2023 ANNUAL ENVIRONMENTAL MONITORING REPORT

INMAN LANDFILL

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April 2024

2023 Annual Environmental Monitoring Report
Inman Landfill
Skagit County, Washington

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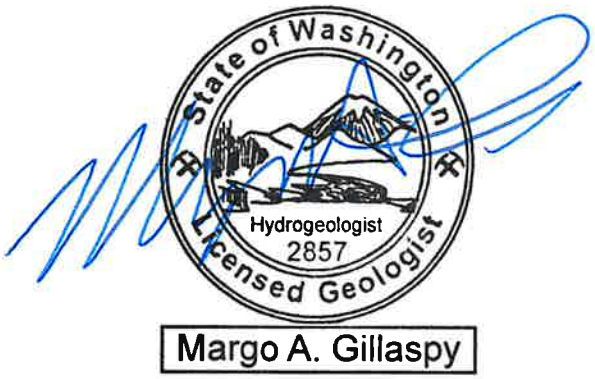

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1.0 INTRODUCTION

This report presents a summary of environmental monitoring data collected during 2023 at the Inman Landfill. Annual reporting of environmental monitoring data is required by *Minimum Functional Standards for Solid Waste Handling* (Chapter 173-304 Washington Administrative Code [WAC]) and *Special Incinerator Ash Management Standards* (Chapter 173-306 WAC). This annual monitoring report includes a summary of leachate generation, groundwater quality and flow characteristics, landfill gas extraction system operations, and methane concentrations measured in perimeter gas probes.

1.1. Site Background

Inman Landfill is located in the northwestern portion of Skagit County, approximately 7.5 miles northwest of Mount Vernon, Washington (Figure 1). The site occupies a former gravel pit and was operated as a solid waste disposal facility by Skagit County beginning in 1973. The site stopped accepting waste in April 1994 and closure construction was completed in 1995.

Solid waste was first disposed in an unlined area covering approximately 16 acres in the eastern portion of the site (Phase I). Beginning in 1986, solid waste was disposed in a lined portion of the site (Phase II), which covers approximately 10 acres, part of which overlaps the Phase I area. Incinerator ash was also disposed in the lined (Phase II) area. The lined portion of the site includes a combination of composite, geomembrane, and soil liner systems. The leachate collection system consists of a series of perforated pipes placed above the bottom liner. The perforated pipes collect and route leachate through a pump station to a lined aeration pond where it is subsequently hauled to a local wastewater treatment plant for disposal.

1.2. Landfill Closure

The landfill stopped receiving waste on April 8, 1994. Closure activities followed in accordance with the approved closure plans. An assessment of potential contaminant sources was conducted in response to the detection of groundwater impacts in the landfill monitoring wells. Based on the results of this assessment, several corrective actions were incorporated into the final closure design to reduce or eliminate identified potential contaminant sources and to protect public health. Corrective actions implemented during and after closure included:

- Relining the leachate aeration pond and upgrading the pump station.
- Improving the surface water collection, conveyance, and storage facilities.
- Recapping the Phase I portion of the landfill with a cover that exceeded the standards required at the time.
- Connecting surrounding homes to a public water system and abandoning drinking water wells.

In addition to these corrective actions, closure activities also included the construction of a landfill gas (LFG) extraction system and expansion of the perimeter gas monitoring probe network. The LFG extraction system has operated since closure to alleviate the accumulation of methane beneath the landfill cap and to control off-site methane migration.

These measures were intended to reduce leachate generation by reducing surface water infiltration, minimizing the potential transport of contaminants in the gas stream into groundwater, and eliminating suspected groundwater contaminant sources and potential exposure pathways. Since closure was completed, these actions have resulted in a gradual long-term decrease in leachate generation and a long-term improvement of groundwater quality as discussed in subsequent sections of this report.

2.0 LEACHATE

2.1. Leachate Collection System Operation

Post-closure activities at Inman Landfill include operation of a leachate collection system. The leachate collection system consists of a network of drain pipes situated under the newer (Phase II) portion of the landfill. These drain pipes lead to a single concrete sump and pump station (PS#1). Leachate enters the sump and is pumped up to a double-lined leachate collection pond. Leachate in the pond is pre-treated with aerators. The pre-treated leachate is periodically pumped from the pond and hauled to the City of Mount Vernon wastewater treatment plant for disposal as authorized by a State Wastewater Discharge Permit.

2.2. Leachate Generation

The amount of leachate collected from the lined, Phase II portion of the landfill generally increased each year until closure in 1994 (Figure 2). Since 1994 leachate generation has generally decreased. In 2006, leachate generation was 3 percent of the amount collected during 1991 and 1992, which was prior to installation of the landfill cover system. Leachate generation rates leveled off approximately twelve years ago, and then decreased again from 2002 through 2005 before increasing in 2007. There was an approximate four-fold increase between 2006 and 2007; this increase was due to the complete draining of the leachate pond during the third quarter of 2007 for cleaning and repair.

In 2023, ongoing equipment issues at the site meant that no leachate was pumped from the leachate pond after March 2023. Repairs are currently in progress and expected to be completed in May 2024.

The stabilization of leachate generation rates during the late 1990s may indicate the removal of easily-drained leachate that entered the landfill prior to construction of the existing cover system. One point that is clear from the graph is that the landfill cover has been effective in reducing the amount of precipitation entering the landfill and, consequently the amount of leachate that is generated.

The Phase I area of the landfill does not have a bottom liner and therefore, no leachate collection system. A significant amount of leachate generated from this portion of the site does potentially reach the underlying groundwater system. However, since the landfill cover system placed over the Phase I area is similar to that placed over the Phase II area, it is reasonable to assume that potential leachate generated from the Phase I area has also decreased in amounts proportional to those observed for the Phase II area.

3.0 HYDROGEOLOGY

Inman Landfill is located on the north side of Bay View Ridge. Bay View Ridge is composed of a series of glacial and glaciomarine deposits and rises up to 200 feet above the surrounding delta valleys. A previous investigation concludes that the Inman Landfill site is underlain by two aquifers (Sweet Edwards & Associates 1987). These aquifers consist of a shallow, unconfined perched aquifer that is typically located above sea level, and a deeper regional aquifer (referred to as the upper regional aquifer or the regional aquifer) that is situated near or below sea level. The shallow perched aquifer occurs in a sand unit that is situated above a dense silt/clay layer at elevations of approximately 1 to 13 feet above sea level. The silt/clay layer appears to dip to the west and southwest into Bay View Ridge. Monitoring Wells B-6, B-7, B-8, B-9, B-11, and B-13 and Gas Probe GP-6 are screened in the perched aquifer (Figure 3). Previous groundwater measurements in these wells indicate that groundwater in this aquifer follows the dip of the silt/clay layer and flows generally to the southwest.

The upper regional aquifer is located in fine to coarse sand deposits that are present beneath the silt/clay layer (Sweet Edwards & Associates 1987). The upper regional aquifer is confined by the overlying silt/clay layer. The top of this aquifer is reportedly situated at elevations ranging from 6 to 14 feet below sea level. Monitoring Wells B-1, B-2, B-3, B-4, B-5, B-10, and B-12 are screened in the upper regional aquifer (Figure 4). Previous groundwater measurements in these wells indicate that groundwater in this aquifer flows in a radial pattern away from Bay View Ridge to the north, northeast, and east.

Water level measurements were collected during three quarterly monitoring events during 2023 (April, September, and December) from monitoring wells completed within each aquifer. Based on the measured water levels, computer-generated potentiometric surface maps were created for each aquifer for each of these quarters (Figures 3a-3c, 4a-4c). These maps were prepared with the kriging method in the Surfer™ version 12.8 contouring software package using elevations from the monitoring wells in each aquifer (Table 1 & 2). Well B-13 was not measured during the September or December measuring events in 2023; therefore, these wells were not used to construct the water table contour map for the third or fourth quarters. Hydrographs of groundwater elevations collected since landfill closure for both aquifers were also prepared (Figures 5 & 6).

3.1. Perched Aquifer

Static water level elevations measured in 2023 for the perched aquifer ranged from a minimum of 8.69 feet above mean sea level (amsl) at B-11 (September) to a maximum of 12.77 feet amsl at B-8 (April) (Table 1).

Table 1. 2023 Static Water Level Elevations: Perched Aquifer

	April	September	December
B-6	11.03	10.50	10.67
B-7	10.38	10.04	10.02
B-8	12.77	11.19	12.59
B-9	10.30	9.88	9.85
B-11	9.81	8.69	9.28
B-13	12.37	NM	NM
GP-6	13.78	11.92	12.43

Elevations are in feet above mean sea level (NGVD 29); NM = Not Measured

The water table contour maps indicate that perched groundwater flow was fairly consistent during 2023, flowing generally from the northeast towards the southwest (Figures 3a-3c). Local groundwater velocities can be variable because of the complex local groundwater flow patterns. For simplicity, the average groundwater velocity across the site within this aquifer was calculated using gradients observed across the central and southern portions of the site.

Based on these criteria, the average gradient in 2023 ranged from about 0.0013 to 0.0016 feet per foot (ft/ft), with an average gradient of approximately 0.0015 ft/ft. The average porosity of the perched aquifer material was estimated to be approximately 27.5 percent and the hydraulic conductivity was estimated to be approximately 28 feet per day (ft/day) (Sweet Edwards & Associates 1987). These parameters were used in conjunction with the average hydraulic gradient of 0.0015 ft/ft to estimate the average linear velocity of groundwater in the perched aquifer using Darcy's Law, where: **V = Ki/n,** and

V = average linear velocity,
K = hydraulic conductivity,
i = hydraulic gradient, and
n = porosity.

This calculation indicates that the average linear velocity of groundwater in the perched aquifer during 2023 was approximately 0.15 ft/day.

A review of the hydrograph for the perched aquifer (Figure 5) shows that the water levels fluctuate in a typical seasonal manner. Prior to 2004 the hydrograph shows an overall slightly decreasing trend in all of the wells since 1995; however, the 2004 through 2023 measurements indicate that this decreasing trend has stabilized. The decreasing trend may be a result of reduced infiltration of rainwater over the landfill since construction of the cap was completed in 1995.

3.2. Upper Regional Aquifer

Static water level elevations measured in 2023 for the upper regional aquifer ranged from a minimum of 2.83 feet amsl at B-5 (September) to a maximum of 9.11 feet amsl at B-10 (April) (Table 2).

Table 2. 2023 Static Water Level Elevations: Upper Regional Aquifer

Well	April	September	December
B-1	8.63	8.25	8.57
B-2	9.04	8.30	8.48
B-3	8.50	7.88	8.36
B-4	8.89	8.38	8.75
B-5	3.19	2.83	4.56
B-10	9.11	8.69	7.90
B-12	8.75	7.88	8.25

Elevations are in feet above mean sea level (NGVD 29)

The water table contour maps for 2023 indicate that the upper regional aquifer groundwater generally flowed from the west towards the east (Figures 4a-4c). Using the information in these maps, hydraulic gradients were calculated between Well B-10, the most upgradient well, and Well B-12, the most downgradient well for the majority of the monitoring events. The calculated hydraulic gradients from

Well B-10 to Well B-12 for 2023 ranged from 0.0002 to 0.0005 ft/ft, with an average of approximately 0.00035 ft/ft.

In addition to the construction of the potentiometric surface maps, groundwater elevations were also used to calculate estimated groundwater flow velocities for the upper regional aquifer. Because of the similarity in material in the perched and upper regional aquifers, the same values for porosity and hydraulic conductivity used for the perched aquifer were also used for the upper regional aquifer. These parameters were used in conjunction with the average hydraulic gradient for 2023 of 0.0004 ft/ft (calculated previously) to estimate the average linear velocity of groundwater in the upper regional aquifer using Darcy's Law. The result of this calculation indicates that the average linear velocity of groundwater in the upper regional aquifer during 2023 was approximately 0.03 ft/day across the central landfill site.

In addition to the potentiometric surface map showing the central landfill area, potentiometric surface maps were also prepared showing groundwater contours beyond the northern and eastern boundaries of the landfill and into the topographically lower Samish River Valley (Figures 7a-7c). A map was not generated for the first quarter event due to a lack of water level data. These maps were also prepared with the wells used for the central landfill area in addition to elevations from a single well located in the valley (Well B-5; refer to Table 2) and estimated groundwater elevations for points located along nearby Joe Leary Slough. Groundwater elevations along Joe Leary Slough were estimated using the elevation of surface water measured in the slough. It should be noted that water level elevations at both the slough and at Well B-5 show significant tidal influence.

The flow pattern in the upper regional aquifer continues to be a radial flow into the Samish River valley, although the hydraulic gradient appears to increase significantly as groundwater enters the Samish River Valley from the central landfill area. Also, flow in the upper regional aquifer appears more radial than in the perched aquifer, flowing from the western side of the site toward the north, northeast, and east.

Hydraulic gradients were calculated from the west side of the landfill and extending into the valley. The gradients were calculated using the groundwater elevations measured at Well B-10, located in the southwestern portion of the site, and Well B-5, which is located in the valley and downgradient of Well B-10. The gradients calculated between these two points ranged from approximately 0.0016 to 0.0028 ft/ft during 2023, with an average of approximately 0.0024 ft/ft. This gradient is steeper than that calculated for the central landfill area because it combines the flatter gradient beneath the landfill with the steeper gradient measured between the landfill proper and the Samish Valley. As noted above, this gradient is significantly influenced by the tide. Using this average hydraulic gradient and the aquifer parameters presented above, the resulting average linear velocity of groundwater in the upper regional aquifer across the landfill area and into the Samish Valley in 2023 was approximately 0.25 ft/day.

A review of the hydrograph for the upper regional aquifer (Figure 6) shows that the water levels fluctuate in a typical seasonal manner. Well B-5 shows the greatest variation of all wells in the upper regional aquifer, but this variation is likely a reflection of different tidal stages in which measurements are made and is to a lesser extent due to seasonal variation. Prior to 2004 the hydrograph shows an overall slightly decreasing trend in all of the wells except Well B-5; however, since 2004 generally water levels have stabilized. The decreasing trend may be a result of reduced infiltration of rainwater over the landfill since construction of the cap was completed in 1995.

4.0 GROUNDWATER SAMPLING METHODS

4.1. Sample Locations and Frequency

Groundwater sampling at Inman Landfill is conducted on a quarterly basis. The Inman Landfill groundwater monitoring network consists of 13 monitoring wells: seven wells screened in the upper regional aquifer (B-1, B-2, B-3, B-4, B-5, B-10, and B-12), and six wells screened in the perched aquifer (B-6, B-7, B-8, B-9, B-11, and B-13). Quarterly sampling in 2023 was conducted in April, September, and January 2024. Declining water levels in the perched aquifer prevented sample collection at Wells B-7 and B-13 during all 2023 sampling events, and B-8 during the September monitoring event. Well B-7 has been dry for over 20 years and has not been sampled since landfill closure in 1994. Monitoring well B-13 was last sampled during the fourth quarter of 2010 (December 2010). Monitoring well B-12 was not sampled during the fourth quarter event due to an oversight.

4.2. Sample Collection

All monitoring wells were purged and sampled in accordance with the *Quality Assurance Project Plan* (QAPP) for Inman Landfill (Skagit County Public Works (SCPW) Dept., 2010).

4.3. Analytical Parameters

Groundwater samples were submitted to Edge Analytical of Burlington, Washington for analysis. Parameters tested consisted of analytes specified in the QAPP (SCPW Dept., 2010). Beginning with the second quarter of 2008 sampling event, additional parameters were tested during each subsequent quarterly sampling event. These additional parameters were measured for a two year period based on a request from the Washington Department of Ecology to further characterize groundwater at the landfill site. These additional parameters were measured for the last time during the first quarter 2010 monitoring event. These additional parameters included total dissolved solids (TDS), alkalinity, bicarbonate, total calcium, total magnesium, total potassium, total sodium, and the following dissolved metals: antimony, barium, beryllium, cobalt, copper, nickel, selenium, silver, thallium, and vanadium.

Based on a subsequent request from the Washington Department of Ecology, most of these additional parameters were sampled again beginning in the third quarter of 2011. Three parameters that were never detected above practical quantitation limits during the 2008 to 2010 sampling rounds were dropped from the sampling request, and included dissolved metals: beryllium, silver, and thallium. The additional parameters from the 2011 request that are presently analyzed for include TDS, alkalinity, bicarbonate, total magnesium, total potassium, and the following dissolved metals: antimony, barium, chromium, cobalt, copper, nickel, selenium, and vanadium. For quality assurance purposes, duplicate samples were collected from Well B-3 during each sampling round.

5.0 GROUNDWATER QUALITY RESULTS

A discussion of groundwater quality based on analytical results from the monitoring well network is presented in this section. Separate discussions are included for the perched and upper regional aquifers. A background well has not been established for either the perched aquifer or the upper regional aquifer monitoring networks because of apparent or potential landfill impacts at each monitoring well location as indicated by historical monitoring results.

Tabulated groundwater monitoring results for 2023 are presented in Appendices A-1 and B-1 for the perched and upper regional aquifers, respectively. Time-series plots were generated from data collected from 1994 through 2023 (Appendices A-2 and B-2).

For quality assurance purposes, a data validation report was generated that reviews laboratory groundwater quality data from the sampling event. The fourth quarter data validation report is presented in Appendix C.

5.1. Perched Aquifer

The perched aquifer monitoring system for the site is comprised of Monitoring Wells B-6, B-7, B-8, B-9, B-11, and B-13. As mentioned in Section 4.1, only monitoring wells B-6, B-8, B-9, and B-11 had sufficient water to collect representative groundwater samples during some or all of the three quarterly sampling events in 2023. Two analytes (dissolved arsenic and pH) were found to exceed state groundwater standards (Chapter 173-200 WAC) in the perched aquifer during 2023 (Table 3).

Table 3. Summary of Maximum Concentrations of Analytes Exceeding Groundwater Quality Standards in Perched Aquifer Wells: 2023

Contaminant	GW Quality Standards (173-200 WAC)	B-6	B-8	B-9	B-11
Carcinogen					
Arsenic (mg/L)	0.00005	0.0006	0.0005	0.0008	0.0011
Secondary					
pH (SU)	6.5-8.5	NE	NE	6.46	6.44

NE Not Exceeded

The 2023 analytical data indicate that elevated concentrations of dissolved arsenic tended to be widespread, with exceedances of the water quality standards occurring in each of the perched aquifer wells sampled.

5.2. Upper Regional Aquifer

The upper regional aquifer monitoring well network comprises Wells B-1, B-2, B-3, B-4, B-5, B-10, and B-12. Seven wells were found to exceed state groundwater standards (Chapter 173-200 WAC) for at least one sampling event during 2023 in the upper regional aquifer (Table 4).

Table 4. Summary of Maximum Concentrations of Analytes Exceeding Groundwater Quality Standards in Upper Regional Aquifer Wells: 2023

Contaminant	GW Quality Standards (173-200 WAC)	Maximum Concentration Detected						
		B-1	B-2	B-3	B-4	B-5	B-10	B-12
Carcinogen								
Arsenic, dissolved (mg/L)	0.00005	0.027	0.0009	0.0018	0.0023	0.0039	0.0019	0.004
Vinyl chloride (µg/L)	0.02	NE	NE	0.086	NE	0.122	NE	NE
Secondary								
Iron, dissolved (mg/L)	0.3	2.03	NE	2.39	4.66	15.9	2.04	0.68
Manganese, dissolved (mg/L)	0.05	2.72	NE	1.005	1.19	1.99	0.601	0.085
pH (standard units)	6.5-8.5	NE	NE	NE	6.36	6.28	NE	NE
Total dissolved solids (mg/L)	500	607	NE	NE	570	NE	NE	NE

NE: Not exceeded

The 2023 analytical data for the upper regional aquifer show areal distribution trends that are somewhat similar to those observed in the perched aquifer. Elevated concentrations of metals tended to be widespread, with exceedances of water quality standards for dissolved arsenic, iron, and manganese occurring in almost all of the upper regional aquifer wells. Vinyl chloride concentrations tended to be more localized in the upper regional aquifer in 2023, with water quality standards exceeded in only two wells (B-3 and B-5), which are located in the northwestern and western margins of the landfill.

In general, concentrations of all analytes tended to be lower in upgradient wells (B-1, B-10, and B-12) and higher in downgradient wells (B-2, B-3, B-4, and B-5), as would be expected. VOCs were not detected above PQLs in either well B-1, B-2, B-4, B-10, or B-12, during any of the 2023 monitoring events.

5.3. Trend Plots

A review of analyte trends over the past twenty-eight years in the time-series plots (Appendix A-2 and B-2) shows that water quality within both the perched aquifer and the regional aquifer has improved markedly from conditions observed in 1994. Some analytes are still above groundwater quality standards, but those may also indicate background conditions instead of landfill impact (dissolved arsenic and iron). Many analytes tend to show seasonal variability, but overall the general trend shows decreasing concentrations.

5.4. Domestic Wells

No domestic wells were sampled in 2023. Domestic wells located to the southwest and southeast of the landfill site have been sampled previously. The results of these analyses were presented in earlier annual reports. Refer to those reports for a discussion of domestic well results.

6.0 STATISTICAL EVALUATION OF GROUNDWATER RESULTS

Statistical analysis of groundwater monitoring data from the Inman Landfill is conducted using Microsoft Excel and Sanitas (v.9.6.37) or equivalent software in accordance with the EPA guidance document (EPA 2009). Statistical analysis is conducted using data from the entire monitoring period (1994-2023) unless otherwise noted.

6.1. Piper Diagrams

Piper diagrams are a graphical display of the proportions of the major cations and anions in a sample. Piper diagrams are constructed by plotting the proportions of the major cations (calcium, magnesium, sodium and potassium) on one triangular diagram, the proportions of the major anions (alkalinity, chloride, sulfate) on another, and then combining the information from the two triangular plots onto a quadrilateral plot (Drever 2002). A piper diagram was created using the data from each quarterly monitoring event in 2023 for both the perched aquifer (Appendix D-1) and the upper regional aquifer (Appendix E-1).

6.1.1. Perched Aquifer

The piper diagrams indicate that all the monitoring wells in the perched aquifer have similar chemical signatures. The results also show that general chemistry of the perched aquifer does not significantly change throughout the year.

6.1.2. Regional Aquifer

The piper diagrams indicate that the monitoring wells in the regional aquifer have mostly similar chemical signatures. Wells B-2, B-4, and B-5 do appear to each have their own slightly different chemical signature that varies from the rest of the monitoring wells. The results also indicate that the general chemistry of the upper regional aquifer does not significantly change throughout the year.

6.2. Stiff Diagrams

A stiff diagram is another graphical representation of the major ion composition of a water analysis. A polygonal shape is created from three horizontal axes extending on either side of a vertical axis. The three major anions are plotted to the right of the center axis and the three major cations are plotted to the left of the center axis. The points are connected to create the polygonal shape. The larger the area of the polygonal shape, the greater the concentrations of the analytes (Drever 2002). Stiff diagrams were produced for every well with the data from each quarterly monitoring event in 2023 for both the perched (Appendix D-2) and upper regional (Appendix E-2) aquifers.

6.2.1. Perched Aquifer

The polygons produced at each well are similar to each other in shape, but do vary in overall size. The polygon shapes and sizes remain similar for each quarterly monitoring event.

6.2.2. Upper Regional Aquifer

Generally, the polygons produced at each well are similar to each other, and are similar for each quarterly monitoring event. Wells B-1 and B-4 have the largest polygonal shapes, which indicates that these wells have the greatest concentration of analytes.

6.3. Cation-Anion Balance

Cation-anion balance is the ratio of cations to anions within the water sample. Since water samples are electrically neutral, the sum of the cations should equal the sum of the anions. The cations are magnesium, calcium, sodium and potassium. The anions are sulfate, chloride, carbonate and bicarbonate. The ratio would be determined as:

Ratio = (sum of cations)/(sum of anions)*100%

Since water is electrically neutral, we would expect the ratio to be 1 or 100%. The cation-anion balance was calculated for the monitoring wells in each aquifer during every quarterly monitoring event of 2023. The results are displayed on the quarterly piper diagrams in Appendix D-1 and Appendix E-1.

The cation-anion balances calculated for each quarterly monitoring event in the perched aquifer are 8.74%, 5.52%, and 6.79%, respectively (Appendix D-1). The cation-anion balances calculated for each quarterly monitoring event in the upper regional aquifer are 4.78%, 3.05%, and 2.68%, respectively (Appendix E-1). These results indicate that there are more anions than cations in the results. There could be a couple of reasons for this ratio imbalance. One is the fact that some analyte values are for dissolved metals and some analyte values are for total metals. Another reason could be that not all species were analyzed in the water sample, and therefore were not included in the cation-anion balance. The most common species were analyzed, but there could be less common species present in the water that were not included in the calculation.

6.4. Box Plots

Box plots are useful in providing a visual display of the distribution of a data set (EPA 2009). The central box of the plot shows the interquartile range from the 25^{th} to the 75^{th} percentiles. A line (whisker) is drawn to the minimum and maximum values from the 25^{th} and 75^{th} percentiles, respectively. The 50^{th} percentile is drawn within the box. The mean value of the data set is plotted within the box as a separate mark. Significantly staggered boxes could be an indication of spatial variability.

Box-plots were created with data collected from 1994 through 2023. Thirty plots were created from the perched aquifer analytical results (Appendix D-3) and thirty-six plots were created from the upper regional aquifer analytical results (Appendix E-3). Box plots were not generated for parameters, particularly dissolved metals and VOCs, when the results were all or nearly all detected at levels below the laboratory practical quantitation limits.

The box plots were visually analyzed to see if there were significant differences between the wells (Table 5 & Table 6). A significant difference would be if one of the boxes in the plot did not overlap with any of the others. This significant difference could indicate that there are statistically different average concentrations between the wells.

6.4.1. Perched Aquifer

Ten out of the thirty analytes plotted had wells with statistically different average concentrations (Table 5). Out of the ten analytes (alkalinity, bicarbonate, total calcium, COD, magnesium, nitrate as nitrogen, potassium, TDS and total sodium) the values measured in B-8 were higher. These results indicate that B-8 shows the most impacts from the landfill.

Table 5. Summary of Box Plot Visual Analysis in Perched Aquifer Wells: 2023

Significantly Staggered Analyte	Distribution of Boxes
Alkalinity	B-8 is higher
Bicarbonate	B-6 and B-8 are higher
Calcium, total	B-6 and B-8 are higher
Chemical oxygen demand (COD)	B-8 is higher
Bicarbonate	B-8 is higher
Magnesium, total	B-8 is higher
Nitrate-N	B-6 and B-11 are higher
Potassium	B-8 is higher
Total dissolved solids (TDS)	B-6 and B-8 are higher
Sodium, total	B-8 is higher

6.4.2. Upper Regional Aquifer

Sixteen out of the thirty-six analytes plotted had wells with statistically different average concentrations (Table 6). In six out of sixteen analytes (alkalinity, bicarbonate, Freon-22, magnesium, manganese, and TDS) the values measured in B-4 were significantly higher than the values measured in the rest of the wells. In three out of the sixteen analytes (CFC-12, nitrate-N, and potassium), the values measured in B-2 were significantly higher than the values measured in the rest of the wells. B-1 was significantly higher in one analyte (dissolved arsenic), and B-5 was significantly higher in five analytes (1,4-dioxane, COD, dissolved iron, dissolved nickel, and vinyl chloride). Wells B-3 and B-5 were both significantly higher in diethyl ether than the other wells. Wells B-4 and B-5 were both significantly higher in dissolved manganese than the other wells.

These results indicate that the B-2, B-4, and B-5 have the highest concentrations of inorganic and organic analytes. B-1 and B-3 were both significantly higher in one analyte each. B-10 and B-12 were not significantly higher in any analyte in the upper regional aquifer.

Table 6. Summary of Box Plot Visual Analysis in Upper Regional Aquifer Wells: 2023

Significantly Staggered Analyte	Distribution of Boxes
1,4-dioxane	B-5 is higher
Alkalinity	B-4 is higher
Arsenic, dissolved	B-1 is higher
Bicarbonate	B-4 is higher
Chemical Oxygen Demand	B-5 is higher
Chlorodifluoromethane (Freon 22)	B-4 is higher
Dichlorodifluoromethane (CFC-12)	B-2 is higher
Diethyl ether	B-3 and B-5 are higher
Iron, dissolved	B-5 is higher
Magnesium, total	B-4 is higher
Manganese, dissolved	B-4 and B-5 are higher
Nickel	B-5 is higher
Nitrate-N	B-2 is higher
Potassium, total	B-2 is higher
Total dissolved solids	B-4 is higher
Vinyl Chloride	B-5 is higher

6.5. Mann-Kendall Trend Test

The presence of significant increasing or decreasing trends was determined using the Mann-Kendall test. The Mann-Kendall test evaluates possible trends by comparing random pairs of data within the data set. The test statistic will increase if the later value is greater than the earlier value, and decrease if the later value is less than the earlier value. After the test statistic is determined, the Z-score is calculated from the test statistic. The farther the Z-score is from zero, the more significant the trend (EPA 2009).

A Mann-Kendall test was run on each well in every long-term time-series plot, however, significant trends were examined for the four active perched aquifer wells B-6, B-8, B-9, and B-11. The Mann-Kendall results show the slope of the trend, the Z-score, the critical threshold of significance for the Z-score, and if the Z-score is significant at the 98% confidence interval. Each analyte concentration is tested. Mann-Kendall long-term trend test results for the perched and upper regional aquifers are included in Appendix D-4 and E-4, respectively. Mann-Kendall short-term trend test results for the perched and upper regional aquifers are included in Appendix D-5 and E-5, respectively. A positive slope indicates an increasing trend, and a negative slope indicates a decreasing trend. Some results state the presence of a statistically significant increasing or decreasing trend in the data, but there were either no or very few actual detections within the data set. These trends are not considered statistically significant since they are the result of a change in laboratory detection limit of the analyte, and not an actual change in detected concentrations.

6.5.1. Perched Aquifer

Overall, the Mann-Kendall results indicate that every well shows stabilizing conditions in water quality (Table 7). Most of the statistically significant decreasing trends have been found in the long-term data set. Nitrate as nitrogen has shown a significant increasing in the long-term trend in the long-term data set in B-6. However, this parameter has never exceeded the groundwater quality criteria for Nitrate at

B-6. There is a significant increasing long-term trend of dissolved nickel at B-6 and B-11; however, these values are slightly above the PQL. Additionally, pH has shown a significant increasing trend in the long-term data set in B-6 and B-9. PH values for these two wells have been within the 6.5 to 8.5 range the last several years, with the exception of one exceedance from each (below 6.5) during the 2023 monitoring period. There are no increasing or decreasing short term trends for the perched aquifer.

Table 7. Mann-Kendall Significant Trends: Perched Aquifer

Well	Analytes with Decreasing trends		Analytes with Increasing trends
B-6	Antimony, dissolved Ammonia-N Arsenic, dissolved Alkalinity Barium, dissolved Bicarbonate Cadmium, dissolved Calcium, total Chemical oxygen demand Cobalt, dissolved Copper, dissolved Lead, dissolved	Magnesium, total Manganese, dissolved Selenium, dissolved Sodium, total Specific conductance Sulfate Total Dissolved Solids (TDS) Total organic carbon (TOC) Vanadium, dissolved Zinc, dissolved	Nickel, dissolved Nitrate-N pH
B-8	Antimony, dissolved Arsenic, dissolved Calcium, total Cadmium, dissolved Chloride Chromium, dissolved Copper, dissolved	Lead, dissolved Selenium, dissolved Sodium, total Specific conductance Sulfate Vandium, dissolved Zinc, dissolved	
B-9	Alkalinity Antimony, dissolved Ammonia-N Arsenic, dissolved Barium, dissolved Bicarbonate Cadmium, dissolved Calcium, total Chloride Chromium, dissolved Cobalt, dissolved Copper, dissolved Dichlorofluoromethane (CFC-12)	Magnesium, total Manganese, dissolved Potassium Selenium, dissolved Sodium, total Specific conductance Sulfate TDS TOC Vanadium, dissolved Zinc, dissolved	pH
B-11	Ammonia-N Cadmium, dissolved Calcium, total Chloride Chromium, dissolved Copper, dissolved Lead, dissolved Manganese, dissolved	Selenium, dissolved Sodium, total Specific conductance Sulfate TOC Vanadium, dissolved Zinc, dissolved	Nickel, dissolved

Regular text denotes a long-term trend only

Bold text denotes both a long-term and short-term trend

Italicized text denotes a short-term trend only

6.5.2. Upper Regional Aquifer

Statistically significant long-term and short-term trends discerned from the upper regional aquifer data indicate that Wells B-2, B-3, and B-4 show the most long-term decreasing concentration trends for landfill analytes during the long-term monitoring period (Table 8). Wells B-1, B-5, B-10, and B-12 show the most increasing concentration trends, in both the long-term and short-term data sets. These increasing trends are all inorganic analytes, except for Freon-22 in Wells B-1 and B-4, diethyl ether in Well B-3, CFC-12 in Wells B-2 and B-5, and vinyl chloride in Wells B-2, B-3, and B-5. The majority of trends, both increasing and decreasing, are shown to be long term. Wells B-4 and B-12 show the highest number of short term trends, with most of B-4's short term trends decreasing and most of B-12's short term trends increasing.

Table 8. Mann-Kendall Significant Trends: Upper Regional Aquifer

Well	Analytes with Decreasing trends		Analytes with Increasing trends	
B-1	Cadmium, dissolved Copper, dissolved Lead, dissolved Selenium, dissolved **Vanadium, dissolved** Zinc, dissolved		Alkalinity Ammonia-N Barium, dissolved Bicarbonate Cobalt, dissolved COD Chloride Freon 22 Iron, dissolved Magnesium, total	Manganese, dissolved Nickel, dissolved Potassium, total Specific conductance Sodium, total Sulfate TDS TOC
B-2	Ammonia -N Arsenic, dissolved Barium, dissolved Cadmium, dissolved Chloride Chromium, dissolved Cobalt, dissolved Copper, dissolved CFC-12	Manganese, dissolved Nickel, dissolved Selenium, dissolved Sodium, total Specific conductance Sulfate TDS TOC Vanadium, dissolved Vinyl chloride Zinc, dissolved		
B-3	Arsenic, dissolved Chloride Chromium, dissolved Cobalt, dissolved Copper, dissolved Diethyl ether Iron, dissolved Manganese, dissolved	Selenium, dissolved Sodium, total Specific conductance TOC Vanadium, dissolved Zinc, dissolved	pH *Vinyl chloride*	

Regular text denotes a long-term trend only
Bold text denotes both a long-term and short-term trend
Italicized text denotes a short-term trend only

Table 8. Mann-Kendall Significant Trends: Upper Regional Aquifer (cont).

Well	Analytes with Decreasing trends		Analytes with Increasing trends	
B-4	**Alkalinity** Arsenic, dissolved **Barium, dissolved** Bicarbonate *Chloride* Chromium, dissolved Cobalt, dissolved Copper, dissolved **Magnesium, total** *Manganese, dissolved*	Potassium, total Selenium, dissolved *Specific conductance* *Sulfate* TDS Vanadium, dissolved Zinc, dissolved	Ammonia-N Chloride COD Iron, dissolved	Specific conductance Sulfate TOC
B-5	Arsenic, dissolved Freon 22 Chromium, dissolved Copper, dissolved CFC-12 Manganese, dissolved	*Vanadium, dissolved* Vinyl chloride Zinc, dissolved	Cobalt, dissolved Chloride COD	Potassium, total Specific conductance Sodium, total TOC
B-10	Alkalinity *Ammonia-N* Arsenic, dissolved Barium, dissolved Bicarbonate	Magnesium, dissolved TDS Vanadium, dissolved Zinc, dissolved	COD Iron, dissolved Manganese, dissolved pH Sodium, total Specific conductance Sulfate TOC	
B-12	**Arsenic, dissolved** Cadmium, dissolved Cobalt, dissolved Copper, dissolved	Manganese, dissolved Selenium, dissolved Zinc, dissolved	**Alkalinity** **Ammonia-N** **Barium, dissolved** **Bicarbonate** *Calcium, total* *Chloride* COD Iron, dissolved **Magnesium, total**	**Potassium, total** **Sodium, total** pH **Specific conductance** Sulfate **TDS**

Regular text denotes a long-term trend only
Bold text denotes both a long-term and short-term trend
Italicized text denotes a short-term trend only

7.0 LANDFILL GAS EXTRACTION AND MONITORING ACTIVITIES

To alleviate the accumulation of methane beneath the landfill cap and to control off-site methane migration, Inman Landfill has a LFG extraction system consisting of 27 wells and trenches (Figure 8). The landfill also contains perimeter LFG monitoring probes to monitor for off-site migration of LFG.

7.1. LFG Extraction System Operation

The LFG system was not operated during 2023 due to low methane levels within the landfill and over-capacity of the current equipment configuration of the system.

7.2. Perimeter Monitoring

Section (2)(b)(i) of Chapter 173-304-460 WAC specifies minimum functional air quality standards for landfills. These standards limit the concentration of explosive gases at the property boundary to the lower explosive limit (LEL) for that gas. For methane, the LEL occurs at a concentration of approximately 5 percent by volume. To monitor for potential exceedance of this standard, concentrations of methane and associated landfill gases (oxygen and carbon dioxide) are measured in 10 nested perimeter LFG monitoring probe sets that include a total of 24 individual probes. Measurements of LFG concentrations in perimeter monitoring probes were conducted during every quarterly monitoring events in 2023. The results of these measurements are presented in Table D-1 located in Appendix D.

The LFG probes are located on all sides of the landfill perimeter as depicted in Figure 9. Some of the probes are co-located with groundwater monitoring wells (Wells B-6, B-7, B-9, B-11, and B-13) and some are stand-alone probes (Probes GDW-1, GDW-2, GDW-3, GDW-5, GP-6, and GP-7). The depths of the screened intervals of the probes vary from 7 to 87 feet below ground surface (Table F-1). For assessment purposes, methane concentrations measured in each probe were compared to the methane air quality standard of 5 percent methane by volume.

Comparisons of the methane results to the air quality standard shows that there was only one detection of methane exceeding the LEL in 2023, at well GDW-1. Historically, methane has been detected in GDW-1 and B-13 at concentrations above the LEL. Probe set GDW-1 is located near the southeastern corner of the Inman Landfill site. The properties adjacent to the east and south of the landfill are vacant. Currently, subsurface methane concentrations in this area do not appear to present an immediate risk to the public. The highest methane concentration measured in 2023, and the only LEL exceedance, was 25.2% in the shallow probe of GDW-1 during the fourth quarter monitoring event.

8.0 INSPECTIONS

Inspections were conducted in conjunction with quarterly groundwater monitoring in 2023.

9.0 SUMMARY AND CONCLUSIONS

Inman Landfill closed in 1994. Post-closure activities have been on-going since closure was completed in 1995. These activities include: leachate collection and disposal, LFG collection, perimeter groundwater monitoring, subsurface LFG monitoring, surface water monitoring, and site maintenance. Groundwater monitoring activities include collection of groundwater samples from two aquifers: an unconfined perched aquifer and a confined upper regional aquifer. Monitoring data indicate that groundwater in the perched aquifer generally flows to the west and southwest, and the upper regional aquifer flows in a radial pattern toward the north, northeast, and east.

Assessment of groundwater monitoring results shows that several groundwater quality standards were exceeded at one or more monitoring wells in both aquifers during 2023. Standards exceeded include the WAC 173-200 carcinogen standards for dissolved arsenic and vinyl chloride, and the WAC 173-200 secondary standards for dissolved iron, dissolved manganese, total dissolved solids, and pH.

Only four of the original six perched aquifer wells had sufficient water to collect groundwater samples in 2023. These include B-6, B-8, B-9, and B-11. The four perched aquifer monitoring wells sampled during 2023 contained elevated concentrations of landfill-related analytes, specifically dissolved arsenic, relative to state standards. However, there has never been an exceedance of Nitrate parameter above the WAC-173-200 primary contaminant standard. No VOCs show any increasing trends. Out of all of the perched aquifer wells, most inorganic analytes show decreasing trends.

All wells screened in the upper regional aquifer sampled during 2023 contained elevated concentrations of landfill-related analytes relative to state standards. Exceedance of standards for metals also tended to be widespread, while exceedance of standards for VOCs also tended to be more localized, occurring in only two wells (B-3 and B-5). Five of these inorganic analytes (dissolved arsenic, dissolved iron, dissolved manganese, pH, and TDS) exceed regulatory limits. Significant VOC concentrations were limited to wells B-3 and B-5; both wells exceeded regulatory limits for vinyl chloride during at least one monitoring event, although neither well showed an increasing nor decreasing trend for vinyl chloride. One VOC, Chlorodifluoromethane (Freon 22), shows an increasing long-term trend at wells B-1; however Freon 22 has no regulatory limit. VOCs were not detected above laboratory PQLs in Wells B-10 and B-12 during 2023. This VOC distribution is consistent with the regional groundwater flow characteristics for this aquifer.

Although apparent impacts from the landfill continue within both aquifers, most of the time-series plots show decreasing concentration trends in most wells, indicating that groundwater quality in the vicinity of the landfill has stabilized. Decreasing trends were most apparent in wells completed within the perched aquifer, which historically has shown the highest degree of impact. However, there are some increasing trends in the regional aquifer which could indicate continued impact to the groundwater quality below the landfill. Improvements to groundwater quality underlying the site appear to be directly attributable to several specific corrective actions conducted at suspected groundwater contaminant sources during general closure activities conducted in 1994 and 1995. These corrective actions included:

- Recapping the old, unlined (Phase I) portion of the landfill which reduced the amount of precipitation infiltrating the landfill, and consequently the amount of leachate entering groundwater.

- Eliminating leachate seeps that allowed leachate to enter into the drainage system.
- Improving the old infiltration basin and constructing a new infiltration basin.
- Relining the pre-treatment leachate pond and pump station.
- Constructing and operating an active LFG extraction system that reduced the potential for VOCs to enter groundwater via partitioning.
- Making other drainage improvements which eliminated surface water run-on to the site and consequently reduced the amount of leachate generated.

In addition to these corrective actions, Skagit County connected several homes located southwest and southeast of the landfill to a public water system and subsequently abandoned their drinking water wells. Because of their location and well construction characteristics, these wells had the potential to be impacted by contaminants from the landfill. These connections have removed the threat of impacts to nearby drinking water sources.

The results of perimeter gas monitoring activities indicate that the historical operation of the LFG system has been effective at controlling landfill gas migration.

10.0 RECOMMENDATIONS

The risk of potential impacts to domestic wells located southeast and southwest of the landfill has been eliminated due to their abandonment and the connection of the homes to a public water source. As a result of closure activities and the implementation of corrective actions, groundwater quality at the site has shown signs of significant stabilization.

Skagit County is recommending that the groundwater monitoring program at the Inman Landfill be modified to reflect the stabilizing trends over the last ten years of certain contaminants of concern (COC) particularly dissolved metals arsenic, iron, and manganese, and organic COCs vinyl chloride and 1,4-dioxane. It is recommended that the frequency of sampling be reduced to a semi-annual schedule coinciding with wet months when water levels are usually the highest (March-April), and dry months when water levels are usually the lowest (September-October). In addition, it is recommended that the list of analytes be reviewed with the objective of removing both inorganic and organic COCs that have never exceeded Chapter 173-200 WAC groundwater quality standards, and those COC's have only been detected slightly above the laboratory practical quantification level.

Perimeter gas monitoring results indicate that the historical operation of the LFG system has been effective at controlling methane concentrations in the vicinity of GDW-1. However, it is anticipated that based on the capacity of the current system configuration, and decreasing levels of LFG measured over the last several years, future operation of the LFG extraction system is impractical. Skagit County is recommending that the LFG extraction piping system be modified to continuously and passively vent remaining concentrations of LFG at the site.

11.0 REFERENCES

Environmental Protection Agency. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities. EPA 530-R-09-007. March 2009.

Skagit County Public Works Department. 2010. Quality Assurance Project Plan. Appendix B of Post-Closure Operations and Maintenance Manual, Inman Landfill. February 2010.

Sweet, Edwards, and Associates, Inc. 1987. Inman Landfill Hydrogeology Investigation Phase II Report. January 16, 1987.

FIGURES

Figure 1. Inman Landfill Location Map

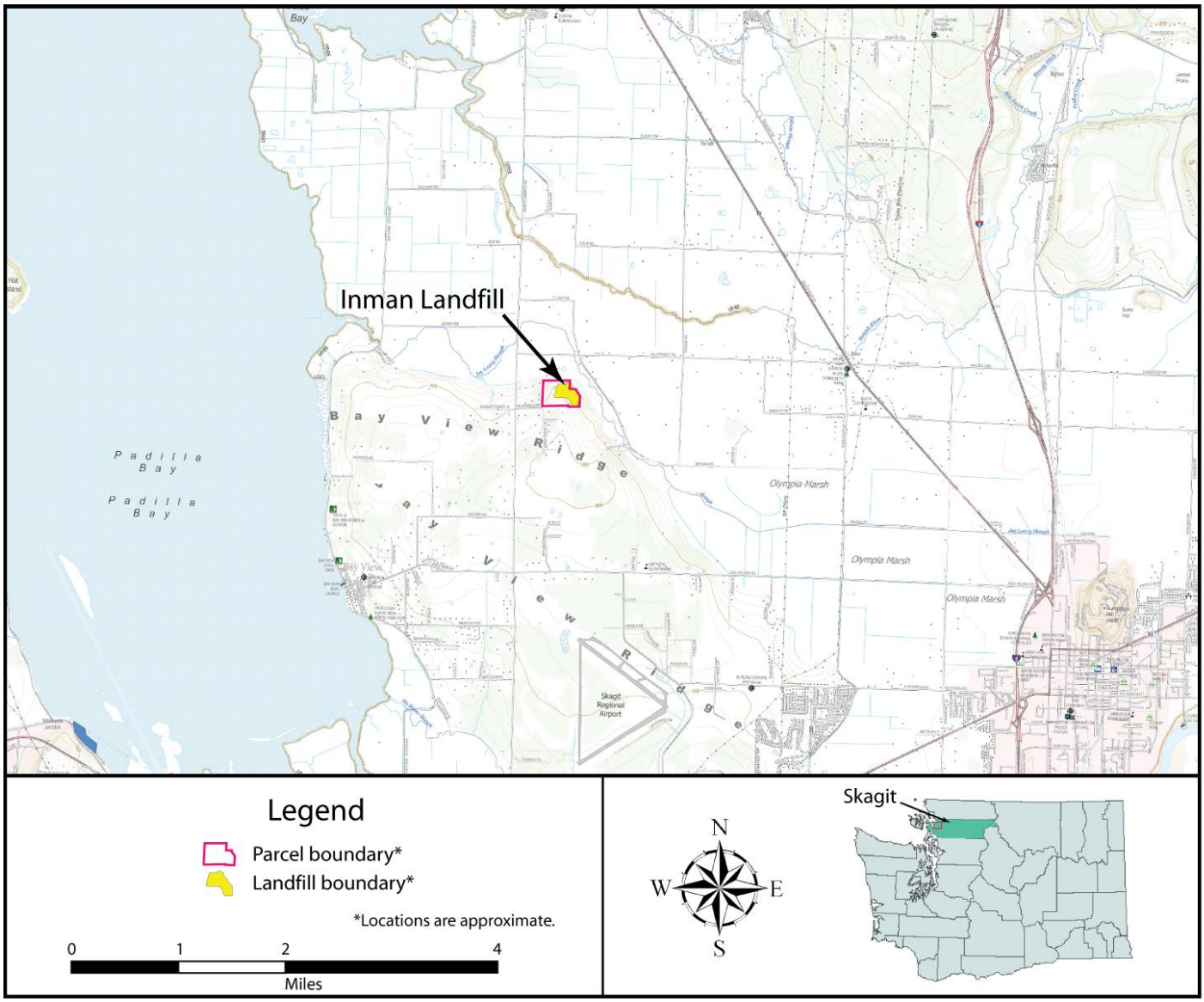


Figure 2. Annual Volume of Leachate Disposed.

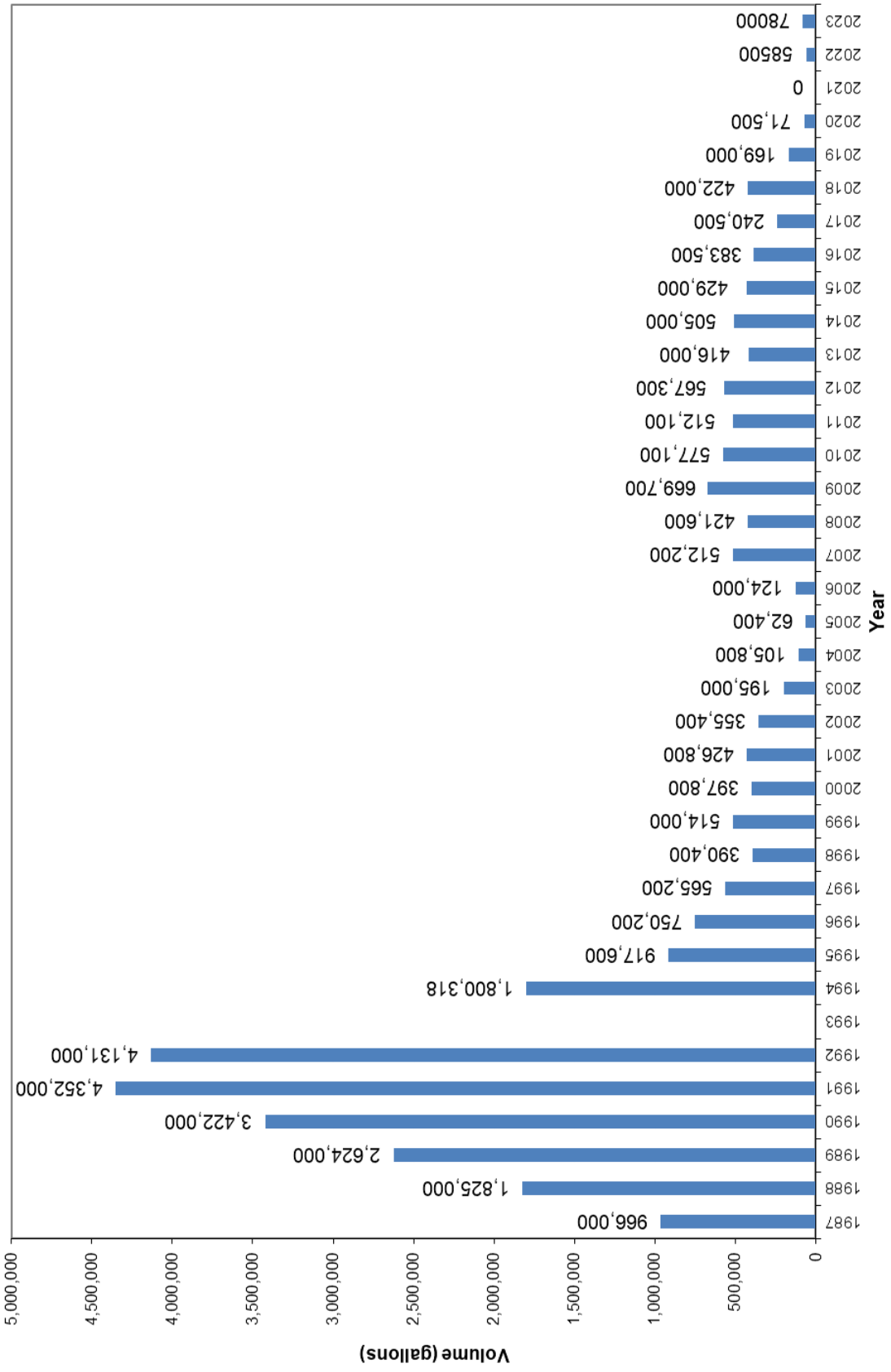
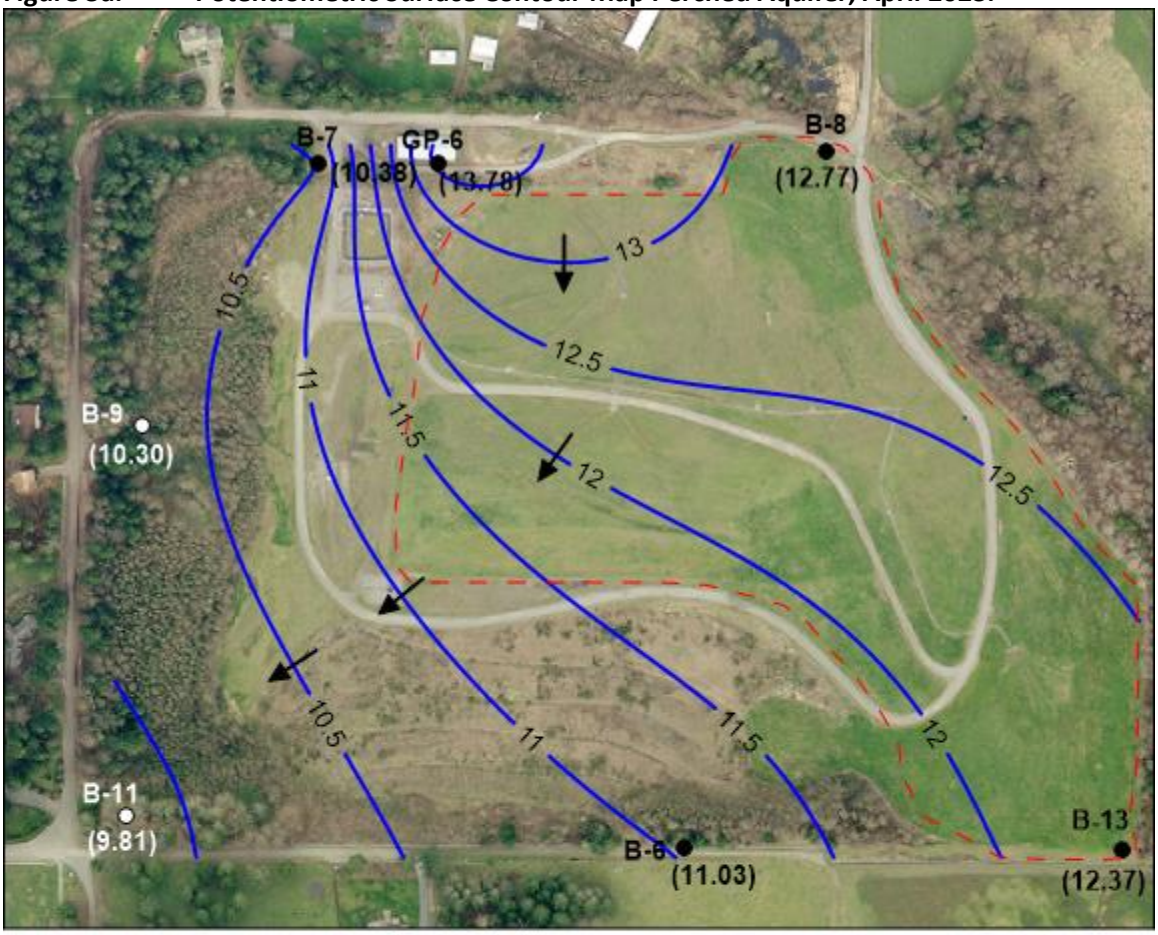


Figure 3. Perched Aquifer Monitoring Well Locations.

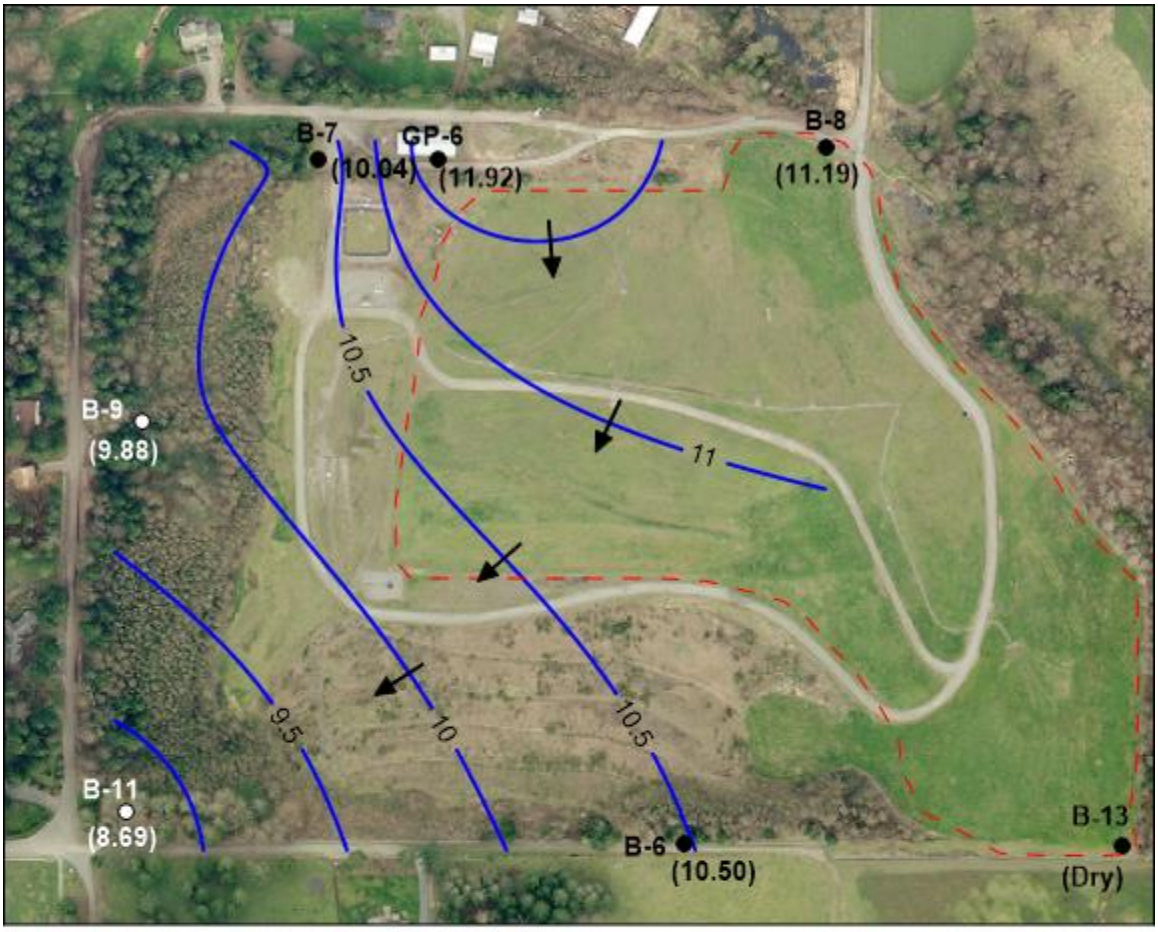
Figure 3a. Potentiometric Surface Contour Map Perched Aquifer, April 2023.



LEGEND

B-6	Monitoring Well
—12.5—	Potentiometric Surface Contour (feet above MSL)
↙	Direction of Groundwater Flow
(9.03)	Measured Static Water-Level Elevation (feet above MSL)
Not Measured	NM
– – –	Approximate Landfill Boundary

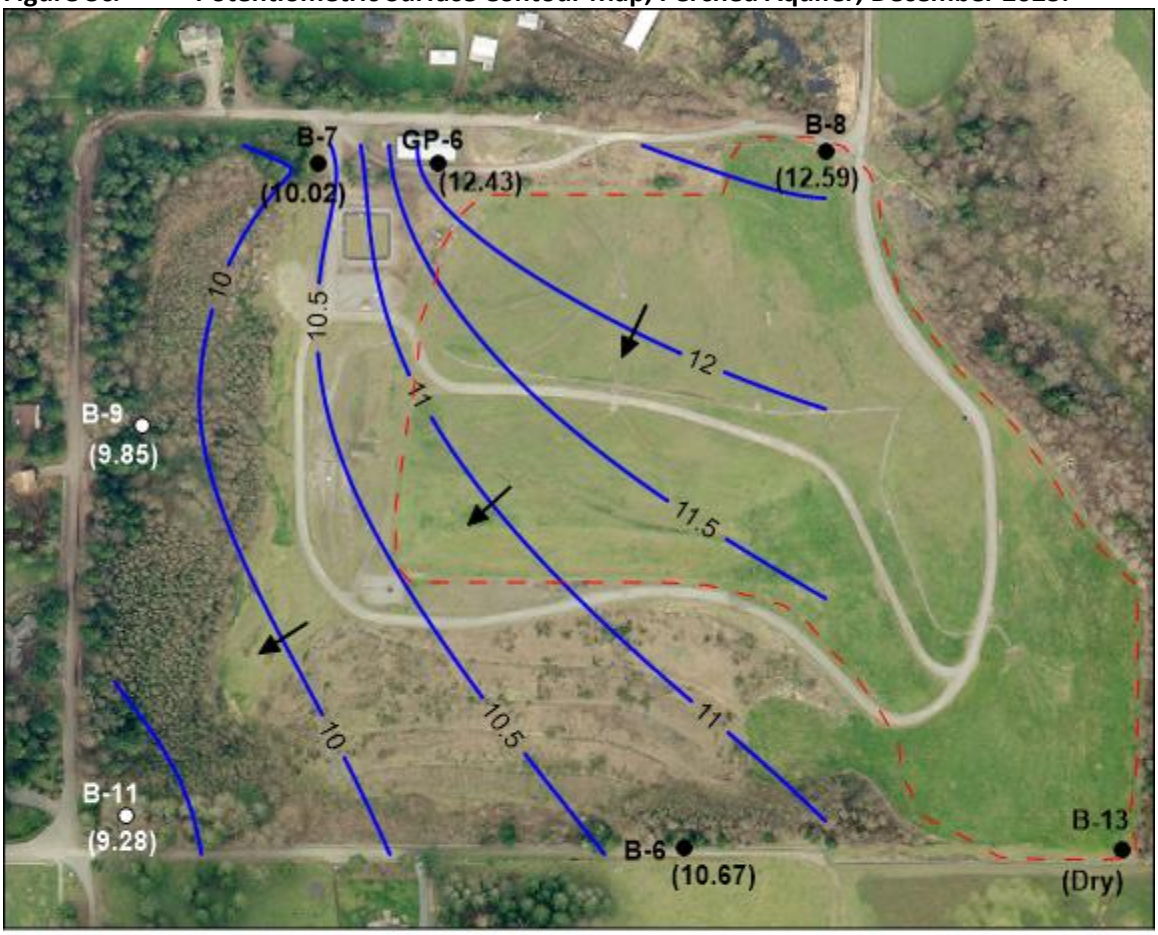
Figure 3b. Potentiometric Surface Contour Map, Perched Aquifer, September 2023.



LEGEND

B-6	Monitoring Well
—12.5—	Potentiometric Surface Contour (feet above MSL)
↙	Direction of Groundwater Flow
(9.03)	Measured Static Water-Level Elevation (feet above MSL)
Not Measured	NM
– – –	Approximate Landfill Boundary

Figure 3c. Potentiometric Surface Contour Map, Perched Aquifer, December 2023.



LEGEND

B-6	Monitoring Well
—12.5—	Potentiometric Surface Contour (feet above MSL)
↙	Direction of Groundwater Flow
(9.03)	Measured Static Water-Level Elevation (feet above MSL)
Not Measured	NM
– – –	Approximate Landfill Boundary

Figure 4. **Regional Aquifer Monitoring Well Locations.**

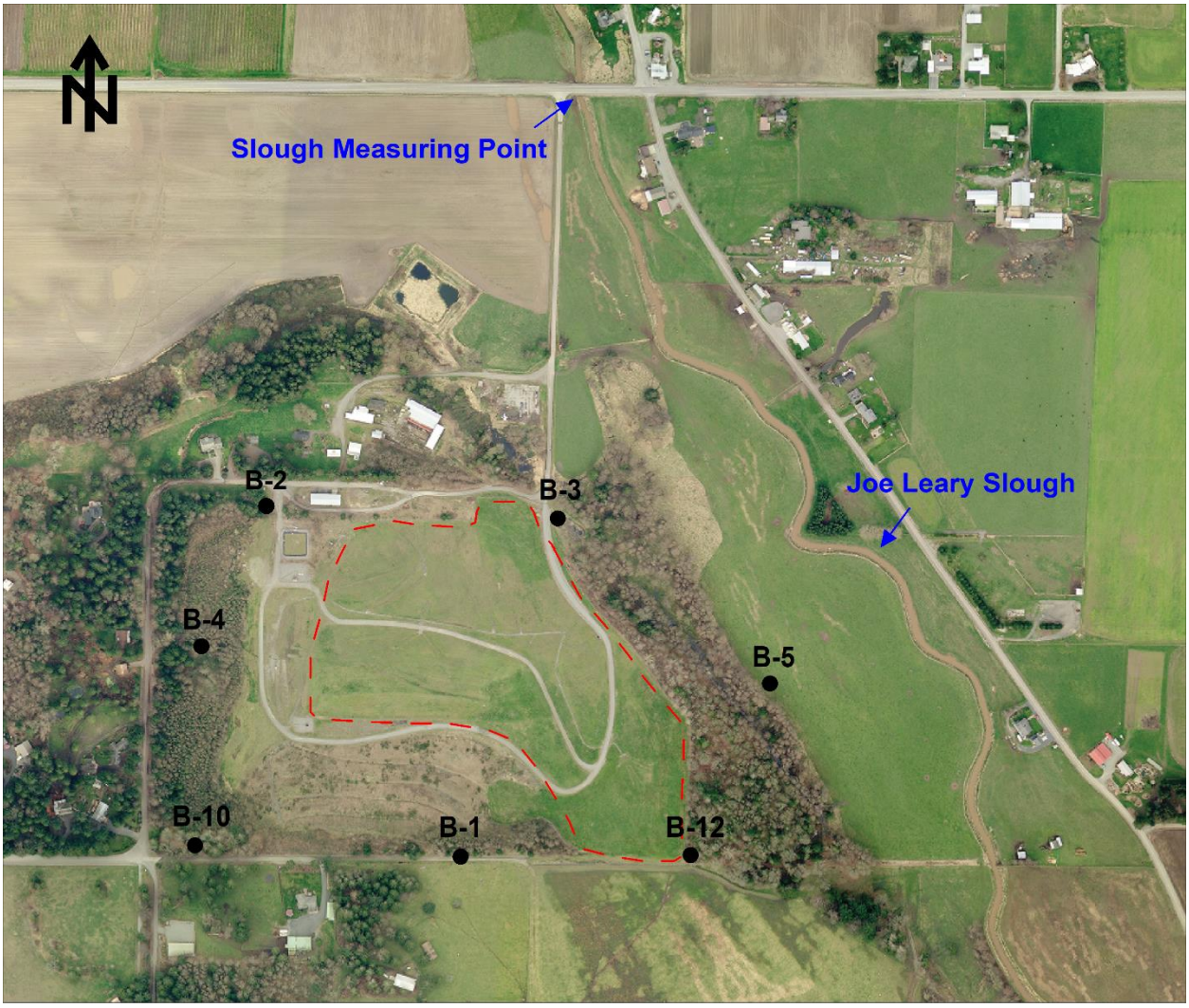


Figure 4a. Potentiometric Surface Contour, Central Landfill, Regional Aquifer, April 2023.

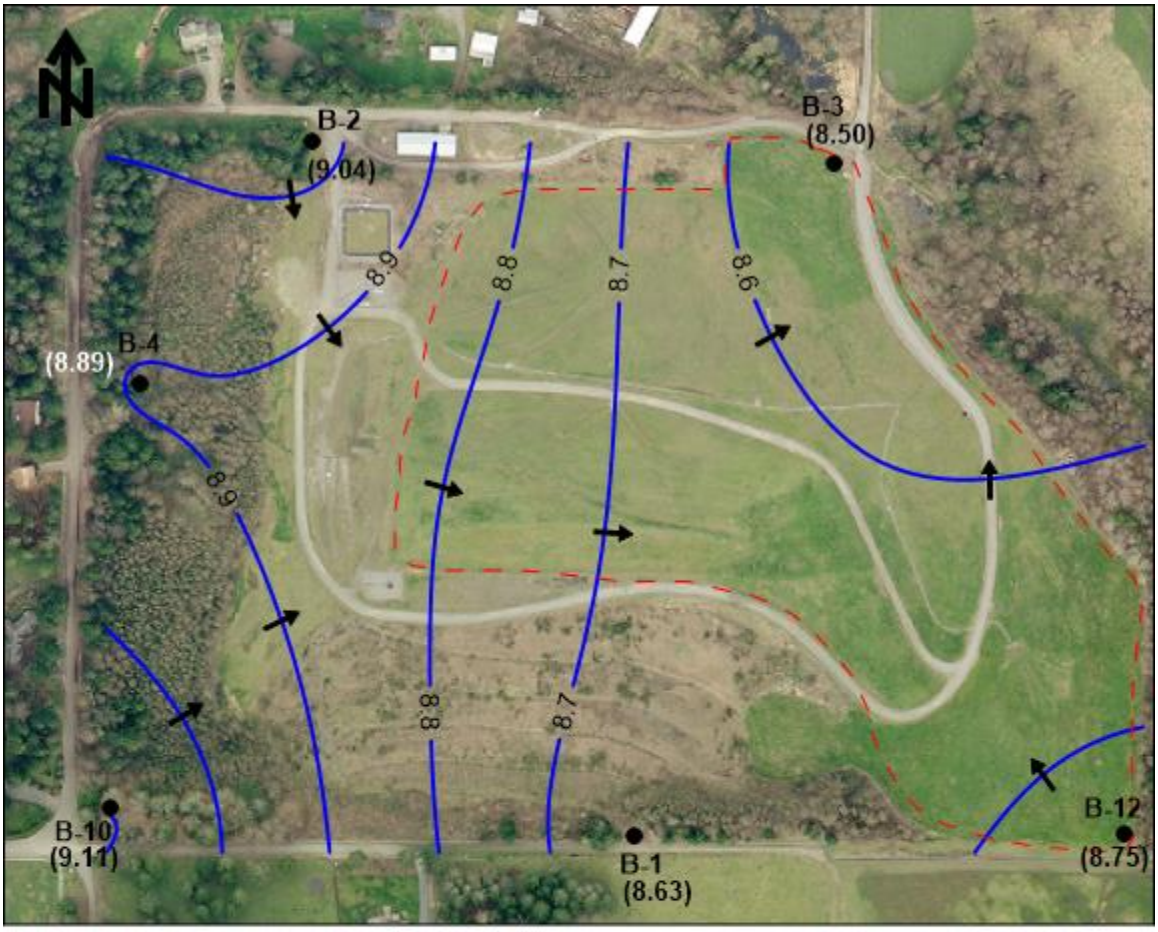


Figure 4c. Potentiometric Surface Contour, Central Landfill, Regional Aquifer, September 2023.

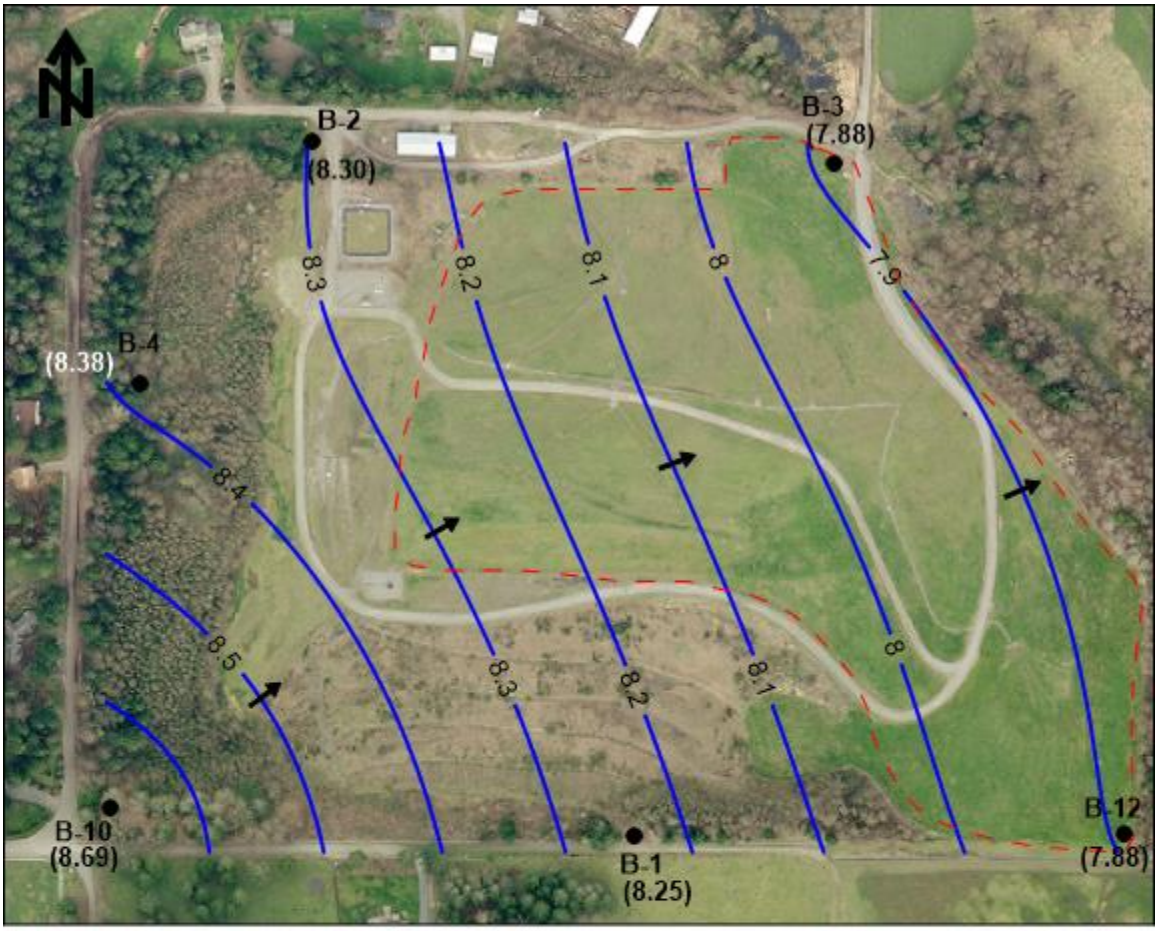
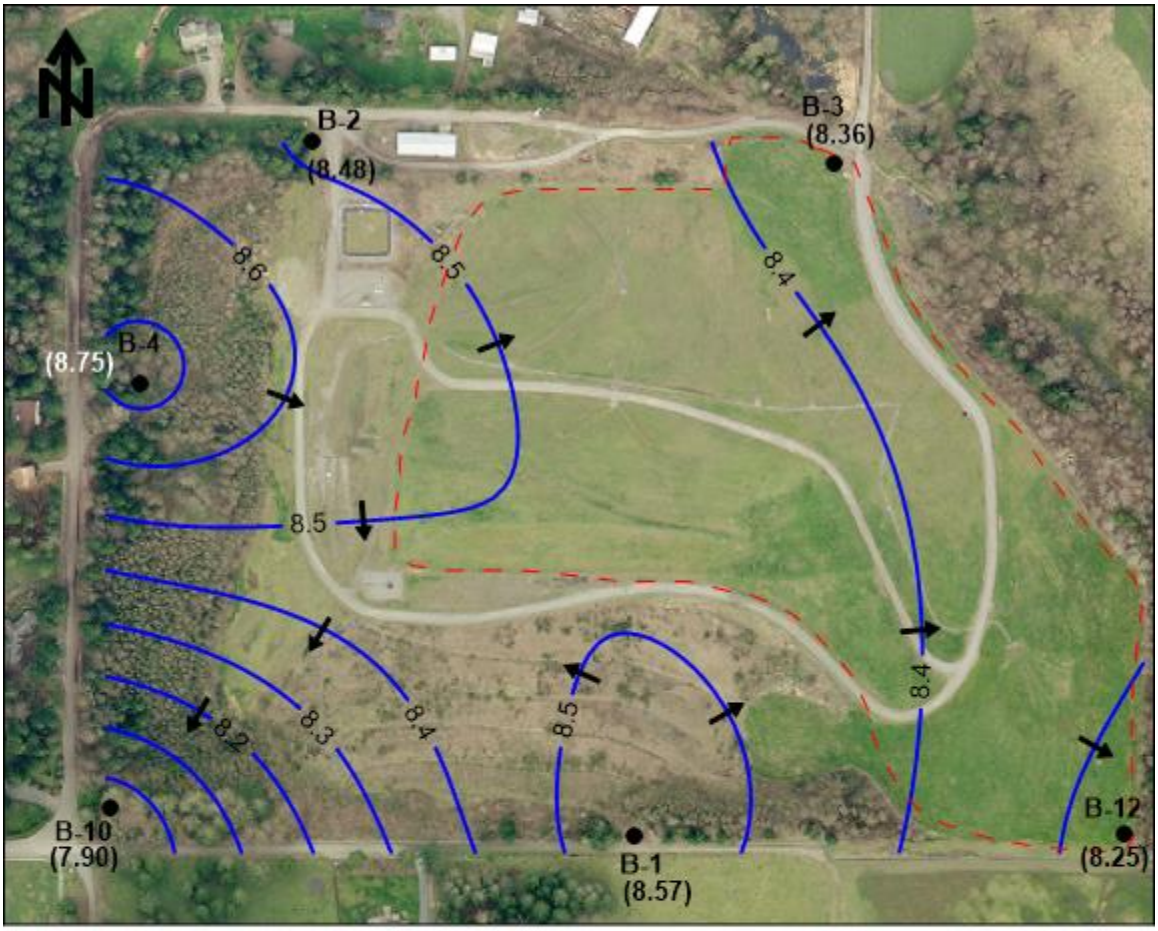


Figure 4d. Potentiometric Surface Contour, Central Landfill, Regional Aquifer, December 2023.



LEGEND

B-6 Monitoring Well

—8.2— Potentiometric Surface Contour (feet above MSL)

Direction of Groundwater Flow

(8.43) Measured Static Water-Level Elevation (feet above MSL)

Approximate Landfill Boundary

Figure 5. Perched Aquifer Hydrograph, 1994-2023

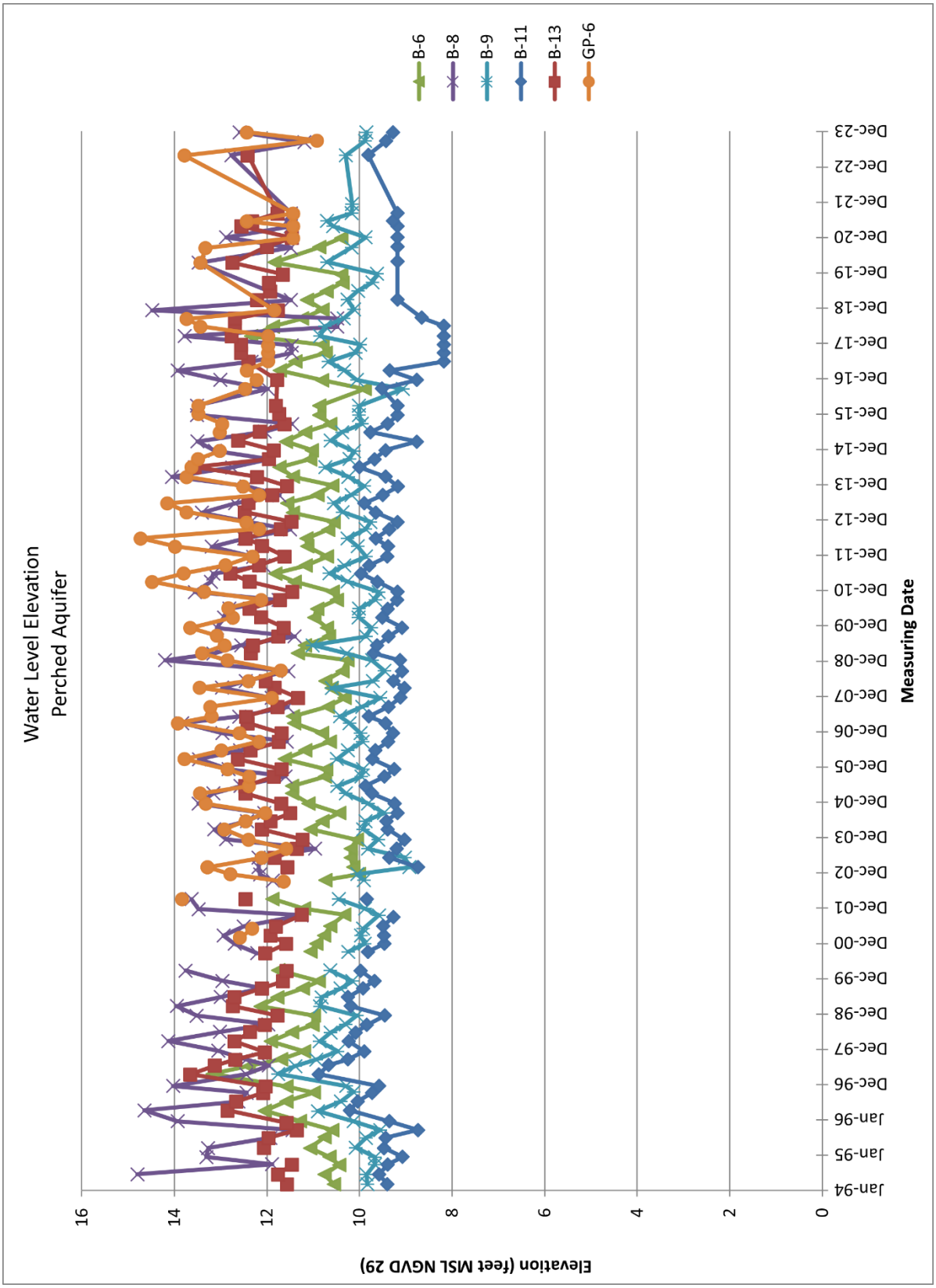


Figure 6. Regional Aquifer Hydrograph, 1994-2023

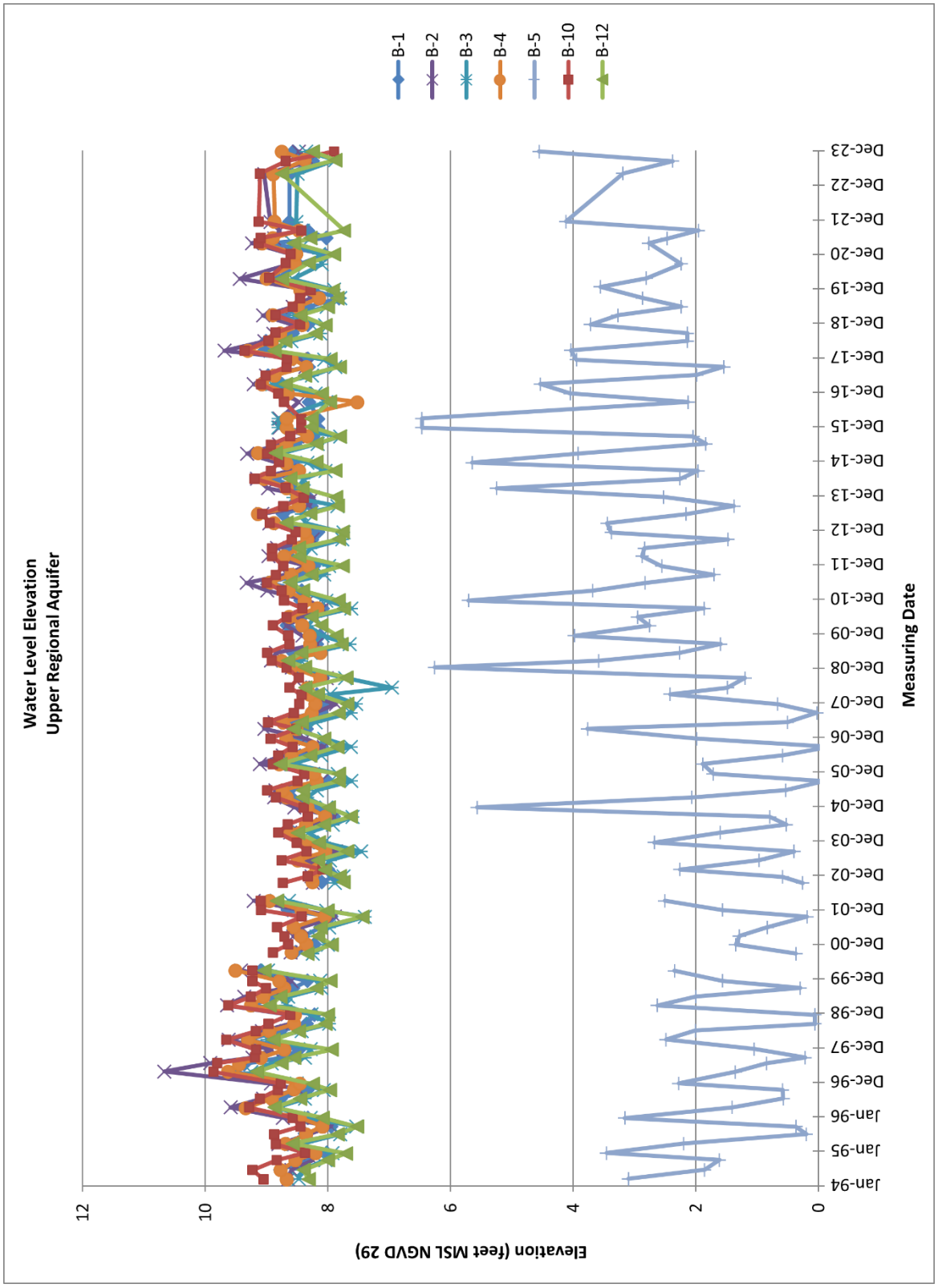


Figure 7a. Potentiometric Surface Contour Map, Regional Aquifer, April 2023.

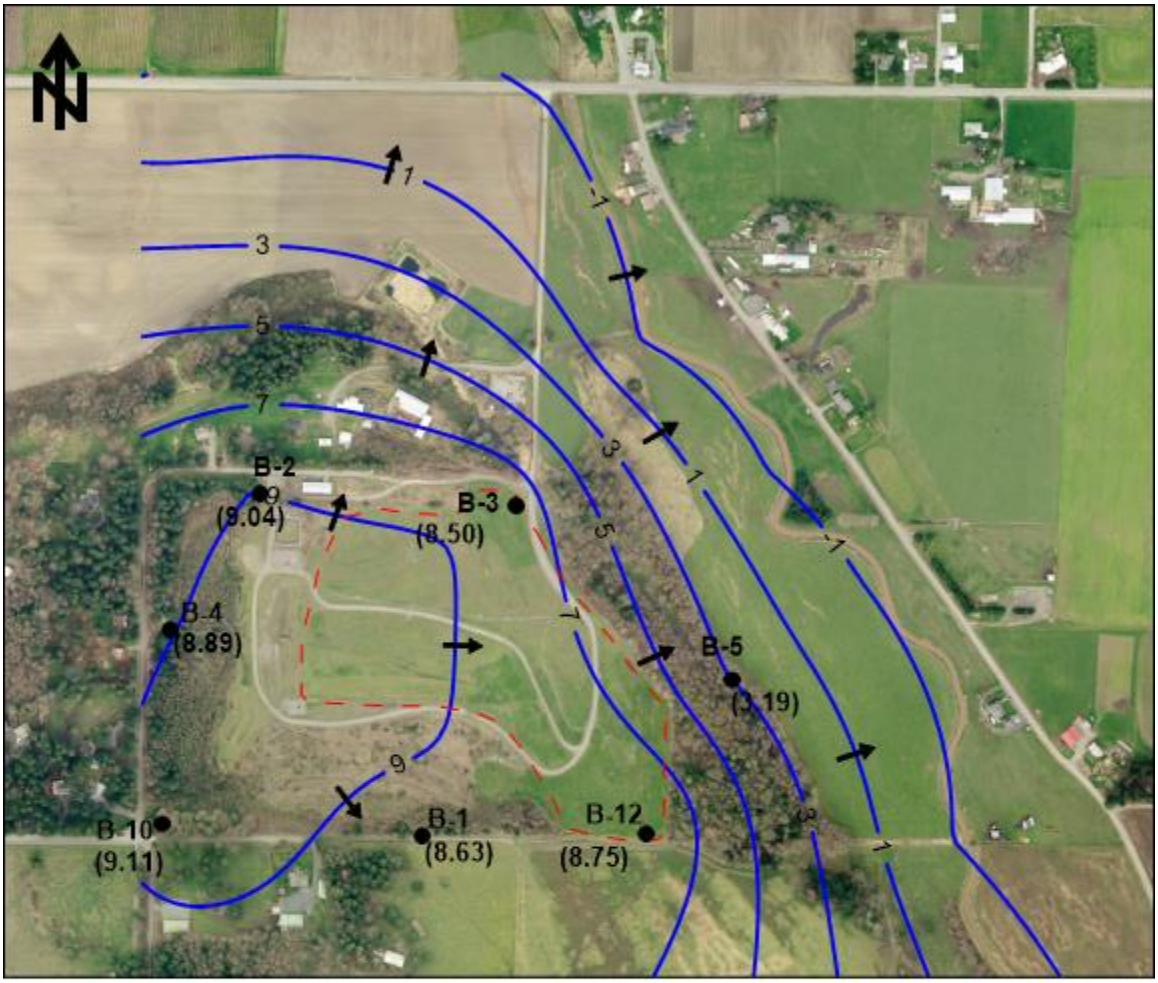


Figure 7b. Potentiometric Surface Contour Map, Regional Aquifer, June 2023.

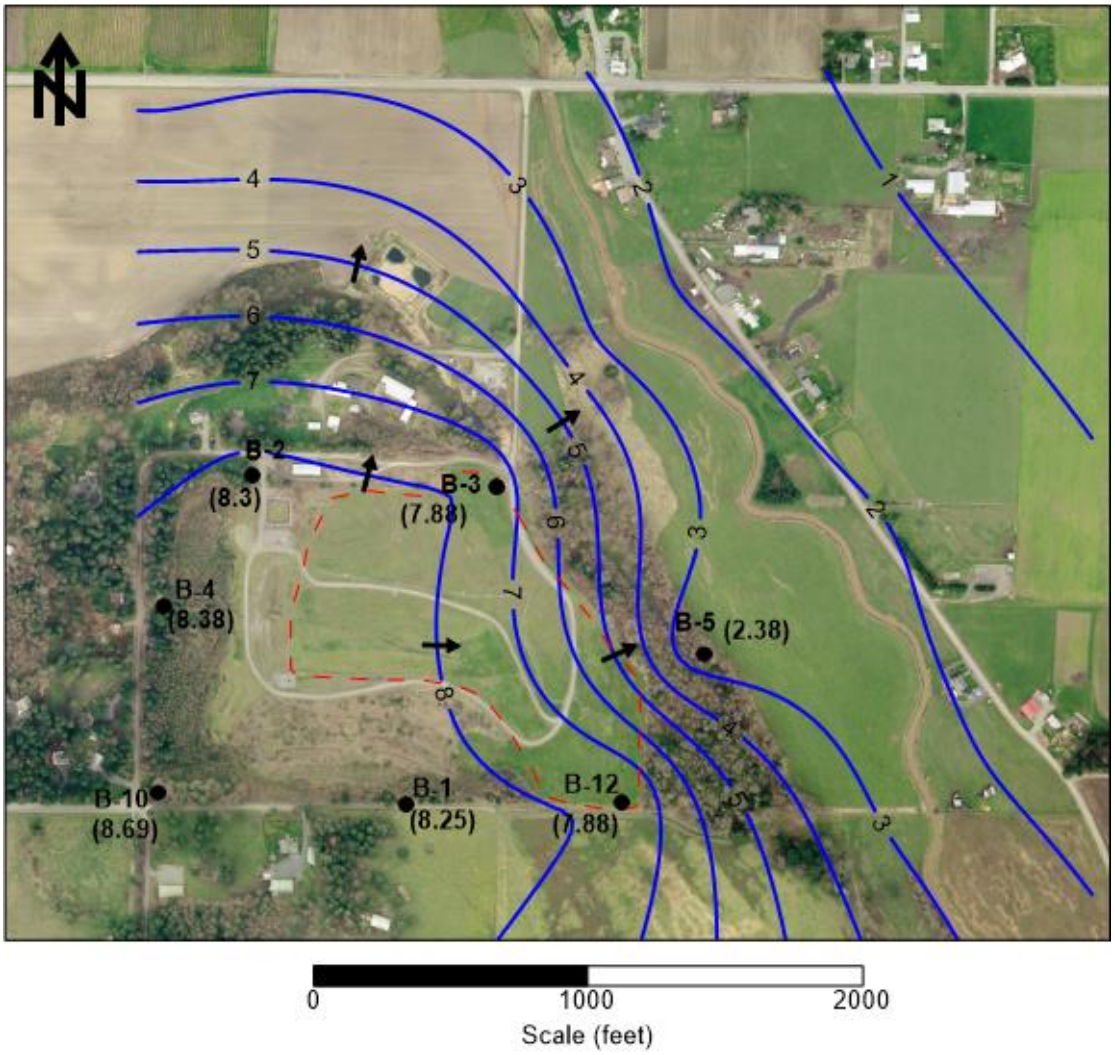


Figure 7c. Potentiometric Surface Contour Map, Regional Aquifer, September 2023.

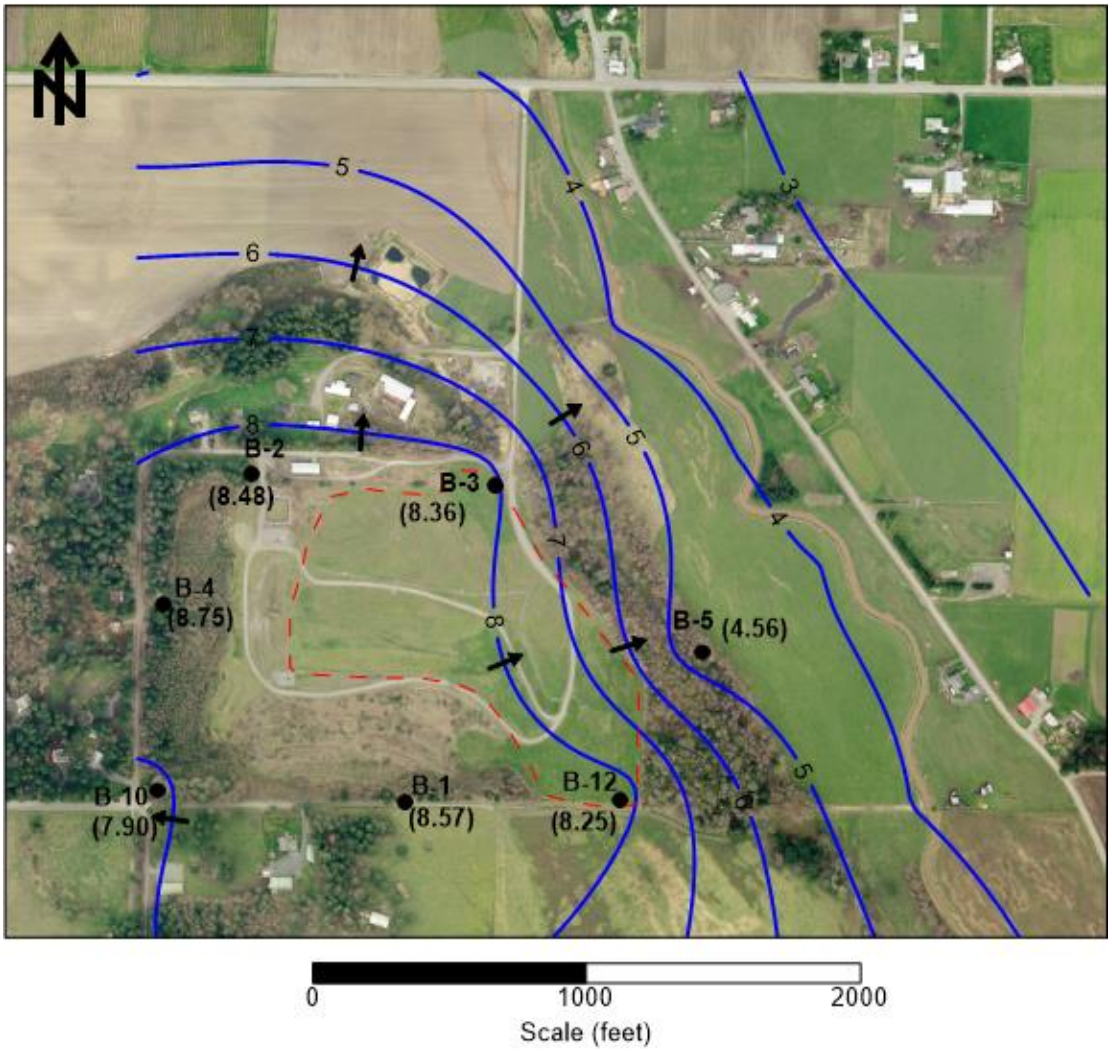


Figure 8. Inman Landfill Gas Extraction System Layout

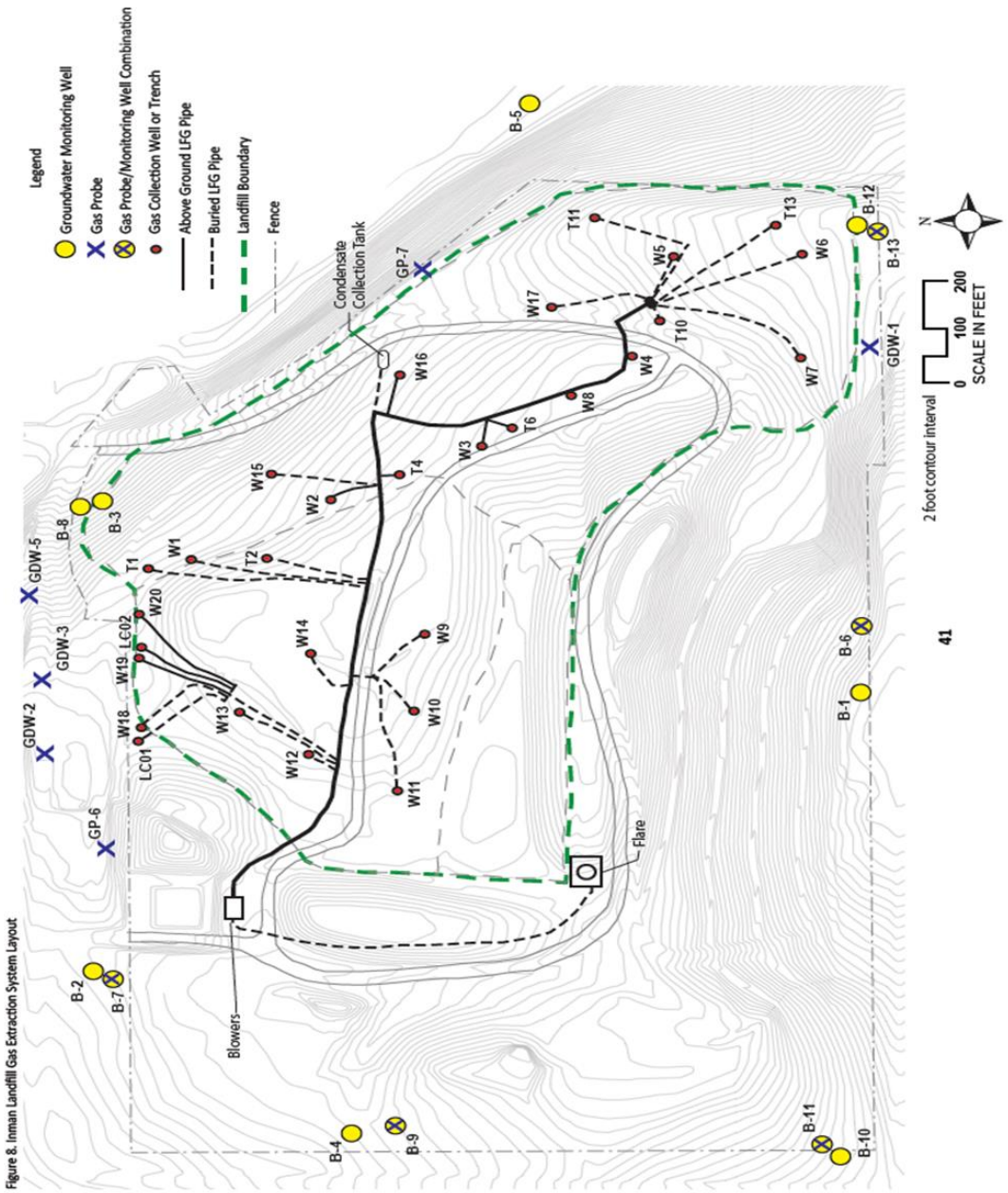


Figure 9. Landfill Gas Perimeter Monitoring Probe Locations.

LEGEND

B-6 Perimeter Gas Monitoring Well

(6.9%) Maximum methane concentration (<=0.1% for wells with no concentrations shown)

– – – Approximate Landfill Boundary

APPENDIX A-1
2023 Groundwater Monitoring Data – Perched Aquifer

2023 Inorganic Monitoring Results
Inman Landfill

AQUIFER			Perched		
MONITORING WELL Sampling Date			B-6 4/21/2023	B-6 9/19/2023	B-6 1/24/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
CONVENTIONALS					
Chemical Oxygen Demand	mg/L		11 J	3 J	5 J
Total Organic Carbon	mg/L		1.84	2.17	2.36
Total Dissolved Solids †	mg/L	**500	255	265	223
Alkalinity †	mg/L		204	197	158
Bicarbonate †	mg CaCO3/L		204	209	158
Ammonia as nitrogen	mg/L		0.01 U	0.01 U	0.0092 J
Nitrate as nitrogen	mg/L	*10	3.97	4.11	4.34
Nitrite as nitrogen	mg/L		0.1 U	0.1 U	0.1 U
Chloride	mg/L	**250	3.9	5.1	3
Sulfate	mg/L	**250	8.9	9	17.5
pH	SU	**6.5-8.5	7.34	6.75	7.77
Specific Conductance	µS/cm		401	434	335
Temperature	C		10.66	10.85	10.18
METALS					
Dissolved Antimony †	mg/L		0.0003 J	0.001 U	0.0004 J
Dissolved Arsenic	mg/L	***0.00005	**0.0006** J	**0.0005** J	**0.0006** J
Dissolved Barium †	mg/L	*1.0	0.0276	0.0296	0.0227
Dissolved Cadmium	mg/L	*0.01	0.001 U	0.001 U	0.001 U
Dissolved Chromium †	mg/L	*0.05	0.0004 J	0.0013	0.0006 J
Dissolved Cobalt †	mg/L		0.0001 J	0.0001 J	0.0001 J
Dissolved Copper †	mg/L	**1.0	0.0013	0.0014 J	0.0018 J
Dissolved Iron	mg/L	**0.3	0.05 U	0.05 U	0.05 U
Dissolved Lead	mg/L	*0.05	0.001 U	0.001 U	0.001 U
Dissolved Manganese	mg/L	**0.05	0.0007 J	0.0002 J	0.0053
Dissolved Mercury	mg/L	*0.002	0.0005 U	0.0001 U	0.0001 U
Dissolved Nickel †	mg/L		0.0017	0.0022	0.0016
Dissolved Selenium †	mg/L	*0.01	0.0004 J	0.0003 J	0.0005 J
Dissolved Vanadium †	mg/L		0.0014	0.0016	0.0012
Dissolved Zinc	mg/L	**5.0	0.0023	0.0009 J	0.0012 J
Total Calcium	mg/L		49.2	49.5	42
Total Magnesium †	mg/L		18.7	18.4	15
Total Potassium †	mg/L		2.5	2.2	2.1
Total Sodium	mg/L		4.6	4.1	3.9

Groundwater Quality Criteria:

* = Primary Contaminant
** = Secondary Contaminant
*** = Carcinogen

Units:

mg/L = milligrams per liter
µg/L = micrograms per liter
SU = standard units
µS/cm = microsiemens per centimeter
C = degrees centigrade
mg $CaCO_3$/L = milligrams of calcium carbonate per liter

Qualifiers:

U — Indicates the analyte of interest was not detected, to the limit of detection indicated.
J — Indicates the analyte of interest was detected below the routine reporting limit. This value should be regarded as an estimate.
NT — Not tested.

Results shown in **bold** exceed Ground Water Quality Criteria.
† Indicates supplement analytes measured due to Ecology request

2023 Inorganic Monitoring Results
Inman Landfill

AQUIFER			Perched	
MONITORING WELL Sampling Date			B-8 4/25/2023	B-8 1/30/2024
Analyte	Units	GW Quality Standards (173-200 WAC)		
CONVENTIONALS				
Chemical Oxygen Demand	mg/L		7 J	14 J
Total Organic Carbon	mg/L		5.67	4.18
Total Dissolved Solids †	mg/L	**500	404	372
Alkalinity †	mg/L		380	344
Bicarbonate †	mg $CaCO_3$/L		380	344
Ammonia as nitrogen	mg/L		0.01 U	0.013
Nitrate as nitrogen	mg/L	*10	0.14	0.11
Nitrite as nitrogen	mg/L		0.1 U	0.1 U
Chloride	mg/L	**250	14.5	11
Sulfate	mg/L	**250	18	20.1
pH	SU	**6.5-8.5	6.90	7.22
Specific Conductance	µS/cm		684	632
Temperature	C		11.52	12.11
METALS				
Dissolved Antimony †	mg/L		0.005 U	0.001 U
Dissolved Arsenic	mg/L	***0.00005	**0.0005** J	**0.0004** J
Dissolved Barium †	mg/L	*1.0	0.0927	0.0814
Dissolved Cadmium	mg/L	*0.01	0.001 U	0.001 U
Dissolved Chromium †	mg/L	*0.05	0.0024	0.0007 J
Dissolved Cobalt †	mg/L		0.0004 J	0.00031 J
Dissolved Copper †	mg/L	**1.0	0.0042	0.0034
Dissolved Iron	mg/L	**0.3	0.05 U	0.003 J
Dissolved Lead	mg/L	*0.05	0.001 U	0.001 U
Dissolved Manganese	mg/L	**0.05	0.0086	0.0034
Dissolved Mercury	mg/L	*0.002	0.0005 U	0.0001 U
Dissolved Nickel †	mg/L		0.0022	0.0036
Dissolved Selenium †	mg/L	*0.01	0.0004 J	0.0003 J
Dissolved Vanadium †	mg/L		0.0016	0.0006 J
Dissolved Zinc	mg/L	**5.0	0.0015	0.0009 J
Total Calcium	mg/L		67.1	59.6
Total Magnesium †	mg/L		45.2	40.2
Total Potassium †	mg/L		8.8	7.7
Total Sodium	mg/L		25.3	22.6

Groundwater Quality Criteria:
* = Primary Contaminant
** = Secondary Contaminant
*** = Carcinogen

Units:
mg/L = milligrams per liter
µg/L = micrograms per liter
SU = standard units
µS/cm = microsiemens per centimeter
C = degrees centigrade
mg $CaCO_3$/L = milligrams of calcium carbonate per liter

Qualifiers:
U — Indicates the analyte of interest was not detected, to the limit of detection indicated.
J — Indicates the analyte of interest was detected below the routine reporting limit. This value should be regarded as an estimate.
NT — Not tested.

Results shown in **bold** exceed Ground Water Quality Criteria.
† Indicates supplement analytes measured due to Ecology request

2023 Inorganic Monitoring Results
Inman Landfill

AQUIFER			Perched		
MONITORING WELL Sampling Date			B-9 4/24/2023	B-9 9/20/2023	B-9 1/30/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
CONVENTIONALS					
Chemical Oxygen Demand	mg/L		14 J	20 U	20 U
Total Organic Carbon	mg/L		1.13	1.05	1.09
Total Dissolved Solids †	mg/L	**500	131	137	136
Alkalinity †	mg/L		102	91.3	108
Bicarbonate †	mg CaCO3/L		102	111	108
Ammonia as nitrogen	mg/L		0.01 U	0.01 U	0.0061 J
Nitrate as nitrogen	mg/L	*10	1.1	1.08	1.25
Nitrite as nitrogen	mg/L		0.1 U	0.1 U	0.1 U
Chloride	mg/L	**250	1	0.8	1.6
Sulfate	mg/L	**250	7.4	7.5	7.4
pH	SU	**6.5-8.5	**6.46**	7.02	7.22
Specific Conductance	µS/cm		186	214	204
Temperature	C		10.36	10.85	10.41
METALS					
Dissolved Antimony †	mg/L		0.0003 J	0.001 U	0.001 U
Dissolved Arsenic	mg/L	***0.00005	**0.0008** J	**0.0007**	**0.0007** J
Dissolved Barium †	mg/L	*1.0	0.011	0.0127	0.0122
Dissolved Cadmium	mg/L	*0.01	0.001 U	4E-05	0.001 U
Dissolved Chromium †	mg/L	*0.05	0.001	0.0012	0.0011
Dissolved Cobalt †	mg/L		0.001 U	8E-05	7E-05 J
Dissolved Copper †	mg/L	**1.0	0.0011	0.0014	0.0012 J
Dissolved Iron	mg/L	**0.3	0.05 U	0.05 U	0.0016 J
Dissolved Lead	mg/L	*0.05	0.001 U	0.0005 U	0.001 U
Dissolved Manganese	mg/L	**0.05	0.0002 J	0.0005	0.0024
Dissolved Mercury	mg/L	*0.002	0.0005 U	0.0001 U	0.0001 U
Dissolved Nickel †	mg/L		0.0011	0.0011	0.001
Dissolved Selenium †	mg/L	*0.01	0.0006 J	0.0007	0.0006 J
Dissolved Vanadium †	mg/L		0.0017	0.0019	0.0017
Dissolved Zinc	mg/L	**5.0	0.0015	0.0033	0.0022 J
Total Calcium	mg/L		17.1	18.2	17.6
Total Magnesium †	mg/L		12.9	12.9	13.7
Total Potassium †	mg/L		1.6	1.7	2
Total Sodium	mg/L		3.4	3.4	3.8

Groundwater Quality Criteria:

* = Primary Contaminant
** = Secondary Contaminant
*** = Carcinogen

Units:

mg/L = milligrams per liter
µg/L = micrograms per liter
SU = standard units
µS/cm = microsiemens per centimeter
C = degrees centigrade
mg $CaCO_3$/L = milligrams of calcium carbonate per liter

Qualifiers:

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J — Indicates the analyte of interest was detected below the routine reporting limit. This value should be regarded as an estimate.
NT — Not tested.

Results shown in **bold** exceed Ground Water Quality Criteria.
† Indicates supplement analytes measured due to Ecology request

2023 Inorganic Monitoring Results
Inman Landfill

AQUIFER			Perched		
MONITORING WELL Sampling Date			B-11 4/28/2023	B-11 9/20/2023	B-11 1/24/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
CONVENTIONALS					
Chemical Oxygen Demand	mg/L		20 U	4 J	7 J
Total Organic Carbon	mg/L		1.57	1.74	1.63
Total Dissolved Solids †	mg/L	**500	204	243	244
Alkalinity †	mg/L		161	170	210
Bicarbonate †	mg CaCO3/L		161	193	210
Ammonia as nitrogen	mg/L		0.01 U	0.01 U	0.01 U
Nitrate as nitrogen	mg/L	*10	3.9	3.74	4.03
Nitrite as nitrogen	mg/L		0.1 U	0.1 U	0.1 U
Chloride	mg/L	**250	2.6	2.2	2.1
Sulfate	mg/L	**250	14.1	17.2	16.1
pH	SU	**6.5-8.5	7.13	**6.44**	7.38
Specific Conductance	µS/cm		327	380	380
Temperature	C		10.84	11.15	9.68
METALS					
Dissolved Antimony †	mg/L		0.0006 J	0.001 U	0.001 U
Dissolved Arsenic	mg/L	***0.00005	**0.0011**	**0.001**	**0.001**
Dissolved Barium †	mg/L	*1.0	0.013	0.0161	0.0153
Dissolved Cadmium	mg/L	*0.01	0.001 U	0.001 U	0.001 U
Dissolved Chromium †	mg/L	*0.05	0.0011	0.0016	0.0013
Dissolved Cobalt †	mg/L		0.001 U	0.0001	0.001 U
Dissolved Copper †	mg/L	**1.0	0.0014	0.0016	0.0013 J
Dissolved Iron	mg/L	**0.3	0.05 U	0.05 U	0.0009 J
Dissolved Lead	mg/L	*0.05	0.001 U	0.001 U	0.001 U
Dissolved Manganese	mg/L	**0.05	0.0002 J	0.0002	0.0018
Dissolved Mercury	mg/L	*0.002	0.0005 U	0.0001 U	0.0001 U
Dissolved Nickel †	mg/L		0.0006 J	0.0015	0.0013
Dissolved Selenium †	mg/L	*0.01	0.0005 J	0.0006	0.0008 J
Dissolved Vanadium †	mg/L		0.0024	0.0025	0.0022
Dissolved Zinc	mg/L	**5.0	0.0033	0.001	0.0007 J
Total Calcium	mg/L		30.1	35	36.5
Total Magnesium †	mg/L		22.4	23.6	24.2
Total Potassium †	mg/L		1.7	1.8	1.8
Total Sodium	mg/L		7.9	7.3	7.7

Groundwater Quality Criteria:

* = Primary Contaminant
** = Secondary Contaminant
*** = Carcinogen

Units:

mg/L = milligrams per liter
µg/L = micrograms per liter
SU = standard units
µS/cm = microsiemens per centimeter
C = degrees centigrade
mg $CaCO_3$/L = milligrams of calcium carbonate per liter

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NT — Not tested.

Results shown in **bold** exceed Ground Water Quality Criteria.
† Indicates supplement analytes measured due to Ecology request

2023 Volatile Organic Compound Monitoring Results
Inman Landfill

AQUIFER			Perched		
MONITORING WELL Sampling Date			B-6 4/21/2023	B-6 9/19/2023	B-6 1/24/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
1,1,1,2-tetrachloroethane	µg/L		0.5 U	0.4 U	0.4 U
1,1,1-trichloroethane	µg/L	200*	0.5 U	0.4 U	0.4 U
1,1,2,2-tetrachloroethane	µg/L		0.5 U	0.4 U	0.4 U
1,1,2-trichloroethane	µg/L		0.5 U	0.4 U	0.4 U
1,1,2-trichlorofluorotoluene (Freon-113)	µg/L		NT	0.4 U	0.4 U
1,1-dichloroethane	µg/L	1.0***	0.5 U	0.4 U	0.4 U
1,1-dichloroethene	µg/L	7****	0.5 U	0.4 U	0.4 U
1,1-dichloropropene	µg/L		0.5 U	0.4 U	0.4 U
1,2,3-trichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2,3-trichloropropane	µg/L		0.5 U	0.4 U	0.4 U
1,2,4-trichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2,4-trimethylbenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2-dibromo-3-chloropropane (DBCP)	µg/L	0.2****	0.5 U	1 U	1 U
1,2-dibromoethane (EDB)	µg/L	0.001***	0.01 U	0.01 U	0.01 U
1,2-dichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2-dichloroethane	µg/L	0.5***	0.5 U	0.4 U	0.4 U
1,2-dichloropropane	µg/L	0.6***	0.5 U	0.4 U	0.4 U
1,3,5-trimethylbenzene	µg/L		0.5 U	0.4 U	0.4 U
1,3-dichloropropane	µg/L		0.5 U	0.4 U	0.4 U
1,4-dichlorobenzene	µg/L	4***	0.5 U	0.4 U	0.4 U
1,4-dioxane	µg/L	7***	0.25 U	5 U	5 U
2,2-dichloropropane	µg/L		0.5 U	0.4 U	0.4 U
2-butanone	µg/L		2.5 U	3 U	3 U
2-chloroethyl vinyl ether	µg/L		1 U	5 U	5 U
2-chlorotoluene	µg/L		0.5 U	0.4 U	0.4 U
2-nitropropane	µg/L		2.5 U	10 U	10 U
2-phenylbutane	µg/L		0.5 U	0.4 U	0.4 U
4-chlorotoluene	µg/L		0.5 U	0.4 U	0.4 U
4-methyl-2-pentanone	µg/L		2.5 U	4 U	4 U
Acetone	µg/L		2.5 U	3 U	3 U
Acrolein	µg/L		2.5 U	4 U	4 U
Acrylonitrile	µg/L	0.07***	0.02 U	0.05 U	0.05 U
Allyl chloride	µg/L		0.5 U	2 U	2 U
Benzene	µg/L	1.0***	0.5 U	0.4 U	0.4 U
Bromobenzene	µg/L		0.5 U	0.4 U	0.4 U
Bromodichloromethane	µg/L	0.3***	0.5 U	0.4 U	0.4 U
Bromomethane	µg/L		0.5 U	0.4 U	0.4 U
Carbon disulfide	µg/L		0.5 U	0.4 U	0.4 U
Carbon tetrachloride	µg/L	0.3***	0.5 U	0.4 U	0.4 U
Chlorobenzene	µg/L	100****	0.5 U	0.4 U	0.4 U
Chlorobromomethane	µg/L		0.5 U	0.4 U	0.4 U
Chlorodibromomethane	µg/L	0.5***	0.5 U	0.4 U	0.4 U
Chlorodifluoromethane (Freon-22)	µg/L		NT	0.5 U	0.5 U
Chloroethane	µg/L		0.5 U	0.4 U	0.4 U
Chloroform	µg/L	7.0***	0.5 U	0.4 U	0.4 U
Chloromethane	µg/L		0.5 U	0.4 U	0.6
cis-1,2-dichloroethene	µg/L	70****	0.5 U	0.4 U	0.4 U
cis-1,3-dichloropropene	µg/L		0.5 U	0.4 U	0.4 U
Cymene	µg/L		0.5 U	0.4 U	0.4 U
Dibromomethane	µg/L		0.5 U	0.4 U	0.4 U
Dichlorodifluoromethane (CFC-12)	µg/L		0.5 U	0.4 U	0.4 U
Dichloromethane	µg/L	5***	2.5 U	0.4 U	0.4 U
Dichloromonofluoromethane (Freon-21)	µg/L		NT	0.4 U	0.4 U
Diethyl ether	µg/L		0.5 U	0.4 U	0.4 U

2023 Volatile Organic Compound Monitoring Results
Inman Landfill

AQUIFER			Perched		
MONITORING WELL Sampling Date			B-6 4/21/2023	B-6 9/19/2023	B-6 1/24/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
Ethyl methacrylate	µg/L		1 U	3 U	3 U
Ethylbenzene	µg/L	700****	0.5 U	0.4 U	0.4 U
Hexachloro-1,3-butadiene	µg/L		0.5 U	0.4 U	0.4 U
Hexachloroethane	µg/L		0.5 U	0.4 U	0.4 U
Isopropylbenzene	µg/L		0.5 U	0.4 U	0.4 U
m-dichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
Methyl acrylate	µg/L		1 U	1.5 U	1.5 U
Methyl iodide	µg/L		0.5 U	5 U	5 U
Methyl methacrylate	µg/L		1 U	2 U	2 U
Methyl n-butyl ketone	µg/L		2.5 U	5 U	5 U
Methyl tert-butyl ether	µg/L		0.5 U	0.4 U	0.4 U
Methylacrylonitrile	µg/L		1 U	4 U	4 U
Naphthalene	µg/L		0.5 U	1 U	1 U
n-butyl chloride	µg/L		0.5 U	0.4 U	0.4 U
n-butylbenzene	µg/L		0.5 U	0.4 U	0.4 U
n-propylbenzene	µg/L		0.5 U	0.4 U	0.4 U
o-xylene	µg/L		0.5 U	0.4 U	0.4 U
Pentachloroethane	µg/L		0.5 U	0.4 U	0.4 U
Styrene (monomer)	µg/L	100****	0.5 U	0.4 U	0.4 U
Tert-butylbenzene	µg/L		0.5 U	0.4 U	0.4 U
Tetrachloroethene	µg/L	0.8***	0.5 U	0.4 U	0.4 U
Tetrahydrofuran	µg/L		0.5 U	3 U	3 U
Toluene	µg/L	1****	0.5 U	0.4 U	0.4 U
Trans-1,2-dichloroethene	µg/L	100****	0.5 U	0.4 U	0.4 U
Trans-1,3-dichloropropene	µg/L		0.5 U	0.4 U	0.4 U
Trans-1,4-dichlorobutene	µg/L		2.5 U	5 U	5 U
Tribromomethane (Bromoform)	µg/L	5***	0.5 U	0.4 U	0.4 U
Trichloroethene	µg/L	3***	0.5 U	0.4 U	0.4 U
Trichlorofluoromethane (CFC-11)	µg/L		0.5 U	0.4 U	0.4 U
Vinyl chloride	µg/L	0.02***	0.01 U	0.01 U	0.01 U

Groundwater Quality Criteria:

* = Primary Contaminant
** = Secondary Contaminant
*** = Carcinogen
**** = 246-290 WAC criteria

Units:

µg/L= micrograms per liter

Results shown in bold exceed Ground Water Quality Criteria.

Qualifiers:

U — Indicates the analyte of interest was not detected, to the limit of detection indicated.

J — Indicates the analyte of interest was detected below the routine reporting limit. This value should be regarded as an estimate.

NT — Not Tested

2023 Volatile Organic Compound Monitoring Results
Inman Landfill

AQUIFER			Perched	
MONITORING WELL Sampling Date			B-8 4/25/2023	B-8 1/30/2024
Analyte	Units	GW Quality Standards (173-200 WAC)		
1,1,1,2-tetrachloroethane	µg/L		0.5 U	0.4 U
1,1,1-trichloroethane	µg/L	200*	0.5 U	0.4 U
1,1,2,2-tetrachloroethane	µg/L		0.5 U	0.4 U
1,1,2-trichloroethane	µg/L		0.5 U	0.4 U
1,1,2-trichlorofluorotoluene (Freon-113)	µg/L		NT	0.4 U
1,1-dichloroethane	µg/L	1.0***	0.5 U	0.4 U
1,1-dichloroethene	µg/L	7****	0.5 U	0.4 U
1,1-dichloropropene	µg/L		0.5 U	0.4 U
1,2,3-trichlorobenzene	µg/L		0.5 U	0.4 U
1,2,3-trichloropropane	µg/L		0.5 U	0.4 U
1,2,4-trichlorobenzene	µg/L		0.5 U	0.4 U
1,2,4-trimethylbenzene	µg/L		0.5 U	0.4 U
1,2-dibromo-3-chloropropane (DBCP)	µg/L	0.2****	0.5 U	1 U
1,2-dibromoethane (EDB)	µg/L	0.001***	0.01 U	0.01 U
1,2-dichlorobenzene	µg/L		0.5 U	0.4 U
1,2-dichloroethane	µg/L	0.5***	0.5 U	0.4 U
1,2-dichloropropane	µg/L	0.6***	0.5 U	0.4 U
1,3,5-trimethylbenzene	µg/L		0.5 U	0.4 U
1,3-dichloropropane	µg/L		0.5 U	0.4 U
1,4-dichlorobenzene	µg/L	4***	0.5 U	0.4 U
1,4-dioxane	µg/L	7***	0.25 U	5 U
2,2-dichloropropane	µg/L		0.5 U	0.4 U
2-butanone	µg/L		2.5 U	3 U
2-chloroethyl vinyl ether	µg/L		1 U	5 U
2-chlorotoluene	µg/L		0.5 U	0.4 U
2-nitropropane	µg/L		2.5 U	10 U
2-phenylbutane	µg/L		0.5 U	0.4 U
4-chlorotoluene	µg/L		0.5 U	0.4 U
4-methyl-2-pentanone	µg/L		2.5 U	4 U
Acetone	µg/L		2.5 U	3 U
Acrolein	µg/L		0.5 U	4 U
Acrylonitrile	µg/L	0.07***	0.05 U	0.05 U
Allyl chloride	µg/L		0.5 U	2 U
Benzene	µg/L	1.0***	0.5 U	0.4 U
Bromobenzene	µg/L		0.5 U	0.4 U
Bromodichloromethane	µg/L	0.3***	0.5 U	0.4 U
Bromomethane	µg/L		0.5 U	0.4 U
Carbon disulfide	µg/L		0.5 U	0.4 U
Carbon tetrachloride	µg/L	0.3***	0.5 U	0.4 U
Chlorobenzene	µg/L	100****	0.5 U	0.4 U
Chlorobromomethane	µg/L		0.5 U	0.4 U
Chlorodibromomethane	µg/L	0.5***	0.5 U	0.4 U
Chlorodifluoromethane (Freon-22)	µg/L		NT	0.5 U
Chloroethane	µg/L		0.5 U	0.4 U
Chloroform	µg/L	7.0***	0.5 U	0.4 U
Chloromethane	µg/L		1 U	0.4
cis-1,2-dichloroethene	µg/L	70****	0.5 U	0.4 U
cis-1,3-dichloropropene	µg/L		0.5 U	0.4 U
Cymene	µg/L		0.5 U	0.4 U
Dibromomethane	µg/L		0.5 U	0.4 U
Dichlorodifluoromethane (CFC-12)	µg/L		0.5 U	0.4 U
Dichloromethane	µg/L	5***	2.5 U	0.4 U
Dichloromonofluoromethane (Freon-21)	µg/L		NT	0.4 U
Diethyl ether	µg/L		0.5 U	0.4 U

2023 Volatile Organic Compound Monitoring Results
Inman Landfill

AQUIFER			Perched	
MONITORING WELL Sampling Date			B-8 4/25/2023	B-8 1/30/2024
Analyte	Units	GW Quality Standards (173-200 WAC)		
Ethyl methacrylate	µg/L		1 U	3 U
Ethylbenzene	µg/L	700****	0.5 U	0.4 U
Hexachloro-1,3-butadiene	µg/L		0.5 U	0.4 U
Hexachloroethane	µg/L		0.5 U	0.4 U
Isopropylbenzene	µg/L		0.5 U	0.4 U
m-dichlorobenzene	µg/L		0.5 U	0.4 U
Methyl acrylate	µg/L		1 U	1.5 U
Methyl iodide	µg/L		0.5 U	5 U
Methyl methacrylate	µg/L		1 U	2 U
Methyl n-butyl ketone	µg/L		2.5 U	5 U
Methyl tert-butyl ether	µg/L		0.5 U	0.4 U
Methylacrylonitrile	µg/L		1 U	4 U
Naphthalene	µg/L		0.5 U	1 U
n-butyl chloride	µg/L		0.5 U	0.4 U
n-butylbenzene	µg/L		0.5 U	0.4 U
n-propylbenzene	µg/L		0.5 U	0.4 U
o-xylene	µg/L		0.5 U	0.4 U
Pentachloroethane	µg/L		0.5 U	0.4 U
Styrene (monomer)	µg/L	100****	0.5 U	0.4 U
Tert-butylbenzene	µg/L		0.5 U	0.4 U
Tetrachloroethene	µg/L	0.8***	0.5 U	0.4 U
Tetrahydrofuran	µg/L		0.5 U	3 U
Toluene	µg/L	1****	0.5 U	0.4 U
Trans-1,2-dichloroethene	µg/L	100****	0.5 U	0.4 U
Trans-1,3-dichloropropene	µg/L		0.5 U	0.4 U
Trans-1,4-dichlorobutene	µg/L		0.5 U	5 U
Tribromomethane (Bromoform)	µg/L	5***	0.5 U	0.4 U
Trichloroethene	µg/L	3***	0.5 U	0.4 U
Trichlorofluoromethane (CFC-11)	µg/L		0.5 U	0.4 U
Vinyl chloride	µg/L	0.02***	0.01 U	0.01 U

Groundwater Quality Criteria:

* = Primary Contaminant
** = Secondary Contaminant
*** = Carcinogen
**** = 246-290 WAC criteria

Units:

µg/L= micrograms per liter

Results shown in bold exceed Ground Water Quality Criteria.

Qualifiers:

U	Indicates the analyte of interest was not detected, to the limit of detection indicated.
J	Indicates the analyte of interest was detected below the routine reporting limit. This value should be regarded as an estimate.
NT	Not Tested

2023 Volatile Organic Compound Monitoring Results
Inman Landfill

AQUIFER			Perched		
MONITORING WELL Sampling Date			B-9 4/24/2023	B-9 9/20/2023	B-9 1/30/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
1,1,1,2-tetrachloroethane	µg/L		0.5 U	0.4 U	0.4 U
1,1,1-trichloroethane	µg/L	200*	0.5 U	0.4 U	0.4 U
1,1,2,2-tetrachloroethane	µg/L		0.5 U	0.4 U	0.4 U
1,1,2-trichloroethane	µg/L		0.5 U	0.4 U	0.4 U
1,1,2-trichlorofluorotoluene (Freon-113)	µg/L		NT	0.4 U	0.4 U
1,1-dichloroethane	µg/L	1.0***	0.5 U	0.4 U	0.4 U
1,1-dichloroethene	µg/L	7****	0.5 U	0.4 U	0.4 U
1,1-dichloropropene	µg/L		0.5 U	0.4 U	0.4 U
1,2,3-trichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2,3-trichloropropane	µg/L		0.5 U	0.4 U	0.4 U
1,2,4-trichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2,4-trimethylbenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2-dibromo-3-chloropropane (DBCP)	µg/L	0.2****	0.01 U	1 U	1 U
1,2-dibromoethane (EDB)	µg/L	0.001***	0.01 U	0.01 U	0.01 U
1,2-dichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2-dichloroethane	µg/L	0.5***	0.5 U	0.4 U	0.4 U
1,2-dichloropropane	µg/L	0.6***	0.5 U	0.4 U	0.4 U
1,3,5-trimethylbenzene	µg/L		0.5 U	0.4 U	0.4 U
1,3-dichloropropane	µg/L		0.5 U	0.4 U	0.4 U
1,4-dichlorobenzene	µg/L	4***	0.5 U	0.4 U	0.4 U
1,4-dioxane	µg/L	7***	0.25 U	5 U	5 U
2,2-dichloropropane	µg/L		0.5 U	0.4 U	0.4 U
2-butanone	µg/L		2.5 U	3 U	3 U
2-chloroethyl vinyl ether	µg/L		1 U	5 U	5 U
2-chlorotoluene	µg/L		0.5 U	0.4 U	0.4 U
2-nitropropane	µg/L		2.5 U	10 U	10 U
2-phenylbutane	µg/L		0.5 U	0.4 U	0.4 U
4-chlorotoluene	µg/L		0.5 U	0.4 U	0.4 U
4-methyl-2-pentanone	µg/L		2.5 U	4 U	4 U
Acetone	µg/L		2.5 U	3 U	3 U
Acrolein	µg/L		1 U	4 U	4 U
Acrylonitrile	µg/L	0.07***	0.01 U	0.05 U	0.05 U
Allyl chloride	µg/L		0.5 U	2 U	2 U
Benzene	µg/L	1.0***	0.5 U	0.4 U	0.4 U
Bromobenzene	µg/L		0.5 U	0.4 U	0.4 U
Bromodichloromethane	µg/L	0.3***	0.5 U	0.4 U	0.4 U
Bromomethane	µg/L		0.5 U	0.4 U	0.4 U
Carbon disulfide	µg/L		0.5 U	0.4 U	0.4 U
Carbon tetrachloride	µg/L	0.3***	0.5 U	0.4 U	0.4 U
Chlorobenzene	µg/L	100****	0.5 U	0.4 U	0.4 U
Chlorobromomethane	µg/L		0.5 U	0.4 U	0.4 U
Chlorodibromomethane	µg/L	0.5***	0.5 U	0.4 U	0.4 U
Chlorodifluoromethane (Freon-22)	µg/L		NT	0.4 U	0.5 U
Chloroethane	µg/L		0.5 U	0.4 U	0.4 U
Chloroform	µg/L	7.0***	0.5 U	0.4 U	0.4 U
Chloromethane	µg/L		0.5 U	0.4 U	0.4 U
cis-1,2-dichloroethene	µg/L	70****	0.5 U	0.4 U	0.4 U
cis-1,3-dichloropropene	µg/L		0.5 U	0.4 U	0.4 U
Cymene	µg/L		0.5 U	0.4 U	0.4 U
Dibromomethane	µg/L		0.5 U	0.4 U	0.4 U
Dichlorodifluoromethane (CFC-12)	µg/L		0.5 U	0.6	0.5
Dichloromethane	µg/L	5***	2.5 U	0.4 U	0.4 U
Dichloromonofluoromethane (Freon-21)	µg/L		NT	0.4 U	0.4 U
Diethyl ether	µg/L		1 U	0.4 U	0.4 U

2023 Volatile Organic Compound Monitoring Results
Inman Landfill

AQUIFER			Perched		
MONITORING WELL Sampling Date			B-9 4/24/2023	B-9 9/20/2023	B-9 1/30/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
Ethyl methacrylate	µg/L		1 U	3 U	3 U
Ethylbenzene	µg/L	700****	0.5 U	0.4 U	0.4 U
Hexachloro-1,3-butadiene	µg/L		0.5 U	0.4 U	0.4 U
Hexachloroethane	µg/L		0.5 U	0.4 U	0.4 U
Isopropylbenzene	µg/L		0.5 U	0.4 U	0.4 U
m-dichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
Methyl acrylate	µg/L		1 U	1.5 U	1.5 U
Methyl iodide	µg/L		1 U	5 U	5 U
Methyl methacrylate	µg/L		1 U	2 U	2 U
Methyl n-butyl ketone	µg/L		2.5 U	5 U	5 U
Methyl tert-butyl ether	µg/L		0.5 U	0.4 U	0.4 U
Methylacrylonitrile	µg/L		1 U	4 U	4 U
Naphthalene	µg/L		0.5 U	1 U	1 U
n-butyl chloride	µg/L		0.5 U	0.4 U	0.4 U
n-butylbenzene	µg/L		0.5 U	0.4 U	0.4 U
n-propylbenzene	µg/L		0.5 U	0.4 U	0.4 U
o-xylene	µg/L		0.5 U	0.4 U	0.4 U
Pentachloroethane	µg/L		0.5 U	0.4 U	0.4 U
Styrene (monomer)	µg/L	100****	0.5 U	0.4 U	0.4 U
Tert-butylbenzene	µg/L		0.5 U	0.4 U	0.4 U
Tetrachloroethene	µg/L	0.8***	0.5 U	0.4 U	0.4 U
Tetrahydrofuran	µg/L		0.5 U	3 U	3 U
Toluene	µg/L	1****	0.5 U	0.4 U	0.4 U
Trans-1,2-dichloroethene	µg/L	100****	0.5 U	0.4 U	0.4 U
Trans-1,3-dichloropropene	µg/L		0.5 U	0.4 U	0.4 U
Trans-1,4-dichlorobutene	µg/L		2.5 U	5 U	5 U
Tribromomethane (Bromoform)	µg/L	5***	0.5 U	0.4 U	0.4 U
Trichloroethene	µg/L	3***	0.5 U	0.4 U	0.4 U
Trichlorofluoromethane (CFC-11)	µg/L		0.5 U	0.4 U	0.4 U
Vinyl chloride	µg/L	0.02***	0.01 U	0.01 U	0.01 U

Groundwater Quality Criteria:

* = Primary Contaminant
** = Secondary Contaminant
*** = Carcinogen
**** = 246-290 WAC criteria

Units:

µg/L= micrograms per liter

Results shown in bold exceed Ground Water Quality Criteria.

Qualifiers:

U — Indicates the analyte of interest was not detected, to the limit of detection indicated.

J — Indicates the analyte of interest was detected below the routine reporting limit. This value should be regarded as an estimate.

NT — Not Tested

2023 Volatile Organic Compound Monitoring Results
Inman Landfill

AQUIFER			Perched		
MONITORING WELL Sampling Date			B-11 4/28/2023	B-11 9/20/2023	B-11 1/24/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
1,1,1,2-tetrachloroethane	µg/L		0.5 U	0.4 U	0.4 U
1,1,1-trichloroethane	µg/L	200*	0.5 U	0.4 U	0.4 U
1,1,2,2-tetrachloroethane	µg/L		0.5 U	0.4 U	0.4 U
1,1,2-trichloroethane	µg/L		0.5 U	0.4 U	0.4 U
1,1,2-trichlorofluorotoluene (Freon-113)	µg/L		NT	0.4 U	0.4 U
1,1-dichloroethane	µg/L	1.0***	0.5 U	0.4 U	0.4 U
1,1-dichloroethene	µg/L	7****	0.5 U	0.4 U	0.4 U
1,1-dichloropropene	µg/L		0.5 U	0.4 U	0.4 U
1,2,3-trichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2,3-trichloropropane	µg/L		0.5 U	0.4 U	0.4 U
1,2,4-trichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2,4-trimethylbenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2-dibromo-3-chloropropane (DBCP)	µg/L	0.2****	0.01 U	1 U	1 U
1,2-dibromoethane (EDB)	µg/L	0.001***	0.01 U	0.01 U	0.01 U
1,2-dichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2-dichloroethane	µg/L	0.5***	0.5 U	0.4 U	0.4 U
1,2-dichloropropane	µg/L	0.6***	0.5 U	0.4 U	0.4 U
1,3,5-trimethylbenzene	µg/L		0.5 U	0.4 U	0.4 U
1,3-dichloropropane	µg/L		0.5 U	0.4 U	0.4 U
1,4-dichlorobenzene	µg/L	4***	0.5 U	0.4 U	0.4 U
1,4-dioxane	µg/L	7***	0.25 U	5 U	5 U
2,2-dichloropropane	µg/L		0.5 U	0.4 U	0.4 U
2-butanone	µg/L		2.5 U	3 U	3 U
2-chloroethyl vinyl ether	µg/L		1 U	5 U	5 U
2-chlorotoluene	µg/L		0.5 U	0.4 U	0.4 U
2-nitropropane	µg/L		2.5 U	10 U	10 U
2-phenylbutane	µg/L		0.5 U	0.4 U	0.4 U
4-chlorotoluene	µg/L		0.5 U	0.4 U	0.4 U
4-methyl-2-pentanone	µg/L		2.5 U	4 U	4 U
Acetone	µg/L		2.5 U	3 U	3 U
Acrolein	µg/L		0.5 U	4 U	4 U
Acrylonitrile	µg/L	0.07***	0.05 U	0.05 U	0.05 U
Allyl chloride	µg/L		0.5 U	2 U	2 U
Benzene	µg/L	1.0***	0.5 U	0.4 U	0.4 U
Bromobenzene	µg/L		0.5 U	0.4 U	0.4 U
Bromodichloromethane	µg/L	0.3***	0.5 U	0.4 U	0.4 U
Bromomethane	µg/L		0.5 U	0.4 U	0.4 U
Carbon disulfide	µg/L		0.5 U	0.4 U	0.4 U
Carbon tetrachloride	µg/L	0.3***	0.5 U	0.4 U	0.4 U
Chlorobenzene	µg/L	100****	0.5 U	0.4 U	0.4 U
Chlorobromomethane	µg/L		0.5 U	0.4 U	0.4 U
Chlorodibromomethane	µg/L	0.5***	0.5 U	0.4 U	0.4 U
Chlorodifluoromethane (Freon-22)	µg/L		NT	0.5 U	0.5 U
Chloroethane	µg/L		0.5 U	0.4 U	0.4 U
Chloroform	µg/L	7.0***	0.5 U	0.4 U	0.4 U
Chloromethane	µg/L		1 U	0.4 U	0.4 U
cis-1,2-dichloroethene	µg/L	70****	0.5 U	0.4 U	0.4 U
cis-1,3-dichloropropene	µg/L		0.5 U	0.4 U	0.4 U
Cymene	µg/L		0.5 U	0.4 U	0.4 U
Dibromomethane	µg/L		0.5 U	0.4 U	0.4 U
Dichlorodifluoromethane (CFC-12)	µg/L		0.5 U	0.4 U	0.4 U
Dichloromethane	µg/L	5***	2.5 U	0.4 U	0.4 U
Dichloromonofluoromethane (Freon-21)	µg/L		NT	0.4 U	0.4 U
Diethyl ether	µg/L		0.5 U	0.4 U	0.4 U

2023 Volatile Organic Compound Monitoring Results
Inman Landfill

AQUIFER			Perched		
MONITORING WELL Sampling Date			B-11 4/28/2023	B-11 9/20/2023	B-11 1/24/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
Ethyl methacrylate	µg/L		1 U	3 U	3 U
Ethylbenzene	µg/L	700****	0.5 U	0.4 U	0.4 U
Hexachloro-1,3-butadiene	µg/L		0.5 U	0.4 U	0.4 U
Hexachloroethane	µg/L		0.5 U	0.4 U	0.4 U
Isopropylbenzene	µg/L		0.5 U	0.4 U	0.4 U
m-dichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
Methyl acrylate	µg/L		1 U	1.5 U	1.5 U
Methyl iodide	µg/L		0.5 U	5 U	5 U
Methyl methacrylate	µg/L		1 U	2 U	2 U
Methyl n-butyl ketone	µg/L		2.5 U	5 U	5 U
Methyl tert-butyl ether	µg/L		0.5 U	0.4 U	0.4 U
Methylacrylonitrile	µg/L		1 U	4 U	4 U
Naphthalene	µg/L		0.5 U	1 U	1 U
n-butyl chloride	µg/L		0.5 U	0.4 U	0.4 U
n-butylbenzene	µg/L		0.5 U	0.4 U	0.4 U
n-propylbenzene	µg/L		0.5 U	0.4 U	0.4 U
o-xylene	µg/L		0.5 U	0.4 U	0.4 U
Pentachloroethane	µg/L		0.5 U	0.4 U	0.4 U
Styrene (monomer)	µg/L	100****	0.5 U	0.4 U	0.4 U
Tert-butylbenzene	µg/L		0.5 U	0.4 U	0.4 U
Tetrachloroethene	µg/L	0.8***	0.5 U	0.4 U	0.4 U
Tetrahydrofuran	µg/L		0.5 U	3 U	3 U
Toluene	µg/L	1****	0.5 U	0.4 U	0.4 U
Trans-1,2-dichloroethene	µg/L	100****	0.5 U	0.4 U	0.4 U
Trans-1,3-dichloropropene	µg/L		0.5 U	0.4 U	0.4 U
Trans-1,4-dichlorobutene	µg/L		0.5 U	5 U	5 U
Tribromomethane (Bromoform)	µg/L	5***	0.5 U	0.4 U	0.4 U
Trichloroethene	µg/L	3***	0.5 U	0.4 U	0.4 U
Trichlorofluoromethane (CFC-11)	µg/L		0.5 U	0.4 U	0.4 U
Vinyl chloride	µg/L	0.02***	0.1 U	0.1 U	0.1 U

Groundwater Quality Criteria:

* = Primary Contaminant
** = Secondary Contaminant
*** = Carcinogen
**** = 246-290 WAC criteria

Units:

µg/L= micrograms per liter

Results shown in bold exceed Ground Water Quality Criteria.

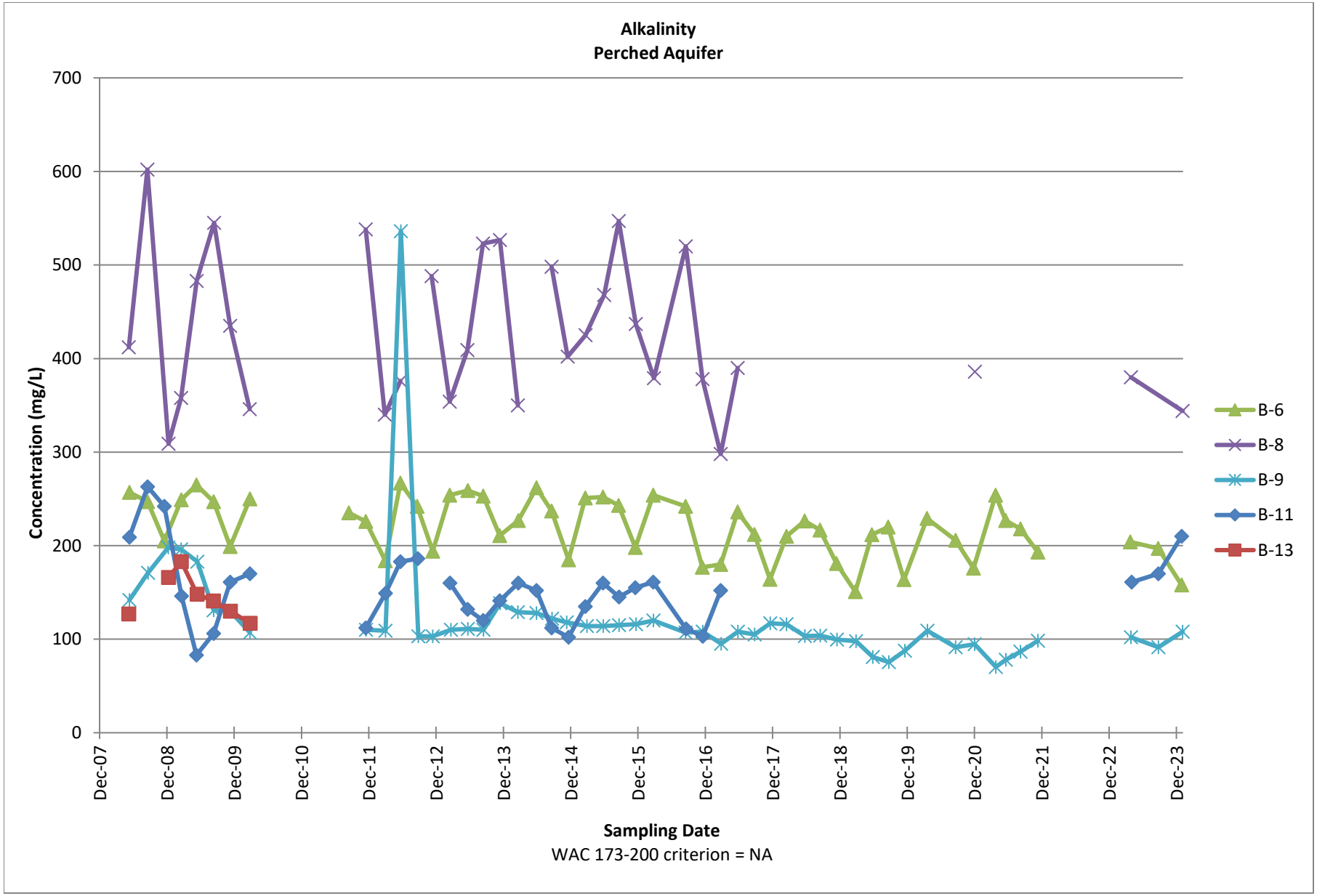
Qualifiers:

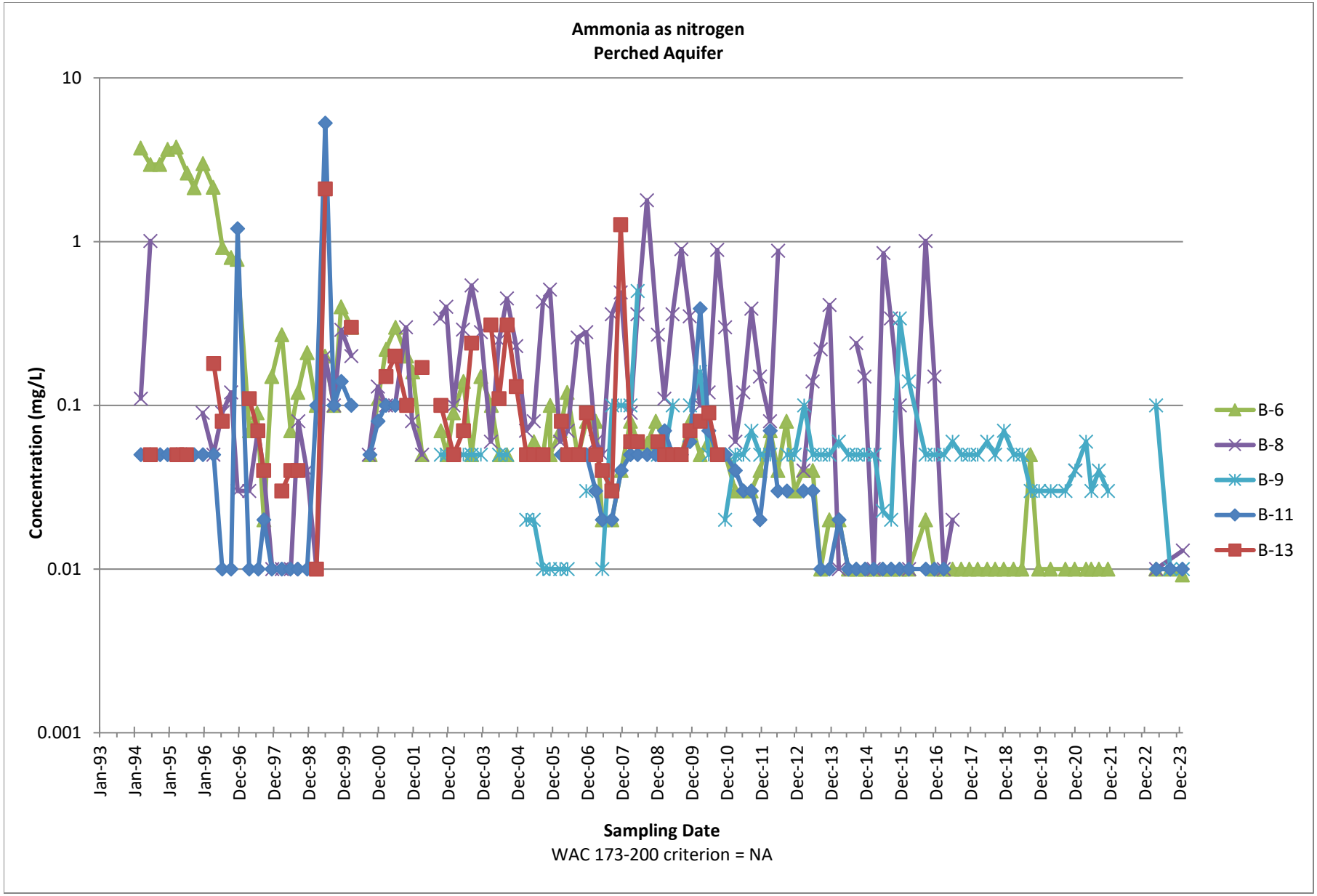
U — Indicates the analyte of interest was not detected, to the limit of detection indicated.

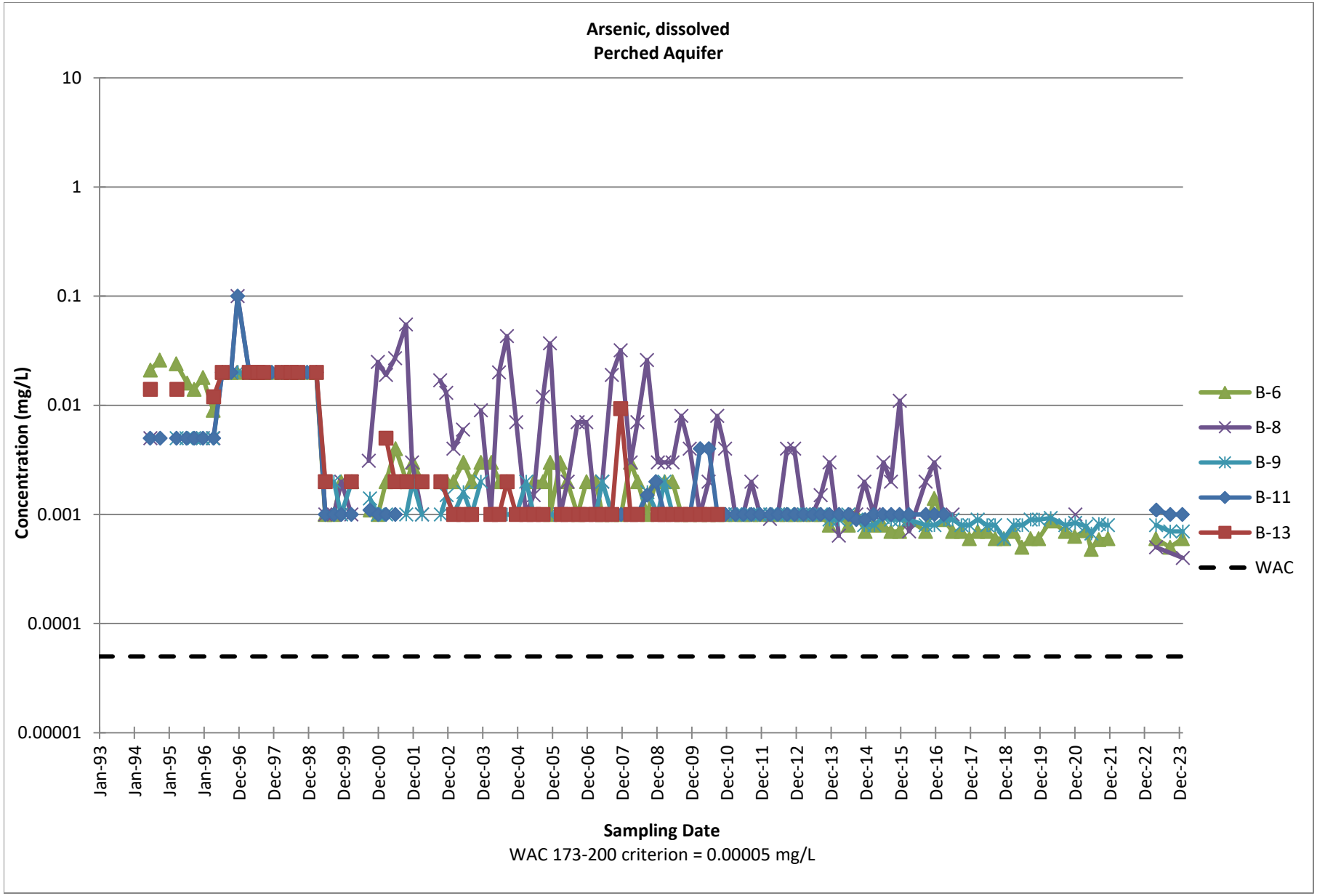
J — Indicates the analyte of interest was detected below the routine reporting limit. This value should be regarded as an estimate.

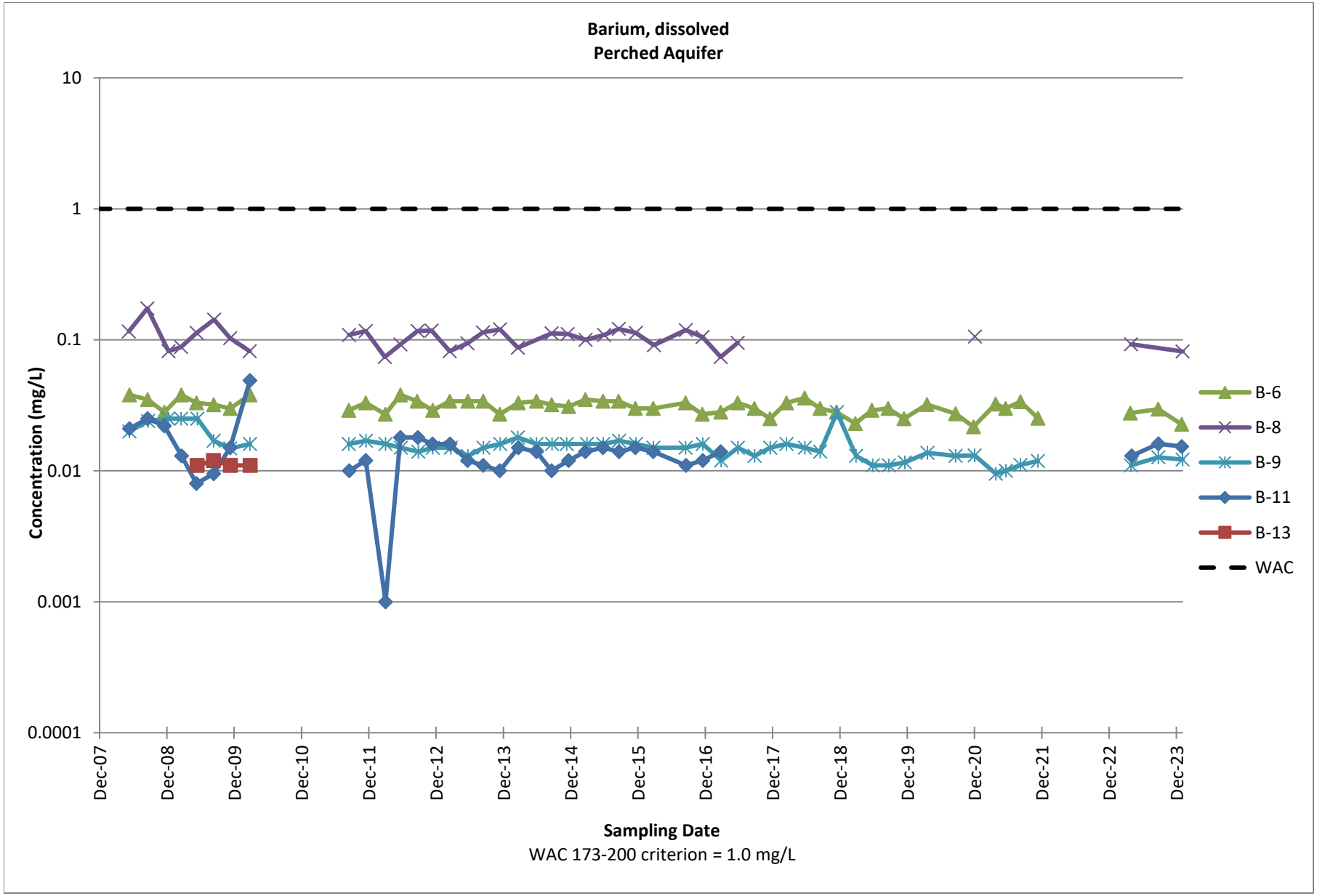
NT — Not Tested

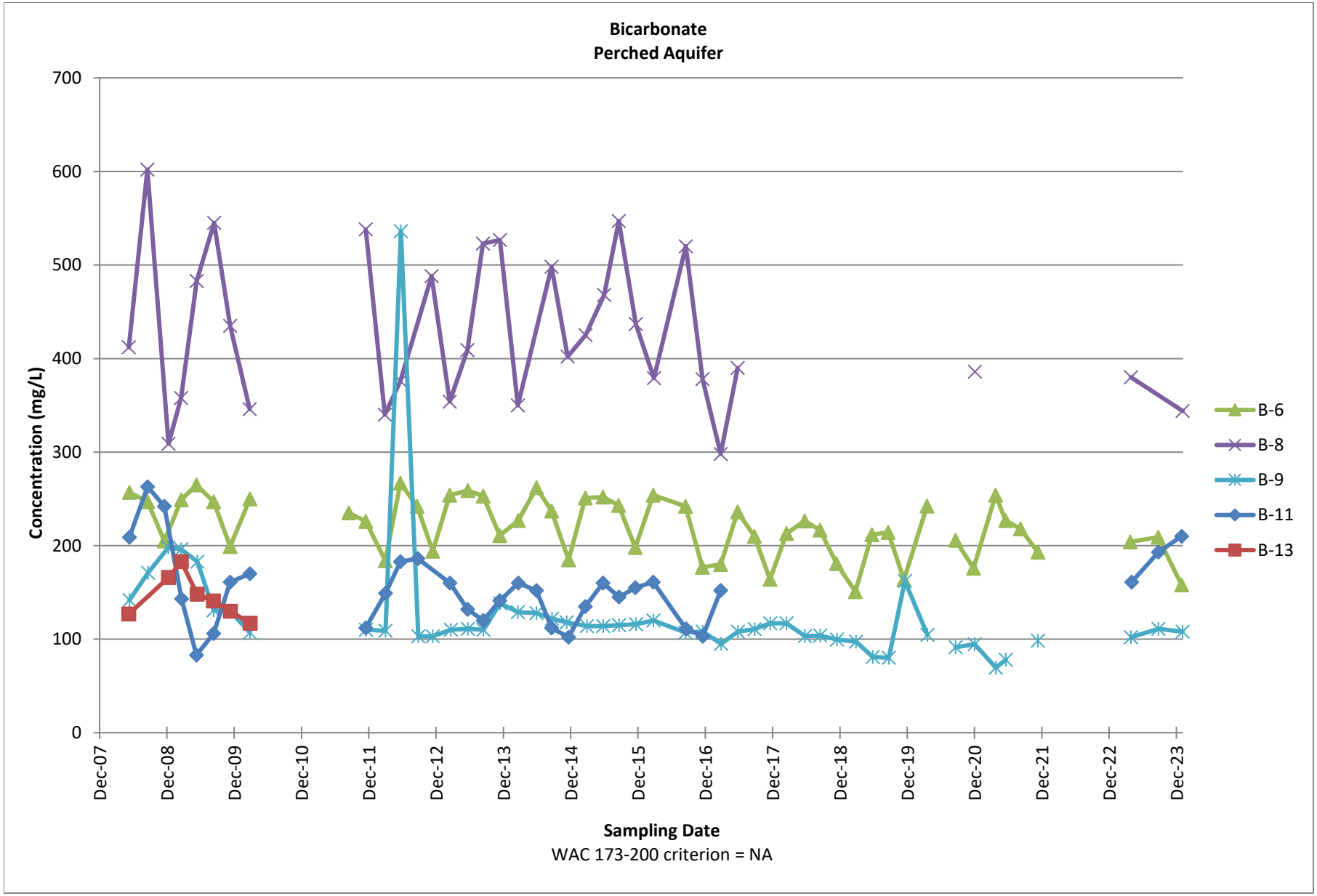
APPENDIX A-2
Long Term Time Series Plots 1994-2023 – Perched Aquifer

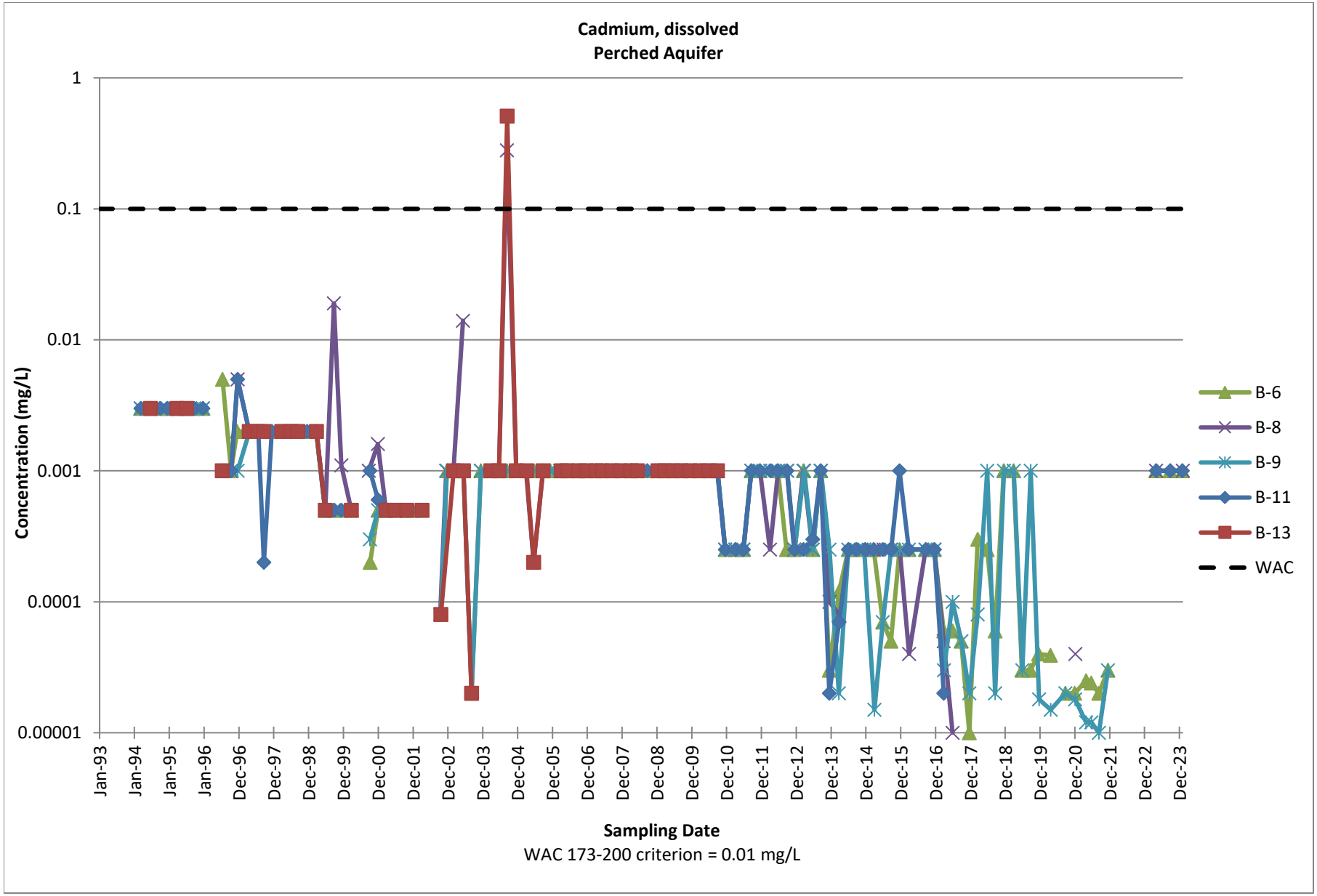

Alkalinity
Perched Aquifer
Concentration (mg/L)
700
600
500
400
300
200
100
0
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
WAC 173-200 criterion = NA
B-6
B-8
B-9
B-11
B-13

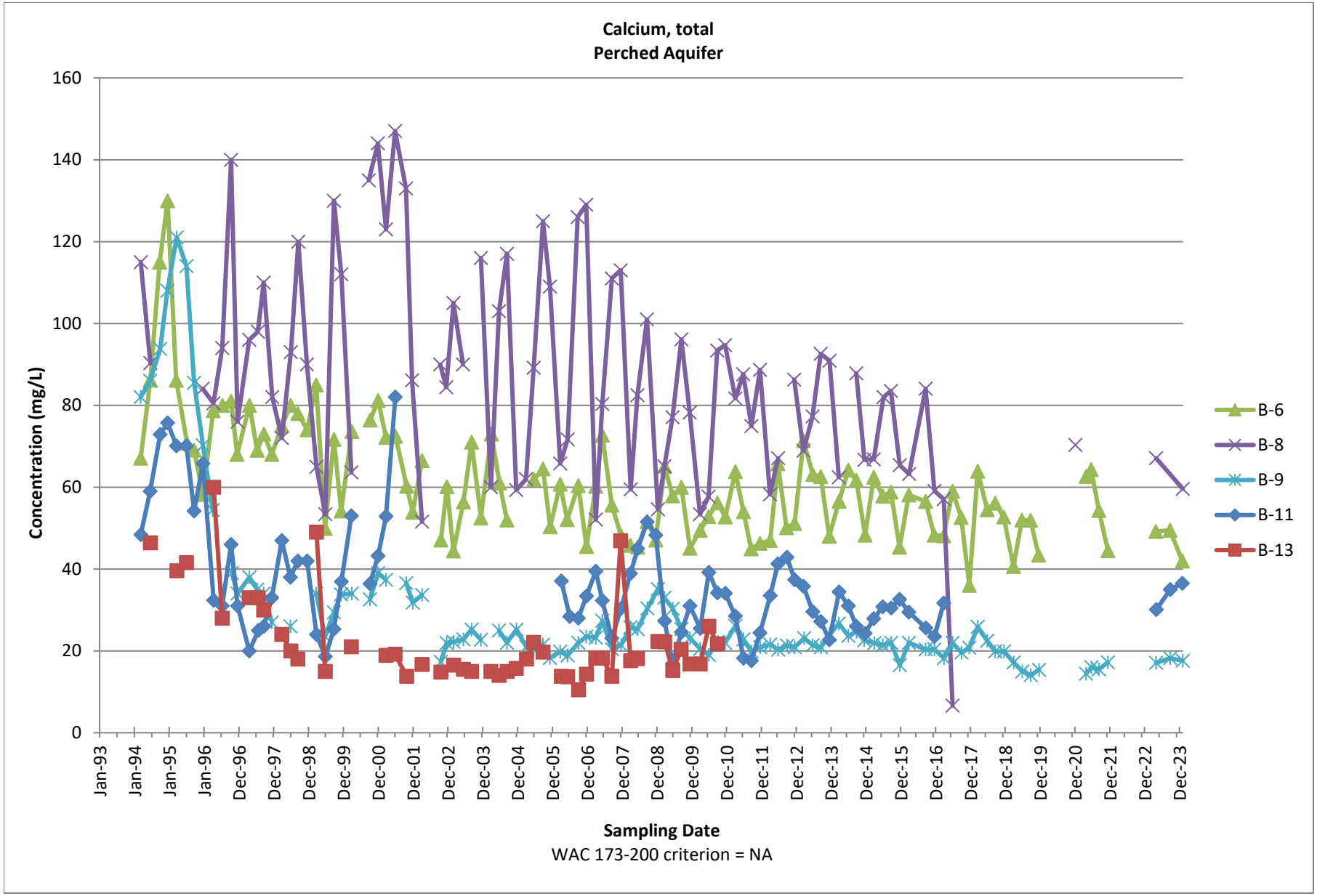

Ammonia as nitrogen
Perched Aquifer
Concentration (mg/L)
10
1
0.1
0.01
0.001
Jan-93
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
B-6
B-8
B-9
B-11
B-13
WAC 173-200 criterion = NA

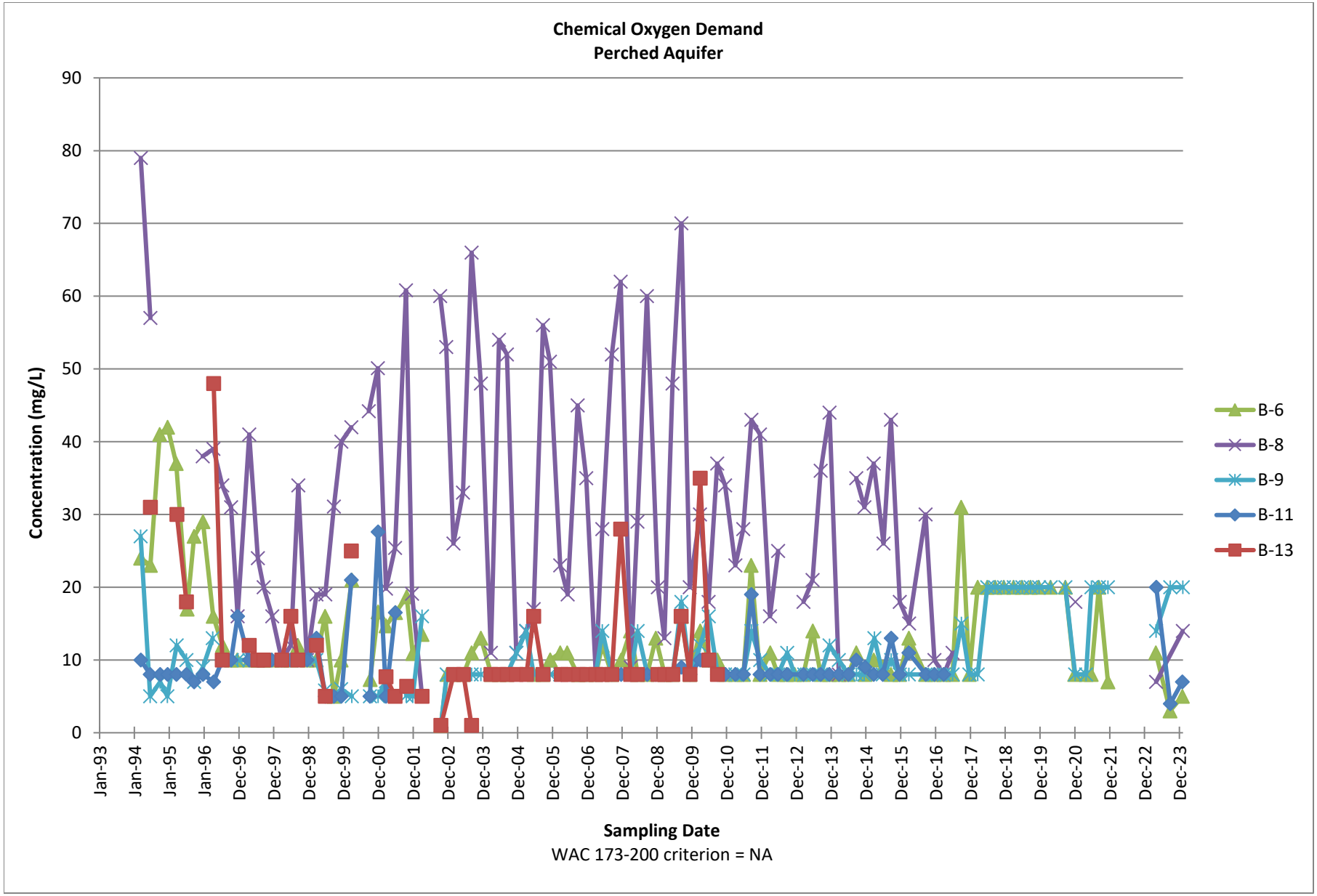

Arsenic, dissolved
Perched Aquifer
10
1
0.1
0.01
0.001
0.0001
0.00001
Concentration (mg/L)
Jan-93
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
B-6
B-8
B-9
B-11
B-13
WAC
Sampling Date
WAC 173-200 criterion = 0.00005 mg/L

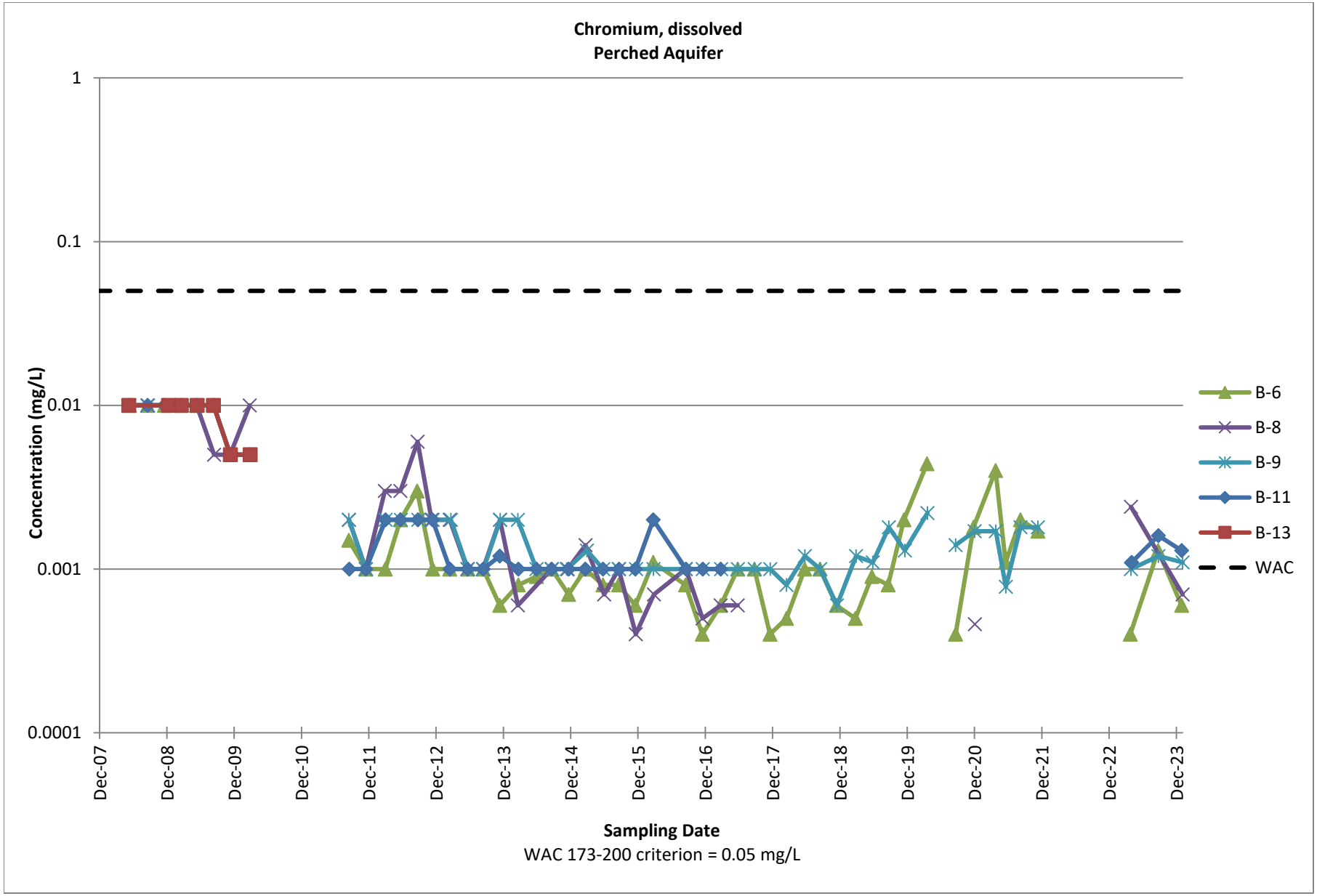

Barium, dissolved
Perched Aquifer
10
1
0.1
0.01
0.001
0.0001
Concentration (mg/L)
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
B-6
B-8
B-9
B-11
B-13
WAC
WAC 173-200 criterion = 1.0 mg/L

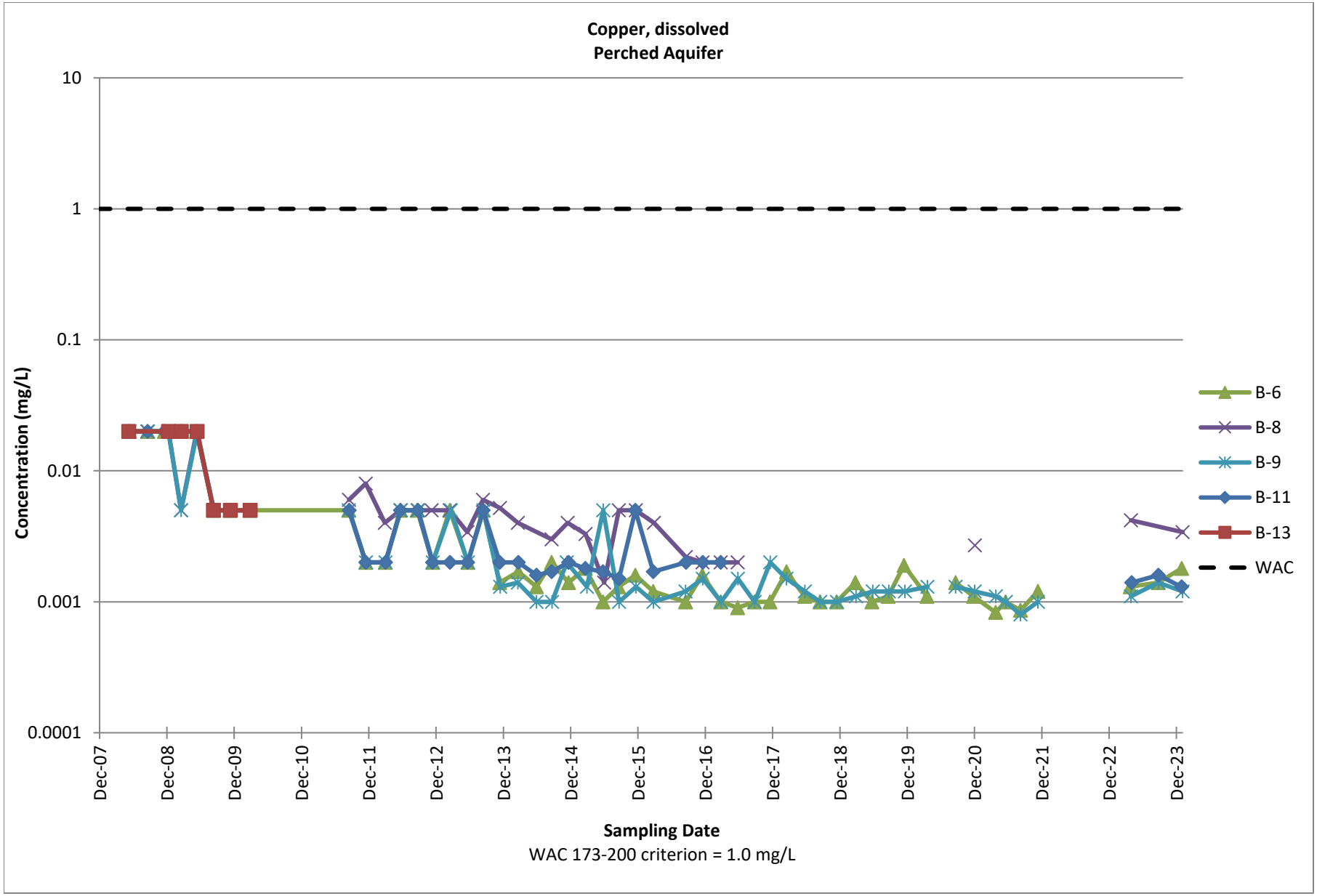

Bicarbonate
Perched Aquifer
Concentration (mg/L)
700
600
500
400
300
200
100
0
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
WAC 173-200 criterion = NA
B-6
B-8
B-9
B-11
B-13

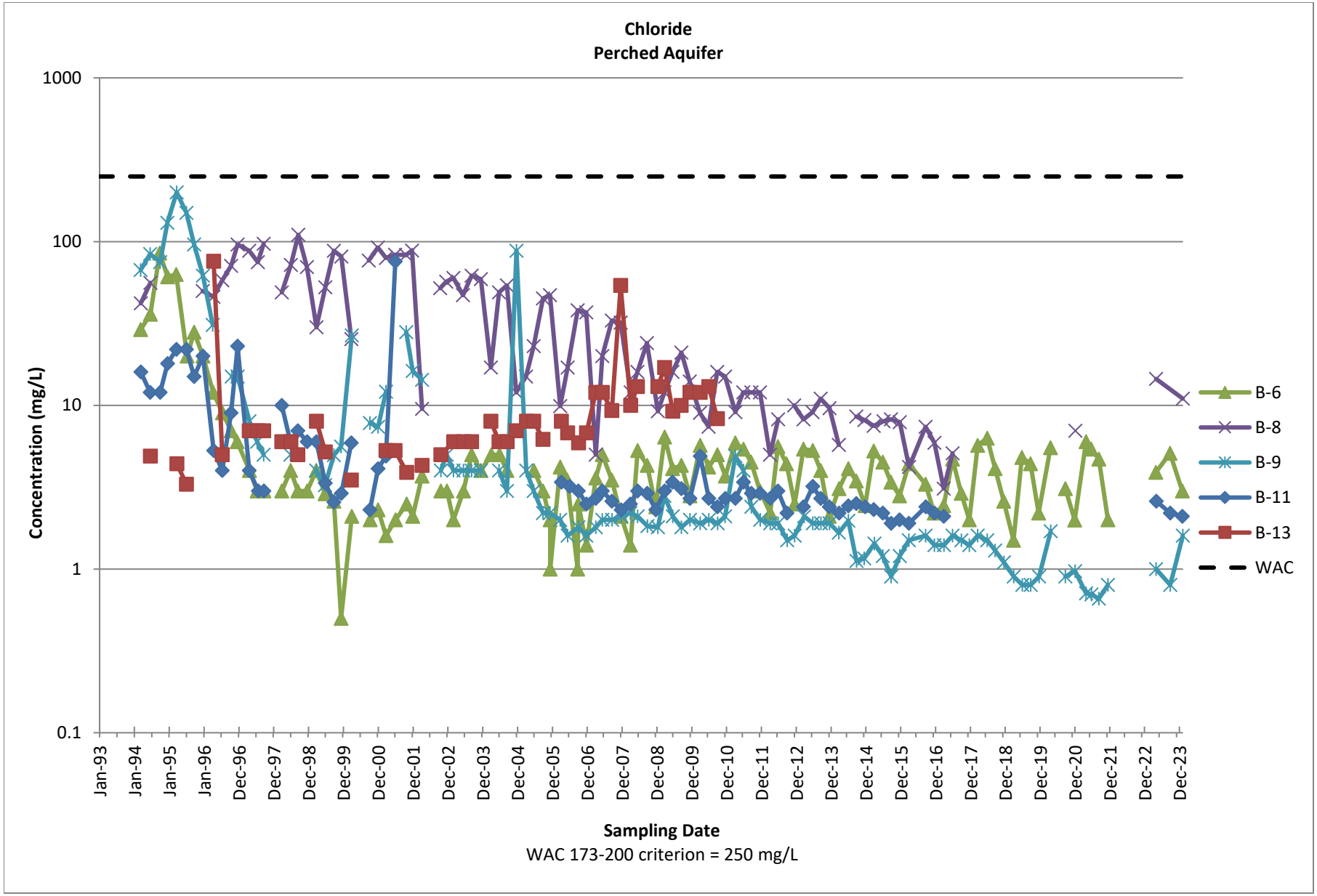

Cadmium, dissolved
Perched Aquifer
1
0.1
0.01
0.001
0.0001
0.00001
Concentration (mg/L)
Jan-93
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
B-6
B-8
B-9
B-11
B-13
WAC
WAC 173-200 criterion = 0.01 mg/L

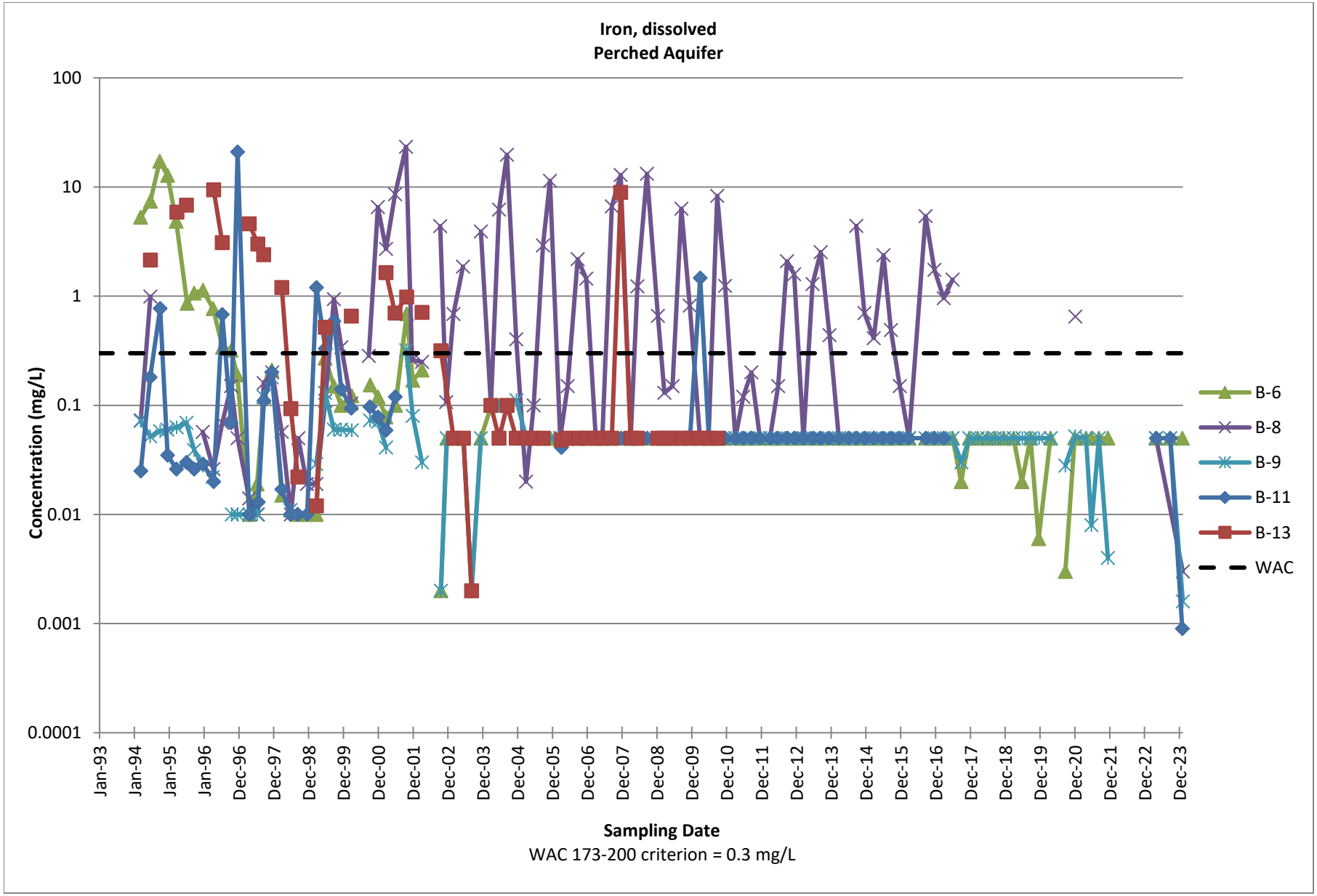

Calcium, total
Perched Aquifer
Concentration (mg/L)
160
140
120
100
80
60
40
20
0
Jan-93
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
B-6
B-8
B-9
B-11
B-13
Sampling Date
WAC 173-200 criterion = NA

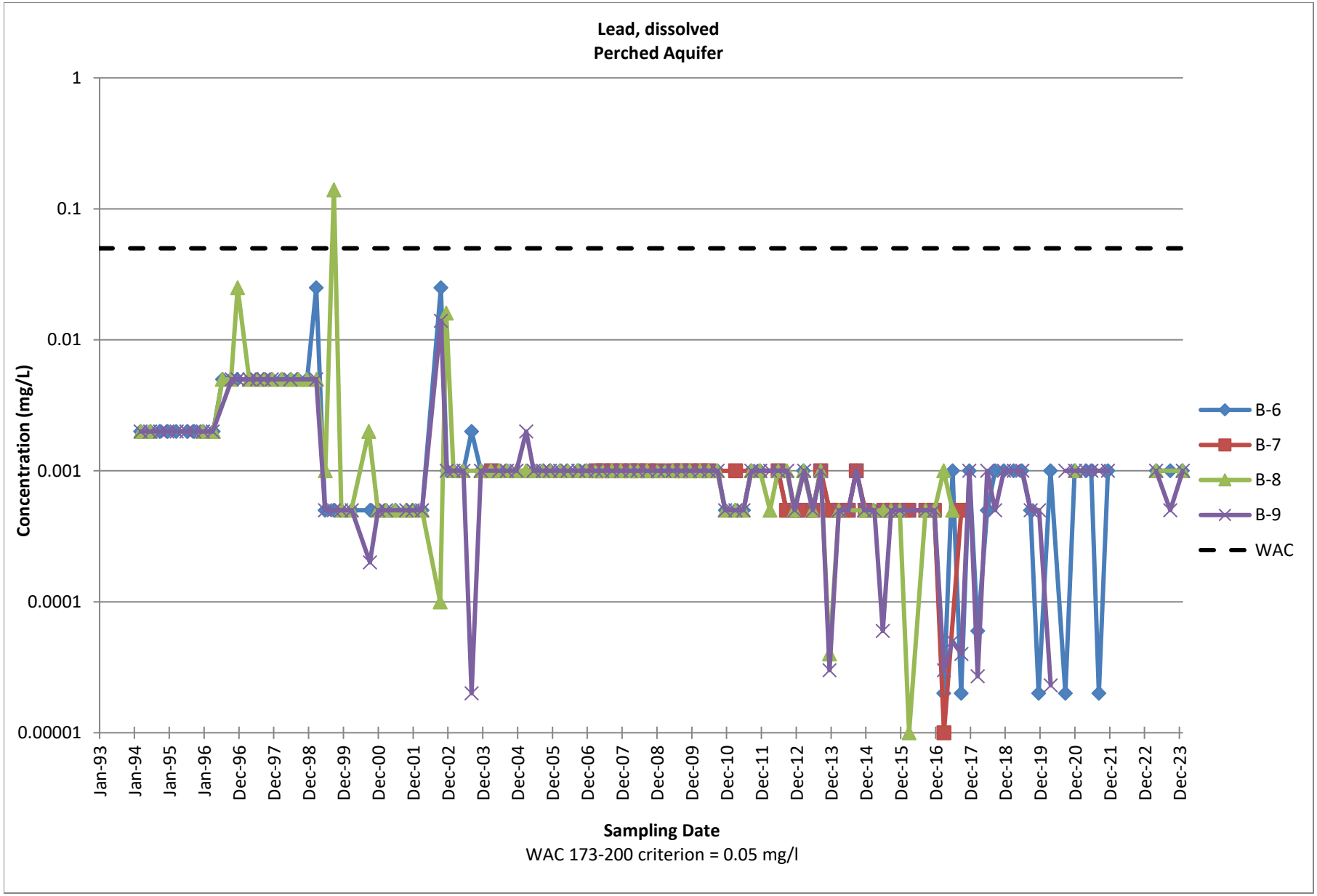

Chemical Oxygen Demand
Perched Aquifer
Concentration (mg/L)
0
10
20
30
40
50
60
70
80
90
Jan-93
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
B-6
B-8
B-9
B-11
B-13
Sampling Date
WAC 173-200 criterion = NA

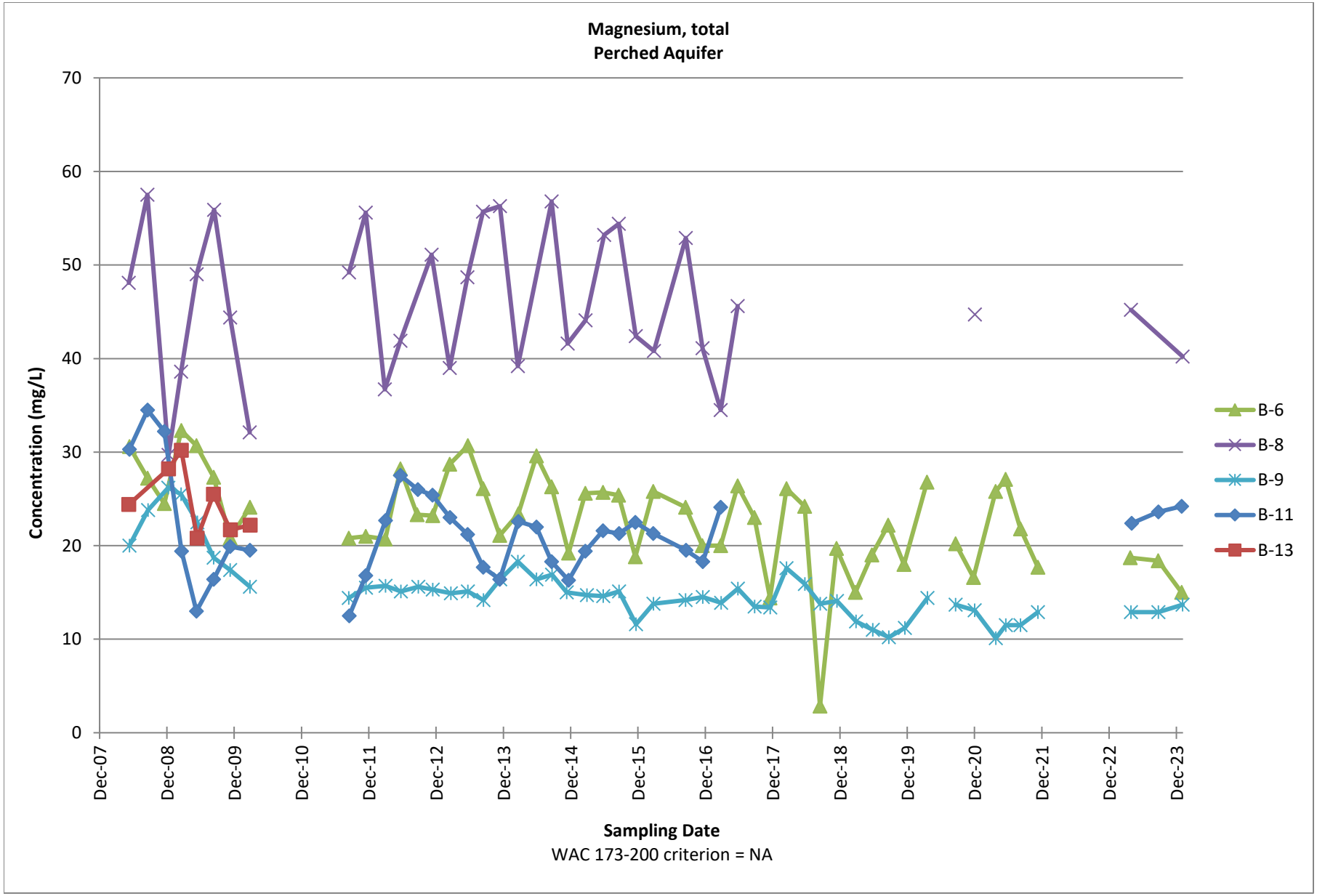

Chromium, dissolved
Perched Aquifer
1
0.1
0.01
0.001
0.0001
Concentration (mg/L)
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
B-6
B-8
B-9
B-11
B-13
WAC
WAC 173-200 criterion = 0.05 mg/L

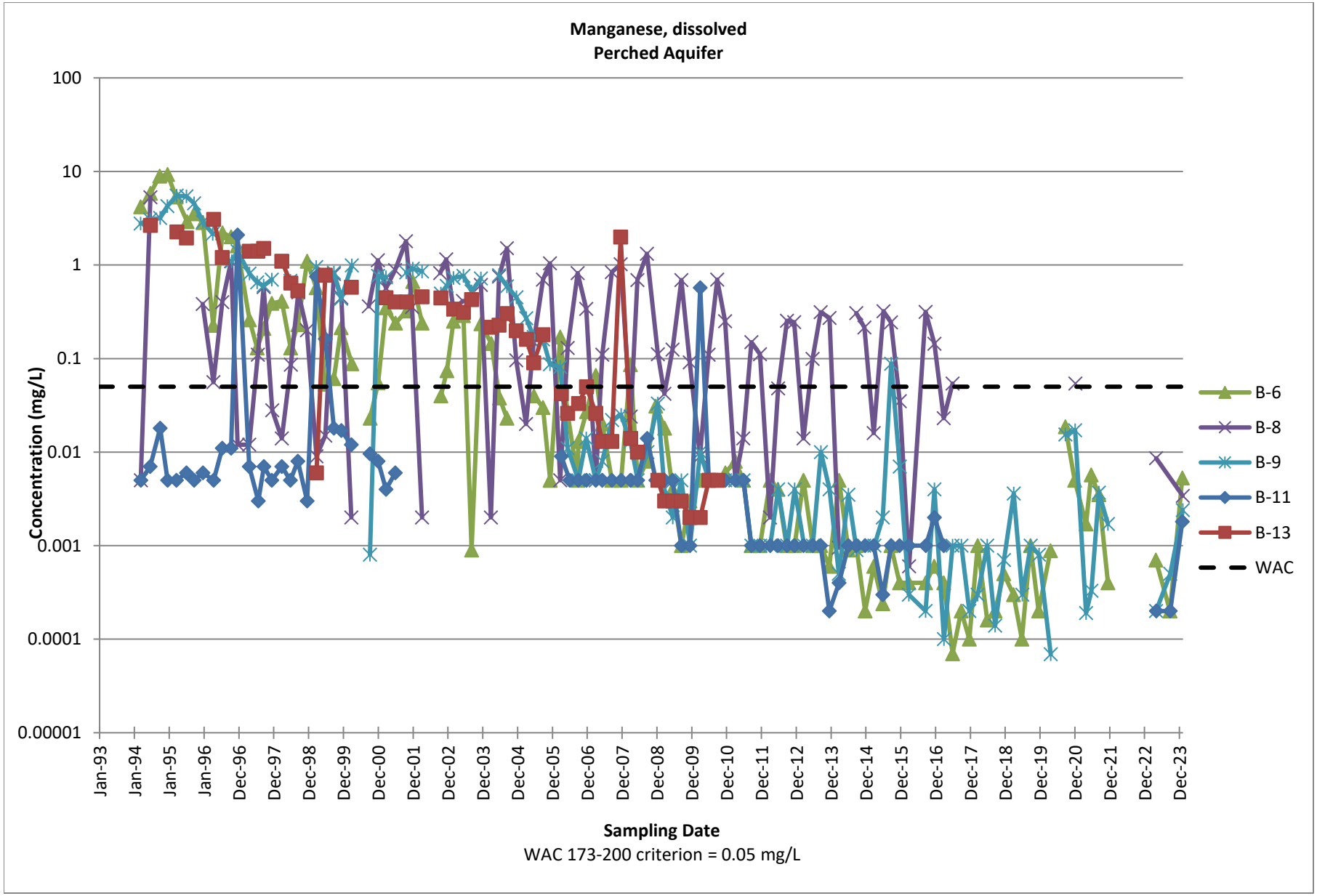

Copper, dissolved
Perched Aquifer
10
1
0.1
0.01
0.001
0.0001
Concentration (mg/L)
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
B-6
B-8
B-9
B-11
B-13
WAC
Sampling Date
WAC 173-200 criterion = 1.0 mg/L

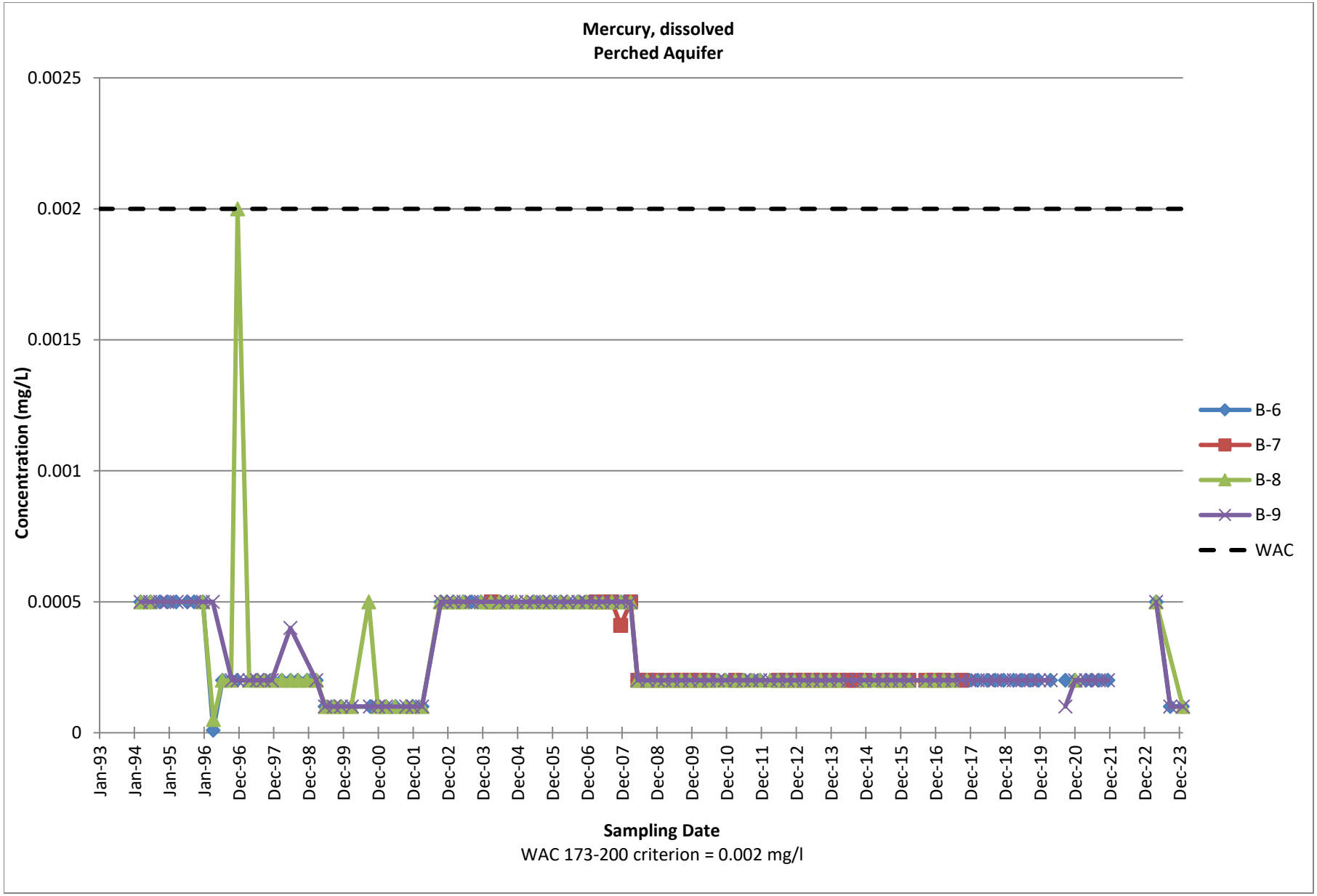

Chloride
Perched Aquifer
1000
100
10
1
0.1
Concentration (mg/L)
Jan-93
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
B-6
B-8
B-9
B-11
B-13
WAC
WAC 173-200 criterion = 250 mg/L

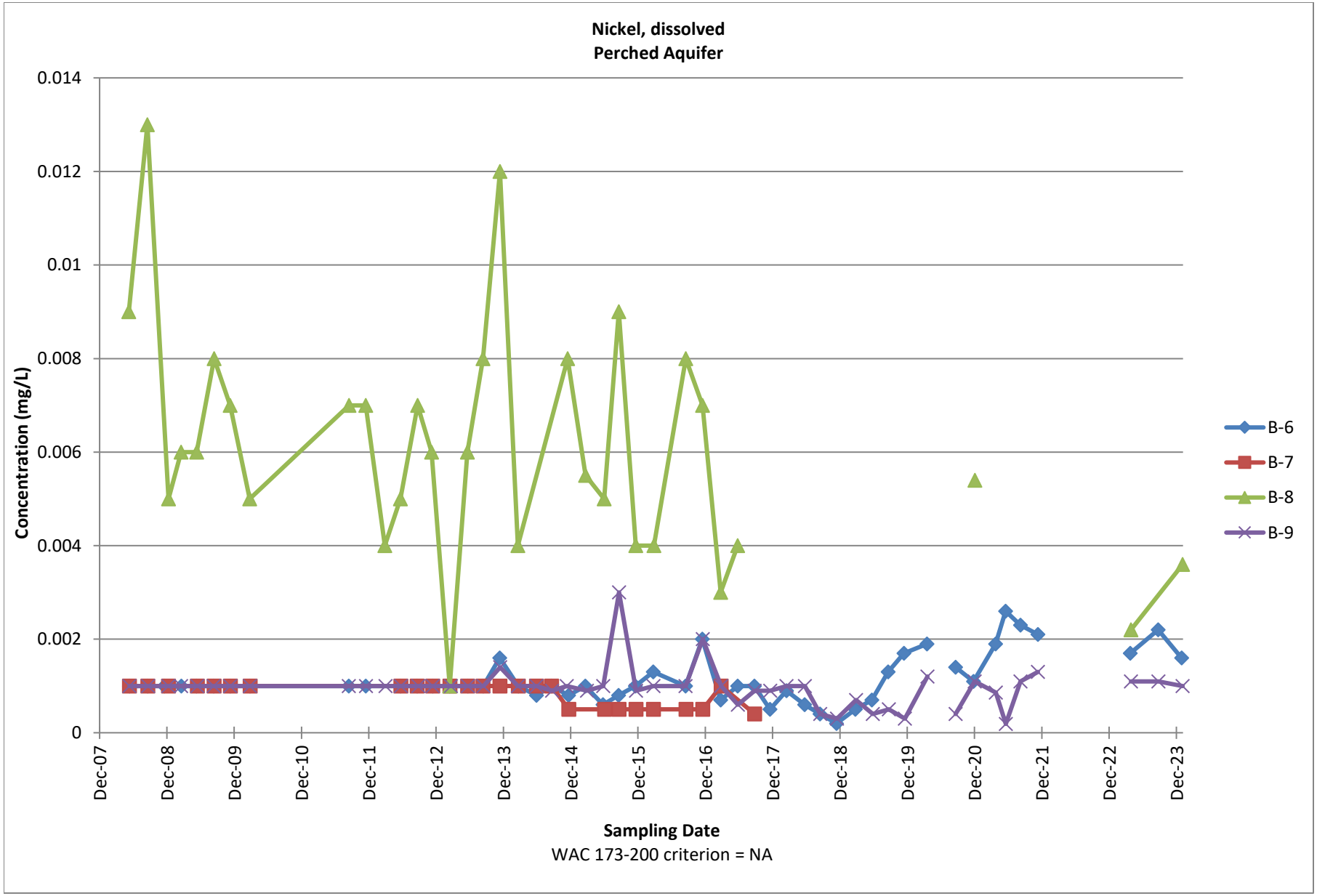

Iron, dissolved
Perched Aquifer
Concentration (mg/L)
100
10
1
0.1
0.01
0.001
0.0001
Jan-93
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
B-6
B-8
B-9
B-11
B-13
WAC
Sampling Date
WAC 173-200 criterion = 0.3 mg/L

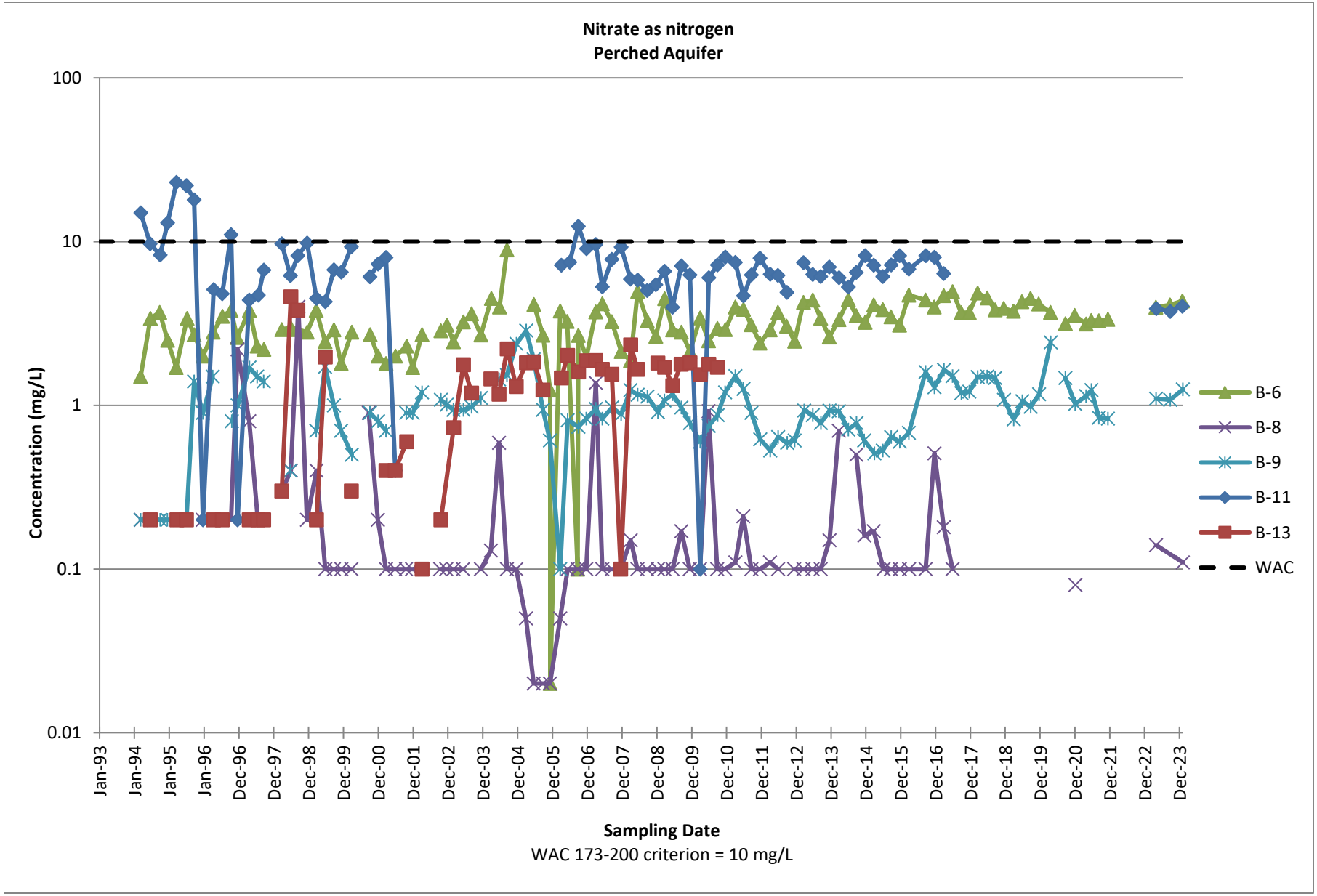

Lead, dissolved
Perched Aquifer
1
0.1
0.01
0.001
0.0001
0.00001
Concentration (mg/L)
Jan-93
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
B-6
B-7
B-8
B-9
WAC
Sampling Date
WAC 173-200 criterion = 0.05 mg/l

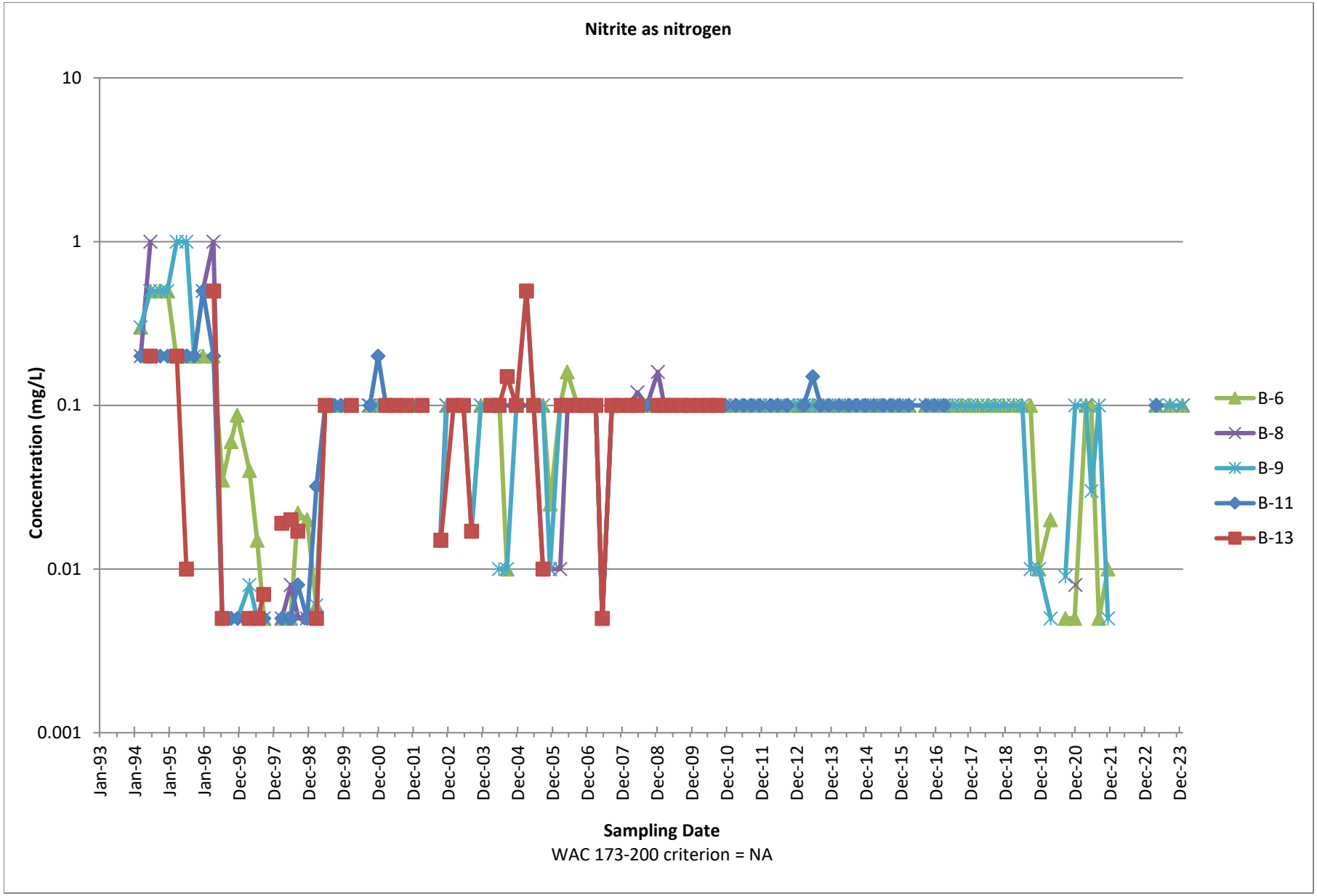

Magnesium, total
Perched Aquifer
Concentration (mg/L)
70
60
50
40
30
20
10
0
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
B-6
B-8
B-9
B-11
B-13
Sampling Date
WAC 173-200 criterion = NA

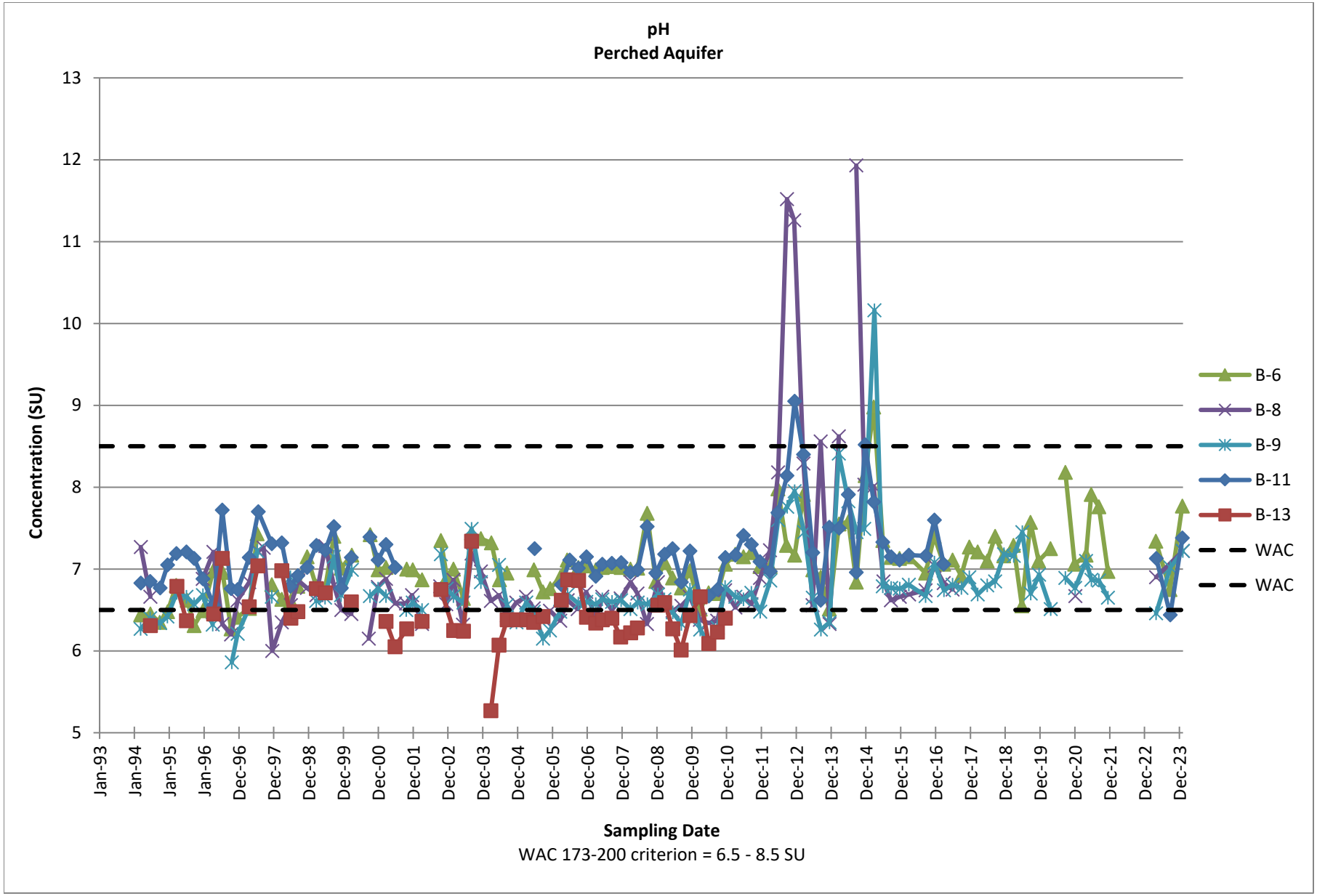

Manganese, dissolved
Perched Aquifer
100
10
1
0.1
0.01
0.001
0.0001
0.00001
Concentration (mg/L)
Jan-93
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
B-6
B-8
B-9
B-11
B-13
WAC
WAC 173-200 criterion = 0.05 mg/L

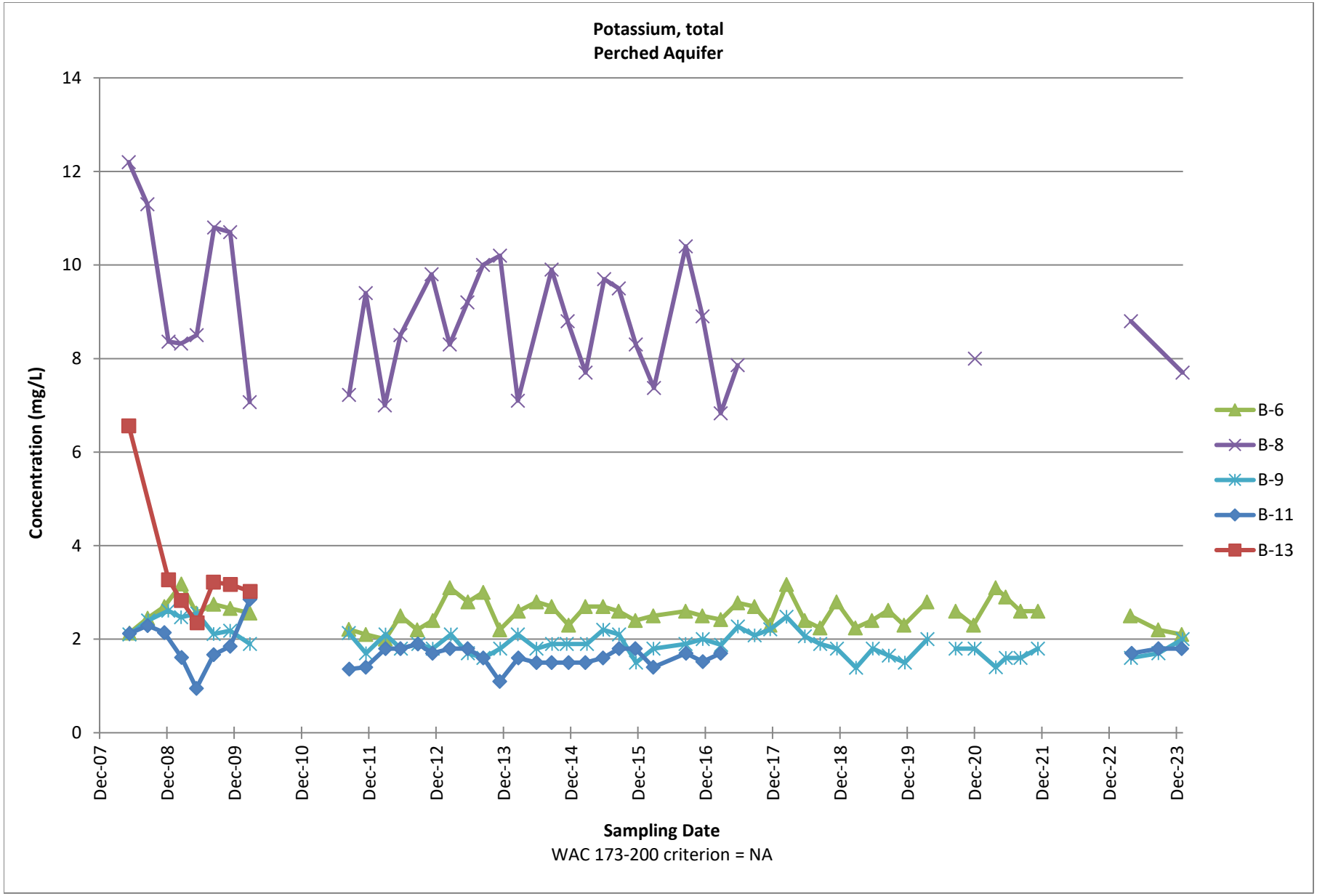

Mercury, dissolved
Perched Aquifer
0.0025
0.002
0.0015
0.001
0.0005
0
Concentration (mg/L)
Jan-93
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
B-6
B-7
B-8
B-9
WAC
WAC 173-200 criterion = 0.002 mg/l

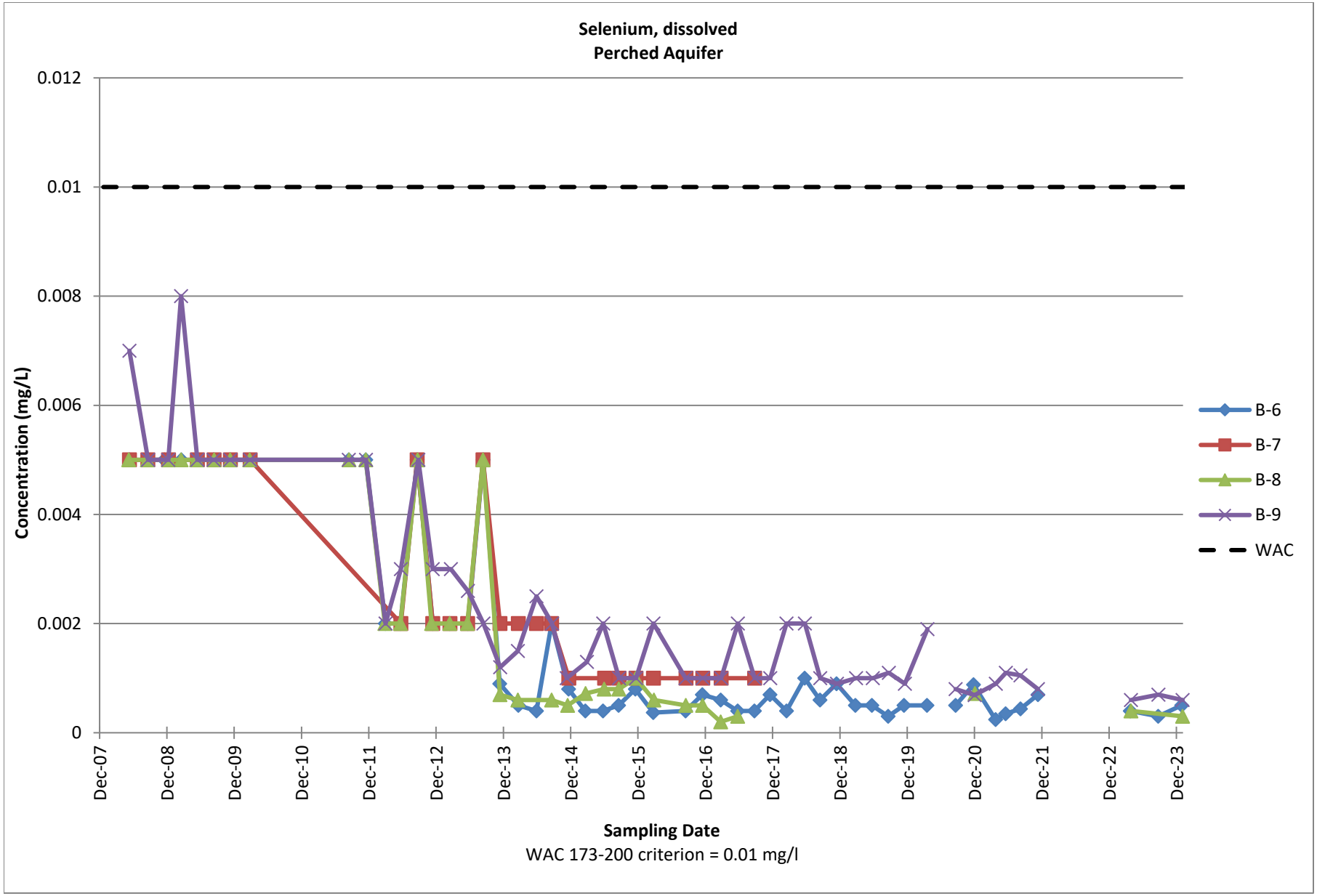

Nickel, dissolved
Perched Aquifer
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
Concentration (mg/L)
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
B-6
B-7
B-8
B-9
WAC 173-200 criterion = NA

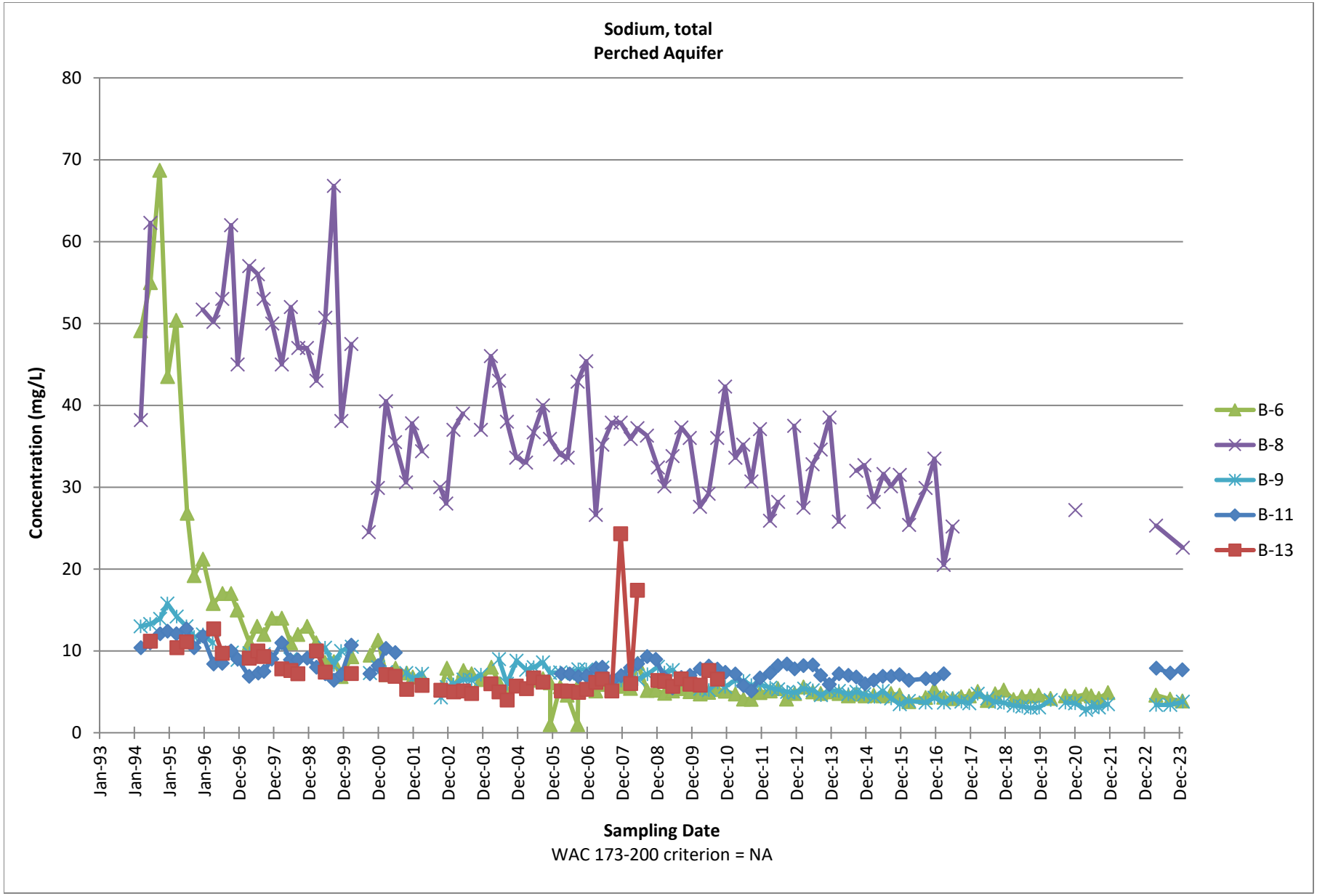

Nitrate as nitrogen
Perched Aquifer
100
10
1
0.1
0.01
Concentration (mg/L)
Jan-93
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
B-6
B-8
B-9
B-11
B-13
WAC
Sampling Date
WAC 173-200 criterion = 10 mg/L

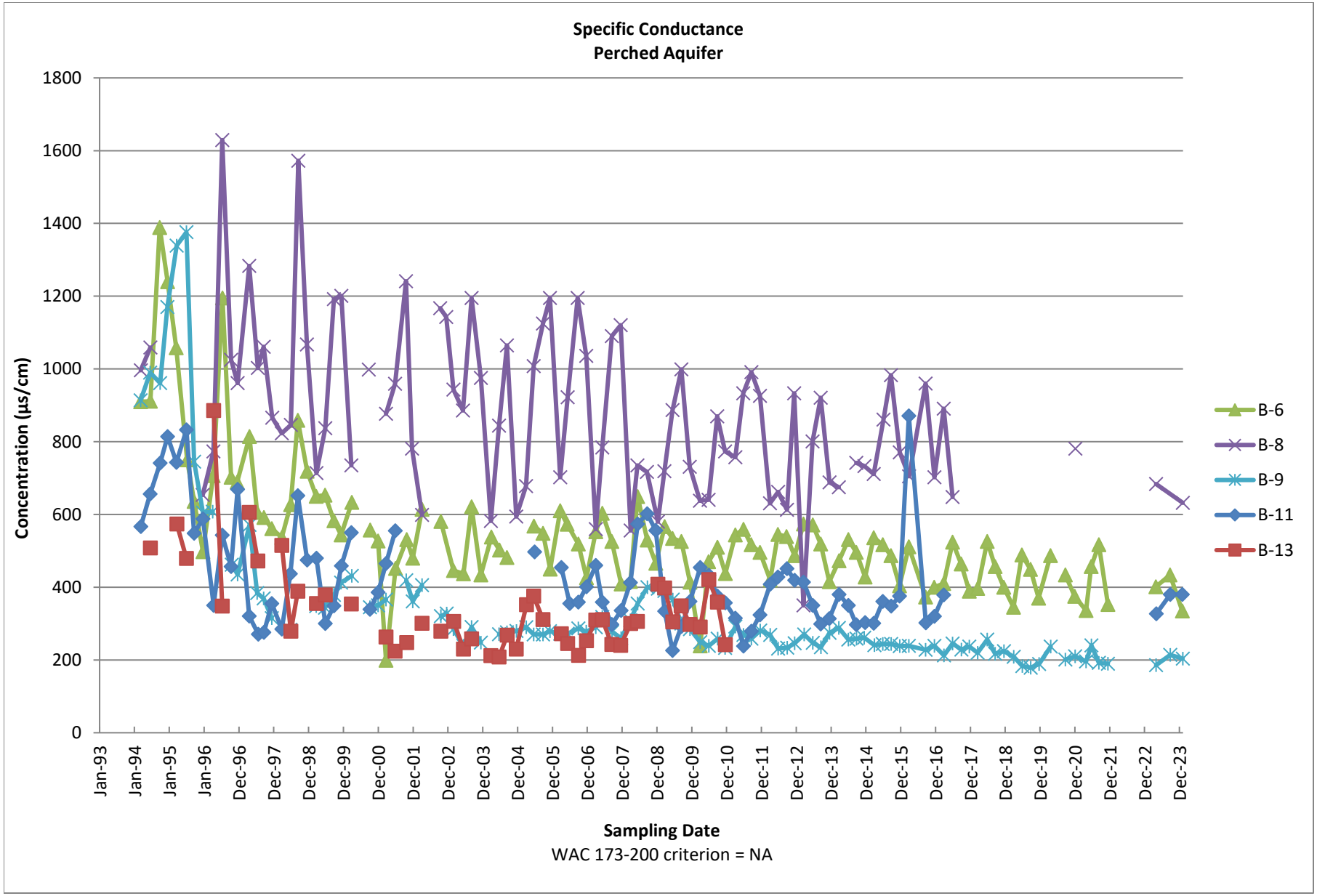

Nitrite as nitrogen
10
1
0.1
0.01
0.001
Concentration (mg/L)
Jan-93
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
B-6
B-8
B-9
B-11
B-13
WAC 173-200 criterion = NA

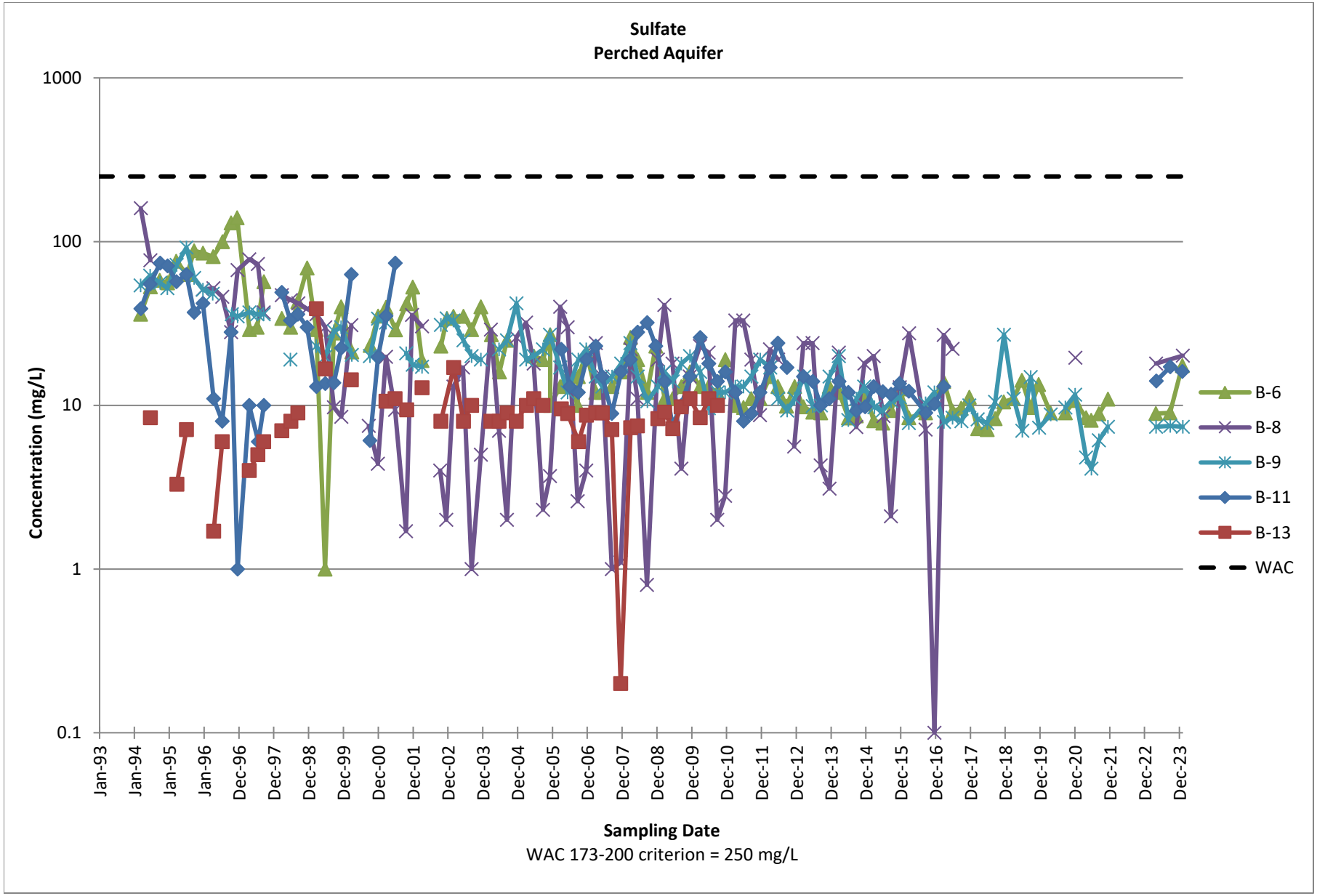

pH
Perched Aquifer
Concentration (SU)
13
12
11
10
9
8
7
6
5
Jan-93
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
B-6
B-8
B-9
B-11
B-13
WAC
WAC
Sampling Date
WAC 173-200 criterion = 6.5 - 8.5 SU

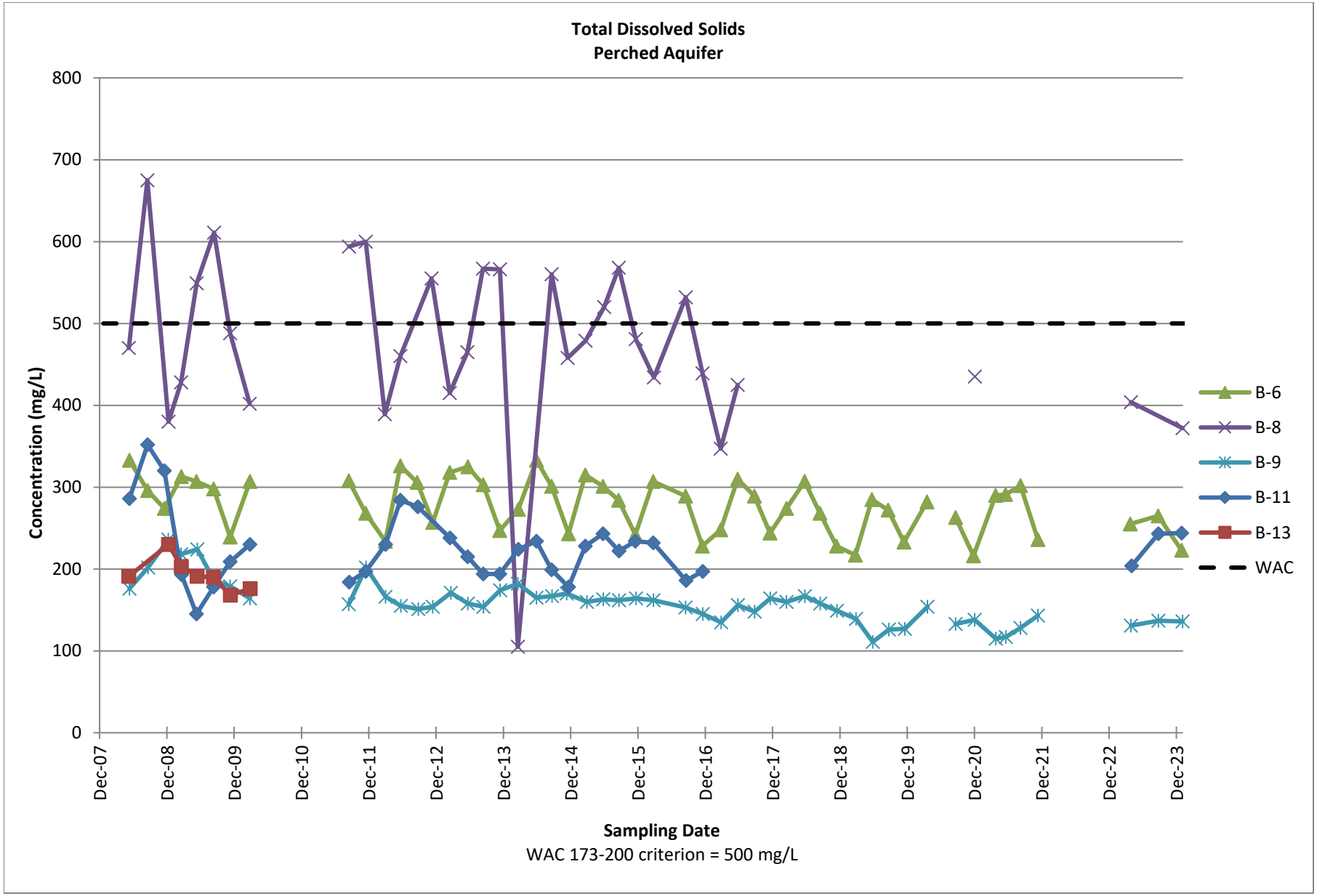

Potassium, total
Perched Aquifer
Concentration (mg/L)
14
12
10
8
6
4
2
0
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
B-6
B-8
B-9
B-11
B-13
Sampling Date
WAC 173-200 criterion = NA

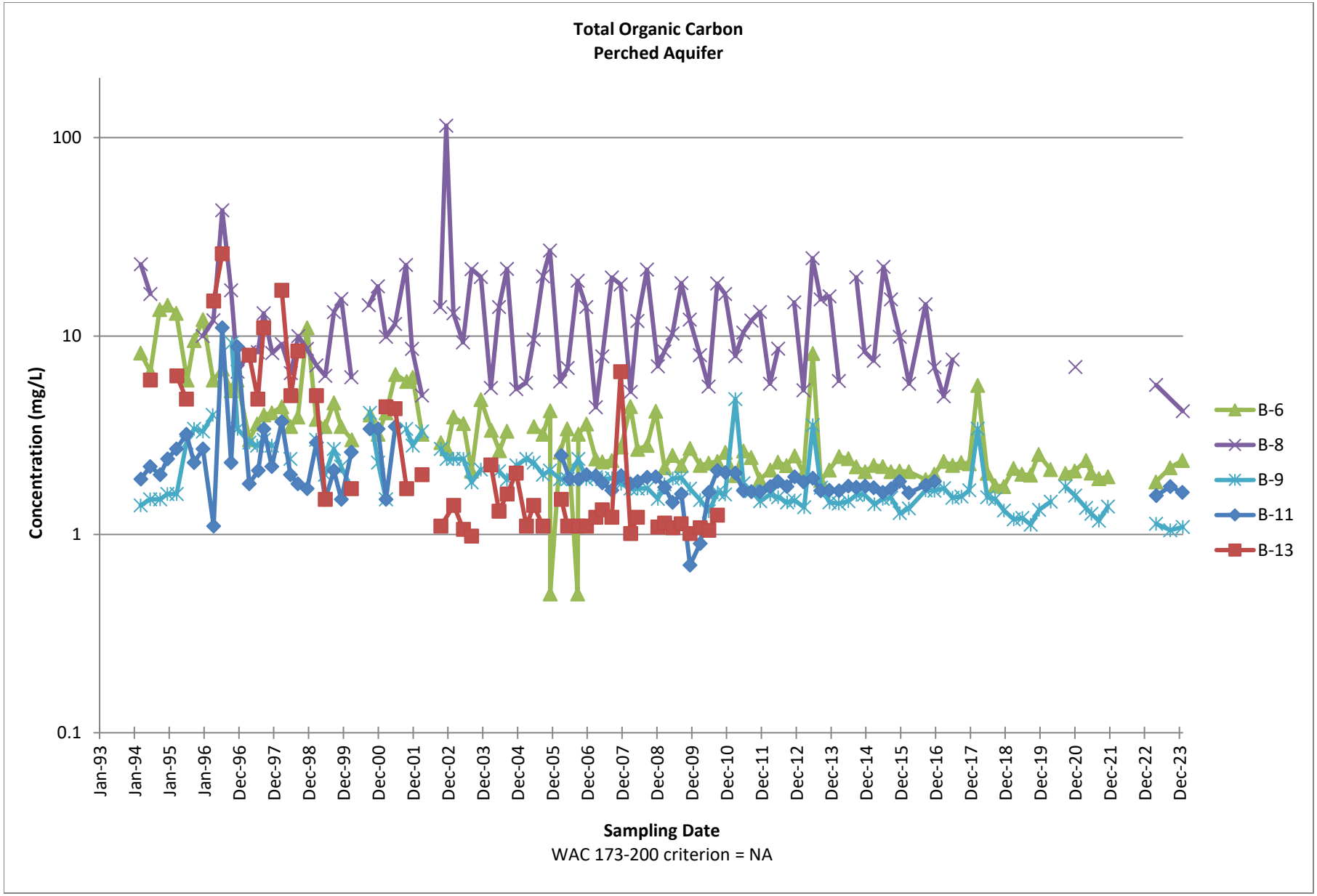

Selenium, dissolved
Perched Aquifer
0.012
0.01
0.008
0.006
0.004
0.002
0
Concentration (mg/L)
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
B-6
B-7
B-8
B-9
WAC
Sampling Date
WAC 173-200 criterion = 0.01 mg/l

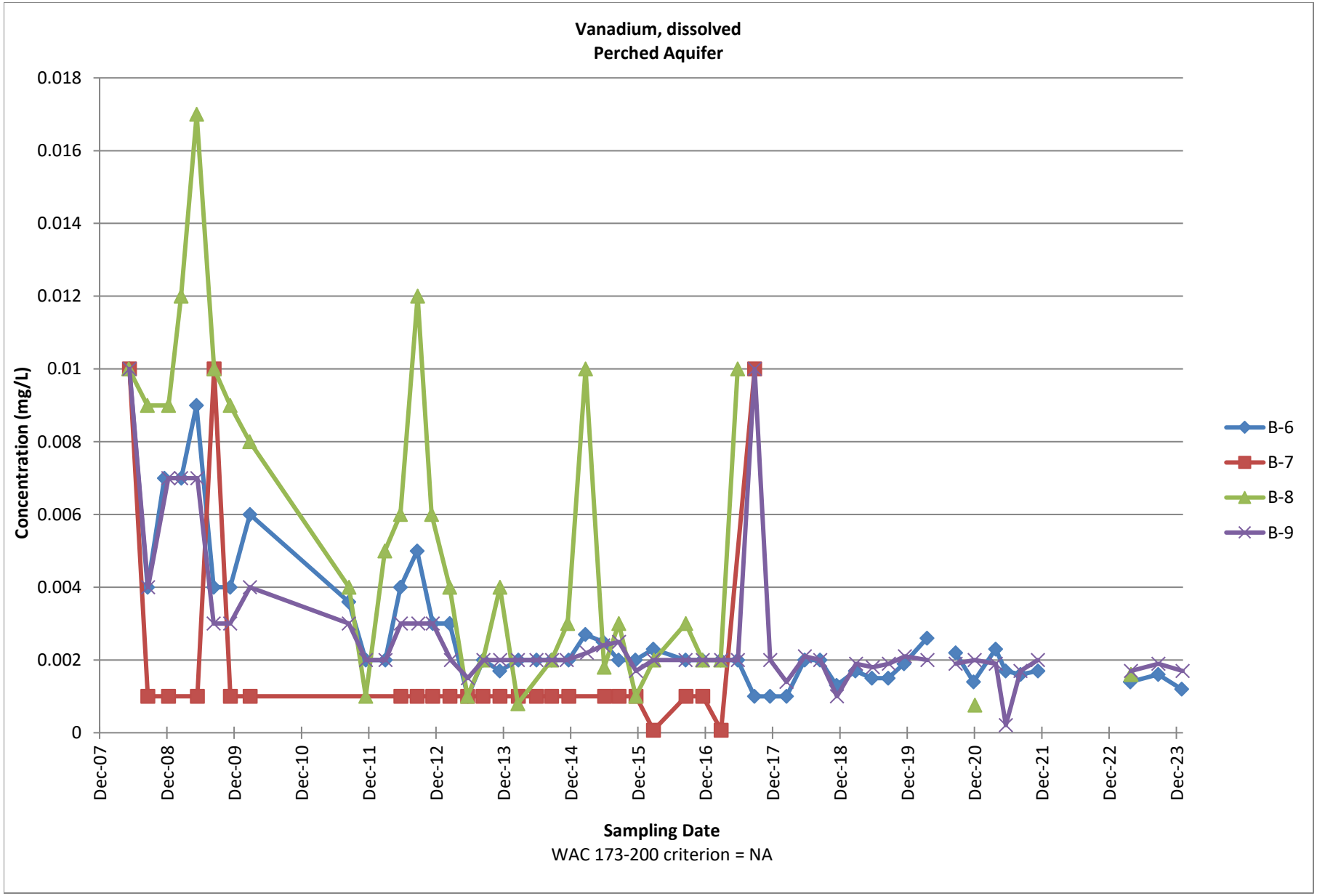

Sodium, total
Perched Aquifer
Concentration (mg/L)
80
70
60
50
40
30
20
10
0
Jan-93
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
B-6
B-8
B-9
B-11
B-13
Sampling Date
WAC 173-200 criterion = NA

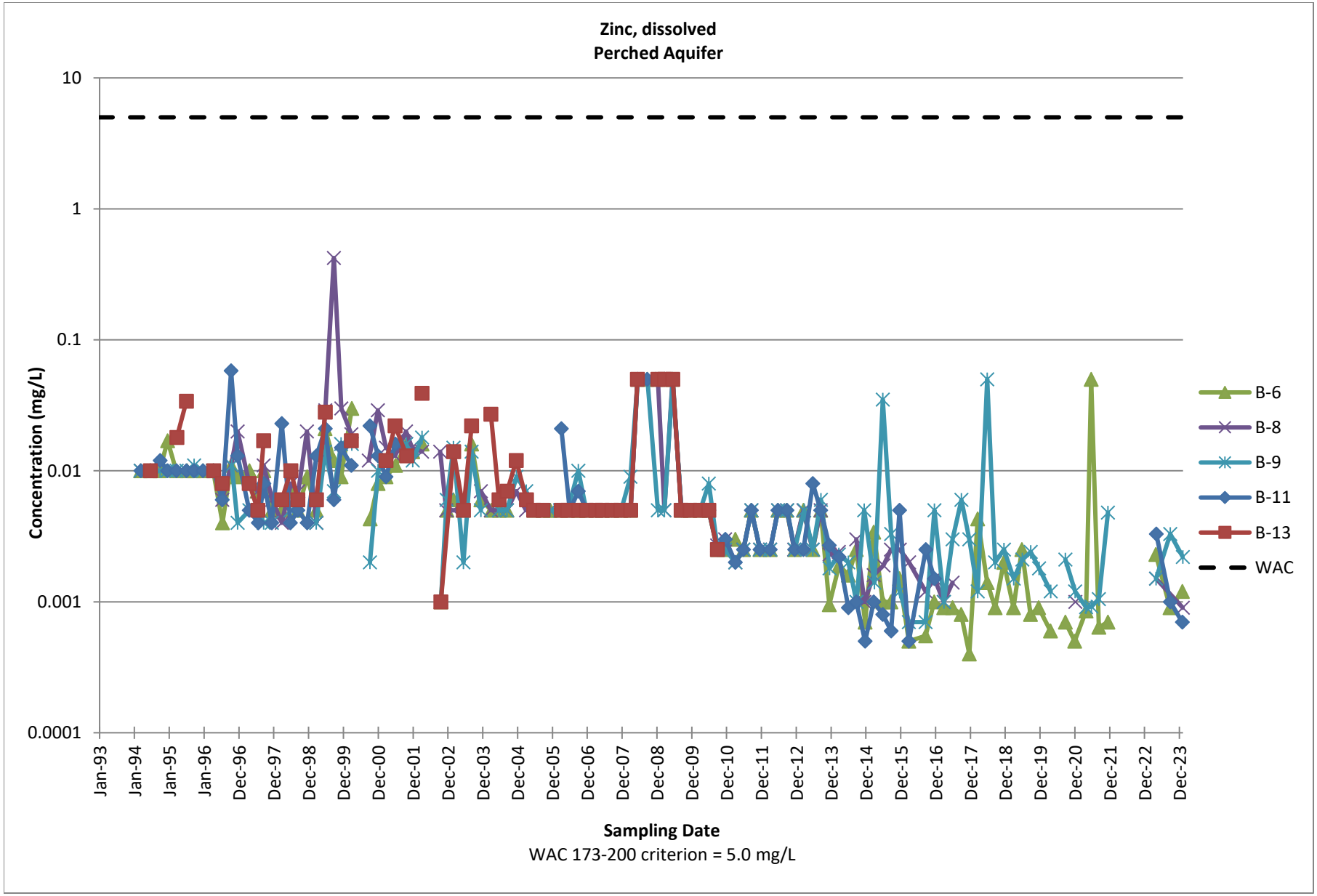

Specific Conductance
Perched Aquifer
Concentration (µs/cm)
1800
1600
1400
1200
1000
800
600
400
200
0
Jan-93
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
WAC 173-200 criterion = NA
B-6
B-8
B-9
B-11
B-13


Sulfate
Perched Aquifer
1000
100
10
1
0.1
Concentration (mg/L)
Jan-93
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
B-6
B-8
B-9
B-11
B-13
WAC
Sampling Date
WAC 173-200 criterion = 250 mg/L


Total Dissolved Solids
Perched Aquifer
Concentration (mg/L)
800
700
600
500
400
300
200
100
0
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
B-6
B-8
B-9
B-11
B-13
WAC
Sampling Date
WAC 173-200 criterion = 500 mg/L


Total Organic Carbon
Perched Aquifer
Concentration (mg/L)
100
10
1
0.1
Jan-93
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
B-6
B-8
B-9
B-11
B-13
Sampling Date
WAC 173-200 criterion = NA


Vanadium, dissolved
Perched Aquifer
0.018
0.016
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
Concentration (mg/L)
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
B-6
B-7
B-8
B-9
WAC 173-200 criterion = NA


Zinc, dissolved
Perched Aquifer
10
1
0.1
0.01
0.001
0.0001
Concentration (mg/L)
Jan-93
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
B-6
B-8
B-9
B-11
B-13
WAC
WAC 173-200 criterion = 5.0 mg/L

APPENDIX B-1
2023 Groundwater Monitoring Data – Upper Regional Aquifer

2023 Inorganic Monitoring Results
Inman Landfill

AQUIFER			Regional		
MONITORING WELL Sampling Date			B-1 4/21/2023	B-1 9/7/2023	B-1 1/24/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
CONVENTIONALS					
Chemical Oxygen Demand	mg/L		27	8 J	11 J
Total Organic Carbon	mg/L		2.1	1.37	2.21
Total Dissolved Solids †	mg/L	**500	444	360	**607**
Alkalinity †	mg/L		345	319	458
Bicarbonate †	mg CaCO3/L		345	319	458
Ammonia as nitrogen	mg/L		0.34	0.19	0.29
Nitrate as nitrogen	mg/L	*10	0.1 U	0.005 U	0.1 U
Nitrite as nitrogen	mg/L		0.1 U	0.005 U	0.1 U
Chloride	mg/L	**250	47.7	32.9	72.9
Sulfate	mg/L	**250	3.2	1.5	7
pH	SU	**6.5-8.5	7.05	7.17	6.67
Specific Conductance	µS/cm		546	554	982
Temperature	C		11.03	13.47	10.3
METALS					
Dissolved Antimony †	mg/L		0.0006 J	0.005 U	0.001 U
Dissolved Arsenic	mg/L	***0.00005	**0.0256**	**0.027**	**0.0194**
Dissolved Barium †	mg/L	*1.0	0.0334	0.0276	0.0331
Dissolved Cadmium	mg/L	*0.01	0.001 U	0.001 U	0.001 U
Dissolved Chromium †	mg/L	*0.05	0.01 U	0.0008 J	0.0004 J
Dissolved Cobalt †	mg/L		0.0008 J	0.0008 J	0.0009 J
Dissolved Copper †	mg/L	**1.0	0.0003 J	0.002 U	0.0003 J
Dissolved Iron	mg/L	**0.3	**2.03**	**1.05**	0.3
Dissolved Lead	mg/L	*0.05	0.001 U	0.001 U	0.001 U
Dissolved Manganese	mg/L	**0.05	**2.72**	**1.97**	**2.77**
Dissolved Mercury	mg/L	*0.002	0.0005 U	0.0005 U	0.0001 U
Dissolved Nickel †	mg/L		0.001 U	0.0044	0.0065
Dissolved Selenium †	mg/L	*0.01	0.0008 J	0.0005 J	0.001
Dissolved Vanadium †	mg/L		0.0006 J	0.0006 J	0.0002 J
Dissolved Zinc	mg/L	**5.0	0.0013	0.0005 J	0.0005 J
Total Calcium	mg/L		89.7	59.2	94
Total Magnesium †	mg/L		64.7	39.7	58.5
Total Potassium †	mg/L		7	4.8	5.9
Total Sodium	mg/L		19.6	14.1	18.2

Groundwater Quality Criteria:

* = Primary Contaminant
** = Secondary Contaminant
*** = Carcinogen

Units:

mg/L = milligrams per liter
µg/L = micrograms per liter
SU = standard units
µS/cm = microsiemens per centimeter
C = degrees centigrade
mg $CaCO_3$/L = milligrams of calcium carbonate per liter

Qualifiers:

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J — Indicates the analyte of interest was detected below the routine reporting limit. This value should be regarded as an estimate.
NT — Not tested.

Results shown in **bold** exceed Ground Water Quality Criteria.
† Indicates supplement analytes measured due to Ecology request

2023 Inorganic Monitoring Results
Inman Landfill

AQUIFER			Regional		
MONITORING WELL Sampling Date			B-2 4/21/2023	B-2 9/25/2023	B-2 1/30/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
CONVENTIONALS					
Chemical Oxygen Demand	mg/L		8 J	3 J	20 U
Total Organic Carbon	mg/L		1.02	1.02	0.96
Total Dissolved Solids †	mg/L	**500	208	190	194
Alkalinity †	mg/L		130	126	130
Bicarbonate †	mg CaCO3/L		130	126	130
Ammonia as nitrogen	mg/L		0.01 U	0.01 U	0.014
Nitrate as nitrogen	mg/L	*10	2.01	1.28	1.38
Nitrite as nitrogen	mg/L		0.1 U	0.1 U	0.1 U
Chloride	mg/L	**250	8.5	3.8	5.4
Sulfate	mg/L	**250	17.2	17.1	24.4
pH	SU	**6.5-8.5	6.93	6.82	8.03
Specific Conductance	µS/cm		168	296	301
Temperature	C		10.85	11.63	11.17
METALS					
Dissolved Antimony †	mg/L		0.005 U	0.005 U	0.001 U
Dissolved Arsenic	mg/L	***0.00005	**0.0008** J	**0.0009** J	**0.0009** J
Dissolved Barium †	mg/L	*1.0	0.0225	0.021	0.022
Dissolved Cadmium	mg/L	*0.01	0.001 U	0.001 U	0.001 U
Dissolved Chromium †	mg/L	*0.05	0.0008 J	0.0013	0.0011
Dissolved Cobalt †	mg/L		0.001 U	0.0001 J	7E-05 J
Dissolved Copper †	mg/L	**1.0	0.0007 J	0.0008 J	0.0007 J
Dissolved Iron	mg/L	**0.3	0.05 U	0.05 U	0.05 U
Dissolved Lead	mg/L	*0.05	0.001 U	0.001 U	0.001 U
Dissolved Manganese	mg/L	**0.05	0.0029	0.0004 J	0.0004 J
Dissolved Mercury	mg/L	*0.002	0.0005 U	0.0001 U	0.0001 U
Dissolved Nickel †	mg/L		0.0019	0.0016	0.0015
Dissolved Selenium †	mg/L	*0.01	0.0014	0.0028	0.0022
Dissolved Vanadium †	mg/L		0.0016	0.0018	0.0017
Dissolved Zinc	mg/L	**5.0	0.0009 J	0.0007 J	0.0006 J
Total Calcium	mg/L		28.4	25	25.4
Total Magnesium †	mg/L		11.9	9.5	10.7
Total Potassium †	mg/L		23.2	19.8	22
Total Sodium	mg/L		8.1	7	8.2

Groundwater Quality Criteria:

* = Primary Contaminant
** = Secondary Contaminant
*** = Carcinogen

Units:

mg/L = milligrams per liter
µg/L = micrograms per liter
SU = standard units
µS/cm = microsiemens per centimeter
C = degrees centigrade
mg $CaCO_3$/L = milligrams of calcium carbonate per liter

Qualifiers:

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J — Indicates the analyte of interest was detected below the routine reporting limit. This value should be regarded as an estimate.
NT — Not tested.

Results shown in **bold** exceed Ground Water Quality Criteria.
† Indicates supplement analytes measured due to Ecology request

2023 Inorganic Monitoring Results
Inman Landfill

AQUIFER			Regional		
MONITORING WELL Sampling Date			B-3 4/25/2023	B-3 9/19/2023	B-3 1/30/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
CONVENTIONALS					
Chemical Oxygen Demand	mg/L		5 J	20 U	17 J
Total Organic Carbon	mg/L		1.96	1.06	4.42
Total Dissolved Solids †	mg/L	**500	176	151	315
Alkalinity †	mg/L		126	93.1	222
Bicarbonate †	mg CaCO3/L		126	114	222
Ammonia as nitrogen	mg/L		1.3	0.86	1.51
Nitrate as nitrogen	mg/L	*10	0.1 U	0.1 U	0.1 U
Nitrite as nitrogen	mg/L		0.1 U	0.1 U	0.1 U
Chloride	mg/L	**250	10.6	7	32.4
Sulfate	mg/L	**250	0.2 U	0.2 U	0.2 U
pH	SU	**6.5-8.5	7.55	6.85	7.15
Specific Conductance	µS/cm		296	227	505
Temperature	C		13.77	13.73	13.39
METALS					
Dissolved Antimony †	mg/L		0.0003 J	0.001 U	0.001 U
Dissolved Arsenic	mg/L	***0.00005	**0.0018**	**0.0018**	**0.0013**
Dissolved Barium †	mg/L	*1.0	0.0584	0.0587	0.121
Dissolved Cadmium	mg/L	*0.01	0.001 U	0.001 U	0.001 U
Dissolved Chromium †	mg/L	*0.05	0.01 U	0.0004 J	0.001 U
Dissolved Cobalt †	mg/L		0.001 U	0.0001 J	0.00043 J
Dissolved Copper †	mg/L	**1.0	0.02 U	0.00025 J	0.002 U
Dissolved Iron	mg/L	**0.3	**1.55**	**2.39**	0.031 J
Dissolved Lead	mg/L	*0.05	0.001 U	0.001 U	0.001 U
Dissolved Manganese	mg/L	**0.05	**0.401**	**0.353**	**1.005**
Dissolved Mercury	mg/L	*0.002	0.0005 U	0.0001 U	0.0001 U
Dissolved Nickel †	mg/L		0.001	0.0004 J	0.0017
Dissolved Selenium †	mg/L	*0.01	0.005 U	0.001 U	0.0004 J
Dissolved Vanadium †	mg/L		0.0002 J	0.0004 J	0.0002 J
Dissolved Zinc	mg/L	**5.0	0.05 U	0.0025 U	0.0025 U
Total Calcium	mg/L		18.8	15.6	39
Total Magnesium †	mg/L		13.3	9.9	27.5
Total Potassium †	mg/L		4.6	3.6	6.8
Total Sodium	mg/L		10.2	7.8	16

Groundwater Quality Criteria:

* = Primary Contaminant
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*** = Carcinogen

Units:

mg/L = milligrams per liter
µg/L = micrograms per liter
SU = standard units
µS/cm = microsiemens per centimeter
C = degrees centigrade
mg $CaCO_3$/L = milligrams of calcium carbonate per liter

Qualifiers:

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J — Indicates the analyte of interest was detected below the routine reporting limit. This value should be regarded as an estimate.
NT — Not tested.

Results shown in **bold** exceed Ground Water Quality Criteria.
† Indicates supplement analytes measured due to Ecology request

2023 Inorganic Monitoring Results
Inman Landfill

AQUIFER			Regional		
MONITORING WELL Sampling Date			B-4 4/24/2023	B-4 9/20/2023	B-4 1/30/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
CONVENTIONALS					
Chemical Oxygen Demand	mg/L		15 J	7 J	8 J
Total Organic Carbon	mg/L		1.5	1.65	1.43
Total Dissolved Solids †	mg/L	**500	**570**	**525**	**542**
Alkalinity †	mg/L		323	310	326
Bicarbonate †	mg CaCO3/L		323	315	326
Ammonia as nitrogen	mg/L		0.74	0.77	0.84
Nitrate as nitrogen	mg/L	*10	0.1 U	0.1 U	0.1 U
Nitrite as nitrogen	mg/L		0.1 U	0.1 U	0.1 U
Chloride	mg/L	**250	86.6	90.4	83.7
Sulfate	mg/L	**250	42.9	42.8	43.4
pH	SU	**6.5-8.5	**6.36**	7.09	7.29
Specific Conductance	µS/cm		855	910	867
Temperature	C		10.32	10.62	10.29
METALS					
Dissolved Antimony †	mg/L		0.0004 J	0.001 U	0.001 U
Dissolved Arsenic	mg/L	***0.00005	**0.0011**	**0.0023**	**0.001**
Dissolved Barium †	mg/L	*1.0	0.0741	0.0866	0.0677
Dissolved Cadmium	mg/L	*0.01	0.001 U	0.001 U	0.001 U
Dissolved Chromium †	mg/L	*0.05	0.01 U	0.0015	0.001 U
Dissolved Cobalt †	mg/L		0.001 U	0.0003	0.0002 J
Dissolved Copper †	mg/L	**1.0	0.02 U	0.002 U	0.002 U
Dissolved Iron	mg/L	**0.3	**0.4**	**4.66**	0.16
Dissolved Lead	mg/L	*0.05	0.001 U	0.001 U	0.001 U
Dissolved Manganese	mg/L	**0.05	**1.12**	**1.19**	**0.995**
Dissolved Mercury	mg/L	*0.002	0.0005 U	0.0001 U	0.0001 U
Dissolved Nickel †	mg/L		0.0029	0.0022	0.002
Dissolved Selenium †	mg/L	*0.01	0.0011	0.0008	0.001
Dissolved Vanadium †	mg/L		0.001 U	0.0005	0.001 U
Dissolved Zinc	mg/L	**5.0	0.05 U	0.0006	0.0007 J
Total Calcium	mg/L		69.2	69.4	69.1
Total Magnesium †	mg/L		58.6	53.3	50.9
Total Potassium †	mg/L		7	5.9	6
Total Sodium	mg/L		20.6	16.9	17.5

Groundwater Quality Criteria:
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Units:
mg/L = milligrams per liter
µg/L = micrograms per liter
SU = standard units
µS/cm = microsiemens per centimeter
C = degrees centigrade
mg $CaCO_3$/L = milligrams of calcium carbonate per liter

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Results shown in **bold** exceed Ground Water Quality Criteria.
† Indicates supplement analytes measured due to Ecology request

2023 Inorganic Monitoring Results
Inman Landfill

AQUIFER			Regional		
MONITORING WELL Sampling Date			B-5 6/1/2023	B-5 9/8/2023	B-5 1/31/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
CONVENTIONALS					
Chemical Oxygen Demand	mg/L		30	35	26
Total Organic Carbon	mg/L		8.42	8.9	8.36
Total Dissolved Solids †	mg/L	**500	487	427	389
Alkalinity †	mg/L		323	253	258
Bicarbonate †	mg CaCO3/L		323	269	258
Ammonia as nitrogen	mg/L		1.37	1.97	1.96
Nitrate as nitrogen	mg/L	*10	0.23	0.005 U	0.005 U
Nitrite as nitrogen	mg/L		0.005 U	0.04	0.007
Chloride	mg/L	**250	88.6	83.2	69.9
Sulfate	mg/L	**250	0.3	0.2 U	0.2 U
pH	SU	**6.5-8.5	6.76	6.53	**6.28**
Specific Conductance	µS/cm		884	802	712
Temperature	C		11.75	11.52	11.9
METALS					
Dissolved Antimony †	mg/L		0.00051 J	0.005 U	0.005 U
Dissolved Arsenic	mg/L	***0.00005	**0.0024**	**0.0039**	**0.003**
Dissolved Barium †	mg/L	*1.0	0.082	0.0706	0.0537
Dissolved Cadmium	mg/L	*0.01	0.001 U	0.001 U	0.001 U
Dissolved Chromium †	mg/L	*0.05	0.00051 J	0.0006 J	0.0004 J
Dissolved Cobalt †	mg/L		0.00099 J	0.0009 J	0.0007 J
Dissolved Copper †	mg/L	**1.0	0.00028 J	0.002 U	0.02 U
Dissolved Iron	mg/L	**0.3	**3.33**	**15.9**	**13.2**
Dissolved Lead	mg/L	*0.05	0.001 U	0.001 U	0.001 U
Dissolved Manganese	mg/L	**0.05	**1.99**	**1.61**	**1.34**
Dissolved Mercury	mg/L	*0.002	0.0001 U	0.0005 U	0.0001 U
Dissolved Nickel †	mg/L		0.0061	0.0054	0.0043
Dissolved Selenium †	mg/L	*0.01	0.0024 J	0.0015 J	0.0014
Dissolved Vanadium †	mg/L		0.001 U	0.00025 J	0.00016 J
Dissolved Zinc	mg/L	**5.0	0.00063 J	0.0012	0.0005
Total Calcium	mg/L		6.1	44.1	36
Total Magnesium †	mg/L		16.8	36	32.8
Total Potassium †	mg/L		7.2	4.7	4.4
Total Sodium	mg/L		68.6	48.6	45.5

Groundwater Quality Criteria:

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Units:

mg/L = milligrams per liter
µg/L = micrograms per liter
SU = standard units
µS/cm = microsiemens per centimeter
C = degrees centigrade
mg $CaCO_3$/L = milligrams of calcium carbonate per liter

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Results shown in **bold** exceed Ground Water Quality Criteria.
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2023 Inorganic Monitoring Results
Inman Landfill

AQUIFER			Regional		
MONITORING WELL Sampling Date			B-10 4/28/2023	B-10 9/19/2023	B-10 1/24/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
CONVENTIONALS					
Chemical Oxygen Demand	mg/L		20 U	20 U	20 U
Total Organic Carbon	mg/L		0.81	0.88	0.75
Total Dissolved Solids †	mg/L	**500	206	208	182
Alkalinity †	mg/L		166	146	148
Bicarbonate †	mg CaCO3/L		166	163	148
Ammonia as nitrogen	mg/L		0.28	0.29	0.26
Nitrate as nitrogen	mg/L	*10	0.1 U	0.1 U	0.1 U
Nitrite as nitrogen	mg/L		0.1 U	0.1 U	0.1 U
Chloride	mg/L	**250	4.4	4.5	4.4
Sulfate	mg/L	**250	20.4	20.7	20.9
pH	SU	**6.5-8.5	6.9	7.15	7.98
Specific Conductance	µS/cm		336	349	292
Temperature	C		10.44	10.78	10.1
METALS					
Dissolved Antimony †	mg/L		0.005 U	0.00027 J	0.001 U
Dissolved Arsenic	mg/L	***0.00005	**0.0015**	**0.0019**	**0.0014**
Dissolved Barium †	mg/L	*1.0	0.0398	0.0438	0.0313
Dissolved Cadmium	mg/L	*0.01	0.001 U	0.001 U	0.001 U
Dissolved Chromium †	mg/L	*0.05	0.01 U	0.0006 J	0.001 U
Dissolved Cobalt †	mg/L		0.001 U	8E-05 J	0.001 U
Dissolved Copper †	mg/L	**1.0	0.02 U	0.002 U	0.002 U
Dissolved Iron	mg/L	**0.3	**1.2**	**2.04**	**0.22**
Dissolved Lead	mg/L	*0.05	0.001 U	0.001 U	0.001 U
Dissolved Manganese	mg/L	**0.05	**0.455**	**0.601**	**0.449**
Dissolved Mercury	mg/L	*0.002	0.0005 U	0.0001 U	0.0001 U
Dissolved Nickel †	mg/L		0.0002 J	0.0006 J	0.0005 J
Dissolved Selenium †	mg/L	*0.01	0.005 U	0.001 U	0.001 U
Dissolved Vanadium †	mg/L		0.001 U	0.0002 J	0.001 U
Dissolved Zinc	mg/L	**5.0	0.05 U	0.0025 U	0.0005 J
Total Calcium	mg/L		28.1	28.5	25.1
Total Magnesium †	mg/L		20.9	19.3	16.6
Total Potassium †	mg/L		3.5	3.4	3
Total Sodium	mg/L		9.2	8.4	7.9

Groundwater Quality Criteria:

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*** = Carcinogen

Units:

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µg/L = micrograms per liter
SU = standard units
µS/cm = microsiemens per centimeter
C = degrees centigrade
mg $CaCO_3$/L = milligrams of calcium carbonate per liter

Qualifiers:

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NT — Not tested.

Results shown in **bold** exceed Ground Water Quality Criteria.
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2023 Inorganic Monitoring Results
Inman Landfill

AQUIFER			Regional	
MONITORING WELL Sampling Date			B-12 4/26/2023	B-12 9/19/2023
Analyte	Units	GW Quality Standards (173-200 WAC)		
CONVENTIONALS				
Chemical Oxygen Demand	mg/L		20 U	20 U
Total Organic Carbon	mg/L		0.74	0.61
Total Dissolved Solids †	mg/L	**500	256	263
Alkalinity †	mg/L		214	211
Bicarbonate †	mg $CaCO_3$/L		214	227
Ammonia as nitrogen	mg/L		0.49	0.3
Nitrate as nitrogen	mg/L	*10	0.1 U	0.1 U
Nitrite as nitrogen	mg/L		0.1 U	0.1 U
Chloride	mg/L	**250	6.4	7.3
Sulfate	mg/L	**250	15.8	15
pH	SU	**6.5-8.5	8.4	6.88
Specific Conductance	µS/cm		408	439
Temperature	C		12.07	12.17
METALS				
Dissolved Antimony †	mg/L		0.0006 J	0.001 U
Dissolved Arsenic	mg/L	***0.00005	**0.0027**	**0.004**
Dissolved Barium †	mg/L	*1.0	0.0335	0.0391
Dissolved Cadmium	mg/L	*0.01	0.001 U	0.001 U
Dissolved Chromium †	mg/L	*0.05	0.01 U	0.0009 J
Dissolved Cobalt †	mg/L		0.0001 J	0.0001 J
Dissolved Copper †	mg/L	**1.0	0.0003 J	0.002 U
Dissolved Iron	mg/L	**0.3	0.05 U	**0.68**
Dissolved Lead	mg/L	*0.05	0.001 U	0.001 U
Dissolved Manganese	mg/L	**0.05	**0.0729**	**0.085**
Dissolved Mercury	mg/L	*0.002	0.0005 U	0.0001 U
Dissolved Nickel †	mg/L		0.0002 J	0.0009 J
Dissolved Selenium †	mg/L	*0.01	0.005 U	0.001 U
Dissolved Vanadium †	mg/L		0.0005 J	0.0009 J
Dissolved Zinc	mg/L	**5.0	0.05 U	0.0025 U
Total Calcium	mg/L		31.7	29.8
Total Magnesium †	mg/L		30.3	26.2
Total Potassium †	mg/L		5.3	4.3
Total Sodium	mg/L		15.8	13

Groundwater Quality Criteria:

* = Primary Contaminant
** = Secondary Contaminant
*** = Carcinogen

Units:

mg/L = milligrams per liter
µg/L = micrograms per liter
SU = standard units
µS/cm = microsiemens per centimeter
C = degrees centigrade
mg $CaCO_3$/L = milligrams of calcium carbonate per liter

Qualifiers:

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NT — Not tested.

Results shown in **bold** exceed Ground Water Quality Criteria.

† Indicates supplement analytes measured due to Ecology request

2023 Volatile Organic Compound Monitoring Results
Inman Landfill

AQUIFER			Regional		
MONITORING WELL Sampling Date			B-1 4/21/2023	B-1 9/7/2023	B-1 1/24/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
1,1,1,2-tetrachloroethane	µg/L		0.5 U	0.4 U	0.4 U
1,1,1-trichloroethane	µg/L	200*	0.5 U	0.4 U	0.4 U
1,1,2,2-tetrachloroethane	µg/L		0.5 U	0.4 U	0.4 U
1,1,2-trichloroethane	µg/L		0.5 U	0.4 U	0.4 U
1,1,2-trichlorofluorotoluene (Freon-113)	µg/L		NT	0.4 U	0.4 U
1,1-dichloroethane	µg/L	1.0***	0.5 U	0.4 U	0.4 U
1,1-dichloroethene	µg/L	7****	0.5 U	0.4 U	0.4 U
1,1-dichloropropene	µg/L		0.5 U	0.4 U	0.4 U
1,2,3-trichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2,3-trichloropropane	µg/L		0.5 U	0.4 U	0.4 U
1,2,4-trichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2,4-trimethylbenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2-dibromo-3-chloropropane (DBCP)	µg/L	0.2****	0.5 U	1 U	1 U
1,2-dibromoethane (EDB)	µg/L	0.001***	0.01 U	0.01 U	0.01 U
1,2-dichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2-dichloroethane	µg/L	0.5***	0.5 U	0.4 U	0.4 U
1,2-dichloropropane	µg/L	0.6***	0.5 U	0.4 U	0.4 U
1,3,5-trimethylbenzene	µg/L		0.5 U	0.4 U	0.4 U
1,3-dichloropropane	µg/L		0.5 U	0.4 U	0.4 U
1,4-dichlorobenzene	µg/L	4***	0.5 U	0.4 U	0.4 U
1,4-dioxane	µg/L	7***	1.58	5 U	4.2 J
2,2-dichloropropane	µg/L		0.5 U	0.4 U	0.4 U
2-butanone	µg/L		2.5 U	3 U	3 U
2-chloroethyl vinyl ether	µg/L		1 U	5 U	5 U
2-chlorotoluene	µg/L		0.5 U	0.4 U	0.4 U
2-nitropropane	µg/L		2.5 U	10 U	10 U
2-phenylbutane	µg/L		0.5 U	0.4 U	0.4 U
4-chlorotoluene	µg/L		0.5 U	0.4 U	0.4 U
4-methyl-2-pentanone	µg/L		2.5 U	4 U	4 U
Acetone	µg/L		2.5 U	3 U	3 U
Acrolein	µg/L		2.5 U	4 U	4 U
Acrylonitrile	µg/L	0.07***	0.02 U	0.05 U	0.05 U
Allyl chloride	µg/L		0.5 U	2 U	2 U
Benzene	µg/L	1.0***	0.5 U	0.4 U	0.4 U
Bromobenzene	µg/L		0.5 U	0.4 U	0.4 U
Bromodichloromethane	µg/L	0.3***	0.5 U	0.4 U	0.4 U
Bromomethane	µg/L		0.5 U	0.4 U	0.4 U
Carbon disulfide	µg/L		0.5 U	0.4 U	0.4 U
Carbon tetrachloride	µg/L	0.3***	0.5 U	0.4 U	0.4 U
Chlorobenzene	µg/L	100****	0.5 U	0.4 U	0.4 U
Chlorobromomethane	µg/L		0.5 U	0.4 U	0.4 U
Chlorodibromomethane	µg/L	0.5***	0.5 U	0.4 U	0.4 U
Chlorodifluoromethane (Freon-22)	µg/L		NT	1.3	2.2
Chloroethane	µg/L		0.5 U	0.4 U	0.4 U
Chloroform	µg/L	7.0***	0.5 U	0.4 U	0.4 U
Chloromethane	µg/L		0.5 U	0.4 U	0.4 U
cis-1,2-dichloroethene	µg/L	70****	0.5 U	0.4 U	0.4 U
cis-1,3-dichloropropene	µg/L		0.5 U	0.4 U	0.4 U
Cymene	µg/L		0.5 U	0.4 U	0.4 U
Dibromomethane	µg/L		0.5 U	0.4 U	0.4 U
Dichlorodifluoromethane (CFC-12)	µg/L		0.5 U	0.4 U	0.4 U
Dichloromethane	µg/L	5***	2.5 U	0.4 U	0.4 U
Dichloromonofluoromethane (Freon-21)	µg/L		NT	0.4 U	0.4 U
Diethyl ether	µg/L		0.5 U	0.4 U	0.4 U

2023 Volatile Organic Compound Monitoring Results
Inman Landfill

AQUIFER			Regional		
MONITORING WELL Sampling Date			B-1 4/21/2023	B-1 9/7/2023	B-1 1/24/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
Ethyl methacrylate	µg/L		1 U	3 U	3 U
Ethylbenzene	µg/L	700****	0.5 U	0.4 U	0.4 U
Hexachloro-1,3-butadiene	µg/L		0.5 U	0.4 U	0.4 U
Hexachloroethane	µg/L		0.5 U	0.4 U	0.4 U
Isopropylbenzene	µg/L		0.5 U	0.4 U	0.4 U
m-dichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
Methyl acrylate	µg/L		1 U	1.5 U	1.5 U
Methyl iodide	µg/L		0.5 U	5 U	5 U
Methyl methacrylate	µg/L		1 U	2 U	2 U
Methyl n-butyl ketone	µg/L		2.5 U	5 U	5 U
Methyl tert-butyl ether	µg/L		0.5 U	0.4 U	0.4 U
Methylacrylonitrile	µg/L		0.5 U	4 U	4 U
Naphthalene	µg/L		0.5 U	1 U	1 U
n-butyl chloride	µg/L		0.5 U	0.4 U	0.4 U
n-butylbenzene	µg/L		0.5 U	0.4 U	0.4 U
n-propylbenzene	µg/L		0.5 U	0.4 U	0.4 U
o-xylene	µg/L		0.5 U	0.4 U	0.4 U
Pentachloroethane	µg/L		0.5 U	0.4 U	0.4 U
Styrene (monomer)	µg/L	100****	0.5 U	0.4 U	0.4 U
Tert-butylbenzene	µg/L		0.5 U	0.4 U	0.4 U
Tetrachloroethene	µg/L	0.8***	0.5 U	0.4 U	0.4 U
Tetrahydrofuran	µg/L		0.5 U	3 U	3 U
Toluene	µg/L	1****	0.5 U	0.4 U	0.4 U
Trans-1,2-dichloroethene	µg/L	100****	0.5 U	0.4 U	0.4 U
Trans-1,3-dichloropropene	µg/L		0.5 U	0.4 U	0.4 U
Trans-1,4-dichlorobutene	µg/L		2.5 U	5 U	5 U
Tribromomethane (Bromoform)	µg/L	5***	0.5 U	0.4 U	0.4 U
Trichloroethene	µg/L	3***	0.5 U	0.4 U	0.4 U
Trichlorofluoromethane (CFC-11)	µg/L		0.5 U	0.4 U	0.4 U
Vinyl chloride	µg/L	0.02***	0.1 U	0.1 U	0.1 U

Groundwater Quality Criteria:

* = Primary Contaminant
** = Secondary Contaminant
*** = Carcinogen
**** = 246-290 WAC criteria

Units:

µg/L= micrograms per liter

Results shown in bold exceed Ground Water Quality Criteria.

Qualifiers:

U — Indicates the analyte of interest was not detected, to the limit of detection indicated.

J — Indicates the analyte of interest was detected below the routine reporting limit. This value should be regarded as an estimate.

NT — Not Tested

2023 Volatile Organic Compound Monitoring Results
Inman Landfill

AQUIFER			Regional		
MONITORING WELL Sampling Date			B-2 4/21/2023	B-2 9/25/2023	B-2 1/30/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
1,1,1,2-tetrachloroethane	µg/L		0.5 U	0.4 U	0.4 U
1,1,1-trichloroethane	µg/L	200*	0.5 U	0.4 U	0.4 U
1,1,2,2-tetrachloroethane	µg/L		0.5 U	0.4 U	0.4 U
1,1,2-trichloroethane	µg/L		0.5 U	0.4 U	0.4 U
1,1,2-trichlorofluorotoluene (Freon-113)	µg/L		NT	0.4 U	0.4 U
1,1-dichloroethane	µg/L	1.0***	0.5 U	0.4 U	0.4 U
1,1-dichloroethene	µg/L	7****	0.5 U	0.4 U	0.4 U
1,1-dichloropropene	µg/L		0.5 U	0.4 U	0.4 U
1,2,3-trichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2,3-trichloropropane	µg/L		0.5 U	0.4 U	0.4 U
1,2,4-trichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2,4-trimethylbenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2-dibromo-3-chloropropane (DBCP)	µg/L	0.2****	0.5 U	1 U	1 U
1,2-dibromoethane (EDB)	µg/L	0.001***	0.005 U	0.01 U	0.01 U
1,2-dichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2-dichloroethane	µg/L	0.5***	0.5 U	0.4 U	0.4 U
1,2-dichloropropane	µg/L	0.6***	0.5 U	0.4 U	0.4 U
1,3,5-trimethylbenzene	µg/L		0.5 U	0.4 U	0.4 U
1,3-dichloropropane	µg/L		0.5 U	0.4 U	0.4 U
1,4-dichlorobenzene	µg/L	4***	0.5 U	0.4 U	0.4 U
1,4-dioxane	µg/L	7***	0.25 U	5 U	5 U
2,2-dichloropropane	µg/L		0.5 U	0.4 U	0.4 U
2-butanone	µg/L		2.5 U	3 U	3 U
2-chloroethyl vinyl ether	µg/L		1 U	5 U	5 U
2-chlorotoluene	µg/L		0.5 U	0.4 U	0.4 U
2-nitropropane	µg/L		2.5 U	10 U	10 U
2-phenylbutane	µg/L		0.5 U	0.4 U	0.4 U
4-chlorotoluene	µg/L		0.5 U	0.4 U	0.4 U
4-methyl-2-pentanone	µg/L		2.5 U	4 U	4 U
Acetone	µg/L		2.5 U	3 U	3 U
Acrolein	µg/L		2.5 U	4 U	4 U
Acrylonitrile	µg/L	0.07***	0.005 U	0.05 U	0.05 U
Allyl chloride	µg/L		0.5 U	2 U	2 U
Benzene	µg/L	1.0***	0.5 U	0.4 U	0.4 U
Bromobenzene	µg/L		0.5 U	0.4 U	0.4 U
Bromodichloromethane	µg/L	0.3***	0.5 U	0.4 U	0.4 U
Bromomethane	µg/L		0.5 U	0.4 U	0.4 U
Carbon disulfide	µg/L		0.5 U	0.4 U	0.4 U
Carbon tetrachloride	µg/L	0.3***	0.5 U	0.4 U	0.4 U
Chlorobenzene	µg/L	100****	0.5 U	0.4 U	0.4 U
Chlorobromomethane	µg/L		0.5 U	0.4 U	0.4 U
Chlorodibromomethane	µg/L	0.5***	0.5 U	0.4 U	0.4 U
Chlorodifluoromethane (Freon-22)	µg/L		NT	0.5 U	0.5 U
Chloroethane	µg/L		0.5 U	0.4 U	0.4 U
Chloroform	µg/L	7.0***	0.5 U	0.4 U	0.4 U
Chloromethane	µg/L		0.5 U	0.4 U	0.4 U
cis-1,2-dichloroethene	µg/L	70****	0.5 U	0.4 U	0.4 U
cis-1,3-dichloropropene	µg/L		0.5 U	0.4 U	0.4 U
Cymene	µg/L		0.5 U	0.4 U	0.4 U
Dibromomethane	µg/L		0.5 U	0.4 U	0.4 U
Dichlorodifluoromethane (CFC-12)	µg/L		0.5 U	0.9	0.7
Dichloromethane	µg/L	5***	2.5 U	0.4 U	0.4 U
Dichloromonofluoromethane (Freon-21)	µg/L		NT	0.4 U	0.4 U
Diethyl ether	µg/L		1 U	0.4 U	0.4 U

2023 Volatile Organic Compound Monitoring Results
Inman Landfill

AQUIFER			Regional		
MONITORING WELL Sampling Date			B-2 4/21/2023	B-2 9/25/2023	B-2 1/30/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
Ethyl methacrylate	µg/L		1 U	3 U	3 U
Ethylbenzene	µg/L	700****	0.5 U	0.4 U	0.4 U
Hexachloro-1,3-butadiene	µg/L		0.5 U	0.4 U	0.4 U
Hexachloroethane	µg/L		0.5 U	0.4 U	0.4 U
Isopropylbenzene	µg/L		0.5 U	0.4 U	0.4 U
m-dichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
Methyl acrylate	µg/L		1 U	1.5 U	1.5 U
Methyl iodide	µg/L		1 U	5 U	5 U
Methyl methacrylate	µg/L		1 U	2 U	2 U
Methyl n-butyl ketone	µg/L		2.5 U	5 U	5 U
Methyl tert-butyl ether	µg/L		0.5 U	0.4 U	0.4 U
Methylacrylonitrile	µg/L		1 U	4 U	4 U
Naphthalene	µg/L		0.5 U	1 U	1 U
n-butyl chloride	µg/L		0.5 U	0.4 U	0.4 U
n-butylbenzene	µg/L		0.5 U	0.4 U	0.4 U
n-propylbenzene	µg/L		0.5 U	0.4 U	0.4 U
o-xylene	µg/L		0.5 U	0.4 U	0.4 U
Pentachloroethane	µg/L		0.5 U	0.4 U	0.4 U
Styrene (monomer)	µg/L	100****	0.5 U	0.4 U	0.4 U
Tert-butylbenzene	µg/L		0.5 U	0.4 U	0.4 U
Tetrachloroethene	µg/L	0.8***	0.5 U	0.4 U	0.4 U
Tetrahydrofuran	µg/L		0.5 U	3 U	3 U
Toluene	µg/L	1****	0.5 U	0.4 U	0.4 U
Trans-1,2-dichloroethene	µg/L	100****	0.5 U	0.4 U	0.4 U
Trans-1,3-dichloropropene	µg/L		0.5 U	0.4 U	0.4 U
Trans-1,4-dichlorobutene	µg/L		2.5 U	5 U	5 U
Tribromomethane (Bromoform)	µg/L	5***	0.5 U	0.4 U	0.4 U
Trichloroethene	µg/L	3***	0.5 U	0.4 U	0.4 U
Trichlorofluoromethane (CFC-11)	µg/L		0.5 U	0.4 U	0.4 U
Vinyl chloride	µg/L	0.02***	0.005 U	0.01 U	0.01 U

Groundwater Quality Criteria:

* = Primary Contaminant
** = Secondary Contaminant
*** = Carcinogen
**** = 246-290 WAC criteria

Units:

µg/L= micrograms per liter

Results shown in bold exceed Ground Water Quality Criteria.

Qualifiers:

U — Indicates the analyte of interest was not detected, to the limit of detection indicated.

J — Indicates the analyte of interest was detected below the routine reporting limit. This value should be regarded as an estimate.

NT — Not Tested

2023 Volatile Organic Compound Monitoring Results
Inman Landfill

AQUIFER			Regional		
MONITORING WELL Sampling Date			B-3 4/25/2023	B-3 9/19/2023	B-3 1/30/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
1,1,1,2-tetrachloroethane	µg/L		0.4 U	0.4 U	0.4 U
1,1,1-trichloroethane	µg/L	200*	0.4 U	0.4 U	0.4 U
1,1,2,2-tetrachloroethane	µg/L		0.4 U	0.4 U	0.4 U
1,1,2-trichloroethane	µg/L		0.4 U	0.4 U	0.4 U
1,1,2-trichlorofluorotoluene (Freon-113)	µg/L		NT	0.4 U	0.4 U
1,1-dichloroethane	µg/L	1.0***	0.4 U	0.4 U	0.4 U
1,1-dichloroethene	µg/L	7****	0.4 U	0.4 U	0.4 U
1,1-dichloropropene	µg/L		0.4 U	0.4 U	0.4 U
1,2,3-trichlorobenzene	µg/L		0.4 U	0.4 U	0.4 U
1,2,3-trichloropropane	µg/L		0.4 U	0.4 U	0.4 U
1,2,4-trichlorobenzene	µg/L		0.4 U	0.4 U	0.4 U
1,2,4-trimethylbenzene	µg/L		0.4 U	0.4 U	0.4 U
1,2-dibromo-3-chloropropane (DBCP)	µg/L	0.2****	0.5 U	1 U	1 U
1,2-dibromoethane (EDB)	µg/L	0.001***	.02 U	0.01 U	0.01 U
1,2-dichlorobenzene	µg/L		0.4 U	0.4 U	0.4 U
1,2-dichloroethane	µg/L	0.5***	0.4 U	0.4 U	0.4 U
1,2-dichloropropane	µg/L	0.6***	0.4 U	0.4 U	0.4 U
1,3,5-trimethylbenzene	µg/L		0.4 U	0.4 U	0.4 U
1,3-dichloropropane	µg/L		0.4 U	0.4 U	0.4 U
1,4-dichlorobenzene	µg/L	4***	0.4 U	0.4 U	0.4 U
1,4-dioxane	µg/L	7***	0.46	5 U	4.3 J
2,2-dichloropropane	µg/L		0.4 U	0.4 U	0.4 U
2-butanone	µg/L		2 U	3 U	3 U
2-chloroethyl vinyl ether	µg/L		1 U	5 U	5 U
2-chlorotoluene	µg/L		0.4 U	0.4 U	0.4 U
2-nitropropane	µg/L		2.5 U	10 U	10 U
2-phenylbutane	µg/L		0.4 U	0.4 U	0.4 U
4-chlorotoluene	µg/L		0.4 U	0.4 U	0.4 U
4-methyl-2-pentanone	µg/L		2.5 U	4 U	4 U
Acetone	µg/L		2.5 U	3 U	3 U
Acrolein	µg/L		0.5 U	4 U	4 U
Acrylonitrile	µg/L	0.07***	0.1 U	0.05 U	0.108 U
Allyl chloride	µg/L		0.5 U	2 U	2 U
Benzene	µg/L	1.0***	0.4 U	0.4 U	0.4 U
Bromobenzene	µg/L		0.4 U	0.4 U	0.4 U
Bromodichloromethane	µg/L	0.3***	0.4 U	0.4 U	0.4 U
Bromomethane	µg/L		0.4 U	0.4 U	0.4 U
Carbon disulfide	µg/L		0.4 U	0.4 U	0.4 U
Carbon tetrachloride	µg/L	0.3***	0.4 U	0.4 U	0.4 U
Chlorobenzene	µg/L	100****	0.4 U	0.4 U	0.4 U
Chlorobromomethane	µg/L		0.4 U	0.4 U	0.4 U
Chlorodibromomethane	µg/L	0.5***	0.4 U	0.4 U	0.4 U
Chlorodifluoromethane (Freon-22)	µg/L		NT	0.5 U	1.1
Chloroethane	µg/L		0.4 U	0.4 U	0.4 U
Chloroform	µg/L	7.0***	0.4 U	0.4 U	0.4 U
Chloromethane	µg/L		0.4 U	0.4 U	0.4 U
cis-1,2-dichloroethene	µg/L	70****	0.4 U	0.4 U	0.4 U
cis-1,3-dichloropropene	µg/L		0.4 U	0.4 U	0.4 U
Cymene	µg/L		0.4 U	0.4 U	0.4 U
Dibromomethane	µg/L		0.4 U	0.4 U	0.4 U
Dichlorodifluoromethane (CFC-12)	µg/L		0.4 U	0.4 U	0.4 U
Dichloromethane	µg/L	5***	0.4 U	0.4 U	0.4 U
Dichloromonofluoromethane (Freon-21)	µg/L		NT	0.4 U	0.5
Diethyl ether	µg/L		0.4 U	0.4 U	2.1

2023 Volatile Organic Compound Monitoring Results
Inman Landfill

AQUIFER			Regional		
MONITORING WELL Sampling Date			B-3 4/25/2023	B-3 9/19/2023	B-3 1/30/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
Ethyl methacrylate	µg/L		1 U	3 U	3 U
Ethylbenzene	µg/L	700****	0.4 U	0.4 U	0.4 U
Hexachloro-1,3-butadiene	µg/L		0.4 U	0.4 U	0.4 U
Hexachloroethane	µg/L		0.4 U	0.4 U	0.4 U
Isopropylbenzene	µg/L		0.4 U	0.4 U	0.4 U
m-dichlorobenzene	µg/L		0.4 U	0.4 U	0.4 U
Methyl acrylate	µg/L		0.8 U	1.5 U	1.5 U
Methyl iodide	µg/L		0.5 U	5 U	5 U
Methyl methacrylate	µg/L		1 U	2 U	2 U
Methyl n-butyl ketone	µg/L		2.5 U	5 U	5 U
Methyl tert-butyl ether	µg/L		0.5 U	0.4 U	0.4
Methylacrylonitrile	µg/L		1 U	4 U	4 U
Naphthalene	µg/L		0.5 U	1 U	1 U
n-butyl chloride	µg/L		0.4 U	0.4 U	0.4 U
n-butylbenzene	µg/L		0.4 U	0.4 U	0.4 U
n-propylbenzene	µg/L		0.4 U	0.4 U	0.4 U
o-xylene	µg/L		0.4 U	0.4 U	0.4 U
Pentachloroethane	µg/L		0.4 U	0.4 U	0.4 U
Styrene (monomer)	µg/L	100****	0.4 U	0.4 U	0.4 U
Tert-butylbenzene	µg/L		0.4 U	0.4 U	0.4 U
Tetrachloroethene	µg/L	0.8***	0.4 U	0.4 U	0.4 U
Tetrahydrofuran	µg/L		0.5 U	3 U	2.5 J
Toluene	µg/L	1****	0.4 U	0.4 U	0.4 U
Trans-1,2-dichloroethene	µg/L	100****	0.4 U	0.4 U	0.4 U
Trans-1,3-dichloropropene	µg/L		0.4 U	0.4 U	0.4 U
Trans-1,4-dichlorobutene	µg/L		1 U	5 U	5 U
Tribromomethane (Bromoform)	µg/L	5***	0.4 U	0.4 U	0.4 U
Trichloroethene	µg/L	3***	0.4 U	0.4 U	0.4 U
Trichlorofluoromethane (CFC-11)	µg/L		0.4 U	0.4 U	0.4 U
Vinyl chloride	µg/L	0.02***	.02 U	0.01 U	**0.086**

Groundwater Quality Criteria:

* = Primary Contaminant
** = Secondary Contaminant
*** = Carcinogen
**** = 246-290 WAC criteria

Units:

µg/L= micrograms per liter

Results shown in bold exceed Ground Water Quality Criteria.

Qualifiers:

U	Indicates the analyte of interest was not detected, to the limit of detection indicated.
J	Indicates the analyte of interest was detected below the routine reporting limit. This value should be regarded as an estimate.
NT	Not Tested

2023 Volatile Organic Compound Monitoring Results
Inman Landfill

AQUIFER			Regional		
MONITORING WELL Sampling Date			B-4 4/24/2023	B-4 9/20/2023	B-4 1/30/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
1,1,1,2-tetrachloroethane	µg/L		0.5 U	0.4 U	0.4 U
1,1,1-trichloroethane	µg/L	200*	0.5 U	0.4 U	0.4 U
1,1,2,2-tetrachloroethane	µg/L		0.5 U	0.4 U	0.4 U
1,1,2-trichloroethane	µg/L		0.5 U	0.4 U	0.4 U
1,1,2-trichlorofluorotoluene (Freon-113)	µg/L		NT	0.4 U	0.4 U
1,1-dichloroethane	µg/L	1.0***	0.5 U	0.4 U	0.4 U
1,1-dichloroethene	µg/L	7****	0.5 U	0.4 U	0.4 U
1,1-dichloropropene	µg/L		0.5 U	0.4 U	0.4 U
1,2,3-trichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2,3-trichloropropane	µg/L		0.5 U	0.4 U	0.4 U
1,2,4-trichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2,4-trimethylbenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2-dibromo-3-chloropropane (DBCP)	µg/L	0.2****	0.01 U	1 U	1 U
1,2-dibromoethane (EDB)	µg/L	0.001***	0.01 U	0.01 U	0.01 U
1,2-dichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2-dichloroethane	µg/L	0.5***	0.5 U	0.4 U	0.4 U
1,2-dichloropropane	µg/L	0.6***	0.5 U	0.4 U	0.4 U
1,3,5-trimethylbenzene	µg/L		0.5 U	0.4 U	0.4 U
1,3-dichloropropane	µg/L		0.5 U	0.4 U	0.4 U
1,4-dichlorobenzene	µg/L	4***	0.5 U	0.4 U	0.4 U
1,4-dioxane	µg/L	7***	0.25 U	5 U	5 U
2,2-dichloropropane	µg/L		0.5 U	0.4 U	0.4 U
2-butanone	µg/L		2.5 U	3 U	3 U
2-chloroethyl vinyl ether	µg/L		1 U	5 U	5 U
2-chlorotoluene	µg/L		0.5 U	0.4 U	0.4 U
2-nitropropane	µg/L		2.5 U	10 U	10 U
2-phenylbutane	µg/L		0.5 U	0.4 U	0.4 U
4-chlorotoluene	µg/L		0.5 U	0.4 U	0.4 U
4-methyl-2-pentanone	µg/L		0.5 U	4 U	4 U
Acetone	µg/L		2.5 U	3 U	3 U
Acrolein	µg/L		1 U	4 U	4 U
Acrylonitrile	µg/L	0.07***	0.01 U	0.05 U	0.05 U
Allyl chloride	µg/L		0.5 U	2 U	2 U
Benzene	µg/L	1.0***	0.5 U	0.4 U	0.4 U
Bromobenzene	µg/L		0.5 U	0.4 U	0.4 U
Bromodichloromethane	µg/L	0.3***	0.5 U	0.4 U	0.4 U
Bromomethane	µg/L		0.5 U	0.4 U	0.4 U
Carbon disulfide	µg/L		0.5 U	0.4 U	0.4 U
Carbon tetrachloride	µg/L	0.3***	0.5 U	0.4 U	0.4 U
Chlorobenzene	µg/L	100****	0.5 U	0.4 U	0.4 U
Chlorobromomethane	µg/L		0.5 U	0.4 U	0.4 U
Chlorodibromomethane	µg/L	0.5***	0.5 U	0.4 U	0.4 U
Chlorodifluoromethane (Freon-22)	µg/L		NT	3.9	2.8
Chloroethane	µg/L		0.5 U	0.4 U	0.4 U
Chloroform	µg/L	7.0***	0.5 U	0.4 U	0.4 U
Chloromethane	µg/L		0.5 U	0.4 U	0.4 U
cis-1,2-dichloroethene	µg/L	70****	0.5 U	0.4 U	0.4 U
cis-1,3-dichloropropene	µg/L		0.5 U	0.4 U	0.4 U
Cymene	µg/L		0.5 U	0.4 U	0.4 U
Dibromomethane	µg/L		0.5 U	0.4 U	0.4 U
Dichlorodifluoromethane (CFC-12)	µg/L		0.5 U	0.4 U	0.4 U
Dichloromethane	µg/L	5***	2.5 U	0.4 U	0.4 U
Dichloromonofluoromethane (Freon-21)	µg/L		NT	0.4 U	0.4 U
Diethyl ether	µg/L		1 U	0.4 U	0.4 U

2023 Volatile Organic Compound Monitoring Results
Inman Landfill

AQUIFER			Regional		
MONITORING WELL Sampling Date			B-4 4/24/2023	B-4 9/20/2023	B-4 1/30/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
Ethyl methacrylate	µg/L		1 U	3 U	3 U
Ethylbenzene	µg/L	700****	0.5 U	0.4 U	0.4 U
Hexachloro-1,3-butadiene	µg/L		0.5 U	0.4 U	0.4 U
Hexachloroethane	µg/L		0.5 U	0.4 U	0.4 U
Isopropylbenzene	µg/L		0.5 U	0.4 U	0.4 U
m-dichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
Methyl acrylate	µg/L		1 U	1.5 U	1.5 U
Methyl iodide	µg/L		1 U	5 U	5 U
Methyl methacrylate	µg/L		1 U	2 U	2 U
Methyl n-butyl ketone	µg/L		2.5 U	5 U	5 U
Methyl tert-butyl ether	µg/L		0.5 U	0.4 U	0.4 U
Methylacrylonitrile	µg/L		1 U	4 U	4 U
Naphthalene	µg/L		0.5 U	1 U	1 U
n-butyl chloride	µg/L		0.5 U	0.4 U	0.4 U
n-butylbenzene	µg/L		0.5 U	0.4 U	0.4 U
n-propylbenzene	µg/L		0.5 U	0.4 U	0.4 U
o-xylene	µg/L		0.5 U	0.4 U	0.4 U
Pentachloroethane	µg/L		0.5 U	0.4 U	0.4 U
Styrene (monomer)	µg/L	100****	0.5 U	0.4 U	0.4 U
Tert-butylbenzene	µg/L		0.5 U	0.4 U	0.4 U
Tetrachloroethene	µg/L	0.8***	0.5 U	0.4 U	0.4 U
Tetrahydrofuran	µg/L		0.5 U	3 U	3 U
Toluene	µg/L	1****	0.5 U	0.4 U	0.4 U
Trans-1,2-dichloroethene	µg/L	100****	0.5 U	0.4 U	0.4 U
Trans-1,3-dichloropropene	µg/L		0.5 U	0.4 U	0.4 U
Trans-1,4-dichlorobutene	µg/L		2.5 U	5 U	5 U
Tribromomethane (Bromoform)	µg/L	5***	0.5 U	0.4 U	0.4 U
Trichloroethene	µg/L	3***	0.5 U	0.4 U	0.4 U
Trichlorofluoromethane (CFC-11)	µg/L		0.5 U	0.4 U	0.4 U
Vinyl chloride	µg/L	0.02***	0.01 U	0.01 U	0.012

Groundwater Quality Criteria:

* = Primary Contaminant
** = Secondary Contaminant
*** = Carcinogen
**** = 246-290 WAC criteria

Units:

µg/L= micrograms per liter

Results shown in bold exceed Ground Water Quality Criteria.

Qualifiers:

U — Indicates the analyte of interest was not detected, to the limit of detection indicated.

J — Indicates the analyte of interest was detected below the routine reporting limit. This value should be regarded as an estimate.

NT — Not Tested

2023 Volatile Organic Compound Monitoring Results
Inman Landfill

AQUIFER			Regional		
MONITORING WELL Sampling Date			B-5 6/1/2023	B-5 9/8/2023	B-5 1/31/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
1,1,1,2-tetrachloroethane	µg/L		0.5 U	0.4 U	0.4 U
1,1,1-trichloroethane	µg/L	200*	0.5 U	0.4 U	0.4 U
1,1,2,2-tetrachloroethane	µg/L		0.5 U	0.4 U	0.4 U
1,1,2-trichloroethane	µg/L		0.5 U	0.4 U	0.4 U
1,1,2-trichlorofluorotoluene (Freon-113)	µg/L		NT	0.4 U	0.4 U
1,1-dichloroethane	µg/L	1.0***	0.5 U	0.4 U	0.4 U
1,1-dichloroethene	µg/L	7****	0.5 U	0.4 U	0.4 U
1,1-dichloropropene	µg/L		0.5 U	0.4 U	0.4 U
1,2,3-trichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2,3-trichloropropane	µg/L		0.5 U	0.4 U	0.4 U
1,2,4-trichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2,4-trimethylbenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2-dibromo-3-chloropropane (DBCP)	µg/L	0.2****	0.5 U	1 U	1 U
1,2-dibromoethane (EDB)	µg/L	0.001***	0.02 U	0.01 U	0.01 U
1,2-dichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2-dichloroethane	µg/L	0.5***	0.5 U	0.4 U	0.4 U
1,2-dichloropropane	µg/L	0.6***	0.5 U	0.4 U	0.4 U
1,3,5-trimethylbenzene	µg/L		0.5 U	0.4 U	0.4 U
1,3-dichloropropane	µg/L		0.5 U	0.4 U	0.4 U
1,4-dichlorobenzene	µg/L	4***	0.5 U	0.4 U	0.4 U
1,4-dioxane	µg/L	7***	4.39	6.5	6.1
2,2-dichloropropane	µg/L		0.5 U	0.4 U	0.4 U
2-butanone	µg/L		2.5 U	3 U	3 U
2-chloroethyl vinyl ether	µg/L		1 U	5 U	5 U
2-chlorotoluene	µg/L		0.5 U	0.4 U	0.4 U
2-nitropropane	µg/L		2.5 U	10 U	10 U
2-phenylbutane	µg/L		0.5 U	0.4 U	0.4 U
4-chlorotoluene	µg/L		0.5 U	0.4 U	0.4 U
4-methyl-2-pentanone	µg/L		2.5 U	4 U	4 U
Acetone	µg/L		2.5 U	3 U	3 U
Acrolein	µg/L		2.5 U	4 U	4 U
Acrylonitrile	µg/L	0.07***	0.05 U	0.05 U	0.05 U
Allyl chloride	µg/L		0.5 U	2 U	2 U
Benzene	µg/L	1.0***	0.5 U	0.4 U	0.4 U
Bromobenzene	µg/L		0.5 U	0.4 U	0.4 U
Bromodichloromethane	µg/L	0.3***	0.5 U	0.4 U	0.4 U
Bromomethane	µg/L		0.5 U	0.4 U	0.4 U
Carbon disulfide	µg/L		0.5 U	0.4 U	0.4 U
Carbon tetrachloride	µg/L	0.3***	0.5 U	0.4 U	0.4 U
Chlorobenzene	µg/L	100****	0.5 U	0.4 U	0.4 U
Chlorobromomethane	µg/L		0.5 U	0.4 U	0.4 U
Chlorodibromomethane	µg/L	0.5***	0.5 U	0.4 U	0.4 U
Chlorodifluoromethane (Freon-22)	µg/L		NT	0.8	0.5
Chloroethane	µg/L		0.5 U	0.4 U	0.4 U
Chloroform	µg/L	7.0***	0.5 U	0.4 U	0.4 U
Chloromethane	µg/L		0.5 U	0.4 U	0.4
cis-1,2-dichloroethene	µg/L	70****	0.5 U	0.4 U	0.4 U
cis-1,3-dichloropropene	µg/L		0.5 U	0.4 U	0.4 U
Cymene	µg/L		0.5 U	0.4 U	0.4 U
Dibromomethane	µg/L		0.5 U	0.4 U	0.4 U
Dichlorodifluoromethane (CFC-12)	µg/L		0.5 U	0.4 U	0.4 U
Dichloromethane	µg/L	5***	2.5 U	0.4 U	0.4 U
Dichloromonofluoromethane (Freon-21)	µg/L		NT	0.4	0.4 U
Diethyl ether	µg/L		4.46	4	2.2

2023 Volatile Organic Compound Monitoring Results
Inman Landfill

AQUIFER			Regional		
MONITORING WELL Sampling Date			B-5 6/1/2023	B-5 9/8/2023	B-5 1/31/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
Ethyl methacrylate	µg/L		1 U	3 U	3 U
Ethylbenzene	µg/L	700****	0.5 U	0.4 U	0.4 U
Hexachloro-1,3-butadiene	µg/L		0.5 U	0.4 U	0.4 U
Hexachloroethane	µg/L		0.5 U	0.4 U	0.4 U
Isopropylbenzene	µg/L		0.5 U	0.4 U	0.4 U
m-dichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
Methyl acrylate	µg/L		1 U	1.5 U	1.5 U
Methyl iodide	µg/L		0.5 U	5 U	5 U
Methyl methacrylate	µg/L		1 U	2 U	2 U
Methyl n-butyl ketone	µg/L		2.5 U	5 U	5 U
Methyl tert-butyl ether	µg/L		0.5 U	0.4 U	0.4 U
Methylacrylonitrile	µg/L		1 U	4 U	4 U
Naphthalene	µg/L		0.5 U	1 U	1 U
n-butyl chloride	µg/L		0.5 U	0.4 U	0.4 U
n-butylbenzene	µg/L		0.5 U	0.4 U	0.4 U
n-propylbenzene	µg/L		0.5 U	0.4 U	0.4 U
o-xylene	µg/L		0.02 U	0.4 U	0.4 U
Pentachloroethane	µg/L		0.5 U	0.4 U	0.4 U
Styrene (monomer)	µg/L	100****	0.5 U	0.4 U	0.4 U
Tert-butylbenzene	µg/L		0.5 U	0.4 U	0.4 U
Tetrachloroethene	µg/L	0.8***	0.5 U	0.4 U	0.4 U
Tetrahydrofuran	µg/L		5.26	3.3	3.8
Toluene	µg/L	1****	0.5 U	0.4 U	0.4 U
Trans-1,2-dichloroethene	µg/L	100****	0.5 U	0.4 U	0.4 U
Trans-1,3-dichloropropene	µg/L		0.5 U	0.4 U	0.4 U
Trans-1,4-dichlorobutene	µg/L		2.5 U	5 U	5 U
Tribromomethane (Bromoform)	µg/L	5***	0.5 U	0.4 U	0.4 U
Trichloroethene	µg/L	3***	0.5 U	0.4 U	0.4 U
Trichlorofluoromethane (CFC-11)	µg/L		0.5 U	0.4 U	0.4 U
Vinyl chloride	µg/L	0.02***	**0.06**	**0.122**	**0.087**

Groundwater Quality Criteria:

* = Primary Contaminant
** = Secondary Contaminant
*** = Carcinogen
**** = 246-290 WAC criteria

Units:

µg/L= micrograms per liter

Results shown in bold exceed Ground Water Quality Criteria.

Qualifiers:

U — Indicates the analyte of interest was not detected, to the limit of detection indicated.

J — Indicates the analyte of interest was detected below the routine reporting limit. This value should be regarded as an estimate.

NT — Not Tested

2023 Volatile Organic Compound Monitoring Results
Inman Landfill

AQUIFER			Regional		
MONITORING WELL Sampling Date			B-10 4/28/2023	B-10 9/19/2023	B-10 1/24/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
1,1,1,2-tetrachloroethane	µg/L		0.5 U	0.4 U	0.4 U
1,1,1-trichloroethane	µg/L	200*	0.5 U	0.4 U	0.4 U
1,1,2,2-tetrachloroethane	µg/L		0.5 U	0.4 U	0.4 U
1,1,2-trichloroethane	µg/L		0.5 U	0.4 U	0.4 U
1,1,2-trichlorofluorotoluene (Freon-113)	µg/L		NT	0.4 U	0.4 U
1,1-dichloroethane	µg/L	1.0***	0.5 U	0.4 U	0.4 U
1,1-dichloroethene	µg/L	7****	0.5 U	0.4 U	0.4 U
1,1-dichloropropene	µg/L		0.5 U	0.4 U	0.4 U
1,2,3-trichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2,3-trichloropropane	µg/L		0.5 U	0.4 U	0.4 U
1,2,4-trichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2,4-trimethylbenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2-dibromo-3-chloropropane (DBCP)	µg/L	0.2****	0.01 U	1 U	1 U
1,2-dibromoethane (EDB)	µg/L	0.001***	0.01 U	0.01 U	0.01 U
1,2-dichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
1,2-dichloroethane	µg/L	0.5***	0.5 U	0.4 U	0.4 U
1,2-dichloropropane	µg/L	0.6***	0.5 U	0.4 U	0.4 U
1,3,5-trimethylbenzene	µg/L		0.5 U	0.4 U	0.4 U
1,3-dichloropropane	µg/L		0.5 U	0.4 U	0.4 U
1,4-dichlorobenzene	µg/L	4***	0.5 U	0.4 U	0.4 U
1,4-dioxane	µg/L	7***	0.25 U	5 U	5 U
2,2-dichloropropane	µg/L		0.5 U	0.4 U	0.4 U
2-butanone	µg/L		2.5 U	3 U	3 U
2-chloroethyl vinyl ether	µg/L		1 U	5 U	5 U
2-chlorotoluene	µg/L		0.5 U	0.4 U	0.4 U
2-nitropropane	µg/L		2.5 U	10 U	10 U
2-phenylbutane	µg/L		0.5 U	0.4 U	0.4 U
4-chlorotoluene	µg/L		0.5 U	0.4 U	0.4 U
4-methyl-2-pentanone	µg/L		2.5 U	4 U	4 U
Acetone	µg/L		2.5 U	3 U	3 U
Acrolein	µg/L		0.5 U	4 U	4 U
Acrylonitrile	µg/L	0.07***	0.05 U	0.05 U	0.05 U
Allyl chloride	µg/L		0.5 U	2 U	2 U
Benzene	µg/L	1.0***	0.5 U	0.4 U	0.4 U
Bromobenzene	µg/L		0.5 U	0.4 U	0.4 U
Bromodichloromethane	µg/L	0.3***	0.5 U	0.4 U	0.4 U
Bromomethane	µg/L		0.5 U	0.4 U	0.4 U
Carbon disulfide	µg/L		0.5 U	0.4 U	0.4 U
Carbon tetrachloride	µg/L	0.3***	0.5 U	0.4 U	0.4 U
Chlorobenzene	µg/L	100****	0.5 U	0.4 U	0.4 U
Chlorobromomethane	µg/L		0.5 U	0.4 U	0.4 U
Chlorodibromomethane	µg/L	0.5***	0.5 U	0.4 U	0.4 U
Chlorodifluoromethane (Freon-22)	µg/L		NT	0.5 U	0.5 U
Chloroethane	µg/L		0.5 U	0.4 U	0.4 U
Chloroform	µg/L	7.0***	0.5 U	0.4 U	0.4 U
Chloromethane	µg/L		1 U	0.4 U	0.4 U
cis-1,2-dichloroethene	µg/L	70****	0.5 U	0.4 U	0.4 U
cis-1,3-dichloropropene	µg/L		0.5 U	0.4 U	0.4 U
Cymene	µg/L		0.5 U	0.4 U	0.4 U
Dibromomethane	µg/L		0.5 U	0.4 U	0.4 U
Dichlorodifluoromethane (CFC-12)	µg/L		0.5 U	0.4 U	0.4 U
Dichloromethane	µg/L	5***	2.5 U	0.4 U	0.4 U
Dichloromonofluoromethane (Freon-21)	µg/L		NT	0.4 U	0.4 U
Diethyl ether	µg/L		0.5 U	0.4 U	0.4 U

2023 Volatile Organic Compound Monitoring Results
Inman Landfill

AQUIFER			Regional		
MONITORING WELL Sampling Date			B-10 4/28/2023	B-10 9/19/2023	B-10 1/24/2024
Analyte	Units	GW Quality Standards (173-200 WAC)			
Ethyl methacrylate	µg/L		1 U	3 U	3 U
Ethylbenzene	µg/L	700****	0.5 U	0.4 U	0.4 U
Hexachloro-1,3-butadiene	µg/L		0.5 U	0.4 U	0.4 U
Hexachloroethane	µg/L		0.5 U	0.4 U	0.4 U
Isopropylbenzene	µg/L		0.5 U	0.4 U	0.4 U
m-dichlorobenzene	µg/L		0.5 U	0.4 U	0.4 U
Methyl acrylate	µg/L		1 U	1.5 U	1.5 U
Methyl iodide	µg/L		0.5 U	5 U	5 U
Methyl methacrylate	µg/L		1 U	2 U	2 U
Methyl n-butyl ketone	µg/L		2.5 U	5 U	5 U
Methyl tert-butyl ether	µg/L		0.5 U	0.4 U	0.4 U
Methylacrylonitrile	µg/L		1 U	4 U	4 U
Naphthalene	µg/L		0.5 U	1 U	1 U
n-butyl chloride	µg/L		0.5 U	0.4 U	0.4 U
n-butylbenzene	µg/L		0.5 U	0.4 U	0.4 U
n-propylbenzene	µg/L		0.5 U	0.4 U	0.4 U
o-xylene	µg/L		0.5 U	0.4 U	0.4 U
Pentachloroethane	µg/L		0.5 U	0.4 U	0.4 U
Styrene (monomer)	µg/L	100****	0.5 U	0.4 U	0.4 U
Tert-butylbenzene	µg/L		0.5 U	0.4 U	0.4 U
Tetrachloroethene	µg/L	0.8***	0.5 U	0.4 U	0.4 U
Tetrahydrofuran	µg/L		0.5 U	3 U	3 U
Toluene	µg/L	1****	0.5 U	0.4 U	0.4 U
Trans-1,2-dichloroethene	µg/L	100****	0.5 U	0.4 U	0.4 U
Trans-1,3-dichloropropene	µg/L		0.5 U	0.4 U	0.4 U
Trans-1,4-dichlorobutene	µg/L		0.5 U	5 U	5 U
Tribromomethane (Bromoform)	µg/L	5***	0.5 U	0.4 U	0.4 U
Trichloroethene	µg/L	3***	0.5 U	0.4 U	0.4 U
Trichlorofluoromethane (CFC-11)	µg/L		0.5 U	0.4 U	0.4 U
Vinyl chloride	µg/L	0.02***	0.1 U	0.1 U	0.1 U

Groundwater Quality Criteria:

* = Primary Contaminant
** = Secondary Contaminant
*** = Carcinogen
**** = 246-290 WAC criteria

Units:

µg/L= micrograms per liter

Results shown in bold exceed Ground Water Quality Criteria.

Qualifiers:

U — Indicates the analyte of interest was not detected, to the limit of detection indicated.

J — Indicates the analyte of interest was detected below the routine reporting limit. This value should be regarded as an estimate.

NT — Not Tested

2023 Volatile Organic Compound Monitoring Results
Inman Landfill

AQUIFER			Regional	
MONITORING WELL Sampling Date			B-12 4/26/2023	B-12 9/19/2023
Analyte	Units	GW Quality Standards (173-200 WAC)		
1,1,1,2-tetrachloroethane	µg/L		0.5 U	0.4 U
1,1,1-trichloroethane	µg/L	200*	0.5 U	0.4 U
1,1,2,2-tetrachloroethane	µg/L		0.5 U	0.4 U
1,1,2-trichloroethane	µg/L		0.5 U	0.4 U
1,1,2-trichlorofluorotoluene (Freon-113)	µg/L		NT	0.4 U
1,1-dichloroethane	µg/L	1.0***	0.5 U	0.4 U
1,1-dichloroethene	µg/L	7****	0.5 U	0.4 U
1,1-dichloropropene	µg/L		0.5 U	0.4 U
1,2,3-trichlorobenzene	µg/L		0.5 U	0.4 U
1,2,3-trichloropropane	µg/L		0.5 U	0.4 U
1,2,4-trichlorobenzene	µg/L		0.5 U	0.4 U
1,2,4-trimethylbenzene	µg/L		0.5 U	0.4 U
1,2-dibromo-3-chloropropane (DBCP)	µg/L	0.2****	0.05 U	1 U
1,2-dibromoethane (EDB)	µg/L	0.001***	0.01 U	0.01 U
1,2-dichlorobenzene	µg/L		0.5 U	0.4 U
1,2-dichloroethane	µg/L	0.5***	0.5 U	0.4 U
1,2-dichloropropane	µg/L	0.6***	0.5 U	0.4 U
1,3,5-trimethylbenzene	µg/L		0.5 U	0.4 U
1,3-dichloropropane	µg/L		0.5 U	0.4 U
1,4-dichlorobenzene	µg/L	4***	0.5 U	0.4 U
1,4-dioxane	µg/L	7***	0.25 U	5 U
2,2-dichloropropane	µg/L		0.5 U	0.4 U
2-butanone	µg/L		2.5 U	3 U
2-chloroethyl vinyl ether	µg/L		1 U	5 U
2-chlorotoluene	µg/L		0.5 U	0.4 U
2-nitropropane	µg/L		2.5 U	10 U
2-phenylbutane	µg/L		0.5 U	0.4 U
4-chlorotoluene	µg/L		0.5 U	0.4 U
4-methyl-2-pentanone	µg/L		2.5 U	4 U
Acetone	µg/L		2.5 U	3 U
Acrolein	µg/L		0.5 U	4 U
Acrylonitrile	µg/L	0.07***	0.05 U	0.05 U
Allyl chloride	µg/L		0.5 U	2 U
Benzene	µg/L	1.0***	0.5 U	0.4 U
Bromobenzene	µg/L		0.5 U	0.4 U
Bromodichloromethane	µg/L	0.3***	0.5 U	0.4 U
Bromomethane	µg/L		0.5 U	0.4 U
Carbon disulfide	µg/L		0.5 U	0.4 U
Carbon tetrachloride	µg/L	0.3***	0.5 U	0.4 U
Chlorobenzene	µg/L	100****	0.5 U	0.4 U
Chlorobromomethane	µg/L		0.5 U	0.4 U
Chlorodibromomethane	µg/L	0.5***	0.5 U	0.4 U
Chlorodifluoromethane (Freon-22)	µg/L		NT	0.5 U
Chloroethane	µg/L		0.5 U	0.4 U
Chloroform	µg/L	7.0***	0.5 U	0.4 U
Chloromethane	µg/L		1 U	0.4 U
cis-1,2-dichloroethene	µg/L	70****	0.5 U	0.4 U
cis-1,3-dichloropropene	µg/L		0.5 U	0.4 U
Cymene	µg/L		0.5 U	0.4 U
Dibromomethane	µg/L		0.5 U	0.4 U
Dichlorodifluoromethane (CFC-12)	µg/L		0.5 U	0.4 U
Dichloromethane	µg/L	5***	2.5 U	0.4 U
Dichloromonofluoromethane (Freon-21)	µg/L		NT	0.4 U
Diethyl ether	µg/L		0.5 U	0.4 U

2023 Volatile Organic Compound Monitoring Results
Inman Landfill

AQUIFER			Regional	
MONITORING WELL Sampling Date			B-12 4/26/2023	B-12 9/19/2023
Analyte	Units	GW Quality Standards (173-200 WAC)		
Ethyl methacrylate	µg/L		1 U	3 U
Ethylbenzene	µg/L	700****	0.5 U	0.4 U
Hexachloro-1,3-butadiene	µg/L		0.5 U	0.4 U
Hexachloroethane	µg/L		0.5 U	0.4 U
Isopropylbenzene	µg/L		0.5 U	0.4 U
m-dichlorobenzene	µg/L		0.5 U	0.4 U
Methyl acrylate	µg/L		1 U	1.5 U
Methyl iodide	µg/L		0.5 U	5 U
Methyl methacrylate	µg/L		1 U	2 U
Methyl n-butyl ketone	µg/L		2.5 U	5 U
Methyl tert-butyl ether	µg/L		0.5 U	0.4 U
Methylacrylonitrile	µg/L		1 U	4 U
Naphthalene	µg/L		0.5 U	1 U
n-butyl chloride	µg/L		0.5 U	0.4 U
n-butylbenzene	µg/L		0.5 U	0.4 U
n-propylbenzene	µg/L		0.5 U	0.4 U
o-xylene	µg/L		0.5 U	0.4 U
Pentachloroethane	µg/L		0.5 U	0.4 U
Styrene (monomer)	µg/L	100****	0.5 U	0.4 U
Tert-butylbenzene	µg/L		0.5 U	0.4 U
Tetrachloroethene	µg/L	0.8***	0.5 U	0.4 U
Tetrahydrofuran	µg/L		0.5 U	3 U
Toluene	µg/L	1****	0.5 U	0.4 U
Trans-1,2-dichloroethene	µg/L	100****	0.5 U	0.4 U
Trans-1,3-dichloropropene	µg/L		0.5 U	0.4 U
Trans-1,4-dichlorobutene	µg/L		0.5 U	5 U
Tribromomethane (Bromoform)	µg/L	5***	0.5 U	0.4 U
Trichloroethene	µg/L	3***	0.5 U	0.4 U
Trichlorofluoromethane (CFC-11)	µg/L		0.5 U	0.4 U
Vinyl chloride	µg/L	0.02***	0.1 U	0.1 U

Groundwater Quality Criteria:

* = Primary Contaminant
** = Secondary Contaminant
*** = Carcinogen
**** = 246-290 WAC criteria

Units:

µg/L= micrograms per liter

Results shown in bold exceed Ground Water Quality Criteria.

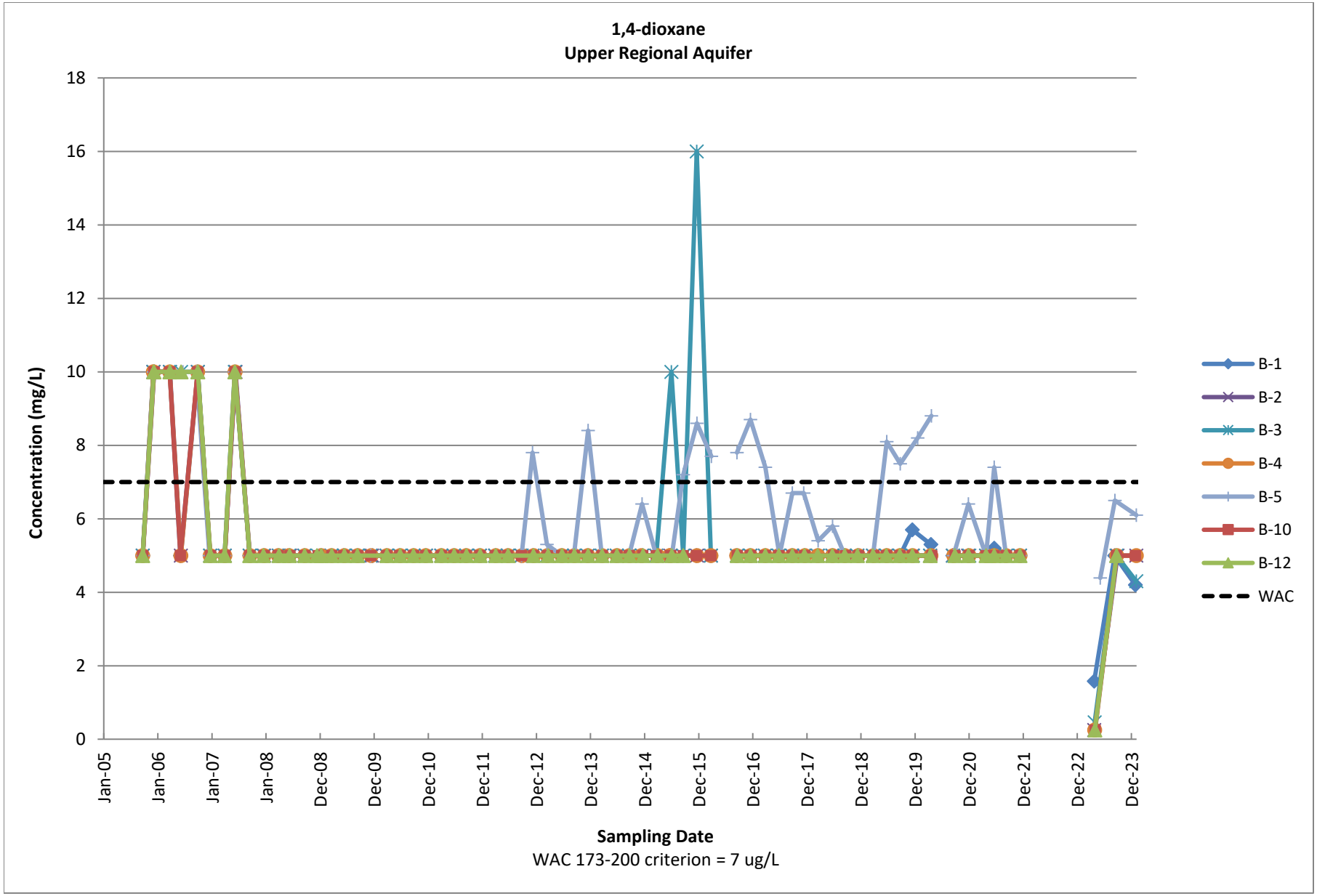
Qualifiers:

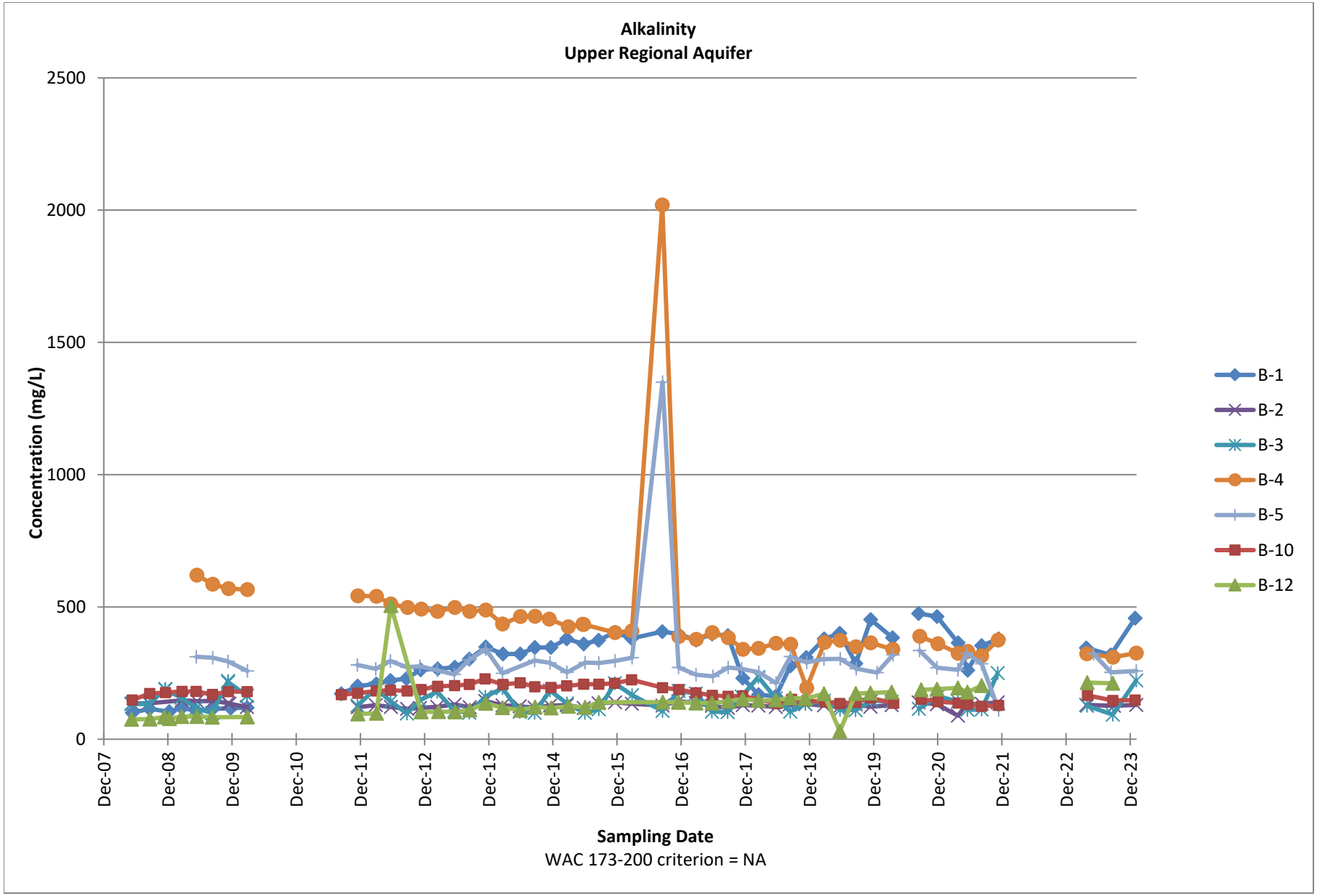
U — Indicates the analyte of interest was not detected, to the limit of detection indicated.

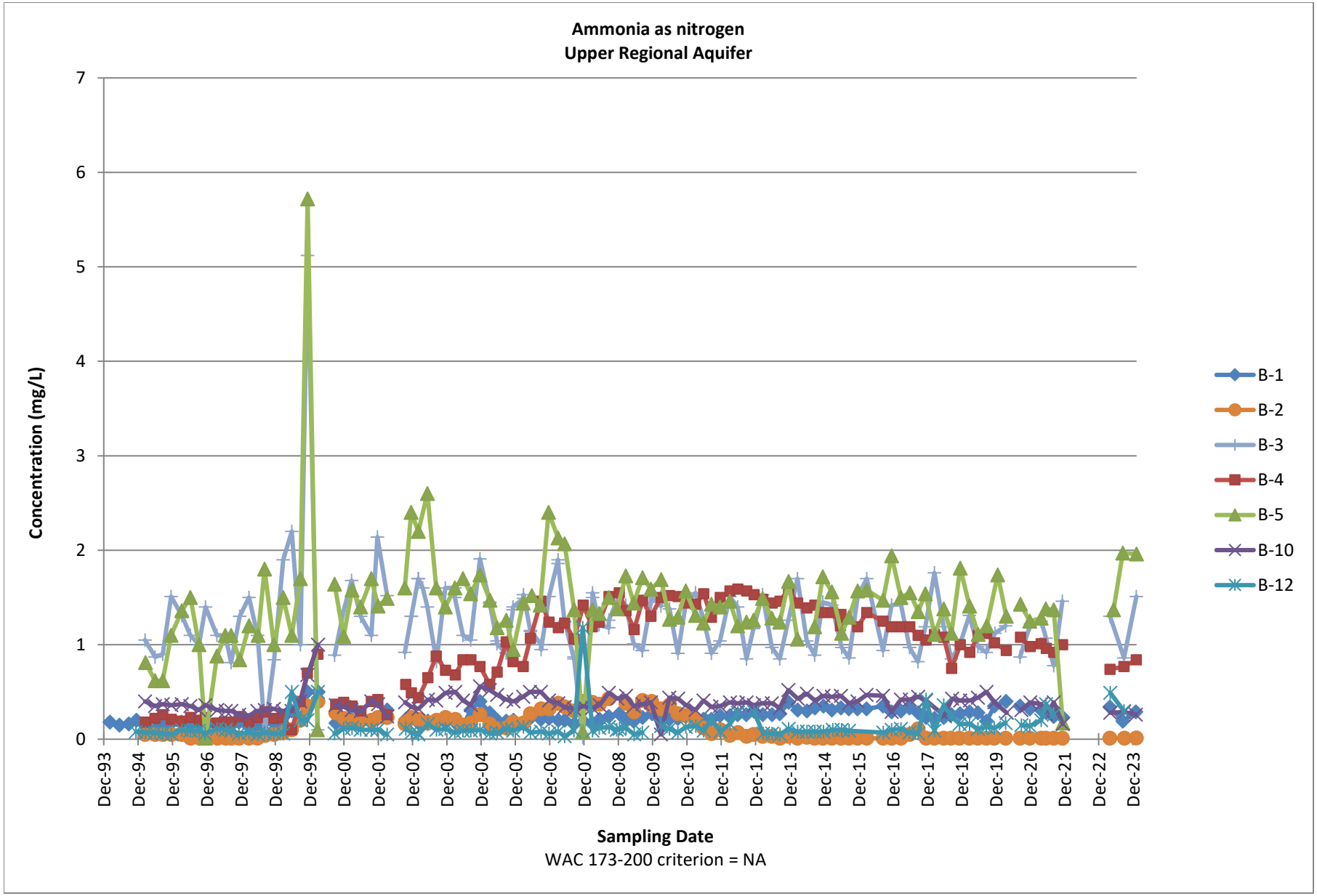
J — Indicates the analyte of interest was detected below the routine reporting limit. This value should be regarded as an estimate.

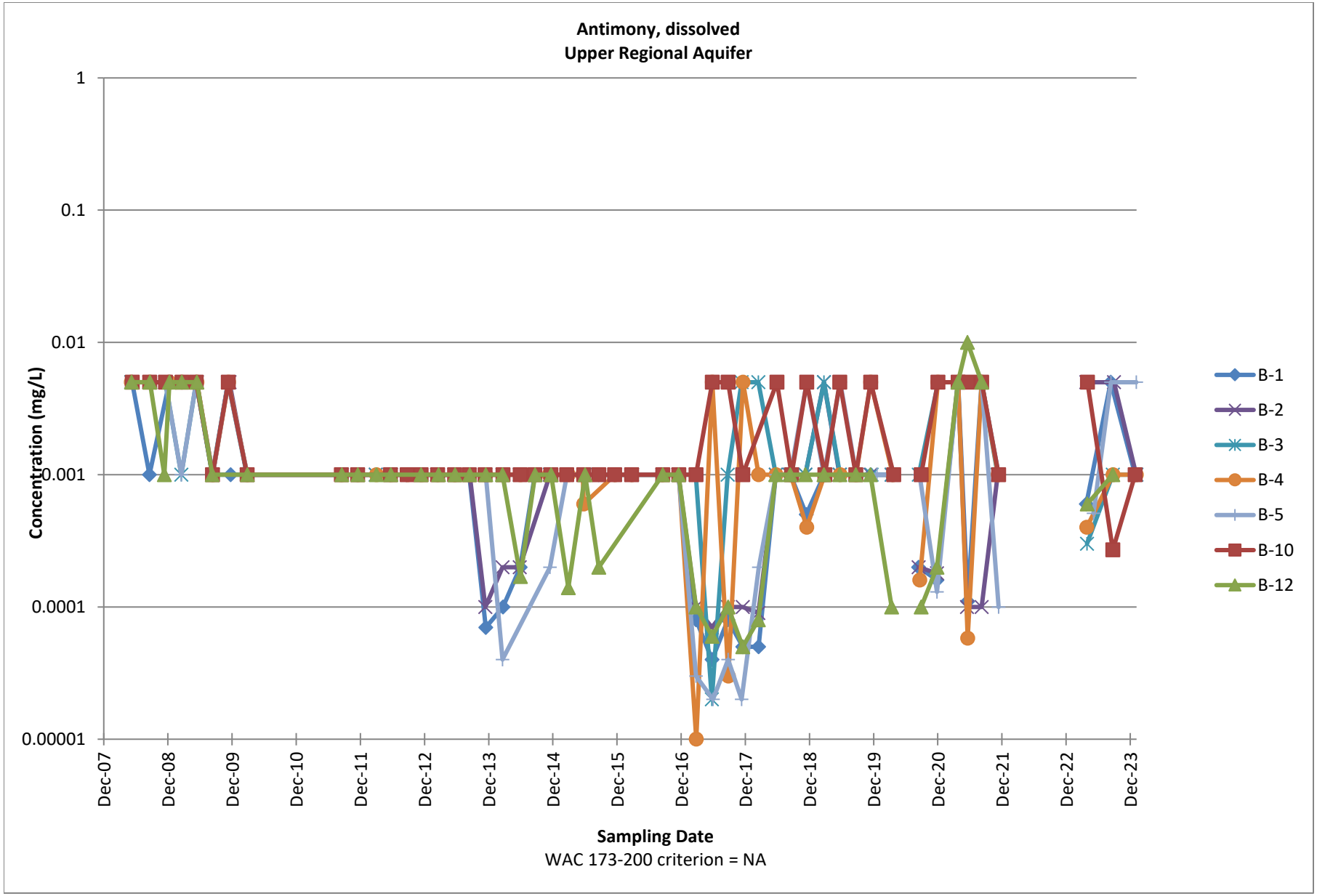
NT — Not Tested

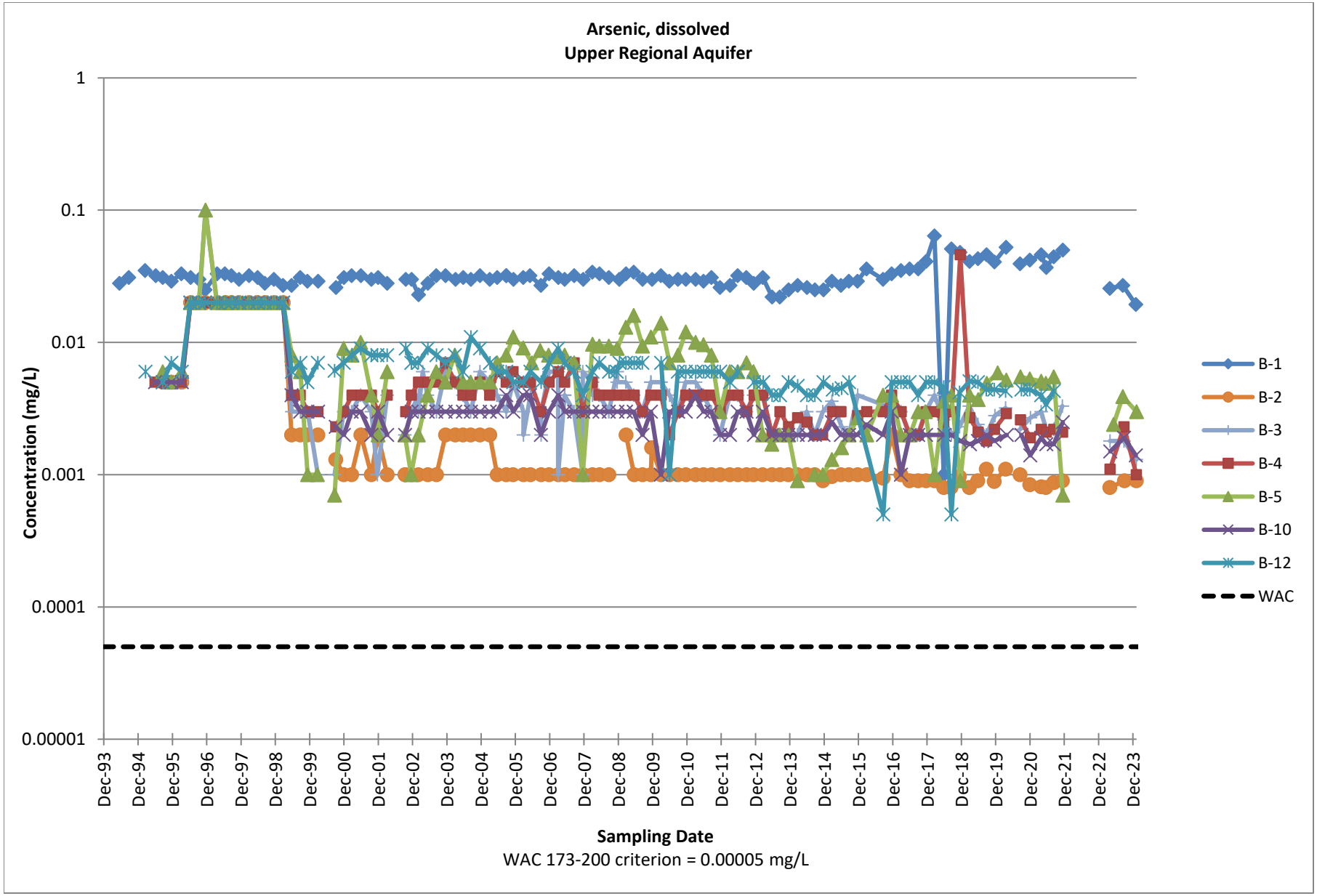
APPENDIX B-2
Long-Term Time Series Plots 1994-2023 – Upper Regional Aquifer

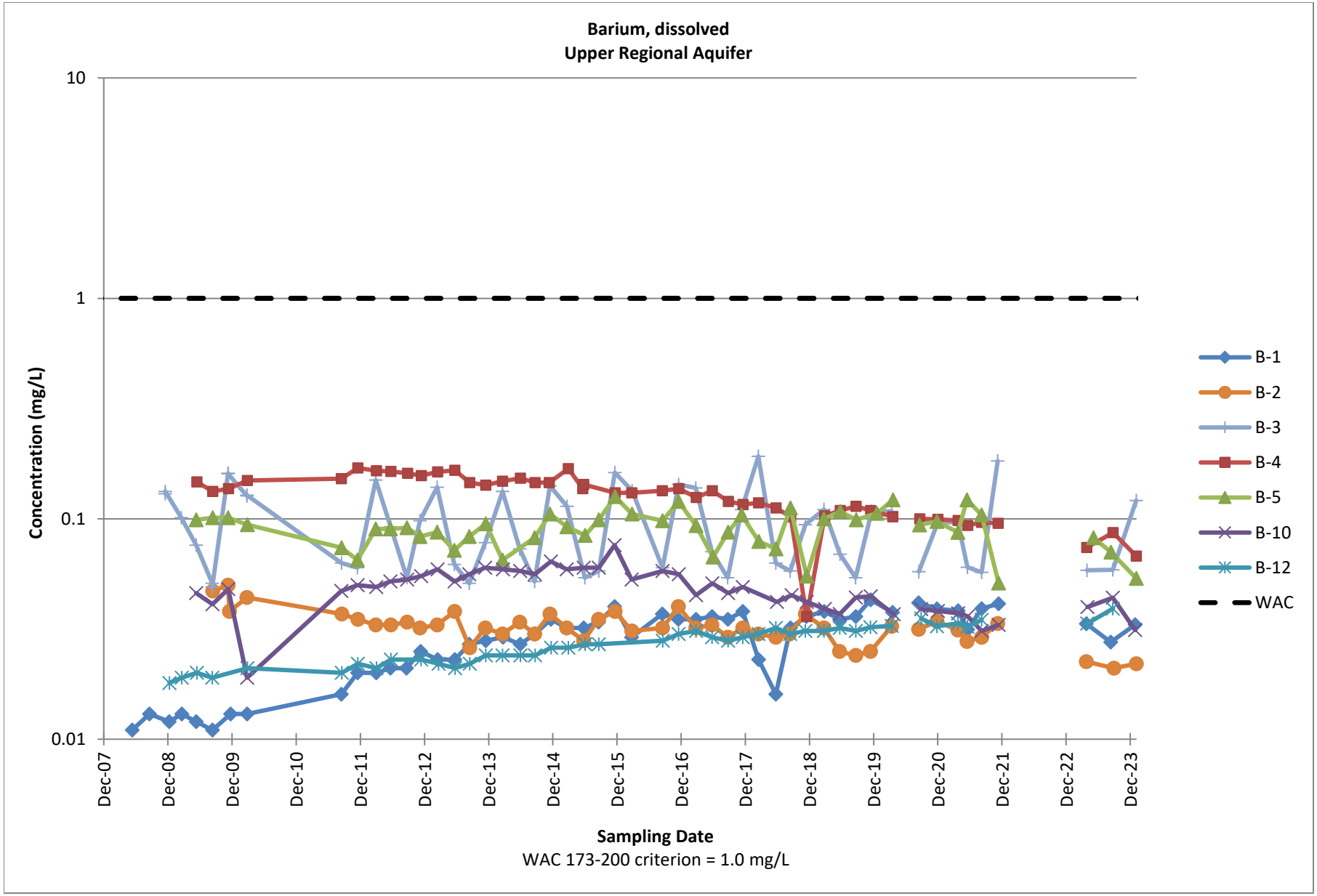

1,4-dioxane
Upper Regional Aquifer
Concentration (mg/L)
18
16
14
12
10
8
6
4
2
0
Jan-05
Jan-06
Jan-07
Jan-08
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
WAC 173-200 criterion = 7 ug/L
B-1
B-2
B-3
B-4
B-5
B-10
B-12
WAC

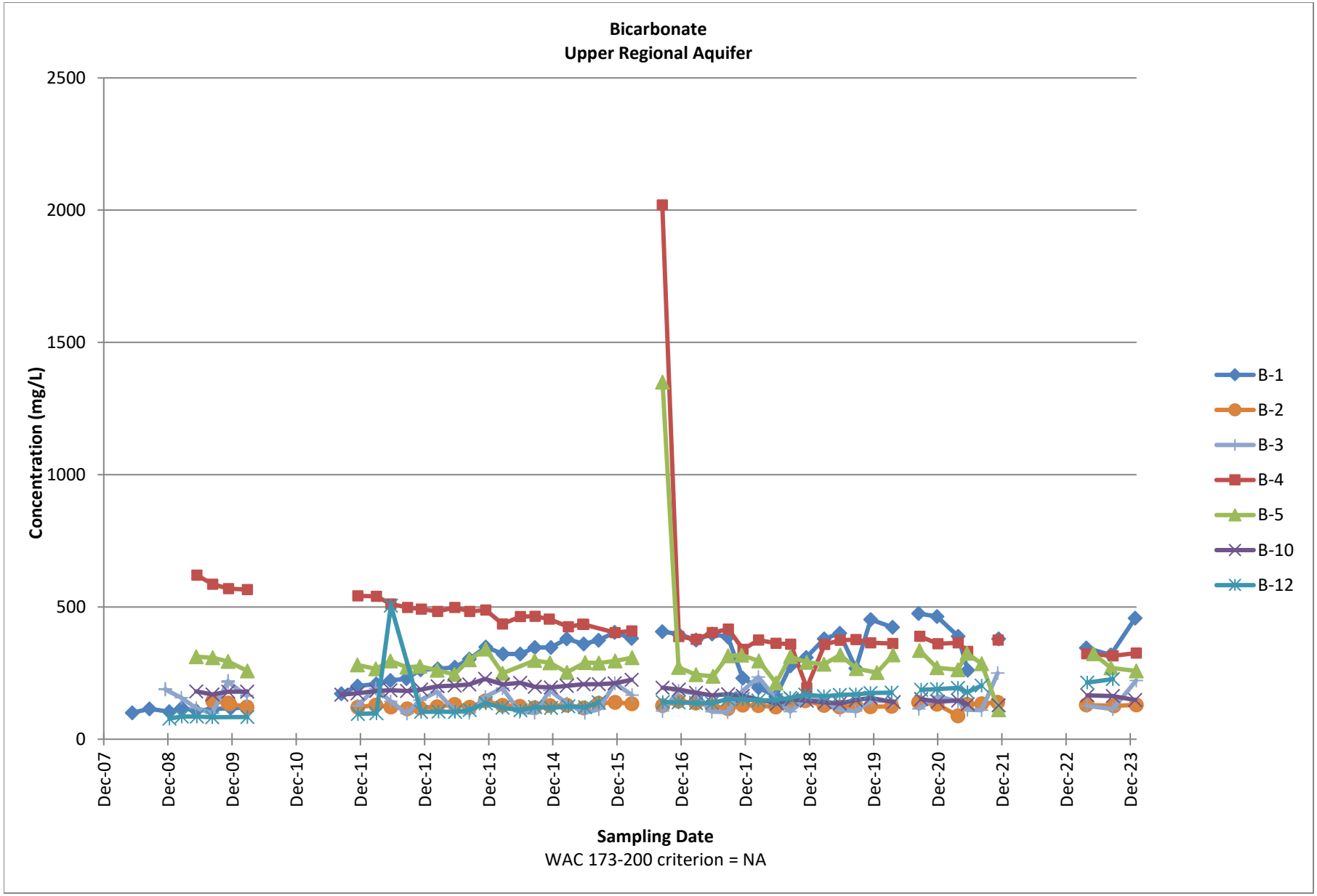

Alkalinity
Upper Regional Aquifer
2500
2000
1500
1000
500
0
Concentration (mg/L)
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
WAC 173-200 criterion = NA
B-1
B-2
B-3
B-4
B-5
B-10
B-12

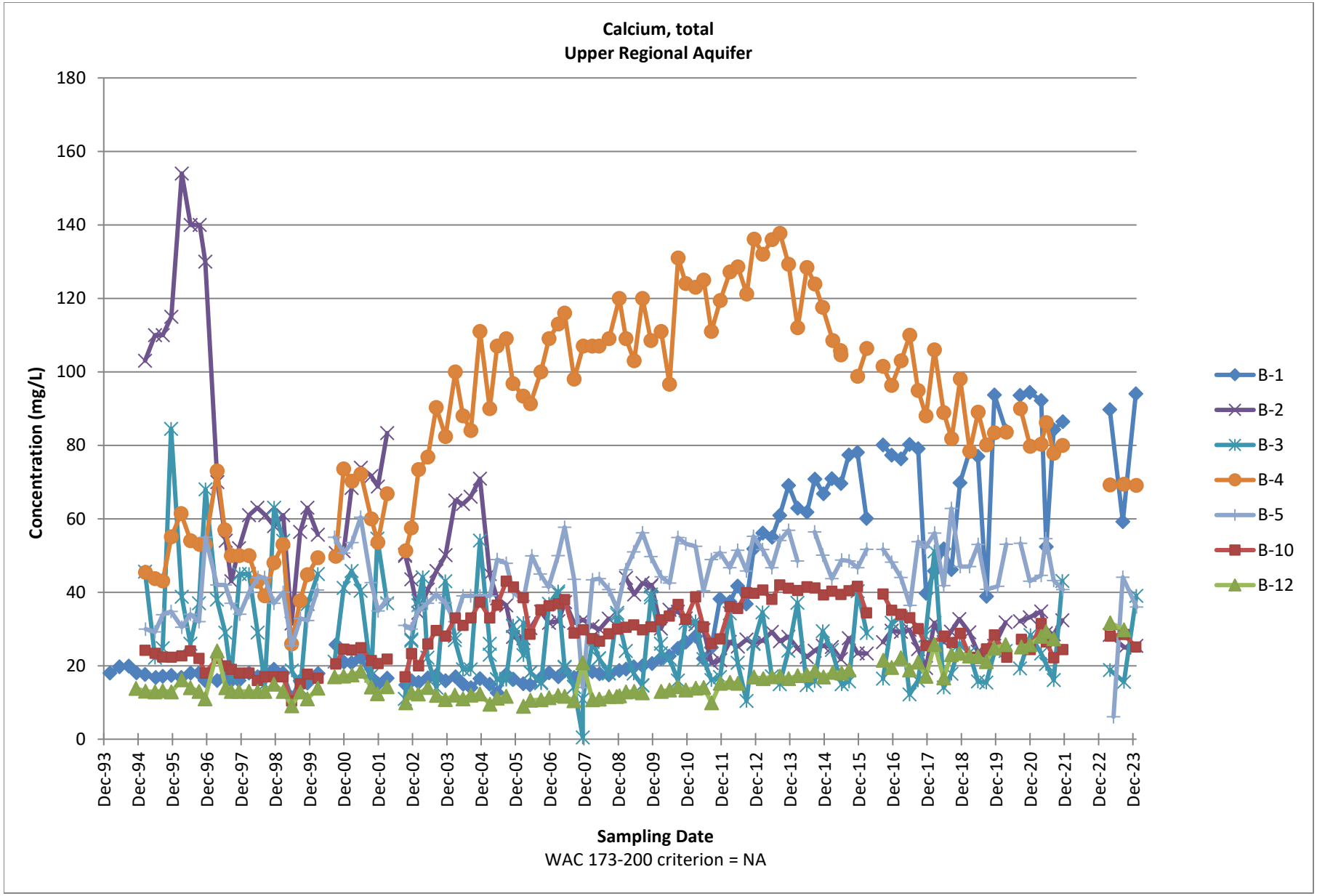

Ammonia as nitrogen
Upper Regional Aquifer
Concentration (mg/L)
0
1
2
3
4
5
6
7
Dec-93
Dec-94
Dec-95
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
B-1
B-2
B-3
B-4
B-5
B-10
B-12
Sampling Date
WAC 173-200 criterion = NA

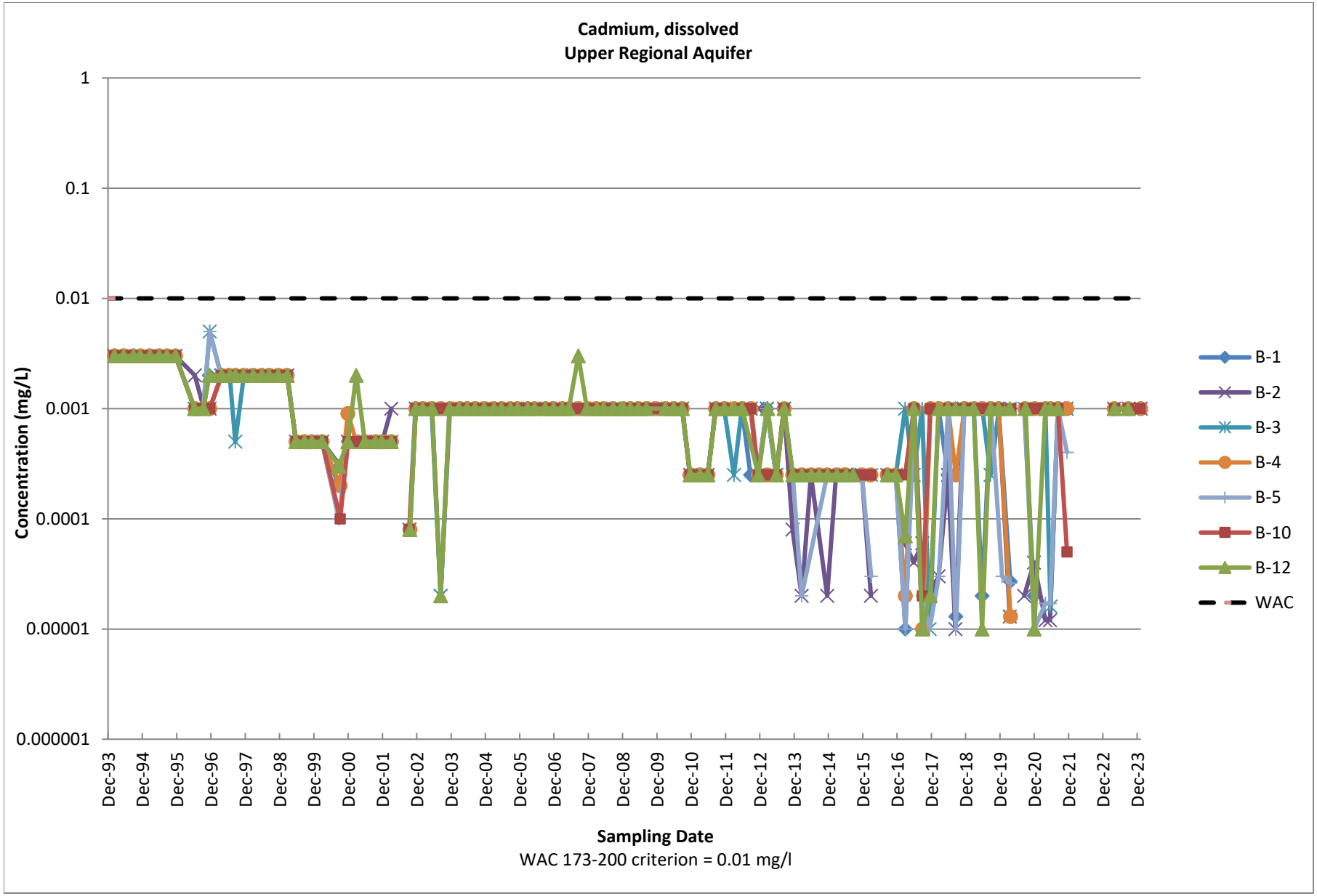

Antimony, dissolved
Upper Regional Aquifer
1
0.1
0.01
0.001
0.0001
0.00001
Concentration (mg/L)
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
WAC 173-200 criterion = NA
B-1
B-2
B-3
B-4
B-5
B-10
B-12

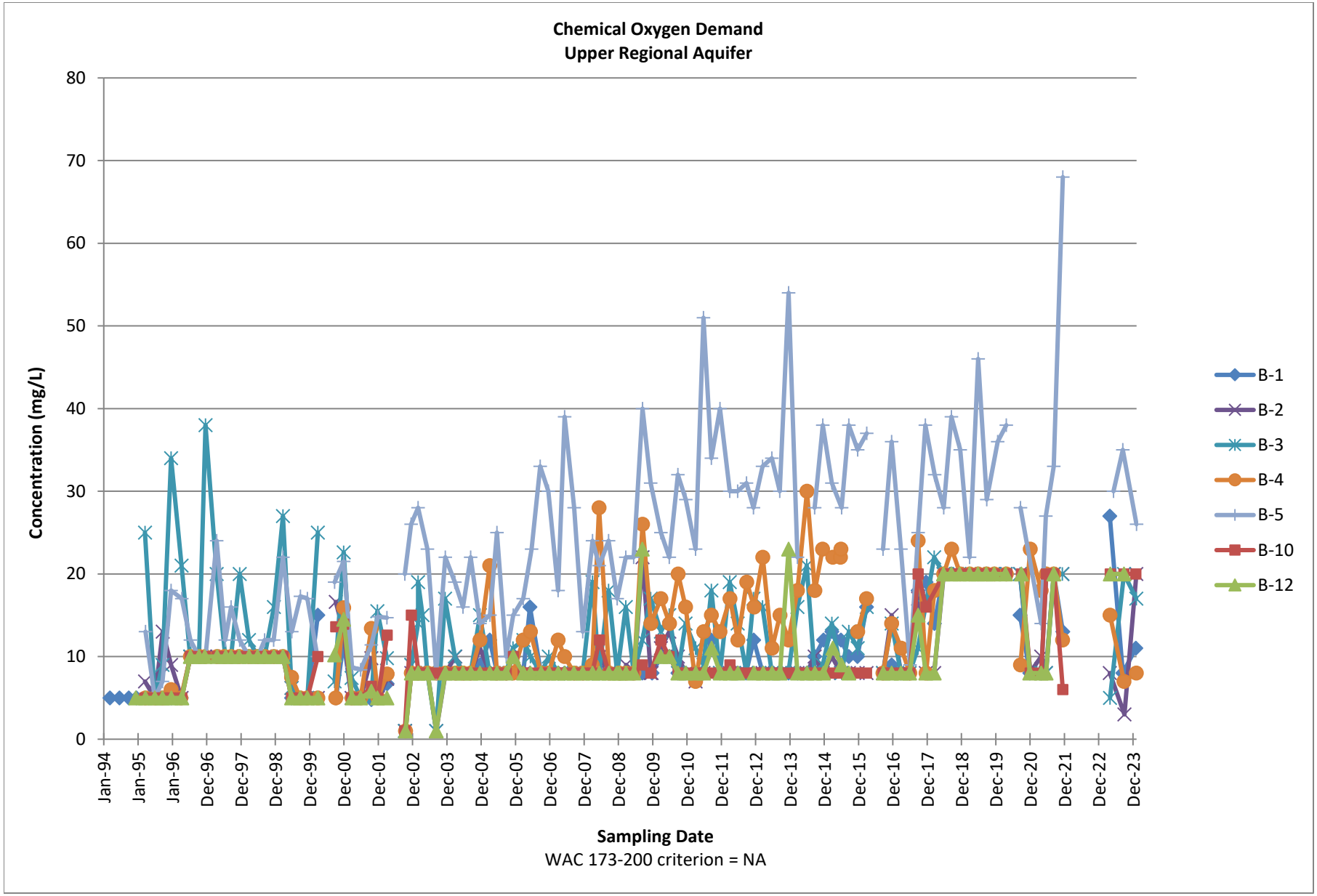

Arsenic, dissolved
Upper Regional Aquifer
Concentration (mg/L)
1
0.1
0.01
0.001
0.0001
0.00001
Dec-93
Dec-94
Dec-95
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
B-1
B-2
B-3
B-4
B-5
B-10
B-12
WAC
WAC 173-200 criterion = 0.00005 mg/L

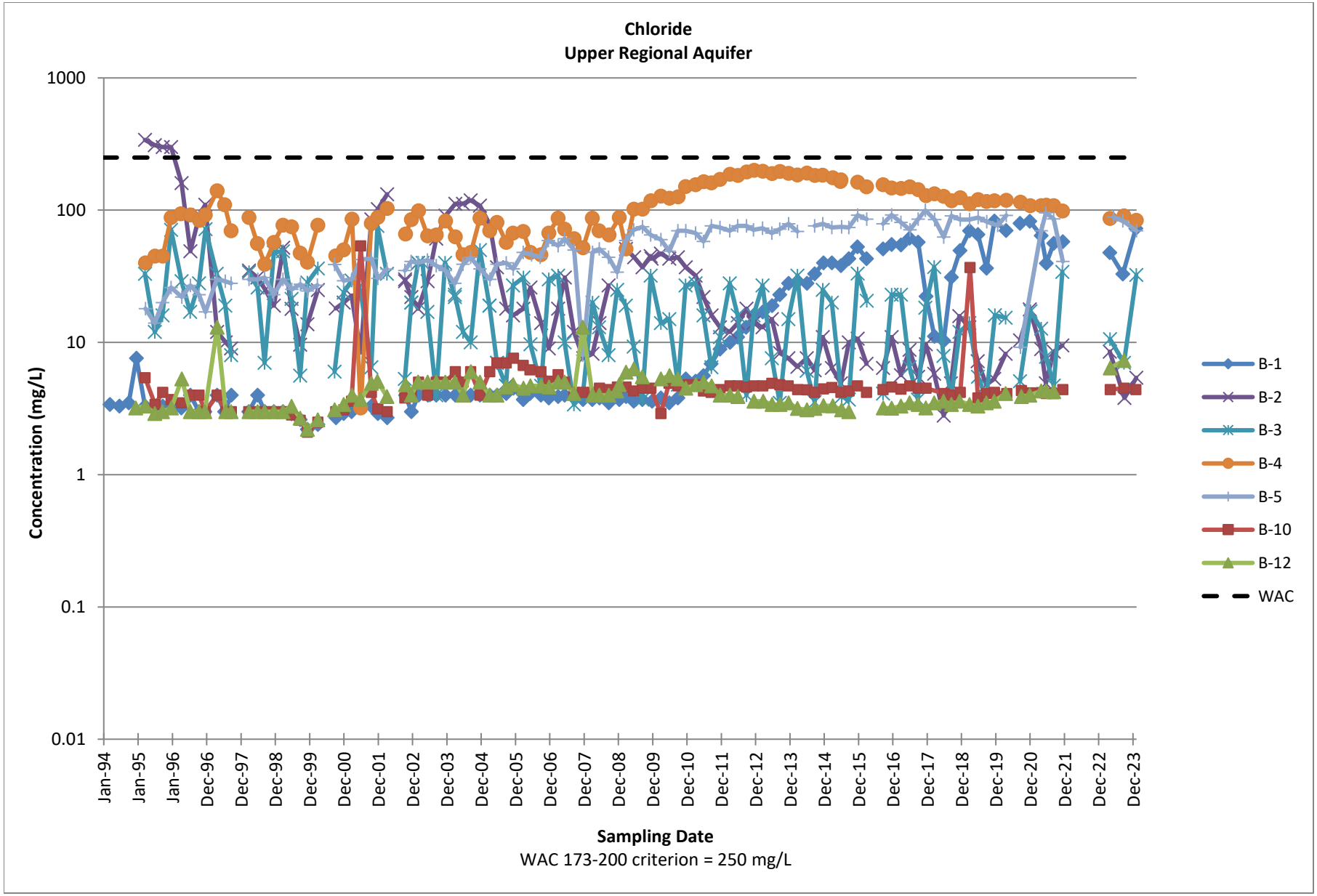

Barium, dissolved
Upper Regional Aquifer
10
1
0.1
0.01
Concentration (mg/L)
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
B-1
B-2
B-3
B-4
B-5
B-10
B-12
WAC
WAC 173-200 criterion = 1.0 mg/L

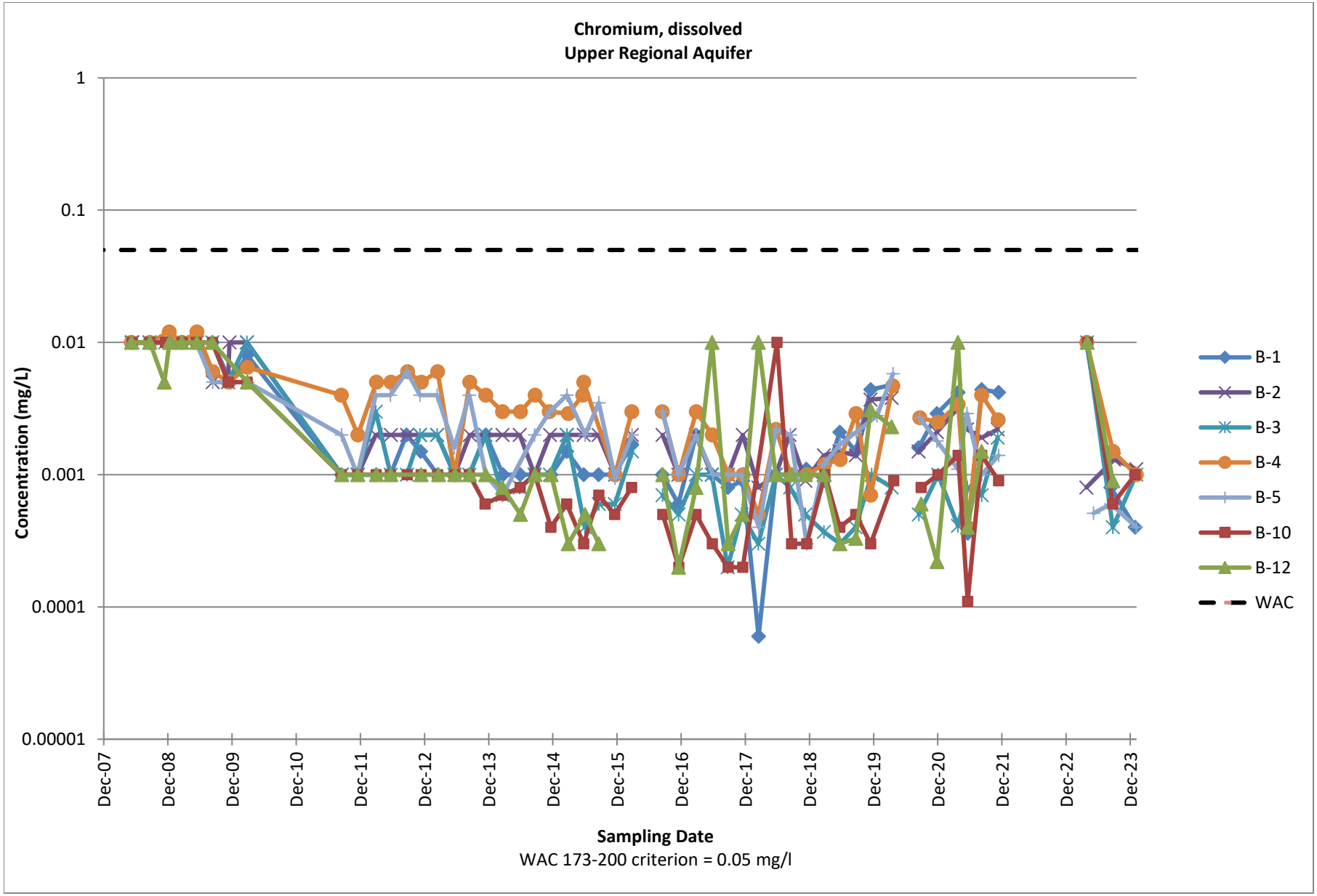

Bicarbonate
Upper Regional Aquifer
2500
2000
1500
1000
500
0
Concentration (mg/L)
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
WAC 173-200 criterion = NA
B-1
B-2
B-3
B-4
B-5
B-10
B-12

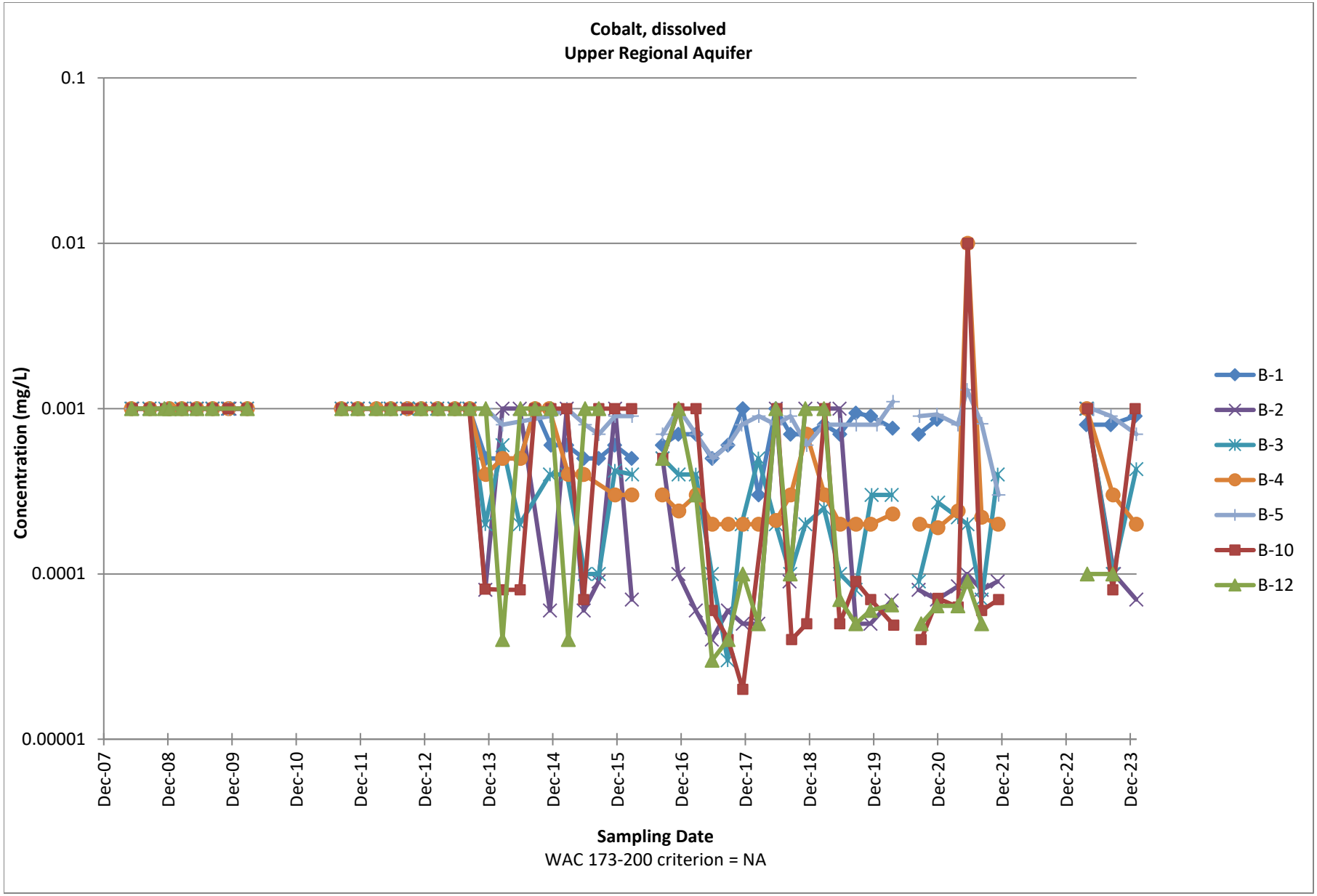

Calcium, total
Upper Regional Aquifer
Concentration (mg/L)
180
160
140
120
100
80
60
40
20
0
Dec-93
Dec-94
Dec-95
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
B-1
B-2
B-3
B-4
B-5
B-10
B-12
Sampling Date
WAC 173-200 criterion = NA

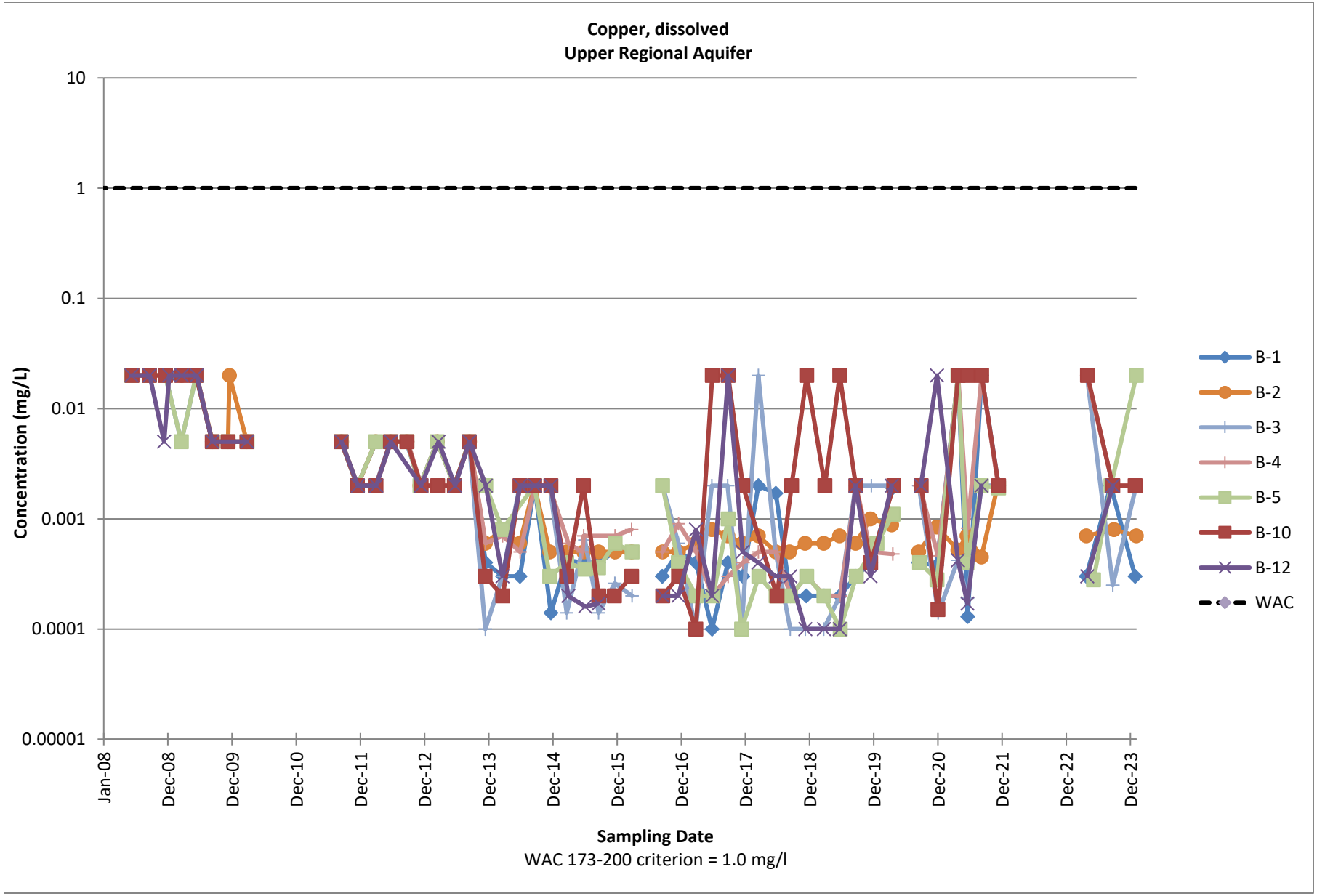

Cadmium, dissolved
Upper Regional Aquifer
Concentration (mg/L)
1
0.1
0.01
0.001
0.0001
0.00001
0.000001
Dec-93
Dec-94
Dec-95
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
B-1
B-2
B-3
B-4
B-5
B-10
B-12
WAC
WAC 173-200 criterion = 0.01 mg/l

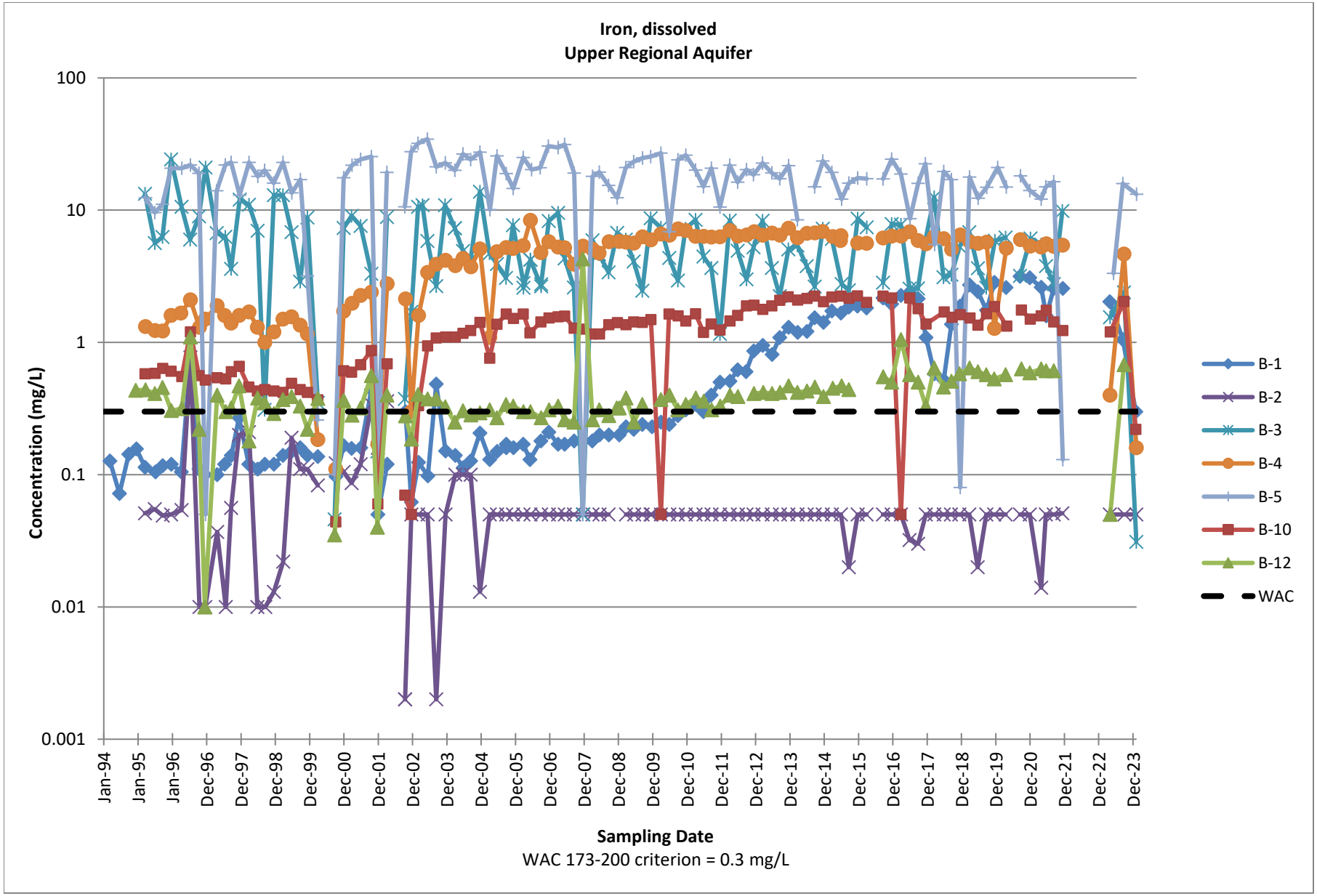

Chemical Oxygen Demand
Upper Regional Aquifer
Concentration (mg/L)
80
70
60
50
40
30
20
10
0
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
WAC 173-200 criterion = NA
B-1
B-2
B-3
B-4
B-5
B-10
B-12

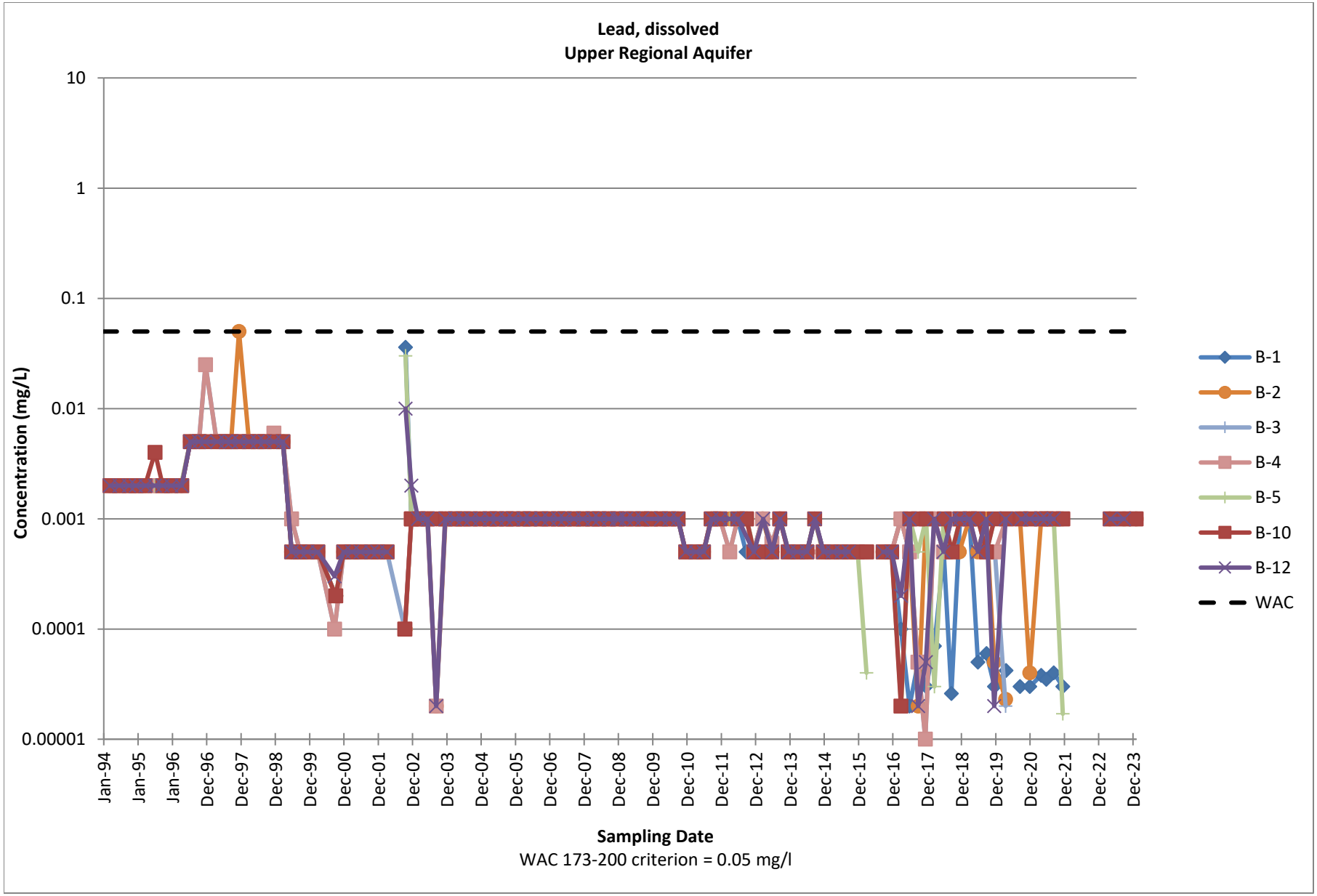

Chloride
Upper Regional Aquifer
1000
100
10
1
0.1
0.01
Concentration (mg/L)
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
WAC 173-200 criterion = 250 mg/L
B-1
B-2
B-3
B-4
B-5
B-10
B-12
WAC

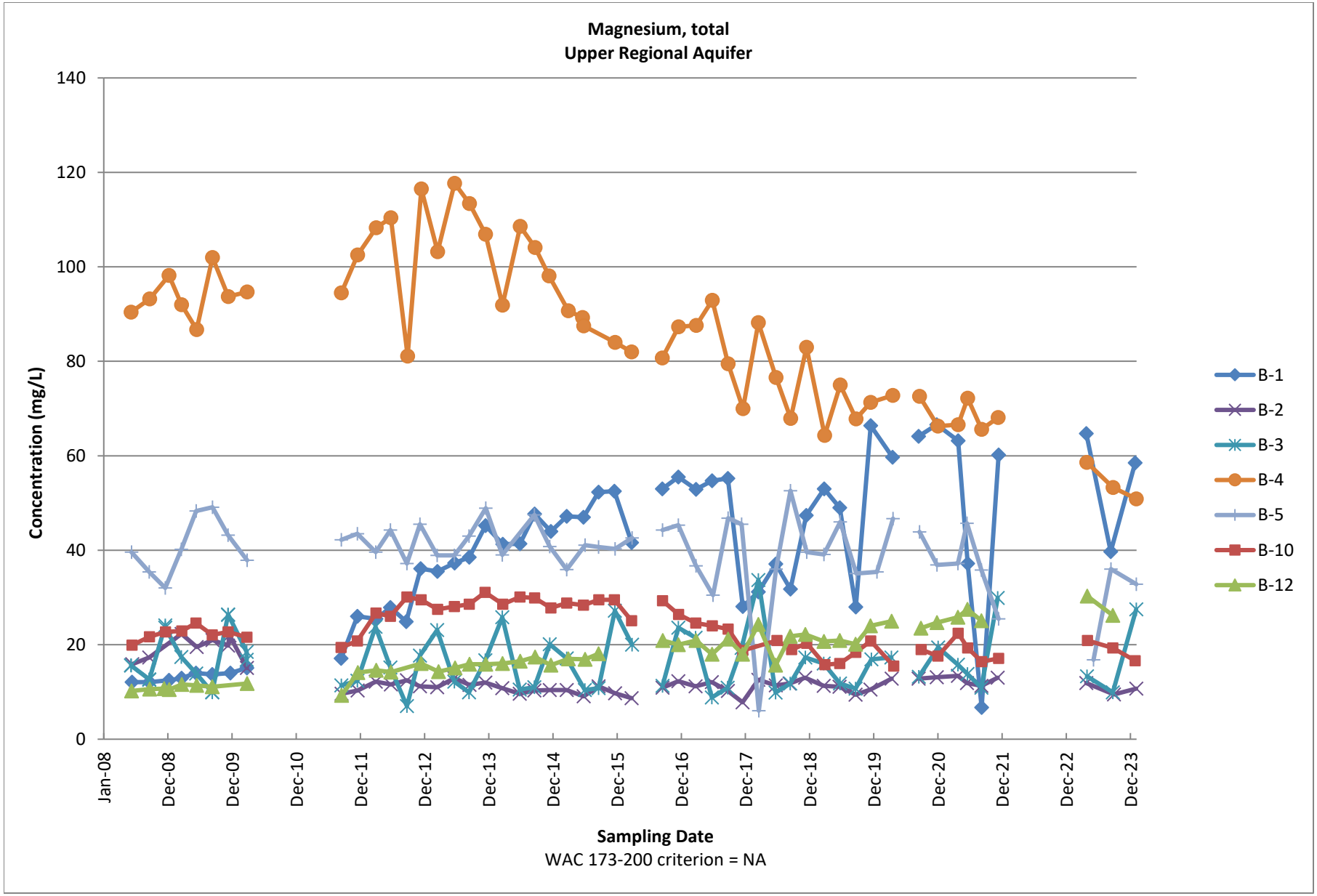

Chromium, dissolved
Upper Regional Aquifer
1
0.1
0.01
0.001
0.0001
0.00001
Concentration (mg/L)
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
WAC 173-200 criterion = 0.05 mg/l
B-1
B-2
B-3
B-4
B-5
B-10
B-12
WAC

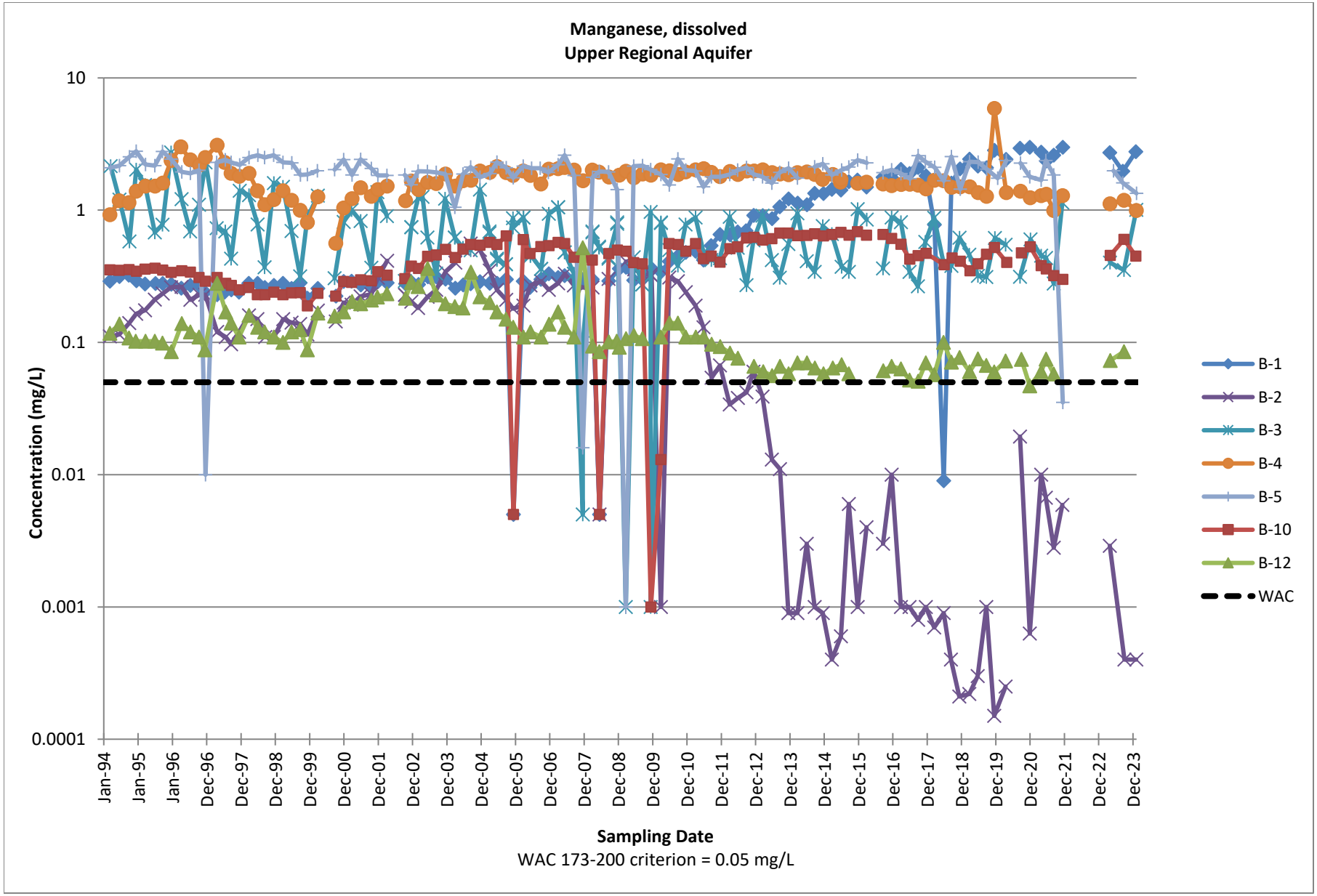

Cobalt, dissolved
Upper Regional Aquifer
0.1
0.01
0.001
0.0001
0.00001
Concentration (mg/L)
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
WAC 173-200 criterion = NA
B-1
B-2
B-3
B-4
B-5
B-10
B-12

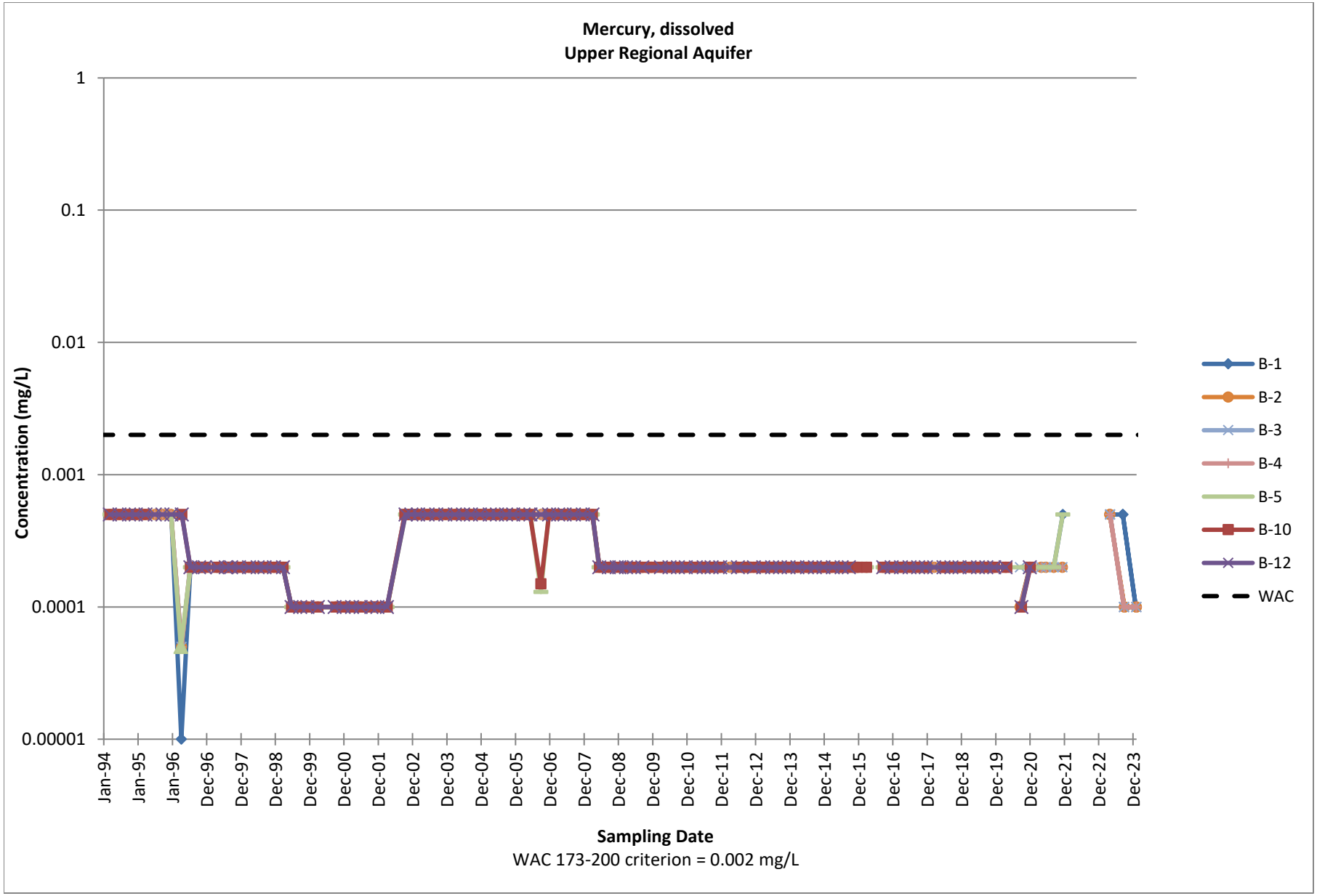

Copper, dissolved
Upper Regional Aquifer
10
1
0.1
0.01
0.001
0.0001
0.00001
Concentration (mg/L)
Jan-08
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
WAC 173-200 criterion = 1.0 mg/l
B-1
B-2
B-3
B-4
B-5
B-10
B-12
WAC

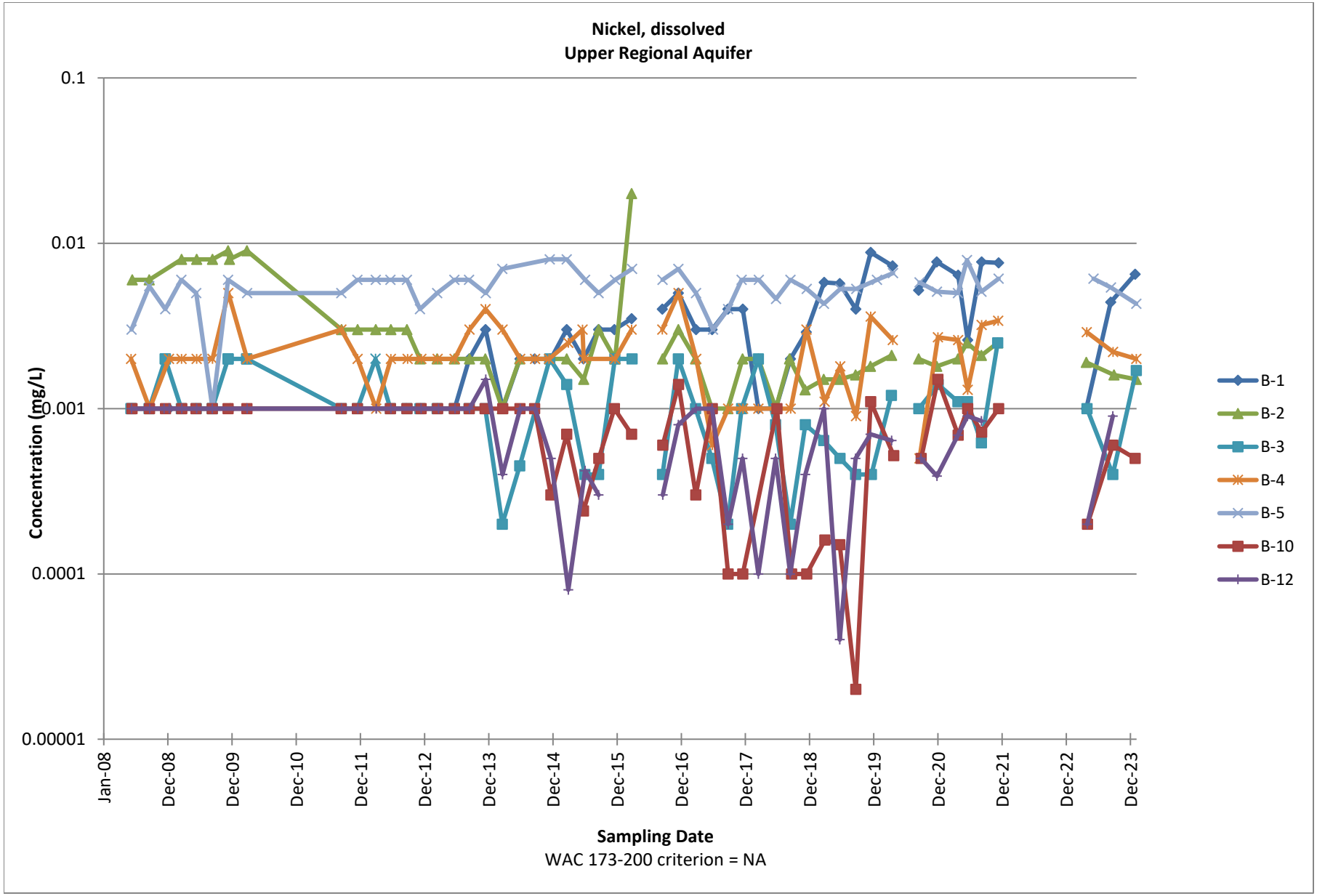

Iron, dissolved
Upper Regional Aquifer
100
10
1
0.1
0.01
0.001
Concentration (mg/L)
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
B-1
B-2
B-3
B-4
B-5
B-10
B-12
WAC
WAC 173-200 criterion = 0.3 mg/L

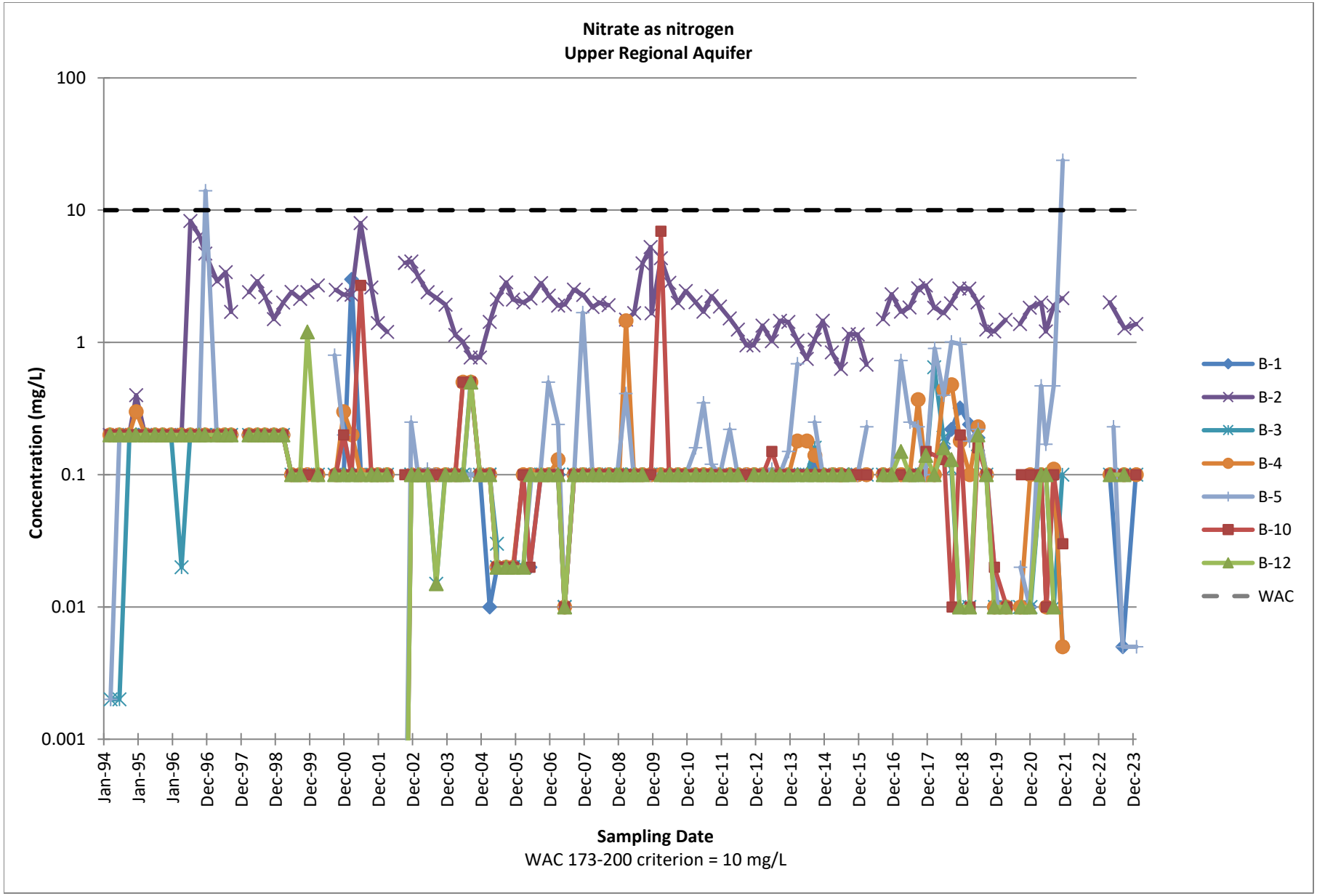

Lead, dissolved
Upper Regional Aquifer
10
1
0.1
0.01
0.001
0.0001
0.00001
Concentration (mg/L)
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
B-1
B-2
B-3
B-4
B-5
B-10
B-12
WAC
WAC 173-200 criterion = 0.05 mg/l

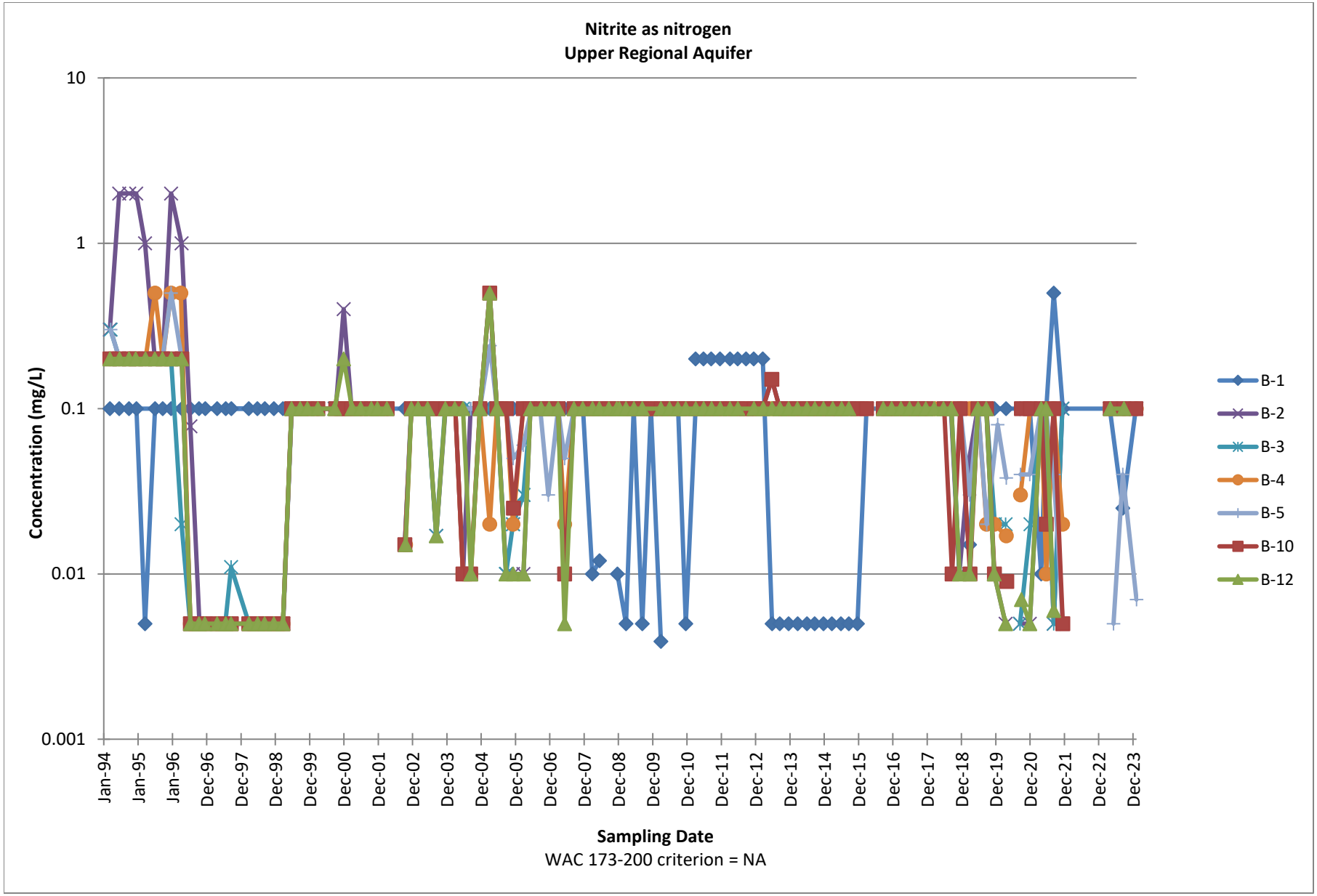

Magnesium, total
Upper Regional Aquifer
Concentration (mg/L)
140
120
100
80
60
40
20
0
Jan-08
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
WAC 173-200 criterion = NA
B-1
B-2
B-3
B-4
B-5
B-10
B-12

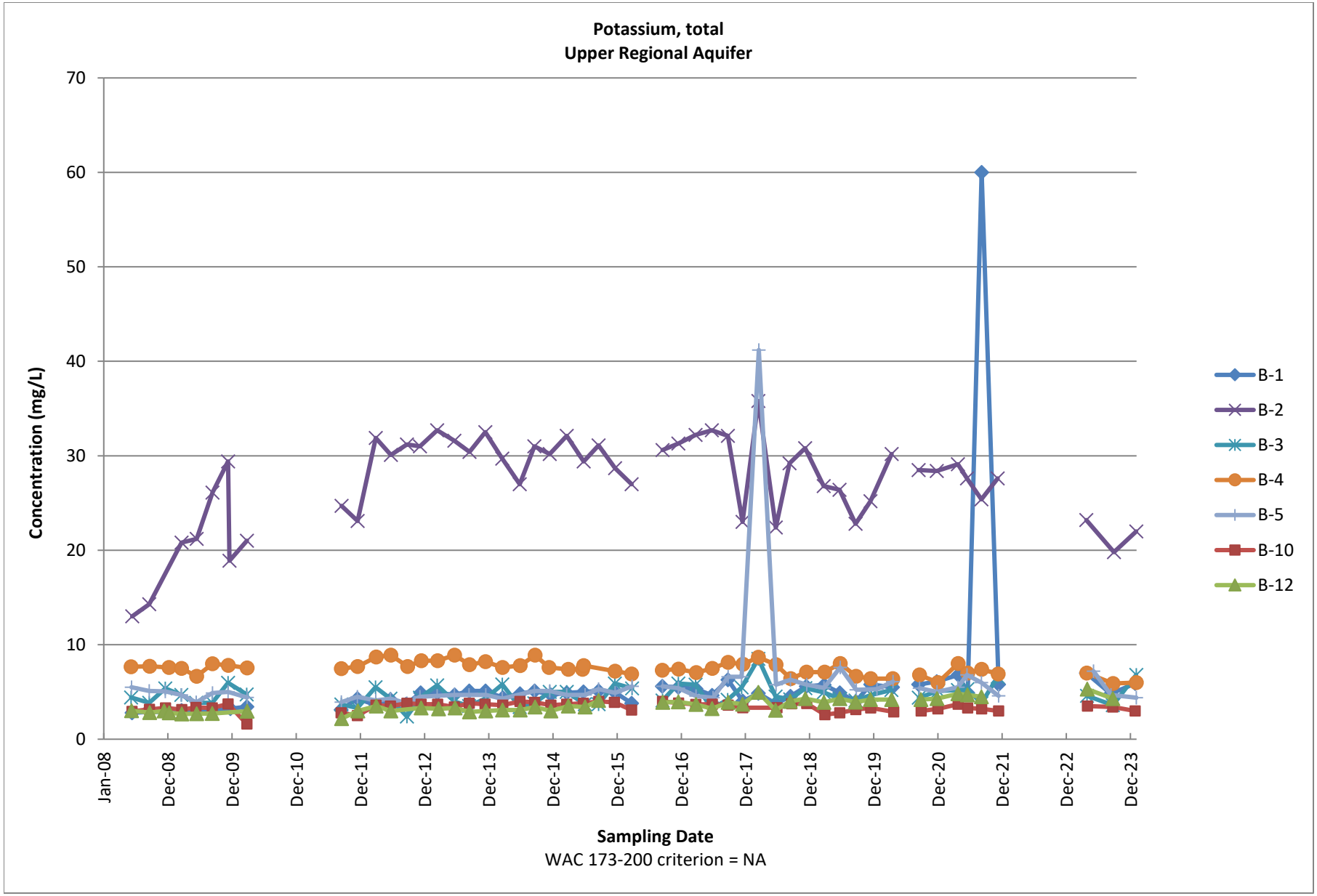

Manganese, dissolved
Upper Regional Aquifer
Concentration (mg/L)
10
1
0.1
0.01
0.001
0.0001
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
B-1
B-2
B-3
B-4
B-5
B-10
B-12
WAC
WAC 173-200 criterion = 0.05 mg/L

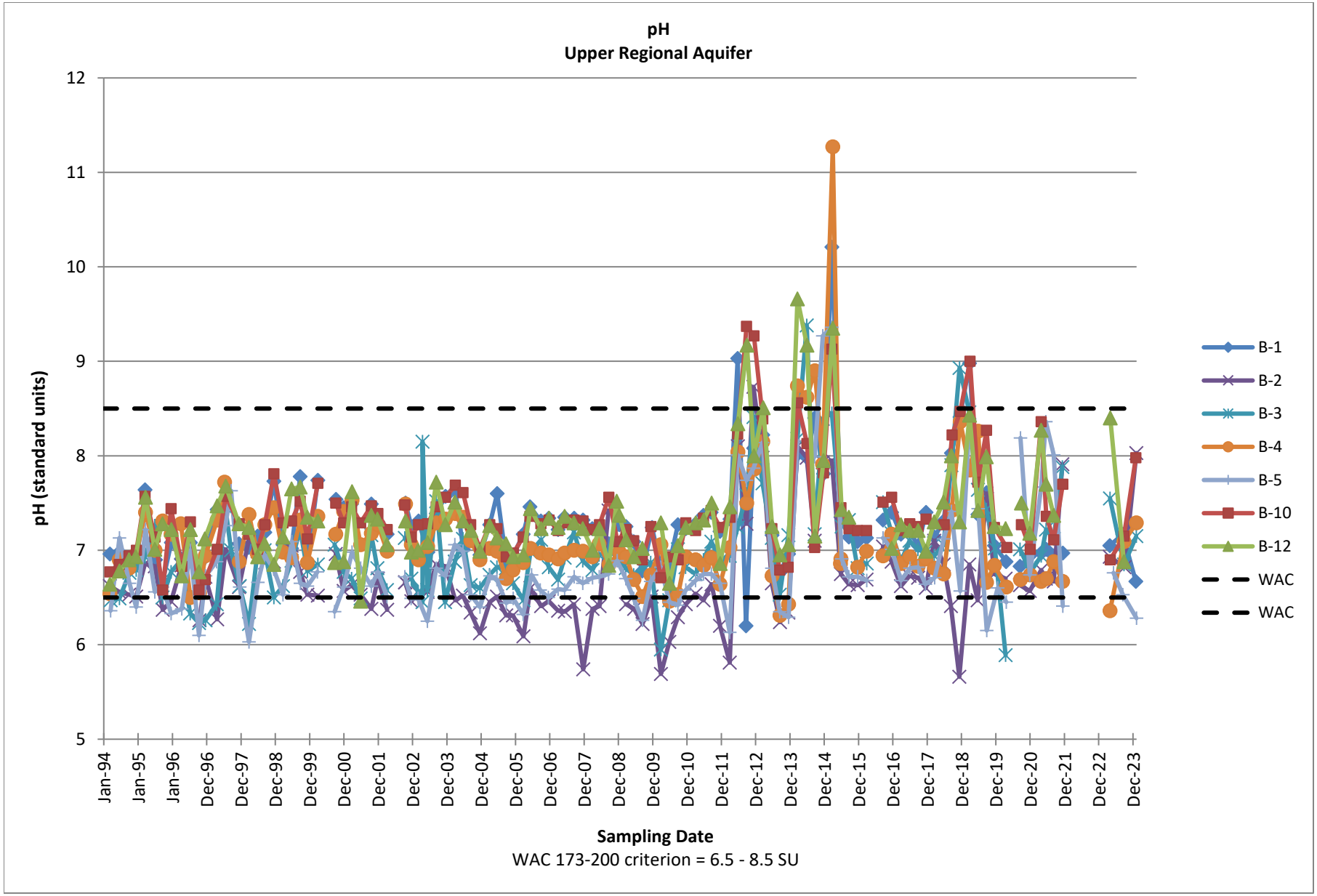

Mercury, dissolved
Upper Regional Aquifer
Concentration (mg/L)
1
0.1
0.01
0.001
0.0001
0.00001
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
B-1
B-2
B-3
B-4
B-5
B-10
B-12
WAC
WAC 173-200 criterion = 0.002 mg/L

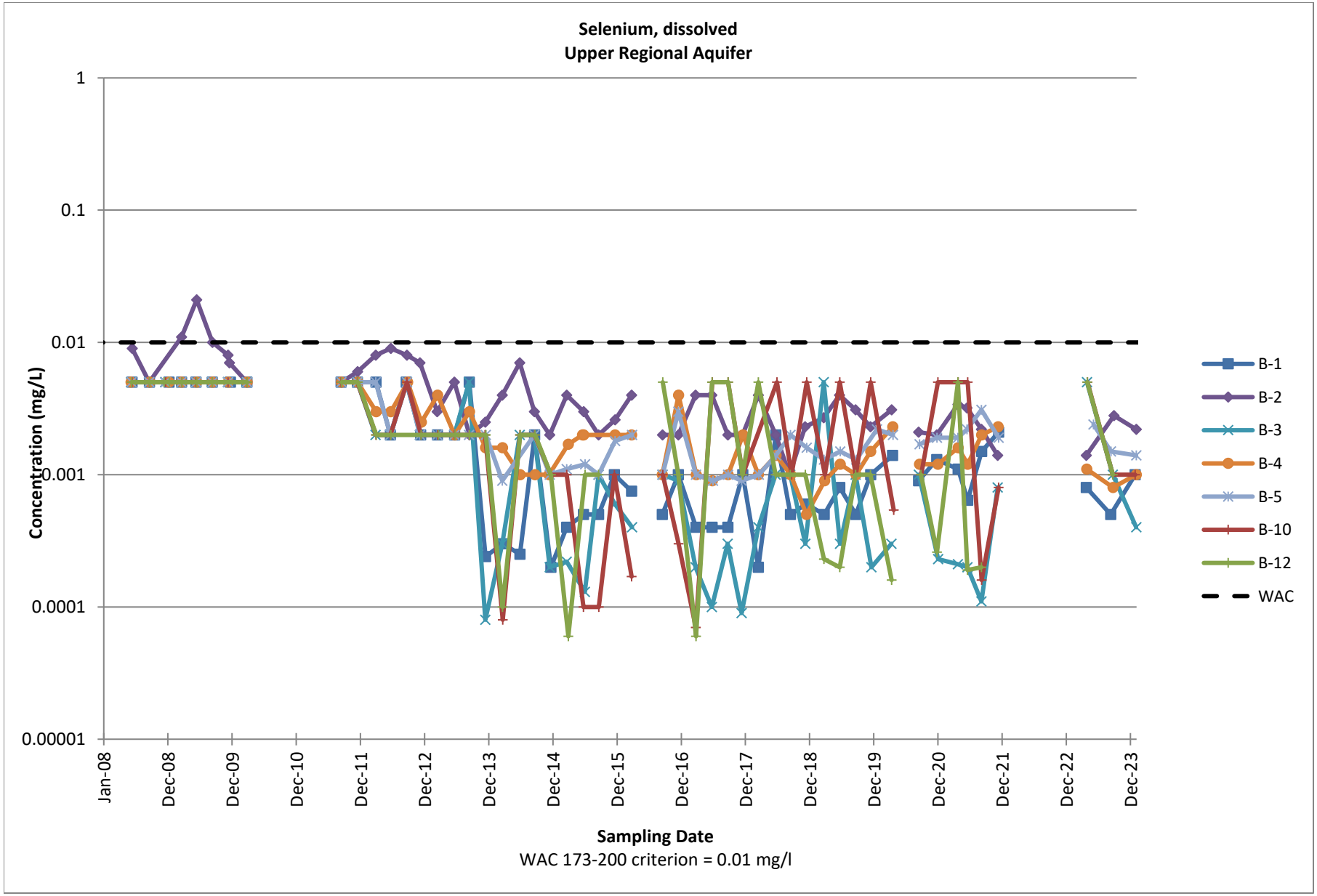

Nickel, dissolved
Upper Regional Aquifer
0.1
0.01
0.001
0.0001
0.00001
Concentration (mg/L)
Jan-08
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
WAC 173-200 criterion = NA
B-1
B-2
B-3
B-4
B-5
B-10
B-12

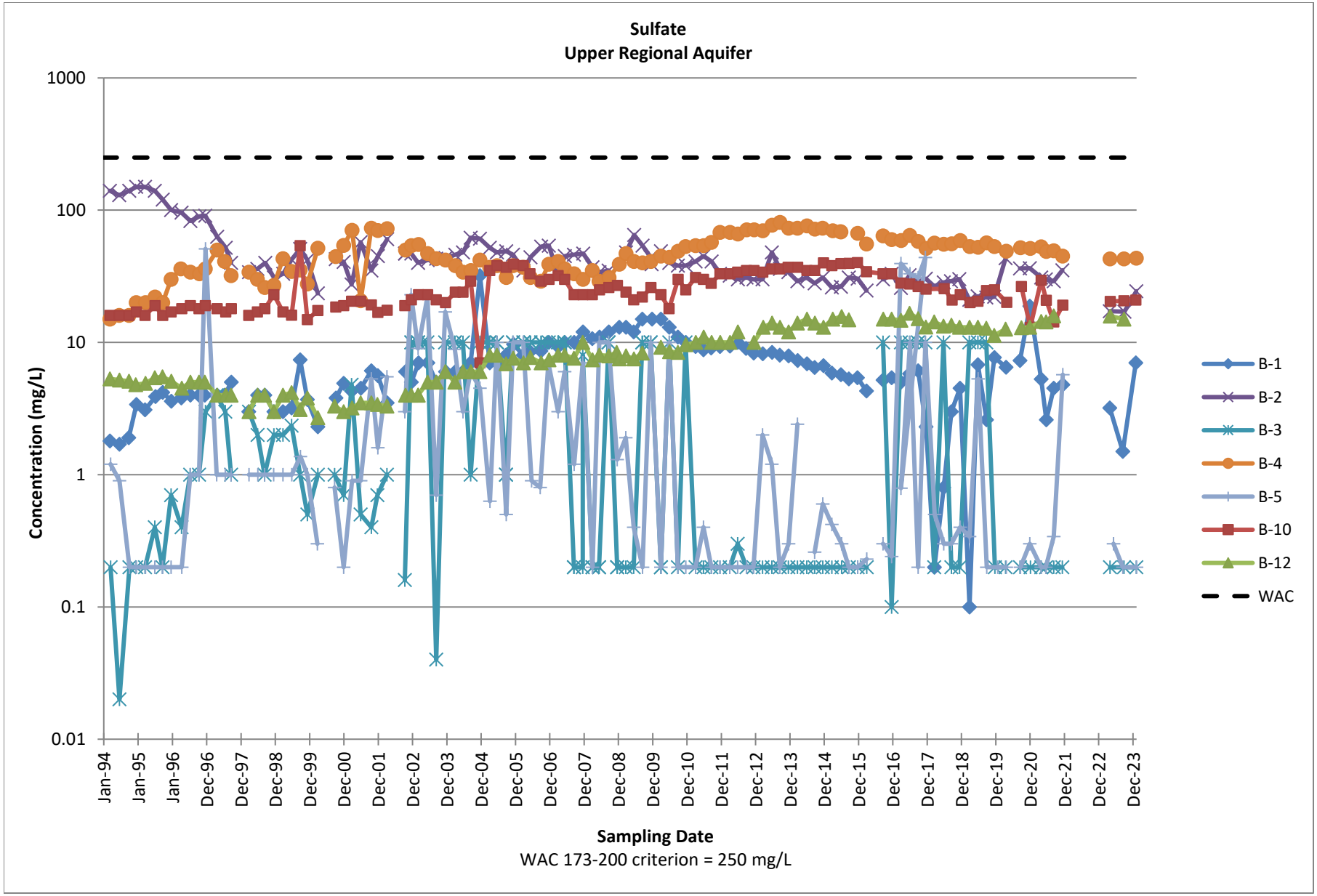

Nitrate as nitrogen
Upper Regional Aquifer
100
10
1
0.1
0.01
0.001
Concentration (mg/L)
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
B-1
B-2
B-3
B-4
B-5
B-10
B-12
WAC
WAC 173-200 criterion = 10 mg/L

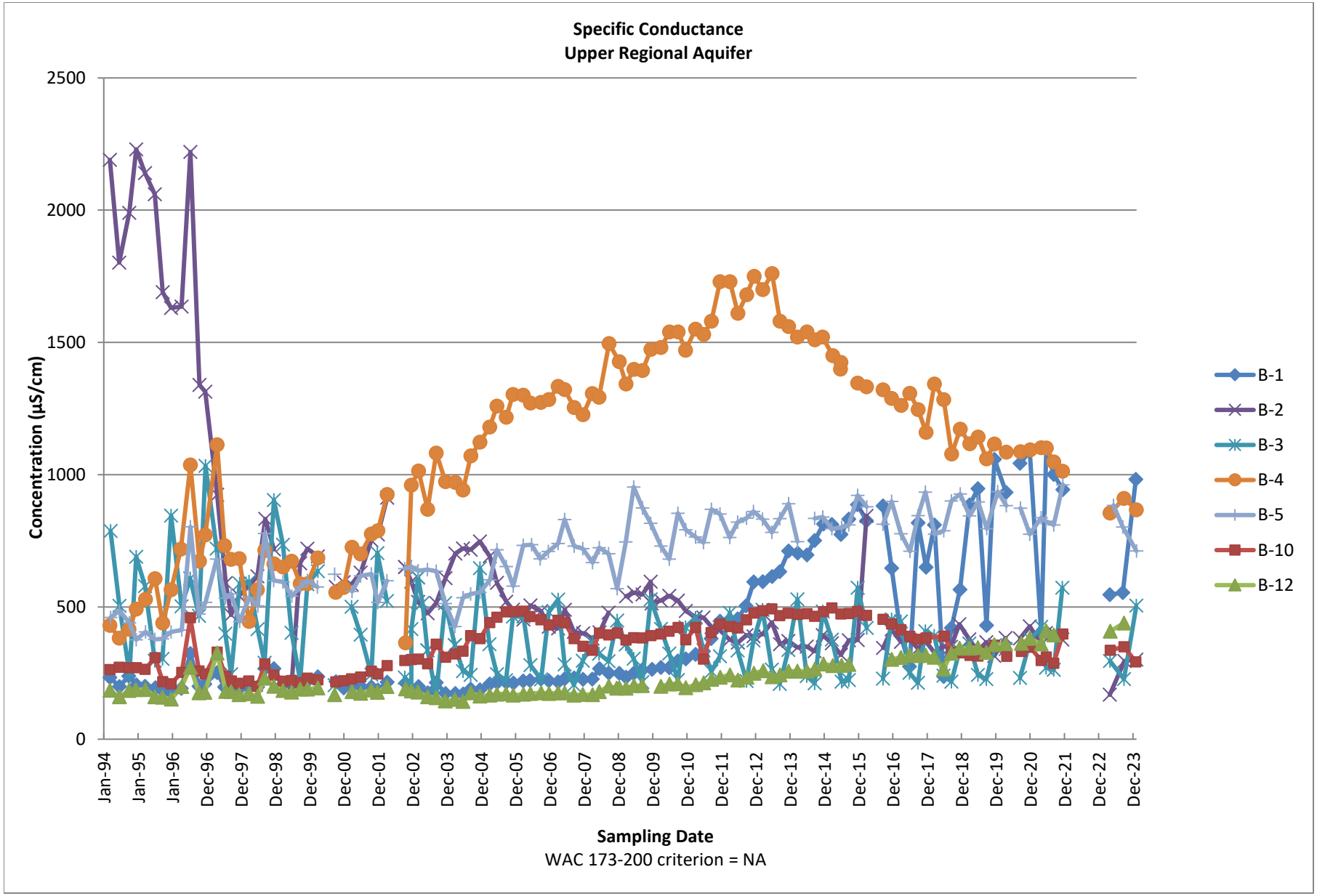

Nitrite as nitrogen
Upper Regional Aquifer
10
1
0.1
0.01
0.001
Concentration (mg/L)
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
WAC 173-200 criterion = NA
B-1
B-2
B-3
B-4
B-5
B-10
B-12

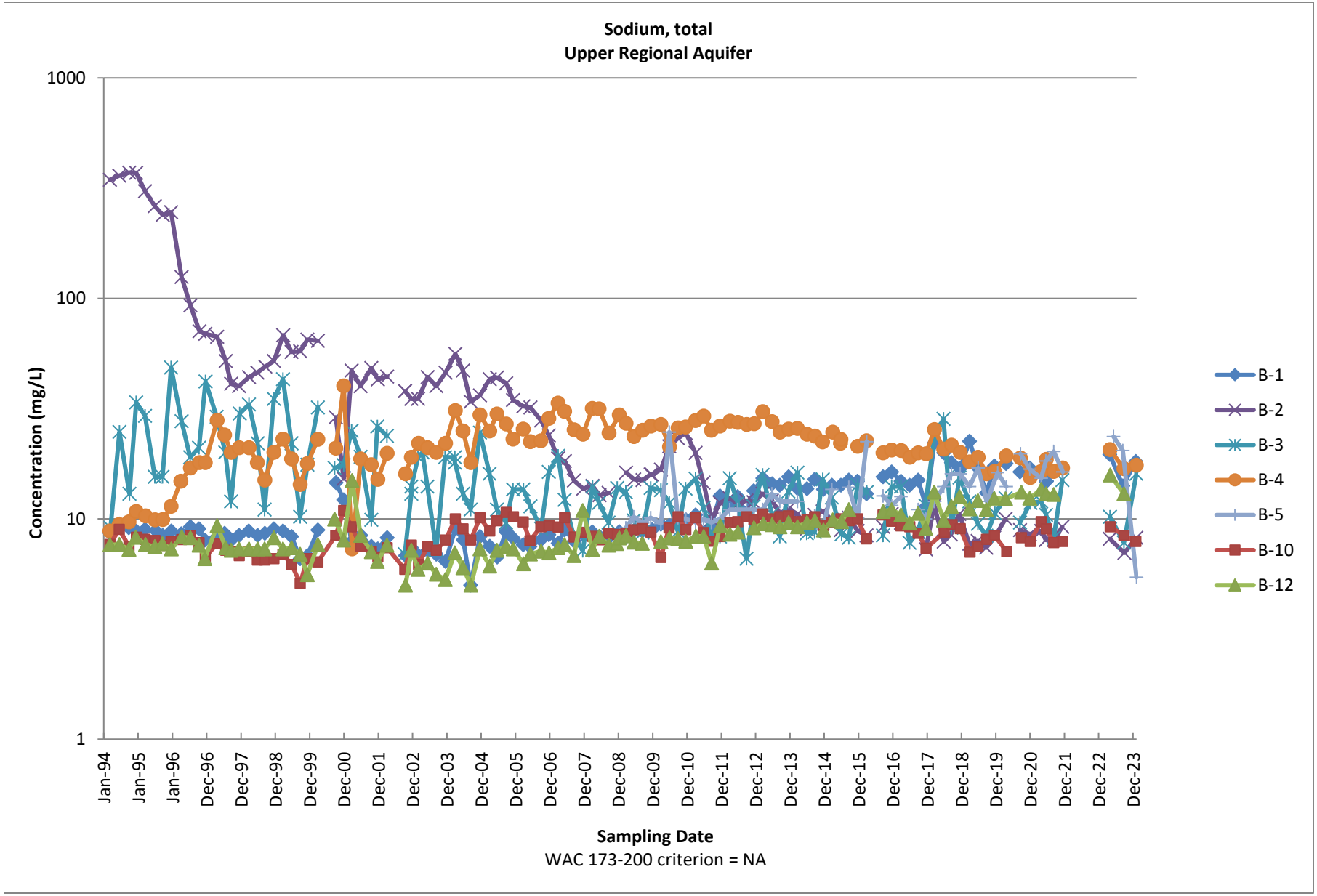

Potassium, total
Upper Regional Aquifer
Concentration (mg/L)
70
60
50
40
30
20
10
0
Jan-08
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
WAC 173-200 criterion = NA
B-1
B-2
B-3
B-4
B-5
B-10
B-12

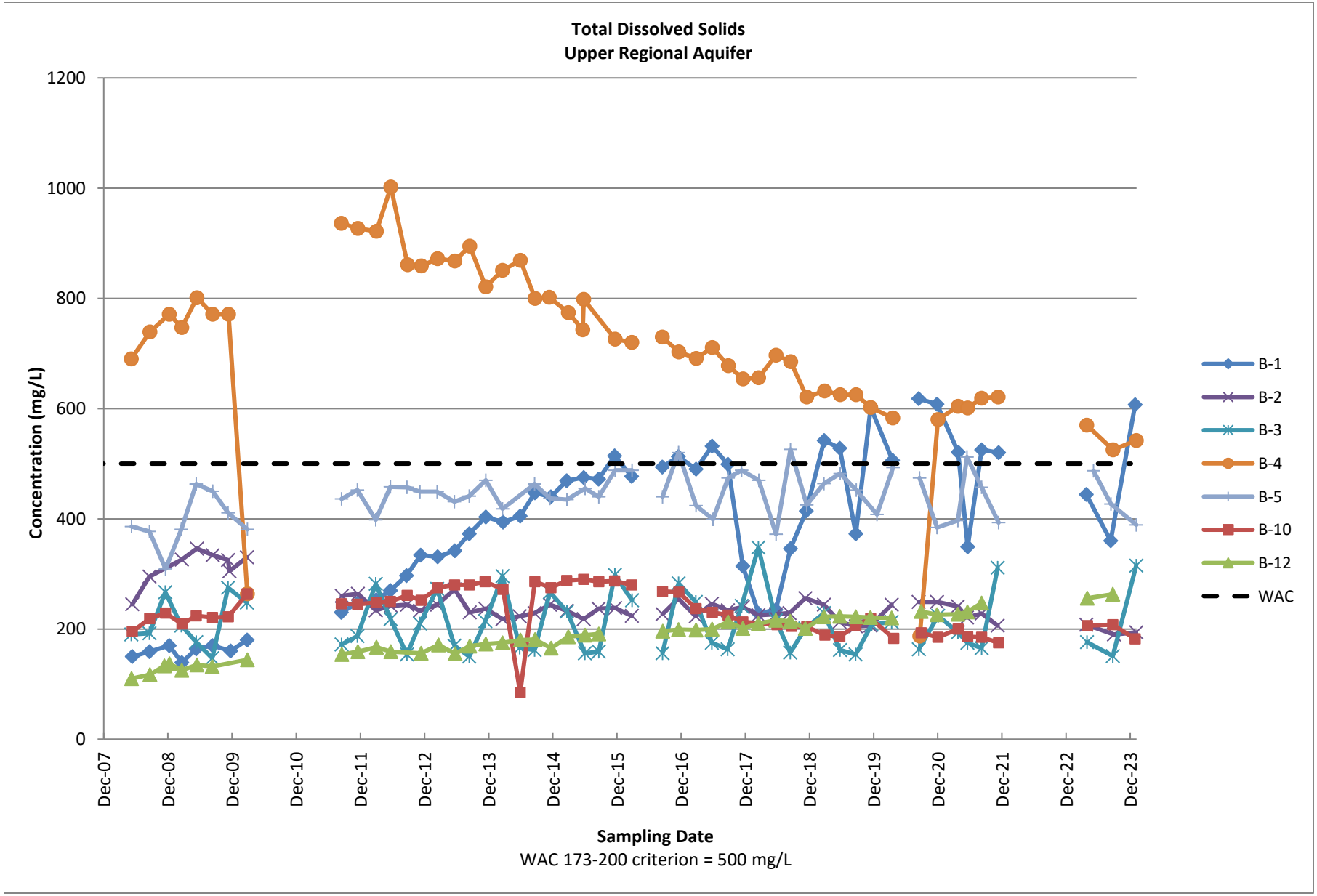

pH
Upper Regional Aquifer
pH (standard units)
12
11
10
9
8
7
6
5
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
WAC 173-200 criterion = 6.5 - 8.5 SU
B-1
B-2
B-3
B-4
B-5
B-10
B-12
WAC
WAC

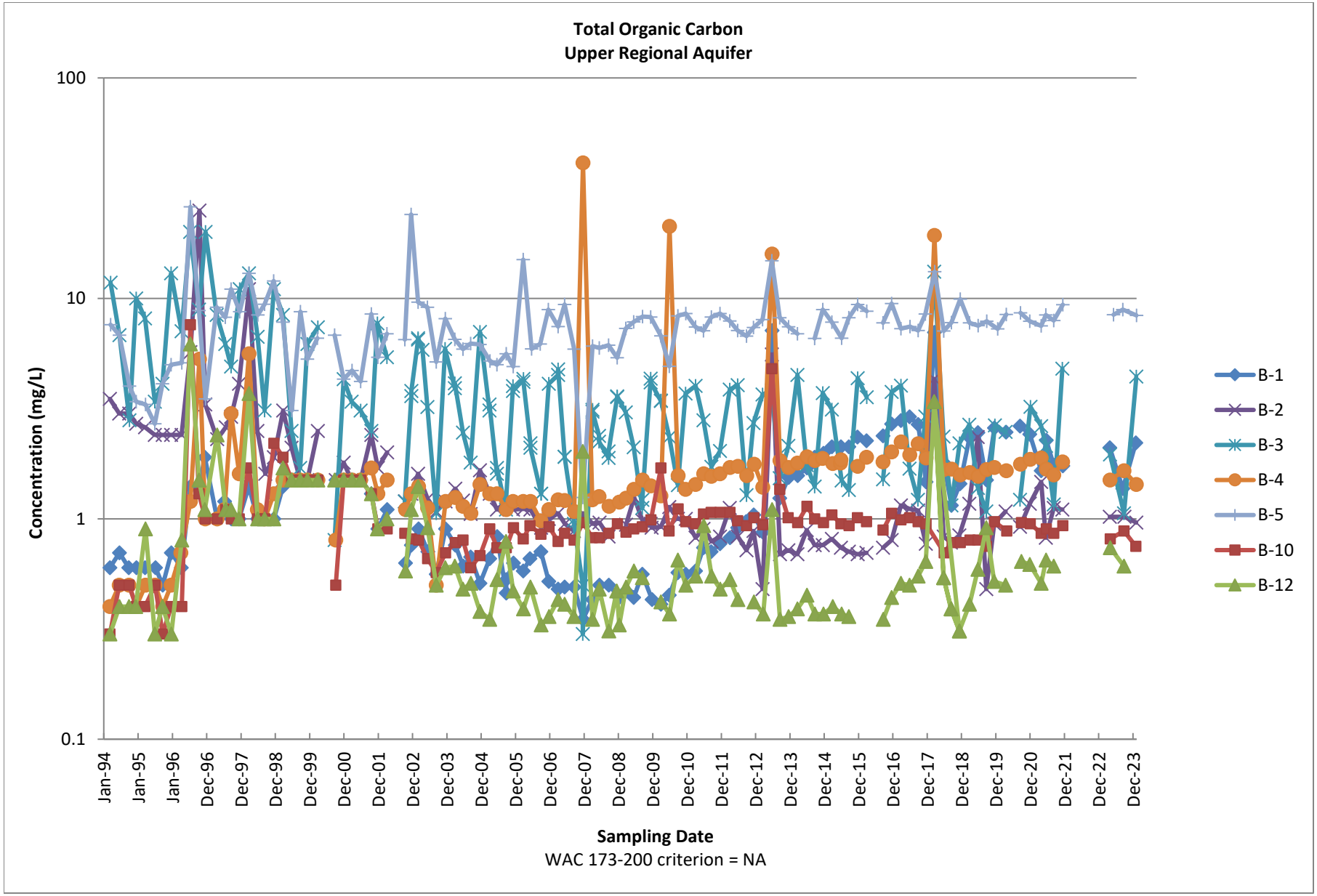

Selenium, dissolved
Upper Regional Aquifer
Concentration (mg/L)
1
0.1
0.01
0.001
0.0001
0.00001
Jan-08
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
B-1
B-2
B-3
B-4
B-5
B-10
B-12
WAC
WAC 173-200 criterion = 0.01 mg/l

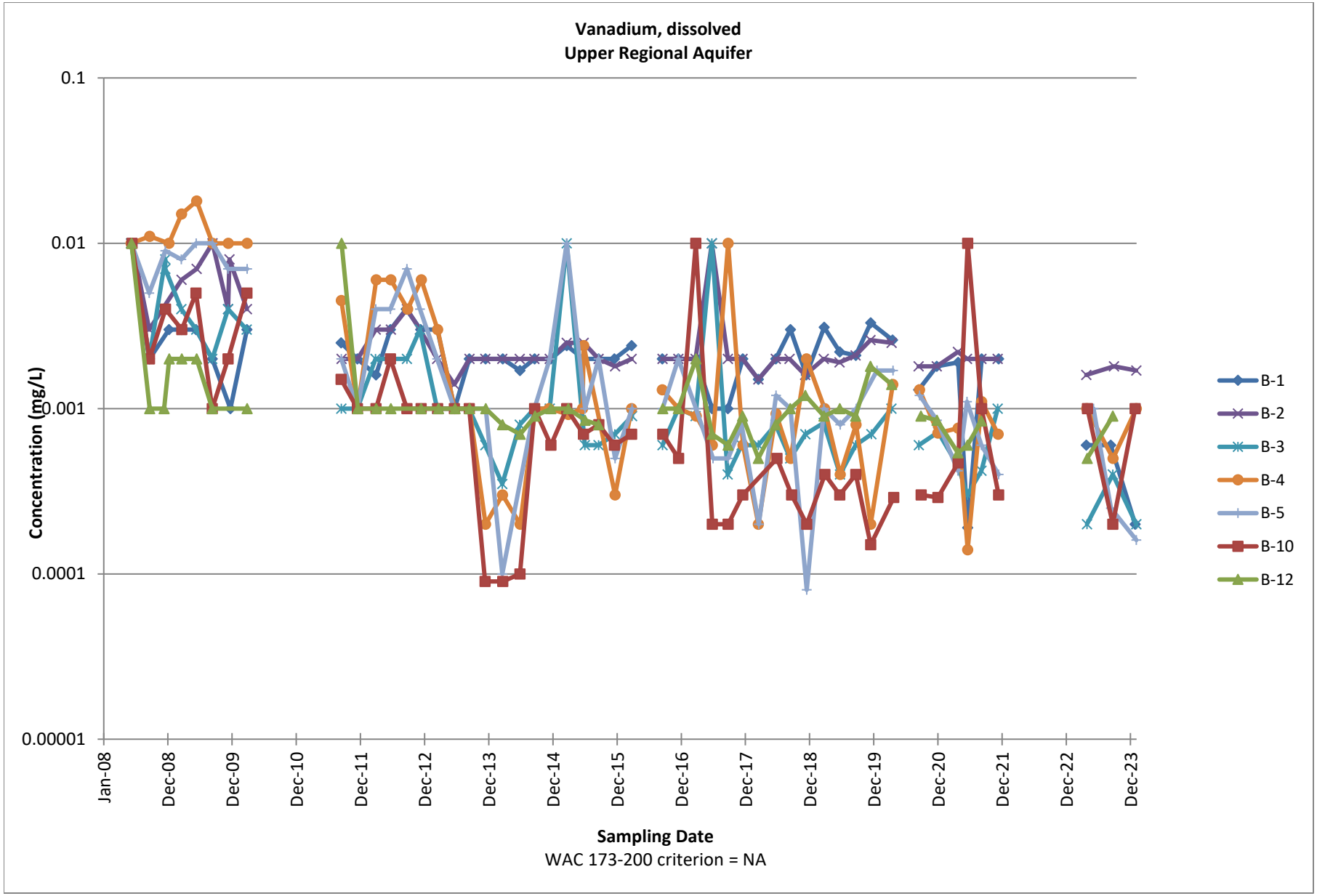

Sulfate
Upper Regional Aquifer
1000
100
10
1
0.1
0.01
Concentration (mg/L)
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
B-1
B-2
B-3
B-4
B-5
B-10
B-12
WAC
WAC 173-200 criterion = 250 mg/L

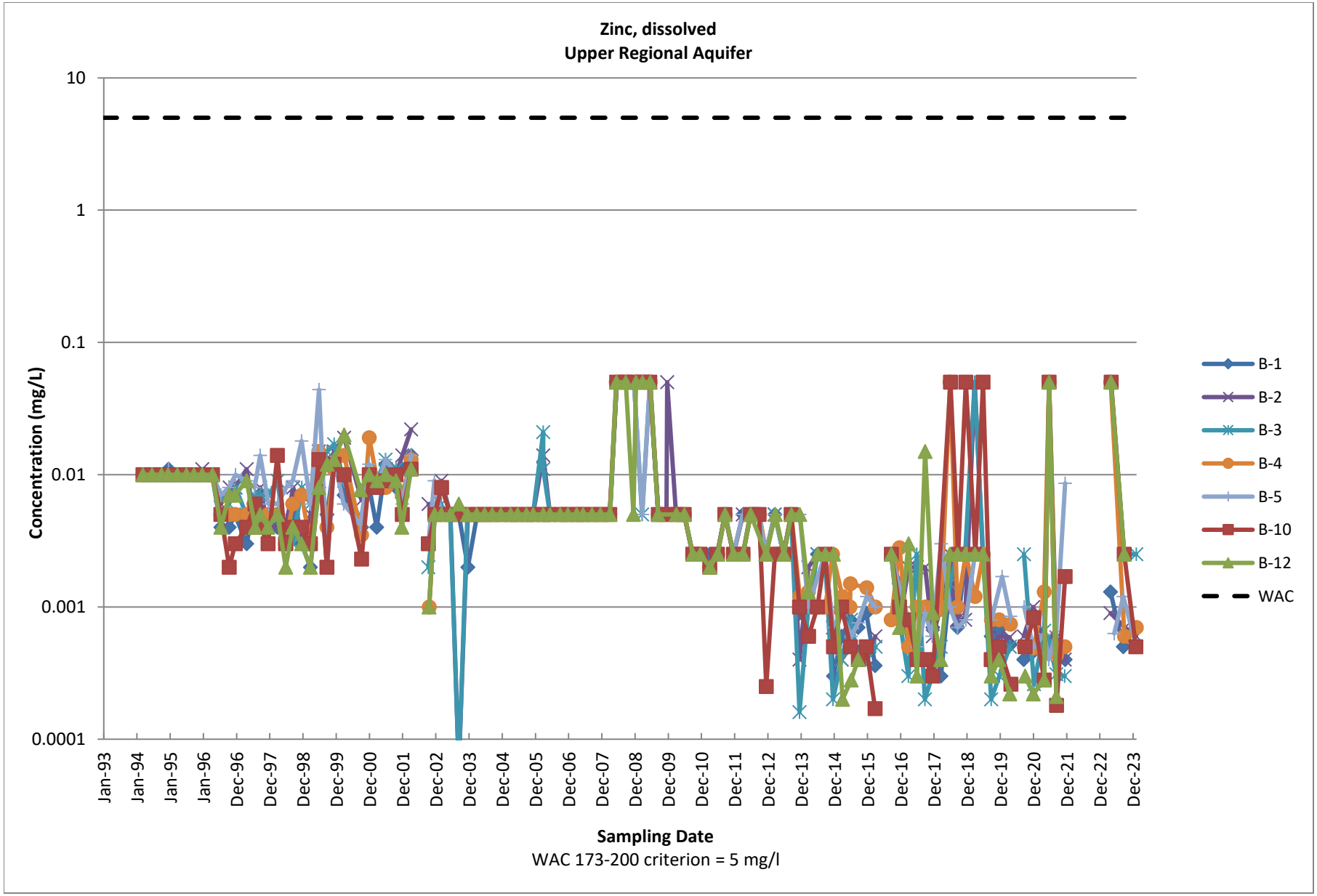

Specific Conductance
Upper Regional Aquifer
Concentration (µS/cm)
2500
2000
1500
1000
500
0
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
WAC 173-200 criterion = NA
B-1
B-2
B-3
B-4
B-5
B-10
B-12

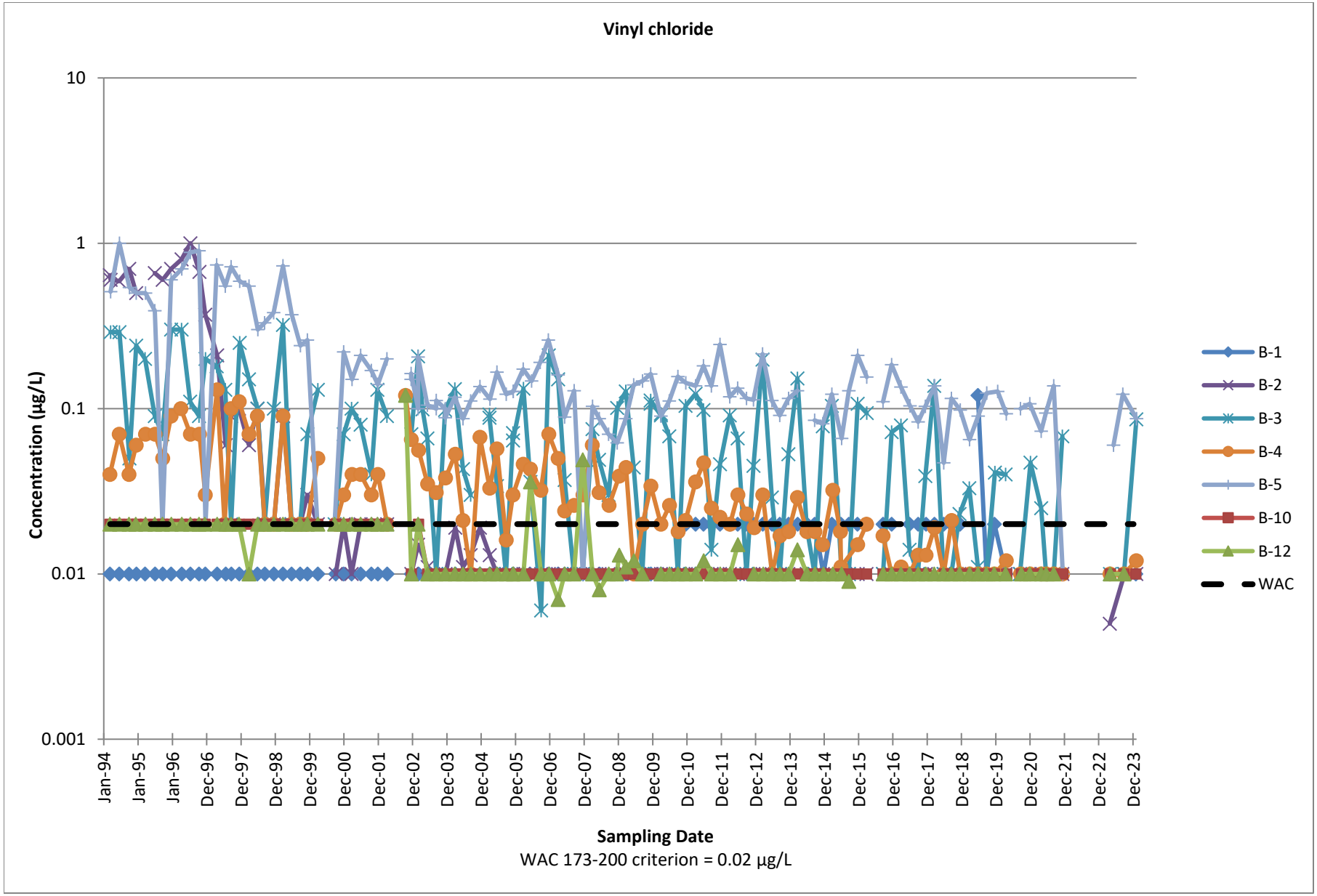

Sodium, total
Upper Regional Aquifer
1000
100
10
1
Concentration (mg/L)
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
WAC 173-200 criterion = NA
B-1
B-2
B-3
B-4
B-5
B-10
B-12


Total Dissolved Solids
Upper Regional Aquifer
Concentration (mg/L)
1200
1000
800
600
400
200
0
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
B-1
B-2
B-3
B-4
B-5
B-10
B-12
WAC
WAC 173-200 criterion = 500 mg/L


Total Organic Carbon
Upper Regional Aquifer
100
10
1
0.1
Concentration (mg/L)
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
WAC 173-200 criterion = NA
B-1
B-2
B-3
B-4
B-5
B-10
B-12


Vanadium, dissolved
Upper Regional Aquifer
0.1
0.01
0.001
0.0001
0.00001
Concentration (mg/L)
Jan-08
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
WAC 173-200 criterion = NA
B-1
B-2
B-3
B-4
B-5
B-10
B-12


Zinc, dissolved
Upper Regional Aquifer
10
1
0.1
0.01
0.001
0.0001
Concentration (mg/L)
Jan-93
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
WAC 173-200 criterion = 5 mg/l
B-1
B-2
B-3
B-4
B-5
B-10
B-12
WAC


Vinyl chloride
10
1
0.1
0.01
0.001
Concentration (µg/L)
Jan-94
Jan-95
Jan-96
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
Dec-21
Dec-22
Dec-23
Sampling Date
B-1
B-2
B-3
B-4
B-5
B-10
B-12
WAC
WAC 173-200 criterion = 0.02 µg/L

APPENDIX C
Data Validation Report
Fourth Quarter 2023

INMAN LANDFILL FOURTH QUARTER 2023 DATA VALIDATION REPORT

1. INTRODUCTION

This report presents the results of data validation for laboratory reports 24-01986, 24-02419, 24-2531, and 24-02723 by Edge Analytical, Burlington, Washington. Sample identifications and the analyses requested are provided in the following table.

Sample Location	Skagit County Sample ID	Lab Sample ID	Lab Report	Analysis (All Samples)
B-1	3233	3921	24-01986	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn: 200.7/Filter, 200.8/Filter, 245.1/Filter Total Metals (Ca, K, Mg, Na): 200.7 Inorganic Anions (NO_3, NO_2, Cl, SO_4): 300.0 Nutrients (NH_3): SM 4500 Demand (TOC, COD): SM 5310B, SM 5220D Organics (VOCs): 8260C, 8260SIM Properties (Alkalinity, TDS, Bicarbonate): SM 2320B, SM 2540C
B-2	3234	4645	24-02419	
B-3	3236	4646	24-02419	
B-3 Duplicate	3235	5307	24-02723	
B-4	3237	4643	24-02419	
B-5	3238	4878	24-02531	
B-6	3239	3922	24-01986	
B-8	3241	4647	24-02419	
B-9	3242	4643	24-02419	
B-10	3243	3923	24-01986	
B-11	3244	3924	24-01986	

The samples were collected on January 24, 30, 31, and February 2, 2024.

2. SAMPLE HANDLING AND CUSTODY REQUIREMENTS

Samples were transported off site for analysis. Custody of the samples was controlled and documented on a chain of custody form. Unique sample identification numbers were recorded on the chain of custody forms along with date, time, matrix type, preservative, analysis required for each sample, and other required information.

2.1 Dissolved Metals

Sample custody was maintained throughout collection, transport, and lab receipt.

2.2 Total Metals

Sample custody was maintained throughout collection, transport, and lab receipt.

2.3 Inorganic Anions

Sample custody was maintained throughout collection, transport, and lab receipt.

2.4 Nutrients

Sample custody was maintained throughout collection, transport, and lab receipt.

2.5 Demand

Sample custody was maintained throughout collection, transport, and lab receipt.

2.6 Organics

Sample custody was maintained throughout collection, transport, and lab receipt.

2.7 Properties

Sample custody was maintained throughout collection, transport, and lab receipt.

3. HOLDING TIME

3.1 Dissolved Metals

All analyses were performed within the recommended maximum holding time.

3.2 Total Metals

All analyses were performed within the recommended maximum holding time.

3.3 Inorganic Anions

All analyses were performed within the recommended maximum holding time.

3.4 Nutrients

All analyses were performed within the recommended maximum holding time.

3.5 Demand

All analyses were performed within the recommended maximum holding time.

3.6 Organics

All analyses were performed within the recommended maximum holding time.

3.7 Properties

All analyses were performed within the recommended maximum holding time.

4. METHOD BLANKS

The assessment of blank analysis results is to determine the existence and magnitude of contamination resulting from laboratory activities.

4.1 Dissolved Metals

Goals for blank analyses were met. Method blanks were analyzed and were target analyte free.

4.2 Total Metals

Sodium was detected at 0.3 mg/L in two instances.

All other goals for blank analyses were met. Method blanks were analyzed and were target analyte free.

4.3 Inorganic Anions

Goals for blank analyses were met. Method blanks were analyzed and were target analyte free.

4.4 Nutrients

Goals for blank analyses were met. Method blanks were analyzed and were target analyte free.

4.5 Demand

Goals for blank analyses were met. Method blanks were analyzed and were target analyte free.

4.6 Organics

Goals for blank analyses were met. Method blanks were analyzed and were target analyte free.

4.7 Properties

Total dissolved solids were detected at negative and positive values in 3 instances.

Goals for all other blank analyses were met.

5. LABORATORY FORTIFIED BLANK

Data for laboratory control samples (LCS) were provided in order to evaluate the accuracy and performance of the analytical method. GC and GC/MS method performance on individual samples is established by means of spiking system monitoring compounds (surrogates), and internal standards which are added just prior to analyses.

5.1 Dissolved Metals

Goals for LCS recovery were met.

5.2 Total Metals

Goals for LCS recovery were met.

5.3 Inorganic Anions

Goals for LCS recovery were met.

5.4 Nutrients

Goals for LCS recovery were met.

5.5 Demand

Goals for LCS recovery were met.

5.6 Organics

METHYL IODIDE: End calibration verification for compounds was below the acceptance limit, but there were no sample detections and adequate sensitivity at reporting limit.

1-CHLOROBUTANE, 2-BUTANONE (MEK), 2-HEXANONE, ACRYLONITRILE, HEXACHLOROETHANE: Low recovery cannot be accounted for, but there was adequate sensitivity to detect compound at MRL.

1,2,3 – TRICHLOROBENZENE, NAPHTHALENE, ACROLEIN: Result was high for this analyte in the end standard, indicating an increase in detector response; no detection of this analyte was found in samples.

All other goals for LCS recovery were met.

5.7 Properties

Goals for LCS recovery were met.

6. LABORATORY DUPLICATE PRECISION

6.1 Dissolved Metals

Dissolved chromium and dissolved mercury were flagged once for an assumed matrix induced bias.

Dissolved chromium was flagged once, dissolved selenium and dissolved zinc were flagged three times: acceptance criteria do not apply to estimated values.

The RPD values for all other duplicate analyses performed on dissolved metal samples were within acceptable limits.

6.2 Total Metals

The RPD values for all duplicate analyses performed on total metal samples were within acceptable limits.

6.3 Inorganic Anions

The RPD values for all duplicate analyses performed on inorganic anion samples were within acceptable limits.

6.4 Nutrients

Ammonia-N was flagged three times for a non-homogenous sample.

The RPD values for all other duplicate analyses performed on nutrient samples were within acceptable limits.

6.5 Demand

Chemical oxygen demand was flagged once: acceptance criteria do not apply to estimated values.

The RPD values for all duplicate analyses performed on demand samples were within acceptable limits.

6.6 Organics

The RPD values for all duplicate analyses performed on organic samples were within acceptable limits.

6.7 Properties

The RPD values for all duplicate analyses performed on organic samples were within acceptable limits.

7. MATRIX SPIKE AND MATRIX SPIKE DUPLICATE ANALYSIS

7.1 Dissolved Metals

Three samples of dissolved mercury were flagged: A matrix induced bias was assumed.

Two samples of copper were flagged without qualifier.

The matrix spike and matrix spike duplicate (MS/MSD) analyses were in control for all other recoveries and RPDs.

7.2 Total Metals

Two samples of total calcium was flagged: the ratio of the spike concentration to sample background was too low to meet performance criteria.

The matrix spike and matrix spike duplicate (MS/MSD) analyses were in control for all other recoveries and RPDs.

7.3 Inorganic Anions

Three samples of chloride were flagged: The ratio of the spike concentration to sample background was too low to meet performance criteria.

The matrix spike and matrix spike duplicate (MS/MSD) analyses were in control for all other recoveries and RPDs.

7.4 Nutrients

One sample of sulfate was flagged: the ratio of the spike concentration to sample background was too low to meet performance criteria.

The MS/MSD analyses performed all other nutrient samples were in control for all recoveries and RPDs.

7.5 Demand

One sample of chemical oxygen demand was flagged: the ratio of the spike concentration to sample background was too low to meet performance criteria.

The MS/MSD analyses performed on all other demand samples were in control for all recoveries and RPDs.

7.6 Organics

HEXACHLOROBUTADIENE, VINYL CHLORIDE (SIM), 1,1 – DICHLOROETHYLENE, 1,1 – DICHLOROPROPENE, 1,1,1 – TRICHLOROETHANE, CARBON TETRACHLORIDE, DICHLORODIFLUOROMETHANE, CHLOROETHANE, HEXACHLOROBUTADIENE, SEC – BUTYLBENZENE, TETRACHLOROETHYLENE, TRICHLOROFLUOROMETHANE, VINYL CHLORIDE, 1,4-DIOXANE (SIM), ACRYLONITRILE (SIM), VINYL CHLORIDE (SIM): Matrix spike recovery was high; the associated blank spike recovery was acceptable.

The MS/MSD analyses performed on all other organic samples were in control for all recoveries and RPDs.

7.7 Properties

The MS/MSD analyses performed on property samples were in control for all recoveries and RPDs.

8. FIELD DUPLICATE

Analyte	Field Duplicate		
	B-3 (3236)	B-3 Duplicate (3235)	RPD (%)
Dissolved Metals (mg/L)			
Arsenic	**0.0013**	**0.0017**	**26.67**
Barium	0.121	0.118	2.51
Chromium	**0.001**	**0.002**	**66.67**
Cobalt	0.00043	0.0004	7.23
Copper	**0.002**	**0.02**	**163.64**
Iron	**0.031**	**2.3**	**194.68**
Manganese	1.005	0.92	8.83
Nickel	0.0017	0.0018	5.71
Selenium	0.0004	0.0004	0
Vanadium	0.0002	0.0002	0
Zinc	**0.0025**	**0.0005**	**133.33**
Total Metals (mg/L)			
Calcium	39	37.9	2.86
Magnesium	27.5	26.7	2.95
Potassium	6.8	5.9	14.17
Sodium	16	14.5	9.84
Inorganic Anions (mg/L)			
Chloride	32.4	29.6	9.03
Nutrients (mg/L)			
Ammonia	1.51	1.44	4.75
Demand (mg/L)			
Total organic carbon	4.42	4.05	8.74
Properties (mg/L)			
Alkalinity	222	191	15.01
Bicarbonate	222	205	7.96
Total dissolved solids	315	282	11.06

Bold = Relative Percent Difference (RPD) exceeds 20% acceptance criteria
Non-detects are not shown.

8.1 Dissolved Metals

The RPD for dissolved arsenic exceeded the acceptance criteria of 20% and results were above the groundwater standard; results are at or below lab PQL, no further action was taken with this data set.

The RPD for dissolved chromium exceeded the acceptance criteria of 20% but results were non-detect; no further action was taken with this data set.

The RPD for dissolved copper exceeded the acceptance criteria of 20% but results were non-detect; no further action was taken with this data set.

The RPD for dissolved iron exceeded the acceptance criteria of 20% and results were above the groundwater standard; the sample with the higher result is not anomalous compared to dissolved iron results from other wells; no further action was taken with this data set.

The RPD for dissolved zinc exceeded the acceptance criteria of 20% but results were non-detect; no further action was taken with this data set.

All other RPDs between the duplicate samples were within $\leq$ 20%.

8.2 Total Metals

All RPDs between the duplicate samples were within $\leq$ 20%.

8.3 Inorganic Anions

All RPDs between the duplicate samples were within $\leq$ 20%.

8.4 Nutrients

All RPDs between the duplicate samples were within $\leq$ 20%.

8.5 Demand

All RPDs between the duplicate samples were within $\leq$ 20%.

8.6 Organics

All RPDs between the duplicate samples were within $\leq$ 20%.

8.7 Properties

All RPDs between the duplicate samples were within $\leq$ 20%.

9. DETECTION LIMITS

If detection limit goals are met, then the analytic method is considered to have provided detection limits low enough to allow site data to be compared to the applicable groundwater criteria.

9.1 Dissolved Metals – 200.8/Filter, 245.1/Filter

Detection limit goals were met for all results.

9.2 Total Metals – 200.7

Detection limit goals were met for all results.

9.3 Inorganic Anions – 300.0

Detection limit goals were met for all results.

9.4 Nutrients – SM 4500

Detection limit goals were met for all results.

9.5 Demand – SM 5310B, SM 5220D

Detection limit goals were met for all results.

9.6 Organics – 8260B, 8260SIM

Detection limit goals were met for all results.

9.7 Properties – SM2320 B, SM2540 C

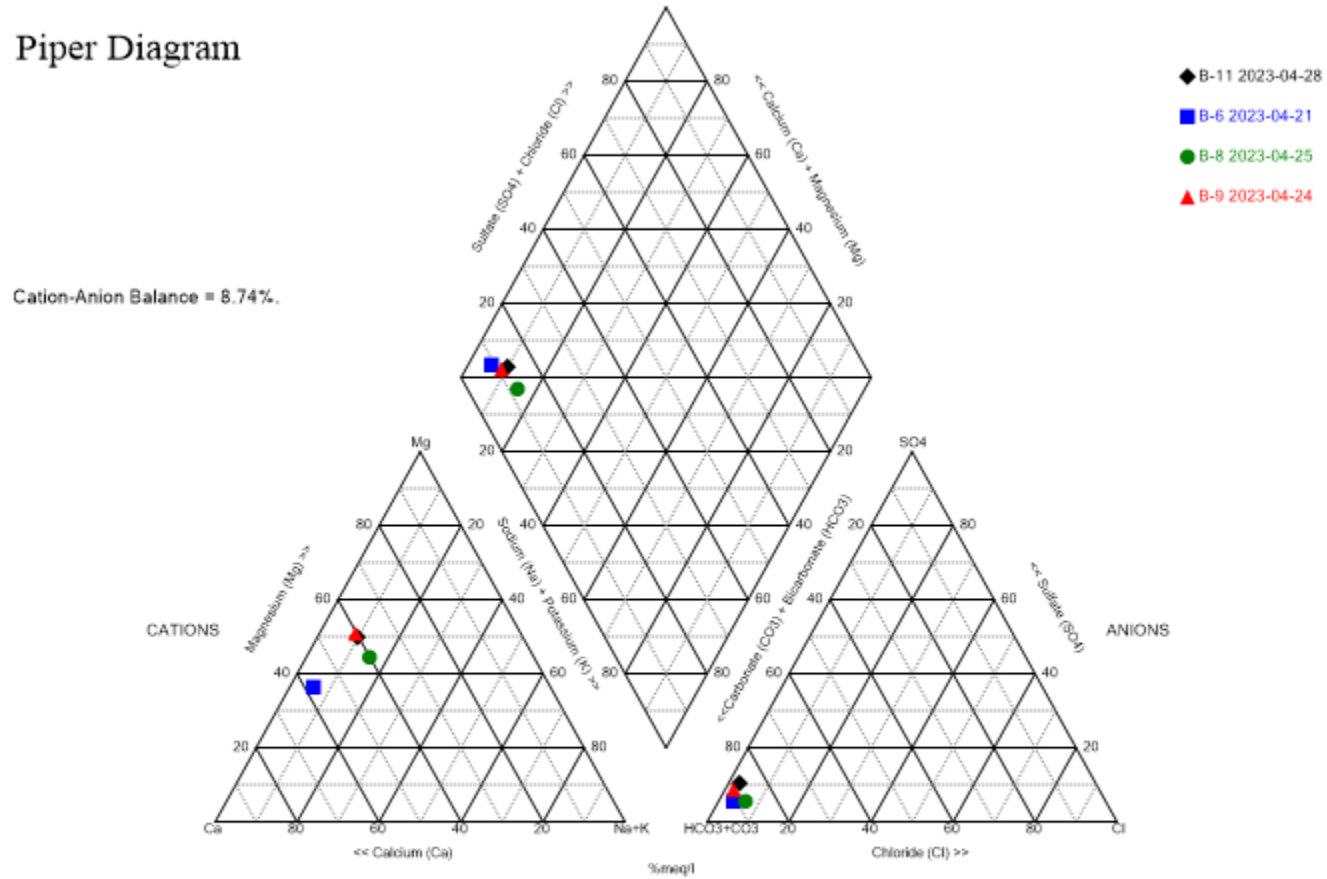
Detection limit goals were met for all results.

10. DATA VALIDATION AND USABILITY

With the exception of the above noted anomalies, standard analytical protocols were followed in the analysis of the samples and all laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits. Limitations were stated and clearly identified where applicable. As a result of this review, the data are found to be acceptable as reported by the laboratory for the intended use in this project.

APPENDIX D-1
Piper Diagrams 2023 – Perched Aquifer

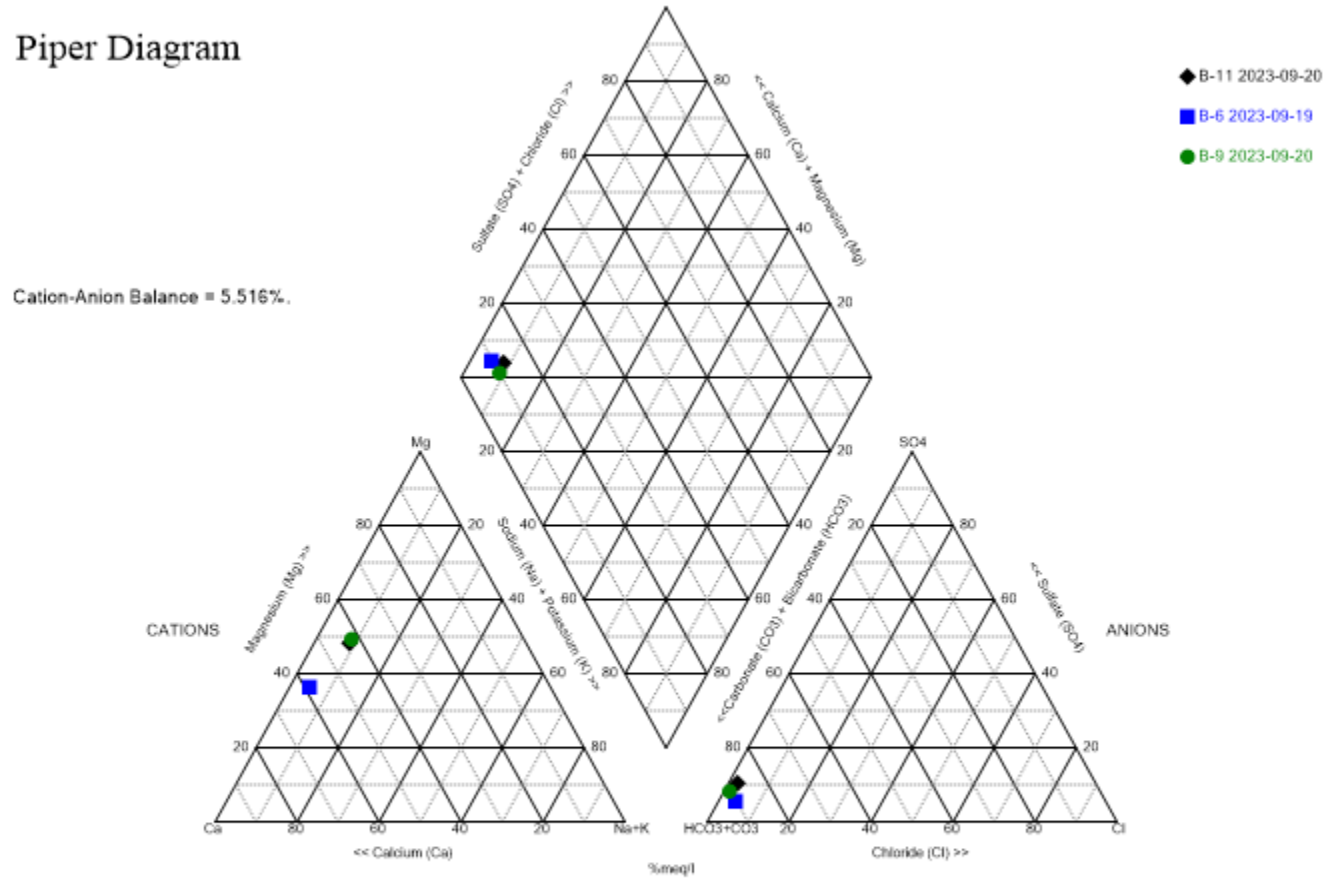
Piper Diagram



Analysis Run 4/8/2024 9:37 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

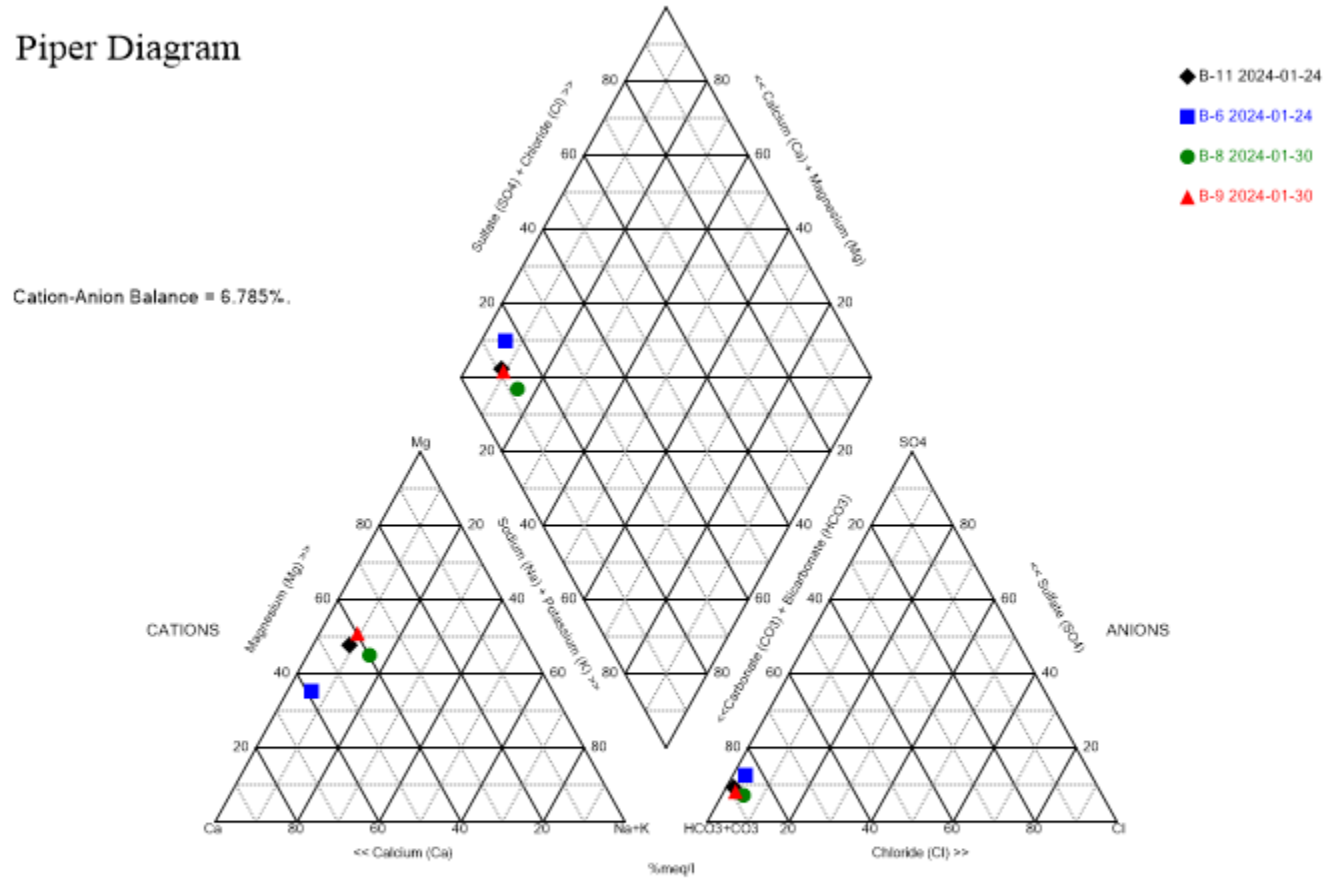
Piper Diagram



Analysis Run 4/8/2024 9:38 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

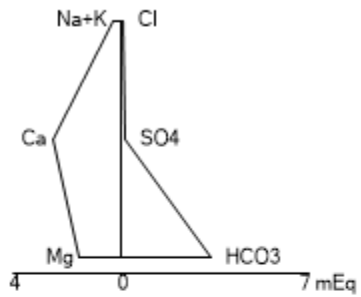
Piper Diagram



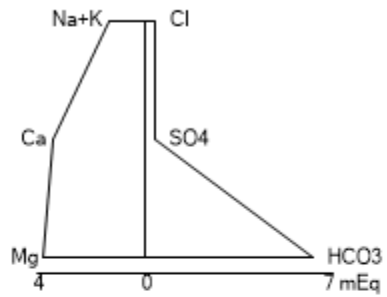
Analysis Run 4/8/2024 9:38 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

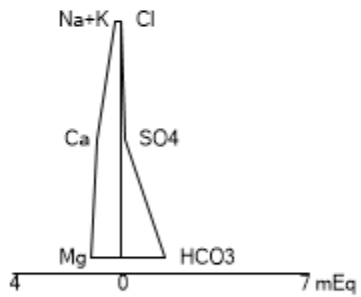
APPENDIX D-2
Stiff Diagrams 2023 – Perched Aquifer



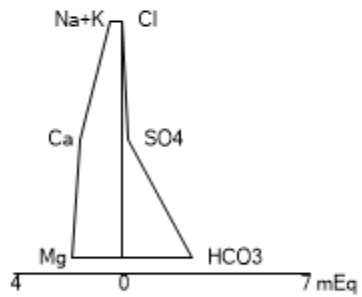
B-6 2023-04-21



B-8 2023-04-25



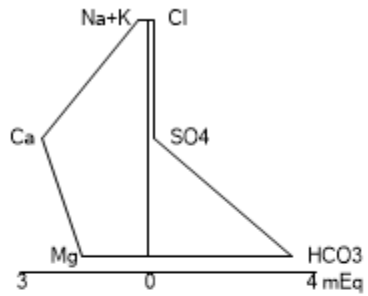
B-9 2023-04-24



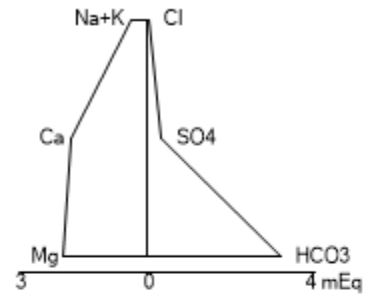
B-11 2023-04-28

Stiff Diagram Analysis Run 4/8/2024 9:39 AM

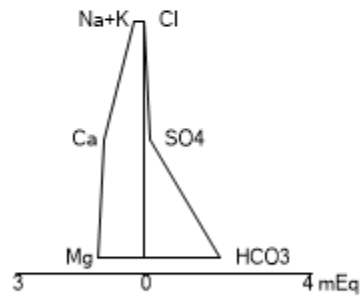
Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023



B-6 2023-09-19



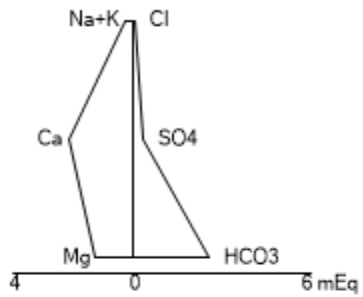
B-11 2023-09-20



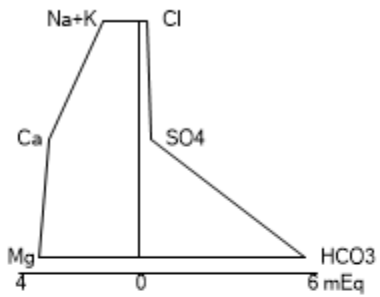
B-9 2023-09-20

Stiff Diagram Analysis Run 4/8/2024 9:40 AM

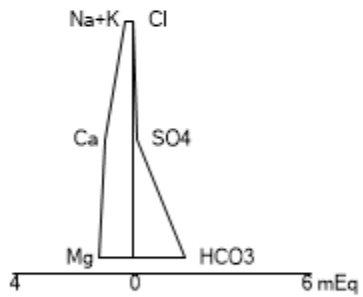
Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023



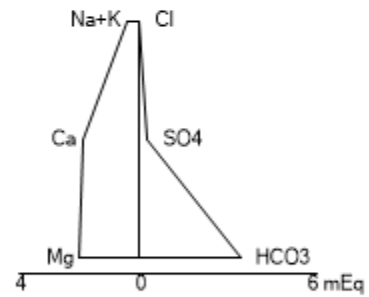
B-6 2024-01-24



B-8 2024-01-30



B-9 2024-01-30



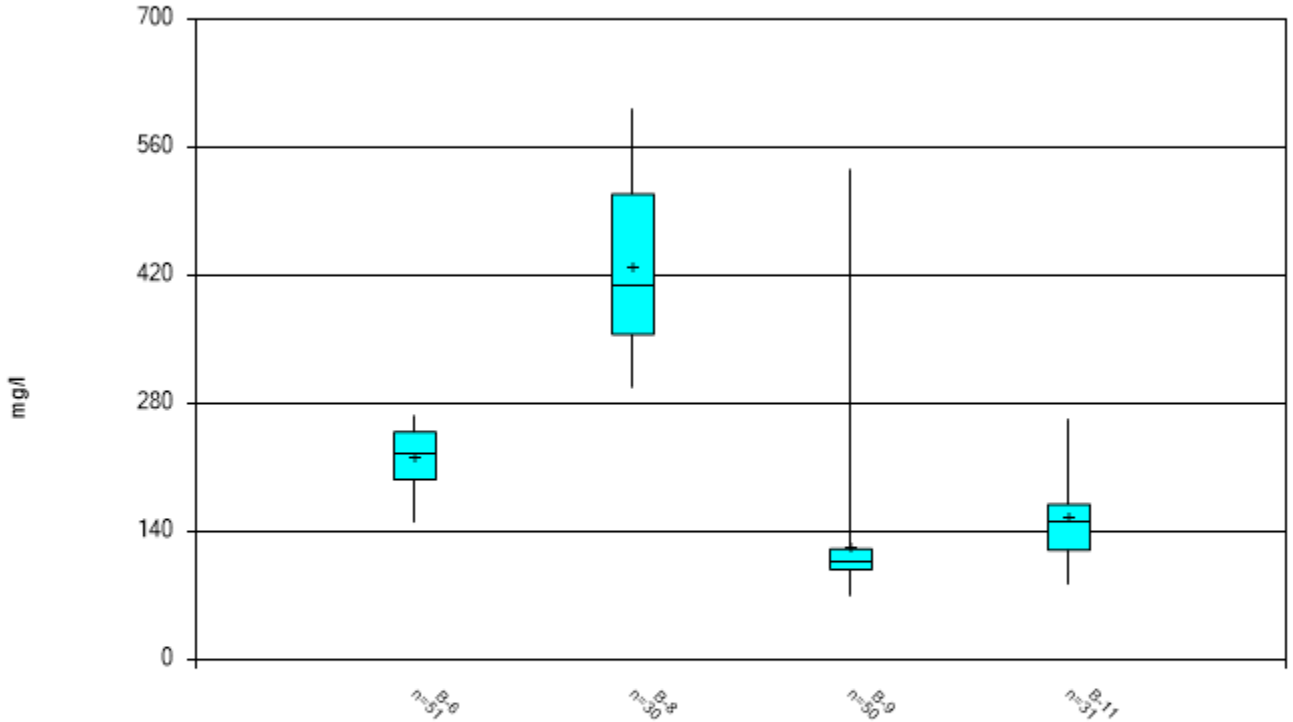
B-11 2024-01-24

Stiff Diagram Analysis Run 4/8/2024 9:40 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

APPENDIX D-3
Box Plots 1994-2023 – Perched Aquifer

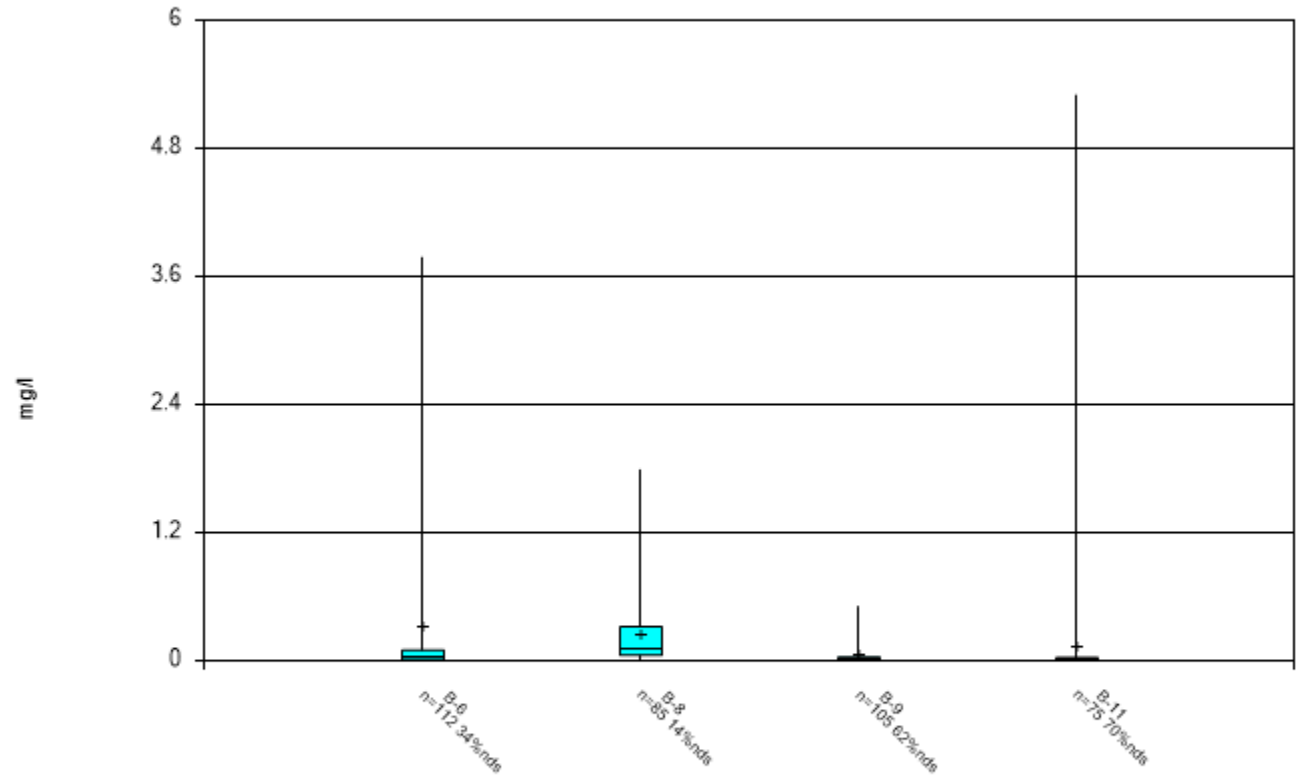
Box & Whiskers Plot



Constituent: Alkalinity Analysis Run 4/8/2024 10:59 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

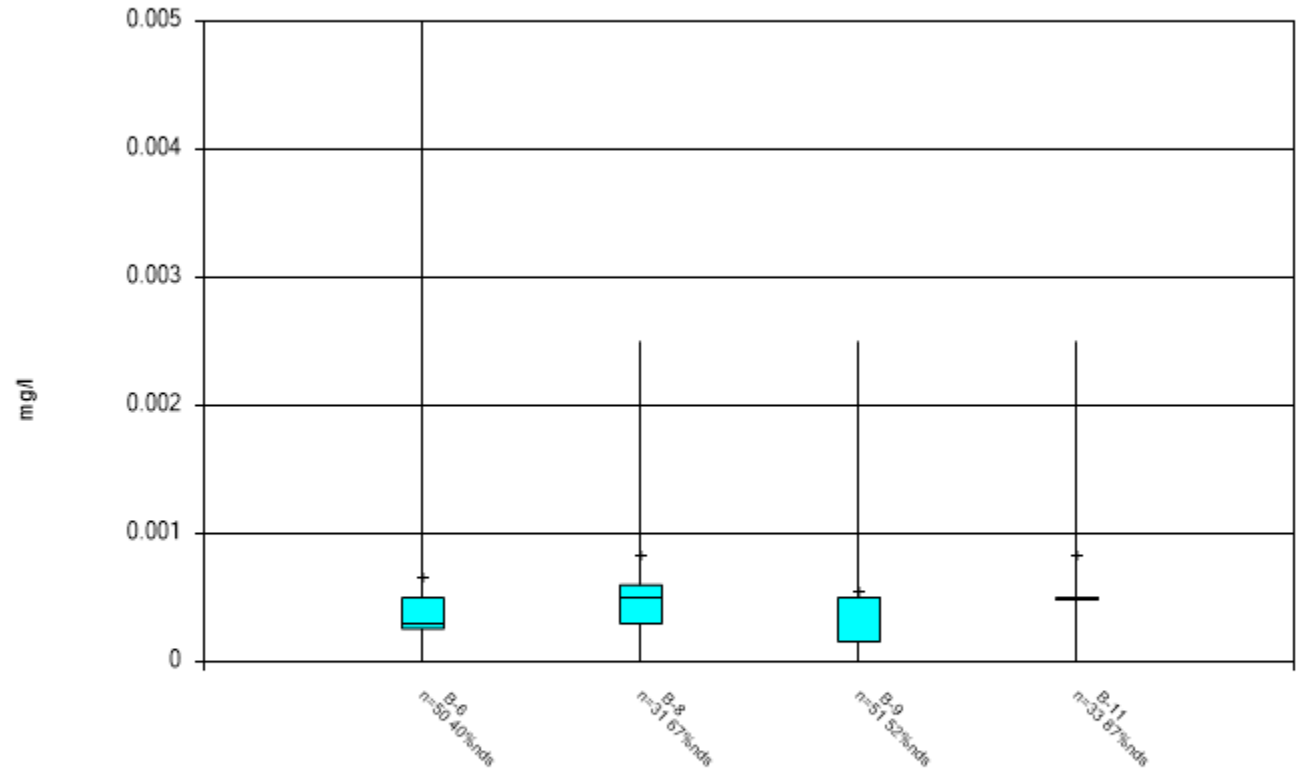
Box & Whiskers Plot



Constituent: Ammonia as nitrogen Analysis Run 4/8/2024 11:01 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

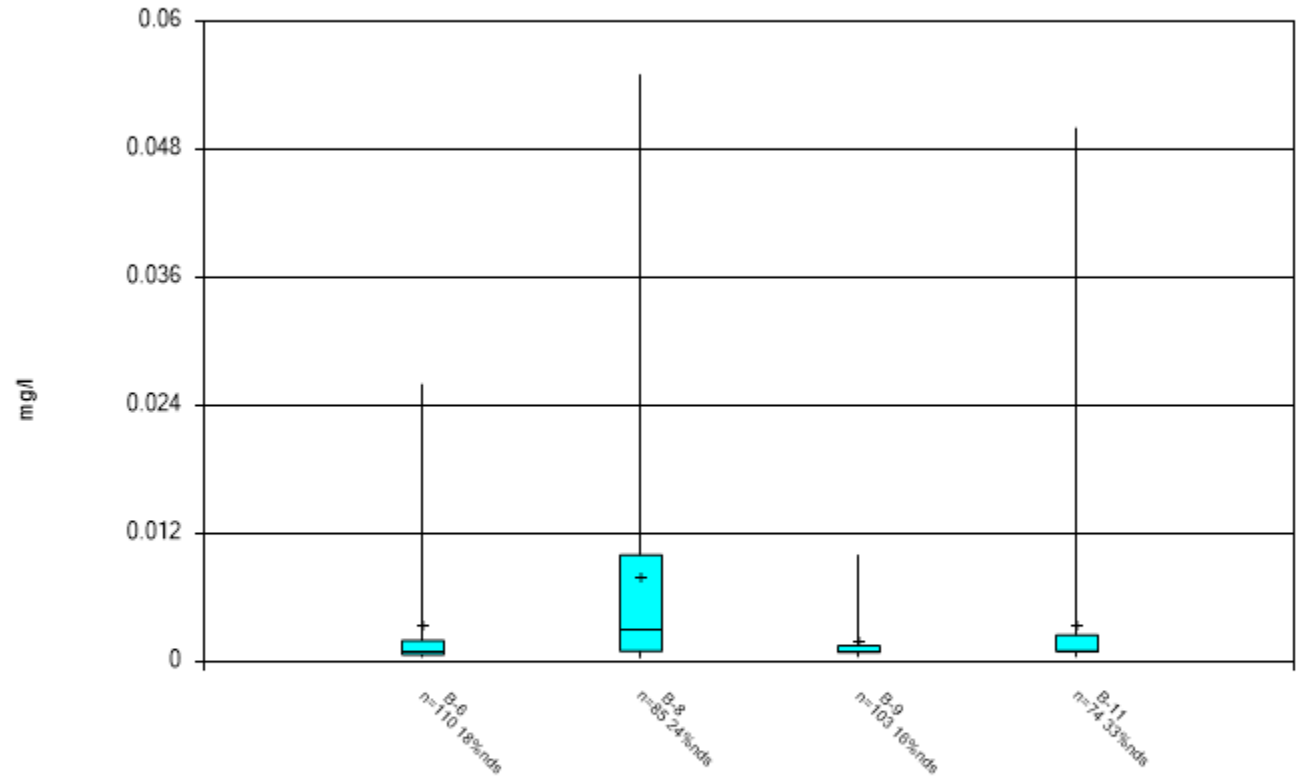
Box & Whiskers Plot



Constituent: ANTIMONY Analysis Run 4/8/2024 11:01 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

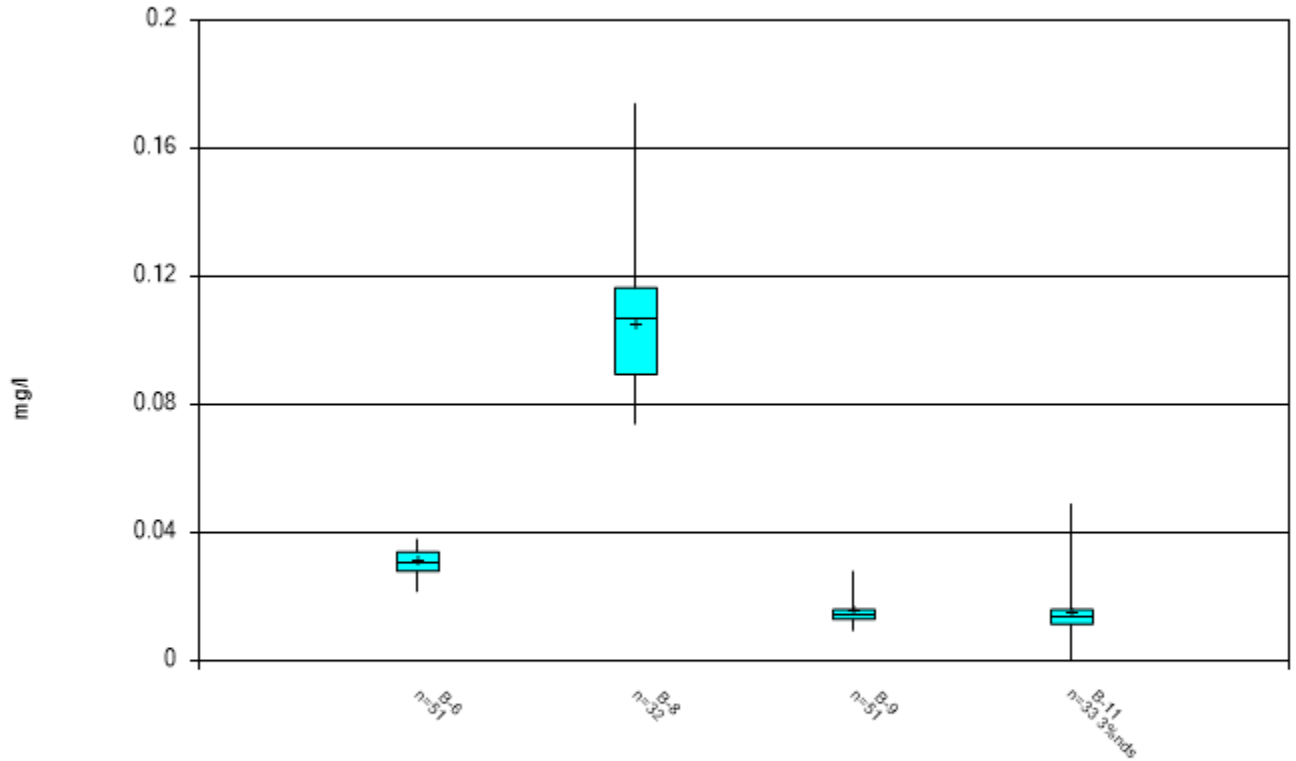
Box & Whiskers Plot



Constituent: Arsenic Analysis Run 4/8/2024 11:01 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

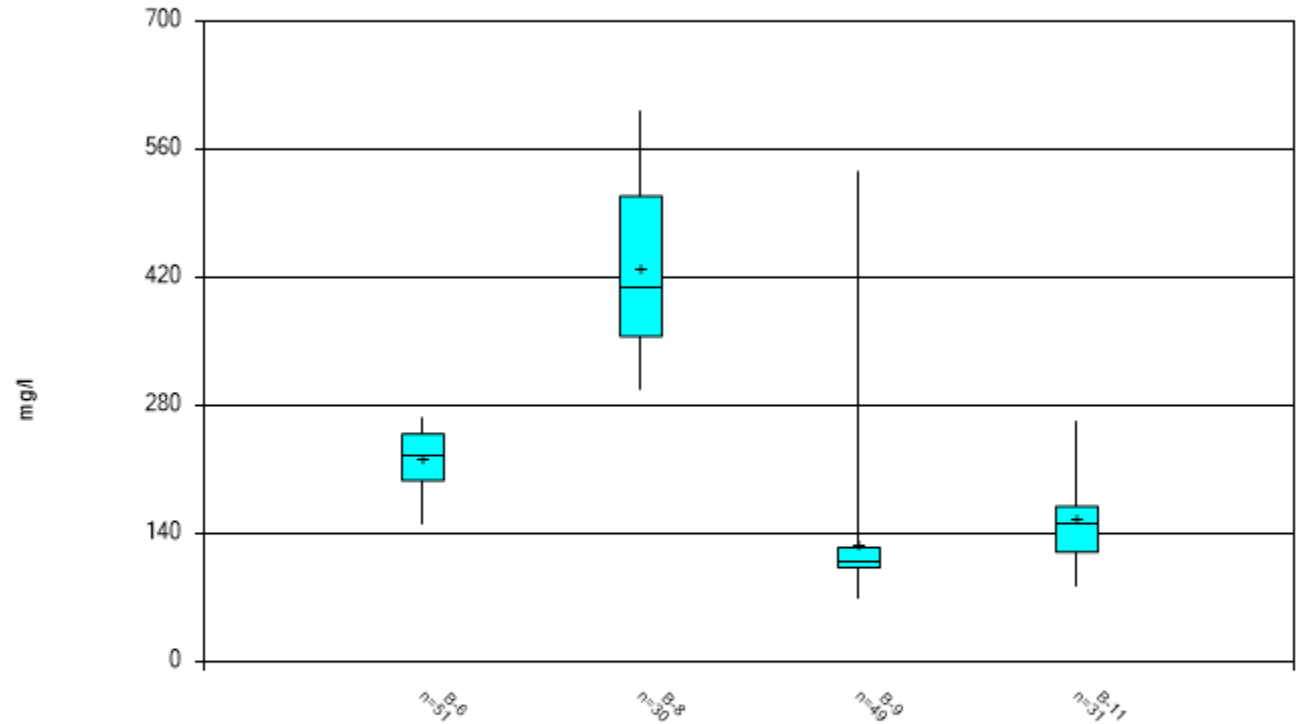
Box & Whiskers Plot



Constituent: BARIUM Analysis Run 4/8/2024 11:01 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

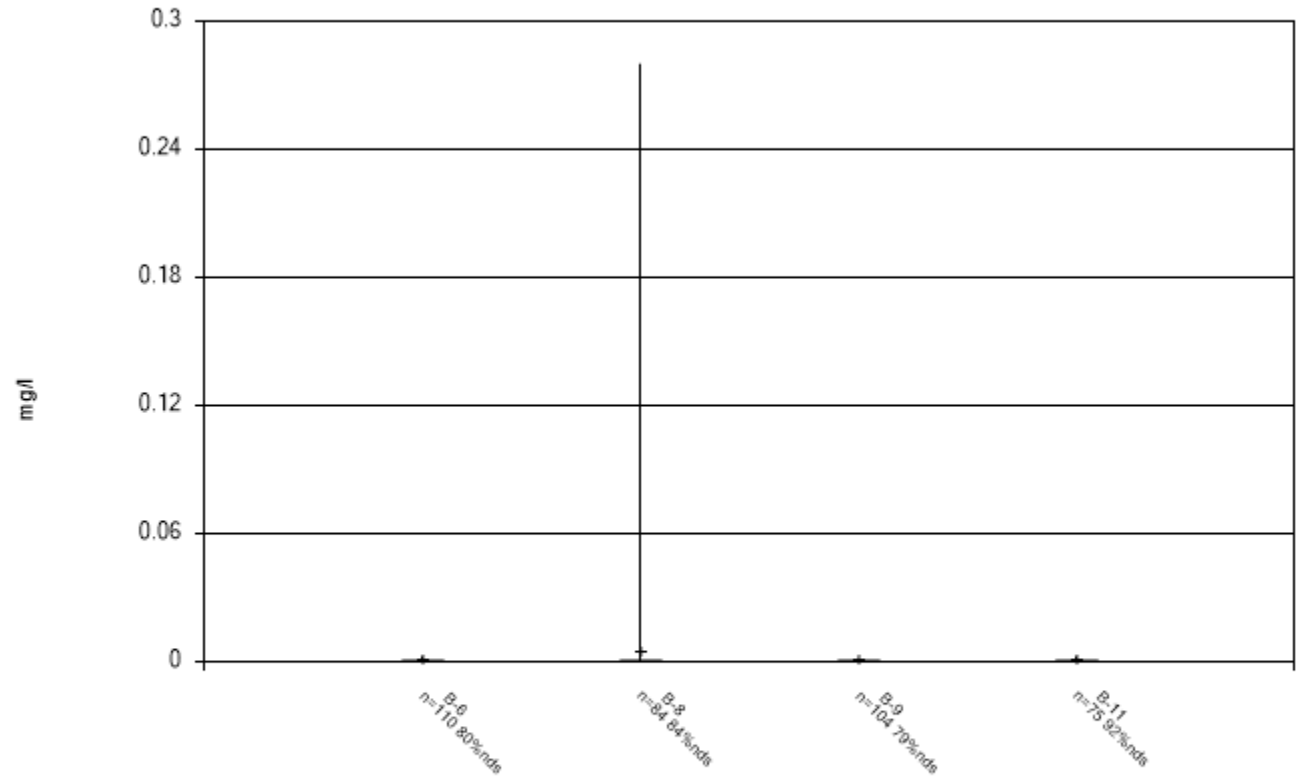
Box & Whiskers Plot



Constituent: Bicarbonate Analysis Run 4/8/2024 11:02 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

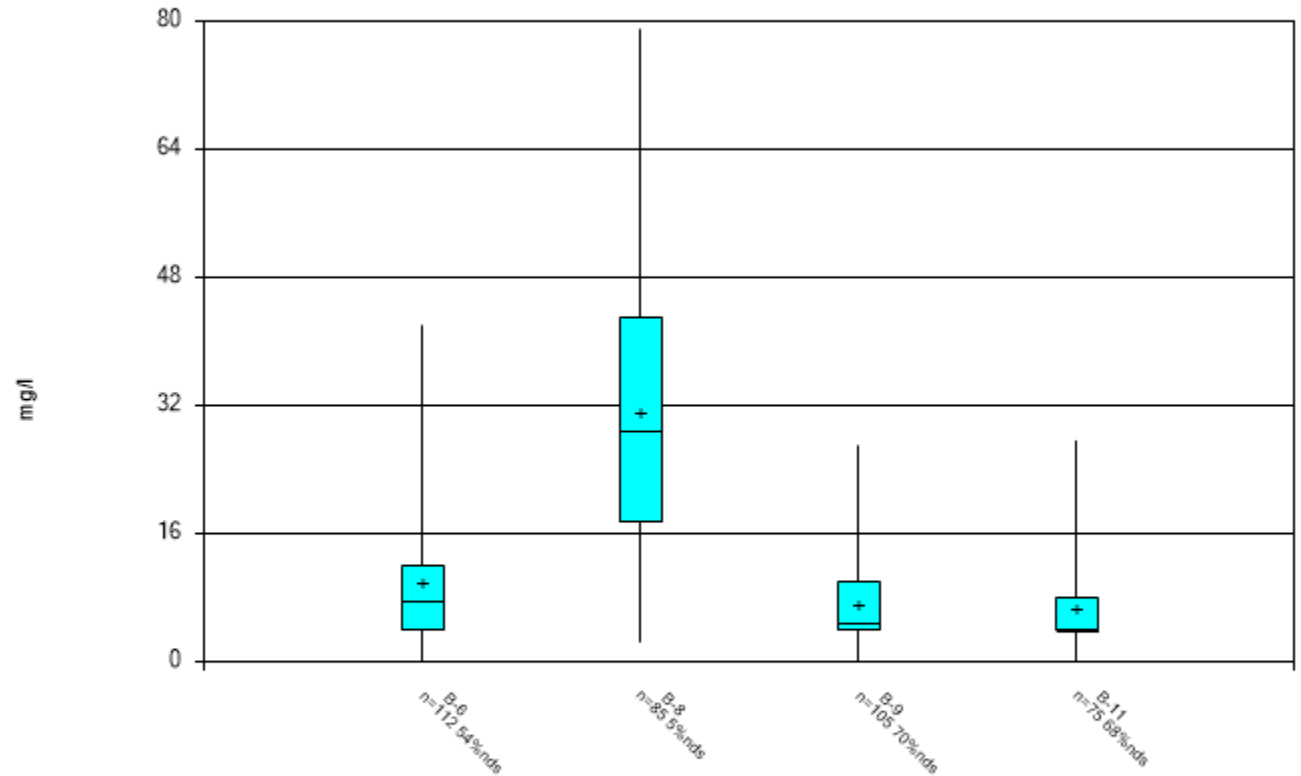
Box & Whiskers Plot



Constituent: Cadmium Analysis Run 4/8/2024 11:02 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

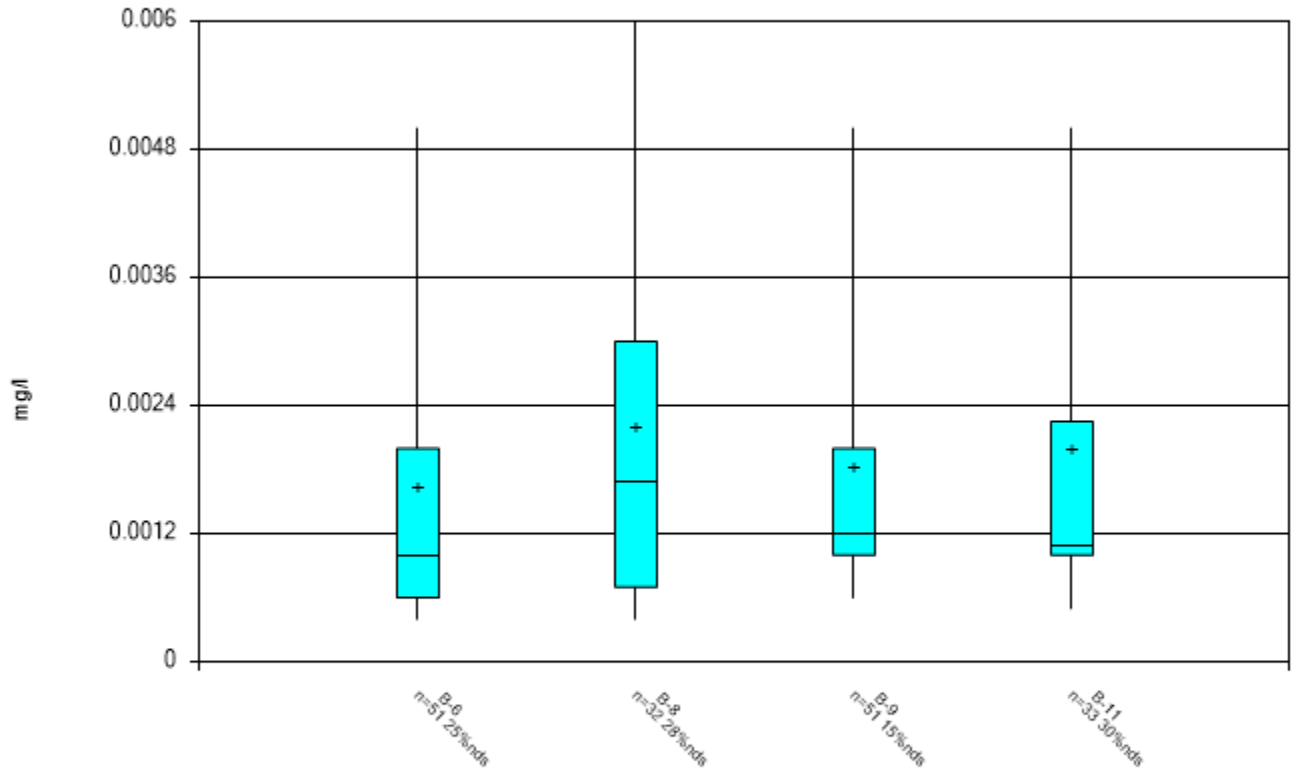
Box & Whiskers Plot



Constituent: Chemical Oxygen Demand Analysis Run 4/8/2024 11:04 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

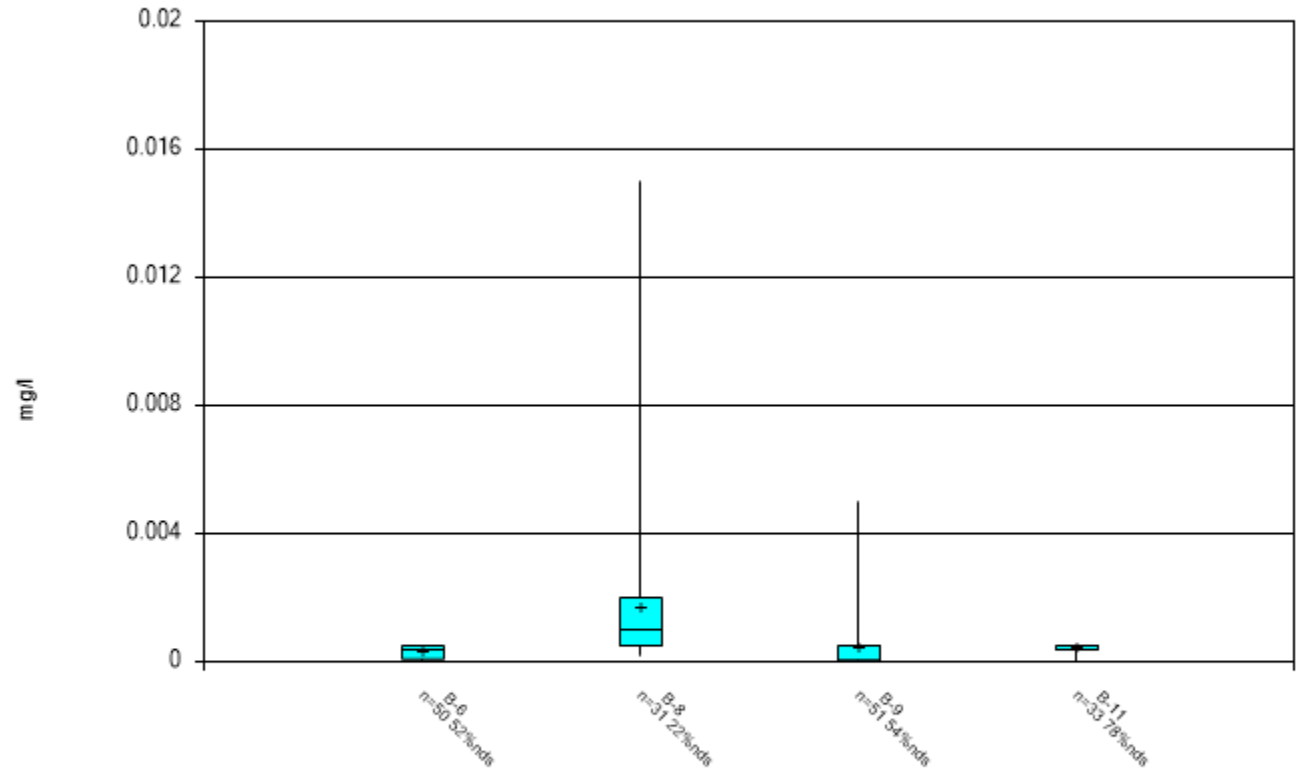
Box & Whiskers Plot



Constituent: Chromium Analysis Run 4/8/2024 11:04 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

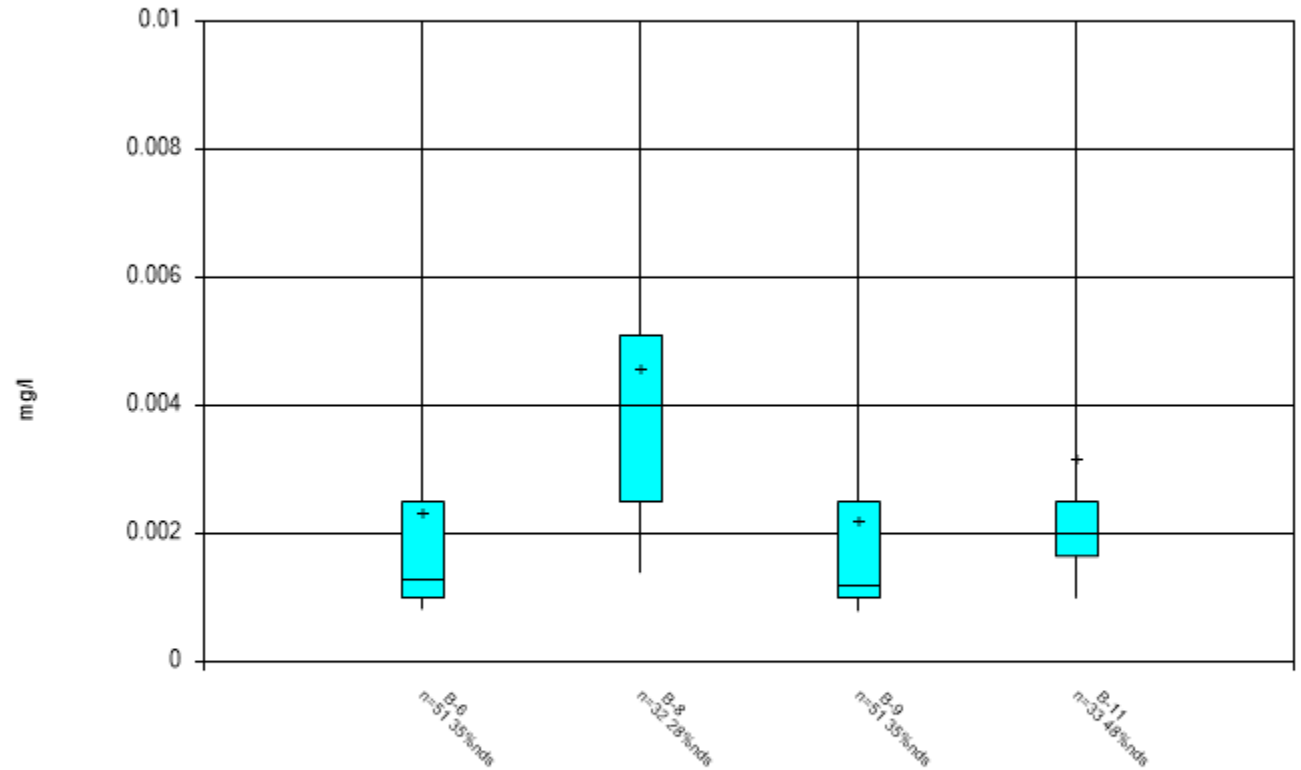
Box & Whiskers Plot



Constituent: COBALT Analysis Run 4/8/2024 11:05 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

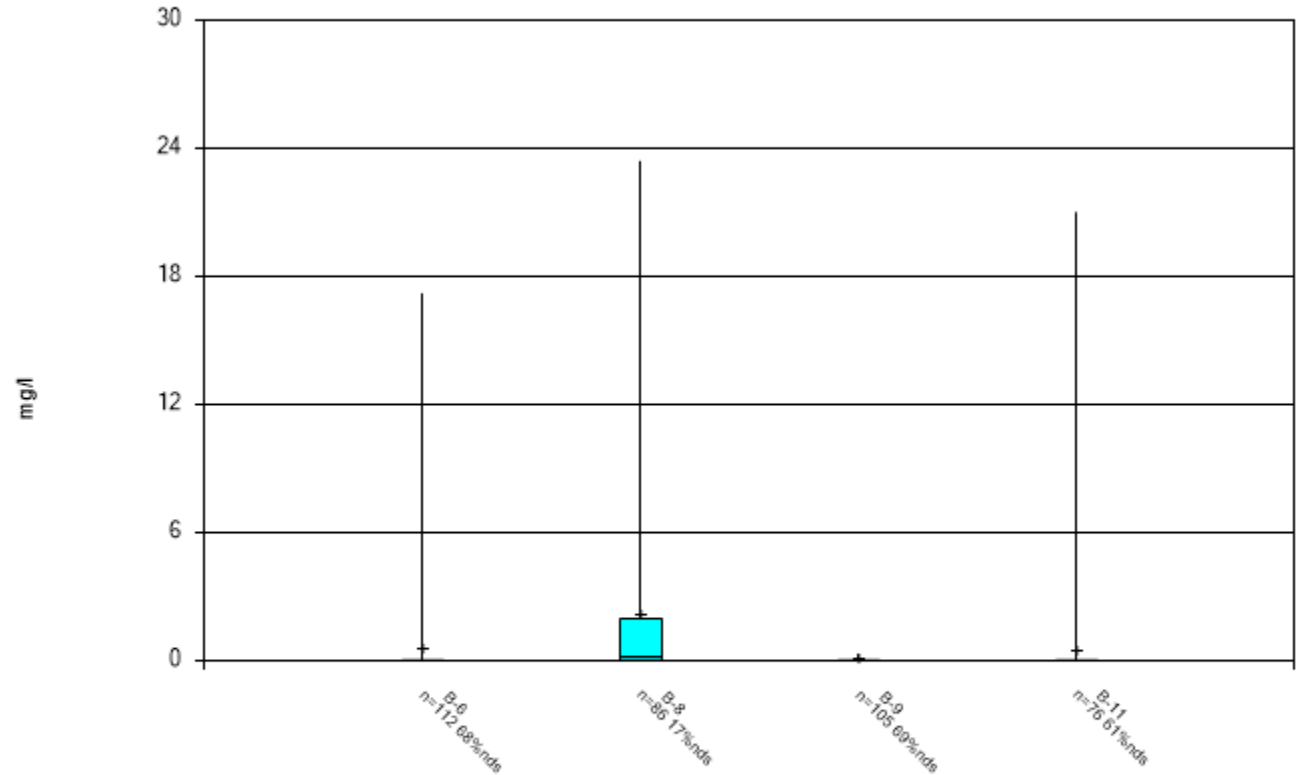
Box & Whiskers Plot



Constituent: Copper Analysis Run 4/8/2024 11:06 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

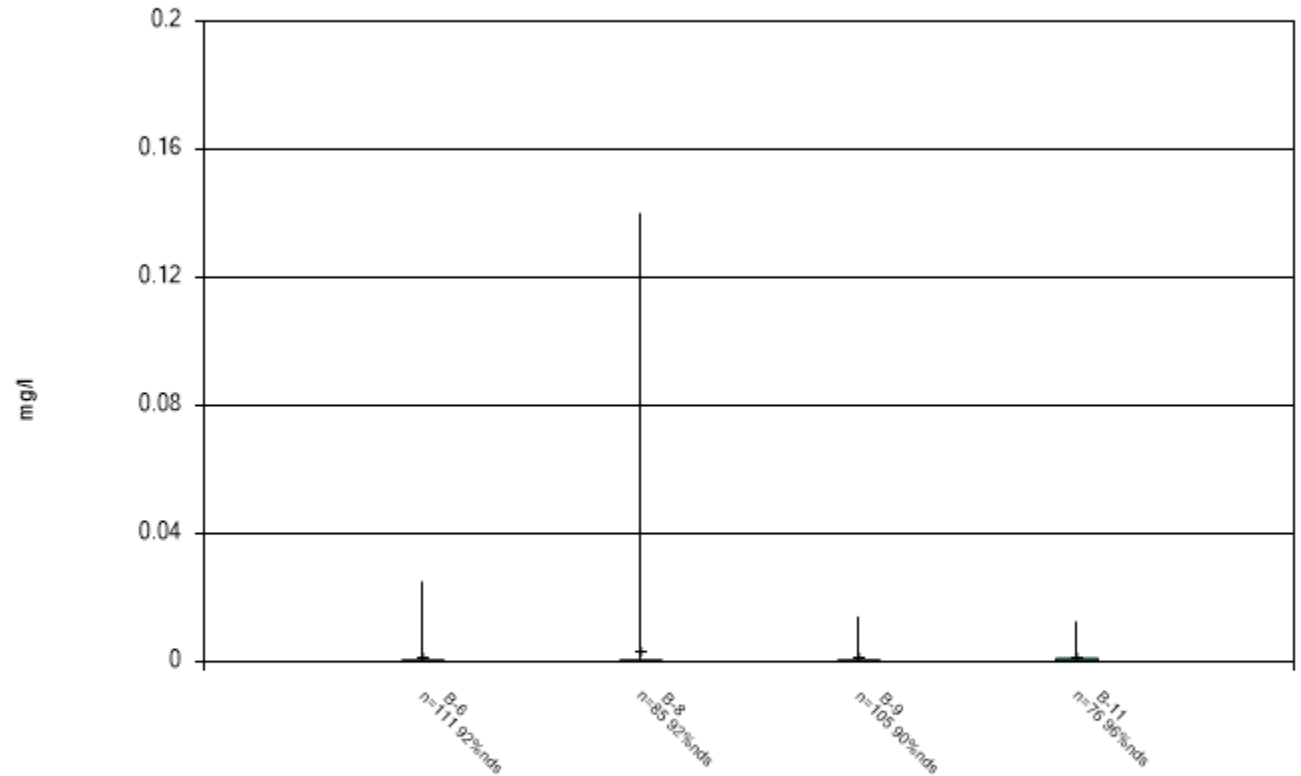
Box & Whiskers Plot



Constituent: Iron Analysis Run 4/8/2024 11:06 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

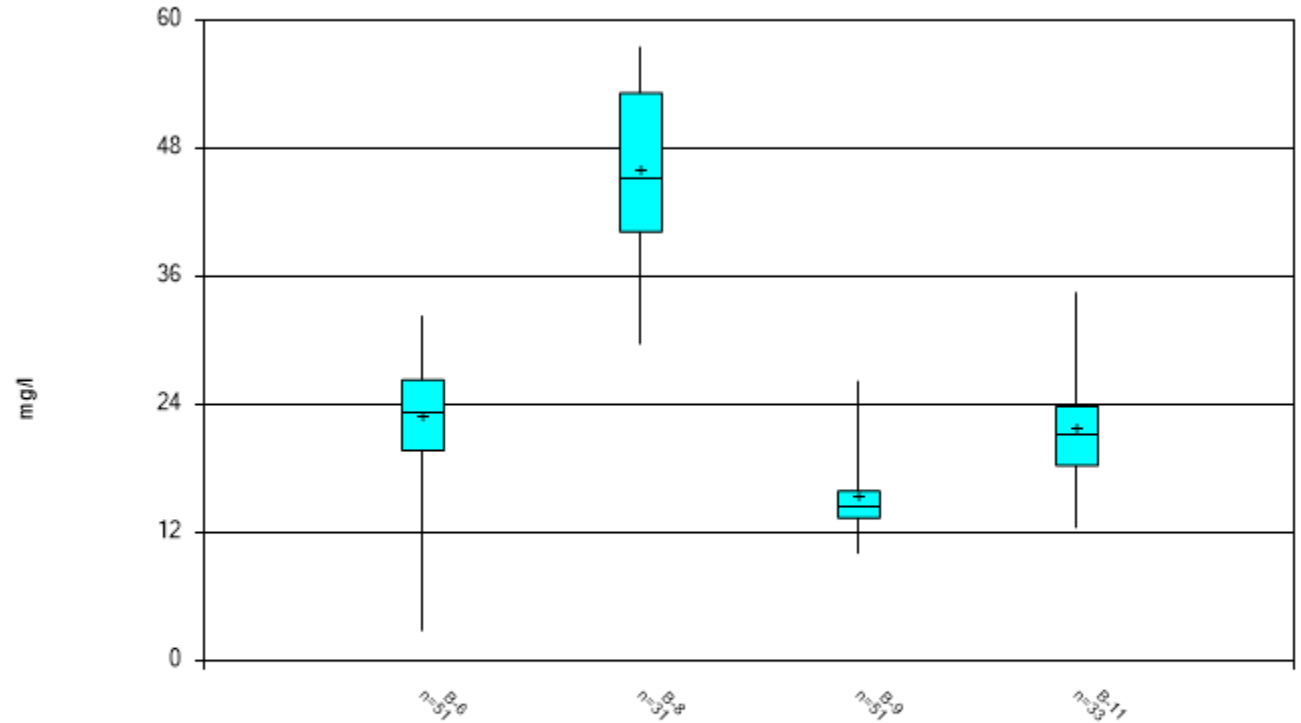
Box & Whiskers Plot



Constituent: Lead Analysis Run 4/8/2024 11:07 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

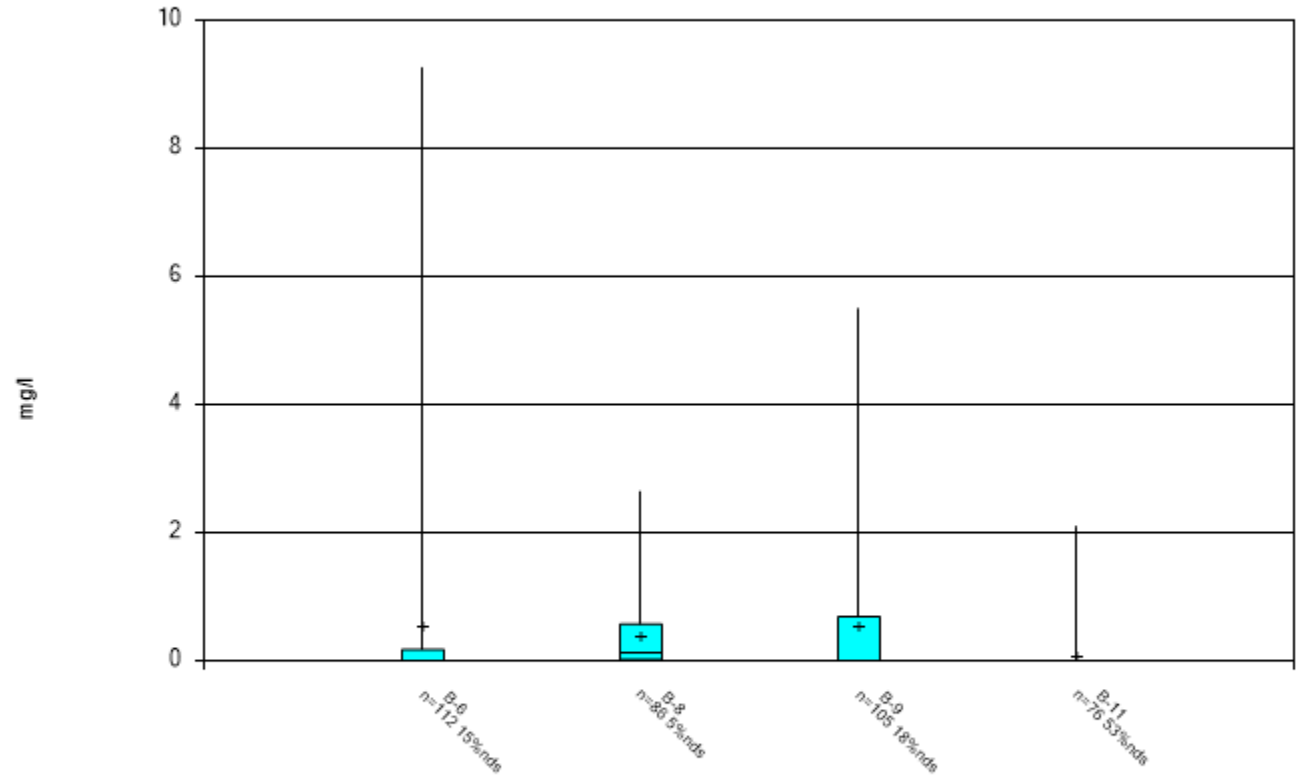
Box & Whiskers Plot



Constituent: MAGNESIUM Analysis Run 4/8/2024 11:07 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

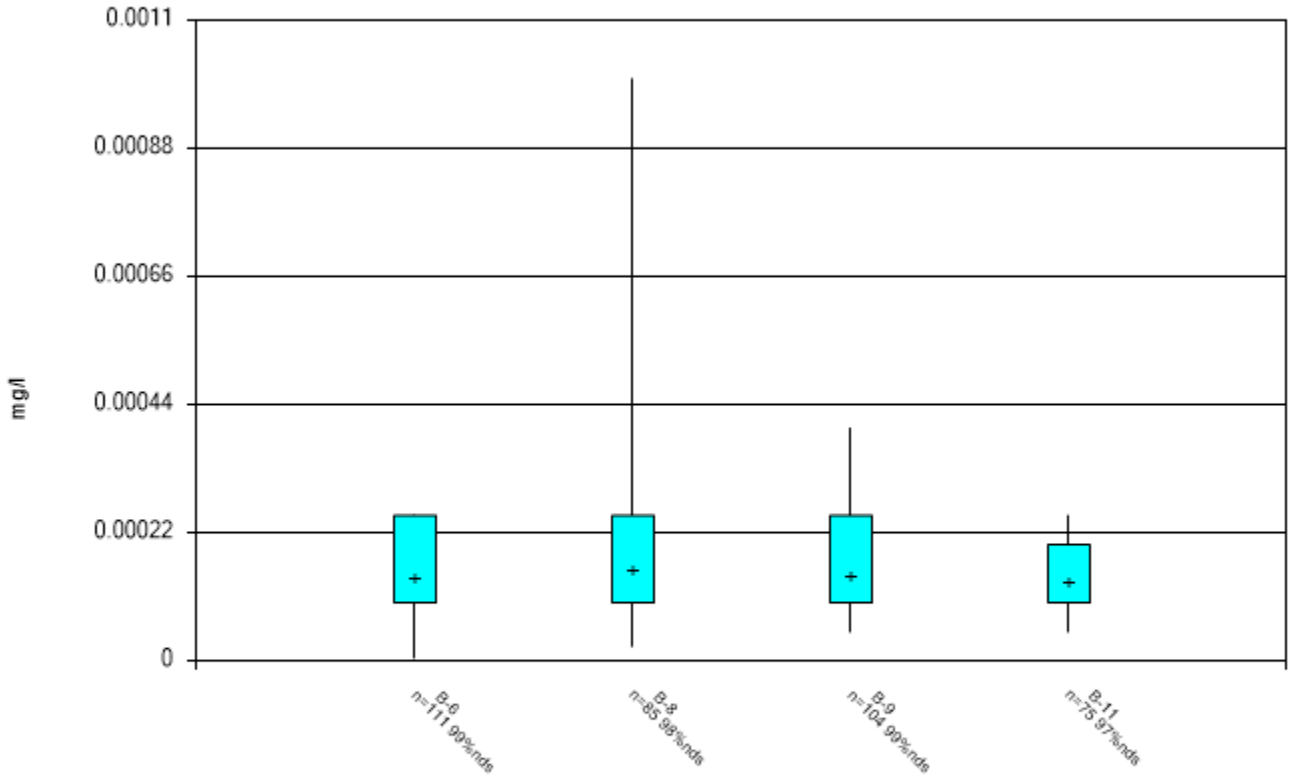
Box & Whiskers Plot



Constituent: Manganese Analysis Run 4/8/2024 11:08 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

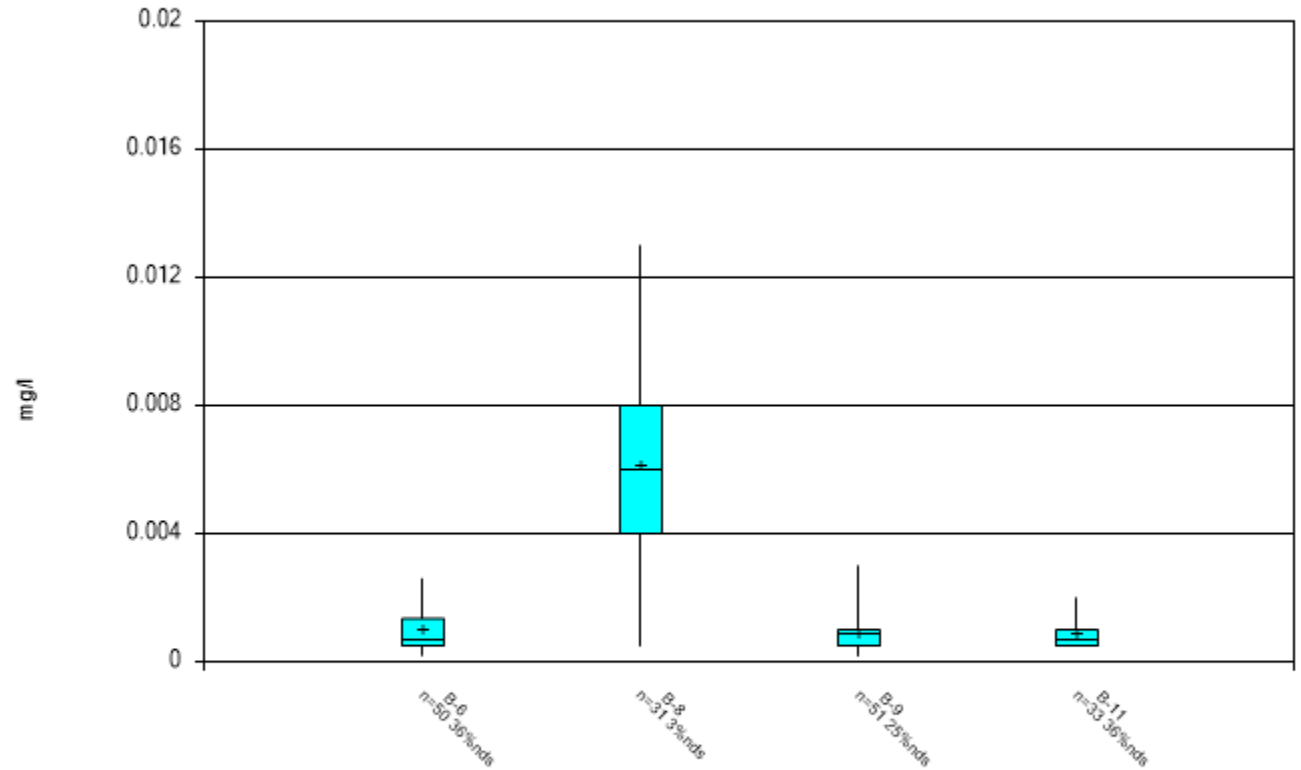
Box & Whiskers Plot



Constituent: Mercury Analysis Run 4/8/2024 11:07 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

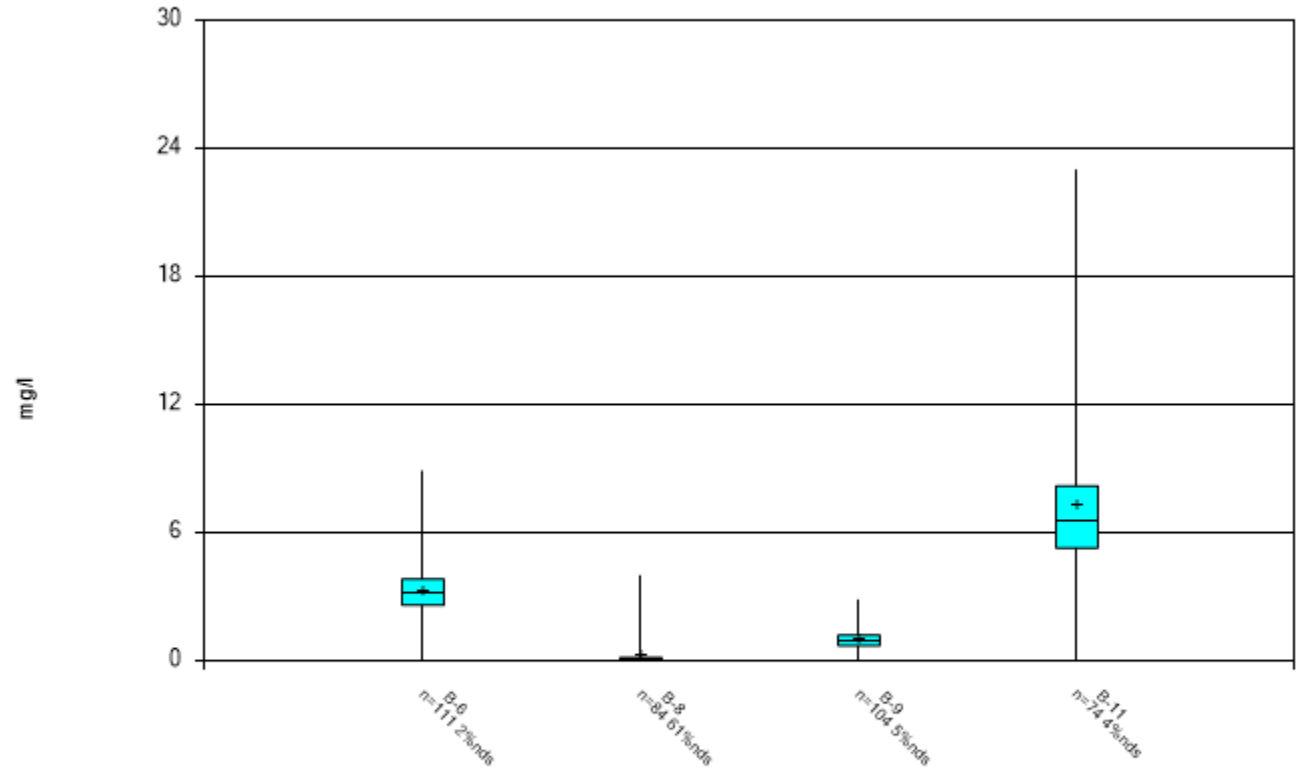
Box & Whiskers Plot



Constituent: Nickel Analysis Run 4/8/2024 11:08 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

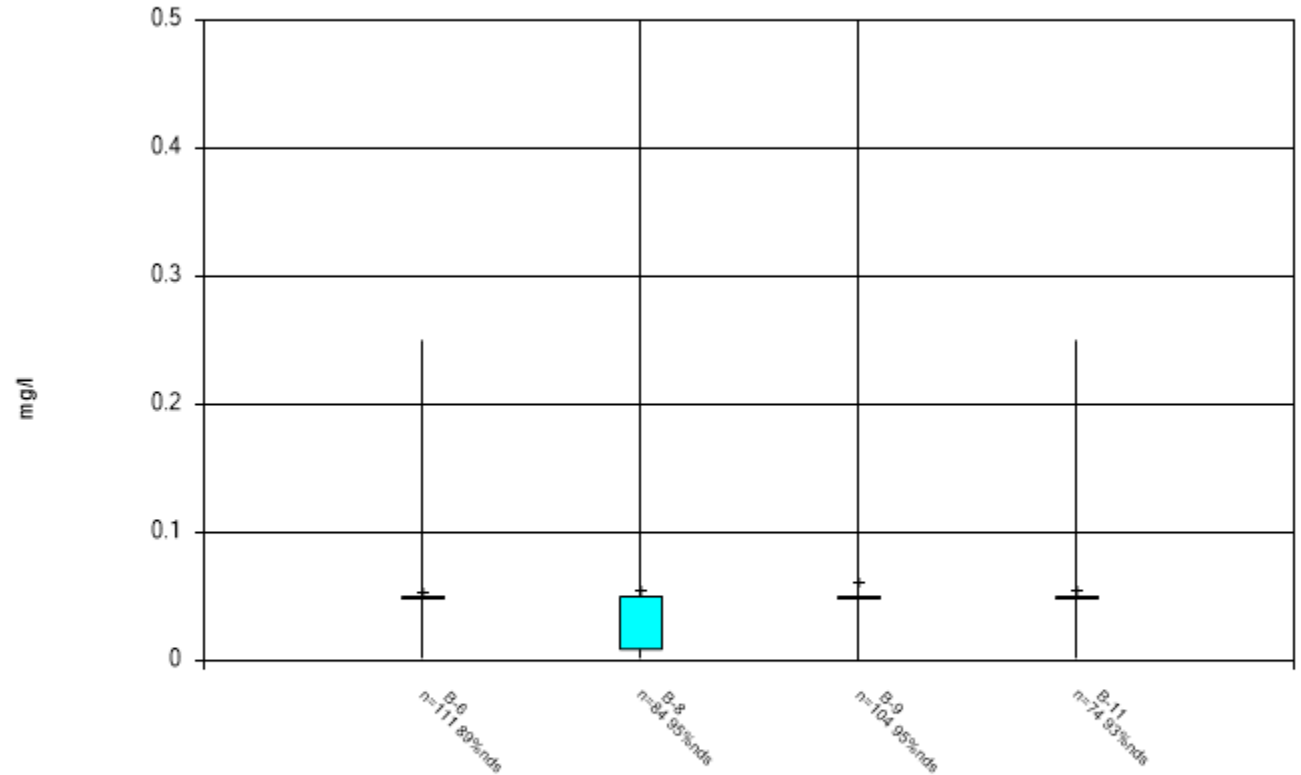
Box & Whiskers Plot



Constituent: Nitrate as nitrogen Analysis Run 4/8/2024 11:08 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

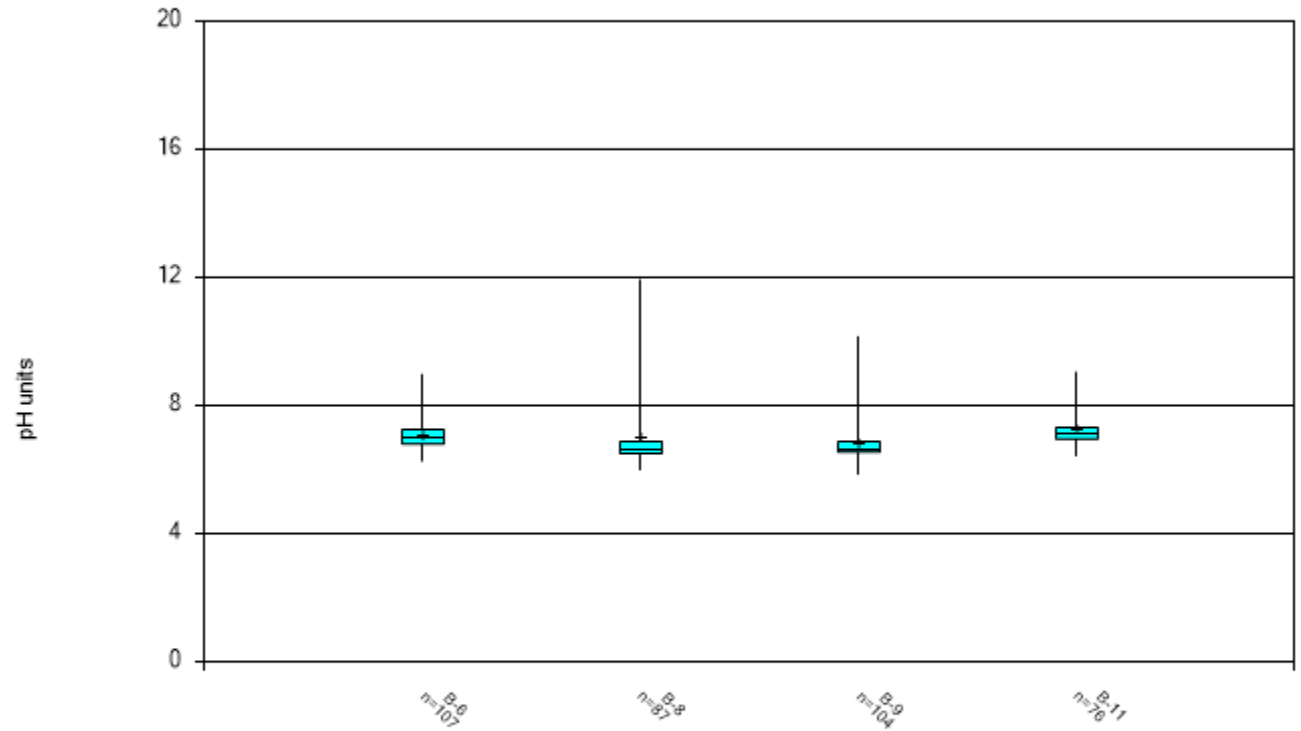
Box & Whiskers Plot



Constituent: Nitrite as nitrogen Analysis Run 4/8/2024 11:09 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

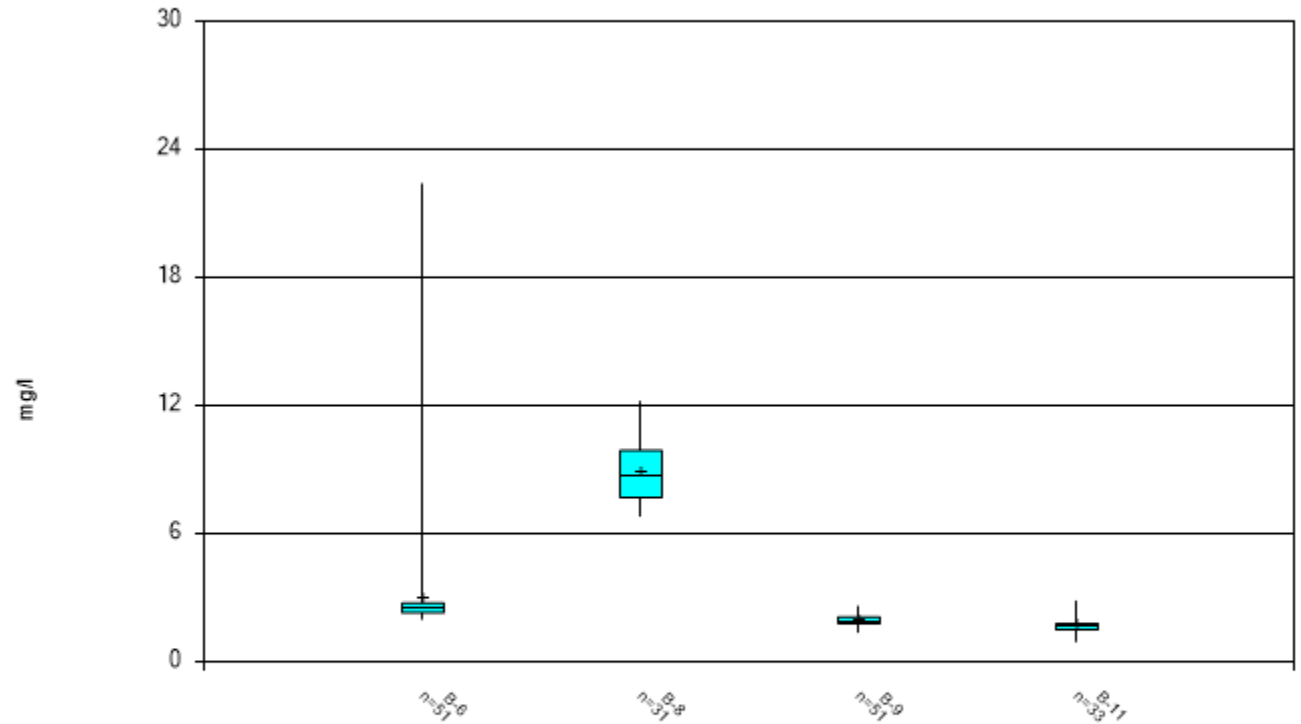
Box & Whiskers Plot



Constituent: pH Analysis Run 4/8/2024 11:09 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

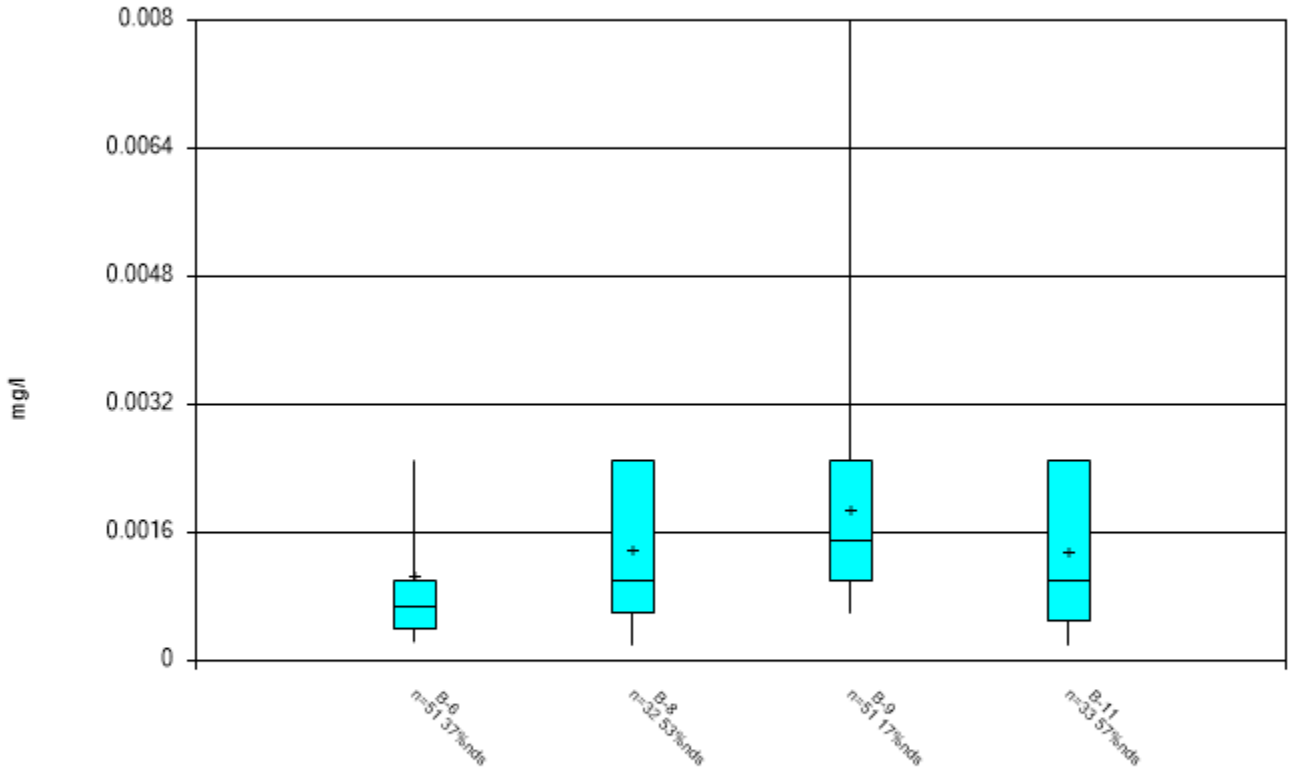
Box & Whiskers Plot



Constituent: Potassium Analysis Run 4/8/2024 11:09 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

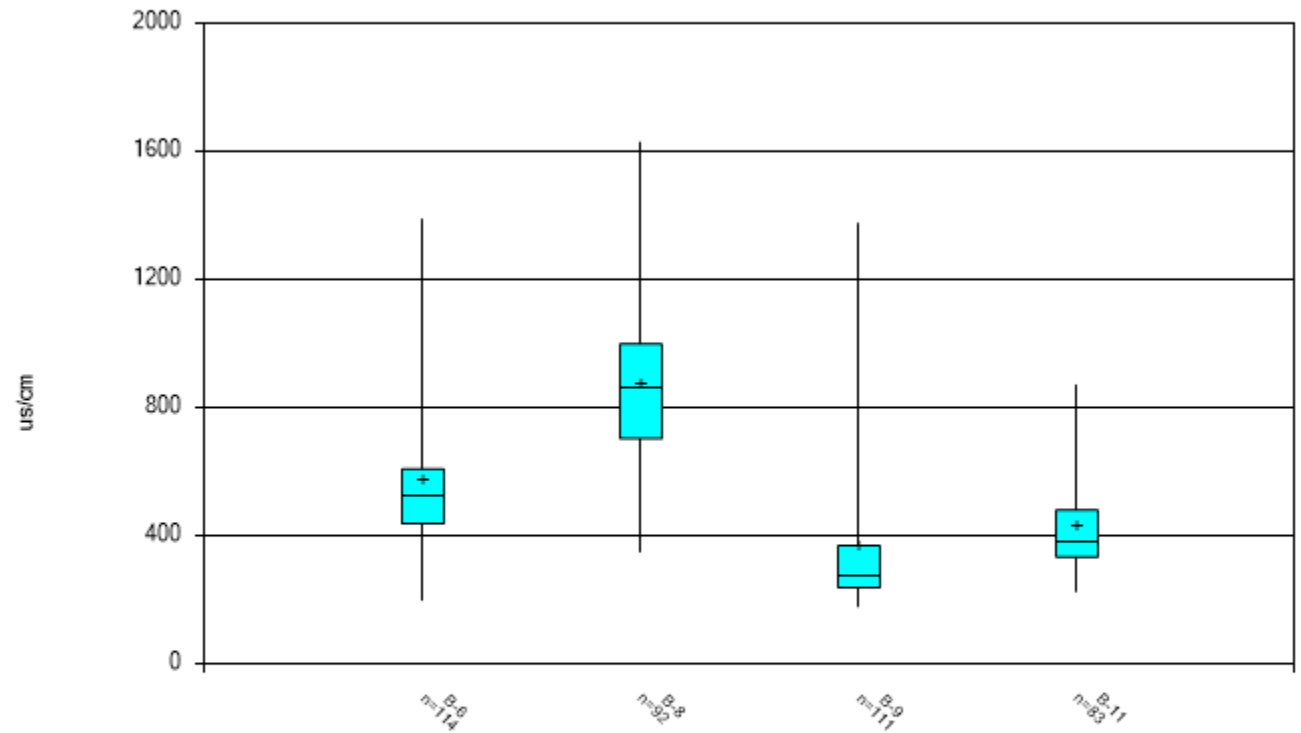
Box & Whiskers Plot



Constituent: Selenium Analysis Run 4/8/2024 11:10 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

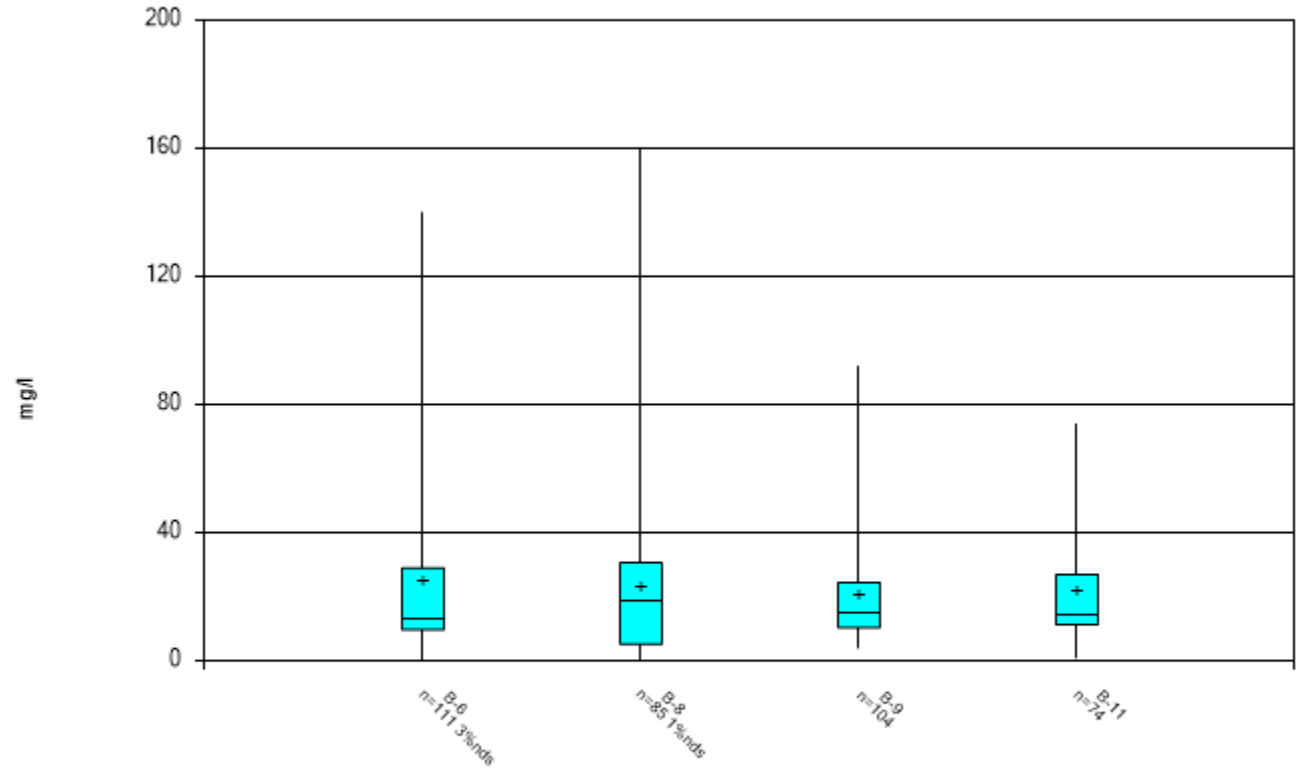
Box & Whiskers Plot



Constituent: Specific Conductance Analysis Run 4/8/2024 2:30 PM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

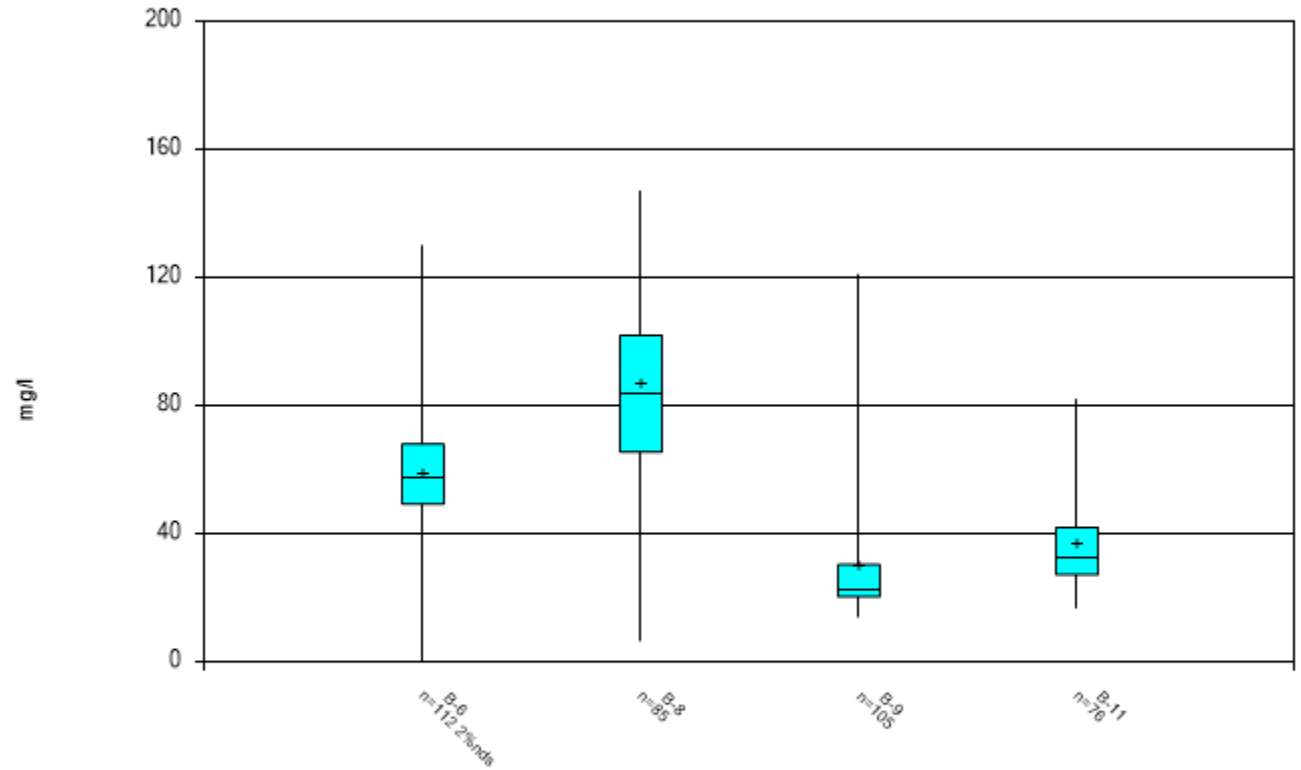
Box & Whiskers Plot



Constituent: Sulfate Analysis Run 4/8/2024 11:12 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

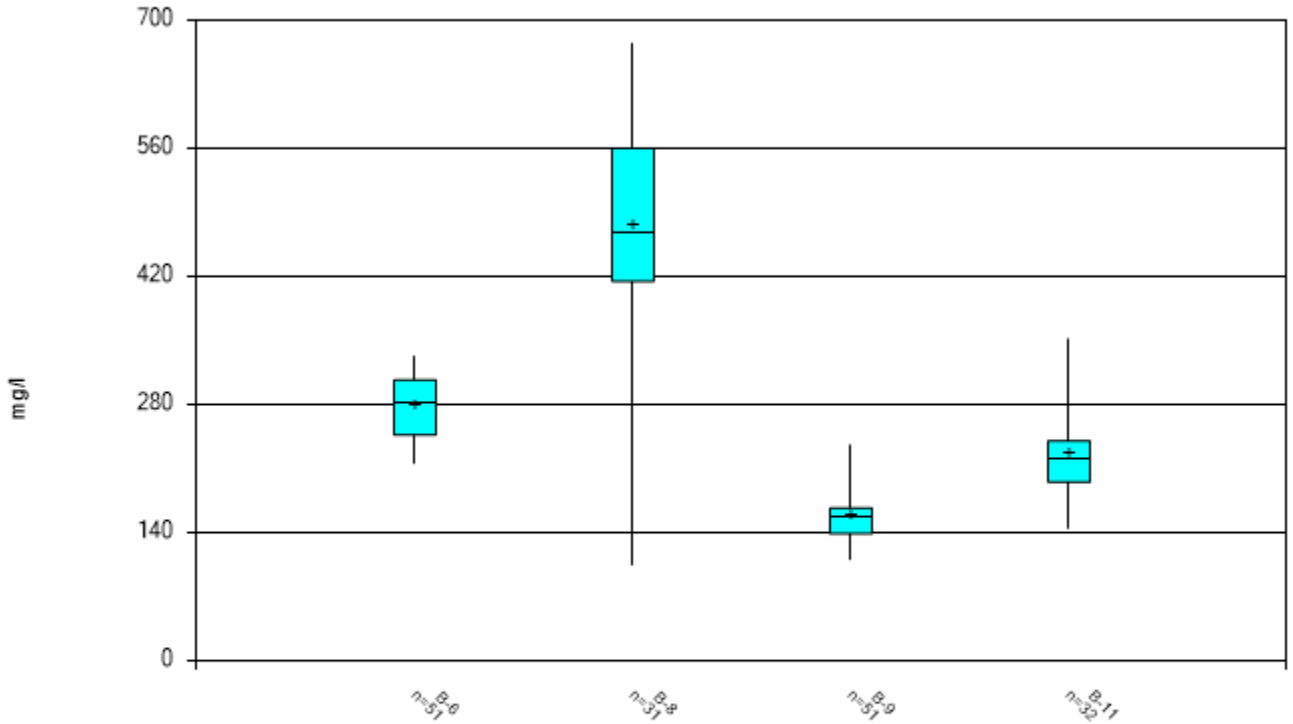
Box & Whiskers Plot



Constituent: Total Calcium Analysis Run 4/8/2024 11:11 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

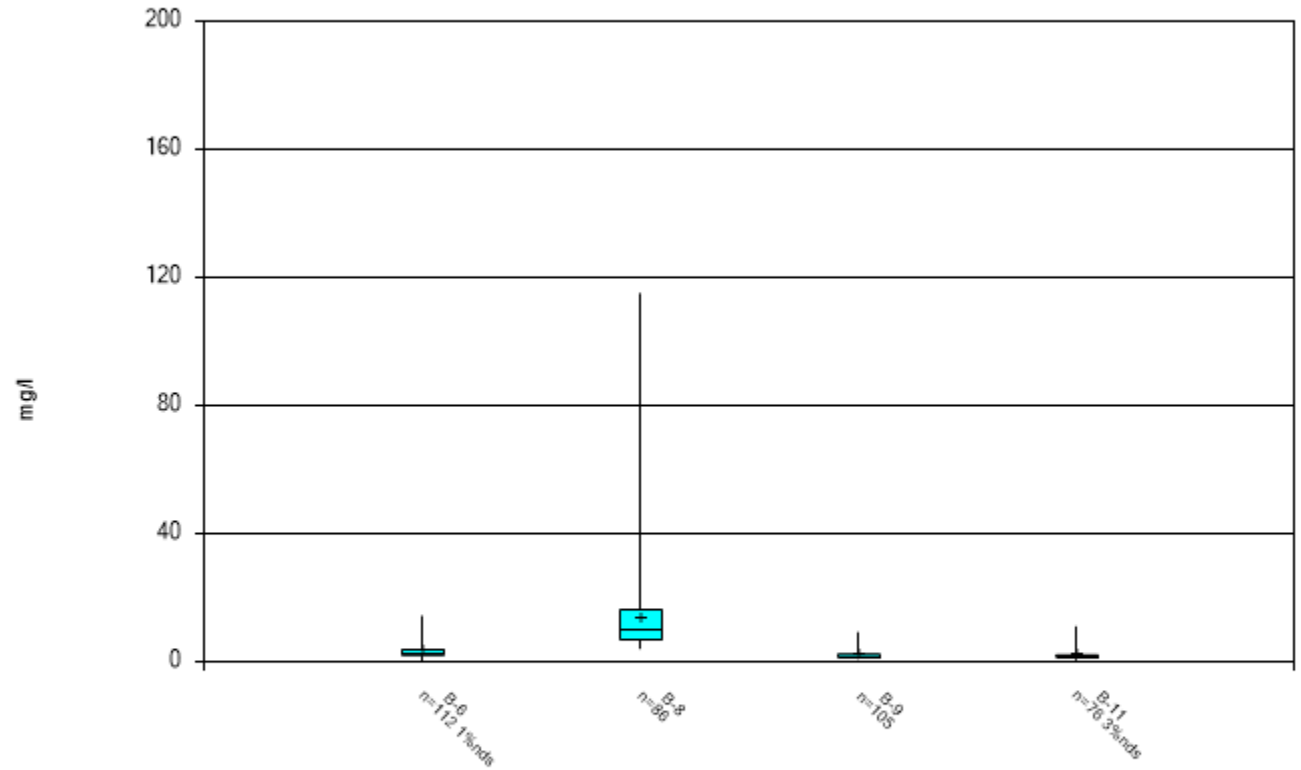
Box & Whiskers Plot



Constituent: Total Dissolved Solids Analysis Run 4/8/2024 11:12 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

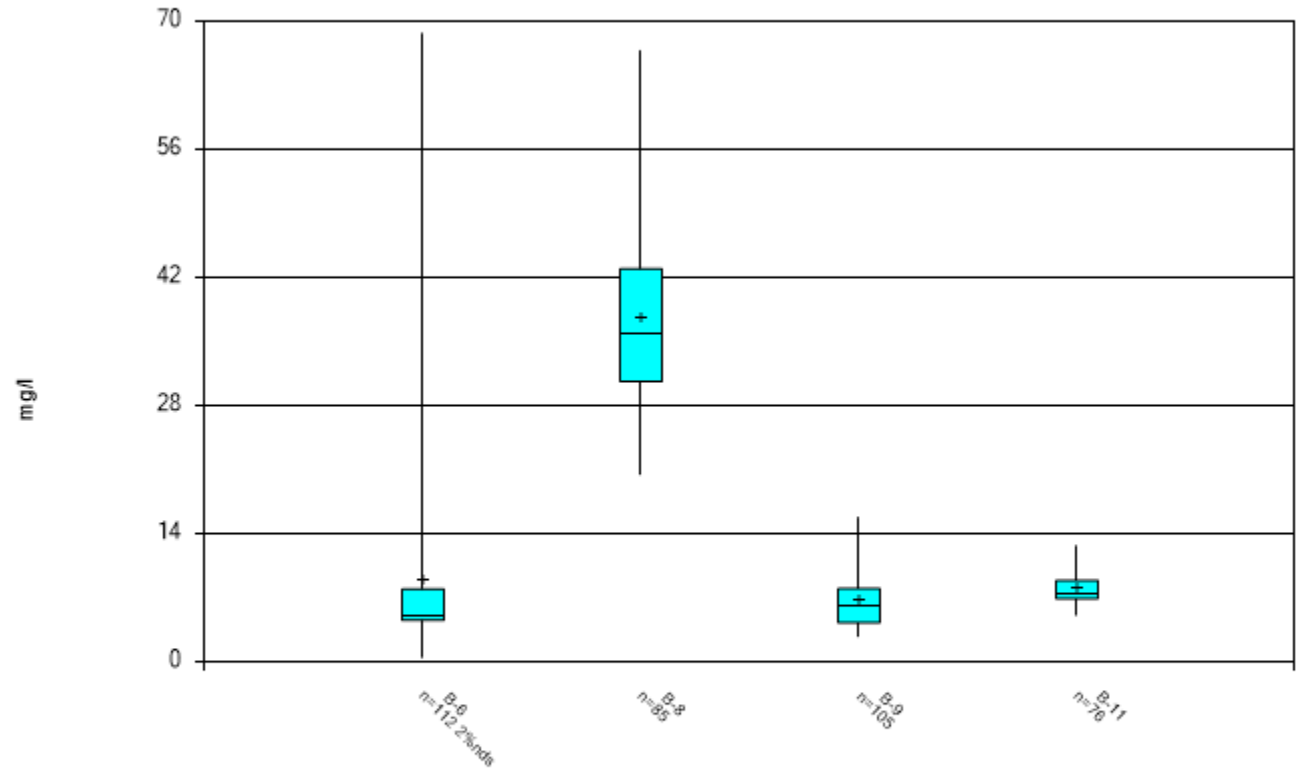
Box & Whiskers Plot



Constituent: Total Organic Carbon Analysis Run 4/8/2024 11:13 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

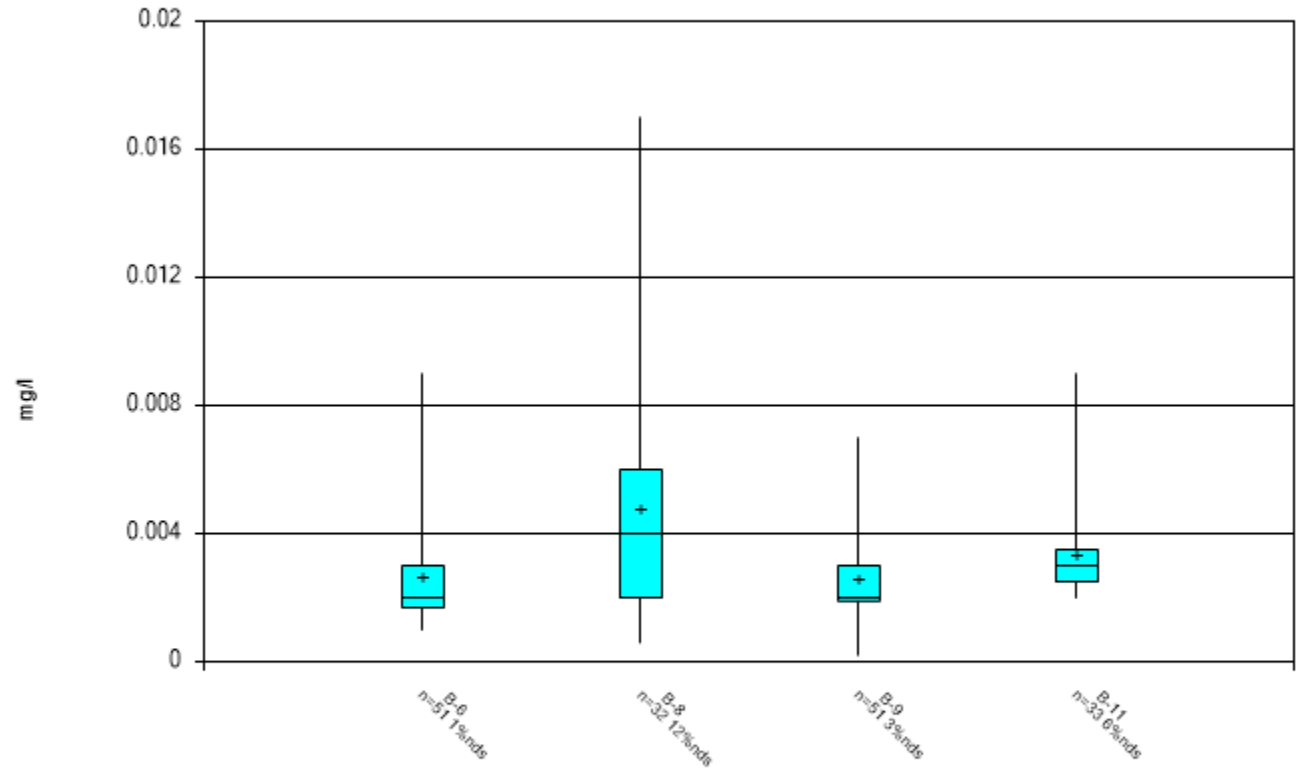
Box & Whiskers Plot



Constituent: Total Sodium Analysis Run 4/8/2024 11:13 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

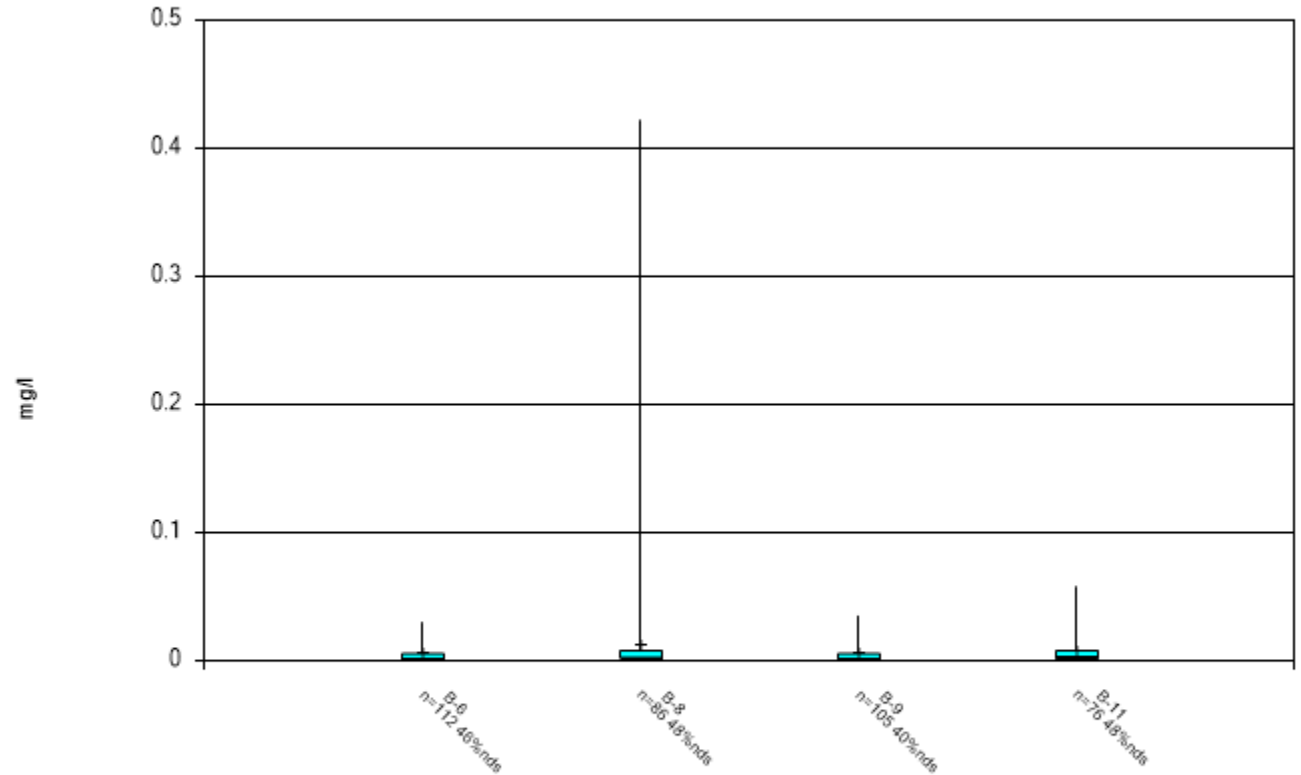
Box & Whiskers Plot



Constituent: VANADIUM [FUME OR DUST] Analysis Run 4/8/2024 11:13 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

Box & Whiskers Plot



Constituent: Zinc Analysis Run 4/8/2024 11:14 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

APPENDIX D-4
Long-Term Mann-Kendall Trend Tests 1994-2023 – Perched Aquifer

Long-Term Mann-Kendall Trend Tests 1994-2023
Perched Aquifer

Analyte	Units	Well	Slope	Z-Score	Critical Value	Significant Trend?	# of Samples	% Non-detects	Alpha
Alkalinity	mg/L	B-11	-0.9964	-28	-138	No	31	0	0.02
		B-6	**-3.605**	**-3.526**	**-2.33**	**Yes**	**51**	**0**	**0.02**
		B-8	-3.566	-45	-132	No	30	0	0.02
		B-9	**-3.913**	**-5.799**	**-2.33**	**Yes**	**50**	**0**	**0.02**
Ammonia as nitrogen	mg/L	**B-11**	**-0.0005859**	**-2.981**	**-2.33**	**Yes**	**75**	**70.67**	**0.02**
		B-6	**-0.006498**	**-10.78**	**-2.33**	**Yes**	**112**	**34.82**	**0.02**
		B-8	0.004025	1.683	2.33	No	85	14.12	0.02
		B-9	**-0.0005961**	**-3.668**	**-2.33**	**Yes**	**105**	**62.86**	**0.02**
Antimony, dissolved	mg/L	B-11	0	-137	-151	No	33	87.88	0.02
		B-6	**-0.00001978**	**-3.556**	**-2.33**	**Yes**	**50**	**40**	**0.02**
		B-8	**-0.00003998**	**-146**	**-138**	**Yes**	**31**	**67.74**	**0.02**
		B-9	**-0.00002967**	**-3.989**	**-2.33**	**Yes**	**51**	**52.94**	**0.02**
Arsenic, dissolved	mg/L	**B-11**	**0**	**-4.293**	**-2.33**	**Yes**	**74**	**33.78**	**0.02**
		B-6	**-0.000118**	**-10.61**	**-2.33**	**Yes**	**110**	**18.18**	**0.02**
		B-8	**-0.0002999**	**-4.319**	**-2.33**	**Yes**	**85**	**24.71**	**0.02**
		B-9	**-0.00002676**	**-10.09**	**-2.33**	**Yes**	**103**	**16.5**	**0.02**
Barium, dissolved	mg/L	B-11	-0.0001181	-35	-151	No	33	3.03	0.02
		B-6	**-0.0004993**	**-3.727**	**-2.33**	**Yes**	**51**	**0**	**0.02**
		B-8	-0.001062	-61	-145	No	32	0	0.02
		B-9	**-0.0004973**	**-5.649**	**-2.33**	**Yes**	**51**	**0**	**0.02**
Bicarbonate	mg/L	B-11	-0.5007	-21	-138	No	31	0	0.02
		B-6	**-3.382**	**-3.347**	**-2.33**	**Yes**	**51**	**0**	**0.02**
		B-8	-3.566	-45	-132	No	30	0	0.02
		B-9	**-3.47**	**-4.864**	**-2.33**	**Yes**	**49**	**0**	**0.02**
Cadmium, dissolved	mg/L	**B-11**	**-0.00004299**	**-6.512**	**-2.33**	**Yes**	**75**	**92**	**0.02**
		B-6	**-0.00003047**	**-7.28**	**-2.33**	**Yes**	**110**	**80.91**	**0.02**
		B-8	**-0.00003711**	**-5.464**	**-2.33**	**Yes**	**84**	**84.52**	**0.02**
		B-9	**-0.00002104**	**-6.356**	**-2.33**	**Yes**	**104**	**79.81**	**0.02**
Calcium, total	mg/L	**B-11**	**-0.6773**	**-3.633**	**-2.33**	**Yes**	**76**	**0**	**0.02**
		B-6	**-0.932**	**-6.088**	**-2.33**	**Yes**	**112**	**2.679**	**0.02**
		B-8	**-1.532**	**-3.932**	**-2.33**	**Yes**	**85**	**0**	**0.02**
		B-9	**-0.7082**	**-8.985**	**-2.33**	**Yes**	**105**	**0**	**0.02**
Chemical Oxygen Demand	mg/L	B-11	0	-2.056	-2.33	No	75	68	0.02
		B-6	**-0.05805**	**-2.491**	**-2.33**	**Yes**	**112**	**54.46**	**0.02**
		B-8	-0.4944	-1.693	-2.33	No	85	5.882	0.02
		B-9	0	1.408	2.33	No	105	70.48	0.02
Chloride	mg/L	**B-11**	**-0.1638**	**-7.965**	**-2.33**	**Yes**	**74**	**0**	**0.02**
		B-6	-0.02359	-1.005	-2.33	No	111	3.604	0.02
		B-8	**-3.19**	**-8.918**	**-2.33**	**Yes**	**85**	**0**	**0.02**
		B-9	**-0.2173**	**-11.43**	**-2.33**	**Yes**	**104**	**0**	**0.02**
Chromium, dissolved	mg/L	**B-11**	**-0.0002111**	**-198**	**-151**	**Yes**	**33**	**30.3**	**0.02**
		B-6	-0.0000566	-2.017	-2.33	No	51	25.49	0.02
		B-8	**-0.0003792**	**-281**	**-145**	**Yes**	**32**	**28.13**	**0.02**
		B-9	**-0.00007599**	**-3.439**	**-2.33**	**Yes**	**51**	**15.69**	**0.02**
Cobalt, dissolved	mg/L	B-11	0	-115	-151	No	33	78.79	0.02
		B-6	**-0.00001682**	**-4.064**	**-2.33**	**Yes**	**50**	**52**	**0.02**
		B-8	-0.00001371	-84	-138	No	31	22.58	0.02
		B-9	**-2.861E-06**	**-3.741**	**-2.33**	**Yes**	**51**	**54.9**	**0.02**
Copper, dissolved	mg/L	**B-11**	**-0.0001183**	**-255**	**-151**	**Yes**	**33**	**48.48**	**0.02**
		B-6	**-0.0001033**	**-3.958**	**-2.33**	**Yes**	**51**	**35.29**	**0.02**
		B-8	**-0.0004008**	**-187**	**-145**	**Yes**	**32**	**28.13**	**0.02**
		B-9	**-0.0000914**	**-3.652**	**-2.33**	**Yes**	**51**	**35.29**	**0.02**
Dichlorodifluoromethane (CFC-12)	ug/L	**B-11**	**0**	**-6.503**	**-2.33**	**Yes**	**83**	**95.18**	**0.02**
		B-6	**0**	**-5.634**	**-2.33**	**Yes**	**118**	**79.66**	**0.02**
		B-8	**0**	**-6.253**	**-2.33**	**Yes**	**93**	**98.92**	**0.02**
		B-9	**-0.08852**	**-6.067**	**-2.33**	**Yes**	**113**	**15.93**	**0.02**
Iron, dissolved	mg/L	**B-11**	**0**	**-3.283**	**-2.33**	**Yes**	**76**	**61.84**	**0.02**
		B-6	**0**	**-4.541**	**-2.33**	**Yes**	**112**	**68.75**	**0.02**
		B-8	0.00575	1.454	2.33	No	86	17.44	0.02
		B-9	0	-2.06	-2.33	No	105	69.52	0.02
Lead, dissolved	mg/L	**B-11**	**-0.00003438**	**-6.159**	**-2.33**	**Yes**	**76**	**96.05**	**0.02**
		B-6	**-0.00001295**	**-4.75**	**-2.33**	**Yes**	**111**	**92.79**	**0.02**
		B-8	**-0.00002853**	**-4.504**	**-2.33**	**Yes**	**85**	**92.94**	**0.02**
		B-9	**0**	**-3.974**	**-2.33**	**Yes**	**105**	**90.48**	**0.02**

Long-Term Mann-Kendall Trend Tests 1994-2023
Perched Aquifer

Analyte	Units	Well	Slope	Z-Score	Critical Value	Significant Trend?	# of Samples	% Non-detects	Alpha
Magnesium, total	mg/L	B-11	0.006668	5	151	No	33	0	0.02
		B-6	**-0.5829**	**-3.826**	**-2.33**	**Yes**	**51**	**0**	**0.02**
		B-8	-0.1532	-21	-138	No	31	0	0.02
		B-9	**-0.4722**	**-6.444**	**-2.33**	**Yes**	**51**	**0**	**0.02**
Manganese, dissolved	mg/L	**B-11**	**-0.000267**	**-7.167**	**-2.33**	**Yes**	**76**	**53.95**	**0.02**
		B-6	**-0.006856**	**-10.86**	**-2.33**	**Yes**	**112**	**15.18**	**0.02**
		B-8	-0.006528	-2.093	-2.33	No	86	5.814	0.02
		B-9	**-0.03419**	**-10.48**	**-2.33**	**Yes**	**105**	**18.1**	**0.02**
Mercury, dissolved	mg/L	B-11	0	-2.318	-2.33	No	75	97.33	0.02
		B-6	**0**	**-2.451**	**-2.33**	**Yes**	**111**	**99.1**	**0.02**
		B-8	0	-1.163	-2.33	No	85	98.82	0.02
		B-9	**0**	**-3.596**	**-2.33**	**Yes**	**104**	**99.04**	**0.02**
Nickel, dissolved	mg/L	**B-11**	**0.0000367**	**192**	**151**	**Yes**	**33**	**36.36**	**0.02**
		B-6	**0.00007612**	**4.879**	**2.33**	**Yes**	**50**	**36**	**0.02**
		B-8	-0.0002656	-134	-138	No	31	3.226	0.02
		B-9	0	0.9646	2.33	No	51	25.49	0.02
Nitrate as nitrogen	mg/L	B-11	-0.07873	-1.9	-2.33	No	74	4.054	0.02
		B-6	**0.05362**	**5.22**	**2.33**	**Yes**	**111**	**2.703**	**0.02**
		B-8	0	-0.6638	-2.33	No	84	61.9	0.02
		B-9	0.009583	2.009	2.33	No	104	5.769	0.02
Nitrite as nitrogen	mg/L	B-11	0	0.5583	2.33	No	74	93.24	0.02
		B-6	0	-1.491	-2.33	No	111	89.19	0.02
		B-8	**0**	**3.324**	**2.33**	**Yes**	**84**	**95.24**	**0.02**
		B-9	0	-0.957	-2.33	No	104	95.19	0.02
pH	mg/L	B-11	0.01196	2.261	2.33	No	76	0	0.02
		B-6	**0.02216**	**5.749**	**2.33**	**Yes**	**107**	**0**	**0.02**
		B-8	0.01163	2.01	2.33	No	87	0	0.02
		B-9	**0.01399**	**4.158**	**2.33**	**Yes**	**104**	**0**	**0.02**
Potassium, total	mg/L	B-11	-0.01141	-72	-151	No	33	0	0.02
		B-6	0	0.05702	2.33	No	51	0	0.02
		B-8	-0.1278	-93	-138	No	31	0	0.02
		B-9	**-0.03223**	**-3.688**	**-2.33**	**Yes**	**51**	**0**	**0.02**
Selenium, dissolved	mg/L	**B-11**	**-0.0001597**	**-248**	**-151**	**Yes**	**33**	**57.58**	**0.02**
		B-6	**-0.00009371**	**-5.879**	**-2.33**	**Yes**	**51**	**37.25**	**0.02**
		B-8	**-0.0002061**	**-341**	**-145**	**Yes**	**32**	**53.13**	**0.02**
		B-9	**-0.0001491**	**-6.701**	**-2.33**	**Yes**	**51**	**17.65**	**0.02**
Sodium, total	mg/L	**B-11**	**-0.1239**	**-5.505**	**-2.33**	**Yes**	**76**	**0**	**0.02**
		B-6	**-0.2588**	**-10.64**	**-2.33**	**Yes**	**112**	**2.679**	**0.02**
		B-8	**-0.9682**	**-7.432**	**-2.33**	**Yes**	**85**	**0**	**0.02**
		B-9	**-0.2898**	**-12.02**	**-2.33**	**Yes**	**105**	**0**	**0.02**
Specific Conductance	us/cm	**B-11**	**-6.328**	**-4.039**	**-2.33**	**Yes**	**83**	**0**	**0.02**
		B-6	**-11.84**	**-9.26**	**-2.33**	**Yes**	**114**	**0**	**0.02**
		B-8	**-9.339**	**-3.231**	**-2.33**	**Yes**	**92**	**0**	**0.02**
		B-9	**-9.249**	**-11.42**	**-2.33**	**Yes**	**111**	**0**	**0.02**
Sulfate	mg/L	**B-11**	**-0.8021**	**-3.693**	**-2.33**	**Yes**	**74**	**0**	**0.02**
		B-6	**-1.212**	**-9.528**	**-2.33**	**Yes**	**111**	**3.604**	**0.02**
		B-8	**-1.113**	**-3.808**	**-2.33**	**Yes**	**85**	**1.176**	**0.02**
		B-9	**-1.069**	**-10.86**	**-2.33**	**Yes**	**104**	**0**	**0.02**
Total Dissolved Solids	mg/L	B-11	0	4	145	No	32	0	0.02
		B-6	**-3.225**	**-3.169**	**-2.33**	**Yes**	**51**	**0**	**0.02**
		B-8	-8.194	-103	-138	No	31	0	0.02
		B-9	**-4.255**	**-6.265**	**-2.33**	**Yes**	**51**	**0**	**0.02**
Total Organic Carbon	mg/L	**B-11**	**-0.02515**	**-4.743**	**-2.33**	**Yes**	**76**	**3.947**	**0.02**
		B-6	**-0.1021**	**-9.094**	**-2.33**	**Yes**	**112**	**1.786**	**0.02**
		B-8	-0.09822	-1.354	-2.33	No	86	0	0.02
		B-9	**-0.05466**	**-8.331**	**-2.33**	**Yes**	**105**	**0**	**0.02**
Vanadium, dissolved	mg/L	**B-11**	**-0.0001738**	**-281**	**-151**	**Yes**	**33**	**6.061**	**0.02**
		B-6	**-0.0001741**	**-5.44**	**-2.33**	**Yes**	**51**	**1.961**	**0.02**
		B-8	**-0.0005892**	**-240**	**-145**	**Yes**	**32**	**12.5**	**0.02**
		B-9	**-0.00009812**	**-5.473**	**-2.33**	**Yes**	**51**	**3.922**	**0.02**
Zinc, dissolved	mg/L	**B-11**	**-0.0002077**	**-6.012**	**-2.33**	**Yes**	**76**	**48.68**	**0.02**
		B-6	**-0.0001864**	**-7.639**	**-2.33**	**Yes**	**112**	**46.43**	**0.02**
		B-8	**-0.000218**	**-6.111**	**-2.33**	**Yes**	**86**	**48.84**	**0.02**
		B-9	**-0.0001406**	**-4.922**	**-2.33**	**Yes**	**105**	**40**	**0.02**

APPENDIX D-5
Short-Term Mann-Kendall Trend Tests 2016-2023 – Perched Aquifer

Short-Term Mann-Kendall Trend Tests 2019-2023
Perched Aquifer

Analyte	Units	Well	Slope	Z-Score	Critical Value	Significant Trend?	# of Samples	% Non-detects	Alpha
Alkalinity	mg/L	B-11	66	NaN	NaN	No	3	0	NaN
		B-6	-1.71	-7	-44	No	14	0	0.02
		B-8	-46.93	NaN	NaN	No	2	0	NaN
		B-9	3.937	21	44	No	14	0	0.02
Ammonia as nitrogen	mg/L	B-11	0	NaN	NaN	No	3	100	NaN
		B-6	0	-6	-44	No	14	85.71	0.02
		B-8	0.01043	NaN	NaN	No	2	50	NaN
		B-9	0	-18	-44	No	14	64.29	0.02
Antimony, dissolved	mg/L	B-11	-0.0001347	NaN	NaN	No	3	66.67	NaN
		B-6	0.00001927	20	44	No	14	14.29	0.02
		B-8	-0.002607	NaN	NaN	No	2	100	NaN
		B-9	0.00001466	9	44	No	14	21.43	0.02
Arsenic, dissolved	mg/L	B-11	-0.0001347	NaN	NaN	No	3	0	NaN
		B-6	-0.000009707	-17	-44	No	14	0	0.02
		B-8	-0.0001304	NaN	NaN	No	2	0	NaN
		B-9	-0.00002963	-35	-44	No	14	0	0.02
Barium, dissolved	mg/L	B-11	0.003098	NaN	NaN	No	3	0	NaN
		B-6	0.0001156	3	44	No	14	0	0.02
		B-8	-0.01473	NaN	NaN	No	2	0	NaN
		B-9	0	-1	-44	No	14	0	0.02
Bicarbonate	mg/L	B-11	66	NaN	NaN	No	3	0	NaN
		B-6	-0.6111	-1	-44	No	14	0	0.02
		B-8	-46.93	NaN	NaN	No	2	0	NaN
		B-9	3.563	16	39	No	13	0	0.02
Cadmium, dissolved	mg/L	B-11	0	NaN	NaN	No	3	100	NaN
		B-6	0	7	44	No	14	28.57	0.02
		B-8	0	NaN	NaN	No	2	100	NaN
		B-9	0	-4	-44	No	14	28.57	0.02
Chemical Oxygen Demand	mg/L	B-11	8.62	NaN	NaN	No	3	0	NaN
		B-6	-0.1156	-2	-44	No	14	0	0.02
		B-8	-9.777	NaN	NaN	No	2	0	NaN
		B-9	0.5055	16	44	No	14	0	0.02
Chloride	mg/L	B-11	-4.041	NaN	NaN	No	3	33.33	NaN
		B-6	-0.3646	-25	-44	No	14	71.43	0.02
		B-8	9.125	NaN	NaN	No	2	0	NaN
		B-9	0	7	44	No	14	92.86	0.02
Chromium, dissolved	mg/L	B-11	-0.6734	NaN	NaN	No	3	0	NaN
		B-6	0.1527	5	44	No	14	0	0.02
		B-8	-4.563	NaN	NaN	No	2	0	NaN
		B-9	0	0	44	No	14	0	0.02
Cobalt, dissolved	mg/L	B-11	0.0002694	NaN	NaN	No	3	0	NaN
		B-6	-0.00002448	-3	-44	No	14	0	0.02
		B-8	-0.002216	NaN	NaN	No	2	0	NaN
		B-9	-0.0000206	-7	-44	No	14	0	0.02
Copper, dissolved	mg/L	B-11	0	NaN	NaN	No	3	66.67	NaN
		B-6	0	3	44	No	14	7.143	0.02
		B-8	-0.0001173	NaN	NaN	No	2	0	NaN
		B-9	0.000005501	23	44	No	14	21.43	0.02
Iron, dissolved	mg/L	B-11	-0.0001347	NaN	NaN	No	3	0	NaN
		B-6	0.0000556	10	44	No	14	0	0.02
		B-8	-0.001043	NaN	NaN	No	2	0	NaN
		B-9	0	-8	-44	No	14	0	0.02
Lead, dissolved	mg/L	B-11	-0.03246	NaN	NaN	No	3	66.67	NaN
		B-6	0	18	44	No	14	78.57	0.02
		B-8	-0.02868	NaN	NaN	No	2	50	NaN
		B-9	-0.001151	-33	-44	No	14	57.14	0.02
Magnesium, dissolved	mg/L	B-11	0	NaN	NaN	No	3	100	NaN
		B-6	0	11	44	No	14	78.57	0.02
		B-8	0	NaN	NaN	No	2	100	NaN
		B-9	0	9	44	No	14	92.86	0.02
Manganese	mg/L	B-11	2.424	NaN	NaN	No	3	0	NaN
		B-6	-0.2036	-8	-44	No	14	0	0.02
		B-8	-6.518	NaN	NaN	No	2	0	NaN
		B-9	0.3708	22	44	No	14	0	0.02

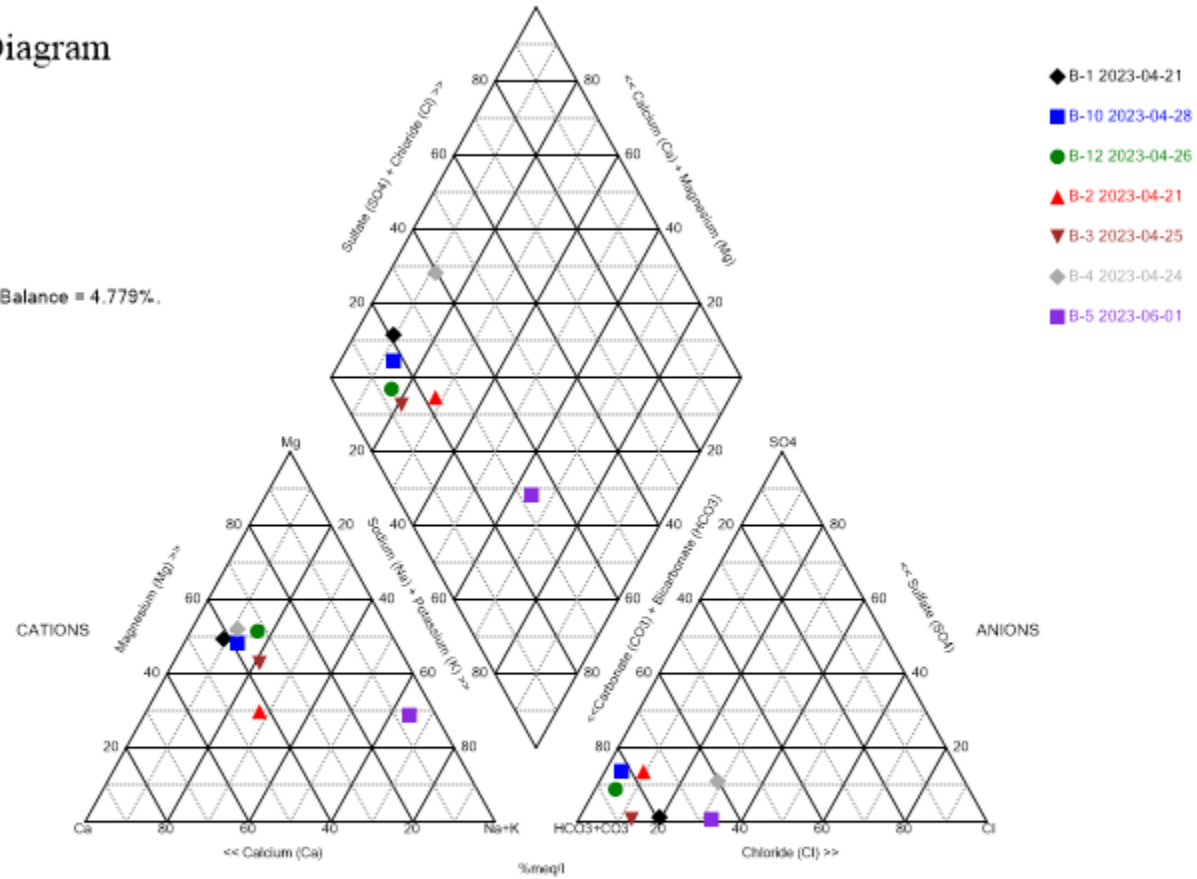
Short-Term Mann-Kendall Trend Tests 2019-2023
Perched Aquifer

Analyte	Units	Well	Slope	Z-Score	Critical Value	Significant Trend?	# of Samples	% Non-detects	Alpha
Mercury, dissolved	mg/L	B-11	0.002155	NaN	NaN	No	3	0	NaN
		B-6	0.0004101	22	44	No	14	14.29	0.02
		B-8	-0.006779	NaN	NaN	No	2	0	NaN
		B-9	0.00001517	4	44	No	14	7.143	0.02
Nickel, dissolved	mg/L	B-11	-0.0002694	NaN	NaN	No	3	100	NaN
		B-6	0	-13	-44	No	14	100	0.02
		B-8	-0.0002607	NaN	NaN	No	2	100	NaN
		B-9	0	-11	-44	No	14	100	0.02
Nitrate as nitrogen	mg/L	B-11	0.0009428	NaN	NaN	No	3	0	NaN
		B-6	0.0002659	41	44	No	14	0	0.02
		B-8	0.001825	NaN	NaN	No	2	0	NaN
		B-9	0.0001197	24	44	No	14	0	0.02
Nitrite as nitrogen	mg/L	B-11	0.1751	NaN	NaN	No	3	0	NaN
		B-6	-0.04466	-7	-44	No	14	0	0.02
		B-8	-0.03911	NaN	NaN	No	2	0	NaN
		B-9	0.01043	9	44	No	14	0	0.02
pH	pH units	B-11	0	NaN	NaN	No	3	100	NaN
		B-6	0	2	44	No	14	85.71	0.02
		B-8	0	NaN	NaN	No	2	100	NaN
		B-9	0	15	44	No	14	85.71	0.02
Potassium	mg/L	B-11	0.3367	NaN	NaN	No	3	0	NaN
		B-6	0.02978	3	44	No	14	0	0.02
		B-8	0.4171	NaN	NaN	No	2	0	NaN
		B-9	-0.04004	-15	-44	No	14	0	0.02
Selenium, dissolved	mg/L	B-11	0.1347	NaN	NaN	No	3	0	NaN
		B-6	-0.01995	-11	-44	No	14	0	0.02
		B-8	-1.434	NaN	NaN	No	2	0	NaN
		B-9	0.0298	15	44	No	14	0	0.02
Specific Conductance	us/cm	B-11	0.0004041	NaN	NaN	No	3	0	NaN
		B-6	0	-9	-44	No	14	0	0.02
		B-8	-0.0001304	NaN	NaN	No	2	0	NaN
		B-9	-0.00008286	-40	-44	No	14	0	0.02
Sulfate	mg/L	B-11	-0.2694	NaN	NaN	No	3	0	NaN
		B-6	0	3	44	No	14	0	0.02
		B-8	-3.52	NaN	NaN	No	2	0	NaN
		B-9	0.05214	14	44	No	14	0	0.02
Calcium, total	mg/L	B-11	71.38	NaN	NaN	No	3	0	NaN
		B-6	-10.15	-22	-44	No	14	0	0.02
		B-8	-67.79	NaN	NaN	No	2	0	NaN
		B-9	1.164	11	44	No	14	0	0.02
Total Dissolved Solids	mg/L	B-11	2.694	NaN	NaN	No	3	0	NaN
		B-6	-0.2224	-18	-44	No	14	0	0.02
		B-8	2.737	NaN	NaN	No	2	0	NaN
		B-9	-0.6814	-14	-44	No	14	0	0.02
Total Organic Carbon	mg/L	B-11	53.87	NaN	NaN	No	3	0	NaN
		B-6	1.238	3	44	No	14	0	0.02
		B-8	-41.71	NaN	NaN	No	2	0	NaN
		B-9	1.831	15	44	No	14	0	0.02
Sodium, total	mg/L	B-11	0.08081	NaN	NaN	No	3	0	NaN
		B-6	-0.03417	-8	-44	No	14	0	0.02
		B-8	-1.942	NaN	NaN	No	2	0	NaN
		B-9	-0.03322	-21	-44	No	14	0	0.02
Vanadium, dissolved	mg/L	B-11	-0.0002694	NaN	NaN	No	3	0	NaN
		B-6	-0.00006612	-23	-44	No	14	0	0.02
		B-8	-0.001304	NaN	NaN	No	2	0	NaN
		B-9	-0.00002915	-21	-44	No	14	0	0.02
Zinc, dissolved	mg/L	B-11	-0.003502	NaN	NaN	No	3	0	NaN
		B-6	0.00002493	7	44	No	14	14.29	0.02
		B-8	-0.0007821	NaN	NaN	No	2	0	NaN
		B-9	0.00002171	4	44	No	14	0	0.02

APPENDIX E-1
Piper Diagrams 2023 – Upper Regional Aquifer

Piper Diagram

Cation-Anion Balance = 4.779%.

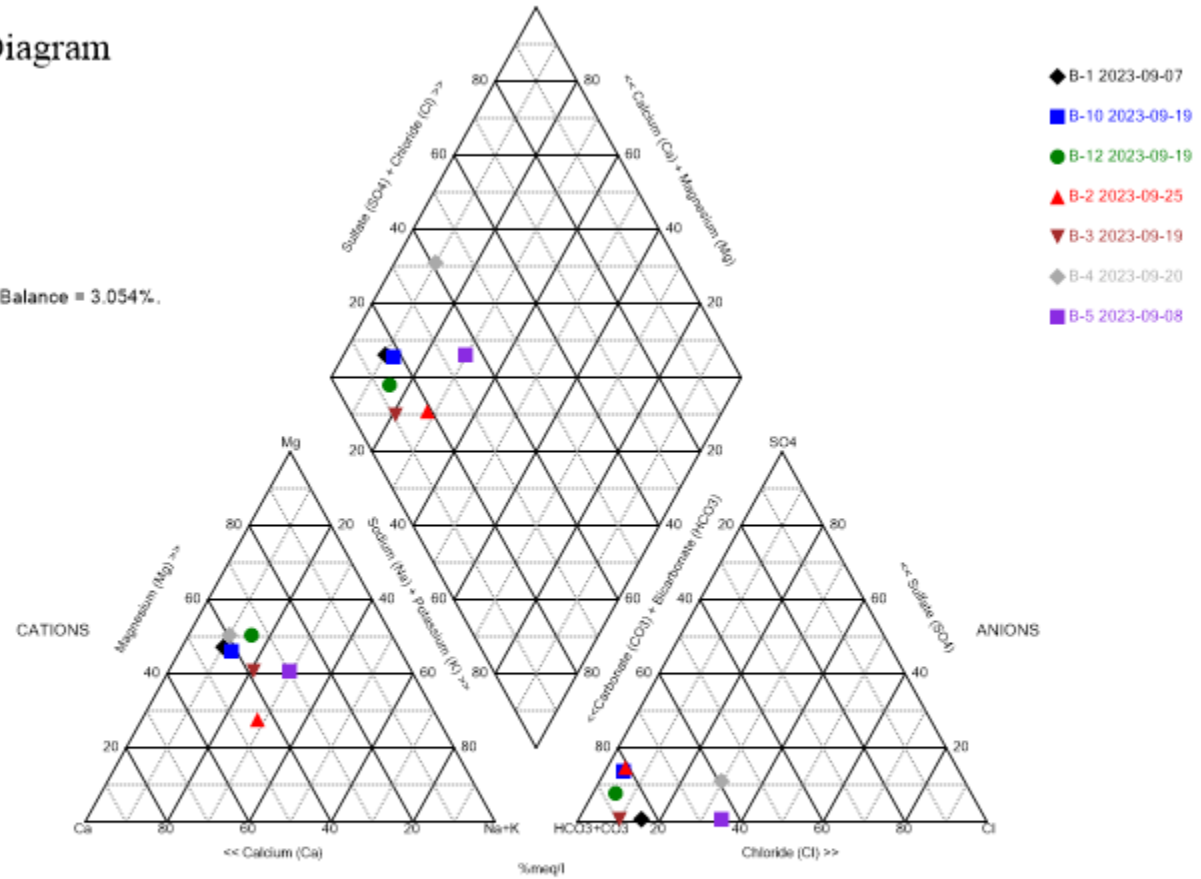


Analysis Run 4/8/2024 9:33 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

Piper Diagram

Cation-Anion Balance = 3.054%.

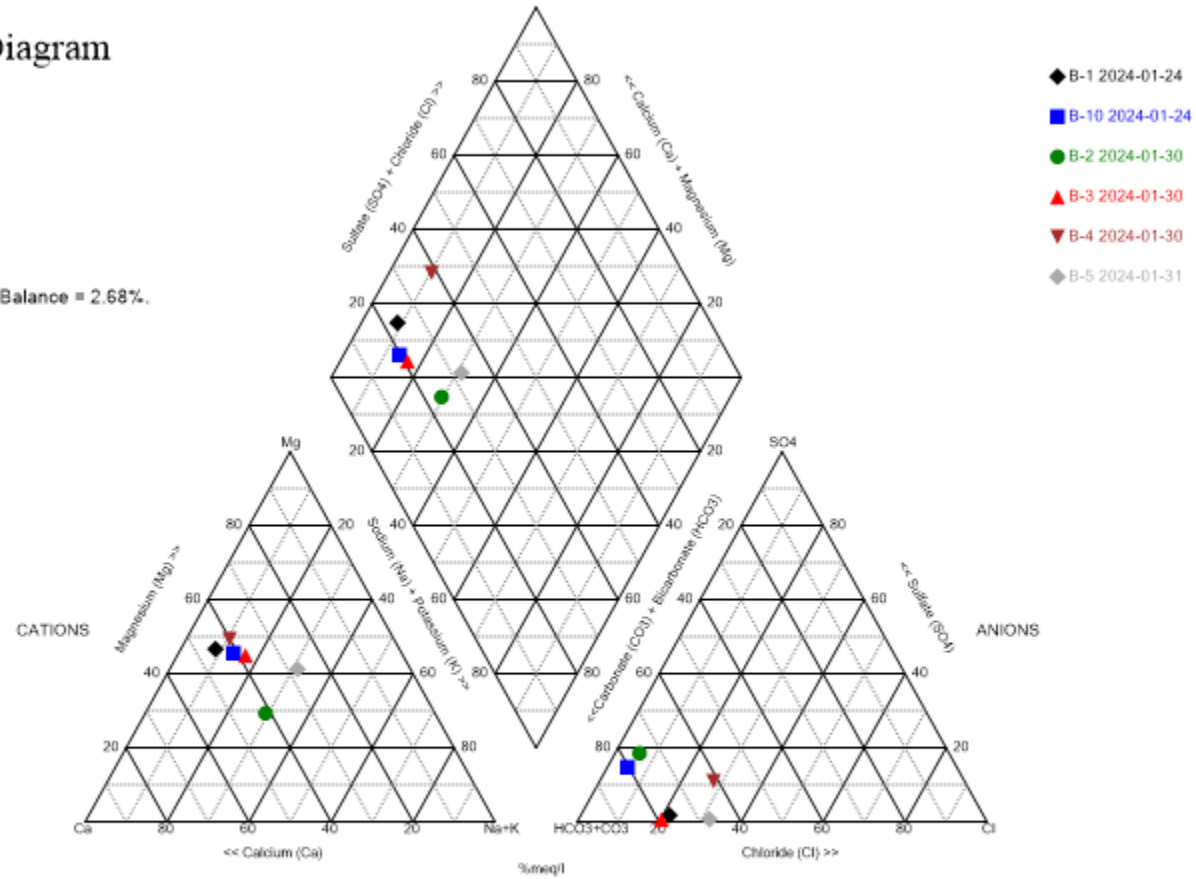


Analysis Run 4/8/2024 9:35 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

Piper Diagram

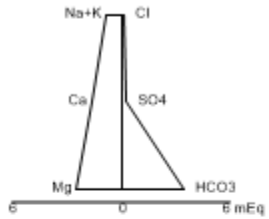
Cation-Anion Balance = 2.68%.



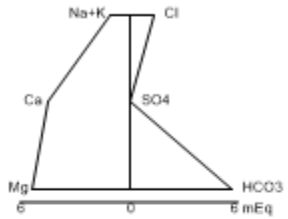
Analysis Run 4/8/2024 9:35 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

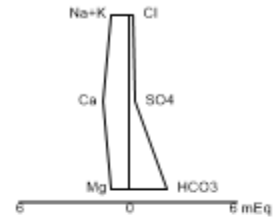
APPENDIX E-2
Stiff Diagrams 2023 – Upper Regional Aquifer



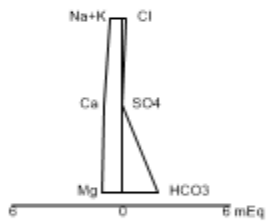
B-12 2023-04-26



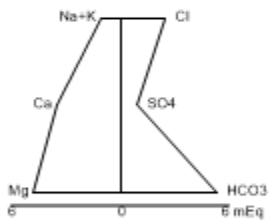
B-1 2023-04-21



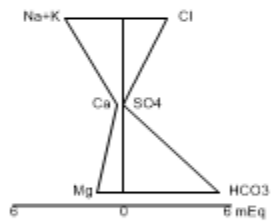
B-2 2023-04-21



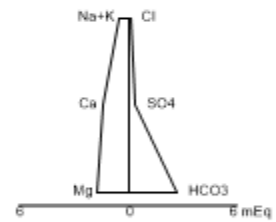
B-3 2023-04-25



B-4 2023-04-24



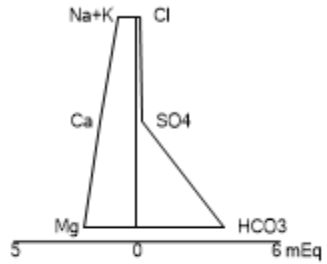
B-5 2023-06-01



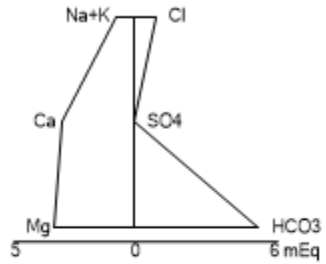
B-10 2023-04-28

Stiff Diagram Analysis Run 4/8/2024 9:42 AM

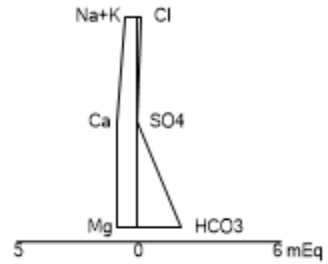
Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023



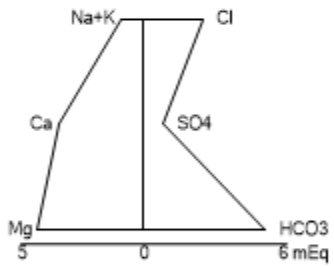
B-12 2023-09-19



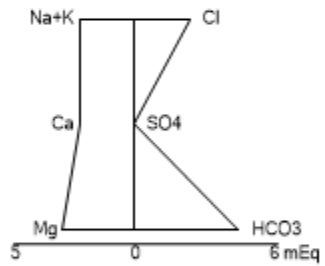
B-1 2023-09-07



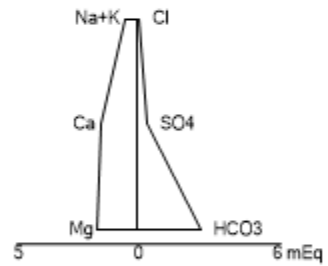
B-3 2023-09-19



B-4 2023-09-20



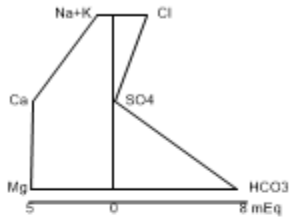
B-5 2023-09-08



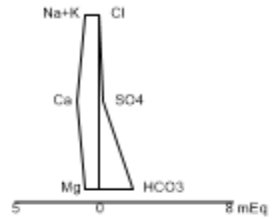
B-10 2023-09-19

Stiff Diagram Analysis Run 4/8/2024 9:42 AM

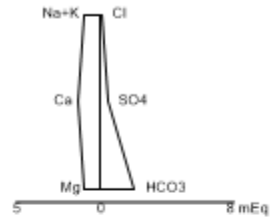
Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023



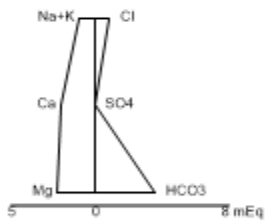
B-1 2024-01-24



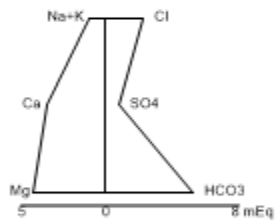
B-2 2023-09-25



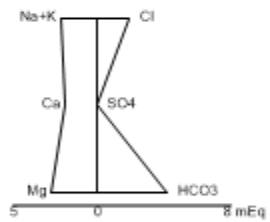
B-2 2024-01-30



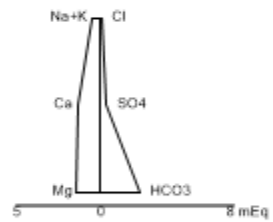
B-3 2024-01-30



B-4 2024-01-30



B-5 2024-01-31



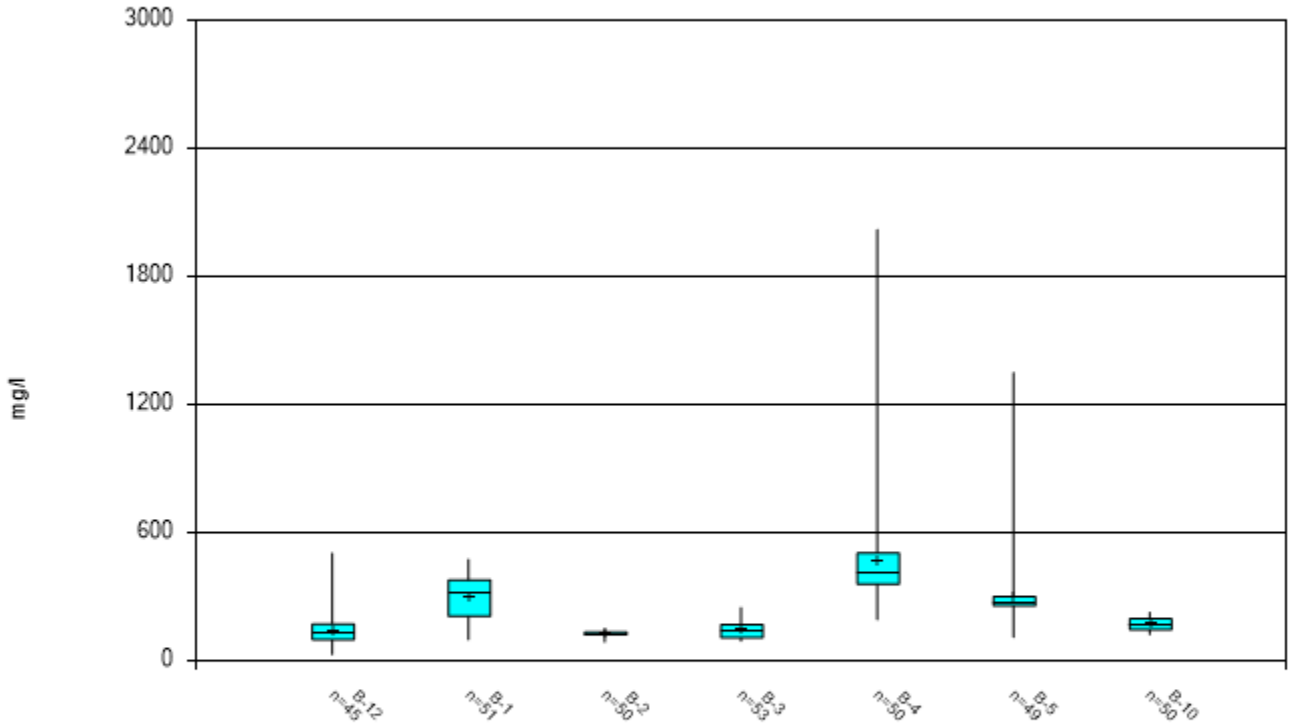
B-10 2024-01-24

Stiff Diagram Analysis Run 4/8/2024 9:41 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

APPENDIX E-3
Box Plots 1994-2023 – Upper Regional Aquifer

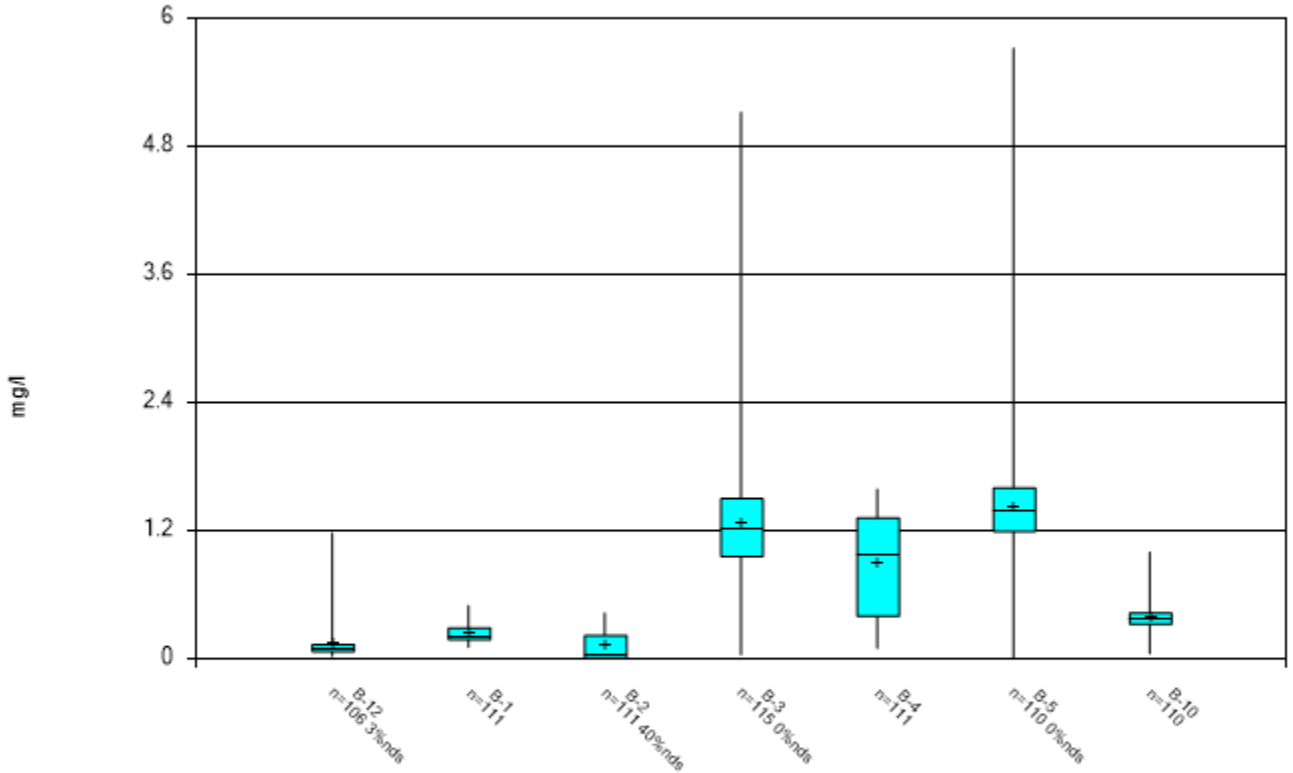
Box & Whiskers Plot



Constituent: Alkalinity Analysis Run 4/8/2024 10:22 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

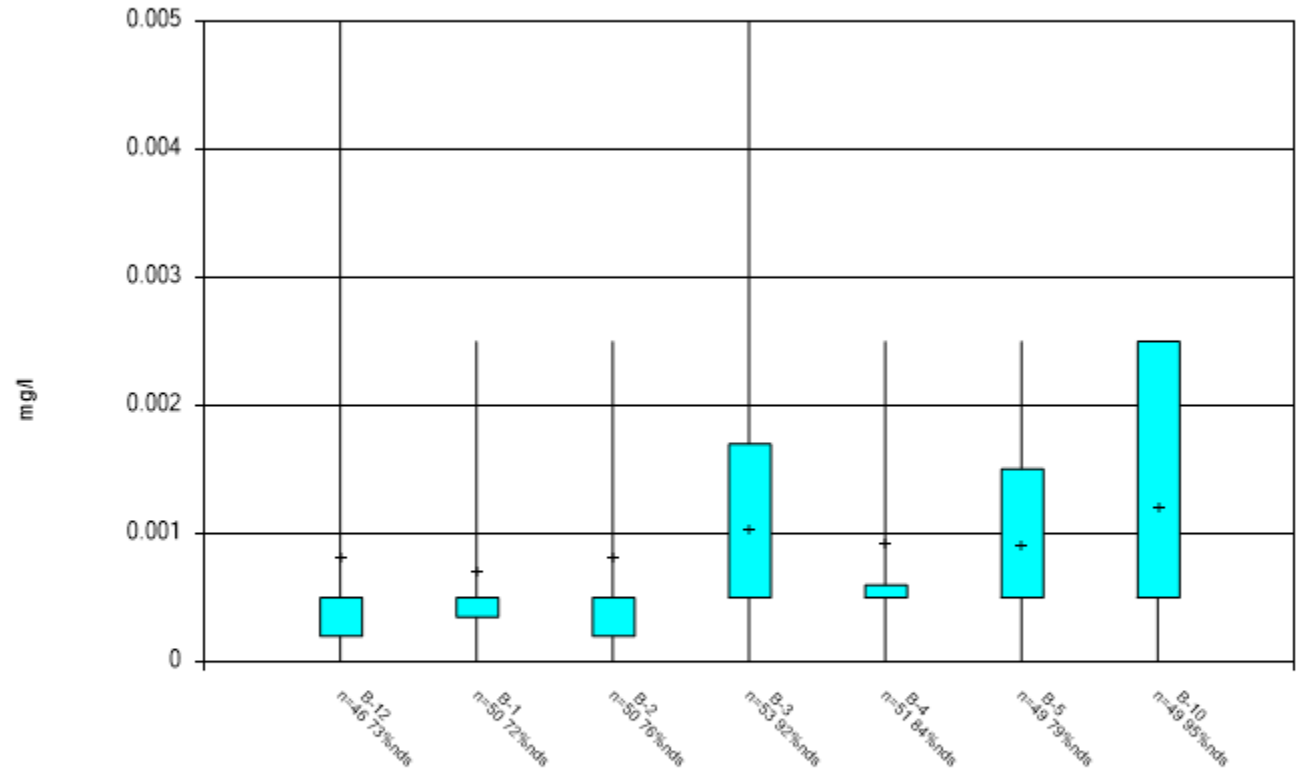
Box & Whiskers Plot



Constituent: Ammonia as nitrogen Analysis Run 4/8/2024 10:23 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

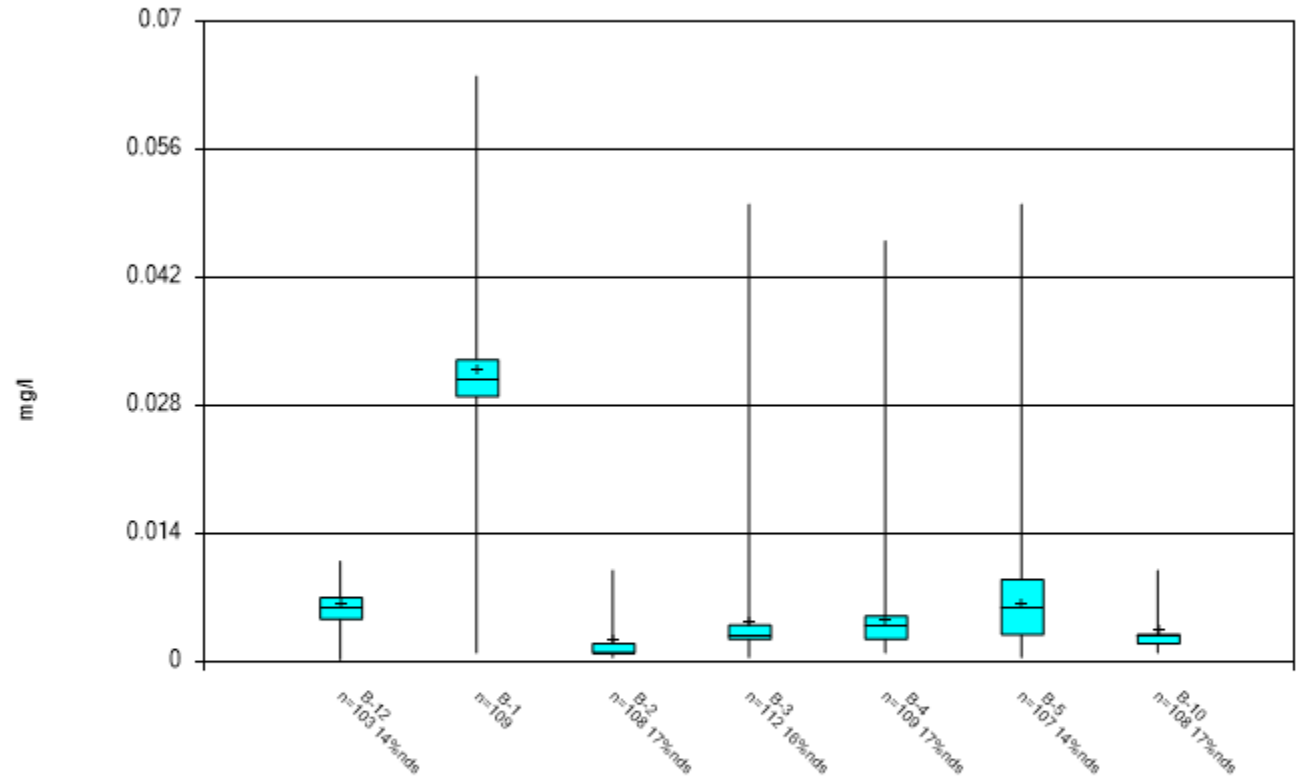
Box & Whiskers Plot



Constituent: ANTIMONY Analysis Run 4/8/2024 10:23 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

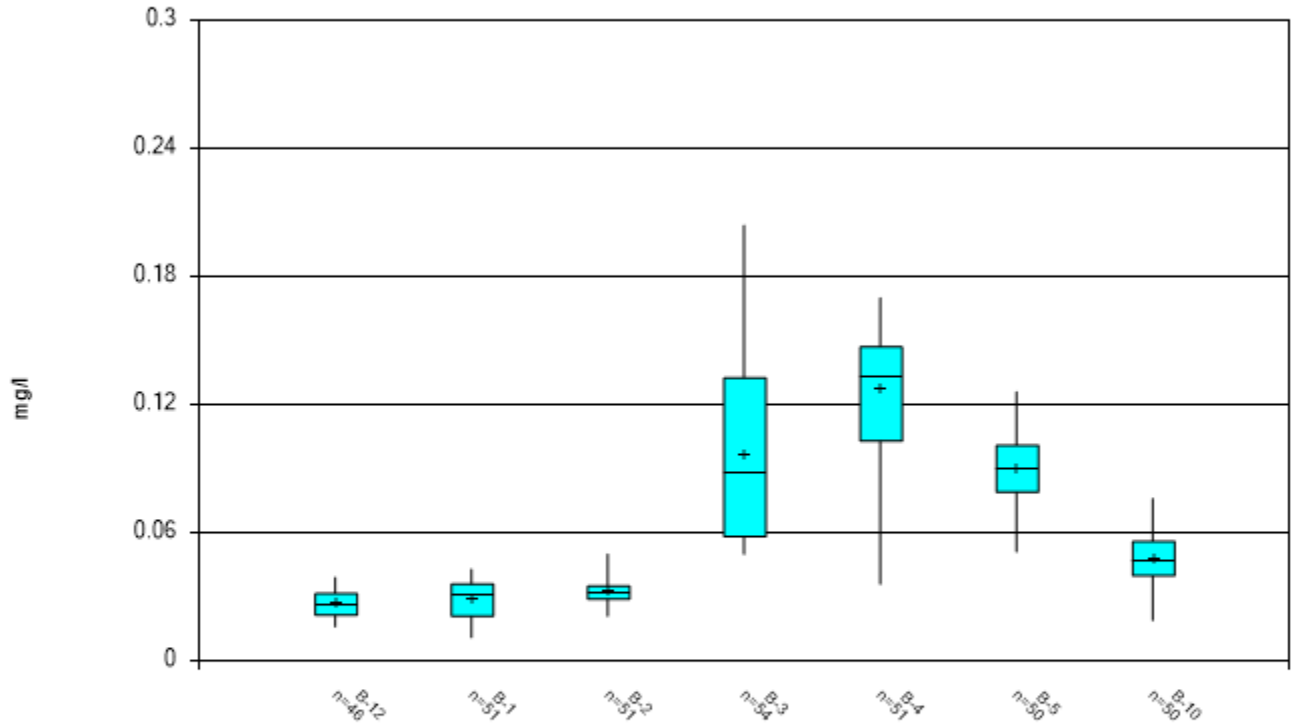
Box & Whiskers Plot



Constituent: Arsenic Analysis Run 4/8/2024 10:24 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

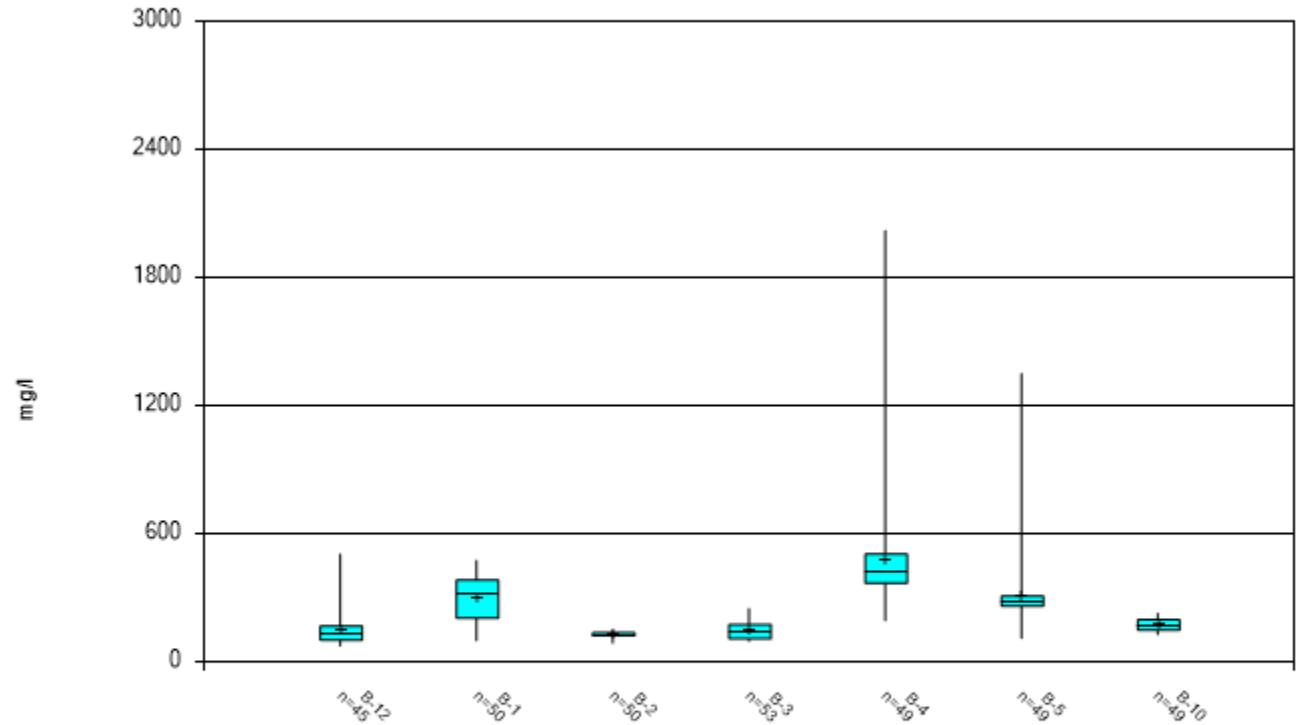
Box & Whiskers Plot



Constituent: BARIUM Analysis Run 4/8/2024 10:24 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

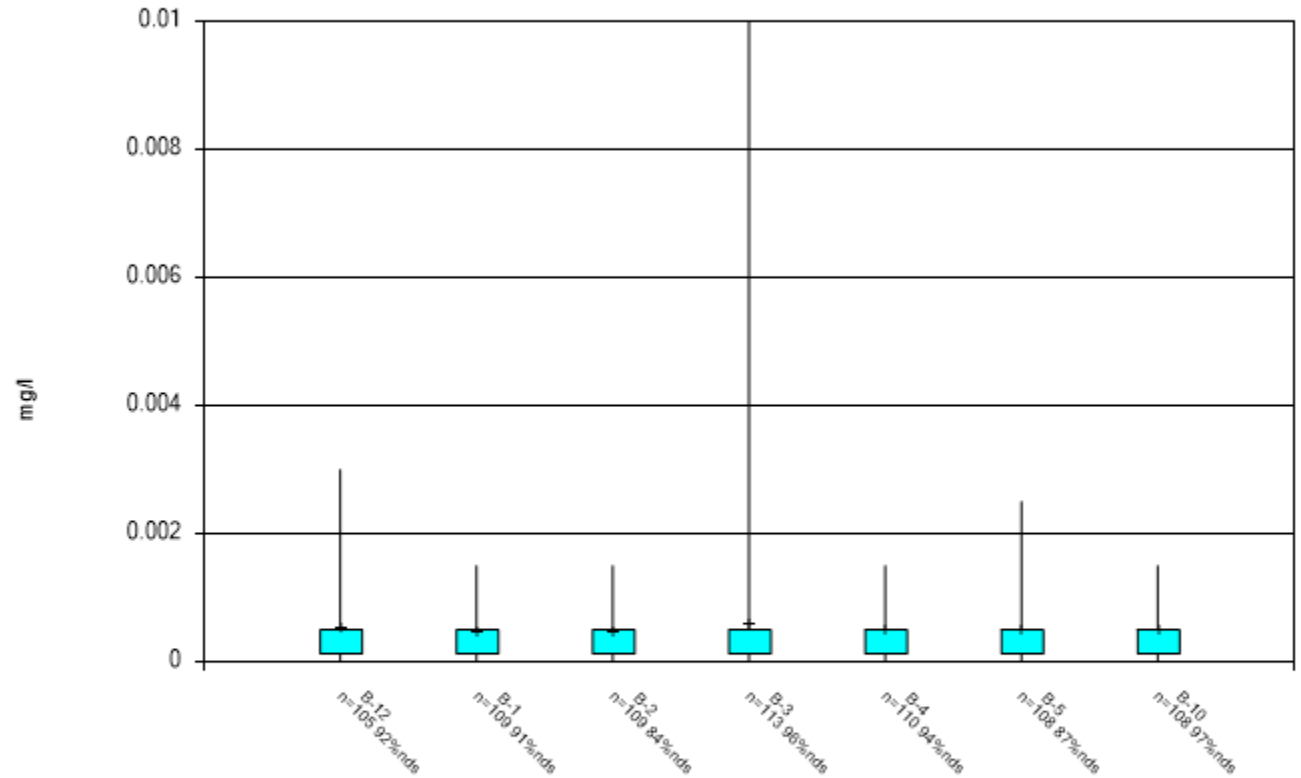
Box & Whiskers Plot



Constituent: Bicarbonate Analysis Run 4/8/2024 10:28 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

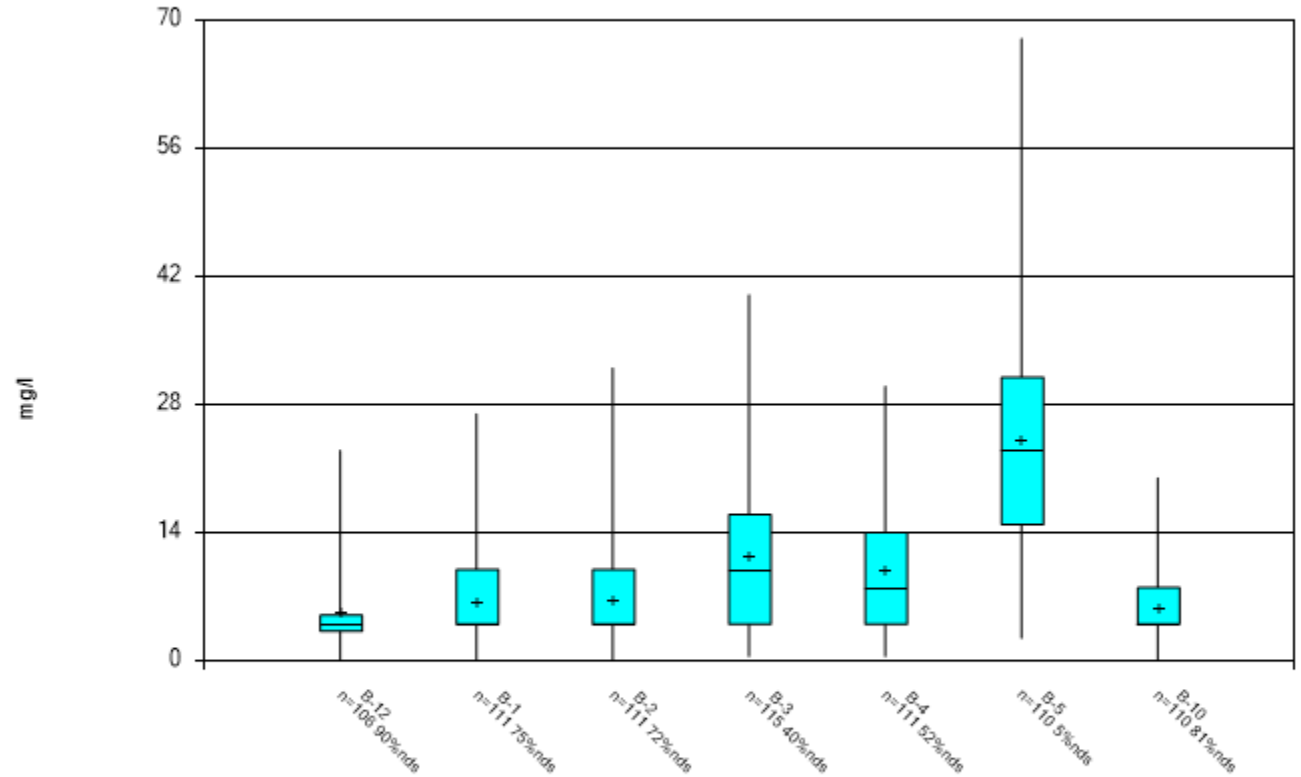
Box & Whiskers Plot



Constituent: Cadmium Analysis Run 4/8/2024 10:28 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

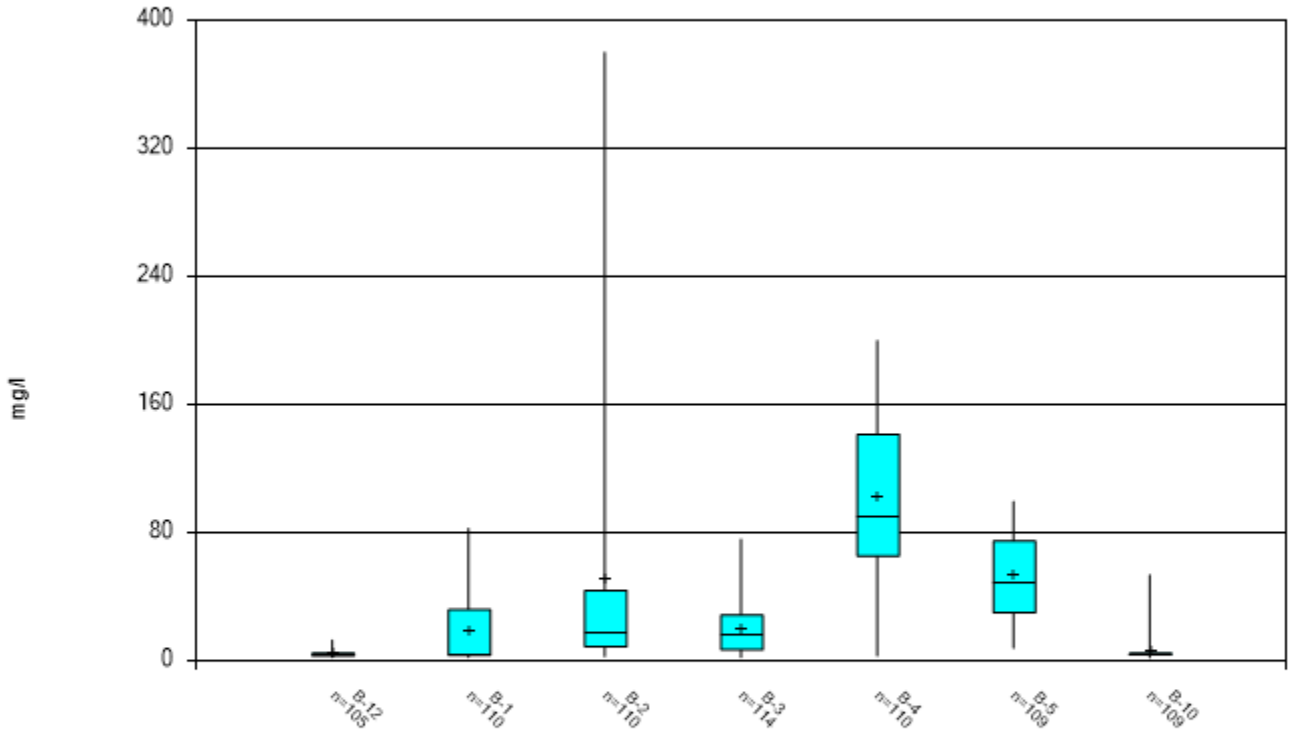
Box & Whiskers Plot



Constituent: Chemical Oxygen Demand Analysis Run 4/8/2024 10:29 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

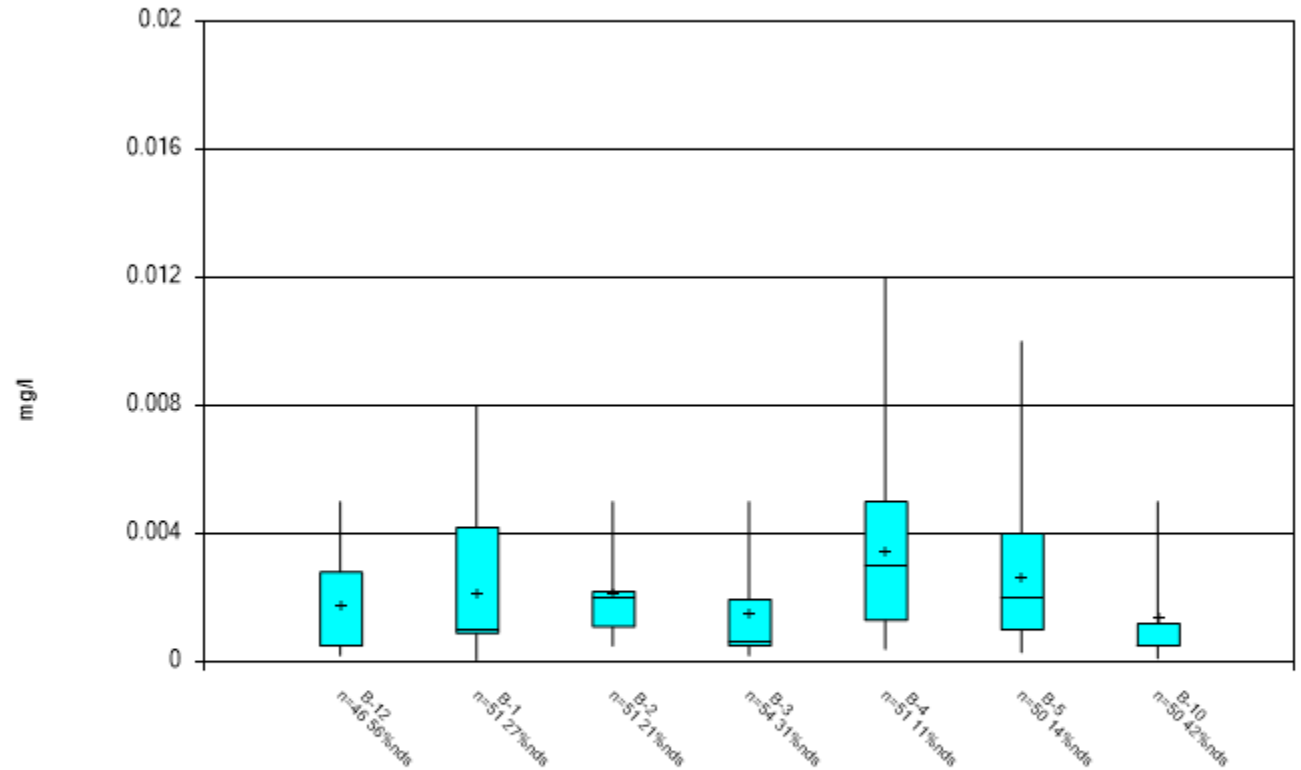
Box & Whiskers Plot



Constituent: Chloride Analysis Run 4/8/2024 10:30 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

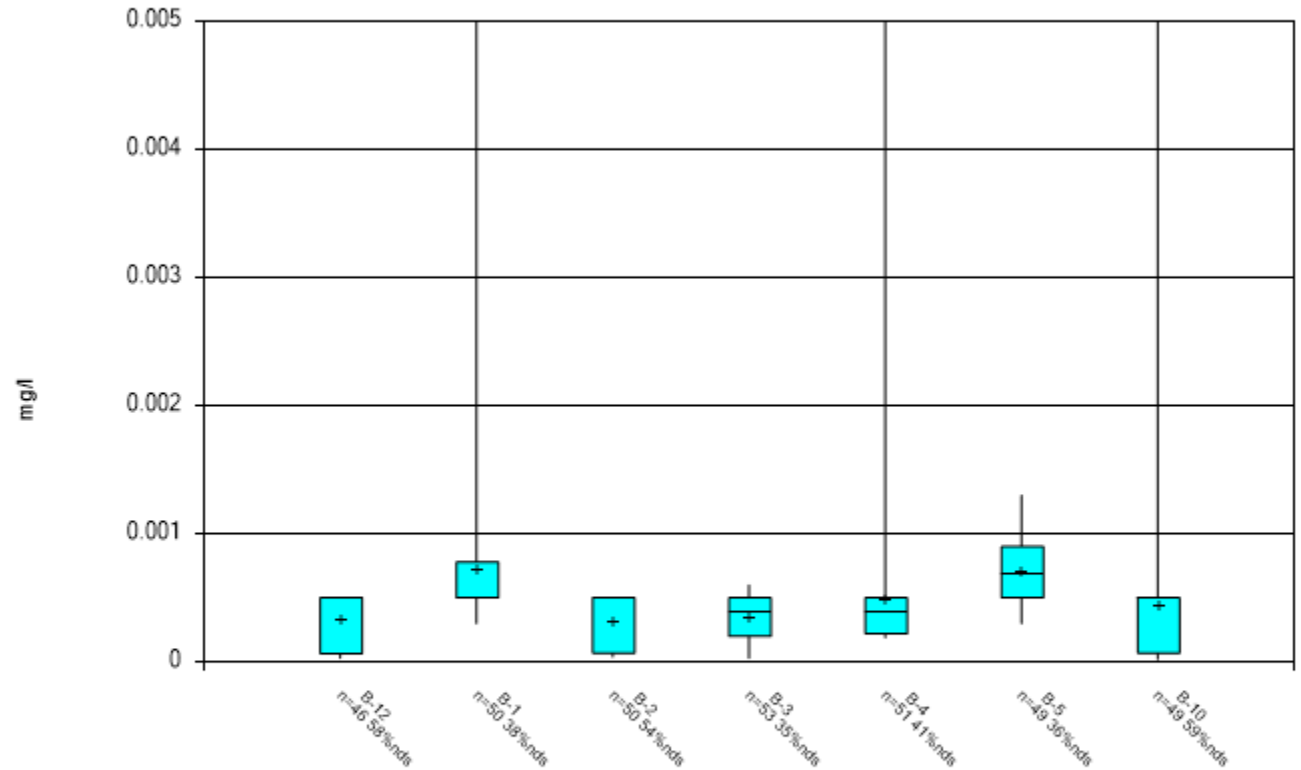
Box & Whiskers Plot



Constituent: Chromium Analysis Run 4/8/2024 10:33 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

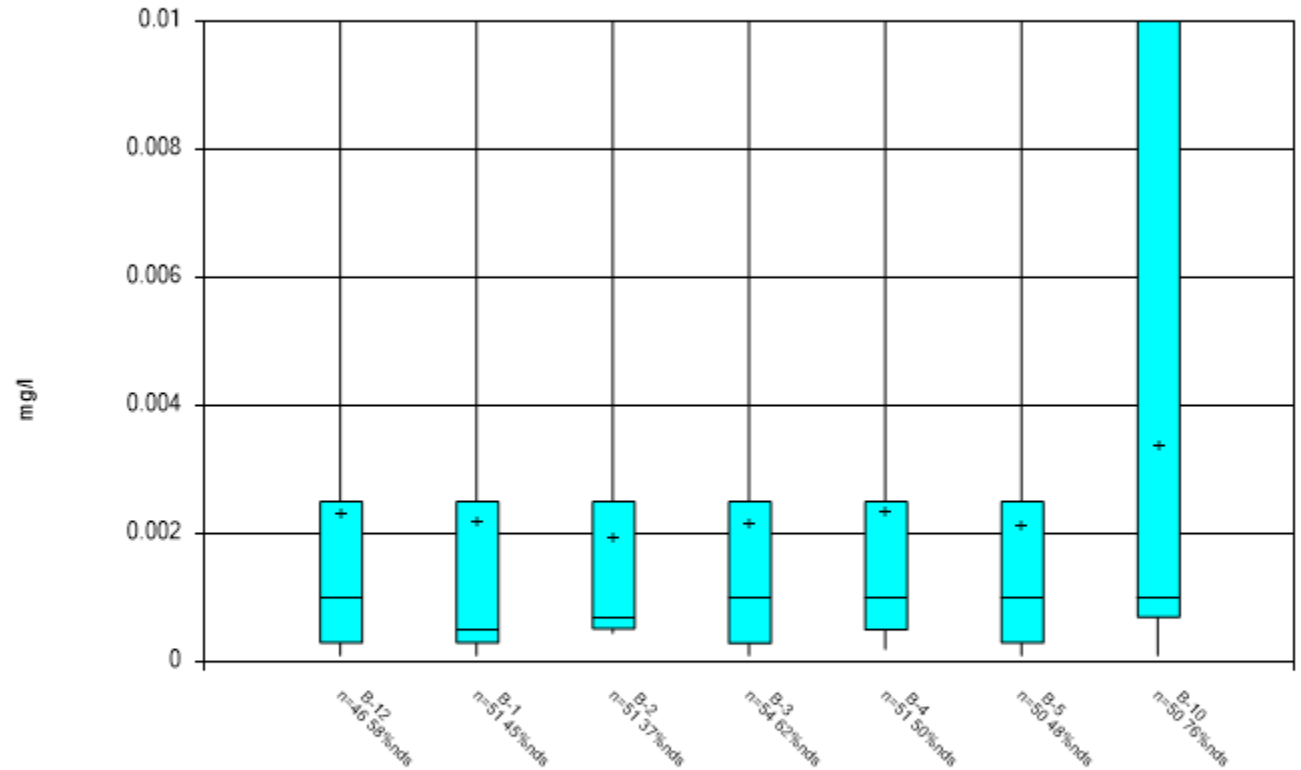
Box & Whiskers Plot



Constituent: COBALT Analysis Run 4/8/2024 10:33 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

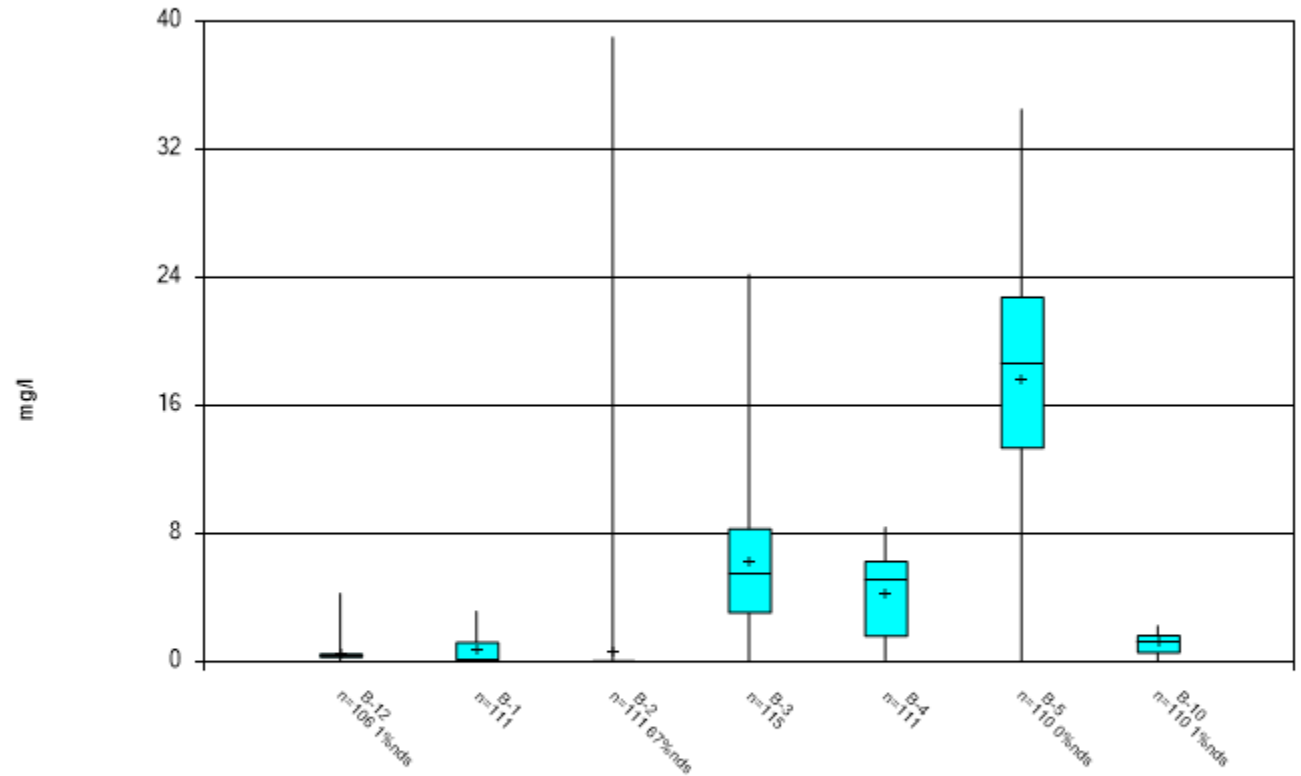
Box & Whiskers Plot



Constituent: Copper Analysis Run 4/8/2024 10:34 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

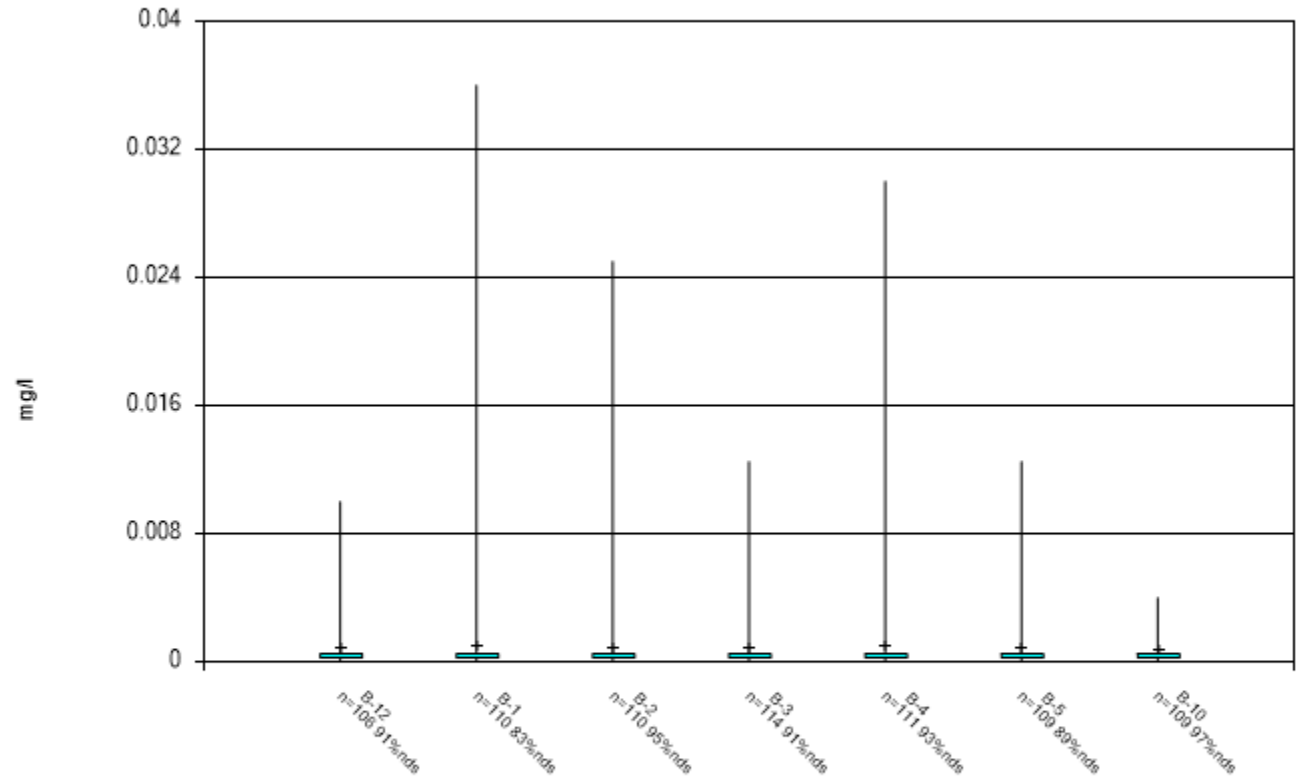
Box & Whiskers Plot



Constituent: Iron Analysis Run 4/8/2024 10:35 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

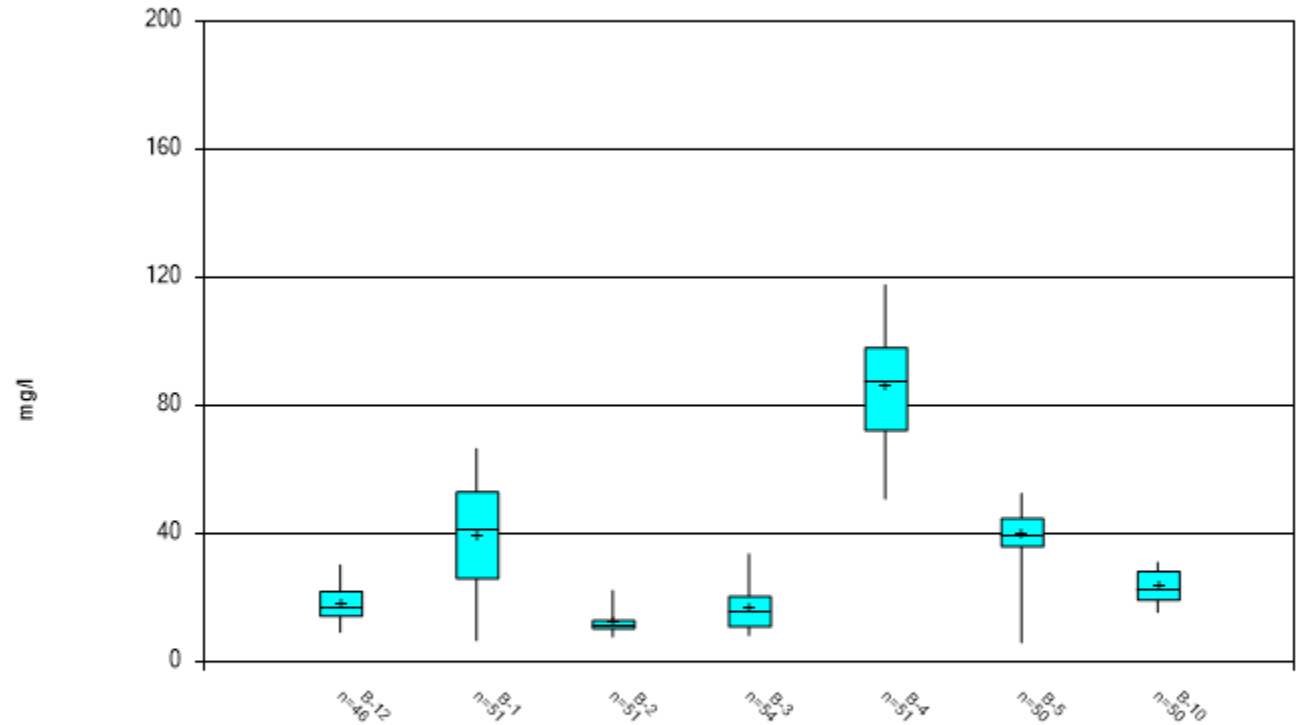
Box & Whiskers Plot



Constituent: Lead Analysis Run 4/8/2024 10:35 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

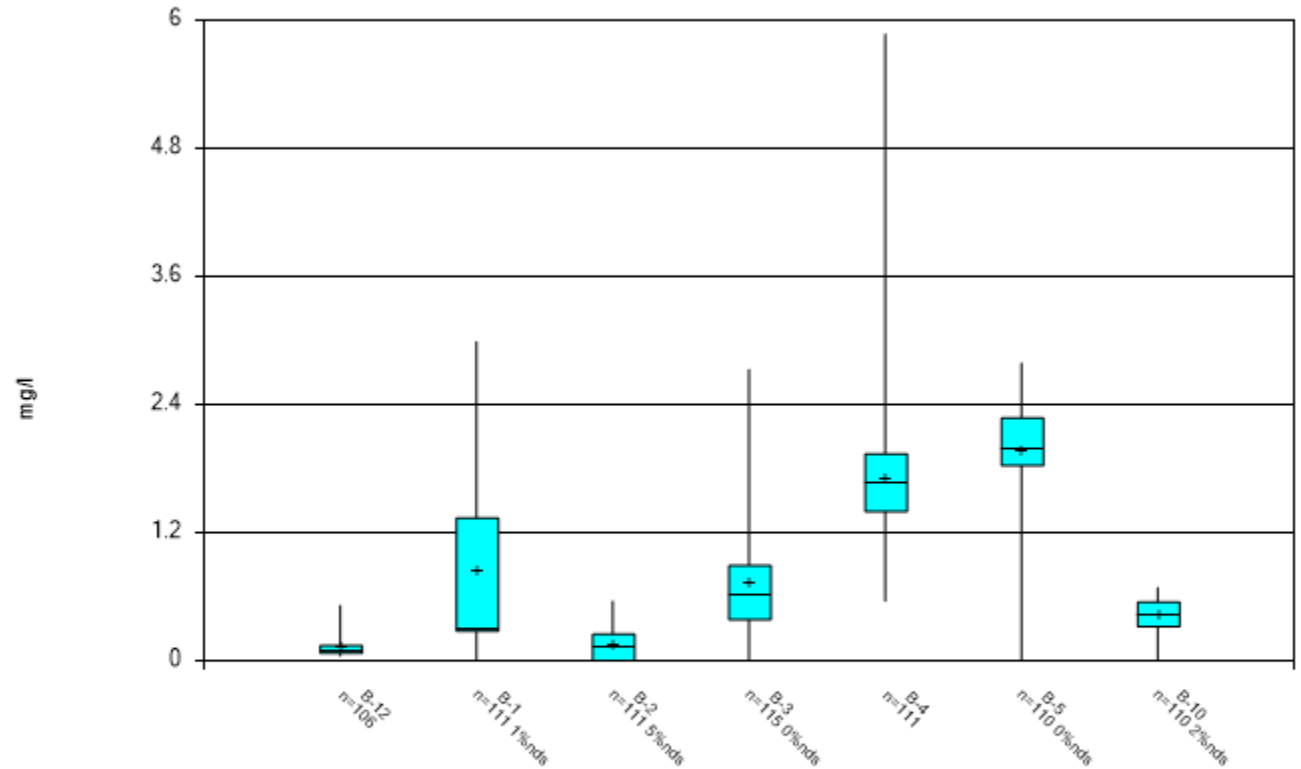
Box & Whiskers Plot



Constituent: MAGNESIUM Analysis Run 4/8/2024 10:35 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

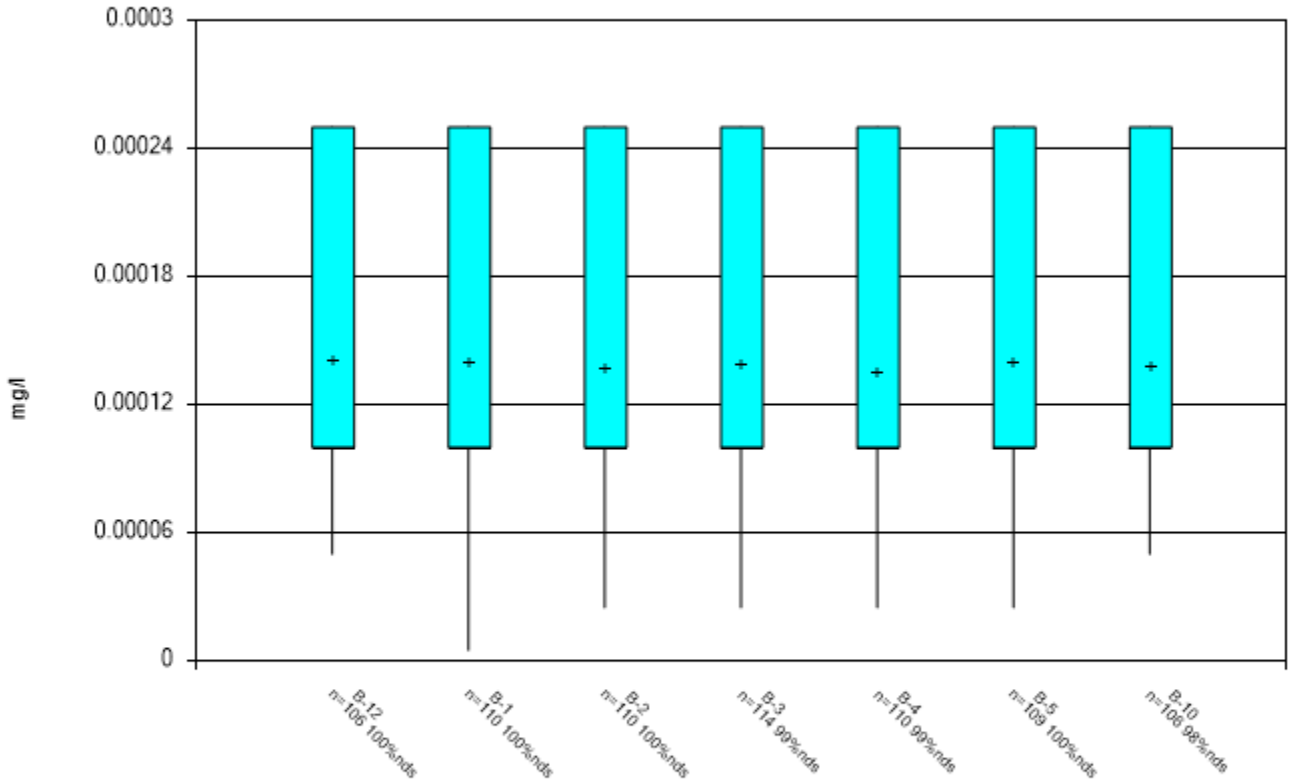
Box & Whiskers Plot



Constituent: Manganese Analysis Run 4/8/2024 10:36 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

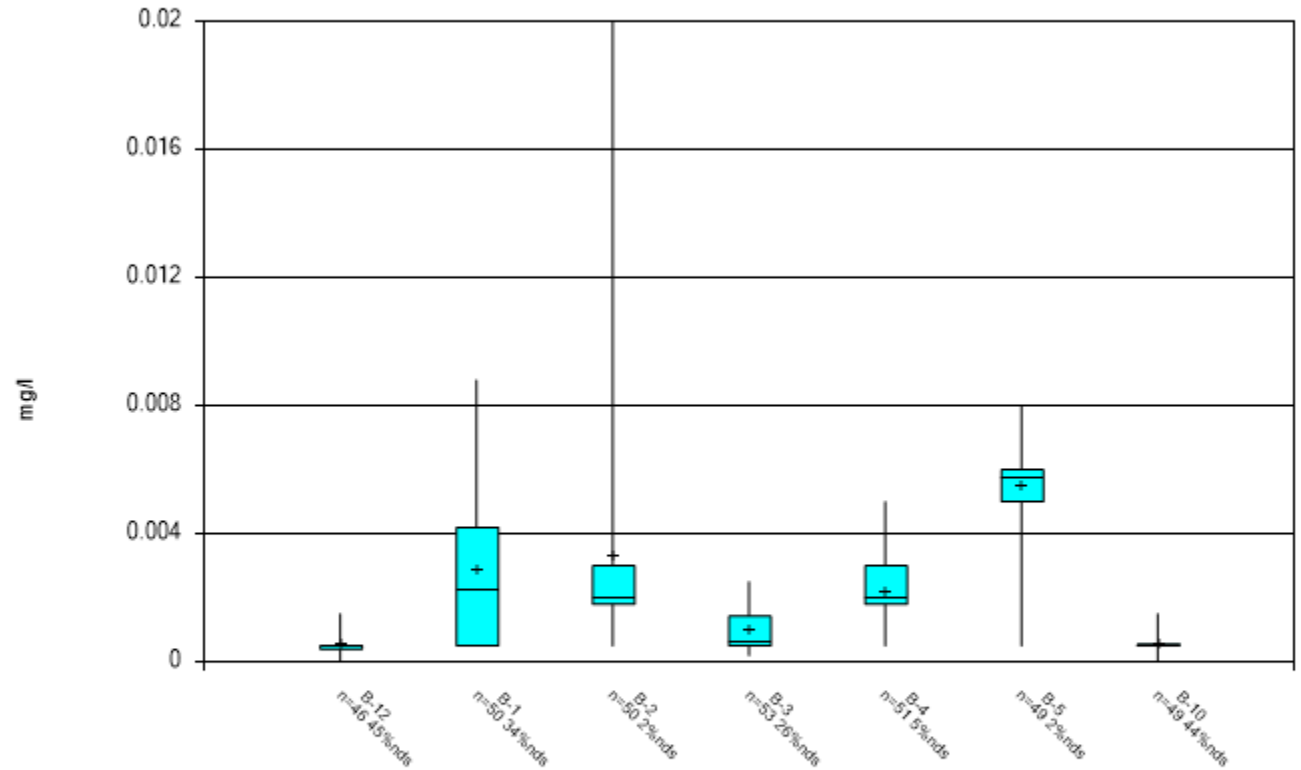
Box & Whiskers Plot



Constituent: Mercury Analysis Run 4/8/2024 10:36 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

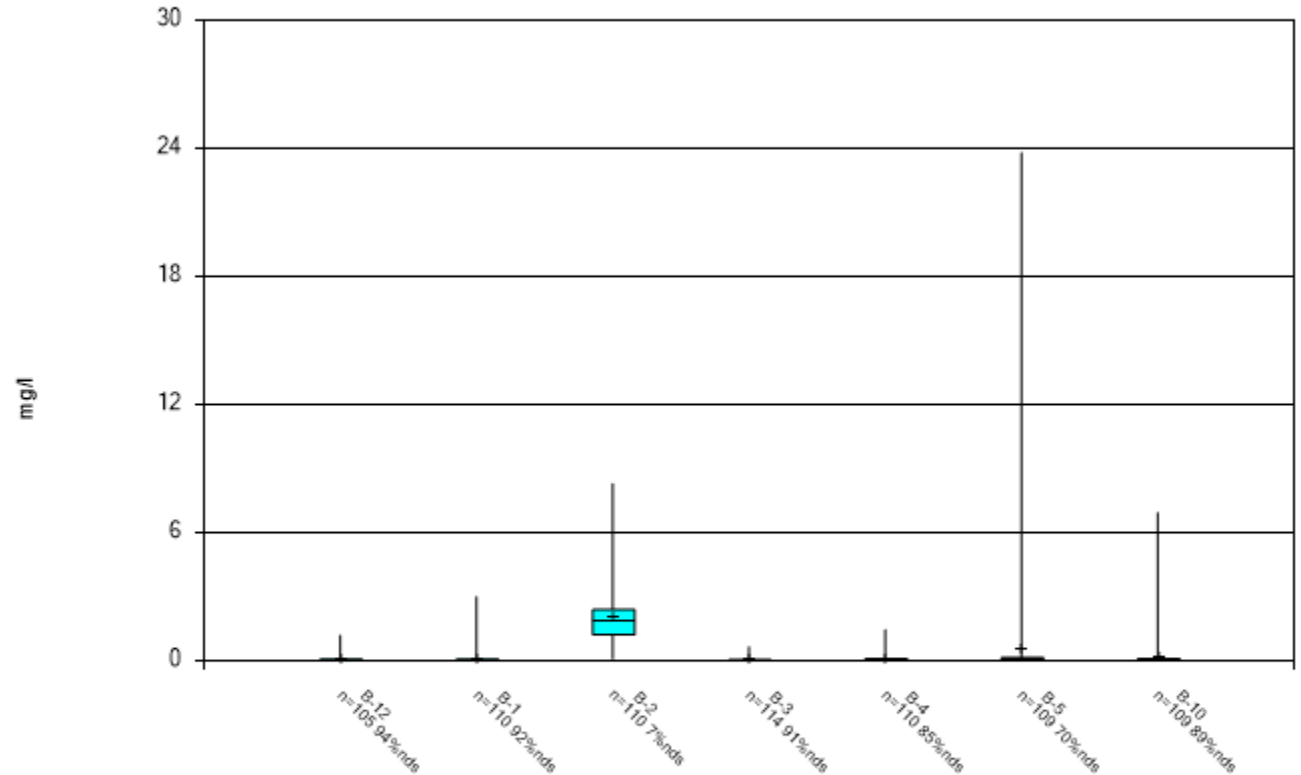
Box & Whiskers Plot



Constituent: Nickel Analysis Run 4/8/2024 10:36 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

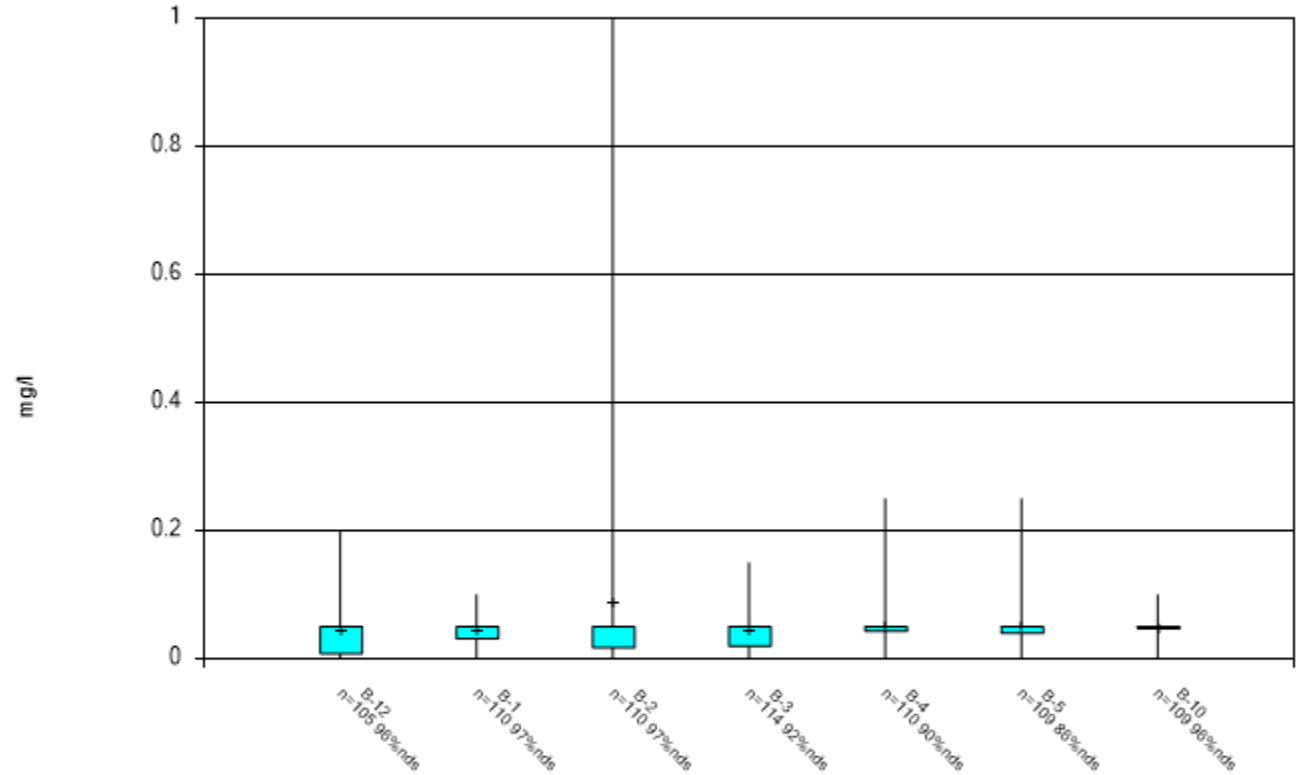
Box & Whiskers Plot



Constituent: Nitrate as nitrogen Analysis Run 4/8/2024 10:37 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

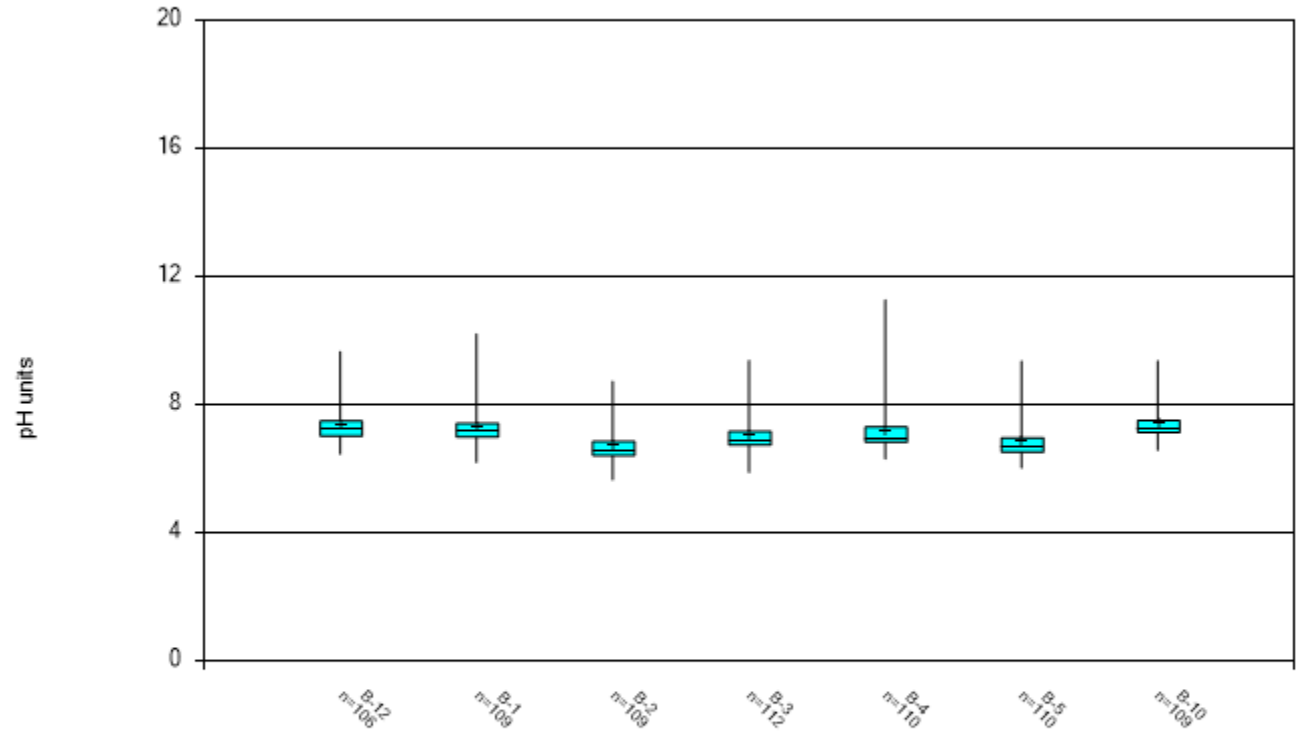
Box & Whiskers Plot



Constituent: Nitrite as nitrogen Analysis Run 4/8/2024 10:37 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

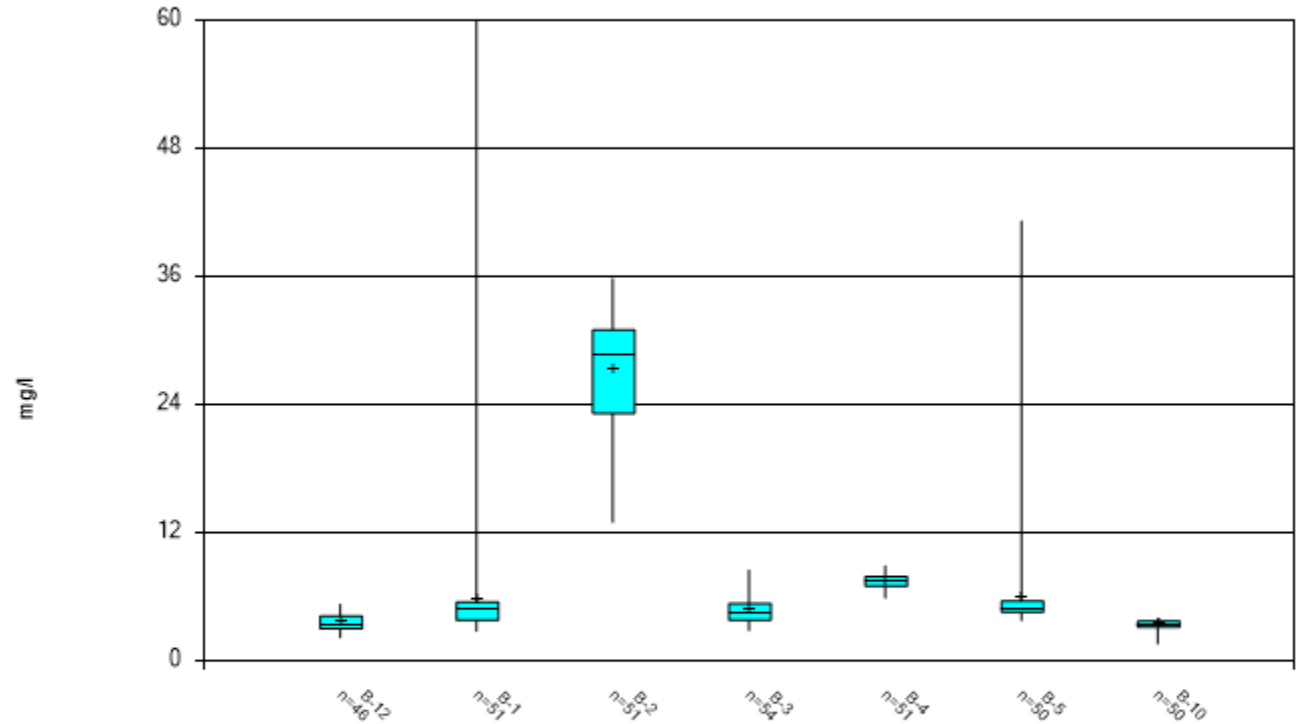
Box & Whiskers Plot



Constituent: pH Analysis Run 4/8/2024 10:37 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

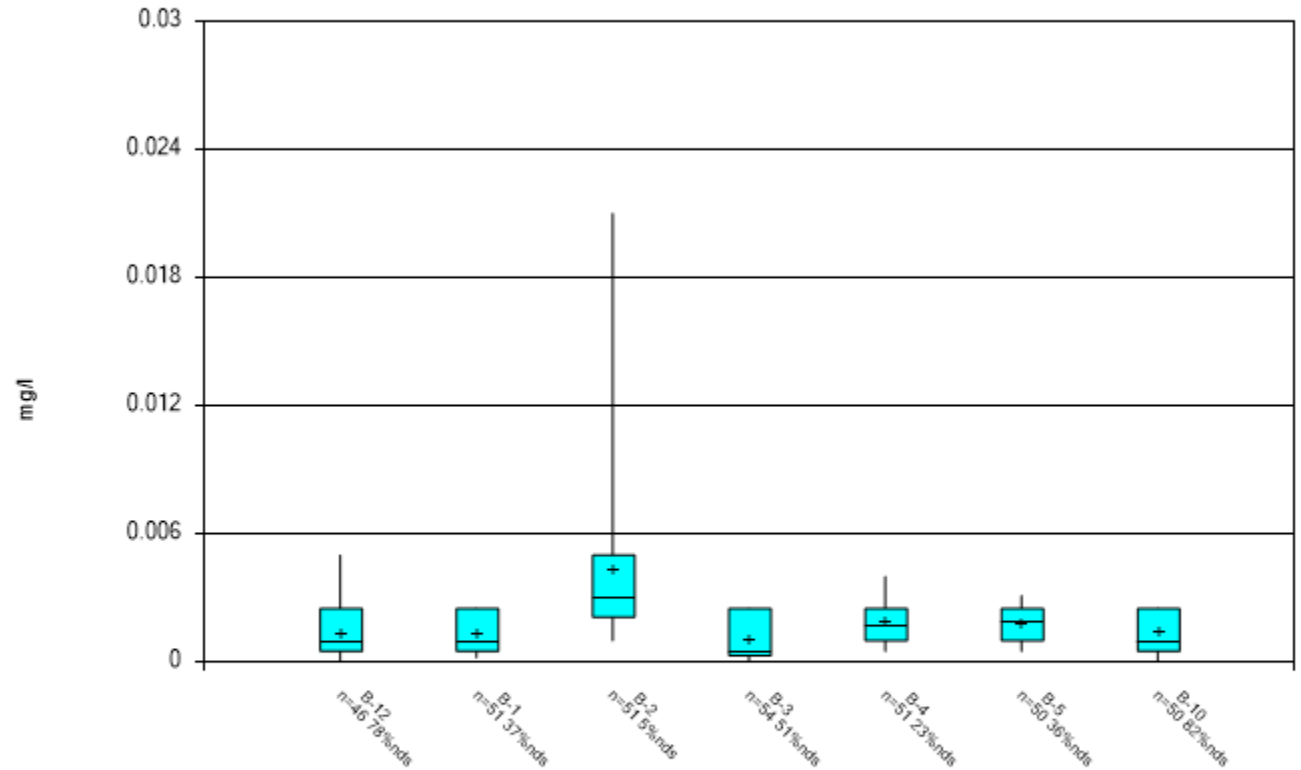
Box & Whiskers Plot



Constituent: Potassium Analysis Run 4/8/2024 10:38 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

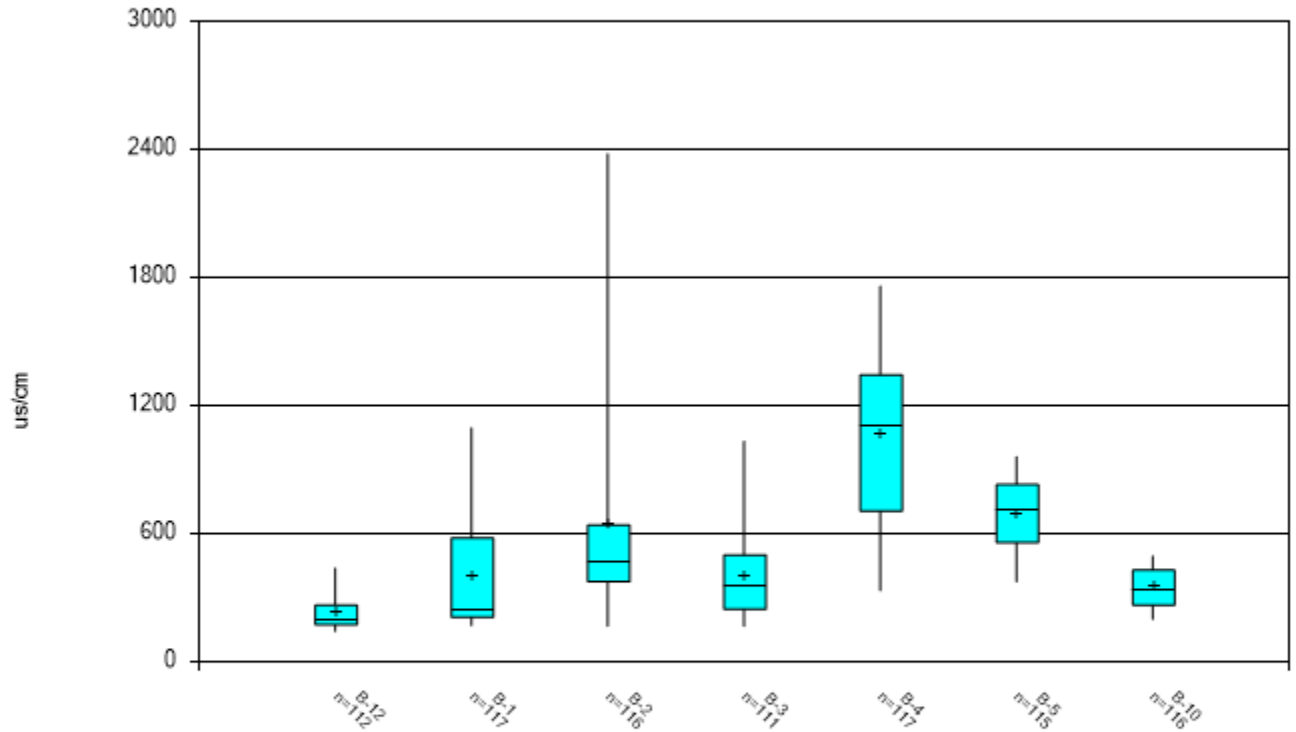
Box & Whiskers Plot



Constituent: Selenium Analysis Run 4/8/2024 10:38 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

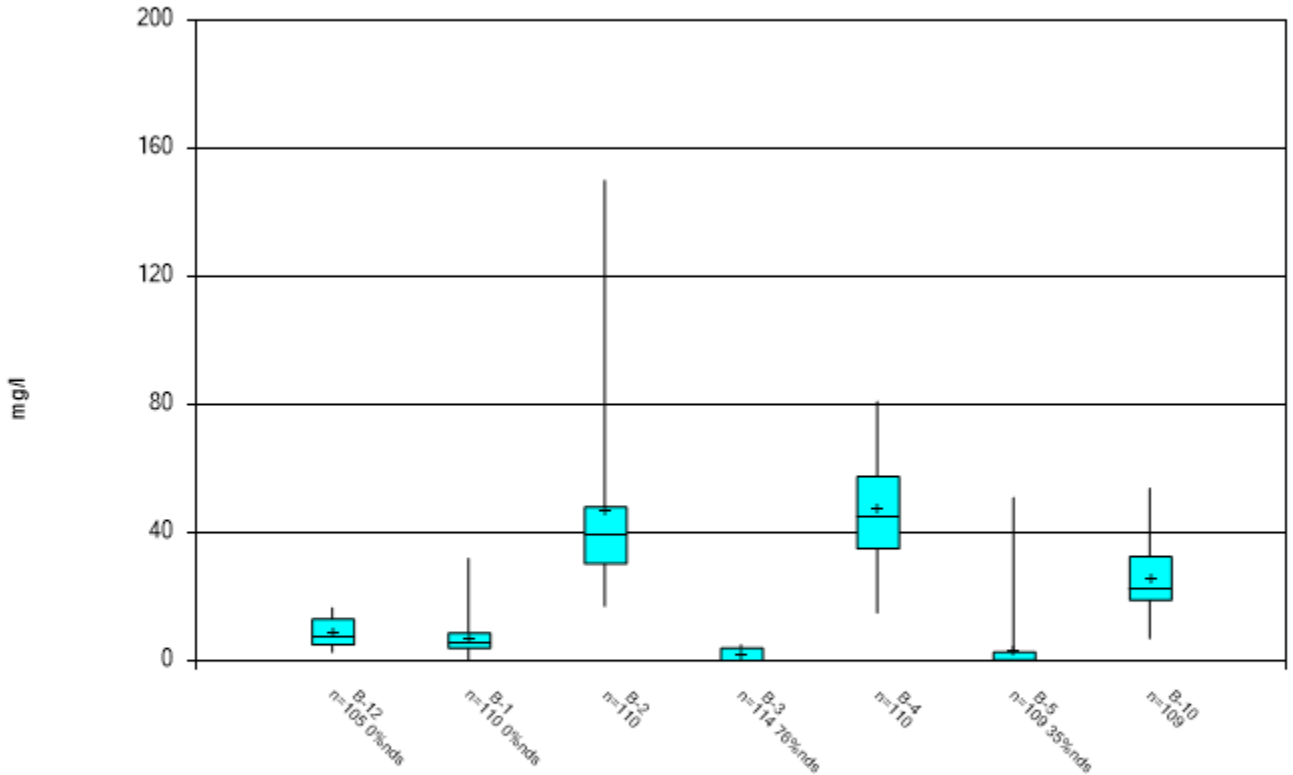
Box & Whiskers Plot



Constituent: Specific Conductance Analysis Run 4/8/2024 2:28 PM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

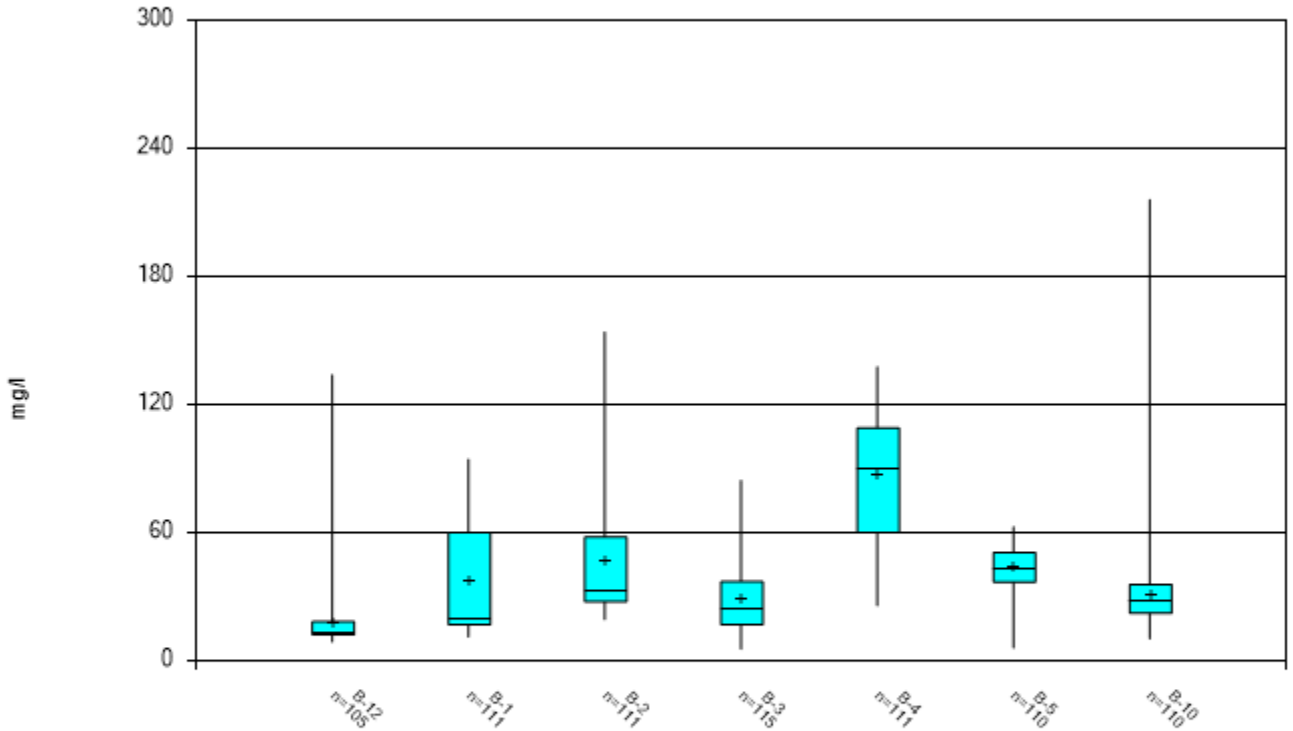
Box & Whiskers Plot



Constituent: Sulfate Analysis Run 4/8/2024 10:40 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

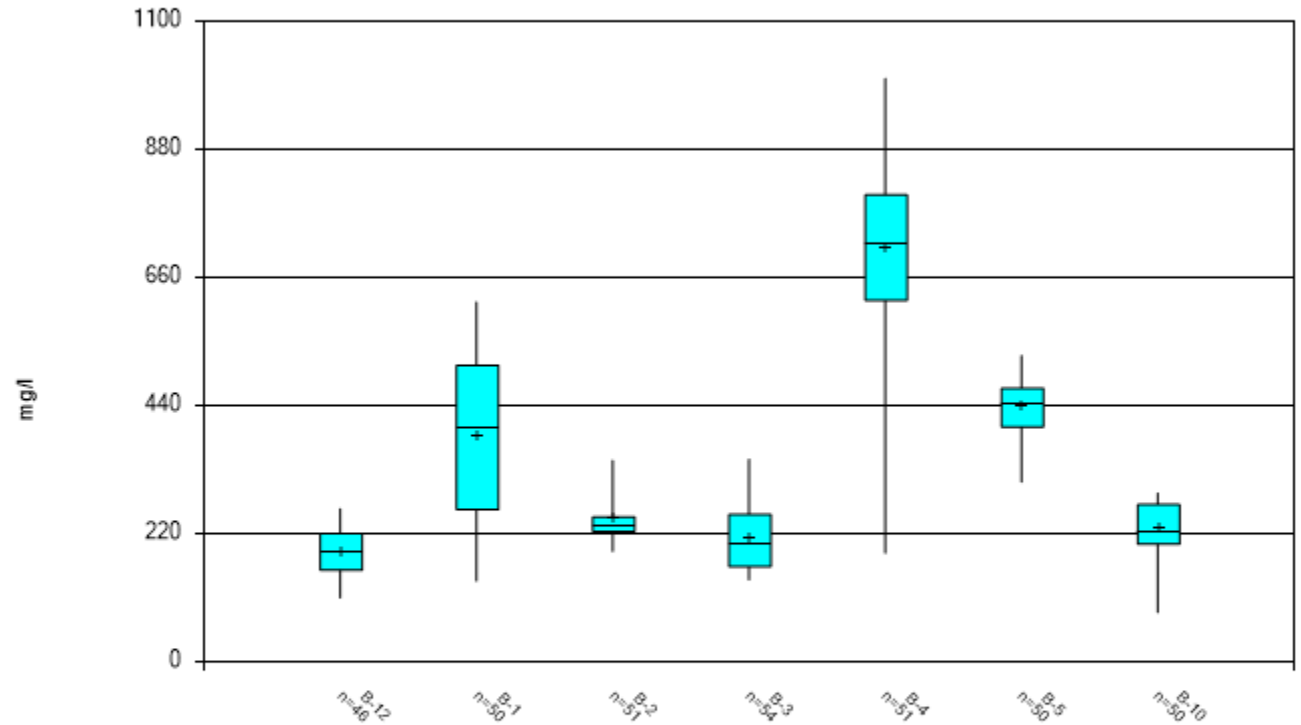
Box & Whiskers Plot



Constituent: Total Calcium Analysis Run 4/8/2024 10:40 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

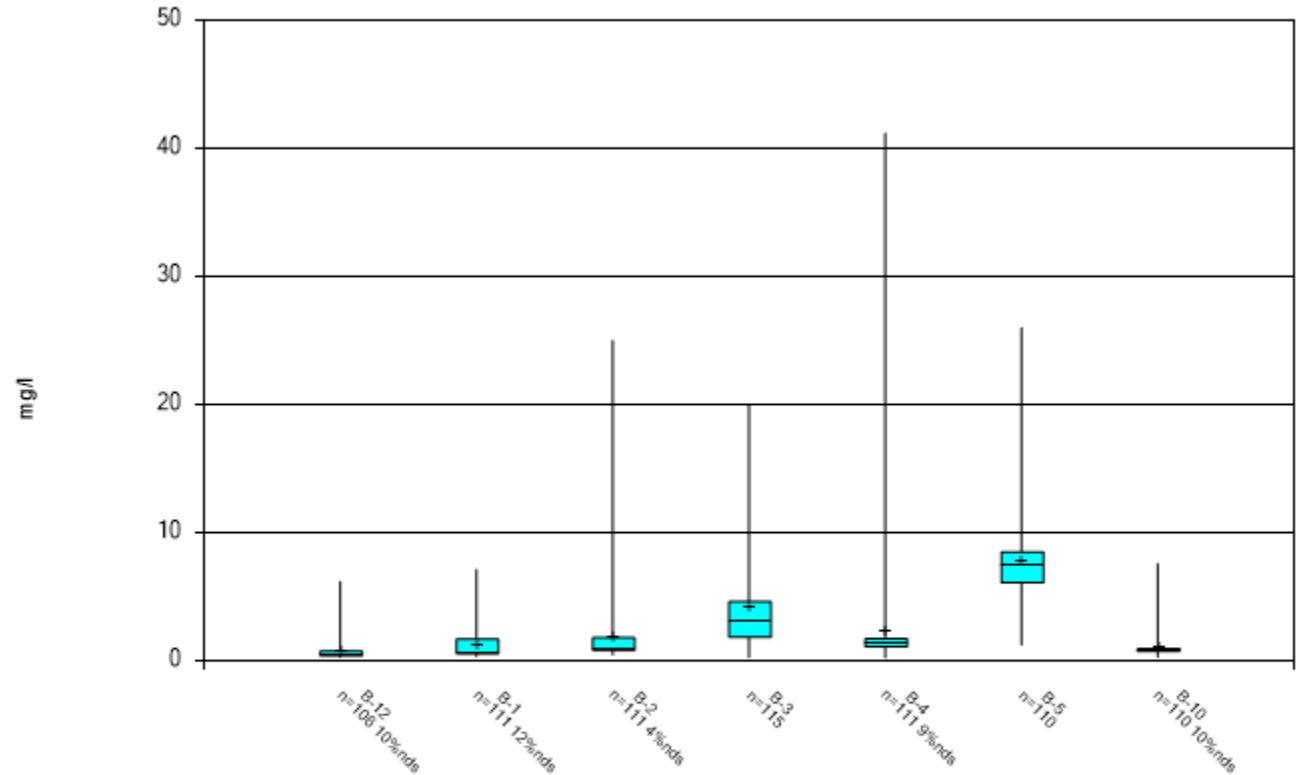
Box & Whiskers Plot



Constituent: Total Dissolved Solids Analysis Run 4/8/2024 10:42 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

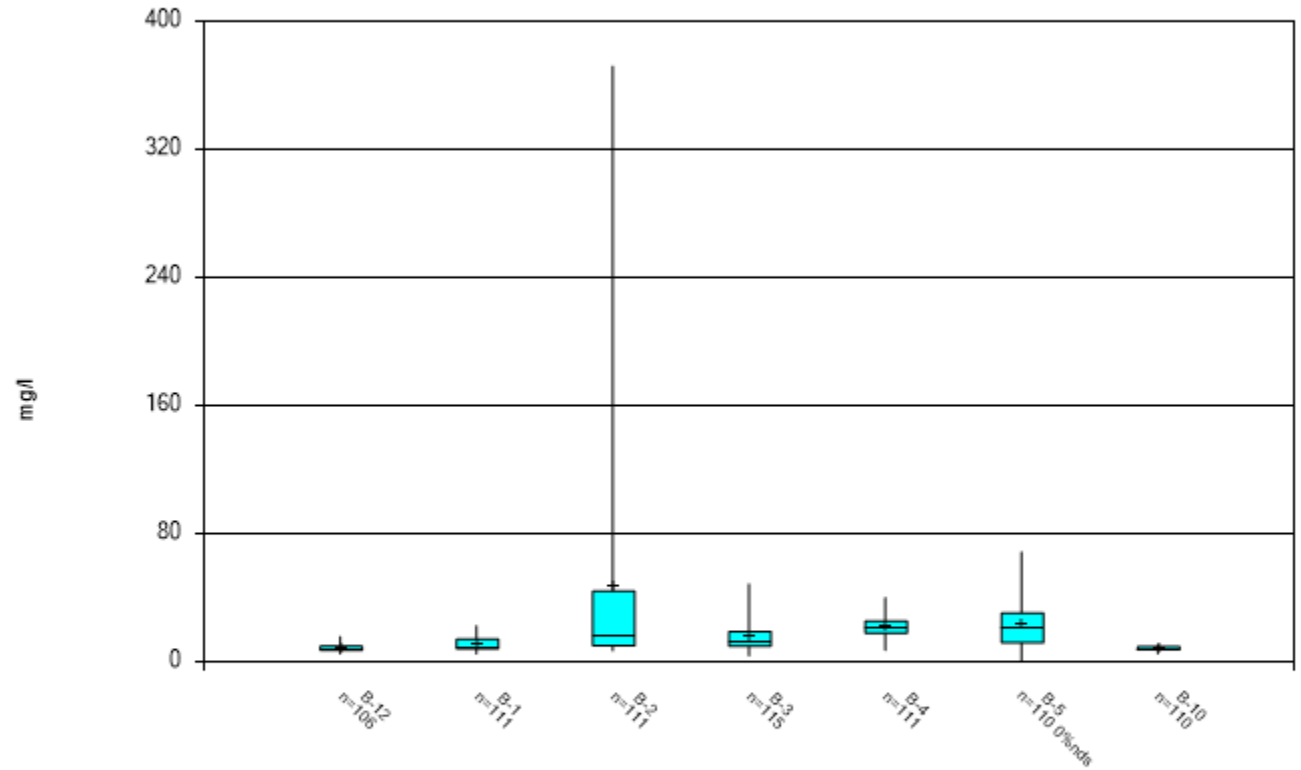
Box & Whiskers Plot



Constituent: Total Organic Carbon Analysis Run 4/8/2024 10:43 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

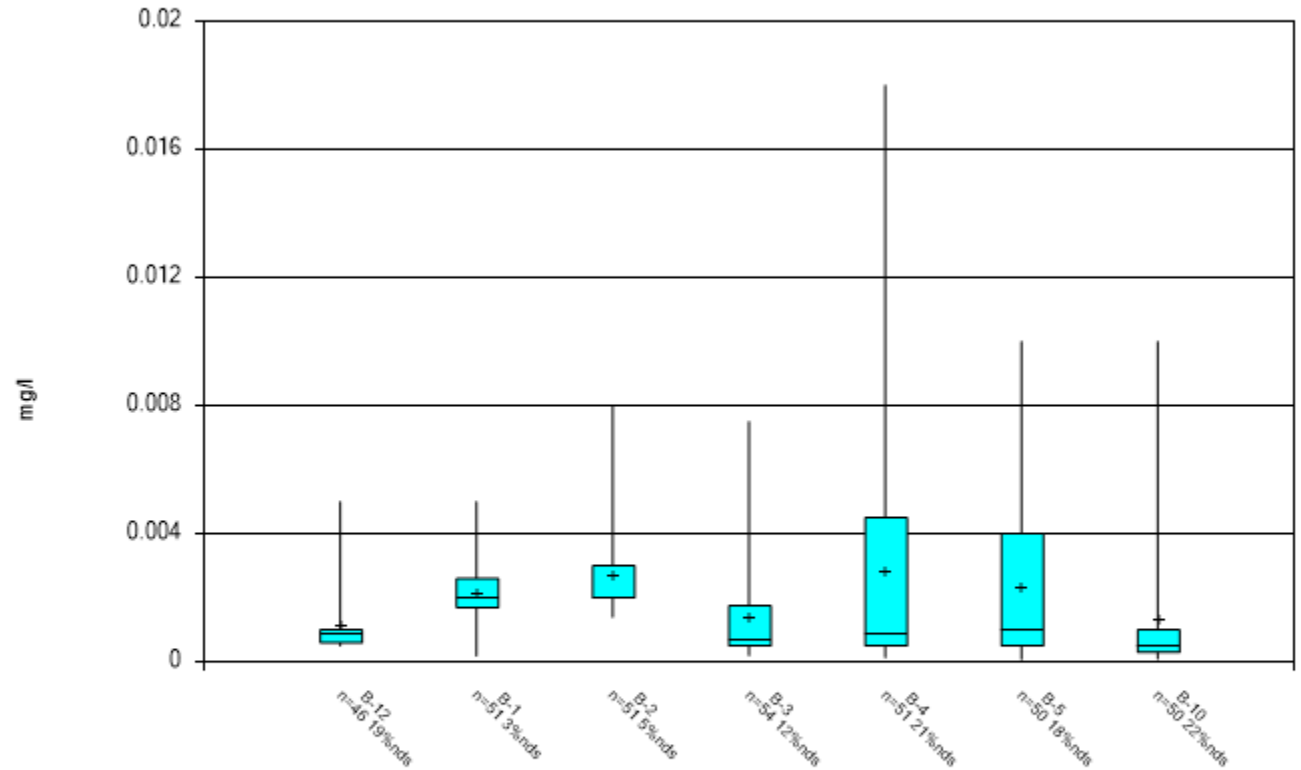
Box & Whiskers Plot



Constituent: Total Sodium Analysis Run 4/8/2024 10:41 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

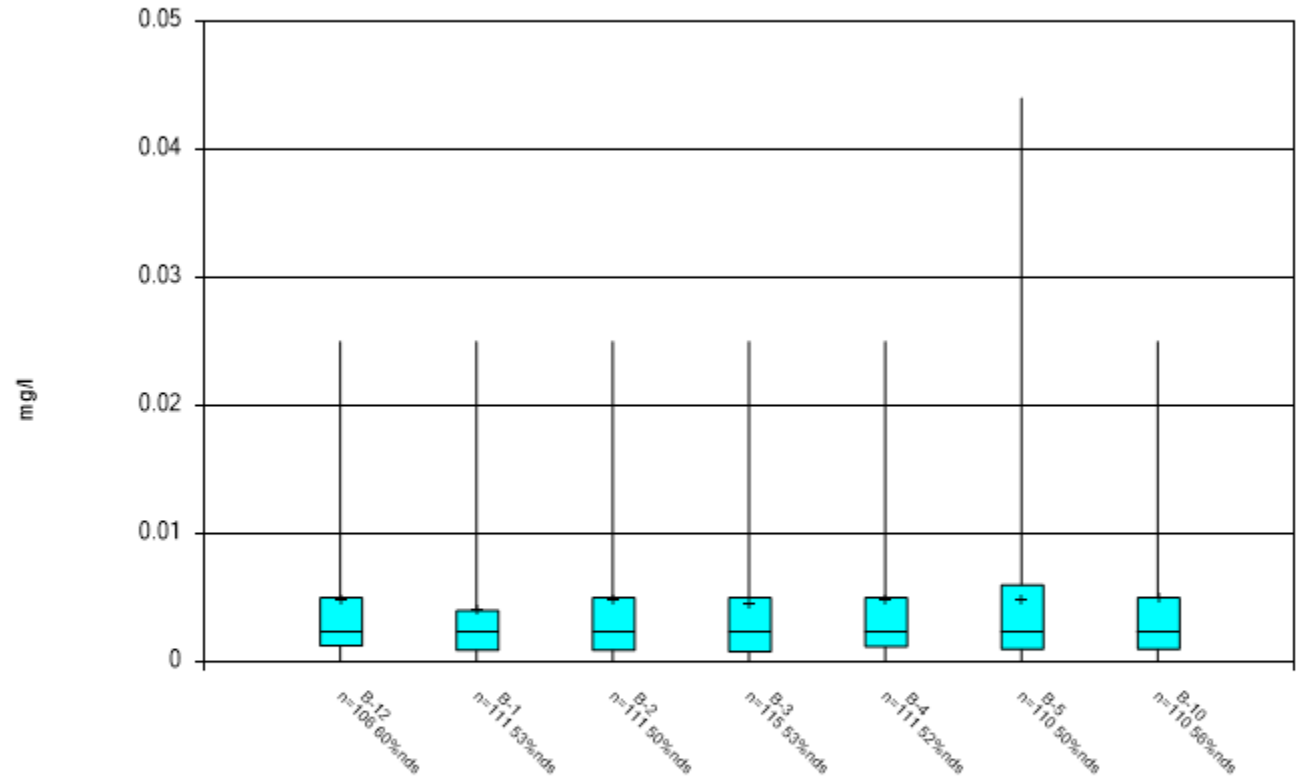
Box & Whiskers Plot



Constituent: VANADIUM [FUME OR DUST] Analysis Run 4/8/2024 10:43 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

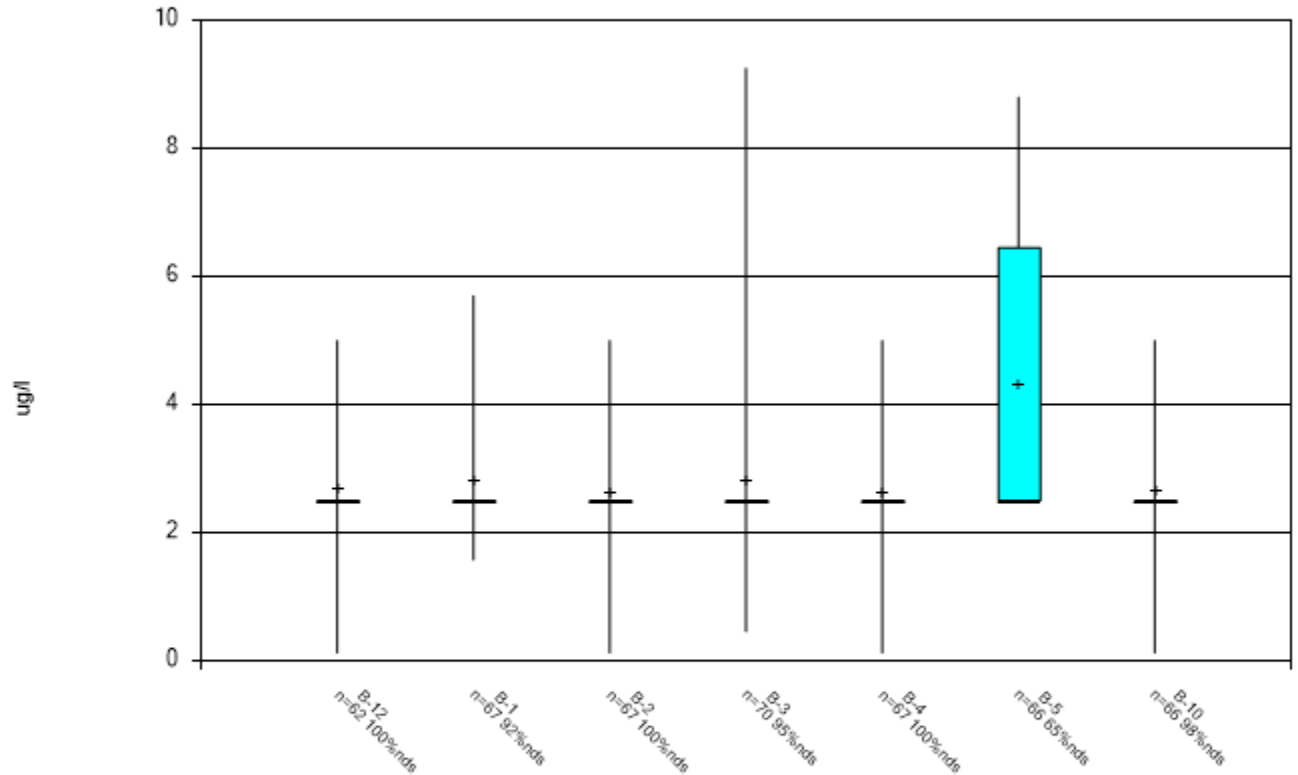
Box & Whiskers Plot



Constituent: Zinc Analysis Run 4/8/2024 10:44 AM

Skagit County Public Works Client: Skagit County Data: inorganics 1994-2023

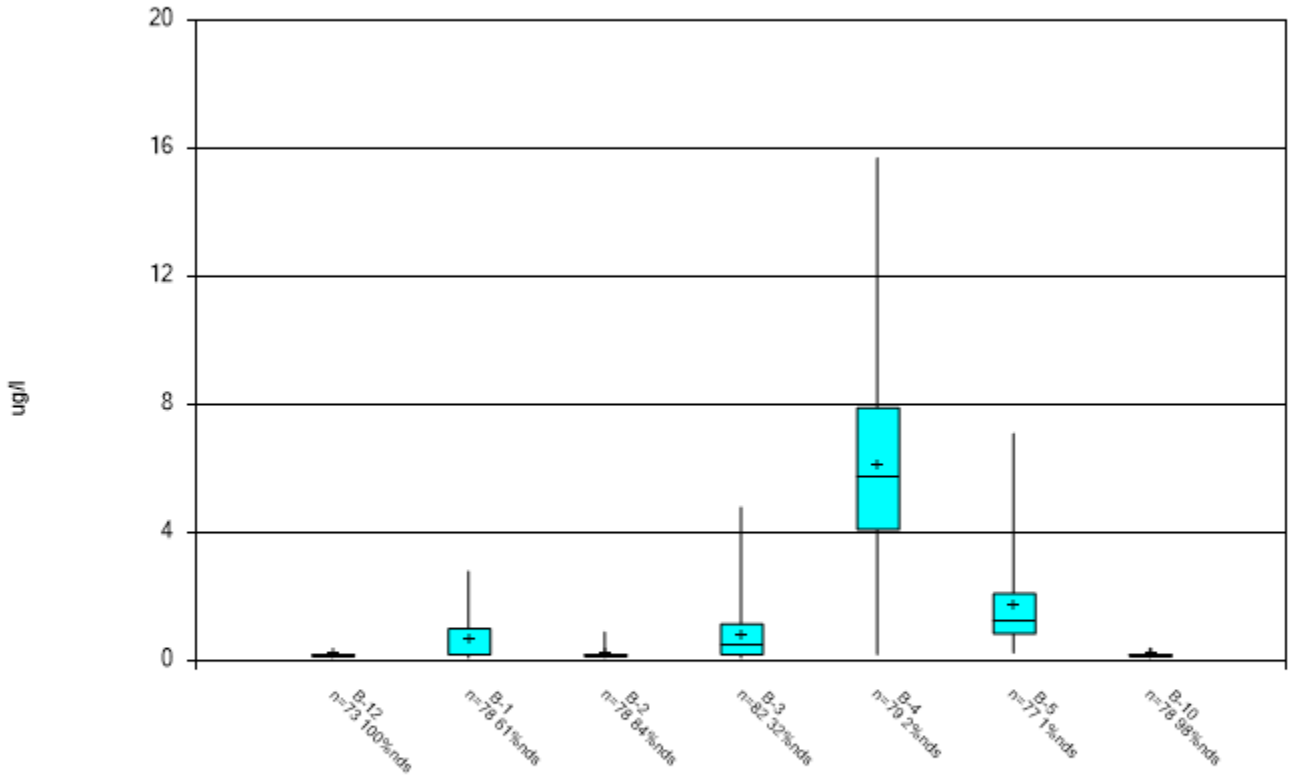
Box & Whiskers Plot



Constituent: 1,4-dioxane Analysis Run 4/8/2024 2:41 PM

Skagit County Public Works Client: Skagit County Data: Select VOCs

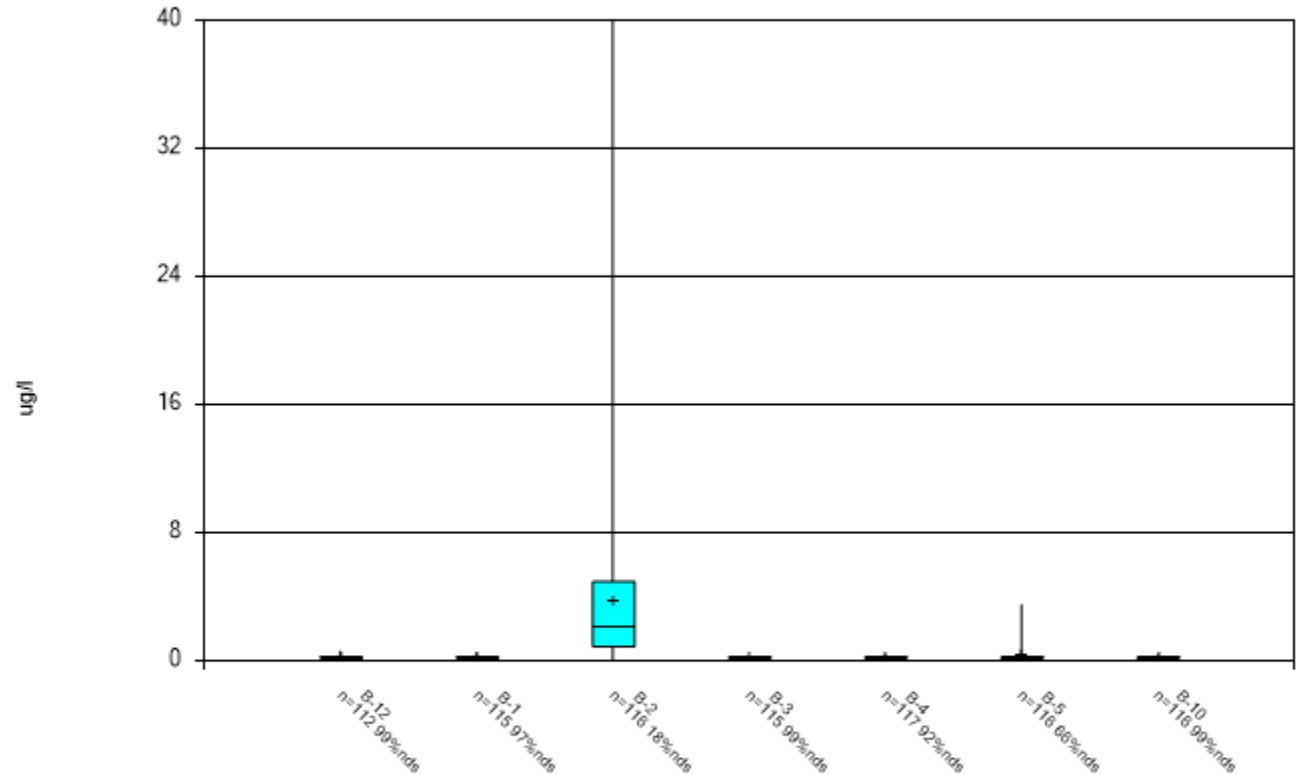
Box & Whiskers Plot



Constituent: Chlorodifluoromethane [Freon 22] Analysis Run 4/8/2024 2:42 PM

Skagit County Public Works Client: Skagit County Data: Select VOCs

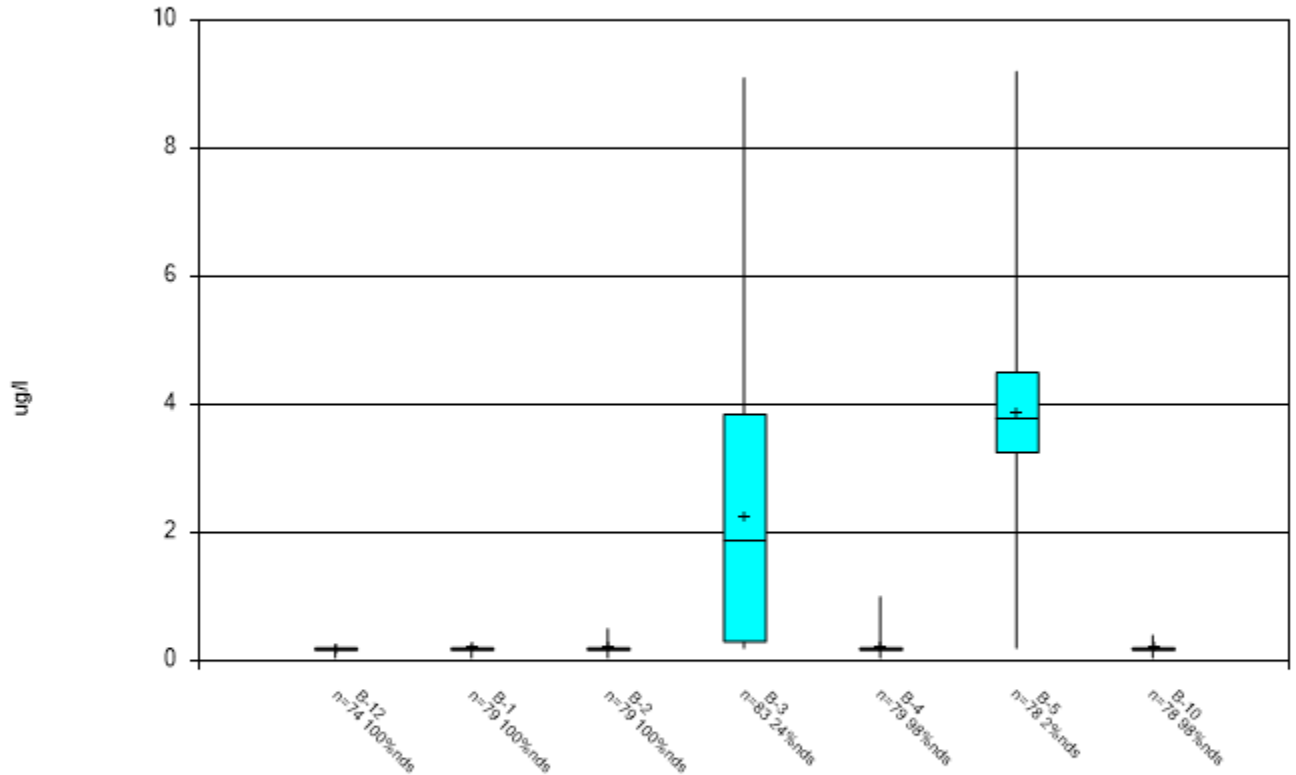
Box & Whiskers Plot



Constituent: Dichlorodifluoromethane [CFC-12] Analysis Run 4/8/2024 2:43 PM

Skagit County Public Works Client: Skagit County Data: Select VOCs

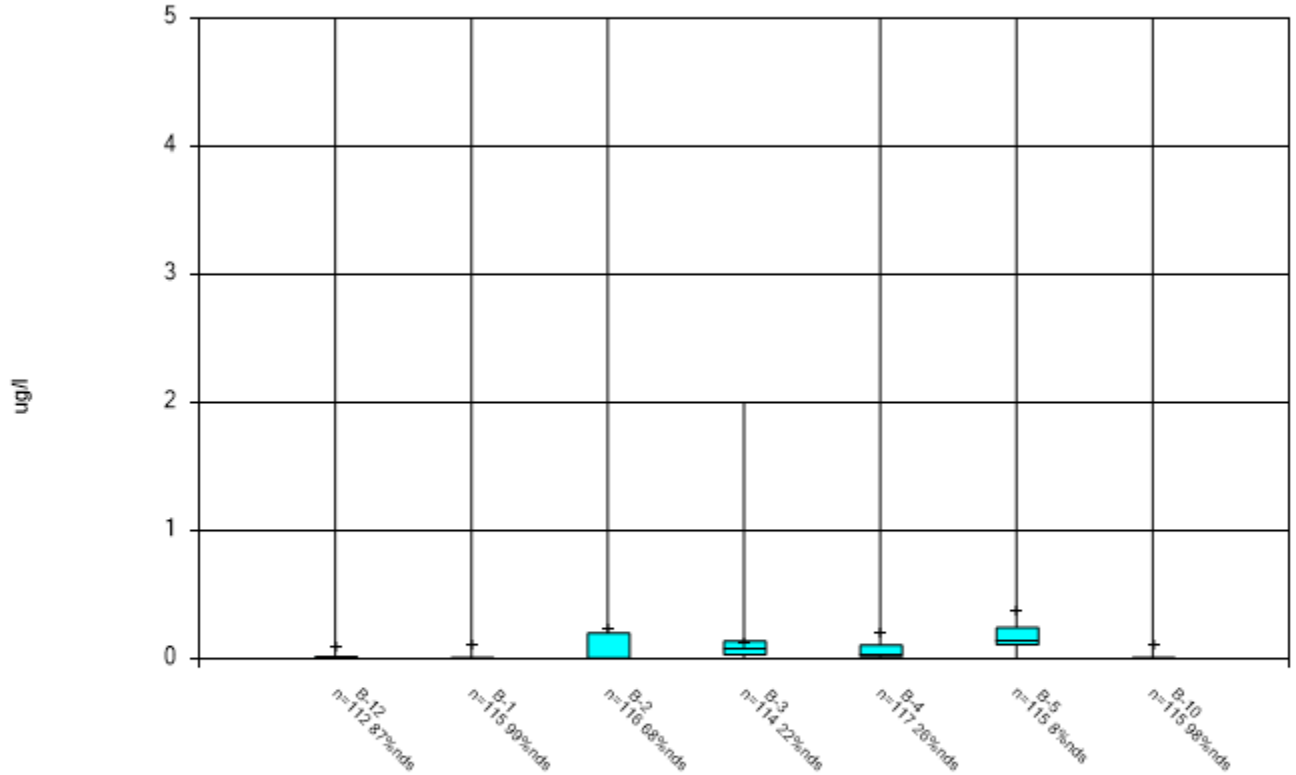
Box & Whiskers Plot



Constituent: Diethyl ether Analysis Run 4/8/2024 2:43 PM

Skagit County Public Works Client: Skagit County Data: Select VOCs

Box & Whiskers Plot



Constituent: Vinyl chloride Analysis Run 4/8/2024 2:51 PM

Skagit County Public Works Client: Skagit County Data: Select VOCs

APPENDIX E-4
Long-Term Mann-Kendall Trend Tests 1994-2023 – Upper Regional Aquifer

Long-Term Mann-Kendall Trend Tests 1994-2023
Upper Regional Aquifer

Analyte	Units	Well	Slope	Z-Score	Critical Value	Significant Trend?	# of Samples	% Non-detects	Significance Level
1,4-dioxane	ug/L	B-1	0	-0.6688	-2.33	No	67	92.54	0.02
		B-10	**0**	**-2.92**	**-2.33**	**Yes**	**66**	**98.48**	**0.02**
		B-12	**0**	**-3.854**	**-2.33**	**Yes**	**62**	**100**	**0.02**
		B-2	**0**	**-3.494**	**-2.33**	**Yes**	**67**	**100**	**0.02**
		B-3	**0**	**-2.442**	**-2.33**	**Yes**	**70**	**95.71**	**0.02**
		B-4	**0**	**-3.494**	**-2.33**	**Yes**	**67**	**100**	**0.02**
		B-5	**0**	**2.892**	**2.33**	**Yes**	**66**	**65.15**	**0.02**
Alkalinity	mg/L	**B-1**	**21.1**	**5.703**	**2.33**	**Yes**	**51**	**0**	**0.02**
		B-10	**-3.528**	**-3.364**	**-2.33**	**Yes**	**50**	**0**	**0.02**
		B-12	**8.819**	**7.662**	**2.33**	**Yes**	**45**	**0**	**0.02**
		B-2	-0.09407	-0.3517	-2.33	No	50	0	0.02
		B-3	-0.3712	-0.1611	-2.33	No	53	0	0.02
		B-4	**-21.11**	**-8.165**	**-2.33**	**Yes**	**50**	**0**	**0.02**
		B-5	-0.5597	-0.3967	-2.33	No	49	0	0.02
Ammonia as nitrogen	mg/L	**B-1**	**0.005557**	**8.034**	**2.33**	**Yes**	**111**	**0**	**0.02**
		B-10	0.0008696	0.9569	2.33	No	110	0	0.02
		B-12	**0.002283**	**4.027**	**2.33**	**Yes**	**106**	**3.774**	**0.02**
		B-2	**-0.0009866**	**-3.215**	**-2.33**	**Yes**	**111**	**40.54**	**0.02**
		B-3	-0.003657	-0.9647	-2.33	No	115	0.8696	0.02
		B-4	**0.03944**	**6.502**	**2.33**	**Yes**	**111**	**0**	**0.02**
		B-5	0.00525	1.098	2.33	No	110	0.9091	0.02
Antimony, dissolved	mg/L	B-1	0	-1.049	-2.33	No	50	72	0.02
		B-10	0	0.5293	2.33	No	49	95.92	0.02
		B-12	0	-1.517	-2.33	No	46	73.91	0.02
		B-2	0	-1.839	-2.33	No	50	76	0.02
		B-3	0	0.1287	2.33	No	53	92.45	0.02
		B-4	0	-1.76	-2.33	No	51	84.31	0.02
		B-5	0	-0.0662	-2.33	No	49	79.59	0.02
Arsenic, dissolved	mg/L	B-1	0.000101	1.817	2.33	No	109	0	0.02
		B-10	**-0.00006718**	**-7.529**	**-2.33**	**Yes**	**108**	**17.59**	**0.02**
		B-12	**-0.0001967**	**-8.146**	**-2.33**	**Yes**	**103**	**14.56**	**0.02**
		B-2	**-0.00002418**	**-9.269**	**-2.33**	**Yes**	**108**	**17.59**	**0.02**
		B-3	**-0.0000773**	**-4.677**	**-2.33**	**Yes**	**112**	**16.96**	**0.02**
		B-4	**-0.0001262**	**-6.384**	**-2.33**	**Yes**	**109**	**17.43**	**0.02**
		B-5	**-0.0001827**	**-4.17**	**-2.33**	**Yes**	**107**	**14.02**	**0.02**
Barium, dissolved	mg/L	**B-1**	**0.002128**	**6.759**	**2.33**	**Yes**	**51**	**0**	**0.02**
		B-10	**-0.001004**	**-2.955**	**-2.33**	**Yes**	**50**	**0**	**0.02**
		B-12	**0.001296**	**8.802**	**2.33**	**Yes**	**46**	**0**	**0.02**
		B-2	**-0.0008838**	**-4.332**	**-2.33**	**Yes**	**51**	**0**	**0.02**
		B-3	-0.0001847	-0.194	-2.33	No	54	0	0.02
		B-4	**-0.006299**	**-6.68**	**-2.33**	**Yes**	**51**	**0**	**0.02**
		B-5	0.000498	0.7951	2.33	No	50	0	0.02
Bicarbonate	mg/L	**B-1**	**22.12**	**5.94**	**2.33**	**Yes**	**50**	**0**	**0.02**
		B-10	**-3.086**	**-2.958**	**-2.33**	**Yes**	**49**	**0**	**0.02**
		B-12	**9.143**	**8.278**	**2.33**	**Yes**	**45**	**0**	**0.02**
		B-2	-0.1731	-0.4771	-2.33	No	50	0	0.02
		B-3	0.2087	0.1688	2.33	No	53	0	0.02
		B-4	**-20.21**	**-8.009**	**-2.33**	**Yes**	**49**	**0**	**0.02**
		B-5	0.2298	0.1207	2.33	No	49	0	0.02
Cadmium, dissolved	mg/L	**B-1**	**-0.00001374**	**-5.269**	**-2.33**	**Yes**	**109**	**91.74**	**0.02**
		B-10	**0**	**-3.568**	**-2.33**	**Yes**	**108**	**97.22**	**0.02**
		B-12	**-0.00000958**	**-4.305**	**-2.33**	**Yes**	**105**	**92.38**	**0.02**
		B-2	**-0.00001992**	**-5.564**	**-2.33**	**Yes**	**109**	**84.4**	**0.02**
		B-3	**0**	**-3.36**	**-2.33**	**Yes**	**113**	**96.46**	**0.02**
		B-4	**0**	**-4.205**	**-2.33**	**Yes**	**110**	**94.55**	**0.02**
		B-5	**-0.00001488**	**-5.334**	**-2.33**	**Yes**	**108**	**87.04**	**0.02**

Long-Term Mann-Kendall Trend Tests 1994-2023
Upper Regional Aquifer

Analyte	Units	Well	Slope	Z-Score	Critical Value	Significant Trend?	# of Samples	% Non-detects	Significance Level
Calcium, total	mg/L	B-1	0	0	2.33	No	50	0	0.02
		B-10	0	0	2.33	No	49	0	0.02
		B-12	0	0	2.33	No	45	0	0.02
		B-2	0	0	2.33	No	50	0	0.02
		B-3	0	0	2.33	No	53	0	0.02
		B-4	0	0	2.33	No	49	0	0.02
		B-5	0	0	2.33	No	49	0	0.02
Chemical Oxygen Demand	mg/L	**B-1**	**0.1829**	**5.489**	**2.33**	**Yes**	**111**	**75.68**	**0.02**
		B-10	**0.1075**	**4.595**	**2.33**	**Yes**	**110**	**81.82**	**0.02**
		B-12	**0.07797**	**4.252**	**2.33**	**Yes**	**106**	**90.57**	**0.02**
		B-2	0	0.6212	2.33	No	111	72.97	0.02
		B-3	0	-0.0996	-2.33	No	115	40.87	0.02
		B-4	**0.3875**	**5.932**	**2.33**	**Yes**	**111**	**52.25**	**0.02**
		B-5	**0.8946**	**7.756**	**2.33**	**Yes**	**110**	**5.455**	**0.02**
Chloride	mg/L	**B-1**	**1.292**	**10.12**	**2.33**	**Yes**	**110**	**0**	**0.02**
		B-10	0.01908	2.298	2.33	No	109	0	0.02
		B-12	0.01201	1.685	2.33	No	105	0	0.02
		B-2	**-1.666**	**-8.521**	**-2.33**	**Yes**	**110**	**0**	**0.02**
		B-3	**-0.5496**	**-3.774**	**-2.33**	**Yes**	**114**	**0**	**0.02**
		B-4	**3.32**	**6.086**	**2.33**	**Yes**	**110**	**0**	**0.02**
		B-5	**2.681**	**11.11**	**2.33**	**Yes**	**109**	**0**	**0.02**
Chlorodifluoromethane (Freon 22)	ug/L	**B-1**	**0.0461**	**6.985**	**2.33**	**Yes**	**78**	**61.54**	**0.02**
		B-10	0	0.5652	2.33	No	78	98.72	0.02
		B-12	0	2.131	2.33	No	73	100	0.02
		B-2	**0**	**-3.453**	**-2.33**	**Yes**	**78**	**84.62**	**0.02**
		B-3	0	-0.9946	-2.33	No	82	32.93	0.02
		B-4	0.09118	1.27	2.33	No	79	2.532	0.02
		B-5	**-0.1086**	**-6.607**	**-2.33**	**Yes**	**77**	**1.299**	**0.02**
Chromium, dissolved	mg/L	B-1	0	-0.7219	-2.33	No	51	27.45	0.02
		B-10	-0.00002666	-1.823	-2.33	No	50	42	0.02
		B-12	-1.5E-11	-1.704	-2.33	No	46	56.52	0.02
		B-2	**-0.00006233**	**-2.392**	**-2.33**	**Yes**	**51**	**21.57**	**0.02**
		B-3	**-0.00009438**	**-3.77**	**-2.33**	**Yes**	**54**	**31.48**	**0.02**
		B-4	**-0.0003072**	**-4.692**	**-2.33**	**Yes**	**51**	**11.76**	**0.02**
		B-5	**-0.000238**	**-4.131**	**-2.33**	**Yes**	**50**	**14**	**0.02**
Cobalt, dissolved	mg/L	**B-1**	**0.00002733**	**6.168**	**2.33**	**Yes**	**50**	**38**	**0.02**
		B-10	**0**	**-3.268**	**-2.33**	**Yes**	**49**	**59.18**	**0.02**
		B-12	**-0.0000257**	**-4.315**	**-2.33**	**Yes**	**46**	**58.7**	**0.02**
		B-2	**-5.197E-06**	**-3.793**	**-2.33**	**Yes**	**50**	**54**	**0.02**
		B-3	**-0.00002209**	**-4.638**	**-2.33**	**Yes**	**53**	**35.85**	**0.02**
		B-4	**-0.00002245**	**-5.165**	**-2.33**	**Yes**	**51**	**41.18**	**0.02**
		B-5	**0.00002852**	**4.768**	**2.33**	**Yes**	**49**	**36.73**	**0.02**
Copper, dissolved	mg/L	**B-1**	**-0.000131**	**-4.354**	**-2.33**	**Yes**	**51**	**45.1**	**0.02**
		B-10	0	-1.72	-2.33	No	50	76	0.02
		B-12	**-0.0001613**	**-4.144**	**-2.33**	**Yes**	**46**	**58.7**	**0.02**
		B-2	**-0.0001202**	**-4.269**	**-2.33**	**Yes**	**51**	**37.25**	**0.02**
		B-3	**-0.0001253**	**-3.653**	**-2.33**	**Yes**	**54**	**62.96**	**0.02**
		B-4	**-0.0001151**	**-3.88**	**-2.33**	**Yes**	**51**	**50.98**	**0.02**
		B-5	**-0.0001457**	**-4.216**	**-2.33**	**Yes**	**50**	**48**	**0.02**
Dichlorodifluoromethane (CFC-12)	ug/L	**B-1**	**0**	**-7.029**	**-2.33**	**Yes**	**115**	**97.39**	**0.02**
		B-10	**0**	**-6.909**	**-2.33**	**Yes**	**116**	**99.14**	**0.02**
		B-12	**0**	**-6.221**	**-2.33**	**Yes**	**112**	**99.11**	**0.02**
		B-2	**-0.1888**	**-7.008**	**-2.33**	**Yes**	**116**	**18.1**	**0.02**
		B-3	**0**	**-6.189**	**-2.33**	**Yes**	**115**	**99.13**	**0.02**
		B-4	**0**	**-5.112**	**-2.33**	**Yes**	**117**	**92.31**	**0.02**
		B-5	**-0.00256**	**-7.996**	**-2.33**	**Yes**	**116**	**66.38**	**0.02**

Long-Term Mann-Kendall Trend Tests 1994-2023
Upper Regional Aquifer

Analyte	Units	Well	Slope	Z-Score	Critical Value	Significant Trend?	# of Samples	% Non-detects	Significance Level
Diethyl ether	ug/L	B-1	0	0.8048	2.33	No	79	100	0.02
		B-10	0	0.126	2.33	No	78	98.72	0.02
		B-12	0	2.121	2.33	No	74	100	0.02
		B-2	0	1.211	2.33	No	79	100	0.02
		B-3	**-0.0925**	**-3.289**	**-2.33**	**Yes**	**83**	**24.1**	**0.02**
		B-4	0	1.217	2.33	No	79	98.73	0.02
		B-5	-0.04287	-2.073	-2.33	No	78	2.564	0.02
Iron, dissolved	mg/L	**B-1**	**0.05572**	**11.48**	**2.33**	**Yes**	**111**	**0**	**0.02**
		B-10	**0.0584**	**7.957**	**2.33**	**Yes**	**110**	**1.818**	**0.02**
		B-12	**0.009524**	**5.265**	**2.33**	**Yes**	**106**	**1.887**	**0.02**
		B-2	0	-2.106	-2.33	No	111	67.57	0.02
		B-3	**-0.1387**	**-3.353**	**-2.33**	**Yes**	**115**	**0**	**0.02**
		B-4	**0.204**	**7.174**	**2.33**	**Yes**	**111**	**0**	**0.02**
		B-5	-0.1599	-1.914	-2.33	No	110	0.9091	0.02
Lead, dissolved	mg/L	**B-1**	**-0.00003034**	**-6.444**	**-2.33**	**Yes**	**110**	**83.64**	**0.02**
		B-10	**0**	**-3.103**	**-2.33**	**Yes**	**109**	**97.25**	**0.02**
		B-12	**0**	**-3.963**	**-2.33**	**Yes**	**106**	**91.51**	**0.02**
		B-2	**0**	**-3.899**	**-2.33**	**Yes**	**110**	**95.45**	**0.02**
		B-3	**0**	**-3.852**	**-2.33**	**Yes**	**114**	**91.23**	**0.02**
		B-4	**0**	**-3.834**	**-2.33**	**Yes**	**111**	**93.69**	**0.02**
		B-5	**0**	**-3.728**	**-2.33**	**Yes**	**109**	**89.91**	**0.02**
Magnesium, total	mg/L	**B-1**	**3.485**	**6.133**	**2.33**	**Yes**	**51**	**0**	**0.02**
		B-10	**-0.5344**	**-3.322**	**-2.33**	**Yes**	**50**	**0**	**0.02**
		B-12	**1.153**	**8.155**	**2.33**	**Yes**	**46**	**0**	**0.02**
		B-2	-0.1718	-1.731	-2.33	No	51	0	0.02
		B-3	-0.02514	-0.1716	-2.33	No	54	0	0.02
		B-4	**-3.22**	**-6.384**	**-2.33**	**Yes**	**51**	**0**	**0.02**
		B-5	-0.3492	-1.632	-2.33	No	50	0	0.02
Manganese, dissolved	mg/L	**B-1**	**0.06549**	**11.21**	**2.33**	**Yes**	**111**	**1.802**	**0.02**
		B-10	**0.009178**	**5.252**	**2.33**	**Yes**	**110**	**2.727**	**0.02**
		B-12	**-0.003391**	**-6.942**	**-2.33**	**Yes**	**106**	**0**	**0.02**
		B-2	**-0.007242**	**-6.204**	**-2.33**	**Yes**	**111**	**5.405**	**0.02**
		B-3	**-0.01791**	**-4.387**	**-2.33**	**Yes**	**115**	**0.8696**	**0.02**
		B-4	-0.007864	-1.277	-2.33	No	111	0	0.02
		B-5	**-0.01036**	**-2.744**	**-2.33**	**Yes**	**110**	**0.9091**	**0.02**
Mercury, dissolved	mg/L	B-1	0	-1.898	-2.33	No	110	100	0.02
		B-10	0	-2.223	-2.33	No	106	98.11	0.02
		B-12	**0**	**-2.843**	**-2.33**	**Yes**	**106**	**100**	**0.02**
		B-2	**0**	**-2.663**	**-2.33**	**Yes**	**110**	**100**	**0.02**
		B-3	**0**	**-2.758**	**-2.33**	**Yes**	**114**	**99.12**	**0.02**
		B-4	**0**	**-2.548**	**-2.33**	**Yes**	**110**	**99.09**	**0.02**
		B-5	0	-2.177	-2.33	No	109	100	0.02
Nickel, dissolved	mg/L	**B-1**	**0.0004328**	**6.389**	**2.33**	**Yes**	**50**	**34**	**0.02**
		B-10	0	0.2691	2.33	No	49	44.9	0.02
		B-12	0	-0.0103	-2.33	No	46	45.65	0.02
		B-2	**-0.0001429**	**-4.199**	**-2.33**	**Yes**	**50**	**2**	**0.02**
		B-3	0	0.1164	2.33	No	53	26.42	0.02
		B-4	0	0.4268	2.33	No	51	5.882	0.02
		B-5	0	0.9835	2.33	No	49	2.041	0.02
Nitrate as nitrogen	mg/L	**B-1**	**0**	**-3.68**	**-2.33**	**Yes**	**110**	**92.73**	**0.02**
		B-10	**0**	**-3.4**	**-2.33**	**Yes**	**109**	**89.91**	**0.02**
		B-12	**0**	**-3.756**	**-2.33**	**Yes**	**105**	**94.29**	**0.02**
		B-2	-0.01933	-1.677	-2.33	No	110	7.273	0.02
		B-3	0	-1.992	-2.33	No	114	91.23	0.02
		B-4	**0**	**-2.55**	**-2.33**	**Yes**	**110**	**85.45**	**0.02**
		B-5	0	0.6362	2.33	No	109	70.64	0.02

Long-Term Mann-Kendall Trend Tests 1994-2023
Upper Regional Aquifer

Analyte	Units	Well	Slope	Z-Score	Critical Value	Significant Trend?	# of Samples	% Non-detects	Significance Level
Nitrite as nitrogen	mg/L	B-1	0	-0.3078	-2.33	No	110	97.27	0.02
		B-10	0	0.4328	2.33	No	109	96.33	0.02
		B-12	0	-0.0859	-2.33	No	105	96.19	0.02
		B-2	0	-0.5954	-2.33	No	110	97.27	0.02
		B-3	0	1.141	2.33	No	114	92.11	0.02
		B-4	0	0.2639	2.33	No	110	90.91	0.02
		B-5	0	-1.086	-2.33	No	109	86.24	0.02
pH	mg/L	B-1	0.00339	0.7595	2.33	No	109	0	0.02
		B-10	**0.01058**	**2.489**	**2.33**	**Yes**	**109**	**0**	**0.02**
		B-12	**0.0161**	**3.763**	**2.33**	**Yes**	**106**	**0**	**0.02**
		B-2	0.007412	1.645	2.33	No	109	0	0.02
		B-3	**0.02309**	**5.498**	**2.33**	**Yes**	**112**	**0**	**0.02**
		B-4	-0.008363	-2.17	-2.33	No	110	0	0.02
		B-5	0.008461	2.132	2.33	No	110	0	0.02
Potassium, total	mg/L	**B-1**	**0.2096**	**6.18**	**2.33**	**Yes**	**51**	**0**	**0.02**
		B-10	-0.002609	-0.4189	-2.33	No	50	0	0.02
		B-12	**0.1383**	**6.921**	**2.33**	**Yes**	**46**	**0**	**0.02**
		B-2	-0.01667	-0.0569	-2.33	No	51	0	0.02
		B-3	0.05233	1.545	2.33	No	54	0	0.02
		B-4	**-0.08447**	**-3.917**	**-2.33**	**Yes**	**51**	**0**	**0.02**
		B-5	**0.1013**	**3.61**	**2.33**	**Yes**	**50**	**0**	**0.02**
Selenium, dissolved	mg/L	**B-1**	**-0.00007106**	**-2.489**	**-2.33**	**Yes**	**51**	**37.25**	**0.02**
		B-10	**0**	**-2.356**	**-2.33**	**Yes**	**50**	**82**	**0.02**
		B-12	**-0.0001023**	**-4.179**	**-2.33**	**Yes**	**46**	**78.26**	**0.02**
		B-2	**-0.000367**	**-4.552**	**-2.33**	**Yes**	**51**	**5.882**	**0.02**
		B-3	**-0.0001034**	**-4.588**	**-2.33**	**Yes**	**54**	**51.85**	**0.02**
		B-4	**-0.000102**	**-4.111**	**-2.33**	**Yes**	**51**	**23.53**	**0.02**
		B-5	-0.00002605	-1.675	-2.33	No	50	36	0.02
Sodium, total	mg/L	**B-1**	**0.3404**	**8.322**	**2.33**	**Yes**	**111**	**0**	**0.02**
		B-10	**0.06071**	**3.87**	**2.33**	**Yes**	**110**	**0**	**0.02**
		B-12	**0.1952**	**8.044**	**2.33**	**Yes**	**106**	**0**	**0.02**
		B-2	**-2.334**	**-12.88**	**-2.33**	**Yes**	**111**	**0**	**0.02**
		B-3	**-0.3764**	**-5.569**	**-2.33**	**Yes**	**115**	**0**	**0.02**
		B-4	0.1099	1.435	2.33	No	111	0	0.02
		B-5	**1.287**	**12.05**	**2.33**	**Yes**	**110**	**0.9091**	**0.02**
Specific Conductance	us/cm	**B-1**	**17.24**	**9.765**	**2.33**	**Yes**	**117**	**0**	**0.02**
		B-10	**6.164**	**6.07**	**2.33**	**Yes**	**116**	**0**	**0.02**
		B-12	**6.404**	**8.722**	**2.33**	**Yes**	**112**	**0**	**0.02**
		B-2	**-17.42**	**-8.907**	**-2.33**	**Yes**	**116**	**0**	**0.02**
		B-3	**-6.311**	**-3.471**	**-2.33**	**Yes**	**111**	**0**	**0.02**
		B-4	**36**	**7.378**	**2.33**	**Yes**	**117**	**0**	**0.02**
		B-5	**15.96**	**10.48**	**2.33**	**Yes**	**115**	**0**	**0.02**
Sulfate	mg/L	**B-1**	**0.09656**	**2.331**	**2.33**	**Yes**	**110**	**0.9091**	**0.02**
		B-10	**0.4446**	**5.301**	**2.33**	**Yes**	**109**	**0**	**0.02**
		B-12	**0.4739**	**10.53**	**2.33**	**Yes**	**105**	**0.9524**	**0.02**
		B-2	**-1.383**	**-8.566**	**-2.33**	**Yes**	**110**	**0**	**0.02**
		B-3	0	-1.205	-2.33	No	114	76.32	0.02
		B-4	**1.099**	**6.02**	**2.33**	**Yes**	**110**	**0**	**0.02**
		B-5	-0.01009	-2.143	-2.33	No	109	35.78	0.02
Total Dissolved Solids	mg/L	**B-1**	**29.26**	**6.257**	**2.33**	**Yes**	**50**	**0**	**0.02**
		B-10	**-3.987**	**-3.08**	**-2.33**	**Yes**	**50**	**0**	**0.02**
		B-12	**8.624**	**8.968**	**2.33**	**Yes**	**46**	**0**	**0.02**
		B-2	**-4.422**	**-4.715**	**-2.33**	**Yes**	**51**	**0**	**0.02**
		B-3	-0.4321	-0.1865	-2.33	No	54	0	0.02
		B-4	**-29.29**	**-6.507**	**-2.33**	**Yes**	**51**	**0**	**0.02**
		B-5	2.774	1.833	2.33	No	50	0	0.02

Long-Term Mann-Kendall Trend Tests 1994-2023
Upper Regional Aquifer

Analyte	Units	Well	Slope	Z-Score	Critical Value	Significant Trend?	# of Samples	% Non-detects	Significance Level
Total Organic Carbon	mg/L	**B-1**	**0.04765**	**5.86**	**2.33**	**Yes**	**111**	**12.61**	**0.02**
		B-10	**0.01264**	**4.667**	**2.33**	**Yes**	**110**	**10.91**	**0.02**
		B-12	-0.006458	-2.186	-2.33	No	106	10.38	0.02
		B-2	**-0.04926**	**-6.974**	**-2.33**	**Yes**	**111**	**4.505**	**0.02**
		B-3	**-0.1429**	**-5.32**	**-2.33**	**Yes**	**115**	**0**	**0.02**
		B-4	**0.04807**	**8.346**	**2.33**	**Yes**	**111**	**9.91**	**0.02**
		B-5	**0.09455**	**3.487**	**2.33**	**Yes**	**110**	**0**	**0.02**
Vanadium, dissolved	mg/L	**B-1**	**-0.00007972**	**-2.993**	**-2.33**	**Yes**	**51**	**3.922**	**0.02**
		B-10	**-0.00007602**	**-4.055**	**-2.33**	**Yes**	**50**	**22**	**0.02**
		B-12	-0.00000952	-1.43	-2.33	No	46	19.57	0.02
		B-2	**-0.000077**	**-4.475**	**-2.33**	**Yes**	**51**	**5.882**	**0.02**
		B-3	**-0.0001066**	**-4.678**	**-2.33**	**Yes**	**54**	**12.96**	**0.02**
		B-4	**-0.000301**	**-3.899**	**-2.33**	**Yes**	**51**	**21.57**	**0.02**
		B-5	**-0.0002935**	**-4.713**	**-2.33**	**Yes**	**50**	**18**	**0.02**
Vinyl chloride	ug/L	B-1	0	-1.78	-2.33	No	115	99.13	0.02
		B-10	0	-2.161	-2.33	No	115	98.26	0.02
		B-12	0	-1.118	-2.33	No	112	87.5	0.02
		B-2	**-0.0004234**	**-4.589**	**-2.33**	**Yes**	**116**	**68.97**	**0.02**
		B-3	-0.0006776	-1.174	-2.33	No	114	22.81	0.02
		B-4	-0.0006483	-1.359	-2.33	No	117	26.5	0.02
		B-5	**-0.007946**	**-5.284**	**-2.33**	**Yes**	**115**	**8.696**	**0.02**
Zinc, dissolved	mg/L	**B-1**	**-0.000154**	**-7.719**	**-2.33**	**Yes**	**111**	**53.15**	**0.02**
		B-10	**-0.000147**	**-6.029**	**-2.33**	**Yes**	**110**	**56.36**	**0.02**
		B-12	**-0.0001612**	**-5.907**	**-2.33**	**Yes**	**106**	**60.38**	**0.02**
		B-2	**-0.0001704**	**-7.129**	**-2.33**	**Yes**	**111**	**50.45**	**0.02**
		B-3	**-0.0001897**	**-6.939**	**-2.33**	**Yes**	**115**	**53.04**	**0.02**
		B-4	**-0.0001574**	**-7.258**	**-2.33**	**Yes**	**111**	**52.25**	**0.02**
		B-5	**-0.0001813**	**-7.707**	**-2.33**	**Yes**	**110**	**50.91**	**0.02**

APPENDIX E-5
Short-Term Mann-Kendall Trend Tests 2016-2023 – Upper Regional Aquifer

Short-Term Mann-Kendall Trend Tests 2019-2023
Upper Regional Aquifer

Analyte	Units	Well	Slope	Z-Score	Critical Value	Significant Trend?	# of Samples	% Non-detects	Significance Level
1,4-dioxane	ug/L	B-1	0	-9	-44	No	14	64.29	0.02
		B-10	0	-9	-44	No	14	100	0.02
		B-12	0	-9	-35	No	12	100	0.02
		B-2	0	-9	-44	No	14	100	0.02
		B-3	0	3	44	No	14	85.71	0.02
		B-4	0	-9	-44	No	14	100	0.02
		B-5	-0.2519	-15	-44	No	14	35.71	0.02
Alkalinity	mg/L	B-1	-8.771	-15	-44	No	14	0	0.02
		B-10	0.5677	1	44	No	14	0	0.02
		B-12	**11.47**	**55**	**35**	**Yes**	**12**	**0**	**0.02**
		B-2	1.052	17	44	No	14	0	0.02
		B-3	0.7636	6	44	No	14	0	0.02
		B-4	**-10.53**	**-45**	**-44**	**Yes**	**14**	**0**	**0.02**
		B-5	-4.461	-15	-44	No	14	0	0.02
Ammonia as nitrogen	mg/L	B-1	-0.01987	-21	-44	No	14	0	0.02
		B-10	**-0.03668**	**-48**	**-44**	**Yes**	**14**	**0**	**0.02**
		B-12	**0.05429**	**42**	**35**	**Yes**	**12**	**0**	**0.02**
		B-2	0	17	44	No	14	78.57	0.02
		B-3	0.03665	13	44	No	14	0	0.02
		B-4	-0.05635	-38	-44	No	14	0	0.02
		B-5	0.06307	20	44	No	14	0	0.02
Antimony, dissolved	mg/L	B-1	0	13	44	No	14	71.43	0.02
		B-10	0	-5	-44	No	14	92.86	0.02
		B-12	0.00002515	14	35	No	12	66.67	0.02
		B-2	0	-5	-44	No	14	71.43	0.02
		B-3	0	-7	-44	No	14	92.86	0.02
		B-4	0	-7	-44	No	14	71.43	0.02
		B-5	0	18	44	No	14	78.57	0.02
Arsenic, dissolved	mg/L	B-1	-0.003634	-28	-44	No	14	0	0.02
		B-10	-0.00003349	-14	-44	No	14	0	0.02
		B-12	**-0.0003505**	**-46**	**-35**	**Yes**	**12**	**0**	**0.02**
		B-2	0	-9	-44	No	14	0	0.02
		B-3	-0.0002129	-38	-44	No	14	0	0.02
		B-4	-0.0001946	-26	-44	No	14	0	0.02
		B-5	-0.000383	-21	-44	No	14	0	0.02
Barium, dissolved	mg/L	B-1	-0.001126	-19	-44	No	14	0	0.02
		B-10	-0.001489	-27	-44	No	14	0	0.02
		B-12	**0.001214**	**41**	**35**	**Yes**	**12**	**0**	**0.02**
		B-2	-0.0007431	-22	-44	No	14	0	0.02
		B-3	-0.001601	-3	-44	No	14	0	0.02
		B-4	**-0.007075**	**-72**	**-44**	**Yes**	**14**	**0**	**0.02**
		B-5	-0.007776	-44	-44	No	14	0	0.02
Bicarbonate	mg/L	B-1	-5.735	-8	-39	No	13	0	0.02
		B-10	2.066	12	39	No	13	0	0.02
		B-12	**13.95**	**60**	**35**	**Yes**	**12**	**0**	**0.02**
		B-2	1.835	21	44	No	14	0	0.02
		B-3	1.92	15	44	No	14	0	0.02
		B-4	-9.999	-30	-39	No	13	0	0.02
		B-5	-3.288	-12	-44	No	14	0	0.02
Cadmium, dissolved	mg/L	B-1	0	2	44	No	14	64.29	0.02
		B-10	0	-7	-44	No	14	92.86	0.02
		B-12	0	8	35	No	12	83.33	0.02
		B-2	0	2	44	No	14	64.29	0.02
		B-3	0	6	44	No	14	85.71	0.02
		B-4	0	5	44	No	14	85.71	0.02
		B-5	0	2	44	No	14	57.14	0.02

Short-Term Mann-Kendall Trend Tests 2019-2023
Upper Regional Aquifer

Analyte	Units	Well	Slope	Z-Score	Critical Value	Significant Trend?	# of Samples	% Non-detects	Significance Level
Calcium, total	mg/L	B-1	2.414	15	44	No	14	0	0.02
		B-10	0.7758	25	44	No	14	0	0.02
		B-12	**2.223**	**51**	**35**	**Yes**	**12**	**0**	**0.02**
		B-2	0.2433	2	44	No	14	0	0.02
		B-3	0.2844	7	44	No	14	0	0.02
		B-4	-3.239	-41	-44	No	14	0	0.02
		B-5	-2.259	-23	-44	No	14	0	0.02
Chemical Oxygen Demand	mg/L	B-1	0	13	44	No	14	64.29	0.02
		B-10	0	-5	-44	No	14	92.86	0.02
		B-12	0	-9	-35	No	12	100	0.02
		B-2	0	-23	-44	No	14	78.57	0.02
		B-3	0	8	44	No	14	71.43	0.02
		B-4	0	-10	-44	No	14	50	0.02
		B-5	-0.2742	-2	-44	No	14	0	0.02
Chloride	mg/L	B-1	-4.526	-23	-44	No	14	0	0.02
		B-10	0.06348	31	44	No	14	0	0.02
		B-12	**0.5076**	**55**	**35**	**Yes**	**12**	**0**	**0.02**
		B-2	-0.3953	-10	-44	No	14	0	0.02
		B-3	1.102	11	44	No	14	0	0.02
		B-4	**-7.465**	**-58**	**-44**	**Yes**	**14**	**0**	**0.02**
		B-5	-1.289	-13	-44	No	14	0	0.02
Chlorodifluoromethane (Freon 22)	ug/L	B-1	0.2622	17	39	No	13	15.38	0.02
		B-10	0	24	44	No	14	100	0.02
		B-12	0	10	31	No	11	100	0.02
		B-2	0	22	39	No	13	100	0.02
		B-3	0.1157	22	39	No	13	46.15	0.02
		B-4	-2.7E-09	-4	-44	No	14	7.143	0.02
		B-5	0.0893	14	39	No	13	0	0.02
Chromium, dissolved	mg/L	B-1	0.00001532	3	44	No	14	7.143	0.02
		B-10	0.00007952	13	44	No	14	14.29	0.02
		B-12	0.0001814	17	35	No	12	25	0.02
		B-2	-0.00008649	-16	-44	No	14	0	0.02
		B-3	0.000112	23	44	No	14	14.29	0.02
		B-4	0.00003806	1	44	No	14	14.29	0.02
		B-5	-0.0003154	-39	-44	No	14	0	0.02
Cobalt, dissolved	mg/L	B-1	0.00002063	16	44	No	14	7.143	0.02
		B-10	0.000007051	17	44	No	14	28.57	0.02
		B-12	0.000003392	7	35	No	12	8.333	0.02
		B-2	0.000005522	16	44	No	14	21.43	0.02
		B-3	0.00003697	18	44	No	14	7.143	0.02
		B-4	0	11	44	No	14	14.29	0.02
		B-5	0	6	44	No	14	0	0.02
Copper, dissolved	mg/L	B-1	0.00006511	18	44	No	14	28.57	0.02
		B-10	0	8	44	No	14	85.71	0.02
		B-12	0.00004195	16	35	No	12	50	0.02
		B-2	0	3	44	No	14	7.143	0.02
		B-3	0	12	44	No	14	57.14	0.02
		B-4	0.0002517	43	44	No	14	50	0.02
		B-5	0.0002576	39	44	No	14	28.57	0.02
Dichlorodifluoromethane (CFC-12)	ug/L	B-1	0	9	44	No	14	100	0.02
		B-10	0	9	44	No	14	100	0.02
		B-12	0	1	35	No	12	91.67	0.02
		B-2	0	0	39	No	13	23.08	0.02
		B-3	0	9	44	No	14	100	0.02
		B-4	0	9	44	No	14	100	0.02
		B-5	0	9	44	No	14	100	0.02

Short-Term Mann-Kendall Trend Tests 2019-2023
Upper Regional Aquifer

Analyte	Units	Well	Slope	Z-Score	Critical Value	Significant Trend?	# of Samples	% Non-detects	Significance Level
Diethyl ether	ug/L	B-1	0	9	44	No	14	100	0.02
		B-10	0	9	44	No	14	100	0.02
		B-12	0	9	35	No	12	100	0.02
		B-2	0	9	44	No	14	100	0.02
		B-3	0	-2	-44	No	14	42.86	0.02
		B-4	0	9	44	No	14	92.86	0.02
		B-5	0	0	44	No	14	0	0.02
Iron, dissolved	mg/L	B-1	-0.2457	-38	-44	No	14	0	0.02
		B-10	-0.07949	-21	-44	No	14	0	0.02
		B-12	0.004772	5	35	No	12	8.333	0.02
		B-2	0	14	44	No	14	71.43	0.02
		B-3	-0.6711	-35	-44	No	14	0	0.02
		B-4	-0.27	-41	-44	No	14	0	0.02
		B-5	-0.9449	-21	-44	No	14	0	0.02
Lead, dissolved	mg/L	B-1	0	7	44	No	14	28.57	0.02
		B-10	0	9	44	No	14	100	0.02
		B-12	0	13	35	No	12	91.67	0.02
		B-2	0	20	44	No	14	78.57	0.02
		B-3	0	20	44	No	14	85.71	0.02
		B-4	0	9	44	No	14	100	0.02
		B-5	0	6	44	No	14	85.71	0.02
Magnesium, total	mg/L	B-1	-0.3174	-1	-44	No	14	0	0.02
		B-10	0.4148	20	44	No	14	0	0.02
		B-12	**2.083**	**48**	**35**	**Yes**	**12**	**0**	**0.02**
		B-2	0.01491	4	44	No	14	0	0.02
		B-3	0.1948	1	44	No	14	0	0.02
		B-4	**-3.62**	**-45**	**-44**	**Yes**	**14**	**0**	**0.02**
		B-5	-2.37	-33	-44	No	14	0	0.02
Manganese, dissolved	mg/L	B-1	0.07036	12	44	No	14	0	0.02
		B-10	0.004945	1	44	No	14	0	0.02
		B-12	0.001834	9	35	No	12	0	0.02
		B-2	0.00006588	20	44	No	14	7.143	0.02
		B-3	0.01306	7	44	No	14	0	0.02
		B-4	**-0.07928**	**-46**	**-44**	**Yes**	**14**	**0**	**0.02**
		B-5	-0.1659	-42	-44	No	14	0	0.02
Mercury, dissolved	mg/L	B-1	0	17	44	No	14	100	0.02
		B-10	0	-3	-44	No	14	100	0.02
		B-12	0	-1	-35	No	12	100	0.02
		B-2	0	-11	-44	No	14	100	0.02
		B-3	0	-13	-44	No	14	100	0.02
		B-4	0	-11	-44	No	14	100	0.02
		B-5	0	-2	-44	No	14	100	0.02
Nickel, dissolved	mg/L	B-1	-0.0003079	-8	-44	No	14	7.143	0.02
		B-10	0.00007031	16	44	No	14	7.143	0.02
		B-12	0.0000954	22	35	No	12	8.333	0.02
		B-2	0.000102	21	44	No	14	0	0.02
		B-3	0.0001429	24	44	No	14	7.143	0.02
		B-4	0.0002299	15	44	No	14	0	0.02
		B-5	0.0000237	5	44	No	14	0	0.02
Nitrate as nitrogen	mg/L	B-1	-0.0008349	-26	-44	No	14	85.71	0.02
		B-10	0	10	44	No	14	78.57	0.02
		B-12	0	7	35	No	12	91.67	0.02
		B-2	0	-2	-44	No	14	0	0.02
		B-3	0	17	44	No	14	92.86	0.02
		B-4	0	-4	-44	No	14	78.57	0.02
		B-5	0	-4	-44	No	14	42.86	0.02

Short-Term Mann-Kendall Trend Tests 2019-2023
Upper Regional Aquifer

Analyte	Units	Well	Slope	Z-Score	Critical Value	Significant Trend?	# of Samples	% Non-detects	Significance Level
Nitrite as nitrogen	mg/L	B-1	0	-15	-44	No	14	78.57	0.02
		B-10	0	16	44	No	14	85.71	0.02
		B-12	0	13	35	No	12	83.33	0.02
		B-2	0	15	44	No	14	100	0.02
		B-3	0	23	44	No	14	71.43	0.02
		B-4	0	13	44	No	14	50	0.02
		B-5	-0.004457	-17	-44	No	14	35.71	0.02
pH	mg/L	B-1	-0.08737	-23	-44	No	14	0	0.02
		B-10	-0.1006	-17	-44	No	14	0	0.02
		B-12	-0.08729	-12	-35	No	12	0	0.02
		B-2	0.09062	30	44	No	14	0	0.02
		B-3	-0.04519	-11	-44	No	14	0	0.02
		B-4	-0.06293	-5	-44	No	14	0	0.02
		B-5	-0.1481	-21	-44	No	14	0	0.02
Potassium, total	mg/L	B-1	0.205	27	44	No	14	0	0.02
		B-10	0.09786	34	44	No	14	0	0.02
		B-12	**0.2538**	**38**	**35**	**Yes**	**12**	**0**	**0.02**
		B-2	-0.9859	-26	-44	No	14	0	0.02
		B-3	0.1526	16	44	No	14	0	0.02
		B-4	-0.1457	-20	-44	No	14	0	0.02
		B-5	-0.1904	-19	-44	No	14	0	0.02
Selenium, dissolved	mg/L	B-1	0.00008035	18	44	No	14	0	0.02
		B-10	0	-6	-44	No	14	78.57	0.02
		B-12	0.00002699	12	35	No	12	50	0.02
		B-2	-0.0002678	-30	-44	No	14	0	0.02
		B-3	-0.00002005	-8	-44	No	14	35.71	0.02
		B-4	0	-1	-44	No	14	0	0.02
		B-5	0.0001281	19	44	No	14	0	0.02
Sodium, total	mg/L	B-1	-0.3873	-13	-44	No	14	0	0.02
		B-10	0.2115	27	44	No	14	0	0.02
		B-12	**0.7273**	**40**	**35**	**Yes**	**12**	**0**	**0.02**
		B-2	0.0442	7	44	No	14	0	0.02
		B-3	0.03897	1	44	No	14	0	0.02
		B-4	0.2042	4	44	No	14	0	0.02
		B-5	1.62	31	44	No	14	0	0.02
Specific Conductance	us/cm	B-1	6.658	3	44	No	14	0	0.02
		B-10	1.543	7	44	No	14	0	0.02
		B-12	**21.27**	**52**	**35**	**Yes**	**12**	**0**	**0.02**
		B-2	-6.703	-15	-44	No	14	0	0.02
		B-3	19.12	18	44	No	14	0	0.02
		B-4	**-52.37**	**-57**	**-44**	**Yes**	**14**	**0**	**0.02**
		B-5	-14.68	-15	-44	No	14	0	0.02
Sulfate	mg/L	B-1	-0.365	-8	-44	No	14	0	0.02
		B-10	0.04701	3	44	No	14	0	0.02
		B-12	0.6995	35	35	No	12	0	0.02
		B-2	-0.8922	-7	-44	No	14	0	0.02
		B-3	0	-33	-44	No	14	92.86	0.02
		B-4	**-2.498**	**-60**	**-44**	**Yes**	**14**	**0**	**0.02**
		B-5	0	-11	-44	No	14	28.57	0.02
Total Dissolved Solids	mg/L	B-1	-8.095	-17	-44	No	14	0	0.02
		B-10	-0.9759	-12	-44	No	14	0	0.02
		B-12	**8.522**	**43**	**35**	**Yes**	**12**	**0**	**0.02**
		B-2	-8.801	-30	-44	No	14	0	0.02
		B-3	2.04	5	44	No	14	0	0.02
		B-4	-14.5	-42	-44	No	14	0	0.02
		B-5	-8.275	-19	-44	No	14	0	0.02

Short-Term Mann-Kendall Trend Tests 2019-2023
Upper Regional Aquifer

Analyte	Units	Well	Slope	Z-Score	Critical Value	Significant Trend?	# of Samples	% Non-detects	Significance Level
Total Organic Carbon	mg/L	B-1	-0.09539	-29	-44	No	14	0	0.02
		B-10	-0.008838	-5	-44	No	14	0	0.02
		B-12	0.03527	17	35	No	12	0	0.02
		B-2	-0.03318	-13	-44	No	14	0	0.02
		B-3	0.0202	3	44	No	14	0	0.02
		B-4	-0.01561	-6	-44	No	14	0	0.02
		B-5	0.2256	36	44	No	14	0	0.02
Vanadium, dissolved	mg/L	**B-1**	**-0.0005153**	**-51**	**-44**	**Yes**	**14**	**0**	**0.02**
		B-10	0.00002068	19	44	No	14	28.57	0.02
		B-12	-0.00009818	-30	-35	No	12	0	0.02
		B-2	-0.00007799	-34	-44	No	14	0	0.02
		B-3	-0.00009539	-38	-44	No	14	0	0.02
		B-4	-0.00007696	-20	-44	No	14	14.29	0.02
		B-5	**-0.0002048**	**-51**	**-44**	**Yes**	**14**	**7.143**	**0.02**
Vinyl chloride	ug/L	B-1	0	7	44	No	14	100	0.02
		B-10	0	7	44	No	14	100	0.02
		B-12	0	5	35	No	12	100	0.02
		B-2	0	7	44	No	14	100	0.02
		B-3	**0.01843**	**45**	**44**	**Yes**	**14**	**42.86**	**0.02**
		B-4	0	1	44	No	14	85.71	0.02
		B-5	0.004272	29	44	No	14	7.143	0.02
Zinc, dissolved	mg/L	B-1	-0.0000485	-26	-44	No	14	21.43	0.02
		B-10	0	4	44	No	14	35.71	0.02
		B-12	0	-4	-35	No	12	41.67	0.02
		B-2	-0.00003017	-13	-44	No	14	14.29	0.02
		B-3	0	7	44	No	14	42.86	0.02
		B-4	-0.00005298	-18	-44	No	14	21.43	0.02
		B-5	-0.0001364	-24	-44	No	14	14.29	0.02

APPENDIX F
Landfill Gas Monitoring Data – 2023

Table D-1. Perimeter Landfill Gas Measurements, 2023
Inman Landfill

Well Identifier	Probe Identifier	Screened Interval Depth (ft bgs)	Date	CH4 Concentration (%v/v)	CO2 Concentration (%v/v)	O2 Concentration (%v/v)	Barometric Pressure inches Hg	Static Pressure (inches H2O)	LFG Extraction System Status
GDW-1	Shallow	19-21	04/26/23	4.6	2.2	11.6	30.03	NM	off
			09/08/23	0.0	0.0	17.2	30.02	NM	off
			12/06/23	**25.2**	14.4	4.4	29.54	NM	off
GDW-1	Intermediate	58-60	NM	NM	NM	NM	NM	NM	off
			NM	NM	NM	NM	NM	NM	off
			NM	NM	NM	NM	NM	NM	off
GDW-1	Deep	82-84	04/26/23	0.0	0.1	17.2	30.03	NM	off
			09/08/23	0.0	0.0	17.1	30.02	NM	off
			12/06/23	0.7	2.1	3.8	29.54	NM	off
GDW-2	Shallow	14.5-15.5	04/26/23	0.0	1.8	15.9	30.16	NM	off
			09/08/23	0.0	2.1	15.9	30.02	NM	off
			12/06/23	0.0	3.7	14.4	29.61	NM	off
GDW-2	Intermediate	27-28	04/26/23	0.0	3.4	12.9	30.16	NM	off
			09/08/23	0.0	3.0	12.4	30.02	NM	off
			12/06/23	0.0	4.5	12.1	29.61	NM	off
GDW-2	Deep	44-45	04/26/23	0.0	4.8	11.6	30.16	NM	off
			09/08/23	0.0	4.0	13.5	30.02	NM	off
			12/06/23	0.0	5.6	10.8	29.61	NM	off
GDW-5	Shallow	9-10	NM	NM	NM	NM	NM	NM	off
			NM	NM	NM	NM	NM	NM	off
			NM	NM	NM	NM	NM	NM	off
GDW-5	Intermediate	19-20	NM	NM	NM	NM	NM	NM	off
			NM	NM	NM	NM	NM	NM	off
			NM	NM	NM	NM	NM	NM	off
GDW-5	Deep	29-30	NM	NM	NM	NM	NM	NM	off
			NM	NM	NM	NM	NM	NM	off
			NM	NM	NM	NM	NM	NM	off

Table D-1. Perimeter Landfill Gas Measurements, 2023
Inman Landfill

Well Identifier	Probe Identifier	Screened Interval Depth (ft bgs)	Date	CH4 Concentration (%v/v)	CO2 Concentration (%v/v)	O2 Concentration (%v/v)	Barometric Pressure inches Hg	Static Pressure (inches H2O)	LFG Extraction System Status
GP-6	Shallow	7-27	04/24/23	0.0	3.8	14.5	30.03	NM	off
			09/08/23	0.0	3.6	14.8	30.06	NM	off
			12/06/23	0.0	3.2	13.8	29.61	NM	off
GP-6	Deep	34-74	04/24/23	0.0	2.0	15.0	30.03	NM	off
			09/08/23	0.0	0.9	16.7	30.06	NM	off
			12/06/23	0.0	2.8	13.9	29.61	NM	off
GP-7	Shallow	7-17	04/24/23	0.0	0.1	17.3	30.03	NM	off
			09/08/23	0.0	0.1	17.4	30.06	NM	off
			12/06/23	0.0	8.4	9.3	29.54		off
GP-7	Deep	26-49	04/24/23	0.0	0.1	17.4	30.03	NM	off
			NM	NM	NM	NM	NM	NM	off
			12/06/23	0.0	8.3	10.0	29.54	NM	off
B-6	Shallow	39-40	04/21/23	0.0	0.4	17.1	30.07	NM	off
			09/07/23	0.0	0.4	16.9	29.83	NM	off
			12/06/23	0.0	0.6	16.7	29.54	NM	off
B-6	Intermediate	94-95	NM	NM	NM	NM	NM	NM	off
			NM	NM	NM	NM	NM	NM	off
			NM	NM	NM	NM	NM	NM	off
B-6	Deep	134-135	04/21/23	0.0	0.1	16.9	30.07	NM	off
			09/07/23	0.0	0.1	17.1	29.83	NM	off
			12/06/23	0.0	1.0	16.2	29.54	NM	off
B-7	Shallow	14-15	NM	NM	NM	NM	NM	NM	off
			NM	NM	NM	NM	NM	NM	off
			12/06/23	0.0	0.0	0.1	29.61	NM	off
B-7	Deep	50-51	NM	NM	NM	NM	NM	NM	off
			NM	NM	NM	NM	NM	NM	off
			NM	NM	NM	NM	NM	NM	off

Table D-1. Perimeter Landfill Gas Measurements, 2023
Inman Landfill

Well Identifier	Probe Identifier	Screened Interval Depth (ft bgs)	Date	CH4 Concentration (%v/v)	CO2 Concentration (%v/v)	O2 Concentration (%v/v)	Barometric Pressure inches Hg	Static Pressure (inches H2O)	LFG Extraction System Status
B-9	Shallow	10-11	04/24/23	0.0	0.1	17.4	30.07	NM	off
			09/08/23	0.0	2.5	15.6	30.02	NM	off
			12/06/23	0.0	0.1	17.4	29.54	NM	off
B-9	Deep	49-50	04/24/23	0.0	2.3	15.0	30.07	NM	off
			09/08/23	0.0	0.0	17.3	30.02	NM	off
			12/06/23	0.0	3.7	14.4	29.54	NM	off
B-11	Shallow	66-67	04/26/23	0.0	0.2	17.2	30.10	NM	off
			09/07/23	0.0	0.1	17.2	29.83	NM	off
			12/06/23	0.0	0.3	16.7	29.54	NM	off
B-11	Deep	86-87	04/27/23	0.0	0.0	17.5	30.10	NM	off
			09/07/23	0.0	0.0	17.3	29.83	NM	off
			12/06/23	0.0	0.2	17.1	29.54	NM	off
B-13	Shallow	38-40	04/26/23	0.0	0.0	17.3	30.07	NM	off
			09/08/23	0.1	0.1	17.2	30.02	NM	off
			12/06/23	4.2	10.2	3.2	29.54	NM	off
B-13	Deep	73-74	04/26/23	0.0	0.0	17.2	30.07	NM	off
			09/08/23	0.1	0.1	17.0	30.02	NM	off
			12/06/23	0.0	5.8	10.0	29.54	NM	off

Notes:
ft bgs = feet below ground surface
%v/v = percent by volume
NA = Flow restriction error.
NM = Not measured
Methane results above lower explosive limit shown in **bold.**

APPENDIX G
Sampling Logs – 2023

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	B-1		Date:	4/21/23
Well Depth (ft):	197	Screen Length (ft):	10	Well Diameter (in)	2	
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	161.60 C			Casing Type:	PVC	
Sample ID:	3172	Duplicate ID:		Sampling Personnel:	RT	
Sample Time:	1130	Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
10:43	0.3	11.09	0.936	6.72	7.03	118	72
10:47	0.8	10.91	0.879	5.00	7.08	109	-105
10:51	1.4	10.81	0.694	3.29	7.09	110	-90
10:55	1.6	10.81	0.552	2.26	7.04	109	-73
10:59	change tank						
~~10~~ 11:03	2	10:91	0.514	1.83	7.10	104	-68
11:07	2.1	10.78	0.513	1.71	7.09	102	-71
11:11	2.3	10.79	0.530	1.53	7.08	102	-71
11:15	2.5	10.92	0.535	1.55	7.04	101	-68
11:19	2.6	11.03	0.546	1.53	7.05	102	-65

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	B-2		Date:	4/21/23
Well Depth (ft):	77	Screen Length (ft):	10	Well Diameter (in)	2	
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	57.05 C			Casing Type:	PVC	
Sample ID:	3173	Duplicate ID:		Sampling Personnel:	RT	
Sample Time:	1545	Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
1443	5.0	10.37	0.291	1.67	7.16	107	160
1447	5.5	10.87	0.175	5.58	7.08	104	169
1451	6.0	10.91	0.156	6.61	7.03	101	173
1455	6.4	10.85	0.177	6.86	7.11	93.1	175
1459	7.1	10.87	0.155	6.56	6.45	89.7	180
1503	8.9	10.86	0.225	~~6.47~~ 6.59	6.42	88.0	184
1507	9.2	10.87	0.126	6.52	6.43	87.5	184
1511	10	10.86	0.141	6.53	6.41	87.5	186
1515	11	10.85	0.164	6.37	6.89	95.3	188
1519	13	10.82	0.~~54~~156	6.19	6.41	84.9	190
1523	13.5	10.86	0.131	6.12	6.41	87.3	192
1527	13.8	10.85	0.153	6.27	6.41	83.4	193
1531	14.1	10.82	0.152	7.06	6.42	83.7	197
1535	14.8	10.84	0.171	6.49	6.41	83.6	197
1539	15.5	10.85	0.167	6.30	6.40	84.5	198
1543	16.5	10.85	0.168	6.31	6.42	84.2	200
			RT				

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	B-3		Date:	4/25/23
Well Depth (ft):	37	Screen Length (ft):	10	Well Diameter (in)	2	
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	17.05 C			Casing Type:	PVC	
Sample ID:	3174	Duplicate ID:	3175	Sampling Personnel:	RT	
Sample Time:	11:50	Duplicate Sample Time:	12:00			

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
1225	1L	13.26	0.349	2.67	7.21	111	-111
1229	3L	13.78	0.325	1.20	7.32	108	-108
1233	4L	13.79	0.316	1.37	7.25	105	-103
1237	5L	13.70	0.314	1.11	7.59	107	-110
1241	6	13.76	0.310	0.94	7.61	107	-114
1245	7	13.71	0.301	0.86	7.52	109	-111
1249	8.5	13.63	0.297	0.82	7.44	108	-110
1253	9.5	13.77	0.296	0.80	7.55	108	-116
			RT				

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	B-4		Date:	4/24/2023
Well Depth (ft):	107.5	Screen Length (ft):	10	Well Diameter (in)	2	
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	64.28 C			Casing Type:	PVC	
Sample ID:	3176	Duplicate ID:		Sampling Personnel:	RT	
Sample Time:	11:50	Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
11:14	2.0	10.44	0.957	6.72	6.46	129	40
11:18	4.0	10.41	0.585	3.14	6.46	104	-8
11:22	6.2	10.30	0.716	5.37	6.32	107	-26
11:26	9.5	10.29	0.780	2.60	6.29	113	-33
11:30	12.8	10.27	0.810	3.82	6.30	105	-34
11:34	15.0	10.28	0.818	2.40	6.31	105	-36
11:38	18.0	10.28	0.834	2.02	6.32	102	-38
11:42	21.0	10.30	0.846	3.68	6.33	104	-38
11:46	24.0	10.34	0.836	2.46	6.34	96.4	-38
11:50	26.5	10.33	0.850	2.45	6.34	96.0	-38
11:54	29.2	10.33	0.851	4.96	6.35	95.4	-38
11:58	32.0	10.32	0.847	4.40	6.37	95.6	-40
12:02	35.0	10.32	0.855	4.65	6.36	92.5	-42

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	B-5		Date:	~~5~~ 6/1/23
Well Depth (ft):	36	Screen Length (ft):	10	Well Diameter (in)	2	
Sampling Device:	Dedicated Hand Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	16.33C			Casing Type:	PVC	
Sample ID:	**3177**	Duplicate ID:		Sampling Personnel:	RT	
Sample Time:		Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
12:00	1.0	11.90	0.696	3.48	6.18	134	-103
12:04	2.5	11.85	0.764	0.74	6.56	121	-125
12:08	~~4.5~~ 3.5	11.86	0.803	0.53	6.76	111	-138
12:12	4.2	11.84	0.825	0.43	6.72	109	-140
12:16	5.0	11.84	0.842	0.38	6.80	108	-145
12:20	5.5	11.78	0.860	0.31	6.74	107	-145
12:24	7.5	11.75	0.872	0.28	6.76	106	-146
12:28	9.0	11.75	0.884	0.23	6.76	105	-147
				RT			

Well depth date: 5/1/23

Sample date: 6/1/23

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	B-6		Date:	4-21-23
Well Depth (ft):	162	Screen Length (ft):	10	Well Diameter (in)	2	
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	155.50			Casing Type:	PVC	
Sample ID:	3178	Duplicate ID:		Sampling Personnel:	RT	
Sample Time:	13:10	Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
12:21	0.5	11.13	0.339	9.29	8.12	104	111
12:25	1.8	10.94	0.423	5.2	7.28	102	106
12:29	2.8	10.75	0.415	8.47	7.27	100	131
12:33	3.8	10.60	0.402	5.18	7.26	104	123
12:37	4.9	10.58	0.401	7.58	7.25	102	134
12:41	5.8	10.57	0.403	7.28	7.28	100	135
12:45	6.9	10.57	0.405	6.93	7.29	96.7	123
12:49	7.8	10.57	0.404	6.58	7.30	96.3	133
12:53	8.8	10.66	0.401	6.67	7.34	97.1	128
			RT				

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	B-8		Date:	4/26/23
Well Depth (ft):	14	Screen Length (ft):	5	Well Diameter (in)	2	
Sampling Device:	Peristaltic Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	11.71C			Casing Type:	PVC	
Sample ID:	**3180**	Duplicate ID:		Sampling Personnel:	RI	
Sample Time:	4/27/23 - 10:45	Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv	
11:44	0.5	11.48	0.668	6.96	7.63	130	148	
11:48	1.8	11.31	0.669	6.52	7.82	122	160	
11:52	4.0 C	11.56	0.677	6.29	8.00	607	72	← Silt in sample
	4.0	well Dry						
1552	4.5	12.21	0.681	6.98	7.48	142	98	
1556	~~6.0~~ 6.0	11.49	0.680	5.29	6.94	141	116	
1600	7.0	11.52	0.684	4.45	6.90	134	122	
	7.5	well	Dry					

RI

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	**B-9**		Date:	4/24/23
Well Depth (ft):	79	Screen Length (ft):	10	Well Diameter (in)	2	
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	70.07 C			Casing Type:	PVC	
Sample ID:	**3181**	Duplicate ID:		Sampling Personnel:	RT	
Sample Time:	~~1345~~ 1400	Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
1318	1.2	10.34	0.167	7.22	6.86	92.6	153
1322	2.0	10.34	0.174	6.58	6.71	90.4	163
1326	4.0	10.34	0.175	6.26	6.66	90.6	164
1330	5.0	10.36	0.171	5.99	6.57	89.4	171
1334	6.5	10.35	0.181	5.75	6.52	87.0	178
1338	8.0	10.36	0.182	5.64	6.49	87.0	178
1342	10.0	10.36	0.186	5.62	6.46	85.6	183
			RT				

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	**B-10**		Date:	4/28/23
Well Depth (ft):	151	Screen Length (ft):	10	Well Diameter (in)	2	
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	114.20 C			Casing Type:	PVC	
Sample ID:	**3182**	Duplicate ID:		Sampling Personnel:	RT	
Sample Time:	11:10	Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
10:35	3	10.22	0.332	4.58	6.20	126	-57
10:39	6	10.28	0.341	0.81	6.42	123	-72
10:43	9	10.29	0.340	0.65	6.53	120	-76
10:47	12	10.39	0.337	0.50	6.69	117	-80
10:51	14	10.30	0.337	0.47	6.72	115	-82
10:55	15.5	10.40	0.338	0.49	6.81	113	-83
10:59	16.4	10.43	0.337	0.51	6.87	112	-83
11:03	18	10.44	0.336	0.49	6.9	111	-53
		RT					

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	**B-11**		Date:	4/28/23	
Well Depth (ft):	114	Screen Length (ft):	10	Well Diameter (in)	2		
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing		
Depth To Water (ft):				Casing Type:	PVC		
Sample ID:	**3183**	Duplicate ID:		Sampling Personnel:	RT		
Sample Time:	12:30	Duplicate Sample Time:					

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
11:50	0.1	12.36	0.359	11.23	7.33	147	112
11:54	0.5	11.21	0.364	9.03	7.24	129	124
11:58	1.0	10.90	0.345	8.89	7.18	134	134
12:02	1.5	10.86	0.337	8.96	7.16	131	138
12:06	2.5	10.85	0.331	8.96	7.16	119	141
12:10	3	10.84	0.327	8.94	7.13	136	145

RT

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	**B-12**		Date:	4/26/23
Well Depth (ft):	123	Screen Length (ft):	5	Well Diameter (in)	2	
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	96.856			Casing Type:	PVC	
Sample ID:	**3184**	Duplicate ID:		Sampling Personnel:	RT	
Sample Time:	1410	Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	60 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
1324	2	11.97	0.395	4.22	8.28	192	-142
1328	7	11.92	0.403	1.38	8.38	159	-150
1332	9	11.77	0.406	1.57	8.26	151	~~-153~~ -149
1336	12	11.93	0.403	0.57	8.21	149	-124
1340	16	11.93	0.408	0.46	8.35	142	-146
1344	17	12.09	0.408	0.44	8.42	138	-154
1348	19	12.07	0.408	0.46	8.40	133	-153

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	**B-13**		Date:	4/26/23
Well Depth (ft):	94	Screen Length (ft):	10	Well Diameter (in)	2	
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	24.19 C			Casing Type:	PVC	
Sample ID:	**3185**	Duplicate ID:		Sampling Personnel:		
Sample Time:	NA	Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
	0						
		RT					

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	B-1		Date:	9/7/23
Well Depth (ft):	197	Screen Length (ft):	10	Well Diameter (in)	2	
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	161.98			Casing Type:	PVC	
Sample ID:	3204	Duplicate ID:		Sampling Personnel:	RT	
Sample Time:	12:00	Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
11:10	0.1	14.40	0.913	3.68	7.45	94.4	-9
11:14	0.8	13.40	0.830	2.56	7.22	95.6	-60
11:18	1	13.31	0.761	2.20	7.15	93.7	-58
11:22	1.1	13.19	0.611	1.60	7.01	91.9	-54
~~11:26~~	Change tank						
11:29	1.2	14.28	0.601	1.77	6.77	86.4	-32
11:33	1.5	13.70	0.557	1.37	7.04	87.9	-28
11:37	1.7	13.60	0.549	1.23	7.03	87.9	-46
11:41	1.8	13.40	0.550	1.04	7.18	88.3	-44
11:45	1.9	13.47	0.554	0.99	7.17	88.3	-43
			RT				

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	B-2		Date:	9/25/23
Well Depth (ft):	77	Screen Length (ft):	10	Well Diameter (in)	2	
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	57.79C (9/8)			Casing Type:	PVC	
Sample ID:	3205	Duplicate ID:		Sampling Personnel:	RT	
Sample Time:	11:20	Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
10:45	1	11.53	0.319	2.71	6.41	110	260
10:49	4	11.61	0.298	2.37	6.59	105	262
10:53	6	11.61	0.297	2.43	6.75	99.6	258
10:57	8	11.62	0.294	2.42	6.78	99.1	257
11:01	10	11.63	0.296	2.47	6.82	96.2	255
11:05							
			RT				

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	B-3		Date:	9/19/23
Well Depth (ft):	37	Screen Length (ft):	10	Well Diameter (in)	2	
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	17.67			Casing Type:	PVC	
Sample ID:	**3206**	Duplicate ID:	**3207**	Sampling Personnel:	RT	
Sample Time:	12:00	Duplicate Sample Time:	12:10			

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
11:22	2	13.66	0.218	1.53	6.77	109	-103
11:26	4	13.78	0.213	1.05	6.78	104	-107
11:30	5	13.57	0.220	1.01	6.74	97.1	-98
11:34	6	13.58	0.222	0.59	6.76	96.7	-93
11:38	10	13.73	0.227	0.29	6.82	92.0	-108
11:42	12	13.63	0.225	0.22	6.80	90.9	-105
11:46	14	13.73	0.227	0.16	6.85	90.3	-109
			RT				

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	B-4		Date:	9/20/23
Well Depth (ft):	107.5	Screen Length (ft):	10	Well Diameter (in)	2	
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	69.79C			Casing Type:	PVC	
Sample ID:	**3208**	Duplicate ID:		Sampling Personnel:	RT	
Sample Time:	14:00	Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
13:29	2	11.00	0.918	1.48	7.04	121	~~+21~~ 70
13:33	4	10.60	0.827	1.21	7.06	109	-25
13:37	6	10.68	0.855	0.91	7.08	102	-52
13:41	7	10.76	0.877	1.05	6.99	98.0	-19
13:45	8	10.76	0.884	12.99	6.49	95.4	-12
13:49	9	10.76	0.888	1.03	6.49	92.3	-25
13:53	10.5	10.76	0.893	1.03	6.90	89.5	-50
13:57	12.5	10.72	0.895	0.99	6.98	88.1	-49
14:01	14	10.61	0.895	0.67	7.01	88.3	-50
14:05	16	10.74	0.893	~~0.51~~	6.99	88.1	-53
14:09	18	10.63	0.908	0.44	7.09	86.6	-58
14:13	20	10.62	0.910	0.42	7.09	85.3	-57

RT

*Use purge line

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	**B-5**		Date:	9/8/23
Well Depth (ft):	36	Screen Length (ft):	10	Well Diameter (in)	2	
Sampling Device:	Dedicated Hand Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	17.14 C			Casing Type:	PVC	
Sample ID:	**3209**	Duplicate ID:		Sampling Personnel:	RT	
Sample Time:	11:00	Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
10:19	1	11.22	0.619	1.26	6.61	90.9	20
10:23	3	11.21	0.625	0.66	6.47	90.9	15
10:27	5	11.27	0.728	0.52	6.39	81.9	-30
10:31	7	11.45	0.774	0.41	6.51	77.4	-77
10:35	9	11.48	0.780	0.38	6.46	75.1	-83
10:39	11	11.50	0.785	0.35	6.50	73.5	-87
10:43	12.5	11.51	0.793	0.33	6.53	72.3	-90
10:47	14	11.52	0.802	0.33	6.53	70.1	-90
			RT				

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	B-6		Date:	9/19/23
Well Depth (ft):	162	Screen Length (ft):	10	Well Diameter (in)	2	
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	156.096			Casing Type:	PVC	
Sample ID:	**3210**	Duplicate ID:		Sampling Personnel:	RT	
Sample Time:	13:40	Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
13:12	1	11.96	0.411	2.93	6.98	120	154
13:16	3	11.20	0.468	2.69	6.81	117	169
13:20	6	11.00	0.445	2.68	6.82	114	187
13:24	8	11.00	0.444	2.59	6.71	111	189
13:28	9	11.05	0.443	2.55	6.55	108	201
13:32	11	10.89	0.441	2.53	6.73	107	197
13:36	13	10.83	0.432	2.49	6.73	105	200
13:40	16	10.85	0.434	2.50	6.85	104	~~207~~ 203
			RT				

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	B-8		Date:	9/8/23
Well Depth (ft):	14	Screen Length (ft):	5	Well Diameter (in)	2	
Sampling Device:	Peristaltic Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	13.29C			Casing Type:	PVC	
Sample ID:	3212	Duplicate ID:		Sampling Personnel:	RT	
Sample Time:	N/A	Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
9:14	0	14.33	—	3.03	6.04	148	-40
9:16	—	well pumped dry					

Partially filled flow cell, then dry

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	B-9		Date:	9/20/23
Well Depth (ft):	79	Screen Length (ft):	10	Well Diameter (in)	2	
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	70.49C			Casing Type:	PVC	
Sample ID:	3213	Duplicate ID:		Sampling Personnel:	RL	
Sample Time:	15:20	Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
14:45	1	10.88	0.207	2.03	7.35	98.1	101
14:49	3	10.78	0.216	1.99	7.31	94.2	111
14:53	6	10.75	0.215	1.98	7.20	88.5	126
14:57	7	10.84	0.214	2.00	7.14	84.8	138
15:01	9	10.91	0.213	2.01	7.19	82.6	137
15:05	11	10.84	0.212	2.01	7.12	80.9	149
15:09	13	10.83	0.213	2.01	7.03	79.8	155
15:13	14	10.84	0.213	2.02	7.02	78.9	165
15:17	16	10.84	0.214	2.01	7.01	78.5	170
15:21	17	10.85	0.214	1.99	7.02	77.9	172
			PT				

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	B-10		Date:	9/19/23
Well Depth (ft):	151	Screen Length (ft):	10	Well Diameter (in)	2	
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	114.62			Casing Type:	PVC	
Sample ID:	**3214**	Duplicate ID:		Sampling Personnel:	RT	
Sample Time:	15:00	Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
14:32	1	10.66	0.337	2.67	7.62	122	36
14:36	4	10.58	0.354	1.35	7.36	118	-84
14:40	7	10.61	0.354	1.15	7.25	110	-88
14:44	8	11.01	0.353	1.12	7.22	106	-89
14:48	9	10.83	0.352	1.03	7.19	103	-89
14:52	10	10.82	0.350	0.97	7.17	102	-89
14:56	12	10.76	0.348	0.89	7.16	101	-89
15:00	13	10.78	0.340	0.83	7.16	99.7	-90
15:04	14	10.78	0.349	0.79	7.15	99.4	-90
			RC				

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	B-11		Date:	9/20/23
Well Depth (ft):	114	Screen Length (ft):	10	Well Diameter (in)	2	
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	112.75C			Casing Type:	PVC	
Sample ID:	**3215**	Duplicate ID:		Sampling Personnel:	RT	
Sample Time:	10:30	Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
9:51	0.5	11.63	0.410	2.24	6.35	89.4	331
9:55	0.8	11.27	0.401	2.21	6.55	86.4	329
9:59	1	11.15	0.384	2.23	6.54	84.9	344
10:03	1.2	11.15	0.381	2.28	6.53	83.1	331
10:07	1.6	11.12	0.381	2.31	6.48	82.0	324
10:11	1.8	11.10	0.382	2.35	6.48	81.1	336
10:15	1.9	11.15	0.384	2.36	6.44	80.3	336
			RT				

Slow well; fill time: 20

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	B-12		Date:	9/19/23
Well Depth (ft):	123	Screen Length (ft):	5	Well Diameter (in)	2	
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	97.72C			Casing Type:	PVC	
Sample ID:	**3216**	Duplicate ID:		Sampling Personnel:	RT	
Sample Time:	10:45	Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
10:12	3	12.27	0.416	1.15	6.30	126	-74
10:16	5	12.16	0.429	0.50	6.65	121	-92
10:20	9	12.11	0.438	0.47	6.70	108	-89
10:24	11	12.23	0.435	0.54	6.72	104	-83
10:28	13	12.18	0.437	0.53	6.69	96.3	-81
10:32	16	12.15	0.434	0.52	6.85	92.8	-83
10:36	19	12.20	0.435	0.50	6.86	89.9	-80
10:40	21	12.17	0.439	0.46	6.88	91.3	-82
			RT				

* use purge line

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	**B-1**		Date:	9/24/24
Well Depth (ft):	197	Screen Length (ft):	10	Well Diameter (in)	2	
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	161.66C (12/19)			Casing Type:	PVC	
Sample ID:	**3233**	Duplicate ID:		Sampling Personnel:	KT	
Sample Time:	10:30	Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
9:48	2	10.86	0.772	6.85	7.57	11.4	186
9:52	4	10.50	0.461	3.42	7.71	14.0	-97
9:56	6	10.45	0.697	1.82	7.42	10.3	-71
10:00	9	10.40	0.844	1.33	7.35	4.2	-54
10:04	11	10.40	0.8916	0.81	6.88	4.2	-56
10:08	14	10.35	0.956	0.40	~~7.0~~ 6.85	2.3	-67
10:12	17	10.33	0.979	0.37	6.68	3.8	-45
10:16	21	10.35	0.969	0.30	6.66	1.5	-48
10:20	24	10.30	0.982	0.35	6.67	1.7	-52

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	**B-2**		Date:	6/30/24
Well Depth (ft):	77	Screen Length (ft):	10	Well Diameter (in)	2	
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	57.61 C (12/19)			Casing Type:	PVC	
Sample ID:	**3234**	Duplicate ID:		Sampling Personnel:	RT	
Sample Time:	12:50	Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
12:13	2	10.98	0.299	4.63	8.09	8.1	141
12:17	4	11.02	0.306	5.26	8.06	3.0	140
12:21	6	11.03	0.310	5.16	8.05	1.3	142
12:25	7	11.01	0.303	5.06	8.06	1.6	143
12:29	9	11.04	0.302	5.03	8.06	1.2	145
12:39	9.5	11.17	0.301	4.98	8.03	0.5	148
		RT					

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	B-3		Date:	1/30
Well Depth (ft):	37	Screen Length (ft):	10	Well Diameter (in)	2	
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	17.19 C (12/19)			Casing Type:	PVC	
Sample ID:	3236	Duplicate ID:	3235	Sampling Personnel:	RT	
Sample Time:	14:20	Duplicate Sample Time:	9:40 (2/2)			

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
13:49	2	13.46	0.536	1.08	7.11	3.8	-59
13:53	8	13.51	0.525	0.37	7.08	5.2	-74
13:57	13	13.48	0.523	0.19	7.11	6.4	-76
14:01	17	13.49	0.515	0.21	7.05	8.6	-84
14:05	23	13.49	0.514	0.17	7.13	11.1	-83
14:09	28	13:48	0.507	0.11	7.07	14.1	-82
14:13	31	13.39	0.505	0.11	7.15	15.4	-82
		RT					

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	B-4		Date:	1/30/24
Well Depth (ft):	107.5	Screen Length (ft):	10	Well Diameter (in):	2	
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	69.42 C			Casing Type:	PVC	
Sample ID:	3237	Duplicate ID:		Sampling Personnel:	RT	
Sample Time:	10:20	Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
9:38	2	10.31	0.605	2.03	7.06	7.6	-55
9:42	7	10.05	0.785	0.37	7.24	5.7	-71
9:46	9	10.31	0.830	0.32	7.41	5.5	-97
9:50	11	10.32	0.851	0.28	7.49	8.0	~~-77~~ -75
9:54	15	10.34	0.866	0.25	7.30	8.3	-64
9:58	17	10.31	0.859	0.21	7.32	9.0	-61
10:02	21	10.29	0.864	0.19	7.32	9.1	-55
10:06	24	10.29	0.867	0.20	7.29	8.5	-60
		RT					

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	**B-5**		Date:	1/31
Well Depth (ft):	36	Screen Length (ft):	10	Well Diameter (in)	2	
Sampling Device:	Dedicated Hand Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	14.96C (12/19)			Casing Type:	PVC	
Sample ID:	**3238**	Duplicate ID:		Sampling Personnel:	RT	
Sample Time:	10:45	Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
10:03	1	11.45	0.657	1.74	6.11	2.6	13
10:07	3	11.50	0.708	1.22	6.30	1.5	-55
10:11	5	11.59	0.717	0.92	6.32	1.2	-86
10:15	7	11.62	0.715	0.72	6.35	1.4	-89
10:19	9	11.61	0.703	0.64	6.44	1.2	-40
10:23	11	11.61	0.714	0.44	6.25	1.4	-76
10:27	13	11.59	0.713	0.46	6.31	1.2	-85
10:31	15	11.59	0.712	0.42	6.28	0.7	-85
		RT					

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	B-6		Date:	1/24	
Well Depth (ft):	162	Screen Length (ft):	10	Well Diameter (in)	2		
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing		
Depth To Water (ft):	155.92C (12/19)			Casing Type:	PVC		
Sample ID:	3239	Duplicate ID:		Sampling Personnel:	LT		
Sample Time:	12:20	Duplicate Sample Time:					

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
11:37	2	10.24	0.358	6.79	7.80	0.7	105
11:43			Tank Change				
11:45	3	10.50	0.368	5.99	7.83	3.0	119
11:49	6	10.28	0.352	5.61	7.66	2.5	130
11:53	8	10.22	0.347	5.03	7.59	1.8	128
11:57	10	10.20	0.340	4.89	7.54	1.7	124
12:01	13	10.19	0.337	4.55	7.53	1.5	122
12:05	16	10.19	0.339	4.61	7.73	1.3	123
12:09	19	10.18	0.333	4.15	7.79	1.8	127
12:13	21	10.19	0.337	4.16	7.70	1.4	127
12:17	24	10.18	0.335	4.28	7.77	0.6	129
			LT				

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	**B-8**		Date:	1/30/24
Well Depth (ft):	14	Screen Length (ft):	5	Well Diameter (in):	2	
Sampling Device:	Peristaltic Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	11.89C (12/19)			Casing Type:	PVC	
Sample ID:	**3241**	Duplicate ID:		Sampling Personnel:	RT	
Sample Time:	14:45	Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
13:26	1	12.17	0.641	6.24	7.30	0.6	195
13:30	3	12.11	0.632	6.05	7.22	2.3	197
13:34	5	12.15	0.631	5.96	7.20	22.6	197
13:36	6	12.64	0.638	6.24	7.14	26.4	196
13:36	pumped dry						
		RT					

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	B-9		Date:	1/30/24
Well Depth (ft):	79	Screen Length (ft):	10	Well Diameter (in)	2	
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	70.52C (12/19)			Casing Type:	PVC	
Sample ID:	3242	Duplicate ID:		Sampling Personnel:	RT	
Sample Time:	11:30	Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	60 mL amber VOA vial	HCl			

Time	Volume Pumped (~~liters~~ or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
10:44	1	10.73	0.191	5.80	7.67	2.0	109
10:48	3	10.54	0.194	6.18	7.42	2.9	120
10:52	5	10.42	0.192	6.36	7.45	2.2	136
10:56	7	10.41	0.196	6.44	7.43	2.3	136
11:00	9	10.43	0.198	6.39	7.23	1.8	146
11:04	~~10~~ 12	10.42	0.198	6.12	7.31	2.0	146
11:08	14	10.40	0.200	6.16	7.26	0.9	157
11:12	16	10.41	0.203	6.49 19	7.26	1.3	158
11:16	19	10.41	0.204	6.20	7.22	0.4	160
			RT				

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	**B-10**		Date:	1/24	
Well Depth (ft):	151	Screen Length (ft):	10	Well Diameter (in)	2		
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing		
Depth To Water (ft):	115.41 C (12/19)			Casing Type:	PVC		
Sample ID:	**3243**	Duplicate ID:		Sampling Personnel:	RT		
Sample Time:	13:50	Duplicate Sample Time:					
Sample Parameters	Parameter	Container	Preservative	Parameter		Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs		2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane		2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD		500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl				

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
13:26	2	10.12	0.284	4.88	8.07	40.7	-85
13:30	3	10.10	0.293	3.16	8.05	44.0	-89
13:34	4	10.09	0.292	2.14	8.00	43.7	-89
13:38	5	10.16	0.292	2.16	7.98	41.7	-87

RT

Groundwater Sampling Log

Skagit County Public Works Department

Site:	Inman	Well Identifier:	B-11		Date:	1/24/24
Well Depth (ft):	114	Screen Length (ft):	10	Well Diameter (in)	2	
Sampling Device:	Dedicated Bladder Pump	Tubing Type:	Polyethylene	Measuring Point:	North, Top of PVC Casing	
Depth To Water (ft):	112.90C (12/19)			Casing Type:	PVC	
Sample ID:	3244	Duplicate ID:		Sampling Personnel:	RT	
Sample Time:	15:10	Duplicate Sample Time:				

Sample Parameters	Parameter	Container	Preservative	Parameter	Container	Preservative
	Dissolved Sb, As, Ba, Cd, Cr, Co, Cu, Fe, Hg, Mn, Ni, Pb, Se, Vd, Zn	1 L poly	HNO_3	VOCs	2-40 mL VOA	HCl
	Alkalinity, Bicarbonate, TDS, Cl, SO_4, NO_3, NO_2	1 L poly		Low-level vinyl chloride, EDB, acrylonitrile, 1,4-dioxane	2-40 mL VOA	HCl
	Total Mg, K, Ca, Na	250 mL poly	HNO_3	Ammonia, COD	500 mL poly	H_2SO_4
	Total Organic Carbon	80 mL amber VOA vial	HCl			

Time	Volume Pumped (liters or gallons)	Temperature °C	Specific Conductance mS/cm	Dissolved Oxygen mg/L	pH S.U.	Turbidity NTU	Redox mv
14:33	0.2	9.46	0.389	10.46	7.61	1.1	104
14:37	0.5	9.62	0.394	8.55	7.59	0.7	114
14:41	1	9.60	0.392	8.45	7.43	0.5	121
14:45	1.5	9.57	0.383	8.36	7.45	0.8	132
14:49	2	9.57	0.384	8.25	7.30	0.4	138
14:53			Tank change				
14:57	2.5	9.49	0.381	8.35	7.45	0.5	139
15:01	3	9.68	0.381	8.36	7.38	0.2	136
			RT				