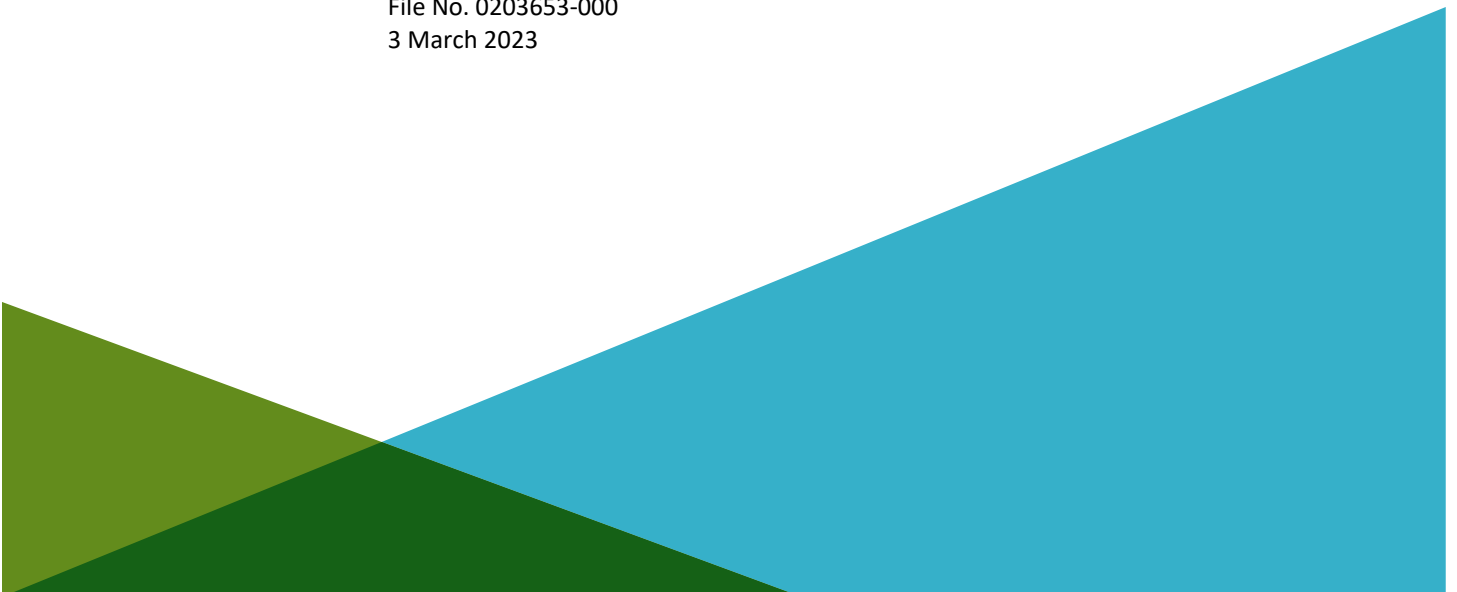


REPORT ON
2021 GROUNDWATER AND SURFACE WATER MONITORING
PACCAR RENTON SITE
RENTON, WASHINGTON

by
Haley & Aldrich, Inc.
Seattle, Washington

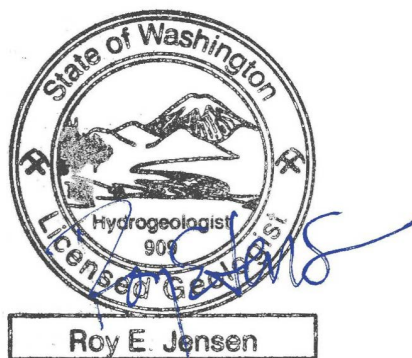
for
PACCAR
Bellevue, Washington

File No. 0203653-000
3 March 2023



SIGNATURE PAGE FOR**REPORT ON
2021 GROUNDWATER AND SURFACE WATER MONITORING
PACCAR RENTON SITE
RENTON, WASHINGTON****PREPARED FOR
PACCAR
BELLEVUE, WASHINGTON**

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1. Introduction

This report provides the 2021 groundwater and surface water monitoring results for the PACCAR Renton National Priorities List (NPL) Site. This monitoring report contains the elements described in the Confirmational Monitoring and Inspection Plan (CMIP; DOF 1997) and the Periodic Review (Ecology 2021) and presents the results of the groundwater, surface water, and structural fill cover monitoring conducted at the site in October 2021.

This report is divided into three sections:

- Section 2. Groundwater Monitoring
- Section 3. Surface Water Monitoring
- Section 4. PACCAR Structural Fill Cover Monitoring Field Inspection and Observation Form

The information in these sections is supplemented by tables and figures presented at the end of the respective sections. In addition, Appendices A and B presents the chemical data quality review for groundwater and surface water, respectively. Appendix C provides the laboratory report, and Appendices D and E presents the groundwater and surface water quality summary charts, respectively.

2. Groundwater Monitoring

2.1 INTRODUCTION

This section presents the results of the groundwater monitoring event conducted in October 2021 and a review of historical groundwater data. Specifically, it includes a tabulation of water level and groundwater quality data, groundwater flow maps, and an assessment of results relative to cleanup levels (CULs) for developing sampling and analysis recommendations consistent with the CMIP and Periodic Review (Ecology 2021).

2.2 GROUNDWATER MONITORING

Groundwater monitoring was completed on 19 October 2021, in accordance with the planned elements described by the Periodic Review (Ecology 2021). The groundwater elevation and chemical test results obtained from this event are compiled in this section.

The CMIP provides compound-specific cleanup levels (CULs) and hot spot action levels (HSALs) for comparison with the Site data. The CULs represent the groundwater remediation goals at the Site, while HSALs for groundwater are based on drinking water standards. Planned actions described in this report are based on an interpretation of the updated data relative to the decision-making processes outlined in the CMIP.

Data presented in this report are organized as follows:

- **Monitoring Summary.** An overview of the data collected from each monitoring well is given in Table 1-1. This table lists the wells sampled and identifies the chemicals analyzed in each well.
- **Groundwater Elevation.** Groundwater elevation measurements are compiled in Table 1-2 and contoured on Figures 1-1 and 1-2 for the Upper Sand and Lower Sand units, respectively.
- **Chemical Result Summary.** A summary of groundwater analytical results is provided in Table 1-3. All groundwater samples were analyzed for arsenic and/or vinyl chloride (Table 1-1). Field parameter measurements including turbidity, temperature, pH, dissolved oxygen, redox potential, and conductivity are also included in Table 1-3.
- **Purge Water Sampling.** Groundwater collected during well purging (before sampling) was analyzed for arsenic, chromium, lead, diesel- and heavy-oil-range hydrocarbons, and volatile organic compounds (VOCs). These data are necessary for future disposal documentation and are presented in Table A-2.
- **Chemical Data Compilation.** Appendix A includes a data validation summary for the groundwater quality results and a compilation of the October 2021 groundwater data (Table A-1) and purge water data (Table A-2). The laboratory report is provided in Appendix C.
- **Groundwater Quality Summary Charts.** Appendix D includes groundwater quality summary charts and Mann-Kendall trend analysis for each well sampled as part of the October 2021 sampling program. The charts summarize the historical sampling results for these wells.

2.2.1 Results October 2021

The results of October 2021 groundwater sampling are summarized in Appendix D Table D-1 and Table 1-3.

- **Arsenic.** The CUL for arsenic is 5 µg/L and the HSAL is 50 µg/L as established in the CMIP. Ecology during the 2021 Periodic Review proposed lowering the HSAL to 10 µg/L to the current drinking water standard for arsenic. Arsenic concentrations in the six confirmation wells sampled in 2021 ranged from 4.44 to 18.1 µg/L. Concentration of arsenic exceeded the CUL for arsenic in all wells except for CW-1S. The proposed HSAL of 10 µg/L was exceeded in MW-3I.
- **Vinyl Chloride.** The CUL for vinyl chloride is 0.4 µg/L. Concentrations of vinyl chloride in 2021 were detected below the CUL in both CW-1S and LW-9D.

2.2.2 Future Monitoring

The Periodic Review establishes the groundwater sampling program (Table 1-4) for the Site, which consists of:

- Sample groundwater in 2022 and 2023 for arsenic in wells CW-1D, LW-6D, LW-9D, CW-1S, LW-9S, and MW-3I. Groundwater elevations and field parameters will also be measured in these wells. Ecology during the 2021 Periodic Review requested that groundwater samples be submitted for dissolved (filtered) and total (unfiltered) analysis.
- Sample groundwater in 2022 and 2023 for vinyl chloride in wells CW-1S and LW-9D.
- Groundwater elevations will be measured from wells in the PACCAR monitoring well network in 2022 and 2023.

2.3 SUMMARY OF HISTORICAL GROUNDWATER SAMPLING RESULTS

Groundwater sampling has been conducted at the Site since the 1980s. Confirmation groundwater sampling began in 1998 after completion of the CMIP in 1997. The confirmational groundwater sampling network began with 28 wells. Historically, the monitoring well network has been sampled for arsenic, chromium, lead, benzene, vinyl chloride, cPAHs, pentachlorophenol, diesel, and heavy oil. Except for vinyl chloride and arsenic, these chemicals have either not been detected or detected at concentrations below CULs. The number and frequency of sampling and sampled analytes have declined governed by the protocols established in the CMIP. Currently the groundwater network consists of eight monitoring wells and arsenic is sampled in all of the monitoring wells (wells SC-1S and SC-2S are currently sampled every 5 years) and vinyl chloride in two monitoring wells.

Historical groundwater sampling results for the current sampling network is summarized below. Appendix D includes groundwater quality summary charts, statistical and trend analysis for each well sampled as part of the October 2021 sampling program. The Mann-Kendall statistical trend analysis is based on data collected since 2010 (Table 1-4).

- **CW-01S.** CW-01S is located along Garden Avenue and is currently sampled for arsenic and vinyl chloride. In 2021 arsenic was detected at 4.44 µg/L, which is less than the CUL of 5 µg/L. Historically, since 2010 the mean concentration of arsenic in CW-01S is 4.4 µg/L ranging from 0.4 to 8.1 µg/L. The CUL of 5 µg/L was exceeded in 4 of 12 samples. There is a probable statistically significant decreasing trend in arsenic concentrations in CW-01S.

Vinyl chloride was detected in 2021 at a concentration of 0.122 µg/L, which is less than then CUL of 0.4 µg/L. Historically, the mean concentration of vinyl chloride in CW-01S is 0.61 µg/L ranging from 0.02 to 2.4 µg/L. Concentrations of vinyl chloride in CW-01S have been less than the CUL since 2010. Arsenic concentrations are statistically decreasing in CW-01S.

- **CW-01D.** CW-01D is located adjacent to CW-01S and is currently only sampled for arsenic. In 2021 arsenic was detected at a concentration of 6.94 µg/L, which is greater than the CUL of 5 µg/L. Since 2010, the mean concentration of arsenic in CW-01D is 4.9 µg/L ranging from not detected to 6.9 µg/L. The concentration of arsenic exceeded the CUL in 10 of the 12 samples. Arsenic concentrations are statistically stable in CW-01D.
- **LW-06D.** LW-06D is located along Garden Avenue and is currently only sampled for arsenic. In 2021, arsenic was detected at a concentration of 9.94 µg/L, which is greater than the CUL of 5 µg/L. Historically, the mean concentration of arsenic in LW-06D is 8.7 µg/L ranging from not detected to 10.4 µg/L. The concentration of arsenic exceeded the CUL in 11 of the 12 samples. There is no statistically significant recent trend in arsenic concentrations in LW-06D since 2010. Arsenic concentrations are statistically stable in LW-06D.
- **LW-09S.** LW-09S is located along Garden Avenue and is currently only sampled for arsenic. In 2021, arsenic was detected at 5.83 µg/L, which is greater than the CUL of 5 µg/L. Historically, the mean concentration of arsenic in LW-09S is 14 µg/L ranging from not detected to 19.2 µg/L. The arsenic concentration exceeded the CUL in all the samples and the hot spot CUL was exceeded in eight samples. There is a recent trend of decline in arsenic concentrations in LW-09S as concentrations have declined from 14.8 to 5.83 µg/L since 2010. There is a statistically significant decreasing trend in arsenic concentrations in LW-09S.
- **LW-09D.** LW-09D is located adjacent to LW 09S is currently only sampled for arsenic and vinyl chloride. Arsenic was detected at 9.51 µg/L, which is greater than the CUL of 5 µg/L. Since 2010, the mean concentration of arsenic in LW-09D is 8.5 µg/L ranging from 7.5 to 9.5 µg/L. The arsenic concentration exceeded the CUL in all the samples. Arsenic concentrations in LW-09D as concentrations have increased from 9 to 9.51 µg/L since 2015. There is a statistically significant increasing trend in arsenic concentrations in LW-09D.

Vinyl chloride was detected in 2021 at a concentration of 0.375 µg/L, which is less than then CUL of 0.4 µg/L. Historically, the mean concentration of vinyl chloride is LW-09D is 0.7 ranging from 0.2 to 1.6 µg/L. There is a probable statistically significant decreasing trend in vinyl chloride concentrations in LW-09D.

- **MW-03I.** MW-03I is located on the south side of Site along 4th Avenue and is currently only sampled for arsenic. In 2021, arsenic was detected at 18.1 µg/L, which is greater than the CUL of 5 µg/L. Since 2010, the mean concentration of arsenic in MW-3I is 14.6 ranging from 10 to 18.1 µg/L. The arsenic concentration exceeded the CUL and hot spot CUL all 12 samples. There is a recent visual trend of increasing arsenic concentrations in MW-3I as concentrations have increased from 13.7 to 18.1 µg/L since 2019. However, arsenic concentrations measured in the well between 1998 and 2018 ranged from 10 to 37.4 µg/L so these recent concentrations fall well within the range of historic arsenic values. There is no statistically significant trend in arsenic concentrations in MW-03I.

Table 1-5. Summary of Groundwater Trend Analysis		
Monitoring Well	Arsenic	Vinyl Chloride
CW-01S	Probable Decreasing	Decreasing
CW-01D	Stable	--
LW-06D	Stable	--
LW-09S	Decreasing	--
LW-09D	Increasing	Probable Decreasing
MW-03I	No Trend	--

2.4 SOURCE OF ARSENIC IN GROUNDWATER

The soil, surface water, and groundwater remedies are summarized in the cleanup action plan (Ecology 1991). Soil with high levels of contamination of total petroleum hydrocarbons, arsenic, chromium, and lead were excavated, treated and contained on Site. Soil cleanup actions were completed in 1997. Confirmational groundwater monitoring began in 1998 and continues to the present governed by the CMIP. Ecology has completed periodic reviews of the project in 2009, 2014, and 2021.

The Cleanup Action Plan (CAP) listed the groundwater contaminants of concern as arsenic, lead, benzene, and vinyl chloride. In addition, the CAP identified chromium, CPAHs, PCBs, and TPH to be of potential concern because of their presence in soil and stabilized materials. Pentachlorophenol was also identified as being of potential concern because it was detected in ground-water samples from several wells. Except for arsenic, the contaminants of concern have not been detected or detected below CULs. The groundwater arsenic CUL has not been achieved in the majority of confirmation wells.

During the remedial investigation (RI [Hart Crowser 1989]), 280 soil samples were analyzed for arsenic. Total arsenic concentrations ranged from 1 mg/kg to 180 mg/kg with the majority of soil sample concentrations falling within the 2 mg/kg to 10 mg/kg range. For reference the Puget Sound background concentration for arsenic in soils is approximately 7 mg/kg (Ecology 1994) and the Method A soil CUL is 20 mg/kg. Only six soil samples exceeded 100 mg/kg. These elevated concentrations of arsenic were encountered within localized areas in the upper 7 feet of soil. Arsenic concentrations were relatively low (<10 mg/kg) at depths exceeding 7 feet. Leaching test results using the EP Tox test were all less than detected (<0.2 mg/L). The hot spots with elevated arsenic concentrations were removed, treated, and stabilized on-site during cleanup.

Arsenic is a naturally occurring element that is often detected in groundwater systems (Ecology 2022). The solubility of arsenic is, in part, affected by pH and Eh (redox potential) of water (Welch et al. 1988). In water, arsenic is generally present as arsenate [As(V)], arsenite [As(III)], or both depending on pH and Eh conditions. Under reducing conditions, arsenite would be the predominant species present. Arsenite compounds are reported to be four to ten times more soluble in water than arsenate compounds (Bodek et al. 1988).

Relatively high ferrous iron concentrations and low dissolved oxygen concentrations were detected in most of the confirmational wells. This indicates reducing conditions are present in groundwater beneath the Site (Hem 1985). Arsenic in groundwater at the Site is likely due to presence of anoxic, reducing conditions, which permit the reduction of iron oxyhydroxides (FeOOH). The naturally occurring arsenic that is sorbed to FeOOH is released to solution when the FeOOH is reduced (Nickson et al. 2000; Ravenscroft et al. 2001]. Reduction of FeOOH is a natural process that is driven by microbial metabolism

of organic matter, (see Nealson 1997; Chapelle 2000) and is accompanied by microbial reduction of arsenate to arsenite (Zobrist et al. 2000).

The presence of organic materials such as peat in area soils fosters reducing conditions in Site groundwater. Peat beds are common in the river-valley deposits and was frequently found in borings at the Site. It is likely that the distribution of peat beds in the aquifer sediments may be the main control on the distribution of arsenic in groundwater. Many of the RI boring logs document the presence of interbedded peat, clay, silt, and sand deposits (Hart Crowser 1989).

Arsenic occurs in the majority of confirmation wells but there is no discernible spatial or temporal concentration trends that are indicative of a contaminant release. The historical use of arsenic at the Site cannot explain the widespread distribution of arsenic in groundwater. The relatively small amount of soil containing high arsenic concentrations were excavated and stabilized on-site approximately 25 years ago. High concentrations of potentially leachable arsenic are no longer present at the Site. The available data do not indicate that an arsenic plume is being generated at the PACCAR Site. Rather, the data indicate that naturally occurring arsenic in soil is being mobilized by the reducing conditions in groundwater in the vicinity of the Site.

The primary receptor of concern with respect to arsenic migration is the City of Renton wellfield located south of the PACCAR Renton site. A conservative risk assessment (RA) was performed during completion of the RI that concluded the risks from migration of arsenic to the wellfield were minimal based on conditions present in the late 1980s. The City of Renton regularly monitors the water supply for over 120 compounds and reports the results in the annual Drinking Water Quality report. Data is available since 2002 shows that the COCs or other constituents which have been monitored as part of the PACCAR's compliance monitoring program have either not been detected or detected at concentrations less than the applicable state and federal water quality standards.

A comparison of arsenic concentrations in groundwater and other information collected since the RI was completed (approximately 20 years ago) indicate the remedy is still protective. For example, groundwater flow directions have not changed, and arsenic concentrations in wells have not increased. CUL exceedances in arsenic do not warrant additional cleanup actions. The distribution of arsenic and the geochemical conditions in groundwater beneath the Site suggest that arsenic concentrations are controlled by natural occurring processes (Ecology 2009, 2014)

2.5 IS THE SURFACE COVER PROTECTIVE OF GROUNDWATER?

After soil treatment activities were completed, a protective cover was installed over all treated and nontreated soils. The protective surface cover consists of a layer of compacted imported structural fill material with a minimum thickness of 12 inches. Buildings and pavement provide an additional protective cover over the Site. The purpose of the cover is to minimize the possibility of uncontrolled contact with contaminated soil, the creation of contaminated dust, and the erosion and off-site migration of contaminated soil via surface water flow (Ecology 1991). Because the Site has limited impact to groundwater, the removal of and treatment of hot spot soils reduced the potential for leaching and transport of contaminants to groundwater.

The protective soil remedy has been successful because, excluding arsenic, monitored groundwater contaminants of concern (including lead, benzene and vinyl chloride) have either been not detected or detected at concentration below respective CULs. Although the CUL for arsenic has not been met,

arsenic concentrations have not increased, and the distribution of arsenic indicate that concentrations in groundwater are the result of natural conditions. The surface cover continues to be an effective remedy for protecting groundwater.

3. Surface Water Monitoring

This section presents the results of the surface water monitoring event conducted in accordance with the CMIP and the Periodic Review. Samples were collected from five storm sewer manholes on 21 October 2021. Chemical test results are compiled in Table 2-1, and the sampling locations are shown with the generalized storm sewer configuration on Figure 2-1. The data quality review and laboratory report (ARI# 20I0358) are provided in Appendices B and C, respectively. Appendix E includes surface water quality summary charts for each well sampled as part of the October 2021 sampling program. The charts summarize the historical surface water sampling results.

3.1 OCTOBER 2021 SAMPLING RESULTS

Surface water monitoring was conducted on 21 October 2021, for metals (total copper, lead and zinc, and hexavalent chromium) at the five locations (Figure 2-1) identified in the CMIP to assess whether any long-term changes are occurring. The October 2021 surface sampling results are presented below.

- **SW-MH.** SW-MH represents municipal stormwater coming onto the Site from off-site and upstream sources. SW-MH is sampled from a concrete vault at the southeast corner of the Site, which access the municipal storm drain. The municipal storm drain traverses the Site from south to north, leaving the Site at the north discharge point (SW-3). Surface water from the Site does not drain into the municipal storm drain as it traverses the Site. SW-MH was included for informational purposes.

Copper, lead and zinc concentrations detected in stormwater collected from SW-MH in October 2021 exceed the surface water CULs.

- **SW-3.** SW-3 is located at the north discharge point. SW-3 represents treated and untreated surface water generated from the Site and the municipal storm drain which carries untreated stormwater northward across the Site from untreated off-site sources. This location is not identified in the CMIP and is sampled for informational purposes.

Metal concentrations detected from SW-3 in October 2021 were less than the surface water CULs.

- **SW-DP.** SW-DP is sampled at the outlet of the north treatment facility. Stormwater from this location is derived from the Truck Plant and associated parking lot and was included in the CMIP for “informational purposes” only. This was because stormwater is derived from paved surfaces associated with the truck plant and discharge is regulated under a stormwater discharge permit.

Zinc was detected in stormwater collected from SW-DP in October 2021 at a concentration exceeding the surface water CUL. Detected copper and lead concentrations were below surface water CULs.

- **SW-6.** SW-6 is sampled from a manhole which represents stormwater from the area where Building 17 was formerly located. Building 17 was demolished and removed from the site in 2013.

Copper, lead and zinc concentrations were detected from SW-6 in October 2021 below the surface CULs.

Since 2016 metals concentrations have been below the CULs.

- **SW-5.** Stormwater from the south half of the Site is sampled at a manhole designated SW-5. The CMIP specifies that water quality from SW-5 will be compared to cleanup levels for compliance purposes and represented (in 1991) runoff from the structural fill cover that covered contaminated soil. Currently, surface water at SW-5 is generated from the Kenworth Research and Development (R&D), PACCAR Part Distribution Warehouse (PDW), and Active facilities as well as a portion of the undeveloped area at the southwest corner of site.

The CMIP specifies that water quality from SW-5 will be compared with CULs for compliance purposes. The detected copper (0.00215 mg/L), lead (0.000551 mg/L) and zinc (0.0164 mg/L) concentrations in the sample collected from SW-5 did not exceed the CULs. Hexavalent chromium was not detected in SW-5.

3.2 HISTORICAL SURFACE WATER SAMPLING RESULTS

Surface water monitoring have been samples for metals (total copper, lead and zinc, and hexavalent chromium) at the five locations (Figure 2-1) identified in the CMIP to assess whether any long-term changes are occurring. Sampling began in 1998 after completion of cleanup activities at the site in 1997. Hexavalent chromium is not discussed since it has not been detected in any samples. The following discussion of historical sampling results and Mann-Kendall trend analysis (Table 2-2) are based on sampling since 2005 when post-construction conditions stabilized.

- **SW-5.** Stormwater from the south half of the Site is sampled at a manhole designated SW-5. Currently, surface water at SW-5 is generated from the Kenworth R&D, PACCAR PDW, and Active facilities as well as a portion of the undeveloped area at the southwest corner of site. The CMIP specifies that water quality from SW-5 will be compared with CULs for compliance purposes.

Since 2005, copper, lead and zinc concentrations have not exceeded the CULs with some minor exceptions. Between 2015 and 2017 some exceedances of copper, lead and zinc concentrations occurred. This time period coincided with construction of the PACCAR parts distribution warehouse, which was completed in 2017. Other than during this period of construction disturbance, the surface cover has been effective at minimizing stormwater impacts based on surface water sampling at the point of compliance. Copper and zinc concentrations are statistically stable and lead concentrations are probably declining in SW-5.

- **SW-MH.** SW-MH represents municipal stormwater coming onto the Site from off-site and upstream sources. As mentioned previously, surface water from the Site does not drain into the municipal storm drain as it traverses the Site. SW-MH was included for information purposes.

Copper, lead and zinc have generally been detected at concentration above the CULs during most of the stormwater sampling events. Copper, lead and zinc concentrations are statistically declining in SW-MH.

- **SW-3.** SW-3 is located at the north discharge point. SW-3 represents treated and untreated surface water generated from the Site and the municipal storm drain which carries untreated stormwater northward across the Site from untreated off-site sources. This location was sampled for informational purposes.

Since 2005, only two water samples collected from SW-3 have detected copper concentration exceeding the CUL (2015 and 2020). Lead concentrations generally have been detected above the CUL at concentrations ranging from 0.0017 to 0.006 µg/L. Since 2005, zinc concentration have ranged from 0.005 to 0.131 mg/L with roughly half of the samples exceeding CULs. Copper

and zinc concentrations are statistically stable and statistically lead concentrations are probably decreasing in SW-3.

- **SW-DP.** SW-DP is sampled at the outlet of the north treatment facility. Stormwater from this location is derived from the Truck Plant and associated parking lot and was included in the CMIP for “informational purposes” only.

Copper and lead concentrations have been detected below the respective CULs. The zinc concentrations have been variable but generally above the CULs. Copper and lead concentrations are statistically stable and there is no statistical trend in zinc concentrations in SW-DP.

- **SW-6.** SW-6 is sampled from a manhole which represents stormwater from the area where Building 17 was formerly located. Building 17 was demolished and removed from the site in 2013.

Copper, lead and zinc concentrations were below CULs except between 2014 to 2017 during construction of the PACCAR parts warehouse completed in 2017. Copper concentrations trends are statistically stable, lead concentration are declining and there is no trend in zinc concentrations in SW-6.

Surface water quality CULs have generally been met at SW-5, the established point of compliance, as well as at SW-6. Exceedances of CULs were noted in selected metals during the period of construction of the PACCAR parts distribution center between 2015 and 2017. Following construction completion, stormwater metals concentrations have dropped below respective CULs.

Table 2-2. Summary of Surface Water Trend Analysis			
Monitoring Well	Copper	Lead	Zinc
SW-5	Stable	Probable Decreasing	Stable
SW-3	Stable	Probable Decreasing	Stable
SW-6	Stable	Decreasing	No Trend
SW-DP	Stable	Stable	No Trend
SW-MH	Decreasing	Decreasing	Decreasing

4. Paccar Structural Fill Cover Monitoring Field Inspection and Observation Form

The structural fill and pavement covers are monitored annually to document their condition and note areas where repair or maintenance is necessary. An engineer or technician conducted a site walk to observe and document the following:

- Conditions of paved area (settlement, ruts, cracks, other) and
- Disturbance in areas of planted cover (erosion, excavation, vegetation, other).

4.1 FIELD INSPECTION OBSERVATIONS

Date of Field Inspection: 20 October 2021
Weather Conditions: Cloudy
Inspection Personnel: Andrew Nakahara
Senior Staff Environmental Engineer

Construction was completed and a new building and soil stockpiles are present. Areas around the building appear to be in good condition, with no obvious signs of settlement or cracking in asphalt cover. The new stockpile area has a planted cover with good development of grass and shows no signs of settlement or erosion.

4.2 RECOMMENDED ACTIONS AND FOLLOW-UP

4.2.1 Areas Needing Repair

Review site conditions in 2022.

4.2.2 Documentation of Repair Completion

No Repairs Required.

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TABLES

Table 1-1 – Groundwater Monitoring Program for 2021

		2021	
	Well	VOC ^a	Arsenic
Confirmation Lower Sand/Delta Deposits			
	CW-1D		X
	LW-6D		X
	LW-9D	X	X
Confirmation Upper Sand/Aquitard Wells			
	CW-1S	X	X
	LW-9S		X
	MW-3I		X
Stabilized Cell Wells			
	SC-1S		
	SC-2S		
Quality Control Samples			
		X	X
Purge Water Samples			
		X	X

Notes

^a VOC is vinyl chloride.

Water elevations were measured in approximately 27 wells.

All wells with samples submitted for laboratory analysis had the following field parameters measured: temperature, pH, conductivity, turbidity, dissolved oxygen, and redox potential.

Purge water samples analyzed for VOCs, arsenic, lead, total chromium, and TPH.

Table 1-2 – Groundwater Elevation Data, October 2021

Well	Depth to Water in Feet	Reference Elevation in Feet	Water Elevation in Feet
CW-1D	4.75	26.18	21.43
CW-1S	4.61	26.14	21.53
CW-3D	10.31	31.39	21.08
CW-3S	9.33	32.04	22.71
DM-2D	6.38	28.40	22.02
DM-5D	7.58	40.13	32.55
LW-14S	23.43	45.37	21.94
LW-1D	4.20	25.98	21.78
LW-1S	3.23	25.84	22.61
LW-2D	NM	28.78	NM
LW-2S	5.50	28.98	23.48
LW-4S	7.33	39.87	NM
LW-6D	8.42	30.58	22.16
LW-6S	NM	29.70	NM
LW-7S	NL	33.74	NL
LW-9D	10.76	31.95	21.19
LW-9S	10.34	32.12	21.78
MW-1S(N)	4.74	26.56	21.82
MW-2D(R)	6.76	29.43	22.67
MW-2S(W)	DRY	28.85	DRY
MW-3I(N)	11.56	34.39	22.83
MW-3S(S)	DRY	34.39	DRY
OSP-10D	14.12	40.74	26.62
OSP-1D	12.54	41.51	28.97
OSP-1S	9.80	41.44	31.64
OW-4D	21.89	43.48	21.59
OW-4S	21.35	43.49	22.14
R-10D	9.08	35.15	26.07
R-10S	10.58	36.24	25.66
SC-1S	5.50	37.78	32.28
SC-2S	14.40	40.52	26.12
U-1D	10.40	30.29	19.89
U-1S	NL	29.86	NL

Notes*NL = Not located.**NM = Not measured.*

Table 1-3 - Summary of Groundwater Analytical Data

Sheet 1 of 7

Well	Date	Arsenic in µg/L	Lead in µg/L	Chromium in µg/L	Benzene in µg/L	Vinyl Chloride in µg/L	Total cPAHs ^a in µg/L	PCP * in µg/L	Diesel in mg/L	Heavy Oil in mg/L	Ferrous Iron ^b in mg/L	Temp. in °C	pH	Diss. Oxygen in mg/L	Cond. in µmhos /cm	Redox Potential in Eh	Turbidity in NTU	TSS in mg/L
CUL:		5	5	80	5	0.4	0.1		1	1	NE	NE	NE	NE	NE	NE	NE	NE
HSAL:		50	50	100	5	2	NE		NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Confirmation Lower Sand/Delta Deposits																		
CW-01D	3/24/98	4.1	-	-	0.5 U	0.13 U	-	-	0.24 U	0.71 U	-	-	-	-	-	-	-	-
	10/20/98	2 U	-	-	0.5 U	0.12 J	-	-	0.24 U	0.48 U	-	-	-	-	-	-	-	-
	3/4/99	3.2 +	-	-	0.5 U	0.039 U	-	-	0.24 U	0.71 U	-	-	-	-	-	-	-	-
	10/19/99	6.3	1 U	10 U	0.5 U	0.2	-	-	0.24 U	0.71 U	-	14	6.8	-	580	-	-	-
	5/18/00	6	-	-	0.2 U	0.4	-	-	0.25 U	0.5 U	-	14	6.8	-	560	-	-	-
	3/19/01	5.8	-	-	0.2 U	0.2	-	-	0.25 U	0.5 U	-	-	-	-	-	-	-	-
	3/25/02	7.9	-	-	0.2 U	0.6	-	-	0.25 U	0.5 U	-	12	7.1	-	780	-	0.08	-
	10/16/02	-	-	-	-	-	-	-	-	-	-	15.8	6.7	-	760	-	0.18	-
	4/2/03	6.7	1 U	1 U	0.2 U	0.2	0.15 U	-	0.25 U	0.5 U	4	13.2	6.8	1.18	442	-	28	-
	3/31/04	8.2	-	-	0.2 U	0.3	-	-	-	-	55.5	13.4	6.2	0.01	496	-34	12	74.5
	4/13/05	6.1	-	-	-	-	-	-	-	-	46.4	14.4	6.5	0.1	283	18	0	31.5
	3/28/06	5.1	-	-	-	-	-	-	-	-	52.5	13.9	6.2	0.26	448	25	0	51.9
	3/27/07	6.2	-	-	-	-	-	-	-	-	45.2	13.3	5.2	0.11	417	62	0	31.6
	4/1/10	5.6	-	-	-	-	-	-	-	-	52	13.1	7.1	0.26	-	-100	293	54.4
	3/29/11	5.7	-	-	-	-	-	-	-	-	43.8	12.8	6.4	<0.01	270	-	10	48.2
	3/22/12	5.5	-	-	-	-	-	-	-	-	46.4	12.9	6.1	<0.01	727	-165	16.3	40
	11/15/12	-	-	-	-	0.14	-	-	-	-	48.4	13.9	6.3	1.15	332	-132	21	85.4
	3/12/13	5.4	0.3	1 U	0.02 U	0.1	0.2 U	0.25 U	0.1 U	0.2 U	55	13.1	9.9	<0.01	423	-13	24.9	80
	4/2/14	5.8	-	-	-	0.1	-	-	-	-	49.8	12.91	6.3	<0.01	410	-80	76.2	76.2
	4/15/15	5.4	-	-	-	-	-	-	-	-	-	13.99	6.2	<0.01	433	-88	13.9	-
	3/10/16	0.4	-	-	-	0.02 U	-	-	-	-	-	13.61	6.6	0.01	797	-8	1.4	-
	4/11/17	6.29	-	-	-	-	-	-	-	-	-	13.55	6.2	<0.01	°	-79	21	-
	4/17/18	5.16	-	-	-	-	-	-	-	-	-	13.6	6.0	0.09	477.1	0	220	-
	6/21/19	1.47	-	-	-	-	-	-	-	-	-	15.6	6.4	0.48	165.5	-25	42.4	-
	8/17/20	5.39	-	-	-	-	-	-	-	-	-	17.4	6.2	0.4	506	24	37	-
	10/19/21	6.94	-	-	-	-	-	-	-	-	-	16.3	6.29	0.32	517	-93	216	-

Table 1-3 - Summary of Groundwater Analytical Data

Sheet 2 of 7

Well	Date	Arsenic in µg/L	Lead in µg/L	Chromium in µg/L	Benzene in µg/L	Vinyl Chloride in µg/L	Total cPAHs ^a in µg/L	PCP * in µg/L	Diesel in mg/L	Heavy Oil in mg/L	Ferrous Iron ^b in mg/L	Temp. in °C	pH	Diss. Oxygen in mg/L	Cond. in µmhos /cm	Redox Potential in Eh	Turbidity in NTU	TSS in mg/L
CUL:		5	5	80	5	0.4	0.1		1	1	NE	NE	NE	NE	NE	NE	NE	NE
HSAL:		50	50	100	5	2	NE		NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
LW-06D	3/26/98	11	-	-	0.5 U	0.13 U	-		0.24 U	0.71 U	-	-	-	-	-	-	-	-
	10/22/98	12	-	-	0.5 U	0.08 J	-	-	0.24 U	0.47 U	-	-	-	-	-	-	-	-
	3/5/99	3.1	-	-	0.5 U	0.039 U	-	-	0.24 U	0.71 U	-	-	-	-	-	-	-	-
	10/19/99	10	1 U	10 "	0.5 U	0.099 J	-	-	0.24 U	0.71 U	-	14.1	6.4	-	530	-	-	-
	5/23/00	9	-	-	0.2 U	0.2 U	-	-	0.25 U	0.5 U	-	13	7.2	-	690	-	-	-
	3/16/01	10.8	-	-	0.2 U	0.2 U	-	-	0.25 U	0.5 U	-	14	7.1	-	900	-	0.14	-
	3/21/02	8.8	-	-	0.2 U	0.2 U	-	-	0.25 U	0.5 U	-	13	7.1	-	860	-	0.08	-
	4/3/03	3.3	1 U	1	0.2 U	0.2 U	0.15 U	-	0.25 U	0.5 U	4	11.4	6.9	1.25	454	-	18	-
	3/31/04	14.2	-	-	-	-	-	-	-	-	56.0	13.0	6.1	0.02	524	-2	27	93.0
	4/12/05	10.2	-	-	-	-	-	-	-	-	59.5	13.2	6.3	0.08	548	-15	0	38.9
	3/31/06	11.2	-	-	-	-	-	-	-	-	62.5	13.7	6.2	0.16	459	-10	0	20.3
	3/29/07	11.1	-	-	-	-	-	-	-	-	58.0	14.0	5.8	0.11	554	107	0	40.8
	3/26/08	9.8	-	-	-	-	-	-	-	-	49.6	11.1	6.7	0.52	436	-35	0	-
	3/26/09	10.4	-	-	-	-	-	-	-	-	63	13.36	5.6	2.64	764	-118	32	55
	4/2/10	10.4	-	-	-	-	-	-	-	-	62	12.5	7.1	<0.01	445	-83	160	58.4
	3/31/11	9.7	-	-	-	-	-	-	-	-	63	13	6.1	0.05	382	-61	10	70
	3/23/12	9.1	-	-	-	-	-	-	-	-	61.5	13.3	6.0	<0.01	724	-160	6.2	54.2
	3/13/13	9.1	0.1 U	1 U	0.025	0.14	0.2 U	-	0.1 U	0.2 U	65	13.18	8.6	<0.01	508	57	9.9	67.8
	4/2/14	7.8	-	-	-	-	-	-	-	-	56.5	14.01	6.3	0.01	527	-102	115.5	34.6
	4/15/15	7.8	-	-	-	-	-	-	-	-	-	14.05	6.2	<0.01	529	-189	25.4	-
	3/10/16	8.0	-	-	-	0.24	-	-	-	-	-	13.72	6.2	<0.01	533.9	-11	10.9	-
	4/11/17	10.0	-	-	-	-	-	-	-	-	-	13.71	6.1	<0.01	°	-101	4.0	-
	4/17/18	9.2	-	-	-	-	-	-	-	-	-	13.7	6.21	0.14	682	0	378	-
	6/21/19	4.57	-	-	-	-	-	-	-	-	-	14.6	6.25	0.7	542	-62.6	32.2	-
	8/17/20	9.26	-	-	-	-	-	-	-	-	-	15.7	6.4	0.4	723	-6.3	3.9	-
	10/19/21	9.94	-	-	-	-	-	-	-	-	-	16	6.21	0.37	730	-92	11.6	-

Table 1-3 - Summary of Groundwater Analytical Data

Sheet 3 of 7

Well	Date	Arsenic in µg/L	Lead in µg/L	Chromium in µg/L	Benzene in µg/L	Vinyl Chloride in µg/L	Total cPAHs ^a in µg/L	PCP * in µg/L	Diesel in mg/L	Heavy Oil in mg/L	Ferrous Iron ^b in mg/L	Temp. in °C	pH	Diss. Oxygen in mg/L	Cond. in µmhos /cm	Redox Potential in Eh	Turbidity in NTU	TSS in mg/L
CUL:		5	5	80	5	0.4	0.1		1	1	NE	NE	NE	NE	NE	NE	NE	NE
HSAL:		50	50	100	5	2	NE		NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
LW-09D	3/26/98	9.5	-	-	0.5 U	0.97 J	-	0.82 U	0.24 U	0.71 U	-	-	-	-	-	-	-	-
	10/21/98	7.6	-	-	0.5 U	0.7 J	-	0.8 U	0.24 U	0.47 U	-	-	-	-	-	-	-	-
	3/7/99	7.9	-	-	0.5 U	0.86	-	0.9 U	0.24 U	0.71 U	-	-	-	-	-	-	-	-
	10/19/99	3.3	1 U	10 U	0.5 U	0.4 J	-	-	0.32	0.71 U	-	14.6	7.4	-	450	-	-	-
	5/24/00	9	-	-	0.2 U	0.3	-	-	0.25 U	0.5 U	-	14	6.7	-	740	-	-	-
	10/12/00	-	-	-	0.2 U	0.9	-	-	-	-	-	14	7.2	-	640	-	-	-
	3/15/01	9.4	-	-	0.2 U	0.9	-	-	0.25 U	0.5 U	-	14	6.8	-	590	-	0.14	-
	10/31/01	-	-	-	0.2 U	0.5	-	-	-	-	-	14	6.8	-	560	-	0.14	-
	3/20/02	11.4	-	-	0.2 U	1.6	-	-	0.25 U	0.5 U	-	13	8.0	-	910	-	0.11	-
	10/16/02	-	-	-	0.2 U	0.9	-	-	-	-	5.8	14.1	6.9	1.1	510	-	0.14	-
	4/4/03	0.9	1 U	1 U	0.2 U	0.2 U	0.15 U	0.25 U	0.25 U	0.5 U	3.4	12.6	7.3	0.71	389	-	12	-
	10/7/03	-	-	-	0.2 U	0.7	-	-	-	-	-	13	7.3	-	680	-	0.18	-
	3/31/04	12.2	-	-	0.2 U	1.1	-	-	-	-	54.5	12.2	6.2	0.22	523	-22	13	77.5
	10/20/04	-	-	-	0.2 U	1.0	-	-	-	-	52	12.6	6.2	0	528	-28	0	41.5
	4/12/05	8	-	-	0.2 U	1.3 J	-	-	-	-	54	12.5	6.4	0.05	540	-24	1	37.5
	11/3/05	-	-	-	0.2 U	0.8	-	-	-	-	52	12	6.7	0.32	517	-42	7	33.4
	3/31/06	7.7	-	-	0.2 U	0.8	-	-	-	-	53.5	12.6	6.3	0.12	433	-20	0	18.2
	3/27/07	8.5	-	-	0.2 U	0.9	-	-	-	-	-	12.2	6.0	0.19	541	54	0	-
	3/26/08	8.3	-	-	-	1.2	-	-	-	-	46.7	11.7	6.8	0.48	427	-15	0	-
	3/26/09	8.4	-	-	-	1.2	-	-	-	-	55.5	12.24	5.7	2.56	729	-129	48	36.4
	10/27/09	8	-	-	-	0.71	-	-	-	-	52.7	12.44	9.3	3.33	617	-146	20	51.1
	4/2/10	8.4	-	-	-	0.5	-	-	-	-	55	11.5	7.2	0	428	-90	242	41.2
	3/29/11	8.5	-	-	-	0.5	-	-	-	-	51.5	12	6.4	0.11	441	-	10	54.8
	3/23/12	7.5	-	-	-	0.32	-	-	-	-	51	11.9	6.0	0	666	-155	2.9	40
	3/15/13	8	0.1 U	0.7	0.02 U	0.41	0.2 U	0.25 U	0.1 U	0.2 U	54	12.31	7.2	0.02	491	235	59.8	62.2
	4/2/14	8.2	-	-	-	0.41	-	-	-	-	63	12.16	6.3	0.01	499.8	-65	27.6	27.7
	4/15/15	7.7	-	-	-	0.7	-	-	-	-	-	12.41	6.2	0.07	481	-192	164.8	-
	3/10/16	9.0	-	-	-	0.44	-	-	-	-	-	12.42	6.2	<0.01	478	-50	6	-
	4/11/17	8.5	-	-	-	0.35	-	-	-	-	-	12.45	6.2	<0.01	^c	-73	17.4	-
	4/17/18	9.16	-	-	-	0.35	-	-	-	-	-	12.5	6.3	0.14	639	0	-	-
	6/20/19	9.12	-	-	-	0.52	-	-	-	-	-	12.9	6.3	0.29	574	-71	116.6	-
	8/17/20	8.95	-	-	-	0.311	-	-	-	-	-	14.9	6.5	0.43	674	-0.1	11.9	-
	10/19/21	9.51	-	-	-	0.375	-	-	-	-	-	13.4	6.22	0.32	675	-93	44.4	-

Table 1-3 - Summary of Groundwater Analytical Data

Sheet 4 of 7

Well	Date	Arsenic in µg/L	Lead in µg/L	Chromium in µg/L	Benzene in µg/L	Vinyl Chloride in µg/L	Total cPAHs ^a in µg/L	PCP * in µg/L	Diesel in mg/L	Heavy Oil in mg/L	Ferrous Iron ^b in mg/L	Temp. in °C	pH	Diss. Oxygen in mg/L	Cond. in µmhos /cm	Redox Potential in Eh	Turbidity in NTU	TSS in mg/L
CUL:		5	5	80	5	0.4	0.1		1	1	NE	NE	NE	NE	NE	NE	NE	NE
HSAL:		50	50	100	5	2	NE		NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Confirmation Upper Sand/Aquitard Wells																		
CW-01S	3/24/98	8.7	-	-	0.5 U	0.38 J	-	-	0.3	0.71 U	-	-	-	-	-	-	-	-
	10/20/98	6.6	-	-	0.62	0.86 J	-	-	0.24 U	0.47 U	-	-	-	-	-	-	-	-
	3/4/99	4.9	-	-	0.5 U	0.53	-	-	0.24 U	0.72 U	-	-	-	-	-	-	-	-
	10/19/99	7.1	1 U	10 U	0.53	0.63 J	-	-	0.24 U	0.71 U	-	14.9	6.6	-	550	-	-	-
	5/18/00	9	-	-	0.6	0.9	-	-	0.25 U	0.5 U	-	15	7.0	-	810	-	-	-
	3/19/01	8.7	-	-	0.7	1.3	-	-	0.25 U	0.5 U	-	-	-	-	-	-	-	-
	3/25/02	11.5	-	-	0.7	2.4	-	-	0.27	0.5 U	-	12	7.1	-	820	-	0.06	-
	10/16/02	-	-	-	-	-	-	-	-	-	-	16.1	6.6	-	580	-	0.14	-
	4/2/03	8.7	1 U	1	0.4	0.9	0.26 U	-	0.25 U	0.5 U	4	13.9	6.8	1.51	408	-	29	-
	10/7/03	-	-	-	0.2 U	0.6	-	-	-	-	-	14	6.9	-	770	-	0.09	-
	3/31/04	12.0	-	-	0.2	0.9	-	-	-	-	48.2	13.5	6.2	0.06	484	-7	30	72.5
	4/13/05	8.7	-	-	0.2 U	0.9	-	-	-	-	48.4	14.8	6.4	0.1	480	5	2	34.4
	3/28/06	8.1	-	-	0.2 U	0.9	-	-	-	-	46.6	14.2	6.5	0.2	524	9	0	33.5
	3/27/07	8.2	-	-	0.2 U	0.7	-	-	-	-	46.2	13.1	5.8	0.02	398	72	0	32.8
	3/27/08	8.1	-	-	-	0.63	-	-	-	-	37.6	12.3	6.6	0.67	379	-7	0	-
	3/24/09	8	-	-	-	0.54	-	-	-	-	0.999	12.83	5.8	2.2	665	-135	10	40.7
	4/1/10	8.1	-	-	0.2 U	0.4	-	-	-	-	49.7	13.1	7.0	<0.01	-	-94	333	69.6
	3/29/11	8.1	-	-	-	0.64	-	-	-	-	50.5	13.2	6.4	<0.01	440	-	10	48.7
	3/22/12	4.7	-	-	-	0.3	-	-	-	-	22.6	13.3	6.0	<0.01	441	-113	4.6	13.7
	3/12/13	7	0.2	1 U	0.023	0.62	0.2 U	-	0.16	0.2 U	52.5	13.01	9.9	0.01	464.3	3	1.2	48.3
	4/2/14	1.8	-	-	-	0.11	-	-	-	-	5.95	12.99	6.1	0.08	95.65	36	18	7
	4/15/15	3.6	-	-	-	0.46	-	-	-	-	-	14.4	5.9	0.08	237.5	-117	42.4	-
	3/10/16	0.4	-	-	-	0.02 U	-	-	-	-	-	13.13	6.6	6.4	163	71	18.1	-
	4/11/17	4.39	-	-	-	0.244	-	-	-	-	-	13.96	5.9	<0.01	374.9	7	3.6	-
	4/17/18	0.884	-	-	-	0.0243 J	-	-	-	-	-	13.8	5.7	1.83	37.3	321	10	-
	6/21/19	1.67	-	-	-	0.2 U	-	-	-	-	-	18.2	6.5	6.24	59.7	82.6	29.4	-
	8/13/20	7.3	-	-	-	0.259	-	-	-	-	-	17	6.2	0.3	544	28	49	-
	10/19/21	4.44	-	-	-	0.122	-	-	-	-	-	15.9	6.1	0.46	315	-57	16.7	-

Table 1-3 - Summary of Groundwater Analytical Data

Sheet 5 of 7

Well	Date	Arsenic in µg/L	Lead in µg/L	Chromium in µg/L	Benzene in µg/L	Vinyl Chloride in µg/L	Total cPAHs ^a in µg/L	PCP * in µg/L	Diesel in mg/L	Heavy Oil in mg/L	Ferrous Iron ^b in mg/L	Temp. in °C	pH	Diss. Oxygen in mg/L	Cond. in µmhos /cm	Redox Potential in Eh	Turbidity in NTU	TSS in mg/L
CUL:		5	5	80	5	0.4	0.1		1	1	NE	NE	NE	NE	NE	NE	NE	NE
HSAL:		50	50	100	5	2	NE		NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
LW-09S	3/26/98	21	-	-	0.5 U	0.13 U	-	-	0.32	0.71 U	-	-	-	-	-	-	-	-
	10/21/98	17	-	-	0.5 U	0.31 J	-	-	0.36	0.47 U	-	-	-	-	-	-	-	-
	3/7/99	10 S	-	-	0.5 U	0.039 U	-	-	0.24 U	0.71 U	-	-	-	-	-	-	-	-
	10/19/99	18	1 U	10 U	0.5 U	0.22 J	-	-	0.56	0.71 U	-	13.6	6.7	-	810	-	-	-
	5/24/00	14	-	-	0.2 U	0.2 U	-	-	0.25 U	0.5 U	-	13	7.2	-	860	-	-	-
	3/15/01	19.2	-	-	0.2 U	0.2 U	-	-	0.25	0.5 U	-	14	6.3	-	720	-	0.11	-
	3/20/02	19.9	-	-	0.2 U	0.2 U	-	-	0.38	0.5 U	-	13	7.4	-	660	-	0.08	-
	10/16/02	-	-	-	-	-	-	-	-	-	-	14.1	7.0	-	600	-	0.1	-
	4/4/03	13.4	1 U	2	0.2 U	0.2 U	0.15 U	-	0.4	0.5 U	3.8	11.5	7.5	1.12	268	-	16	-
	3/30/04	17.7	-	-	-	-	-	-	-	-	61.5	11.1	5.9	0.39	420	-12	49	89.0
	4/12/05	11.6	-	-	-	-	-	-	-	-	48.8	11.4	6.6	0.07	418	-37	10	48.4
	3/30/06	8.5	-	-	-	-	-	-	-	-	36.2	11.9	6.5	0.3	299	-15	0	43.6
	3/28/07	14.8	-	-	-	-	-	-	-	-	61	10.7	6.6	0.03	367	92	46	68.2
	3/25/08	12.8	-	-	-	-	-	-	-	-	39	10	6.4	1.08	343	-140	62	-
	3/26/09	13.3	-	-	-	-	-	-	-	-	57.5	11.86	6.0	2.4	612	-127	81	46.7
	4/2/10	18.3	-	-	-	-	-	-	-	-	65	10.4	7.6	<0.01	361	-124	77	56.4
	3/31/11	17.3	-	-	-	-	-	-	-	-	61	10.6	6.4	<0.01	322	-152	10	76 J
	3/23/12	14.1	-	-	-	-	-	-	-	-	54	10.5	6.2	<0.01	570	-190	9.2	68.1
	3/15/13	13.6	0.1 U	1.8	0.02 U	0.039	0.2 U	-	0.2	0.25	50	11.46	7.5	0.03	360.1	201	42	79.3
	4/2/14	14.6	-	-	-	-	-	-	-	-	61	11.03	6.7	0.07	417	-118	33.1	76.5
	4/15/15	19.2	-	-	-	-	-	-	-	-	-	11.72	6.5	0.01	410.5	-95	47.3	-
	3/10/16	14.8	-	-	-	0.027	-	-	-	-	-	11.59	6.4	<0.01	421.6	-74	27.6	-
	4/11/17	15.3	-	-	-	-	-	-	-	-	-	11.45	6.5	<0.01	--	-111	26.8	-
	4/17/18	7.31	-	-	-	-	-	-	-	-	-	11.3	6.49	0.16	523	0	57.2	-
	6/20/19	6.1	-	-	-	-	-	-	-	-	-	12.4	6.73	0.62	428.7	-81.2	36.5	-
	8/17/20	6.98	-	-	-	-	-	-	-	-	-	14.7	6.5	0.47	595	-53.4	4.5	-
	10/19/21	5.83	-	-	-	-	-	-	-	-	-	14.2	6.48	0.36	704	-113	1.8	-

Table 1-3 - Summary of Groundwater Analytical Data

Sheet 6 of 7

Well	Date	Arsenic in µg/L	Lead in µg/L	Chromium in µg/L	Benzene in µg/L	Vinyl Chloride in µg/L	Total cPAHs ^a in µg/L	PCP * in µg/L	Diesel in mg/L	Heavy Oil in mg/L	Ferrous Iron ^b in mg/L	Temp. in °C	pH	Diss. Oxygen in mg/L	Cond. in µmhos /cm	Redox Potential in Eh	Turbidity in NTU	TSS in mg/L
CUL:		5	5	80	5	0.4	0.1		1	1	NE	NE	NE	NE	NE	NE	NE	NE
HSAL:		50	50	100	5	2	NE		NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
MW-03I	3/27/98	17	-	-	0.5 U	0.13 U	-		0.24 U	0.71 U	-	-	-	-	-	-	-	-
	10/22/98	15	-	-	0.5 U	0.15 J	-	-	0.24 U	0.47 U	-	-	-	-	-	-	-	-
	3/5/99	10	-	-	0.5 U	0.039 U	-	-	0.24 U	0.71 U	-	-	-	-	-	-	-	-
	10/20/99	19	1 U	10 U	0.5 U	0.14 J	-	-	0.34	0.71 U	-	15.7	7.3	-	430	-	-	-
	5/23/00	14	-	-	0.2 U	0.2	-	-	0.25 U	0.5 U	-	13	7.1	-	620	-	-	-
	3/16/01	18	-	-	0.2 U	0.3	-	-	0.25 U	0.5 U	-	14	7.1	-	810	-	0.19	-
	3/25/02	19.4	-	-	0.2 U	0.5	-	-	0.28	0.5 U	-	13	7.4	-	940	-	0.13	-
	10/16/02	-	-	-	-	-	-	-	-	-	-	15.4	6.9	-	410	-	0.08	-
	4/1/03	37.4	1 U	1	0.2 U	0.2 U	0.15 U	-	0.29	0.5 U	5.5	13.2	6.9	0.86	268	-	35	-
	3/30/04	18.2	-	-	0.2 U	0.2 J	-	-	-	-	49.9	13	6.0	0.35	382	-33	19	79.5
	10/20/04	19.4	-	-	-	-	-	-	-	-	50.5	15.4	6.4	0.01	404	-26	1	43.5
	4/12/05	14.9	-	-	-	-	-	-	-	-	50.5	12.8	6.5	0.16	386	-41	0	35.2
	11/2/05	17.5	-	-	-	-	-	-	-	-	49.3	15	6.9	0.36	449	-40	7	30
	3/30/06	12.8	-	-	-	-	-	-	-	-	51.5	13.8	6.3	0.14	316	-11	0	51.4
	3/28/07	12.9	1 U	1 U	0.2 U	0.2 U	0.1 U	0.25 U	0.25 U	0.5 U	46	12.6	5.7	0.1	339	103	0	47.7
	3/25/08	18.6	-	-	-	-	-	-	-	-	37	11.1	6.9	0.8	320	-31	0	-
	3/26/09	13	-	-	-	-	-	-	-	-	48	11.94	5.8	2.11	504	-119	12	27.2
	4/2/10	13.8	-	-	-	-	-	-	-	-	50	11.5	7.4	0.15	320	-92	33	60.5
	3/31/11	14.9	-	-	-	-	-	-	-	-	51	12.2	6.2	0.08	265	-	10	98.8
	3/23/12	14.7	-	-	-	-	-	-	-	-	54.5	12	6.0	<0.01	547	-148	3	45.1
	11/15/12	-	-	-	-	0.029	-	-	-	-	46.2 J	12.9	6.3	2.29	284	-105	2.6	54
	3/14/13	10.9	0.1 U	0.5	0.02 U	0.066	0.2 U	-	0.1 U	0.2 U	52.0	12.35	8.4	<0.01	343	77	7.1	58
	4/2/14	13.2	-	-	-	-	-	-	-	-	56.0	12.53	6.5	0.02	407.5	-100	3.9	33.4
	4/15/15	13.5	-	-	-	-	-	-	-	-	-	12.6	6.4	0.1	388.6	-85	5.6	-
	3/10/16	16.9	-	-	-	0.077	-	-	-	-	-	11.72	6.4	<0.01	385.3	-36	9.2	-
	4/11/17	14.7	-	-	-	-	-	-	-	-	-	12.59	6.3	<0.01	^c -67	-67	8.1	-
	4/17/18	13.9	-	-	-	-	-	-	-	-	-	12.2	6.4	0.14	501	0	30	-
	6/20/19	13.7	-	-	-	-	-	-	-	-	-	13.1	6.5	0.26	504	-68.5	23.8	-
	8/13/20	16.3	-	-	-	-	-	-	-	-	-	13.9	6.5	0.4	490	32.2	8.7	-
	10/19/21	18.1	-	-	-	-	-	-	-	-	-	15.9	6.5	0.27	583	-88	65	-

Table 1-3 - Summary of Groundwater Analytical Data

Sheet 7 of 7

Well	Date	Arsenic in µg/L	Lead in µg/L	Chromium in µg/L	Benzene in µg/L	Vinyl Chloride in µg/L	Total cPAHs ^a in µg/L	PCP * in µg/L	Diesel in mg/L	Heavy Oil in mg/L	Ferrous Iron ^b in mg/L	Temp. in °C	pH	Diss. Oxygen in mg/L	Cond. in µmhos /cm	Redox Potential in Eh	Turbidity in NTU	TSS in mg/L
CUL:		5	5	80	5	0.4	0.1		1	1	NE	NE	NE	NE	NE	NE	NE	NE
HSAL:		50	50	100	5	2	NE		NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Stabilized Cell Wells																		
SC-01S	3/25/98	4.4	2.2	10 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/21/98	3.4	1.4	5 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/7/99	4.7	1 U	10 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/19/99	5.8	1 U	10 U	-	-	-	-	-	-	-	17.2	8.2	-	190	-	-	-
	5/24/00	5	1 U	0.5 U	-	-	-	-	-	-	-	13	7.0	-	740	-	-	-
	3/15/01	5.2	1 U	0.5 U	-	-	-	-	-	-	-	13	6.8	-	620	-	0.13	-
	3/20/02	5.8	1 U	0.5 U	-	-	-	-	-	-	-	12	7.2	-	860	-	0.15	-
	10/16/02	-	-	-	-	-	-	-	-	-	-	15.1	7.1	-	610	-	0.11	-
	4/4/03	4.9	1 U	0.5 U	-	-	-	-	-	-	0.6	13.8	8.1	2.6	107	-	26	-
	4/1/04	5.4	-	-	-	-	-	-	-	-	0.043	12.4	8.2	0.19	119	162	13	4.9
	4/12/05	5.1	-	-	-	-	-	-	-	-	0.04 U	12.7	8.0	0.15	123	-42	1	1.9
	3/29/06	4.7	-	-	-	-	-	-	-	-	0.04 U	12.8	7.7	0.32	97	-49	0	1.8
	3/29/07	4.6	-	-	-	-	-	-	-	-	0.04 U	12.9	7.1	0.2	118	93	0	2.9
	3/13/13	4.6	0.1 U	1 U	-	-	-	-	-	-	0.046	11.72	8.7	0.09	105.7	70	9.3	3.3
	6/20/19	-	-	-	-	0.2 U	-	-	-	-	-	16.2	7.9	9.64	131.6	166.3	3	-
	8/13/20	5.15	-	-	-	-	-	-	-	-	-	16.2	7.86	9.64	131.6	166	3	-
SC-02S	3/26/98	4.5	1 U	10 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/21/98	4	1 U	5 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/7/99	2.6	1 U	10 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/19/99	4.7	1 U	10 U	-	-	-	-	-	-	-	16.5	-	-	-	-	-	-
	5/24/00	4	1 U	2 U	-	-	-	-	-	-	-	14	7.1	-	610	-	-	-
	3/15/01	4.1	1 U	2	-	-	-	-	-	-	-	13	6.3	-	810	-	0.17	-
	3/20/02	5.7	1 U	3.9	-	-	-	-	-	-	-	12	6.7	-	790	-	0.13	-
	10/16/02	-	-	-	-	-	-	-	-	-	-	13.4	6.5	-	560	-	0.09	-
	4/4/03	3.2	1 U	2	-	-	-	-	-	-	4.2	13	7.3	1.04	340	-	21	-
	4/1/04	4.9	-	-	-	-	-	-	-	-	36.5	12.7	6.2	0.03	386	66	18	23.2
	3/13/13	3.3	0.1 U	2	-	-	-	-	-	-	34.8	12.85	8.6	0.05	361	115	22.5	1.4
	6/21/19	-	-	-	-	0.2 U	-	-	-	-	-	13.5	6.2	0.67	476.7	-103	9.4	-
	8/13/20	3.65	-	-	-	-	-	-	-	-	-	13.5	6.15	0.67	476.7	-103	9.4	-

Notes:^a cPAHs are benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene (WAC 173-340-200). Total cPAH values presented are based on^b Ferrous iron collected in October 2002 and April 2003 were field measurements using HACH kit. Other samples were analyzed in the laboratory using EPA Method SM 3500.^c Instrument error - no data

* PCP = Pentachlorophenol

- = Sample not analyzed for specific analyte.

NE = Not established.

J = Estimated value.

U = Not selected at the detection limit noted.

See pages A-3 explanation of data qualifiers.

Table 1-4 – Groundwater Monitoring Program for 2022

		2022	
	Well	VOC ^a	Arsenic
Confirmation Lower Sand/Delta Deposits			
	CW-1D		X
	LW-6D		X
	LW-9D	X	X
Confirmation Upper Sand/Aquitard Wells			
	CW-1S	X	X
	LW-9S		X
	MW-3I		X
Stabilized Cell Wells			
	SC-1S		
	SC-2S		
Quality Control Samples			
		X	X
Purge Water Samples			
		X	X

Notes

^a VOC is vinyl chloride.

Water elevations will be measured in up to 33 wells.

Arsenic will be analyzed for total (unfiltered) and dissolved (filtered)

All wells with samples submitted for laboratory analysis will have the following parameters measured: temperature, pH, conductivity, turbidity, dissolved oxygen, and redox potential.

Purge water samples will be analyzed for VOCs, arsenic, lead, total chromium, and TPH.

Table 2-1 – Analytical Results for Surface Water Samples, October 2021

Sample ID		SW-3	SW-5	SW-6	SW-DP	SW-MD	SW-MH
Sample Date	CUL ^a	10/21/2021	10/21/2021	10/21/2021	10/21/2021	10/21/2021	10/21/2021
Total Metals in mg/L							
Copper	0.007	0.00182	0.00215	0.0025	0.0054	0.053	0.0517
Hexavalent chromium	0.011	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U
Lead	0.001	0.000072 J	0.000551	0.000105	0.000387	0.00228	0.00208
Zinc	0.047	0.022	0.0164	0.00672	0.0694	0.0996	0.0998

Notes

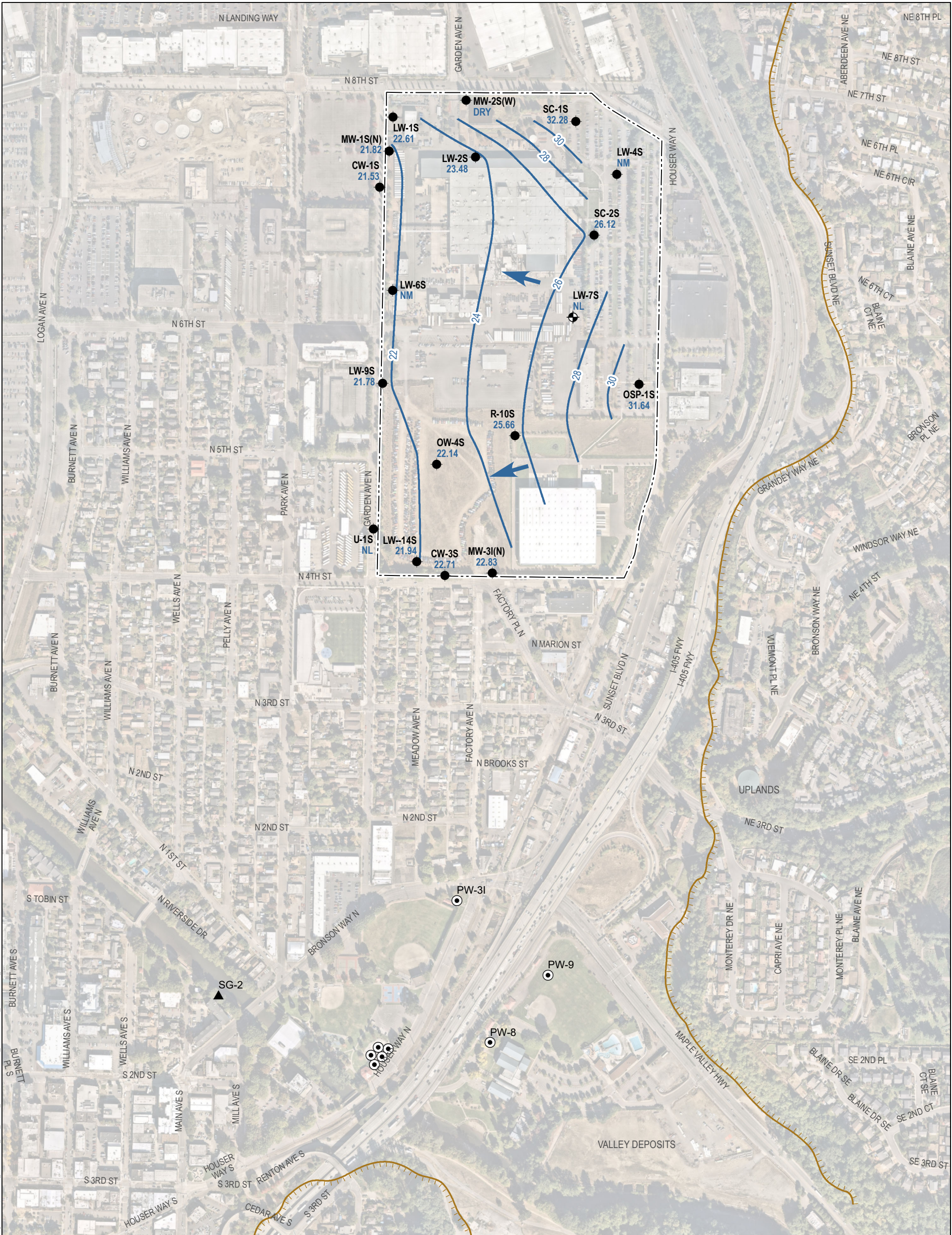
^a Cleanup levels from CMIP (DOF 1997).

See page B-3 for definition of data qualifiers.

SW-MD is a duplicate sample of SW-MH.

FIGURES

GIS: \\haleyaldrich.com\share\esa_projects\Notebooks\0203653-000_PACCAR_2021_Fall_Sampling\GIS\Maps\2022_01\203653_000_00MB_GROUNDWATER ELEVATION CONTOUR MAP.mxd - mscw\lizer - 1/18/2022 7:59:46 PM



LEGEND

- MONITORING WELL
- PIEZOMETER
- CITY OF RENTON PRODUCTION WELL
- RIVER STAFF GAUGE
- UPLAND BOUNDARY
- PROJECT BOUNDARY
- GROUNDWATER ELEVATION CONTOUR, IN FEET
- GROUNDWATER FLOW DIRECTION

22.76 GROUNDWATER ELEVATION, IN FEET

NM NOT MEASURED

NL NOT LOCATED

NOTES

1. FEATURE LOCATIONS AND DEMINSIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: NEARMAP, 21 SEPTEMBER 2021



0 500 1,000
SCALE IN FEET

HARTCROWSER
A division of Haley & Aldrich

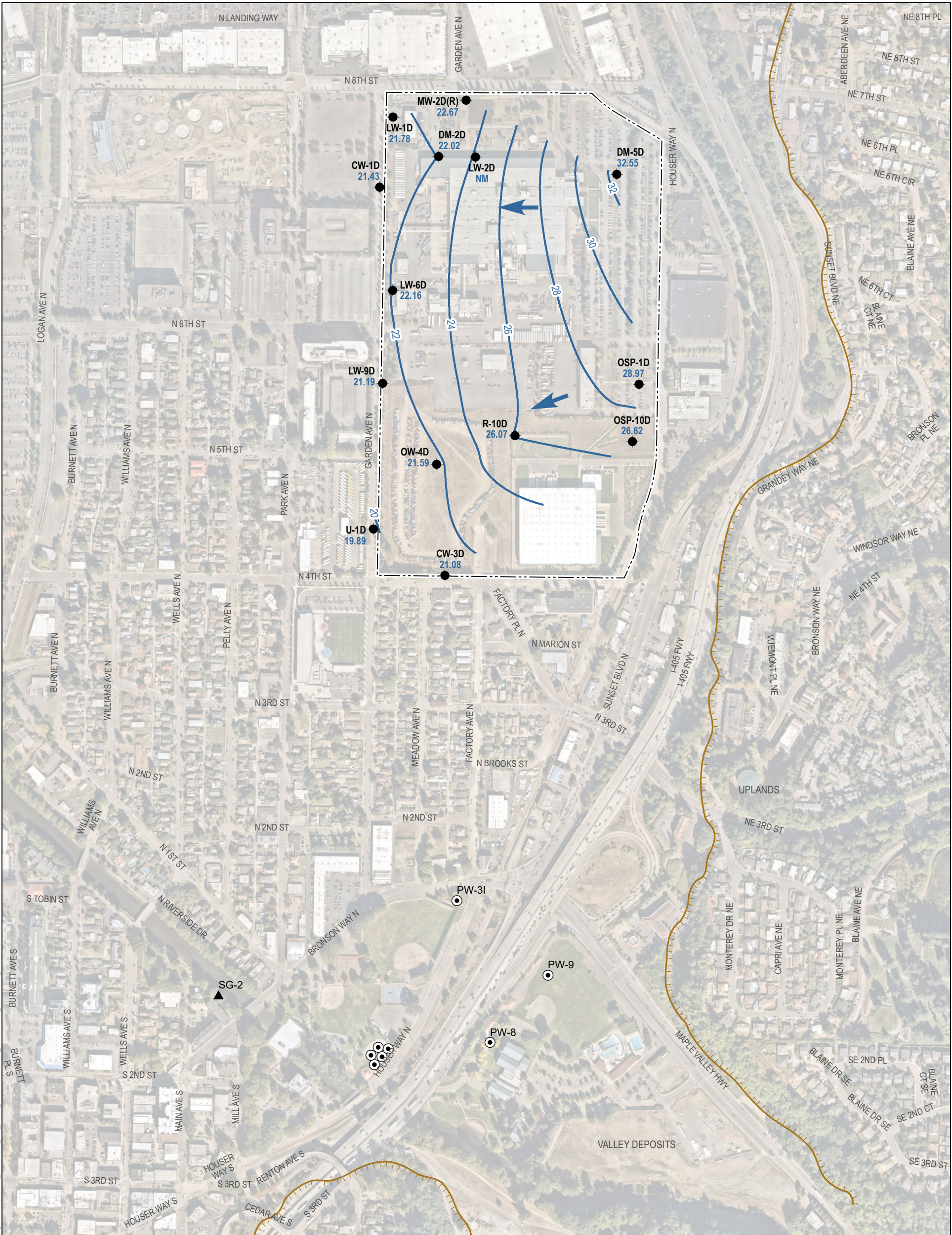
PACCAR
RENTON, WASHINGTON

GROUNDWATER ELEVATION
CONTOUR MAP
SHALLOW WELLS - 2021

JANUARY 2022

FIGURE 1-1

C:\GIS\HaleyAldrich.com\sharearea_projects\Notebooks\0203653-000_PACCAR_2021_Fall_Sampling\GIS\Maps\2022_01\203653_000_00MB_GROUNDWATER ELEVATION CONTOUR_MAP.mxd - mscweitzer - 1/18/2022 7:59:46 PM



LEGEND

- PIEZOMETER
- ⊙ CITY OF RENTON PRODUCTION WELL
- ▲ RIVER STAFF GAUGE
- UPLAND BOUNDARY
- PROJECT BOUNDARY

- GROUNDWATER ELEVATION CONTOUR, IN FEET
- GROUNDWATER FLOW DIRECTION

- 22.76 GROUNDWATER ELEVATION, IN FEET
- NM NOT MEASURED
- NL NOT LOCATED

NOTES

- FEATURE LOCATIONS AND DEMINSIONS ARE APPROXIMATE.
- AERIAL IMAGERY SOURCE: NEARMAP, 21 SEPTEMBER 2021



0 500 1,000
SCALE IN FEET

HARTCROWSER
A division of Haley & Aldrich

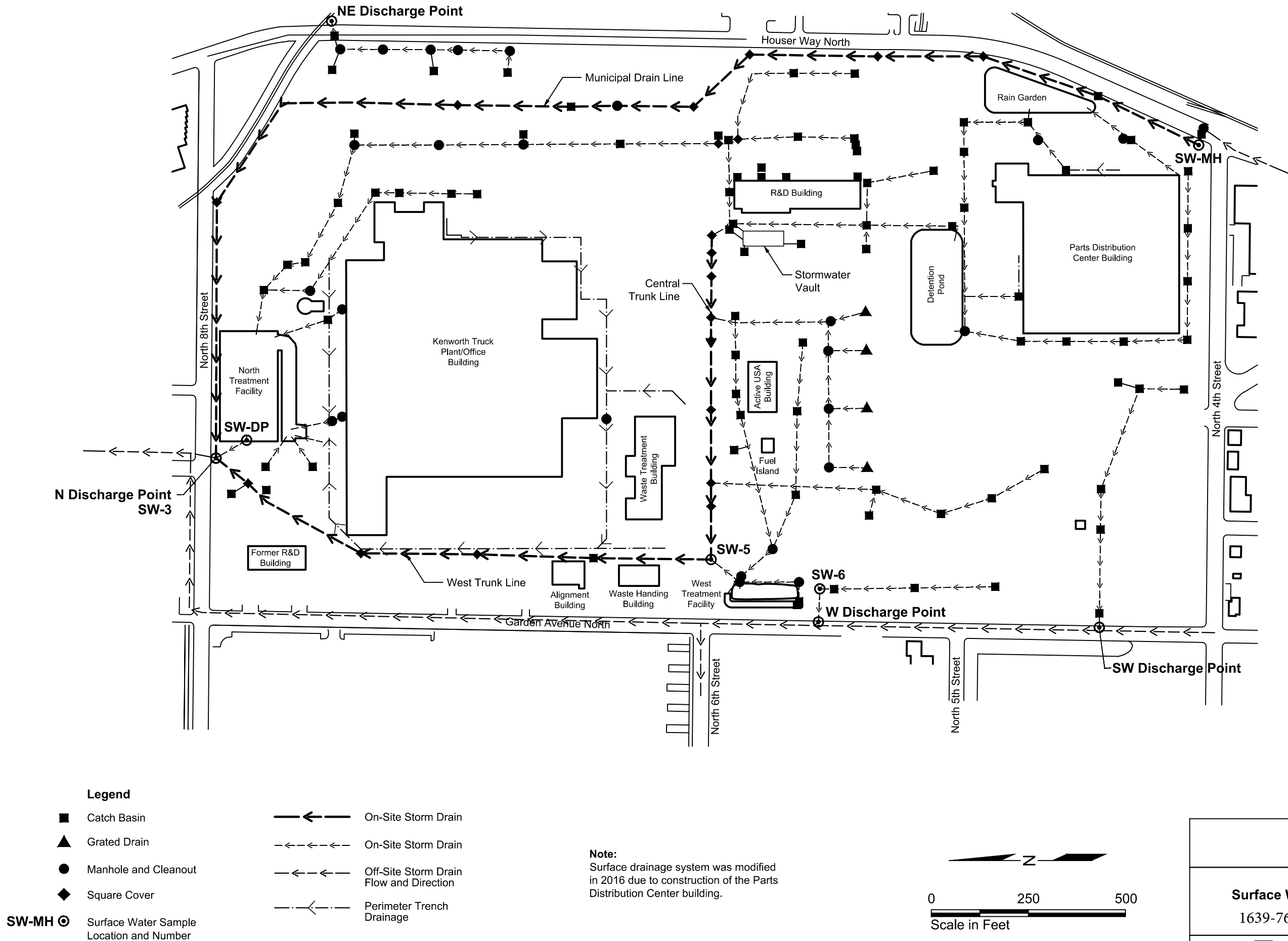
PACCAR
RENTON, WASHINGTON

GROUNDWATER ELEVATION
CONTOUR MAP
LOWER SAND UNIT - 2021

JANUARY 2022

FIGURE 1-2

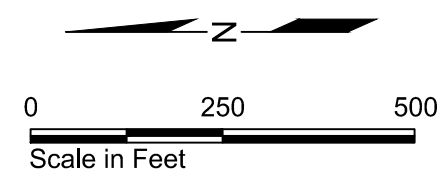
File: L:\Notebooks\163975_PACCAR_2019_GW_SW_Monitoring\CAD\163975-003 (SPlan).dwg Layout:SurfWatSamp Date: 10-17-2019 Author: melissaschweitzer



Legend

- | | |
|--|---|
| ■ Catch Basin | —◄— On-Site Storm Drain |
| ▲ Grated Drain | - - - - - On-Site Storm Drain |
| ● Manhole and Cleanout | - - - - - Off-Site Storm Drain Flow and Direction |
| ◆ Square Cover | - . - . - Perimeter Trench Drainage |
| SW-MH ⊙ Surface Water Sample Location and Number | |

Note:
Surface drainage system was modified in 2016 due to construction of the Parts Distribution Center building.



PACCAR Renton, Washington	
Surface Water Sampling Location Plan 1639-76 January 2022	
	Figure 2-1

APPENDIX A
Data Validation Summary for Groundwater Samples

APPENDIX A

Data Validation Summary for Groundwater Samples

SUMMARY OF DATA VALIDATION EFFORT

This appendix provides the quality assurance (QA) review of eight groundwater samples, one purge water sample, and one field duplicate collected in accordance with the PACCAR CMIP (DOF 1997) and Periodic Review (Ecology 2021) for the 2021 sampling event. The samples were submitted to Analytical Resources, Inc., (ARI) in Tukwila, Washington, for chemical analysis. The laboratory reported results as ARI Job No. 21J0272 dated 4 November 2021 (See Appendix C). The samples were analyzed for one or more of the following:

- Diesel- and heavy oil-range hydrocarbons by Ecology Method NWTPH-Dx;
- Total metals (arsenic, chromium, and lead) by EPA Method 200.8; and
- Vinyl chloride by EPA Method 8260C-SIM; and volatile organic compounds (VOCs) by EPA Method 8260C.

The laboratory performed ongoing quality assurance/quality control (QA/QC) reviews of laboratory procedures. Haley & Aldrich performed the data review, using laboratory quality control results summary sheets, to check that the data met data quality objectives for the project. The following criteria were evaluated in the standard data quality review process:

- Holding times;
- Method blanks;
- Surrogate recoveries;
- Laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) recoveries and relative percent differences (RPDs);
- Matrix spike/matrix spike duplicate (MS/MSD) recoveries and RPDs;
- Laboratory and field duplicate RPDs;
- Calibration criteria (if reported); and
- Reporting limits (RL).

OVERALL DATA QUALITY

The overall data quality objectives (DQOs) as set forth in the quality assurance project plan (QAPP) were met, and the data for this site are acceptable for use as qualified. The completeness for the associated data is 100 percent. Detailed discussions are presented in the following pages.

Quality Assurance Objectives

- **Precision.** Precision measures the reproducibility of measurements under a given set of conditions. Specifically, it is a quantitative measure of the variability of a group of measurements compared with their average values. Precision is generally evaluated using LCS/LCSD, MS/MSD, lab duplicate results, and field duplicate results. The LCS/LCSD, MS/MSD,

and lab duplicate results provide information on laboratory (only) precision, while field duplicates provide information on field and laboratory precision combined.

Analytical precision is generally measured through LCS/LCSD and MS/MSD samples for organic analysis, and through laboratory duplicate samples for metals and other inorganic analysis. Analytical precision is quantitatively expressed as the RPD between the LCS/LCSD, MS/MSD, or laboratory duplicates. Analytical precision measurements were carried out on project groundwater samples at a minimum frequency of one in 20 samples. The analytical precision for all analytes was acceptable.

- **Accuracy.** Accuracy measures the closeness of the measured value to the true value. The accuracy of chemical test results was assessed by analyzing standard reference materials or by "spiking" samples with known standards (surrogates, LCS, and/or MS) and measuring the percent recovery.

Accuracy measurements for all fractions were carried out in accordance with method requirements for organic and inorganic analyses and at a minimum frequency of one in 20 samples. The analytical accuracy for analytes was acceptable.

- **Completeness.** Completeness is defined as the percentage of measurements made that are judged to be valid measurements. The completeness of the data is the ratio of acceptable data points to the total number of data points (expressed as a percent). The target completeness goal for this work was 100 percent. The completeness of the data for this project was 100 percent.
- **Comparability.** Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. Because standard techniques were used for both sample collection and laboratory analysis, the data collected from the same sampling locations and depths should be comparable to both internal data and other data generated.

MAJOR PROBLEMS ENCOUNTERED

No major problems were encountered.

MINOR PROBLEMS ENCOUNTERED

No minor problems were encountered.

DATA QUALIFIER DEFINITIONS

The following data qualifiers are used in the text and tables according to a quality assurance review of the laboratory procedures and results:

- U** Indicates the compound or analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ** Indicates the compound or analyte was analyzed for and not detected. Because of quality control deficiencies identified during data validation, the value reported may not accurately reflect the sample quantitation limit.
- J** Indicates the compound or analyte was analyzed for and detected. The associated value is estimated, but the data are usable for decision making processes.

Table A-1 – Compilation of Chemical Analytical Data for Groundwater Samples

Sample ID Sampling Date	Cleanup Level	CW-1D 10/19/2021	CW-1S 10/19/2021	LW-6D 10/19/2021	LW-9D 10/19/2021	LW-9S 10/19/2021	MW-3I 10/19/2021
Metals in mg/L							
Arsenic	0.005 ^a	0.00694	0.00444	0.00994	0.00951	0.00583	0.0181
Volatiles in µg/L							
Vinyl chloride	0.4 ^b		0.122		0.375		

Notes

^a HSAL for arsenic is 0.01 mg/L.

^b HSAL for vinyl chloride is 2 µg/L.

Blank indicates sample not analyzed for specific analyte.

See page A-3 for explanation of data qualifiers.

CW-100S is a duplicate sample from CW-1S.

Table A-2 – Analytical Results for Purge Water

Sample ID Sampling Date	KW Tank 10/19/2021
Metals in µg/L	
Arsenic	1.89
Chromium	0.5 U
Lead	0.1 U
TPH in mg/L	
Diesel Range Organics	0.13 U
Motor Oil	0.2 U
Volatiles in µg/L	
1,1,1,2-Tetrachloroethane	0.2 U
1,1,1-Trichloroethane	0.2 U
1,1,2,2-Tetrachloroethane	0.2 U
1,1,2-Trichloroethane	0.2 U
1,1-Dichloroethane	0.2 U
1,1-Dichloroethene	0.2 U
1,1-Dichloropropene	0.2 U
1,2,3-Trichlorobenzene	0.5 U
1,2,3-Trichloropropane	0.5 U
1,2,4-Trichlorobenzene	0.5 U
1,2,4-Trimethylbenzene	0.2 U
1,2-Dibromo-3-Chloropropane	0.5 U
1,2-Dichlorobenzene	0.2 U
1,2-Dichloroethane	0.2 U
1,2-Dichloropropane	0.2 U
1,3,5-Trimethylbenzene	0.2 U
1,3-Dichlorobenzene	0.2 U
1,3-Dichloropropane	0.2 U
1,4-Dichlorobenzene	0.2 U
2,2-Dichloropropane	0.2 U
2-Chloroethyl vinyl ether	1 U
2-Chlorotoluene	0.2 U
2-Hexanone	5 U
2-Pentanone	5 U
4-Chlorotoluene	0.2 U
4-Isopropyl Toluene	0.2 U
Acetone	5 U
Acrolein	5 U
Acrylonitrile	1 U
Benzene	0.05 U
Bromobenzene	0.2 U
Bromochloromethane	0.2 U
Bromoform	0.2 U
Bromomethane	1 U
Carbon Disulfide	0.2 U
Carbon Tetrachloride	0.2 U

Sample ID Sampling Date	KW Tank 10/19/2021
Volatiles in µg/L	
CFC-11	0.2 U
CFC-113	0.2 U
Chlorobenzene	0.2 U
Chlorodibromomethane	0.2 U
Chloroethane	0.2 U
Chloroform	0.2 U
Chloromethane	0.5 U
Cis-1,2-Dichloroethene	0.2 U
Cis-1,3-Dichloropropene	0.2 U
Dibromomethane	0.2 U
Dichlorobromomethane	0.2 U
Dichlorodifluoromethane	0.2 U
Ethylbenzene	0.2 U
Ethylene Dibromide	0.2 U
Hexachlorobutadiene	0.5 U
Iodomethane	1 U
Isopropyl Benzene	0.2 U
m, p-Xylene	0.4 U
methyl ethyl ketone	5 U
Methyl isobutyl ketone	5 U
Methyl t-butyl ether	0.5 U
Methylene Chloride	1 U
Naphthalene	0.5 U
n-Butylbenzene	0.2 U
n-Propylbenzene	0.2 U
o-Xylene	0.2 U
Sec-Butylbenzene	0.2 U
Styrene	0.2 U
tert-butylbenzene	0.2 U
Tetrachloroethene	0.2 U
Toluene	0.11 J
Total Xylenes	0.6 U
Trans-1,2-Dichloroethene	0.2 U
Trans-1,3-Dichloropropene	0.2 U
Trans-1,4-Dichloro-2-butene	1 U
Trichloroethene	0.2 U
Vinyl Acetate	0.2 U
Vinyl Chloride	0.2 U

APPENDIX B

Data Validation Summary for Surface Water Samples

APPENDIX B

Data Validation Summary for Surface Water Samples

SUMMARY OF DATA VALIDATION EFFORT

This appendix provides the quality assurance (QA) review of five surface water samples and one field duplicate, collected in accordance with the PACCAR CMIP (DOF 1997) and Periodic Review (Ecology 2021) for the 2020 sampling event. The samples were submitted to Analytical Resources, Inc., (ARI) in Tukwila, Washington, for chemical analysis. The laboratory reported results as ARI Job No. 21J0309 dated 9 November 2021 (See Appendix C). The samples were analyzed for the following:

- Total metals (copper, lead, and zinc) by EPA Method 200.8; and
- Hexavalent chromium by SM 3500-Cr B.

The laboratory performed ongoing quality assurance/quality control (QA/QC) reviews of laboratory procedures. Haley & Aldrich performed the data review using laboratory quality control results summary sheets to ensure the data met data quality objectives for the project. The following criteria were evaluated in the standard data quality review process:

- Holding times;
- Method blanks;
- Laboratory control sample (LCS) recoveries;
- Matrix spike/matrix spike duplicate (MS/MSD) recoveries and relative percent differences (RPDs);
- Standard reference material (SRM) recoveries;
- Laboratory and field duplicate RPDs; and
- Reporting limits (RL).

OVERALL DATA QUALITY

The overall data quality objectives (DQOs) as set forth in the quality assurance project plan (QAPP) were met, and the data for this site are acceptable for use as qualified. The completeness for the associated data is 100 percent. Detailed discussions are presented in the following pages.

Quality Assurance Objectives

- **Precision.** Precision measures the reproducibility of measurements under a given set of conditions. Specifically, it is a quantitative measure of the variability of a group of measurements compared with their average values. Precision is generally evaluated using LCS/LCSD, MS/MSD, lab duplicate, and field duplicate results. The LCS/LCSD, MS/MSD, and lab duplicate results provide information on laboratory (only) precision, while field duplicates provide information on field and laboratory precision combined.

Analytical precision is generally measured through LCS/LCSD and MS/MSD samples for organic analysis, and through lab duplicate samples for metals and other inorganic analysis. Analytical precision is quantitatively expressed as the RPD between the MS/MSD or duplicates. Analytical

precision measurements were carried out on project surface water samples at a minimum frequency of one in 20 samples. The analytical precision for all analytes was acceptable or not applicable when the sample and duplicate results were less than five times the RL.

- **Accuracy.** Accuracy measures the closeness of the measured value to the true value. The accuracy of chemical test results was assessed by analyzing standard reference materials or by "spiking" samples with known standards (surrogates, LCS, SRM, and/or MS) and measuring the percent recovery.

Accuracy measurements for all fractions were carried out in accordance with method requirements for organic and inorganic analyses and at a minimum frequency of one in 20 samples. The analytical accuracy for all analytes was acceptable.

- **Completeness.** Completeness is defined as the percentage of measurements made that are judged to be valid measurements. The completeness of the data is the ratio of acceptable data points to the total number of data points (expressed as a percent). The target completeness goal for this work was 100 percent. The completeness of the data for this project was 100 percent.
- **Comparability.** Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. Because standard techniques were used for both sample collection and laboratory analysis, the data collected from the same sampling locations and depths should be comparable to both internal and other data generated.

MAJOR PROBLEMS ENCOUNTERED

No major problems were encountered.

MINOR PROBLEMS ENCOUNTERED

No minor problems were encountered.

DATA QUALIFIER DEFINITIONS

The following data qualifiers are used in the text and tables according to a quality assurance review of the laboratory procedures and results:

- U** Indicates the compound or analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution by the laboratory.
- UJ** Indicates the compound or analyte was analyzed for and not detected. Because of quality control deficiencies identified during data validation, the value reported may not accurately reflect the sample quantitation limit.

APPENDIX C

Laboratory Report



Analytical Resources, LLC
Analytical Chemists and Consultants

04 November 2021

Roy Jensen
Hart Crowser
3131 Elliott Ave Suite 600
Seattle, WA 98121

RE: Paccar

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)
21J0272

Associated SDG ID(s)
N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Kelly Bottem, Client Services Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 2150272	Turn-around Requested: Standard	Page: 1 of 1
ARI Client Company: HC	Phone:	Date: 10/19/11 Ice Present? Yes
Client Contact: Roy Jensen		No. of Coolers: 1 Cooler Temps: 5.3



Analytical Resources, Incorporated
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)
 www.arilabs.com

Client Project Name: Pacur					Analysis Requested							Notes/Comments	
Client Project #: 163476		Samplers: ASN			Total metals (As, Se, etc.)	Vinyl chloride	VOGs	TPH-D+	Total metals (As, Pb, Cr)				
Sample ID	Date	Time	Matrix	No. Containers									
CW-1S	10/19/11	1055	water	11	X	X							
CW-1S-Dup		1125		4	X	X							
CW-1D		1220		1	X								
LW-9D		1340		4	X	X							
LW-9S		1450		1	X								
MW-3I		1545		1	X								
LW-6D		1645		1	X								
Purge water		1715		6			X	X	X				

Comments/Special Instructions	Relinquished by: (Signature) [Signature]	Received by: (Signature) [Signature]	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Andrew Nakatani	Printed Name: Jacob Walter	Printed Name:	Printed Name:
	Company: HC	Company: ARZ	Company:	Company:
	Date & Time: 10/19/11 1812	Date & Time: 10/20/2011 0735	Date & Time:	Date & Time:

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: 163976
Project Manager: Roy Jensen

Reported:
04-Nov-2021 15:32

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
CW-1S	21J0272-01	Water	19-Oct-2021 10:55	20-Oct-2021 07:35
CW-1S-DUP	21J0272-02	Water	19-Oct-2021 11:25	20-Oct-2021 07:35
CW-1D	21J0272-03	Water	19-Oct-2021 12:20	20-Oct-2021 07:35
LW-9D	21J0272-04	Water	19-Oct-2021 13:40	20-Oct-2021 07:35
LW-9S	21J0272-05	Water	19-Oct-2021 14:50	20-Oct-2021 07:35
MW-3I	21J0272-06	Water	19-Oct-2021 15:45	20-Oct-2021 07:35
LW-6D	21J0272-07	Water	19-Oct-2021 16:45	20-Oct-2021 07:35
Purge Water	21J0272-08	Water	19-Oct-2021 17:15	20-Oct-2021 07:35
Trip Blanks	21J0272-09	Water	19-Oct-2021 00:00	20-Oct-2021 07:35



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: 163976
Project Manager: Roy Jensen

Reported:
04-Nov-2021 15:32

Work Order Case Narrative

Volatiles - EPA Method SW8260D

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements with the exception of all associated "Q" flagged analytes which are out of control low and hexachloro-1,3-Butadiene is out of control high. All associated samples that contain analyte have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits with the exception of hexachloro-1,3-Butadiene. Associated samples have been flagged with a "B" qualifier.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits with the exception of analytes flagged on the associated forms.

Volatiles - EPA Method 8260D-SIM (Selected Ion Monitoring)

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

Total Metals - EPA Method 200.8

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.



Hart Crowser
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Seattle WA, 98121

Project: Paccar
Project Number: 163976
Project Manager: Roy Jensen

Reported:
04-Nov-2021 15:32

The blank spike (BS/LCS) percent recoveries were within control limits.

Diesel/Heavy Oil Range Organics - WA-Ecology Method NW-TPHDx

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.



WORK ORDER

21J0272

Samples will be discarded 90 days after submission of a final report unless other instructions are received.

Client: Hart Crowser

Project Manager: Kelly Bottem

Project: Paccar

Project Number: 163976

Preservation Confirmation

Container ID	Container Type	pH
21J0272-01 A	HDPE NM, 500 mL, 1:1 HNO3	12 Pass
21J0272-01 B	HDPE NM, 500 mL, 1:1 HNO3	12 Pass
21J0272-01 C	VOA Vial, Clear, 40 mL, HCL	
21J0272-01 D	VOA Vial, Clear, 40 mL, HCL	
21J0272-01 E	VOA Vial, Clear, 40 mL, HCL	
21J0272-01 F	VOA Vial, Clear, 40 mL, HCL	
21J0272-01 G	VOA Vial, Clear, 40 mL, HCL	
21J0272-01 H	VOA Vial, Clear, 40 mL, HCL	
21J0272-01 I	VOA Vial, Clear, 40 mL, HCL	
21J0272-01 J	VOA Vial, Clear, 40 mL, HCL	
21J0272-01 K	VOA Vial, Clear, 40 mL, HCL	
21J0272-02 A	HDPE NM, 500 mL, 1:1 HNO3	12 Pass
21J0272-02 B	VOA Vial, Clear, 40 mL, HCL	
21J0272-02 C	VOA Vial, Clear, 40 mL, HCL	
21J0272-02 D	VOA Vial, Clear, 40 mL, HCL	
21J0272-03 A	HDPE NM, 500 mL, 1:1 HNO3	
21J0272-04 A	HDPE NM, 500 mL, 1:1 HNO3	
21J0272-04 B	VOA Vial, Clear, 40 mL, HCL	
21J0272-04 C	VOA Vial, Clear, 40 mL, HCL	
21J0272-04 D	VOA Vial, Clear, 40 mL, HCL	
21J0272-05 A	HDPE NM, 500 mL, 1:1 HNO3	12 Pass
21J0272-06 A	HDPE NM, 500 mL, 1:1 HNO3	12 Pass
21J0272-07 A	HDPE NM, 500 mL, 1:1 HNO3	12 Pass
21J0272-08 A	HDPE NM, 500 mL, 1:1 HNO3	12 Pass
21J0272-08 B	Glass NM, Amber, 500 mL	
21J0272-08 C	Glass NM, Amber, 500 mL	
21J0272-08 D	VOA Vial, Clear, 40 mL, HCL	
21J0272-08 E	VOA Vial, Clear, 40 mL, HCL	
21J0272-08 F	VOA Vial, Clear, 40 mL, HCL	
21J0272-09 A	VOA Vial, Clear, 40 mL, HCL	
21J0272-09 B	VOA Vial, Clear, 40 mL, HCL	

Preservation Confirmed By hcl

Date 10/20/21



Cooler Receipt Form

ARI Client: Hart Cranser

Project Name: Barcar

COC No(s): _____ NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other After hours drop off

Assigned ARI Job No: 213072

Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES NO

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.) YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 0735

5.3

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: DOO 2565

Cooler Accepted by: JSW Date: 10/20/21 Time: 0735

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA YES NO

How were bottles sealed in plastic bags? Individually Grouped Not

Did all bottles arrive in good condition (unbroken)? YES NO

Were all bottle labels complete and legible? YES NO

Did the number of containers listed on COC match with the number of containers received? YES NO

Did all bottle labels and tags agree with custody papers? YES NO

Were all bottles used correct for the requested analyses? YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES NO

Were all VOC vials free of air bubbles? NA YES NO

Was sufficient amount of sample sent in each bottle? YES NO

Date VOC Trip Blank was made at ARI: NA 10/19/21

Were the sample(s) split by ARI? NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: DL Date: 10/20/21 Time: 1006 Labels checked by: _____

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: _____

Date: _____



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: 163976
Project Manager: Roy Jensen

Reported:
04-Nov-2021 15:32

CW-1S
21J0272-01 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM

Sampled: 10/19/2021 10:55

Instrument: NT16 Analyst: PB

Analyzed: 10/21/2021 12:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 21J0272-01 C

Preparation Batch: BJJ0596

Sample Size: 10 mL

Prepared: 10/21/2021

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	5.01	20.0	122	ng/L	
Surrogate: 1,2-Dichloroethane-d4				80-129 %	103	%	
Surrogate: Toluene-d8				80-120 %	96.2	%	
Surrogate: 4-Bromofluorobenzene				75-125 %	96.6	%	



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Seattle WA, 98121

Project: Paccar
Project Number: 163976
Project Manager: Roy Jensen

Reported:
04-Nov-2021 15:32

CW-1S
21J0272-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 10/19/2021 10:55

Instrument: ICPMS1 Analyst: MCB

Analyzed: 11/03/2021 01:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BJK0045 Sample Size: 25 mL
Prepared: 11/02/2021 Final Volume: 25 mL

Extract ID: 21J0272-01 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	4.44	ug/L	



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: 163976
Project Manager: Roy Jensen

Reported:
04-Nov-2021 15:32

CW-1S-DUP
21J0272-02 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM

Sampled: 10/19/2021 11:25

Instrument: NT16 Analyst: PB

Analyzed: 10/21/2021 14:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 21J0272-02 C

Preparation Batch: BJJ0596

Sample Size: 10 mL

Prepared: 10/21/2021

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	5.01	20.0	121	ng/L	
Surrogate: 1,2-Dichloroethane-d4				80-129 %	103	%	
Surrogate: Toluene-d8				80-120 %	96.2	%	
Surrogate: 4-Bromofluorobenzene				75-125 %	95.5	%	



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: 163976
Project Manager: Roy Jensen

Reported:
04-Nov-2021 15:32

CW-1S-DUP
21J0272-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 10/19/2021 11:25

Instrument: ICPMS1 Analyst: MCB

Analyzed: 11/03/2021 01:07

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BJK0045 Sample Size: 25 mL
Prepared: 11/02/2021 Final Volume: 25 mL

Extract ID: 21J0272-02 A 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	4.65	ug/L	



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: 163976
Project Manager: Roy Jensen

Reported:
04-Nov-2021 15:32

CW-1D
21J0272-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 10/19/2021 12:20

Instrument: ICPMS1 Analyst: MCB

Analyzed: 11/03/2021 01:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BJK0045 Sample Size: 25 mL
Prepared: 11/02/2021 Final Volume: 25 mL

Extract ID: 21J0272-03 A 01

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	5	0.187	1.00	6.94	ug/L	D



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: 163976
Project Manager: Roy Jensen

Reported:
04-Nov-2021 15:32

LW-9D
21J0272-04 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM

Sampled: 10/19/2021 13:40

Instrument: NT16 Analyst: PB

Analyzed: 10/21/2021 14:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 21J0272-04 C

Preparation Batch: BJJ0596

Sample Size: 10 mL

Prepared: 10/21/2021

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	5.01	20.0	375	ng/L	
Surrogate: 1,2-Dichloroethane-d4				80-129 %	104	%	
Surrogate: Toluene-d8				80-120 %	96.2	%	
Surrogate: 4-Bromofluorobenzene				75-125 %	97.9	%	



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Project: Paccar
Project Number: 163976
Project Manager: Roy Jensen

Reported:
04-Nov-2021 15:32

LW-9D
21J0272-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 10/19/2021 13:40

Instrument: ICPMS1 Analyst: MCB

Analyzed: 11/03/2021 01:12

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BJK0045 Sample Size: 25 mL
Prepared: 11/02/2021 Final Volume: 25 mL

Extract ID: 21J0272-04 A 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	9.51	ug/L	



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Project: Paccar
Project Number: 163976
Project Manager: Roy Jensen

Reported:
04-Nov-2021 15:32

LW-9S
21J0272-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 10/19/2021 14:50

Instrument: ICPMS1 Analyst: MCB

Analyzed: 11/03/2021 01:18

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BJK0045 Sample Size: 25 mL
Prepared: 11/02/2021 Final Volume: 25 mL

Extract ID: 21J0272-05 A 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	5.83	ug/L	



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Project: Paccar
Project Number: 163976
Project Manager: Roy Jensen

Reported:
04-Nov-2021 15:32

MW-3I
21J0272-06 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 10/19/2021 15:45

Instrument: ICPMS1 Analyst: MCB

Analyzed: 11/03/2021 01:47

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BJK0045 Sample Size: 25 mL
Prepared: 11/02/2021 Final Volume: 25 mL

Extract ID: 21J0272-06 A 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	18.1	ug/L	



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Project: Paccar
Project Number: 163976
Project Manager: Roy Jensen

Reported:
04-Nov-2021 15:32

LW-6D
21J0272-07 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 10/19/2021 16:45

Instrument: ICPMS1 Analyst: MCB

Analyzed: 11/03/2021 01:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BJK0045 Sample Size: 25 mL
Prepared: 11/02/2021 Final Volume: 25 mL

Extract ID: 21J0272-07 A 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	9.94	ug/L	



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Project: Paccar
Project Number: 163976
Project Manager: Roy Jensen

Reported:
04-Nov-2021 15:32

Purge Water
21J0272-08 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 10/19/2021 17:15

Instrument: NT2 Analyst: PKC

Analyzed: 10/20/2021 17:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 21J0272-08 F

Preparation Batch: BJJ0574

Sample Size: 10 mL

Prepared: 10/20/2021

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	0.11	ug/L	J



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Project: Paccar
Project Number: 163976
Project Manager: Roy Jensen

Reported:
04-Nov-2021 15:32

Purge Water
21J0272-08 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 10/19/2021 17:15

Instrument: NT2 Analyst: PKC

Analyzed: 10/20/2021 17:55

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.41	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



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Project: Paccar
Project Number: 163976
Project Manager: Roy Jensen

Reported:
04-Nov-2021 15:32

Purge Water
21J0272-08 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 10/19/2021 17:15

Instrument: NT2 Analyst: PKC

Analyzed: 10/20/2021 17:55

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				<i>80-129 %</i>	<i>101</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>				<i>80-120 %</i>	<i>94.0</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>				<i>80-120 %</i>	<i>92.7</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				<i>80-120 %</i>	<i>105</i>	<i>%</i>	



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Reported:
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Purge Water
21J0272-08 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx

Sampled: 10/19/2021 17:15

Instrument: FID4 Analyst: TWC

Analyzed: 10/23/2021 04:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BJJ0585
Prepared: 10/21/2021

Sample Size: 390 mL
Final Volume: 1 mL

Extract ID: 21J0272-08 B 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.128	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.256	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			<i>50-150 %</i>	<i>104</i>	<i>%</i>	



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Reported:
04-Nov-2021 15:32

Purge Water
21J0272-08 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 10/19/2021 17:15

Instrument: ICPMS1 Analyst: MCB

Analyzed: 11/03/2021 01:57

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BJK0045 Sample Size: 25 mL
Prepared: 11/02/2021 Final Volume: 25 mL

Extract ID: 21J0272-08 A 01

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Chromium	7440-47-3	1	0.260	0.500	0.726	ug/L	
Lead	7439-92-1	1	0.0513	0.100	0.403	ug/L	



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Reported:
04-Nov-2021 15:32

Purge Water
21J0272-08 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 10/19/2021 17:15

Instrument: ICPMS1 Analyst: MCB

Analyzed: 11/03/2021 01:57

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BJK0045 Sample Size: 25 mL
Prepared: 11/02/2021 Final Volume: 25 mL

Extract ID: 21J0272-08 A 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	1.89	ug/L	



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Project: Paccar
Project Number: 163976
Project Manager: Roy Jensen

Reported:
04-Nov-2021 15:32

Trip Blanks
21J0272-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 10/19/2021 00:00

Instrument: NT2 Analyst: PKC

Analyzed: 10/20/2021 17:13

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BJJ0574
Prepared: 10/20/2021

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 21J0272-09 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



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Project: Paccar
Project Number: 163976
Project Manager: Roy Jensen

Reported:
04-Nov-2021 15:32

Trip Blanks
21J0272-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 10/19/2021 00:00

Instrument: NT2 Analyst: PKC

Analyzed: 10/20/2021 17:13

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	0.41	0.50	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: 163976
Project Manager: Roy Jensen

Reported:
04-Nov-2021 15:32

Trip Blanks
21J0272-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 10/19/2021 00:00

Instrument: NT2 Analyst: PKC

Analyzed: 10/20/2021 17:13

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				<i>80-129 %</i>	<i>99.9</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>				<i>80-120 %</i>	<i>93.8</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>				<i>80-120 %</i>	<i>97.1</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				<i>80-120 %</i>	<i>104</i>	<i>%</i>	



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Reported:
04-Nov-2021 15:32

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BJJ0574 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJJ0574-BLK2)						Prepared: 20-Oct-2021 Analyzed: 20-Oct-2021 16:31					
Chloromethane	ND	0.27	0.50	ug/L							U
Vinyl Chloride	ND	0.08	0.20	ug/L							U
Bromomethane	ND	0.74	1.00	ug/L							U
Chloroethane	ND	0.18	0.20	ug/L							U
Trichlorofluoromethane	ND	0.13	0.20	ug/L							U
Acrolein	ND	2.70	5.00	ug/L							U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.11	0.20	ug/L							U
Acetone	ND	4.33	5.00	ug/L							U
1,1-Dichloroethene	ND	0.08	0.20	ug/L							U
Iodomethane	ND	0.43	1.00	ug/L							U
Methylene Chloride	ND	0.53	1.00	ug/L							U
Acrylonitrile	ND	0.40	1.00	ug/L							U
Carbon Disulfide	ND	0.12	0.20	ug/L							U
trans-1,2-Dichloroethene	ND	0.07	0.20	ug/L							U
Vinyl Acetate	ND	0.12	0.20	ug/L							U
1,1-Dichloroethane	ND	0.09	0.20	ug/L							U
2-Butanone	ND	1.77	5.00	ug/L							U
2,2-Dichloropropane	ND	0.11	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.08	0.20	ug/L							U
Chloroform	ND	0.05	0.20	ug/L							U
Bromochloromethane	ND	0.09	0.20	ug/L							U
1,1,1-Trichloroethane	ND	0.08	0.20	ug/L							U
1,1-Dichloropropene	ND	0.09	0.20	ug/L							U
Carbon tetrachloride	ND	0.09	0.20	ug/L							U
1,2-Dichloroethane	ND	0.08	0.20	ug/L							U
Benzene	ND	0.05	0.20	ug/L							U
Trichloroethene	ND	0.07	0.20	ug/L							U
1,2-Dichloropropane	ND	0.07	0.20	ug/L							U
Bromodichloromethane	ND	0.09	0.20	ug/L							U
Dibromomethane	ND	0.06	0.20	ug/L							U
2-Chloroethyl vinyl ether	ND	0.55	1.00	ug/L							U
4-Methyl-2-Pentanone	ND	1.90	5.00	ug/L							U
cis-1,3-Dichloropropene	ND	0.09	0.20	ug/L							U
Toluene	ND	0.05	0.20	ug/L							U
trans-1,3-Dichloropropene	ND	0.09	0.20	ug/L							U



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BJJ0574 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJJ0574-BLK2)						Prepared: 20-Oct-2021 Analyzed: 20-Oct-2021 16:31					
2-Hexanone	ND	2.06	5.00	ug/L							U
1,1,2-Trichloroethane	ND	0.10	0.20	ug/L							U
1,3-Dichloropropane	ND	0.07	0.20	ug/L							U
Tetrachloroethene	ND	0.09	0.20	ug/L							U
Dibromochloromethane	ND	0.09	0.20	ug/L							U
1,2-Dibromoethane	ND	0.09	0.20	ug/L							U
Chlorobenzene	ND	0.06	0.20	ug/L							U
Ethylbenzene	ND	0.05	0.20	ug/L							U
1,1,1,2-Tetrachloroethane	ND	0.09	0.20	ug/L							U
m,p-Xylene	ND	0.14	0.40	ug/L							U
o-Xylene	ND	0.08	0.20	ug/L							U
Xylenes, total	ND	0.22	0.60	ug/L							U
Styrene	ND	0.09	0.20	ug/L							U
Bromoform	ND	0.15	0.20	ug/L							U
1,1,2,2-Tetrachloroethane	ND	0.10	0.20	ug/L							U
1,2,3-Trichloropropane	ND	0.16	0.50	ug/L							U
trans-1,4-Dichloro 2-Butene	ND	0.60	1.00	ug/L							U
n-Propylbenzene	ND	0.07	0.20	ug/L							U
Bromobenzene	ND	0.07	0.20	ug/L							U
Isopropyl Benzene	ND	0.07	0.20	ug/L							U
2-Chlorotoluene	ND	0.06	0.20	ug/L							U
4-Chlorotoluene	ND	0.06	0.20	ug/L							U
t-Butylbenzene	ND	0.07	0.20	ug/L							U
1,3,5-Trimethylbenzene	ND	0.07	0.20	ug/L							U
1,2,4-Trimethylbenzene	ND	0.10	0.20	ug/L							U
s-Butylbenzene	ND	0.06	0.20	ug/L							U
4-Isopropyl Toluene	ND	0.08	0.20	ug/L							U
1,3-Dichlorobenzene	ND	0.08	0.20	ug/L							U
1,4-Dichlorobenzene	ND	0.10	0.20	ug/L							U
n-Butylbenzene	ND	0.18	0.20	ug/L							U
1,2-Dichlorobenzene	ND	0.08	0.20	ug/L							U
1,2-Dibromo-3-chloropropane	ND	0.39	0.50	ug/L							U
1,2,4-Trichlorobenzene	ND	0.21	0.50	ug/L							U
Hexachloro-1,3-Butadiene	0.54	0.41	0.50	ug/L							
Naphthalene	ND	0.27	0.50	ug/L							U



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Volatile Organic Compounds - Quality Control

Batch BJJ0574 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJJ0574-BLK2)						Prepared: 20-Oct-2021 Analyzed: 20-Oct-2021 16:31					
1,2,3-Trichlorobenzene	ND	0.25	0.50	ug/L							U
Dichlorodifluoromethane	ND	0.13	0.20	ug/L							U
Methyl tert-butyl Ether	ND	0.14	0.50	ug/L							U
2-Pentanone	ND	2.34	5.00	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.70			ug/L	5.00		94.0	80-129			
<i>Surrogate: Toluene-d8</i>	4.86			ug/L	5.00		97.2	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.93			ug/L	5.00		98.7	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	5.14			ug/L	5.00		103	80-120			
LCS (BJJ0574-BS2)						Prepared: 20-Oct-2021 Analyzed: 20-Oct-2021 15:06					
Chloromethane	8.81	0.27	0.50	ug/L	10.0		88.1	60-138			
Vinyl Chloride	9.75	0.08	0.20	ug/L	10.0		97.5	66-133			
Bromomethane	9.56	0.74	1.00	ug/L	10.0		95.6	72-131			
Chloroethane	9.71	0.18	0.20	ug/L	10.0		97.1	60-155			
Trichlorofluoromethane	8.87	0.13	0.20	ug/L	10.0		88.7	62-141			
Acrolein	51.1	2.70	5.00	ug/L	50.0		102	52-190			
1,1,2-Trichloro-1,2,2-Trifluoroethane	9.93	0.11	0.20	ug/L	10.0		99.3	76-129			
Acetone	43.8	4.33	5.00	ug/L	50.0		87.5	58-142			
1,1-Dichloroethene	9.67	0.08	0.20	ug/L	10.0		96.7	69-135			
Iodomethane	10.0	0.43	1.00	ug/L	10.0		100	56-147			
Methylene Chloride	10.6	0.53	1.00	ug/L	10.0		106	65-135			
Acrylonitrile	9.73	0.40	1.00	ug/L	10.0		97.3	64-134			
Carbon Disulfide	9.63	0.12	0.20	ug/L	10.0		96.3	78-125			
trans-1,2-Dichloroethene	9.94	0.07	0.20	ug/L	10.0		99.4	78-128			
Vinyl Acetate	9.77	0.12	0.20	ug/L	10.0		97.7	55-138			
1,1-Dichloroethane	9.90	0.09	0.20	ug/L	10.0		99.0	76-124			
2-Butanone	51.6	1.77	5.00	ug/L	50.0		103	61-140			
2,2-Dichloropropane	10.2	0.11	0.20	ug/L	10.0		102	66-147			
cis-1,2-Dichloroethene	9.90	0.08	0.20	ug/L	10.0		99.0	80-121			
Chloroform	9.87	0.05	0.20	ug/L	10.0		98.7	80-122			
Bromochloromethane	10.0	0.09	0.20	ug/L	10.0		100	80-121			
1,1,1-Trichloroethane	10.1	0.08	0.20	ug/L	10.0		101	79-123			
1,1-Dichloropropene	10.7	0.09	0.20	ug/L	10.0		107	80-127			
Carbon tetrachloride	10.6	0.09	0.20	ug/L	10.0		106	53-137			
1,2-Dichloroethane	10.1	0.08	0.20	ug/L	10.0		101	75-123			



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Project: Paccar
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Project Manager: Roy Jensen

Reported:
04-Nov-2021 15:32

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BJJ0574 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BJJ0574-BS2)						Prepared: 20-Oct-2021 Analyzed: 20-Oct-2021 15:06					
Benzene	10.2	0.05	0.20	ug/L	10.0		102	80-120			
Trichloroethene	10.1	0.07	0.20	ug/L	10.0		101	80-120			
1,2-Dichloropropane	10.1	0.07	0.20	ug/L	10.0		101	80-120			
Bromodichloromethane	10.2	0.09	0.20	ug/L	10.0		102	80-121			
Dibromomethane	9.88	0.06	0.20	ug/L	10.0		98.8	80-120			
2-Chloroethyl vinyl ether	9.18	0.55	1.00	ug/L	10.0		91.8	64-120			
4-Methyl-2-Pentanone	56.2	1.90	5.00	ug/L	50.0		112	67-133			
cis-1,3-Dichloropropene	10.8	0.09	0.20	ug/L	10.0		108	80-124			
Toluene	10.3	0.05	0.20	ug/L	10.0		103	80-120			
trans-1,3-Dichloropropene	10.8	0.09	0.20	ug/L	10.0		108	71-127			
2-Hexanone	57.2	2.06	5.00	ug/L	50.0		114	69-133			
1,1,2-Trichloroethane	10.1	0.10	0.20	ug/L	10.0		101	80-121			
1,3-Dichloropropane	10.2	0.07	0.20	ug/L	10.0		102	80-120			
Tetrachloroethene	9.81	0.09	0.20	ug/L	10.0		98.1	80-120			
Dibromochloromethane	10.5	0.09	0.20	ug/L	10.0		105	65-135			
1,2-Dibromoethane	10.6	0.09	0.20	ug/L	10.0		106	80-121			
Chlorobenzene	10.2	0.06	0.20	ug/L	10.0		102	80-120			
Ethylbenzene	10.2	0.05	0.20	ug/L	10.0		102	80-120			
1,1,1,2-Tetrachloroethane	10.3	0.09	0.20	ug/L	10.0		103	80-120			
m,p-Xylene	22.1	0.14	0.40	ug/L	20.0		110	80-121			
o-Xylene	11.1	0.08	0.20	ug/L	10.0		111	80-121			
Xylenes, total	33.2	0.22	0.60	ug/L	30.0		111	76-127			
Styrene	9.46	0.09	0.20	ug/L	10.0		94.6	80-124			
Bromoform	8.35	0.15	0.20	ug/L	10.0		83.5	51-134			
1,1,2,2-Tetrachloroethane	9.06	0.10	0.20	ug/L	10.0		90.6	77-123			
1,2,3-Trichloropropane	9.41	0.16	0.50	ug/L	10.0		94.1	76-125			
trans-1,4-Dichloro 2-Butene	7.02	0.60	1.00	ug/L	10.0		70.2	55-129			Q
n-Propylbenzene	10.7	0.07	0.20	ug/L	10.0		107	78-130			
Bromobenzene	9.70	0.07	0.20	ug/L	10.0		97.0	80-120			
Isopropyl Benzene	11.1	0.07	0.20	ug/L	10.0		111	80-128			
2-Chlorotoluene	10.2	0.06	0.20	ug/L	10.0		102	78-122			
4-Chlorotoluene	10.7	0.06	0.20	ug/L	10.0		107	80-121			
t-Butylbenzene	11.0	0.07	0.20	ug/L	10.0		110	78-125			
1,3,5-Trimethylbenzene	11.2	0.07	0.20	ug/L	10.0		112	80-129			
1,2,4-Trimethylbenzene	11.4	0.10	0.20	ug/L	10.0		114	80-127			



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Project Manager: Roy Jensen

Reported:
04-Nov-2021 15:32

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BJJ0574 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BJJ0574-BS2)											
						Prepared: 20-Oct-2021 Analyzed: 20-Oct-2021 15:06					
s-Butylbenzene	11.2	0.06	0.20	ug/L	10.0		112	78-129			
4-Isopropyl Toluene	11.8	0.08	0.20	ug/L	10.0		118	79-130			
1,3-Dichlorobenzene	10.3	0.08	0.20	ug/L	10.0		103	80-120			
1,4-Dichlorobenzene	9.88	0.10	0.20	ug/L	10.0		98.8	80-120			
n-Butylbenzene	11.6	0.18	0.20	ug/L	10.0		116	74-129			
1,2-Dichlorobenzene	10.1	0.08	0.20	ug/L	10.0		101	80-120			
1,2-Dibromo-3-chloropropane	8.04	0.39	0.50	ug/L	10.0		80.4	62-123			
1,2,4-Trichlorobenzene	10.5	0.21	0.50	ug/L	10.0		105	64-124			
Hexachloro-1,3-Butadiene	13.7	0.41	0.50	ug/L	10.0		137	58-123			* , Q, B
Naphthalene	10.3	0.27	0.50	ug/L	10.0		103	50-134			
1,2,3-Trichlorobenzene	10.4	0.25	0.50	ug/L	10.0		104	49-133			
Dichlorodifluoromethane	9.46	0.13	0.20	ug/L	10.0		94.6	48-147			
Methyl tert-butyl Ether	9.89	0.14	0.50	ug/L	10.0		98.9	71-132			
2-Pentanone	44.1	2.34	5.00	ug/L	50.0		88.2	69-134			
Surrogate: 1,2-Dichloroethane-d4	4.97			ug/L	5.00		99.4	80-129			
Surrogate: Toluene-d8	5.01			ug/L	5.00		100	80-120			
Surrogate: 4-Bromofluorobenzene	5.28			ug/L	5.00		106	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	5.09			ug/L	5.00		102	80-120			
LCS Dup (BJJ0574-BSD2)											
						Prepared: 20-Oct-2021 Analyzed: 20-Oct-2021 15:48					
Chloromethane	9.96	0.27	0.50	ug/L	10.0		99.6	60-138	12.20	30	
Vinyl Chloride	10.0	0.08	0.20	ug/L	10.0		100	66-133	2.63	30	
Bromomethane	9.87	0.74	1.00	ug/L	10.0		98.7	72-131	3.12	30	
Chloroethane	10.5	0.18	0.20	ug/L	10.0		105	60-155	8.14	30	
Trichlorofluoromethane	8.94	0.13	0.20	ug/L	10.0		89.4	62-141	0.79	30	
Acrolein	50.6	2.70	5.00	ug/L	50.0		101	52-190	1.08	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	9.87	0.11	0.20	ug/L	10.0		98.7	76-129	0.56	30	
Acetone	45.4	4.33	5.00	ug/L	50.0		90.7	58-142	3.60	30	
1,1-Dichloroethene	9.69	0.08	0.20	ug/L	10.0		96.9	69-135	0.13	30	
Iodomethane	10.1	0.43	1.00	ug/L	10.0		101	56-147	0.37	30	
Methylene Chloride	10.2	0.53	1.00	ug/L	10.0		102	65-135	3.30	30	
Acrylonitrile	10.0	0.40	1.00	ug/L	10.0		100	64-134	3.24	30	
Carbon Disulfide	9.60	0.12	0.20	ug/L	10.0		96.0	78-125	0.32	30	
trans-1,2-Dichloroethene	9.74	0.07	0.20	ug/L	10.0		97.4	78-128	2.07	30	
Vinyl Acetate	10.1	0.12	0.20	ug/L	10.0		101	55-138	3.16	30	



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BJJ0574 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BJJ0574-BSD2)					Prepared: 20-Oct-2021 Analyzed: 20-Oct-2021 15:48						
1,1-Dichloroethane	10.0	0.09	0.20	ug/L	10.0		100	76-124	1.21	30	
2-Butanone	51.7	1.77	5.00	ug/L	50.0		103	61-140	0.10	30	
2,2-Dichloropropane	10.0	0.11	0.20	ug/L	10.0		100	66-147	1.29	30	
cis-1,2-Dichloroethene	9.80	0.08	0.20	ug/L	10.0		98.0	80-121	0.96	30	
Chloroform	9.88	0.05	0.20	ug/L	10.0		98.8	80-122	0.10	30	
Bromochloromethane	9.84	0.09	0.20	ug/L	10.0		98.4	80-121	1.98	30	
1,1,1-Trichloroethane	10.0	0.08	0.20	ug/L	10.0		100	79-123	0.66	30	
1,1-Dichloropropene	10.4	0.09	0.20	ug/L	10.0		104	80-127	3.20	30	
Carbon tetrachloride	10.3	0.09	0.20	ug/L	10.0		103	53-137	2.83	30	
1,2-Dichloroethane	9.85	0.08	0.20	ug/L	10.0		98.5	75-123	2.59	30	
Benzene	10.0	0.05	0.20	ug/L	10.0		100	80-120	1.79	30	
Trichloroethene	9.91	0.07	0.20	ug/L	10.0		99.1	80-120	1.81	30	
1,2-Dichloropropane	10.0	0.07	0.20	ug/L	10.0		100	80-120	0.55	30	
Bromodichloromethane	9.93	0.09	0.20	ug/L	10.0		99.3	80-121	3.14	30	
Dibromomethane	9.68	0.06	0.20	ug/L	10.0		96.8	80-120	2.07	30	
2-Chloroethyl vinyl ether	9.05	0.55	1.00	ug/L	10.0		90.5	64-120	1.46	30	
4-Methyl-2-Pentanone	55.5	1.90	5.00	ug/L	50.0		111	67-133	1.20	30	
cis-1,3-Dichloropropene	10.6	0.09	0.20	ug/L	10.0		106	80-124	2.03	30	
Toluene	10.1	0.05	0.20	ug/L	10.0		101	80-120	2.62	30	
trans-1,3-Dichloropropene	10.6	0.09	0.20	ug/L	10.0		106	71-127	2.45	30	
2-Hexanone	57.3	2.06	5.00	ug/L	50.0		115	69-133	0.20	30	
1,1,2-Trichloroethane	9.97	0.10	0.20	ug/L	10.0		99.7	80-121	1.03	30	
1,3-Dichloropropane	10.0	0.07	0.20	ug/L	10.0		100	80-120	1.36	30	
Tetrachloroethene	9.49	0.09	0.20	ug/L	10.0		94.9	80-120	3.30	30	
Dibromochloromethane	10.3	0.09	0.20	ug/L	10.0		103	65-135	1.99	30	
1,2-Dibromoethane	10.5	0.09	0.20	ug/L	10.0		105	80-121	1.42	30	
Chlorobenzene	10.1	0.06	0.20	ug/L	10.0		101	80-120	0.91	30	
Ethylbenzene	10.0	0.05	0.20	ug/L	10.0		100	80-120	1.86	30	
1,1,1,2-Tetrachloroethane	10.1	0.09	0.20	ug/L	10.0		101	80-120	2.18	30	
m,p-Xylene	21.4	0.14	0.40	ug/L	20.0		107	80-121	2.98	30	
o-Xylene	10.9	0.08	0.20	ug/L	10.0		109	80-121	1.72	30	
Xylenes, total	32.4	0.22	0.60	ug/L	30.0		108	76-127	2.55	30	
Styrene	9.37	0.09	0.20	ug/L	10.0		93.7	80-124	0.89	30	
Bromoform	8.34	0.15	0.20	ug/L	10.0		83.4	51-134	0.09	30	
1,1,2,2-Tetrachloroethane	9.19	0.10	0.20	ug/L	10.0		91.9	77-123	1.46	30	



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3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: 163976
Project Manager: Roy Jensen

Reported:
04-Nov-2021 15:32

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BJJ0574 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BJJ0574-BSD2)						Prepared: 20-Oct-2021 Analyzed: 20-Oct-2021 15:48					
1,2,3-Trichloropropane	9.74	0.16	0.50	ug/L	10.0		97.4	76-125	3.43	30	
trans-1,4-Dichloro 2-Butene	7.05	0.60	1.00	ug/L	10.0		70.5	55-129	0.49	30	Q
n-Propylbenzene	10.5	0.07	0.20	ug/L	10.0		105	78-130	1.62	30	
Bromobenzene	9.61	0.07	0.20	ug/L	10.0		96.1	80-120	0.91	30	
Isopropyl Benzene	10.9	0.07	0.20	ug/L	10.0		109	80-128	2.09	30	
2-Chlorotoluene	10.2	0.06	0.20	ug/L	10.0		102	78-122	0.16	30	
4-Chlorotoluene	10.6	0.06	0.20	ug/L	10.0		106	80-121	1.01	30	
t-Butylbenzene	10.9	0.07	0.20	ug/L	10.0		109	78-125	0.75	30	
1,3,5-Trimethylbenzene	11.0	0.07	0.20	ug/L	10.0		110	80-129	1.25	30	
1,2,4-Trimethylbenzene	11.4	0.10	0.20	ug/L	10.0		114	80-127	0.02	30	
s-Butylbenzene	11.0	0.06	0.20	ug/L	10.0		110	78-129	1.81	30	
4-Isopropyl Toluene	11.6	0.08	0.20	ug/L	10.0		116	79-130	1.08	30	
1,3-Dichlorobenzene	10.2	0.08	0.20	ug/L	10.0		102	80-120	1.17	30	
1,4-Dichlorobenzene	9.76	0.10	0.20	ug/L	10.0		97.6	80-120	1.25	30	
n-Butylbenzene	11.2	0.18	0.20	ug/L	10.0		112	74-129	4.23	30	
1,2-Dichlorobenzene	9.89	0.08	0.20	ug/L	10.0		98.9	80-120	1.70	30	
1,2-Dibromo-3-chloropropane	7.78	0.39	0.50	ug/L	10.0		77.8	62-123	3.31	30	
1,2,4-Trichlorobenzene	10.2	0.21	0.50	ug/L	10.0		102	64-124	3.05	30	
Hexachloro-1,3-Butadiene	13.3	0.41	0.50	ug/L	10.0		133	58-123	2.53	30	*, Q, B
Naphthalene	10.2	0.27	0.50	ug/L	10.0		102	50-134	1.60	30	
1,2,3-Trichlorobenzene	10.3	0.25	0.50	ug/L	10.0		103	49-133	1.33	30	
Dichlorodifluoromethane	9.70	0.13	0.20	ug/L	10.0		97.0	48-147	2.51	30	
Methyl tert-butyl Ether	10.1	0.14	0.50	ug/L	10.0		101	71-132	2.28	30	
2-Pentanone	45.0	2.34	5.00	ug/L	50.0		90.0	69-134	2.08	30	
Surrogate: 1,2-Dichloroethane-d4	4.97			ug/L	5.00		99.3	80-129			
Surrogate: Toluene-d8	5.05			ug/L	5.00		101	80-120			
Surrogate: 4-Bromofluorobenzene	5.39			ug/L	5.00		108	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	5.01			ug/L	5.00		100	80-120			



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Project: Paccar
Project Number: 163976
Project Manager: Roy Jensen

Reported:
04-Nov-2021 15:32

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BJJ0596 - EPA 5030C (Purge and Trap)

Instrument: NT16 Analyst: PB

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Blank (BJJ0596-BLK1) Prepared: 21-Oct-2021 Analyzed: 21-Oct-2021 11:20										
Vinyl chloride	ND	5.01	20.0	ng/L						U
Surrogate: 1,2-Dichloroethane-d4	4900			ng/L	5000	98.0	80-129			
Surrogate: Toluene-d8	4840			ng/L	5000	96.8	80-120			
Surrogate: 4-Bromofluorobenzene	4870			ng/L	5000	97.5	75-125			
LCS (BJJ0596-BS1) Prepared: 21-Oct-2021 Analyzed: 21-Oct-2021 09:09										
Vinyl chloride	2140	5.01	20.0	ng/L	2000	107	62-141			
Surrogate: 1,2-Dichloroethane-d4	4910			ng/L	5000	98.1	80-129			
Surrogate: Toluene-d8	4890			ng/L	5000	97.9	80-120			
Surrogate: 4-Bromofluorobenzene	4920			ng/L	5000	98.5	75-125			
LCS Dup (BJJ0596-BSD1) Prepared: 21-Oct-2021 Analyzed: 21-Oct-2021 09:30										
Vinyl chloride	2450	5.01	20.0	ng/L	2000	122	62-141	13.60	30	
Surrogate: 1,2-Dichloroethane-d4	5200			ng/L	5000	104	80-129			
Surrogate: Toluene-d8	4860			ng/L	5000	97.2	80-120			
Surrogate: 4-Bromofluorobenzene	5090			ng/L	5000	102	75-125			



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Project: Paccar
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Reported:
04-Nov-2021 15:32

Analysis by: Analytical Resources, LLC

Petroleum Hydrocarbons - Quality Control

Batch BJJ0585 - EPA 3510C SepF

Instrument: FID4 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Blank (BJJ0585-BLK1) Prepared: 21-Oct-2021 Analyzed: 23-Oct-2021 02:40									
Diesel Range Organics (C12-C24)	ND	0.100	mg/L						U
Motor Oil Range Organics (C24-C38)	ND	0.200	mg/L						U
Surrogate: o-Terphenyl	0.235		mg/L	0.225	105	50-150			
LCS (BJJ0585-BS1) Prepared: 21-Oct-2021 Analyzed: 23-Oct-2021 03:00									
Diesel Range Organics (C12-C24)	2.78	0.100	mg/L	3.00	92.7	56-120			
Surrogate: o-Terphenyl	0.192		mg/L	0.225	85.4	50-150			
LCS Dup (BJJ0585-BSD1) Prepared: 21-Oct-2021 Analyzed: 23-Oct-2021 03:20									
Diesel Range Organics (C12-C24)	3.19	0.100	mg/L	3.00	106	56-120	13.70	30	
Surrogate: o-Terphenyl	0.216		mg/L	0.225	95.9	50-150			



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Project: Paccar
Project Number: 163976
Project Manager: Roy Jensen

Reported:
04-Nov-2021 15:32

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BJK0045 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Blank (BJK0045-BLK1)						Prepared: 02-Nov-2021 Analyzed: 02-Nov-2021 18:24					
Chromium	52	ND	0.260	0.500	ug/L						U
Chromium	53	ND	0.239	0.500	ug/L						U
Lead	208	ND	0.0513	0.100	ug/L						U
Arsenic	75a	ND	0.0373	0.200	ug/L						U
LCS (BJK0045-BS1)						Prepared: 02-Nov-2021 Analyzed: 02-Nov-2021 18:28					
Chromium	52	25.7	0.260	0.500	ug/L	25.0		103	80-120		
Chromium	53	25.4	0.239	0.500	ug/L	25.0		101	80-120		
Lead	208	26.1	0.0513	0.100	ug/L	25.0		104	80-120		
Arsenic	75a	24.8	0.0373	0.200	ug/L	25.0		99.4	80-120		



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04-Nov-2021 15:32

Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 in Water	
Chromium-52	NELAP,WADOE,WA-DW,DoD-ELAP
Chromium-53	NELAP,WADOE,WA-DW,DoD-ELAP
Lead-208	NELAP,WADOE,WA-DW,DoD-ELAP
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
EPA 8260D in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Acrolein	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Iodomethane	DoD-ELAP,NELAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Butanone	DoD-ELAP,NELAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE



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Bromodichloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
Styrene	DoD-ELAP,NELAP,WADOE
Bromoform	DoD-ELAP,NELAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE



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Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

EPA 8260D-SIM in Water

Acrylonitrile	NELAP,WADOE
Vinyl chloride	NELAP,WADOE
1,1-Dichloroethene	NELAP,WADOE
cis-1,2-Dichloroethene	NELAP,WADOE
trans-1,2-Dichloroethene	NELAP,WADOE
Trichloroethene	NELAP,WADOE
Tetrachloroethene	NELAP,WADOE
1,1,2,2-Tetrachloroethane	NELAP,WADOE
1,2-Dichloroethane	NELAP,WADOE
Benzene	NELAP,WADOE

NWTPH-Dx in Water

Diesel Range Organics (C12-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C25)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C28)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C12-C22)	DoD-ELAP
Diesel Range Organics (C12-C25)	DoD-ELAP
Motor Oil Range Organics (C24-C38)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C25-C36)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C24-C40)	DoD-ELAP,NELAP,WADOE
Residual Range Organics (C23-C32)	DoD-ELAP
Mineral Spirits Range Organics (Tol-C12)	DoD-ELAP,NELAP,WADOE
Mineral Oil Range Organics (C16-C28)	DoD-ELAP,NELAP,WADOE
Kerosene Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
JP8 Range Organics (C8-C18)	DoD-ELAP,NELAP,WADOE
JP5 Range Organics (C10-C16)	DoD-ELAP,NELAP,WADOE
JP4 Range Organics (Tol-C14)	DoD-ELAP,NELAP,WADOE
Jet-A Range Organics (C10-C18)	DoD-ELAP,NELAP,WADOE
Creosote Range Organics (C12-C22)	DoD-ELAP,NELAP,WADOE



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Reported:

04-Nov-2021 15:32

Bunker C Range Organics (C10-C38)

DoD-ELAP,NELAP,WADOE

Stoddard Range Organics (C8-C12)

DoD-ELAP,NELAP,WADOE

Transformer Oil Range Organics (C12-C28)

DoD-ELAP,NELAP,WADOE

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	02/28/2022
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2022
WADOE	WA Dept of Ecology	C558	06/30/2022
WA-DW	Ecology - Drinking Water	C558	06/30/2022



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Project Number: 163976
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Reported:
04-Nov-2021 15:32

Notes and Definitions

*	Flagged value is not within established control limits.
B	This analyte was detected in the method blank.
D	The reported value is from a dilution
J	Estimated concentration value detected below the reporting limit.
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.



Analytical Resources, LLC
Analytical Chemists and Consultants

10 November 2021

Roy Jensen
Hart Crowser
3131 Elliott Ave Suite 600
Seattle, WA 98121

RE: Paccar

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)
21J0309

Associated SDG ID(s)
N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Kelly Bottem, Client Services Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 2130309		Turn-around Requested: Standard		Page: 1 of 1																																																																																																													
ARI Client Company: HLC		Phone:		Date: 10/21/21	Ice Present?																																																																																																												
Client Contact: Roy Jensen		No. of Coolers:		Cooler Temps: 4.3																																																																																																													
Client Project Name: Pallcar		<table border="1"> <thead> <tr> <th colspan="8">Analysis Requested</th> <th>Notes/Comments</th> </tr> <tr> <th>Total Metals Cd, Pb, Zn</th> <th>Hexavalent Chromium</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>QC sample</td> </tr> <tr> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>				Analysis Requested								Notes/Comments	Total Metals Cd, Pb, Zn	Hexavalent Chromium								X	X								X	X								X	X								X	X							QC sample	X	X								X	X																																											
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Client Project #: 0203653-000		Samplers: ASV																																																																																																															

Sample ID	Date	Time	Matrix	No. Containers	Total Metals Cd, Pb, Zn	Hexavalent Chromium									
MW-5	10/21/21	1035	H₂O	2	X	X									
MW-6	1	1055	1	1	X	X									
SW-DP	1	1135	1	1	X	X									
SW-3	1	1205	1	4	X	X									
SW-MH	1	1245	1	2	X	X									
SW-MO	4	1300	4	1	X	X									

Comments/Special Instructions	Relinquished by: (Signature) [Signature]	Received by: (Signature) [Signature]	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Andrew Nakamura	Printed Name: Dmitri Konradtze	Printed Name:	Printed Name:
	Company: HLC	Company: ARI	Company:	Company:
	Date & Time: 10/21/21 1330	Date & Time: 10/21/21 1330	Date & Time:	Date & Time:



Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: 0203653-000
Project Manager: Roy Jensen

Reported:
10-Nov-2021 14:03

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-5	21J0309-01	Water	21-Oct-2021 10:35	21-Oct-2021 13:30
MW-6	21J0309-02	Water	21-Oct-2021 10:55	21-Oct-2021 13:30
SW-DP	21J0309-03	Water	21-Oct-2021 11:35	21-Oct-2021 13:30
SW-3	21J0309-04	Water	21-Oct-2021 12:05	21-Oct-2021 13:30
SW-MH	21J0309-05	Water	21-Oct-2021 12:45	21-Oct-2021 13:30
SW-MD	21J0309-06	Water	21-Oct-2021 13:00	21-Oct-2021 13:30



Hart Crowser
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Seattle WA, 98121

Project: Paccar
Project Number: 0203653-000
Project Manager: Roy Jensen

Reported:
10-Nov-2021 14:03

Work Order Case Narrative

Total Metals - EPA Method 200.8

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The matrix spike (MS) percent recoveries and the duplicate (DUP) relative percent difference (RPD) were within advisory control limits.

Wet Chemistry

The sample(s) were prepared and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The reference material (SRM) percent recoveries were within control limits.

The matrix spike (MS) percent recoveries and the duplicate (DUP) relative percent difference (RPD) were within advisory control limits with the exception of analytes flagged on the associated forms.



WORK ORDER

21J0309

Samples will be discarded 90 days after submission of a final report unless other instructions are received.

Client: Hart Crowser

Project Manager: Kelly Bottem

Project: Paccar

Project Number: 0203653-000

Preservation Confirmation

Container ID	Container Type	pH	
21J0309-01 A	HDPE NM, 500 mL		
21J0309-01 B	HDPE NM, 500 mL, 1:1 HNO ₃	5.2	Pass
21J0309-02 A	HDPE NM, 500 mL		
21J0309-02 B	HDPE NM, 500 mL, 1:1 HNO ₃	5.2	Pass
21J0309-03 A	HDPE NM, 500 mL		
21J0309-03 B	HDPE NM, 500 mL, 1:1 HNO ₃	5.2	Pass
21J0309-04 A	HDPE NM, 500 mL		
21J0309-04 B	HDPE NM, 500 mL		
21J0309-04 C	HDPE NM, 500 mL, 1:1 HNO ₃	5.2	Pass
21J0309-04 D	HDPE NM, 500 mL, 1:1 HNO ₃	5.2	Pass
21J0309-05 A	HDPE NM, 500 mL		
21J0309-05 B	HDPE NM, 500 mL, 1:1 HNO ₃	5.2	Pass
21J0309-06 A	HDPE NM, 500 mL		
21J0309-06 B	HDPE NM, 500 mL, 1:1 HNO ₃	5.2	Pass

Preservation Confirmed By

Date

Reviewed By

Date



Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Hart Crocker

Project Name: Paccar

COC No(s): NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: NA

Assigned ARI Job No: 2130309

Tracking No: NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES NO

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.) YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1330

4.3

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: DOO2565

Cooler Accepted by: DL Date: 10/21/21 Time: 1330

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: NA

Was sufficient ice used (if appropriate)? NA YES NO

How were bottles sealed in plastic bags? Individually Grouped Not

Did all bottles arrive in good condition (unbroken)? YES NO

Were all bottle labels complete and legible? YES NO

Did the number of containers listed on COC match with the number of containers received? YES NO

Did all bottle labels and tags agree with custody papers? YES NO

Were all bottles used correct for the requested analyses? YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES NO

Were all VOC vials free of air bubbles? NA YES NO

Was sufficient amount of sample sent in each bottle? YES NO

Date VOC Trip Blank was made at ARI NA

Were the sample(s) split by ARI? NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JSW Date: 10/21/2021 Time: 1402 Labels checked by: JSW

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC
<u>SW-6</u>	<u>MW-6</u>		
<u>SW-5</u>	<u>MW-5</u>		

Additional Notes, Discrepancies, & Resolutions:

By: JSW

Date: 10/21/2021



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: 0203653-000
Project Manager: Roy Jensen

Reported:
10-Nov-2021 14:03

MW-5
21J0309-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 10/21/2021 10:35

Instrument: ICPMS2 Analyst: MCB

Analyzed: 11/04/2021 20:25

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BJK0080 Sample Size: 25 mL
Prepared: 11/03/2021 Final Volume: 25 mL

Extract ID: 21J0309-01 B 01

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Lead	7439-92-1	1	0.0513	0.100	0.551	ug/L	



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Seattle WA, 98121

Project: Paccar
Project Number: 0203653-000
Project Manager: Roy Jensen

Reported:
10-Nov-2021 14:03

MW-5
21J0309-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 10/21/2021 10:35

Instrument: ICPMS2 Analyst: MCB

Analyzed: 11/04/2021 20:25

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BJK0080 Sample Size: 25 mL
Prepared: 11/03/2021 Final Volume: 25 mL

Extract ID: 21J0309-01 B 01

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Copper	7440-50-8	1	0.173	0.500	2.15	ug/L	
Zinc	7440-66-6	1	2.92	6.00	16.4	ug/L	



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Project: Paccar
Project Number: 0203653-000
Project Manager: Roy Jensen

Reported:
10-Nov-2021 14:03

MW-5
21J0309-01 (Water)

Wet Chemistry

Method: SM 3500-Cr B-09

Sampled: 10/21/2021 10:35

Instrument: UV1800-2 Analyst: DOE

Analyzed: 10/21/2021 16:45

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: SM 5310 A-00, 0.45um filtration

Extract ID: 21J0309-01 A 01

Preparation Batch: BJJ0608

Sample Size: 40 mL

Prepared: 10/21/2021

Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Hexavalent Chromium	1854-02-99	1.25	0.013	0.013	ND	mg/L	U



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Seattle WA, 98121

Project: Paccar
Project Number: 0203653-000
Project Manager: Roy Jensen

Reported:
10-Nov-2021 14:03

MW-6
21J0309-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 10/21/2021 10:55

Instrument: ICPMS2 Analyst: MCB

Analyzed: 11/04/2021 20:33

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BJK0080 Sample Size: 25 mL
Prepared: 11/03/2021 Final Volume: 25 mL

Extract ID: 21J0309-02 B 01

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Lead	7439-92-1	1	0.0513	0.100	0.105	ug/L	



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Project: Paccar
Project Number: 0203653-000
Project Manager: Roy Jensen

Reported:
10-Nov-2021 14:03

MW-6
21J0309-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 10/21/2021 10:55

Instrument: ICPMS2 Analyst: MCB

Analyzed: 11/04/2021 20:33

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BJK0080 Sample Size: 25 mL
Prepared: 11/03/2021 Final Volume: 25 mL

Extract ID: 21J0309-02 B 01

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Copper	7440-50-8	1	0.173	0.500	2.50	ug/L	
Zinc	7440-66-6	1	2.92	6.00	6.72	ug/L	



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3131 Elliott Ave Suite 600
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Project: Paccar
Project Number: 0203653-000
Project Manager: Roy Jensen

Reported:
10-Nov-2021 14:03

MW-6
21J0309-02 (Water)

Wet Chemistry

Method: SM 3500-Cr B-09

Sampled: 10/21/2021 10:55

Instrument: UV1800-2 Analyst: DOE

Analyzed: 10/21/2021 16:46

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: SM 5310 A-00, 0.45um filtration

Extract ID: 21J0309-02 A 01

Preparation Batch: BJJ0608

Sample Size: 40 mL

Prepared: 10/21/2021

Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Hexavalent Chromium	1854-02-99	1.25	0.013	0.013	ND	mg/L	U



Hart Crowser
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Seattle WA, 98121

Project: Paccar
Project Number: 0203653-000
Project Manager: Roy Jensen

Reported:
10-Nov-2021 14:03

SW-DP
21J0309-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 10/21/2021 11:35

Instrument: ICPMS2 Analyst: MCB

Analyzed: 11/04/2021 20:37

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BJK0080 Sample Size: 25 mL
Prepared: 11/03/2021 Final Volume: 25 mL

Extract ID: 21J0309-03 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Lead	7439-92-1	1	0.0513	0.100	0.387	ug/L	



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: 0203653-000
Project Manager: Roy Jensen

Reported:
10-Nov-2021 14:03

SW-DP
21J0309-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 10/21/2021 11:35

Instrument: ICPMS2 Analyst: MCB

Analyzed: 11/04/2021 20:37

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BJK0080 Sample Size: 25 mL
Prepared: 11/03/2021 Final Volume: 25 mL

Extract ID: 21J0309-03 B 01

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Copper	7440-50-8	1	0.173	0.500	5.40	ug/L	
Zinc	7440-66-6	1	2.92	6.00	69.4	ug/L	



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Project: Paccar
Project Number: 0203653-000
Project Manager: Roy Jensen

Reported:
10-Nov-2021 14:03

SW-DP
21J0309-03 (Water)

Wet Chemistry

Method: SM 3500-Cr B-09

Sampled: 10/21/2021 11:35

Instrument: UV1800-2 Analyst: DOE

Analyzed: 10/21/2021 17:00

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: SM 5310 A-00, 0.45um filtration

Extract ID: 21J0309-03 A 01

Preparation Batch: BJJ0608

Sample Size: 40 mL

Prepared: 10/21/2021

Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Hexavalent Chromium	1854-02-99	1.25	0.013	0.013	ND	mg/L	U



Hart Crowser
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Project: Paccar
Project Number: 0203653-000
Project Manager: Roy Jensen

Reported:
10-Nov-2021 14:03

SW-3
21J0309-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 10/21/2021 12:05

Instrument: ICPMS1 Analyst: MCB

Analyzed: 11/04/2021 22:12

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BJK0080 Sample Size: 25 mL
Prepared: 11/03/2021 Final Volume: 25 mL

Extract ID: 21J0309-04 D 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Lead	7439-92-1	1	0.0513	0.100	0.0720	ug/L	J



Hart Crowser
3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: 0203653-000
Project Manager: Roy Jensen

Reported:
10-Nov-2021 14:03

SW-3
21J0309-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 10/21/2021 12:05

Instrument: ICPMS1 Analyst: MCB

Analyzed: 11/04/2021 22:12

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BJK0080 Sample Size: 25 mL
Prepared: 11/03/2021 Final Volume: 25 mL

Extract ID: 21J0309-04 D 01

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Copper	7440-50-8	1	0.173	0.500	1.82	ug/L	
Zinc	7440-66-6	1	2.92	6.00	22.0	ug/L	



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Project Number: 0203653-000
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Reported:
10-Nov-2021 14:03

SW-3
21J0309-04 (Water)

Wet Chemistry

Method: SM 3500-Cr B-09

Sampled: 10/21/2021 12:05

Instrument: UV1800-2 Analyst: DOE

Analyzed: 10/21/2021 16:42

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: SM 5310 A-00, 0.45um filtration

Extract ID: 21J0309-04 A 01

Preparation Batch: BJJ0608

Sample Size: 40 mL

Prepared: 10/21/2021

Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Hexavalent Chromium	1854-02-99	1.25	0.013	0.013	ND	mg/L	U



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Project: Paccar
Project Number: 0203653-000
Project Manager: Roy Jensen

Reported:
10-Nov-2021 14:03

SW-MH
21J0309-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 10/21/2021 12:45

Instrument: ICPMS2 Analyst: MCB

Analyzed: 11/04/2021 20:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BJK0080 Sample Size: 25 mL
Prepared: 11/03/2021 Final Volume: 25 mL

Extract ID: 21J0309-05 B 01

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Lead	7439-92-1	1	0.0513	0.100	2.08	ug/L	



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Project: Paccar
Project Number: 0203653-000
Project Manager: Roy Jensen

Reported:
10-Nov-2021 14:03

SW-MH
21J0309-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 10/21/2021 12:45

Instrument: ICPMS2 Analyst: MCB

Analyzed: 11/04/2021 20:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BJK0080 Sample Size: 25 mL
Prepared: 11/03/2021 Final Volume: 25 mL

Extract ID: 21J0309-05 B 01

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Copper	7440-50-8	1	0.173	0.500	51.7	ug/L	
Zinc	7440-66-6	1	0.940	6.00	99.8	ug/L	



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Project: Paccar
Project Number: 0203653-000
Project Manager: Roy Jensen

Reported:
10-Nov-2021 14:03

SW-MH
21J0309-05 (Water)

Wet Chemistry

Method: SM 3500-Cr B-09

Sampled: 10/21/2021 12:45

Instrument: UV1800-2 Analyst: DOE

Analyzed: 10/21/2021 17:00

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: SM 5310 A-00, 0.45um filtration

Extract ID: 21J0309-05 A 01

Preparation Batch: BJJ0608

Sample Size: 40 mL

Prepared: 10/21/2021

Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Hexavalent Chromium	1854-02-99	1.25	0.013	0.013	ND	mg/L	U



Hart Crowser
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Project: Paccar
Project Number: 0203653-000
Project Manager: Roy Jensen

Reported:
10-Nov-2021 14:03

SW-MD
21J0309-06 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 10/21/2021 13:00

Instrument: ICPMS2 Analyst: MCB

Analyzed: 11/04/2021 20:46

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO₃ matrix
Preparation Batch: BJK0080 Sample Size: 25 mL
Prepared: 11/03/2021 Final Volume: 25 mL

Extract ID: 21J0309-06 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Lead	7439-92-1	1	0.0513	0.100	2.28	ug/L	



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Project: Paccar
Project Number: 0203653-000
Project Manager: Roy Jensen

Reported:
10-Nov-2021 14:03

SW-MD
21J0309-06 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED

Sampled: 10/21/2021 13:00

Instrument: ICPMS2 Analyst: MCB

Analyzed: 11/04/2021 20:46

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BJK0080 Sample Size: 25 mL
Prepared: 11/03/2021 Final Volume: 25 mL

Extract ID: 21J0309-06 B 01

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Copper	7440-50-8	1	0.173	0.500	53.0	ug/L	
Zinc	7440-66-6	1	0.940	6.00	99.6	ug/L	



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3131 Elliott Ave Suite 600
Seattle WA, 98121

Project: Paccar
Project Number: 0203653-000
Project Manager: Roy Jensen

Reported:
10-Nov-2021 14:03

SW-MD
21J0309-06 (Water)

Wet Chemistry

Method: SM 3500-Cr B-09

Sampled: 10/21/2021 13:00

Instrument: UV1800-2 Analyst: DOE

Analyzed: 10/21/2021 17:01

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: SM 5310 A-00, 0.45um filtration

Extract ID: 21J0309-06 A 01

Preparation Batch: BJJ0608

Sample Size: 40 mL

Prepared: 10/21/2021

Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Hexavalent Chromium	1854-02-99	1.25	0.013	0.013	ND	mg/L	U



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Reported:
10-Nov-2021 14:03

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BJK0080 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJK0080-BLK1)						Prepared: 03-Nov-2021 Analyzed: 03-Nov-2021 17:42						
Copper	63	ND	0.173	0.500	ug/L							U
Copper	65	ND	0.350	0.500	ug/L							U
Zinc	66	ND	2.92	6.00	ug/L							U
Zinc	67	ND	0.940	6.00	ug/L							U
Blank (BJK0080-BLK2)						Prepared: 03-Nov-2021 Analyzed: 04-Nov-2021 16:54						
Chromium	52	ND	0.260	0.500	ug/L							U
Chromium	53	ND	0.239	0.500	ug/L							U
Lead	208	ND	0.0513	0.100	ug/L							U
LCS (BJK0080-BS1)						Prepared: 03-Nov-2021 Analyzed: 03-Nov-2021 17:45						
Copper	63	24.8	0.173	0.500	ug/L	25.0		99.1	80-120			
Copper	65	24.9	0.350	0.500	ug/L	25.0		99.6	80-120			
Zinc	66	79.1	2.92	6.00	ug/L	80.0		98.9	80-120			
Zinc	67	75.3	0.940	6.00	ug/L	80.0		94.1	80-120			
LCS (BJK0080-BS2)						Prepared: 03-Nov-2021 Analyzed: 04-Nov-2021 16:59						
Chromium	52	26.9	0.260	0.500	ug/L	25.0		107	80-120			
Chromium	53	27.0	0.239	0.500	ug/L	25.0		108	80-120			
Lead	208	24.3	0.0513	0.100	ug/L	25.0		97.2	80-120			
Duplicate (BJK0080-DUP1)						Source: 21J0309-04 Prepared: 03-Nov-2021 Analyzed: 04-Nov-2021 22:17						
Lead	208	0.0750	0.0513	0.100	ug/L		0.0720			4.08	20	J
Copper	63	1.88	0.173	0.500	ug/L		1.82			3.40	20	
Zinc	66	21.7	2.92	6.00	ug/L		22.0			0.98	20	
Matrix Spike (BJK0080-MS1)						Source: 21J0309-04 Prepared: 03-Nov-2021 Analyzed: 04-Nov-2021 22:22						
Lead	208	23.1	0.0513	0.100	ug/L	25.0	0.0720	92.1	75-125			
Copper	63	26.3	0.173	0.500	ug/L	25.0	1.82	97.9	75-125			
Zinc	66	99.2	2.92	6.00	ug/L	80.0	22.0	96.6	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.												
Matrix Spike Dup (BJK0080-MSD1)						Source: 21J0309-04 Prepared: 03-Nov-2021 Analyzed: 04-Nov-2021 22:28						
Lead	208	22.5	0.0513	0.100	ug/L	25.0	0.0720	89.7	75-125	2.73	20	
Copper	63	25.4	0.173	0.500	ug/L	25.0	1.82	94.2	75-125	3.50	20	
Zinc	66	95.2	2.92	6.00	ug/L	80.0	22.0	91.6	75-125	4.07	20	



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Reported:
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BJK0080 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Instrument: ICPMS2 Analyst: SKD

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Duplicate (BJK0080-DUP2) Source: 21J0309-04 Prepared: 03-Nov-2021 Analyzed: 05-Nov-2021 20:45

Chromium	52	0.596	0.260	0.500	ug/L		0.553			7.48	20	
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Matrix Spike (BJK0080-MS2) Source: 21J0309-04 Prepared: 03-Nov-2021 Analyzed: 05-Nov-2021 20:49

Chromium	52	23.1	0.260	0.500	ug/L	25.0	0.553	90.1	75-125			
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Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BJK0080-MSD2) Source: 21J0309-04 Prepared: 03-Nov-2021 Analyzed: 05-Nov-2021 20:53

Chromium	52	22.7	0.260	0.500	ug/L	25.0	0.553	88.6	75-125	1.67	20	
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Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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Project Manager: Roy Jensen

Reported:
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Analysis by: Analytical Resources, LLC

Wet Chemistry - Quality Control

Batch BJJ0608 - SM 5310 A-00, 0.45um filtration

Instrument: UV1800-2 Analyst: DOE

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Blank (BJJ0608-BLK1)					Prepared: 21-Oct-2021 Analyzed: 21-Oct-2021 16:40					
Hexavalent Chromium	ND	0.013	0.013	mg/L						U
LCS (BJJ0608-BS1)					Prepared: 21-Oct-2021 Analyzed: 21-Oct-2021 16:41					
Hexavalent Chromium	0.623	0.013	0.013	mg/L	0.626		99.5 85-115			D
Duplicate (BJJ0608-DUP1)					Source: 21J0309-04 Prepared: 21-Oct-2021 Analyzed: 21-Oct-2021 16:42					
Hexavalent Chromium	ND	0.013	0.013	mg/L		ND				U
Matrix Spike (BJJ0608-MS1)					Source: 21J0309-04 Prepared: 21-Oct-2021 Analyzed: 21-Oct-2021 16:43					
Hexavalent Chromium	ND	0.013	0.013	mg/L	0.0626	ND	85-115			*, K, U
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BJJ0608-MSD1)					Source: 21J0309-04 Prepared: 21-Oct-2021 Analyzed: 21-Oct-2021 16:43					
Hexavalent Chromium	ND	0.013	0.013	mg/L	0.0626	ND	85-115			*, K, U
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Post Spike (BJJ0608-PS1)					Source: 21J0309-04 Prepared: 21-Oct-2021 Analyzed: 21-Oct-2021 17:02					
Hexavalent Chromium	0.016			mg/L	0.0299	ND	28.2 85-115			*



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Certified Analyses included in this Report

Analyte	Certifications
<i>EPA 200.8 in Water</i>	
Lead-208	NELAP,WADOE,WA-DW,DoD-ELAP
<i>EPA 200.8 UCT-KED in Water</i>	
Copper-63	NELAP,WADOE,WA-DW,DoD-ELAP
Copper-65	NELAP,WADOE,WA-DW,DoD-ELAP
Zinc-66	NELAP,WADOE,WA-DW,DoD-ELAP
Zinc-67	NELAP,WADOE,WA-DW,DoD-ELAP
<i>SM 3500-Cr B-09 in Water</i>	
Hexavalent Chromium	WADOE,NELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	02/28/2022
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2022
WADOE	WA Dept of Ecology	C558	06/30/2022
WA-DW	Ecology - Drinking Water	C558	06/30/2022



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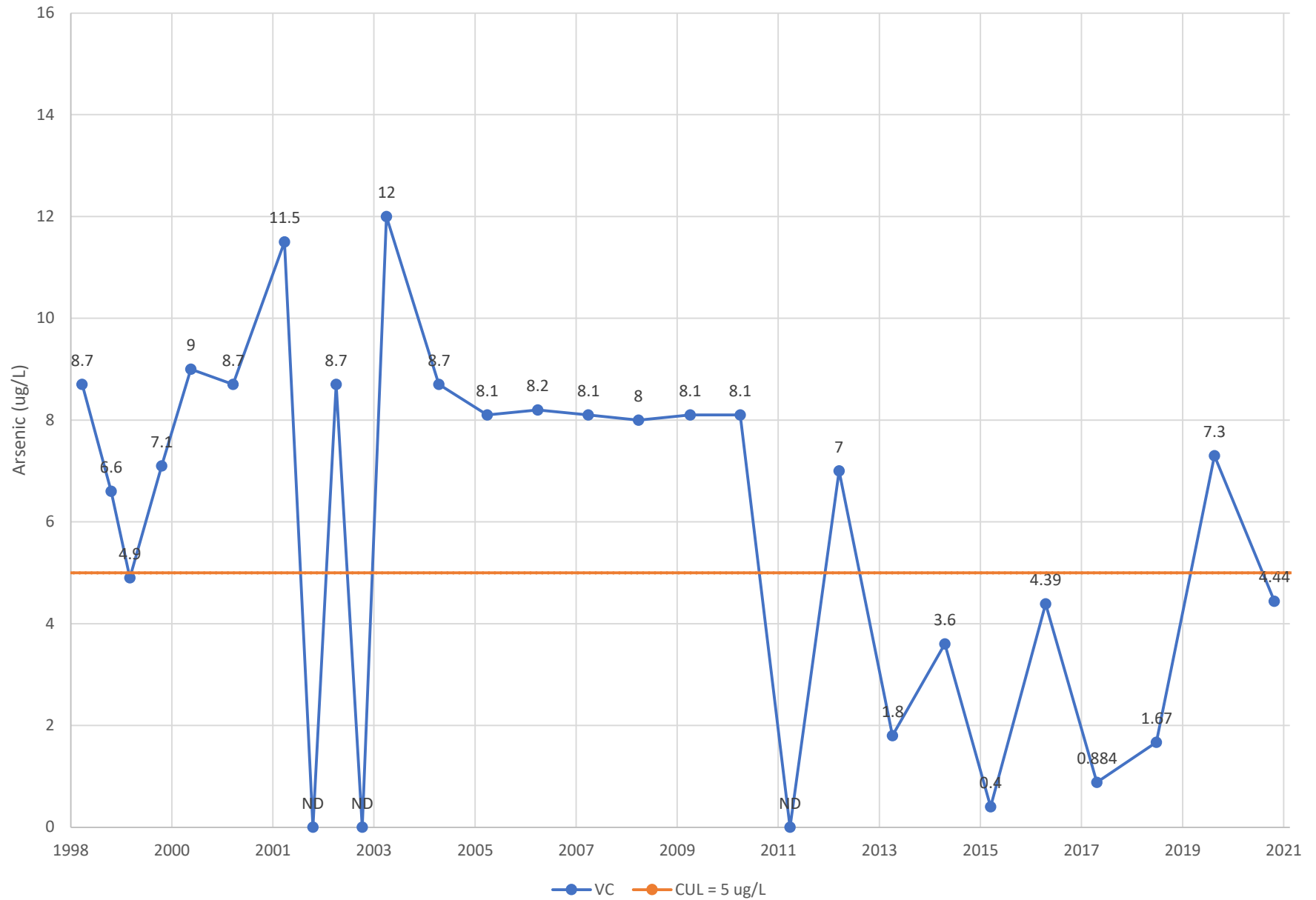
Notes and Definitions

*	Flagged value is not within established control limits.
D	The reported value is from a dilution
J	Estimated concentration value detected below the reporting limit.
K	Hexavalent Chromium post spike performed on a pH adjusted sample to verify matrix interference.
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

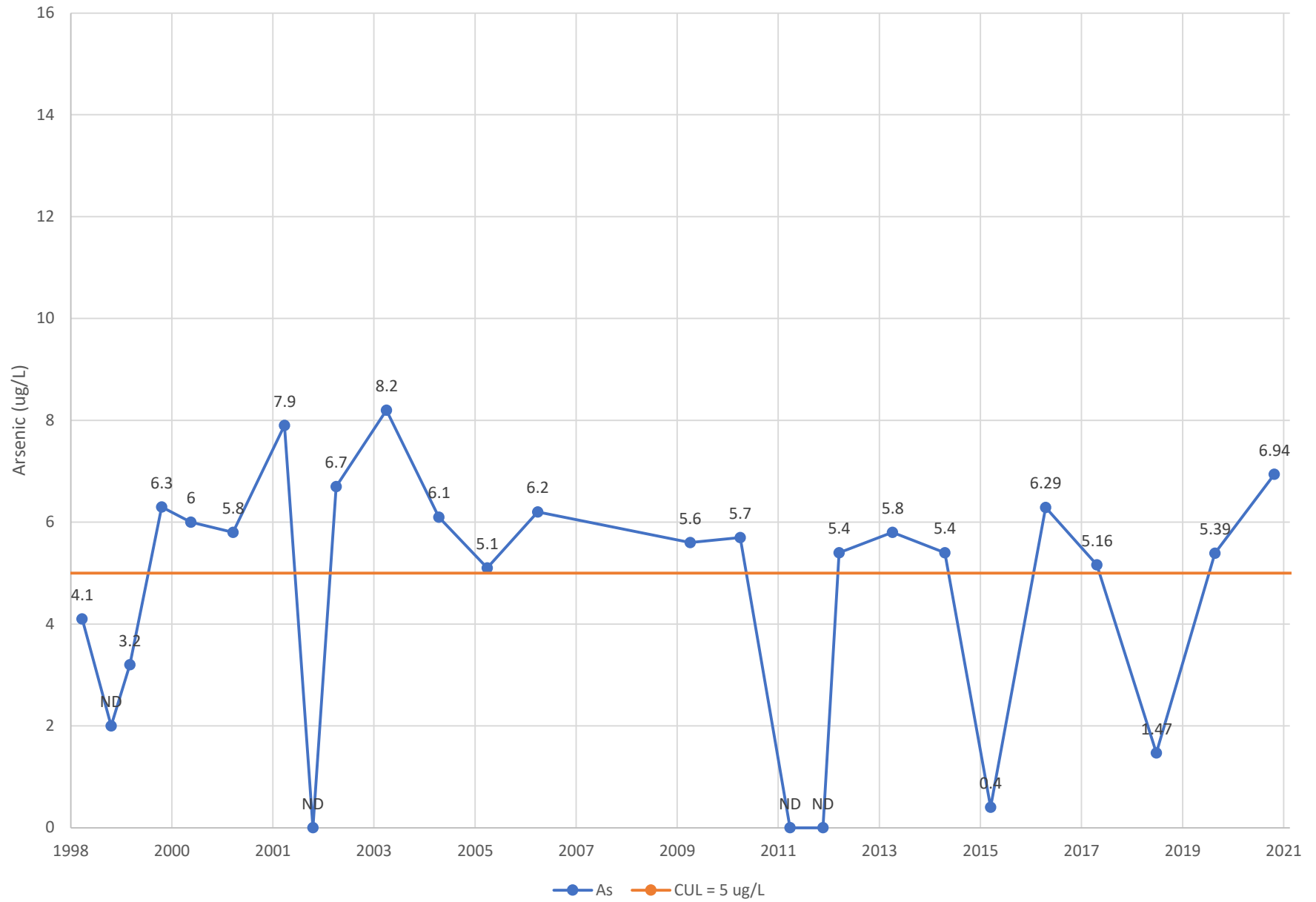
APPENDIX D

Groundwater Quality Summary Charts

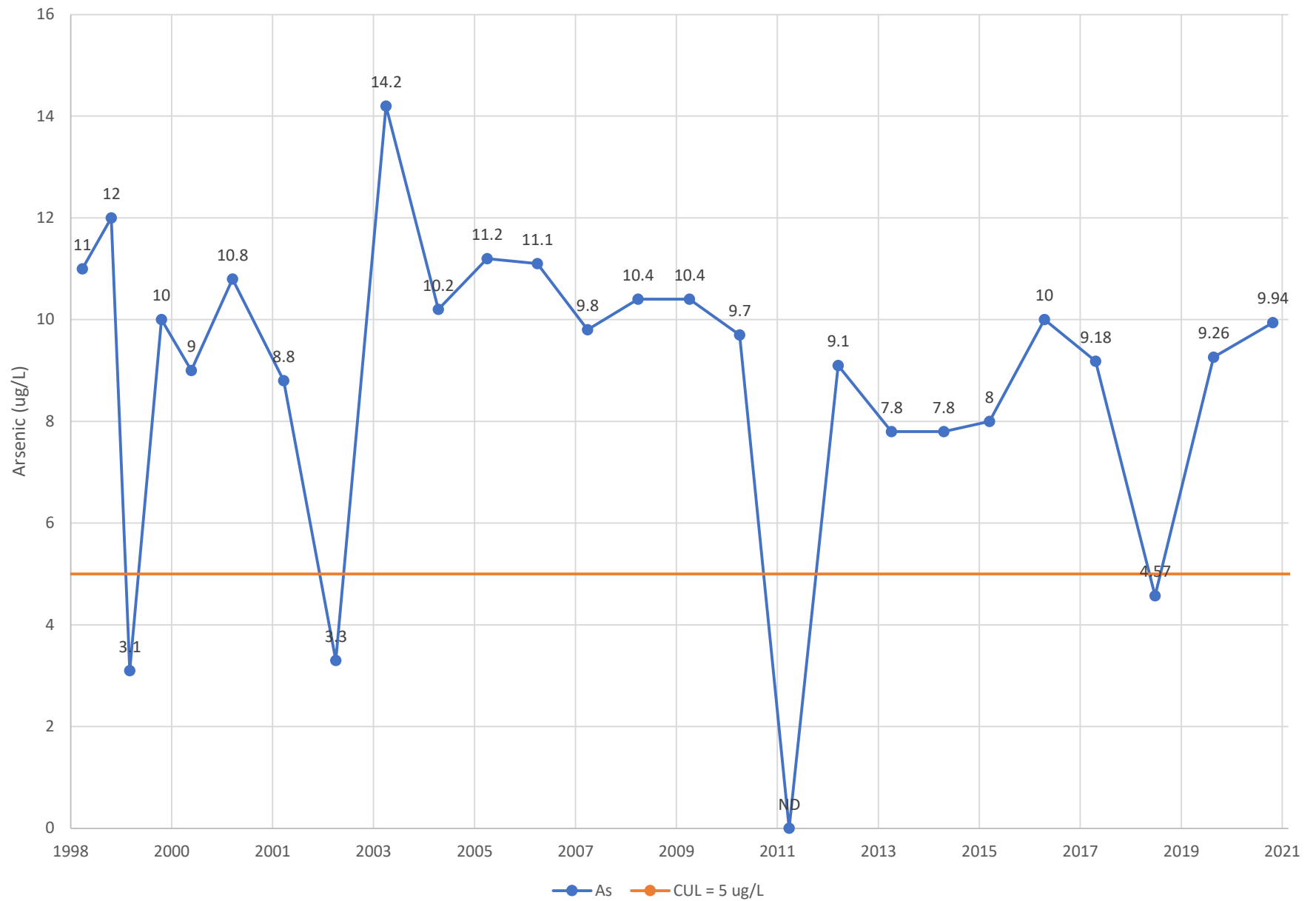
CW-01S - Arsenic



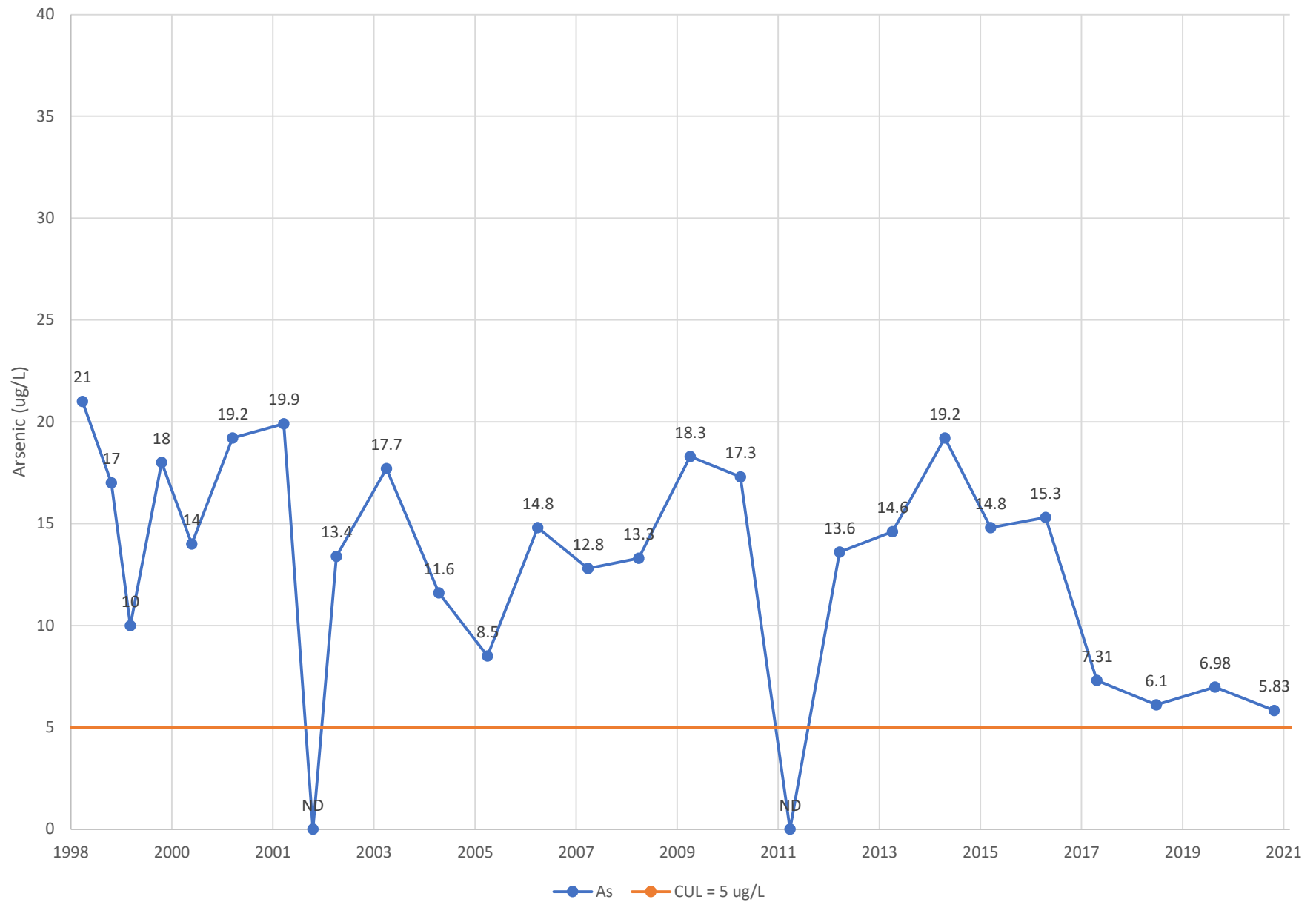
CW-01D - Arsenic



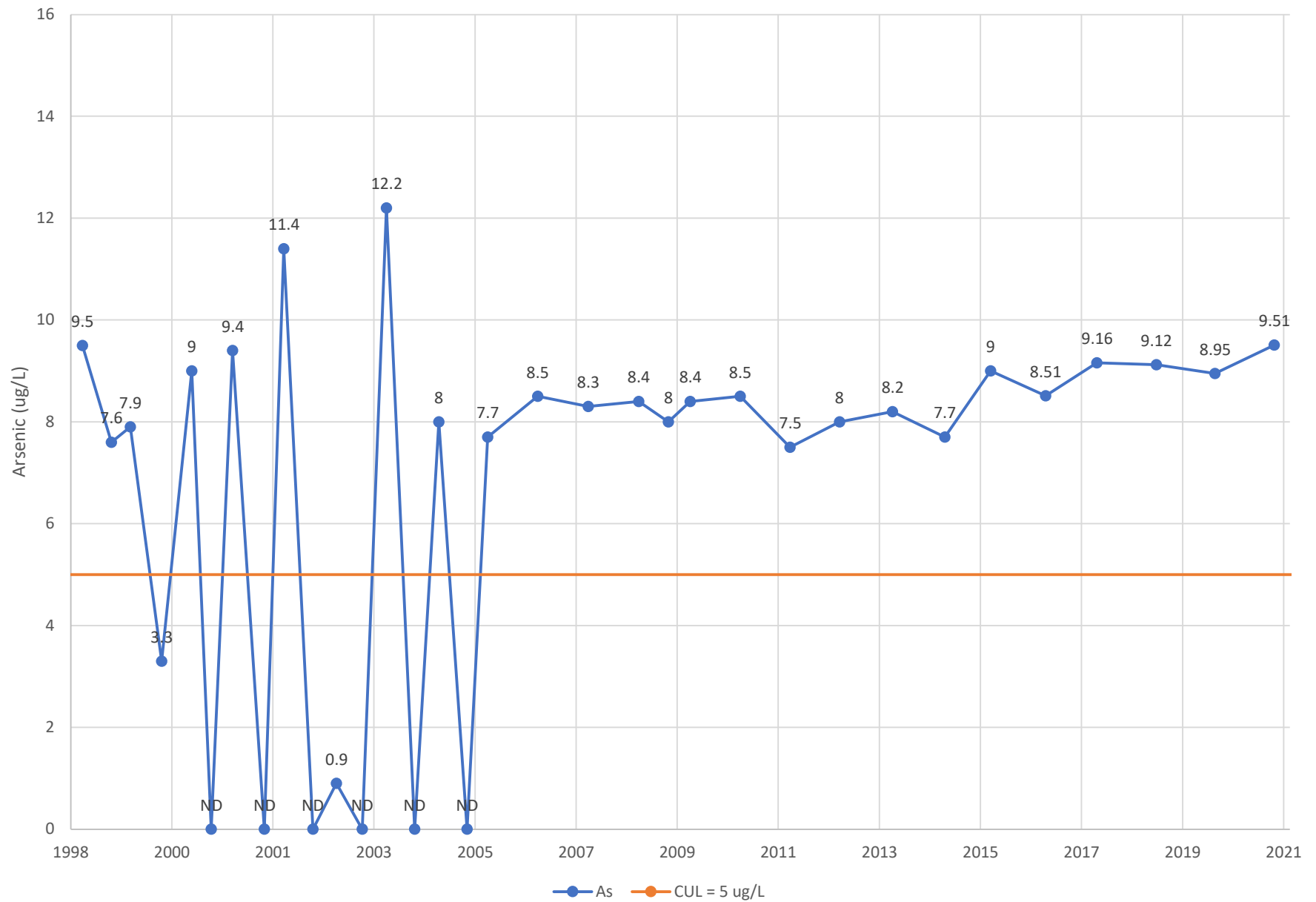
LW-06D - Arsenic



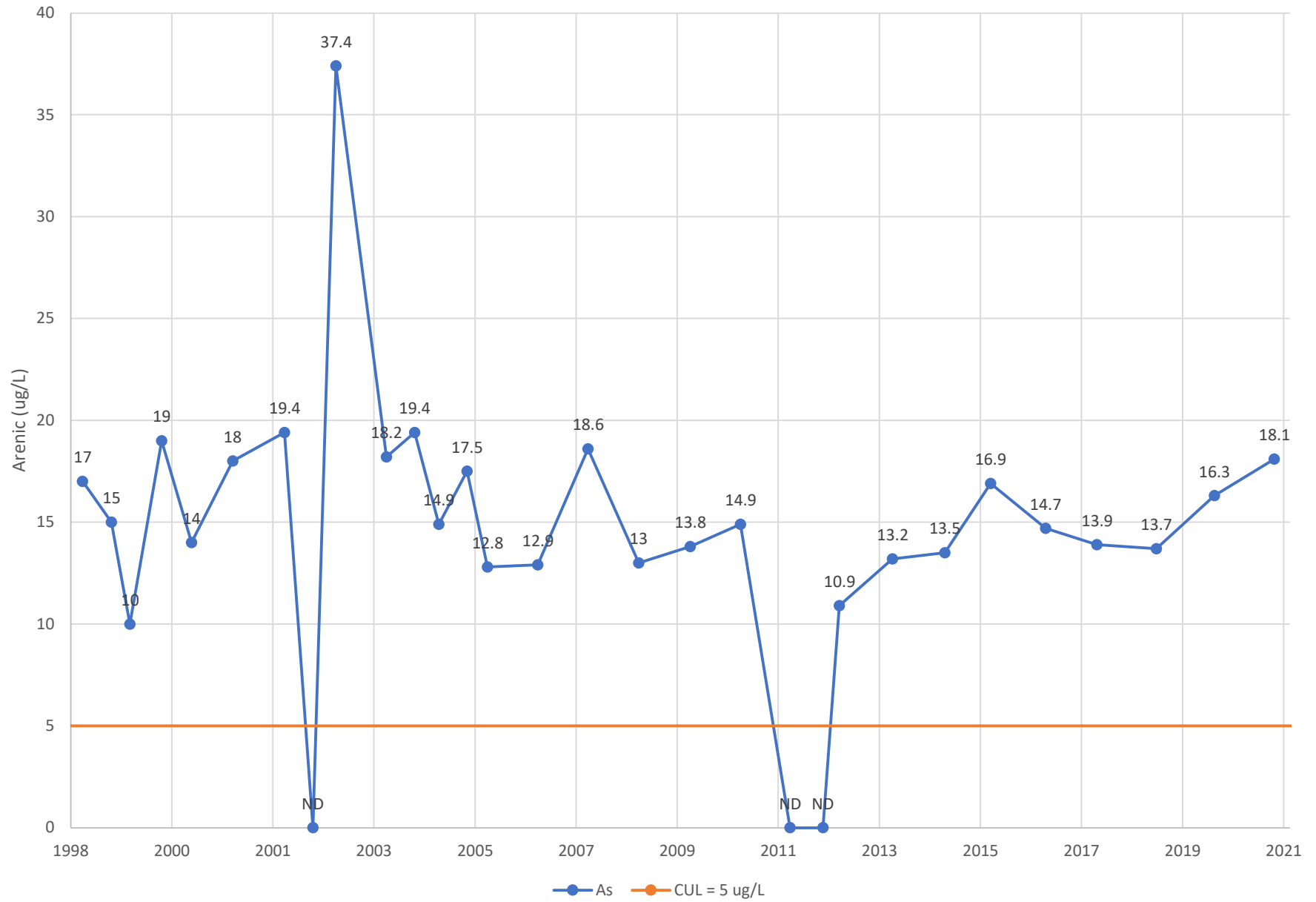
LW-09S - Arsenic



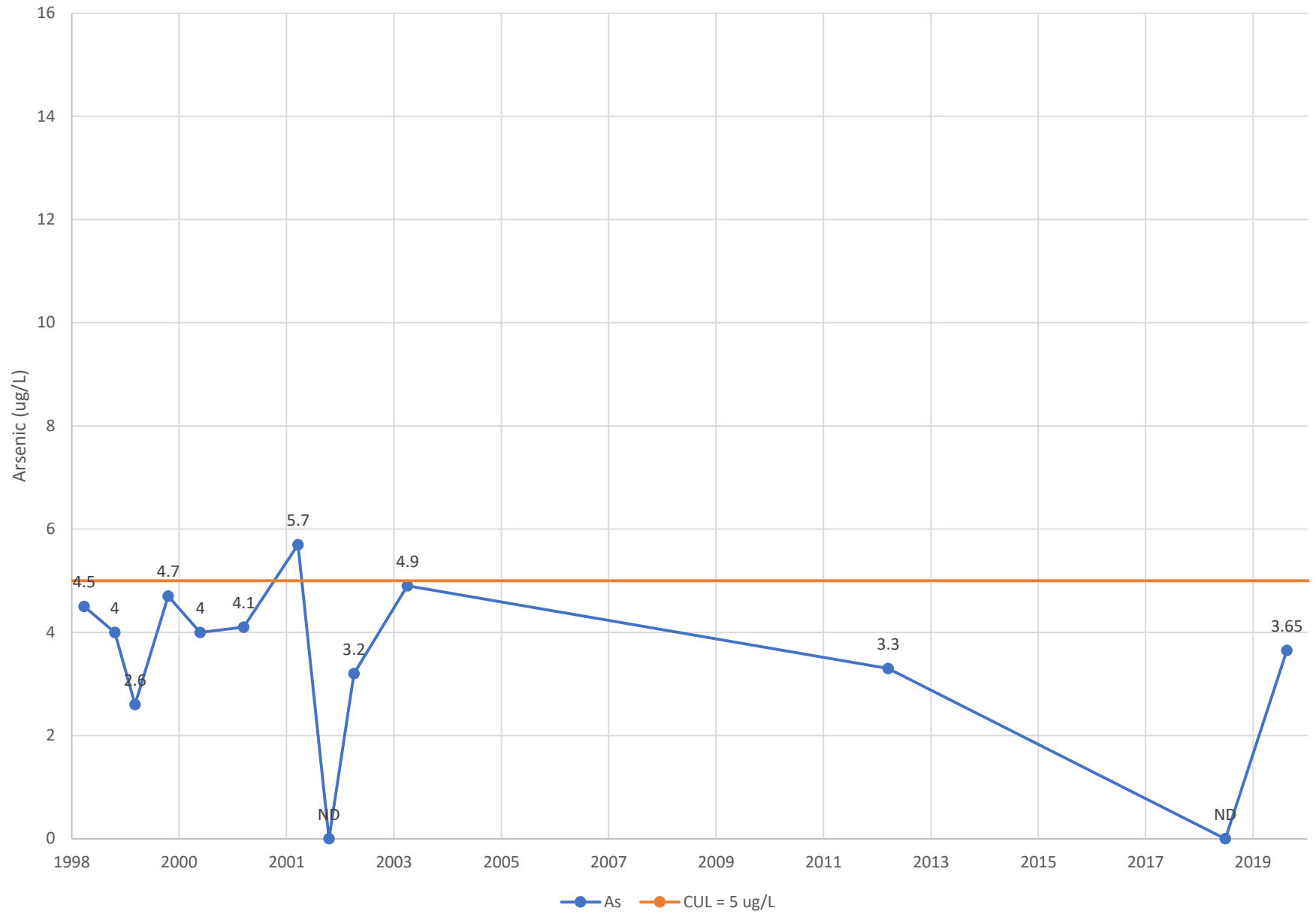
LW-09D - Arsenic



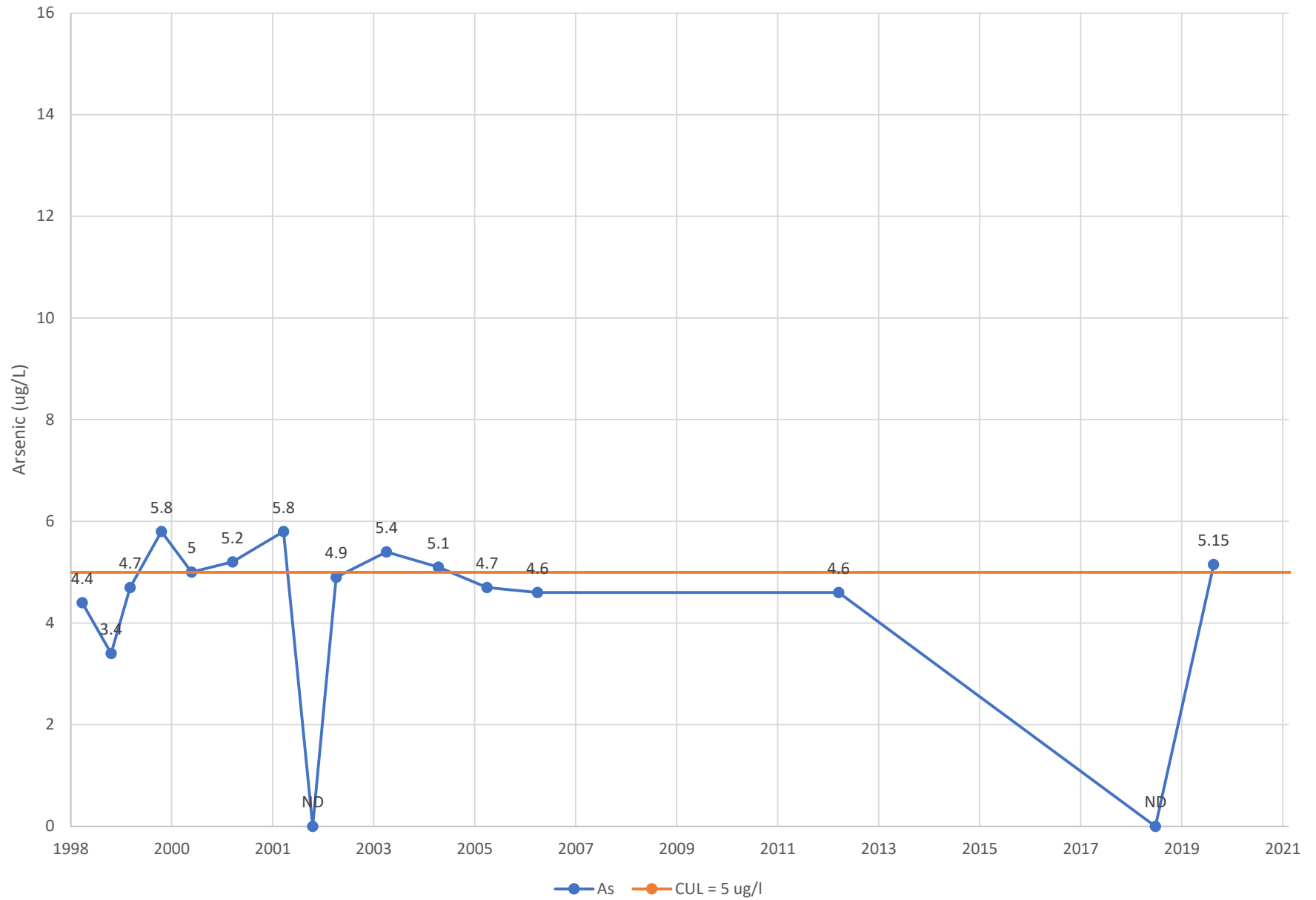
MW-03I - Arsenic



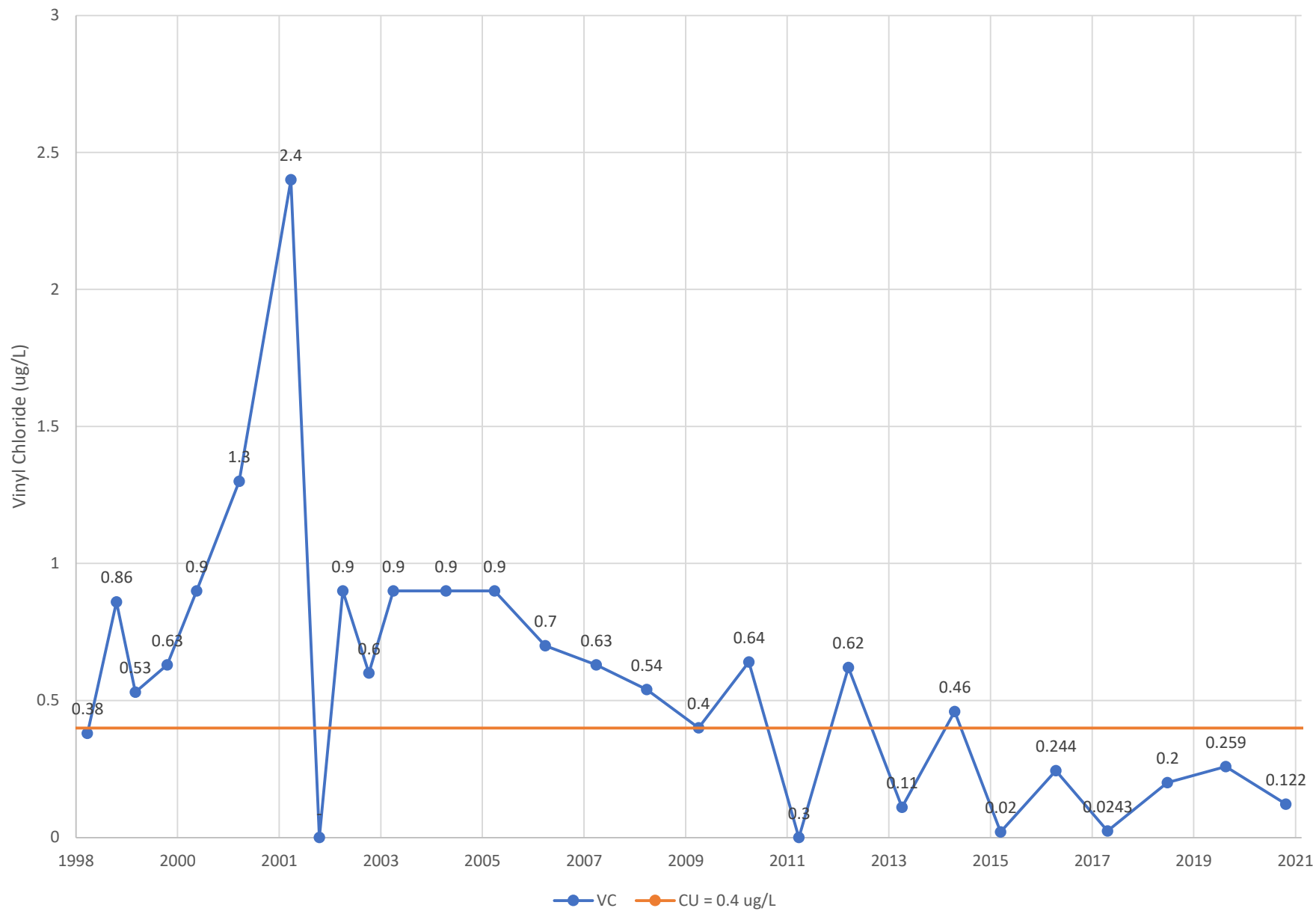
SC-02S - Arsenic



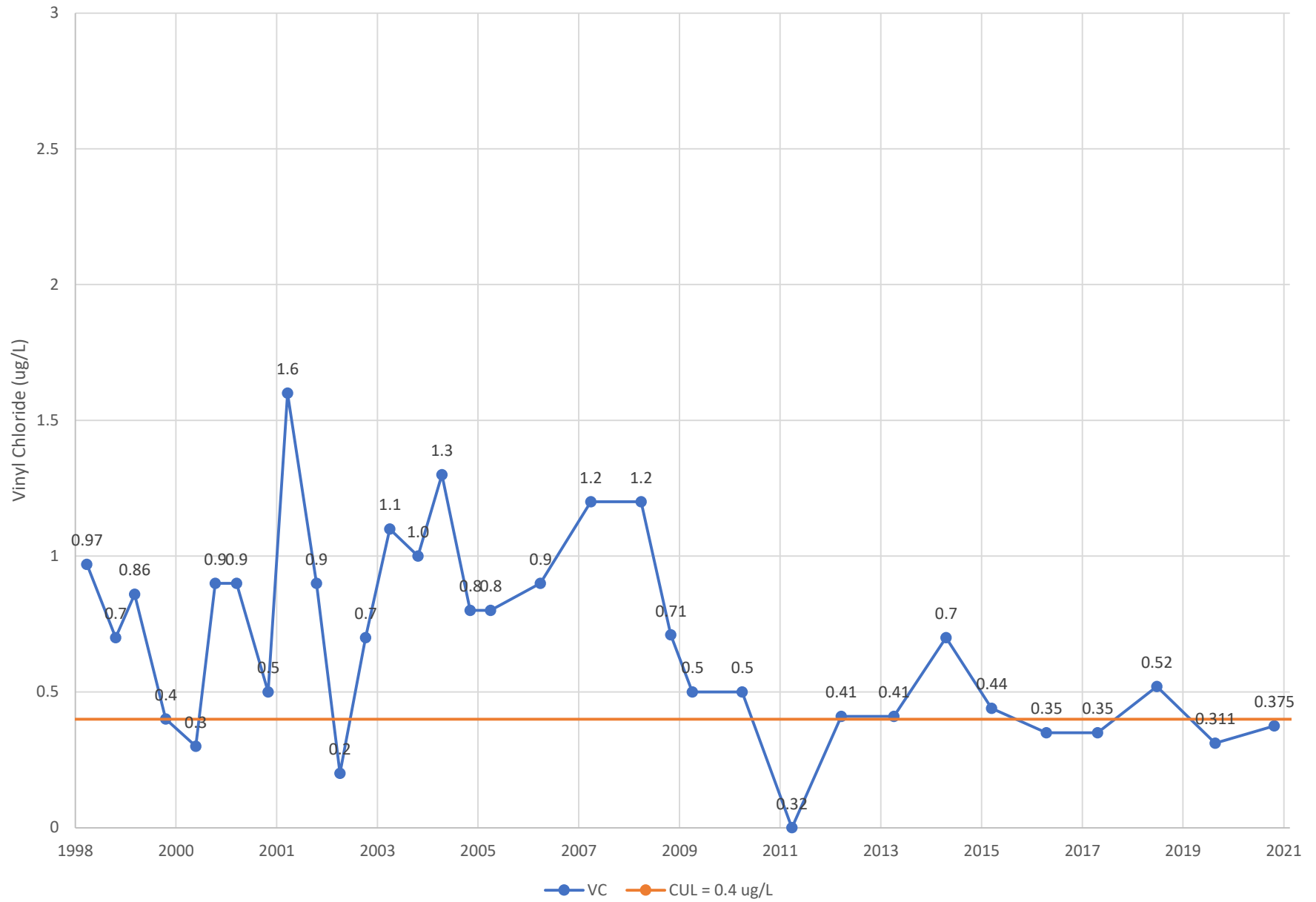
SC-01S - Arsenic



CW-01S - Vinyl Chloride



LW-09D - Vinyl Chloride



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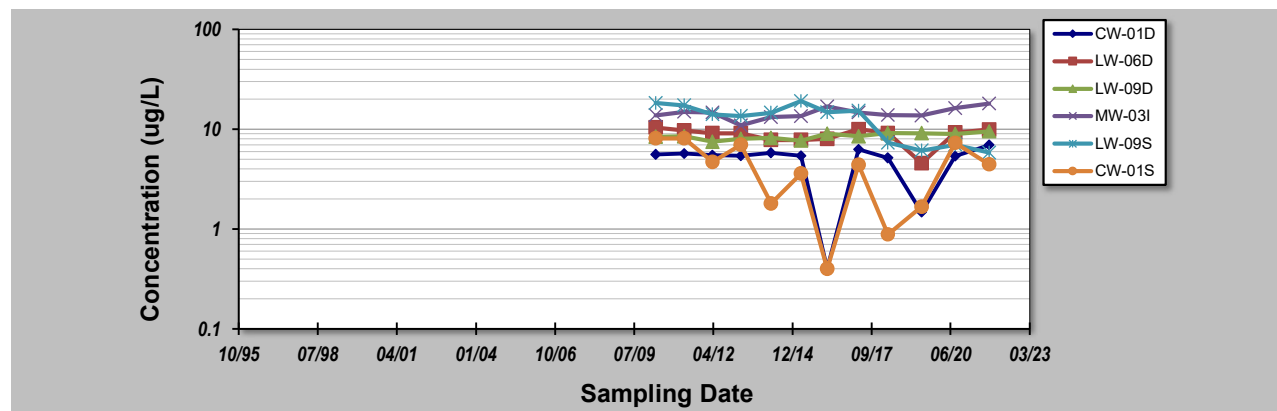
for Constituent Trend Analysis

Evaluation Date: 4-Dec-22	Job ID: 9999
Facility Name: PACCAR Renton	Constituent: Arsenic
Conducted By: Andrew Nakahara/REJ	Concentration Units: ug/L

Sampling Point ID: CW-01D	LW-06D	LW-09D	MW-03I	LW-09S	CW-01S
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Sampling Event	Sampling Date	ARSENIC CONCENTRATION (ug/L)					
1	4/2/10	5.6	10.4	8.4	13.8	18.3	8.1
2	3/31/11	5.7	9.7	8.5	14.9	17.3	8.1
3	3/23/12	5.5	9.1	7.5	14.7	14.1	4.7
4	3/14/13	5.4	9.1	8	10.9	13.6	7
5	4/2/14	5.8	7.8	8.2	13.2	14.6	1.8
6	4/15/15	5.4	7.8	7.7	13.5	19.2	3.6
7	3/10/16	0.4	8.0	9.0	16.9	14.8	0.4
8	4/11/17	6.29	10.0	8.5	14.7	15.3	4.39
9	4/17/18	5.16	9.2	9.16	13.9	7.31	0.884
10	6/20/19	1.47	4.57	9.12	13.7	6.1	1.67
11	8/13/20	5.39	9.26	8.95	16.3	6.98	7.3
12	10/19/21	6.94	9.94	9.51	18.1	5.83	4.44
13							
14							
15							
16							
17							
18							
19							
20							

Coefficient of Variation:	0.39	0.18	0.07	0.13	0.38	0.64	
Mann-Kendall Statistic (S):	-9	-6	36	19	-36	-21	
Confidence Factor:	70.4%	63.1%	99.3%	88.9%	99.3%	91.3%	
Concentration Trend:	Stable	Stable	Increasing	No Trend	Decreasing	Prob. Decreasing	



Notes:

- At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
- Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0); >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
- Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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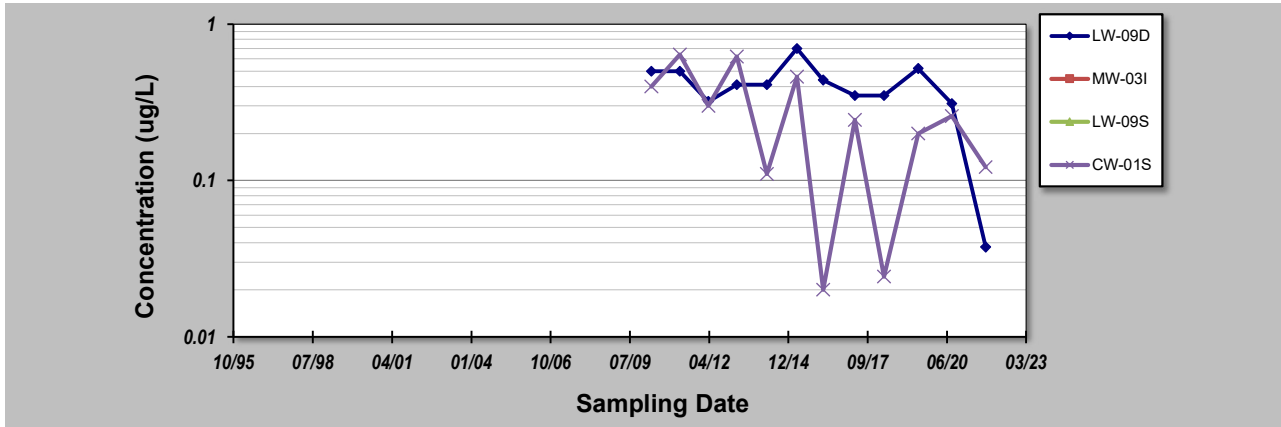
for Constituent Trend Analysis

Evaluation Date: **Dec 4 2022** Job ID: **9999**
 Facility Name: **PACCAR Renton** Constituent: **VC**
 Conducted By: **Andrew Nakahara** Concentration Units: **ug/L**

Sampling Point ID:	CW-01D	LW-06D	LW-09D	MW-03I	LW-09S	CW-01S
Sampling Event	Sampling Date	VC CONCENTRATION (ug/L)				

Sampling Event	Sampling Date	VC CONCENTRATION (ug/L)				
1	4/2/10		0.5			0.4
2	3/29/11		0.5			0.64
3	3/23/12		0.32			0.3
4	3/15/13		0.41			0.62
5	4/2/14		0.41			0.11
6	4/15/15		0.7			0.46
7	3/10/16		0.44			0.02
8	4/11/17		0.35			0.244
9	4/17/18		0.35			0.0243
10	6/20/19		0.52			0.2
11	8/17/20		0.311			0.259
12	10/19/21		0.0375			0.122
13						
14						
15						
16						
17						
18						
19						
20						

Coefficient of Variation:		0.39		0.74	
Mann-Kendall Statistic (S):		-23		-26	
Confidence Factor:		93.3%		95.7%	
Concentration Trend:		Prob. Decreasing		Decreasing	



Notes:

- At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
- Confidence in Trend = Confidence (in percent) that constituent concentration is increasing ($S > 0$) or decreasing ($S < 0$): $> 95\%$ = Increasing or Decreasing; $\geq 90\%$ = Probably Increasing or Probably Decreasing; $< 90\%$ and $S > 0$ = No Trend; $< 90\%$, $S \leq 0$, and $COV \geq 1$ = No Trend; $< 90\%$ and $COV < 1$ = Stable.
- Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

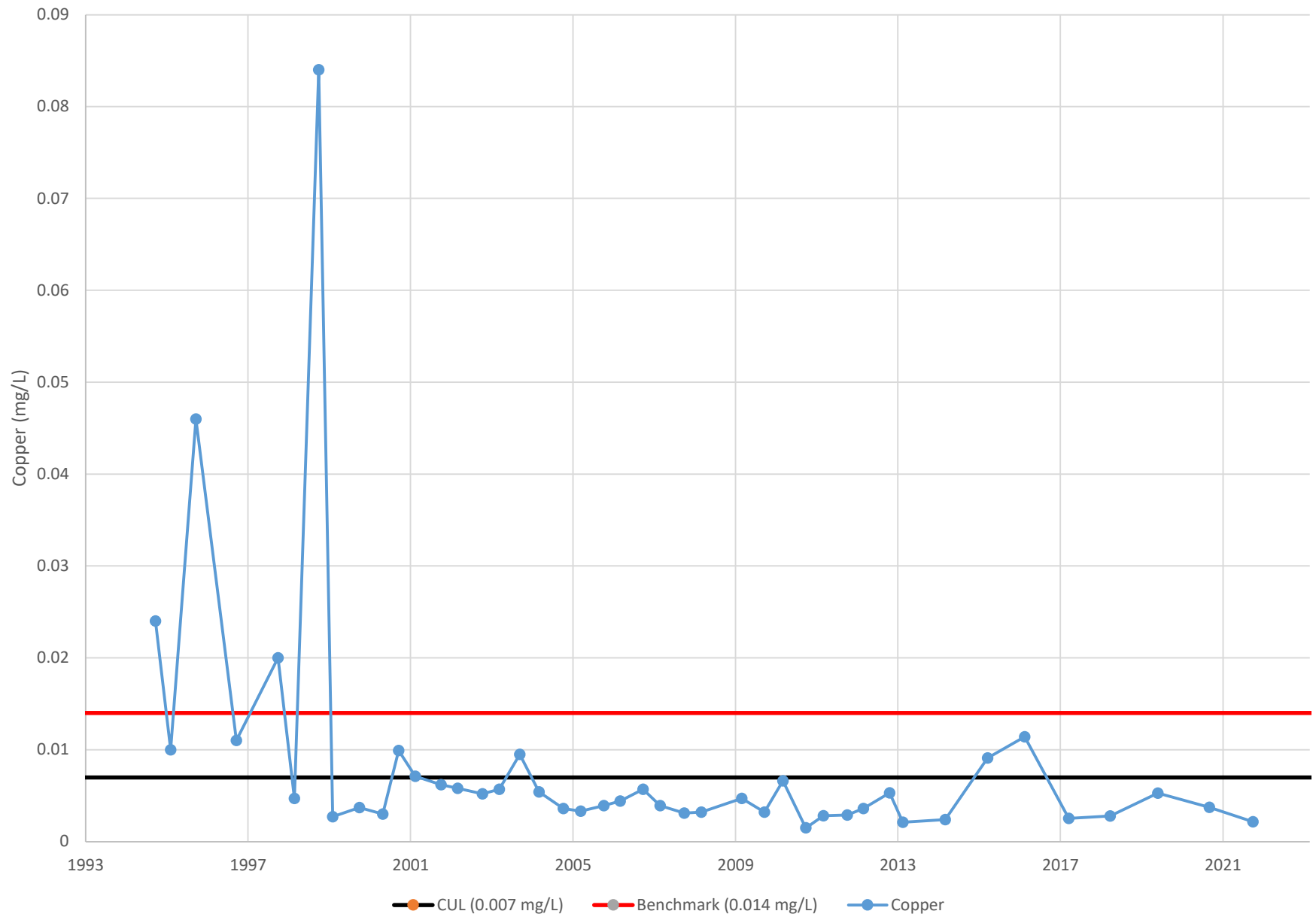
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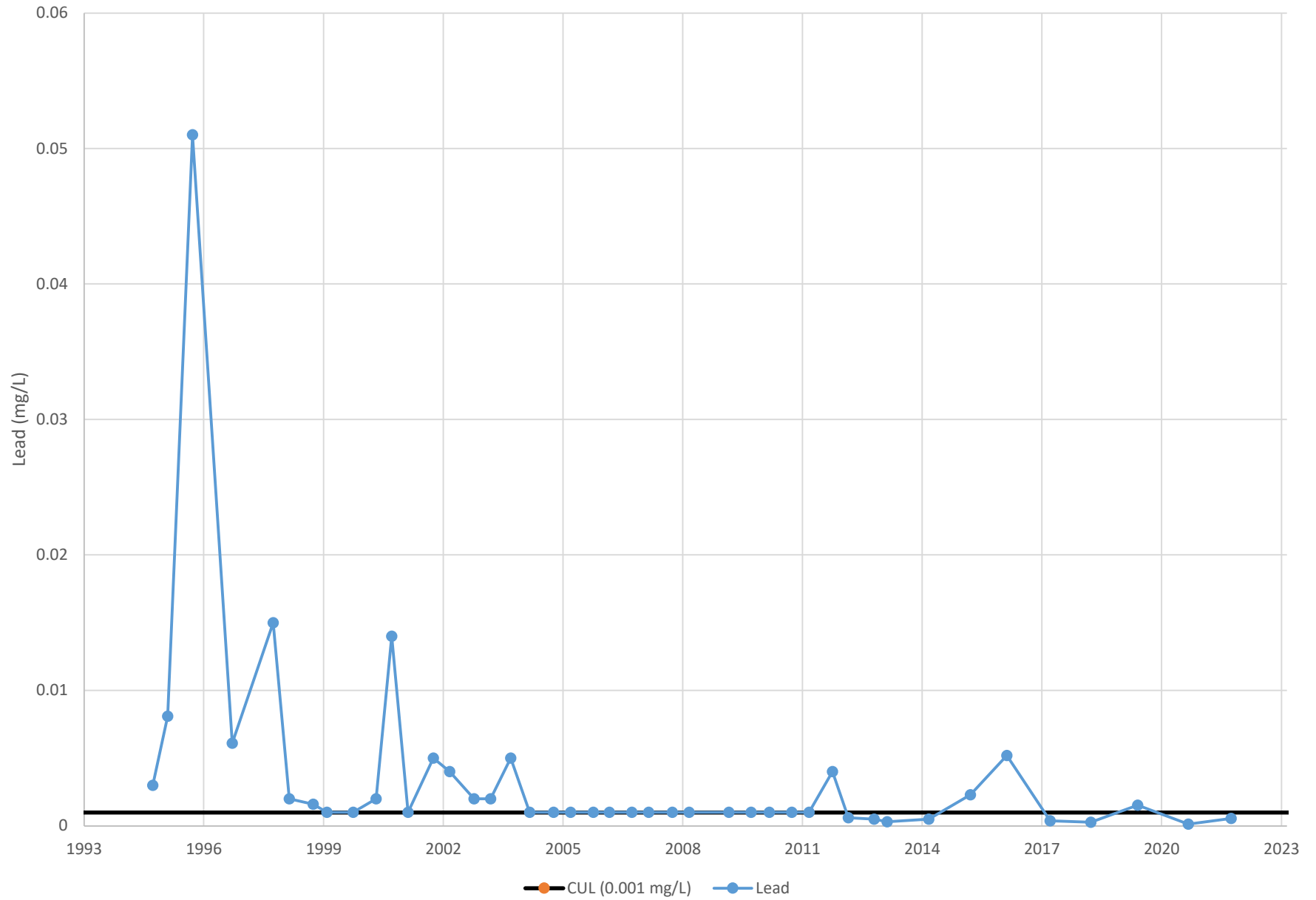
APPENDIX E

Surface Water Quality Summary Charts

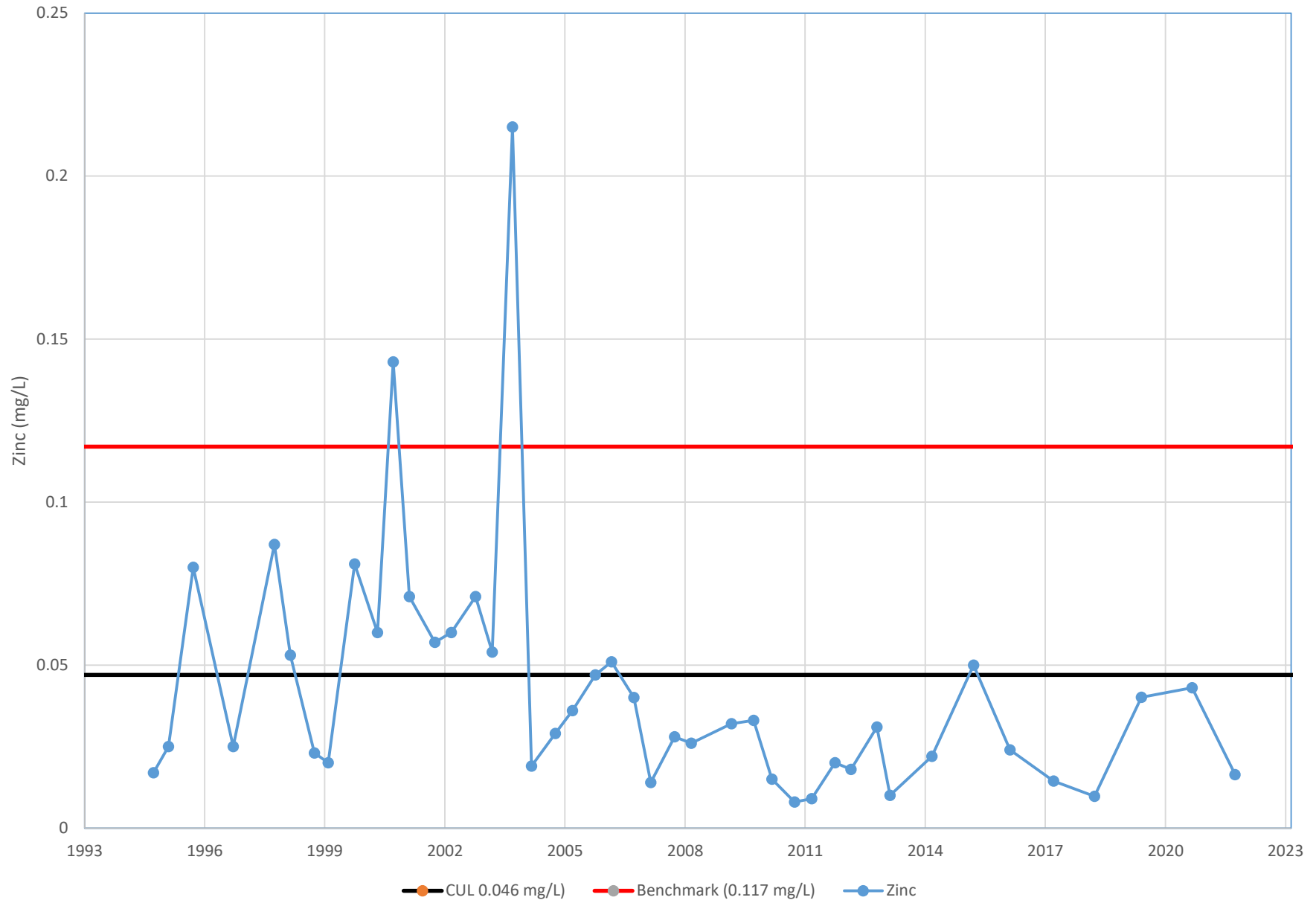
SW-5 Copper



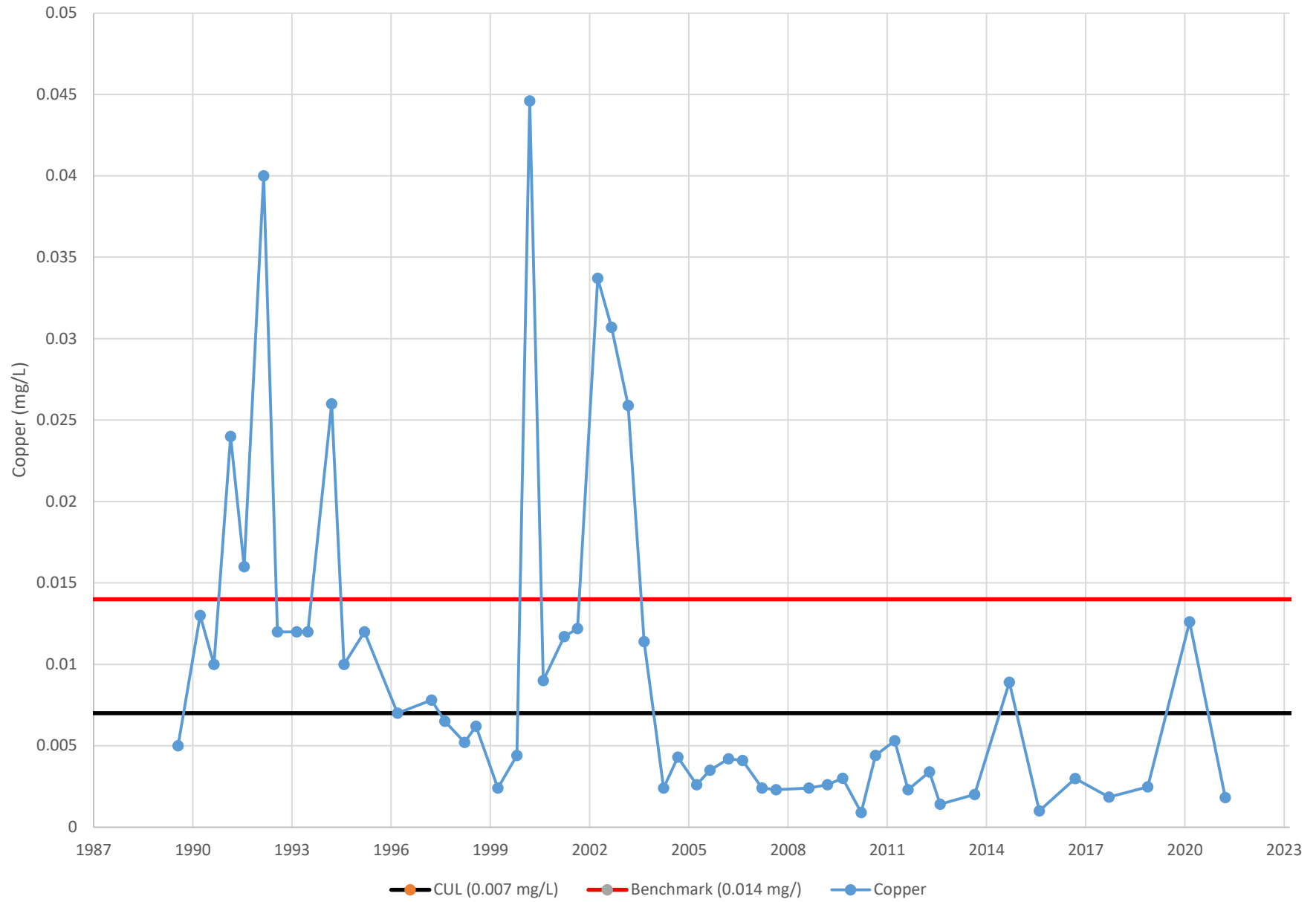
SW-5 Lead



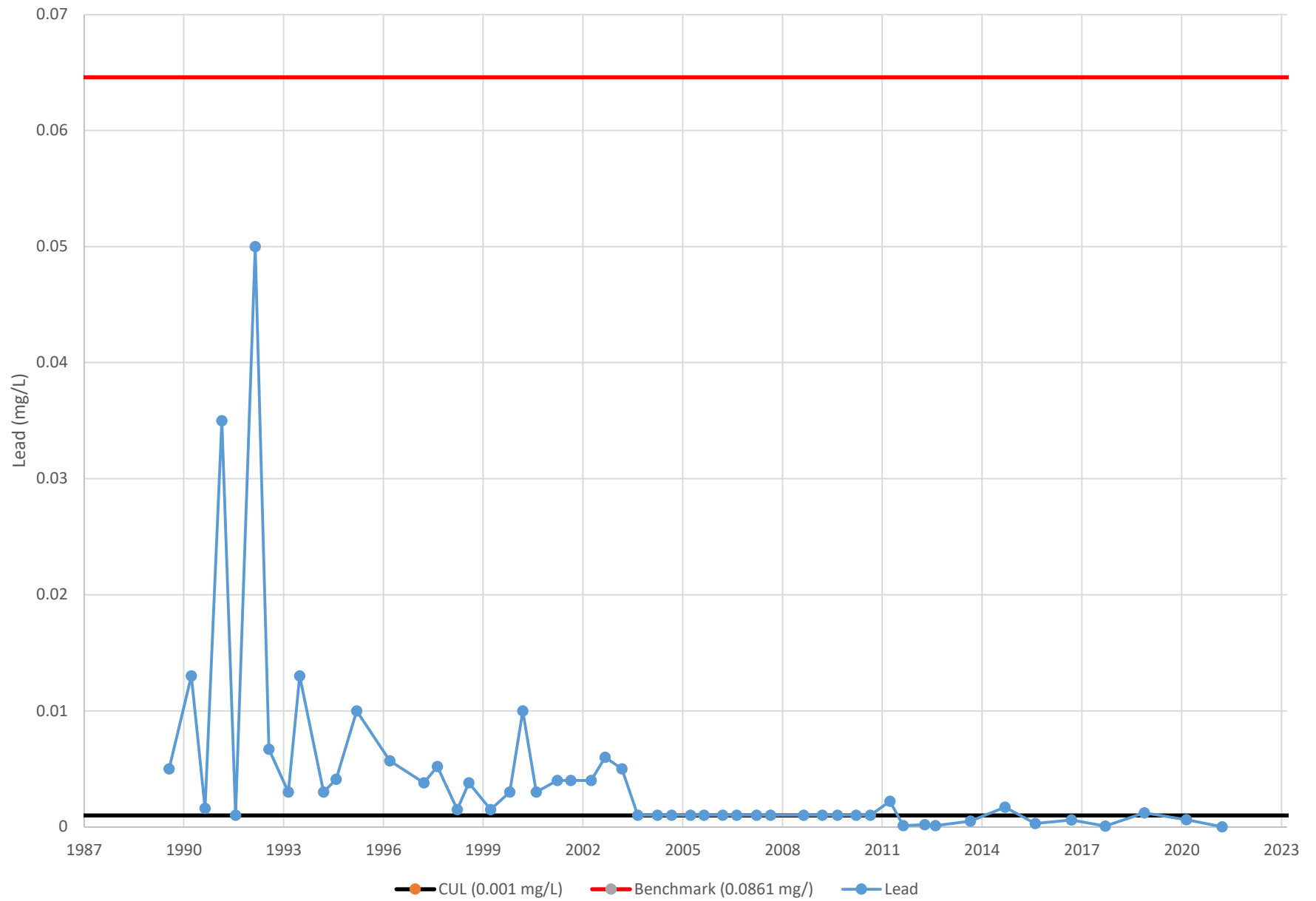
SW-5 Zinc



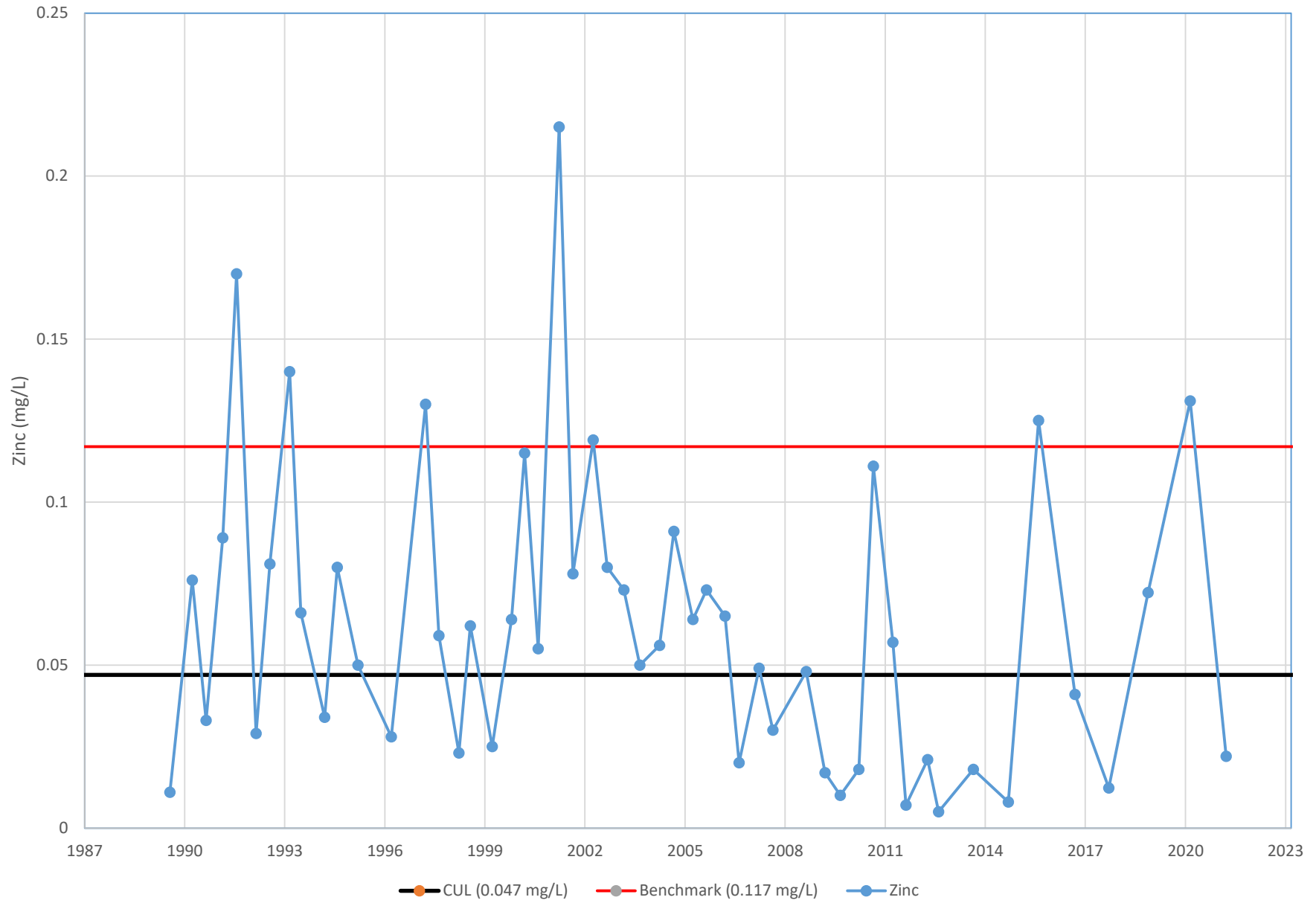
SW-3 Copper



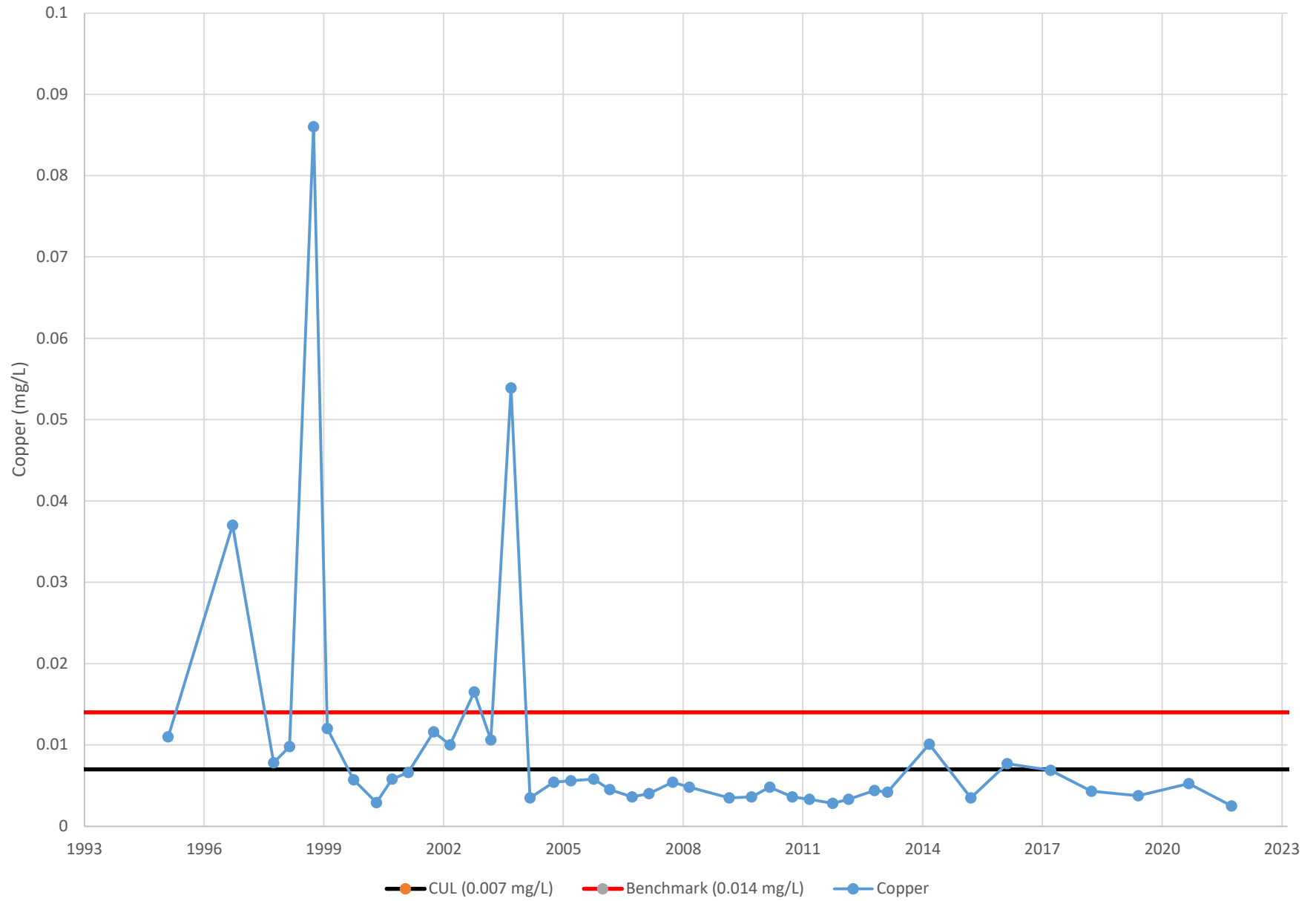
SW-3 Lead



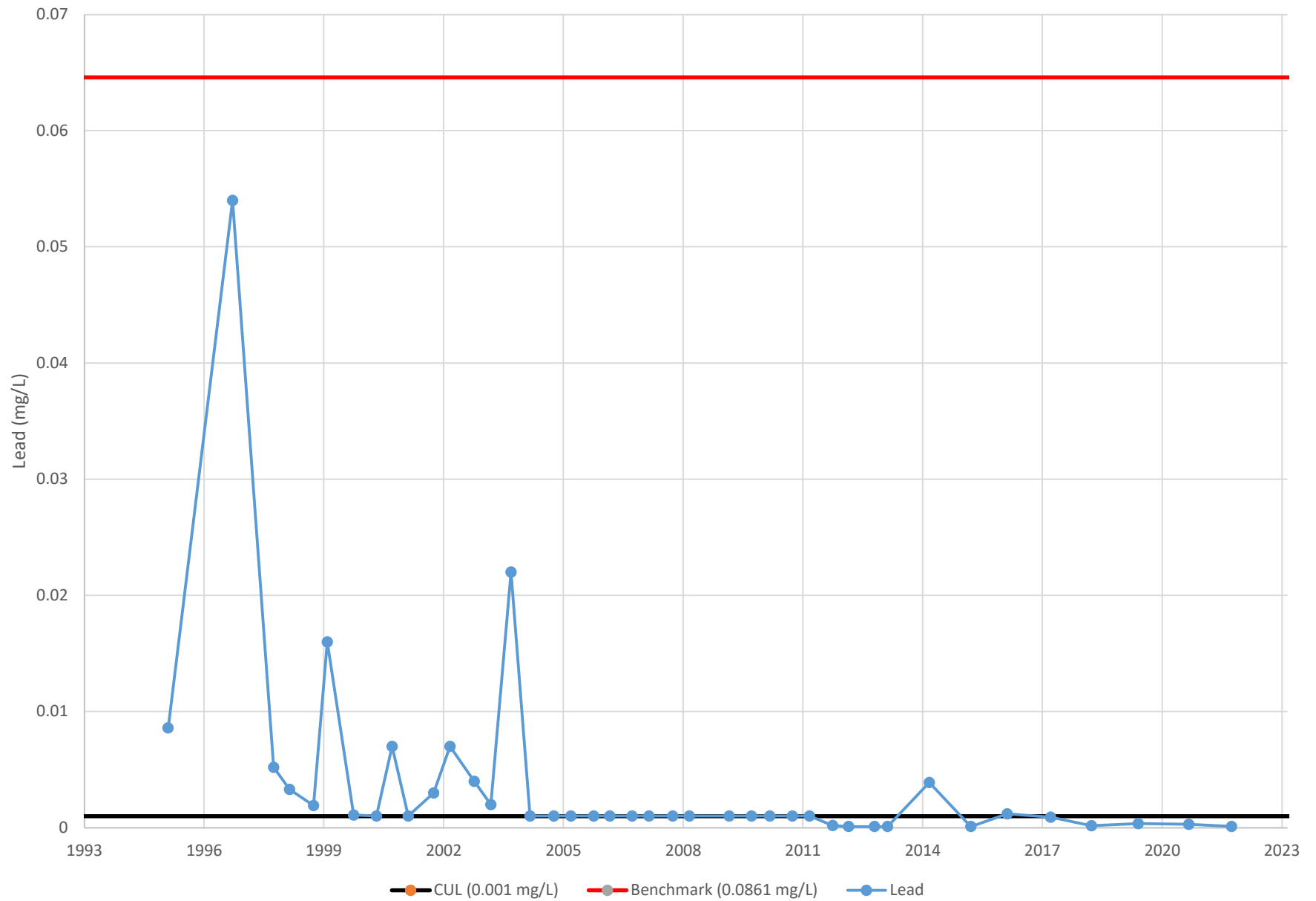
SW-3 Zinc



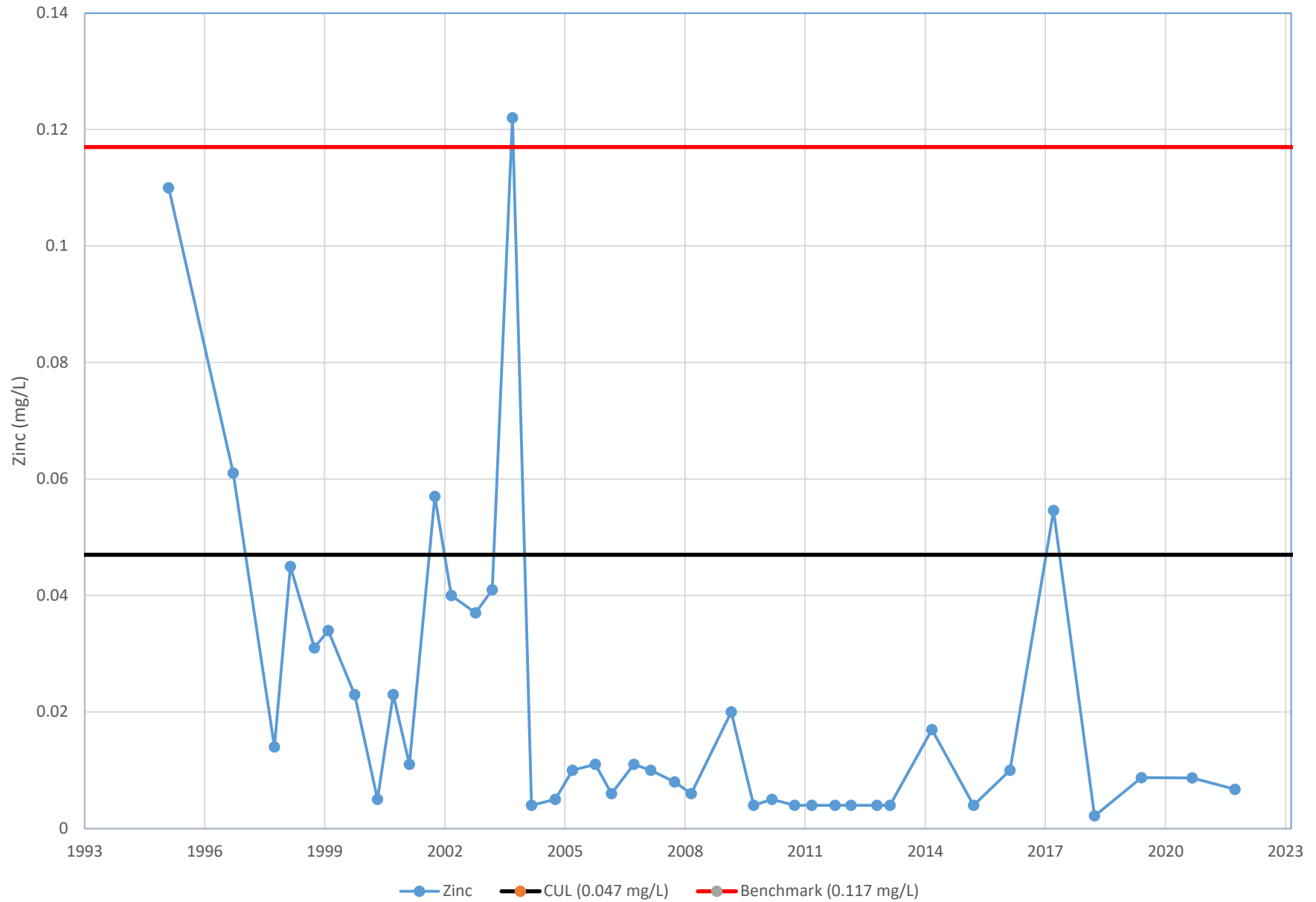
SW-6 Copper



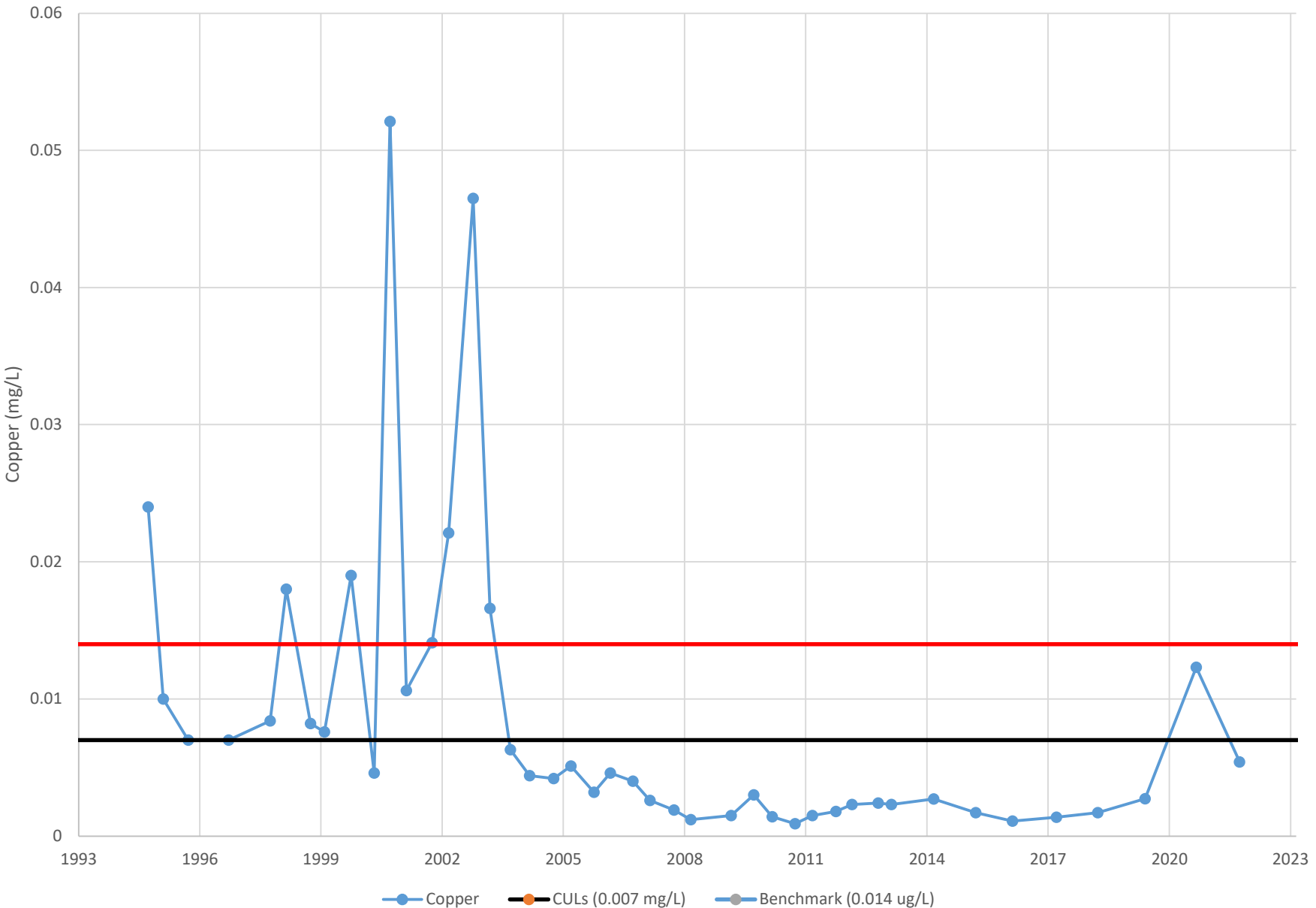
SW-6 Lead



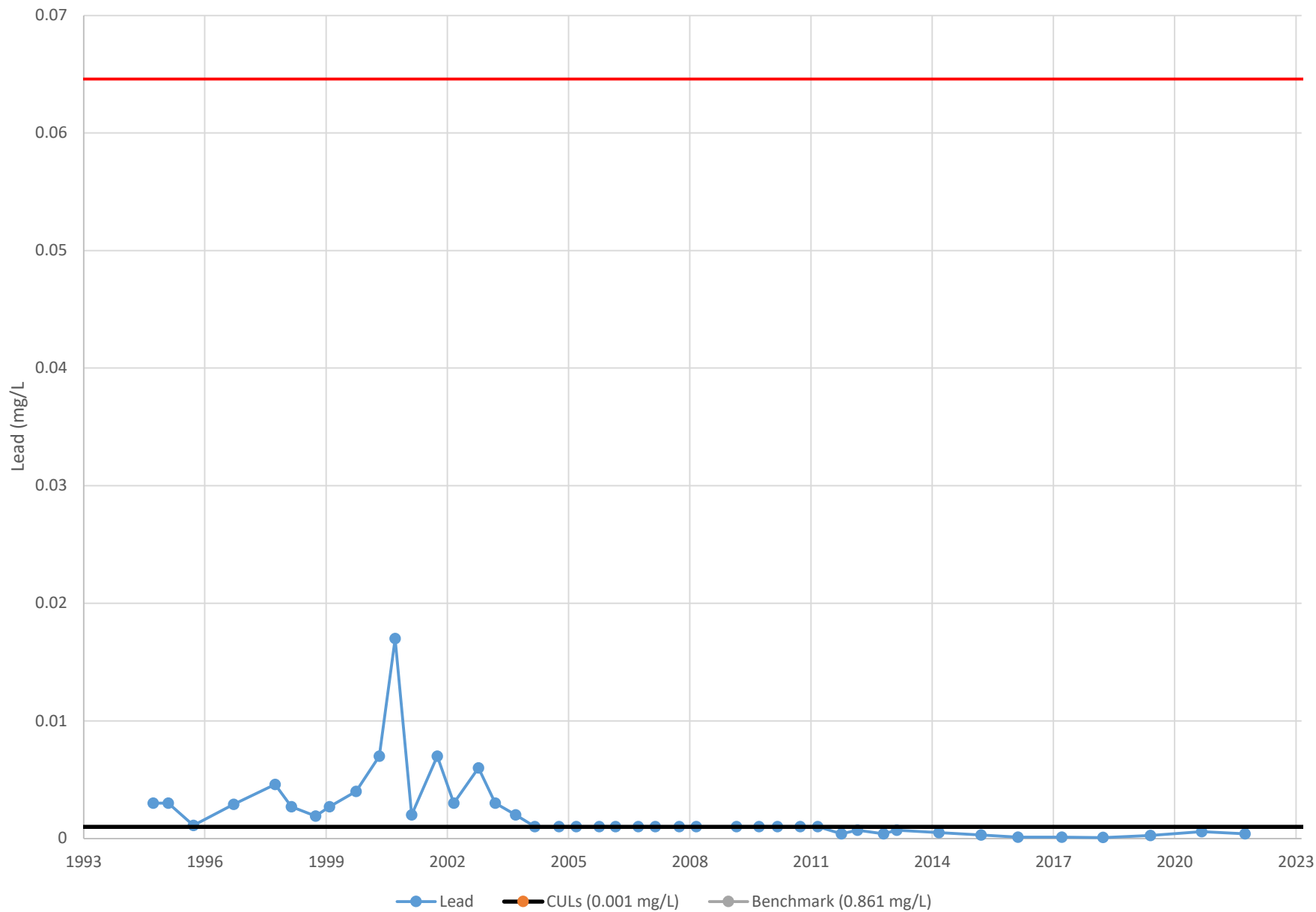
SW-6 Zinc



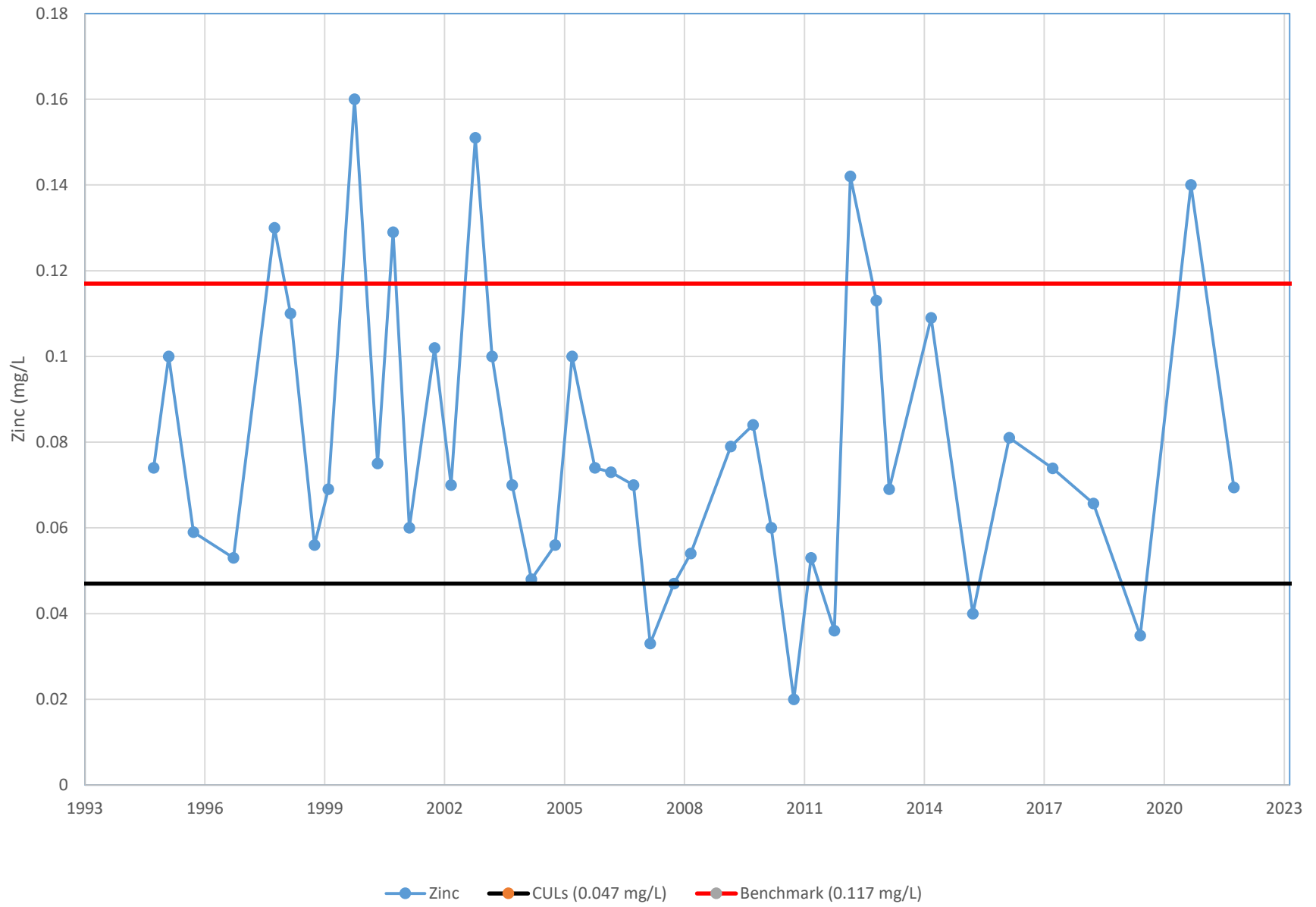
SW-DP Copper



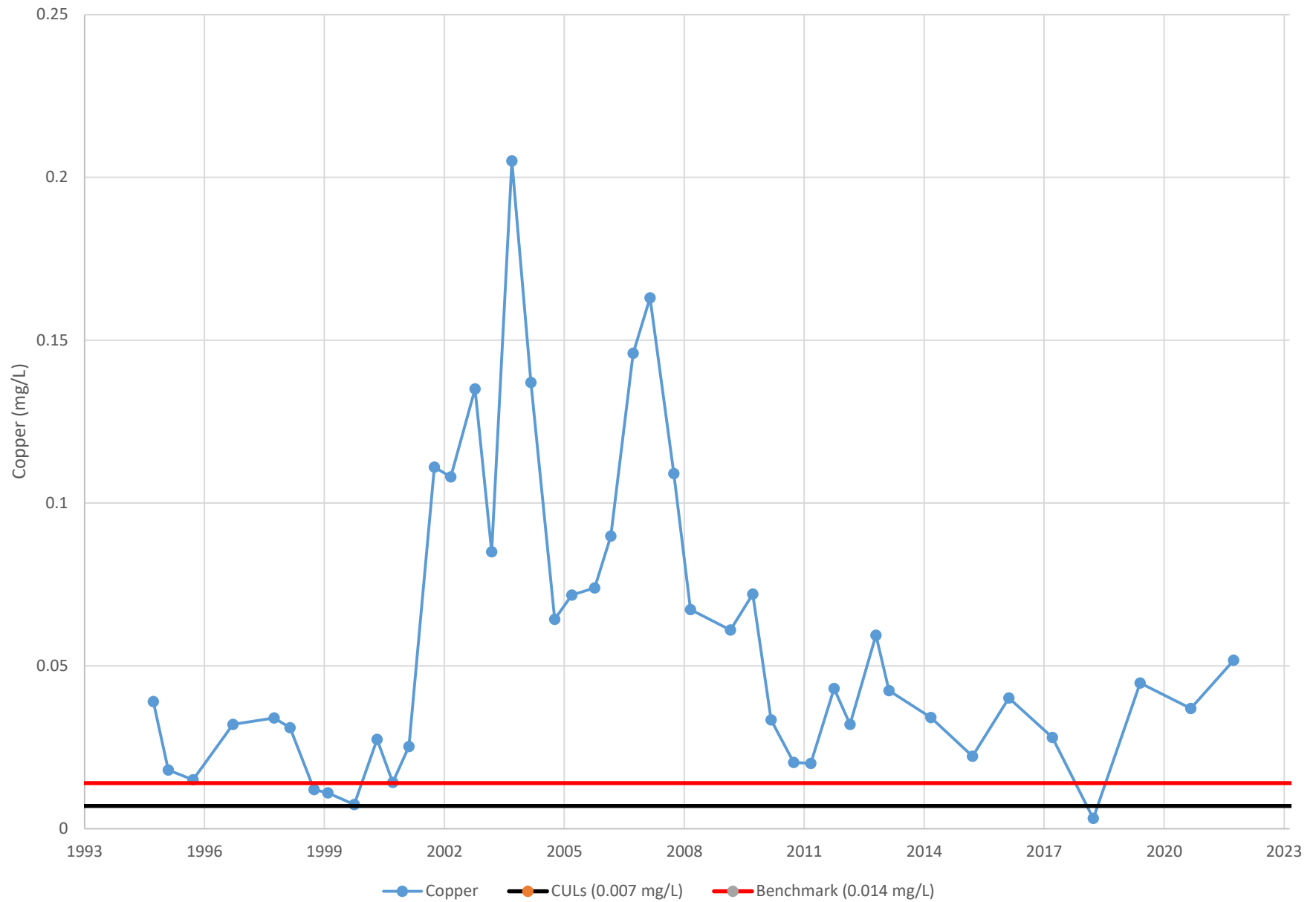
SW-DP Lead



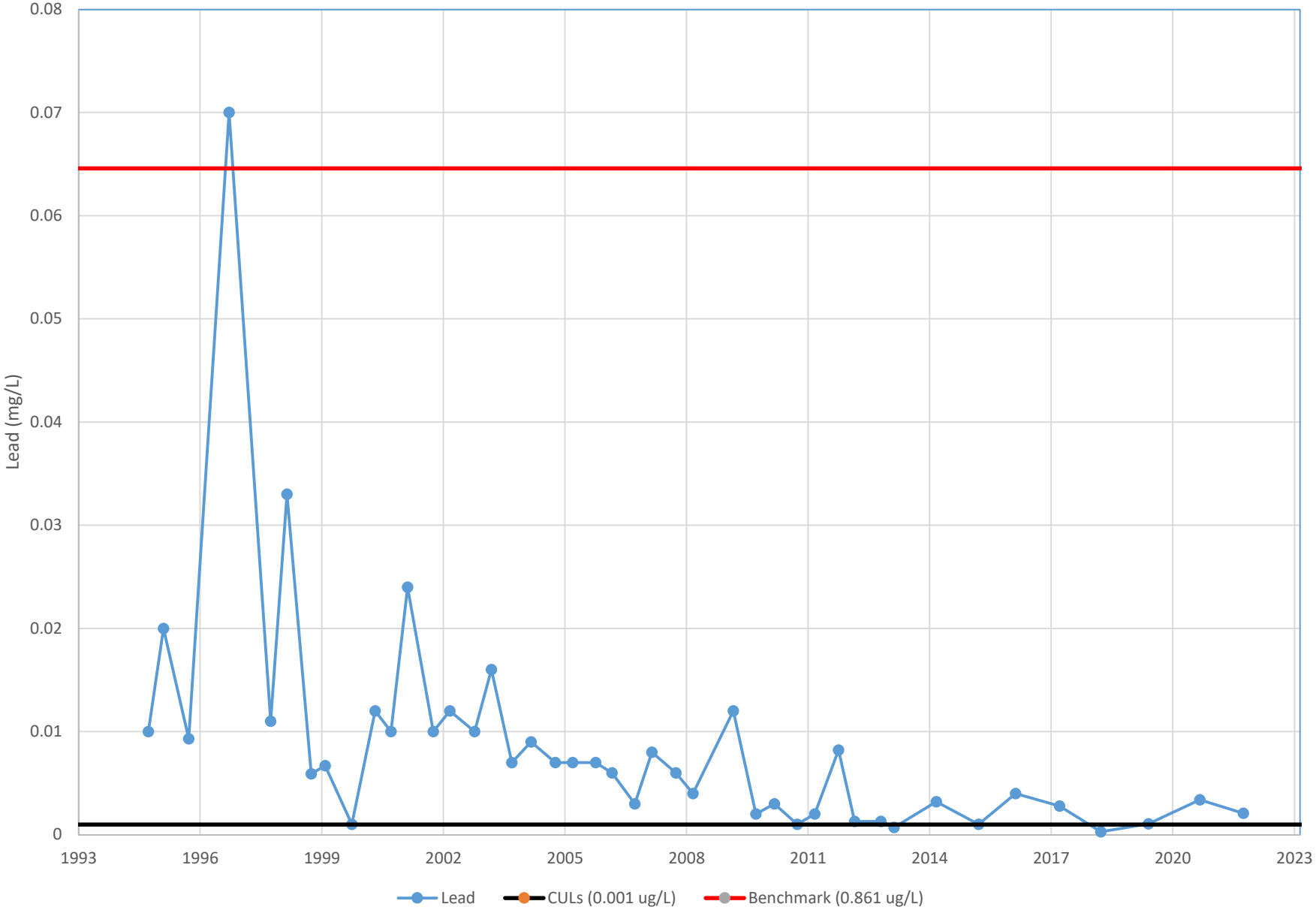
SW-DP Zinc



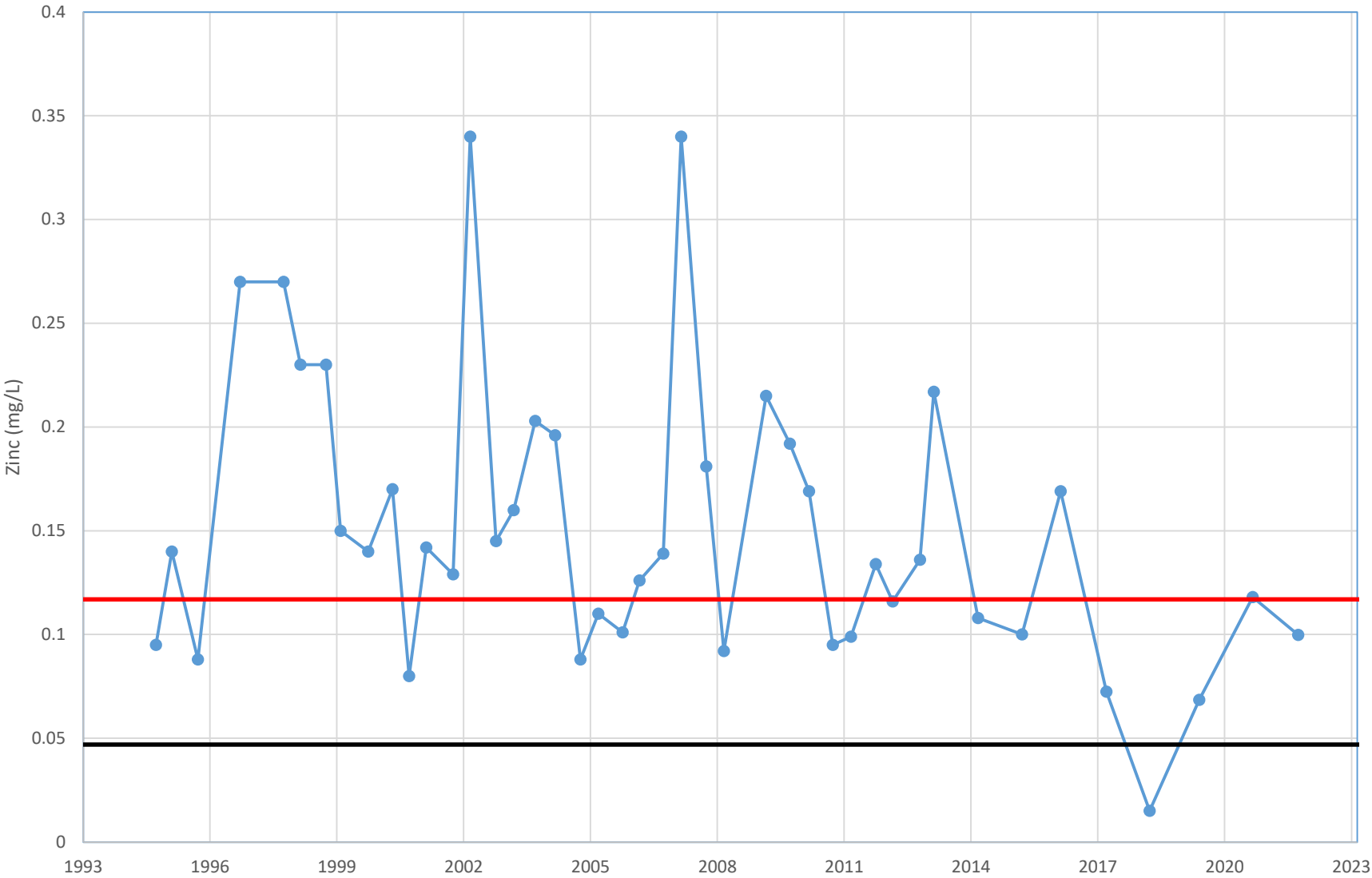
SW-MH Copper



SW-MH Lead



SW-MH Zinc



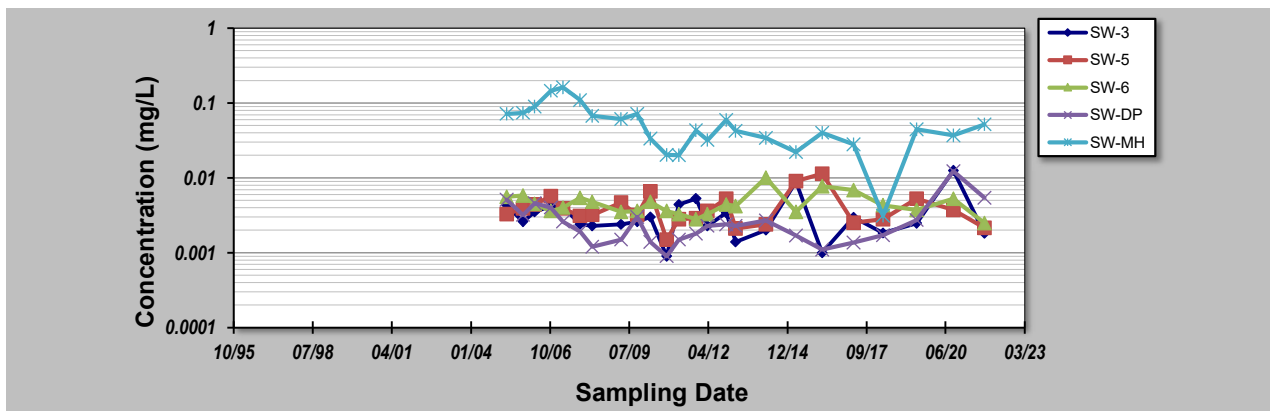
—●— Zinc —●— CULs (0.047 mg/L) —●— Benchmark (0.117 mg/L)

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for Constituent Trend Analysis

Evaluation Date: Dec 4 2022	Job ID: 9999
Facility Name: PACCAR Renton	Constituent: Copper
Conducted By: Andrew Nakahara/REJ	Concentration Units: mg/L

Sampling Point ID:	SW-3	SW-5	SW-6	SW-DP	SW-MH		
Sampling Event	Sampling Date	COPPER CONCENTRATION (mg/L)					
1	4/7/2005	0.0043	0.0033	0.0056	0.0051	0.0717	
2	11/1/2005	0.0026	0.0039	0.0058	0.0032	0.0739	
3	3/28/2006	0.0035	0.0044	0.0045	0.0046	0.0898	
4	10/19/2006	0.0042	0.0057	0.0036	0.004	0.146	
5	3/22/2007	0.0041	0.0039	0.004	0.0026	0.163	
6	10/25/2007	0.0024	0.0031	0.0054	0.0019	0.109	
7	3/26/2008	0.0023	0.0032	0.0048	0.0012	0.0673	
8	3/25/2009	0.0024	0.0047	0.0035	0.0015	0.061	
9	10/15/2009	0.0026	0.0032	0.0036	0.003	0.072	
10	3/31/2010	0.003	0.0066	0.0048	0.0014	0.0334	
11	10/22/2010	0.0009	0.0015	0.0036	0.0009	0.0203	
12	3/28/2011	0.0044	0.0028	0.0033	0.0015	0.02	
13	10/28/2011	0.0053	0.0029	0.0028	0.0018	0.043	
14	3/21/2012	0.0023	0.0036	0.0033	0.0023	0.032	
15	11/13/2012	0.0034	0.0053	0.0044	0.0024	0.0594	
16	3/11/2013	0.0014	0.0021	0.0042	0.0023	0.0424	
17	3/28/2014	0.002	0.0024	0.0101	0.0027	0.0341	
18	4/13/2015	0.0089	0.0091	0.0035	0.0017	0.0222	
19	3/10/2016	0.001	0.0114	0.0077	0.0011	0.0401	
20	4/11/2017	0.00298	0.00252	0.00687	0.00137	0.028	
21	4/18/2018	0.00184	0.00279	0.00431	0.00171	0.00314	
22	6/20/2019	0.00247	0.00528	0.00375	0.00273	0.0447	
23	9/24/2020	0.0126	0.00374	0.00525	0.0123	0.0369	
24	10/21/2021	0.00182	0.00215	0.0025	0.0054	0.0517	
25							
Coefficient of Variation:		0.74	0.55	0.37	0.83	0.68	
Mann-Kendall Statistic (S):		-45	-32	-32	-22	-122	
Confidence Factor:		86.1%	77.7%	77.7%	69.7%	99.9%	
Concentration Trend:		Stable	Stable	Stable	Stable	Decreasing	



Notes:

- At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
- Confidence in Trend = Confidence (in percent) that constituent concentration is increasing ($S > 0$) or decreasing ($S < 0$): $> 95\%$ = Increasing or Decreasing; $\geq 90\%$ = Probably Increasing or Probably Decreasing; $< 90\%$ and $S > 0$ = No Trend; $< 90\%$, $S \leq 0$, and $COV \geq 1$ = No Trend; $< 90\%$ and $COV < 1$ = Stable.
- Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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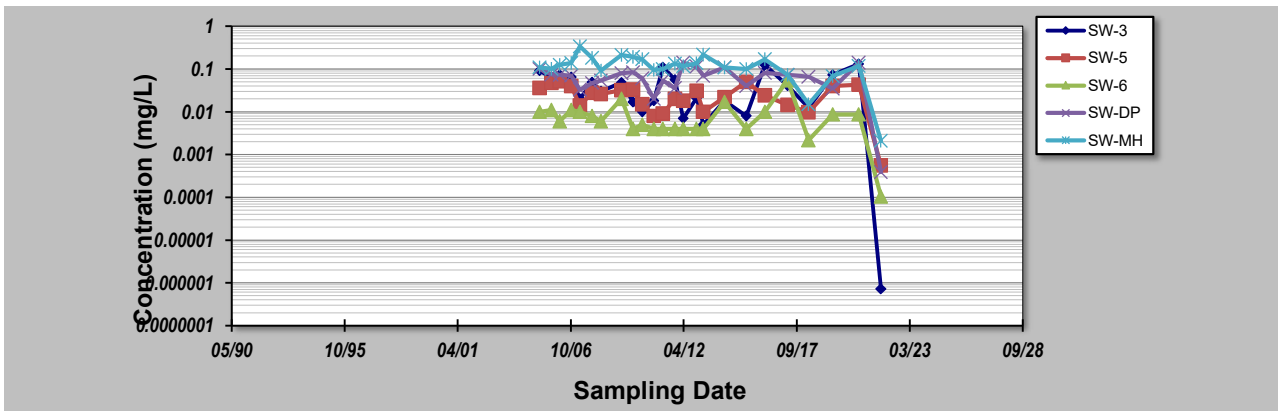
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GSI MANN-KENDALL TOOLKIT

for Constituent Trend Analysis

Evaluation Date: Dec 4 2022	Job ID: 9999
Facility Name: PACCAR Renton	Constituent: Lead
Conducted By: Andrew Nakahara	Concentration Units: mg/L

Sampling Point ID:		SW-3	SW-5	SW-6	SW-DP	SW-MH		
Sampling Event	Sampling Date	LEAD CONCENTRATION (mg/L)						
1	4/7/2005	0.091	0.036	0.01	0.10	0.11		
2	11/1/2005	0.064	0.047	0.011	0.074	0.101		
3	3/28/2006	0.073	0.051	0.006	0.073	0.126		
4	10/19/2006	0.065	0.04	0.011	0.07	0.139		
5	3/22/2007	0.020	0.014	0.010	0.033	0.340		
6	10/25/2007	0.049	0.028	0.008	0.047	0.181		
7	3/26/2008	0.030	0.026	0.006	0.054	0.092		
8	3/25/2009	0.048	0.032	0.020	0.079	0.215		
9	10/15/2009	0.017	0.033	0.004	0.084	0.192		
10	3/31/2010	0.010	0.015	0.005	0.06	0.169		
11	10/22/2010	0.018	0.008	0.004	0.02	0.095		
12	3/28/2011	0.111	0.009	0.004	0.053	0.099		
13	10/28/2011	0.057	0.02	0.004	0.036	0.134		
14	3/21/2012	0.007	0.018	0.004	0.142	0.116		
15	11/13/2012	0.021	0.031	0.004	0.113	0.136		
16	3/11/2013	0.005	0.01	0.004	0.069	0.217		
17	3/28/2014	0.018	0.022	0.017	0.109	0.108		
18	4/13/2015	0.008	0.05	0.004	0.04	0.100		
19	3/10/2016	0.125	0.024	0.010	0.081	0.169		
20	4/11/2017	0.041	0.0144	0.055	0.0739	0.073		
21	4/18/2018	0.012	0.00972	0.002	0.0657	0.015		
22	6/20/2019	0.072	0.0401	0.009	0.0349	0.069		
23	9/24/2020	0.131	0.043	0.009	0.14	0.118		
24	10/21/2021	0.0000072	0.000551	0.000105	0.000387	0.00208		
25								
Coefficient of Variation:		0.86	0.56	1.17	0.51	0.54		
Mann-Kendall Statistic (S):		-59	-62	-73	-18	-81		
Confidence Factor:		92.5%	93.4%	96.3%	66.2%	97.7%		
Concentration Trend:		Prob. Decreasing	Prob. Decreasing	Decreasing	Stable	Decreasing		



Notes:

- At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
- Confidence in Trend = Confidence (in percent) that constituent concentration is increasing ($S > 0$) or decreasing ($S < 0$): $> 95\%$ = Increasing or Decreasing; $\geq 90\%$ = Probably Increasing or Probably Decreasing; $< 90\%$ and $S > 0$ = No Trend; $< 90\%$, $S \leq 0$, and $COV \geq 1$ = No Trend; $< 90\%$ and $COV < 1$ = Stable.
- Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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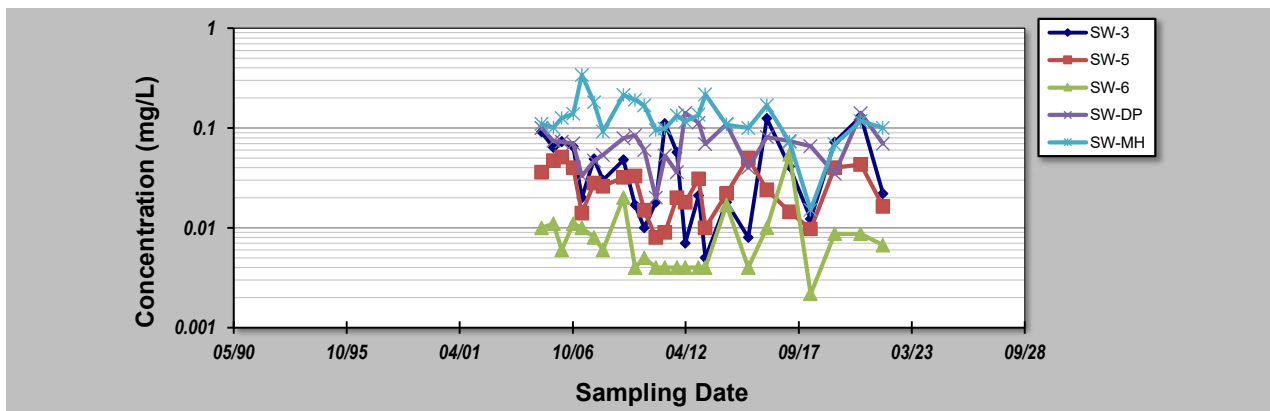
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GSI MANN-KENDALL TOOLKIT

for Constituent Trend Analysis

Evaluation Date: Dec 4 2022	Job ID: 9999
Facility Name: PACCAR Renton	Constituent: Zinc
Conducted By: Andrew Nakahara/REJ	Concentration Units: mg/L

Sampling Point ID:	SW-3	SW-5	SW-6	SW-DP	SW-MH		
Sampling Event	Sampling Date	ZINC CONCENTRATION (mg/L)					
1	4/7/2005	0.091	0.036	0.01	0.10	0.11	
2	11/1/2005	0.064	0.047	0.011	0.074	0.101	
3	3/28/2006	0.073	0.051	0.006	0.073	0.126	
4	10/19/2006	0.065	0.04	0.011	0.07	0.139	
5	3/22/2007	0.020	0.014	0.010	0.033	0.340	
6	10/25/2007	0.049	0.028	0.008	0.047	0.181	
7	3/26/2008	0.030	0.026	0.006	0.054	0.092	
8	3/25/2009	0.048	0.032	0.020	0.079	0.215	
9	10/15/2009	0.017	0.033	0.004	0.084	0.192	
10	3/31/2010	0.010	0.015	0.005	0.06	0.169	
11	10/22/2010	0.018	0.008	0.004	0.02	0.095	
12	3/28/2011	0.111	0.009	0.004	0.053	0.099	
13	10/28/2011	0.057	0.02	0.004	0.036	0.134	
14	3/21/2012	0.007	0.018	0.004	0.142	0.116	
15	11/13/2012	0.021	0.031	0.004	0.113	0.136	
16	3/11/2013	0.005	0.01	0.004	0.069	0.217	
17	3/28/2014	0.018	0.022	0.017	0.109	0.108	
18	4/13/2015	0.008	0.05	0.004	0.04	0.100	
19	3/10/2016	0.125	0.024	0.010	0.081	0.169	
20	4/11/2017	0.041	0.0144	0.055	0.0739	0.073	
21	4/18/2018	0.012	0.00972	0.002	0.0657	0.015	
22	6/20/2019	0.072	0.0401	0.009	0.0349	0.069	
23	9/24/2020	0.131	0.043	0.009	0.14	0.118	
24	10/21/2021	0.022	0.0164	0.007	0.0694	0.100	
25							
Coefficient of Variation:		0.82	0.51	1.12	0.44	0.48	
Mann-Kendall Statistic (S):		-39	-48	-49	4	-69	
Confidence Factor:		82.5%	87.7%	88.2%	52.9%	95.4%	
Concentration Trend:		Stable	Stable	No Trend	No Trend	Decreasing	



Notes:

- At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
- Confidence in Trend = Confidence (in percent) that constituent concentration is increasing ($S > 0$) or decreasing ($S < 0$): $> 95\%$ = Increasing or Decreasing; $\geq 90\%$ = Probably Increasing or Probably Decreasing; $< 90\%$ and $S > 0$ = No Trend; $< 90\%$, $S \leq 0$, and $COV \geq 1$ = No Trend; $< 90\%$ and $COV < 1$ = Stable.
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