 14:13	1
Trichloroethene	**40**		0.50	0.16	ug/L			09/22/19 14:13	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/22/19 14:13	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/22/19 14:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*110*		*72 - 124*		*09/22/19 14:13*	*1*
Dibromofluoromethane	*109*		*75 - 120*		*09/22/19 14:13*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*75 - 126*		*09/22/19 14:13*	*1*
Toluene-d8 (Surr)	*103*		*75 - 120*		*09/22/19 14:13*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190910-KS-27
Lab Sample ID: 500-169953-27
Date Collected: 09/10/19 13:49
Matrix: Water
Date Received: 09/12/19 09:00

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			09/20/19 18:00	1
Benzene	<0.15		0.50	0.15	ug/L			09/20/19 18:00	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/20/19 18:00	1
Chloroform	<0.37		2.0	0.37	ug/L			09/20/19 18:00	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			09/20/19 18:00	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/20/19 18:00	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/20/19 18:00	1
Methylene Chloride	**2.8**	**J**	5.0	1.6	ug/L			09/20/19 18:00	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			09/20/19 18:00	1
Toluene	<0.15		0.50	0.15	ug/L			09/20/19 18:00	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/20/19 18:00	1
Trichloroethene	**39**		0.50	0.16	ug/L			09/20/19 18:00	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/20/19 18:00	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/20/19 18:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*106*		*72 - 124*		*09/20/19 18:00*	*1*
Dibromofluoromethane	*98*		*75 - 120*		*09/20/19 18:00*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*75 - 126*		*09/20/19 18:00*	*1*
Toluene-d8 (Surr)	*104*		*75 - 120*		*09/20/19 18:00*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190910-KS-28
Lab Sample ID: 500-169953-28
Date Collected: 09/10/19 13:50
Matrix: Water
Date Received: 09/12/19 09:00

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

Analyte	Result	Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7	F1	10	1.7	ug/L			09/20/19 18:28	1
Benzene	<0.15		0.50	0.15	ug/L			09/20/19 18:28	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/20/19 18:28	1
Chloroform	<0.37		2.0	0.37	ug/L			09/20/19 18:28	1
cis-1,2-Dichloroethene	<0.41	F1	1.0	0.41	ug/L			09/20/19 18:28	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/20/19 18:28	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/20/19 18:28	1
Methylene Chloride	**3.2**	**J F1**	5.0	1.6	ug/L			09/20/19 18:28	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			09/20/19 18:28	1
Toluene	**0.34**	**J**	0.50	0.15	ug/L			09/20/19 18:28	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/20/19 18:28	1
Trichloroethene	<0.16		0.50	0.16	ug/L			09/20/19 18:28	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/20/19 18:28	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/20/19 18:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*113*		*72 - 124*		*09/20/19 18:28*	*1*
Dibromofluoromethane	*111*		*75 - 120*		*09/20/19 18:28*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*75 - 126*		*09/20/19 18:28*	*1*
Toluene-d8 (Surr)	*102*		*75 - 120*		*09/20/19 18:28*	*1*

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: Trip Blank
Lab Sample ID: 500-169953-29
Date Collected: 09/09/19 00:00
Matrix: Water
Date Received: 09/12/19 09:00

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			09/20/19 18:56	1
Benzene	<0.15		0.50	0.15	ug/L			09/20/19 18:56	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/20/19 18:56	1
Chloroform	<0.37		2.0	0.37	ug/L			09/20/19 18:56	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			09/20/19 18:56	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/20/19 18:56	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/20/19 18:56	1
Methylene Chloride	**2.8**	**J**	5.0	1.6	ug/L			09/20/19 18:56	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			09/20/19 18:56	1
Toluene	<0.15		0.50	0.15	ug/L			09/20/19 18:56	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/20/19 18:56	1
Trichloroethene	<0.16		0.50	0.16	ug/L			09/20/19 18:56	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/20/19 18:56	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/20/19 18:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*114*		*72 - 124*		*09/20/19 18:56*	*1*
Dibromofluoromethane	*82*		*75 - 120*		*09/20/19 18:56*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*75 - 126*		*09/20/19 18:56*	*1*
Toluene-d8 (Surr)	*103*		*75 - 120*		*09/20/19 18:56*	*1*

Definitions/Glossary

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
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.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

GC/MS VOA

Analysis Batch: 505434

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-169953-1	W-190909-KS-01	Total/NA	Water	8260B	
500-169953-2	W-190909-KS-02	Total/NA	Water	8260B	
500-169953-3	W-190909-KS-03	Total/NA	Water	8260B	
500-169953-4	W-190909-KS-04	Total/NA	Water	8260B	
500-169953-5	W-190909-KS-05	Total/NA	Water	8260B	
500-169953-5 - DL	W-190909-KS-05	Total/NA	Water	8260B	
500-169953-6	W-190909-KS-06	Total/NA	Water	8260B	
500-169953-7	W-190909-KS-07	Total/NA	Water	8260B	
500-169953-8	W-190909-KS-08	Total/NA	Water	8260B	
500-169953-9	W-190909-KS-09	Total/NA	Water	8260B	
500-169953-10	W-190910-KS-10	Total/NA	Water	8260B	
MB 500-505434/6	Method Blank	Total/NA	Water	8260B	
LCS 500-505434/4	Lab Control Sample	Total/NA	Water	8260B	
500-169953-10 MS	W-190910-KS-10	Total/NA	Water	8260B	
500-169953-10 MSD	W-190910-KS-10	Total/NA	Water	8260B	

Analysis Batch: 505668

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-169953-11	W-190910-KS-11	Total/NA	Water	8260B	
500-169953-12	W-190910-KS-12	Total/NA	Water	8260B	
500-169953-13	W-190910-KS-13	Total/NA	Water	8260B	
500-169953-14	W-190910-KS-14	Total/NA	Water	8260B	
500-169953-15	W-190910-KS-15	Total/NA	Water	8260B	
500-169953-16	W-190910-KS-16	Total/NA	Water	8260B	
500-169953-17	W-190910-KS-17	Total/NA	Water	8260B	
500-169953-18	W-190910-KS-18	Total/NA	Water	8260B	
500-169953-19	W-190910-KS-19	Total/NA	Water	8260B	
500-169953-20	W-190910-KS-20	Total/NA	Water	8260B	
500-169953-21	W-190910-KS-21	Total/NA	Water	8260B	
500-169953-22	W-190910-KS-22	Total/NA	Water	8260B	
500-169953-23	W-190910-KS-23	Total/NA	Water	8260B	
MB 500-505668/7	Method Blank	Total/NA	Water	8260B	
LCS 500-505668/5	Lab Control Sample	Total/NA	Water	8260B	
500-169953-23 MS	W-190910-KS-23	Total/NA	Water	8260B	
500-169953-23 MSD	W-190910-KS-23	Total/NA	Water	8260B	

Analysis Batch: 505878

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-169953-24	W-190910-KS-24	Total/NA	Water	8260B	
500-169953-25	W-190910-KS-25	Total/NA	Water	8260B	
500-169953-27	W-190910-KS-27	Total/NA	Water	8260B	
500-169953-28	W-190910-KS-28	Total/NA	Water	8260B	
500-169953-29	Trip Blank	Total/NA	Water	8260B	
MB 500-505878/7	Method Blank	Total/NA	Water	8260B	
LCS 500-505878/5	Lab Control Sample	Total/NA	Water	8260B	
500-169953-28 MS	W-190910-KS-28	Total/NA	Water	8260B	
500-169953-28 MSD	W-190910-KS-28	Total/NA	Water	8260B	

Analysis Batch: 506145

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-169953-26	W-190910-KS-26	Total/NA	Water	8260B	

GC/MS VOA (Continued)

Analysis Batch: 506145 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 500-506145/7	Method Blank	Total/NA	Water	8260B	
LCS 500-506145/5	Lab Control Sample	Total/NA	Water	8260B	

Surrogate Summary

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

Job ID: 500-169953-1

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	DCA	TOL
Lab Sample ID	Client Sample ID	(72-124)	(75-120)	(75-126)	(75-120)
500-169953-1	W-190909-KS-01	114	91	93	100
500-169953-2	W-190909-KS-02	111	91	93	101
500-169953-3	W-190909-KS-03	110	90	95	102
500-169953-4	W-190909-KS-04	112	93	95	100
500-169953-5	W-190909-KS-05	111	92	94	100
500-169953-5 - DL	W-190909-KS-05	115	92	94	100
500-169953-6	W-190909-KS-06	111	92	96	101
500-169953-7	W-190909-KS-07	116	93	95	102
500-169953-8	W-190909-KS-08	116	92	95	100
500-169953-9	W-190909-KS-09	116	95	99	101
500-169953-10	W-190910-KS-10	117	93	97	101
500-169953-10 MS	W-190910-KS-10	105	94	92	104
500-169953-10 MSD	W-190910-KS-10	102	98	93	106
500-169953-11	W-190910-KS-11	110	89	94	99
500-169953-12	W-190910-KS-12	109	91	95	99
500-169953-13	W-190910-KS-13	111	91	96	98
500-169953-14	W-190910-KS-14	111	90	93	99
500-169953-15	W-190910-KS-15	111	91	94	100
500-169953-16	W-190910-KS-16	109	91	95	100
500-169953-17	W-190910-KS-17	111	90	96	99
500-169953-18	W-190910-KS-18	110	92	95	98
500-169953-19	W-190910-KS-19	111	90	96	98
500-169953-20	W-190910-KS-20	113	91	96	99
500-169953-21	W-190910-KS-21	111	89	93	101
500-169953-22	W-190910-KS-22	114	91	95	100
500-169953-23	W-190910-KS-23	110	92	95	100
500-169953-23 MS	W-190910-KS-23	104	93	94	104
500-169953-23 MSD	W-190910-KS-23	101	96	95	102
500-169953-24	W-190910-KS-24	112	99	112	89
500-169953-25	W-190910-KS-25	113	100	109	92
500-169953-26	W-190910-KS-26	110	109	101	103
500-169953-27	W-190910-KS-27	106	98	108	104
500-169953-28	W-190910-KS-28	113	111	106	102
500-169953-28 MS	W-190910-KS-28	93	102	111	95
500-169953-28 MSD	W-190910-KS-28	121	96	116	94
500-169953-29	Trip Blank	114	82	105	103
LCS 500-505434/4	Lab Control Sample	99	95	92	105
LCS 500-505668/5	Lab Control Sample	99	95	95	107
LCS 500-505878/5	Lab Control Sample	108	88	96	105
LCS 500-506145/5	Lab Control Sample	109	101	107	99
MB 500-505434/6	Method Blank	109	93	94	101
MB 500-505668/7	Method Blank	110	93	96	99
MB 500-505878/7	Method Blank	116	98	109	87
MB 500-506145/7	Method Blank	112	101	109	102

Surrogate Legend

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

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

Job ID: 500-169953-1

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

Lab Sample ID: MB 500-505434/6
Matrix: Water
Analysis Batch: 505434

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			09/18/19 12:20	1
Benzene	<0.15		0.50	0.15	ug/L			09/18/19 12:20	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/18/19 12:20	1
Chloroform	<0.37		2.0	0.37	ug/L			09/18/19 12:20	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			09/18/19 12:20	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/18/19 12:20	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/18/19 12:20	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/18/19 12:20	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			09/18/19 12:20	1
Toluene	<0.15		0.50	0.15	ug/L			09/18/19 12:20	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/18/19 12:20	1
Trichloroethene	<0.16		0.50	0.16	ug/L			09/18/19 12:20	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/18/19 12:20	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/18/19 12:20	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*109*		*72 - 124*		*09/18/19 12:20*	*1*
Dibromofluoromethane	*93*		*75 - 120*		*09/18/19 12:20*	*1*
1,2-Dichloroethane-d4 (Surr)	*94*		*75 - 126*		*09/18/19 12:20*	*1*
Toluene-d8 (Surr)	*101*		*75 - 120*		*09/18/19 12:20*	*1*

Lab Sample ID: LCS 500-505434/4
Matrix: Water
Analysis Batch: 505434

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	50.0	43.6		ug/L		87	40 - 143
Benzene	50.0	50.0		ug/L		100	70 - 120
Carbon tetrachloride	50.0	42.0		ug/L		84	59 - 133
Chloroform	50.0	45.6		ug/L		91	70 - 120
cis-1,2-Dichloroethene	50.0	48.2		ug/L		96	70 - 125
1,1-Dichloroethene	50.0	46.1		ug/L		92	67 - 122
Ethylbenzene	50.0	52.6		ug/L		105	70 - 123
Methylene Chloride	50.0	46.5		ug/L		93	69 - 125
Tetrachloroethene	50.0	54.0		ug/L		108	70 - 128
Toluene	50.0	50.1		ug/L		100	70 - 125
1,1,2-Trichloroethane	50.0	48.4		ug/L		97	71 - 130
Trichloroethene	50.0	48.1		ug/L		96	70 - 125
Vinyl chloride	50.0	58.4		ug/L		117	64 - 126
Xylenes, Total	100	97.6		ug/L		98	70 - 125

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*72 - 124*
Dibromofluoromethane	*95*		*75 - 120*
1,2-Dichloroethane-d4 (Surr)	*92*		*75 - 126*
Toluene-d8 (Surr)	*105*		*75 - 120*

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

Lab Sample ID: 500-169953-10 MS
Matrix: Water
Analysis Batch: 505434

Client Sample ID: W-190910-KS-10
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	41.4		ug/L		83	40 - 143
Benzene	<0.15		50.0	47.4		ug/L		95	70 - 120
Carbon tetrachloride	<0.38		50.0	39.4		ug/L		79	59 - 133
Chloroform	<0.37		50.0	43.7		ug/L		87	70 - 120
cis-1,2-Dichloroethene	<0.41		50.0	46.1		ug/L		92	70 - 125
1,1-Dichloroethene	<0.39		50.0	43.3		ug/L		87	67 - 122
Ethylbenzene	<0.18		50.0	50.0		ug/L		100	70 - 123
Methylene Chloride	<1.6		50.0	44.8		ug/L		90	69 - 125
Tetrachloroethene	<0.37		50.0	49.6		ug/L		99	70 - 128
Toluene	<0.15		50.0	47.3		ug/L		95	70 - 125
1,1,2-Trichloroethane	<0.35		50.0	47.2		ug/L		94	71 - 130
Trichloroethene	2.4		50.0	46.9		ug/L		89	70 - 125
Vinyl chloride	<0.20		50.0	58.7		ug/L		117	64 - 126
Xylenes, Total	<0.22		100	91.6		ug/L		92	70 - 125

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*105*		*72 - 124*
Dibromofluoromethane	*94*		*75 - 120*
1,2-Dichloroethane-d4 (Surr)	*92*		*75 - 126*
Toluene-d8 (Surr)	*104*		*75 - 120*

Lab Sample ID: 500-169953-10 MSD
Matrix: Water
Analysis Batch: 505434

Client Sample ID: W-190910-KS-10
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	41.1		ug/L		82	40 - 143	1	20
Benzene	<0.15		50.0	49.5		ug/L		99	70 - 120	4	20
Carbon tetrachloride	<0.38		50.0	41.2		ug/L		82	59 - 133	5	20
Chloroform	<0.37		50.0	45.6		ug/L		91	70 - 120	4	20
cis-1,2-Dichloroethene	<0.41		50.0	48.2		ug/L		96	70 - 125	4	20
1,1-Dichloroethene	<0.39		50.0	44.9		ug/L		90	67 - 122	4	20
Ethylbenzene	<0.18		50.0	51.5		ug/L		103	70 - 123	3	20
Methylene Chloride	<1.6		50.0	47.5		ug/L		95	69 - 125	6	20
Tetrachloroethene	<0.37		50.0	50.3		ug/L		101	70 - 128	1	20
Toluene	<0.15		50.0	49.6		ug/L		99	70 - 125	5	20
1,1,2-Trichloroethane	<0.35		50.0	48.4		ug/L		97	71 - 130	2	20
Trichloroethene	2.4		50.0	48.3		ug/L		92	70 - 125	3	20
Vinyl chloride	<0.20		50.0	61.2		ug/L		122	64 - 126	4	20
Xylenes, Total	<0.22		100	95.1		ug/L		95	70 - 125	4	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*102*		*72 - 124*
Dibromofluoromethane	*98*		*75 - 120*
1,2-Dichloroethane-d4 (Surr)	*93*		*75 - 126*
Toluene-d8 (Surr)	*106*		*75 - 120*

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

Lab Sample ID: MB 500-505668/7
Matrix: Water
Analysis Batch: 505668

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			09/19/19 13:21	1
Benzene	<0.15		0.50	0.15	ug/L			09/19/19 13:21	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/19/19 13:21	1
Chloroform	<0.37		2.0	0.37	ug/L			09/19/19 13:21	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			09/19/19 13:21	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/19/19 13:21	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/19/19 13:21	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/19/19 13:21	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			09/19/19 13:21	1
Toluene	<0.15		0.50	0.15	ug/L			09/19/19 13:21	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/19/19 13:21	1
Trichloroethene	<0.16		0.50	0.16	ug/L			09/19/19 13:21	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/19/19 13:21	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/19/19 13:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*110*		*72 - 124*		*09/19/19 13:21*	*1*
Dibromofluoromethane	*93*		*75 - 120*		*09/19/19 13:21*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*75 - 126*		*09/19/19 13:21*	*1*
Toluene-d8 (Surr)	*99*		*75 - 120*		*09/19/19 13:21*	*1*

Lab Sample ID: LCS 500-505668/5
Matrix: Water
Analysis Batch: 505668

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	50.0	37.8		ug/L		76	40 - 143
Benzene	50.0	44.1		ug/L		88	70 - 120
Carbon tetrachloride	50.0	36.2		ug/L		72	59 - 133
Chloroform	50.0	40.5		ug/L		81	70 - 120
cis-1,2-Dichloroethene	50.0	42.9		ug/L		86	70 - 125
1,1-Dichloroethene	50.0	40.0		ug/L		80	67 - 122
Ethylbenzene	50.0	45.2		ug/L		90	70 - 123
Methylene Chloride	50.0	42.2		ug/L		84	69 - 125
Tetrachloroethene	50.0	46.0		ug/L		92	70 - 128
Toluene	50.0	44.3		ug/L		89	70 - 125
1,1,2-Trichloroethane	50.0	43.3		ug/L		87	71 - 130
Trichloroethene	50.0	41.2		ug/L		82	70 - 125
Vinyl chloride	50.0	54.2		ug/L		108	64 - 126
Xylenes, Total	100	85.0		ug/L		85	70 - 125

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*72 - 124*
Dibromofluoromethane	*95*		*75 - 120*
1,2-Dichloroethane-d4 (Surr)	*95*		*75 - 126*
Toluene-d8 (Surr)	*107*		*75 - 120*

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

Lab Sample ID: 500-169953-23 MS
Matrix: Water
Analysis Batch: 505668

Client Sample ID: W-190910-KS-23
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	*104*		*72 - 124*
Dibromofluoromethane	*93*		*75 - 120*
1,2-Dichloroethane-d4 (Surr)	*94*		*75 - 126*
Toluene-d8 (Surr)	*104*		*75 - 120*

Lab Sample ID: 500-169953-23 MSD
Matrix: Water
Analysis Batch: 505668

Client Sample ID: W-190910-KS-23
Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	*101*		*72 - 124*
Dibromofluoromethane	*96*		*75 - 120*
1,2-Dichloroethane-d4 (Surr)	*95*		*75 - 126*
Toluene-d8 (Surr)	*102*		*75 - 120*

Lab Sample ID: MB 500-505878/7
Matrix: Water
Analysis Batch: 505878

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			09/20/19 12:26	1
Benzene	<0.15		0.50	0.15	ug/L			09/20/19 12:26	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/20/19 12:26	1
Chloroform	<0.37		2.0	0.37	ug/L			09/20/19 12:26	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			09/20/19 12:26	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/20/19 12:26	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/20/19 12:26	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/20/19 12:26	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			09/20/19 12:26	1
Toluene	<0.15		0.50	0.15	ug/L			09/20/19 12:26	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/20/19 12:26	1
Trichloroethene	<0.16		0.50	0.16	ug/L			09/20/19 12:26	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/20/19 12:26	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/20/19 12:26	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	*116*		*72 - 124*		*09/20/19 12:26*	*1*
Dibromofluoromethane	*98*		*75 - 120*		*09/20/19 12:26*	*1*
1,2-Dichloroethane-d4 (Surr)	*109*		*75 - 126*		*09/20/19 12:26*	*1*
Toluene-d8 (Surr)	*87*		*75 - 120*		*09/20/19 12:26*	*1*

Lab Sample ID: LCS 500-505878/5
Matrix: Water
Analysis Batch: 505878

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	50.0	56.0		ug/L		112	40 - 143
Benzene	50.0	46.0		ug/L		92	70 - 120

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

Lab Sample ID: LCS 500-505878/5
Matrix: Water
Analysis Batch: 505878

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon tetrachloride	50.0	41.6		ug/L		83	59 - 133
Chloroform	50.0	42.3		ug/L		85	70 - 120
cis-1,2-Dichloroethene	50.0	42.6		ug/L		85	70 - 125
1,1-Dichloroethene	50.0	49.2		ug/L		98	67 - 122
Ethylbenzene	50.0	50.1		ug/L		100	70 - 123
Methylene Chloride	50.0	48.8		ug/L		98	69 - 125
Tetrachloroethene	50.0	47.7		ug/L		95	70 - 128
Toluene	50.0	47.3		ug/L		95	70 - 125
1,1,2-Trichloroethane	50.0	48.2		ug/L		96	71 - 130
Trichloroethene	50.0	49.2		ug/L		98	70 - 125
Vinyl chloride	50.0	45.4		ug/L		91	64 - 126
Xylenes, Total	100	98.7		ug/L		99	70 - 125

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*108*		*72 - 124*
Dibromofluoromethane	*88*		*75 - 120*
1,2-Dichloroethane-d4 (Surr)	*96*		*75 - 126*
Toluene-d8 (Surr)	*105*		*75 - 120*

Lab Sample ID: 500-169953-28 MS
Matrix: Water
Analysis Batch: 505878

Client Sample ID: W-190910-KS-28
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	<1.7	F1	50.0	87.6	F1	ug/L		175	40 - 143
Benzene	<0.15		50.0	57.6		ug/L		115	70 - 120
Carbon tetrachloride	<0.38		50.0	52.0		ug/L		104	59 - 133
Chloroform	<0.37		50.0	57.0		ug/L		114	70 - 120
cis-1,2-Dichloroethene	<0.41	F1	50.0	63.2	F1	ug/L		126	70 - 125
1,1-Dichloroethene	<0.39		50.0	59.4		ug/L		119	67 - 122
Ethylbenzene	<0.18		50.0	54.7		ug/L		109	70 - 123
Methylene Chloride	3.2	J F1	50.0	66.5	F1	ug/L		127	69 - 125
Tetrachloroethene	<0.37		50.0	47.9		ug/L		96	70 - 128
Toluene	0.34	J	50.0	49.9		ug/L		99	70 - 125
1,1,2-Trichloroethane	<0.35		50.0	55.6		ug/L		111	71 - 130
Trichloroethene	<0.16		50.0	54.6		ug/L		109	70 - 125
Vinyl chloride	<0.20		50.0	48.2		ug/L		96	64 - 126
Xylenes, Total	<0.22		100	105		ug/L		105	70 - 125

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*93*		*72 - 124*
Dibromofluoromethane	*102*		*75 - 120*
1,2-Dichloroethane-d4 (Surr)	*111*		*75 - 126*
Toluene-d8 (Surr)	*95*		*75 - 120*

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

Lab Sample ID: 500-169953-28 MSD
Matrix: Water
Analysis Batch: 505878

Client Sample ID: W-190910-KS-28
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	F1	50.0	68.3	F2	ug/L		137	40 - 143	25	20
Benzene	<0.15		50.0	56.2		ug/L		112	70 - 120	2	20
Carbon tetrachloride	<0.38		50.0	50.1		ug/L		100	59 - 133	4	20
Chloroform	<0.37		50.0	55.3		ug/L		111	70 - 120	3	20
cis-1,2-Dichloroethene	<0.41	F1	50.0	55.1		ug/L		110	70 - 125	14	20
1,1-Dichloroethene	<0.39		50.0	45.9	F2	ug/L		92	67 - 122	26	20
Ethylbenzene	<0.18		50.0	53.8		ug/L		108	70 - 123	2	20
Methylene Chloride	3.2	J F1	50.0	51.4	F2	ug/L		96	69 - 125	26	20
Tetrachloroethene	<0.37		50.0	44.1		ug/L		88	70 - 128	8	20
Toluene	0.34	J	50.0	46.6		ug/L		92	70 - 125	7	20
1,1,2-Trichloroethane	<0.35		50.0	51.4		ug/L		103	71 - 130	8	20
Trichloroethene	<0.16		50.0	52.6		ug/L		105	70 - 125	4	20
Vinyl chloride	<0.20		50.0	40.8		ug/L		82	64 - 126	17	20
Xylenes, Total	<0.22		100	106		ug/L		106	70 - 125	1	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*121*		*72 - 124*
Dibromofluoromethane	*96*		*75 - 120*
1,2-Dichloroethane-d4 (Surr)	*116*		*75 - 126*
Toluene-d8 (Surr)	*94*		*75 - 120*

Lab Sample ID: MB 500-506145/7
Matrix: Water
Analysis Batch: 506145

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

Analyte	MB Result	MB Qualifier	LOQ	LOD	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<1.7		10	1.7	ug/L			09/22/19 11:55	1
Benzene	<0.15		0.50	0.15	ug/L			09/22/19 11:55	1
Carbon tetrachloride	<0.38		1.0	0.38	ug/L			09/22/19 11:55	1
Chloroform	<0.37		2.0	0.37	ug/L			09/22/19 11:55	1
cis-1,2-Dichloroethene	<0.41		1.0	0.41	ug/L			09/22/19 11:55	1
1,1-Dichloroethene	<0.39		1.0	0.39	ug/L			09/22/19 11:55	1
Ethylbenzene	<0.18		0.50	0.18	ug/L			09/22/19 11:55	1
Methylene Chloride	<1.6		5.0	1.6	ug/L			09/22/19 11:55	1
Tetrachloroethene	<0.37		1.0	0.37	ug/L			09/22/19 11:55	1
Toluene	<0.15		0.50	0.15	ug/L			09/22/19 11:55	1
1,1,2-Trichloroethane	<0.35		1.0	0.35	ug/L			09/22/19 11:55	1
Trichloroethene	<0.16		0.50	0.16	ug/L			09/22/19 11:55	1
Vinyl chloride	<0.20		1.0	0.20	ug/L			09/22/19 11:55	1
Xylenes, Total	<0.22		1.0	0.22	ug/L			09/22/19 11:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*112*		*72 - 124*		*09/22/19 11:55*	*1*
Dibromofluoromethane	*101*		*75 - 120*		*09/22/19 11:55*	*1*
1,2-Dichloroethane-d4 (Surr)	*109*		*75 - 126*		*09/22/19 11:55*	*1*
Toluene-d8 (Surr)	*102*		*75 - 120*		*09/22/19 11:55*	*1*

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

Lab Sample ID: LCS 500-506145/5
Matrix: Water
Analysis Batch: 506145

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	50.0	57.0		ug/L		114	40 - 143
Benzene	50.0	52.3		ug/L		105	70 - 120
Carbon tetrachloride	50.0	53.0		ug/L		106	59 - 133
Chloroform	50.0	50.2		ug/L		100	70 - 120
cis-1,2-Dichloroethene	50.0	49.6		ug/L		99	70 - 125
1,1-Dichloroethene	50.0	51.1		ug/L		102	67 - 122
Ethylbenzene	50.0	53.3		ug/L		107	70 - 123
Methylene Chloride	50.0	45.2		ug/L		90	69 - 125
Tetrachloroethene	50.0	51.0		ug/L		102	70 - 128
Toluene	50.0	47.4		ug/L		95	70 - 125
1,1,2-Trichloroethane	50.0	47.1		ug/L		94	71 - 130
Trichloroethene	50.0	51.3		ug/L		103	70 - 125
Vinyl chloride	50.0	47.6		ug/L		95	64 - 126
Xylenes, Total	100	103		ug/L		103	70 - 125

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*109*		*72 - 124*
Dibromofluoromethane	*101*		*75 - 120*
1,2-Dichloroethane-d4 (Surr)	*107*		*75 - 126*
Toluene-d8 (Surr)	*99*		*75 - 120*

Lab Chronicle

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190909-KS-01
Lab Sample ID: 500-169953-1
Date Collected: 09/09/19 13:41
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505434	09/18/19 15:16	JDD	TAL CHI

Client Sample ID: W-190909-KS-02
Lab Sample ID: 500-169953-2
Date Collected: 09/09/19 14:26
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505434	09/18/19 15:41	JDD	TAL CHI

Client Sample ID: W-190909-KS-03
Lab Sample ID: 500-169953-3
Date Collected: 09/09/19 15:22
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505434	09/18/19 16:06	JDD	TAL CHI

Client Sample ID: W-190909-KS-04
Lab Sample ID: 500-169953-4
Date Collected: 09/09/19 16:20
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505434	09/18/19 16:31	JDD	TAL CHI

Client Sample ID: W-190909-KS-05
Lab Sample ID: 500-169953-5
Date Collected: 09/09/19 16:50
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505434	09/18/19 16:56	JDD	TAL CHI
Total/NA	Analysis	8260B	DL	10	505434	09/18/19 17:22	JDD	TAL CHI

Client Sample ID: W-190909-KS-06
Lab Sample ID: 500-169953-6
Date Collected: 09/09/19 16:01
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505434	09/18/19 17:47	JDD	TAL CHI

Client Sample ID: W-190909-KS-07
Lab Sample ID: 500-169953-7
Date Collected: 09/09/19 16:18
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505434	09/18/19 18:12	JDD	TAL CHI

Lab Chronicle

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190909-KS-08
Lab Sample ID: 500-169953-8
Date Collected: 09/09/19 16:39
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505434	09/18/19 18:37	JDD	TAL CHI

Client Sample ID: W-190909-KS-09
Lab Sample ID: 500-169953-9
Date Collected: 09/09/19 16:10
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505434	09/18/19 19:02	JDD	TAL CHI

Client Sample ID: W-190910-KS-10
Lab Sample ID: 500-169953-10
Date Collected: 09/10/19 07:30
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505434	09/18/19 19:27	JDD	TAL CHI

Client Sample ID: W-190910-KS-11
Lab Sample ID: 500-169953-11
Date Collected: 09/10/19 08:35
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505668	09/19/19 13:46	STW	TAL CHI

Client Sample ID: W-190910-KS-12
Lab Sample ID: 500-169953-12
Date Collected: 09/10/19 09:05
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505668	09/19/19 14:11	STW	TAL CHI

Client Sample ID: W-190910-KS-13
Lab Sample ID: 500-169953-13
Date Collected: 09/10/19 09:30
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505668	09/19/19 14:36	STW	TAL CHI

Client Sample ID: W-190910-KS-14
Lab Sample ID: 500-169953-14
Date Collected: 09/10/19 09:55
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505668	09/19/19 15:02	STW	TAL CHI

Lab Chronicle

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190910-KS-15
Lab Sample ID: 500-169953-15
Date Collected: 09/10/19 10:20
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505668	09/19/19 15:27	STW	TAL CHI

Client Sample ID: W-190910-KS-16
Lab Sample ID: 500-169953-16
Date Collected: 09/10/19 10:50
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505668	09/19/19 15:52	STW	TAL CHI

Client Sample ID: W-190910-KS-17
Lab Sample ID: 500-169953-17
Date Collected: 09/10/19 08:07
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505668	09/19/19 16:17	STW	TAL CHI

Client Sample ID: W-190910-KS-18
Lab Sample ID: 500-169953-18
Date Collected: 09/10/19 08:08
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505668	09/19/19 16:42	STW	TAL CHI

Client Sample ID: W-190910-KS-19
Lab Sample ID: 500-169953-19
Date Collected: 09/10/19 08:38
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505668	09/19/19 17:07	STW	TAL CHI

Client Sample ID: W-190910-KS-20
Lab Sample ID: 500-169953-20
Date Collected: 09/10/19 09:22
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505668	09/19/19 17:32	STW	TAL CHI

Client Sample ID: W-190910-KS-21
Lab Sample ID: 500-169953-21
Date Collected: 09/10/19 10:58
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505668	09/19/19 17:57	STW	TAL CHI

Lab Chronicle

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: W-190910-KS-22
Lab Sample ID: 500-169953-22
Date Collected: 09/10/19 12:45
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505668	09/19/19 18:23	STW	TAL CHI

Client Sample ID: W-190910-KS-23
Lab Sample ID: 500-169953-23
Date Collected: 09/10/19 13:06
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505668	09/19/19 18:48	STW	TAL CHI

Client Sample ID: W-190910-KS-24
Lab Sample ID: 500-169953-24
Date Collected: 09/10/19 13:30
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505878	09/20/19 16:36	STW	TAL CHI

Client Sample ID: W-190910-KS-25
Lab Sample ID: 500-169953-25
Date Collected: 09/10/19 13:31
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505878	09/20/19 17:03	STW	TAL CHI

Client Sample ID: W-190910-KS-26
Lab Sample ID: 500-169953-26
Date Collected: 09/10/19 13:48
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	506145	09/22/19 14:13	STW	TAL CHI

Client Sample ID: W-190910-KS-27
Lab Sample ID: 500-169953-27
Date Collected: 09/10/19 13:49
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505878	09/20/19 18:00	STW	TAL CHI

Client Sample ID: W-190910-KS-28
Lab Sample ID: 500-169953-28
Date Collected: 09/10/19 13:50
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505878	09/20/19 18:28	STW	TAL CHI

Lab Chronicle

Client: GHD Services Inc.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Client Sample ID: Trip Blank
Lab Sample ID: 500-169953-29
Date Collected: 09/09/19 00:00
Matrix: Water
Date Received: 09/12/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	505878	09/20/19 18:56	STW	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.
Job ID: 500-169953-1
Project/Site: Wausau Superfund Site - 003978

Laboratory: Eurofins TestAmerica, Chicago

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

Authority	Program	Identification Number	Expiration Date
Wisconsin	State Program	999580010	08-31-20

TestAmerica

THE LEADER IN ENVIRONMENTAL

2417 Bond Street, University Park, IL 6
Phone: 708.534.5200 Fax: 708.53

500-169953 COC

(optional)
Report To
Contact: Grant Anderson
Company: GHD
Address:
Address:
Phone:
Fax:
E-Mail:

(optional)
Bill To
Contact:
Company:
Address:
Address:
Phone:
Fax:
PO#/Reference#

Chain of Custody Record

Lab Job #: 500-169953
Chain of Custody Number:
Page 1 of 3
Temperature °C of Cooler: 5.6

Client: GHD
Client Project #: 003978
Project Name: Wausau
Project Location/State: Wausau, WI
Lab Project #:
Sampler: KJ, RA, BL
Lab PM:

Preservative: HCl
Parameter: VOCs - Select by 8260B

Preservative Key
1. HCL, Cool to 4°
2. H2SO4, Cool to 4°
3. HNO3, Cool to 4°
4. NaOH, Cool to 4°
5. NaOH/Zn, Cool to 4°
6. NaHSO4
7. Cool to 4°
8. None
9. Other

Lab ID	MS/MSD	Sample ID	Sampling Date	Sampling Time	# of Containers	Matrix	VOCs - Select by 8260B	Comments
1		W-190909-KJ-01	9/9/19	1341	3	W	X	
2		-02		1426			X	
3		-03		1527				
4		-04		1620				
5		-05		1650				
6		-06		1601				
7		-07		1618				
8		-08		1639				
9		-09		1610				
10		W-190910-KJ-10	9/10/19	0730				

Turnaround Time Required (Business Days)
___ 1 Day ___ 2 Days ___ 5 Days ___ 7 Days ___ 10 Days ___ 15 Days _____ Other
Requested Due Date _____

Sample Disposal
☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
[signature]	GHD	9/11/19	1600	[signature]	TA-CDE	9/12/19	0900
Relinquished By	Company	Date	Time	Received By	Company	Date	Time
Relinquished By	Company	Date	Time	Received By	Company	Date	Time

Lab Courier
Shipped FedEx
Hand Delivered

Matrix Key
WW – Wastewater
W – Water
S – Soil
SL – Sludge
MS – Miscellaneous
OL – Oil
A – Air
SE – Sediment
SO – Soil
L – Leachate
WI – Wipe
DW – Drinking Water
O – Other

Client Comments

Lab Comments:

TAL-4124-500 (1209)

9/25/2019

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

2417 Bond Street, University Park, IL 60484
Phone: 708.534.5200 Fax: 708.534.5211

(optional)
Report To
Contact: Grant Anderson
Company: GHD
Address:
Address:
Phone:
Fax:
E-Mail:

(optional)
Bill To
Contact:
Company:
Address:
Address:
Phone:
Fax:
PO#/Reference#

Chain of Custody Record

Lab Job #: 500-169953
Chain of Custody Number:
Page 2 of 3
Temperature °C of Cooler:

Client	Client Project #	Preservative	HCl								
GHD	003978										
Project Name		Parameter	VOCs - Select 8260 Only								
Wausau											
Project Location/State	Lab Project #										
Wausau, WI											
Sampler	Lab PM										
RA, KJ, BL											

Preservative Key
1. HCL, Cool to 4°
2. H2SO4, Cool to 4°
3. HNO3, Cool to 4°
4. NaOH, Cool to 4°
5. NaOH/Zn, Cool to 4°
6. NaHSO4
7. Cool to 4°
8. None
9. Other

Lab ID	MS/MSD	Sample ID	Sampling Date	Sampling Time	# of Containers	Matrix	Comments
11		W-190910-KJ-11	9/10/19	0835	3	W	
12		-12		0905			
13		-13		0930			
14		-14		0955			
15		-15		1020			
16		-16		1050			
17		-17		0807			
18		-18		0808			
19		-19		0838			
20		-20		0922			

Turnaround Time Required (Business Days)
___ 1 Day ___ 2 Days ___ 5 Days ___ 7 Days ___ 10 Days ___ 15 Days _____ Other
Requested Due Date _____

Sample Disposal
☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
[signature]	GHD	9/11/19	1600	[signature]	TA-CHT	9/12/19	0900
Relinquished By	Company	Date	Time	Received By	Company	Date	Time
Relinquished By	Company	Date	Time	Received By	Company	Date	Time

Lab Courier
Shipped Fed Ex
Hand Delivered

Matrix Key
WW – Wastewater
W – Water
S – Soil
SL – Sludge
MS – Miscellaneous
OL – Oil
A – Air
SE – Sediment
SO – Soil
L – Leachate
WI – Wipe
DW – Drinking Water
O – Other

Client Comments

Lab Comments:

TAL-4124-500 (1209)

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

2417 Bond Street, University Park, IL 60484
Phone: 708.534.5200 Fax: 708.534.5211

(optional)
Report To
Contact: Grant Anderson
Company: GHD
Address:
Address:
Phone:
Fax:
E-Mail:

(optional)
Bill To
Contact:
Company:
Address:
Address:
Phone:
Fax:
PO#/Reference#

Chain of Custody Record

Lab Job #: 500-169953
Chain of Custody Number:
Page 3 of 3
Temperature °C of Cooler:

Client	Client Project #	Preservative	HCl								
GHD	003978										
Project Name: Wausau		Parameter	Voc's-Select by 8260B								
Project Location/State: Wausau, WI	Lab Project #										
Sampler: RA, KS, BL	Lab PM										

Preservative Key
1. HCL, Cool to 4°
2. H2SO4, Cool to 4°
3. HNO3, Cool to 4°
4. NaOH, Cool to 4°
5. NaOH/Zn, Cool to 4°
6. NaHSO4
7. Cool to 4°
8. None
9. Other

Lab ID	MS/MSD	Sample ID	Sampling Date	Sampling Time	# of Containers	Matrix	Comments
21		W-190910-KS-21	9/10/19	1058	3	W	
22		-22		1245	3		
23	X	-23		1306	9		
24		-24		1330	3		
25		-25		1331			
26		-26		1348			
27		-27		1349			
28		-28		1350			
29		Trip Blank	—	—	2	W	

Turnaround Time Required (Business Days)
___ 1 Day ___ 2 Days ___ 5 Days ___ 7 Days ___ 10 Days ___ 15 Days _____ Other
Requested Due Date _____

Sample Disposal
☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
[signature]	GHD	9/11/19	1600	[signature]	TA-CHI	9/12/19	0900
Relinquished By	Company	Date	Time	Received By	Company	Date	Time
Relinquished By	Company	Date	Time	Received By	Company	Date	Time

Lab Courier
Shipped: Fed-X
Hand Delivered

Matrix Key
WW – Wastewater
W – Water
S – Soil
SL – Sludge
MS – Miscellaneous
OL – Oil
A – Air
SE – Sediment
SO – Soil
L – Leachate
WI – Wipe
DW – Drinking Water
O – Other

Client Comments

Lab Comments:

9/25/2019

TAL-4124-COC (1209)

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 500-169953-1

Login Number: 169953
List Number: 1
Creator: Scott, Sherri L

List Source: Eurofins TestAmerica, Chicago

Question	Answer	Comment
Radioactivity wasn't checked or is </= 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	5.6
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 <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Memorandum

November 15, 2019

To:	Chuck Ahrens, GHD	Ref. No.:	003978
From:	Grant Anderson/sb/19	Tel:	(651) 639-0913

Subject: **Analytical Results and Reduced Data Validation**
Groundwater Sampling Event
Wausau Superfund – Wausau, Wisconsin
September 2019

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 September 2019. 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 one trip blank sample, one field blank sample and two field duplicate sample sets.

Trip Blank Sample Analysis

To evaluate contamination from sample collection, transportation, storage, and analytical activities, a trip blank sample was submitted to the laboratory for VOC analysis. Methylene chloride was detected in the trip blank. Table 4 lists the trip blank detection. Associated sample data are qualified as noted in the table.

Field Blank Sample Analysis

To assess ambient conditions at the site and cleanliness of sample containers, one field blank sample was submitted for analysis, as identified in Table 1. Acetone, methylene chloride and toluene were detected in the field blanks. Associated methylene chloride results were previously qualified based on trip blank results. Associated toluene results were non-detect. Table 5 lists the acetone detection. Associated sample results are qualified as noted in the table.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, two 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
September 2019

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters	Comments
W-190909-KJ-01	CW3	water	09/09/2019	13:41	Select VOC	
W-190909-KJ-02	MW10B	water	09/09/2019	14:26	Select VOC	
W-190909-KJ-03	E21	water	09/09/2019	15:22	Select VOC	
W-190909-KJ-04	WC5A	water	09/09/2019	16:20	Select VOC	
W-190909-KJ-05	WC3B	water	09/09/2019	16:50	Select VOC	
W-190909-KJ-06	WW4	water	09/09/2019	16:01	Select VOC	
W-190909-KJ-07	WW6	water	09/09/2019	16:18	Select VOC	
W-190909-KJ-08	E24AR	water	09/09/2019	16:39	Select VOC	
W-190909-KJ-09	E22A	water	09/09/2019	16:10	Select VOC	
W-190910-KJ-10	CW6	water	09/10/2019	07:30	Select VOC	
W-190910-KJ-11	C2S	water	09/10/2019	08:35	Select VOC	
W-190910-KJ-12	R4D	water	09/10/2019	09:05	Select VOC	
W-190910-KJ-13	W52	water	09/10/2019	09:30	Select VOC	
W-190910-KJ-14	W53A	water	09/10/2019	09:55	Select VOC	
W-190910-KJ-15	W55	water	09/10/2019	10:20	Select VOC	
W-190910-KJ-16	MW1A	water	09/10/2019	10:50	Select VOC	
W-190910-KJ-17	E37A	water	09/10/2019	08:07	Select VOC	
W-190910-KJ-18	E37A	water	09/10/2019	08:08	Select VOC	duplicate (KJ-17)
W-190910-KJ-19	W56	water	09/10/2019	08:38	Select VOC	
W-190910-KJ-20	R2D	water	09/10/2019	09:22	Select VOC	
W-190910-KJ-21	C4S	water	09/10/2019	10:58	Select VOC	
W-190910-KJ-22	WSWD	water	09/10/2019	12:45	Select VOC	
W-190910-KJ-23	R3D	water	09/10/2019	13:06	Select VOC	MS/MSD
W-190910-KJ-24	EW1	water	09/10/2019	13:30	Select VOC	
W-190910-KJ-25	EW1	water	09/10/2019	13:31	Select VOC	
W-190910-KJ-26	W54	water	09/10/2019	13:48	Select VOC	
W-190910-KJ-27	W54	water	09/10/2019	13:49	Select VOC	duplicate (KJ-26)
W-190910-KJ-28	W54	water	09/10/2019	13:50	Select VOC	field blank
Trip Blank	Lab	water	09/09/2019	00:00	Select VOC	trip blank

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
September 2019

Location ID:		C2S	C4S	CW3	CW6	E21	E22A	E24AR	E37A	E37A
Sample Name:		W-190910-KJ-11	W-190910-KJ-21	W-190909-KJ-01	W-190910-KJ-10	W-190909-KJ-03	W-190909-KJ-09	W-190909-KJ-08	W-190910-KJ-17	W-190910-KJ-18
Sample Date:		09/10/2019	09/10/2019	09/09/2019	09/10/2019	09/09/2019	09/09/2019	09/09/2019	09/10/2019	09/10/2019 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
1,1-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
Acetone	µg/L	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
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
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
cis-1,2-Dichloroethene	µg/L	1.0 U	2.2	1.0	1.0 U	1.0 U	1.0 U	3.6	0.52 J	0.56 J
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
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
Tetrachloroethene	µg/L	1.0 U	1.0 U	1.0	1.0 U	1.0 U	1.6	0.68 J	0.42 J	0.37 J
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
Trichloroethene	µg/L	3.4	2.6	0.75	2.4	0.50 U	0.50 U	0.26 J	0.65	0.69
Vinyl chloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.64 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

Table 2

Validated Analytical Results Summary
Groundwater Sampling Event
Wausau Superfund Site
Wausau, Wisconsin
September 2019

Location ID:		EW1	MW10B	MW1A	R2D	R3D	R4D	W52	W53A	W54	W54
Sample Name:		W-190910-KJ-24	W-190909-KJ-02	W-190910-KJ-16	W-190910-KJ-20	W-190910-KJ-23	W-190910-KJ-12	W-190910-KJ-13	W-190910-KJ-14	W-190910-KJ-26	W-190910-KJ-27
Sample Date:		09/10/2019	09/09/2019	09/10/2019	09/10/2019	09/10/2019	09/10/2019	09/10/2019	09/10/2019	09/10/2019	09/10/2019 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	1.0 U	2.4	1.0 U	1.0 U	1.0	1.0 U	0.99 J	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	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	0.50 U	0.53	10	1.1	14	6.8	82	40	39
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	1.0 U	0.43 J	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
September 2019

Location ID:		W55	W56	WC3B	WC5A	WSWD	WW4	WW6
Sample Name:		W-190910-KJ-15	W-190910-KJ-19	W-190909-KJ-05	W-190909-KJ-04	W-190910-KJ-22	W-190909-KJ-06	W-190909-KJ-07
Sample Date:		09/10/2019	09/10/2019	09/09/2019	09/09/2019	09/10/2019	09/09/2019	09/09/2019
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
1,1-Dichloroethene	µg/L	1.0 U	1.0 U	2.2	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
Benzene	µg/L	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
Chloroform (Trichloromethane)	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	0.52 J
cis-1,2-Dichloroethene	µg/L	15	1.0 U	74	1.0 U	0.94 J	1.0 U	14
Ethylbenzene	µg/L	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
Tetrachloroethene	µg/L	1.0 U	1.0 U	350	0.63 J	1.0 U	1.0 U	3.9
Toluene	µg/L	0.50 U	0.50 U	0.25 J	0.50 U	0.50 U	0.50 U	0.50 U
Trichloroethene	µg/L	7.7	0.50 U	44	0.48 J	6.4	0.50 U	11
Vinyl chloride	µg/L	1.0 U	1.0 U	10	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

Note:

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

Table 3

Analytical Methods and Holding Time Criteria
Groundwater Sampling Event
Wausau Superfund Site
Wausau, Wisconsin
September 2019

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

Notes:

Method References:

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 Trip Blank
Groundwater Sampling Event
Wausau Superfund Site
Wausau, Wisconsin
September 2019

Parameter	Blank Date (mm/dd/yyyy)	Analyte	Blank Result	Associated Sample ID	Original Result	Qualified Result	Units
VOC	9/9/2019	Methylene chloride	2.8J	W-190910-KS-24	3.0 J	5.0 U	ug/L
				W-190910-KS-27	2.8 J	5.0 U	ug/L

Notes:

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

Table 5

Qualified Sample Data Due to Analyte Concentrations in the Field Blanks
Groundwater Sampling Event
Wausau Superfund Site
Wausau, Wisconsin
September 2019

Parameter	Rinse Blank ID	Blank Date (dd/mm/yyyy)	Analyte	Blank Result	Associated Sample ID	Original Result	Qualified Result	Units
VOC	W-190910-KJ-28	9/10/2019	Acetone	6.3J	W-190910-KJ-11	3.6 J	10 U	ug/L
					W-190910-KJ-13	3.0 J	10 U	ug/L
					W-190910-KJ-16	1.8 J	10 U	ug/L
					W-190910-KJ-17	7.7 J	10 U	ug/L
					W-190910-KJ-18	3.4 J	10 U	ug/L
					W-190909-KJ-02	2.9 J	10 U	ug/L
					W-190909-KJ-04	2.2 J	10 U	ug/L
					W-190909-KJ-05	8.8 J	10 U	ug/L
					W-190909-KJ-09	2.3 J	10 U	ug/L

Notes:

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

Appendix B
Wausau Chemical Pavement Inspection Report

Appendix B - Table 1

Pavement Barrier Inspection Log
Former Wausau Chemical Corporation

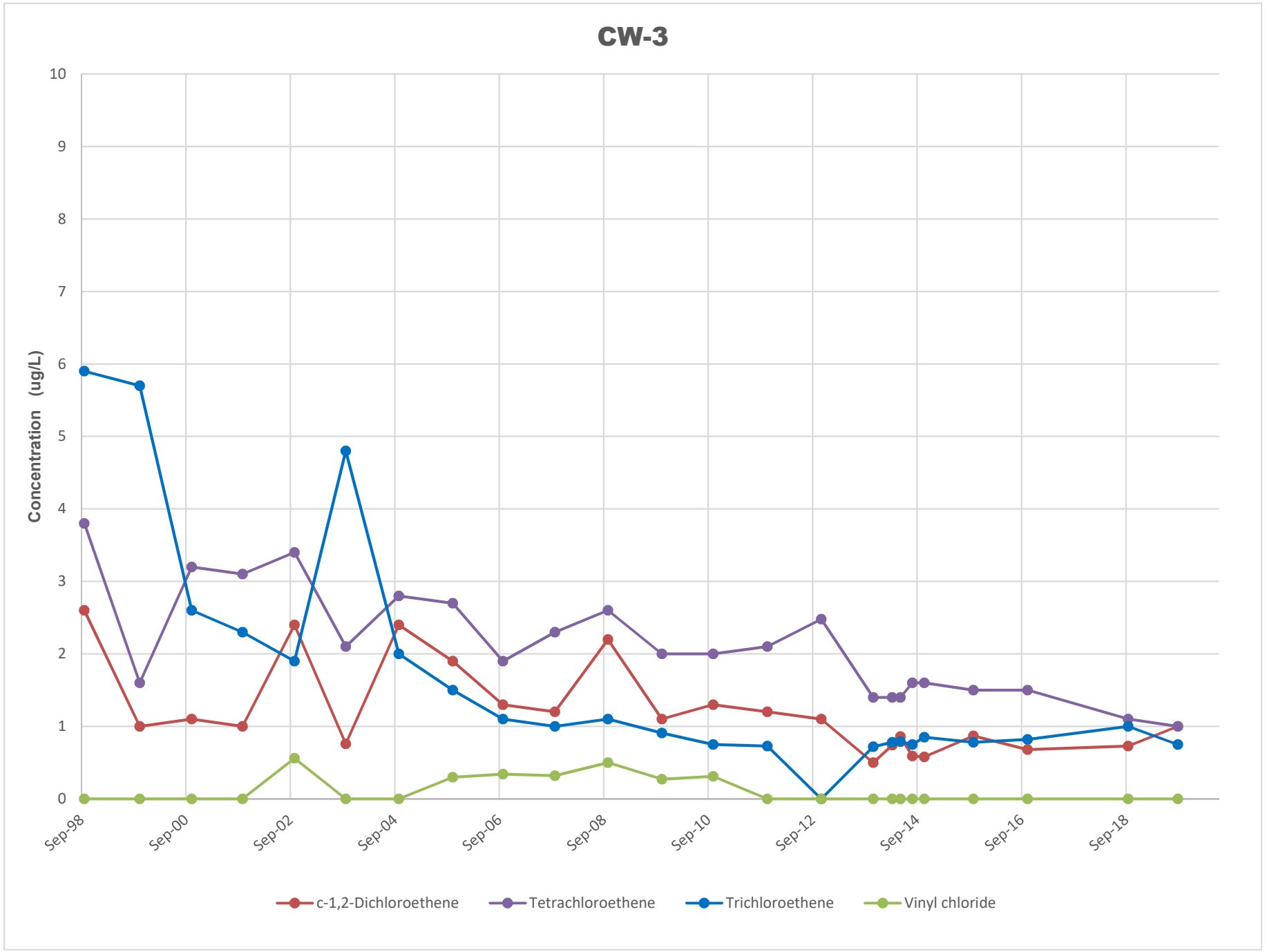
Inspection Date	Inspector	Condition of Cap	Recommendations	Have Recommendations From Previous Inspection Been Implemented?
8/29/2011	Rob Flashinski	Pavement was completely replaced in 2009. Three cracks starting to form, but have not penetrated.	No action required.	Yes.
7/2/2012	Rob Flashinski	Overall 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 hariline 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.

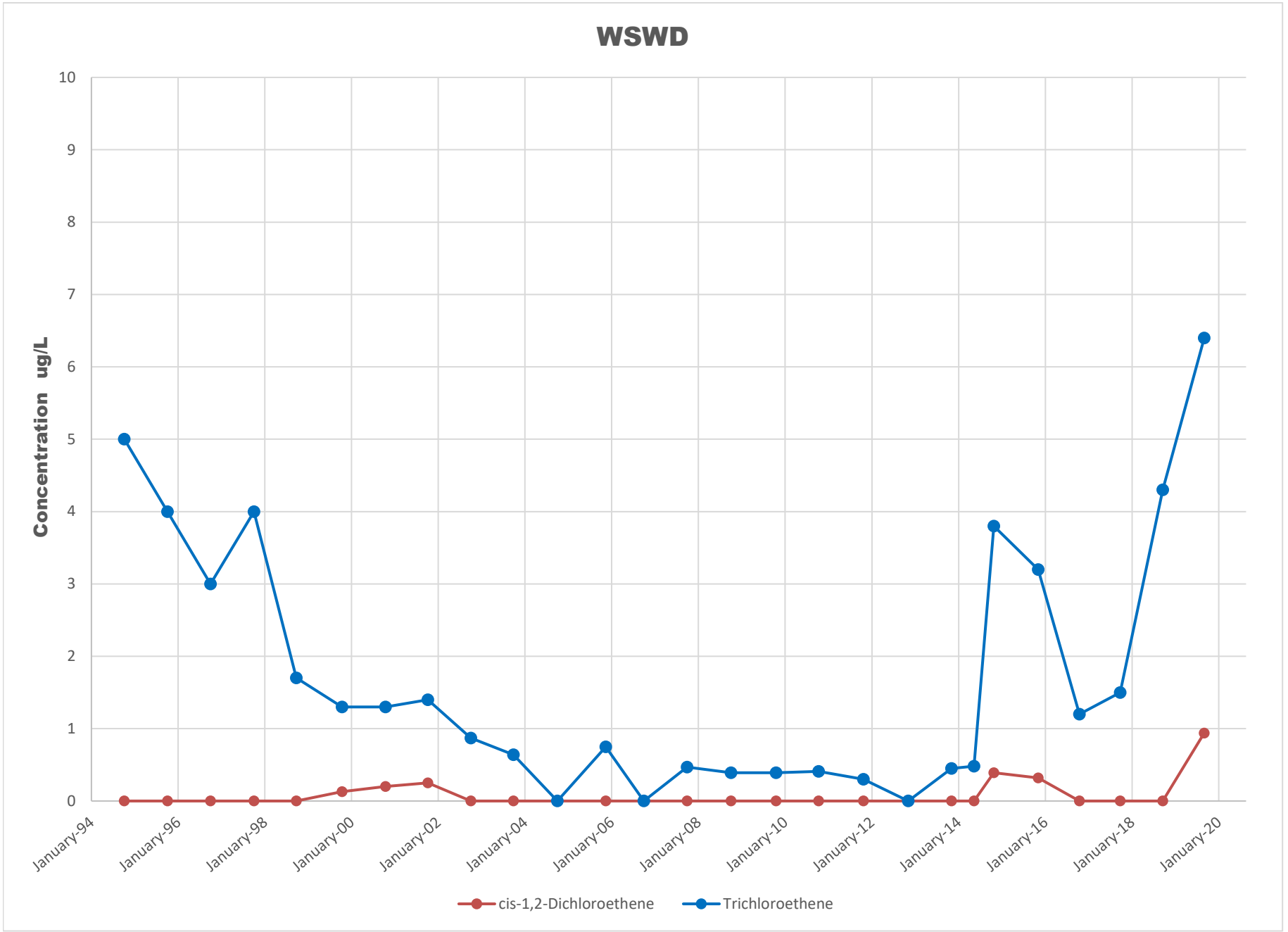
Appendix B - Table 1

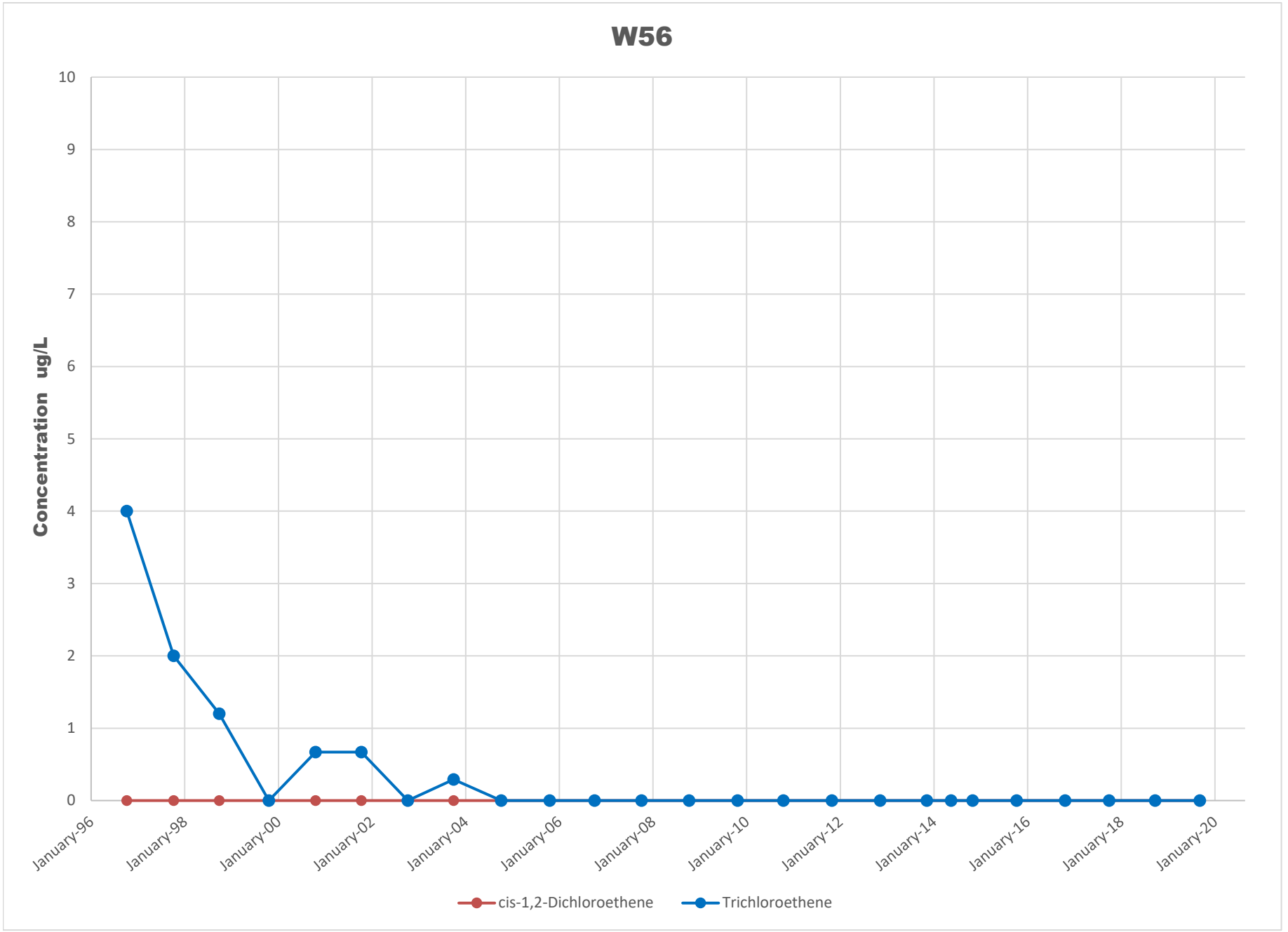
Pavement Barrier Inspection Log
Former Wausau Chemical Corporation

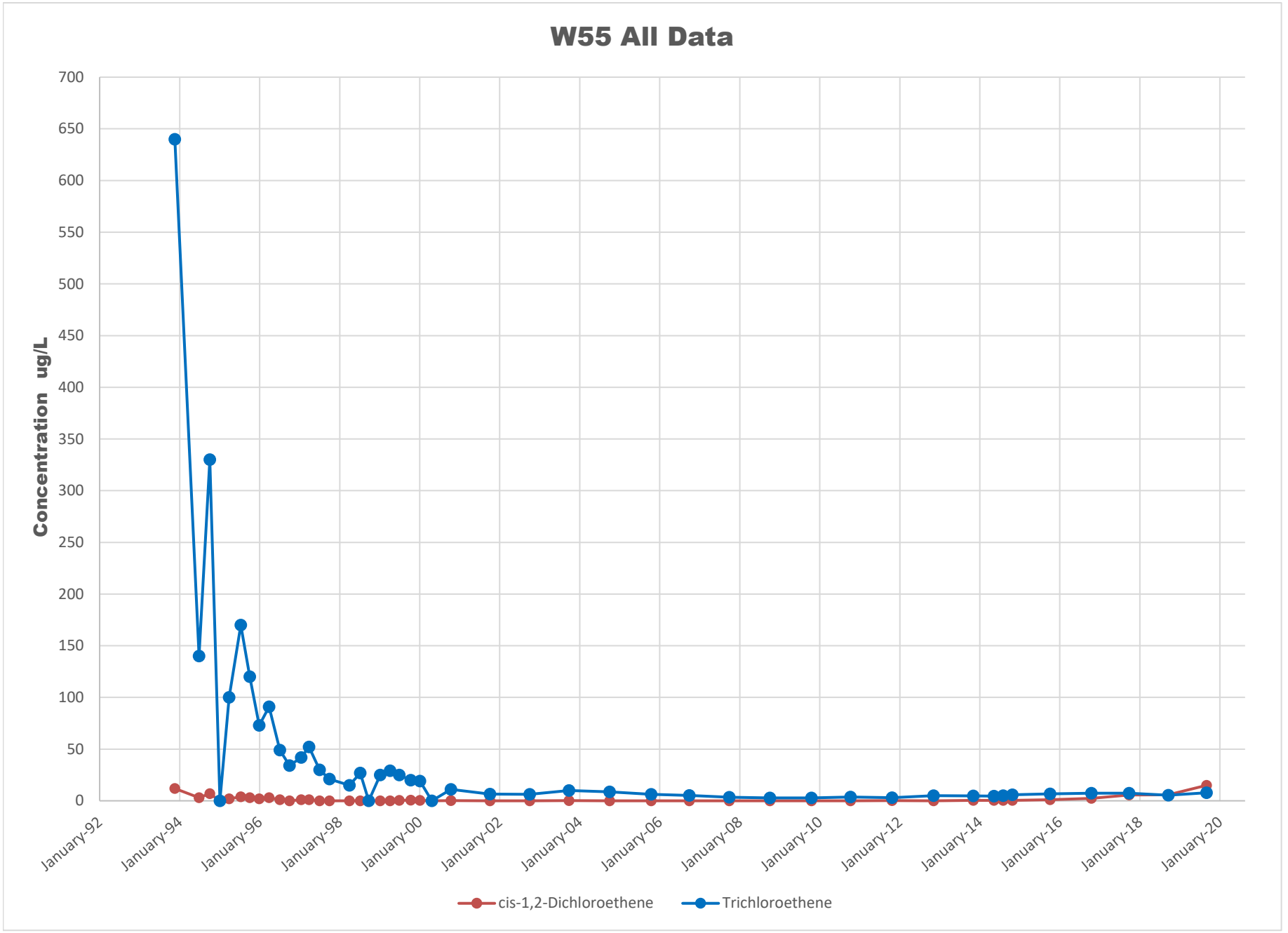
Inspection Date	Inspector	Condition of Cap	Recommendations	Have Recommendations From Previous Inspection Been Implemented?
10/16/2015	Rob Flashinski	Overall condition is still good. Exsiting Cracks were sealed by Advanced Seal Coatings.	Nothing at this point.	Yes.
9/14/2016	Rob Flashinski	Overall condition is still good. Prior repair work is still in good conditioin 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 noticable 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.

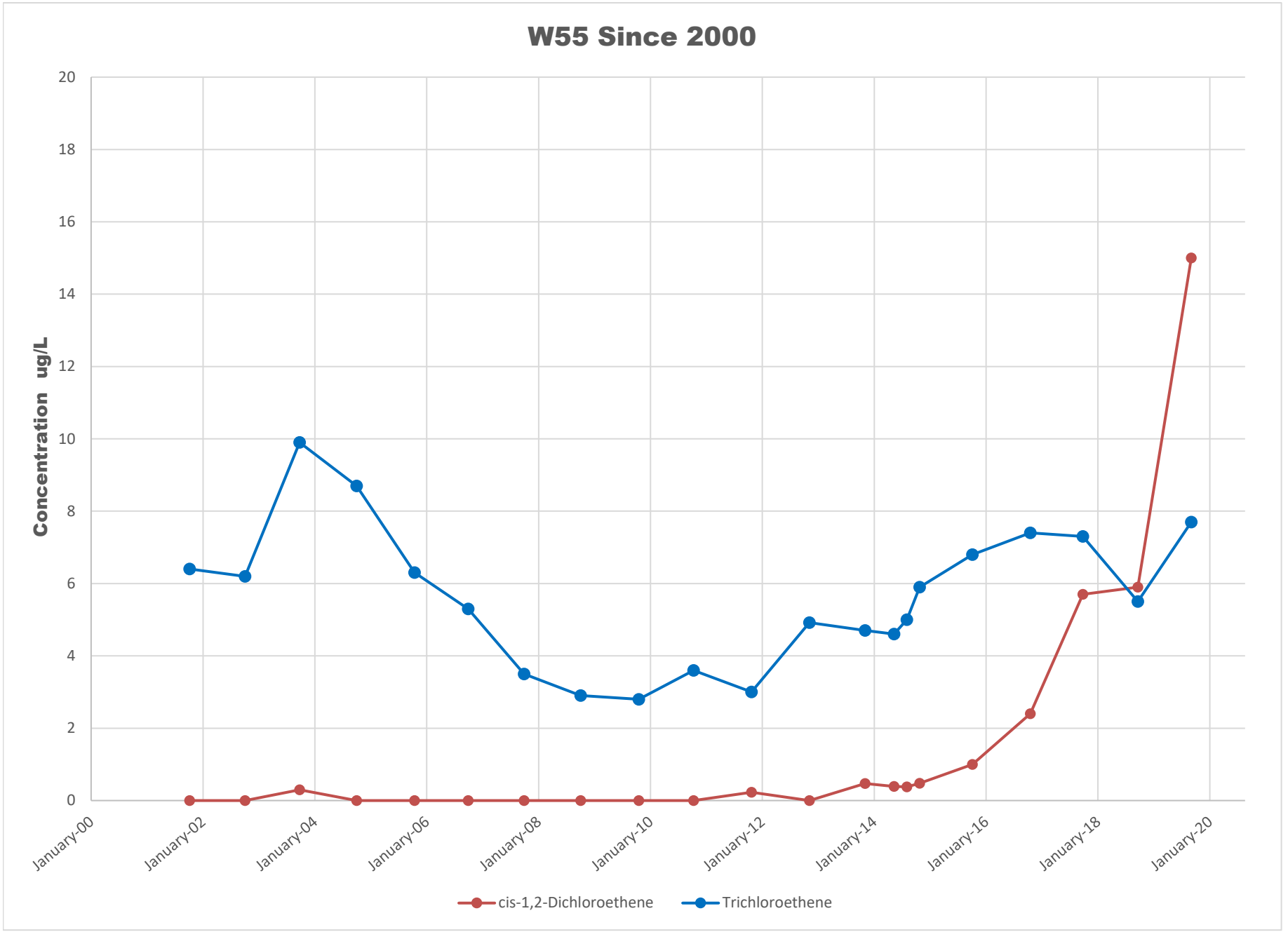
Appendix C
Total Chlorinated VOC Concentration Charts

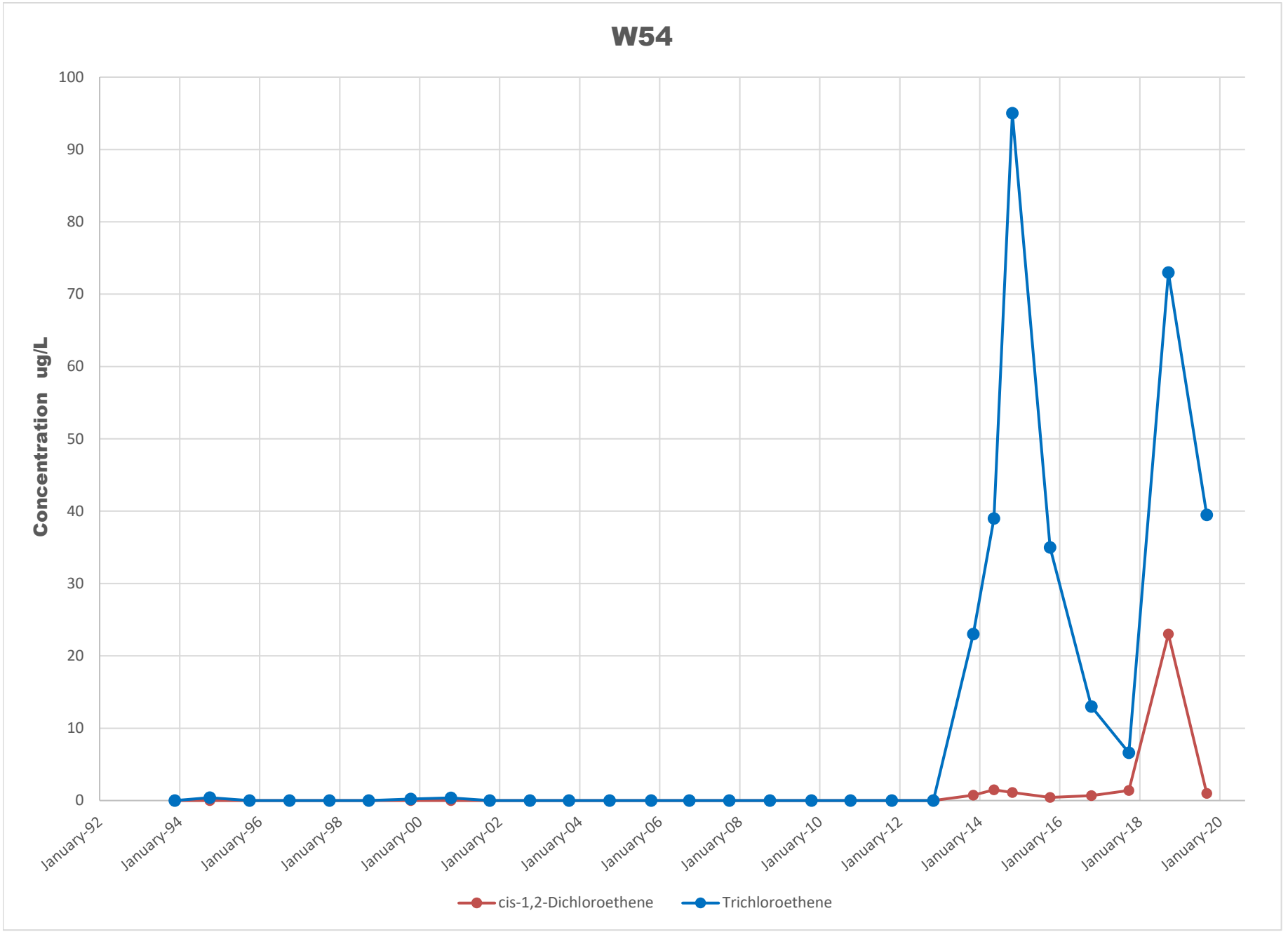

CW-3
Concentration (ug/L)
10
9
8
7
6
5
4
3
2
1
0
Sep-98
Sep-00
Sep-02
Sep-04
Sep-06
Sep-08
Sep-10
Sep-12
Sep-14
Sep-16
Sep-18
c-1,2-Dichloroethene
Tetrachloroethene
Trichloroethene
Vinyl chloride

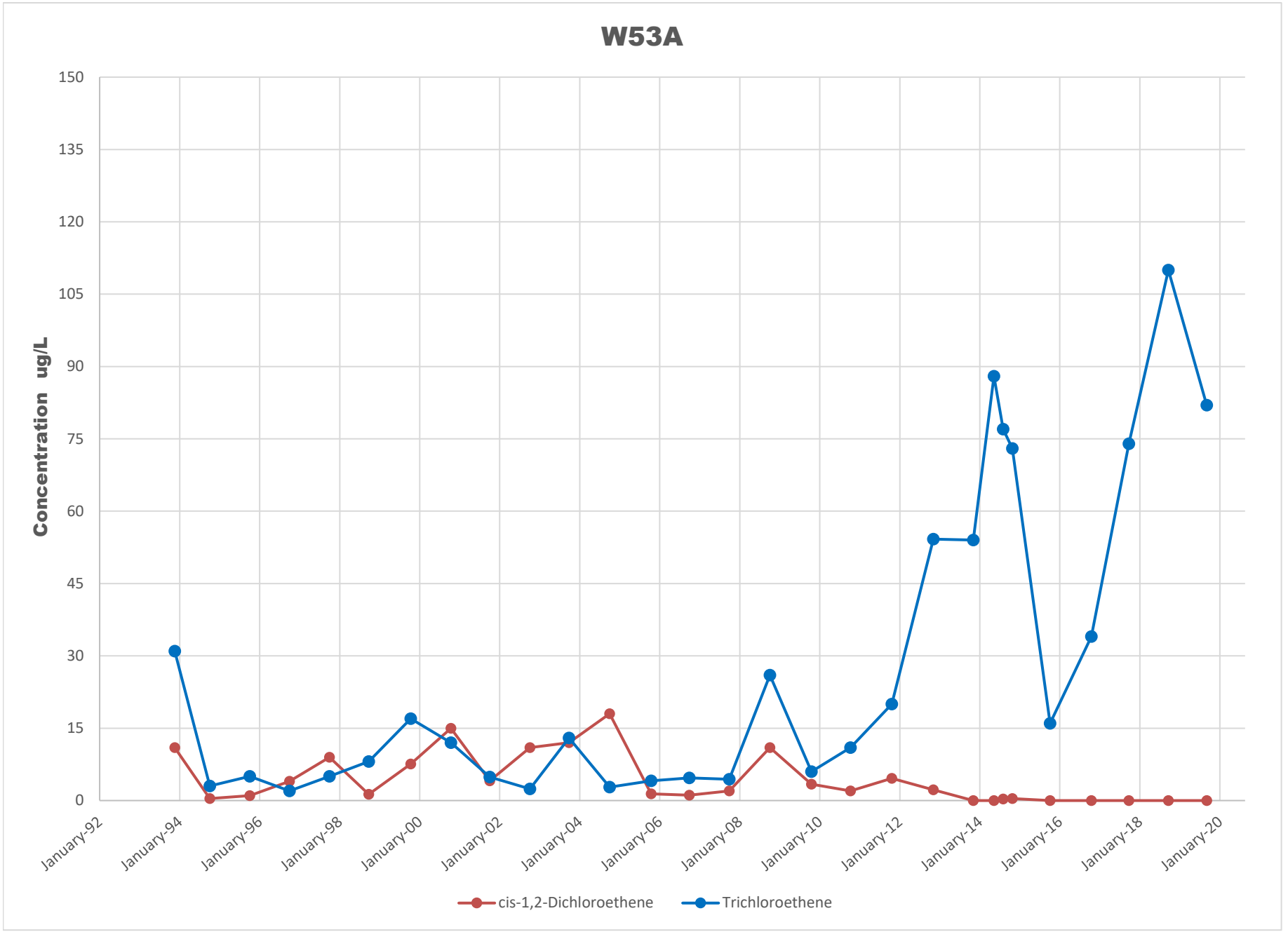

WSWD
Concentration ug/L
10
9
8
7
6
5
4
3
2
1
0
January-94
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

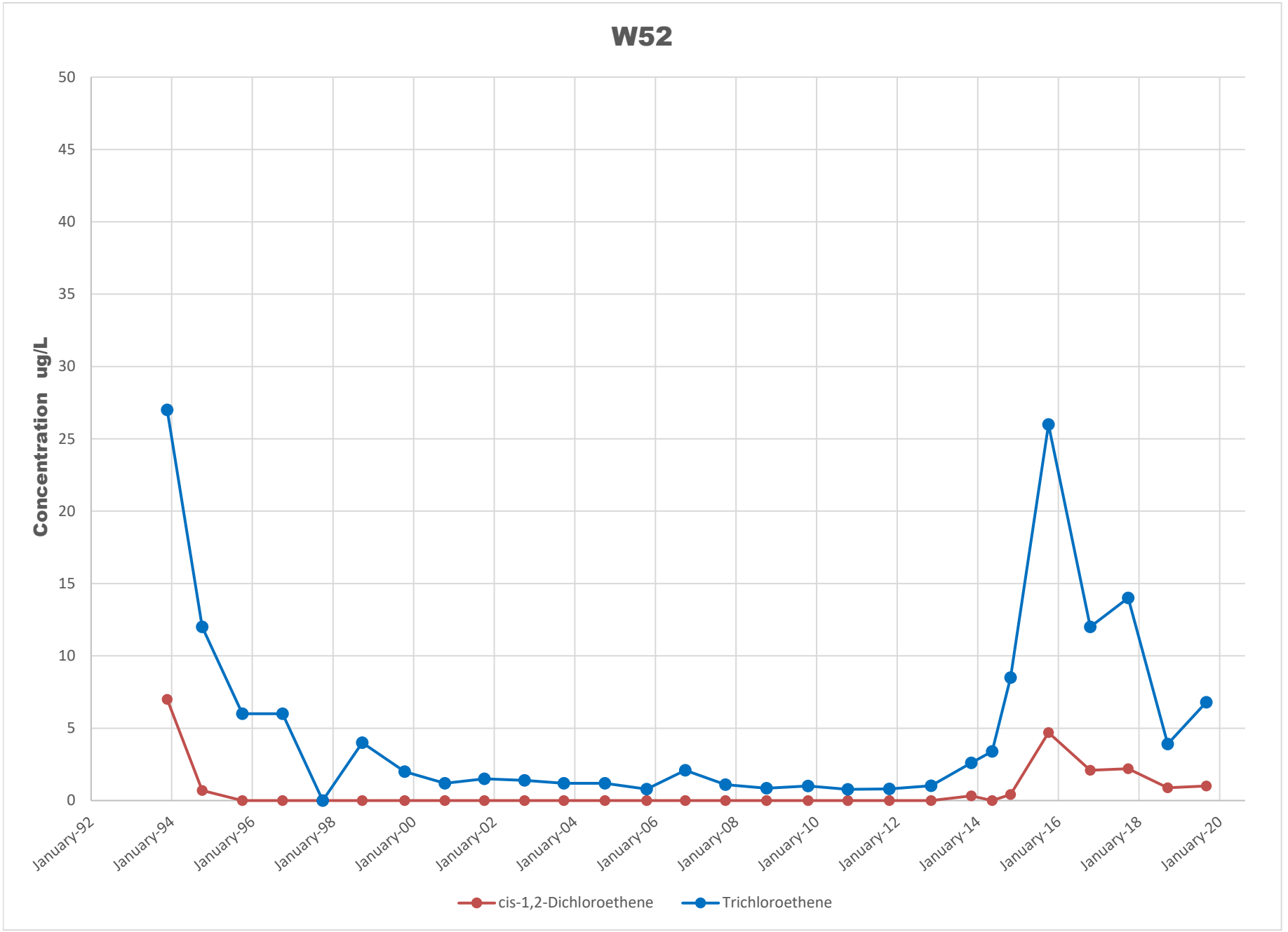

W56
Concentration ug/L
10
9
8
7
6
5
4
3
2
1
0
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

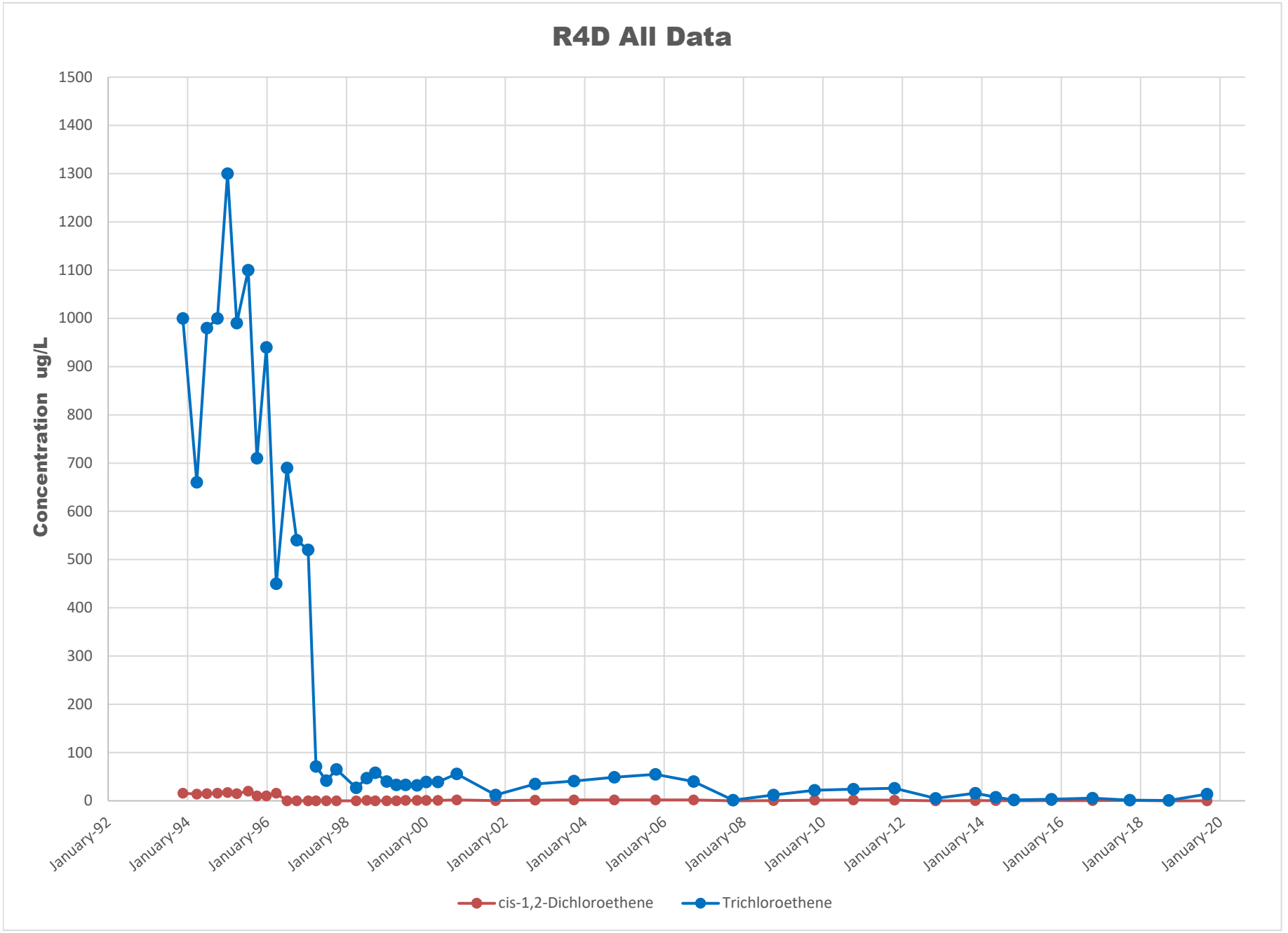

W55 All Data
Concentration ug/L
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
January-92
January-94
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

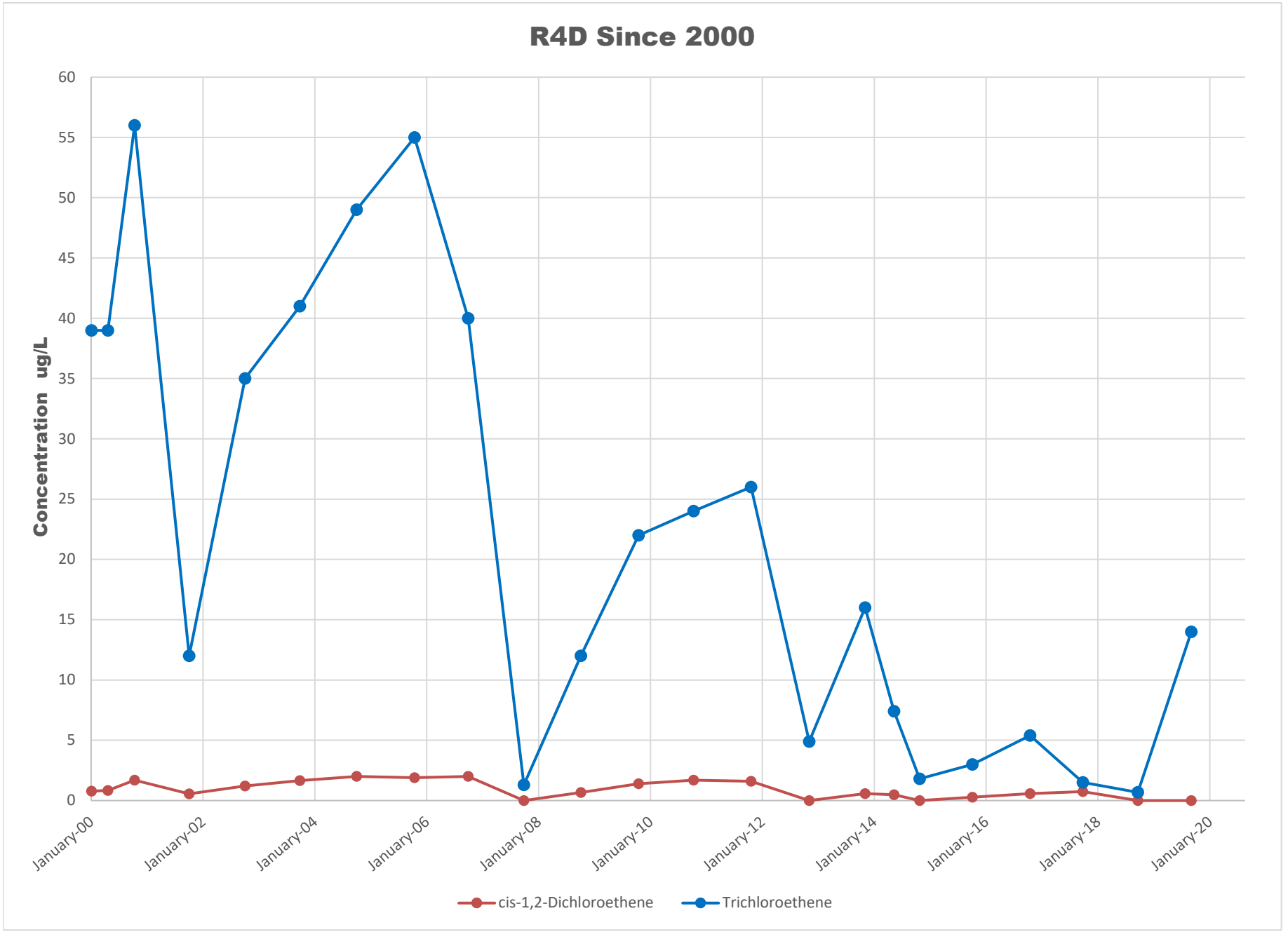

W55 Since 2000
Concentration ug/L
20
18
16
14
12
10
8
6
4
2
0
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

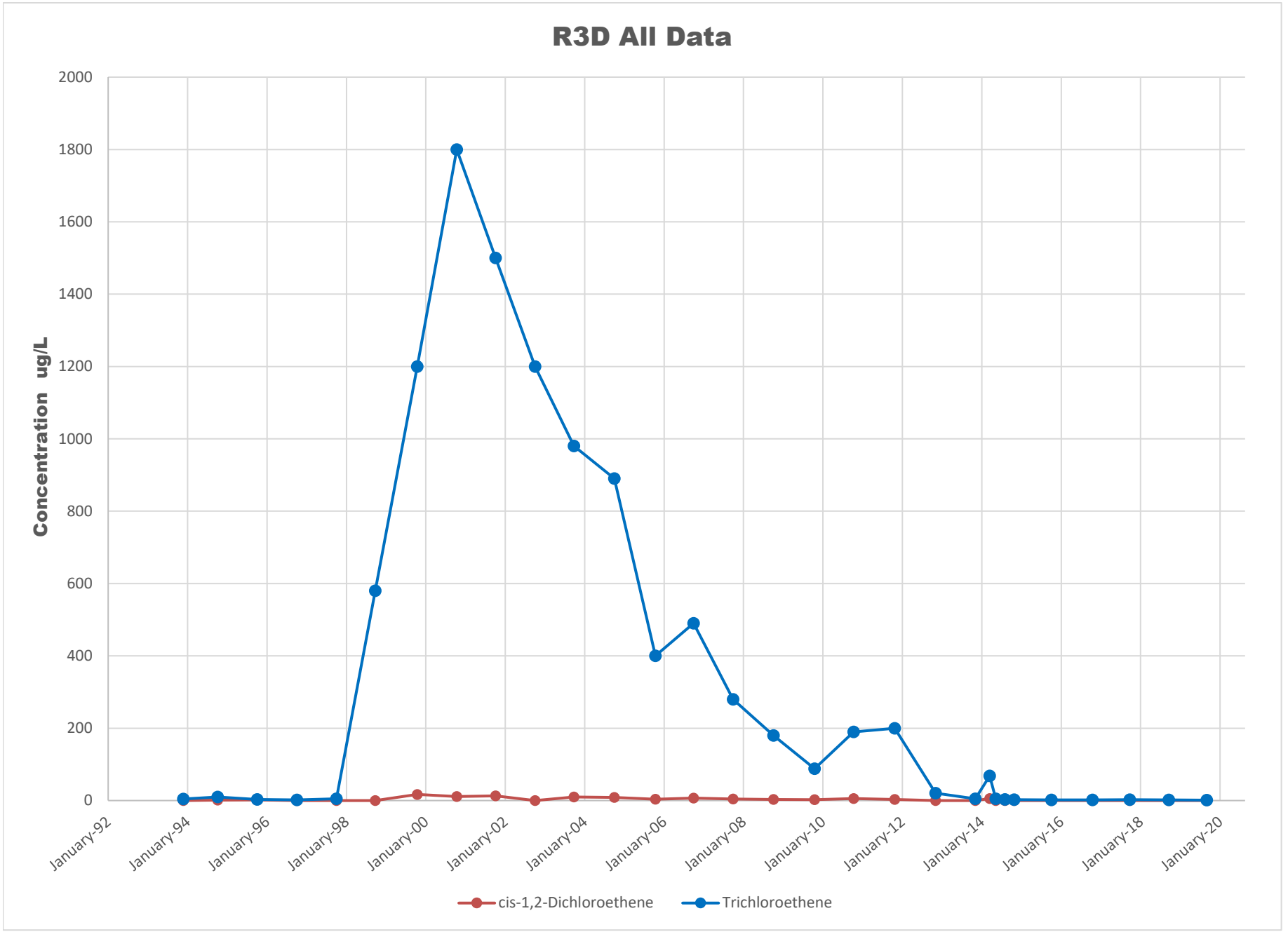

W54
Concentration ug/L
100
90
80
70
60
50
40
30
20
10
0
January-92
January-94
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

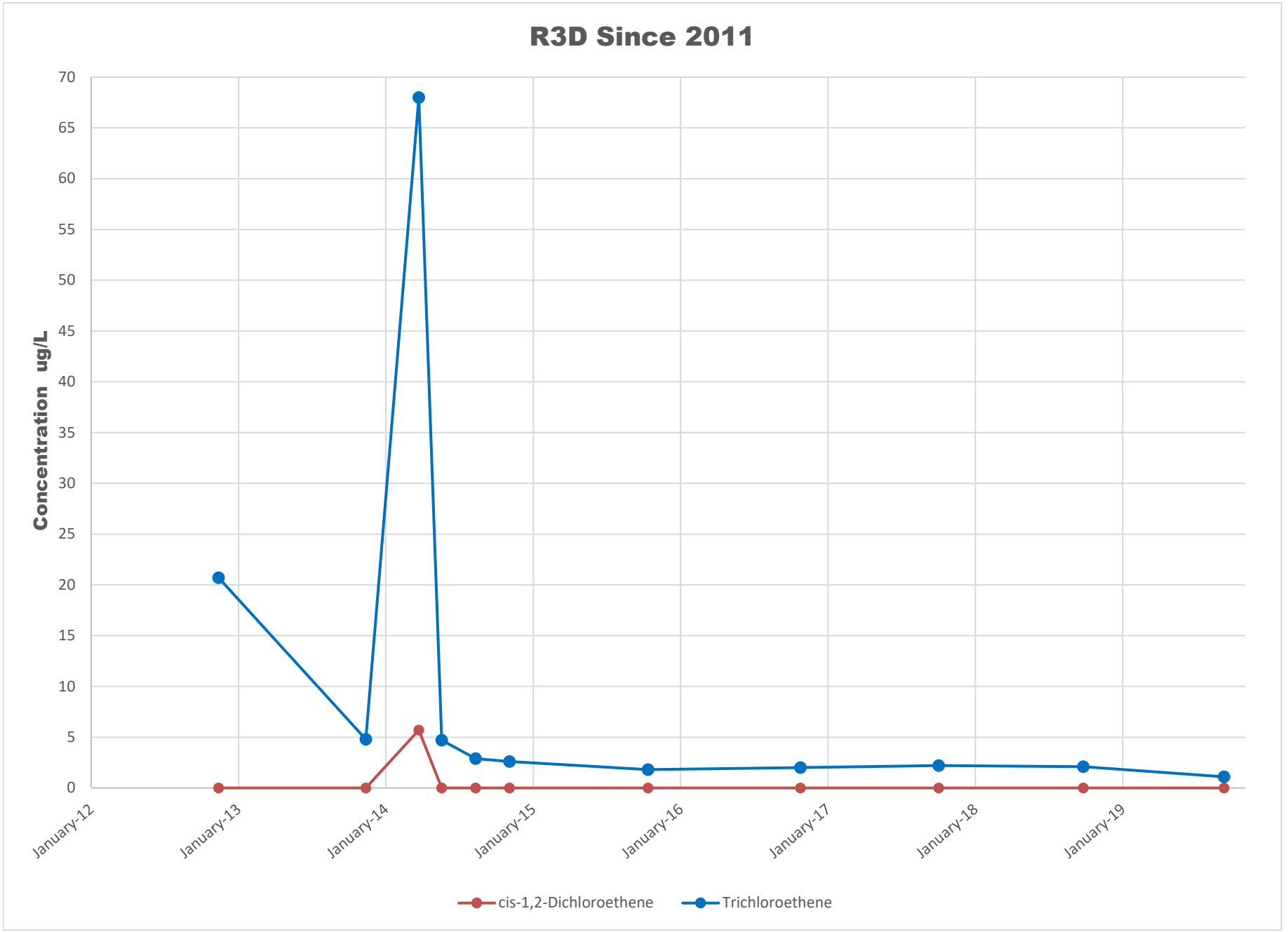

W53A
Concentration ug/L
150
135
120
105
90
75
60
45
30
15
0
January-92
January-94
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

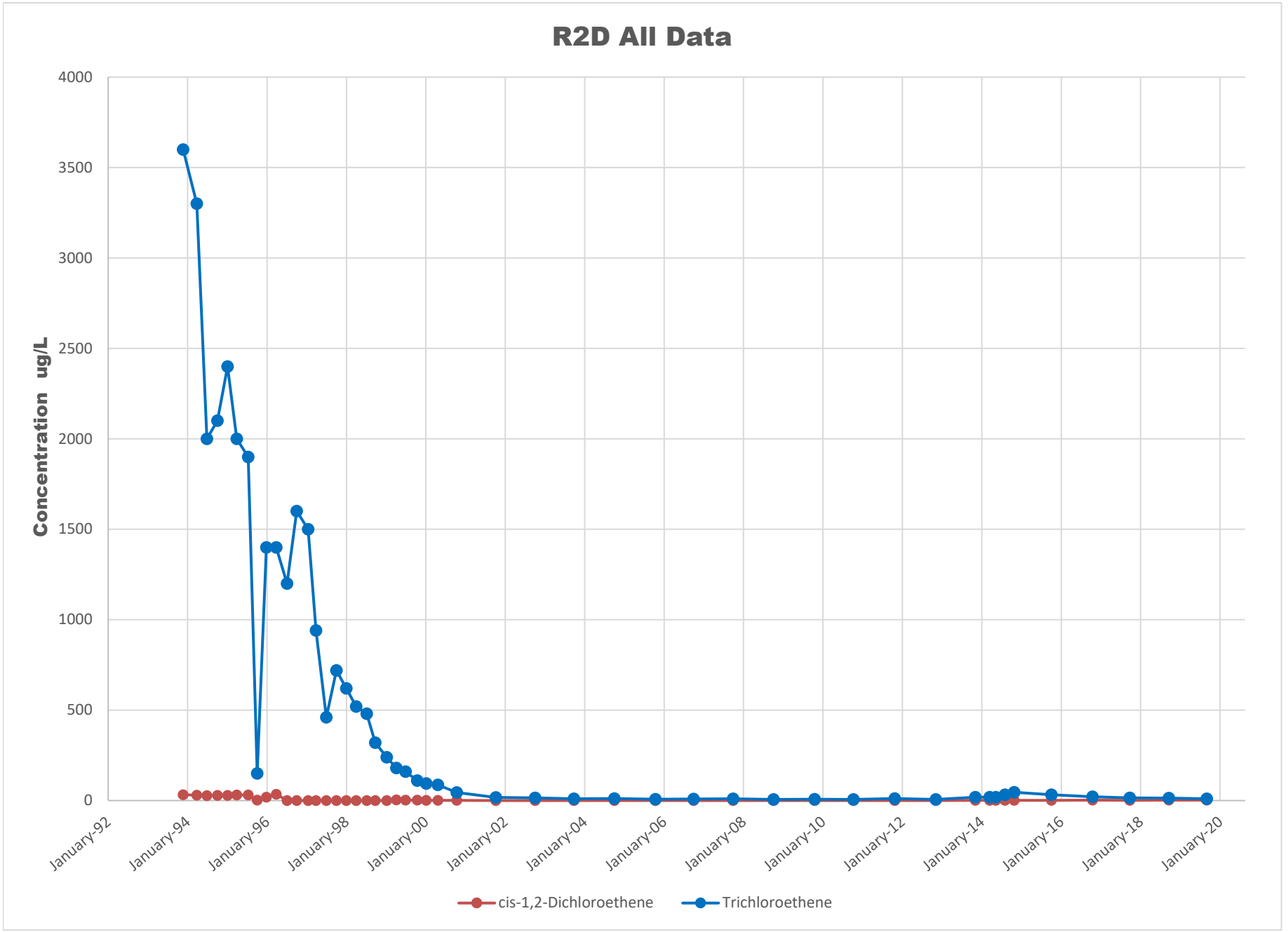

W52
Concentration ug/L
50
45
40
35
30
25
20
15
10
5
0
January-92
January-94
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

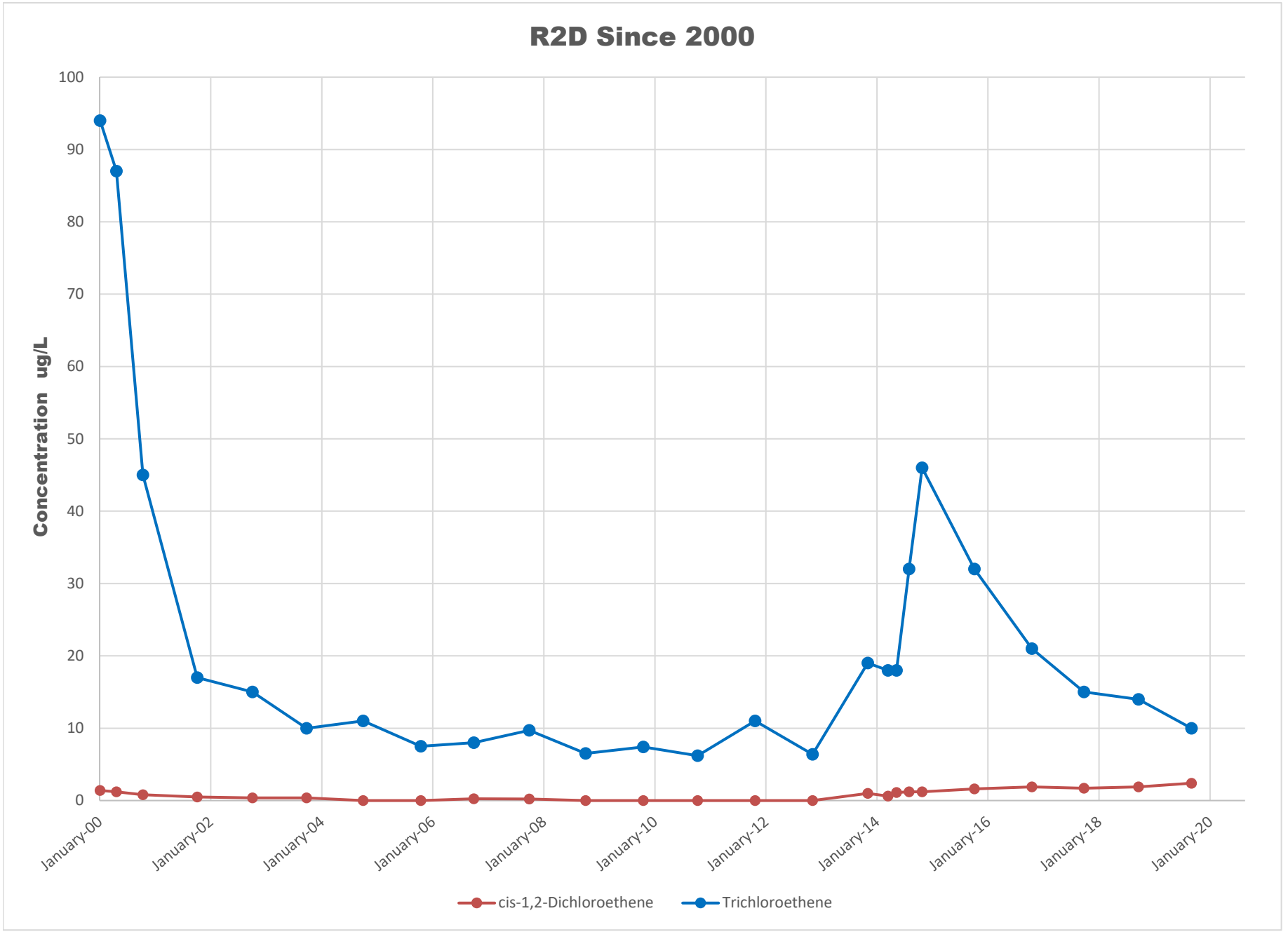

R4D All Data
Concentration ug/L
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
January-92
January-94
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

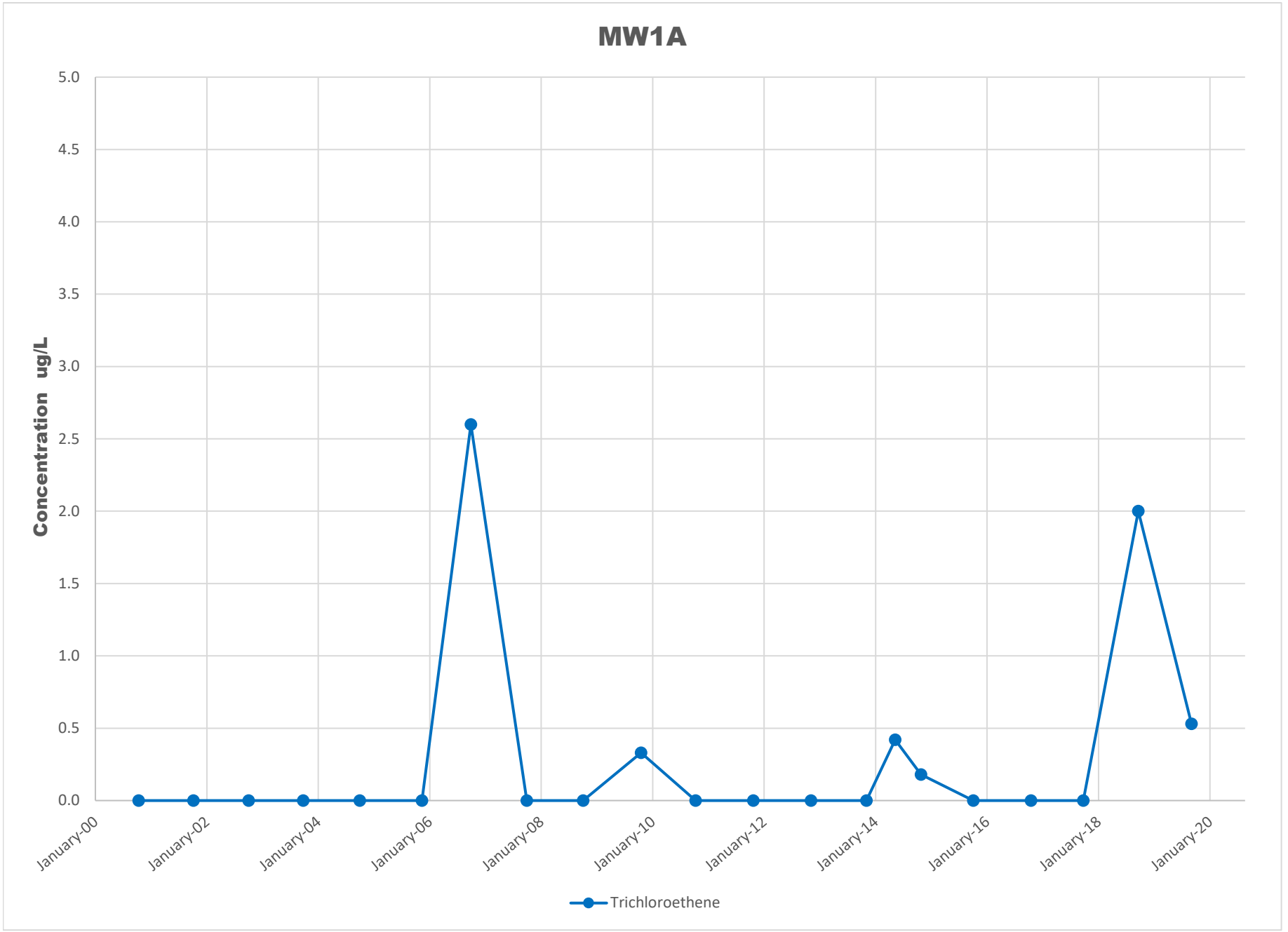

R4D Since 2000
Concentration ug/L
60
55
50
45
40
35
30
25
20
15
10
5
0
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

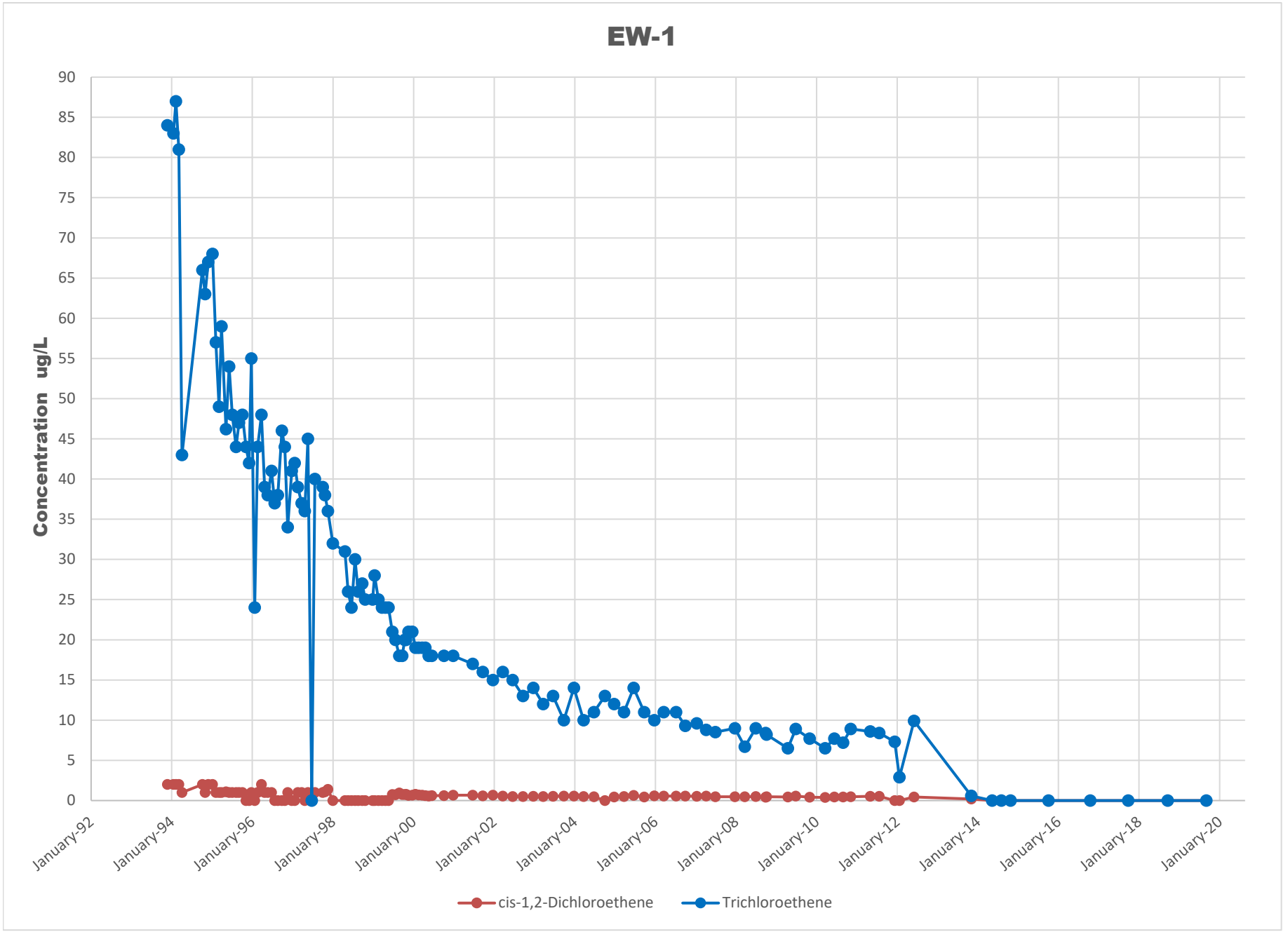

R3D All Data
Concentration ug/L
2000
1800
1600
1400
1200
1000
800
600
400
200
0
January-92
January-94
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

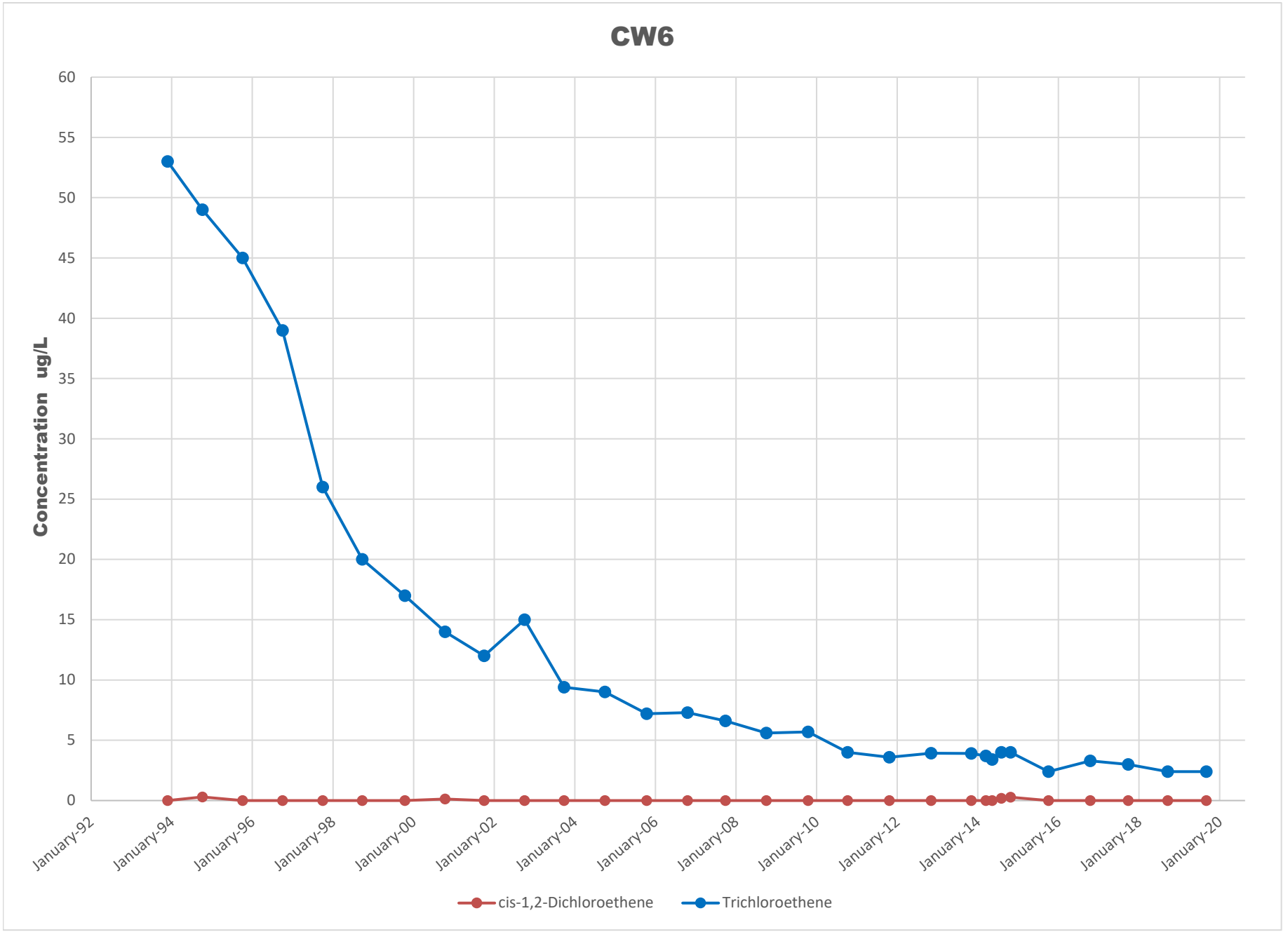

R3D Since 2011
Concentration ug/L
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
January-12
January-13
January-14
January-15
January-16
January-17
January-18
January-19
cis-1,2-Dichloroethene
Trichloroethene

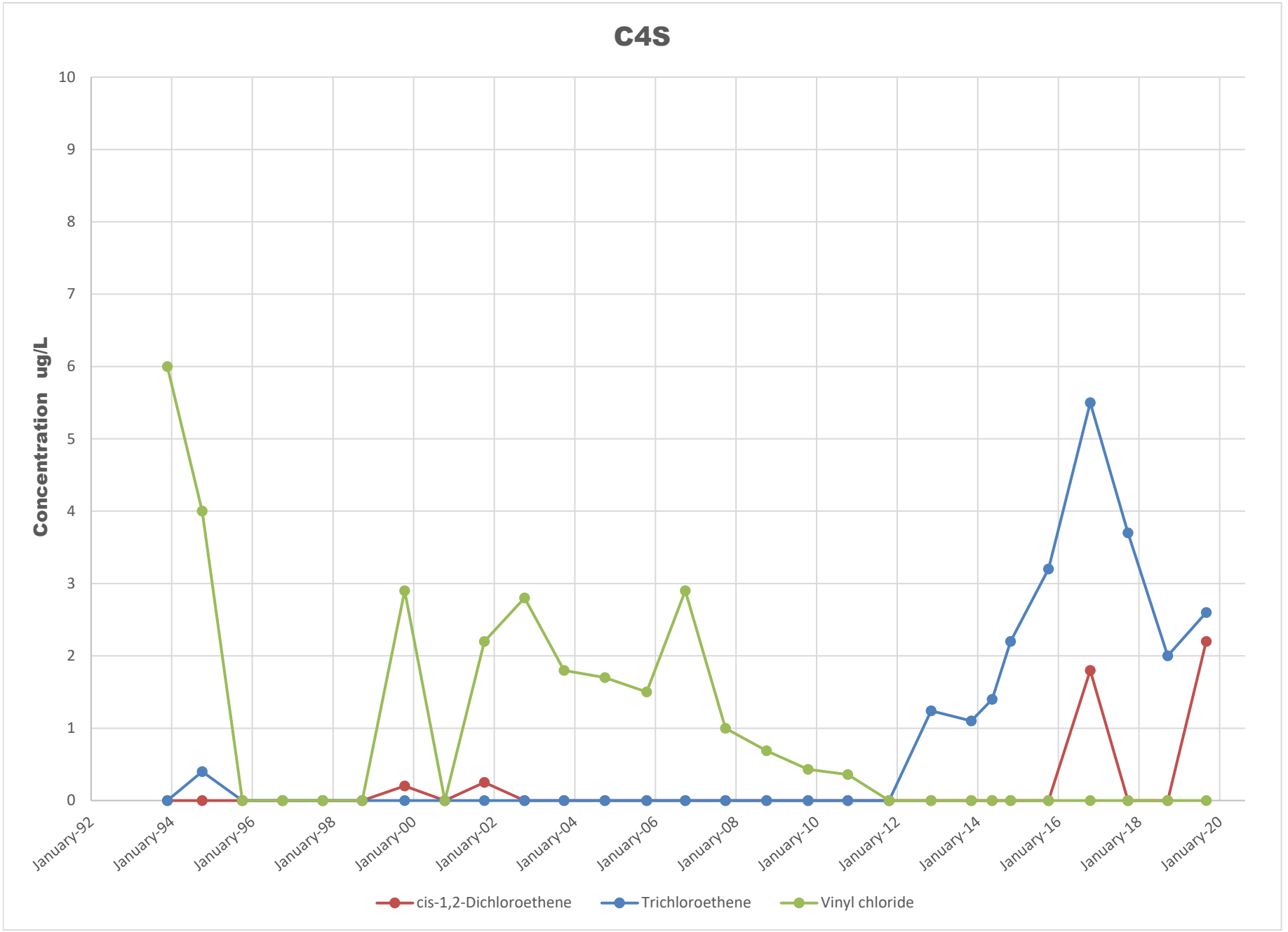

R2D All Data
Concentration ug/L
4000
3500
3000
2500
2000
1500
1000
500
0
January-92
January-94
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

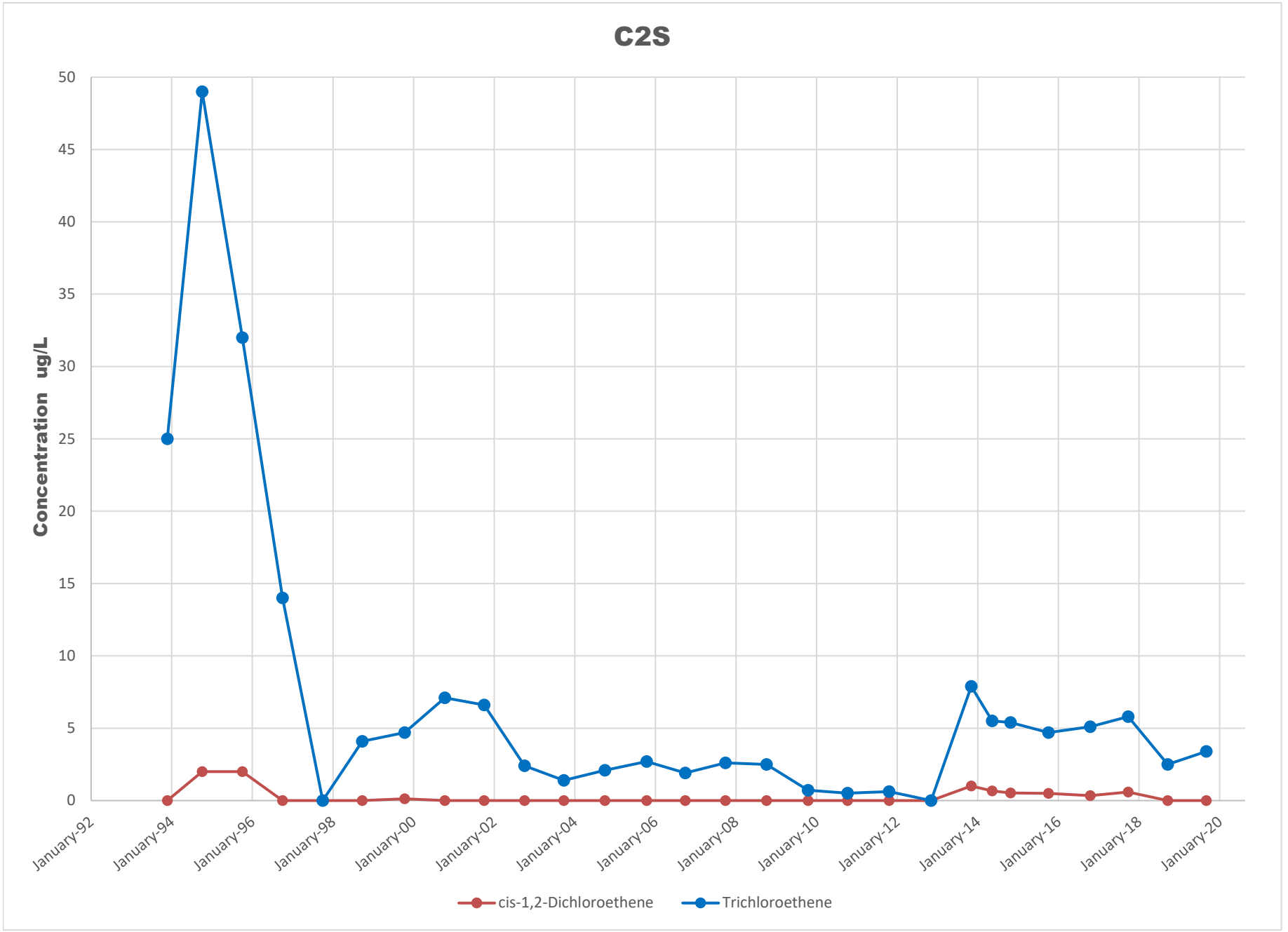

R2D Since 2000
Concentration ug/L
100
90
80
70
60
50
40
30
20
10
0
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene


MW1A
Concentration ug/L
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
Trichloroethene


EW-1
Concentration ug/L
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
January-92
January-94
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene


CW6
Concentration ug/L
60
55
50
45
40
35
30
25
20
15
10
5
0
January-92
January-94
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene


C4S
Concentration ug/L
10
9
8
7
6
5
4
3
2
1
0
January-92
January-94
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene
Vinyl chloride


C2S
Concentration ug/L
50
45
40
35
30
25
20
15
10
5
0
January-92
January-94
January-96
January-98
January-00
January-02
January-04
January-06
January-08
January-10
January-12
January-14
January-16
January-18
January-20
cis-1,2-Dichloroethene
Trichloroethene

about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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