



2022 Annual Groundwater Monitoring and Corrective Action Report and Semi- Annual Remedy Selection and Design Progress Report

for Compliance with the Coal Combustion
Residuals (CCR) Rule

Hayden Station

January 31, 2023



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Table of Abbreviations and Acronyms

Abbreviation	Definition
ACM	Assessment of Corrective Measures
BTv	background threshold value
CCR	Coal Combustion Residuals
COI	constituent of interest
EPA	Environmental Protection Agency
LCL	lower confidence level
LCS	Laboratory Control Samples
MCL	Maximum Contaminant Level
MS/MSD	Matrix Spike/Duplicate
PSCo	Public Service Company of Colorado
QC	quality control
RPD	relative percent difference
SOP	Standard Operating Procedure
SSI	statistically significant increase
SSL	statistically significant level
TDS	Total Dissolved Solids
TSS	Total Suspended Solids

Certification

2022 Groundwater Monitoring Annual Report for Hayden Station

I hereby certify to the best of my knowledge that this groundwater monitoring annual report is designed to meet the performance standard in 40 CFR Part 257 of the Federal Coal Combustion Residuals (CCR) Rule.

I am duly licensed Professional Engineer under the laws of the State of Colorado.



Signed January 31, 2023

Matthew Rohr, PE

Colorado PE License 0053467

License renewal date October 31, 2023



Summary of 40 CFR Section § 257.90(e)(6) Groundwater Monitoring System Requirements and Site-Specific Compliance at Hayden Station		
§ 257.90(e)(6) A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit. At a minimum, the summary must specify all of the following:		Landfill Status
§257.90(e)(6)(i)	At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95.	Assessment Monitoring Program
§257.90(e)(6)(ii)	At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95.	Assessment Monitoring Program and Evaluation of Potential Remedies
§257.90(e)(6)(iii)	If it was determined that there was a statistically significant increase over background for one or more constituents listed in appendix III to this part pursuant to § 257.94(e):	Yes
§257.90(e)(6)(iii)(A)	Identify those constituents listed in appendix III to this part and the names of the monitoring wells associated with such an increase. These SSIs are from the original triggering event.	•W-2 – boron •W-4 - chloride, sulfate, TDS
§257.90(e)(6)(iii)(B)	Provide the date when the assessment monitoring program was initiated for the CCR unit.	September 25-26, 2019
§257.90(e)(6)(iv)	If it was determined that there was a statistically significant level above the groundwater protection standard for one or more constituents listed in appendix IV to this part pursuant to § 257.95(g) include all of the following:	Yes
§257.90(e)(6)(iv)(A)	Identify those constituents listed in appendix IV to this part and the names of the monitoring wells associated with such an increase.	W-4 - cobalt
§257.90(e)(6)(iv)(B)	Provide the date when the assessment of corrective measures was initiated for the CCR unit.	July 17, 2021
§257.90(e)(6)(iv)(C)	Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit.	Will be held 30 days prior to remedy selection
§257.90(e)(6)(iv)(D)	Provide the date when the assessment of corrective measures was completed for the CCR unit.	October 14, 2021
§257.90(e)(6)(v)	Whether a remedy was selected pursuant to § 257.97 during the current annual reporting period, and if so, the date of remedy selection.	Evaluation of potential remedies ongoing
§257.90(e)(6)(vi)	(vi) Whether remedial activities were initiated or are ongoing pursuant to § 257.98 during the current annual reporting period.	Evaluation of potential remedies ongoing

1.0 Introduction

The U.S. Environmental Protection Agency's (EPA's) final Coal Combustion Residuals (CCR) Rule establishes a comprehensive set of requirements for the management and disposal of CCR (or coal ash) in landfills and surface impoundments by electric utilities. Hayden Station, located in Routt County, Colorado (**Figure 1**), has an ash disposal facility subject to the CCR Rule (**Figure 2**). Hayden Station is operated by Public Service Company of Colorado (PSCo), an Xcel Energy Company.

The original certified CCR monitoring well network for the Hayden CCR landfill consisted of four wells completed in the colluvium that underlies the landfill: one upgradient of the landfill and three at the downgradient waste boundary. Upgradient colluvial monitoring well, MW-5, has continued to be dry since program implementation and comparison of upgradient and downgradient groundwater chemistry in the colluvial wells has not been possible. The colluvium under the landfill discharges to the adjacent alluvial aquifer of Sage Creek. Therefore, four existing monitoring wells in the adjacent alluvial aquifer were added to the certified monitoring network for the landfill. These four alluvial wells are located both upgradient and downgradient of the CCR landfill and are used to supplement the colluvial landfill monitoring wells. It is not appropriate to compare alluvial water quality to colluvial water quality; however, collecting samples from the alluvial well network will provide background groundwater that has not been impacted by the CCR unit, as well as groundwater downgradient of the CCR unit in compliance with the CCR Rule. The colluvial wells were sampled for CCR constituents of interest (COIs) background water quality between December 2, 2015, and July 11, 2017. The alluvial wells were sampled for background water quality between April 11, 2018, and November 13, 2018, and background threshold values (BTVs) were developed. Detection monitoring samples were collected in April 2019 and compared against the BTVs as specified under CCR Rule Part 257.94 and assessment monitoring was initiated as specified under Part 257.95.

The initial assessment monitoring event was in September 2019, and assessment monitoring continued through 2022. The December 2020 sample event results identified statistically significant levels (SSLs) of a COI over the groundwater protection standard (GPS). Therefore, an assessment of corrective measures was initiated July 17, 2021, and the Hayden Assessment of Corrective Measures (ACM) was completed October 14, 2021. The ACM evaluated corrective measure alternatives for the site and potential effectiveness of each alternative. This ACM report also documented ongoing implementation of corrective measures pursuant to the state of Colorado solid waste regulations (6 CCR 1007-2 Part 1, Section 2.2 and Appendix B). In 2020, PSCo began implementing a corrective action plan approved by the Colorado Department of Public Health and Environment (CDPHE) to dewater leachate that had previously infiltrated the landfilled ash, thereby removing the source of water causing the impacts observed in the state groundwater monitoring program. This report also documents progress on implementation of a corrective action, and the dewatering is further described in **Section 6.0**.

This Annual Groundwater Monitoring Report presents the sampling and analysis and assessment and documentation steps completed in 2022:

- The status of the groundwater monitoring program for the landfill at the end of 2022 is assessment monitoring, evaluation of potential remedies, and under state regulations implementation of a dewatering corrective action plan for the landfill, approved by CDPHE.

2.0 Facility Description

Hayden Station is a coal-fired, steam turbine electric generating station; the fuel source for the existing coal-fired units is sub-bituminous, low-sulfur coal supplied by several mines in western Colorado. Hayden Station uses water from the Yampa River and does not discharge water offsite. Hayden Station began operating in 1965 (Unit 1), with the addition of Unit 2 in 1976. CCR generated at the Station is permanently disposed in the landfill (**Figure 2**). Wastes disposed at the landfill consist of coal ash, air emission control byproducts, water intake silt, excavation soils, and coal impurities.

2.1 Hydrogeology

The landfill is located on a west-facing hillslope that drains to Sage Creek and the alluvial aquifer (**Figure 2**). Sage Creek flows to the north. The soil underlying the landfill is colluvium consisting of silty clay or clay to a depth of 9 to 24 feet, which is underlain by shale bedrock of the Lewis Shale Formation (Walsh, 2001). The Lewis Shale Formation surface slopes downward to the west/northwest toward Sage Creek (Walsh, 2001). The Lewis Shale Formation is several hundred feet thick in the area and is recognized as an aquiclude that inhibits vertical movement of water (Xcel, 2001). Eight monitoring wells were installed in 1984 in the vicinity of the landfill, prior to landfill construction. All wells were dry (and remained dry throughout the multi-year period in which they were monitored) except for HD-1 in the northwest near County Road 27. Well HD-1 was observed to be wet at the top of bedrock. These observations indicate that the background hydrologic condition associated with the landfill was predominantly dry colluvium. Limited perched groundwater may be present beneath the landfill from infiltrated precipitation above the bedrock, which would flow along the bedrock surface northwest and ultimately discharge to the Sage Creek alluvial aquifer immediately west of the landfill (**Figure 2**).

Within approximately 100 feet west of the landfill, the uppermost aquifer is within the alluvium of Sage Creek valley. Monitoring wells W-1 through W-7 were drilled to depths of 15 to 20 feet and encountered layers of sand and gravel alternating with finer-grained layers of sand, silt, and clay. Groundwater in the Sage Creek alluvial aquifer is 5 to 10 feet below surface (Xcel, 2001). Groundwater present in the Sage Creek valley bottom alluvium flows to the north.

2.2 Monitoring Well Network

Four monitoring wells (MW-5, MW-6, MW-7, and MW-8) were drilled and installed in 2015 around the perimeter of the landfill and are monitored for compliance with the CCR Rule. All four wells were completed in the colluvium. The well locations are shown on **Figure 2**. The upgradient well (MW-5) is located to the southeast of the ash landfill. The three downgradient wells (MW-6, MW-7, and MW-8) are located on the western waste boundary of the landfill. The three downgradient wells are spaced along the length of the landfill. Upgradient well MW-5 has

been consistently dry since monitoring began in 2015 and therefore background water quality could not be established in the colluvial system of wells.

HDR has reviewed site conditions on multiple occasions to evaluate potential locations for a new upgradient colluvial monitoring well. Based upon the documented consistently dry colluvium conditions, locations east of the landfill are expected to be dry. Locations along the south end of the landfill are inappropriate due to possible stormwater runoff from the landfill and potential contributions from the adjacent property owner. The most appropriate location for an upgradient well is along the south edge of the landfill and west of CR-27. However, a well installed west of CR-27 would intercept the alluvial aquifer and would not be representative of the colluvium that is monitored in downgradient CCR wells at the waste boundary. No options for an upgradient well in the colluvium exist, and since the colluvium discharges to the alluvial aquifer, the monitoring wells in the alluvial aquifer, W-1 through W-4, are used to supplement the colluvial monitoring well network.

In 2018, PSCo began sampling four existing monitoring wells (W-1 to W-4) in the adjacent alluvial aquifer for CCR COIs and the wells were added to the certified monitoring network (HDR 2019). These four wells are screened in the alluvial aquifer west of the landfill (**Figure 2**). Based on the site hydrogeology and westerly sloping bedrock surface, impacts to groundwater in colluvium under the landfill should be observable in the alluvial aquifer downgradient of the landfill waste boundary. One upgradient alluvial well (W-3) is located southwest of the landfill to represent background water quality conditions and three downgradient wells (W-1, W-2, and W-4) are located west and northwest of the landfill (**Figure 2**). It is not appropriate to compare alluvial water quality to colluvial water quality; however, collecting samples from the alluvial well network will provide background groundwater that has not been impacted by the CCR unit, as well as groundwater downgradient of the CCR unit that has the potential to be impacted by the CCR unit, thus complying with the intent of the CCR Rule groundwater monitoring. Monitoring of the three colluvial wells (MW-6, MW-7, and MW-8) at the downgradient waste boundary and the background colluvial well (MW-5) will also continue.

No wells were installed or abandoned in 2022.

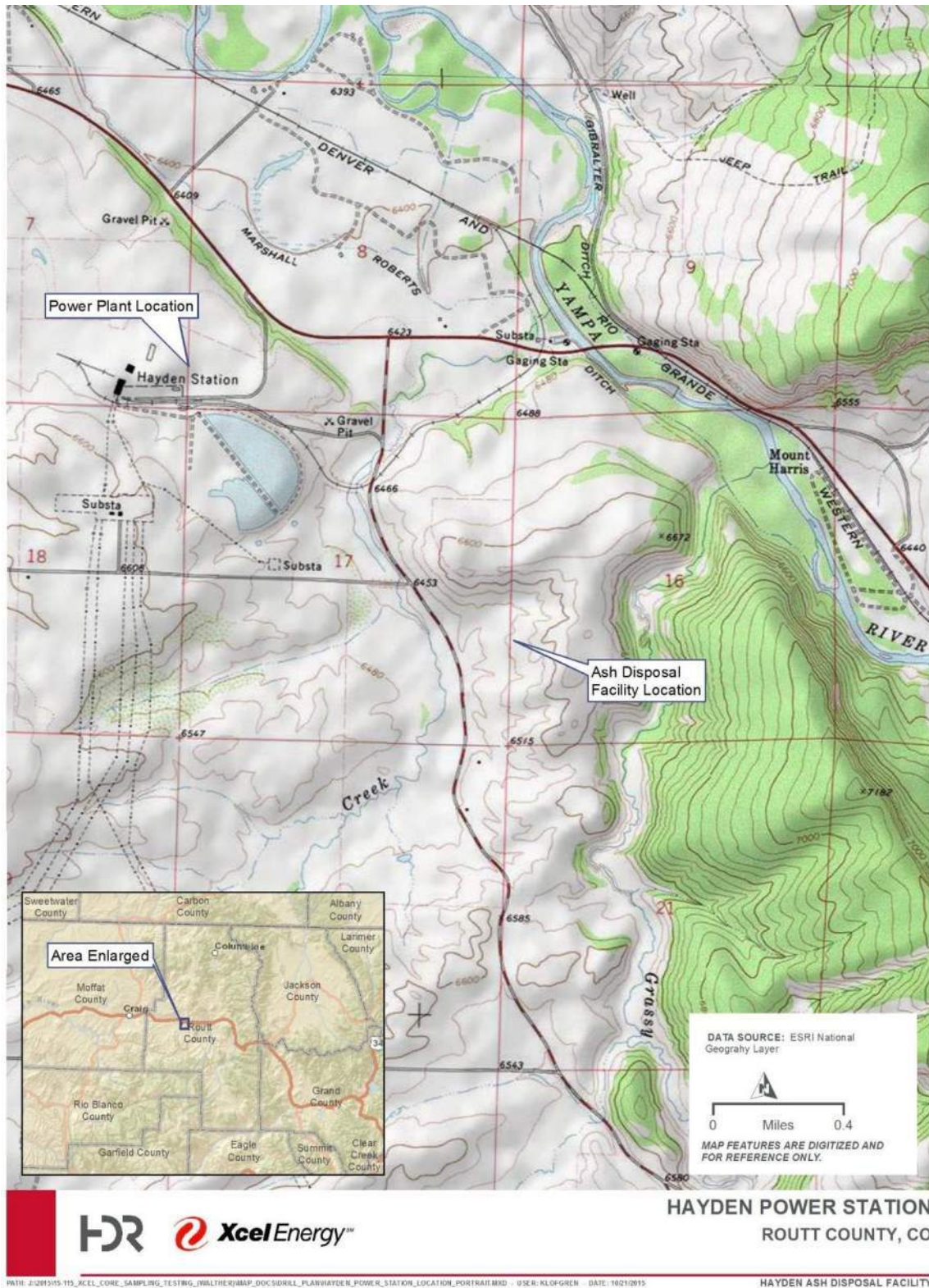


Figure 1. Vicinity map for Hayden Station.

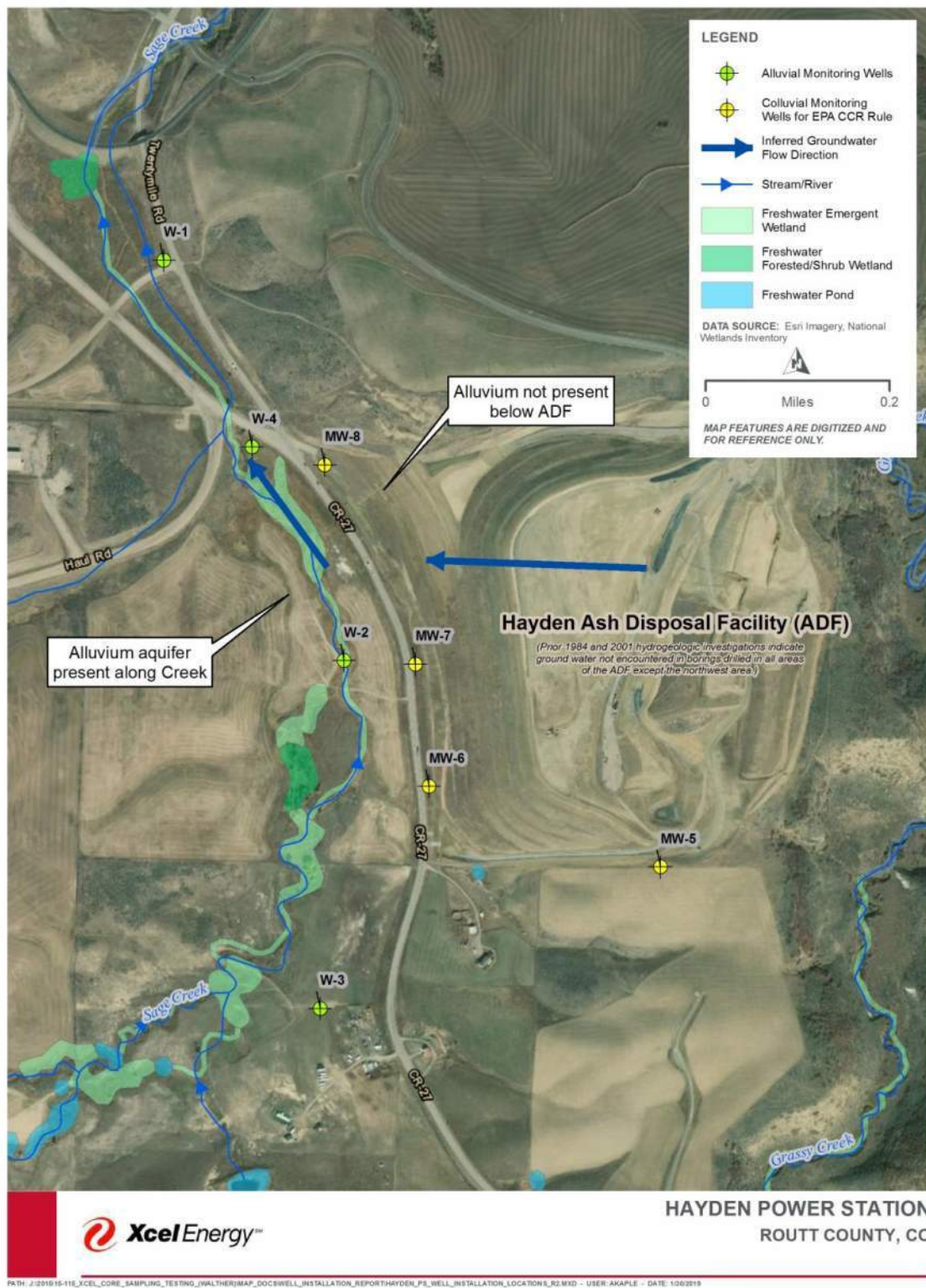


Figure 2. Hayden Station – CCR unit and monitoring well location map.

3.0 Monitoring

3.1 Frequency

In 2022, each well in the monitoring network was sampled on a semi-annual basis for assessment monitoring. On June 13-14, 2022, annual monitoring was conducted, and samples were analyzed for Appendix III and Appendix IV parameters (**Table 1**). During semi-annual events, samples are only required to be analyzed for Appendix IV COIs detected during the annual sampling event; however, the full Appendix IV parameters were analyzed for during the November 7-9, 2022 semi-annual monitoring event. **Table 2** provides the well identification, number of samples collected, dates samples were collected in 2022, and whether the sample was required by the detection monitoring or assessment monitoring programs (per (40 CFR §257.90(e)(3))).

Table 1. Groundwater quality parameters	
Appendix III Constituents	Appendix IV Constituents
Boron	Antimony
Calcium	Arsenic
Chloride	Barium
Fluoride	Beryllium
pH	Cadmium
Sulfate	Chromium
Total Dissolved Solids (TDS)	Cobalt
Additional Parameters	Fluoride
Total Suspended Solids (TSS)	Lead
	Lithium
	Mercury
	Molybdenum
	Selenium
	Thallium
	Radium 226 and 228 combined

Table 2. Number and dates of groundwater samples collected in 2022 for each well and the required monitoring programs (257.90(e)(3))			
Monitoring Well I.D.	Well Location	Dates Monitored	CCR Rule Monitoring Purpose
MW-5 (Colluvial)	Upgradient	June 13, 2022*	Annual Assessment Monitoring
		November 7, 2022*	Semi-Annual Assessment Monitoring
MW-6 (Colluvial)	Downgradient	June 13, 2022	Annual Assessment Monitoring
		November 8, 2022	Semi-Annual Assessment Monitoring
MW-7 (Colluvial)	Downgradient	June 13, 2022	Annual Assessment Monitoring
		November 7, 2022	Semi-Annual Assessment Monitoring
MW-8 (Colluvial)	Downgradient	June 14, 2022	Annual Assessment Monitoring
		November 9, 2022	Semi-Annual Assessment Monitoring
W-1 (Alluvial)	Downgradient	June 13, 2022	Annual Assessment Monitoring
		November 7, 2022	Semi-Annual Assessment Monitoring
W-2 (Alluvial)	Downgradient	June 14, 2022	Annual Assessment Monitoring
		November 8, 2022	Semi-Annual Assessment Monitoring
W-3 (Alluvial)	Upgradient	June 14, 2022	Annual Assessment Monitoring
		November 9, 2022	Semi-Annual Assessment Monitoring
W-4 (Alluvial)	Downgradient	June 14, 2022	Annual Assessment Monitoring
		November 8, 2022	Semi-Annual Assessment Monitoring

*Well was monitored and found to be dry, no sample was collected

3.2 Water Levels and Sample Collection

Water levels were collected in each well prior to sample collection. Groundwater quality samples were collected in all monitoring wells listed in **Table 2** unless wells were dry. Groundwater sample collection protocols follow the Groundwater Sample Collection Standard Operating Procedure (SOP) (HDR, 2016). The water samples were collected using a peristaltic pump. Downhole reusable equipment (i.e., water level meter) was decontaminated between wells. Each well was purged until field parameters stabilized. In accordance with the CCR Rule,

groundwater samples were not field filtered. Field parameters (i.e., conductivity, dissolved oxygen, oxidation reduction potential, pH, turbidity, and temperature) were measured using a YSI Professional Plus (or an equivalent) portable water quality instrument that was calibrated prior to use each day of sampling. The results of field measurements were recorded on a field data form, which are maintained as part of the field sampling records. Quality control (QC) samples include one field duplicate sample and one field equipment blank sample collected during each sample event. Water samples were delivered under Chain of Custody to Eurofins Environment Testing America (Eurofins) in Denver, Colorado.

4.0 Data Validation and Data Management

Data validation was conducted to eliminate data that did not meet validation criteria and designate a data qualifier for any data quality limitation discovered. All data validation and data management tasks were performed per the Data Management and Statistical Procedures Plan for Compliance with the Coal Combustion Residuals Rule (HDR, 2019).

The assessment monitoring sampling event completed in December 2021 was described in the 2021 annual report; however, the laboratory results were not received in time to include in the 2021 annual groundwater report. Therefore, review of results is being described herein. The laboratory reports for the December 2021 and the June 2022 assessment monitoring sample events are provided in **Appendix B**. Because laboratory reports from the November 2022 sample event were received in late January 2023, data validation and statistics are still being completed at the time of this report. Laboratory results for the November 2022 sampling event will be included in the 2023 annual report. After the statistical evaluation is complete, any applicable requirements of the CCR Rule will be followed, and the statistical evaluation findings will be reported in the 2023 annual report.

All samples and quality control (QC) from December 2021 and June 2022 were reviewed and evaluated, and no samples were rejected. Most QC analyses were within reportable limits; however, when QC was outside control limits, samples were reported as estimated. Relative percent difference (RPD) results for field duplicate analyses were generally within the control limit criterion of 20%. Outliers were identified for beryllium and combined radium, requiring qualification of the parent sample and field duplicate in the June 2022 event. Lab duplicate analyses were within the control limit criterion of 20%. Laboratory Control Sample (LCS)/LCS duplicates and Matrix Spike/Duplicate (MS/MSD) recoveries and RPDs were all within control limits. Data analyses required minimal qualifications, and all data were usable, even when qualified.

5.0 Monitoring Results

5.1 Water Levels and Groundwater Flow Direction

The water levels at monitoring wells were recorded during monitoring events. Groundwater elevations from June and November 2022 are displayed on the potentiometric contour map in **Appendix A**, and the flow direction was consistent between both monitoring events. In 2022,

groundwater flow direction was to the northwest under the landfill and north in the alluvial aquifer, consistent with the flow of Sage Creek, consistent with previous conceptual models. The potentiometric contour map confirms well W-3 as being upgradient of the influence of the landfill and is appropriate to represent background water quality for the landfill in the alluvial aquifer.

Upgradient well MW-5 has been consistently dry since monitoring began in 2015, reflecting the normally dry background conditions in the colluvium under the landfill and above the Lewis Shale aquitard. However, groundwater is observed in the colluvium downgradient wells MW-6, MW-7 and MW-8 at the waste boundary. Because the colluvium is otherwise dry, the water in these wells is likely seepage from within the footprint of the landfill, which is collecting as perched groundwater, flowing along the top of bedrock, and discharging to the northwest into the alluvial aquifer of Sage Creek.

5.2 Water Quality

After addition of the alluvial wells to the certified monitoring network, eight rounds of updated background groundwater sampling and detection monitoring were completed in 2019 for the landfill. The background sampling was described in detail in the *Background Water Quality Statistical Certification* (HDR, 2021). In the August 20, 2019, PSCo memorandum, *Determination of Statistically Significant Increases over Background per 257.93(h)(2)*, concentrations of Appendix III COIs from each downgradient monitoring well at the landfill were compared against the BTVs and several COIs were shown to have SSIs over BTVs (upper prediction limit). These SSIs triggered the assessment monitoring program for the landfill.

Assessment monitoring was conducted in 2019 and 2020 as described in those Annual reports. In accordance with CCR Rule 257.95(h), groundwater protection standards (GPS) were established for each detected Appendix IV COI. For each detected COI, **Table 3** lists the EPA established maximum contaminant level (MCL) from 40 CFR 141.62 and 141.66, the BTV (upper tolerance limit) for the Hayden landfill, and the site-specific GPS.

Table 3. Groundwater Protection Standards for Detected Appendix IV COIs for the Landfill 257.95(d)(3)

Constituent	Unit	MCL	BTV (UTL)	GPS
Arsenic	mg/l	0.010	0.00410	0.010
Barium	mg/l	2.00	0.00918	2.00
Beryllium	mg/l	0.004	0.000600	0.004
Cadmium	mg/l	0.00500	0.00120	0.005
Cobalt	mg/l	0.00600*	0.00616	0.00616
Fluoride	mg/l	4.00	0.862	4.00
Lead	mg/l	0.004	0.000830	0.004
Lithium	mg/l	0.0400*	1.80	1.80
Molybdenum	mg/l	0.100*	0.00402	0.100
Radium-226+228	pci/l	5.0^	1.01	5.0

Table 3. Groundwater Protection Standards for Detected Appendix IV COIs for the Landfill 257.95(d)(3)				
Constituent	Unit	MCL	BTU (UTL)	GPS
Selenium	mg/l	0.0500	0.0246	0.0500

*EPA adopted health-based value in place of MCL

^Colorado Water Quality Regulation

In accordance with CCR Rule 257.95(e), downgradient well concentrations from the December 2021 assessment monitoring event were compared against background values, and some concentrations were found to be above background values. In accordance with CCR Rule 257.95(f), detected Appendix IV COI concentrations in downgradient wells were compared against GPS. W-2 and W-4 had a cobalt GPS exceedance. Therefore, in accordance with CCR Rule 257.95(g), statistical evaluation was completed to determine if any concentrations are at a statistically significant level (SSL) over GPS. Statistical analysis from the December 2021 analysis is provided in **Appendix C**.

To determine if an exceedance of a GPS was statistically significant, the 95% lower confidence limit (95LCL) was calculated for each of the downgradient wells at the landfill (W-1, W-2, and W-4) for each of the detected Appendix IV COIs. The data used to calculate the lower confidence limit (LCL) was an accumulation of all samples collected at these wells since the establishment of the groundwater monitoring system. The results of the LCL comparison against GPS (after the December 2021 sample event) are provided in **Table 4** for Appendix IV COIs with SSLs above the GPS. Downgradient well W-4 had 95LCL for cobalt that slightly exceeds the GPS. Downgradient well W-2, between the landfill and W-4, did not have an SSL for cobalt.

Table 4. Lower Confidence Limit from December 2021 Compared to Groundwater Protection Standard for the only Detected Appendix IV COI that Exceeds GPS		
Monitoring Well	Appendix IV Constituent	Cobalt
	Unit	mg/l
	GPS	0.00616
W-4	95% LCL	0.00650*

*95% Adjusted Gamma LCL

In accordance with CCR Rule 257.95(e), downgradient well concentrations from the June 2022 assessment monitoring event were compared against background values, and some concentrations were found to be above background values. The laboratory report for June 2022 sample event is provided in **Appendix B**. In accordance with CCR Rule 257.95(f), detected Appendix IV COI concentrations in downgradient wells were compared against GPS. There were no Appendix IV COI concentrations from June 2022 at concentrations greater than the GPS. However, since an SSL for cobalt was previously identified in W-4, statistical evaluation was completed to incorporate the June 2022 cobalt result into an updated LCL calculation in accordance with CCR Rule 257.95(g), to determine if the previously detected SSL for cobalt at W-4 remained a statistical exceedance above the GPS. The results of the LCL comparison

against GPS (recalculated with the result from the June 2022 sample event) are provided in **Table 5**. Downgradient well W-4 continued to have a 95LCL for cobalt that exceeds the GPS. Statistical analysis from the June 2022 analysis is provided in **Appendix C**.

Table 5. Lower Confidence Limit from June 2022 Compared to Groundwater Protection Standard for the only Detected Appendix IV COI that Exceeds GPS

Monitoring Well	Appendix IV Constituent	Cobalt
	Unit	mg/l
	GPS	0.00616
W-4 [^]	95% LCL	0.00640*

*95% Adjusted Gamma LCL

[^] although the June 2022 cobalt concentration was below the GPS, the result was incorporated into an updated LCL, since an SSL had previously been identified

In 2023, PSCo will continue to monitor groundwater at the landfill in accordance with the assessment monitoring program and consistent with 257.95.

6.0 Remedy Selection Progress Update

This section provides the semi-annual progress report describing the progress towards remedy selection and design for the landfill in accordance with 257.97(a). Semi-annual progress reports will be prepared and posted to the CCR website until a remedy is selected and documented in a final report.

As described earlier in this report, one downgradient well was found to have concentrations of cobalt at an SSL above the GPS in December 2020. Therefore, PSCo completed the *Conceptual Site Model and Assessment of Corrective Measures* on October 14, 2021, in accordance with CCR Rule 257.96(c) (HDR 2021).

The ACM included a preliminary analysis of the feasibility of potential corrective measures in meeting the requirements and objectives of the remedy as described under CCR Rule 257.97. At the time of the assessment and currently, downgradient well W-4 has concentrations of cobalt at an SSL above the GPS. All other detected Appendix IV COIs are below the GPS. Therefore, the constituent that was evaluated for assessment of corrective measures was cobalt. PSCo has identified that saturated ash leachate is contributing to the alluvial aquifer, which may be the source of the cobalt exceedance; however, concentrations of cobalt were less at the wells between the saturated zone of the landfill and the alluvial aquifer. Because another source has not been identified, PSCo continues with the dewatering efforts as source control and monitoring that are already being implemented at the site. However, in 2023 PSCo intends to further evaluate whether the cobalt SSL in W-4 is related to the landfill, or possibly other alternate sources.

Dewatering at the landfill is accomplished using two RPS-400 submersible solar pumps with associated piping, flow totalizers, sensors, and controllers installed in two landfill wells. One of the pumps was replaced with a new Grundfos 6SQF-2 helical rotor pump and a Grundfos SQFlex AC/DEC controller for solar applications in June 2022. Pumping at each location was

accomplished using an array of photovoltaic solar panels and a battery bank to allow for pumping outside of daylight hours. Both pumps are equipped with flow totalizers and were run between May and October beginning in 2020 through 2022 due to freezing conditions in winter. Produced water is transferred to a lined contact water pond and used as needed for dust suppression within the active area of the landfill. Produced water not used for dust suppression evaporates within the lined pond. Approximately 903,000 gallons have been removed since dewatering was initiated in 2020.

Despite the pump replacement and improvements to the solar/battery power set up, the expected pumping at maximum rate and/or durations in 2022 was not realized. In addition, low-water sensors intermittently indicating dry conditions would automatically turn off pumping, pump troubleshooting issues, insufficient battery bank, and winter conditions limited the total dewatering volume in 2022. However, PSCo has completed additional evaluation of system requirements and will be implementing more improvements in 2023 that are expected to achieve 24/7 pumping. PSCo also intends to install additional dewatering wells in 2023 with larger diameter borings and longer screened intervals to attempt to increase the pumping rate and leachate recovery. PSCo will also consider alternative measures outlined in the ACM if dewatering under the state program is found to be insufficient.

PSCo will continue assessment monitoring at the landfill to evaluate concentration trends of cobalt and to assess if the corrective measures being implemented under the state program (stormwater management and ash leachate dewatering, combined with monitoring of natural attenuation) appear to be an effective remedy. Current data in farthest downgradient monitoring well W-1 appears to demonstrate limited extent of groundwater impacts and that MNA may be effective. The groundwater chemistry is expected to improve over time in response to ash dewatering. Additional data points are needed to evaluate for decreasing trends.

The following activities are proposed to be completed in the next 6-month period:

- Continued ash dewatering, including year-round dewatering if feasible.
- Continued semi-annual groundwater assessment monitoring.
- Continued evaluation of cobalt concentration trends in all CCR monitoring wells.
- Completion of alternative source demonstration for cobalt concentrations at W-4.
- Installation of additional dewatering wells and power capacity to improve the rate and duration of pumping activities.

7.0 Summary

In 2022 PSCo continued assessment monitoring in the CCR monitoring well network. Monitoring well MW-5 has been consistently dry since monitoring began in 2015, reflecting the normally dry background conditions in the colluvium under the landfill and above the Lewis Shale. Therefore, no background water quality is available in the colluvium to develop BTVs. Groundwater is observed in the colluvium downgradient wells MW-6, MW-7 and MW-8 located at the waste boundary, which likely represents seepage from within the footprint of the landfill collecting as perched groundwater in these wells, flowing along the top of bedrock and discharging to the

northwest into the alluvial aquifer of Sage Creek. Existing monitoring wells in the Sage Creek aquifer were added to the groundwater certified network for the landfill in 2018.

Under the separate CDPHE-approved groundwater monitoring system of wells in the alluvial aquifer, SSIs over background were identified (under the CDPHE program) in downgradient well W-2. PSCo initiated assessment monitoring under the CDPHE program in 2017 and initiated a CDPHE-approved dewatering corrective action program in 2018, which is functionally equivalent to that which is outlined in the CCR Rule. The dewatering of the colluvium under the landfill continued in 2022.

The following observations are based on CCR Rule compliance data collected in 2022:

- Groundwater flow direction under the CCR landfill is generally to the northwest and discharges to the Sage Creek alluvial aquifer. Groundwater flow direction in the Sage Creek alluvial aquifer is to the north.
- The colluvium in the area of the landfill has been documented to be dry under baseline conditions and upgradient of the landfill. Therefore, no background water quality is available to develop BTVs for the colluvium.
- All four of the alluvial and three of the colluvial CCR monitoring wells were sampled in June and November 2022 for assessment monitoring. Consistent with historic observations, colluvial well MW-5 located upgradient of the landfill was dry in both monitoring events.
- Assessment monitoring data from the downgradient alluvial wells was compared to background data and some concentrations were above BTVs. Some concentrations were also above the site GPS and cobalt was present at an SSL over GPS at downgradient well W-4. Well W-1 which is downgradient of W-4 did not have any exceedances, so the extent appears to have been bounded.
- Dewatering of ash leachate in the landfill had already been initiated under state approved corrective action and continued through 2022. These measures will continue unless dewatering and MNA appear to be insufficient. Other alternatives outlined in the ACM will be considered if necessary.
- The Hayden landfill status is in assessment monitoring and Evaluation of Potential Remedies and is implementing dewatering corrective action under the state program.
- No wells were installed or abandoned in 2022.

8.0 References

AECOM, 2016. Hayden Station Ash Disposal Facility Semi-Annual Groundwater Monitoring Report December 28, 2016.

HDR, 2019. Groundwater Monitoring System Certification - Compliance with the Coal Combustion Residuals Rule Hayden Station. February 26, 2019.

HDR, 2019. Data Management and Statistical Procedures Plan for Compliance with the Coal Combustion Residuals Rule. Updated July 19, 2019.

HDR, 2021. Background Water Quality Statistical Certification. February 19, 2021.

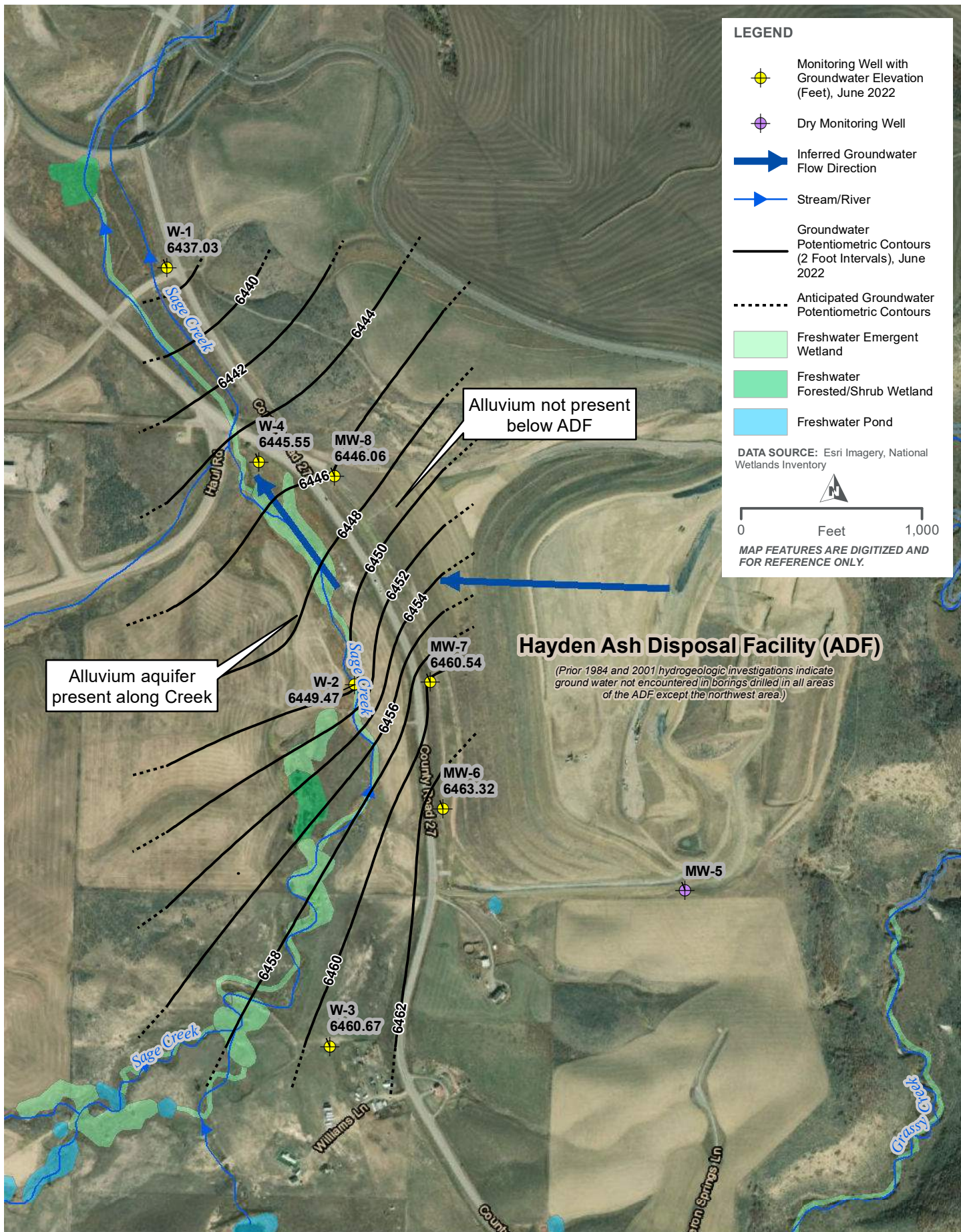
HDR, 2021. Conceptual Site Model and Assessment of Corrective Measures for Compliance with the Coal Combustion Residuals Rule - Hayden Station. October 14, 2021.

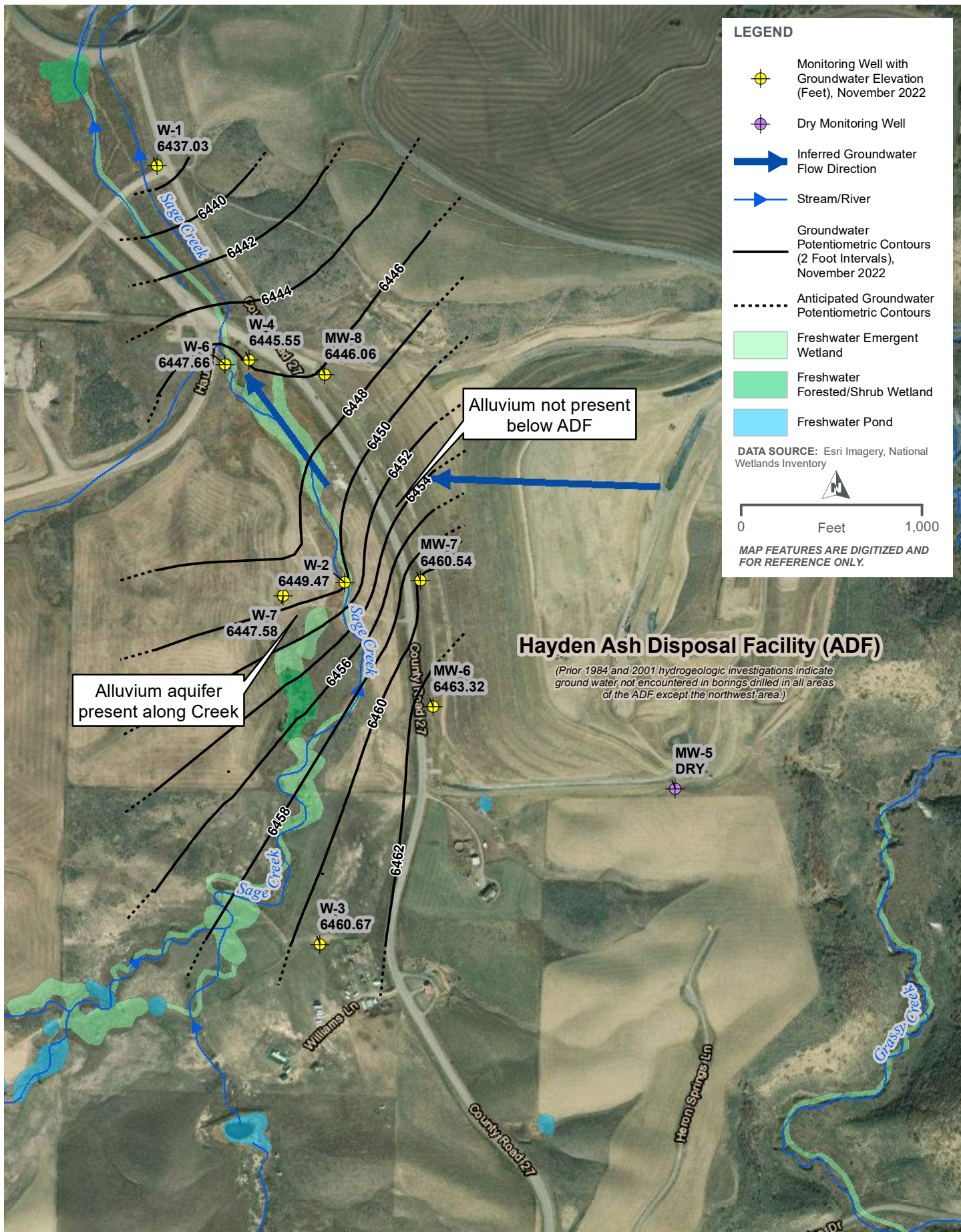
Walsh (Walsh Environmental Scientists and Engineers), 2013. Hayden Station Coal Ash Disposal Facility Engineering and Design and Operation Plan. Xcel Energy, Hayden, Colorado. November 2013.

Xcel Energy, 2001. Hayden Ash Disposal Facility Environmental Monitoring System (EMS) Work Plan, August 23, 2001.

Appendix A

Potentiometric Surface Maps





Appendix B

Laboratory Reports & Data Validation

ANALYTICAL REPORT

Eurofins Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

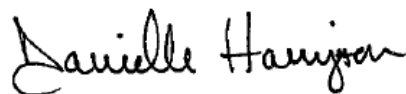
Laboratory Job ID: 280-156573-1

Client Project/Site: Xcel Energy GW CCR Monitoring - Hayden

For:

HDR Inc
1670 Broadway
Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves



Authorized for release by:
1/13/2022 6:47:32 PM

Danielle Harrington, Project Manager II
(303)736-0176
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The test results in this report meet all 2003 NELAC, 2009 TNI, and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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

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

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Definitions/Glossary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Qualifiers

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
H	Sample was prepped or analyzed beyond the specified holding time
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Case Narrative

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Job ID: 280-156573-1

Laboratory: Eurofins Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Hayden

Report Number: 280-156573-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 12/08/2021; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt were 0.9°C, 1.0°C and 2.0°C.

Please note, the container labels list MW-6EB, while the chain of custody lists MM-6EB. There are also no dates/times on the containers. Samples were logged per information listed on COC.

TOTAL RECOVERABLE METALS -METHOD 6010C/6020A

Some samples required dilution prior to analysis for Method 6010C and/or 6020A. The reporting limits have been adjusted accordingly.

The accuracy and precision of the Calcium MS/MSD performed on a sample W-1 could not be reliably evaluated, as the concentrations present in the parent sample were 4 times greater than the matrix spike concentration. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

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

TOTAL MERCURY

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

GENERAL CHEMISTRY -VARIOUS

Several samples required dilution prior to analysis for various methods. The reporting limits have been adjusted accordingly.

Due to a required prep dilution, sample W-1 was analyzed past the EPA-recommended holding time for method 2540C Total Dissolved Solids; the original analysis of the undiluted sample was performed within holding time but over the residue limit for the method. The out-of-hold, diluted result is confirmed by the undiluted result; only the diluted result has been reported. There is no impact on data usability.

Total Dissolved Solids are present at a level greater than the reporting limit in the method blank associated with QC batches 280-560153, 280-560426 and 280-560559. As the associated sample amounts are ten times greater than the method blank concentration, corrective action is deemed unnecessary.

The pH sample duplicate analysis data associated with QC batch 280-561205 exhibited RPD data outside the QC limits. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

Case Narrative

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Job ID: 280-156573-1 (Continued)

Laboratory: Eurofins Denver (Continued)

The accuracy and precision of the Sulfate MS/MSD performed on a laboratory generated sample could not be reliably evaluated, as the concentrations present in the parent sample were 4 times greater than the matrix spike concentration. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

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

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Client Sample ID: W-1

Lab Sample ID: 280-156573-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.53		0.10	0.057	mg/L	1		6010C	Total
									Recoverable
Barium	0.0096		0.0050	0.0022	mg/L	1		6020A	Total
									Recoverable
Calcium	330		1.0	0.58	mg/L	1		6020A	Total
									Recoverable
Cobalt	0.0010		0.0010	0.00019	mg/L	1		6020A	Total
									Recoverable
Lithium	0.27		0.0080	0.0017	mg/L	1		6020A	Total
									Recoverable
Molybdenum	0.0033	J	0.010	0.0011	mg/L	1		6020A	Total
									Recoverable
Selenium	0.0038	J	0.0050	0.00089	mg/L	1		6020A	Total
									Recoverable
pH adj. to 25 deg C	7.5	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	48		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.37	J	0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	2600		250	52	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	4300	H	40	19	mg/L	1		SM 2540C	Total/NA

Client Sample ID: W-1D

Lab Sample ID: 280-156573-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.51		0.10	0.057	mg/L	1		6010C	Total
									Recoverable
Barium	0.0094		0.0050	0.0022	mg/L	1		6020A	Total
									Recoverable
Cadmium	0.00027	J	0.0010	0.00020	mg/L	1		6020A	Total
									Recoverable
Calcium	320		1.0	0.58	mg/L	1		6020A	Total
									Recoverable
Cobalt	0.0010		0.0010	0.00019	mg/L	1		6020A	Total
									Recoverable
Lithium	0.26		0.0080	0.0017	mg/L	1		6020A	Total
									Recoverable
Molybdenum	0.0036	J	0.010	0.0011	mg/L	1		6020A	Total
									Recoverable
Selenium	0.0039	J	0.0050	0.00089	mg/L	1		6020A	Total
									Recoverable
Thallium	0.58	J	1.0	0.20	ug/L	1		6020A	Total
									Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.0	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	49		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.37	J	0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	2600		250	52	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	4000	B	40	19	mg/L	1		SM 2540C	Total/NA

Client Sample ID: W-2

Lab Sample ID: 280-156573-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	11		0.10	0.057	mg/L	1		6010C	Total
									Recoverable
Barium	0.0094		0.0050	0.0022	mg/L	1		6020A	Total
									Recoverable

This Detection Summary does not include radiochemical test results.

Eurofins Denver

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Client Sample ID: W-2 (Continued)

Lab Sample ID: 280-156573-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	0.00029	J	0.0010	0.00020	mg/L	1		6020A	Total Recoverable
Calcium	370		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.0083		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Lithium	0.61		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0042	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0025	J	0.0050	0.00089	mg/L	1		6020A	Total Recoverable
Thallium	0.33	J	1.0	0.20	ug/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.7	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	93		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.57		0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	4600		250	52	mg/L	50		9056A	Total/NA
Total Dissolved Solids (TDS)	7100	B	100	47	mg/L	1		SM 2540C	Total/NA

Client Sample ID: W-3

Lab Sample ID: 280-156573-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.62		0.10	0.057	mg/L	1		6010C	Total Recoverable
Arsenic	1.1	J	5.0	0.75	ug/L	1		6020A	Total Recoverable
Barium	0.0078		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Cadmium	0.00029	J	0.0010	0.00020	mg/L	1		6020A	Total Recoverable
Calcium	360		1.0	0.58	mg/L	1		6020A	Total Recoverable
Cobalt	0.0029		0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Lithium	1.1		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0030	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.0085		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	230		15	5.1	mg/L	5		9056A	Total/NA
Fluoride	0.70		0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	7700		500	100	mg/L	100		9056A	Total/NA
Total Dissolved Solids (TDS)	12000	B	1000	470	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	4.0		4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: W-4

Lab Sample ID: 280-156573-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.55		0.10	0.057	mg/L	1		6010C	Total Recoverable

This Detection Summary does not include radiochemical test results.

Eurofins Denver

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Client Sample ID: W-4 (Continued)

Lab Sample ID: 280-156573-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.0075		0.0050	0.0022	mg/L	1		6020A	Total
									Recoverable
Calcium	340		1.0	0.58	mg/L	1		6020A	Total
									Recoverable
Cobalt	0.0066		0.0010	0.00019	mg/L	1		6020A	Total
									Recoverable
Lithium	0.59		0.0080	0.0017	mg/L	1		6020A	Total
									Recoverable
Molybdenum	0.0026	J	0.010	0.0011	mg/L	1		6020A	Total
									Recoverable
pH adj. to 25 deg C	7.5	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	22.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	350	J	600	200	mg/L	200		9056A	Total/NA
Fluoride	0.62		0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	12000		1000	210	mg/L	200		9056A	Total/NA
Total Dissolved Solids (TDS)	18000	B	1000	470	mg/L	1		SM 2540C	Total/NA
Total Suspended Solids	1.6	J	4.0	1.1	mg/L	1		SM 2540D	Total/NA

Client Sample ID: MW-6

Lab Sample ID: 280-156573-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	47		0.50	0.29	mg/L	5		6010C	Total
									Recoverable
Calcium	440		5.0	2.9	mg/L	5		6020A	Total
									Recoverable
Lithium	0.11		0.040	0.0083	mg/L	5		6020A	Total
									Recoverable
Molybdenum	1.4		0.050	0.0054	mg/L	5		6020A	Total
									Recoverable
Selenium	0.012	J	0.025	0.0045	mg/L	5		6020A	Total
									Recoverable
pH adj. to 25 deg C	8.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.3	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	70		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.30	J	0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	3000		100	21	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	4500	B	40	19	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MM-6EB

Lab Sample ID: 280-156573-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH adj. to 25 deg C	6.1	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.7	HF	1.0	1.0	Degrees C	1		9040B	Total/NA

Client Sample ID: MW-7

Lab Sample ID: 280-156573-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	49		0.50	0.29	mg/L	5		6010C	Total
									Recoverable
Calcium	460		5.0	2.9	mg/L	5		6020A	Total
									Recoverable
Lithium	0.25		0.040	0.0083	mg/L	5		6020A	Total
									Recoverable
Molybdenum	0.81		0.050	0.0054	mg/L	5		6020A	Total
									Recoverable

This Detection Summary does not include radiochemical test results.

Eurofins Denver

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Client Sample ID: MW-7 (Continued)

Lab Sample ID: 280-156573-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Selenium	0.0067	J	0.025	0.0045	mg/L	5		6020A	Total Recoverable
pH adj. to 25 deg C	8.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.9	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	170		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.21	J	0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	3300		100	21	mg/L	20		9056A	Total/NA
Total Dissolved Solids (TDS)	5200	B	40	19	mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-8

Lab Sample ID: 280-156573-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.78		0.10	0.057	mg/L	1		6010C	Total Recoverable
Barium	0.0063		0.0050	0.0022	mg/L	1		6020A	Total Recoverable
Calcium	360		1.0	0.58	mg/L	1		6020A	Total Recoverable
Chromium	5.4		2.0	2.5	ug/L	1		6020A	Total Recoverable
Cobalt	0.00044	J	0.0010	0.00019	mg/L	1		6020A	Total Recoverable
Lithium	0.58		0.0080	0.0017	mg/L	1		6020A	Total Recoverable
Molybdenum	0.0035	J	0.010	0.0011	mg/L	1		6020A	Total Recoverable
Selenium	0.047		0.0050	0.00089	mg/L	1		6020A	Total Recoverable
pH adj. to 25 deg C	7.5	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.4	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	410		15	5.1	mg/L	5		9056A	Total/NA
Fluoride	0.24	J	0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	6100		500	100	mg/L	100		9056A	Total/NA
Total Dissolved Solids (TDS)	9800	B	100	47	mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Denver

Method Summary

Client: HDR Inc

Job ID: 280-156573-1

Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL CAN
6020A	Metals (ICP/MS)	SW846	TAL CAN
7470A	Mercury (CVAA)	SW846	TAL CAN
9040B	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL DEN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
7470A	Preparation, Mercury	SW846	TAL CAN

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

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

Laboratory References:

TAL CAN = Eurofins Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Sample Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-156573-1	W-1	Water	12/06/21 13:20	12/08/21 13:29
280-156573-2	W-1D	Water	12/06/21 13:20	12/08/21 13:29
280-156573-3	W-2	Water	12/06/21 14:55	12/08/21 13:29
280-156573-4	W-3	Water	12/06/21 11:50	12/08/21 13:29
280-156573-5	W-4	Water	12/06/21 16:15	12/08/21 13:29
280-156573-6	MW-6	Water	12/07/21 10:30	12/08/21 13:29
280-156573-7	MM-6EB	Water	12/07/21 10:55	12/08/21 13:29
280-156573-8	MW-7	Water	12/07/21 09:30	12/08/21 13:29
280-156573-9	MW-8	Water	12/07/21 13:15	12/08/21 13:29

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Method: 6010C - Metals (ICP) - Total Recoverable

Client Sample ID: W-1
Date Collected: 12/06/21 13:20
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.53		0.10	0.057	mg/L		12/13/21 14:00	12/14/21 12:31	1

Client Sample ID: W-1D
Date Collected: 12/06/21 13:20
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.51		0.10	0.057	mg/L		12/13/21 14:00	12/14/21 12:40	1

Client Sample ID: W-2
Date Collected: 12/06/21 14:55
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	11		0.10	0.057	mg/L		12/13/21 14:00	12/14/21 12:45	1

Client Sample ID: W-3
Date Collected: 12/06/21 11:50
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.62		0.10	0.057	mg/L		12/13/21 14:00	12/14/21 12:49	1

Client Sample ID: W-4
Date Collected: 12/06/21 16:15
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.55		0.10	0.057	mg/L		12/13/21 14:00	12/14/21 12:54	1

Client Sample ID: MW-6
Date Collected: 12/07/21 10:30
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	47		0.50	0.29	mg/L		12/13/21 14:00	12/14/21 15:31	5

Client Sample ID: MM-6EB
Date Collected: 12/07/21 10:55
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.057	mg/L		12/13/21 14:00	12/14/21 13:12	1

Client Sample ID: MW-7
Date Collected: 12/07/21 09:30
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	49		0.50	0.29	mg/L		12/13/21 14:00	12/14/21 15:36	5

Client Sample ID: MW-8
Date Collected: 12/07/21 13:15
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.78		0.10	0.057	mg/L		12/13/21 14:00	12/14/21 13:21	1

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Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: W-1
Date Collected: 12/06/21 13:20
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0	0.57	ug/L		12/13/21 14:00	12/15/21 15:21	1
Arsenic	ND		5.0	0.75	ug/L		12/13/21 14:00	12/15/21 15:21	1
Barium	0.0096		0.0050	0.0022	mg/L		12/13/21 14:00	12/15/21 15:21	1
Beryllium	ND		1.0	0.62	ug/L		12/13/21 14:00	12/15/21 15:21	1
Cadmium	ND		0.0010	0.00020	mg/L		12/13/21 14:00	12/15/21 15:21	1
Calcium	330		1.0	0.58	mg/L		12/13/21 14:00	12/15/21 15:21	1
Chromium	ND		2.0	2.5	ug/L		12/13/21 14:00	12/15/21 15:21	1
Cobalt	0.0010		0.0010	0.00019	mg/L		12/13/21 14:00	12/15/21 15:21	1
Lead	ND		1.0	0.45	ug/L		12/13/21 14:00	12/15/21 15:21	1
Lithium	0.27		0.0080	0.0017	mg/L		12/13/21 14:00	12/15/21 15:21	1
Molybdenum	0.0033	J	0.010	0.0011	mg/L		12/13/21 14:00	12/15/21 15:21	1
Selenium	0.0038	J	0.0050	0.00089	mg/L		12/13/21 14:00	12/15/21 15:21	1
Thallium	ND		1.0	0.20	ug/L		12/13/21 14:00	12/15/21 15:21	1

Client Sample ID: W-1D
Date Collected: 12/06/21 13:20
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0	0.57	ug/L		12/13/21 14:00	12/15/21 15:33	1
Arsenic	ND		5.0	0.75	ug/L		12/13/21 14:00	12/15/21 15:33	1
Barium	0.0094		0.0050	0.0022	mg/L		12/13/21 14:00	12/15/21 15:33	1
Beryllium	ND		1.0	0.62	ug/L		12/13/21 14:00	12/15/21 15:33	1
Cadmium	0.00027	J	0.0010	0.00020	mg/L		12/13/21 14:00	12/15/21 15:33	1
Calcium	320		1.0	0.58	mg/L		12/13/21 14:00	12/15/21 15:33	1
Chromium	ND		2.0	2.5	ug/L		12/13/21 14:00	12/15/21 15:33	1
Cobalt	0.0010		0.0010	0.00019	mg/L		12/13/21 14:00	12/15/21 15:33	1
Lead	ND		1.0	0.45	ug/L		12/13/21 14:00	12/15/21 15:33	1
Lithium	0.26		0.0080	0.0017	mg/L		12/13/21 14:00	12/15/21 15:33	1
Molybdenum	0.0036	J	0.010	0.0011	mg/L		12/13/21 14:00	12/15/21 15:33	1
Selenium	0.0039	J	0.0050	0.00089	mg/L		12/13/21 14:00	12/15/21 15:33	1
Thallium	0.58	J	1.0	0.20	ug/L		12/13/21 14:00	12/15/21 15:33	1

Client Sample ID: W-2
Date Collected: 12/06/21 14:55
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0	0.57	ug/L		12/13/21 14:00	12/15/21 15:36	1
Arsenic	ND		5.0	0.75	ug/L		12/13/21 14:00	12/15/21 15:36	1
Barium	0.0094		0.0050	0.0022	mg/L		12/13/21 14:00	12/15/21 15:36	1
Beryllium	ND		1.0	0.62	ug/L		12/13/21 14:00	12/15/21 15:36	1
Cadmium	0.00029	J	0.0010	0.00020	mg/L		12/13/21 14:00	12/15/21 15:36	1
Calcium	370		1.0	0.58	mg/L		12/13/21 14:00	12/15/21 15:36	1
Chromium	ND		2.0	2.5	ug/L		12/13/21 14:00	12/15/21 15:36	1
Cobalt	0.0083		0.0010	0.00019	mg/L		12/13/21 14:00	12/15/21 15:36	1
Lead	ND		1.0	0.45	ug/L		12/13/21 14:00	12/15/21 15:36	1
Lithium	0.61		0.0080	0.0017	mg/L		12/13/21 14:00	12/15/21 15:36	1
Molybdenum	0.0042	J	0.010	0.0011	mg/L		12/13/21 14:00	12/15/21 15:36	1
Selenium	0.0025	J	0.0050	0.00089	mg/L		12/13/21 14:00	12/15/21 15:36	1
Thallium	0.33	J	1.0	0.20	ug/L		12/13/21 14:00	12/15/21 15:36	1

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Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: W-3
Date Collected: 12/06/21 11:50
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0	0.57	ug/L		12/13/21 14:00	12/15/21 15:43	1
Arsenic	1.1	J	5.0	0.75	ug/L		12/13/21 14:00	12/15/21 15:43	1
Barium	0.0078		0.0050	0.0022	mg/L		12/13/21 14:00	12/15/21 15:43	1
Beryllium	ND		1.0	0.62	ug/L		12/13/21 14:00	12/15/21 15:43	1
Cadmium	0.00029	J	0.0010	0.00020	mg/L		12/13/21 14:00	12/15/21 15:43	1
Calcium	360		1.0	0.58	mg/L		12/13/21 14:00	12/15/21 15:43	1
Chromium	ND		2.0	2.5	ug/L		12/13/21 14:00	12/15/21 15:43	1
Cobalt	0.0029		0.0010	0.00019	mg/L		12/13/21 14:00	12/15/21 15:43	1
Lead	ND		1.0	0.45	ug/L		12/13/21 14:00	12/15/21 15:43	1
Lithium	1.1		0.0080	0.0017	mg/L		12/13/21 14:00	12/15/21 15:43	1
Molybdenum	0.0030	J	0.010	0.0011	mg/L		12/13/21 14:00	12/15/21 15:43	1
Selenium	0.0085		0.0050	0.00089	mg/L		12/13/21 14:00	12/15/21 15:43	1
Thallium	ND		1.0	0.20	ug/L		12/13/21 14:00	12/15/21 15:43	1

Client Sample ID: W-4
Date Collected: 12/06/21 16:15
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0	0.57	ug/L		12/13/21 14:00	12/15/21 15:46	1
Arsenic	ND		5.0	0.75	ug/L		12/13/21 14:00	12/15/21 15:46	1
Barium	0.0075		0.0050	0.0022	mg/L		12/13/21 14:00	12/15/21 15:46	1
Beryllium	ND		1.0	0.62	ug/L		12/13/21 14:00	12/15/21 15:46	1
Cadmium	ND		0.0010	0.00020	mg/L		12/13/21 14:00	12/15/21 15:46	1
Calcium	340		1.0	0.58	mg/L		12/13/21 14:00	12/15/21 15:46	1
Chromium	ND		2.0	2.5	ug/L		12/13/21 14:00	12/15/21 15:46	1
Cobalt	0.0066		0.0010	0.00019	mg/L		12/13/21 14:00	12/15/21 15:46	1
Lead	ND		1.0	0.45	ug/L		12/13/21 14:00	12/15/21 15:46	1
Lithium	0.59		0.0080	0.0017	mg/L		12/13/21 14:00	12/15/21 15:46	1
Molybdenum	0.0026	J	0.010	0.0011	mg/L		12/13/21 14:00	12/15/21 15:46	1
Selenium	ND		0.0050	0.00089	mg/L		12/13/21 14:00	12/15/21 15:46	1
Thallium	ND		1.0	0.20	ug/L		12/13/21 14:00	12/15/21 15:46	1

Client Sample ID: MW-6
Date Collected: 12/07/21 10:30
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		10	2.9	ug/L		12/13/21 14:00	12/15/21 15:48	5
Arsenic	ND		25	3.8	ug/L		12/13/21 14:00	12/15/21 15:48	5
Barium	ND		0.025	0.011	mg/L		12/13/21 14:00	12/15/21 15:48	5
Beryllium	ND		5.0	3.1	ug/L		12/13/21 14:00	12/15/21 15:48	5
Cadmium	ND		0.0050	0.00099	mg/L		12/13/21 14:00	12/15/21 15:48	5
Calcium	440		5.0	2.9	mg/L		12/13/21 14:00	12/15/21 15:48	5
Chromium	ND		10	12	ug/L		12/13/21 14:00	12/15/21 15:48	5
Cobalt	ND		0.0050	0.00095	mg/L		12/13/21 14:00	12/15/21 15:48	5
Lead	ND		5.0	2.3	ug/L		12/13/21 14:00	12/15/21 15:48	5
Lithium	0.11		0.040	0.0083	mg/L		12/13/21 14:00	12/15/21 15:48	5
Molybdenum	1.4		0.050	0.0054	mg/L		12/13/21 14:00	12/15/21 15:48	5
Selenium	0.012	J	0.025	0.0045	mg/L		12/13/21 14:00	12/15/21 15:48	5
Thallium	ND		5.0	1.0	ug/L		12/13/21 14:00	12/15/21 15:48	5

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Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Client Sample ID: MM-6EB
Date Collected: 12/07/21 10:55
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0	0.57	ug/L		12/13/21 14:00	12/15/21 15:51	1
Arsenic	ND		5.0	0.75	ug/L		12/13/21 14:00	12/15/21 15:51	1
Barium	ND		0.0050	0.0022	mg/L		12/13/21 14:00	12/15/21 15:51	1
Beryllium	ND		1.0	0.62	ug/L		12/13/21 14:00	12/15/21 15:51	1
Cadmium	ND		0.0010	0.00020	mg/L		12/13/21 14:00	12/15/21 15:51	1
Calcium	ND		1.0	0.58	mg/L		12/13/21 14:00	12/15/21 15:51	1
Chromium	ND		2.0	2.5	ug/L		12/13/21 14:00	12/15/21 15:51	1
Cobalt	ND		0.0010	0.00019	mg/L		12/13/21 14:00	12/15/21 15:51	1
Lead	ND		1.0	0.45	ug/L		12/13/21 14:00	12/15/21 15:51	1
Lithium	ND		0.0080	0.0017	mg/L		12/13/21 14:00	12/15/21 15:51	1
Molybdenum	ND		0.010	0.0011	mg/L		12/13/21 14:00	12/15/21 15:51	1
Selenium	ND		0.0050	0.00089	mg/L		12/13/21 14:00	12/15/21 15:51	1
Thallium	ND		1.0	0.20	ug/L		12/13/21 14:00	12/15/21 15:51	1

Client Sample ID: MW-7
Date Collected: 12/07/21 09:30
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		10	2.9	ug/L		12/13/21 14:00	12/15/21 15:53	5
Arsenic	ND		25	3.8	ug/L		12/13/21 14:00	12/15/21 15:53	5
Barium	ND		0.025	0.011	mg/L		12/13/21 14:00	12/15/21 15:53	5
Beryllium	ND		5.0	3.1	ug/L		12/13/21 14:00	12/15/21 15:53	5
Cadmium	ND		0.0050	0.00099	mg/L		12/13/21 14:00	12/15/21 15:53	5
Calcium	460		5.0	2.9	mg/L		12/13/21 14:00	12/15/21 15:53	5
Chromium	ND		10	12	ug/L		12/13/21 14:00	12/15/21 15:53	5
Cobalt	ND		0.0050	0.00095	mg/L		12/13/21 14:00	12/15/21 15:53	5
Lead	ND		5.0	2.3	ug/L		12/13/21 14:00	12/15/21 15:53	5
Lithium	0.25		0.040	0.0083	mg/L		12/13/21 14:00	12/15/21 15:53	5
Molybdenum	0.81		0.050	0.0054	mg/L		12/13/21 14:00	12/15/21 15:53	5
Selenium	0.0067	J	0.025	0.0045	mg/L		12/13/21 14:00	12/15/21 15:53	5
Thallium	ND		5.0	1.0	ug/L		12/13/21 14:00	12/15/21 15:53	5

Client Sample ID: MW-8
Date Collected: 12/07/21 13:15
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0	0.57	ug/L		12/13/21 14:00	12/15/21 15:56	1
Arsenic	ND		5.0	0.75	ug/L		12/13/21 14:00	12/15/21 15:56	1
Barium	0.0063		0.0050	0.0022	mg/L		12/13/21 14:00	12/15/21 15:56	1
Beryllium	ND		1.0	0.62	ug/L		12/13/21 14:00	12/15/21 15:56	1
Cadmium	ND		0.0010	0.00020	mg/L		12/13/21 14:00	12/15/21 15:56	1
Calcium	360		1.0	0.58	mg/L		12/13/21 14:00	12/15/21 15:56	1
Chromium	5.4		2.0	2.5	ug/L		12/13/21 14:00	12/15/21 15:56	1
Cobalt	0.00044	J	0.0010	0.00019	mg/L		12/13/21 14:00	12/15/21 15:56	1
Lead	ND		1.0	0.45	ug/L		12/13/21 14:00	12/15/21 15:56	1
Lithium	0.58		0.0080	0.0017	mg/L		12/13/21 14:00	12/15/21 15:56	1
Molybdenum	0.0035	J	0.010	0.0011	mg/L		12/13/21 14:00	12/15/21 15:56	1
Selenium	0.047		0.0050	0.00089	mg/L		12/13/21 14:00	12/15/21 15:56	1
Thallium	ND		1.0	0.20	ug/L		12/13/21 14:00	12/15/21 15:56	1

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Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Method: 7470A - Mercury (CVAA)

Client Sample ID: W-1
Date Collected: 12/06/21 13:20
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		12/13/21 14:00	12/13/21 15:47	1

Client Sample ID: W-1D
Date Collected: 12/06/21 13:20
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		12/13/21 14:00	12/13/21 15:56	1

Client Sample ID: W-2
Date Collected: 12/06/21 14:55
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		12/13/21 14:00	12/13/21 15:58	1

Client Sample ID: W-3
Date Collected: 12/06/21 11:50
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		12/13/21 14:00	12/13/21 16:00	1

Client Sample ID: W-4
Date Collected: 12/06/21 16:15
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		12/13/21 14:00	12/13/21 16:02	1

Client Sample ID: MW-6
Date Collected: 12/07/21 10:30
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		12/13/21 14:00	12/13/21 16:04	1

Client Sample ID: MM-6EB
Date Collected: 12/07/21 10:55
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		12/13/21 14:00	12/13/21 16:06	1

Client Sample ID: MW-7
Date Collected: 12/07/21 09:30
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		12/13/21 14:00	12/13/21 16:08	1

Client Sample ID: MW-8
Date Collected: 12/07/21 13:15
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		12/13/21 14:00	12/13/21 16:10	1

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Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

General Chemistry

Client Sample ID: W-1
Date Collected: 12/06/21 13:20
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.5	HF	0.1	0.1	SU			12/15/21 13:45	1
Temperature	21.6	HF	1.0	1.0	Degrees C			12/15/21 13:45	1
Chloride	48		3.0	1.0	mg/L			12/31/21 15:22	1
Fluoride	0.37	J	0.50	0.17	mg/L			12/31/21 15:22	1
Sulfate	2600		250	52	mg/L			12/31/21 15:37	50
Total Dissolved Solids (TDS)	4300	H	40	19	mg/L			12/14/21 09:19	1
Total Suspended Solids	ND		4.0	1.1	mg/L			12/09/21 12:35	1

Client Sample ID: W-1D
Date Collected: 12/06/21 13:20
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU			12/15/21 13:41	1
Temperature	21.0	HF	1.0	1.0	Degrees C			12/15/21 13:41	1
Chloride	49		3.0	1.0	mg/L			12/31/21 15:52	1
Fluoride	0.37	J	0.50	0.17	mg/L			12/31/21 15:52	1
Sulfate	2600		250	52	mg/L			12/31/21 16:07	50
Total Dissolved Solids (TDS)	4000	B	40	19	mg/L			12/09/21 12:26	1
Total Suspended Solids	ND		4.0	1.1	mg/L			12/09/21 12:35	1

Client Sample ID: W-2
Date Collected: 12/06/21 14:55
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU			12/15/21 13:38	1
Temperature	20.7	HF	1.0	1.0	Degrees C			12/15/21 13:38	1
Chloride	93		3.0	1.0	mg/L			12/31/21 16:22	1
Fluoride	0.57		0.50	0.17	mg/L			12/31/21 16:22	1
Sulfate	4600		250	52	mg/L			12/31/21 16:37	50
Total Dissolved Solids (TDS)	7100	B	100	47	mg/L			12/09/21 12:26	1
Total Suspended Solids	ND		4.0	1.1	mg/L			12/09/21 12:35	1

Client Sample ID: W-3
Date Collected: 12/06/21 11:50
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU			12/15/21 13:34	1
Temperature	20.6	HF	1.0	1.0	Degrees C			12/15/21 13:34	1
Chloride	230		15	5.1	mg/L			12/31/21 13:07	5
Fluoride	0.70		0.50	0.17	mg/L			12/31/21 12:52	1
Sulfate	7700		500	100	mg/L			01/03/22 13:36	100
Total Dissolved Solids (TDS)	12000	B	1000	470	mg/L			12/09/21 12:26	1
Total Suspended Solids	4.0		4.0	1.1	mg/L			12/09/21 12:35	1

Client Sample ID: W-4
Date Collected: 12/06/21 16:15
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.5	HF	0.1	0.1	SU			12/15/21 13:55	1
Temperature	22.6	HF	1.0	1.0	Degrees C			12/15/21 13:55	1

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Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

General Chemistry (Continued)

Client Sample ID: W-4
Date Collected: 12/06/21 16:15
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	350	J	600	200	mg/L			12/31/21 17:07	200
Fluoride	0.62		0.50	0.17	mg/L			12/31/21 16:52	1
Sulfate	12000		1000	210	mg/L			12/31/21 17:07	200
Total Dissolved Solids (TDS)	18000	B	1000	470	mg/L			12/09/21 12:26	1
Total Suspended Solids	1.6	J	4.0	1.1	mg/L			12/09/21 12:35	1

Client Sample ID: MW-6
Date Collected: 12/07/21 10:30
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.6	HF	0.1	0.1	SU			12/17/21 16:25	1
Temperature	20.3	HF	1.0	1.0	Degrees C			12/17/21 16:25	1
Chloride	70		3.0	1.0	mg/L			12/31/21 11:52	1
Fluoride	0.30	J	0.50	0.17	mg/L			12/31/21 11:52	1
Sulfate	3000		100	21	mg/L			01/03/22 13:51	20
Total Dissolved Solids (TDS)	4500	B	40	19	mg/L			12/14/21 09:21	1
Total Suspended Solids	ND		4.0	1.1	mg/L			12/13/21 09:16	1

Client Sample ID: MM-6EB
Date Collected: 12/07/21 10:55
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	6.1	HF	0.1	0.1	SU			12/19/21 17:26	1
Temperature	19.7	HF	1.0	1.0	Degrees C			12/19/21 17:26	1
Chloride	ND		3.0	1.0	mg/L			12/31/21 14:52	1
Fluoride	ND		0.50	0.17	mg/L			12/31/21 14:52	1
Sulfate	ND		5.0	1.0	mg/L			12/31/21 14:52	1
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			12/13/21 09:11	1
Total Suspended Solids	ND		4.0	1.1	mg/L			12/13/21 09:16	1

Client Sample ID: MW-7
Date Collected: 12/07/21 09:30
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.8	HF	0.1	0.1	SU			12/17/21 16:36	1
Temperature	20.9	HF	1.0	1.0	Degrees C			12/17/21 16:36	1
Chloride	170		3.0	1.0	mg/L			12/31/21 13:22	1
Fluoride	0.21	J	0.50	0.17	mg/L			12/31/21 13:22	1
Sulfate	3300		100	21	mg/L			01/03/22 14:06	20
Total Dissolved Solids (TDS)	5200	B	40	19	mg/L			12/13/21 09:11	1
Total Suspended Solids	ND		4.0	1.1	mg/L			12/13/21 09:16	1

Client Sample ID: MW-8
Date Collected: 12/07/21 13:15
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.5	HF	0.1	0.1	SU			12/17/21 16:33	1
Temperature	20.4	HF	1.0	1.0	Degrees C			12/17/21 16:33	1
Chloride	410		15	5.1	mg/L			12/31/21 14:07	5
Fluoride	0.24	J	0.50	0.17	mg/L			12/31/21 13:52	1

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Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

General Chemistry (Continued)

Client Sample ID: MW-8
Date Collected: 12/07/21 13:15
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	6100		500	100	mg/L			01/03/22 14:21	100
Total Dissolved Solids (TDS)	9800	B	100	47	mg/L			12/13/21 09:11	1
Total Suspended Solids	ND		4.0	1.1	mg/L			12/13/21 09:16	1

QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 240-516528/1-A
Matrix: Water
Analysis Batch: 516790

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 516528

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.057	mg/L		12/13/21 14:00	12/14/21 14:05	1

Lab Sample ID: LCS 240-516528/2-A
Matrix: Water
Analysis Batch: 516790

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 516528

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1.00	0.998		mg/L		100	80 - 120

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 240-516528/1-A
Matrix: Water
Analysis Batch: 516928

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 516528

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0	0.57	ug/L		12/13/21 14:00	12/15/21 15:14	1
Arsenic	ND		5.0	0.75	ug/L		12/13/21 14:00	12/15/21 15:14	1
Barium	ND		0.0050	0.0022	mg/L		12/13/21 14:00	12/15/21 15:14	1
Beryllium	ND		1.0	0.62	ug/L		12/13/21 14:00	12/15/21 15:14	1
Cadmium	ND		0.0010	0.00020	mg/L		12/13/21 14:00	12/15/21 15:14	1
Calcium	ND		1.0	0.58	mg/L		12/13/21 14:00	12/15/21 15:14	1
Chromium	ND		2.0	2.5	ug/L		12/13/21 14:00	12/15/21 15:14	1
Cobalt	ND		0.0010	0.00019	mg/L		12/13/21 14:00	12/15/21 15:14	1
Lead	ND		1.0	0.45	ug/L		12/13/21 14:00	12/15/21 15:14	1
Lithium	ND		0.0080	0.0017	mg/L		12/13/21 14:00	12/15/21 15:14	1
Molybdenum	ND		0.010	0.0011	mg/L		12/13/21 14:00	12/15/21 15:14	1
Selenium	ND		0.0050	0.00089	mg/L		12/13/21 14:00	12/15/21 15:14	1
Thallium	ND		1.0	0.20	ug/L		12/13/21 14:00	12/15/21 15:14	1

Lab Sample ID: LCS 240-516528/3-A
Matrix: Water
Analysis Batch: 516928

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 516528

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	100	97.7		ug/L		98	80 - 120
Arsenic	1000	951		ug/L		95	80 - 120
Barium	1.00	0.943		mg/L		94	80 - 120
Beryllium	500	472		ug/L		94	80 - 120
Cadmium	0.500	0.460		mg/L		92	80 - 120
Calcium	25.0	25.0		mg/L		100	80 - 120
Chromium	500	466		ug/L		93	80 - 120
Cobalt	0.500	0.471		mg/L		94	80 - 120
Lead	500	484		ug/L		97	80 - 120
Lithium	0.500	0.472		mg/L		94	80 - 120
Molybdenum	0.500	0.456		mg/L		91	80 - 120
Selenium	1.00	0.899		mg/L		90	80 - 120
Thallium	1000	938		ug/L		94	80 - 120

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QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: 280-156573-1 MS

Matrix: Water

Analysis Batch: 516928

Client Sample ID: W-1

Prep Type: Total Recoverable

Prep Batch: 516528

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	ND		100	95.8		ug/L		96	75 - 125
Arsenic	ND		1000	970		ug/L		97	75 - 125
Barium	0.0096		1.00	0.904		mg/L		89	75 - 125
Beryllium	ND		500	442		ug/L		88	75 - 125
Cadmium	ND		0.500	0.432		mg/L		86	75 - 125
Calcium	330		25.0	323	4	mg/L		-43	75 - 125
Chromium	ND		500	425		ug/L		85	75 - 125
Cobalt	0.0010		0.500	0.464		mg/L		93	75 - 125
Lead	ND		500	449		ug/L		90	75 - 125
Lithium	0.27		0.500	0.667		mg/L		80	75 - 125
Molybdenum	0.0033	J	0.500	0.461		mg/L		92	75 - 125
Selenium	0.0038	J	1.00	0.895		mg/L		89	75 - 125
Thallium	ND		1000	874		ug/L		87	75 - 125

Lab Sample ID: 280-156573-1 MSD

Matrix: Water

Analysis Batch: 516928

Client Sample ID: W-1

Prep Type: Total Recoverable

Prep Batch: 516528

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	ND		100	101		ug/L		101	75 - 125	6	20
Arsenic	ND		1000	996		ug/L		100	75 - 125	3	20
Barium	0.0096		1.00	0.935		mg/L		93	75 - 125	3	20
Beryllium	ND		500	445		ug/L		89	75 - 125	1	20
Cadmium	ND		0.500	0.439		mg/L		88	75 - 125	2	20
Calcium	330		25.0	333	4	mg/L		-2	75 - 125	3	20
Chromium	ND		500	441		ug/L		88	75 - 125	4	20
Cobalt	0.0010		0.500	0.485		mg/L		97	75 - 125	4	20
Lead	ND		500	458		ug/L		92	75 - 125	2	20
Lithium	0.27		0.500	0.682		mg/L		83	75 - 125	2	20
Molybdenum	0.0033	J	0.500	0.482		mg/L		96	75 - 125	4	20
Selenium	0.0038	J	1.00	0.920		mg/L		92	75 - 125	3	20
Thallium	ND		1000	888		ug/L		89	75 - 125	1	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 240-516531/1-A

Matrix: Water

Analysis Batch: 516656

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 516531

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.20	0.13	ug/L		12/13/21 14:00	12/13/21 15:34	1

Lab Sample ID: LCS 240-516531/2-A

Matrix: Water

Analysis Batch: 516656

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 516531

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	5.03		ug/L		101	80 - 120

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QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Method: 9040B - pH

Lab Sample ID: LCS 280-560808/27

Matrix: Water

Analysis Batch: 560808

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Lab Sample ID: LCS 280-561159/27

Matrix: Water

Analysis Batch: 561159

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		101	99 - 101

Lab Sample ID: 280-156573-6 DU

Matrix: Water

Analysis Batch: 561159

Client Sample ID: MW-6

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH adj. to 25 deg C	8.6	HF	8.6		SU		0.1	5
Temperature	20.3	HF	20.2		Degrees C		0.1	10

Lab Sample ID: LCS 280-561205/4

Matrix: Water

Analysis Batch: 561205

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-562217/13

Matrix: Water

Analysis Batch: 562217

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	1.0	mg/L			12/30/21 17:51	1
Fluoride	ND		0.50	0.17	mg/L			12/30/21 17:51	1
Sulfate	ND		5.0	1.0	mg/L			12/30/21 17:51	1

Lab Sample ID: LCS 280-562217/11

Matrix: Water

Analysis Batch: 562217

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	100	100		mg/L		100	90 - 110
Fluoride	5.00	4.84		mg/L		97	90 - 110
Sulfate	100	101		mg/L		101	90 - 110

Lab Sample ID: LCSD 280-562217/12

Matrix: Water

Analysis Batch: 562217

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	100	100		mg/L		100	90 - 110	0	10

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QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCSD 280-562217/12

Matrix: Water

Analysis Batch: 562217

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride	5.00	4.84		mg/L		97	90 - 110	0	10
Sulfate	100	101		mg/L		101	90 - 110	0	10

Lab Sample ID: MRL 280-562217/10

Matrix: Water

Analysis Batch: 562217

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	5.00	4.77		mg/L		95	50 - 150		
Fluoride	0.500	0.464	J	mg/L		93	50 - 150		
Sulfate	5.00	4.49	J	mg/L		90	50 - 150		

Lab Sample ID: 280-156573-6 MS

Matrix: Water

Analysis Batch: 562217

Client Sample ID: MW-6

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	70		50.0	123		mg/L		106	80 - 120		
Fluoride	0.30	J	5.00	4.51		mg/L		84	80 - 120		

Lab Sample ID: 280-156573-6 MSD

Matrix: Water

Analysis Batch: 562217

Client Sample ID: MW-6

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	70		50.0	124		mg/L		108	80 - 120	1	20
Fluoride	0.30	J	5.00	4.58		mg/L		86	80 - 120	2	20

Lab Sample ID: 280-156573-6 DU

Matrix: Water

Analysis Batch: 562217

Client Sample ID: MW-6

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	DU Result	DU Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	70		50.0	69.4		mg/L				0.9	15
Fluoride	0.30	J	5.00	0.298	J	mg/L				0.08	15

Lab Sample ID: MB 280-562337/6

Matrix: Water

Analysis Batch: 562337

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		5.0	1.0	mg/L			01/03/22 11:31	1

Lab Sample ID: LCS 280-562337/4

Matrix: Water

Analysis Batch: 562337

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	100	98.1		mg/L		98	90 - 110		

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QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCSD 280-562337/5

Matrix: Water

Analysis Batch: 562337

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	100	98.4		mg/L		98	90 - 110	0	10

Lab Sample ID: MRL 280-562337/3

Matrix: Water

Analysis Batch: 562337

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate	5.00	4.71	J	mg/L		94	50 - 150		

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 280-560153/1

Matrix: Water

Analysis Batch: 560153

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	11.0		10	4.7	mg/L			12/09/21 12:26	1

Lab Sample ID: LCS 280-560153/2

Matrix: Water

Analysis Batch: 560153

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids (TDS)	523	533		mg/L		102	88 - 114		

Lab Sample ID: MB 280-560426/1

Matrix: Water

Analysis Batch: 560426

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	13.0		10	4.7	mg/L			12/13/21 09:11	1

Lab Sample ID: LCS 280-560426/2

Matrix: Water

Analysis Batch: 560426

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids (TDS)	507	514		mg/L		101	88 - 114		

Lab Sample ID: MB 280-560558/1

Matrix: Water

Analysis Batch: 560558

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			12/14/21 08:19	1

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QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: LCS 280-560558/2
Matrix: Water
Analysis Batch: 560558

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	507	505		mg/L		100	88 - 114

Lab Sample ID: LCSD 280-560558/3
Matrix: Water
Analysis Batch: 560558

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Dissolved Solids (TDS)	507	507		mg/L		100	88 - 114	0	20

Lab Sample ID: MB 280-560559/1
Matrix: Water
Analysis Batch: 560559

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	28.0		10	4.7	mg/L			12/14/21 08:21	1

Lab Sample ID: LCS 280-560559/2
Matrix: Water
Analysis Batch: 560559

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids (TDS)	507	506		mg/L		100	88 - 114

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 280-560157/1
Matrix: Water
Analysis Batch: 560157

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			12/09/21 12:35	1

Lab Sample ID: LCS 280-560157/2
Matrix: Water
Analysis Batch: 560157

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	91.2		mg/L		91	79 - 114

Lab Sample ID: MB 280-560430/1
Matrix: Water
Analysis Batch: 560430

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			12/13/21 09:16	1

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QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Method: SM 2540D - Solids, Total Suspended (TSS) (Continued)

Lab Sample ID: LCS 280-560430/2

Matrix: Water

Analysis Batch: 560430

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	100	84.8		mg/L		85	79 - 114

Lab Sample ID: LCSD 280-560430/3

Matrix: Water

Analysis Batch: 560430

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Suspended Solids	100	83.2		mg/L		83	79 - 114	2	20

Lab Sample ID: 280-156573-9 DU

Matrix: Water

Analysis Batch: 560430

Client Sample ID: MW-8

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	ND		ND		mg/L		NC	10

QC Association Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Metals

Prep Batch: 516528

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-156573-1	W-1	Total Recoverable	Water	3005A	
280-156573-2	W-1D	Total Recoverable	Water	3005A	
280-156573-3	W-2	Total Recoverable	Water	3005A	
280-156573-4	W-3	Total Recoverable	Water	3005A	
280-156573-5	W-4	Total Recoverable	Water	3005A	
280-156573-6	MW-6	Total Recoverable	Water	3005A	
280-156573-7	MM-6EB	Total Recoverable	Water	3005A	
280-156573-8	MW-7	Total Recoverable	Water	3005A	
280-156573-9	MW-8	Total Recoverable	Water	3005A	
MB 240-516528/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-516528/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
LCS 240-516528/3-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-156573-1 MS	W-1	Total Recoverable	Water	3005A	
280-156573-1 MSD	W-1	Total Recoverable	Water	3005A	

Prep Batch: 516531

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-156573-1	W-1	Total/NA	Water	7470A	
280-156573-2	W-1D	Total/NA	Water	7470A	
280-156573-3	W-2	Total/NA	Water	7470A	
280-156573-4	W-3	Total/NA	Water	7470A	
280-156573-5	W-4	Total/NA	Water	7470A	
280-156573-6	MW-6	Total/NA	Water	7470A	
280-156573-7	MM-6EB	Total/NA	Water	7470A	
280-156573-8	MW-7	Total/NA	Water	7470A	
280-156573-9	MW-8	Total/NA	Water	7470A	
MB 240-516531/1-A	Method Blank	Total/NA	Water	7470A	
LCS 240-516531/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 516656

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-156573-1	W-1	Total/NA	Water	7470A	516531
280-156573-2	W-1D	Total/NA	Water	7470A	516531
280-156573-3	W-2	Total/NA	Water	7470A	516531
280-156573-4	W-3	Total/NA	Water	7470A	516531
280-156573-5	W-4	Total/NA	Water	7470A	516531
280-156573-6	MW-6	Total/NA	Water	7470A	516531
280-156573-7	MM-6EB	Total/NA	Water	7470A	516531
280-156573-8	MW-7	Total/NA	Water	7470A	516531
280-156573-9	MW-8	Total/NA	Water	7470A	516531
MB 240-516531/1-A	Method Blank	Total/NA	Water	7470A	516531
LCS 240-516531/2-A	Lab Control Sample	Total/NA	Water	7470A	516531

Analysis Batch: 516790

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-156573-1	W-1	Total Recoverable	Water	6010C	516528
280-156573-2	W-1D	Total Recoverable	Water	6010C	516528
280-156573-3	W-2	Total Recoverable	Water	6010C	516528
280-156573-4	W-3	Total Recoverable	Water	6010C	516528
280-156573-5	W-4	Total Recoverable	Water	6010C	516528
280-156573-6	MW-6	Total Recoverable	Water	6010C	516528

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QC Association Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Metals (Continued)

Analysis Batch: 516790 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-156573-7	MM-6EB	Total Recoverable	Water	6010C	516528
280-156573-8	MW-7	Total Recoverable	Water	6010C	516528
280-156573-9	MW-8	Total Recoverable	Water	6010C	516528
MB 240-516528/1-A	Method Blank	Total Recoverable	Water	6010C	516528
LCS 240-516528/2-A	Lab Control Sample	Total Recoverable	Water	6010C	516528

Analysis Batch: 516928

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-156573-1	W-1	Total Recoverable	Water	6020A	516528
280-156573-2	W-1D	Total Recoverable	Water	6020A	516528
280-156573-3	W-2	Total Recoverable	Water	6020A	516528
280-156573-4	W-3	Total Recoverable	Water	6020A	516528
280-156573-5	W-4	Total Recoverable	Water	6020A	516528
280-156573-6	MW-6	Total Recoverable	Water	6020A	516528
280-156573-7	MM-6EB	Total Recoverable	Water	6020A	516528
280-156573-8	MW-7	Total Recoverable	Water	6020A	516528
280-156573-9	MW-8	Total Recoverable	Water	6020A	516528
MB 240-516528/1-A	Method Blank	Total Recoverable	Water	6020A	516528
LCS 240-516528/3-A	Lab Control Sample	Total Recoverable	Water	6020A	516528
280-156573-1 MS	W-1	Total Recoverable	Water	6020A	516528
280-156573-1 MSD	W-1	Total Recoverable	Water	6020A	516528

General Chemistry

Analysis Batch: 560153

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-156573-2	W-1D	Total/NA	Water	SM 2540C	
280-156573-3	W-2	Total/NA	Water	SM 2540C	
280-156573-4	W-3	Total/NA	Water	SM 2540C	
280-156573-5	W-4	Total/NA	Water	SM 2540C	
MB 280-560153/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-560153/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 560157

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-156573-1	W-1	Total/NA	Water	SM 2540D	
280-156573-2	W-1D	Total/NA	Water	SM 2540D	
280-156573-3	W-2	Total/NA	Water	SM 2540D	
280-156573-4	W-3	Total/NA	Water	SM 2540D	
280-156573-5	W-4	Total/NA	Water	SM 2540D	
MB 280-560157/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-560157/2	Lab Control Sample	Total/NA	Water	SM 2540D	

Analysis Batch: 560426

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-156573-7	MM-6EB	Total/NA	Water	SM 2540C	
280-156573-8	MW-7	Total/NA	Water	SM 2540C	
280-156573-9	MW-8	Total/NA	Water	SM 2540C	
MB 280-560426/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-560426/2	Lab Control Sample	Total/NA	Water	SM 2540C	

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QC Association Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

General Chemistry

Analysis Batch: 560430

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-156573-6	MW-6	Total/NA	Water	SM 2540D	
280-156573-7	MM-6EB	Total/NA	Water	SM 2540D	
280-156573-8	MW-7	Total/NA	Water	SM 2540D	
280-156573-9	MW-8	Total/NA	Water	SM 2540D	
MB 280-560430/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-560430/2	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-560430/3	Lab Control Sample Dup	Total/NA	Water	SM 2540D	
280-156573-9 DU	MW-8	Total/NA	Water	SM 2540D	

Analysis Batch: 560558

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-156573-1	W-1	Total/NA	Water	SM 2540C	
MB 280-560558/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-560558/2	Lab Control Sample	Total/NA	Water	SM 2540C	
LCSD 280-560558/3	Lab Control Sample Dup	Total/NA	Water	SM 2540C	

Analysis Batch: 560559

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-156573-6	MW-6	Total/NA	Water	SM 2540C	
MB 280-560559/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 280-560559/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 560808

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-156573-1	W-1	Total/NA	Water	9040B	
280-156573-2	W-1D	Total/NA	Water	9040B	
280-156573-3	W-2	Total/NA	Water	9040B	
280-156573-4	W-3	Total/NA	Water	9040B	
280-156573-5	W-4	Total/NA	Water	9040B	
LCS 280-560808/27	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 561159

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-156573-6	MW-6	Total/NA	Water	9040B	
280-156573-8	MW-7	Total/NA	Water	9040B	
280-156573-9	MW-8	Total/NA	Water	9040B	
LCS 280-561159/27	Lab Control Sample	Total/NA	Water	9040B	
280-156573-6 DU	MW-6	Total/NA	Water	9040B	

Analysis Batch: 561205

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-156573-7	MM-6EB	Total/NA	Water	9040B	
LCS 280-561205/4	Lab Control Sample	Total/NA	Water	9040B	

Analysis Batch: 562217

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-156573-1	W-1	Total/NA	Water	9056A	
280-156573-1	W-1	Total/NA	Water	9056A	
280-156573-2	W-1D	Total/NA	Water	9056A	
280-156573-2	W-1D	Total/NA	Water	9056A	
280-156573-3	W-2	Total/NA	Water	9056A	

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QC Association Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

General Chemistry (Continued)

Analysis Batch: 562217 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-156573-3	W-2	Total/NA	Water	9056A	
280-156573-4	W-3	Total/NA	Water	9056A	
280-156573-4	W-3	Total/NA	Water	9056A	
280-156573-5	W-4	Total/NA	Water	9056A	
280-156573-5	W-4	Total/NA	Water	9056A	
280-156573-6	MW-6	Total/NA	Water	9056A	
280-156573-7	MM-6EB	Total/NA	Water	9056A	
280-156573-8	MW-7	Total/NA	Water	9056A	
280-156573-9	MW-8	Total/NA	Water	9056A	
280-156573-9	MW-8	Total/NA	Water	9056A	
MB 280-562217/13	Method Blank	Total/NA	Water	9056A	
LCS 280-562217/11	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-562217/12	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-562217/10	Lab Control Sample	Total/NA	Water	9056A	
280-156573-6 MS	MW-6	Total/NA	Water	9056A	
280-156573-6 MSD	MW-6	Total/NA	Water	9056A	
280-156573-6 DU	MW-6	Total/NA	Water	9056A	

Analysis Batch: 562337

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-156573-4	W-3	Total/NA	Water	9056A	
280-156573-6	MW-6	Total/NA	Water	9056A	
280-156573-8	MW-7	Total/NA	Water	9056A	
280-156573-9	MW-8	Total/NA	Water	9056A	
MB 280-562337/6	Method Blank	Total/NA	Water	9056A	
LCS 280-562337/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-562337/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-562337/3	Lab Control Sample	Total/NA	Water	9056A	

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Client Sample ID: W-1

Lab Sample ID: 280-156573-1

Date Collected: 12/06/21 13:20

Matrix: Water

Date Received: 12/08/21 13:29

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	516528	12/13/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6010C		1			516790	12/14/21 12:31	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	516528	12/13/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6020A		1			516928	12/15/21 15:21	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	516531	12/13/21 14:00	SHB	TAL CAN
Total/NA	Analysis	7470A		1			516656	12/13/21 15:47	MRL	TAL CAN
Total/NA	Analysis	9040B		1			560808	12/15/21 13:45	ECC	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	562217	12/31/21 15:22	SPG	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	562217	12/31/21 15:37	SPG	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	560558	12/14/21 09:19	ABW	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	560157	12/09/21 12:35	ABW	TAL DEN

Client Sample ID: W-1D

Lab Sample ID: 280-156573-2

Date Collected: 12/06/21 13:20

Matrix: Water

Date Received: 12/08/21 13:29

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	516528	12/13/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6010C		1			516790	12/14/21 12:40	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	516528	12/13/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6020A		1			516928	12/15/21 15:33	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	516531	12/13/21 14:00	SHB	TAL CAN
Total/NA	Analysis	7470A		1			516656	12/13/21 15:56	MRL	TAL CAN
Total/NA	Analysis	9040B		1			560808	12/15/21 13:41	ECC	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	562217	12/31/21 15:52	SPG	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	562217	12/31/21 16:07	SPG	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	560153	12/09/21 12:26	ABW	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	560157	12/09/21 12:35	ABW	TAL DEN

Client Sample ID: W-2

Lab Sample ID: 280-156573-3

Date Collected: 12/06/21 14:55

Matrix: Water

Date Received: 12/08/21 13:29

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	516528	12/13/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6010C		1			516790	12/14/21 12:45	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	516528	12/13/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6020A		1			516928	12/15/21 15:36	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	516531	12/13/21 14:00	SHB	TAL CAN
Total/NA	Analysis	7470A		1			516656	12/13/21 15:58	MRL	TAL CAN
Total/NA	Analysis	9040B		1			560808	12/15/21 13:38	ECC	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	562217	12/31/21 16:22	SPG	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	562217	12/31/21 16:37	SPG	TAL DEN

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Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Client Sample ID: W-2

Date Collected: 12/06/21 14:55

Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	560153	12/09/21 12:26	ABW	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	560157	12/09/21 12:35	ABW	TAL DEN

Client Sample ID: W-3

Date Collected: 12/06/21 11:50

Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	516528	12/13/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6010C		1			516790	12/14/21 12:49	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	516528	12/13/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6020A		1			516928	12/15/21 15:43	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	516531	12/13/21 14:00	SHB	TAL CAN
Total/NA	Analysis	7470A		1			516656	12/13/21 16:00	MRL	TAL CAN
Total/NA	Analysis	9040B		1			560808	12/15/21 13:34	ECC	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	562217	12/31/21 12:52	SPG	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	562217	12/31/21 13:07	SPG	TAL DEN
Total/NA	Analysis	9056A		100	10 mL	10 mL	562337	01/03/22 13:36	SPG	TAL DEN
Total/NA	Analysis	SM 2540C		1	1 mL	100 mL	560153	12/09/21 12:26	ABW	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	560157	12/09/21 12:35	ABW	TAL DEN

Client Sample ID: W-4

Date Collected: 12/06/21 16:15

Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	516528	12/13/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6010C		1			516790	12/14/21 12:54	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	516528	12/13/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6020A		1			516928	12/15/21 15:46	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	516531	12/13/21 14:00	SHB	TAL CAN
Total/NA	Analysis	7470A		1			516656	12/13/21 16:02	MRL	TAL CAN
Total/NA	Analysis	9040B		1			560808	12/15/21 13:55	ECC	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	562217	12/31/21 16:52	SPG	TAL DEN
Total/NA	Analysis	9056A		200	5 mL	5 mL	562217	12/31/21 17:07	SPG	TAL DEN
Total/NA	Analysis	SM 2540C		1	1 mL	100 mL	560153	12/09/21 12:26	ABW	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	560157	12/09/21 12:35	ABW	TAL DEN

Eurofins Denver

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Client Sample ID: MW-6

Date Collected: 12/07/21 10:30

Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	516528	12/13/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6010C		5			516790	12/14/21 15:31	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	516528	12/13/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6020A		5			516928	12/15/21 15:48	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	516531	12/13/21 14:00	SHB	TAL CAN
Total/NA	Analysis	7470A		1			516656	12/13/21 16:04	MRL	TAL CAN
Total/NA	Analysis	9040B		1			561159	12/17/21 16:25	ECC	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	562217	12/31/21 11:52	SPG	TAL DEN
Total/NA	Analysis	9056A		20	10 mL	10 mL	562337	01/03/22 13:51	SPG	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	560559	12/14/21 09:21	ABW	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	560430	12/13/21 09:16	ABW	TAL DEN

Client Sample ID: MM-6EB

Date Collected: 12/07/21 10:55

Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	516528	12/13/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6010C		1			516790	12/14/21 13:12	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	516528	12/13/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6020A		1			516928	12/15/21 15:51	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	516531	12/13/21 14:00	SHB	TAL CAN
Total/NA	Analysis	7470A		1			516656	12/13/21 16:06	MRL	TAL CAN
Total/NA	Analysis	9040B		1			561205	12/19/21 17:26	SPG	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	562217	12/31/21 14:52	SPG	TAL DEN
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	560426	12/13/21 09:11	ABW	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	560430	12/13/21 09:16	ABW	TAL DEN

Client Sample ID: MW-7

Date Collected: 12/07/21 09:30

Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	516528	12/13/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6010C		5			516790	12/14/21 15:36	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	516528	12/13/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6020A		5			516928	12/15/21 15:53	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	516531	12/13/21 14:00	SHB	TAL CAN
Total/NA	Analysis	7470A		1			516656	12/13/21 16:08	MRL	TAL CAN
Total/NA	Analysis	9040B		1			561159	12/17/21 16:36	ECC	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	562217	12/31/21 13:22	SPG	TAL DEN
Total/NA	Analysis	9056A		20	10 mL	10 mL	562337	01/03/22 14:06	SPG	TAL DEN
Total/NA	Analysis	SM 2540C		1	25 mL	100 mL	560426	12/13/21 09:11	ABW	TAL DEN

Eurofins Denver

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Client Sample ID: MW-7

Date Collected: 12/07/21 09:30

Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	560430	12/13/21 09:16	ABW	TAL DEN

Client Sample ID: MW-8

Date Collected: 12/07/21 13:15

Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	516528	12/13/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6010C		1			516790	12/14/21 13:21	RKT	TAL CAN
Total Recoverable	Prep	3005A			50 mL	50 mL	516528	12/13/21 14:00	SHB	TAL CAN
Total Recoverable	Analysis	6020A		1			516928	12/15/21 15:56	DSH	TAL CAN
Total/NA	Prep	7470A			50 mL	50 mL	516531	12/13/21 14:00	SHB	TAL CAN
Total/NA	Analysis	7470A		1			516656	12/13/21 16:10	MRL	TAL CAN
Total/NA	Analysis	9040B		1			561159	12/17/21 16:33	ECC	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	562217	12/31/21 13:52	SPG	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	562217	12/31/21 14:07	SPG	TAL DEN
Total/NA	Analysis	9056A		100	10 mL	10 mL	562337	01/03/22 14:21	SPG	TAL DEN
Total/NA	Analysis	SM 2540C		1	10 mL	100 mL	560426	12/13/21 09:11	ABW	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	560430	12/13/21 09:16	ABW	TAL DEN

Laboratory References:

TAL CAN = Eurofins Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Accreditation/Certification Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-1

Laboratory: Eurofins Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
9040B		Water	Temperature

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-22
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	12-31-21
Georgia	State	4062	02-23-22
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kansas	NELAP	E-10336	04-30-22
Kentucky (UST)	State	112225	02-23-22
Kentucky (WW)	State	KY98016	12-31-21
Minnesota	NELAP	039-999-348	12-27-21
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	11-06-22
New York	NELAP	10975	03-31-22
Ohio VAP	State	CL0024	12-21-23
Oregon	NELAP	4062	02-23-22
Pennsylvania	NELAP	68-00340	08-31-22
Texas	NELAP	T104704517-21-14	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-22
West Virginia DEP	State	210	12-21-21

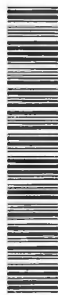
Client Information		Sample		Lab PM:		Carrier Tracking No(s):	
Client Contact: Molly Reeves HDR Inc		Phone: 720 933 7496		Bandy, Darlene F E-Mail: Darlene.Bandy@Eurofinset.com		COC No: Page: Page 1 of 1 Job #:	
Address: 1670 Broadway, Suite 3400 City: Denver State, Zip: CO, 80202 Phone: 734-263-7138(Tel) Email: Molly.Reeves@hdrinc.com Project Name: Xcel Energy GW Monitoring - Hayden Site: Colorado		Due Date Requested: TAT Requested (days): 54 TAT PO #: DEN-018 WO #: Project #: 28014377 SSOW#:		Analysis Requested		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4.5 Z - other (specify)	
Sample Identification		Sample Date		Sample Time		Sample Type (C=Comp, G=grab)	
HQ W-1		12-06-21		1320		G	
HQ W-1D		12-06-21		1320		G	
HQ W-2		12-06-21		1455		G	
HQ W-3		12-07-21		1150		G	
HQ W-4		12-06-21		1615		G	
MW-6		12-07-21		1030		G	
MW-6EB		12-07-21		1055		G	
MW-7		12-07-21		0930		G	
MW-8		12-07-21		1315		G	
Possible Hazard Identification		☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological		☐ Return To Client ☒ Disposal By Lab ☐ Archive For		Months	
Deliverable Requested: I, II, III, IV, Other (specify)		Date:		Time:		Method of Shipment:	
Relinquished by: Tara Kent		Date/Time: 12-08-2021 1329		Company: HDR		Received by: Date/Time: 12/08/2021 1329 Company: EMAN	
Relinquished by:		Date/Time:		Company:		Received by:	
Relinquished by:		Date/Time:		Company:		Received by:	
Custody Seals Intact: ☐ Yes ☐ No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:			

4/15

Chain of Custody Record



Environment Testing
America



Client Information (Sub Contract Lab)				Sampler: Lab PM: Harrington, Danielle M Phone: E-Mail: Danielle Harrington@Eurofinset.com State of Origin: Colorado		Carrier Tracking No(s): 280-597303.1 Page 1 of 1	
Company: TestAmerica Laboratories, Inc. Address: 14101 Shuffel Street NW, North Canton, OH, 44720 Phone: 330-497-9396(Tel) 330-497-0772(Fax) Email:				Job #: 280-156573-1 Preservation Codes: A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, Other:		COC No: 280-597303.1 Page 1 of 1	
Due Date Requested: 1/10/2022 TAT Requested (days):				Analysis Requested			
PO # WO # Project # 28014377 SOW#				Field Filtered Sample (Yes or No) ☒ Perform MS/MSD (Yes or No) ☒ 6020A/3005A (MOD) 13 Total Metals (w/collision cell) ☒ 6010C/3005A (MOD) Boron ☒ 7470A/7470A Prep Mercury ☒			
Sample Identification - Client ID (Lab ID)				Special Instructions/Note:			
WW-1 (280-156573-1) WW-1D (280-156573-2) WW-2 (280-156573-3) WW-3 (280-156573-4) WW-4 (280-156573-5) MW-6 (280-156573-6) MM-6EB (280-156573-7) MW-7 (280-156573-8) MW-8 (280-156573-9)				Total Number of Containers: 1 Use Collision Cell Use Collision Cell Use Collision Cell Use Collision Cell Use Collision Cell Use Collision Cell Use Collision Cell Use Collision Cell Use Collision Cell			
Sample Date Sample Time Sample Type (C=comp, G=grab) Matrix (W=water, S=solid, O=other) Preservation Code:				12/6/21 13:20 Mountain Water 12/6/21 13:20 Mountain Water 12/6/21 14:55 Mountain Water 12/6/21 11:50 Mountain Water 12/6/21 16:15 Mountain Water 12/7/21 10:30 Mountain Water 12/7/21 10:55 Mountain Water 12/7/21 09:30 Mountain Water 12/7/21 13:15 Mountain Water			
Note: Since laboratory accreditation is subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica							
Possible Hazard Identification Unconfirmed Deliverable Requested: I, II, III, IV, Other (specify)				Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months			
Empty Kit Relinquished by: _____ Relinquished by: _____ Relinquished by: _____ Relinquished by: _____				Date: _____ Date/Time: _____ Date/Time: _____ Date/Time: _____			
Custody Seal No.: _____ Δ Yes Δ No				Cooler Temperature(s) °C and Other Remarks:			

Eurofins TestAmerica Canton Sample Receipt Form/Narrative				Login # : _____	
Canton Facility					
Client <u>ETA Denver</u>		Site Name _____		Cooler unpacked by: <u>Adam J. Smith</u>	
Cooler Received on <u>12-10-21</u>		Opened on <u>12-10-21</u>			
FedEx: 1 st Grd <u>Exp</u> UPS FAS Clipper		Client Drop Off		TestAmerica Courier Other _____	
Receipt After-hours: Drop-off Date/Time _____			Storage Location _____		
TestAmerica Cooler # <u>NA</u>		Foam Box	Client Cooler	Box	Other _____
Packing material used: Bubble Wrap		Foam	Plastic Bag	None	Other _____
COOLANT: Wet Ice		Blue Ice	Dry Ice	Water	None
1. Cooler temperature upon receipt ☐ See Multiple Cooler Form					
IR GUN# IR-14 (CF +0.1 °C)		Observed Cooler Temp. <u>1-4</u> °C		Corrected Cooler Temp. _____ °C	
IR GUN #IR-15 (CF +0.2°C)		Observed Cooler Temp. _____ °C		Corrected Cooler Temp. _____ °C	
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity <u>1</u>					
-Were the seals on the outside of the cooler(s) signed & dated?				<u>Yes</u>	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?				<u>Yes</u>	No NA
-Were tamper/custody seals intact and uncompromised?				<u>Yes</u>	No NA
3. Shippers' packing slip attached to the cooler(s)? <u>Yes</u> No					
4. Did custody papers accompany the sample(s)? <u>Yes</u> No					
5. Were the custody papers relinquished & signed in the appropriate place? <u>Yes</u> No					
6. Was/were the person(s) who collected the samples clearly identified on the COC? <u>Yes</u> No					
7. Did all bottles arrive in good condition (Unbroken)? <u>Yes</u> No					
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? <u>Yes</u> No					
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?					
10. Were correct bottle(s) used for the test(s) indicated? <u>Yes</u> No					
11. Sufficient quantity received to perform indicated analyses? <u>Yes</u> No					
12. Are these work share samples and all listed on the COC? <u>Yes</u> No					
If yes, Questions 13-17 have been checked at the originating laboratory.					
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# <u>HC157842</u>					
14. Were VOAs on the COC? Yes No					
15. Were air bubbles >6 mm in any VOA vials? <u>Yes</u>  Larger than this. Yes No NA					
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No					
17. Was a LL Hg or Me Hg trip blank present? _____ Yes No					
Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____					
Concerning _____					

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page		Samples processed by: _____
19. SAMPLE CONDITION		
Sample(s) _____ were received after the recommended holding time had expired.		
Sample(s) _____ were received in a broken container.		
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)		
20. SAMPLE PRESERVATION		
Sample(s) _____ were further preserved in the laboratory.		
Time preserved: _____ Preservative(s) added/Lot number(s): _____		
VOA Sample Preservation - Date/Time VOAs Frozen: _____		

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13**
- 14

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-156573-1

Login Number: 156573

List Number: 1

Creator: Rystrom, Joshua R

List Source: Eurofins Denver

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

ANALYTICAL REPORT

Eurofins Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

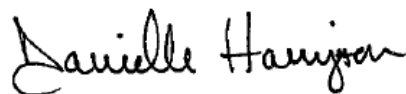
Laboratory Job ID: 280-156573-2

Client Project/Site: Xcel Energy GW CCR Monitoring - Hayden

For:

HDR Inc
1670 Broadway
Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves



Authorized for release by:
1/26/2022 11:16:18 AM

Danielle Harrington, Project Manager II
(303)736-0176

Danielle.Harrington@Eurofinset.com

LINKS

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

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

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

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Definitions/Glossary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
X	Carrier is outside acceptance limits.

Glossary

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

Case Narrative

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-2

Job ID: 280-156573-2

Laboratory: Eurofins Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Hayden

Report Number: 280-156573-2

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 12/08/2021; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt were 0.9°C, 1.0°C and 2.0°C.

Please note: The container labels list MW-6EB, while the chain of custody (COC) lists MM-6EB. There are also no dates/times on the containers. Samples were logged per information listed on COC.

This report only contains the radioactive analyses. All other results are under login 280-156573-1.

RADIUM-226 (GFPC)- METHOD 9315

Method 9315_Ra226: The LCS associated with the following samples in Ra-226 batch 160-543509 had conflicting spike/carrier recoveries: W-1 (280-156573-1), W-1D (280-156573-2), W-2 (280-156573-3), W-3 (280-156573-4), W-4 (280-156573-5), MW-6 (280-156573-6), MM-6EB (280-156573-7), MW-7 (280-156573-8) and MW-8 (280-156573-9); therefore, the planchet was pulled to reweigh for verification. The following results were found upon review: Original Barium gross weight for LCS: 8.9530gReweigh on 1/19/2022 of Barium gross weight for LCS: 8.9458gNew Barium yield: 24%

Method 9315_Ra226: Radium 226 batch 543509The Barium carrier recovery is outside acceptance limit for the laboratory control sample (LCS). The LCS spike recoveries are within control limits, which demonstrates acceptable sample preparation and instrument performance. As such, this was an apparent anomaly in the sample preparation, isolated to the LCS, which is not indicative of the entire batch. (LCS 160-543509/1-A)

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

RADIUM-228- METHOD 9320

Radium-228 was detected in method blank MB 160-543511/23-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

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

RADIUM-226/RADIUM-228 (GFPC)

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

Case Narrative

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-2

Job ID: 280-156573-2 (Continued)

Laboratory: Eurofins Denver (Continued)

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Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-2

Client Sample ID: W-1

Lab Sample ID: 280-156573-1

☐ No Detections.

Client Sample ID: W-1D

Lab Sample ID: 280-156573-2

☐ No Detections.

Client Sample ID: W-2

Lab Sample ID: 280-156573-3

☐ No Detections.

Client Sample ID: W-3

Lab Sample ID: 280-156573-4

☐ No Detections.

Client Sample ID: W-4

Lab Sample ID: 280-156573-5

☐ No Detections.

Client Sample ID: MW-6

Lab Sample ID: 280-156573-6

☐ No Detections.

Client Sample ID: MM-6EB

Lab Sample ID: 280-156573-7

☐ No Detections.

Client Sample ID: MW-7

Lab Sample ID: 280-156573-8

☐ No Detections.

Client Sample ID: MW-8

Lab Sample ID: 280-156573-9

☐ No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Denver

Method Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-2

Method	Method Description	Protocol	Laboratory
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None

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

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-156573-1	W-1	Water	12/06/21 13:20	12/08/21 13:29
280-156573-2	W-1D	Water	12/06/21 13:20	12/08/21 13:29
280-156573-3	W-2	Water	12/06/21 14:55	12/08/21 13:29
280-156573-4	W-3	Water	12/06/21 11:50	12/08/21 13:29
280-156573-5	W-4	Water	12/06/21 16:15	12/08/21 13:29
280-156573-6	MW-6	Water	12/07/21 10:30	12/08/21 13:29
280-156573-7	MM-6EB	Water	12/07/21 10:55	12/08/21 13:29
280-156573-8	MW-7	Water	12/07/21 09:30	12/08/21 13:29
280-156573-9	MW-8	Water	12/07/21 13:15	12/08/21 13:29

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-2

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: W-1
Date Collected: 12/06/21 13:20
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0946	U	0.110	0.110	1.00	0.178	pCi/L	12/23/21 10:41	01/17/22 14:00	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	82.6		40 - 110					12/23/21 10:41	01/17/22 14:00	1

Client Sample ID: W-1D
Date Collected: 12/06/21 13:20
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0825	U	0.110	0.110	1.00	0.183	pCi/L	12/23/21 10:41	01/17/22 14:00	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	80.1		40 - 110					12/23/21 10:41	01/17/22 14:00	1

Client Sample ID: W-2
Date Collected: 12/06/21 14:55
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.257		0.141	0.143	1.00	0.173	pCi/L	12/23/21 10:41	01/17/22 14:00	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	84.6		40 - 110					12/23/21 10:41	01/17/22 14:00	1

Client Sample ID: W-3
Date Collected: 12/06/21 11:50
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0915	U	0.123	0.124	1.00	0.207	pCi/L	12/23/21 10:41	01/17/22 14:00	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.4		40 - 110					12/23/21 10:41	01/17/22 14:00	1

Client Sample ID: W-4
Date Collected: 12/06/21 16:15
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.189		0.121	0.122	1.00	0.164	pCi/L	12/23/21 10:41	01/17/22 18:14	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.0		40 - 110					12/23/21 10:41	01/17/22 18:14	1

Eurofins Denver

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-2

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-6
Date Collected: 12/07/21 10:30
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0666	U	0.0838	0.0840	1.00	0.139	pCi/L	12/23/21 10:41	01/17/22 18:15	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.9		40 - 110					12/23/21 10:41	01/17/22 18:15	1

Client Sample ID: MM-6EB
Date Collected: 12/07/21 10:55
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.00895	U	0.0738	0.0738	1.00	0.152	pCi/L	12/23/21 10:41	01/17/22 18:15	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.4		40 - 110					12/23/21 10:41	01/17/22 18:15	1

Client Sample ID: MW-7
Date Collected: 12/07/21 09:30
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0684	U	0.104	0.105	1.00	0.229	pCi/L	12/23/21 10:41	01/17/22 18:15	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	67.2		40 - 110					12/23/21 10:41	01/17/22 18:15	1

Client Sample ID: MW-8
Date Collected: 12/07/21 13:15
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.103	U	0.187	0.187	1.00	0.325	pCi/L	12/23/21 10:41	01/17/22 18:15	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	60.9		40 - 110					12/23/21 10:41	01/17/22 18:15	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: W-1
Date Collected: 12/06/21 13:20
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.16		0.436	0.448	1.00	0.598	pCi/L	12/23/21 11:08	01/12/22 09:35	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	82.6		40 - 110					12/23/21 11:08	01/12/22 09:35	1

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Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-2

Method: 9320 - Radium-228 (GFPC) (Continued)

Client Sample ID: W-1
Date Collected: 12/06/21 13:20
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-1
Matrix: Water

Carrier	%Yield	Qualifier	Limits
Y Carrier	80.0		40 - 110

Prepared	Analyzed	Dil Fac
12/23/21 11:08	01/12/22 09:35	1

Client Sample ID: W-1D
Date Collected: 12/06/21 13:20
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.57		0.460	0.482	1.00	0.575	pCi/L	12/23/21 11:08	01/12/22 09:36	1
Carrier	%Yield	Qualifier	Limits							
Ba Carrier	80.1		40 - 110							
Y Carrier	79.6		40 - 110							

Client Sample ID: W-2
Date Collected: 12/06/21 14:55
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	2.75		0.546	0.602	1.00	0.597	pCi/L	12/23/21 11:08	01/12/22 09:36	1
Carrier	%Yield	Qualifier	Limits							
Ba Carrier	84.6		40 - 110							
Y Carrier	78.9		40 - 110							

Client Sample ID: W-3
Date Collected: 12/06/21 11:50
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.510		0.328	0.331	1.00	0.497	pCi/L	12/23/21 11:08	01/12/22 09:36	1
Carrier	%Yield	Qualifier	Limits							
Ba Carrier	87.4		40 - 110							
Y Carrier	80.0		40 - 110							

Client Sample ID: W-4
Date Collected: 12/06/21 16:15
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.68		0.402	0.431	1.00	0.440	pCi/L	12/23/21 11:08	01/12/22 09:36	1
Carrier	%Yield	Qualifier	Limits							
Ba Carrier	97.0		40 - 110							
Y Carrier	74.4		40 - 110							

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Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-2

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-6
Date Collected: 12/07/21 10:30
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.629		0.279	0.285	1.00	0.402	pCi/L	12/23/21 11:08	01/12/22 09:36	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.9		40 - 110					12/23/21 11:08	01/12/22 09:36	1
Y Carrier	80.4		40 - 110					12/23/21 11:08	01/12/22 09:36	1

Client Sample ID: MM-6EB
Date Collected: 12/07/21 10:55
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.612		0.255	0.261	1.00	0.349	pCi/L	12/23/21 11:08	01/12/22 09:36	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.4		40 - 110					12/23/21 11:08	01/12/22 09:36	1
Y Carrier	81.1		40 - 110					12/23/21 11:08	01/12/22 09:36	1

Client Sample ID: MW-7
Date Collected: 12/07/21 09:30
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.870		0.348	0.358	1.00	0.470	pCi/L	12/23/21 11:08	01/12/22 09:36	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	67.2		40 - 110					12/23/21 11:08	01/12/22 09:36	1
Y Carrier	81.9		40 - 110					12/23/21 11:08	01/12/22 09:36	1

Client Sample ID: MW-8
Date Collected: 12/07/21 13:15
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.78		0.606	0.628	1.00	0.807	pCi/L	12/23/21 11:08	01/12/22 09:36	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	60.9		40 - 110					12/23/21 11:08	01/12/22 09:36	1
Y Carrier	79.6		40 - 110					12/23/21 11:08	01/12/22 09:36	1

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-2

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: W-1
Date Collected: 12/06/21 13:20
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.26		0.450	0.461	5.00	0.598	pCi/L		01/25/22 14:31	1

Client Sample ID: W-1D
Date Collected: 12/06/21 13:20
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.65		0.473	0.494	5.00	0.575	pCi/L		01/25/22 14:31	1

Client Sample ID: W-2
Date Collected: 12/06/21 14:55
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	3.01		0.564	0.619	5.00	0.597	pCi/L		01/25/22 14:31	1

Client Sample ID: W-3
Date Collected: 12/06/21 11:50
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.602		0.350	0.353	5.00	0.497	pCi/L		01/25/22 14:31	1

Client Sample ID: W-4
Date Collected: 12/06/21 16:15
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.87		0.420	0.448	5.00	0.440	pCi/L		01/25/22 14:31	1

Client Sample ID: MW-6
Date Collected: 12/07/21 10:30
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.696		0.291	0.297	5.00	0.402	pCi/L		01/25/22 14:31	1

Eurofins Denver

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-2

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: MM-6EB
Date Collected: 12/07/21 10:55
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.604		0.265	0.271	5.00	0.349	pCi/L		01/25/22 14:31	1

Client Sample ID: MW-7
Date Collected: 12/07/21 09:30
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.801		0.363	0.373	5.00	0.470	pCi/L		01/25/22 14:31	1

Client Sample ID: MW-8
Date Collected: 12/07/21 13:15
Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.88		0.634	0.655	5.00	0.807	pCi/L		01/25/22 14:31	1

QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-2

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-543509/23-A

Matrix: Water

Analysis Batch: 546750

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 543509

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.06540	U	0.0891	0.0893	1.00	0.206	pCi/L	12/23/21 10:41	01/17/22 18:05	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	75.3		40 - 110					12/23/21 10:41	01/17/22 18:05	1

Lab Sample ID: LCS 160-543509/1-A

Matrix: Water

Analysis Batch: 546760

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 543509

Analyte		Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226		11.3	10.25		1.45	1.00	0.470	pCi/L	90	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits							
Ba Carrier	24.0	X	40 - 110							

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-543511/23-A

Matrix: Water

Analysis Batch: 546037

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 543511

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.6111		0.300	0.305	1.00	0.432	pCi/L	12/23/21 11:08	01/12/22 09:41	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	75.3		40 - 110					12/23/21 11:08	01/12/22 09:41	1
Y Carrier	83.7		40 - 110					12/23/21 11:08	01/12/22 09:41	1

Lab Sample ID: LCS 160-543511/1-A

Matrix: Water

Analysis Batch: 546036

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 543511

Analyte		Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228		8.97	10.34		1.47	1.00	0.845	pCi/L	115	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits							
Ba Carrier	42.2		40 - 110							
Y Carrier	78.5		40 - 110							

Eurofins Denver

QC Association Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-2

Rad

Prep Batch: 543509

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-156573-1	W-1	Total/NA	Water	PrecSep-21	
280-156573-2	W-1D	Total/NA	Water	PrecSep-21	
280-156573-3	W-2	Total/NA	Water	PrecSep-21	
280-156573-4	W-3	Total/NA	Water	PrecSep-21	
280-156573-5	W-4	Total/NA	Water	PrecSep-21	
280-156573-6	MW-6	Total/NA	Water	PrecSep-21	
280-156573-7	MM-6EB	Total/NA	Water	PrecSep-21	
280-156573-8	MW-7	Total/NA	Water	PrecSep-21	
280-156573-9	MW-8	Total/NA	Water	PrecSep-21	
MB 160-543509/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-543509/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 543511

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-156573-1	W-1	Total/NA	Water	PrecSep_0	
280-156573-2	W-1D	Total/NA	Water	PrecSep_0	
280-156573-3	W-2	Total/NA	Water	PrecSep_0	
280-156573-4	W-3	Total/NA	Water	PrecSep_0	
280-156573-5	W-4	Total/NA	Water	PrecSep_0	
280-156573-6	MW-6	Total/NA	Water	PrecSep_0	
280-156573-7	MM-6EB	Total/NA	Water	PrecSep_0	
280-156573-8	MW-7	Total/NA	Water	PrecSep_0	
280-156573-9	MW-8	Total/NA	Water	PrecSep_0	
MB 160-543511/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-543511/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-2

Client Sample ID: W-1

Lab Sample ID: 280-156573-1

Date Collected: 12/06/21 13:20

Matrix: Water

Date Received: 12/08/21 13:29

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			749.04 mL	1.0 g	543509	12/23/21 10:41	BMP	TAL SL
Total/NA	Analysis	9315		1			546760	01/17/22 14:00	FLC	TAL SL
Total/NA	Prep	PrecSep_0			749.04 mL	1.0 g	543511	12/23/21 11:08	BMP	TAL SL
Total/NA	Analysis	9320		1			546036	01/12/22 09:35	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			548020	01/25/22 14:31	SCB	TAL SL

Client Sample ID: W-1D

Lab Sample ID: 280-156573-2

Date Collected: 12/06/21 13:20

Matrix: Water

Date Received: 12/08/21 13:29

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			750.52 mL	1.0 g	543509	12/23/21 10:41	BMP	TAL SL
Total/NA	Analysis	9315		1			546760	01/17/22 14:00	FLC	TAL SL
Total/NA	Prep	PrecSep_0			750.52 mL	1.0 g	543511	12/23/21 11:08	BMP	TAL SL
Total/NA	Analysis	9320		1			546036	01/12/22 09:36	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			548020	01/25/22 14:31	SCB	TAL SL

Client Sample ID: W-2

Lab Sample ID: 280-156573-3

Date Collected: 12/06/21 14:55

Matrix: Water

Date Received: 12/08/21 13:29

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			750.97 mL	1.0 g	543509	12/23/21 10:41	BMP	TAL SL
Total/NA	Analysis	9315		1			546760	01/17/22 14:00	FLC	TAL SL
Total/NA	Prep	PrecSep_0			750.97 mL	1.0 g	543511	12/23/21 11:08	BMP	TAL SL
Total/NA	Analysis	9320		1			546036	01/12/22 09:36	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			548020	01/25/22 14:31	SCB	TAL SL

Client Sample ID: W-3

Lab Sample ID: 280-156573-4

Date Collected: 12/06/21 11:50

Matrix: Water

Date Received: 12/08/21 13:29

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			750.26 mL	1.0 g	543509	12/23/21 10:41	BMP	TAL SL
Total/NA	Analysis	9315		1			546760	01/17/22 14:00	FLC	TAL SL
Total/NA	Prep	PrecSep_0			750.26 mL	1.0 g	543511	12/23/21 11:08	BMP	TAL SL
Total/NA	Analysis	9320		1			546036	01/12/22 09:36	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			548020	01/25/22 14:31	SCB	TAL SL

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-2

Client Sample ID: W-4

Date Collected: 12/06/21 16:15

Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			750.37 mL	1.0 g	543509	12/23/21 10:41	BMP	TAL SL
Total/NA	Analysis	9315		1			546760	01/17/22 18:14	FLC	TAL SL
Total/NA	Prep	PrecSep_0			750.37 mL	1.0 g	543511	12/23/21 11:08	BMP	TAL SL
Total/NA	Analysis	9320		1			546036	01/12/22 09:36	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			548020	01/25/22 14:31	SCB	TAL SL

Client Sample ID: MW-6

Date Collected: 12/07/21 10:30

Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.83 mL	1.0 g	543509	12/23/21 10:41	BMP	TAL SL
Total/NA	Analysis	9315		1			546760	01/17/22 18:15	FLC	TAL SL
Total/NA	Prep	PrecSep_0			1000.83 mL	1.0 g	543511	12/23/21 11:08	BMP	TAL SL
Total/NA	Analysis	9320		1			546036	01/12/22 09:36	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			548020	01/25/22 14:31	SCB	TAL SL

Client Sample ID: MM-6EB

Date Collected: 12/07/21 10:55

Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.44 mL	1.0 g	543509	12/23/21 10:41	BMP	TAL SL
Total/NA	Analysis	9315		1			546760	01/17/22 18:15	FLC	TAL SL
Total/NA	Prep	PrecSep_0			1000.44 mL	1.0 g	543511	12/23/21 11:08	BMP	TAL SL
Total/NA	Analysis	9320		1			546036	01/12/22 09:36	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			548020	01/25/22 14:31	SCB	TAL SL

Client Sample ID: MW-7

Date Collected: 12/07/21 09:30

Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			1000.07 mL	1.0 g	543509	12/23/21 10:41	BMP	TAL SL
Total/NA	Analysis	9315		1			546760	01/17/22 18:15	FLC	TAL SL
Total/NA	Prep	PrecSep_0			1000.07 mL	1.0 g	543511	12/23/21 11:08	BMP	TAL SL
Total/NA	Analysis	9320		1			546036	01/12/22 09:36	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			548020	01/25/22 14:31	SCB	TAL SL

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-2

Client Sample ID: MW-8

Date Collected: 12/07/21 13:15

Date Received: 12/08/21 13:29

Lab Sample ID: 280-156573-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			750.35 mL	1.0 g	543509	12/23/21 10:41	BMP	TAL SL
Total/NA	Analysis	9315		1			546760	01/17/22 18:15	FLC	TAL SL
Total/NA	Prep	PrecSep_0			750.35 mL	1.0 g	543511	12/23/21 11:08	BMP	TAL SL
Total/NA	Analysis	9320		1			546036	01/12/22 09:36	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			548020	01/25/22 14:31	SCB	TAL SL

Laboratory References:

TAL SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-2

Laboratory: Eurofins St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-22
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-22
California	Los Angeles County Sanitation Districts	10259	06-30-22
California	State	2886	06-30-21 *
Connecticut	State	PH-0241	03-31-23
Florida	NELAP	E87689	06-30-22
HI - RadChem Recognition	State	n/a	06-30-22
Illinois	NELAP	200023	11-30-22
Iowa	State	373	12-01-22
Kansas	NELAP	E-10236	10-31-22
Kentucky (DW)	State	KY90125	01-01-22 *
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-22
Louisiana	NELAP	04080	06-30-22
Louisiana (DW)	State	LA011	12-31-22
Maryland	State	310	09-30-22
MI - RadChem Recognition	State	9005	06-30-22
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-22
New Jersey	NELAP	MO002	06-30-22
New York	NELAP	11616	04-01-22
North Dakota	State	R-207	06-30-22
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-22
Oregon	NELAP	4157	09-01-22
Pennsylvania	NELAP	68-00540	03-01-22
South Carolina	State	85002001	06-30-22
Texas	NELAP	T104704193	07-31-22
US Fish & Wildlife	US Federal Programs	058448	07-31-22
USDA	US Federal Programs	P330-17-00028	03-11-23
Utah	NELAP	MO000542021-14	08-01-22
Virginia	NELAP	10310	06-14-22
Washington	State	C592	08-30-22
West Virginia DEP	State	381	10-31-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins Denver

Client Information		Sample: Tava Kent		Lab PM: Bandy, Darlene F		Carrier Tracking No(s):		COC No:	
Client Contact: Molly Reeves		Phone: 720933 7496		E-Mail: Darlene.Bandy@Eurofinset.com				Page: 1 of 1	
Company: HDR Inc								Job #:	
Address: 1670 Broadway, Suite 3400		City: Denver		State: CO		Zip: 80202		Phone: 734-263-7138(Tel)	
Email: Molly.Reeves@hdrinc.com		Project #: 28014377		Project Name: Xcel Energy GW Monitoring, J. Hayden		Site: Colorado		SSOW#:	
Due Date Requested:		TAT Requested (days):		PO #:		DEN-018		WO #:	
Sample Identification		Sample Date		Sample Time		Sample Type (C=comp, G=grab)		Matrix (Water, Spill, Other)	
HO-1 W-1		12-06-21		1320		G		Water	
HO-2 W-1 D		12-06-21		1320		G		Water	
HO-3 W-2		12-06-21		1455		G		Water	
HO-4 W-3		12-07-21		1150		G		Water	
HO-5 W-4		12-06-21		1615		G		Water	
MW-6		12-07-21		1030		G		W	
MW-6 EB		12-07-21		1055		G		W	
MW-7		12-07-21		0930		G		W	
MW-8		12-07-21		1315		G		W	
Possible Hazard Identification		Non-Hazard		Flammable		Skin Irritant		Poison B	
Deliverable Requested: I, II, III, IV, Other (specify)		Unknown		Radiological					
Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:		Return To Client	
Relinquished by: Tava Kent		12-08-2021		1329		HDR		Received by: J. Hayden	
Relinquished by:		Date:		Time:		Company:		Received by:	
Relinquished by:		Date:		Time:		Company:		Received by:	
Custody Seals Intact: Δ Yes Δ No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:					

Client Information (Sub Contract Lab)				Lab PM: Harrington, Danielle M		Carrier Tracking No(s): 280-597308.1	
Client Contact Shipping/Receiving				E-Mail: [Danielle.Harrington@Eurofinset.com]		Page Page 1 of 1	
Company TestAmerica Laboratories, Inc.				Accreditations Required (See note): DoD - A2LA		Job # 280-156573-1	
Address 13715 Rider Trail North, City: Earth City State, Zip: MO, 63045 Phone 314-298-8566(Tel) 314-298-8757(Fax) Email				Due Date Requested: 1/10/2022			
Project Name: Xcel Energy GW CCR Monitoring - Hayden				TAT Requested (days):			
Site: Xcel Energy CCR - Hayden Station				PO #			
Project # 28014377				WO #			
SSOW#							

Sample Identification - Client ID (Lab ID)				Analysis Requested				Special Instructions/Note:	
Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (Weather, Sealed, One-at-a-time)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315 Ra226/PreSep, 21 Radium-226 (1/3 for Ra-226/Ra-228) SUB	9320 Ra228/PreSep, 0 Radium-228 (2/3 for Ra-226/Ra-228) SUB	Ra226Ra228 GPPC/ Combined Radium-226 and Radium-228	Total Number of Containers
12/6/21	13:20 Mountain	Water	Water	X	X	X	X	X	2
12/6/21	13:20 Mountain	Water	Water	X	X	X	X	X	2
12/6/21	14:55 Mountain	Water	Water	X	X	X	X	X	2
12/6/21	11:50 Mountain	Water	Water	X	X	X	X	X	2
12/6/21	16:15 Mountain	Water	Water	X	X	X	X	X	2
12/7/21	10:30 Mountain	Water	Water	X	X	X	X	X	2
12/7/21	10:55 Mountain	Water	Water	X	X	X	X	X	2
12/7/21	09:30 Mountain	Water	Water	X	X	X	X	X	2
12/7/21	13:15 Mountain	Water	Water	X	X	X	X	X	2

Possible Hazard Identification

Unconfirmed

Deliverable Requested: I, II, III, IV, Other (specify)

Primary Deliverable Rank: 4

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

☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Special Instructions/QC Requirements:

Date/Time: 12/6/21 13:20		Date/Time: 12/6/21 13:20	
Received by: [Signature]		Received by: [Signature]	
Company: [Signature]		Company: [Signature]	
Date/Time: 12/6/21 13:20		Date/Time: 12/6/21 13:20	
Received by: [Signature]		Received by: [Signature]	
Company: [Signature]		Company: [Signature]	

Custody Seals Intact: ☐ Yes ☐ No		Custody Seal No.:	
Cooler Temperature(s) °C and Other Remarks:			

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-156573-2

Login Number: 156573

List Source: Eurofins Denver

List Number: 1

Creator: Rystrom, Joshua R

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

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-156573-2

Login Number: 156573

List Number: 2

Creator: Johnson, Autumn R

List Source: Eurofins St. Louis

List Creation: 12/10/21 01:36 PM

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

Tracer/Carrier Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-156573-2

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (40-110)	
280-156573-1	W-1	82.6	
280-156573-2	W-1D	80.1	
280-156573-3	W-2	84.6	
280-156573-4	W-3	87.4	
280-156573-5	W-4	97.0	
280-156573-6	MW-6	93.9	
280-156573-7	MM-6EB	90.4	
280-156573-8	MW-7	67.2	
280-156573-9	MW-8	60.9	
LCS 160-543509/1-A	Lab Control Sample	24.0 X	
MB 160-543509/23-A	Method Blank	75.3	
Tracer/Carrier Legend			
Ba = Ba Carrier			

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)
280-156573-1	W-1	82.6	80.0
280-156573-2	W-1D	80.1	79.6
280-156573-3	W-2	84.6	78.9
280-156573-4	W-3	87.4	80.0
280-156573-5	W-4	97.0	74.4
280-156573-6	MW-6	93.9	80.4
280-156573-7	MM-6EB	90.4	81.1
280-156573-8	MW-7	67.2	81.9
280-156573-9	MW-8	60.9	79.6
LCS 160-543511/1-A	Lab Control Sample	42.2	78.5
MB 160-543511/23-A	Method Blank	75.3	83.7
Tracer/Carrier Legend			
Ba = Ba Carrier			
Y = Y Carrier			

ANALYTICAL REPORT

Eurofins Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

Laboratory Job ID: 280-163427-1

Client Project/Site: Xcel Energy GW CCR Monitoring - Hayden

For:

HDR Inc
1670 Broadway
Suite 3400
Denver, Colorado 80202

Attn: Molly Reeves



Authorized for release by:

7/20/2022 2:41:41 PM

Matthew Gardner, Project Manager I

Matthew.Gardner@et.eurofinsus.com

Designee for

Danielle Harrington, Project Manager II
(303)736-0176

Danielle.Harrington@et.eurofinsus.com

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results through



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

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

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Definitions/Glossary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Qualifiers

Metals

Qualifier	Qualifier Description
^+	Continuing Calibration Verification (CCV) is outside acceptance limits, high biased.
^2	Calibration Blank (ICB and/or CCB) is outside acceptance limits.
^6+	Interference Check Standard (ICSA and/or ICSAB) is outside acceptance limits, high biased.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
B	Compound was found in the blank and sample.
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

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

Eurofins Denver

Case Narrative

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Job ID: 280-163427-1

Laboratory: Eurofins Denver

Narrative

CASE NARRATIVE

Client: HDR Inc

Project: Xcel Energy GW CCR Monitoring - Hayden

Report Number: 280-163427-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

This report may include reporting limits (RLs) less than Eurofins TestAmerica's standard reporting limit. The reported sample results and associated reporting limits are being used specifically to meet the needs of this project. Note that data are not normally reported to these levels without qualification because they are inherently less reliable and potentially less defensible than required by the latest industry standards.

This submission may contain field data obtained by the sampler. The methods referenced in this submission for the field data results may not be the methods used to obtain the field data by the sampler.

RECEIPT

The samples were received on 6/15/2022 9:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 4.0° C, 4.1° C and 6.0° C.

RECEIPT EXCEPTIONS

Two out of three of the 500 Plastic unpreserved sample containers were received only about 1/2 filled with sample volume: MW-8EB.

TOTAL RECOVERABLE METALS - Method 6010/6020

Several samples were analyzed at a dilution due to high analyte concentrations or matrix interferences. The reporting limits have been adjusted accordingly.

Low levels of Boron are present in the method blank associated with QC batch 280-580425. Because the concentration in the method blank is not present at a level greater than the reporting limit, corrective action is deemed unnecessary.

Low levels of Molybdenum and Beryllium are present in the method blank associated with QC batch 280-579159. Because the concentration in the method blank is not present at a level greater than the reporting limit, corrective action is deemed unnecessary. MS/MSD analyses were performed on sample W-1. The MS/MSD for method 6020 exhibited spike compound recoveries outside the QC limits. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

The interference check standard solution (ICSA) associated with batch 280-579159 had results for one or more elements at a level greater than 2x the RL. The initial ICSA result (3.3 ppb) was >2x the RL of 1 ppb for Ba. The vendor acknowledges that these elements are trace impurities in the ICSA standard. These results are not indicative of a matrix interference.

The interference check standard solution (ICSA) associated with batch 280-579160 had results for one or more elements at a level greater than 2x the RL. The initial ICSA result (2.87 ppb ppb) was >2x the RL of 1 ppb for Ba. The vendor acknowledges that these elements are trace impurities in the ICSA standard. These results are not indicative of a matrix interference.

The interference check standard solution (ICSA) associated with batch 280-579261 had results for one or more elements at a level greater than 2x the RL. The initial ICSA result (2.6 ppb) was >2x the RL of 1 ppb for Ba. The vendor acknowledges that these elements are trace impurities in the ICSA standard. These results are not indicative of a matrix interference.

Case Narrative

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Job ID: 280-163427-1 (Continued)

Laboratory: Eurofins Denver (Continued)

The interference check standard solution (ICSA) associated with batch 280-579282 had results for one or more elements at a level greater than 2x the RL. The initial ICSA result (3 ppb) was >2x the RL of 1 ppb for Ba. The vendor acknowledges that these elements are trace impurities in the ICSA standard. These results are not indicative of a matrix interference.

The instrument blank for analytical batch 280-579261 contained 223 ppb Na which is greater than the reporting limit (RL) of 150 ppb, and were not reanalyzed because the samples are >10x the blank. The data have been qualified and reported.

The instrument blank for analytical batch 280-579601 contained 1.72 ppb Mn which is greater than the reporting limit (RL) of 1 ppb, and were not reanalyzed because the samples are >10x the blank. The data have been qualified and reported.

The low level continuing calibration verification (CCVL) associated with 280-580535 failed above the upper control limit for Li. The associated samples contained the affected analyte at a level greater than 10x the value in the CCVL; therefore the data have been reported.

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

RADIUM-226

Insufficient sample volume was available to perform a sample duplicate for the following samples: W-1, W-2, W-3, W-4, MW-6, MW-7, MW-8, MW-8EB and W-1D. A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

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

RADIUM-228

Insufficient sample volume was available to perform a sample duplicate for the following samples: W-1, W-2, W-3, W-4, MW-6, MW-7, MW-8, MW-8EB and W-1D. A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

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

GENERAL CHEMISTRY - VARIOUS

Several samples were analyzed at a dilution due to high analyte concentrations or matrix interferences. The reporting limits have been adjusted accordingly.

Laboratory generated MS/MSD analysis data have been provided. The MS/MSD for method 9056 exhibited spike compound recoveries outside the QC limits. Method precision and accuracy have been verified by the acceptable LCS/LCSD analysis data; therefore, corrective action is deemed unnecessary.

The sample duplicate (DUP) precision for analytical batch 280-579382 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

Sample did not equilibrate to within 0.05 pH units after three measurements. This was observed in a previous analysis thus the sample was not rerun.

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

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Client Sample ID: W-1

Lab Sample ID: 280-163427-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.48	B	0.10	0.0015	mg/L	1		6010C	Total Recoverable
Lithium	310	^+	20	9.1	ug/L	1		6010C	Total Recoverable
Magnesium	270		2.5	1.1	mg/L	50		6020B	Total Recoverable
Sodium	530		7.5	3.2	mg/L	50		6020B	Total Recoverable
Barium	0.0086	^6+	0.0010	0.00029	mg/L	1		6020B	Total Recoverable
Potassium	5.7	J	6.0	2.6	mg/L	50		6020B	Total Recoverable
Cobalt	0.00076	J F1	0.0010	0.000092	mg/L	1		6020B	Total Recoverable
Molybdenum	0.0029	B	0.0020	0.00014	mg/L	1		6020B	Total Recoverable
Selenium	0.00094	J	0.0050	0.00037	mg/L	1		6020B	Total Recoverable
Calcium	340		10	1.9	mg/L	50		6020B	Total Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	21.1	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	67		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.34	J	0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	2700		100	21	mg/L	20		9056A	Total/NA
Alkalinity	440		10	3.1	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	440		10	3.1	mg/L	1		SM 2320B	Total/NA
Total Dissolved Solids (TDS)	4100		40	19	mg/L	1		SM2540 C	Total/NA

Client Sample ID: W-2

Lab Sample ID: 280-163427-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	12	B	0.10	0.0015	mg/L	1		6010C	Total Recoverable
Lithium	700	^+	20	9.1	ug/L	1		6010C	Total Recoverable
Antimony	0.0012	J	0.0020	0.00040	mg/L	1		6020B	Total Recoverable
Magnesium	420		2.5	1.1	mg/L	50		6020B	Total Recoverable
Sodium	1000		7.5	3.2	mg/L	50		6020B	Total Recoverable
Barium	0.0069	^6+	0.0010	0.00029	mg/L	1		6020B	Total Recoverable
Potassium	5.7		0.12	0.052	mg/L	1		6020B	Total Recoverable
Beryllium	0.00056	J B	0.0010	0.000080	mg/L	1		6020B	Total Recoverable
Cobalt	0.0048		0.0010	0.000092	mg/L	1		6020B	Total Recoverable
Lead	0.00022	J	0.0010	0.00018	mg/L	1		6020B	Total Recoverable
Molybdenum	0.0055	B	0.0020	0.00014	mg/L	1		6020B	Total Recoverable
Selenium	0.0020	J	0.0050	0.00037	mg/L	1		6020B	Total Recoverable

This Detection Summary does not include radiochemical test results.

Eurofins Denver

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Client Sample ID: W-2 (Continued)

Lab Sample ID: 280-163427-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Thallium	0.00011	J	0.0010	0.000089	mg/L	1		6020B	Total Recoverable
Calcium	380		10	1.9	mg/L	50		6020B	Total Recoverable
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.8	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	95		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.54		0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	4600		250	52	mg/L	50		9056A	Total/NA
Alkalinity	280		10	3.1	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	280		10	3.1	mg/L	1		SM 2320B	Total/NA
Total Suspended Solids	4.8		4.0	1.1	mg/L	1		SM 2540D	Total/NA
Total Dissolved Solids (TDS)	6400		40	19	mg/L	1		SM2540 C	Total/NA

Client Sample ID: W-3

Lab Sample ID: 280-163427-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.50	B	0.10	0.0015	mg/L	1		6010C	Total Recoverable
Lithium	1400	^+	20	9.1	ug/L	1		6010C	Total Recoverable
Magnesium	820		2.5	1.1	mg/L	50		6020B	Total Recoverable
Sodium	2000		7.5	3.2	mg/L	50		6020B	Total Recoverable
Barium	0.0068	^6+	0.0010	0.00029	mg/L	1		6020B	Total Recoverable
Potassium	5.3		0.12	0.052	mg/L	1		6020B	Total Recoverable
Beryllium	0.00020	J B	0.0010	0.000080	mg/L	1		6020B	Total Recoverable
Cadmium	0.00027	J	0.0010	0.00027	mg/L	1		6020B	Total Recoverable
Cobalt	0.0014		0.0010	0.000092	mg/L	1		6020B	Total Recoverable
Molybdenum	0.0035	B	0.0020	0.00014	mg/L	1		6020B	Total Recoverable
Selenium	0.010		0.0050	0.00037	mg/L	1		6020B	Total Recoverable
Calcium	400		10	1.9	mg/L	50		6020B	Total Recoverable
pH adj. to 25 deg C	7.4	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.2	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	210		15	5.1	mg/L	5		9056A	Total/NA
Fluoride	0.68		0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	8000		500	100	mg/L	100		9056A	Total/NA
Alkalinity	560		10	3.1	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	560		10	3.1	mg/L	1		SM 2320B	Total/NA
Total Dissolved Solids (TDS)	9600		1000	470	mg/L	1		SM2540 C	Total/NA

Client Sample ID: W-4

Lab Sample ID: 280-163427-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.34	B	0.10	0.0015	mg/L	1		6010C	Total Recoverable

This Detection Summary does not include radiochemical test results.

Eurofins Denver

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Client Sample ID: W-4 (Continued)

Lab Sample ID: 280-163427-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lithium	810	^+	20	9.1	ug/L	1		6010C	Total Recoverable
Magnesium	1200		2.5	1.1	mg/L	50		6020B	Total Recoverable
Arsenic	0.00066	J	0.0050	0.00033	mg/L	1		6020B	Total Recoverable
Sodium	3500		7.5	3.2	mg/L	50		6020B	Total Recoverable
Barium	0.0077	^6+ B	0.0010	0.00029	mg/L	1		6020B	Total Recoverable
Potassium	7.1		6.0	2.6	mg/L	50		6020B	Total Recoverable
Cobalt	0.0057		0.0010	0.000092	mg/L	1		6020B	Total Recoverable
Molybdenum	0.0028	B	0.0020	0.00014	mg/L	1		6020B	Total Recoverable
Calcium	360		10	1.9	mg/L	50		6020B	Total Recoverable
pH adj. to 25 deg C	7.4	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.8	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	340		15	5.1	mg/L	5		9056A	Total/NA
Fluoride	0.68		0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	13000		500	100	mg/L	100		9056A	Total/NA
Alkalinity	570		10	3.1	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	570		10	3.1	mg/L	1		SM 2320B	Total/NA
Total Dissolved Solids (TDS)	20000		1000	470	mg/L	1		SM2540 C	Total/NA

Client Sample ID: MW-6

Lab Sample ID: 280-163427-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	47		0.10	0.0015	mg/L	1		6010C	Total Recoverable
Lithium	100		20	9.1	ug/L	1		6010C	Total Recoverable
Magnesium	63		2.5	1.1	mg/L	50		6020B	Total Recoverable
Arsenic	0.00039	J	0.0050	0.00033	mg/L	1		6020B	Total Recoverable
Sodium	960	^2	7.5	3.2	mg/L	50		6020B	Total Recoverable
Barium	0.0050	^6+ B	0.0010	0.00029	mg/L	1		6020B	Total Recoverable
Potassium	13		0.12	0.052	mg/L	1		6020B	Total Recoverable
Beryllium	0.00019	J B	0.0010	0.000080	mg/L	1		6020B	Total Recoverable
Molybdenum	1.4	B	0.0020	0.00014	mg/L	1		6020B	Total Recoverable
Selenium	0.013		0.0050	0.00037	mg/L	1		6020B	Total Recoverable
Calcium	460		10	1.9	mg/L	50		6020B	Total Recoverable
pH adj. to 25 deg C	8.7	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	72		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.33	J	0.50	0.17	mg/L	1		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Denver

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Client Sample ID: MW-6 (Continued)

Lab Sample ID: 280-163427-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	3000		100	21	mg/L	20		9056A	Total/NA
Alkalinity	93		10	3.1	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	19		10	3.1	mg/L	1		SM 2320B	Total/NA
Carbonate Alkalinity as CaCO3	74		10	3.1	mg/L	1		SM 2320B	Total/NA
Total Dissolved Solids (TDS)	4300		40	19	mg/L	1		SM2540 C	Total/NA

Client Sample ID: MW-7

Lab Sample ID: 280-163427-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	50		0.10	0.0015	mg/L	1		6010C	Total Recoverable
Lithium	250		40	18	ug/L	2		6010C	Total Recoverable
Magnesium	77		2.5	1.1	mg/L	50		6020B	Total Recoverable
Arsenic	0.00043	J	0.0050	0.00033	mg/L	1		6020B	Total Recoverable
Sodium	1000	^2	7.5	3.2	mg/L	50		6020B	Total Recoverable
Barium	0.0059	^6+	0.0010	0.00029	mg/L	1		6020B	Total Recoverable
Potassium	18		0.12	0.052	mg/L	1		6020B	Total Recoverable
Beryllium	0.00030	J B	0.0010	0.000080	mg/L	1		6020B	Total Recoverable
Molybdenum	0.79	B	0.0020	0.00014	mg/L	1		6020B	Total Recoverable
Selenium	0.0067		0.0050	0.00037	mg/L	1		6020B	Total Recoverable
Calcium	450		10	1.9	mg/L	50		6020B	Total Recoverable
pH adj. to 25 deg C	8.8	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.5	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	180		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.24	J	0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	3300		100	21	mg/L	20		9056A	Total/NA
Alkalinity	120		10	3.1	mg/L	1		SM 2320B	Total/NA
Carbonate Alkalinity as CaCO3	110		10	3.1	mg/L	1		SM 2320B	Total/NA
Total Dissolved Solids (TDS)	4900		40	19	mg/L	1		SM2540 C	Total/NA

Client Sample ID: MW-8

Lab Sample ID: 280-163427-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.81		0.10	0.0015	mg/L	1		6010C	Total Recoverable
Lithium	710		40	18	ug/L	2		6010C	Total Recoverable
Magnesium	540		2.5	1.1	mg/L	50		6020B	Total Recoverable
Sodium	1900	^2	7.5	3.2	mg/L	50		6020B	Total Recoverable
Barium	0.0055	^6+	0.0010	0.00029	mg/L	1		6020B	Total Recoverable
Potassium	16		6.0	2.6	mg/L	50		6020B	Total Recoverable

This Detection Summary does not include radiochemical test results.

Eurofins Denver

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Client Sample ID: MW-8 (Continued)

Lab Sample ID: 280-163427-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Beryllium	0.00051	J B	0.0010	0.000080	mg/L	1		6020B	Total
									Recoverable
Cobalt	0.00021	J	0.0010	0.000092	mg/L	1		6020B	Total
									Recoverable
Molybdenum	0.0044	B	0.0020	0.00014	mg/L	1		6020B	Total
									Recoverable
Selenium	0.035		0.0050	0.00037	mg/L	1		6020B	Total
									Recoverable
Calcium	430		10	1.9	mg/L	50		6020B	Total
									Recoverable
Mercury	0.000092	J	0.00020	0.000061	mg/L	1		7470A	Total/NA
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	19.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	280		15	5.1	mg/L	5		9056A	Total/NA
Fluoride	0.28	J	0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	6600		250	52	mg/L	50		9056A	Total/NA
Alkalinity	370		10	3.1	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	370		10	3.1	mg/L	1		SM 2320B	Total/NA
Total Dissolved Solids (TDS)	10000		1000	470	mg/L	1		SM2540 C	Total/NA

Client Sample ID: MW-8EB

Lab Sample ID: 280-163427-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.032	J	0.10	0.0015	mg/L	1		6010C	Total
									Recoverable
Magnesium	0.18		0.050	0.021	mg/L	1		6020B	Total
									Recoverable
Barium	0.00051	J ^6+	0.0010	0.00029	mg/L	1		6020B	Total
									Recoverable
Potassium	0.072	J	0.12	0.052	mg/L	1		6020B	Total
									Recoverable
Beryllium	0.00025	J B	0.0010	0.000080	mg/L	1		6020B	Total
									Recoverable
Chromium	0.00057	J	0.0020	0.00050	mg/L	1		6020B	Total
									Recoverable
Molybdenum	0.00051	J B	0.0020	0.00014	mg/L	1		6020B	Total
									Recoverable
Calcium	0.17	J	0.20	0.038	mg/L	1		6020B	Total
									Recoverable
Mercury	0.000064	J	0.00020	0.000061	mg/L	1		7470A	Total/NA
pH adj. to 25 deg C	4.3	HF	0.1	0.1	SU	1		9040B	Total/NA
Temperature	20.6	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Total Dissolved Solids (TDS)	18		10	4.7	mg/L	1		SM2540 C	Total/NA

Client Sample ID: W-1D

Lab Sample ID: 280-163427-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	0.48		0.10	0.0015	mg/L	1		6010C	Total
									Recoverable
Lithium	300		20	9.1	ug/L	1		6010C	Total
									Recoverable
Magnesium	250		2.5	1.1	mg/L	50		6020B	Total
									Recoverable
Sodium	640	^2	7.5	3.2	mg/L	50		6020B	Total
									Recoverable

This Detection Summary does not include radiochemical test results.

Eurofins Denver

Detection Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Client Sample ID: W-1D (Continued)

Lab Sample ID: 280-163427-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.0096	^6+	0.0010	0.00029	mg/L	1		6020B	Total
Potassium	4.5		0.12	0.052	mg/L	1		6020B	Recoverable
Beryllium	0.00030	J B	0.0010	0.000080	mg/L	1		6020B	Total
Cobalt	0.00074	J	0.0010	0.000092	mg/L	1		6020B	Recoverable
Molybdenum	0.0033	B	0.0020	0.00014	mg/L	1		6020B	Total
Selenium	0.00078	J	0.0050	0.00037	mg/L	1		6020B	Recoverable
Calcium	330		10	1.9	mg/L	50		6020B	Total
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU	1		9040B	Recoverable
Temperature	20.8	HF	1.0	1.0	Degrees C	1		9040B	Total/NA
Chloride	67		3.0	1.0	mg/L	1		9056A	Total/NA
Fluoride	0.35	J	0.50	0.17	mg/L	1		9056A	Total/NA
Sulfate	2700		100	21	mg/L	20		9056A	Total/NA
Alkalinity	420		10	3.1	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	420		10	3.1	mg/L	1		SM 2320B	Total/NA
Total Dissolved Solids (TDS)	4000		40	19	mg/L	1		SM2540 C	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Denver

Method Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL DEN
6020B	Metals (ICP/MS)	SW846	TAL DEN
7470A	Mercury (CVAA)	SW846	TAL DEN
9040B	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
SM 2320B	Alkalinity	SM	TAL DEN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL DEN
SM2540 C	Total Dissolved Solids	SM18	TAL DEN
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL DEN
7470A	Preparation, Mercury	SW846	TAL DEN
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

SM18 = "Standard Methods For The Examination Of Water And Wastewater", 18th Edition, 1992.

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

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-163427-1	W-1	Water	06/13/22 14:05	06/15/22 09:00
280-163427-2	W-2	Water	06/14/22 12:30	06/15/22 09:00
280-163427-3	W-3	Water	06/14/22 14:45	06/15/22 09:00
280-163427-4	W-4	Water	06/14/22 10:00	06/15/22 09:00
280-163427-5	MW-6	Water	06/13/22 17:30	06/15/22 09:00
280-163427-6	MW-7	Water	06/13/22 16:00	06/15/22 09:00
280-163427-7	MW-8	Water	06/14/22 16:10	06/15/22 09:00
280-163427-8	MW-8EB	Water	06/14/22 17:30	06/15/22 09:00
280-163427-9	W-1D	Water	06/13/22 14:05	06/15/22 09:00

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Method: 6010C - Metals (ICP) - Total Recoverable

Client Sample ID: W-1
Date Collected: 06/13/22 14:05
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.48	B	0.10	0.0015	mg/L		07/07/22 09:10	07/09/22 10:55	1
Lithium	310	^+	20	9.1	ug/L		07/07/22 09:10	07/11/22 14:39	1

Client Sample ID: W-2
Date Collected: 06/14/22 12:30
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	12	B	0.10	0.0015	mg/L		07/07/22 09:10	07/09/22 11:40	1
Lithium	700	^+	20	9.1	ug/L		07/07/22 09:10	07/11/22 15:11	1

Client Sample ID: W-3
Date Collected: 06/14/22 14:45
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.50	B	0.10	0.0015	mg/L		07/07/22 09:10	07/09/22 11:45	1
Lithium	1400	^+	20	9.1	ug/L		07/07/22 09:10	07/11/22 15:15	1

Client Sample ID: W-4
Date Collected: 06/14/22 10:00
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.34	B	0.10	0.0015	mg/L		07/07/22 09:10	07/09/22 11:49	1
Lithium	810	^+	20	9.1	ug/L		07/07/22 09:10	07/11/22 15:19	1

Client Sample ID: MW-6
Date Collected: 06/13/22 17:30
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	47		0.10	0.0015	mg/L		07/11/22 12:51	07/11/22 20:27	1
Lithium	100		20	9.1	ug/L		07/11/22 12:51	07/12/22 14:49	1

Client Sample ID: MW-7
Date Collected: 06/13/22 16:00
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	50		0.10	0.0015	mg/L		07/11/22 12:51	07/11/22 20:31	1
Lithium	250		40	18	ug/L		07/11/22 12:51	07/12/22 14:53	2

Client Sample ID: MW-8
Date Collected: 06/14/22 16:10
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.81		0.10	0.0015	mg/L		07/11/22 12:51	07/11/22 20:35	1
Lithium	710		40	18	ug/L		07/11/22 12:51	07/12/22 14:57	2

Client Sample ID: MW-8EB
Date Collected: 06/14/22 17:30
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.032	J	0.10	0.0015	mg/L		07/11/22 12:51	07/11/22 20:39	1
Lithium	ND		40	18	ug/L		07/11/22 12:51	07/12/22 15:18	2

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Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Method: 6010C - Metals (ICP) - Total Recoverable

Client Sample ID: W-1D
Date Collected: 06/13/22 14:05
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.48		0.10	0.0015	mg/L		07/11/22 12:51	07/11/22 20:43	1
Lithium	300		20	9.1	ug/L		07/11/22 12:51	07/12/22 15:22	1

Method: 6020B - Metals (ICP/MS) - Total Recoverable

Client Sample ID: W-1
Date Collected: 06/13/22 14:05
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00040	mg/L		06/23/22 09:00	06/25/22 00:14	1
Magnesium	270		2.5	1.1	mg/L		06/23/22 09:00	06/24/22 14:05	50
Arsenic	ND		0.0050	0.00033	mg/L		06/23/22 09:00	06/25/22 00:14	1
Sodium	530		7.5	3.2	mg/L		06/23/22 09:00	06/27/22 14:26	50
Barium	0.0086	^6+	0.0010	0.00029	mg/L		06/23/22 09:00	06/25/22 00:14	1
Potassium	5.7	J	6.0	2.6	mg/L		06/23/22 09:00	06/27/22 14:26	50
Beryllium	ND		0.0010	0.000080	mg/L		06/23/22 09:00	06/25/22 00:14	1
Cadmium	ND		0.0010	0.00027	mg/L		06/23/22 09:00	06/25/22 00:14	1
Chromium	ND		0.0020	0.00050	mg/L		06/23/22 09:00	06/25/22 00:14	1
Cobalt	0.00076	J F1	0.0010	0.000092	mg/L		06/23/22 09:00	06/25/22 00:14	1
Lead	ND	F1	0.0010	0.00018	mg/L		06/23/22 09:00	06/25/22 00:14	1
Molybdenum	0.0029	B	0.0020	0.00014	mg/L		06/23/22 09:00	06/25/22 00:14	1
Selenium	0.00094	J	0.0050	0.00037	mg/L		06/23/22 09:00	06/25/22 00:14	1
Thallium	ND	F1	0.0010	0.000089	mg/L		06/23/22 09:00	06/25/22 00:14	1
Calcium	340		10	1.9	mg/L		06/23/22 09:00	06/24/22 14:05	50

Client Sample ID: W-2
Date Collected: 06/14/22 12:30
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0012	J	0.0020	0.00040	mg/L		06/23/22 09:00	06/25/22 00:33	1
Magnesium	420		2.5	1.1	mg/L		06/23/22 09:00	06/24/22 14:24	50
Arsenic	ND		0.0050	0.00033	mg/L		06/23/22 09:00	06/25/22 00:33	1
Sodium	1000		7.5	3.2	mg/L		06/23/22 09:00	06/27/22 14:45	50
Barium	0.0069	^6+	0.0010	0.00029	mg/L		06/23/22 09:00	06/25/22 00:33	1
Potassium	5.7		0.12	0.052	mg/L		06/23/22 09:00	06/25/22 00:33	1
Beryllium	0.00056	J B	0.0010	0.000080	mg/L		06/23/22 09:00	06/25/22 00:33	1
Cadmium	ND		0.0010	0.00027	mg/L		06/23/22 09:00	06/25/22 00:33	1
Chromium	ND		0.0020	0.00050	mg/L		06/23/22 09:00	06/25/22 00:33	1
Cobalt	0.0048		0.0010	0.000092	mg/L		06/23/22 09:00	06/25/22 00:33	1
Lead	0.00022	J	0.0010	0.00018	mg/L		06/23/22 09:00	06/25/22 00:33	1
Molybdenum	0.0055	B	0.0020	0.00014	mg/L		06/23/22 09:00	06/25/22 00:33	1
Selenium	0.0020	J	0.0050	0.00037	mg/L		06/23/22 09:00	06/25/22 00:33	1
Thallium	0.00011	J	0.0010	0.000089	mg/L		06/23/22 09:00	06/25/22 00:33	1
Calcium	380		10	1.9	mg/L		06/23/22 09:00	06/27/22 14:45	50

Client Sample ID: W-3
Date Collected: 06/14/22 14:45
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00040	mg/L		06/23/22 09:00	06/25/22 00:36	1

Eurofins Denver

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Method: 6020B - Metals (ICP/MS) - Total Recoverable (Continued)

Client Sample ID: W-3
Date Collected: 06/14/22 14:45
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	820		2.5	1.1	mg/L		06/23/22 09:00	06/24/22 14:35	50
Arsenic	ND		0.0050	0.00033	mg/L		06/23/22 09:00	06/25/22 00:36	1
Sodium	2000		7.5	3.2	mg/L		06/23/22 09:00	06/27/22 15:28	50
Barium	0.0068	^6+	0.0010	0.00029	mg/L		06/23/22 09:00	06/25/22 00:36	1
Potassium	5.3		0.12	0.052	mg/L		06/23/22 09:00	06/25/22 00:36	1
Beryllium	0.00020	J B	0.0010	0.000080	mg/L		06/23/22 09:00	06/25/22 00:36	1
Cadmium	0.00027	J	0.0010	0.00027	mg/L		06/23/22 09:00	06/25/22 00:36	1
Chromium	ND		0.0020	0.00050	mg/L		06/23/22 09:00	06/25/22 00:36	1
Cobalt	0.0014		0.0010	0.000092	mg/L		06/23/22 09:00	06/25/22 00:36	1
Lead	ND		0.0010	0.00018	mg/L		06/23/22 09:00	06/25/22 00:36	1
Molybdenum	0.0035	B	0.0020	0.00014	mg/L		06/23/22 09:00	06/25/22 00:36	1
Selenium	0.010		0.0050	0.00037	mg/L		06/23/22 09:00	06/25/22 00:36	1
Thallium	ND		0.0010	0.000089	mg/L		06/23/22 09:00	06/25/22 00:36	1
Calcium	400		10	1.9	mg/L		06/23/22 09:00	06/24/22 14:35	50

Client Sample ID: W-4
Date Collected: 06/14/22 10:00
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00040	mg/L		06/23/22 09:00	06/27/22 15:44	1
Magnesium	1200		2.5	1.1	mg/L		06/23/22 09:00	06/24/22 14:39	50
Arsenic	0.00066	J	0.0050	0.00033	mg/L		06/23/22 09:00	06/27/22 15:44	1
Sodium	3500		7.5	3.2	mg/L		06/23/22 09:00	06/27/22 15:32	50
Barium	0.0077	^6+ B	0.0010	0.00029	mg/L		06/23/22 09:00	06/27/22 15:44	1
Potassium	7.1		6.0	2.6	mg/L		06/23/22 09:00	06/27/22 15:32	50
Beryllium	ND		0.0010	0.000080	mg/L		06/23/22 09:00	06/27/22 15:44	1
Cadmium	ND		0.0010	0.00027	mg/L		06/23/22 09:00	06/27/22 15:44	1
Chromium	ND		0.0020	0.00050	mg/L		06/23/22 09:00	06/27/22 15:44	1
Cobalt	0.0057		0.0010	0.000092	mg/L		06/23/22 09:00	06/27/22 15:44	1
Lead	ND		0.0010	0.00018	mg/L		06/23/22 09:00	06/27/22 15:44	1
Molybdenum	0.0028	B	0.0020	0.00014	mg/L		06/23/22 09:00	06/27/22 15:44	1
Selenium	ND		0.0050	0.00037	mg/L		06/23/22 09:00	06/27/22 15:44	1
Thallium	ND		0.0010	0.000089	mg/L		06/23/22 09:00	06/27/22 15:44	1
Calcium	360		10	1.9	mg/L		06/23/22 09:00	06/24/22 14:39	50

Client Sample ID: MW-6
Date Collected: 06/13/22 17:30
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00040	mg/L		06/23/22 09:00	06/27/22 15:48	1
Magnesium	63		2.5	1.1	mg/L		06/23/22 09:00	06/24/22 14:43	50
Arsenic	0.00039	J	0.0050	0.00033	mg/L		06/23/22 09:00	06/27/22 15:48	1
Sodium	960	^2	7.5	3.2	mg/L		06/23/22 09:00	06/27/22 15:51	50
Barium	0.0050	^6+ B	0.0010	0.00029	mg/L		06/23/22 09:00	06/27/22 15:48	1
Potassium	13		0.12	0.052	mg/L		06/23/22 09:00	06/27/22 15:48	1
Beryllium	0.00019	J B	0.0010	0.000080	mg/L		06/23/22 09:00	06/27/22 15:48	1
Cadmium	ND		0.0010	0.00027	mg/L		06/23/22 09:00	06/27/22 15:48	1
Chromium	ND		0.0020	0.00050	mg/L		06/23/22 09:00	06/27/22 15:48	1
Cobalt	ND		0.0010	0.000092	mg/L		06/23/22 09:00	06/27/22 15:48	1
Lead	ND		0.0010	0.00018	mg/L		06/23/22 09:00	06/27/22 15:48	1

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Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Method: 6020B - Metals (ICP/MS) - Total Recoverable (Continued)

Client Sample ID: MW-6
Date Collected: 06/13/22 17:30
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	1.4	B	0.0020	0.00014	mg/L		06/23/22 09:00	06/27/22 15:48	1
Selenium	0.013		0.0050	0.00037	mg/L		06/23/22 09:00	06/27/22 15:48	1
Thallium	ND		0.0010	0.000089	mg/L		06/23/22 09:00	06/27/22 15:48	1
Calcium	460		10	1.9	mg/L		06/23/22 09:00	06/24/22 14:43	50

Client Sample ID: MW-7
Date Collected: 06/13/22 16:00
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00040	mg/L		06/23/22 09:00	06/27/22 17:46	1
Magnesium	77		2.5	1.1	mg/L		06/23/22 09:00	06/24/22 14:46	50
Arsenic	0.00043	J	0.0050	0.00033	mg/L		06/23/22 09:00	06/27/22 17:46	1
Sodium	1000	^2	7.5	3.2	mg/L		06/23/22 09:00	06/27/22 15:55	50
Barium	0.0059	^6+	0.0010	0.00029	mg/L		06/23/22 09:00	06/27/22 17:46	1
Potassium	18		0.12	0.052	mg/L		06/23/22 09:00	06/27/22 17:46	1
Beryllium	0.00030	J B	0.0010	0.000080	mg/L		06/23/22 09:00	06/27/22 17:46	1
Cadmium	ND		0.0010	0.00027	mg/L		06/23/22 09:00	06/27/22 17:46	1
Chromium	ND		0.0020	0.00050	mg/L		06/23/22 09:00	06/27/22 17:46	1
Cobalt	ND		0.0010	0.000092	mg/L		06/23/22 09:00	06/27/22 17:46	1
Lead	ND		0.0010	0.00018	mg/L		06/23/22 09:00	06/27/22 17:46	1
Molybdenum	0.79	B	0.0020	0.00014	mg/L		06/23/22 09:00	06/27/22 17:46	1
Selenium	0.0067		0.0050	0.00037	mg/L		06/23/22 09:00	06/27/22 17:46	1
Thallium	ND		0.0010	0.000089	mg/L		06/23/22 09:00	06/27/22 17:46	1
Calcium	450		10	1.9	mg/L		06/23/22 09:00	06/24/22 14:46	50

Client Sample ID: MW-8
Date Collected: 06/14/22 16:10
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00040	mg/L		06/23/22 09:00	06/27/22 17:50	1
Magnesium	540		2.5	1.1	mg/L		06/23/22 09:00	06/24/22 14:50	50
Arsenic	ND		0.0050	0.00033	mg/L		06/23/22 09:00	06/27/22 17:50	1
Sodium	1900	^2	7.5	3.2	mg/L		06/23/22 09:00	06/27/22 15:59	50
Barium	0.0055	^6+	0.0010	0.00029	mg/L		06/23/22 09:00	06/27/22 17:50	1
Potassium	16		6.0	2.6	mg/L		06/23/22 09:00	06/24/22 14:50	50
Beryllium	0.00051	J B	0.0010	0.000080	mg/L		06/23/22 09:00	06/27/22 17:50	1
Cadmium	ND		0.0010	0.00027	mg/L		06/23/22 09:00	06/27/22 17:50	1
Chromium	ND		0.0020	0.00050	mg/L		06/23/22 09:00	06/27/22 17:50	1
Cobalt	0.00021	J	0.0010	0.000092	mg/L		06/23/22 09:00	06/27/22 17:50	1
Lead	ND		0.0010	0.00018	mg/L		06/23/22 09:00	06/27/22 17:50	1
Molybdenum	0.0044	B	0.0020	0.00014	mg/L		06/23/22 09:00	06/27/22 17:50	1
Selenium	0.035		0.0050	0.00037	mg/L		06/23/22 09:00	06/27/22 17:50	1
Thallium	ND		0.0010	0.000089	mg/L		06/23/22 09:00	06/27/22 17:50	1
Calcium	430		10	1.9	mg/L		06/23/22 09:00	06/24/22 14:50	50

Client Sample ID: MW-8EB
Date Collected: 06/14/22 17:30
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00040	mg/L		06/23/22 09:00	06/27/22 17:54	1

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Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Method: 6020B - Metals (ICP/MS) - Total Recoverable (Continued)

Client Sample ID: MW-8EB
Date Collected: 06/14/22 17:30
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	0.18		0.050	0.021	mg/L		06/23/22 09:00	06/27/22 17:54	1
Arsenic	ND		0.0050	0.00033	mg/L		06/23/22 09:00	06/27/22 17:54	1
Sodium	ND		0.15	0.065	mg/L		06/23/22 09:00	06/29/22 14:52	1
Barium	0.00051	J ^6+	0.0010	0.00029	mg/L		06/23/22 09:00	06/27/22 17:54	1
Potassium	0.072	J	0.12	0.052	mg/L		06/23/22 09:00	06/27/22 17:54	1
Beryllium	0.00025	J B	0.0010	0.000080	mg/L		06/23/22 09:00	06/27/22 17:54	1
Cadmium	ND		0.0010	0.00027	mg/L		06/23/22 09:00	06/27/22 17:54	1
Chromium	0.00057	J	0.0020	0.00050	mg/L		06/23/22 09:00	06/27/22 17:54	1
Cobalt	ND		0.0010	0.000092	mg/L		06/23/22 09:00	06/27/22 17:54	1
Lead	ND		0.0010	0.00018	mg/L		06/23/22 09:00	06/27/22 17:54	1
Molybdenum	0.00051	J B	0.0020	0.00014	mg/L		06/23/22 09:00	06/27/22 17:54	1
Selenium	ND		0.0050	0.00037	mg/L		06/23/22 09:00	06/27/22 17:54	1
Thallium	ND		0.0010	0.000089	mg/L		06/23/22 09:00	06/27/22 17:54	1
Calcium	0.17	J	0.20	0.038	mg/L		06/23/22 09:00	06/27/22 16:03	1

Client Sample ID: W-1D
Date Collected: 06/13/22 14:05
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00040	mg/L		06/23/22 09:00	06/27/22 17:57	1
Magnesium	250		2.5	1.1	mg/L		06/23/22 09:00	06/24/22 14:58	50
Arsenic	ND		0.0050	0.00033	mg/L		06/23/22 09:00	06/27/22 17:57	1
Sodium	640	^2	7.5	3.2	mg/L		06/23/22 09:00	06/27/22 16:06	50
Barium	0.0096	^6+	0.0010	0.00029	mg/L		06/23/22 09:00	06/27/22 17:57	1
Potassium	4.5		0.12	0.052	mg/L		06/23/22 09:00	06/27/22 17:57	1
Beryllium	0.00030	J B	0.0010	0.000080	mg/L		06/23/22 09:00	06/27/22 17:57	1
Cadmium	ND		0.0010	0.00027	mg/L		06/23/22 09:00	06/27/22 17:57	1
Chromium	ND		0.0020	0.00050	mg/L		06/23/22 09:00	06/27/22 17:57	1
Cobalt	0.00074	J	0.0010	0.000092	mg/L		06/23/22 09:00	06/27/22 17:57	1
Lead	ND		0.0010	0.00018	mg/L		06/23/22 09:00	06/27/22 17:57	1
Molybdenum	0.0033	B	0.0020	0.00014	mg/L		06/23/22 09:00	06/27/22 17:57	1
Selenium	0.00078	J	0.0050	0.00037	mg/L		06/23/22 09:00	06/27/22 17:57	1
Thallium	ND		0.0010	0.000089	mg/L		06/23/22 09:00	06/27/22 17:57	1
Calcium	330		10	1.9	mg/L		06/23/22 09:00	06/24/22 14:58	50

Method: 7470A - Mercury (CVAA)

Client Sample ID: W-1
Date Collected: 06/13/22 14:05
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000061	mg/L		06/28/22 15:42	06/29/22 19:01	1

Client Sample ID: W-2
Date Collected: 06/14/22 12:30
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000061	mg/L		06/28/22 15:42	06/29/22 19:03	1

Eurofins Denver

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Method: 7470A - Mercury (CVAA)

Client Sample ID: W-3
Date Collected: 06/14/22 14:45
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000061	mg/L		06/28/22 15:42	06/29/22 19:06	1

Client Sample ID: W-4
Date Collected: 06/14/22 10:00
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000061	mg/L		06/28/22 15:42	06/29/22 19:08	1

Client Sample ID: MW-6
Date Collected: 06/13/22 17:30
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000061	mg/L		06/28/22 15:42	06/29/22 19:11	1

Client Sample ID: MW-7
Date Collected: 06/13/22 16:00
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000061	mg/L		06/28/22 15:42	06/29/22 19:13	1

Client Sample ID: MW-8
Date Collected: 06/14/22 16:10
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000092	J	0.00020	0.000061	mg/L		06/24/22 17:36	06/25/22 19:27	1

Client Sample ID: MW-8EB
Date Collected: 06/14/22 17:30
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000064	J	0.00020	0.000061	mg/L		06/24/22 17:36	06/25/22 19:30	1

Client Sample ID: W-1D
Date Collected: 06/13/22 14:05
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000061	mg/L		06/24/22 17:36	06/25/22 19:37	1

General Chemistry

Client Sample ID: W-1
Date Collected: 06/13/22 14:05
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU			06/24/22 12:58	1
Temperature	21.1	HF	1.0	1.0	Degrees C			06/24/22 12:58	1
Chloride	67		3.0	1.0	mg/L			06/28/22 17:50	1
Fluoride	0.34	J	0.50	0.17	mg/L			06/28/22 17:50	1
Sulfate	2700		100	21	mg/L			06/29/22 18:06	20
Alkalinity	440		10	3.1	mg/L			06/20/22 16:28	1
Bicarbonate Alkalinity as CaCO3	440		10	3.1	mg/L			06/20/22 16:28	1

Eurofins Denver

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

General Chemistry (Continued)

Client Sample ID: W-1
Date Collected: 06/13/22 14:05
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Carbonate Alkalinity as CaCO ₃	ND		10	3.1	mg/L			06/20/22 16:28	1
Total Suspended Solids	ND		4.0	1.1	mg/L			06/20/22 11:54	1
Total Dissolved Solids (TDS)	4100		40	19	mg/L			06/17/22 16:32	1

Client Sample ID: W-2
Date Collected: 06/14/22 12:30
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU			06/24/22 13:02	1
Temperature	20.8	HF	1.0	1.0	Degrees C			06/24/22 13:02	1
Chloride	95		3.0	1.0	mg/L			06/28/22 18:38	1
Fluoride	0.54		0.50	0.17	mg/L			06/28/22 18:38	1
Sulfate	4600		250	52	mg/L			06/29/22 18:39	50
Alkalinity	280		10	3.1	mg/L			06/20/22 16:36	1
Bicarbonate Alkalinity as CaCO ₃	280		10	3.1	mg/L			06/20/22 16:36	1
Carbonate Alkalinity as CaCO ₃	ND		10	3.1	mg/L			06/20/22 16:36	1
Total Suspended Solids	4.8		4.0	1.1	mg/L			06/20/22 11:54	1
Total Dissolved Solids (TDS)	6400		40	19	mg/L			06/17/22 16:32	1

Client Sample ID: W-3
Date Collected: 06/14/22 14:45
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.4	HF	0.1	0.1	SU			06/24/22 13:06	1
Temperature	20.2	HF	1.0	1.0	Degrees C			06/24/22 13:06	1
Chloride	210		15	5.1	mg/L			06/28/22 20:14	5
Fluoride	0.68		0.50	0.17	mg/L			06/29/22 18:55	1
Sulfate	8000		500	100	mg/L			07/02/22 20:50	100
Alkalinity	560		10	3.1	mg/L			06/20/22 16:45	1
Bicarbonate Alkalinity as CaCO ₃	560		10	3.1	mg/L			06/20/22 16:45	1
Carbonate Alkalinity as CaCO ₃	ND		10	3.1	mg/L			06/20/22 16:45	1
Total Suspended Solids	ND		4.0	1.1	mg/L			06/20/22 11:54	1
Total Dissolved Solids (TDS)	9600		1000	470	mg/L			06/17/22 16:32	1

Client Sample ID: W-4
Date Collected: 06/14/22 10:00
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.4	HF	0.1	0.1	SU			06/24/22 13:09	1
Temperature	19.8	HF	1.0	1.0	Degrees C			06/24/22 13:09	1
Chloride	340		15	5.1	mg/L			06/28/22 21:02	5
Fluoride	0.68		0.50	0.17	mg/L			06/29/22 19:59	1
Sulfate	13000		500	100	mg/L			07/02/22 21:54	100
Alkalinity	570		10	3.1	mg/L			06/20/22 16:55	1
Bicarbonate Alkalinity as CaCO ₃	570		10	3.1	mg/L			06/20/22 16:55	1
Carbonate Alkalinity as CaCO ₃	ND		10	3.1	mg/L			06/20/22 16:55	1
Total Suspended Solids	ND		4.0	1.1	mg/L			06/20/22 13:36	1
Total Dissolved Solids (TDS)	20000		1000	470	mg/L			06/17/22 16:32	1

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Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

General Chemistry

Client Sample ID: MW-6
Date Collected: 06/13/22 17:30
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.7	HF	0.1	0.1	SU			06/24/22 13:13	1
Temperature	19.6	HF	1.0	1.0	Degrees C			06/24/22 13:13	1
Chloride	72		3.0	1.0	mg/L			06/28/22 21:34	1
Fluoride	0.33	J	0.50	0.17	mg/L			06/29/22 20:31	1
Sulfate	3000		100	21	mg/L			06/29/22 20:47	20
Alkalinity	93		10	3.1	mg/L			06/20/22 17:00	1
Bicarbonate Alkalinity as CaCO3	19		10	3.1	mg/L			06/20/22 17:00	1
Carbonate Alkalinity as CaCO3	74		10	3.1	mg/L			06/20/22 17:00	1
Total Suspended Solids	ND		4.0	1.1	mg/L			06/20/22 13:36	1
Total Dissolved Solids (TDS)	4300		40	19	mg/L			06/17/22 16:32	1

Client Sample ID: MW-7
Date Collected: 06/13/22 16:00
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.8	HF	0.1	0.1	SU			06/24/22 13:17	1
Temperature	19.5	HF	1.0	1.0	Degrees C			06/24/22 13:17	1
Chloride	180		3.0	1.0	mg/L			06/28/22 22:06	1
Fluoride	0.24	J	0.50	0.17	mg/L			06/29/22 21:03	1
Sulfate	3300		100	21	mg/L			06/29/22 21:19	20
Alkalinity	120		10	3.1	mg/L			06/20/22 17:06	1
Bicarbonate Alkalinity as CaCO3	ND		10	3.1	mg/L			06/20/22 17:06	1
Carbonate Alkalinity as CaCO3	110		10	3.1	mg/L			06/20/22 17:06	1
Total Suspended Solids	ND		4.0	1.1	mg/L			06/20/22 13:36	1
Total Dissolved Solids (TDS)	4900		40	19	mg/L			06/17/22 16:32	1

Client Sample ID: MW-8
Date Collected: 06/14/22 16:10
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU			06/24/22 13:21	1
Temperature	19.6	HF	1.0	1.0	Degrees C			06/24/22 13:21	1
Chloride	280		15	5.1	mg/L			06/28/22 23:42	5
Fluoride	0.28	J	0.50	0.17	mg/L			06/29/22 21:35	1
Sulfate	6600		250	52	mg/L			06/29/22 21:51	50
Alkalinity	370		10	3.1	mg/L			06/20/22 17:14	1
Bicarbonate Alkalinity as CaCO3	370		10	3.1	mg/L			06/20/22 17:14	1
Carbonate Alkalinity as CaCO3	ND		10	3.1	mg/L			06/20/22 17:14	1
Total Suspended Solids	ND		4.0	1.1	mg/L			06/20/22 13:36	1
Total Dissolved Solids (TDS)	10000		1000	470	mg/L			06/17/22 16:32	1

Client Sample ID: MW-8EB
Date Collected: 06/14/22 17:30
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	4.3	HF	0.1	0.1	SU			07/05/22 13:14	1
Temperature	20.6	HF	1.0	1.0	Degrees C			07/05/22 13:14	1
Chloride	ND		3.0	1.0	mg/L			06/29/22 00:14	1
Fluoride	ND		0.50	0.17	mg/L			06/29/22 22:07	1
Sulfate	ND		5.0	1.0	mg/L			06/29/22 00:14	1

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Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

General Chemistry (Continued)

Client Sample ID: MW-8EB
Date Collected: 06/14/22 17:30
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	ND		10	3.1	mg/L			06/20/22 17:18	1
Bicarbonate Alkalinity as CaCO3	ND		10	3.1	mg/L			06/20/22 17:18	1
Carbonate Alkalinity as CaCO3	ND		10	3.1	mg/L			06/20/22 17:18	1
Total Suspended Solids	ND		4.0	1.1	mg/L			06/20/22 13:36	1
Total Dissolved Solids (TDS)	18		10	4.7	mg/L			06/17/22 16:32	1

Client Sample ID: W-1D
Date Collected: 06/13/22 14:05
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	7.6	HF	0.1	0.1	SU			06/24/22 13:37	1
Temperature	20.8	HF	1.0	1.0	Degrees C			06/24/22 13:37	1
Chloride	67		3.0	1.0	mg/L			06/29/22 00:30	1
Fluoride	0.35	J	0.50	0.17	mg/L			06/29/22 22:55	1
Sulfate	2700		100	21	mg/L			06/29/22 23:11	20
Alkalinity	420		10	3.1	mg/L			06/20/22 17:27	1
Bicarbonate Alkalinity as CaCO3	420		10	3.1	mg/L			06/20/22 17:27	1
Carbonate Alkalinity as CaCO3	ND		10	3.1	mg/L			06/20/22 17:27	1
Total Suspended Solids	ND		4.0	1.1	mg/L			06/20/22 13:36	1
Total Dissolved Solids (TDS)	4000		40	19	mg/L			06/17/22 16:32	1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: W-1
Date Collected: 06/13/22 14:05
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.00913	U	0.0430	0.0430	1.00	0.0856	pCi/L	06/24/22 13:16	07/18/22 08:59	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.7		40 - 110					06/24/22 13:16	07/18/22 08:59	1

Client Sample ID: W-2
Date Collected: 06/14/22 12:30
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.151		0.0991	0.100	1.00	0.137	pCi/L	06/24/22 13:16	07/18/22 09:03	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	66.1		40 - 110					06/24/22 13:16	07/18/22 09:03	1

Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: W-3
Date Collected: 06/14/22 14:45
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0454	U	0.0712	0.0713	1.00	0.123	pCi/L	06/24/22 13:16	07/18/22 09:03	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	75.7		40 - 110					06/24/22 13:16	07/18/22 09:03	1

Client Sample ID: W-4
Date Collected: 06/14/22 10:00
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.121	U	0.0875	0.0882	1.00	0.129	pCi/L	06/27/22 11:53	07/19/22 14:11	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.4		40 - 110					06/27/22 11:53	07/19/22 14:11	1

Client Sample ID: MW-6
Date Collected: 06/13/22 17:30
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.00259	U	0.0525	0.0525	1.00	0.105	pCi/L	06/24/22 13:16	07/18/22 09:03	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.5		40 - 110					06/24/22 13:16	07/18/22 09:03	1

Client Sample ID: MW-7
Date Collected: 06/13/22 16:00
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0561	U	0.0722	0.0723	1.00	0.120	pCi/L	06/24/22 13:16	07/18/22 09:04	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.2		40 - 110					06/24/22 13:16	07/18/22 09:04	1

Client Sample ID: MW-8
Date Collected: 06/14/22 16:10
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.104	U	0.0818	0.0824	1.00	0.121	pCi/L	06/24/22 13:16	07/18/22 09:04	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	84.6		40 - 110					06/24/22 13:16	07/18/22 09:04	1

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Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Method: 9315 - Radium-226 (GFPC)

Client Sample ID: MW-8EB
Date Collected: 06/14/22 17:30
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0197	U	0.0649	0.0649	1.00	0.120	pCi/L	06/24/22 13:16	07/18/22 09:04	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.4		40 - 110					06/24/22 13:16	07/18/22 09:04	1

Client Sample ID: W-1D
Date Collected: 06/13/22 14:05
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0524	U	0.0677	0.0679	1.00	0.113	pCi/L	06/24/22 13:16	07/18/22 09:04	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.5		40 - 110					06/24/22 13:16	07/18/22 09:04	1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: W-1
Date Collected: 06/13/22 14:05
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.04		0.410	0.421	1.00	0.534	pCi/L	06/24/22 13:34	07/05/22 12:08	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.7		40 - 110					06/24/22 13:34	07/05/22 12:08	1
Y Carrier	87.5		40 - 110					06/24/22 13:34	07/05/22 12:08	1

Client Sample ID: W-2
Date Collected: 06/14/22 12:30
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.07		0.554	0.563	1.00	0.780	pCi/L	06/24/22 13:34	07/05/22 12:08	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	66.1		40 - 110					06/24/22 13:34	07/05/22 12:08	1
Y Carrier	86.0		40 - 110					06/24/22 13:34	07/05/22 12:08	1

Client Sample ID: W-3
Date Collected: 06/14/22 14:45
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.663		0.414	0.419	1.00	0.600	pCi/L	06/24/22 13:34	07/05/22 12:08	1

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Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Method: 9320 - Radium-228 (GFPC) (Continued)

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	75.7		40 - 110	06/24/22 13:34	07/05/22 12:08	1
Y Carrier	86.7		40 - 110	06/24/22 13:34	07/05/22 12:08	1

Client Sample ID: W-4
Date Collected: 06/14/22 10:00
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-4
Matrix: Water

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.26		0.425	0.441	1.00	0.525	pCi/L	06/27/22 13:01	07/06/22 11:28	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.4		40 - 110					06/27/22 13:01	07/06/22 11:28	1
Y Carrier	88.2		40 - 110					06/27/22 13:01	07/06/22 11:28	1

Client Sample ID: MW-6
Date Collected: 06/13/22 17:30
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-5
Matrix: Water

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.103	U	0.292	0.292	1.00	0.518	pCi/L	06/24/22 13:34	07/05/22 12:09	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	99.5		40 - 110					06/24/22 13:34	07/05/22 12:09	1
Y Carrier	86.7		40 - 110					06/24/22 13:34	07/05/22 12:09	1

Client Sample ID: MW-7
Date Collected: 06/13/22 16:00
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-6
Matrix: Water

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0898	U	0.303	0.303	1.00	0.541	pCi/L	06/24/22 13:34	07/05/22 12:09	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.2		40 - 110					06/24/22 13:34	07/05/22 12:09	1
Y Carrier	86.7		40 - 110					06/24/22 13:34	07/05/22 12:09	1

Client Sample ID: MW-8
Date Collected: 06/14/22 16:10
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-7
Matrix: Water

Analyte	Result	Qualifier	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Radium-228	0.478	U	0.373	0.375	1.00	0.571	pCi/L	06/24/22 13:34	07/05/22 12:10	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	84.6		40 - 110					06/24/22 13:34	07/05/22 12:10	1
Y Carrier	84.5		40 - 110					06/24/22 13:34	07/05/22 12:10	1

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Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Method: 9320 - Radium-228 (GFPC)

Client Sample ID: MW-8EB
Date Collected: 06/14/22 17:30
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.186	U	0.226	0.227	1.00	0.492	pCi/L	06/24/22 13:34	07/05/22 12:10	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.4		40 - 110					06/24/22 13:34	07/05/22 12:10	1
Y Carrier	87.9		40 - 110					06/24/22 13:34	07/05/22 12:10	1

Client Sample ID: W-1D
Date Collected: 06/13/22 14:05
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.510		0.340	0.343	1.00	0.510	pCi/L	06/24/22 13:34	07/05/22 12:10	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	98.5		40 - 110					06/24/22 13:34	07/05/22 12:10	1
Y Carrier	87.9		40 - 110					06/24/22 13:34	07/05/22 12:10	1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: W-1
Date Collected: 06/13/22 14:05
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-1
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.05		0.412	0.423	5.00	0.534	pCi/L		07/18/22 17:51	1

Client Sample ID: W-2
Date Collected: 06/14/22 12:30
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-2
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.22		0.563	0.572	5.00	0.780	pCi/L		07/18/22 17:51	1

Client Sample ID: W-3
Date Collected: 06/14/22 14:45
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-3
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.709		0.420	0.425	5.00	0.600	pCi/L		07/18/22 17:51	1

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Client Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Client Sample ID: W-4
Date Collected: 06/14/22 10:00
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-4
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.38		0.434	0.450	5.00	0.525	pCi/L		07/19/22 22:30	1

Client Sample ID: MW-6
Date Collected: 06/13/22 17:30
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-5
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.106	U	0.297	0.297	5.00	0.518	pCi/L		07/18/22 17:51	1

Client Sample ID: MW-7
Date Collected: 06/13/22 16:00
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-6
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.146	U	0.311	0.312	5.00	0.541	pCi/L		07/18/22 17:51	1

Client Sample ID: MW-8
Date Collected: 06/14/22 16:10
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-7
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.583		0.382	0.384	5.00	0.571	pCi/L		07/18/22 17:51	1

Client Sample ID: MW-8EB
Date Collected: 06/14/22 17:30
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-8
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.167	U	0.235	0.236	5.00	0.492	pCi/L		07/18/22 17:51	1

Client Sample ID: W-1D
Date Collected: 06/13/22 14:05
Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-9
Matrix: Water

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.563		0.347	0.350	5.00	0.510	pCi/L		07/18/22 17:51	1

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QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 280-580153/1-A
Matrix: Water
Analysis Batch: 580425

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 580153

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.00221	J	0.10	0.0015	mg/L		07/07/22 09:10	07/09/22 10:46	1

Lab Sample ID: MB 280-580153/1-A
Matrix: Water
Analysis Batch: 580535

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 580153

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	ND	^+	20	9.1	ug/L		07/07/22 09:10	07/11/22 14:30	1

Lab Sample ID: LCS 280-580153/2-A
Matrix: Water
Analysis Batch: 580425

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 580153

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Boron	2.00	2.09		mg/L		105	86 - 110

Lab Sample ID: LCS 280-580153/2-A
Matrix: Water
Analysis Batch: 580535

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 580153

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Lithium	1000	1010	^+	ug/L		101	90 - 112

Lab Sample ID: 280-163427-1 MS
Matrix: Water
Analysis Batch: 580425

Client Sample ID: W-1
Prep Type: Total Recoverable
Prep Batch: 580153

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Boron	0.48	B	2.00	2.67		mg/L		109	87 - 113

Lab Sample ID: 280-163427-1 MS
Matrix: Water
Analysis Batch: 580535

Client Sample ID: W-1
Prep Type: Total Recoverable
Prep Batch: 580153

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Lithium	310	^+	1000	1360	^+	ug/L		106	89 - 114

Lab Sample ID: 280-163427-1 MSD
Matrix: Water
Analysis Batch: 580425

Client Sample ID: W-1
Prep Type: Total Recoverable
Prep Batch: 580153

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Boron	0.48	B	2.00	2.69		mg/L		110	87 - 113	1	20

Lab Sample ID: 280-163427-1 MSD
Matrix: Water
Analysis Batch: 580535

Client Sample ID: W-1
Prep Type: Total Recoverable
Prep Batch: 580153

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Lithium	310	^+	1000	1370	^+	ug/L		106	89 - 114	0	20

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QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 280-580439/1-A
Matrix: Water
Analysis Batch: 580536

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 580439

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		0.10	0.0015	mg/L		07/11/22 12:51	07/11/22 19:41	1
Lithium	ND		20	9.1	ug/L		07/11/22 12:51	07/11/22 19:41	1

Lab Sample ID: LCS 280-580439/2-A
Matrix: Water
Analysis Batch: 580536

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 580439

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Boron	2.00	1.98		mg/L		99	86 - 110
Lithium	1000	982		ug/L		98	90 - 112

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 280-578652/1-A
Matrix: Water
Analysis Batch: 579159

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 578652

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.0020	0.00040	mg/L		06/23/22 09:00	06/24/22 13:58	1
Magnesium	ND		50	21	ug/L		06/23/22 09:00	06/24/22 13:58	1
Arsenic	ND		0.0050	0.00033	mg/L		06/23/22 09:00	06/24/22 13:58	1
Barium	ND	^6+	0.0010	0.00029	mg/L		06/23/22 09:00	06/24/22 13:58	1
Potassium	ND		120	52	ug/L		06/23/22 09:00	06/24/22 13:58	1
Cadmium	ND		0.0010	0.00027	mg/L		06/23/22 09:00	06/24/22 13:58	1
Chromium	ND		0.0020	0.00050	mg/L		06/23/22 09:00	06/24/22 13:58	1
Cobalt	ND		0.0010	0.000092	mg/L		06/23/22 09:00	06/24/22 13:58	1
Lead	ND		0.0010	0.00018	mg/L		06/23/22 09:00	06/24/22 13:58	1
Molybdenum	0.000351	J	0.0020	0.00014	mg/L		06/23/22 09:00	06/24/22 13:58	1
Selenium	ND		0.0050	0.00037	mg/L		06/23/22 09:00	06/24/22 13:58	1
Thallium	ND		0.0010	0.000089	mg/L		06/23/22 09:00	06/24/22 13:58	1

Lab Sample ID: MB 280-578652/1-A
Matrix: Water
Analysis Batch: 579261

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 578652

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	ND		150	65	ug/L		06/23/22 09:00	06/27/22 14:19	1
Potassium	ND		120	52	ug/L		06/23/22 09:00	06/27/22 14:19	1
Beryllium	0.000182	J	0.0010	0.000080	mg/L		06/23/22 09:00	06/27/22 14:19	1

Lab Sample ID: LCS 280-578652/2-A
Matrix: Water
Analysis Batch: 579159

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 578652

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	0.0400	0.0396		mg/L		99	80 - 111
Magnesium	800	753		ug/L		94	80 - 120
Arsenic	0.0400	0.0380		mg/L		95	92 - 112
Barium	0.0400	0.0375	^6+	mg/L		94	92 - 117
Potassium	800	808		ug/L		101	80 - 120

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QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 280-578652/2-A

Matrix: Water

Analysis Batch: 579159

Client Sample ID: Lab Control Sample

Prep Type: Total Recoverable

Prep Batch: 578652

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cadmium	0.0400	0.0393		mg/L		98	91 - 114
Chromium	0.0400	0.0391		mg/L		98	91 - 114
Cobalt	0.0400	0.0389		mg/L		97	94 - 115
Lead	0.0400	0.0389		mg/L		97	95 - 116
Molybdenum	0.0400	0.0402		mg/L		100	84 - 117
Selenium	0.0400	0.0372		mg/L		93	90 - 115
Thallium	0.0400	0.0380		mg/L		95	94 - 115

Lab Sample ID: LCS 280-578652/2-A

Matrix: Water

Analysis Batch: 579261

Client Sample ID: Lab Control Sample

Prep Type: Total Recoverable

Prep Batch: 578652

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sodium	800	800		ug/L		100	80 - 120
Potassium	800	830		ug/L		104	80 - 120
Beryllium	0.0400	0.0400		mg/L		100	87 - 118

Lab Sample ID: 280-163427-1 MS

Matrix: Water

Analysis Batch: 579159

Client Sample ID: W-1

Prep Type: Total Recoverable

Prep Batch: 578652

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Magnesium	270000		800	267000	4	ug/L		251	80 - 120
Calcium	340		0.800	349	4	mg/L		840	80 - 120

Lab Sample ID: 280-163427-1 MS

Matrix: Water

Analysis Batch: 579160

Client Sample ID: W-1

Prep Type: Total Recoverable

Prep Batch: 578652

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	ND		0.0400	0.0403		mg/L		101	80 - 111
Arsenic	ND		0.0400	0.0385		mg/L		96	92 - 112
Barium	0.0086	^6+	0.0400	0.0463	^6+	mg/L		94	92 - 117
Beryllium	ND		0.0400	0.0356		mg/L		89	87 - 118
Cadmium	ND		0.0400	0.0379		mg/L		95	91 - 114
Chromium	ND		0.0400	0.0386		mg/L		97	91 - 114
Cobalt	0.00076	J F1	0.0400	0.0381	F1	mg/L		93	94 - 115
Lead	ND	F1	0.0400	0.0375	F1	mg/L		94	95 - 116
Molybdenum	0.0029	B	0.0400	0.0450		mg/L		105	84 - 117
Selenium	0.00094	J	0.0400	0.0374		mg/L		91	90 - 115
Thallium	ND	F1	0.0400	0.0368	F1	mg/L		92	94 - 115

Lab Sample ID: 280-163427-1 MS

Matrix: Water

Analysis Batch: 579261

Client Sample ID: W-1

Prep Type: Total Recoverable

Prep Batch: 578652

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Sodium	530000		0.800	519	4	mg/L		-6675 7806	80 - 120

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QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: 280-163427-1 MS

Matrix: Water

Analysis Batch: 579261

Client Sample ID: W-1

Prep Type: Total Recoverable

Prep Batch: 578652

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Potassium	5700	J	0.800	6.53	4	mg/L		-7176 78	80 - 120

Lab Sample ID: 280-163427-1 MSD

Matrix: Water

Analysis Batch: 579159

Client Sample ID: W-1

Prep Type: Total Recoverable

Prep Batch: 578652

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Magnesium	270000		0.800	275	4	mg/L		-3310 2082	80 - 120	3	20
Calcium	340		0.800	358	4	mg/L		2017	80 - 120	3	20

Lab Sample ID: 280-163427-1 MSD

Matrix: Water

Analysis Batch: 579160

Client Sample ID: W-1

Prep Type: Total Recoverable

Prep Batch: 578652

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	ND		0.0400	0.0426		mg/L		107	80 - 111	6	20
Arsenic	ND		0.0400	0.0398		mg/L		99	92 - 112	3	20
Barium	0.0086	^6+	0.0400	0.0469	^6+	mg/L		96	92 - 117	1	20
Beryllium	ND		0.0400	0.0389		mg/L		97	87 - 118	9	20
Cadmium	ND		0.0400	0.0387		mg/L		97	91 - 114	2	20
Chromium	ND		0.0400	0.0391		mg/L		98	91 - 114	1	20
Cobalt	0.00076	J F1	0.0400	0.0389		mg/L		95	94 - 115	2	20
Lead	ND	F1	0.0400	0.0385		mg/L		96	95 - 116	3	20
Molybdenum	0.0029	B	0.0400	0.0455		mg/L		107	84 - 117	1	20
Selenium	0.00094	J	0.0400	0.0398		mg/L		97	90 - 115	6	20
Thallium	ND	F1	0.0400	0.0382		mg/L		96	94 - 115	4	20

Lab Sample ID: 280-163427-1 MSD

Matrix: Water

Analysis Batch: 579261

Client Sample ID: W-1

Prep Type: Total Recoverable

Prep Batch: 578652

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Sodium	530000		800	545000	4	ug/L		1250	80 - 120	5	20
Potassium	5700	J	800	7260	4	ug/L		189	80 - 120	11	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 280-579025/1-A

Matrix: Water

Analysis Batch: 579150

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 579025

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000061	mg/L		06/24/22 17:36	06/25/22 18:54	1

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QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Method: 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 280-579025/2-A
Matrix: Water
Analysis Batch: 579150

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 579025

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	0.00500	0.00499		mg/L		100	84 - 120

Lab Sample ID: MB 280-579347/1-A
Matrix: Water
Analysis Batch: 579547

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 579347

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.000061	mg/L		06/28/22 15:42	06/29/22 18:00	1

Lab Sample ID: LCS 280-579347/2-A
Matrix: Water
Analysis Batch: 579547

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 579347

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	0.00500	0.00486		mg/L		97	84 - 120

Method: 9040B - pH

Lab Sample ID: LCS 280-579165/27
Matrix: Water
Analysis Batch: 579165

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Lab Sample ID: LCS 280-579165/50
Matrix: Water
Analysis Batch: 579165

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Lab Sample ID: 280-163427-9 DU
Matrix: Water
Analysis Batch: 579165

Client Sample ID: W-1D
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH adj. to 25 deg C	7.6	HF	7.6		SU		0.1	5
Temperature	20.8	HF	20.4		Degrees C		2	10

Lab Sample ID: LCS 280-580032/27
Matrix: Water
Analysis Batch: 580032

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
pH adj. to 25 deg C	7.00	7.1		SU		101	99 - 101

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QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-579295/6

Matrix: Water

Analysis Batch: 579295

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	1.0	mg/L			06/28/22 11:06	1
Fluoride	ND		0.50	0.17	mg/L			06/28/22 11:06	1
Sulfate	ND		5.0	1.0	mg/L			06/28/22 11:06	1

Lab Sample ID: MB 280-579295/90

Matrix: Water

Analysis Batch: 579295

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	1.0	mg/L			06/29/22 03:26	1
Sulfate	ND		5.0	1.0	mg/L			06/29/22 03:26	1

Lab Sample ID: LCS 280-579295/4

Matrix: Water

Analysis Batch: 579295

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	100	99.5		mg/L		100	90 - 110
Fluoride	5.00	4.72		mg/L		94	90 - 110
Sulfate	100	99.6		mg/L		100	90 - 110

Lab Sample ID: LCS 280-579295/88

Matrix: Water

Analysis Batch: 579295

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	100	101		mg/L		101	90 - 110
Sulfate	100	101		mg/L		101	90 - 110

Lab Sample ID: LCSD 280-579295/5

Matrix: Water

Analysis Batch: 579295

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	100	99.5		mg/L		100	90 - 110	0	10
Fluoride	5.00	4.70		mg/L		94	90 - 110	0	10
Sulfate	100	99.6		mg/L		100	90 - 110	0	10

Lab Sample ID: LCSD 280-579295/89

Matrix: Water

Analysis Batch: 579295

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	100	101		mg/L		101	90 - 110	0	10
Sulfate	100	101		mg/L		101	90 - 110	0	10

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QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: MRL 280-579295/3

Matrix: Water

Analysis Batch: 579295

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	5.00	4.61		mg/L		92	50 - 150
Fluoride	0.500	0.450	J	mg/L		90	50 - 150
Sulfate	5.00	4.32	J	mg/L		86	50 - 150

Lab Sample ID: MB 280-579382/13

Matrix: Water

Analysis Batch: 579382

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	1.0	mg/L			06/29/22 13:16	1
Fluoride	ND		0.50	0.17	mg/L			06/29/22 13:16	1
Sulfate	ND		5.0	1.0	mg/L			06/29/22 13:16	1

Lab Sample ID: LCS 280-579382/11

Matrix: Water

Analysis Batch: 579382

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	100	101		mg/L		101	90 - 110
Fluoride	5.00	4.98		mg/L		100	90 - 110
Sulfate	100	102		mg/L		102	90 - 110

Lab Sample ID: LCSD 280-579382/12

Matrix: Water

Analysis Batch: 579382

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	100	101		mg/L		101	90 - 110	0	10
Fluoride	5.00	4.88		mg/L		98	90 - 110	2	10
Sulfate	100	101		mg/L		101	90 - 110	0	10

Lab Sample ID: MRL 280-579382/10

Matrix: Water

Analysis Batch: 579382

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	5.00	4.71		mg/L		94	50 - 150
Fluoride	0.500	0.463	J	mg/L		93	50 - 150
Sulfate	5.00	4.46	J	mg/L		89	50 - 150

Lab Sample ID: MB 280-579709/52

Matrix: Water

Analysis Batch: 579709

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		5.0	1.0	mg/L			07/02/22 17:38	1

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QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 280-579709/50

Matrix: Water

Analysis Batch: 579709

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfate	100	102		mg/L		102	90 - 110

Lab Sample ID: LCSD 280-579709/51

Matrix: Water

Analysis Batch: 579709

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Sulfate	100	102		mg/L		102	90 - 110	1	10

Lab Sample ID: MRL 280-579709/3

Matrix: Water

Analysis Batch: 579709

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Sulfate	5.00	4.51	J	mg/L		90	50 - 150

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 280-578604/6

Matrix: Water

Analysis Batch: 578604

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity	ND		10	3.1	mg/L			06/20/22 14:59	1
Bicarbonate Alkalinity as CaCO3	ND		10	3.1	mg/L			06/20/22 14:59	1
Carbonate Alkalinity as CaCO3	ND		10	3.1	mg/L			06/20/22 14:59	1

Lab Sample ID: LCS 280-578604/4

Matrix: Water

Analysis Batch: 578604

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Alkalinity	200	194		mg/L		97	89 - 109

Lab Sample ID: LCSD 280-578604/5

Matrix: Water

Analysis Batch: 578604

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Alkalinity	200	202		mg/L		101	89 - 109	4	10

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 280-578524/3

Matrix: Water

Analysis Batch: 578524

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			06/20/22 11:53	1

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QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Method: SM 2540D - Solids, Total Suspended (TSS) (Continued)

Lab Sample ID: LCS 280-578524/1
Matrix: Water
Analysis Batch: 578524

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	97.2		mg/L		97	79 - 114

Lab Sample ID: LCSD 280-578524/2
Matrix: Water
Analysis Batch: 578524

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Total Suspended Solids	100	86.0		mg/L		86	79 - 114	12	20

Lab Sample ID: MB 280-578537/3
Matrix: Water
Analysis Batch: 578537

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		4.0	1.1	mg/L			06/20/22 13:35	1

Lab Sample ID: LCS 280-578537/1
Matrix: Water
Analysis Batch: 578537

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	83.6		mg/L		84	79 - 114

Lab Sample ID: LCSD 280-578537/2
Matrix: Water
Analysis Batch: 578537

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Total Suspended Solids	100	88.8		mg/L		89	79 - 114	6	20

Method: SM2540 C - Total Dissolved Solids

Lab Sample ID: MB 280-578417/1
Matrix: Water
Analysis Batch: 578417

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (TDS)	ND		10	4.7	mg/L			06/17/22 16:32	1

Lab Sample ID: LCS 280-578417/2
Matrix: Water
Analysis Batch: 578417

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Dissolved Solids (TDS)	502	469		mg/L		93	88 - 114

QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Method: SM2540 C - Total Dissolved Solids (Continued)

Lab Sample ID: 280-163427-1 DU
Matrix: Water
Analysis Batch: 578417

Client Sample ID: W-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids (TDS)	4100		4000		mg/L		2	10

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-571464/1-A
Matrix: Water
Analysis Batch: 574266

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 571464

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.02346	U	0.0557	0.0557	1.00	0.102	pCi/L	06/24/22 13:16	07/18/22 08:58	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.2		40 - 110					06/24/22 13:16	07/18/22 08:58	1

Lab Sample ID: LCS 160-571464/2-A
Matrix: Water
Analysis Batch: 574266

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 571464

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits
Radium-226	11.3	10.48		1.08	1.00	0.0843	pCi/L	92	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	93.2		40 - 110						

Lab Sample ID: LCSD 160-571464/3-A
Matrix: Water
Analysis Batch: 574266

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 571464

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits	RER	RER Limit
Radium-226	11.3	10.90		1.13	1.00	0.119	pCi/L	96	75 - 125	0.19	1
Carrier	LCSD %Yield	LCSD Qualifier	Limits								
Ba Carrier	86.3		40 - 110								

Lab Sample ID: MB 160-571772/1-A
Matrix: Water
Analysis Batch: 574441

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 571772

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.02828	U	0.0654	0.0655	1.00	0.119	pCi/L	06/27/22 11:53	07/19/22 08:08	1
Carrier	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.3		40 - 110					06/27/22 11:53	07/19/22 08:08	1

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QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-571772/2-A
Matrix: Water
Analysis Batch: 574441

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 571772

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits
Radium-226	11.3	10.64		1.10	1.00	0.0940	pCi/L	94	75 - 125
Carrier	%Yield	LCS Qualifier	Limits						
Ba Carrier	91.1		40 - 110						

Lab Sample ID: LCSD 160-571772/3-A
Matrix: Water
Analysis Batch: 574441

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 571772

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits	RER	RER Limit
Radium-226	11.3	11.10		1.15	1.00	0.127	pCi/L	98	75 - 125	0.21	1
Carrier	%Yield	LCSD Qualifier	Limits								
Ba Carrier	83.3		40 - 110								

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-571468/1-A
Matrix: Water
Analysis Batch: 572693

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 571468

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.2345	U	0.282	0.283	1.00	0.466	pCi/L	06/24/22 13:34	07/05/22 12:06	1
Carrier	%Yield	MB Qualifier	Limits							
Ba Carrier	92.2		40 - 110							
Y Carrier	86.7		40 - 110							

Lab Sample ID: LCS 160-571468/2-A
Matrix: Water
Analysis Batch: 572693

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 571468

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits
Radium-228	8.48	9.369		1.27	1.00	0.423	pCi/L	111	75 - 125
Carrier	%Yield	LCS Qualifier	Limits						
Ba Carrier	93.2		40 - 110						
Y Carrier	87.5		40 - 110						

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QC Sample Results

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Method: 9320 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCSD 160-571468/3-A

Matrix: Water

Analysis Batch: 572693

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 571468

Analyte		Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits	RER	RER Limit
Radium-228		8.48	10.39		1.41	1.00	0.557	pCi/L	123	75 - 125	0.38	1
	LCSD	LCSD										
Carrier	%Yield	Qualifier	Limits									
Ba Carrier	86.3		40 - 110									
Y Carrier	86.7		40 - 110									

Lab Sample ID: MB 160-571788/1-A

Matrix: Water

Analysis Batch: 572903

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 571788

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.3461	U	0.322	0.324	1.00	0.512	pCi/L	06/27/22 13:01	07/06/22 11:52	1
	MB	MB								
Carrier	%Yield	Qualifier	Limits							
Ba Carrier	86.3		40 - 110							
Y Carrier	89.0		40 - 110							
								Prepared	Analyzed	Dil Fac
								06/27/22 13:01	07/06/22 11:52	1
								06/27/22 13:01	07/06/22 11:52	1

Lab Sample ID: LCS 160-571788/2-A

Matrix: Water

Analysis Batch: 572903

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 571788

Analyte		Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits
Radium-228		8.47	10.36		1.38	1.00	0.569	pCi/L	122	75 - 125
	LCS	LCS								
Carrier	%Yield	Qualifier	Limits							
Ba Carrier	91.1		40 - 110							
Y Carrier	86.7		40 - 110							

Lab Sample ID: LCSD 160-571788/3-A

Matrix: Water

Analysis Batch: 572904

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 571788

Analyte		Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits	RER	RER Limit
Radium-228		8.47	10.04		1.35	1.00	0.548	pCi/L	118	75 - 125	0.12	1
	LCSD	LCSD										
Carrier	%Yield	Qualifier	Limits									
Ba Carrier	83.3		40 - 110									
Y Carrier	86.4		40 - 110									

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QC Association Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Metals

Prep Batch: 578652

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-1	W-1	Total Recoverable	Water	3005A	
280-163427-2	W-2	Total Recoverable	Water	3005A	
280-163427-3	W-3	Total Recoverable	Water	3005A	
280-163427-4	W-4	Total Recoverable	Water	3005A	
280-163427-5	MW-6	Total Recoverable	Water	3005A	
280-163427-6	MW-7	Total Recoverable	Water	3005A	
280-163427-7	MW-8	Total Recoverable	Water	3005A	
280-163427-8	MW-8EB	Total Recoverable	Water	3005A	
280-163427-9	W-1D	Total Recoverable	Water	3005A	
MB 280-578652/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 280-578652/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-163427-1 MS	W-1	Total Recoverable	Water	3005A	
280-163427-1 MSD	W-1	Total Recoverable	Water	3005A	

Prep Batch: 579025

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-7	MW-8	Total/NA	Water	7470A	
280-163427-8	MW-8EB	Total/NA	Water	7470A	
280-163427-9	W-1D	Total/NA	Water	7470A	
MB 280-579025/1-A	Method Blank	Total/NA	Water	7470A	
LCS 280-579025/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 579150

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-7	MW-8	Total/NA	Water	7470A	579025
280-163427-8	MW-8EB	Total/NA	Water	7470A	579025
280-163427-9	W-1D	Total/NA	Water	7470A	579025
MB 280-579025/1-A	Method Blank	Total/NA	Water	7470A	579025
LCS 280-579025/2-A	Lab Control Sample	Total/NA	Water	7470A	579025

Analysis Batch: 579159

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-1	W-1	Total Recoverable	Water	6020B	578652
280-163427-2	W-2	Total Recoverable	Water	6020B	578652
280-163427-3	W-3	Total Recoverable	Water	6020B	578652
280-163427-4	W-4	Total Recoverable	Water	6020B	578652
280-163427-5	MW-6	Total Recoverable	Water	6020B	578652
280-163427-6	MW-7	Total Recoverable	Water	6020B	578652
280-163427-7	MW-8	Total Recoverable	Water	6020B	578652
280-163427-9	W-1D	Total Recoverable	Water	6020B	578652
MB 280-578652/1-A	Method Blank	Total Recoverable	Water	6020B	578652
LCS 280-578652/2-A	Lab Control Sample	Total Recoverable	Water	6020B	578652
280-163427-1 MS	W-1	Total Recoverable	Water	6020B	578652
280-163427-1 MSD	W-1	Total Recoverable	Water	6020B	578652

Analysis Batch: 579160

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-1	W-1	Total Recoverable	Water	6020B	578652
280-163427-2	W-2	Total Recoverable	Water	6020B	578652
280-163427-3	W-3	Total Recoverable	Water	6020B	578652
280-163427-1 MS	W-1	Total Recoverable	Water	6020B	578652

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QC Association Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Metals (Continued)

Analysis Batch: 579160 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-1 MSD	W-1	Total Recoverable	Water	6020B	578652

Analysis Batch: 579261

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-1	W-1	Total Recoverable	Water	6020B	578652
280-163427-2	W-2	Total Recoverable	Water	6020B	578652
280-163427-3	W-3	Total Recoverable	Water	6020B	578652
280-163427-4	W-4	Total Recoverable	Water	6020B	578652
280-163427-4	W-4	Total Recoverable	Water	6020B	578652
280-163427-5	MW-6	Total Recoverable	Water	6020B	578652
280-163427-5	MW-6	Total Recoverable	Water	6020B	578652
280-163427-6	MW-7	Total Recoverable	Water	6020B	578652
280-163427-7	MW-8	Total Recoverable	Water	6020B	578652
280-163427-8	MW-8EB	Total Recoverable	Water	6020B	578652
280-163427-9	W-1D	Total Recoverable	Water	6020B	578652
MB 280-578652/1-A	Method Blank	Total Recoverable	Water	6020B	578652
LCS 280-578652/2-A	Lab Control Sample	Total Recoverable	Water	6020B	578652
280-163427-1 MS	W-1	Total Recoverable	Water	6020B	578652
280-163427-1 MSD	W-1	Total Recoverable	Water	6020B	578652

Analysis Batch: 579282

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-6	MW-7	Total Recoverable	Water	6020B	578652
280-163427-7	MW-8	Total Recoverable	Water	6020B	578652
280-163427-8	MW-8EB	Total Recoverable	Water	6020B	578652
280-163427-9	W-1D	Total Recoverable	Water	6020B	578652

Prep Batch: 579347

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-1	W-1	Total/NA	Water	7470A	
280-163427-2	W-2	Total/NA	Water	7470A	
280-163427-3	W-3	Total/NA	Water	7470A	
280-163427-4	W-4	Total/NA	Water	7470A	
280-163427-5	MW-6	Total/NA	Water	7470A	
280-163427-6	MW-7	Total/NA	Water	7470A	
MB 280-579347/1-A	Method Blank	Total/NA	Water	7470A	
LCS 280-579347/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 579506

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-8	MW-8EB	Total Recoverable	Water	6020B	578652

Analysis Batch: 579547

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-1	W-1	Total/NA	Water	7470A	579347
280-163427-2	W-2	Total/NA	Water	7470A	579347
280-163427-3	W-3	Total/NA	Water	7470A	579347
280-163427-4	W-4	Total/NA	Water	7470A	579347
280-163427-5	MW-6	Total/NA	Water	7470A	579347
280-163427-6	MW-7	Total/NA	Water	7470A	579347
MB 280-579347/1-A	Method Blank	Total/NA	Water	7470A	579347

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QC Association Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Metals (Continued)

Analysis Batch: 579547 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 280-579347/2-A	Lab Control Sample	Total/NA	Water	7470A	579347

Prep Batch: 580153

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-1	W-1	Total Recoverable	Water	3005A	
280-163427-2	W-2	Total Recoverable	Water	3005A	
280-163427-3	W-3	Total Recoverable	Water	3005A	
280-163427-4	W-4	Total Recoverable	Water	3005A	
MB 280-580153/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 280-580153/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-163427-1 MS	W-1	Total Recoverable	Water	3005A	
280-163427-1 MSD	W-1	Total Recoverable	Water	3005A	

Analysis Batch: 580425

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-1	W-1	Total Recoverable	Water	6010C	580153
280-163427-2	W-2	Total Recoverable	Water	6010C	580153
280-163427-3	W-3	Total Recoverable	Water	6010C	580153
280-163427-4	W-4	Total Recoverable	Water	6010C	580153
MB 280-580153/1-A	Method Blank	Total Recoverable	Water	6010C	580153
LCS 280-580153/2-A	Lab Control Sample	Total Recoverable	Water	6010C	580153
280-163427-1 MS	W-1	Total Recoverable	Water	6010C	580153
280-163427-1 MSD	W-1	Total Recoverable	Water	6010C	580153

Prep Batch: 580439

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-5	MW-6	Total Recoverable	Water	3005A	
280-163427-6	MW-7	Total Recoverable	Water	3005A	
280-163427-7	MW-8	Total Recoverable	Water	3005A	
280-163427-8	MW-8EB	Total Recoverable	Water	3005A	
280-163427-9	W-1D	Total Recoverable	Water	3005A	
MB 280-580439/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 280-580439/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 580535

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-1	W-1	Total Recoverable	Water	6010C	580153
280-163427-2	W-2	Total Recoverable	Water	6010C	580153
280-163427-3	W-3	Total Recoverable	Water	6010C	580153
280-163427-4	W-4	Total Recoverable	Water	6010C	580153
MB 280-580153/1-A	Method Blank	Total Recoverable	Water	6010C	580153
LCS 280-580153/2-A	Lab Control Sample	Total Recoverable	Water	6010C	580153
280-163427-1 MS	W-1	Total Recoverable	Water	6010C	580153
280-163427-1 MSD	W-1	Total Recoverable	Water	6010C	580153

Analysis Batch: 580536

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-5	MW-6	Total Recoverable	Water	6010C	580439
280-163427-6	MW-7	Total Recoverable	Water	6010C	580439
280-163427-7	MW-8	Total Recoverable	Water	6010C	580439
280-163427-8	MW-8EB	Total Recoverable	Water	6010C	580439

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QC Association Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Metals (Continued)

Analysis Batch: 580536 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-9	W-1D	Total Recoverable	Water	6010C	580439
MB 280-580439/1-A	Method Blank	Total Recoverable	Water	6010C	580439
LCS 280-580439/2-A	Lab Control Sample	Total Recoverable	Water	6010C	580439

Analysis Batch: 580651

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-5	MW-6	Total Recoverable	Water	6010C	580439
280-163427-6	MW-7	Total Recoverable	Water	6010C	580439
280-163427-7	MW-8	Total Recoverable	Water	6010C	580439
280-163427-8	MW-8EB	Total Recoverable	Water	6010C	580439
280-163427-9	W-1D	Total Recoverable	Water	6010C	580439

General Chemistry

Analysis Batch: 578417

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-1	W-1	Total/NA	Water	SM2540 C	
280-163427-2	W-2	Total/NA	Water	SM2540 C	
280-163427-3	W-3	Total/NA	Water	SM2540 C	
280-163427-4	W-4	Total/NA	Water	SM2540 C	
280-163427-5	MW-6	Total/NA	Water	SM2540 C	
280-163427-6	MW-7	Total/NA	Water	SM2540 C	
280-163427-7	MW-8	Total/NA	Water	SM2540 C	
280-163427-8	MW-8EB	Total/NA	Water	SM2540 C	
280-163427-9	W-1D	Total/NA	Water	SM2540 C	
MB 280-578417/1	Method Blank	Total/NA	Water	SM2540 C	
LCS 280-578417/2	Lab Control Sample	Total/NA	Water	SM2540 C	
280-163427-1 DU	W-1	Total/NA	Water	SM2540 C	

Analysis Batch: 578524

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-1	W-1	Total/NA	Water	SM 2540D	
280-163427-2	W-2	Total/NA	Water	SM 2540D	
280-163427-3	W-3	Total/NA	Water	SM 2540D	
MB 280-578524/3	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-578524/1	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-578524/2	Lab Control Sample Dup	Total/NA	Water	SM 2540D	

Analysis Batch: 578537

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-4	W-4	Total/NA	Water	SM 2540D	
280-163427-5	MW-6	Total/NA	Water	SM 2540D	
280-163427-6	MW-7	Total/NA	Water	SM 2540D	
280-163427-7	MW-8	Total/NA	Water	SM 2540D	
280-163427-8	MW-8EB	Total/NA	Water	SM 2540D	
280-163427-9	W-1D	Total/NA	Water	SM 2540D	
MB 280-578537/3	Method Blank	Total/NA	Water	SM 2540D	
LCS 280-578537/1	Lab Control Sample	Total/NA	Water	SM 2540D	
LCSD 280-578537/2	Lab Control Sample Dup	Total/NA	Water	SM 2540D	

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QC Association Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

General Chemistry

Analysis Batch: 578604

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-1	W-1	Total/NA	Water	SM 2320B	
280-163427-2	W-2	Total/NA	Water	SM 2320B	
280-163427-3	W-3	Total/NA	Water	SM 2320B	
280-163427-4	W-4	Total/NA	Water	SM 2320B	
280-163427-5	MW-6	Total/NA	Water	SM 2320B	
280-163427-6	MW-7	Total/NA	Water	SM 2320B	
280-163427-7	MW-8	Total/NA	Water	SM 2320B	
280-163427-8	MW-8EB	Total/NA	Water	SM 2320B	
280-163427-9	W-1D	Total/NA	Water	SM 2320B	
MB 280-578604/6	Method Blank	Total/NA	Water	SM 2320B	
LCS 280-578604/4	Lab Control Sample	Total/NA	Water	SM 2320B	
LCSD 280-578604/5	Lab Control Sample Dup	Total/NA	Water	SM 2320B	

Analysis Batch: 579165

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-1	W-1	Total/NA	Water	9040B	
280-163427-2	W-2	Total/NA	Water	9040B	
280-163427-3	W-3	Total/NA	Water	9040B	
280-163427-4	W-4	Total/NA	Water	9040B	
280-163427-5	MW-6	Total/NA	Water	9040B	
280-163427-6	MW-7	Total/NA	Water	9040B	
280-163427-7	MW-8	Total/NA	Water	9040B	
280-163427-9	W-1D	Total/NA	Water	9040B	
LCS 280-579165/27	Lab Control Sample	Total/NA	Water	9040B	
LCS 280-579165/50	Lab Control Sample	Total/NA	Water	9040B	
280-163427-9 DU	W-1D	Total/NA	Water	9040B	

Analysis Batch: 579295

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-1	W-1	Total/NA	Water	9056A	
280-163427-2	W-2	Total/NA	Water	9056A	
280-163427-3	W-3	Total/NA	Water	9056A	
280-163427-4	W-4	Total/NA	Water	9056A	
280-163427-5	MW-6	Total/NA	Water	9056A	
280-163427-6	MW-7	Total/NA	Water	9056A	
280-163427-7	MW-8	Total/NA	Water	9056A	
280-163427-8	MW-8EB	Total/NA	Water	9056A	
280-163427-9	W-1D	Total/NA	Water	9056A	
MB 280-579295/6	Method Blank	Total/NA	Water	9056A	
MB 280-579295/90	Method Blank	Total/NA	Water	9056A	
LCS 280-579295/4	Lab Control Sample	Total/NA	Water	9056A	
LCS 280-579295/88	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-579295/5	Lab Control Sample Dup	Total/NA	Water	9056A	
LCSD 280-579295/89	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-579295/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 579382

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-1	W-1	Total/NA	Water	9056A	
280-163427-2	W-2	Total/NA	Water	9056A	
280-163427-3	W-3	Total/NA	Water	9056A	

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QC Association Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

General Chemistry (Continued)

Analysis Batch: 579382 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-4	W-4	Total/NA	Water	9056A	
280-163427-5	MW-6	Total/NA	Water	9056A	
280-163427-5	MW-6	Total/NA	Water	9056A	
280-163427-6	MW-7	Total/NA	Water	9056A	
280-163427-6	MW-7	Total/NA	Water	9056A	
280-163427-7	MW-8	Total/NA	Water	9056A	
280-163427-7	MW-8	Total/NA	Water	9056A	
280-163427-8	MW-8EB	Total/NA	Water	9056A	
280-163427-9	W-1D	Total/NA	Water	9056A	
280-163427-9	W-1D	Total/NA	Water	9056A	
MB 280-579382/13	Method Blank	Total/NA	Water	9056A	
LCS 280-579382/11	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-579382/12	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-579382/10	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 579709

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-3	W-3	Total/NA	Water	9056A	
280-163427-4	W-4	Total/NA	Water	9056A	
MB 280-579709/52	Method Blank	Total/NA	Water	9056A	
LCS 280-579709/50	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-579709/51	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-579709/3	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 580032

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-8	MW-8EB	Total/NA	Water	9040B	
LCS 280-580032/27	Lab Control Sample	Total/NA	Water	9040B	

Rad

Prep Batch: 571464

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-1	W-1	Total/NA	Water	PrecSep-21	
280-163427-2	W-2	Total/NA	Water	PrecSep-21	
280-163427-3	W-3	Total/NA	Water	PrecSep-21	
280-163427-5	MW-6	Total/NA	Water	PrecSep-21	
280-163427-6	MW-7	Total/NA	Water	PrecSep-21	
280-163427-7	MW-8	Total/NA	Water	PrecSep-21	
280-163427-8	MW-8EB	Total/NA	Water	PrecSep-21	
280-163427-9	W-1D	Total/NA	Water	PrecSep-21	
MB 160-571464/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-571464/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-571464/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 571468

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-1	W-1	Total/NA	Water	PrecSep_0	
280-163427-2	W-2	Total/NA	Water	PrecSep_0	
280-163427-3	W-3	Total/NA	Water	PrecSep_0	
280-163427-5	MW-6	Total/NA	Water	PrecSep_0	

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QC Association Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Rad (Continued)

Prep Batch: 571468 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-6	MW-7	Total/NA	Water	PrecSep_0	
280-163427-7	MW-8	Total/NA	Water	PrecSep_0	
280-163427-8	MW-8EB	Total/NA	Water	PrecSep_0	
280-163427-9	W-1D	Total/NA	Water	PrecSep_0	
MB 160-571468/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-571468/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-571468/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Prep Batch: 571772

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-4	W-4	Total/NA	Water	PrecSep-21	
MB 160-571772/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-571772/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-571772/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 571788

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163427-4	W-4	Total/NA	Water	PrecSep_0	
MB 160-571788/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-571788/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-571788/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Client Sample ID: W-1

Date Collected: 06/13/22 14:05

Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	580153	07/07/22 09:10	KMS	TAL DEN
Total Recoverable	Analysis	6010C		1			580535	07/11/22 14:39	MAB	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	580153	07/07/22 09:10	KMS	TAL DEN
Total Recoverable	Analysis	6010C		1			580425	07/09/22 10:55	MAB	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		50			579159	06/24/22 14:05	LMT	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		1			579160	06/25/22 00:14	LMT	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		50			579261	06/27/22 14:26	LMT	TAL DEN
Total/NA	Prep	7470A			30 mL	50 mL	579347	06/28/22 15:42	CEH	TAL DEN
Total/NA	Analysis	7470A		1			579547	06/29/22 19:01	CEH	TAL DEN
Total/NA	Analysis	9040B		1			579165	06/24/22 12:58	KEG	TAL DEN
Total/NA	Analysis	9056A		1	10 mL	10 mL	579295	06/28/22 17:50	MEC	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	579382	06/29/22 18:06	MEC	TAL DEN
Total/NA	Analysis	SM 2320B		1			578604	06/20/22 16:28	KEG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	578524	06/20/22 11:54	CAI	TAL DEN
Total/NA	Analysis	SM2540 C		1	25 mL	100 mL	578417	06/17/22 16:32	CAI	TAL DEN
Total/NA	Prep	PrecSep-21			994.44 mL	1.0 g	571464	06/24/22 13:16	MS	TAL SL
Total/NA	Analysis	9315		1			574266	07/18/22 08:59	CLP	TAL SL
Total/NA	Prep	PrecSep_0			994.44 mL	1.0 g	571468	06/24/22 13:34	MS	TAL SL
Total/NA	Analysis	9320		1			572693	07/05/22 12:08	CLP	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			574323	07/18/22 17:51	EMH	TAL SL

Client Sample ID: W-2

Date Collected: 06/14/22 12:30

Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	580153	07/07/22 09:10	KMS	TAL DEN
Total Recoverable	Analysis	6010C		1			580535	07/11/22 15:11	MAB	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	580153	07/07/22 09:10	KMS	TAL DEN
Total Recoverable	Analysis	6010C		1			580425	07/09/22 11:40	MAB	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		50			579159	06/24/22 14:24	LMT	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		1			579160	06/25/22 00:33	LMT	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		50			579261	06/27/22 14:45	LMT	TAL DEN
Total/NA	Prep	7470A			30 mL	50 mL	579347	06/28/22 15:42	CEH	TAL DEN
Total/NA	Analysis	7470A		1			579547	06/29/22 19:03	CEH	TAL DEN
Total/NA	Analysis	9040B		1			579165	06/24/22 13:02	KEG	TAL DEN
Total/NA	Analysis	9056A		1	10 mL	10 mL	579295	06/28/22 18:38	MEC	TAL DEN

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Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Client Sample ID: W-2

Lab Sample ID: 280-163427-2

Date Collected: 06/14/22 12:30

Matrix: Water

Date Received: 06/15/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		50	5 mL	5 mL	579382	06/29/22 18:39	MEC	TAL DEN
Total/NA	Analysis	SM 2320B		1			578604	06/20/22 16:36	KEG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	578524	06/20/22 11:54	CAI	TAL DEN
Total/NA	Analysis	SM2540 C		1	25 mL	100 mL	578417	06/17/22 16:32	CAI	TAL DEN
Total/NA	Prep	PrecSep-21			1008.99 mL	1.0 g	571464	06/24/22 13:16	MS	TAL SL
Total/NA	Analysis	9315		1			574295	07/18/22 09:03	CLP	TAL SL
Total/NA	Prep	PrecSep_0			1008.99 mL	1.0 g	571468	06/24/22 13:34	MS	TAL SL
Total/NA	Analysis	9320		1			572693	07/05/22 12:08	CLP	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			574323	07/18/22 17:51	EMH	TAL SL

Client Sample ID: W-3

Lab Sample ID: 280-163427-3

Date Collected: 06/14/22 14:45

Matrix: Water

Date Received: 06/15/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	580153	07/07/22 09:10	KMS	TAL DEN
Total Recoverable	Analysis	6010C		1			580535	07/11/22 15:15	MAB	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	580153	07/07/22 09:10	KMS	TAL DEN
Total Recoverable	Analysis	6010C		1			580425	07/09/22 11:45	MAB	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		50			579159	06/24/22 14:35	LMT	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		1			579160	06/25/22 00:36	LMT	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		50			579261	06/27/22 15:28	LMT	TAL DEN
Total/NA	Prep	7470A			30 mL	50 mL	579347	06/28/22 15:42	CEH	TAL DEN
Total/NA	Analysis	7470A		1			579547	06/29/22 19:06	CEH	TAL DEN
Total/NA	Analysis	9040B		1			579165	06/24/22 13:06	KEG	TAL DEN
Total/NA	Analysis	9056A		5	10 mL	10 mL	579295	06/28/22 20:14	MEC	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	579382	06/29/22 18:55	MEC	TAL DEN
Total/NA	Analysis	9056A		100	10 mL	10 mL	579709	07/02/22 20:50	RAF	TAL DEN
Total/NA	Analysis	SM 2320B		1			578604	06/20/22 16:45	KEG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	578524	06/20/22 11:54	CAI	TAL DEN
Total/NA	Analysis	SM2540 C		1	1 mL	100 mL	578417	06/17/22 16:32	CAI	TAL DEN
Total/NA	Prep	PrecSep-21			995.99 mL	1.0 g	571464	06/24/22 13:16	MS	TAL SL
Total/NA	Analysis	9315		1			574295	07/18/22 09:03	CLP	TAL SL
Total/NA	Prep	PrecSep_0			995.99 mL	1.0 g	571468	06/24/22 13:34	MS	TAL SL
Total/NA	Analysis	9320		1			572693	07/05/22 12:08	CLP	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			574323	07/18/22 17:51	EMH	TAL SL

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Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Client Sample ID: W-4

Lab Sample ID: 280-163427-4

Date Collected: 06/14/22 10:00

Matrix: Water

Date Received: 06/15/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	580153	07/07/22 09:10	KMS	TAL DEN
Total Recoverable	Analysis	6010C		1			580535	07/11/22 15:19	MAB	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	580153	07/07/22 09:10	KMS	TAL DEN
Total Recoverable	Analysis	6010C		1			580425	07/09/22 11:49	MAB	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		50			579159	06/24/22 14:39	LMT	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		50			579261	06/27/22 15:32	LMT	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		1			579261	06/27/22 15:44	LMT	TAL DEN
Total/NA	Prep	7470A			30 mL	50 mL	579347	06/28/22 15:42	CEH	TAL DEN
Total/NA	Analysis	7470A		1			579547	06/29/22 19:08	CEH	TAL DEN
Total/NA	Analysis	9040B		1			579165	06/24/22 13:09	KEG	TAL DEN
Total/NA	Analysis	9056A		5	10 mL	10 mL	579295	06/28/22 21:02	MEC	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	579382	06/29/22 19:59	MEC	TAL DEN
Total/NA	Analysis	9056A		100	10 mL	10 mL	579709	07/02/22 21:54	RAF	TAL DEN
Total/NA	Analysis	SM 2320B		1			578604	06/20/22 16:55	KEG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	578537	06/20/22 13:36	CAI	TAL DEN
Total/NA	Analysis	SM2540 C		1	1 mL	100 mL	578417	06/17/22 16:32	CAI	TAL DEN
Total/NA	Prep	PrecSep-21			993.06 mL	1.0 g	571772	06/27/22 11:53	MS	TAL SL
Total/NA	Analysis	9315		1			574440	07/19/22 14:11	CLP	TAL SL
Total/NA	Prep	PrecSep_0			993.06 mL	1.0 g	571788	06/27/22 13:01	MS	TAL SL
Total/NA	Analysis	9320		1			572904	07/06/22 11:28	CLP	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			574577	07/19/22 22:30	EMH	TAL SL

Client Sample ID: MW-6

Lab Sample ID: 280-163427-5

Date Collected: 06/13/22 17:30

Matrix: Water

Date Received: 06/15/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	580439	07/11/22 12:51	PFM	TAL DEN
Total Recoverable	Analysis	6010C		1			580536	07/11/22 20:27	MAB	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	580439	07/11/22 12:51	PFM	TAL DEN
Total Recoverable	Analysis	6010C		1			580651	07/12/22 14:49	MAB	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		50			579159	06/24/22 14:43	LMT	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		1			579261	06/27/22 15:48	LMT	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		50			579261	06/27/22 15:51	LMT	TAL DEN
Total/NA	Prep	7470A			30 mL	50 mL	579347	06/28/22 15:42	CEH	TAL DEN
Total/NA	Analysis	7470A		1			579547	06/29/22 19:11	CEH	TAL DEN
Total/NA	Analysis	9040B		1			579165	06/24/22 13:13	KEG	TAL DEN

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Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Client Sample ID: MW-6

Date Collected: 06/13/22 17:30

Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1	10 mL	10 mL	579295	06/28/22 21:34	MEC	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	579382	06/29/22 20:31	MEC	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	579382	06/29/22 20:47	MEC	TAL DEN
Total/NA	Analysis	SM 2320B		1			578604	06/20/22 17:00	KEG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	578537	06/20/22 13:36	CAI	TAL DEN
Total/NA	Analysis	SM2540 C		1	25 mL	100 mL	578417	06/17/22 16:32	CAI	TAL DEN
Total/NA	Prep	PrecSep-21			996.08 mL	1.0 g	571464	06/24/22 13:16	MS	TAL SL
Total/NA	Analysis	9315		1			574295	07/18/22 09:03	CLP	TAL SL
Total/NA	Prep	PrecSep_0			996.08 mL	1.0 g	571468	06/24/22 13:34	MS	TAL SL
Total/NA	Analysis	9320		1			572693	07/05/22 12:09	CLP	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			574323	07/18/22 17:51	EMH	TAL SL

Client Sample ID: MW-7

Date Collected: 06/13/22 16:00

Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	580439	07/11/22 12:51	PFM	TAL DEN
Total Recoverable	Analysis	6010C		1			580536	07/11/22 20:31	MAB	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	580439	07/11/22 12:51	PFM	TAL DEN
Total Recoverable	Analysis	6010C		2			580651	07/12/22 14:53	MAB	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		50			579159	06/24/22 14:46	LMT	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		50			579261	06/27/22 15:55	LMT	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		1			579282	06/27/22 17:46	LMT	TAL DEN
Total/NA	Prep	7470A			30 mL	50 mL	579347	06/28/22 15:42	CEH	TAL DEN
Total/NA	Analysis	7470A		1			579547	06/29/22 19:13	CEH	TAL DEN
Total/NA	Analysis	9040B		1			579165	06/24/22 13:17	KEG	TAL DEN
Total/NA	Analysis	9056A		1	10 mL	10 mL	579295	06/28/22 22:06	MEC	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	579382	06/29/22 21:03	MEC	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	579382	06/29/22 21:19	MEC	TAL DEN
Total/NA	Analysis	SM 2320B		1			578604	06/20/22 17:06	KEG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	578537	06/20/22 13:36	CAI	TAL DEN
Total/NA	Analysis	SM2540 C		1	25 mL	100 mL	578417	06/17/22 16:32	CAI	TAL DEN
Total/NA	Prep	PrecSep-21			995.34 mL	1.0 g	571464	06/24/22 13:16	MS	TAL SL
Total/NA	Analysis	9315		1			574295	07/18/22 09:04	CLP	TAL SL
Total/NA	Prep	PrecSep_0			995.34 mL	1.0 g	571468	06/24/22 13:34	MS	TAL SL
Total/NA	Analysis	9320		1			572693	07/05/22 12:09	CLP	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			574323	07/18/22 17:51	EMH	TAL SL

Eurofins Denver

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Client Sample ID: MW-8

Date Collected: 06/14/22 16:10

Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	580439	07/11/22 12:51	PFM	TAL DEN
Total Recoverable	Analysis	6010C		1			580536	07/11/22 20:35	MAB	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	580439	07/11/22 12:51	PFM	TAL DEN
Total Recoverable	Analysis	6010C		2			580651	07/12/22 14:57	MAB	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		50			579159	06/24/22 14:50	LMT	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		50			579261	06/27/22 15:59	LMT	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		1			579282	06/27/22 17:50	LMT	TAL DEN
Total/NA	Prep	7470A			30 mL	50 mL	579025	06/24/22 17:36	MAB	TAL DEN
Total/NA	Analysis	7470A		1			579150	06/25/22 19:27	MAB	TAL DEN
Total/NA	Analysis	9040B		1			579165	06/24/22 13:21	KEG	TAL DEN
Total/NA	Analysis	9056A		5	10 mL	10 mL	579295	06/28/22 23:42	MEC	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	579382	06/29/22 21:35	MEC	TAL DEN
Total/NA	Analysis	9056A		50	5 mL	5 mL	579382	06/29/22 21:51	MEC	TAL DEN
Total/NA	Analysis	SM 2320B		1			578604	06/20/22 17:14	KEG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	578537	06/20/22 13:36	CAI	TAL DEN
Total/NA	Analysis	SM2540 C		1	1 mL	100 mL	578417	06/17/22 16:32	CAI	TAL DEN
Total/NA	Prep	PrecSep-21			991.74 mL	1.0 g	571464	06/24/22 13:16	MS	TAL SL
Total/NA	Analysis	9315		1			574295	07/18/22 09:04	CLP	TAL SL
Total/NA	Prep	PrecSep_0			991.74 mL	1.0 g	571468	06/24/22 13:34	MS	TAL SL
Total/NA	Analysis	9320		1			572693	07/05/22 12:10	CLP	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			574323	07/18/22 17:51	EMH	TAL SL

Client Sample ID: MW-8EB

Date Collected: 06/14/22 17:30

Date Received: 06/15/22 09:00

Lab Sample ID: 280-163427-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	580439	07/11/22 12:51	PFM	TAL DEN
Total Recoverable	Analysis	6010C		1			580536	07/11/22 20:39	MAB	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	580439	07/11/22 12:51	PFM	TAL DEN
Total Recoverable	Analysis	6010C		2			580651	07/12/22 15:18	MAB	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		1			579261	06/27/22 16:03	LMT	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		1			579282	06/27/22 17:54	LMT	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		1			579506	06/29/22 14:52	LMT	TAL DEN
Total/NA	Prep	7470A			30 mL	50 mL	579025	06/24/22 17:36	MAB	TAL DEN
Total/NA	Analysis	7470A		1			579150	06/25/22 19:30	MAB	TAL DEN
Total/NA	Analysis	9040B		1			580032	07/05/22 13:14	KEG	TAL DEN

Eurofins Denver

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Client Sample ID: MW-8EB

Lab Sample ID: 280-163427-8

Date Collected: 06/14/22 17:30

Matrix: Water

Date Received: 06/15/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1	10 mL	10 mL	579295	06/29/22 00:14	MEC	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	579382	06/29/22 22:07	MEC	TAL DEN
Total/NA	Analysis	SM 2320B		1			578604	06/20/22 17:18	KEG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	578537	06/20/22 13:36	CAI	TAL DEN
Total/NA	Analysis	SM2540 C		1	100 mL	100 mL	578417	06/17/22 16:32	CAI	TAL DEN
Total/NA	Prep	PrecSep-21			994.17 mL	1.0 g	571464	06/24/22 13:16	MS	TAL SL
Total/NA	Analysis	9315		1			574295	07/18/22 09:04	CLP	TAL SL
Total/NA	Prep	PrecSep_0			994.17 mL	1.0 g	571468	06/24/22 13:34	MS	TAL SL
Total/NA	Analysis	9320		1			572693	07/05/22 12:10	CLP	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			574323	07/18/22 17:51	EMH	TAL SL

Client Sample ID: W-1D

Lab Sample ID: 280-163427-9

Date Collected: 06/13/22 14:05

Matrix: Water

Date Received: 06/15/22 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	50 mL	580439	07/11/22 12:51	PFM	TAL DEN
Total Recoverable	Analysis	6010C		1			580536	07/11/22 20:43	MAB	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	580439	07/11/22 12:51	PFM	TAL DEN
Total Recoverable	Analysis	6010C		1			580651	07/12/22 15:22	MAB	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		50			579159	06/24/22 14:58	LMT	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		50			579261	06/27/22 16:06	LMT	TAL DEN
Total Recoverable	Prep	3005A			50 mL	50 mL	578652	06/23/22 09:00	PFM	TAL DEN
Total Recoverable	Analysis	6020B		1			579282	06/27/22 17:57	LMT	TAL DEN
Total/NA	Prep	7470A			30 mL	50 mL	579025	06/24/22 17:36	MAB	TAL DEN
Total/NA	Analysis	7470A		1			579150	06/25/22 19:37	MAB	TAL DEN
Total/NA	Analysis	9040B		1			579165	06/24/22 13:37	KEG	TAL DEN
Total/NA	Analysis	9056A		1	10 mL	10 mL	579295	06/29/22 00:30	MEC	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	579382	06/29/22 22:55	MEC	TAL DEN
Total/NA	Analysis	9056A		20	5 mL	5 mL	579382	06/29/22 23:11	MEC	TAL DEN
Total/NA	Analysis	SM 2320B		1			578604	06/20/22 17:27	KEG	TAL DEN
Total/NA	Analysis	SM 2540D		1	250 mL	250 mL	578537	06/20/22 13:36	CAI	TAL DEN
Total/NA	Analysis	SM2540 C		1	25 mL	100 mL	578417	06/17/22 16:32	CAI	TAL DEN
Total/NA	Prep	PrecSep-21			1003.59 mL	1.0 g	571464	06/24/22 13:16	MS	TAL SL
Total/NA	Analysis	9315		1			574295	07/18/22 09:04	CLP	TAL SL
Total/NA	Prep	PrecSep_0			1003.59 mL	1.0 g	571468	06/24/22 13:34	MS	TAL SL
Total/NA	Analysis	9320		1			572693	07/05/22 12:10	CLP	TAL SL
Total/NA	Analysis	Ra226_Ra228		1			574323	07/18/22 17:51	EMH	TAL SL

Eurofins Denver

Lab Chronicle

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Laboratory References:

TAL DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
TAL SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

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Accreditation/Certification Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Laboratory: Eurofins Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-23
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
6020B	3005A	Water	Calcium
6020B	3005A	Water	Magnesium
6020B	3005A	Water	Potassium
6020B	3005A	Water	Sodium
9040B		Water	Temperature

Laboratory: Eurofins St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-25
ANAB	Dept. of Defense ELAP	L2305	04-06-25
ANAB	Dept. of Energy	L2305.01	04-06-25
ANAB	ISO/IEC 17025	L2305	04-06-25
Arizona	State	AZ0813	12-08-22
California	Los Angeles County Sanitation Districts	10259	06-30-22 *
California	State	2886	07-01-22 *
Connecticut	State	PH-0241	03-31-23
Florida	NELAP	E87689	06-30-23
HI - RadChem Recognition	State	n/a	06-30-23
Illinois	NELAP	200023	11-30-22
Iowa	State	373	12-01-22
Kansas	NELAP	E-10236	10-31-22
Kentucky (DW)	State	KY90125	12-31-22
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-22
Louisiana	NELAP	04080	06-30-22 *
Louisiana (All)	NELAP	04080	06-30-23
Louisiana (DW)	State	LA011	12-31-22
Maryland	State	310	09-30-22
MI - RadChem Recognition	State	9005	06-30-22 *
Missouri	State	780	06-30-25
Nevada	State	MO000542020-1	07-31-22
New Jersey	NELAP	MO002	06-30-23
New York	NELAP	11616	04-01-23
North Dakota	State	R-207	06-30-22 *
NRC	NRC	24-24817-01	12-31-22
Oklahoma	NELAP	9997	08-31-22
Oregon	NELAP	4157	09-01-22
Pennsylvania	NELAP	68-00540	02-28-23
South Carolina	State	85002001	06-30-22 *
Texas	NELAP	T104704193	07-31-22
US Fish & Wildlife	US Federal Programs	058448	07-31-22
USDA	US Federal Programs	P330-17-00028	03-11-23
Utah	NELAP	MO000542021-14	08-01-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins Denver

Accreditation/Certification Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Laboratory: Eurofins St. Louis (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Virginia	NELAP	10310	06-14-23
Washington	State	C592	08-30-22
West Virginia DEP	State	381	10-31-22

Client Information Client Contact: Molly Reeves Company: HDR Inc		Sampler: Tara Kent Phone: 720 933 7496		Lab PW: Bandy, Darlene F E-Mail: Darlene.Bandy@Eurofinset.com		Carrier Tracking No(s): Page: 1 of 1 Job #:		COC No:	
Address: 1670 Broadway, Suite 3400 City: Denver State, Zip: CO, 80202 Phone: 734-263-7138(Tel) Email: Molly.Reeves@hdrinc.com		Project Name: Xcel Energy GW Monitoring-Hayden Project #: 28014377 SSOW#:		Due Date Requested: 5/15/22 TAT Requested (days): 5		Analysis Requested		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Matrix (Water, Solid, or Tissue, A&M) Preservation Code:		Sample Type (C=comp, G=grab) Sample Time Sample Date		Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) 2540C, Calcd - TDS 400-Phos, Smeared on TSS 2320B Alkalinity, 300.0, 28D, 300, 48HR Anions - SHORT HOLD 200-7, 300-9, 240-1, 240-2, 240-3, 240-4, 240-5, 240-6, 240-7, 240-8, 240-9, 240-10, 240-11, 240-12, 240-13, 240-14, 240-15, 240-16, 240-17, 240-18, 240-19, 240-20, 240-21, 240-22, 240-23, 240-24, 240-25, 240-26, 240-27, 240-28, 240-29, 240-30, 240-31, 240-32, 240-33, 240-34, 240-35, 240-36, 240-37, 240-38, 240-39, 240-40, 240-41, 240-42, 240-43, 240-44, 240-45, 240-46, 240-47, 240-48, 240-49, 240-50, 240-51, 240-52, 240-53, 240-54, 240-55, 240-56, 240-57, 240-58, 240-59, 240-60, 240-61, 240-62, 240-63, 240-64, 240-65, 240-66, 240-67, 240-68, 240-69, 240-70, 240-71, 240-72, 240-73, 240-74, 240-75, 240-76, 240-77, 240-78, 240-79, 240-80, 240-81, 240-82, 240-83, 240-84, 240-85, 240-86, 240-87, 240-88, 240-89, 240-90, 240-91, 240-92, 240-93, 240-94, 240-95, 240-96, 240-97, 240-98, 240-99, 240-100, 240-101, 240-102, 240-103, 240-104, 240-105, 240-106, 240-107, 240-108, 240-109, 240-110, 240-111, 240-112, 240-113, 240-114, 240-115, 240-116, 240-117, 240-118, 240-119, 240-120, 240-121, 240-122, 240-123, 240-124, 240-125, 240-126, 240-127, 240-128, 240-129, 240-130, 240-131, 240-132, 240-133, 240-134, 240-135, 240-136, 240-137, 240-138, 240-139, 240-140, 240-141, 240-142, 240-143, 240-144, 240-145, 240-146, 240-147, 240-148, 240-149, 240-150, 240-151, 240-152, 240-153, 240-154, 240-155, 240-156, 240-157, 240-158, 240-159, 240-160, 240-161, 240-162, 240-163, 240-164, 240-165, 240-166, 240-167, 240-168, 240-169, 240-170, 240-171, 240-172, 240-173, 240-174, 240-175, 240-176, 240-177, 240-178, 240-179, 240-180, 240-181, 240-182, 240-183, 240-184, 240-185, 240-186, 240-187, 240-188, 240-189, 240-190, 240-191, 240-192, 240-193, 240-194, 240-195, 240-196, 240-197, 240-198, 240-199, 240-200, 240-201, 240-202, 240-203, 240-204, 240-205, 240-206, 240-207, 240-208, 240-209, 240-210, 240-211, 240-212, 240-213, 240-214, 240-215, 240-216, 240-217, 240-218, 240-219, 240-220, 240-221, 240-222, 240-223, 240-224, 240-225, 240-226, 240-227, 240-228, 240-229, 240-230, 240-231, 240-232, 240-233, 240-234, 240-235, 240-236, 240-237, 240-238, 240-239, 240-240, 240-241, 240-242, 240-243, 240-244, 240-245, 240-246, 240-247, 240-248, 240-249, 240-250, 240-251, 240-252, 240-253, 240-254, 240-255, 240-256, 240-257, 240-258, 240-259, 240-260, 240-261, 240-262, 240-263, 240-264, 240-265, 240-266, 240-267, 240-268, 240-269, 240-270, 240-271, 240-272, 240-273, 240-274, 240-275, 240-276, 240-277, 240-278, 240-279, 240-280, 240-281, 240-282, 240-283, 240-284, 240-285, 240-286, 240-287, 240-288, 240-289, 240-290, 240-291, 240-292, 240-293, 240-294, 240-295, 240-296, 240-297, 240-298, 240-299, 240-300, 240-301, 240-302, 240-303, 240-304, 240-305, 240-306, 240-307, 240-308, 240-309, 240-310, 240-311, 240-312, 240-313, 240-314, 240-315, 240-316, 240-317, 240-318, 240-319, 240-320, 240-321, 240-322, 240-323, 240-324, 240-325, 240-326, 240-327, 240-328, 240-329, 240-330, 240-331, 240-332, 240-333, 240-334, 240-335, 240-336, 240-337, 240-338, 240-339, 240-340, 240-341, 240-342, 240-343, 240-344, 240-345, 240-346, 240-347, 240-348, 240-349, 240-350, 240-351, 240-352, 240-353, 240-354, 240-355, 240-356, 240-357, 240-358, 240-359, 240-360, 240-361, 240-362, 240-363, 240-364, 240-365, 240-366, 240-367, 240-368, 240-369, 240-370, 240-371, 240-372, 240-373, 240-374, 240-375, 240-376, 240-377, 240-378, 240-379, 240-380, 240-381, 240-382, 240-383, 240-384, 240-385, 240-3					

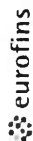
Eurofins Denver

4955 Yarrow Street

Arvada, CO 80002

Phone: 303-736-0100 Fax: 303-431-7171

Chain of Custody Record

Environment Testing
America

Client Information (Sub Contract Lab)		Sampler:		Lab PM:	Carrier Tracking No(s):		COC No:
Client Contact		Phone:		Harrington, Danielle M			280-618808 1
Shipping/Receiving		Company:		E-Mail:	State of Origin:		Page
TestAmerica Laboratories, Inc.				Danielle Harrington@et.eurofins.com	Colorado		Page 1 of 1
Address:		Due Date Requested:		Accreditations Required (See note):		Job #	
13715 Rider Trail North,		7/20/2022		DoD - A2LA		280-163427-1	
City:		TAT Requested (days):		Analysis Requested		Preservation Codes:	
Earth City						A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
State, Zip:		PO #				M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Y - Trizma Z - other (specify)	
Phone:		WO #					
314-298-8566(Tel) 314-298-8757(Fax)							
Email:		Project #					
		28014377					
Site:		SSOW#					
Xcel Energy CCR - Hayden Station							

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=Water, S=Solid, O=Soil, ST=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Performance MS/MSD (Yes or No)	9315_Ra226/PreSep_21 Ra226 (1/3) - SUB	9320_Ra228/PreSep_0 Ra228 (2/3) - SUB	Ra226Ra228_GFP/ Ra226/Ra228 Calc (3/3) - SUB	Total Number of Containers	Special Instructions/Note:
W-1 (280-163427-1)	6/13/22	14:05	Mountain	Water	X	X	X	X	X	2	
W-2 (280-163427-2)	6/14/22	12:30	Mountain	Water	X	X	X	X	X	2	
W-3 (280-163427-3)	6/14/22	14:45	Mountain	Water	X	X	X	X	X	3	
W-4 (280-163427-4)	6/14/22	10:00	Mountain	Water	X	X	X	X	X	2	
MW-6 (280-163427-5)	6/13/22	17:30	Mountain	Water	X	X	X	X	X	2	
MW-7 (280-163427-6)	6/13/22	16:00	Mountain	Water	X	X	X	X	X	2	
MW-8 (280-163427-7)	6/14/22	16:10	Mountain	Water	X	X	X	X	X	2	
MW-8EB (280-163427-8)	6/14/22	17:30	Mountain	Water	X	X	X	X	X	3	
W-1D (280-163427-9)	6/13/22	14:05	Mountain	Water	X	X	X	X	X	2	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification	
Unconfirmed	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Deliverable Requested: I, II, III, IV, Other (specify)	☐ Return To Client ☐ Disposal By Lab ☐ Archive For Months
Primary Deliverable Rank: 4	
Empty Kit Relinquished by:	
Relinquished by:	Date:
Relinquished by:	Date:
Relinquished by:	Date:
Custody Seals Intact:	Custody Seal No.:
Δ Yes Δ No	

Relinquished by:	Date/Time:	Company:	Method of Shipment:
Relinquished by:	Date/Time:	Company:	
Relinquished by:	Date/Time:	Company:	
Cooler Temperature(s) °C and Other Remarks			

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-163427-1

Login Number: 163427

List Number: 1

Creator: Roehsner, Karen P

List Source: Eurofins Denver

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

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-163427-1

Login Number: 163427

List Number: 2

Creator: Booker, Autumn R

List Source: Eurofins St. Louis

List Creation: 06/20/22 10:09 AM

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

Tracer/Carrier Summary

Client: HDR Inc
Project/Site: Xcel Energy GW CCR Monitoring - Hayden

Job ID: 280-163427-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)					
Lab Sample ID	Client Sample ID	Ba (40-110)					
280-163427-1	W-1	99.7					
280-163427-2	W-2	66.1					
280-163427-3	W-3	75.7					
280-163427-4	W-4	93.4					
280-163427-5	MW-6	99.5					
280-163427-6	MW-7	96.2					
280-163427-7	MW-8	84.6					
280-163427-8	MW-8EB	94.4					
280-163427-9	W-1D	98.5					
LCS 160-571464/2-A	Lab Control Sample	93.2					
LCS 160-571772/2-A	Lab Control Sample	91.1					
LCSD 160-571464/3-A	Lab Control Sample Dup	86.3					
LCSD 160-571772/3-A	Lab Control Sample Dup	83.3					
MB 160-571464/1-A	Method Blank	92.2					
MB 160-571772/1-A	Method Blank	86.3					
Tracer/Carrier Legend							
Ba = Ba Carrier							

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)					
Lab Sample ID	Client Sample ID	Ba (40-110)	Y (40-110)				
280-163427-1	W-1	99.7	87.5				
280-163427-2	W-2	66.1	86.0				
280-163427-3	W-3	75.7	86.7				
280-163427-4	W-4	93.4	88.2				
280-163427-5	MW-6	99.5	86.7				
280-163427-6	MW-7	96.2	86.7				
280-163427-7	MW-8	84.6	84.5				
280-163427-8	MW-8EB	94.4	87.9				
280-163427-9	W-1D	98.5	87.9				
LCS 160-571468/2-A	Lab Control Sample	93.2	87.5				
LCS 160-571788/2-A	Lab Control Sample	91.1	86.7				
LCSD 160-571468/3-A	Lab Control Sample Dup	86.3	86.7				
LCSD 160-571788/3-A	Lab Control Sample Dup	83.3	86.4				
MB 160-571468/1-A	Method Blank	92.2	86.7				
MB 160-571788/1-A	Method Blank	86.3	89.0				
Tracer/Carrier Legend							
Ba = Ba Carrier							
Y = Y Carrier							

DATA VALIDATION AND USABILITY REPORT

Metals by USEPA SW-846 Method 6010C/6020A

Mercury by USEPA SW-846 Method 7470A

Anions by USEPA SW-846 Method 9056A

Total Dissolved Solids (TDS) by Standard Method SM2540C

Total Suspended Solids (TSS) by Standard Method SM2540D

Radium-226 (Ra-226) by USEPA SW-846 Method 9315

Radium-228 (Ra-228) by USEPA SW-846 Method 9320

pH by USEPA SW-846 Method 9040B

Project: Xcel Energy Coal Combustion Residuals (CCR) Project –
Hayden - December 2021

Project/Task Number: 10279371-001

Sample Data Package: 280-156573-1
280-156573-2 (radiochemistry)
Lab Report Dates: 1/13/2022, 1/26/2022
Data Validation Report Date: 1/28/22

Laboratory: TestAmerica Denver, Arvada, Colorado (anions, TDS, TSS, pH);
TestAmerica Canton, North Canton, Ohio (metals);
TestAmerica Saint Louis, Earth City, Missouri (radiochem)

Sample Matrix: Groundwater

Sampling Dates: December 6-7, 2021

Validation Guidelines: Project Plan (*Statistical Method Certification for Compliance with the Coal Combustion Residuals [CCR] Rule, for Xcel Energy [HDR, December 7, 2015]*), United States Environmental Protection Agency (USEPA) Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, 3rd edition (SW-846); USEPA *National Functional Guidelines for Inorganic Data Review*, USEPA-540-R-10-011, January 2010; USEPA *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use*, USEPA 540-R-08-005, January 13, 2009; and professional judgment

Validation Level: Stage 2BVM (100%)

Data Reviewer: Aryka Thomson, HDR

Sample ID	Matrix	Lab ID	Date Collected	Metals Mercury	Anions	TDS TSS	RA-226 RA-228
W-1	GW	280-156573-1	12/6/21	X	X	X	X
W-1D	QC	280-156573-2	12/6/21	X	X	X	X
W-2	GW	280-156573-4	12/6/21	X	X	X	X
W-3	GW	280-156573-3	12/6/21	X	X	X	X
W-4	GW	280-156573-5	12/6/21	X	X	X	X
MW-6	GW	280-156573-6	12/7/21	X	X	X	X
MW-6EB	QC	280-156573-7	12/7/21	X	X	X	X
MW-7	GW	280-156573-8	12/7/21	X	X	X	X
MW-8	GW	280-156573-9	12/7/21	X	X	X	X

SUMMARY

All laboratory data were acceptable with qualification.

I. SAMPLE RECEIPT / CHAIN OF CUSTODY

Samples were shipped or hand-delivered to the TestAmerica Denver facility, who then forwarded the appropriate sample containers to the other facilities. Samples were received at 0.9°C to 2.0°C, within the correct temperature range of 0-6°C. The chains of custody (COCs) from the field and for transfer to the different lab facilities were filled out and signed.

II. HOLDING TIMES

Holding time criteria were generally met except as noted below.

Metals: Samples were analyzed within 180 days of collection.

Mercury: Samples were analyzed within 28 days of collection.

Anions: Samples were analyzed within 28 days of collection except sulfate in sample W-3, which has been qualified as estimated (J).

TDS: Samples W-1 and MW-6 were analyzed past the 7-day holding time and were qualified as estimated (J).

TSS: Samples were analyzed within 7 days of collection.

Radium-226: Samples had ingrowth times of at least 21 days.

Radium-228: Samples had ingrowth times of at least 36 hours.

pH: Samples were analyzed more than 24 hours after collection. The method states the samples are to be analyzed “as soon as possible.” All sample results have been qualified as estimated (J).

III. INSTRUMENT CALIBRATION

INITIAL CALIBRATIONS

Metals: Initial calibration criteria were met. One standard and a blank comprised the calibration. No qualification was required.

Mercury: Initial calibration criteria were met. The fit of the curve was ≥ 0.995 and the low standard was below the RL. No qualification was required.

Anions: Initial calibration criteria were met. The fit of the curve was ≥ 0.995 and the low standard was below the RL. No qualification was required.

TDS: Not applicable. Analysis was gravimetric.

TSS: Not applicable. Analysis was gravimetric.

Radium-226: Not applicable.

Radium-228: Not applicable.

pH: The instrument was properly standardized using five buffer solutions. The correlation coefficient of the curve was 1.000. No qualification was required.

SECOND SOURCE STANDARDS

Metals: Second source standard criteria were met. All analytes had %D values less than 10%. No qualification was required.

Mercury: Second source standard criteria were met. All analytes had %D values less than 10%. No qualification was required.

Anions: Second source standard criteria were met. All analytes had %D values less than 10%. No qualification was required.

TDS: Not applicable. Analysis was gravimetric.

TSS: Not applicable. Analysis was gravimetric.

Radium-226: Not applicable.

Radium-228: Not applicable.

pH: Second source standard criteria were met. pH results were within limits. No qualification was required.

CONTINUING CALIBRATIONS

Metals: Continuing calibration criteria were met in that all analytes had %D values less than 10%. No qualification was required.

Mercury: Continuing calibration criteria were met. All analytes had %D values less than 10%. No qualification was required.

Anions: Continuing calibration criteria were met. All analytes had %D values less than 10%. No qualification was required.

TDS: Not applicable. Analysis was gravimetric.

TSS: Not applicable. Analysis was gravimetric.

Radium-226: Not applicable.

Radium-228: Not applicable.

pH: Continuing calibration criteria were met. pH results were within limits. No qualification was required.

IV. BLANKS

Target analytes were not detected in the blanks except as noted below.

METHOD BLANKS (MB) AND EQUIPMENT BLANK (EB)

Metals: Metals were not detected in the MBs or the EB. No qualification was required

Mercury: Mercury was not detected in the MBs or the EB. No qualification was required.

Anions: Anions were not detected in the MBs or the EB. No qualification was required.

TDS: TDS was detected in MB 280-5601531 at 11 mg/L, MB 280-5604261 at 13 mg/L, and MB 280-5605591 at 28 mg/L. TDS results from the project samples were much higher. No qualification was required. TDS was not detected in the EB. No qualification was required.

TSS: TSS was not detected in the MBs or the EB. No qualification was required.

Radium-226: Ra-226 was not detected in the MBs or the EB. No qualification was required.

Radium-228: Ra-228 was detected in the MB 160-54351123-A at 0.6111 pCi/L. This is above the MDC of 0.432 pCi/L but below the RL of 1.0 pCi/L. Ra-228 and combined Ra-226 + Ra-228 have been qualified as estimated (J) in all project samples. Ra-228 was detected in the EB MW-6EB at 0.612 pCi/L. The parent sample MW-6 had an Ra-228 result of 0.629 pCi/L. The parent sample has been qualified as estimated with high bias (J+).

pH: Not applicable.

INITIAL AND CONTINUING CALIBRATION BLANKS (ICB and CCB)

Metals: Metals were not detected in the ICBs. Metals were detected in the CCBs in the following instances:

Constituent	Concentration	CCB
Lithium	2.96 mg/L	240-516825/181
Lithium	2.05 mg/L	240-516825/193
Thallium	0.209 mg/L	240-516825/193

Instruments were recalibrated prior to use on project samples. Metals were not detected in the ICBs or CCBs on the day the samples were analyzed for metals. No qualification was required.

Mercury: Mercury was not detected in the ICBs or CCBs. No qualification was required.

Anions: Anions were not detected in the ICBs or CCBs. No qualification was required.

V. LABORATORY CONTROL SAMPLES (LCS) and LABORATORY CONTROL SAMPLES DUPLICATE (LCSD)

Metals: LCS recoveries were within the project control limits of 75-125%. No qualification was required.

Mercury: LCS recoveries were within the project control limits of 75-125%. No qualification was required.

Anions: LCS and LCSD recoveries were within the project control limits of 75-125%. The RPDs were within the control limit of 20% as suggested in the Functional Guidelines. No qualification was required.

TDS: LCS and LCSD recoveries were within the project control limits of 75-125%. The RPDs were within the control limit of 20% as suggested in the Functional Guidelines. No qualification was required.

TSS: LCS and LCSD recoveries were within the project control limits of 75-125%. The RPDs were

within the control limit of 20% as suggested in the Functional Guidelines. No qualification was required.

Radium-226: The following was noted on the lab report narrative: “The LCS associated with the following samples in Ra-226 batch 160-543509 had conflicting spike/carrier recoveries: W-1 (280-156573-1), W-1D (280-156573-2), W-2 (280-156573-3), W-3 (280-156573-4), W-4 (280-156573-5), MW-6 (280-156573-6), MM-6EB (280-156573-7), MW-7 (280-156573-8) and MW-8 (280-156573-9); therefore, the planchet was pulled to reweigh for verification. The following results were found upon review: Original Barium gross weight for LCS: 8.9530g. Reweigh on 1/19/2022 of Barium gross weight for LCS: 8.9458g. New Barium yield: 24%. Radium 226 batch 543509: The Barium carrier recovery is outside acceptance limit for the laboratory control sample (LCS). The LCS spike recoveries are within control limits, which demonstrates acceptable sample preparation and instrument performance. As such, this was an apparent anomaly in the sample preparation, isolated to the LCS, which is not indicative of the entire batch.” Based on this explanation, no qualification was required.

Radium-228: LCS and LCSD recoveries were within the project control limits of 75-125%. The RPDs were within the control limit of 20% as suggested in the Functional Guidelines. No qualification was required.

pH: LCS results were within the control limits of 99-101%. No qualification was required.

VI. MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS/MSD)

No samples were designated on the COC for MS/MSD analysis.

Metals: The lab spiked sample W-1 from this project for analytes except boron and performed a laboratory-generated MS/MSD analysis for boron. The MS/MSD analysis for boron was within control limits and no qualification was required. MS/MSD results for other analytes were within the control limits except for calcium. The accuracy and precision of the calcium MS/MSD could not be reliably evaluated because the concentrations present in the parent sample were 4 times greater than the matrix spike concentration. The acceptable LCS data analysis indicated that no action was necessary and therefore required no qualification.

Mercury: The lab spiked performed a laboratory-generated MS/MSD analysis for mercury. Results were within the control limits and no qualification was required.

Anions: The lab spiked sample MW-6 from this project for chloride and fluoride. Results were within the control limits and no qualification was required. Laboratory-generated MS/MSD analysis for sulfate had a recovery outside control limits. The accuracy and precision of the sulfate MS/MSD could not be reliably evaluated because the concentrations present in the parent sample were 4 times greater than the matrix spike concentration. The acceptable LCS data analysis indicated that no action was necessary and therefore required no qualification.

Radium-226: MS/MSD analysis was not performed for Rad-226.

Radium-228: MS/MSD analysis was not performed for Rad-228.

VII. DUPLICATES

FIELD DUPLICATES

Sample W-1D was collected as a field duplicate of W-1.

Metals: Cadmium and thallium were present in the duplicate but non-detect in the parent. However, results were below the RL, so no qualification was required.

Mercury: Mercury was non-detect in the parent and FD samples. No qualification was required.

Anions: FD results were within control limits. No qualification was required.

TDS: FD results were within control limits. No qualification was required.

TSS: TSS was non-detect in the parent and FD samples. No qualification was required.

Radium-226: FD results were within control limits. No qualification was required.

Radium-228: FD results were within control limits. No qualification was required.

pH: FD results were within control limits. No qualification was required.

LABORATORY DUPLICATES

Anions: Lab duplicate analysis was performed on sample MW-6 for chloride and fluoride. RPDs were within the 20% control limit. No qualification was required. The laboratory-generated duplicate sample for sulfate was within control limits and no qualification was required.

TDS: Lab duplicate analysis was not performed for TDS on samples from this project. Laboratory-generated duplicate samples for TDS were within control limits and no qualification was required.

TSS: Lab duplicate analysis was performed on MW-8 and one laboratory-generated duplicate sample. Results were within control limits and no qualification was required.

pH: Lab duplicate analysis was performed on sample MW-6. Results were within control limits and no qualification was required. Lab duplicate analysis was also performed on two laboratory-generated duplicate samples. One resulted in an RPD of 10%, outside the 5% requirement for pH RPDs. This result was part of a different analysis batch that did not include project sample results for pH. No qualification was required.

VIII. INTERNAL STANDARDS (ISTD) OR TRACERS

All ISTD and tracer criteria were met except as noted below.

Metals: ISTD areas were greater than 30% of the initial calibration ISTD areas. No qualification was required.

Mercury: Not applicable.

Anions: Not applicable.

TDS: Not applicable.

TSS: Not applicable.

Radium-226: Tracer recoveries in all samples were within limits. See Section V for more details.

Radium-228: Tracer recoveries in all samples were within limits.

pH: Not applicable.

IX. POST DIGESTION SPIKE AND DILUTION TEST

Post-digestion spike (PDS) analyses and serial dilution tests were performed for Method 6020A metals. PDS results were within the control limits of 75-125% except as noted below. The dilution tests were not applicable unless sample results were greater than 50 times the MDL.

Metals: The dilution test was performed on the same samples as the MS/MSD. Results were within control limits. No qualification was required.

X. INTERFERENCE CHECK SAMPLES (ICS)

ICS results were applicable to the Method 6010C and 6020A metals analyses. Results were within required limits of 80-120% except as noted below.

Metals: Recoveries were within required limits. No qualifications were required.

XI. REPORTING LIMITS (RL) AND METHOD DETECTION LIMITS (MDL)

This phase of the project is the establishment of baseline contaminant levels. RLs are compared, **for internal use only**, against the Colorado drinking water maximum contaminant levels (MCLs), MCL goals (MCLGs), secondary MCLs, and/or action levels (ALs). RLs should be below these levels.

Metals: The RLs are compared to the MCLs, MCLGs, ALs and secondary MCLs in the table below.

Analyte	RL (mg/L)	MDL (mg/L)	MCL or AL (mg/L)	MCLG (mg/L)
Antimony	0.002	0.00057	0.006 (MCL)	0.006
Arsenic	0.005	0.00075	0.010 (MCL)	Zero
Barium	0.005	0.0022	2 (MCL)	2
Beryllium	0.001	0.00062	0.004 (MCL)	0.004
Boron	0.1	0.057	Not Listed	Not Listed
Cadmium	0.001	0.0002	0.005 (MCL)	0.005
Calcium	1	0.58	Not Listed	Not Listed
Chromium	0.0025	0.0025	0.1 (MCL)	0.1
Cobalt	0.001	0.00019	Not Listed	Not Listed
Lead	0.001	0.00045	0.015 (AL)	Zero
Lithium	0.008	0.0017	Not Listed	Not Listed
Molybdenum	0.01	0.0011	Not Listed	Not Listed
Selenium	0.005	0.00089	0.05 (MCL)	0.05

Thallium	0.001	0.0002	0.002 (MCL)	0.0005

Mercury: The RL of 0.2 µg/L is below the MCL and MCLG of 0.02 mg/L (20 µg/L). RL is above the MDL of 0.13 µg/L.

Anions: The RLs of 3 mg/L, 0.5 mg/L and 5 mg/L for chloride, fluoride and sulfate respectively are below the secondary MCLs of 250 mg/L, 2.0 mg/L, and 250 mg/L, respectively. The RLs are above the MDLs of 1.02 mg/L, 0.17 mg/L, and 1.05 mg/L, respectively.

TDS: The RL is 10 mg/L; The Colorado drinking water standard is 400 mg/L or 1.25 times the background level, whichever is least restrictive. The RL is above the MDL of 4.7 mg/L.

TSS: The RL is 4 mg/L; there are no Colorado drinking water standards for TSS. The RL is above the MDL of 1.1 mg/L.

Radium 226: The RL of 1.0 picocurie per liter (pCi/L) is below the MCL of 5.0 pCi/L for combined radium 226 and radium 228.

Radium 228: The RL of 1.0 picocurie per liter (pCi/L) is below the MCL of 5.0 pCi/L for combined radium 226 and radium 228.

pH: The Colorado drinking water standard is pH value of 6.5 to 8.5.

XII. SAMPLE RESULTS / TRANSCRIPTION VERIFICATION

Transcription between the data package and the EDDs was verified. Sample results reported between the MDL and RL were qualified as estimated (J).

Sample container listed MW-6EB but chain-of-custody listed MM-6EB. MM-6EB is used in the report and EDD but all references to this sample are noted as MW-6EB in this validation report.

Metals: No issues.

Mercury: No issues.

Anions: No issues.

TDS: No issues.

TSS: No issues.

Radium-226: No issues.

Radium-228: No issues.

pH: No issues.

XIII. PARCCS PARAMETERS AND DATA USABILITY

Data were usable as discussed below.

The data quality indicators (DQIs), expressed in terms of precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS parameters), were assessed. This included the evaluation of sample integrity, holding times, trip blanks, rinsate blanks, method blanks, internal

standards, surrogate recoveries, MS/MSD recoveries, LCS/Ds, and field duplicate precision. The results of the DQI assessment are provided below.

PRECISION

Field duplicates are collected to assess sampling precision. Lab duplicates, LCS/Ds, and MS/Ds are analyzed to assess analysis precision. Precision is best expressed in terms of relative percent difference (RPD).

Lab precision goals were met. Lab duplicates, LCS/LCSD, and MS/MSD RPDs were within control limits.

Field precision goals were met. All RPDs between the parent/field duplicate pair were within control limits except cadmium and thallium. These analytes were detected in the duplicate but non-detect in the parent; however, detection was below the RL, so no qualification was required.

ACCURACY

Accuracy or bias is measured through the analyses of LCS/Ds and MS/MSDs. Sample specific accuracy is measured through surrogate recovery. Accuracy is expressed as percent recovery (%R).

Field accuracy goals were met in that MS/MSD recoveries were within control limits. MS/MSD recoveries for calcium and sulfate could not be accurately verified.

Lab accuracy goals were met in that LCS/LCSD recoveries were within control limits.

REPRESENTATIVENESS

Representativeness refers to the degree sample data accurately and precisely describes the population of samples at a sampling point or under certain environmental conditions. Samples that are not properly preserved or are analyzed beyond holding times may not be considered representative. Review of sampling procedures, laboratory preparation, analysis holding times, trip blank and rinsate blank analysis help in providing this assessment.

Representativeness goals were generally met. Samples were collected at predetermined locations according to the project plan.

Representativeness goals were not met in these instances:

- All pH and temperature results required qualification as estimated (J) due to analysis past the holding time;
- Sulfate in one sample required qualification as estimated (J) due to analysis past the holding time;
- TDS in two samples required qualification as estimated (J) due to analysis past the holding time;
- Rad-228 required qualification as estimated (J) in all project samples due to detection in the MB;
- Rad-228 in one sample required qualification as estimated with high bias (J+) due to detection in the EB; and

- The MS/MSD for calcium and sulfate could not be verified.

COMPARABILITY

The selection of standardized methods and consistent laboratory practices facilitates the comparison of data between sampling events.

Comparability goals were met. Samples were analyzed by standardized methods (SW-846 and Standards Methods). Future sampling events will be analyzed by the same methods at the same labs to achieve comparability.

COMPLETENESS

Completeness is determined for both field and analytical objectives. Field completeness is calculated from the number of samples proposed versus the actual number of samples collected. Analytical completeness is expressed in terms of usable data.

Field completeness goals were met. 7 of the 8 planned wells were sampled, resulting in a field completeness of 88%. The well that was not sampled was MW-5, which has historically been dry.

Lab completeness goals were met. No data were rejected. Of the planned 9 samples for analysis, including field duplicates and equipment blanks, all 9 were analyzed for all analytes.

SENSITIVITY

Analytical sensitivity is the concentration at which the measurement system can quantitate target analytes in the environmental matrices of concern. Analytical sensitivity is expressed in terms of the RL, which is provided by the respective laboratories as their reasonable and defensible quantitation limit for environmental samples above the MDL, which is established by each laboratory using pure water or clean matrix.

Sensitivity goals were met. The MDLs were $\leq$ one-half the RLs except for boron, beryllium, calcium, chromium, mercury, and Ra-228. This phase of the project is the establishment of baseline contaminant levels, and project RLs were compared to the Colorado drinking water maximum contaminant levels (MCLs), MCL goals (MCLGs), secondary MCLs, and/or action levels (ALs). RLs were at or below these levels.

Metals: No data were rejected. Data required minimal qualification. All data are usable as qualified.

Mercury: No data were rejected. Data required minimal qualification. All data are usable as qualified.

Anions: No data were rejected. Data required minimal qualification. All data are usable as qualified.

TDS: No data were rejected. Data required minimal qualification. All data are usable as qualified.

TSS: No data were rejected. Data required minimal qualification. All data are usable as qualified.

Radium-226: No data were rejected. Data required minimal qualification. All data are usable as qualified.

Radium-228: No data were rejected. Data required minimal qualification. All data are usable as qualified.

pH: No data were rejected. All data are usable as qualified.

DATA VALIDATION AND USABILITY REPORT

Metals by USEPA SW-846 Method 6010C/6020B

Mercury by USEPA SW-846 Method 7470A

Anions by USEPA SW-846 Method 9056A

Total Dissolved Solids (TDS) by Standard Method SM2540C

Total Suspended Solids (TSS) by Standard Method SM2540D

Radium-226 (Ra-226) by USEPA SW-846 Method 9315

Radium-228 (Ra-228) by USEPA SW-846 Method 9320

pH by USEPA SW-846 Method 9040B

Alkalinity by Standard Method SM2320B

Project: Xcel Energy Coal Combustion Residuals (CCR) Project –
Hayden - June 2022

Project/Task Number: 10279371-001

Sample Data Package: 280-163427-1
Lab Report Dates: 7/20/2022
Data Validation Report Date: 7/25/2022

Laboratory: TestAmerica Denver, Arvada, Colorado (metals, anions, TDS, TSS,
pH, alkalinity);
TestAmerica Saint Louis, Earth City, Missouri (radiochem)

Sample Matrix: Groundwater

Sampling Dates: June 13-14, 2022

Validation Guidelines: Project Plan (*Statistical Method Certification for Compliance with the Coal Combustion Residuals [CCR] Rule, for Xcel Energy* [HDR, December 7, 2015]), United States Environmental Protection Agency (USEPA) Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, 3rd edition (SW-846); USEPA *National Functional Guidelines for Inorganic Data Review*, USEPA-540-R-10-011, January 2010; USEPA *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use*, USEPA 540-R-08-005, January 13, 2009; and professional judgment

Validation Level: Stage 2BVM (100%)

Data Reviewer: Aryka Thomson, HDR

Sample ID	Matrix	Lab ID	Date Collected	Metals Mercury	Anions	TDS TSS	RA-226 RA-228	Alk, K, Mg, Na
W-1	GW	280-163427-1	06/13/2022	X	X	X	X	X
W-2	GW	280-163427-2	06/14/2022	X	X	X	X	X
W-3	GW	280-163427-3	06/14/2022	X	X	X	X	X
W-4	GW	280-163427-4	06/14/2022	X	X	X	X	X
MW-6	GW	280-163427-5	06/13/2022	X	X	X	X	X
MW-7	GW	280-163427-6	06/13/2022	X	X	X	X	X
MW-8	GW	280-163427-7	06/14/2022	X	X	X	X	X
MW-8EB	QC	280-163427-8	06/14/2022	X	X	X	X	X
W-1D	QC	280-163427-9	06/13/2022	X	X	X	X	X

SUMMARY

All laboratory data were acceptable with qualification.

I. SAMPLE RECEIPT / CHAIN OF CUSTODY

Samples were shipped or hand-delivered to the TestAmerica Denver facility, who then forwarded the appropriate sample containers to the other facilities. The temperature of samples upon receipt were between 4.0°C, 4.1°C and 6.0°C, within the acceptable range of 0-6°C. The chains of custody (COCs) from the field and for transfer to the different lab facilities were filled out and signed.

II. HOLDING TIMES

Holding time criteria were generally met except as noted below.

Metals: Samples were analyzed within 180 days of collection.

Mercury: All samples were analyzed within 28 days of collection.

Anions: Samples were analyzed within 28 days of collection.

Alkalinity: Samples were analyzed within 14 days of collection.

TDS: Samples were analyzed within 7 days of collection.

TSS: Samples were analyzed within 7 days of collection except W-1, W-1D, MW-6, and MW-7 which have been qualified as estimated but non-detect (UJ).

Radium-226: Samples had ingrowth times of at least 21 days.

Radium-228: Samples had ingrowth times of at least 36 hours.

pH: Samples were analyzed more than 24 hours after collection. The method states the samples are to be analyzed “as soon as possible.” All sample results have been qualified as estimated (J).

III. INSTRUMENT CALIBRATION

INITIAL CALIBRATIONS

Metals: Initial calibration criteria were met. One standard and a blank comprised the calibration. No qualification was required.

Mercury: Initial calibration criteria were met. The fit of the curve was ≥ 0.995 and the low standard was below the RL. No qualification was required.

Anions: Initial calibration criteria were met except. No qualification was required.

Alkalinity: Not applicable. Analysis was gravimetric.

TDS: Not applicable. Analysis was gravimetric.

TSS: Not applicable. Analysis was gravimetric.

pH: The instrument was properly standardized using five buffer solutions. The correlation coefficient

of the curve was 1.000. No qualification was required.

SECOND SOURCE STANDARDS

Metals: Second source standard criteria were met. All analytes had %D values less than 10%. No qualification was required.

Mercury: Second source standard criteria were met. All analytes had %D values less than 10%. No qualification was required.

Anions: Second source standard criteria were met. All analytes had %D values less than 10%. No qualification was required.

Alkalinity: Not applicable. Analysis was gravimetric.

TDS: Not applicable. Analysis was gravimetric.

TSS: Not applicable. Analysis was gravimetric.

pH: Second source standard criteria were met. pH results were within limits. No qualification was required.

CONTINUING CALIBRATIONS

Metals: Continuing calibration criteria were met except those listed below. All analytes had %D values less than 10% for the continuing calibration verifications (CCV).

The low level continuing calibration verification (CCVL) associated with 280-580535 and 280-580536 failed above the upper control limit for lithium. The associated samples contained the affected analyte at a level greater than 10x the value in the CCVL; therefore the data have been reported. Affected samples below required qualification as estimated with potential for high bias (J+).

W-1	W-2	W-3	W-4	

The low level continuing calibration verification (CCVL) associated with 280-579159 failed above the upper control limit for calcium. The associated samples contained the affected analyte at a level greater than 10x the value in the CCVL; therefore the data have been reported. Affected samples below required qualification as estimated with potential for high bias (J+).

W-1	W-2	W-3	W-4	MW-6
MW-7	MW-8	W-1D		

Mercury: Continuing calibration criteria were met. All analytes had %D values less than 10%. No qualification was required.

Anions: Continuing calibration criteria were met. All analytes had %D values less than 10%. No qualification was required.

Alkalinity: Not applicable. Analysis was gravimetric.

TDS: Not applicable. Analysis was gravimetric.

TSS: Not applicable. Analysis was gravimetric.

pH: Continuing calibration criteria were met. pH results were within limits. No qualification was required.

IV. BLANKS

Target analytes were not detected in the blanks except as noted below.

METHOD BLANKS (MB) AND EQUIPMENT BLANK (EB)

Metals: Metals were detected in the MBs and EBs as described below:

Analyte	MB or EB	Associated Samples	Result (mg/L)	Qualification
Barium	EB MW-8EB	MW-8	0.00051	J+
Beryllium	MB 280-5786521-A	W-1, W-1D, W-2, W-3, W-4, MW-6, MW-7, MW-8, MW-8EB	0.000182	J+ or UJ
	EB MW-8EB	MW-8	0.00025	J+
Boron	MB 280-5801531-A	W-1, W-2, W-3, W-4	0.00221	J+
	EB MW-8EB	MW-8	0.032	J+
Calcium	EB MW-8EB	MW-8	0.17	J+
Chromium*	EB MW-8EB	MW-8	0.00057	UJ
Magnesium	EB MW-8EB	MW-8	0.18	J+
Molybdenum	MB 280-5786521-A	W-1, W-1D, W-2, W-3, W-4, MW-6, MW-7, MW-8, MW-8EB	0.000351	J+
	EB MW-8EB	MW-8	0.00051	J+
Potassium	EB MW-8EB	MW-8	0.072	J+

*Chromium was detected in the EB but not in the parent sample MW-8. EB results should be considered estimated.

Mercury: Mercury was not detected in the MBs. Mercury was detected in the EB MW-8EB at 0.000064 mg/L. No qualification was required.

Anions: Anions were not detected in the MBs or EB. No qualification was required.

Alkalinity: Alkalinity was not detected in the MBs or the EBs. No qualification was required.

TDS: TDS was not detected in the MBs. TDS was detected in EB MW-8EB at 18 mg/L. Sample results were much higher. No qualification was required.

TSS: TSS was not detected in the MBs or the EB. No qualification was required.

Radium-226: Rad-226 was not detected in the MBs or the EB. No qualification was required.

Radium-228: Rad-228 was not detected in the MBs or the EB. No qualification was required.

pH: Not applicable.

INITIAL AND CONTINUING CALIBRATION BLANKS (ICB and CCB)

Metals: Metals were detected in several ICBs and CCBs as noted below.

Analyte	ICB or CCB	Associated Samples	Result (mg/L)	Qualification
Barium	CCB 280-579159/52	None	0.000467	None
	CCB 280-579282/18	None	0.000357	
Beryllium	CCB 280-579160/30	None	0.000109	None
	CCB 280-579160/76		0.000101	
	CCB 280-579261/28	None	0.000183	None
	CCB 280-579282/18	W-1D, MW-7, MW-8, MW-8EB	0.000456	J+ (or UJ if non-detect)
	CCB 280-579282/25		0.000116	
Boron	CCB 280-580536/41	None	0.0109	None
	CCB 280-580425/23	W-1, W-2, W-3, W-4	0.00267	J+
	CCB 280-580425/31		0.00231	
	CCB 280-580425/45		0.00259	
Calcium	CCB 280-579159/74	None	0.0988	None
Cobalt	CCB 280-579159/52	None	0.000213	None
	CCB 280-579160/76	None	0.000096	None
	CCB 280-579261/28	None	0.000163	None
	CCB 280-579282/18	W-1D, MW-7, MW-8, MW-8EB	0.000195	J+ (or UJ if non-detect)
	CCB 280-579282/25		0.000135	
Lead	CCB 280-579159/52	None	0.000281	None
	CCB 280-579261/28	None	0.000296	None
	CCB 280-579282/18	W-1D, MW-7, MW-8, MW-8EB	0.000245	J+ (or UJ if non-detect)
Lithium	CCB 280-580535/76	None	0.00926	None
Magnesium	CCB 280-579282/25	W-1D, MW-7, MW-8, MW-8EB	0.0303	J+ (or UJ if non-detect)
Molybdenum	ICB 280-579159/42	W-1, W-1D, W-2, W-3, W-4, MW-6, MW-7, MW-8	0.000222	J+ (or UJ if non-detect)
	CCB 280-579159/52	None	0.000967	None
	CCB 280-579159/63		0.000269	
	CCB 280-579159/74		0.000228	
	ICB 280-579160/10	W-1, W-2, W-3	0.000222	J+ (or UJ if non-detect)
	CCB 280-579160/30	None	0.000269	None
	CCB 280-579160/66		0.000205	
	CCB 280-579160/76		0.000278	
	CCB 280-579261/28	None	0.000525	None
	ICB 280-579282/9	W-1D, MW-7, MW-8, MW-8EB	0.000216	J+ (or UJ if non-detect)
	CCB 280-579282/18	W-1D, MW-7, MW-8, MW-8EB	0.000393	J+ (or UJ if non-detect)
	CCB 280-579282/25		0.000259	
Potassium	CCB 280-579282/25	W-1D, MW-7, MW-8, MW-8EB	57000	J+ (or UJ if non-detect)
Sodium	CCB 280-579261/49	None	223000	None

Mercury: Mercury was not detected in the ICBs or CCBs. No qualification was required.

Anions: Anions were not detected in the ICBs or CCBs. No qualification was required.

Alkalinity: Alkalinity was not detected in the ICBs or CCBs. No qualification was required.

TDS: Not applicable.

TSS: Not applicable.

Radium-226: Not applicable.

Radium-228: Not applicable.

pH: Not applicable.

V. LABORATORY CONTROL SAMPLES (LCS) and LABORATORY CONTROL SAMPLES DUPLICATE (LCSD)

Metals: LCS recoveries were within the project control limits of 75-125%. No qualification was required.

Mercury: LCS recoveries were within the project control limits of 75-125%. No qualification was required.

Anions: LCS and LCSD recoveries were within the project control limits of 75-125%. The RPDs were within the control limit of 20% as suggested in the Functional Guidelines. No qualification was required.

Alkalinity: LCS and LCSD recoveries were within the project control limits of 75-125%. The RPDs were within the control limit of 20% as suggested in the Functional Guidelines. No qualification was required.

TDS: LCS and LCSD recoveries were within the project control limits of 75-125%. The RPDs were within the control limit of 20% as suggested in the Functional Guidelines. No qualification was required.

TSS: LCS and LCSD recoveries were within the project control limits of 75-125%. The RPDs were within the control limit of 20% as suggested in the Functional Guidelines. No qualification was required.

Radium-226: LCS and LCSD recoveries were within the project control limits of 75-125%. The RPDs were within the control limit of 20% as suggested in the Functional Guidelines. No qualification was required.

Radium-228: LCS and LCSD recoveries were within the project control limits of 75-125%. The RPDs were within the control limit of 20% as suggested in the Functional Guidelines. No qualification was required.

pH: LCS results were within the control limits of 99-101%. No qualification was required.

VI. MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS/MSD)

No samples were designated on the COC for MS/MSD analysis.

Metals: The lab spiked sample W-1 from this project for metals. Recoveries were within control limits except calcium, magnesium, potassium, and sodium. The concentrations present in the parent sample were 4 times greater than the matrix spike concentration, so the accuracy and precision of the MS/MSD analysis could not be reliably evaluated. The associated LCS/LCSD analysis data showed that the laboratory processes were operating within control, so no corrective action was necessary. W-1 calcium, magnesium, potassium, and sodium results have been qualified as estimated (J) or (UJ) if non-detect.

Mercury: The lab did not spike samples from this project for mercury. Recoveries and RPDs of laboratory-generated MS/MSD samples were within the control limits and no qualification was required.

Anions: The lab did not spike samples from this project for anions. Recoveries of laboratory-generated MS/MSD samples were outside the control limits, but not project samples were affected. No qualification was required.

Radium-226: MS/MSD analysis was not performed for Rad-226 due to limited sample volume.

Radium-228: MS/MSD analysis was not performed for Rad-228 due to limited sample volume.

VII. DUPLICATES

FIELD DUPLICATES

Sample W-1D was collected as a field duplicate of W-1.

Metals: FD results were within control limits except beryllium was detected at 0.0003 mg/L in the FD and non-detect in the parent sample. Beryllium results have been qualified as estimated but not detected (UJ) in the parent sample W-1 and estimated with potential for high bias (J+) in the FD W-1D.

Anions: FD results were within control limits. No qualification was required.

Alkalinity: FD results were within control limits. No qualification was required.

TDS: FD results were within control limits. No qualification was required.

TSS: FD results were within control limits. No qualification was required.

Radium-226: RPD for combined radium is 30%, outside the control limit of 20%. Combined radium has been qualified as estimated with potential for low bias (J-) in the FD and estimated with potential for high bias (J+) in the parent sample.

Radium-228: RPD for combined radium is 30%, outside the control limit of 20%. Combined radium has been qualified as estimated with potential for low bias (J-) in the FD and estimated with potential for high bias (J+) in the parent sample.

pH: FD results were within control limits. No qualification was required.

LABORATORY DUPLICATES

Metals: Lab duplicate analysis was not performed for metals.

Anions: Lab duplicate analysis was not performed on samples from this project for anions. Resulting RPDs from laboratory-generated duplicate analyses were within control limits and no qualification was required.

Alkalinity: Lab duplicate analysis was not performed on samples from this project for anions. Resulting RPDs from laboratory-generated duplicate analyses were within control limits and no qualification was required.

TDS: Lab duplicate analysis was performed on sample W-1 from this project. Resulting RPDs were

within control limits and no qualification was required.

TSS: Lab duplicate analysis was not performed on samples from this project for anions. Resulting RPDs from laboratory-generated duplicate analyses were within control limits and no qualification was required.

pH: Lab duplicate analysis was performed on sample W-1D from this project. Resulting RPDs were within control limits and no qualification was required.

VIII. INTERNAL STANDARDS (ISTD) OR TRACERS

All ISTD and tracer criteria were met except as noted below.

Metals: ISTD areas were greater than 30% of the initial calibration ISTD areas. No qualification was required.

Radium-226: Tracer recoveries in all samples were within limits.

Radium-228: Tracer recoveries in all samples were within limits.

IX. POST DIGESTION SPIKE AND DILUTION TEST

Post-digestion spike (PDS) analyses and serial dilution tests were performed for Method 6020A metals. PDS results were within the control limits of 75-125% except as noted below. The dilution tests were not applicable unless sample results were greater than 50 times the MDL.

Metals: The PDS analysis was performed on the same sample as the MS/MSD. Results were within control limits and no qualification was required.

X. INTERFERENCE CHECK SAMPLES (ICS)

ICS results were applicable to the Method 6010C and 6020A metals analyses. Results were within required limits of 80-120% except as noted below.

Metals: Recoveries were within required limits except as noted below. No qualifications were required.

The interference check standard solution (ICSA) associated with batches 280-579159, 280-579160, 280-579261, and 280-579282 had results for one or more elements at a level greater than 2x the RL. The initial ICSA results (3.3 ppb, 2.87 ppb, 2.6 ppb, and 3 ppb, respectively) were >2x the RL of 1 ppb for barium. The vendor acknowledges that these elements are trace impurities in the ICSA standard. These results are not indicative of a matrix interference. Recoveries were within 80-120%. No qualification was required.

XI. REPORTING LIMITS (RL) AND METHOD DETECTION LIMITS (MDL)

This phase of the project is the establishment of baseline contaminant levels. RLs are compared, **for internal use only**, against the Colorado drinking water maximum contaminant levels (MCLs), MCL goals (MCLGs), secondary MCLs, action levels (ALs), and/or groundwater protection standards (GPS). RLs should be below these levels.

Metals: The RLs are compared to the MCLs, MCLGs, ALs and secondary MCLs in the table below.

Analyte	RL (mg/L)	MDL (mg/L)	MCL or AL (mg/L)	MCLG (mg/L)	GPS (mg/L)
Antimony	0.002	0.0004	0.006 (MCL)	0.006	None
Arsenic	0.005	0.00033	0.010 (MCL)	Zero	None
Barium	0.005	0.00029	2 (MCL)	2	2
Beryllium	0.001	0.00008	0.004 (MCL)	0.004	None
Boron	0.1	0.0015	Not Listed	Not Listed	None
Cadmium	0.001	0.00027	0.005 (MCL)	0.005	0.005
Calcium	1	0.45	Not Listed	Not Listed	None
Chromium	0.002	0.0005	0.1 (MCL)	0.1	None
Cobalt	0.001	0.000092	Not Listed	Not Listed	0.00616
Lead	0.001	0.00018	0.015 (AL)	Zero	None
Lithium	0.02	0.0091	Not Listed	Not Listed	1.80
Molybdenum	0.002	0.00014	Not Listed	Not Listed	0.1
Selenium	0.005	0.00037	0.05 (MCL)	0.05	0.05
Thallium	0.001	0.000089	0.002 (MCL)	0.0005	None

Mercury: The RL of 0.2 µg/L is below the MCL and MCLG of 0.02 mg/L (20 µg/L). RL is above the MDL of 0.061 µg/L.

Anions: The RLs of 3 mg/L, 0.5 mg/L and 5 mg/L for chloride, fluoride and sulfate respectively are below the secondary MCLs of 250 mg/L, 2.0 mg/L, and 250 mg/L, respectively. The RLs are above the MDLs of 1 mg/L, 0.17 mg/L, and 1 mg/L, respectively.

Alkalinity: The RLs of 10 mg/L for alkalinity, carbonate, and bicarbonate are above the MDLs of 3.1 mg/L for alkalinity, carbonate, and bicarbonate.

TDS: The RL is 10 mg/L; The Colorado drinking water standard is 400 mg/L or 1.25 times the background level, whichever is least restrictive. The RL is above the MDL of 4.7 mg/L.

TSS: The RL is 4 mg/L; there are no Colorado drinking water standards for TSS. The RL is above the MDL of 1.1 mg/L.

Radium 226: The RL of 1.0 picocurie per liter (pCi/L) is below the MCL of 5.0 pCi/L for combined radium 226 and radium 228.

Radium 228: The RL of 1.0 picocurie per liter (pCi/L) is below the MCL of 5.0 pCi/L for combined radium 226 and radium 228.

pH: The Colorado drinking water standard is pH value of 6.5 to 8.5.

XII. SAMPLE RESULTS / TRANSCRIPTION VERIFICATION

Transcription between the data package and the EDDs was verified. Sample results reported between the MDL and RL were qualified as estimated (J).

Metals: Several samples required dilution prior to analysis for total metals. The reporting limits have been adjusted accordingly.

Mercury: No issues.

Anions: No issues.

Alkalinity: No issues.

TDS: No issues.

TSS: No issues.

Radium-226: A reduced sample volume was prepared for all project samples due to matrix interferences, but all RLs were 1.0 pCi/L.

Radium-228: A reduced sample volume was prepared for all project samples due to matrix interferences, but all RLs were 1.0 pCi/L.

pH: A sample did not equilibrate to within 0.05 pH units after three measurements. This was observed in a previous analysis, thus the sample was not reanalyzed.

XIII. PARCCS PARAMETERS AND DATA USABILITY

Data were usable as discussed below.

The data quality indicators (DQIs), expressed in terms of precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS parameters), were assessed. This included the evaluation of sample integrity, holding times, trip blanks, rinsate blanks, method blanks, internal standards, surrogate recoveries, MS/MSD recoveries, LCS/Ds, and field duplicate precision. The results of the DQI assessment are provided below.

PRECISION

Field duplicates are collected to assess sampling precision. Lab duplicates, LCS/Ds, and MS/Ds are analyzed to assess analysis precision. Precision is best expressed in terms of relative percent difference (RPD).

Lab precision goals were met in that lab duplicates, LCS/LCSD, and MS/MSD RPDs were within control limits.

Field precision goals were met in that RPDs between the parent/field duplicate pair were within control limits except beryllium and combined radium results that required qualification.

ACCURACY

Accuracy or bias is measured through the analyses of LCS/Ds and MS/MSDs. Sample specific accuracy is measured through surrogate recovery. Accuracy is expressed as percent recovery (%R).

Field accuracy goals were met except MS/MSD recoveries for calcium, magnesium, potassium, and sodium could not be verified.

Lab accuracy goals were met in that LCS/LCSD recoveries were within control limits.

REPRESENTATIVENESS

Representativeness refers to the degree sample data accurately and precisely describes the population of samples at a sampling point or under certain environmental conditions. Samples that are not properly preserved or are analyzed beyond holding times may not be considered representative. Review of sampling procedures, laboratory preparation, analysis holding times, trip blank and rinsate blank analysis help in providing this assessment.

Representativeness goals were generally met. Samples were collected at predetermined locations according to the project plan.

Representativeness goals were not met in these instances:

- All pH and temperature results required qualification as estimated (J) due to analysis past the holding time;
- TSS in four samples required qualification as estimated (UJ) due to analysis past the holding time;
- Lithium in four samples required qualification as estimated with potential for high bias (J+) due to CCVLs above the upper control limit;
- Calcium in eight samples required qualification as estimated with potential for high bias (J+) due to CCVLs above the upper control limit;
- Beryllium in all samples, molybdenum in all samples, and boron in four samples required qualification as estimated with potential for high bias (J+) or (UJ) due to detection in the MB;
- Barium, beryllium, boron, calcium, chromium, magnesium, molybdenum, and potassium required qualification as estimated with potential for high bias (J+) or (UJ) in the parent sample due to detection in the EB;
- Beryllium, boron, cobalt, lead, magnesium, molybdenum, and potassium in four samples and molybdenum in eight samples required qualification as estimated with potential for high bias (J+) (or UJ if non-detect) due to detection in the ICB or CCB;
- Calcium, magnesium, potassium, and sodium in the MS/MSD parent sample required qualification as estimated (J) because precision could not be verified;
- Beryllium required qualification as estimated but not detected (UJ) in the parent sample and estimated with potential for high bias (J+) in the field duplicate due to RPDs outside control limits in one parent/duplicate pair;
- Combined radium required qualification as estimated with potential for high bias (J+) in the parent sample and estimated with potential for low bias (J-) in the field duplicate due to RPDs outside control limits in one parent/duplicate pair.

COMPARABILITY

The selection of standardized methods and consistent laboratory practices facilitates the comparison of data between sampling events.

Comparability goals were met. Samples were analyzed by standardized methods (SW-846 and Standards Methods). Future sampling events will be analyzed by the same methods at the same labs to achieve comparability.

COMPLETENESS

Completeness is determined for both field and analytical objectives. Field completeness is calculated from the number of samples proposed versus the actual number of samples collected. Analytical completeness is expressed in terms of usable data.

Field completeness goals were nearly met. 7 of the 8 planned wells were sampled. MW-5 was dry. This results in a field completeness of 87.5%.

Lab completeness goals were nearly met. No data were rejected; however, the EB results should be interpreted with caution. Of the planned 9 samples for analysis, all 9 were analyzed for all analytes.

SENSITIVITY

Analytical sensitivity is the concentration at which the measurement system can quantitate target analytes in the environmental matrices of concern. Analytical sensitivity is expressed in terms of the RL, which is provided by the respective laboratories as their reasonable and defensible quantitation limit for environmental samples above the MDL, which is established by each laboratory using pure water or clean matrix.

Sensitivity goals were met. The MDLs were $\leq$ one-half the RLs except for Rad-228. This phase of the project is the establishment of baseline contaminant levels, and project RLs were compared to the Colorado drinking water maximum contaminant levels (MCLs), MCL goals (MCLGs), secondary MCLs, and/or action levels (ALs). RLs were at or below these levels.

Metals: No data were rejected. Data required minimal qualification. All data are usable as qualified.

Mercury: No data were rejected. Data required minimal qualification. All data are usable as qualified.

Anions: No data were rejected. Data required minimal qualification. All data are usable as qualified.

Alkalinity: No data were rejected. Data required minimal qualification. All data are usable as qualified.

TDS: No data were rejected. Data required minimal qualification. All data are usable as qualified.

TSS: No data were rejected. Data required minimal qualification. All data are usable as qualified.

Radium-226: No data were rejected. Data required minimal qualification. All data are usable as qualified.

Radium-228: No data were rejected. Data required minimal qualification. All data are usable as qualified.

pH: No data were rejected. All data are usable as qualified.

Appendix C

Statistical Analysis

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Date Range	Distributions Fit ^a	Recommended Distribution	Mean	Median	Minimum	Maximum	SD	CV	MAD/0.675	Skewness	Kurtosis
1_1_105	W-1	Appendix III	Boron	mg/l	13	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.614	0.620	0.500	0.840	0.0847	0.138	0.0593	1.42	3.89
1_1_107	W-1	Appendix III	Calcium	mg/l	14	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	338	340	300	380	23.6	0.0698	14.8	0.257	0.336
1_1_108	W-1	Appendix III	Chloride (as Cl)	mg/l	14	0	0%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	37.4	41.0	21.0	48.0	8.61	0.230	5.19	-0.992	-0.233
1_1_112	W-1	Appendix III	Fluoride	mg/l	15	2	13%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	0.613	0.300	0.180	3.40	0.831	1.36	0.0741	3.10	10.2
1_1_119	W-1	Appendix III	pH (field)	su	15	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	7.19	7.20	6.91	7.41	0.119	0.0165	0.0889	-0.385	1.83
1_1_120	W-1	Appendix III	pH (lab)	su	14	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	7.61	7.60	7.40	7.80	0.123	0.0162	0.148	-0.0235	-0.975
1_1_125	W-1	Appendix III	Sulfate (as SO4)	mg/l	14	0	0%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	2793	2700	2500	4500	500	0.179	148	3.52	12.8
1_1_129	W-1	Appendix III	Total Dissolved Solids	mg/l	14	0	0%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	4164	4400	1300	4600	845	0.203	296	-3.44	12.4
1_2_101	W-1	Appendix IV	Antimony	mg/l	10	10	100%	2018-06-11 to 2021-12-06		Nonparametric	0.000570	0.000570	0.000570	0.000570	0	0	0	NA	NA
1_2_102	W-1	Appendix IV	Arsenic	mg/l	10	10	100%	2018-06-11 to 2021-12-06		Nonparametric	0.000750	0.000750	0.000750	0.000750	0	0	0	NA	NA
1_2_103	W-1	Appendix IV	Barium	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.00990	0.00970	0.00890	0.0110	0.000734	0.0741	0.000519	0.603	-0.793
1_2_104	W-1	Appendix IV	Beryllium	mg/l	10	6	60%	2018-06-11 to 2021-12-06		Nonparametric	0.000559	0.000485	0.000310	0.00110	0.000292	0.522	0.000259	0.843	-0.532
1_2_106	W-1	Appendix IV	Cadmium	mg/l	12	8	67%	2018-06-11 to 2021-12-06		Nonparametric	0.000239	0.000210	0.000200	0.000370	0.0000624	0.261	0.0000148	1.64	1.37
1_2_109	W-1	Appendix IV	Chromium, Total	mg/l	10	9	90%	2018-06-11 to 2021-12-06		Nonparametric	0.00136	0.000980	0.000980	0.00250	0.000643	0.474	0	1.39	0.220
1_2_110	W-1	Appendix IV	Cobalt	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.000959	0.000910	0.000780	0.00130	0.000180	0.188	0.000148	0.913	-0.567
1_2_113	W-1	Appendix IV	Fluoride (App IV)	mg/l	15	2	13%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	0.613	0.300	0.180	3.40	0.831	1.36	0.0741	3.10	10.2
1_2_114	W-1	Appendix IV	Lead	mg/l	10	9	90%	2018-06-11 to 2021-12-06		Nonparametric	0.000575	0.000450	0.000450	0.00170	0.000395	0.687	0	3.16	10.0
1_2_115	W-1	Appendix IV	Lithium	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.278	0.280	0.250	0.320	0.0196	0.0706	0.0148	0.505	0.859
1_2_116	W-1	Appendix IV	Mercury	mg/l	10	10	100%	2018-06-11 to 2021-12-06		Nonparametric	0.000120	0.000130	0.0000270	0.000130	0.0000326	0.272	0	-3.16	10.0
1_2_117	W-1	Appendix IV	Molybdenum	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Gamma; Lognormal	Gamma	0.00339	0.00330	0.00290	0.00460	0.000440	0.130	0.000148	1.98	5.47
1_2_122	W-1	Appendix IV	Radium-226+228	pci/l	14	3	21%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.768	0.777	0.402	1.26	0.251	0.327	0.309	0.420	-0.563
1_2_124	W-1	Appendix IV	Selenium	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Gamma; Normal	Gamma	0.0114	0.0115	0.00380	0.0160	0.00338	0.297	0.00222	-0.788	1.32
1_2_128	W-1	Appendix IV	Thallium	mg/l	10	9	90%	2018-06-11 to 2021-12-06		Nonparametric	0.000224	0.000200	0.000200	0.000440	0.0000759	0.339	0	3.16	10.0
1_3_111	W-1	Supplemental	Conductivity (field)	us/cm	15	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	4556	4574	4216	4732	142	0.0312	97.8	-1.15	1.13
1_3_118	W-1	Supplemental	Oxidation-reduction Potential (field)	mV	15	0	0%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	284	128	-89.6	2721	678	2.39	47.3	3.80	14.6
1_3_121	W-1	Supplemental	Radium-226	pci/l	14	7	50%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Nonparametric	0.212	0.194	0.0884	0.404	0.106	0.500	0.109	0.628	-0.778
1_3_123	W-1	Supplemental	Radium-228	pci/l	14	6	43%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.640	0.550	0.402	1.16	0.217	0.340	0.151	1.34	1.42
1_3_126	W-1	Supplemental	Temperature (field)	deg c	15	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	10.3	10.2	8.50	11.9	1.01	0.0987	1.33	0.0104	-0.979
1_3_127	W-1	Supplemental	Temperature (lab)	deg c	14	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	20.6	20.6	19.1	21.9	1.00	0.0489	1.41	-0.144	-1.33
1_3_130	W-1	Supplemental	Total Suspended Solids	mg/l	12	5	42%	2018-05-14 to 2021-12-06	Nonparametric	Nonparametric	2.19	2.00	1.10	5.20	1.41	0.645	1.33	1.48	1.29
1_3_131	W-1	Supplemental	Turbidity (field)	ntu	15	0	0%	2018-04-11 to 2021-12-06	Normal	Normal	0.884	0.820	0.0200	2.44	0.712	0.805	0.533	0.857	0.526
2_1_105	W-2	Appendix III	Boron	mg/l	13	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	9.09	8.80	7.80	11.0	0.944	0.104	0.889	0.541	-0.392
2_1_107	W-2	Appendix III	Calcium	mg/l	14	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	360	370	300	410	32.1	0.0892	29.6	-0.504	-0.217
2_1_108	W-2	Appendix III	Chloride (as Cl)	mg/l	14	0	0%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	85.9	84.5	64.0	110	9.79	0.114	4.44	0.372	3.81
2_1_112	W-2	Appendix III	Fluoride	mg/l	15	2	13%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	1.51	0.560	0.450	6.70	2.0	1.32	0.119	2.01	2.96
2_1_119	W-2	Appendix III	pH (field)	su	15	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	7.32	7.34	6.90	7.51	0.145	0.0198	0.0889	-1.56	4.55
2_1_120	W-2	Appendix III	pH (lab)	su	14	0	0%	2018-04-11 to 2021-12-06		Nonparametric	7.64	7.60	7.50	7.70	0.0633	0.00829	0.0741	-0.433	-0.394
2_1_125	W-2	Appendix III	Sulfate (as SO4)	mg/l	14	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal	Gamma	4500	4500	4100	5400	316	0.0703	148	1.69	4.88
2_1_129	W-2	Appendix III	Total Dissolved Solids	mg/l	14	0	0%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	6786	7100	4100	7300	835	0.123	296	-2.91	9.37
2_2_101	W-2	Appendix IV	Antimony	mg/l	10	10	100%	2018-06-11 to 2021-12-06		Nonparametric	0.000570	0.000570	0.000570	0.000570	0	0	0	NA	NA
2_2_102	W-2	Appendix IV	Arsenic	mg/l	10	10	100%	2018-06-11 to 2021-12-06		Nonparametric	0.000750	0.000750	0.000750	0.000750	0	0	0	NA	NA
2_2_103	W-2	Appendix IV	Barium	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Nonparametric	Nonparametric	0.00677	0.00590	0.00490	0.0130	0.00233	0.345	0.000593	2.10	4.42

(Table continues on next page)

^a Non-detects are excluded from goodness-of-fit tests.

Table 1: Summary Statistics, Non-Detects Included *(continued)*

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Date Range	Distributions Fit ^a	Recommended Distribution	Mean	Median	Minimum	Maximum	SD	CV	MAD/0.675	Skewness	Kurtosis
2_2_104	W-2	Appendix IV	Beryllium	mg/l	10	8	80%	2018-06-11 to 2021-12-06		Nonparametric	0.000470	0.000310	0.000310	0.000920	0.000222	0.473	0	1.04	-0.0673
2_2_106	W-2	Appendix IV	Cadmium	mg/l	12	8	67%	2018-06-11 to 2021-12-06		Nonparametric	0.000247	0.000210	0.000200	0.000520	0.0000913	0.370	0.0000148	2.86	8.70
2_2_109	W-2	Appendix IV	Chromium, Total	mg/l	10	9	90%	2018-06-11 to 2021-12-06		Nonparametric	0.00134	0.000980	0.000980	0.00250	0.000635	0.475	0	1.55	0.756
2_2_110	W-2	Appendix IV	Cobalt	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Gamma; Lognormal	Gamma	0.00407	0.00170	0.00110	0.0200	0.00545	1.34	0.000889	2.68	7.59
2_2_113	W-2	Appendix IV	Fluoride (App IV)	mg/l	15	2	13%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	1.51	0.560	0.450	6.70	2.0	1.32	0.119	2.01	2.96
2_2_114	W-2	Appendix IV	Lead	mg/l	10	9	90%	2018-06-11 to 2021-12-06		Nonparametric	0.000565	0.000450	0.000450	0.00160	0.000364	0.644	0	3.16	10.0
2_2_115	W-2	Appendix IV	Lithium	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.636	0.620	0.550	0.760	0.0611	0.0961	0.0370	0.874	0.193
2_2_116	W-2	Appendix IV	Mercury	mg/l	10	10	100%	2018-06-11 to 2021-12-06		Nonparametric	0.000120	0.000130	0.0000270	0.000130	0.0000326	0.272	0	-3.16	10.0
2_2_117	W-2	Appendix IV	Molybdenum	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.00372	0.00345	0.00280	0.00570	0.000789	0.212	0.000444	1.54	2.76
2_2_122	W-2	Appendix IV	Radium-226+228	pci/l	14	3	21%	2018-04-11 to 2021-12-06	Gamma; Lognormal	Gamma	1.19	0.806	0.413	3.01	0.864	0.725	0.468	1.46	1.07
2_2_124	W-2	Appendix IV	Selenium	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.00324	0.00330	0.00250	0.00390	0.000476	0.147	0.000519	-0.214	-1.38
2_2_128	W-2	Appendix IV	Thallium	mg/l	10	9	90%	2018-06-11 to 2021-12-06		Nonparametric	0.000213	0.000200	0.000200	0.000330	0.0000411	0.193	0	3.16	10.0
2_3_111	W-2	Supplemental	Conductivity (field)	us/cm	15	0	0%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	6834	6935	4531	7982	713	0.104	213	-2.41	8.92
2_3_118	W-2	Supplemental	Oxidation-reduction Potential (field)	mV	15	0	0%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	278	112	-76.3	2721	680	2.45	72.1	3.79	14.5
2_3_121	W-2	Supplemental	Radium-226	pci/l	14	5	36%	2018-04-11 to 2021-12-06	Gamma; Lognormal	Gamma	0.264	0.240	0.0991	0.628	0.137	0.519	0.0622	1.68	3.39
2_3_123	W-2	Supplemental	Radium-228	pci/l	14	4	29%	2018-04-11 to 2021-12-06	Gamma; Lognormal	Gamma	0.987	0.622	0.413	2.75	0.754	0.764	0.217	1.61	1.43
2_3_126	W-2	Supplemental	Temperature (field)	deg c	15	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	10.1	10.2	8.30	11.8	1.10	0.109	1.04	-0.255	-0.807
2_3_127	W-2	Supplemental	Temperature (lab)	deg c	14	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	20.5	20.8	18.4	22.2	1.10	0.0537	1.19	-0.348	-0.383
2_3_130	W-2	Supplemental	Total Suspended Solids	mg/l	12	3	25%	2018-05-14 to 2021-12-06	Lognormal	Lognormal	2.84	1.40	1.10	14.0	3.61	1.27	0.444	3.14	10.3
2_3_131	W-2	Supplemental	Turbidity (field)	ntu	15	0	0%	2018-04-11 to 2021-12-06	Gamma; Normal	Gamma	1.38	0.980	0.0200	4.12	1.34	0.972	1.42	0.778	-0.530
3_1_105	W-4	Appendix III	Boron	mg/l	13	0	0%	2018-04-11 to 2021-12-06	Lognormal	Lognormal	1.02	0.960	0.550	2.20	0.398	0.392	0.207	2.31	7.22
3_1_107	W-4	Appendix III	Calcium	mg/l	14	0	0%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	339	360	78.0	430	82.2	0.243	29.6	-2.70	8.84
3_1_108	W-4	Appendix III	Chloride (as Cl)	mg/l	14	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	356	360	280	390	30.6	0.0859	29.6	-1.37	1.79
3_1_112	W-4	Appendix III	Fluoride	mg/l	15	6	40%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	2.28	0.600	0.170	26.0	6.57	2.88	0.148	3.86	14.9
3_1_119	W-4	Appendix III	pH (field)	su	15	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	7.09	7.10	6.82	7.28	0.110	0.0156	0.0593	-0.433	2.20
3_1_120	W-4	Appendix III	pH (lab)	su	14	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	7.49	7.50	7.30	7.60	0.0949	0.0127	0.148	-0.308	-0.694
3_1_125	W-4	Appendix III	Sulfate (as SO4)	mg/l	14	0	0%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	13214	13000	12000	15000	802	0.0607	0	0.608	0.801
3_1_129	W-4	Appendix III	Total Dissolved Solids	mg/l	14	0	0%	2018-04-11 to 2021-12-06	Normal	Normal	19214	20000	11000	25000	3118	0.162	1481	-1.12	3.69
3_2_101	W-4	Appendix IV	Antimony	mg/l	10	10	100%	2018-06-11 to 2021-12-06		Nonparametric	0.000570	0.000570	0.000570	0.000570	0	0	0	NA	NA
3_2_102	W-4	Appendix IV	Arsenic	mg/l	10	10	100%	2018-06-11 to 2021-12-06		Nonparametric	0.000750	0.000750	0.000750	0.000750	0	0	0	NA	NA
3_2_103	W-4	Appendix IV	Barium	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.00838	0.00845	0.00740	0.00930	0.000681	0.0813	0.000963	-0.0926	-1.42
3_2_104	W-4	Appendix IV	Beryllium	mg/l	10	10	100%	2018-06-11 to 2021-12-06		Nonparametric	0.000372	0.000310	0.000310	0.000620	0.000131	0.351	0	1.78	1.41
3_2_106	W-4	Appendix IV	Cadmium	mg/l	12	3	25%	2018-06-11 to 2021-12-06	Lognormal	Lognormal	0.000236	0.000225	0.000200	0.000330	0.0000442	0.187	0.0000222	1.58	1.53
3_2_109	W-4	Appendix IV	Chromium, Total	mg/l	10	9	90%	2018-06-11 to 2021-12-06		Nonparametric	0.00138	0.000980	0.000980	0.00250	0.000658	0.478	0	1.24	-0.339
3_2_110	W-4	Appendix IV	Cobalt	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.00679	0.00670	0.00610	0.00790	0.000496	0.0731	0.000444	0.820	1.07
3_2_113	W-4	Appendix IV	Fluoride (App IV)	mg/l	15	6	40%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	2.28	0.600	0.170	26.0	6.57	2.88	0.148	3.86	14.9
3_2_114	W-4	Appendix IV	Lead	mg/l	10	10	100%	2018-06-11 to 2021-12-06		Nonparametric	0.000450	0.000450	0.000450	0.000450	0	0	0	NA	NA
3_2_115	W-4	Appendix IV	Lithium	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.741	0.715	0.560	0.990	0.137	0.185	0.119	0.621	-0.516
3_2_116	W-4	Appendix IV	Mercury	mg/l	10	10	100%	2018-06-11 to 2021-12-06		Nonparametric	0.000120	0.000130	0.0000270	0.000130	0.0000326	0.272	0	-3.16	10.0
3_2_117	W-4	Appendix IV	Molybdenum	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.00301	0.00300	0.00260	0.00340	0.000254	0.0844	0.000296	0.168	-0.668
3_2_122	W-4	Appendix IV	Radium-226+228	pci/l	14	2	14%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.843	0.690	0.418	1.87	0.402	0.476	0.363	1.41	2.12
3_2_124	W-4	Appendix IV	Selenium	mg/l	12	4	33%	2018-06-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.00145	0.00130	0.000890	0.00270	0.000590	0.408	0.000607	0.856	0.0145

(Table continues on next page)

^a Non-detects are excluded from goodness-of-fit tests.

Table 1: Summary Statistics, Non-Detects Included *(continued)*

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Date Range	Distributions Fit ^a	Recommended Distribution	Mean	Median	Minimum	Maximum	SD	CV	MAD/0.675	Skewness	Kurtosis
3_2_128	W-4	Appendix IV	Thallium	mg/l	10	10	100%	2018-06-11 to 2021-12-06		Nonparametric	0.000200	0.000200	0.000200	0.000200	0	0	0	NA	NA
3_3_111	W-4	Supplemental	Conductivity (field)	us/cm	15	0	0%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	17342	17643	16166	18373	821	0.0473	876	-0.306	-1.66
3_3_118	W-4	Supplemental	Oxidation-reduction Potential (field)	mV	15	0	0%	2018-04-11 to 2021-12-06	Normal	Normal	64.4	61.4	-105	185	63.3	0.983	39.9	-0.915	3.56
3_3_121	W-4	Supplemental	Radium-226	pci/l	14	6	43%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.220	0.186	0.0945	0.443	0.0967	0.440	0.0756	1.02	0.647
3_3_123	W-4	Supplemental	Radium-228	pci/l	14	6	43%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.684	0.553	0.394	1.68	0.343	0.501	0.137	2.19	5.22
3_3_126	W-4	Supplemental	Temperature (field)	deg c	15	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	9.52	9.40	7.70	11.6	1.24	0.130	1.63	0.00513	-1.15
3_3_127	W-4	Supplemental	Temperature (lab)	deg c	14	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	20.7	20.4	19.0	23.1	1.33	0.0645	1.41	0.536	-0.817
3_3_130	W-4	Supplemental	Total Suspended Solids	mg/l	12	2	17%	2018-05-14 to 2021-12-06	Gamma; Lognormal	Gamma	7.07	4.60	1.10	25.0	7.68	1.09	4.15	1.72	2.13
3_3_131	W-4	Supplemental	Turbidity (field)	ntu	15	0	0%	2018-04-11 to 2021-12-06	Normal	Normal	1.73	1.75	0.0200	4.10	1.25	0.723	1.32	0.265	-0.562

^a Non-detects are excluded from goodness-of-fit tests.

Table 2: Summary Statistics, Non-Detects Excluded

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Date Range	Distributions Fit	Recommended Distribution	Mean	Median	Minimum	Maximum	SD	CV	MAD/0.675	Skewness	Kurtosis
1_1_105	W-1	Appendix III	Boron	mg/l	13	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.614	0.620	0.500	0.840	0.0847	0.138	0.0593	1.42	3.89
1_1_107	W-1	Appendix III	Calcium	mg/l	14	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	338	340	300	380	23.6	0.0698	14.8	0.257	0.336
1_1_108	W-1	Appendix III	Chloride (as Cl)	mg/l	14	0	0%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	37.4	41.0	21.0	48.0	8.61	0.230	5.19	-0.992	-0.233
1_1_112	W-1	Appendix III	Fluoride	mg/l	15	2	13%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	0.661	0.320	0.180	3.40	0.887	1.34	0.0741	2.87	8.70
1_1_119	W-1	Appendix III	pH (field)	su	15	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	7.19	7.20	6.91	7.41	0.119	0.0165	0.0889	-0.385	1.83
1_1_120	W-1	Appendix III	pH (lab)	su	14	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	7.61	7.60	7.40	7.80	0.123	0.0162	0.148	-0.0235	-0.975
1_1_125	W-1	Appendix III	Sulfate (as SO4)	mg/l	14	0	0%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	2793	2700	2500	4500	500	0.179	148	3.52	12.8
1_1_129	W-1	Appendix III	Total Dissolved Solids	mg/l	14	0	0%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	4164	4400	1300	4600	845	0.203	296	-3.44	12.4
1_2_103	W-1	Appendix IV	Barium	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.00990	0.00970	0.00890	0.0110	0.000734	0.0741	0.000519	0.603	-0.793
1_2_104	W-1	Appendix IV	Beryllium	mg/l	10	6	60%	2018-06-11 to 2021-12-06		Nonparametric	0.000777	0.000830	0.000350	0.00110	0.000327	0.421	0.000289	-0.757	-0.369
1_2_106	W-1	Appendix IV	Cadmium	mg/l	12	8	67%	2018-06-11 to 2021-12-06		Nonparametric	0.000310	0.000315	0.000240	0.000370	0.0000648	0.209	0.0000741	-0.162	-4.85
1_2_109	W-1	Appendix IV	Chromium, Total	mg/l	10	9	90%	2018-06-11 to 2021-12-06		Nonparametric	0.00170	0.00170	0.00170	0.00170	NA	NA	0	NA	NA
1_2_110	W-1	Appendix IV	Cobalt	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.000959	0.000910	0.000780	0.00130	0.000180	0.188	0.000148	0.913	-0.567
1_2_113	W-1	Appendix IV	Fluoride (App IV)	mg/l	15	2	13%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	0.661	0.320	0.180	3.40	0.887	1.34	0.0741	2.87	8.70
1_2_114	W-1	Appendix IV	Lead	mg/l	10	9	90%	2018-06-11 to 2021-12-06		Nonparametric	0.00170	0.00170	0.00170	0.00170	NA	NA	0	NA	NA
1_2_115	W-1	Appendix IV	Lithium	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.278	0.280	0.250	0.320	0.0196	0.0706	0.0148	0.505	0.859
1_2_117	W-1	Appendix IV	Molybdenum	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Gamma; Lognormal	Gamma	0.00339	0.00330	0.00290	0.00460	0.000440	0.130	0.000148	1.98	5.47
1_2_122	W-1	Appendix IV	Radium-226+228	pci/l	14	3	21%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.843	0.830	0.485	1.26	0.227	0.269	0.258	0.274	-0.259
1_2_124	W-1	Appendix IV	Selenium	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Gamma; Normal	Gamma	0.0114	0.0115	0.00380	0.0160	0.00338	0.297	0.00222	-0.788	1.32
1_2_128	W-1	Appendix IV	Thallium	mg/l	10	9	90%	2018-06-11 to 2021-12-06		Nonparametric	0.000440	0.000440	0.000440	0.000440	NA	NA	0	NA	NA
1_3_111	W-1	Supplemental	Conductivity (field)	us/cm	15	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	4556	4574	4216	4732	142	0.0312	97.8	-1.15	1.13
1_3_118	W-1	Supplemental	Oxidation-reduction Potential (field)	mV	15	0	0%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	284	128	-89.6	2721	678	2.39	47.3	3.80	14.6
1_3_121	W-1	Supplemental	Radium-226	pci/l	14	7	50%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Nonparametric	0.257	0.248	0.0884	0.404	0.126	0.492	0.185	-0.210	-1.83
1_3_123	W-1	Supplemental	Radium-228	pci/l	14	6	43%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.755	0.722	0.481	1.16	0.223	0.295	0.173	0.870	0.273
1_3_126	W-1	Supplemental	Temperature (field)	deg c	15	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	10.3	10.2	8.50	11.9	1.01	0.0987	1.33	0.0104	-0.979
1_3_127	W-1	Supplemental	Temperature (lab)	deg c	14	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	20.6	20.6	19.1	21.9	1.00	0.0489	1.41	-0.144	-1.33
1_3_130	W-1	Supplemental	Total Suspended Solids	mg/l	12	5	42%	2018-05-14 to 2021-12-06	Nonparametric	Nonparametric	2.97	2.40	2.00	5.20	1.40	0.472	0.593	1.19	-0.722
1_3_131	W-1	Supplemental	Turbidity (field)	ntu	15	0	0%	2018-04-11 to 2021-12-06	Normal	Normal	0.884	0.820	0.0200	2.44	0.712	0.805	0.533	0.857	0.526
2_1_105	W-2	Appendix III	Boron	mg/l	13	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	9.09	8.80	7.80	11.0	0.944	0.104	0.889	0.541	-0.392
2_1_107	W-2	Appendix III	Calcium	mg/l	14	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	360	370	300	410	32.1	0.0892	29.6	-0.504	-0.217
2_1_108	W-2	Appendix III	Chloride (as Cl)	mg/l	14	0	0%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	85.9	84.5	64.0	110	9.79	0.114	4.44	0.372	3.81
2_1_112	W-2	Appendix III	Fluoride	mg/l	15	2	13%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	1.44	0.530	0.450	6.70	2.08	1.44	0.0741	2.19	3.61
2_1_119	W-2	Appendix III	pH (field)	su	15	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	7.32	7.34	6.90	7.51	0.145	0.0198	0.0889	-1.56	4.55
2_1_120	W-2	Appendix III	pH (lab)	su	14	0	0%	2018-04-11 to 2021-12-06		Nonparametric	7.64	7.60	7.50	7.70	0.0633	0.00829	0.0741	-0.433	-0.394
2_1_125	W-2	Appendix III	Sulfate (as SO4)	mg/l	14	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal	Gamma	4500	4500	4100	5400	316	0.0703	148	1.69	4.88
2_1_129	W-2	Appendix III	Total Dissolved Solids	mg/l	14	0	0%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	6786	7100	4100	7300	835	0.123	296	-2.91	9.37
2_2_103	W-2	Appendix IV	Barium	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Nonparametric	Nonparametric	0.00677	0.00590	0.00490	0.0130	0.00233	0.345	0.000593	2.10	4.42
2_2_104	W-2	Appendix IV	Beryllium	mg/l	10	8	80%	2018-06-11 to 2021-12-06		Nonparametric	0.000800	0.000800	0.000680	0.000920	0.000170	0.212	0.000178	NA	NA
2_2_106	W-2	Appendix IV	Cadmium	mg/l	12	8	67%	2018-06-11 to 2021-12-06		Nonparametric	0.000327	0.000285	0.000220	0.000520	0.000132	0.403	0.0000519	1.66	3.12
2_2_109	W-2	Appendix IV	Chromium, Total	mg/l	10	9	90%	2018-06-11 to 2021-12-06		Nonparametric	0.00150	0.00150	0.00150	0.00150	NA	NA	0	NA	NA
2_2_110	W-2	Appendix IV	Cobalt	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Gamma; Lognormal	Gamma	0.00407	0.00170	0.00110	0.0200	0.00545	1.34	0.000889	2.68	7.59
2_2_113	W-2	Appendix IV	Fluoride (App IV)	mg/l	15	2	13%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	1.44	0.530	0.450	6.70	2.08	1.44	0.0741	2.19	3.61
2_2_114	W-2	Appendix IV	Lead	mg/l	10	9	90%	2018-06-11 to 2021-12-06		Nonparametric	0.00160	0.00160	0.00160	0.00160	NA	NA	0	NA	NA

(Table continues on next page)

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Date Range	Distributions Fit	Recommended Distribution	Mean	Median	Minimum	Maximum	SD	CV	MAD/0.675	Skewness	Kurtosis
2_2_115	W-2	Appendix IV	Lithium	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.636	0.620	0.550	0.760	0.0611	0.0961	0.0370	0.874	0.193
2_2_117	W-2	Appendix IV	Molybdenum	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.00372	0.00345	0.00280	0.00570	0.000789	0.212	0.000444	1.54	2.76
2_2_122	W-2	Appendix IV	Radium-226+228	pci/l	14	3	21%	2018-04-11 to 2021-12-06	Gamma; Lognormal	Gamma	1.38	1.14	0.584	3.01	0.884	0.639	0.621	1.23	0.193
2_2_124	W-2	Appendix IV	Selenium	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.00324	0.00330	0.00250	0.00390	0.000476	0.147	0.000519	-0.214	-1.38
2_2_128	W-2	Appendix IV	Thallium	mg/l	10	9	90%	2018-06-11 to 2021-12-06		Nonparametric	0.000330	0.000330	0.000330	0.000330	NA	NA	0	NA	NA
2_3_111	W-2	Supplemental	Conductivity (field)	us/cm	15	0	0%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	6834	6935	4531	7982	713	0.104	213	-2.41	8.92
2_3_118	W-2	Supplemental	Oxidation-reduction Potential (field)	mV	15	0	0%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	278	112	-76.3	2721	680	2.45	72.1	3.79	14.5
2_3_121	W-2	Supplemental	Radium-226	pci/l	14	5	36%	2018-04-11 to 2021-12-06	Gamma; Lognormal	Gamma	0.312	0.257	0.180	0.628	0.144	0.460	0.0622	1.67	2.30
2_3_123	W-2	Supplemental	Radium-228	pci/l	14	4	29%	2018-04-11 to 2021-12-06	Gamma; Lognormal	Gamma	1.19	0.837	0.487	2.75	0.814	0.686	0.349	1.16	-0.0899
2_3_126	W-2	Supplemental	Temperature (field)	deg c	15	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	10.1	10.2	8.30	11.8	1.10	0.109	1.04	-0.255	-0.807
2_3_127	W-2	Supplemental	Temperature (lab)	deg c	14	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	20.5	20.8	18.4	22.2	1.10	0.0537	1.19	-0.348	-0.383
2_3_130	W-2	Supplemental	Total Suspended Solids	mg/l	12	3	25%	2018-05-14 to 2021-12-06	Lognormal	Lognormal	3.42	2.40	1.20	14.0	4.06	1.18	1.19	2.76	7.91
2_3_131	W-2	Supplemental	Turbidity (field)	ntu	15	0	0%	2018-04-11 to 2021-12-06	Gamma; Normal	Gamma	1.38	0.980	0.0200	4.12	1.34	0.972	1.42	0.778	-0.530
3_1_105	W-4	Appendix III	Boron	mg/l	13	0	0%	2018-04-11 to 2021-12-06	Lognormal	Lognormal	1.02	0.960	0.550	2.20	0.398	0.392	0.207	2.31	7.22
3_1_107	W-4	Appendix III	Calcium	mg/l	14	0	0%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	339	360	78.0	430	82.2	0.243	29.6	-2.70	8.84
3_1_108	W-4	Appendix III	Chloride (as Cl)	mg/l	14	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	356	360	280	390	30.6	0.0859	29.6	-1.37	1.79
3_1_112	W-4	Appendix III	Fluoride	mg/l	15	6	40%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	3.40	0.610	0.210	26.0	8.48	2.49	0.0741	3.0	8.99
3_1_119	W-4	Appendix III	pH (field)	su	15	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	7.09	7.10	6.82	7.28	0.110	0.0156	0.0593	-0.433	2.20
3_1_120	W-4	Appendix III	pH (lab)	su	14	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	7.49	7.50	7.30	7.60	0.0949	0.0127	0.148	-0.308	-0.694
3_1_125	W-4	Appendix III	Sulfate (as SO4)	mg/l	14	0	0%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	13214	13000	12000	15000	802	0.0607	0	0.608	0.801
3_1_129	W-4	Appendix III	Total Dissolved Solids	mg/l	14	0	0%	2018-04-11 to 2021-12-06	Normal	Normal	19214	20000	11000	25000	3118	0.162	1481	-1.12	3.69
3_2_103	W-4	Appendix IV	Barium	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.00838	0.00845	0.00740	0.00930	0.000681	0.0813	0.000963	-0.0926	-1.42
3_2_106	W-4	Appendix IV	Cadmium	mg/l	12	3	25%	2018-06-11 to 2021-12-06	Lognormal	Lognormal	0.000247	0.000230	0.000200	0.000330	0.0000464	0.188	0.0000148	1.28	0.317
3_2_109	W-4	Appendix IV	Chromium, Total	mg/l	10	9	90%	2018-06-11 to 2021-12-06		Nonparametric	0.00190	0.00190	0.00190	0.00190	NA	NA	0	NA	NA
3_2_110	W-4	Appendix IV	Cobalt	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.00679	0.00670	0.00610	0.00790	0.000496	0.0731	0.000444	0.820	1.07
3_2_113	W-4	Appendix IV	Fluoride (App IV)	mg/l	15	6	40%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	3.40	0.610	0.210	26.0	8.48	2.49	0.0741	3.0	8.99
3_2_115	W-4	Appendix IV	Lithium	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.741	0.715	0.560	0.990	0.137	0.185	0.119	0.621	-0.516
3_2_117	W-4	Appendix IV	Molybdenum	mg/l	12	0	0%	2018-06-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.00301	0.00300	0.00260	0.00340	0.000254	0.0844	0.000296	0.168	-0.668
3_2_122	W-4	Appendix IV	Radium-226+228	pci/l	14	2	14%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.903	0.824	0.418	1.87	0.404	0.447	0.289	1.30	1.92
3_2_124	W-4	Appendix IV	Selenium	mg/l	12	4	33%	2018-06-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.00172	0.00170	0.00110	0.00270	0.000531	0.308	0.000444	0.615	0.408
3_3_111	W-4	Supplemental	Conductivity (field)	us/cm	15	0	0%	2018-04-11 to 2021-12-06	Nonparametric	Nonparametric	17342	17643	16166	18373	821	0.0473	876	-0.306	-1.66
3_3_118	W-4	Supplemental	Oxidation-reduction Potential (field)	mV	15	0	0%	2018-04-11 to 2021-12-06	Normal	Normal	64.4	61.4	-105	185	63.3	0.983	39.9	-0.915	3.56
3_3_121	W-4	Supplemental	Radium-226	pci/l	14	6	43%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.256	0.237	0.135	0.443	0.107	0.417	0.0985	0.659	-0.573
3_3_123	W-4	Supplemental	Radium-228	pci/l	14	6	43%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	0.836	0.710	0.475	1.68	0.394	0.472	0.261	1.63	2.78
3_3_126	W-4	Supplemental	Temperature (field)	deg c	15	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	9.52	9.40	7.70	11.6	1.24	0.130	1.63	0.00513	-1.15
3_3_127	W-4	Supplemental	Temperature (lab)	deg c	14	0	0%	2018-04-11 to 2021-12-06	Gamma; Lognormal; Normal	Gamma	20.7	20.4	19.0	23.1	1.33	0.0645	1.41	0.536	-0.817
3_3_130	W-4	Supplemental	Total Suspended Solids	mg/l	12	2	17%	2018-05-14 to 2021-12-06	Gamma; Lognormal	Gamma	8.26	5.20	1.60	25.0	7.91	0.957	3.85	1.55	1.36
3_3_131	W-4	Supplemental	Turbidity (field)	ntu	15	0	0%	2018-04-11 to 2021-12-06	Normal	Normal	1.73	1.75	0.0200	4.10	1.25	0.723	1.32	0.265	-0.562

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Normal				Lognormal				Gamma				Log-SD (NDs excl.)	ProUCL Distributions Fit	Recommended Distribution
								S-W		Lilliefors		S-W		Lilliefors		K-S		A-D				
								Stat.	p-Value	Stat.	p-Value	Stat.	p-Value	Stat.	p-Value	Stat.	p-Value	Stat.	p-Value			
1_1_105	W-1	Appendix III	Boron	mg/l	13	0	0%	0.853	0.031	0.225	0.071	0.897	0.121	0.198	0.179	0.205	>= 0.10	0.624	0.05 <= p < 0.10	0.131	Gamma; Lognormal; Normal	Gamma
1_1_107	W-1	Appendix III	Calcium	mg/l	14	0	0%	0.918	0.207	0.178	0.266	0.922	0.232	0.166	0.373	0.168	>= 0.10	0.510	>= 0.10	0.070	Gamma; Lognormal; Normal	Gamma
1_1_108	W-1	Appendix III	Chloride (as Cl)	mg/l	14	0	0%	0.856	0.027	0.304	0.001	0.808	0.006	0.318	0.000	0.320	< 0.01	1.158	< 0.01	0.267	Nonparametric	Nonparametric
1_1_112	W-1	Appendix III	Fluoride	mg/l	15	2	13%	0.555	0.000	0.398	0.000	0.786	0.005	0.334	0.000	0.382	< 0.01	1.737	< 0.01	0.837	Nonparametric	Nonparametric
1_1_119	W-1	Appendix III	pH (field)	su	15	0	0%	0.933	0.299	0.153	0.449	0.930	0.277	0.156	0.416	0.155	>= 0.10	0.501	>= 0.10	0.017	Gamma; Lognormal; Normal	Gamma
1_1_120	W-1	Appendix III	pH (lab)	su	14	0	0%	0.924	0.255	0.185	0.214	0.925	0.256	0.186	0.208	0.194	>= 0.10	0.544	>= 0.10	0.016	Gamma; Lognormal; Normal	Gamma
1_1_125	W-1	Appendix III	Sulfate (as SO4)	mg/l	14	0	0%	0.465	0.000	0.423	0.000	0.518	0.000	0.391	0.000	0.402	< 0.01	2.842	< 0.01	0.145	Nonparametric	Nonparametric
1_1_129	W-1	Appendix III	Total Dissolved Solids	mg/l	14	0	0%	0.490	0.000	0.398	0.000	0.409	0.000	0.454	0.000	0.441	< 0.01	3.354	< 0.01	0.327	Nonparametric	Nonparametric
1_2_101	W-1	Appendix IV	Antimony	mg/l	10	10	100%	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric
1_2_102	W-1	Appendix IV	Arsenic	mg/l	10	10	100%	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric
1_2_103	W-1	Appendix IV	Barium	mg/l	12	0	0%	0.876	0.078	0.196	0.231	0.890	0.116	0.182	0.333	0.188	>= 0.10	0.626	0.05 <= p < 0.10	0.073	Gamma; Lognormal; Normal	Gamma
1_2_104	W-1	Appendix IV	Beryllium	mg/l	10	6	60%	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		0.509		Nonparametric
1_2_106	W-1	Appendix IV	Cadmium	mg/l	12	8	67%	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		0.214		Nonparametric
1_2_109	W-1	Appendix IV	Chromium, Total	mg/l	10	9	90%	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric
1_2_110	W-1	Appendix IV	Cobalt	mg/l	12	0	0%	0.854	0.041	0.187	0.293	0.877	0.081	0.162	0.523	0.172	>= 0.10	0.686	0.05 <= p < 0.10	0.179	Gamma; Lognormal; Normal	Gamma
1_2_113	W-1	Appendix IV	Fluoride (App IV)	mg/l	15	2	13%	0.555	0.000	0.398	0.000	0.786	0.005	0.334	0.000	0.382	< 0.01	1.737	< 0.01	0.837	Nonparametric	Nonparametric
1_2_114	W-1	Appendix IV	Lead	mg/l	10	9	90%	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric
1_2_115	W-1	Appendix IV	Lithium	mg/l	12	0	0%	0.932	0.405	0.178	0.363	0.939	0.484	0.171	0.434	0.165	>= 0.10	0.355	>= 0.10	0.070	Gamma; Lognormal; Normal	Gamma
1_2_116	W-1	Appendix IV	Mercury	mg/l	10	10	100%	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric
1_2_117	W-1	Appendix IV	Molybdenum	mg/l	12	0	0%	0.773	0.005	0.249	0.038	0.822	0.017	0.235	0.067	0.243	0.05 <= p < 0.10	0.980	0.01 <= p < 0.05	0.119	Gamma; Lognormal	Gamma
1_2_122	W-1	Appendix IV	Radium-226+228	pci/l	14	3	21%	0.981	0.973	0.138	0.806	0.981	0.971	0.158	0.622	0.142	>= 0.10	0.158	>= 0.10	0.278	Gamma; Lognormal; Normal	Gamma
1_2_124	W-1	Appendix IV	Selenium	mg/l	12	0	0%	0.931	0.391	0.174	0.400	0.806	0.011	0.258	0.027	0.227	>= 0.10	0.642	0.05 <= p < 0.10	0.385	Gamma; Normal	Gamma
1_2_128	W-1	Appendix IV	Thallium	mg/l	10	9	90%	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric
1_3_111	W-1	Supplemental	Conductivity (field)	us/cm	15	0	0%	0.905	0.115	0.184	0.186	0.897	0.084	0.191	0.148	0.184	>= 0.10	0.587	>= 0.10	0.032	Gamma; Lognormal; Normal	Gamma
1_3_118	W-1	Supplemental	Oxidation-reduction Potential (field)	mV	15	0	0%	0.380	0.000	0.471	0.000	NA	NA	NA	NA	NA		NA		NA	Nonparametric	Nonparametric
1_3_121	W-1	Supplemental	Radium-226	pci/l	14	7	50%	0.911	0.404	0.217	0.406	0.887	0.259	0.211	0.450	0.234	>= 0.10	0.394	>= 0.10	0.596	Gamma; Lognormal; Normal	Nonparametric
1_3_123	W-1	Supplemental	Radium-228	pci/l	14	6	43%	0.928	0.502	0.254	0.136	0.969	0.890	0.203	0.429	0.218	>= 0.10	0.258	>= 0.10	0.285	Gamma; Lognormal; Normal	Gamma
1_3_126	W-1	Supplemental	Temperature (field)	deg c	15	0	0%	0.967	0.806	0.123	0.787	0.967	0.815	0.126	0.755	0.134	>= 0.10	0.243	>= 0.10	0.099	Gamma; Lognormal; Normal	Gamma
1_3_127	W-1	Supplemental	Temperature (lab)	deg c	14	0	0%	0.921	0.230	0.136	0.686	0.920	0.216	0.134	0.705	0.145	>= 0.10	0.400	>= 0.10	0.049	Gamma; Lognormal; Normal	Gamma
1_3_130	W-1	Supplemental	Total Suspended Solids	mg/l	12	5	42%	0.712	0.005	0.372	0.004	0.743	0.011	0.337	0.016	0.362	< 0.01	1.000	< 0.01	0.420	Nonparametric	Nonparametric
1_3_131	W-1	Supplemental	Turbidity (field)	ntu	15	0	0%	0.917	0.176	0.152	0.461	0.751	0.001	0.309	0.000	0.234	0.01 <= p < 0.05	0.973	0.01 <= p < 0.05	1.671	Normal	Normal
2_1_105	W-2	Appendix III	Boron	mg/l	13	0	0%	0.946	0.533	0.160	0.481	0.956	0.694	0.146	0.633	0.154	>= 0.10	0.306	>= 0.10	0.102	Gamma; Lognormal; Normal	Gamma
2_1_107	W-2	Appendix III	Calcium	mg/l	14	0	0%	0.930	0.306	0.194	0.165	0.917	0.196	0.205	0.115	0.208	>= 0.10	0.593	>= 0.10	0.092	Gamma; Lognormal; Normal	Gamma
2_1_108	W-2	Appendix III	Chloride (as Cl)	mg/l	14	0	0%	0.859	0.030	0.236	0.034	0.855	0.026	0.251	0.017	0.238	0.01 <= p < 0.05	0.934	0.01 <= p < 0.05	0.115	Nonparametric	Nonparametric
2_1_112	W-2	Appendix III	Fluoride	mg/l	15	2	13%	0.532	0.000	0.419	0.000	0.642	0.000	0.373	0.000	0.414	< 0.01	2.586	< 0.01	0.932	Nonparametric	Nonparametric
2_1_119	W-2	Appendix III	pH (field)	su	15	0	0%	0.843	0.014	0.184	0.185	0.834	0.010	0.183	0.195	0.178	>= 0.10	0.845	0.01 <= p < 0.05	0.020	Gamma; Lognormal; Normal	Gamma
2_1_120	W-2	Appendix III	pH (lab)	su	14	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		0.008		Nonparametric
2_1_125	W-2	Appendix III	Sulfate (as SO4)	mg/l	14	0	0%	0.835	0.014	0.233	0.038	0.864	0.035	0.217	0.072	0.221	0.05 <= p < 0.10	0.700	0.05 <= p < 0.10	0.067	Gamma; Lognormal	Gamma
2_1_129	W-2	Appendix III	Total Dissolved Solids	mg/l	14	0	0%	0.616	0.000	0.269	0.007	0.556	0.000	0.292	0.002	0.286	< 0.01	2.200	< 0.01	0.150	Nonparametric	Nonparametric

(Table continues on next page)

Note: p-values above 0.05 suggest a fit to the tested distribution; a distribution passes its GOF test when at least one of the two p-values is above 0.05.

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Normal				Lognormal				Gamma				Log-SD (NDs excl.)	ProUCL Distributions Fit	Recommended Distribution
								S-W		Lilliefors		S-W		Lilliefors		K-S		A-D				
								Stat.	p-Value	Stat.	p-Value	Stat.	p-Value	Stat.	p-Value	Stat.	p-Value	Stat.	p-Value			
2_2_101	W-2	Appendix IV	Antimony	mg/l	10	10	100%	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric	
2_2_102	W-2	Appendix IV	Arsenic	mg/l	10	10	100%	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric	
2_2_103	W-2	Appendix IV	Barium	mg/l	12	0	0%	0.726	0.002	0.346	0.000	0.812	0.013	0.313	0.002	0.330	< 0.01	1.126	< 0.01	0.284	Nonparametric	Nonparametric
2_2_104	W-2	Appendix IV	Beryllium	mg/l	10	8	80%	NA	NA	NA	NA	NA	NA	NA	NA		NA		0.214		Nonparametric	
2_2_106	W-2	Appendix IV	Cadmium	mg/l	12	8	67%	NA	NA	NA	NA	NA	NA	NA	NA		NA		0.365		Nonparametric	
2_2_109	W-2	Appendix IV	Chromium, Total	mg/l	10	9	90%	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric	
2_2_110	W-2	Appendix IV	Cobalt	mg/l	12	0	0%	0.608	0.000	0.299	0.004	0.851	0.038	0.219	0.116	0.253	0.05 <= p < 0.10	1.059	< 0.01	0.925	Gamma; Lognormal	Gamma
2_2_113	W-2	Appendix IV	Fluoride (App IV)	mg/l	15	2	13%	0.532	0.000	0.419	0.000	0.642	0.000	0.373	0.000	0.414	< 0.01	2.586	< 0.01	0.932	Nonparametric	Nonparametric
2_2_114	W-2	Appendix IV	Lead	mg/l	10	9	90%	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric	
2_2_115	W-2	Appendix IV	Lithium	mg/l	12	0	0%	0.915	0.249	0.223	0.102	0.933	0.414	0.205	0.178	0.209	>= 0.10	0.500	>= 0.10	0.094	Gamma; Lognormal; Normal	Gamma
2_2_116	W-2	Appendix IV	Mercury	mg/l	10	10	100%	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric	
2_2_117	W-2	Appendix IV	Molybdenum	mg/l	12	0	0%	0.869	0.064	0.196	0.232	0.929	0.374	0.174	0.407	0.186	>= 0.10	0.460	>= 0.10	0.194	Gamma; Lognormal; Normal	Gamma
2_2_122	W-2	Appendix IV	Radium-226+228	pci/l	14	3	21%	0.797	0.009	0.269	0.025	0.899	0.181	0.196	0.278	0.210	>= 0.10	0.632	0.05 <= p < 0.10	0.576	Gamma; Lognormal	Gamma
2_2_124	W-2	Appendix IV	Selenium	mg/l	12	0	0%	0.935	0.440	0.191	0.263	0.929	0.373	0.194	0.241	0.207	>= 0.10	0.410	>= 0.10	0.151	Gamma; Lognormal; Normal	Gamma
2_2_128	W-2	Appendix IV	Thallium	mg/l	10	9	90%	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric	
2_3_111	W-2	Supplemental	Conductivity (field)	us/cm	15	0	0%	0.682	0.000	0.321	0.000	0.616	0.000	0.354	0.000	0.329	< 0.01	2.082	< 0.01	0.120	Nonparametric	Nonparametric
2_3_118	W-2	Supplemental	Oxidation-reduction Potential (field)	mV	15	0	0%	0.388	0.000	0.456	0.000	NA	NA	NA	NA	NA		NA		NA	Nonparametric	Nonparametric
2_3_121	W-2	Supplemental	Radium-226	pci/l	14	5	36%	0.794	0.017	0.315	0.010	0.895	0.224	0.245	0.122	0.272	0.05 <= p < 0.10	0.642	0.05 <= p < 0.10	0.392	Gamma; Lognormal	Gamma
2_3_123	W-2	Supplemental	Radium-228	pci/l	14	4	29%	0.801	0.015	0.291	0.016	0.877	0.120	0.229	0.145	0.246	>= 0.10	0.719	0.05 <= p < 0.10	0.623	Gamma; Lognormal	Gamma
2_3_126	W-2	Supplemental	Temperature (field)	deg c	15	0	0%	0.937	0.352	0.149	0.496	0.927	0.248	0.170	0.290	0.159	>= 0.10	0.439	>= 0.10	0.111	Gamma; Lognormal; Normal	Gamma
2_3_127	W-2	Supplemental	Temperature (lab)	deg c	14	0	0%	0.974	0.930	0.131	0.746	0.970	0.872	0.140	0.648	0.139	>= 0.10	0.194	>= 0.10	0.054	Gamma; Lognormal; Normal	Gamma
2_3_130	W-2	Supplemental	Total Suspended Solids	mg/l	12	3	25%	0.575	0.000	0.411	0.000	0.825	0.039	0.246	0.120	0.314	0.01 <= p < 0.05	0.955	0.01 <= p < 0.05	0.783	Lognormal	Lognormal
2_3_131	W-2	Supplemental	Turbidity (field)	ntu	15	0	0%	0.880	0.048	0.155	0.427	0.791	0.003	0.237	0.023	0.196	>= 0.10	0.802	0.01 <= p < 0.05	2.074	Gamma; Normal	Gamma
3_1_105	W-4	Appendix III	Boron	mg/l	13	0	0%	0.738	0.001	0.340	0.000	0.887	0.088	0.265	0.013	0.285	< 0.01	0.792	0.01 <= p < 0.05	0.331	Lognormal	Lognormal
3_1_107	W-4	Appendix III	Calcium	mg/l	14	0	0%	0.693	0.000	0.265	0.009	0.510	0.000	0.365	0.000	0.332	< 0.01	2.386	< 0.01	0.418	Nonparametric	Nonparametric
3_1_108	W-4	Appendix III	Chloride (as Cl)	mg/l	14	0	0%	0.865	0.036	0.199	0.141	0.838	0.015	0.211	0.091	0.211	0.05 <= p < 0.10	0.824	0.01 <= p < 0.05	0.091	Gamma; Lognormal; Normal	Gamma
3_1_112	W-4	Appendix III	Fluoride	mg/l	15	6	40%	0.409	0.000	0.506	0.000	0.643	0.000	0.372	0.001	0.479	< 0.01	2.242	< 0.01	1.349	Nonparametric	Nonparametric
3_1_119	W-4	Appendix III	pH (field)	su	15	0	0%	0.905	0.113	0.190	0.155	0.903	0.105	0.188	0.163	0.183	>= 0.10	0.653	0.05 <= p < 0.10	0.016	Gamma; Lognormal; Normal	Gamma
3_1_120	W-4	Appendix III	pH (lab)	su	14	0	0%	0.882	0.063	0.203	0.123	0.882	0.063	0.205	0.115	0.206	>= 0.10	0.770	0.01 <= p < 0.05	0.013	Gamma; Lognormal; Normal	Gamma
3_1_125	W-4	Appendix III	Sulfate (as SO4)	mg/l	14	0	0%	0.850	0.022	0.320	0.000	0.855	0.026	0.311	0.001	0.317	< 0.01	1.162	< 0.01	0.060	Nonparametric	Nonparametric
3_1_129	W-4	Appendix III	Total Dissolved Solids	mg/l	14	0	0%	0.870	0.042	0.212	0.088	0.793	0.004	0.250	0.018	0.231	0.01 <= p < 0.05	1.032	< 0.01	0.186	Normal	Normal
3_2_101	W-4	Appendix IV	Antimony	mg/l	10	10	100%	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric	
3_2_102	W-4	Appendix IV	Arsenic	mg/l	10	10	100%	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric	
3_2_103	W-4	Appendix IV	Barium	mg/l	12	0	0%	0.926	0.340	0.173	0.416	0.923	0.316	0.172	0.422	0.184	>= 0.10	0.385	>= 0.10	0.082	Gamma; Lognormal; Normal	Gamma
3_2_104	W-4	Appendix IV	Beryllium	mg/l	10	10	100%	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric	
3_2_106	W-4	Appendix IV	Cadmium	mg/l	12	3	25%	0.797	0.019	0.335	0.004	0.837	0.053	0.308	0.014	0.320	0.01 <= p < 0.05	0.819	0.01 <= p < 0.05	0.175	Lognormal	Lognormal
3_2_109	W-4	Appendix IV	Chromium, Total	mg/l	10	9	90%	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric	
3_2_110	W-4	Appendix IV	Cobalt	mg/l	12	0	0%	0.953	0.679	0.157	0.574	0.966	0.868	0.145	0.689	0.151	>= 0.10	0.218	>= 0.10	0.072	Gamma; Lognormal; Normal	Gamma
3_2_113	W-4	Appendix IV	Fluoride (App IV)	mg/l	15	6	40%	0.409	0.000	0.506	0.000	0.643	0.000	0.372	0.001	0.479	< 0.01	2.242	< 0.01	1.349	Nonparametric	Nonparametric

(Table continues on next page)

Note: p-values above 0.05 suggest a fit to the tested distribution; a distribution passes its GOF test when at least one of the two p-values is above 0.05.

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Normal		Lognormal				Gamma				Log-SD (NDs excl.)	ProUCL Distributions Fit	Recommended Distribution		
								S-W		Lilliefors		S-W		Lilliefors		K-S					A-D	
								Stat.	p-Value	Stat.	p-Value	Stat.	p-Value	Stat.	p-Value	Stat.	p-Value				Stat.	p-Value
3_2_114	W-4	Appendix IV	Lead	mg/l	10	10	100%	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric	
3_2_115	W-4	Appendix IV	Lithium	mg/l	12	0	0%	0.906	0.188	0.227	0.088	0.926	0.339	0.196	0.230	0.208	>= 0.10	0.501	>= 0.10	0.181	Gamma; Lognormal; Normal	Gamma
3_2_116	W-4	Appendix IV	Mercury	mg/l	10	10	100%	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric	
3_2_117	W-4	Appendix IV	Molybdenum	mg/l	12	0	0%	0.952	0.660	0.180	0.352	0.956	0.728	0.164	0.495	0.170	>= 0.10	0.273	>= 0.10	0.084	Gamma; Lognormal; Normal	Gamma
3_2_122	W-4	Appendix IV	Radium-226+228	pci/l	14	2	14%	0.895	0.137	0.182	0.334	0.978	0.974	0.145	0.695	0.168	>= 0.10	0.272	>= 0.10	0.418	Gamma; Lognormal; Normal	Gamma
3_2_124	W-4	Appendix IV	Selenium	mg/l	12	4	33%	0.944	0.655	0.130	0.955	0.950	0.709	0.157	0.811	0.164	>= 0.10	0.231	>= 0.10	0.309	Gamma; Lognormal; Normal	Gamma
3_2_128	W-4	Appendix IV	Thallium	mg/l	10	10	100%	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric	
3_3_111	W-4	Supplemental	Conductivity (field)	us/cm	15	0	0%	0.866	0.029	0.239	0.021	0.863	0.026	0.245	0.016	0.248	0.01 <= p < 0.05	0.910	0.01 <= p < 0.05	0.048	Nonparametric	Nonparametric
3_3_118	W-4	Supplemental	Oxidation-reduction Potential (field)	mV	15	0	0%	0.899	0.092	0.202	0.101	NA	NA	NA	NA		NA		NA		Normal	Normal
3_3_121	W-4	Supplemental	Radium-226	pci/l	14	6	43%	0.918	0.414	0.235	0.218	0.940	0.610	0.208	0.389	0.233	>= 0.10	0.353	>= 0.10	0.415	Gamma; Lognormal; Normal	Gamma
3_3_123	W-4	Supplemental	Radium-228	pci/l	14	6	43%	0.840	0.076	0.208	0.390	0.939	0.602	0.147	0.876	0.174	>= 0.10	0.361	>= 0.10	0.413	Gamma; Lognormal; Normal	Gamma
3_3_126	W-4	Supplemental	Temperature (field)	deg c	15	0	0%	0.956	0.626	0.123	0.789	0.951	0.541	0.124	0.771	0.134	>= 0.10	0.295	>= 0.10	0.132	Gamma; Lognormal; Normal	Gamma
3_3_127	W-4	Supplemental	Temperature (lab)	deg c	14	0	0%	0.926	0.271	0.127	0.778	0.933	0.332	0.126	0.787	0.133	>= 0.10	0.380	>= 0.10	0.064	Gamma; Lognormal; Normal	Gamma
3_3_130	W-4	Supplemental	Total Suspended Solids	mg/l	12	2	17%	0.778	0.008	0.273	0.034	0.959	0.777	0.120	0.952	0.167	>= 0.10	0.406	>= 0.10	0.891	Gamma; Lognormal	Gamma
3_3_131	W-4	Supplemental	Turbidity (field)	ntu	15	0	0%	0.941	0.396	0.145	0.542	0.690	0.000	0.320	0.000	0.255	0.01 <= p < 0.05	1.477	< 0.01	1.942	Normal	Normal

Note: p-values above 0.05 suggest a fit to the tested distribution; a distribution passes its GOF test when at least one of the two p-values is above 0.05.

Table 4: Autocorrelation Tests, Non-Detects Excluded

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Autocorrelation	Box-Ljung p-value	Sig.
1_1_105	W-1	Appendix III	Boron	mg/l	13	0	0%	-0.119	0.632	
1_1_107	W-1	Appendix III	Calcium	mg/l	14	0	0%	0.134	0.579	
1_1_108	W-1	Appendix III	Chloride (as Cl)	mg/l	14	0	0%	0.568	0.018	*
1_1_112	W-1	Appendix III	Fluoride	mg/l	15	2	13%	0.177	0.475	
1_1_119	W-1	Appendix III	pH (field)	su	15	0	0%	0.055	0.815	
1_1_120	W-1	Appendix III	pH (lab)	su	14	0	0%	0.340	0.159	
1_1_125	W-1	Appendix III	Sulfate (as SO4)	mg/l	14	0	0%	0.025	0.916	
1_1_129	W-1	Appendix III	Total Dissolved Solids	mg/l	14	0	0%	-0.069	0.775	
1_2_103	W-1	Appendix IV	Barium	mg/l	12	0	0%	-0.142	0.579	
1_2_104	W-1	Appendix IV	Beryllium	mg/l	10	6	60%	0.227	0.521	
1_2_106	W-1	Appendix IV	Cadmium	mg/l	12	8	67%	-0.230	0.515	
1_2_109	W-1	Appendix IV	Chromium, Total	mg/l	10	9	90%	NA	NA	
1_2_110	W-1	Appendix IV	Cobalt	mg/l	12	0	0%	0.199	0.438	
1_2_113	W-1	Appendix IV	Fluoride (App IV)	mg/l	15	2	13%	0.177	0.475	
1_2_114	W-1	Appendix IV	Lead	mg/l	10	9	90%	NA	NA	
1_2_115	W-1	Appendix IV	Lithium	mg/l	12	0	0%	-0.463	0.070	
1_2_117	W-1	Appendix IV	Molybdenum	mg/l	12	0	0%	-0.174	0.497	
1_2_122	W-1	Appendix IV	Radium-226+228	pci/l	14	3	21%	0.044	0.868	
1_2_124	W-1	Appendix IV	Selenium	mg/l	12	0	0%	0.031	0.902	
1_2_128	W-1	Appendix IV	Thallium	mg/l	10	9	90%	NA	NA	
1_3_111	W-1	Supplemental	Conductivity (field)	us/cm	15	0	0%	-0.069	0.767	
1_3_118	W-1	Supplemental	Oxidation-reduction Potential (field)	mV	15	0	0%	-0.095	0.687	
1_3_121	W-1	Supplemental	Radium-226	pci/l	14	7	50%	-0.121	0.695	
1_3_123	W-1	Supplemental	Radium-228	pci/l	14	6	43%	-0.108	0.714	
1_3_126	W-1	Supplemental	Temperature (field)	deg c	15	0	0%	0.093	0.691	
1_3_127	W-1	Supplemental	Temperature (lab)	deg c	14	0	0%	0.647	0.007	**
1_3_130	W-1	Supplemental	Total Suspended Solids	mg/l	12	5	42%	-0.249	0.420	
1_3_131	W-1	Supplemental	Turbidity (field)	ntu	15	0	0%	0.052	0.825	
2_1_105	W-2	Appendix III	Boron	mg/l	13	0	0%	0.420	0.090	
2_1_107	W-2	Appendix III	Calcium	mg/l	14	0	0%	0.119	0.620	
2_1_108	W-2	Appendix III	Chloride (as Cl)	mg/l	14	0	0%	0.195	0.419	
2_1_112	W-2	Appendix III	Fluoride	mg/l	15	2	13%	0.455	0.067	
2_1_119	W-2	Appendix III	pH (field)	su	15	0	0%	-0.284	0.226	
2_1_120	W-2	Appendix III	pH (lab)	su	14	0	0%	0.277	0.250	
2_1_125	W-2	Appendix III	Sulfate (as SO4)	mg/l	14	0	0%	0.092	0.702	
2_1_129	W-2	Appendix III	Total Dissolved Solids	mg/l	14	0	0%	-0.207	0.391	
2_2_103	W-2	Appendix IV	Barium	mg/l	12	0	0%	0.545	0.033	*
2_2_104	W-2	Appendix IV	Beryllium	mg/l	10	8	80%	-0.500	0.157	
2_2_106	W-2	Appendix IV	Cadmium	mg/l	12	8	67%	-0.436	0.217	
2_2_109	W-2	Appendix IV	Chromium, Total	mg/l	10	9	90%	NA	NA	
2_2_110	W-2	Appendix IV	Cobalt	mg/l	12	0	0%	0.381	0.137	
2_2_113	W-2	Appendix IV	Fluoride (App IV)	mg/l	15	2	13%	0.455	0.067	

(Table continues on next page)

*** p < 0.001, ** p < 0.01, * p < 0.05

Table 4: Autocorrelation Tests, Non-Detects Excluded *(continued)*

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Autocorrelation	Box-Ljung p-value	Sig.
2_2_114	W-2	Appendix IV	Lead	mg/l	10	9	90%	NA	NA	
2_2_115	W-2	Appendix IV	Lithium	mg/l	12	0	0%	-0.191	0.456	
2_2_117	W-2	Appendix IV	Molybdenum	mg/l	12	0	0%	0.459	0.073	
2_2_122	W-2	Appendix IV	Radium-226+228	pci/l	14	3	21%	0.182	0.491	
2_2_124	W-2	Appendix IV	Selenium	mg/l	12	0	0%	0.021	0.933	
2_2_128	W-2	Appendix IV	Thallium	mg/l	10	9	90%	NA	NA	
2_3_111	W-2	Supplemental	Conductivity (field)	us/cm	15	0	0%	-0.367	0.117	
2_3_118	W-2	Supplemental	Oxidation-reduction Potential (field)	mV	15	0	0%	-0.114	0.626	
2_3_121	W-2	Supplemental	Radium-226	pci/l	14	5	36%	-0.441	0.121	
2_3_123	W-2	Supplemental	Radium-228	pci/l	14	4	29%	0.199	0.467	
2_3_126	W-2	Supplemental	Temperature (field)	deg c	15	0	0%	0.135	0.564	
2_3_127	W-2	Supplemental	Temperature (lab)	deg c	14	0	0%	0.510	0.034	*
2_3_130	W-2	Supplemental	Total Suspended Solids	mg/l	12	3	25%	0.074	0.794	
2_3_131	W-2	Supplemental	Turbidity (field)	ntu	15	0	0%	0.395	0.092	
3_1_105	W-4	Appendix III	Boron	mg/l	13	0	0%	-0.028	0.911	
3_1_107	W-4	Appendix III	Calcium	mg/l	14	0	0%	-0.127	0.597	
3_1_108	W-4	Appendix III	Chloride (as Cl)	mg/l	14	0	0%	0.320	0.185	
3_1_112	W-4	Appendix III	Fluoride	mg/l	15	6	40%	-0.152	0.593	
3_1_119	W-4	Appendix III	pH (field)	su	15	0	0%	-0.189	0.419	
3_1_120	W-4	Appendix III	pH (lab)	su	14	0	0%	0.303	0.208	
3_1_125	W-4	Appendix III	Sulfate (as SO4)	mg/l	14	0	0%	0.131	0.586	
3_1_129	W-4	Appendix III	Total Dissolved Solids	mg/l	14	0	0%	0.104	0.667	
3_2_103	W-4	Appendix IV	Barium	mg/l	12	0	0%	-0.002	0.995	
3_2_106	W-4	Appendix IV	Cadmium	mg/l	12	3	25%	0.046	0.872	
3_2_109	W-4	Appendix IV	Chromium, Total	mg/l	10	9	90%	NA	NA	
3_2_110	W-4	Appendix IV	Cobalt	mg/l	12	0	0%	0.050	0.844	
3_2_113	W-4	Appendix IV	Fluoride (App IV)	mg/l	15	6	40%	-0.152	0.593	
3_2_115	W-4	Appendix IV	Lithium	mg/l	12	0	0%	0.372	0.146	
3_2_117	W-4	Appendix IV	Molybdenum	mg/l	12	0	0%	0.394	0.124	
3_2_122	W-4	Appendix IV	Radium-226+228	pci/l	14	2	14%	-0.226	0.376	
3_2_124	W-4	Appendix IV	Selenium	mg/l	12	4	33%	-0.529	0.073	
3_3_111	W-4	Supplemental	Conductivity (field)	us/cm	15	0	0%	0.378	0.107	
3_3_118	W-4	Supplemental	Oxidation-reduction Potential (field)	mV	15	0	0%	0.207	0.376	
3_3_121	W-4	Supplemental	Radium-226	pci/l	14	6	43%	0.457	0.122	
3_3_123	W-4	Supplemental	Radium-228	pci/l	14	6	43%	-0.252	0.394	
3_3_126	W-4	Supplemental	Temperature (field)	deg c	15	0	0%	-0.598	0.011	*
3_3_127	W-4	Supplemental	Temperature (lab)	deg c	14	0	0%	0.468	0.052	
3_3_130	W-4	Supplemental	Total Suspended Solids	mg/l	12	2	17%	0.126	0.645	
3_3_131	W-4	Supplemental	Turbidity (field)	ntu	15	0	0%	0.053	0.820	

*** p < 0.001, ** p < 0.01, * p < 0.05

Table 5: Outlier Counts by Date

Date	Count
2018-06-11	1
2018-07-10	1
2018-09-10	1
2018-10-10	3
2019-04-15	2
2020-06-16	4
2020-12-15	6
2020-12-16	1
2021-06-22	3

Table 6: Outliers Identified at the 1% Significance Level, Non-Detects Excluded

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	No. Detects	Date	Dilution	Value
1_1_105	W-1	Appendix III	Boron	mg/l	13	0	0%	13	2020-12-15	1	0.840
1_1_112	W-1	Appendix III	Fluoride	mg/l	15	2	13%	13	2020-06-16	1	3.40
1_1_125	W-1	Appendix III	Sulfate (as SO4)	mg/l	14	0	0%	14	2019-04-15	50	4500
1_1_129	W-1	Appendix III	Total Dissolved Solids	mg/l	14	0	0%	14	2018-10-10	1	1300
1_2_113	W-1	Appendix IV	Fluoride (App IV)	mg/l	15	2	13%	13	2020-06-16	1	3.40
1_2_117	W-1	Appendix IV	Molybdenum	mg/l	12	0	0%	12	2018-06-11	1	0.00460
1_3_118	W-1	Supplemental	Oxidation-reduction Potential (field)	mV	15	0	0%	15	2020-12-15	NA	2721
2_1_112	W-2	Appendix III	Fluoride	mg/l	15	2	13%	13	2020-12-15	1	6.70
2_1_125	W-2	Appendix III	Sulfate (as SO4)	mg/l	14	0	0%	14	2019-04-15	100	5400
2_1_129	W-2	Appendix III	Total Dissolved Solids	mg/l	14	0	0%	14	2018-10-10	1	4100
2_2_103	W-2	Appendix IV	Barium	mg/l	12	0	0%	12	2021-06-22	1	0.0130
2_2_110	W-2	Appendix IV	Cobalt	mg/l	12	0	0%	12	2021-06-22	1	0.0200
2_2_113	W-2	Appendix IV	Fluoride (App IV)	mg/l	15	2	13%	13	2020-12-15	1	6.70
2_3_111	W-2	Supplemental	Conductivity (field)	us/cm	15	0	0%	15	2020-12-15	NA	4531
2_3_118	W-2	Supplemental	Oxidation-reduction Potential (field)	mV	15	0	0%	15	2020-12-15	NA	2721
2_3_130	W-2	Supplemental	Total Suspended Solids	mg/l	12	3	25%	9	2021-06-22	1	14.0
3_1_105	W-4	Appendix III	Boron	mg/l	13	0	0%	13	2020-12-16	1	2.20
3_1_107	W-4	Appendix III	Calcium	mg/l	14	0	0%	14	2018-07-10	1	78.0
3_1_112	W-4	Appendix III	Fluoride	mg/l	15	6	40%	9	2020-06-16	20	26.0
3_1_129	W-4	Appendix III	Total Dissolved Solids	mg/l	14	0	0%	14	2018-10-10	1	11000
3_2_113	W-4	Appendix IV	Fluoride (App IV)	mg/l	15	6	40%	9	2020-06-16	20	26.0
3_3_118	W-4	Supplemental	Oxidation-reduction Potential (field)	mV	15	0	0%	15	2018-09-10	NA	-105

ID	Well	Constituent Type	Constituent	Unit	% NDs	Full							Without Non-Detects												
						Sample Size					p-Value			Sample Size					p-Value						
						Winter	Spring	Summer	Fall	Total	Kruskal-Wallis	ANOVA	Log ANOVA	Winter	Spring	Summer	Fall	Total	Kruskal-Wallis	ANOVA	Log ANOVA				
1_1_105	W-1	Appendix III	Boron	mg/l	0%	3	3	4	3	13	0.627	0.561	0.577	3	3	4	3	13	0.627	0.561	0.577				
1_1_107	W-1	Appendix III	Calcium	mg/l	0%	3	3	5	3	14	0.100	0.104	0.106	3	3	5	3	14	0.100	0.104	0.106				
1_1_108	W-1	Appendix III	Chloride (as Cl)	mg/l	0%	3	3	5	3	14	0.441	0.347	0.318	3	3	5	3	14	0.441	0.347	0.318				
1_1_112	W-1	Appendix III	Fluoride	mg/l	13%	3	3	5	4	15	0.591	0.530	0.516	3	2	4	4	13	0.602	0.478	0.473				
1_1_119	W-1	Appendix III	pH (field)	su	0%	3	3	5	4	15	0.274	0.506	0.499	3	3	5	4	15	0.274	0.506	0.499				
1_1_120	W-1	Appendix III	pH (lab)	su	0%	3	3	5	3	14	0.095	0.073	0.073	3	3	5	3	14	0.095	0.073	0.073				
1_1_125	W-1	Appendix III	Sulfate (as SO4)	mg/l	0%	3	3	5	3	14	0.830	0.357	0.370	3	3	5	3	14	0.830	0.357	0.370				
1_1_129	W-1	Appendix III	Total Dissolved Solids	mg/l	0%	3	3	5	3	14	0.705	0.362	0.343	3	3	5	3	14	0.705	0.362	0.343				
1_2_101	W-1	Appendix IV	Antimony	mg/l	100%	1	0	5	4	10	NA	NA	0.662	NA	NA	NA	NA	NA	NA	NA	NA				
1_2_102	W-1	Appendix IV	Arsenic	mg/l	100%	1	0	5	4	10	NA	0.662	NA	NA	NA	NA	NA	NA	NA	NA	NA				
1_2_103	W-1	Appendix IV	Barium	mg/l	0%	3	0	5	4	12	0.338	0.432	0.429	3	0	5	4	12	0.338	0.432	0.429				
1_2_104	W-1	Appendix IV	Beryllium	mg/l	60%	1	0	5	4	10	0.178	0.131	0.147	0	0	1	3	4	0.180	0.129	0.066				
1_2_106	W-1	Appendix IV	Cadmium	mg/l	67%	3	0	5	4	12	0.090	0.089	0.088	0	0	1	3	4	0.655	0.589	0.622				
1_2_109	W-1	Appendix IV	Chromium, Total	mg/l	90%	1	0	5	4	10	0.116	0.082	0.090	0	0	1	0	1	NA	NA	NA				
1_2_110	W-1	Appendix IV	Cobalt	mg/l	0%	3	0	5	4	12	0.615	0.651	0.676	3	0	5	4	12	0.615	0.651	0.676				
1_2_113	W-1	Appendix IV	Fluoride (App IV)	mg/l	13%	3	3	5	4	15	0.591	0.530	0.516	3	2	4	4	13	0.602	0.478	0.473				
1_2_114	W-1	Appendix IV	Lead	mg/l	90%	1	0	5	4	10	0.607	0.662	0.662	0	0	1	0	1	NA	NA	NA				
1_2_115	W-1	Appendix IV	Lithium	mg/l	0%	3	0	5	4	12	0.130	0.190	0.185	3	0	5	4	12	0.130	0.190	0.185				
1_2_116	W-1	Appendix IV	Mercury	mg/l	100%	1	0	5	4	10	0.607	0.662	0.662	NA	NA	NA	NA	NA	NA	NA	NA				
1_2_117	W-1	Appendix IV	Molybdenum	mg/l	0%	3	0	5	4	12	0.208	0.851	0.823	3	0	5	4	12	0.208	0.851	0.823				
1_2_122	W-1	Appendix IV	Radium-226+228	pci/l	21%	3	2	5	4	14	0.604	0.712	0.686	3	1	3	4	11	0.737	0.844	0.820				
1_2_124	W-1	Appendix IV	Selenium	mg/l	0%	3	0	5	4	12	0.843	0.848	0.715	3	0	5	4	12	0.843	0.848	0.715				
1_2_128	W-1	Appendix IV	Thallium	mg/l	90%	1	0	5	4	10	0.607	0.662	0.662	0	0	1	0	1	NA	NA	NA				
1_3_111	W-1	Supplemental	Conductivity (field)	us/cm	0%	3	3	5	4	15	0.041	*	0.096	0.106	3	3	5	4	15	0.041	*	0.096			
1_3_118	W-1	Supplemental	Oxidation-reduction Potential (field)	mV	0%	3	3	5	4	15	0.434	0.254	NA	3	3	5	4	15	0.434	0.254	NA				
1_3_121	W-1	Supplemental	Radium-226	pci/l	50%	3	2	5	4	14	0.034	*	0.034	*	1	1	2	3	7	0.206	0.205	0.078			
1_3_123	W-1	Supplemental	Radium-228	pci/l	43%	3	2	5	4	14	0.316	0.427	0.438	3	1	3	1	8	0.907	0.974	0.988				
1_3_126	W-1	Supplemental	Temperature (field)	deg c	0%	3	3	5	4	15	0.046	*	0.016	*	3	3	5	4	15	0.046	*	0.016	*		
1_3_127	W-1	Supplemental	Temperature (lab)	deg c	0%	3	3	5	3	14	0.220	0.222	0.219	3	3	5	3	14	0.220	0.222	0.219				
1_3_130	W-1	Supplemental	Total Suspended Solids	mg/l	42%	3	1	5	3	12	0.541	0.671	0.573	2	0	4	1	7	0.964	0.883	0.905				
1_3_131	W-1	Supplemental	Turbidity (field)	ntu	0%	3	3	5	4	15	0.066	0.007	**	0.374	3	3	5	4	15	0.066	0.007	**	0.374		
2_1_105	W-2	Appendix III	Boron	mg/l	0%	3	3	4	3	13	0.079	0.028	*	0.035	*	3	3	4	3	13	0.079	0.028	*	0.035	*
2_1_107	W-2	Appendix III	Calcium	mg/l	0%	3	3	5	3	14	0.137	0.103	0.106	3	3	5	3	14	0.137	0.103	0.106				
2_1_108	W-2	Appendix III	Chloride (as Cl)	mg/l	0%	3	3	5	3	14	0.119	0.337	0.352	3	3	5	3	14	0.119	0.337	0.352				
2_1_112	W-2	Appendix III	Fluoride	mg/l	13%	3	3	5	4	15	0.054	0.185	0.116	2	2	5	4	13	0.076	0.351	0.320				
2_1_119	W-2	Appendix III	pH (field)	su	0%	3	3	5	4	15	0.603	0.522	0.519	3	3	5	4	15	0.603	0.522	0.519				
2_1_120	W-2	Appendix III	pH (lab)	su	0%	3	3	5	3	14	0.075	0.072	0.073	3	3	5	3	14	0.075	0.072	0.073				
2_1_125	W-2	Appendix III	Sulfate (as SO4)	mg/l	0%	3	3	5	3	14	0.054	0.080	0.071	3	3	5	3	14	0.054	0.080	0.071				
2_1_129	W-2	Appendix III	Total Dissolved Solids	mg/l	0%	3	3	5	3	14	0.720	0.502	0.465	3	3	5	3	14	0.720	0.502	0.465				

(Table continues on next page)

*** p < 0.001, ** p < 0.01, * p < 0.05

ID	Well	Constituent Type	Constituent	Unit	% NDs	Full					Without Non-Detects																
						Sample Size					p-Value			Sample Size					p-Value								
Winter	Spring	Summer	Fall	Total	Kruskal-Wallis	ANOVA	Log ANOVA	Winter	Spring	Summer	Fall	Total	Kruskal-Wallis	ANOVA	Log ANOVA												
2_2_101	W-2	Appendix IV	Antimony	mg/l	100%	1	0	5	4	10	NA	NA	0.662	NA	NA	NA	NA	NA	NA	NA	NA						
2_2_102	W-2	Appendix IV	Arsenic	mg/l	100%	1	0	5	4	10	NA	0.662	NA	NA	NA	NA	NA	NA	NA	NA	NA						
2_2_103	W-2	Appendix IV	Barium	mg/l	0%	3	0	5	4	12	0.176	0.538	0.430	3	0	5	4	12	0.176	0.538	0.430						
2_2_104	W-2	Appendix IV	Beryllium	mg/l	80%	1	0	5	4	10	0.346	0.413	0.400	0	0	0	2	2	NA	NA	NA						
2_2_106	W-2	Appendix IV	Cadmium	mg/l	67%	3	0	5	4	12	0.877	0.781	0.859	2	0	1	1	4	0.407	0.216	0.309						
2_2_109	W-2	Appendix IV	Chromium, Total	mg/l	90%	1	0	5	4	10	0.116	0.078	0.081	0	0	1	0	1	NA	NA	NA						
2_2_110	W-2	Appendix IV	Cobalt	mg/l	0%	3	0	5	4	12	0.806	0.639	0.633	3	0	5	4	12	0.806	0.639	0.633						
2_2_113	W-2	Appendix IV	Fluoride (App IV)	mg/l	13%	3	3	5	4	15	0.054	0.185	0.116	2	2	5	4	13	0.076	0.351	0.320						
2_2_114	W-2	Appendix IV	Lead	mg/l	90%	1	0	5	4	10	0.607	0.662	0.662	0	0	1	0	1	NA	NA	NA						
2_2_115	W-2	Appendix IV	Lithium	mg/l	0%	3	0	5	4	12	0.075	0.047	*	0.044	*	3	0	5	4	12	0.075	0.047	*	0.044	*		
2_2_116	W-2	Appendix IV	Mercury	mg/l	100%	1	0	5	4	10	0.607	0.662	0.662	NA	NA	NA	NA	NA	NA	NA	NA						
2_2_117	W-2	Appendix IV	Molybdenum	mg/l	0%	3	0	5	4	12	0.571	0.590	0.594	3	0	5	4	12	0.571	0.590	0.594						
2_2_122	W-2	Appendix IV	Radium-226+228	pci/l	21%	3	2	5	4	14	0.871	0.766	0.825	2	2	4	3	11	0.946	0.644	0.768						
2_2_124	W-2	Appendix IV	Selenium	mg/l	0%	3	0	5	4	12	0.728	0.677	0.642	3	0	5	4	12	0.728	0.677	0.642						
2_2_128	W-2	Appendix IV	Thallium	mg/l	90%	1	0	5	4	10	0.011	*	0.000	***	0.000	***	1	0	0	0	1	NA	NA	NA			
2_3_111	W-2	Supplemental	Conductivity (field)	us/cm	0%	3	3	5	4	15	0.586	0.337	0.313	3	3	5	4	15	0.586	0.337	0.313						
2_3_118	W-2	Supplemental	Oxidation-reduction Potential (field)	mV	0%	3	3	5	4	15	0.551	0.251	NA	3	3	5	4	15	0.551	0.251	NA						
2_3_121	W-2	Supplemental	Radium-226	pci/l	36%	3	2	5	4	14	0.404	0.244	0.132	1	2	4	2	9	0.494	0.707	0.767						
2_3_123	W-2	Supplemental	Radium-228	pci/l	29%	3	2	5	4	14	0.898	0.773	0.902	2	2	3	3	10	0.620	0.517	0.620						
2_3_126	W-2	Supplemental	Temperature (field)	deg c	0%	3	3	5	4	15	0.013	*	0.000	***	0.000	***	3	3	5	4	15	0.013	*	0.000	***	0.000	***
2_3_127	W-2	Supplemental	Temperature (lab)	deg c	0%	3	3	5	3	14	0.128	0.159	0.159	3	3	5	3	14	0.128	0.159	0.159						
2_3_130	W-2	Supplemental	Total Suspended Solids	mg/l	25%	3	1	5	3	12	0.431	0.683	0.570	1	1	5	2	9	0.462	0.886	0.779						
2_3_131	W-2	Supplemental	Turbidity (field)	ntu	0%	3	3	5	4	15	0.347	0.414	0.459	3	3	5	4	15	0.347	0.414	0.459						
3_1_105	W-4	Appendix III	Boron	mg/l	0%	3	3	4	3	13	0.393	0.715	0.802	3	3	4	3	13	0.393	0.715	0.802						
3_1_107	W-4	Appendix III	Calcium	mg/l	0%	3	3	5	3	14	0.220	0.496	0.604	3	3	5	3	14	0.220	0.496	0.604						
3_1_108	W-4	Appendix III	Chloride (as Cl)	mg/l	0%	3	3	5	3	14	0.108	0.257	0.293	3	3	5	3	14	0.108	0.257	0.293						
3_1_112	W-4	Appendix III	Fluoride	mg/l	40%	3	3	5	4	15	0.594	0.628	0.692	2	1	3	3	9	0.596	0.652	0.500						
3_1_119	W-4	Appendix III	pH (field)	su	0%	3	3	5	4	15	0.500	0.790	0.784	3	3	5	4	15	0.500	0.790	0.784						
3_1_120	W-4	Appendix III	pH (lab)	su	0%	3	3	5	3	14	0.065	0.047	*	0.048	*	3	3	5	3	14	0.065	0.047	*	0.048	*		
3_1_125	W-4	Appendix III	Sulfate (as SO4)	mg/l	0%	3	3	5	3	14	0.112	0.122	0.105	3	3	5	3	14	0.112	0.122	0.105						
3_1_129	W-4	Appendix III	Total Dissolved Solids	mg/l	0%	3	3	5	3	14	0.294	0.397	0.379	3	3	5	3	14	0.294	0.397	0.379						
3_2_101	W-4	Appendix IV	Antimony	mg/l	100%	1	0	5	4	10	NA	NA	0.662	NA	NA	NA	NA	NA	NA	NA	NA						
3_2_102	W-4	Appendix IV	Arsenic	mg/l	100%	1	0	5	4	10	NA	0.662	NA	NA	NA	NA	NA	NA	NA	NA	NA						
3_2_103	W-4	Appendix IV	Barium	mg/l	0%	3	0	5	4	12	0.139	0.185	0.198	3	0	5	4	12	0.139	0.185	0.198						
3_2_104	W-4	Appendix IV	Beryllium	mg/l	100%	1	0	5	4	10	0.105	0.088	0.088	NA	NA	NA	NA	NA	NA	NA	NA						
3_2_106	W-4	Appendix IV	Cadmium	mg/l	25%	3	0	5	4	12	0.302	0.273	0.286	1	0	5	3	9	0.932	0.690	0.747						
3_2_109	W-4	Appendix IV	Chromium, Total	mg/l	90%	1	0	5	4	10	0.116	0.091	0.101	0	0	1	0	1	NA	NA	NA						
3_2_110	W-4	Appendix IV	Cobalt	mg/l	0%	3	0	5	4	12	0.306	0.226	0.229	3	0	5	4	12	0.306	0.226	0.229						
3_2_113	W-4	Appendix IV	Fluoride (App IV)	mg/l	40%	3	3	5	4	15	0.594	0.628	0.692	2	1	3	3	9	0.596	0.652	0.500						

(Table continues on next page)

*** p < 0.001, ** p < 0.01, * p < 0.05

Table 7: Seasonality Tests (continued)

ID	Well	Constituent Type	Constituent	Unit	% NDs	Full									Without Non-Detects												
						Sample Size					p-Value				Sample Size					p-Value							
						Winter	Spring	Summer	Fall	Total	Kruskal-Wallis	ANOVA	Log ANOVA	Winter	Spring	Summer	Fall	Total	Kruskal-Wallis	ANOVA	Log ANOVA						
3_2_114	W-4	Appendix IV	Lead	mg/l	100%	1	0	5	4	10	NA	0.662	0.662	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA				
3_2_115	W-4	Appendix IV	Lithium	mg/l	0%	3	0	5	4	12	0.009	**	0.003	**	0.001	**	3	0	5	4	12	0.009	**	0.003	**	0.001	**
3_2_116	W-4	Appendix IV	Mercury	mg/l	100%	1	0	5	4	10	0.607	0.662	0.662	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
3_2_117	W-4	Appendix IV	Molybdenum	mg/l	0%	3	0	5	4	12	0.528	0.411	0.431	3	0	5	4	12	0.528	0.411	0.431						
3_2_122	W-4	Appendix IV	Radium-226+228	pci/l	14%	3	2	5	4	14	0.832	0.902	0.898	2	2	4	4	12	0.947	0.689	0.809						
3_2_124	W-4	Appendix IV	Selenium	mg/l	33%	3	0	5	4	12	0.575	0.710	0.702	1	0	4	3	8	0.972	0.977	0.966						
3_2_128	W-4	Appendix IV	Thallium	mg/l	100%	1	0	5	4	10	NA	0.662	0.662	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
3_3_111	W-4	Supplemental	Conductivity (field)	us/cm	0%	3	3	5	4	15	0.137	0.054	0.050	3	3	5	4	15	0.137	0.054	0.050						
3_3_118	W-4	Supplemental	Oxidation-reduction Potential (field)	mV	0%	3	3	5	4	15	0.773	0.580	NA	3	3	5	4	15	0.773	0.580	NA						
3_3_121	W-4	Supplemental	Radium-226	pci/l	43%	3	2	5	4	14	0.139	0.174	0.111	2	1	3	2	8	0.283	0.190	0.177						
3_3_123	W-4	Supplemental	Radium-228	pci/l	43%	3	2	5	4	14	0.578	0.772	0.868	2	2	1	3	8	0.708	0.720	0.802						
3_3_126	W-4	Supplemental	Temperature (field)	deg c	0%	3	3	5	4	15	0.021	*	0.002	**	0.002	**	3	3	5	4	15	0.021	*	0.002	**	0.002	**
3_3_127	W-4	Supplemental	Temperature (lab)	deg c	0%	3	3	5	3	14	0.330	0.310	0.319	3	3	5	3	14	0.330	0.310	0.319						
3_3_130	W-4	Supplemental	Total Suspended Solids	mg/l	17%	3	1	5	3	12	0.390	0.726	0.492	2	1	5	2	10	0.551	0.799	0.655						
3_3_131	W-4	Supplemental	Turbidity (field)	ntu	0%	3	3	5	4	15	0.551	0.678	0.483	3	3	5	4	15	0.551	0.678	0.483						

*** p < 0.001, ** p < 0.01, * p < 0.05

Table 8: Trend Tests: Lognormal MLE and MK

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Type	Method	Slope	p-value	Trend
1_1_105	W-1	Appendix III	Boron	mg/l	13	0	0%	Parametric	Lognormal MLE	-0.00000399	0.959	↔
1_1_107	W-1	Appendix III	Calcium	mg/l	14	0	0%	Parametric	Lognormal MLE	0.0000125	0.759	↔
1_1_108	W-1	Appendix III	Chloride (as Cl)	mg/l	14	0	0%	Nonparametric	MK	-0.0165	0.015	↔
1_1_112	W-1	Appendix III	Fluoride	mg/l	15	2	13%	Nonparametric	MK	0.000124	0.100	↔
1_1_119	W-1	Appendix III	pH (field)	su	15	0	0%	Parametric	Lognormal MLE	0.00000907	0.335	↔
1_1_120	W-1	Appendix III	pH (lab)	su	14	0	0%	Parametric	Lognormal MLE	-0.0000161	0.057	↔
1_1_125	W-1	Appendix III	Sulfate (as SO4)	mg/l	14	0	0%	Nonparametric	MK	0	0.817	↔
1_1_129	W-1	Appendix III	Total Dissolved Solids	mg/l	14	0	0%	Nonparametric	MK	-0.161	0.370	↔
1_2_103	W-1	Appendix IV	Barium	mg/l	12	0	0%	Parametric	Lognormal MLE	0.0000238	0.604	↔
1_2_110	W-1	Appendix IV	Cobalt	mg/l	12	0	0%	Parametric	Lognormal MLE	0.000163	0.113	↔
1_2_113	W-1	Appendix IV	Fluoride (App IV)	mg/l	15	2	13%	Nonparametric	MK	0.000124	0.100	↔
1_2_114	W-1	Appendix IV	Lead	mg/l	10	9	90%	Nonparametric	MK	0	0.296	↔
1_2_115	W-1	Appendix IV	Lithium	mg/l	12	0	0%	Parametric	Lognormal MLE	-0.0000319	0.462	↔
1_2_117	W-1	Appendix IV	Molybdenum	mg/l	12	0	0%	Parametric	Lognormal MLE	-0.0000910	0.201	↔
1_2_122	W-1	Appendix IV	Radium-226+228	pci/l	14	3	21%	Parametric	Lognormal MLE	0.000433	0.044	↔
1_2_124	W-1	Appendix IV	Selenium	mg/l	12	0	0%	Parametric	Lognormal MLE	-0.000284	0.217	↔
1_2_128	W-1	Appendix IV	Thallium	mg/l	10	9	90%	Nonparametric	MK	0	0.296	↔
1_3_111	W-1	Supplemental	Conductivity (field)	us/cm	15	0	0%	Parametric	Lognormal MLE	-0.0000306	0.069	↔
1_3_118	W-1	Supplemental	Oxidation-reduction Potential (field)	mV	15	0	0%	Nonparametric	MK	0.0464	0.235	↔
1_3_123	W-1	Supplemental	Radium-228	pci/l	14	6	43%	Parametric	Lognormal MLE	0.000615	0.005	↑
1_3_126	W-1	Supplemental	Temperature (field)	deg c	15	0	0%	Parametric	Lognormal MLE	0.0000313	0.587	↔
1_3_127	W-1	Supplemental	Temperature (lab)	deg c	14	0	0%	Parametric	Lognormal MLE	0.0000629	0.007	↑
1_3_130	W-1	Supplemental	Total Suspended Solids	mg/l	12	5	42%	Nonparametric	MK	0	0.828	↔
1_3_131	W-1	Supplemental	Turbidity (field)	ntu	15	0	0%	Parametric	Lognormal MLE	0.00128	0.165	↔
2_1_105	W-2	Appendix III	Boron	mg/l	13	0	0%	Parametric	Lognormal MLE	0.000197	0.000	↑
2_1_107	W-2	Appendix III	Calcium	mg/l	14	0	0%	Parametric	Lognormal MLE	0.0000506	0.329	↔
2_1_108	W-2	Appendix III	Chloride (as Cl)	mg/l	14	0	0%	Nonparametric	MK	0.00793	0.024	↔
2_1_119	W-2	Appendix III	pH (field)	su	15	0	0%	Parametric	Lognormal MLE	0.0000126	0.266	↔
2_1_120	W-2	Appendix III	pH (lab)	su	14	0	0%	Nonparametric	MK	-0.0000749	0.026	↔
2_1_125	W-2	Appendix III	Sulfate (as SO4)	mg/l	14	0	0%	Parametric	Lognormal MLE	-0.00000637	0.872	↔
2_1_129	W-2	Appendix III	Total Dissolved Solids	mg/l	14	0	0%	Nonparametric	MK	-0.0785	0.698	↔
2_2_103	W-2	Appendix IV	Barium	mg/l	12	0	0%	Nonparametric	MK	0.00000288	0.002	↑
2_2_110	W-2	Appendix IV	Cobalt	mg/l	12	0	0%	Parametric	Lognormal MLE	0.00179	0.000	↑
2_2_114	W-2	Appendix IV	Lead	mg/l	10	9	90%	Nonparametric	MK	0	0.296	↔
2_2_115	W-2	Appendix IV	Lithium	mg/l	12	0	0%	Parametric	Lognormal MLE	-0.0000678	0.226	↔
2_2_117	W-2	Appendix IV	Molybdenum	mg/l	12	0	0%	Parametric	Lognormal MLE	0.000289	0.001	↑
2_2_122	W-2	Appendix IV	Radium-226+228	pci/l	14	3	21%	Parametric	Lognormal MLE	0.000845	0.027	↔
2_2_124	W-2	Appendix IV	Selenium	mg/l	12	0	0%	Parametric	Lognormal MLE	-0.0000945	0.302	↔
2_2_128	W-2	Appendix IV	Thallium	mg/l	10	9	90%	Nonparametric	MK	0	0.164	↔
2_3_111	W-2	Supplemental	Conductivity (field)	us/cm	15	0	0%	Nonparametric	MK	-0.0130	1.000	↔
2_3_118	W-2	Supplemental	Oxidation-reduction Potential (field)	mV	15	0	0%	Nonparametric	MK	0.0341	0.692	↔
2_3_121	W-2	Supplemental	Radium-226	pci/l	14	5	36%	Parametric	Lognormal MLE	-0.0000485	0.902	↔
2_3_123	W-2	Supplemental	Radium-228	pci/l	14	4	29%	Parametric	Lognormal MLE	0.00101	0.007	↑

(Table continues on next page)

Table 8: Trend Tests: Lognormal MLE and MK *(continued)*

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Type	Method	Slope	p-value	Trend
2_3_126	W-2	Supplemental	Temperature (field)	deg c	15	0	0%	Parametric	Lognormal MLE	0.0000189	0.771	↔
2_3_127	W-2	Supplemental	Temperature (lab)	deg c	14	0	0%	Parametric	Lognormal MLE	0.0000430	0.147	↔
2_3_130	W-2	Supplemental	Total Suspended Solids	mg/l	12	3	25%	Parametric	Lognormal MLE	0.000511	0.356	↔
2_3_131	W-2	Supplemental	Turbidity (field)	ntu	15	0	0%	Parametric	Lognormal MLE	0.000549	0.649	↔
3_1_105	W-4	Appendix III	Boron	mg/l	13	0	0%	Parametric	Lognormal MLE	-0.0000845	0.669	↔
3_1_107	W-4	Appendix III	Calcium	mg/l	14	0	0%	Nonparametric	MK	-0.0248	0.294	↔
3_1_108	W-4	Appendix III	Chloride (as Cl)	mg/l	14	0	0%	Parametric	Lognormal MLE	-0.000101	0.029	↔
3_1_119	W-4	Appendix III	pH (field)	su	15	0	0%	Parametric	Lognormal MLE	0.00000785	0.379	↔
3_1_120	W-4	Appendix III	pH (lab)	su	14	0	0%	Parametric	Lognormal MLE	-0.00000555	0.446	↔
3_1_125	W-4	Appendix III	Sulfate (as SO4)	mg/l	14	0	0%	Nonparametric	MK	0	0.085	↔
3_1_129	W-4	Appendix III	Total Dissolved Solids	mg/l	14	0	0%	Parametric	Lognormal MLE	-0.0000619	0.565	↔
3_2_103	W-4	Appendix IV	Barium	mg/l	12	0	0%	Parametric	Lognormal MLE	-0.0000317	0.536	↔
3_2_106	W-4	Appendix IV	Cadmium	mg/l	12	3	25%	Parametric	Lognormal MLE	-0.000333	0.003	↓
3_2_110	W-4	Appendix IV	Cobalt	mg/l	12	0	0%	Parametric	Lognormal MLE	0.0000149	0.742	↔
3_2_115	W-4	Appendix IV	Lithium	mg/l	12	0	0%	Parametric	Lognormal MLE	-0.000258	0.003	↓
3_2_117	W-4	Appendix IV	Molybdenum	mg/l	12	0	0%	Parametric	Lognormal MLE	-0.000129	0.001	↓
3_2_122	W-4	Appendix IV	Radium-226+228	pci/l	14	2	14%	Parametric	Lognormal MLE	-0.0000699	0.810	↔
3_2_124	W-4	Appendix IV	Selenium	mg/l	12	4	33%	Parametric	Lognormal MLE	-0.000874	0.002	↓
3_3_111	W-4	Supplemental	Conductivity (field)	us/cm	15	0	0%	Nonparametric	MK	-1.28	0.060	↔
3_3_121	W-4	Supplemental	Radium-226	pci/l	14	6	43%	Parametric	Lognormal MLE	-0.000294	0.429	↔
3_3_123	W-4	Supplemental	Radium-228	pci/l	14	6	43%	Parametric	Lognormal MLE	-0.0000318	0.934	↔
3_3_126	W-4	Supplemental	Temperature (field)	deg c	15	0	0%	Parametric	Lognormal MLE	-0.0000196	0.799	↔
3_3_127	W-4	Supplemental	Temperature (lab)	deg c	14	0	0%	Parametric	Lognormal MLE	0.0000669	0.041	↔
3_3_130	W-4	Supplemental	Total Suspended Solids	mg/l	12	2	17%	Parametric	Lognormal MLE	0.000496	0.488	↔
3_3_131	W-4	Supplemental	Turbidity (field)	ntu	15	0	0%	Parametric	Lognormal MLE	0.000207	0.855	↔

Table 9: Trend Tests: Piecewise Linear-Linear

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Line 1			Line 2			Break 1	R-Squared	Overall Trend
								Slope	p-Value	Trend	Slope	p-Value	Trend			
1_1_105	W-1	Appendix III	Boron	mg/l	13	0	0%	0.000144	0.065	↔	-0.000652	0.309	↔	2020-12-15	0.467	↔
1_1_107	W-1	Appendix III	Calcium	mg/l	14	0	0%	-0.663	0.197	↔	0.0192	0.212	↔	2018-06-30	0.406	↔
1_1_108	W-1	Appendix III	Chloride (as Cl)	mg/l	14	0	0%	-0.0254	0.000	↓	0.0958	0.002	↑	2021-02-01	0.918	↔
1_1_112	W-1	Appendix III	Fluoride	mg/l	15	2	13%	0.00223	0.020	↔	-0.00259	0.369	↔	2020-07-06	0.448	↔
1_1_119	W-1	Appendix III	pH (field)	su	15	0	0%	0.000285	0.278	↔	-0.000108	0.622	↔	2019-09-25	0.166	↔
1_1_120	W-1	Appendix III	pH (lab)	su	14	0	0%	0.000252	0.679	↔	-0.000260	0.107	↔	2019-04-14	0.307	↔
1_1_125	W-1	Appendix III	Sulfate (as SO4)	mg/l	14	0	0%	3.21	0.154	↔	-1.27	0.033	↔	2019-04-14	0.480	↔
1_1_129	W-1	Appendix III	Total Dissolved Solids	mg/l	14	0	0%	-4.94	0.506	↔	0.593	0.469	↔	2018-10-09	0.108	↔
1_2_103	W-1	Appendix IV	Barium	mg/l	12	0	0%	0.00000203	0.760	↔	-0.000000361	0.768	↔	2019-04-24	0.068	↔
1_2_104	W-1	Appendix IV	Beryllium	mg/l	10	6	60%	0.00000488	0.264	↔	-0.000000304	0.274	↔	2018-10-09	0.421	↔
1_2_106	W-1	Appendix IV	Cadmium	mg/l	12	8	67%	0.000000939	0.152	↔	-0.0000000978	0.143	↔	2018-10-10	0.392	↔

(Table continues on next page)

Table 9: Trend Tests: Piecewise Linear-Linear *(continued)*

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Line 1			Line 2			Break 1	R-Squared	Overall Trend
								Slope	p-Value	Trend	Slope	p-Value	Trend			
1_2_109	W-1	Appendix IV	Chromium, Total	mg/l	10	9	90%	-0.000000335	0.688	↔	0.00000304	0.009	↑	2020-04-19	0.847	↔
1_2_110	W-1	Appendix IV	Cobalt	mg/l	12	0	0%	-0.000000259	0.851	↔	0.000000461	0.097	↔	2019-09-24	0.337	↔
1_2_113	W-1	Appendix IV	Fluoride (App IV)	mg/l	15	2	13%	0.00223	0.020	↔	-0.00259	0.369	↔	2020-07-06	0.448	↔
1_2_114	W-1	Appendix IV	Lead	mg/l	10	9	90%	-0.00000444	0.499	↔	-0.000000000000597	1.000	↔	2018-10-05	0.233	↔
1_2_115	W-1	Appendix IV	Lithium	mg/l	12	0	0%	0.000321	0.765	↔	-0.0000157	0.352	↔	2018-08-12	0.140	↔
1_2_116	W-1	Appendix IV	Mercury	mg/l	10	10	100%	-0.000000111	0.018	↔	0.000000151	0.478	↔	2020-06-16	0.653	↔
1_2_117	W-1	Appendix IV	Molybdenum	mg/l	12	0	0%	-0.0000307	0.084	↔	-0.0000000675	0.784	↔	2018-07-18	0.616	↔
1_2_122	W-1	Appendix IV	Radium-226+228	pci/l	14	3	21%	-0.0000227	0.968	↔	0.000527	0.243	↔	2019-10-30	0.280	↔
1_2_124	W-1	Appendix IV	Selenium	mg/l	12	0	0%	0.00000396	0.140	↔	-0.0000431	0.066	↔	2021-03-22	0.634	↔
1_2_128	W-1	Appendix IV	Thallium	mg/l	10	9	90%	-0.00000000000000410	1.000	↔	0.000000128	0.344	↔	2019-08-13	0.291	↔
1_3_111	W-1	Supplemental	Conductivity (field)	us/cm	15	0	0%	-1.24	0.566	↔	-0.0995	0.354	↔	2018-07-23	0.237	↔
1_3_118	W-1	Supplemental	Oxidation-reduction Potential (field)	mV	15	0	0%	1.36	0.031	↔	-3.65	0.490	↔	2020-12-15	0.377	↔
1_3_121	W-1	Supplemental	Radium-226	pci/l	14	7	50%	0.00271	0.177	↔	-0.000160	0.018	↔	2018-07-09	0.556	↔
1_3_123	W-1	Supplemental	Radium-228	pci/l	14	6	43%	-0.000456	0.581	↔	0.000657	0.015	↔	2019-05-09	0.593	↔
1_3_126	W-1	Supplemental	Temperature (field)	deg c	15	0	0%	0.0137	0.203	↔	-0.000440	0.580	↔	2018-08-20	0.268	↔
1_3_127	W-1	Supplemental	Temperature (lab)	deg c	14	0	0%	0.00843	0.007	↑	-0.00105	0.122	↔	2019-03-21	0.813	↔
1_3_130	W-1	Supplemental	Total Suspended Solids	mg/l	12	5	42%	0.00317	0.741	↔	-0.00148	0.588	↔	2019-12-18	0.186	↔
1_3_131	W-1	Supplemental	Turbidity (field)	ntu	15	0	0%	0.0000394	0.990	↔	0.00133	0.095	↔	2019-04-14	0.389	↔
2_1_105	W-2	Appendix III	Boron	mg/l	13	0	0%	0.00307	0.244	↔	0.00164	0.021	↔	2018-12-07	0.813	↔
2_1_107	W-2	Appendix III	Calcium	mg/l	14	0	0%	-0.786	0.234	↔	0.0392	0.061	↔	2018-07-09	0.464	↔
2_1_108	W-2	Appendix III	Chloride (as Cl)	mg/l	14	0	0%	-0.0603	0.800	↔	0.0102	0.171	↔	2018-06-11	0.199	↔
2_1_112	W-2	Appendix III	Fluoride	mg/l	15	2	13%	0.00575	0.000	↑	-0.0150	0.130	↔	2020-12-15	0.769	↔
2_1_119	W-2	Appendix III	pH (field)	su	15	0	0%	0.000275	0.397	↔	-0.0000534	0.846	↔	2019-09-25	0.127	↔
2_1_120	W-2	Appendix III	pH (lab)	su	14	0	0%	-0.000639	0.601	↔	-0.0000779	0.053	↔	2018-07-09	0.499	↔
2_1_125	W-2	Appendix III	Sulfate (as SO4)	mg/l	14	0	0%	-0.184	0.685	↔	0.561	0.699	↔	2020-10-30	0.032	↔
2_1_129	W-2	Appendix III	Total Dissolved Solids	mg/l	14	0	0%	-4.17	0.574	↔	0.533	0.516	↔	2018-10-09	0.082	↔
2_2_103	W-2	Appendix IV	Barium	mg/l	12	0	0%	0.00000169	0.514	↔	0.00000903	0.029	↔	2020-06-15	0.749	↔
2_2_104	W-2	Appendix IV	Beryllium	mg/l	10	8	80%	0.00000305	0.424	↔	-0.00000000752	0.975	↔	2018-09-10	0.196	↔
2_2_106	W-2	Appendix IV	Cadmium	mg/l	12	8	67%	-0.0000000362	0.809	↔	0.000000329	0.137	↔	2020-04-18	0.439	↔
2_2_109	W-2	Appendix IV	Chromium, Total	mg/l	10	9	90%	-0.000000242	0.717	↔	0.00000304	0.003	↑	2020-04-26	0.899	↔
2_2_110	W-2	Appendix IV	Cobalt	mg/l	12	0	0%	0.00000108	0.883	↔	0.0000172	0.116	↔	2020-01-22	0.622	↔
2_2_113	W-2	Appendix IV	Fluoride (App IV)	mg/l	15	2	13%	0.00575	0.000	↑	-0.0150	0.130	↔	2020-12-15	0.769	↔
2_2_114	W-2	Appendix IV	Lead	mg/l	10	9	90%	-0.00000408	0.499	↔	-0.000000000000410	1.000	↔	2018-10-05	0.233	↔
2_2_115	W-2	Appendix IV	Lithium	mg/l	12	0	0%	-0.000482	0.304	↔	0.0000711	0.403	↔	2019-03-12	0.376	↔
2_2_116	W-2	Appendix IV	Mercury	mg/l	10	10	100%	-0.000000111	0.018	↔	0.000000151	0.478	↔	2020-06-16	0.653	↔
2_2_117	W-2	Appendix IV	Molybdenum	mg/l	12	0	0%	-0.00000151	0.755	↔	0.00000226	0.029	↔	2019-06-01	0.579	↔
2_2_122	W-2	Appendix IV	Radium-226+228	pci/l	14	3	21%	-0.000519	0.685	↔	0.00332	0.007	↑	2019-12-18	0.683	↔
2_2_124	W-2	Appendix IV	Selenium	mg/l	12	0	0%	0.0000000728	0.885	↔	-0.00000419	0.336	↔	2021-05-11	0.248	↔
2_2_128	W-2	Appendix IV	Thallium	mg/l	10	9	90%	-0.000000000000000000192	0.103	↔	0.000000778	0.000	↑	2021-06-21	1.000	↔
2_3_111	W-2	Supplemental	Conductivity (field)	us/cm	15	0	0%	-1.06	0.124	↔	3.88	0.525	↔	2020-12-15	0.249	↔
2_3_118	W-2	Supplemental	Oxidation-reduction Potential (field)	mV	15	0	0%	-0.453	0.953	↔	0.597	0.314	↔	2018-09-09	0.121	↔
2_3_121	W-2	Supplemental	Radium-226	pci/l	14	5	36%	-0.000251	0.272	↔	0.000433	0.225	↔	2020-02-27	0.249	↔

(Table continues on next page)

Table 9: Trend Tests: Piecewise Linear-Linear *(continued)*

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Line 1			Line 2			Break 1	R-Squared	Overall Trend
								Slope	p-Value	Trend	Slope	p-Value	Trend			
2_3_123	W-2	Supplemental	Radium-228	pci/l	14	4	29%	-0.000291	0.783	↔	0.00285	0.005	↑	2019-12-18	0.714	↔
2_3_126	W-2	Supplemental	Temperature (field)	deg c	15	0	0%	0.0229	0.097	↔	-0.00102	0.128	↔	2018-08-12	0.544	↔
2_3_127	W-2	Supplemental	Temperature (lab)	deg c	14	0	0%	0.0124	0.005	↑	-0.00149	0.111	↔	2018-12-31	0.708	↔
2_3_130	W-2	Supplemental	Total Suspended Solids	mg/l	12	3	25%	-0.00194	0.935	↔	0.00673	0.328	↔	2019-08-11	0.241	↔
2_3_131	W-2	Supplemental	Turbidity (field)	ntu	15	0	0%	-0.00166	0.199	↔	0.00787	0.082	↔	2020-07-11	0.527	↔
3_1_105	W-4	Appendix III	Boron	mg/l	13	0	0%	0.000698	0.057	↔	-0.00309	0.303	↔	2020-12-16	0.476	↔
3_1_107	W-4	Appendix III	Calcium	mg/l	14	0	0%	-1.56	0.427	↔	0.0651	0.274	↔	2018-07-09	0.253	↔
3_1_108	W-4	Appendix III	Chloride (as Cl)	mg/l	14	0	0%	-0.0987	0.027	↔	0.104	0.075	↔	2020-06-15	0.634	↔
3_1_112	W-4	Appendix III	Fluoride	mg/l	15	6	40%	0.0151	0.055	↔	-0.0239	0.342	↔	2020-06-16	0.337	↔
3_1_119	W-4	Appendix III	pH (field)	su	15	0	0%	0.000250	0.308	↔	-0.0000983	0.635	↔	2019-09-25	0.147	↔
3_1_120	W-4	Appendix III	pH (lab)	su	14	0	0%	-0.00176	0.435	↔	0.00000572	0.931	↔	2018-07-09	0.254	↔
3_1_125	W-4	Appendix III	Sulfate (as SO4)	mg/l	14	0	0%	4.27	0.562	↔	-1.41	0.027	↔	2018-09-09	0.437	↔
3_1_129	W-4	Appendix III	Total Dissolved Solids	mg/l	14	0	0%	-23.1	0.381	↔	0.651	0.819	↔	2018-10-09	0.191	↔
3_2_103	W-4	Appendix IV	Barium	mg/l	12	0	0%	-0.0000110	0.273	↔	0.000000393	0.516	↔	2018-10-09	0.349	↔
3_2_104	W-4	Appendix IV	Beryllium	mg/l	10	10	100%	-0.000000000000593	1.000	↔	0.000000619	0.000	↑	2020-05-16	0.962	↔
3_2_106	W-4	Appendix IV	Cadmium	mg/l	12	3	25%	-0.000000708	0.140	↔	-0.0000000223	0.428	↔	2018-10-09	0.671	↔
3_2_109	W-4	Appendix IV	Chromium, Total	mg/l	10	9	90%	-0.000000428	0.673	↔	0.00000304	0.020	↔	2020-04-13	0.785	↔
3_2_110	W-4	Appendix IV	Cobalt	mg/l	12	0	0%	0.0000162	0.152	↔	-0.000000258	0.503	↔	2018-08-16	0.386	↔
3_2_113	W-4	Appendix IV	Fluoride (App IV)	mg/l	15	6	40%	0.0151	0.055	↔	-0.0239	0.342	↔	2020-06-16	0.337	↔
3_2_115	W-4	Appendix IV	Lithium	mg/l	12	0	0%	-0.00216	0.047	↔	-0.0000563	0.564	↔	2018-10-18	0.697	↔
3_2_116	W-4	Appendix IV	Mercury	mg/l	10	10	100%	-0.000000111	0.018	↔	0.000000151	0.478	↔	2020-06-16	0.653	↔
3_2_117	W-4	Appendix IV	Molybdenum	mg/l	12	0	0%	-0.00000322	0.093	↔	-0.000000141	0.435	↔	2018-11-05	0.702	↔
3_2_122	W-4	Appendix IV	Radium-226+228	pci/l	14	2	14%	-0.000615	0.375	↔	0.00106	0.328	↔	2020-02-09	0.182	↔
3_2_124	W-4	Appendix IV	Selenium	mg/l	12	4	33%	-0.00000841	0.462	↔	-0.000000687	0.118	↔	2018-08-19	0.508	↔
3_3_111	W-4	Supplemental	Conductivity (field)	us/cm	15	0	0%	-1.60	0.020	↔	0.119	0.983	↔	2020-12-16	0.517	↔
3_3_118	W-4	Supplemental	Oxidation-reduction Potential (field)	mV	15	0	0%	0.181	0.607	↔	-0.0732	0.371	↔	2019-04-14	0.106	↔
3_3_121	W-4	Supplemental	Radium-226	pci/l	14	6	43%	0.00274	0.160	↔	-0.000140	0.028	↔	2018-06-26	0.503	↔
3_3_123	W-4	Supplemental	Radium-228	pci/l	14	6	43%	-0.000704	0.691	↔	0.000842	0.113	↔	2019-09-15	0.244	↔
3_3_126	W-4	Supplemental	Temperature (field)	deg c	15	0	0%	0.0124	0.550	↔	-0.000564	0.578	↔	2018-07-21	0.083	↔
3_3_127	W-4	Supplemental	Temperature (lab)	deg c	14	0	0%	0.00859	0.023	↔	-0.00126	0.495	↔	2019-04-15	0.552	↔
3_3_130	W-4	Supplemental	Total Suspended Solids	mg/l	12	2	17%	-0.0104	0.836	↔	0.0125	0.390	↔	2019-03-16	0.232	↔
3_3_131	W-4	Supplemental	Turbidity (field)	ntu	15	0	0%	-0.00197	0.174	↔	0.00624	0.203	↔	2020-07-27	0.326	↔

Table 10: Trend Tests: Piecewise Linear-Linear-Linear

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Line 1			Line 2			Line 3			Break 1	Break 2	R-Squared	Overall Trend
								Slope	p-Value	Trend	Slope	p-Value	Trend	Slope	p-Value	Trend				
1_1_105	W-1	Appendix III	Boron	mg/l	13	0	0%	-0.000877	0.456	↔	0.000194	0.051	↔	-0.000706	0.282	↔	2018-07-18	2020-12-15	0.584	↔
1_1_107	W-1	Appendix III	Calcium	mg/l	14	0	0%	-0.742	0.102	↔	0.0931	0.041	↔	-0.0468	0.309	↔	2018-07-08	2019-12-19	0.667	↔
1_1_108	W-1	Appendix III	Chloride (as Cl)	mg/l	14	0	0%	-0.0108	0.225	↔	-0.0432	0.068	↔	0.0732	0.000	↑	2019-04-15	2020-10-08	0.944	↔

(Table continues on next page)

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Line 1			Line 2			Line 3			Break 1	Break 2	R-Squared	Overall Trend
								Slope	p-Value	Trend	Slope	p-Value	Trend	Slope	p-Value	Trend				
1_1_120	W-1	Appendix III	pH (lab)	su	14	0	0%	-0.00195	0.083	↔	0.00319	0.167	↔	-0.000293	0.039	↔	2018-08-17	2018-11-14	0.634	↔
1_1_125	W-1	Appendix III	Sulfate (as SO4)	mg/l	14	0	0%	-1.19	0.701	↔	6.11	0.708	↔	-1.62	0.009	↓	2018-09-17	2019-04-14	0.647	↔
1_1_129	W-1	Appendix III	Total Dissolved Solids	mg/l	14	0	0%	-7.19	0.365	↔	3.80	0.589	↔	-0.833	0.630	↔	2018-10-09	2019-09-07	0.221	↔
1_2_103	W-1	Appendix IV	Barium	mg/l	12	0	0%	0.00000825	0.706	↔	0.000000288	0.989	↔	-0.000000255	0.853	↔	2018-09-09	2019-09-17	0.126	↔
1_2_106	W-1	Appendix IV	Cadmium	mg/l	12	8	67%	0.00000115	0.043	↔	-0.000000400	0.032	↔	0.0000000832	0.465	↔	2018-11-12	2020-01-27	0.741	↔
1_2_109	W-1	Appendix IV	Chromium, Total	mg/l	10	9	90%	0.00000487	0.793	↔	-0.000000869	0.463	↔	0.00000292	0.033	↔	2018-08-07	2020-02-05	0.864	↔
1_2_110	W-1	Appendix IV	Cobalt	mg/l	12	0	0%	-0.000000217	0.439	↔	0.00000150	0.230	↔	-0.00000209	0.139	↔	2020-05-10	2021-06-06	0.647	↔
1_2_114	W-1	Appendix IV	Lead	mg/l	10	9	90%	-0.00000444	0.589	↔	-0.0000000000410	1.000	↔	0.00000000000765	1.000	↔	2018-10-05	2018-12-10	0.233	↔
1_2_115	W-1	Appendix IV	Lithium	mg/l	12	0	0%	0.000579	0.617	↔	-0.000266	0.450	↔	0.00000497	0.882	↔	2018-08-12	2018-12-08	0.278	↔
1_2_116	W-1	Appendix IV	Mercury	mg/l	10	10	100%	0.0000000905	0.758	↔	-0.000000139	0.096	↔	0.000000162	0.508	↔	2018-10-15	2020-06-16	0.709	↔
1_2_128	W-1	Appendix IV	Thallium	mg/l	10	9	90%	-0.000000276	0.480	↔	0.000000354	0.220	↔	-0.00000123	0.034	↔	2019-05-02	2021-06-21	0.838	↔
1_3_111	W-1	Supplemental	Conductivity (field)	us/cm	15	0	0%	-1.32	0.408	↔	0.515	0.877	↔	-0.223	0.224	↔	2018-09-06	2019-04-14	0.312	↔
1_3_121	W-1	Supplemental	Radium-226	pci/l	14	7	50%	0.00308	0.109	↔	-0.000321	0.055	↔	0.000135	0.480	↔	2018-07-09	2020-06-06	0.703	↔
1_3_126	W-1	Supplemental	Temperature (field)	deg c	15	0	0%	0.0159	0.073	↔	-0.00941	0.825	↔	0.000637	0.595	↔	2018-09-14	2019-02-10	0.384	↔
1_3_131	W-1	Supplemental	Turbidity (field)	ntu	15	0	0%	0.00333	0.646	↔	-0.00155	0.919	↔	0.00151	0.086	↔	2018-09-03	2019-04-14	0.422	↔
2_1_107	W-2	Appendix III	Calcium	mg/l	14	0	0%	-0.872	0.067	↔	0.0994	0.507	↔	-0.0139	0.781	↔	2018-07-12	2019-12-18	0.549	↔
2_1_108	W-2	Appendix III	Chloride (as Cl)	mg/l	14	0	0%	-0.107	0.218	↔	0.115	0.520	↔	-0.0118	0.261	↔	2018-08-13	2019-03-23	0.615	↔
2_1_112	W-2	Appendix III	Fluoride	mg/l	15	2	13%	0.000244	0.908	↔	0.0175	0.001	↑	-0.0175	0.000	↓	2019-09-02	2020-09-26	0.932	↔
2_1_119	W-2	Appendix III	pH (field)	su	15	0	0%	-0.000433	0.807	↔	0.000406	0.458	↔	-0.0000904	0.763	↔	2018-08-31	2019-10-23	0.157	↔
2_1_120	W-2	Appendix III	pH (lab)	su	14	0	0%	-0.000990	0.235	↔	0.000661	0.404	↔	-0.000125	0.087	↔	2018-07-30	2018-11-15	0.596	↔
2_1_129	W-2	Appendix III	Total Dissolved Solids	mg/l	14	0	0%	-4.66	0.575	↔	0.973	0.750	↔	-0.0599	0.982	↔	2018-10-09	2020-05-14	0.092	↔
2_2_103	W-2	Appendix IV	Barium	mg/l	12	0	0%	0.000000791	0.764	↔	0.0000195	0.122	↔	0.000000761	0.951	↔	2020-06-15	2021-01-25	0.805	↔
2_2_104	W-2	Appendix IV	Beryllium	mg/l	10	8	80%	0.00000581	0.112	↔	-0.00000858	0.353	↔	0.000000453	0.222	↔	2018-09-25	2018-12-10	0.653	↔
2_2_106	W-2	Appendix IV	Cadmium	mg/l	12	8	67%	-0.0000000765	0.653	↔	0.000000576	0.440	↔	0.0000000746	0.925	↔	2020-04-10	2021-01-26	0.473	↔
2_2_110	W-2	Appendix IV	Cobalt	mg/l	12	0	0%	0.00000785	0.941	↔	0.000000640	0.953	↔	0.0000172	0.177	↔	2018-08-17	2020-01-17	0.623	↔
2_2_113	W-2	Appendix IV	Fluoride (App IV)	mg/l	15	2	13%	0.000244	0.908	↔	0.0175	0.001	↑	-0.0175	0.000	↓	2019-09-02	2020-09-26	0.932	↔
2_2_114	W-2	Appendix IV	Lead	mg/l	10	9	90%	-0.00000408	0.589	↔	-0.0000000000377	1.000	↔	0.00000000000704	1.000	↔	2018-10-05	2018-12-10	0.233	↔
2_2_116	W-2	Appendix IV	Mercury	mg/l	10	10	100%	0.0000000905	0.758	↔	-0.000000139	0.096	↔	0.000000162	0.508	↔	2018-10-15	2020-06-16	0.709	↔
2_2_122	W-2	Appendix IV	Radium-226+228	pci/l	14	3	21%	-0.00221	0.719	↔	0.000524	0.487	↔	0.00609	0.244	↔	2018-08-20	2020-12-16	0.730	↔
2_2_124	W-2	Appendix IV	Selenium	mg/l	12	0	0%	-0.00000404	0.277	↔	0.0000118	0.156	↔	-0.00000170	0.167	↔	2019-08-01	2020-01-13	0.542	↔
2_2_128	W-2	Appendix IV	Thallium	mg/l	10	9	90%	0.00000000000293	0.817	↔	-0.00000000000143	0.206	↔	0.0000000778	0.000	↑	2018-09-01	2021-06-21	1.000	↔
2_3_121	W-2	Supplemental	Radium-226	pci/l	14	5	36%	0.00129	0.708	↔	-0.000358	0.232	↔	0.000482	0.212	↔	2018-07-09	2020-03-01	0.325	↔
2_3_126	W-2	Supplemental	Temperature (field)	deg c	15	0	0%	0.0273	0.012	↔	-0.00632	0.740	↔	0.0000590	0.953	↔	2018-08-15	2019-03-21	0.632	↔
2_3_127	W-2	Supplemental	Temperature (lab)	deg c	14	0	0%	-0.00403	0.900	↔	0.0141	0.037	↔	-0.00178	0.087	↔	2018-05-29	2019-01-10	0.733	↔
2_3_131	W-2	Supplemental	Turbidity (field)	ntu	15	0	0%	0.00795	0.224	↔	-0.00460	0.181	↔	0.00772	0.011	↔	2018-10-10	2020-04-12	0.658	↔
3_1_105	W-4	Appendix III	Boron	mg/l	13	0	0%	-0.00183	0.304	↔	0.00126	0.113	↔	-0.00357	0.223	↔	2018-11-25	2020-12-16	0.635	↔
3_1_107	W-4	Appendix III	Calcium	mg/l	14	0	0%	-2.07	0.133	↔	0.406	0.372	↔	-0.0566	0.705	↔	2018-07-10	2019-05-28	0.380	↔
3_1_120	W-4	Appendix III	pH (lab)	su	14	0	0%	-0.00331	0.015	↔	0.00167	0.150	↔	-0.000141	0.155	↔	2018-07-12	2018-11-25	0.647	↔
3_2_103	W-4	Appendix IV	Barium	mg/l	12	0	0%	-0.0000130	0.108	↔	0.00000289	0.368	↔	-0.000000598	0.625	↔	2018-10-25	2019-10-06	0.482	↔
3_2_106	W-4	Appendix IV	Cadmium	mg/l	12	3	25%	-0.000000733	0.083	↔	0.0000000000270	1.000	↔	-0.0000000479	0.590	↔	2018-10-14	2020-05-29	0.678	↔
3_2_109	W-4	Appendix IV	Chromium, Total	mg/l	10	9	90%	0.00000553	0.804	↔	-0.00000107	0.454	↔	0.00000293	0.056	↔	2018-08-12	2020-01-26	0.812	↔
3_2_110	W-4	Appendix IV	Cobalt	mg/l	12	0	0%	0.00000683	0.102	↔	-0.00000821	0.322	↔	-0.000000276	0.816	↔	2019-05-26	2019-12-19	0.537	↔

(Table continues on next page)

Table 10: Trend Tests: Piecewise Linear-Linear-Linear (*continued*)

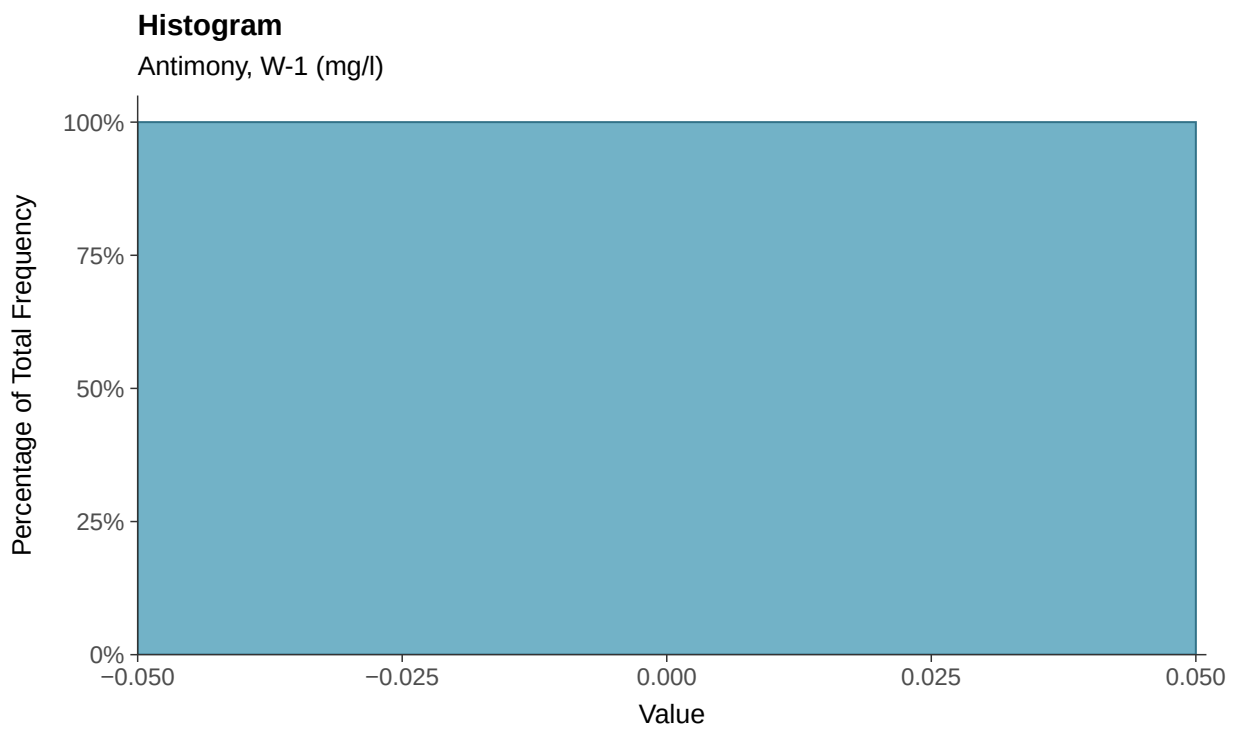
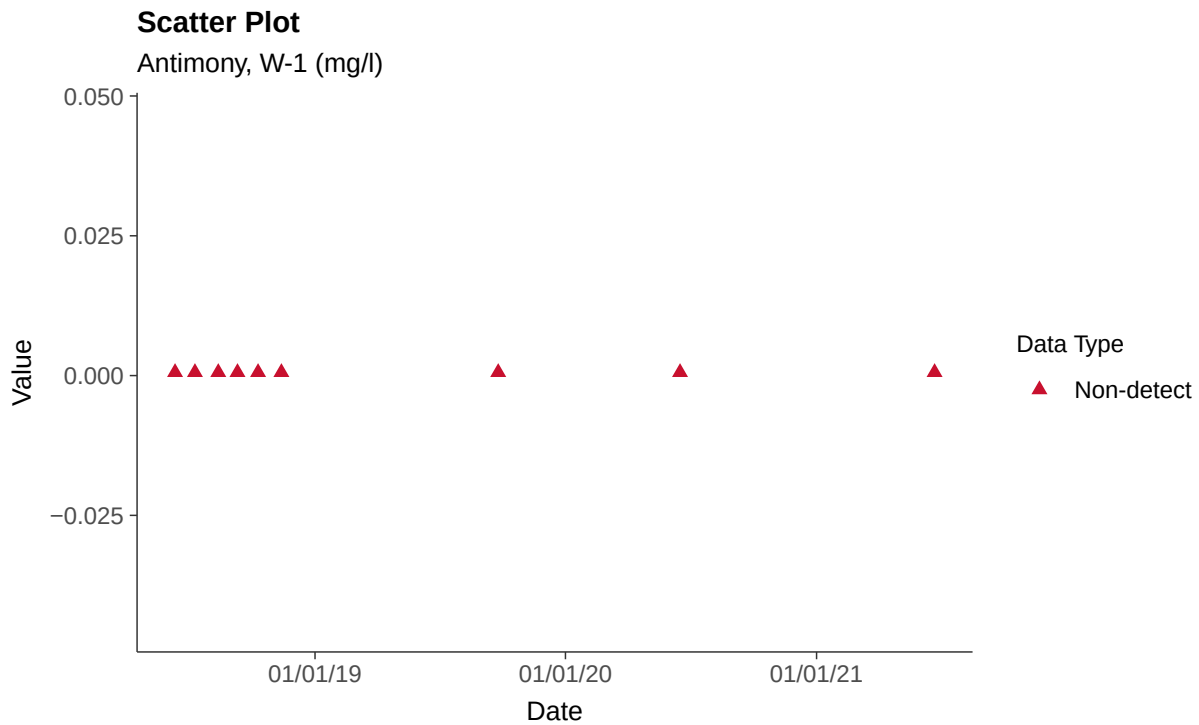
ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Line 1			Line 2			Line 3			Break 1	Break 2	R-Squared	Overall Trend
								Slope	p-Value	Trend	Slope	p-Value	Trend	Slope	p-Value	Trend				
3_2_115	W-4	Appendix IV	Lithium	mg/l	12	0	0%	-0.00218	0.086	↔	-0.000116	0.746	↔	-0.0000219	0.934	↔	2018-10-10	2020-03-04	0.699	↔
3_2_116	W-4	Appendix IV	Mercury	mg/l	10	10	100%	0.0000000905	0.758	↔	-0.000000139	0.096	↔	0.000000162	0.508	↔	2018-10-15	2020-06-16	0.709	↔
3_2_117	W-4	Appendix IV	Molybdenum	mg/l	12	0	0%	0.000000542	0.890	↔	-0.00000734	0.390	↔	-0.000000130	0.491	↔	2018-08-13	2018-10-10	0.761	↔
3_2_122	W-4	Appendix IV	Radium-226+228	pci/l	14	2	14%	0.00000453	0.998	↔	-0.00102	0.254	↔	0.00834	0.009	↑	2019-09-24	2021-05-25	0.688	↔
3_2_124	W-4	Appendix IV	Selenium	mg/l	12	4	33%	-0.00000723	0.580	↔	-0.000000886	0.371	↔	0.000000120	0.958	↔	2018-08-23	2020-12-15	0.523	↔
3_3_126	W-4	Supplemental	Temperature (field)	deg c	15	0	0%	0.0132	0.396	↔	-0.0131	0.688	↔	0.000338	0.844	↔	2018-09-03	2018-12-17	0.144	↔
3_3_127	W-4	Supplemental	Temperature (lab)	deg c	14	0	0%	0.00879	0.001	↑	-0.00937	0.003	↓	0.0126	0.034	↔	2019-10-03	2021-02-25	0.882	↔
3_3_130	W-4	Supplemental	Total Suspended Solids	mg/l	12	2	17%	-0.0111	0.153	↔	0.0530	0.085	↔	-0.141	0.002	↓	2019-12-26	2021-06-07	0.898	↔

Hayden Alluvial – 95% Lower Confidence Limits for Assessment Monitoring

Code	Well	Type	Constituent	Unit	n	% NDs	Range of Sampling Period	Method	95% LCL
1_2_101	W-1	Appendix IV	Antimony	mg/l	10	100%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.00057
1_2_102	W-1	Appendix IV	Arsenic	mg/l	10	100%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.00075
1_2_103	W-1	Appendix IV	Barium	mg/l	12	0%	2015-12-05 to 2021-12-07	Adjusted Gamma LCL	0.0095
1_2_104	W-1	Appendix IV	Beryllium	mg/l	10	60%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.00031
1_2_106	W-1	Appendix IV	Cadmium	mg/l	12	67%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.00020
1_2_109	W-1	Appendix IV	Chromium, Total	mg/l	10	90%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.00098
1_2_110	W-1	Appendix IV	Cobalt	mg/l	12	0%	2015-12-05 to 2021-12-07	Adjusted Gamma LCL	0.00086
1_2_113	W-1	Appendix IV	Fluoride (App IV)	mg/l	15	13%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.29
1_2_114	W-1	Appendix IV	Lead	mg/l	10	90%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.00045
1_2_115	W-1	Appendix IV	Lithium	mg/l	12	0%	2015-12-05 to 2021-12-07	Adjusted Gamma LCL	0.27
1_2_116	W-1	Appendix IV	Mercury	mg/l	10	100%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.00013
1_2_117	W-1	Appendix IV	Molybdenum	mg/l	12	0%	2015-12-05 to 2021-12-07	Adjusted Gamma LCL	0.0032
1_2_122	W-1	Appendix IV	Radium-226+228	pci/l	14	21%	2015-12-05 to 2021-12-07	Gamma MLE Bootstrap LCL	0.619
1_2_124	W-1	Appendix IV	Selenium	mg/l	12	0%	2015-12-05 to 2021-12-07	Adjusted Gamma LCL	0.0093
1_2_128	W-1	Appendix IV	Thallium	mg/l	10	90%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.00020
2_2_101	W-2	Appendix IV	Antimony	mg/l	10	100%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.00057
2_2_102	W-2	Appendix IV	Arsenic	mg/l	10	100%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.00075
2_2_103	W-2	Appendix IV	Barium	mg/l	12	0%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.0055
2_2_104	W-2	Appendix IV	Beryllium	mg/l	10	80%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.00031
2_2_106	W-2	Appendix IV	Cadmium	mg/l	12	67%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.00020
2_2_109	W-2	Appendix IV	Chromium, Total	mg/l	10	90%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.00098
2_2_110	W-2	Appendix IV	Cobalt	mg/l	12	0%	2015-12-05 to 2021-12-07	Adjusted Gamma LCL	0.0025
2_2_113	W-2	Appendix IV	Fluoride (App IV)	mg/l	15	13%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.50
2_2_114	W-2	Appendix IV	Lead	mg/l	10	90%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.00045
2_2_115	W-2	Appendix IV	Lithium	mg/l	12	0%	2015-12-05 to 2021-12-07	Adjusted Gamma LCL	0.60
2_2_116	W-2	Appendix IV	Mercury	mg/l	10	100%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.00013
2_2_117	W-2	Appendix IV	Molybdenum	mg/l	12	0%	2015-12-05 to 2021-12-07	Adjusted Gamma LCL	0.0033
2_2_122	W-2	Appendix IV	Radium-226+228	pci/l	14	21%	2015-12-05 to 2021-12-07	Gamma MLE Bootstrap LCL	0.785
2_2_124	W-2	Appendix IV	Selenium	mg/l	12	0%	2015-12-05 to 2021-12-07	Adjusted Gamma LCL	0.0030
2_2_128	W-2	Appendix IV	Thallium	mg/l	10	90%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.00020
3_2_101	W-4	Appendix IV	Antimony	mg/l	10	100%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.00057
3_2_102	W-4	Appendix IV	Arsenic	mg/l	10	100%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.00075
3_2_103	W-4	Appendix IV	Barium	mg/l	12	0%	2015-12-05 to 2021-12-07	Adjusted Gamma LCL	0.0080
3_2_104	W-4	Appendix IV	Beryllium	mg/l	10	100%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.00031
3_2_106	W-4	Appendix IV	Cadmium	mg/l	12	25%	2015-12-05 to 2021-12-07	Lognormal MLE Likelihood Profile LCL	0.00021
3_2_109	W-4	Appendix IV	Chromium, Total	mg/l	10	90%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.00098
3_2_110	W-4	Appendix IV	Cobalt	mg/l	12	0%	2015-12-05 to 2021-12-07	Adjusted Gamma LCL	0.0065
3_2_113	W-4	Appendix IV	Fluoride (App IV)	mg/l	15	40%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.50
3_2_114	W-4	Appendix IV	Lead	mg/l	10	100%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.00045
3_2_115	W-4	Appendix IV	Lithium	mg/l	12	0%	2015-12-05 to 2021-12-07	Adjusted Gamma LCL	0.67
3_2_116	W-4	Appendix IV	Mercury	mg/l	10	100%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.00013
3_2_117	W-4	Appendix IV	Molybdenum	mg/l	12	0%	2015-12-05 to 2021-12-07	Adjusted Gamma LCL	0.0029
3_2_122	W-4	Appendix IV	Radium-226+228	pci/l	14	14%	2015-12-05 to 2021-12-07	Gamma MLE Bootstrap LCL	0.654
3_2_124	W-4	Appendix IV	Selenium	mg/l	12	33%	2015-12-05 to 2021-12-07	Gamma MLE Bootstrap LCL	0.0010
3_2_128	W-4	Appendix IV	Thallium	mg/l	10	100%	2015-12-05 to 2021-12-07	Nonparametric LCL around the Median	0.00020

Appendix IV: Antimony, W-1

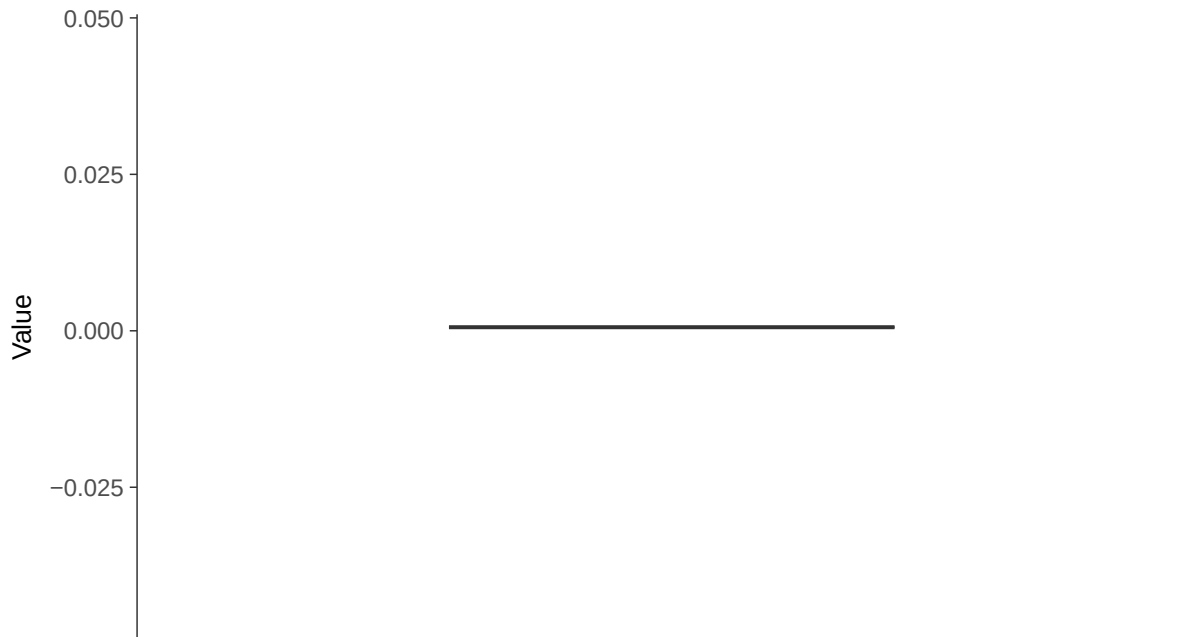
ID: 1_2_101





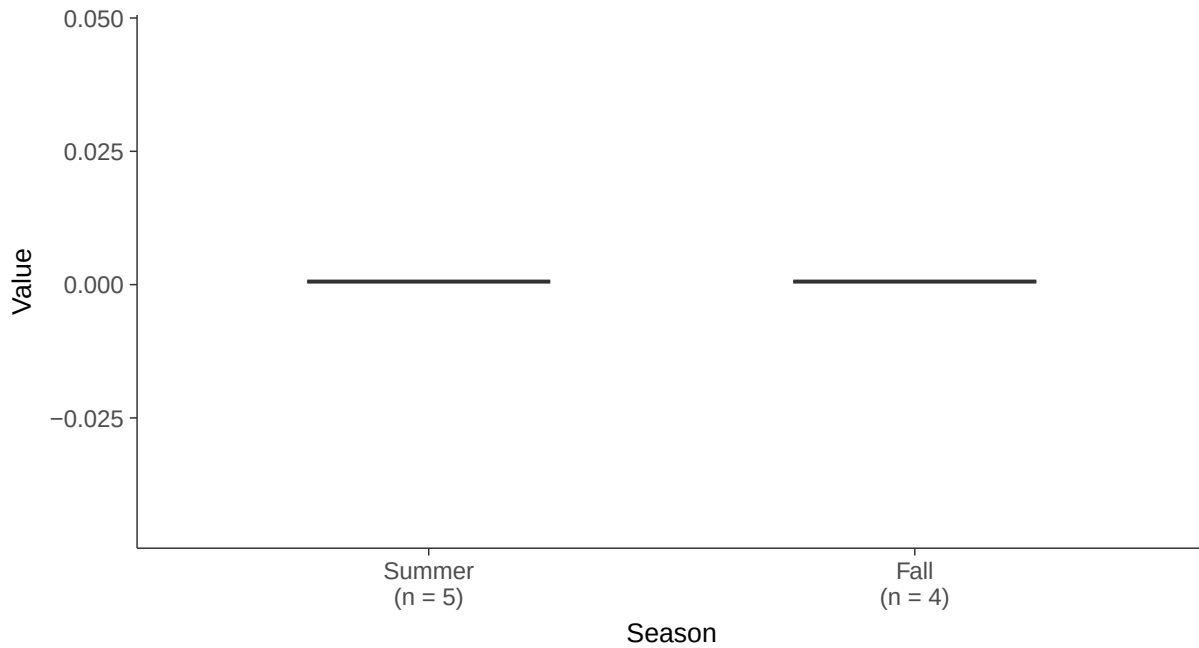
Boxplot

Antimony, W-1 (mg/l)



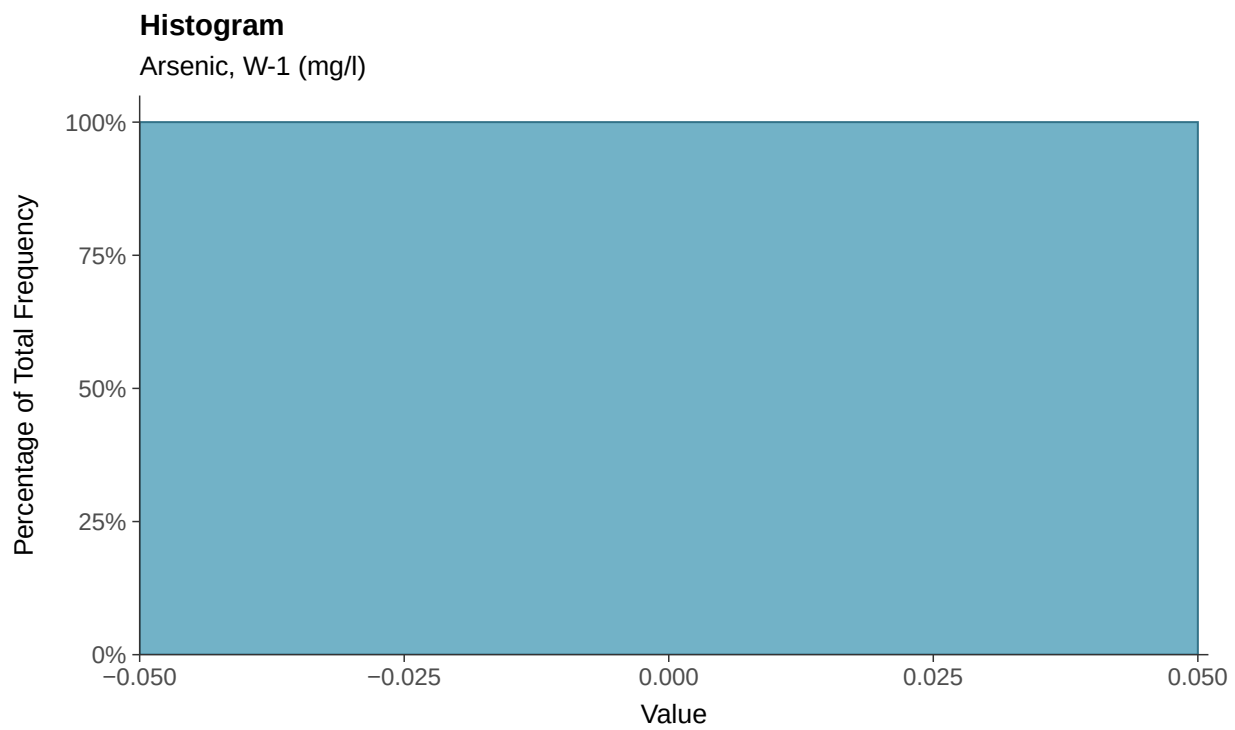
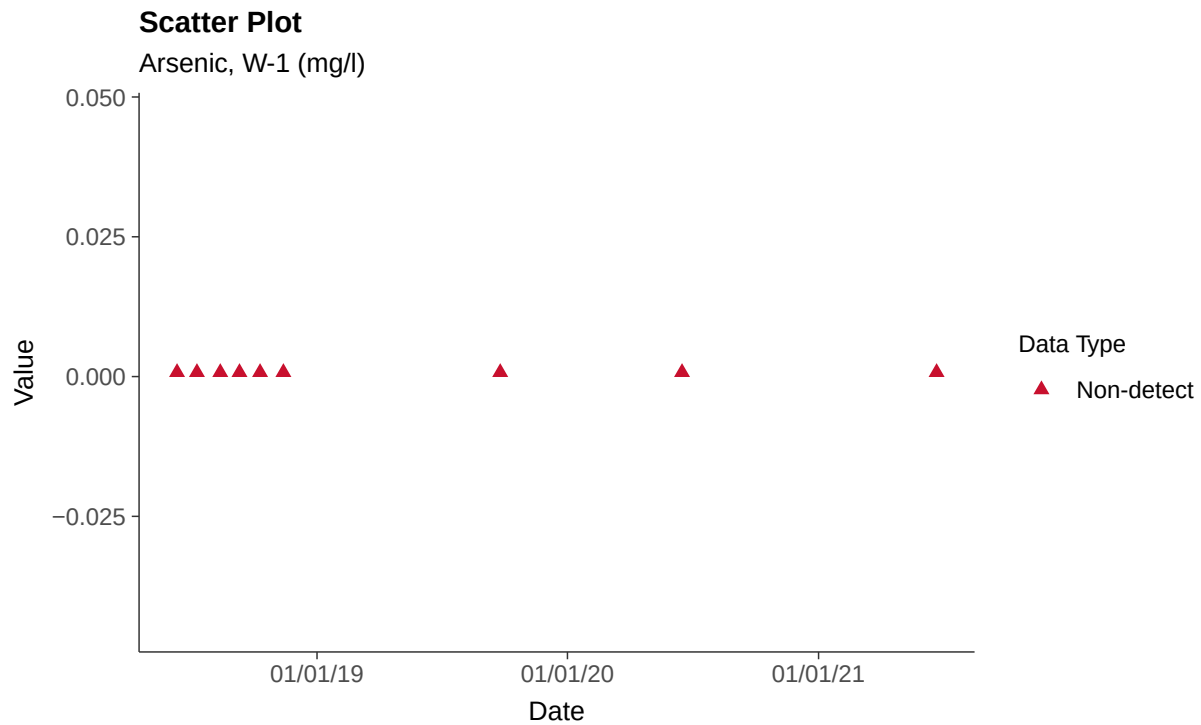
Boxplot by Season

Antimony, W-1 (mg/l)



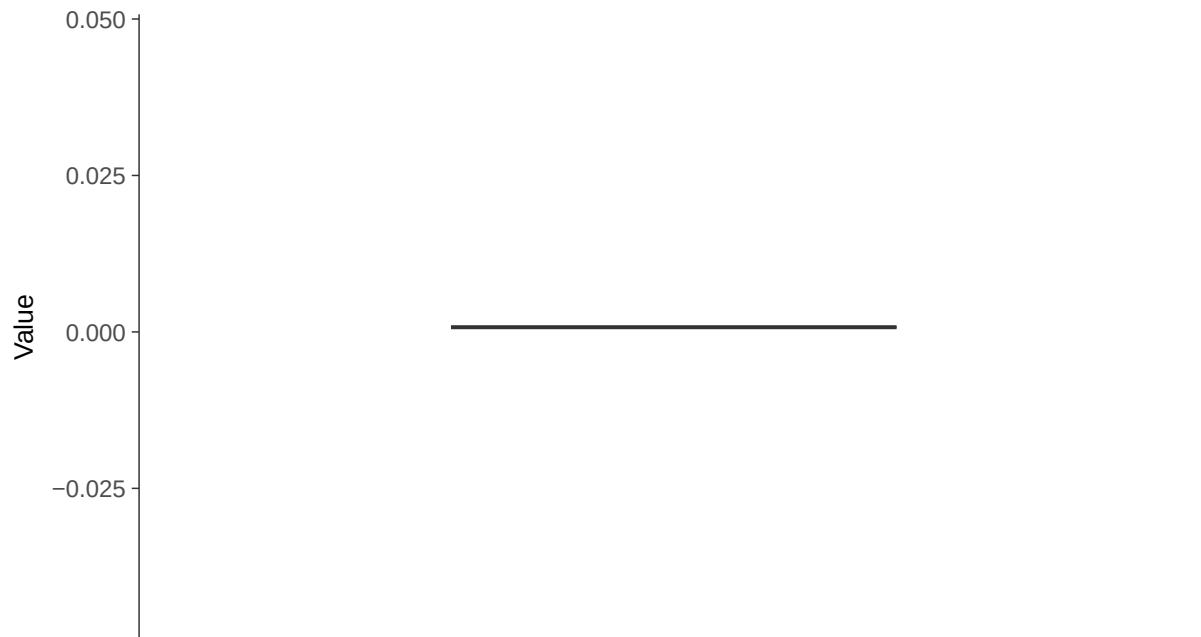
Appendix IV: Arsenic, W-1

ID: 1_2_102



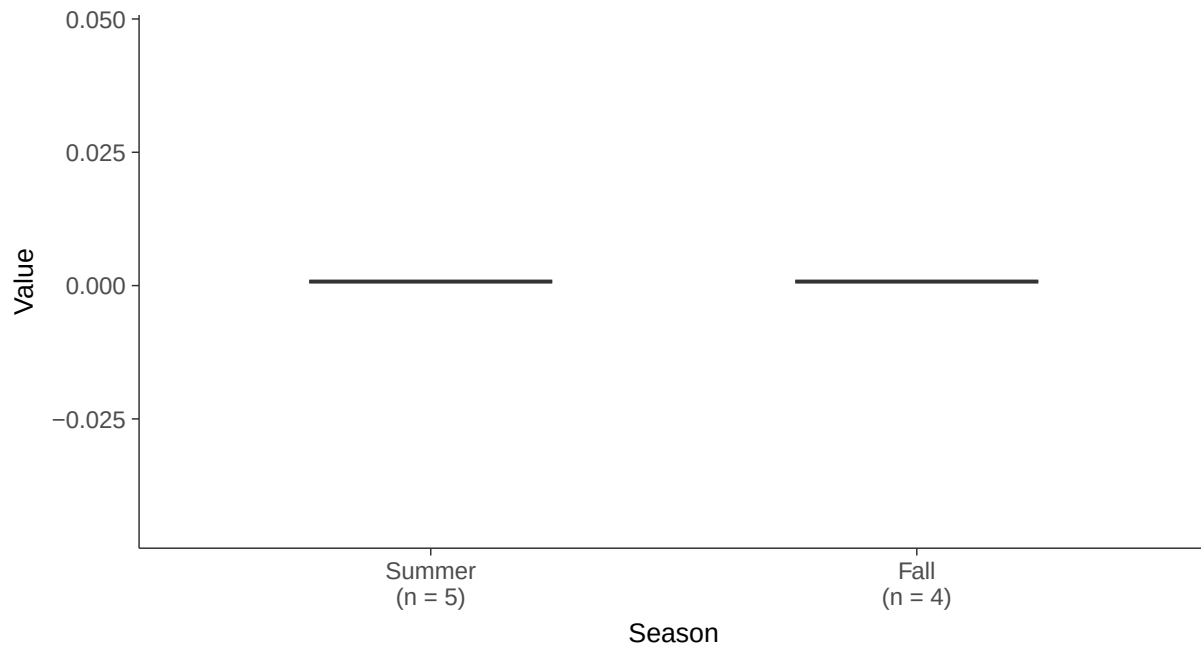
Boxplot

Arsenic, W-1 (mg/l)



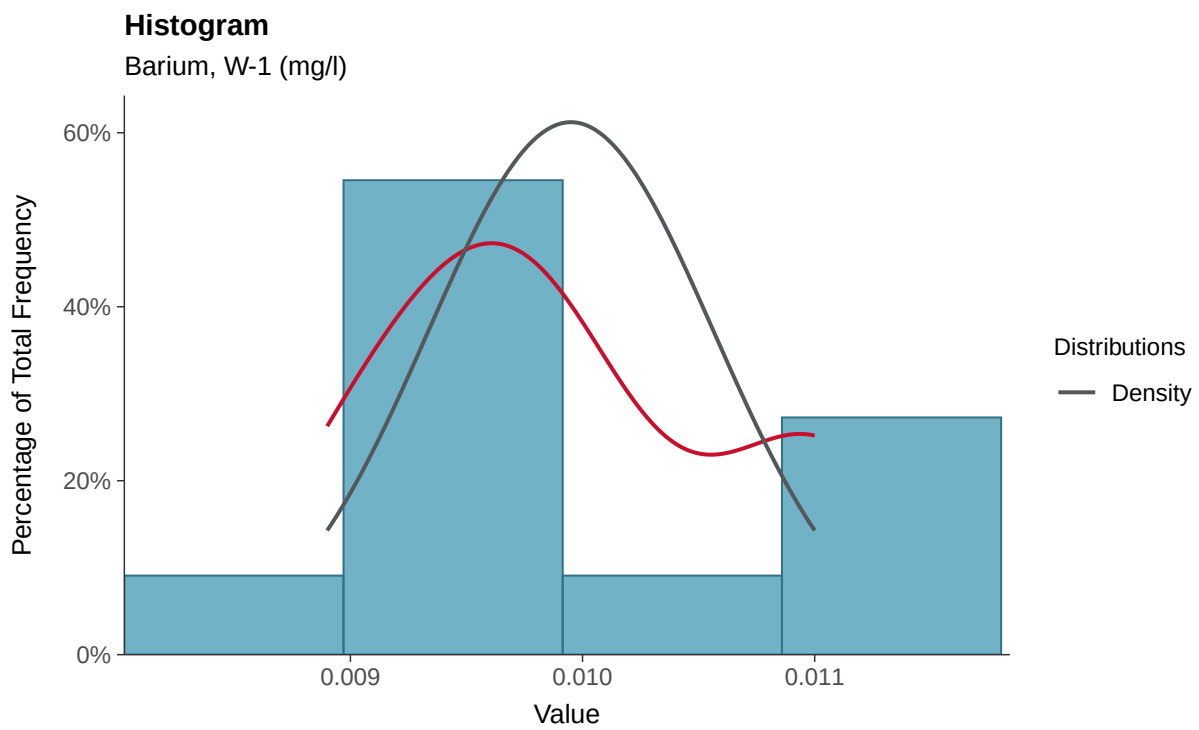
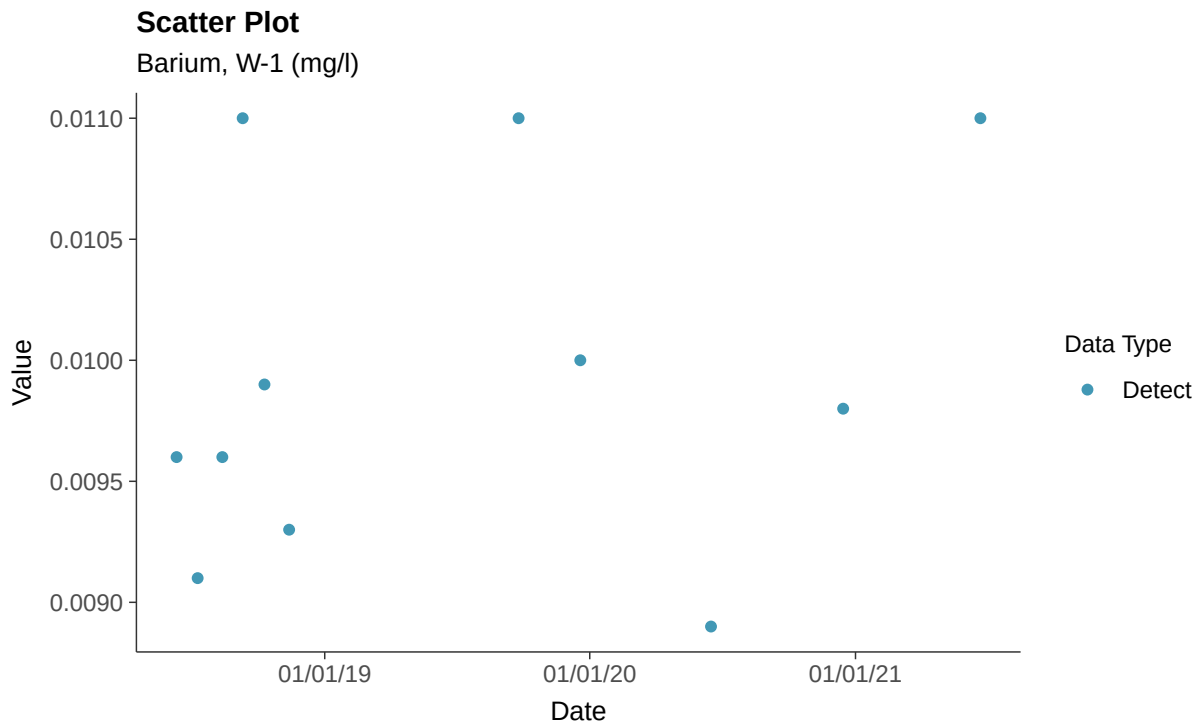
Boxplot by Season

Arsenic, W-1 (mg/l)



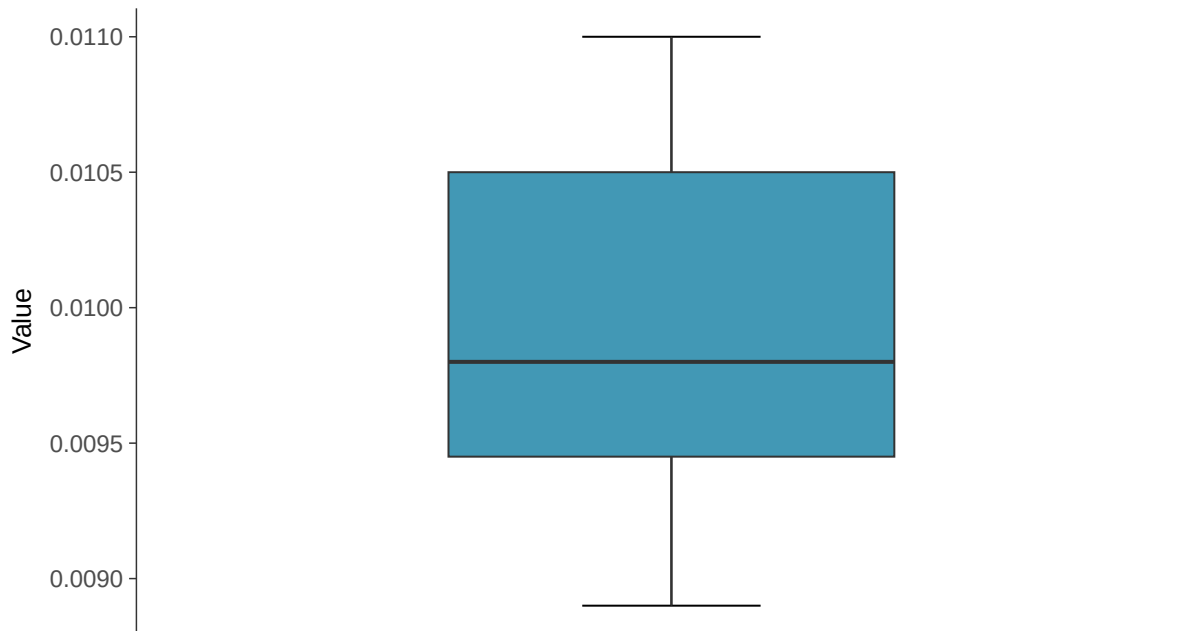
Appendix IV: Barium, W-1

ID: 1_2_103



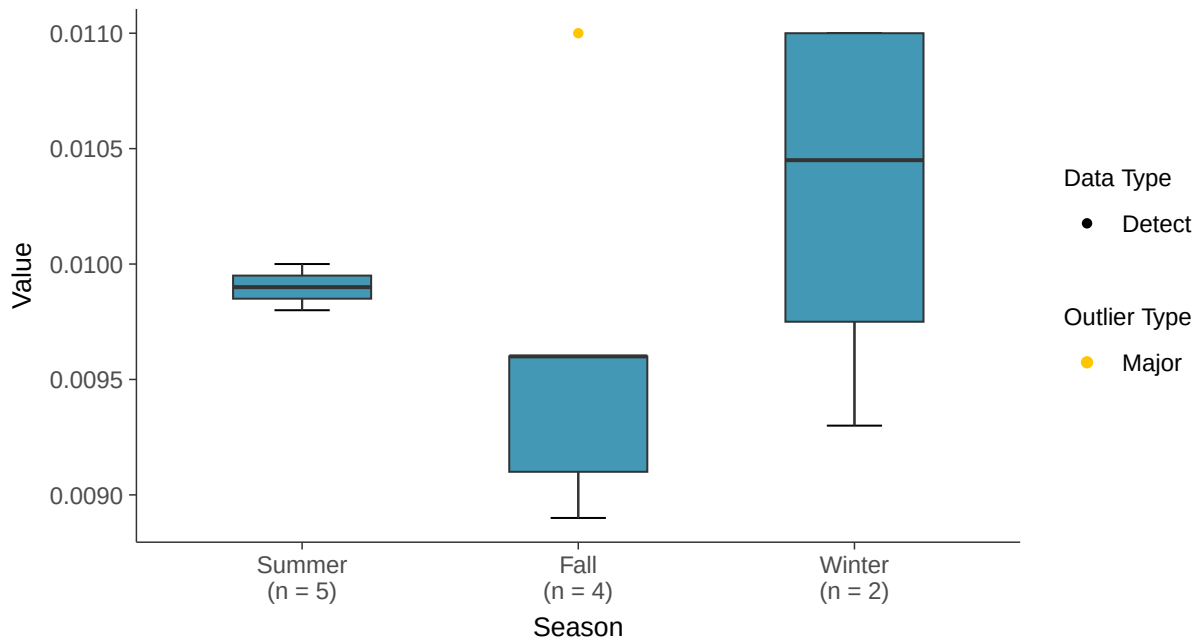
Boxplot

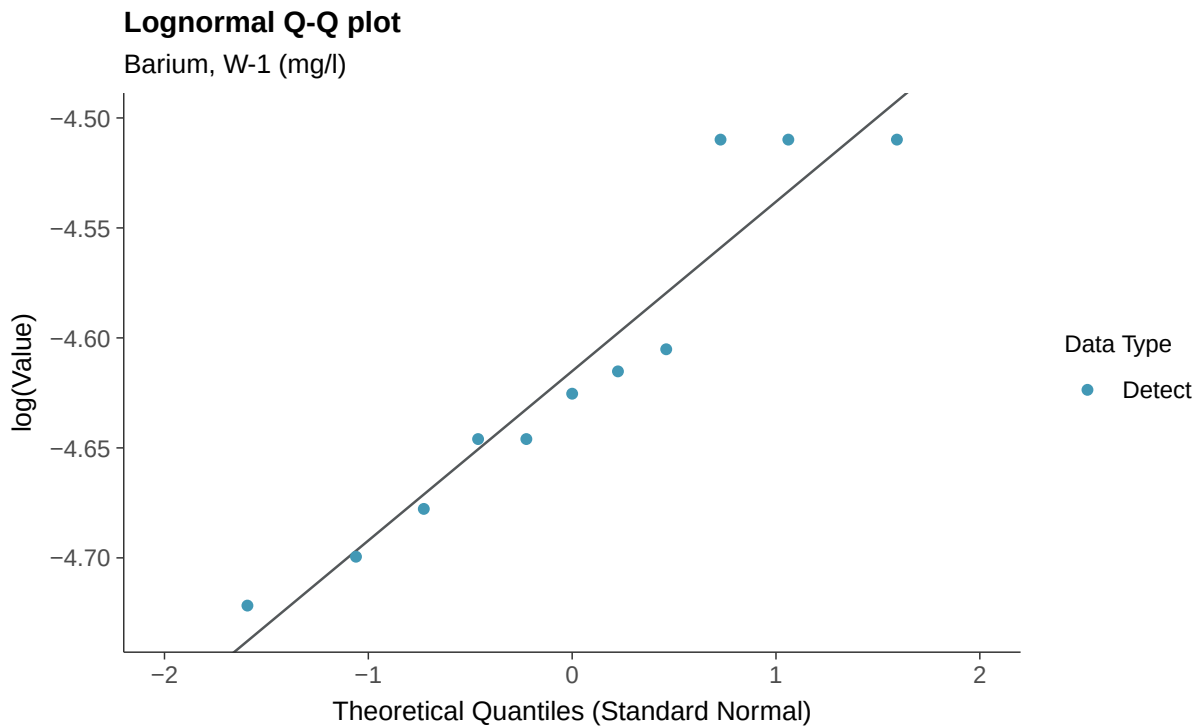
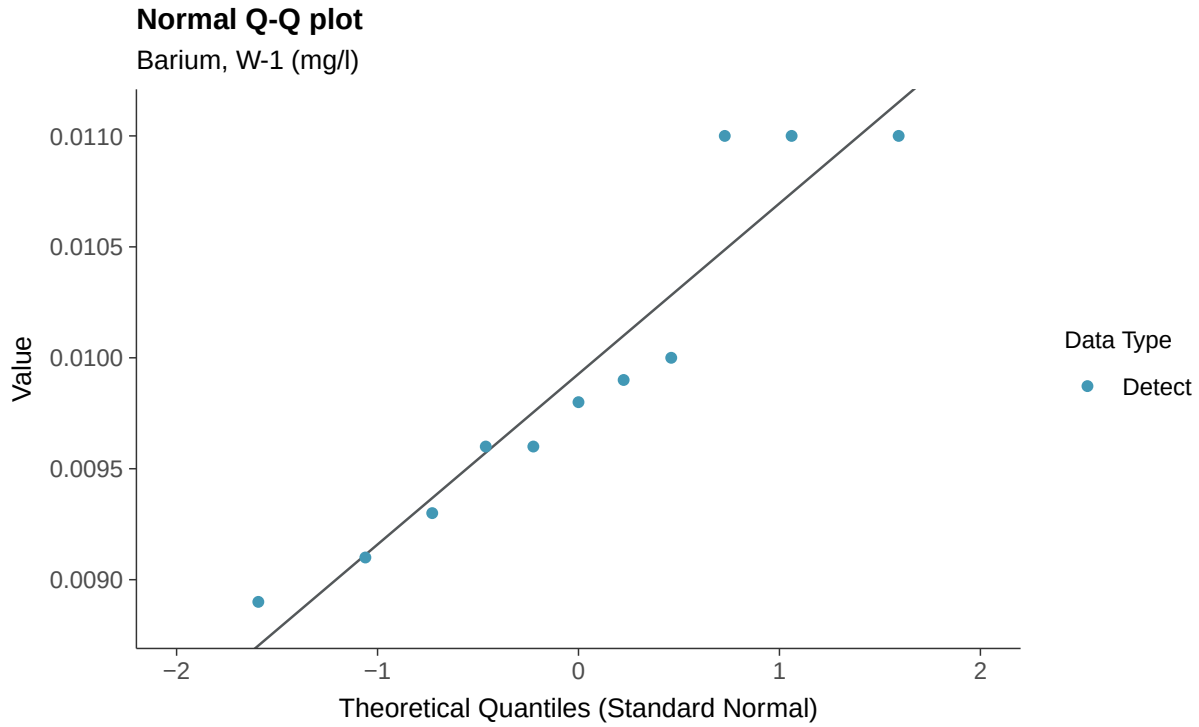
Barium, W-1 (mg/l)

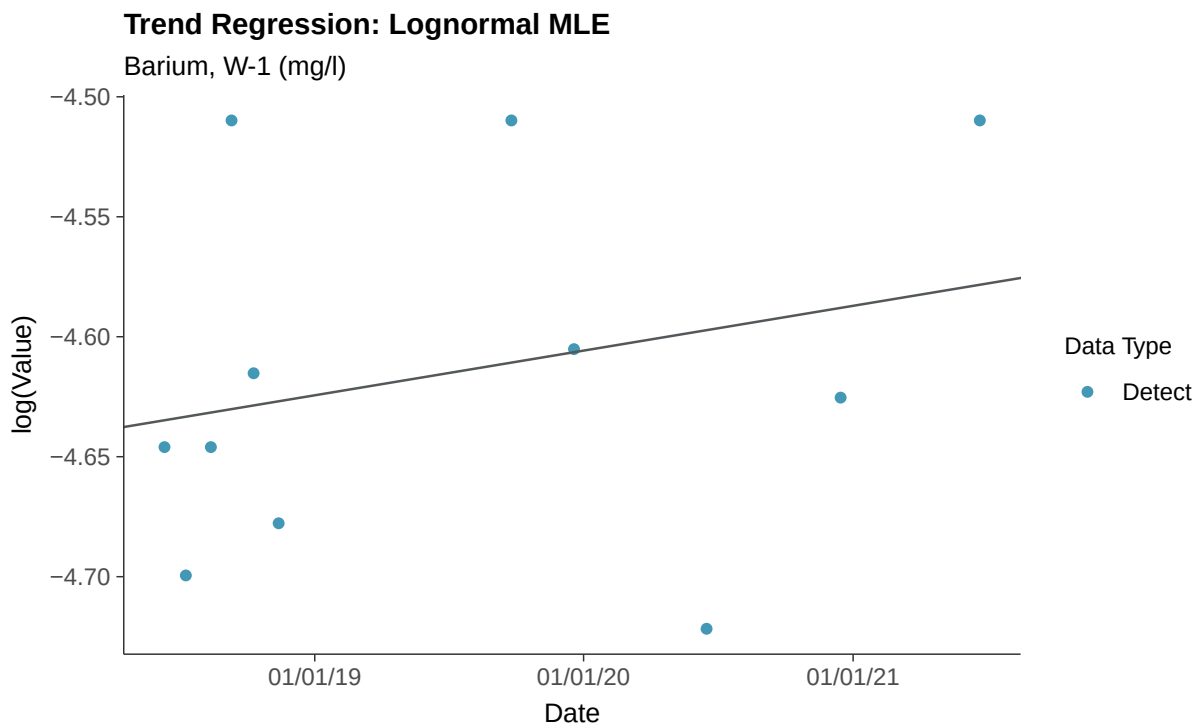
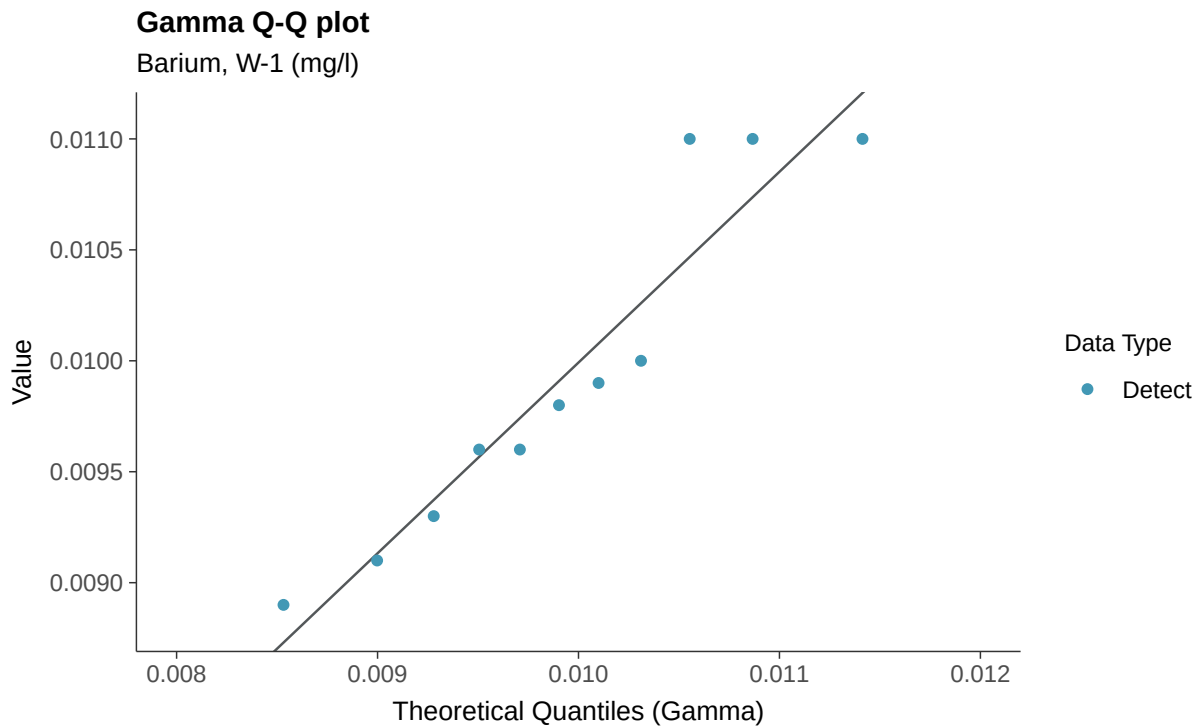


Boxplot by Season

Barium, W-1 (mg/l)

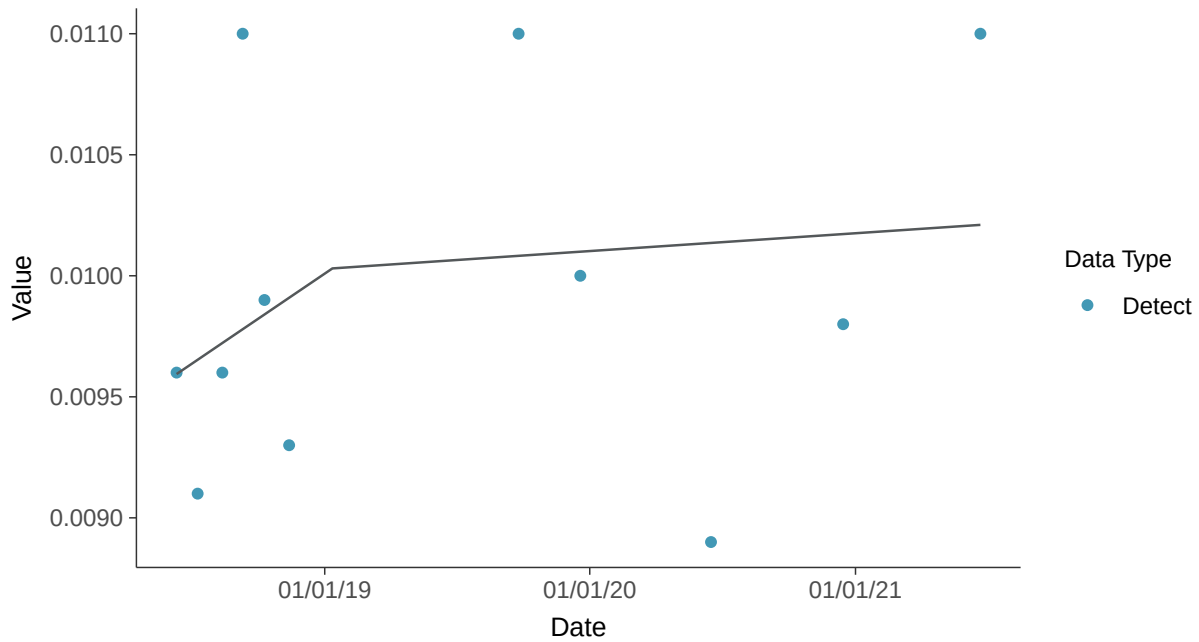






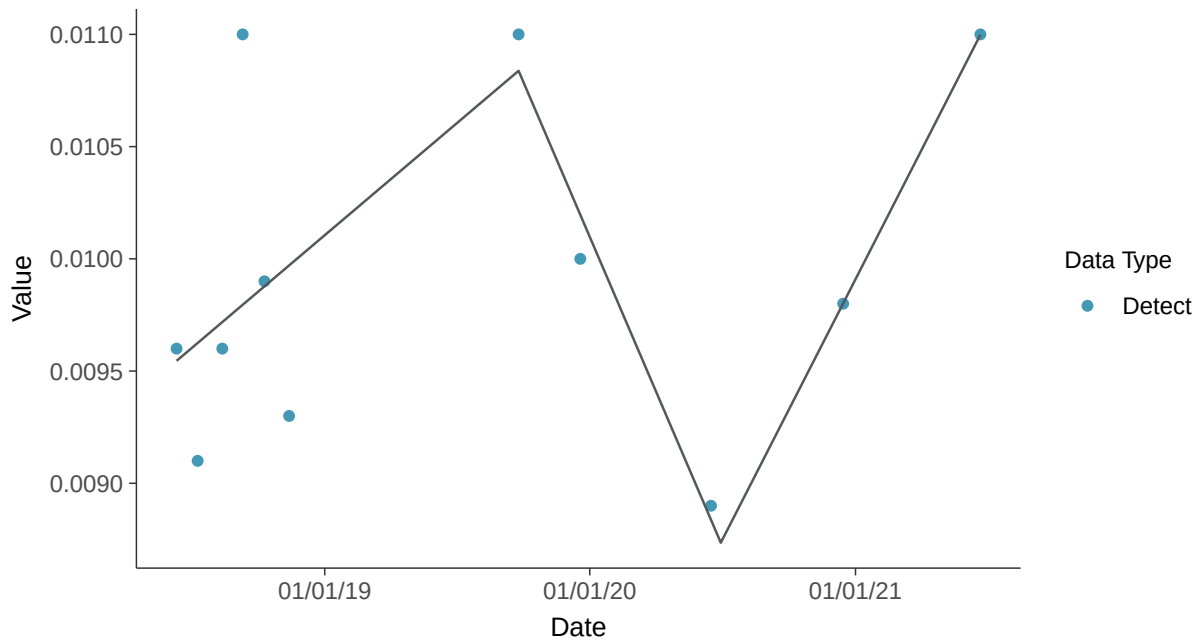
Trend Regression: Piecewise Linear-Linear

Barium, W-1 (mg/l)



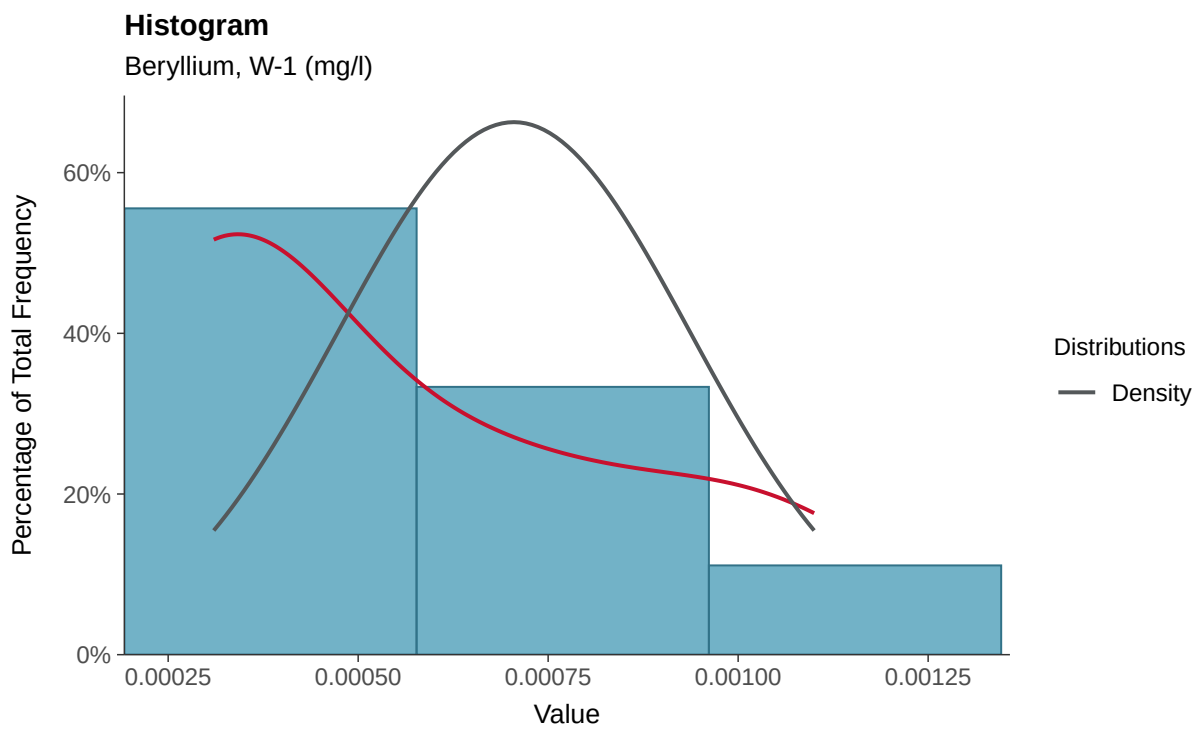
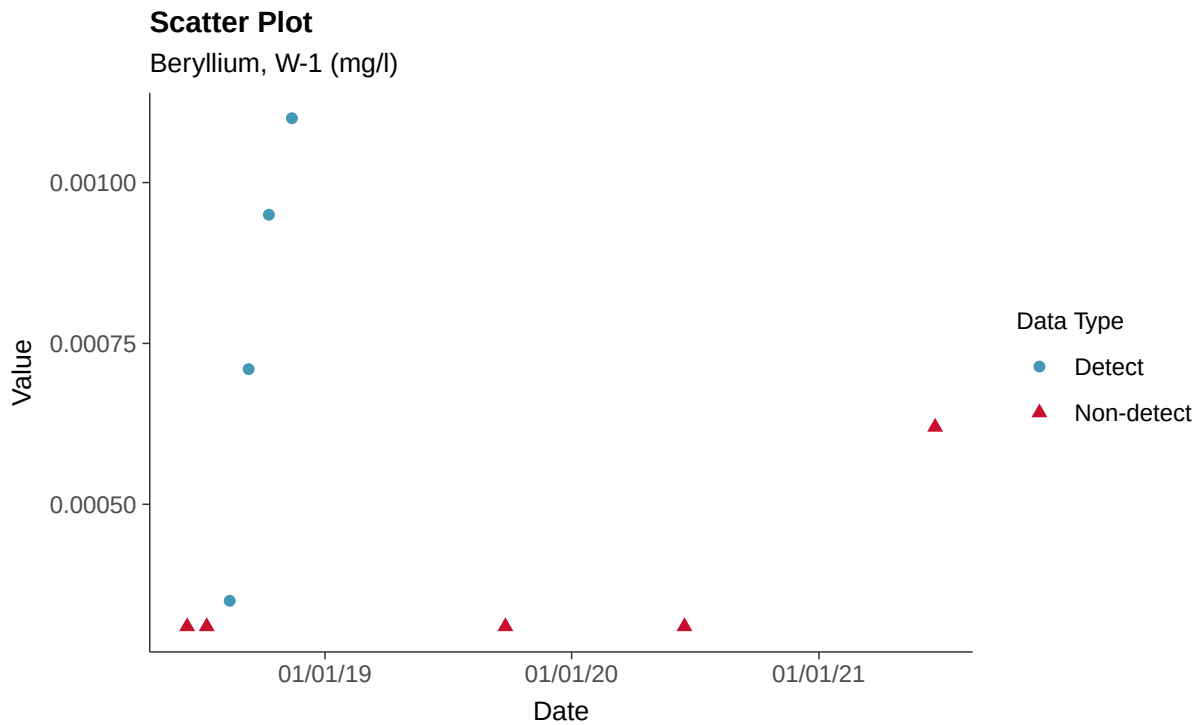
Trend Regression: Piecewise Linear-Linear-Linear

Barium, W-1 (mg/l)



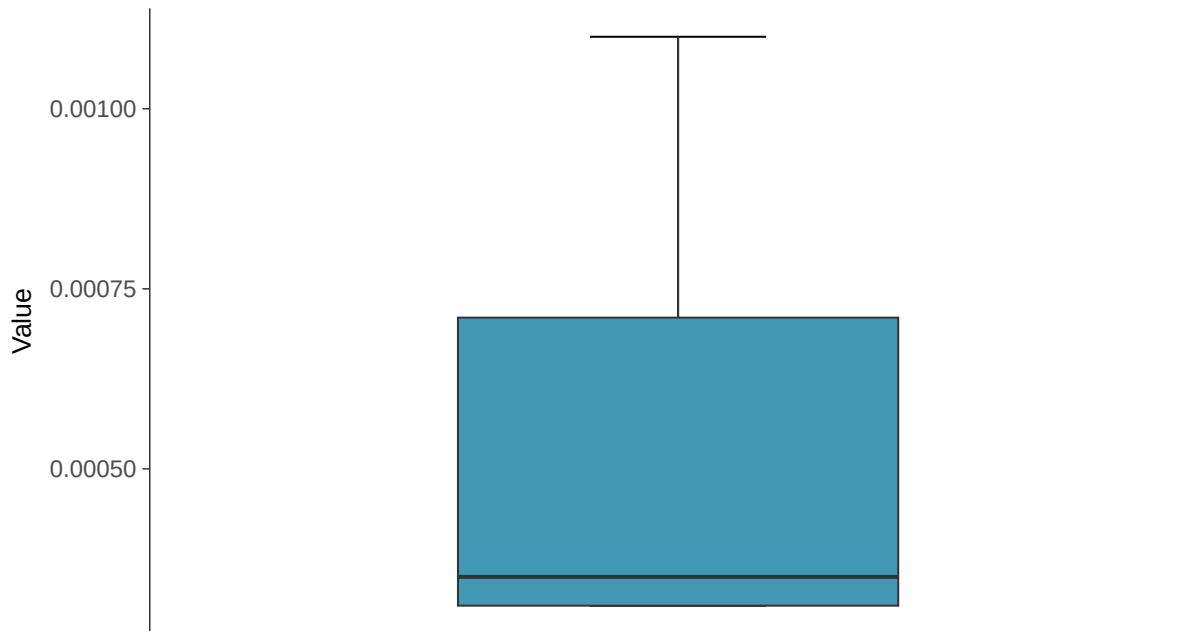
Appendix IV: Beryllium, W-1

ID: 1_2_104



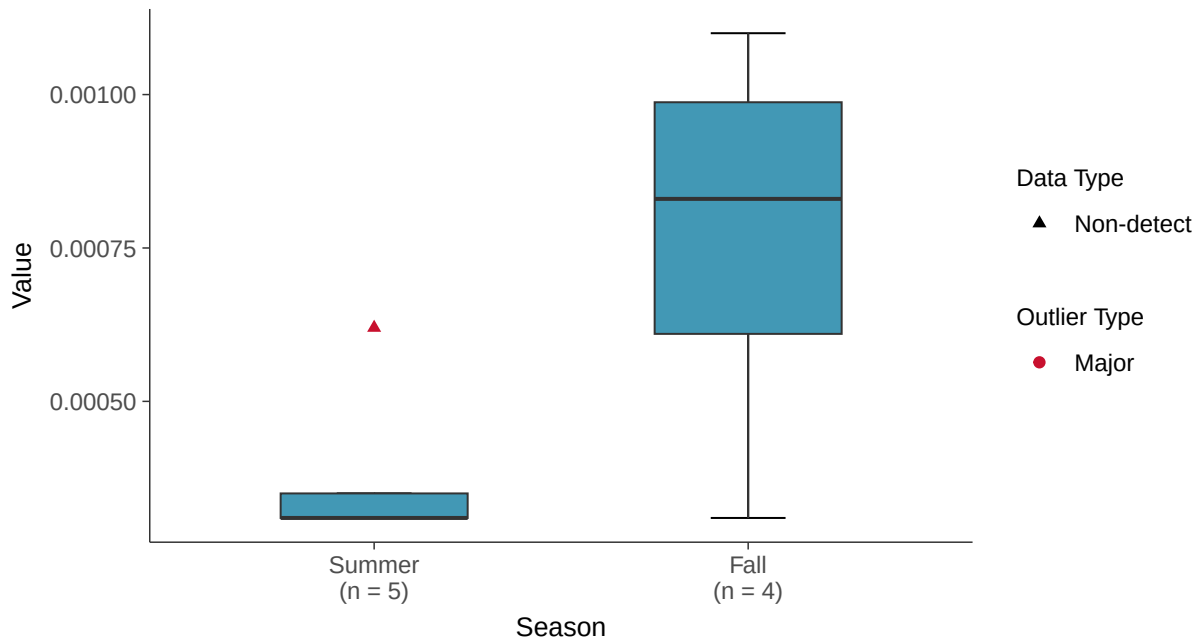
Boxplot

Beryllium, W-1 (mg/l)



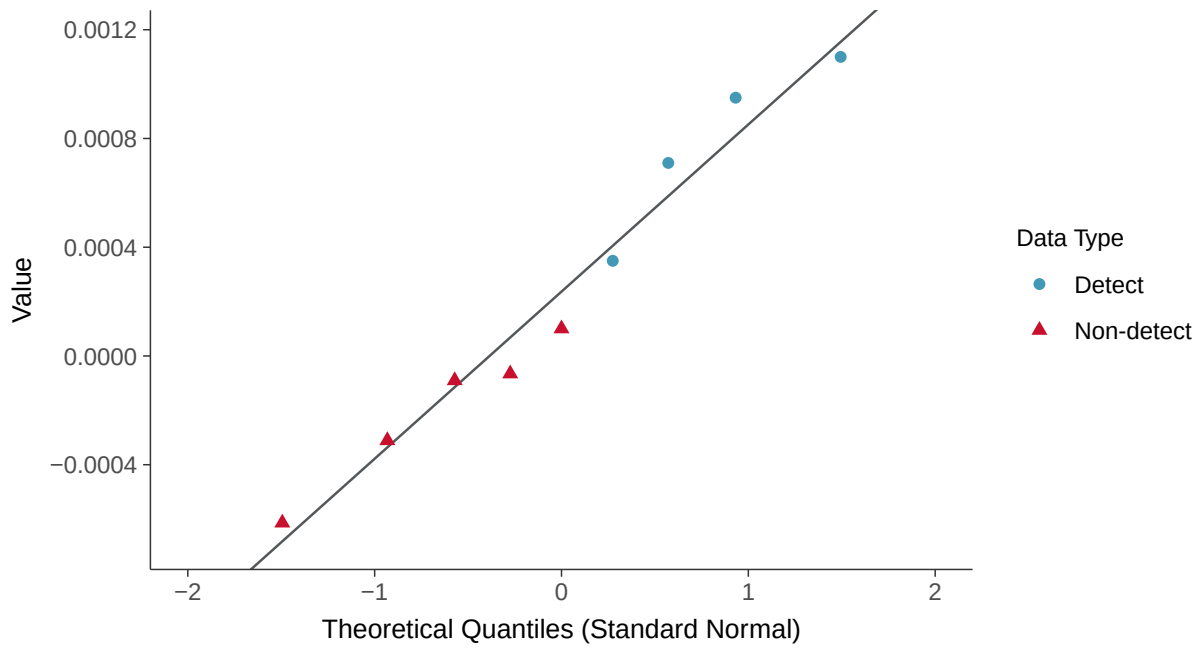
Boxplot by Season

Beryllium, W-1 (mg/l)



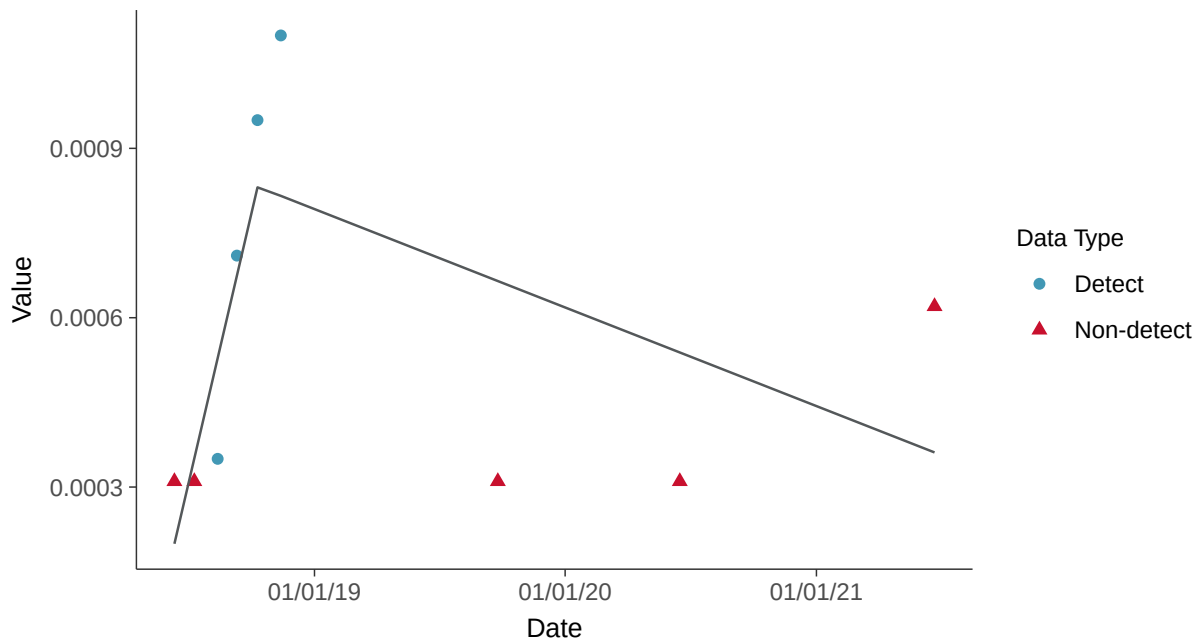
Normal Q-Q plot using ROS Imputed Estimates

Beryllium, W-1 (mg/l)



Trend Regression: Piecewise Linear-Linear

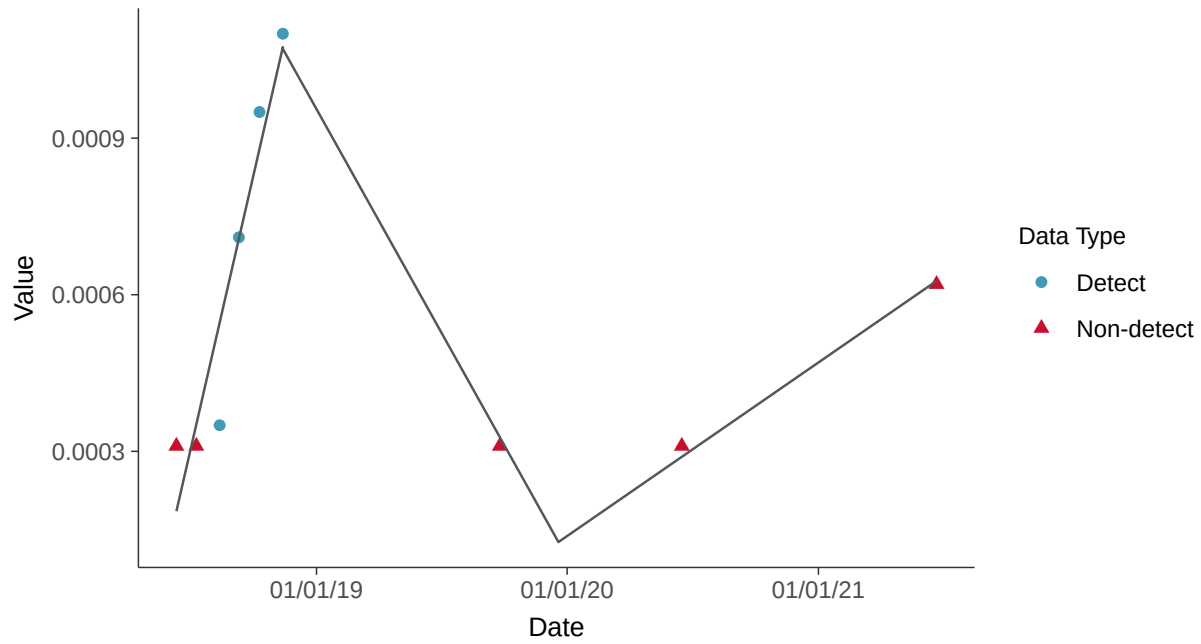
Beryllium, W-1 (mg/l)





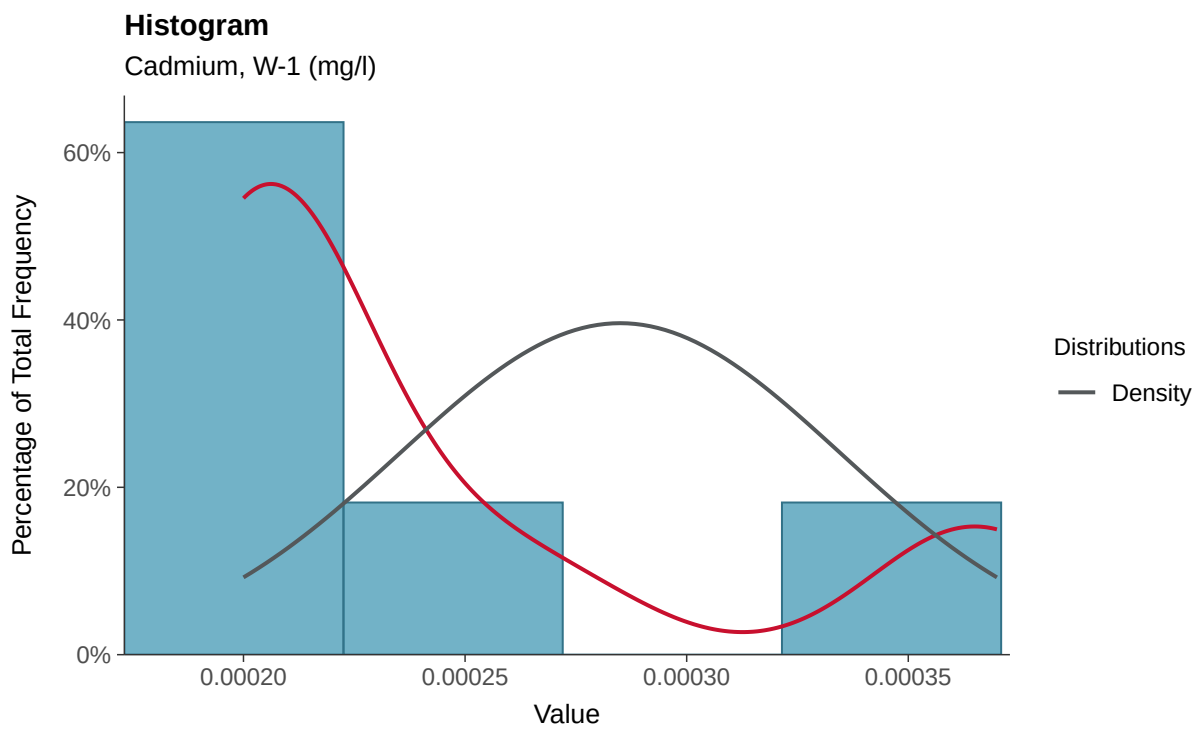
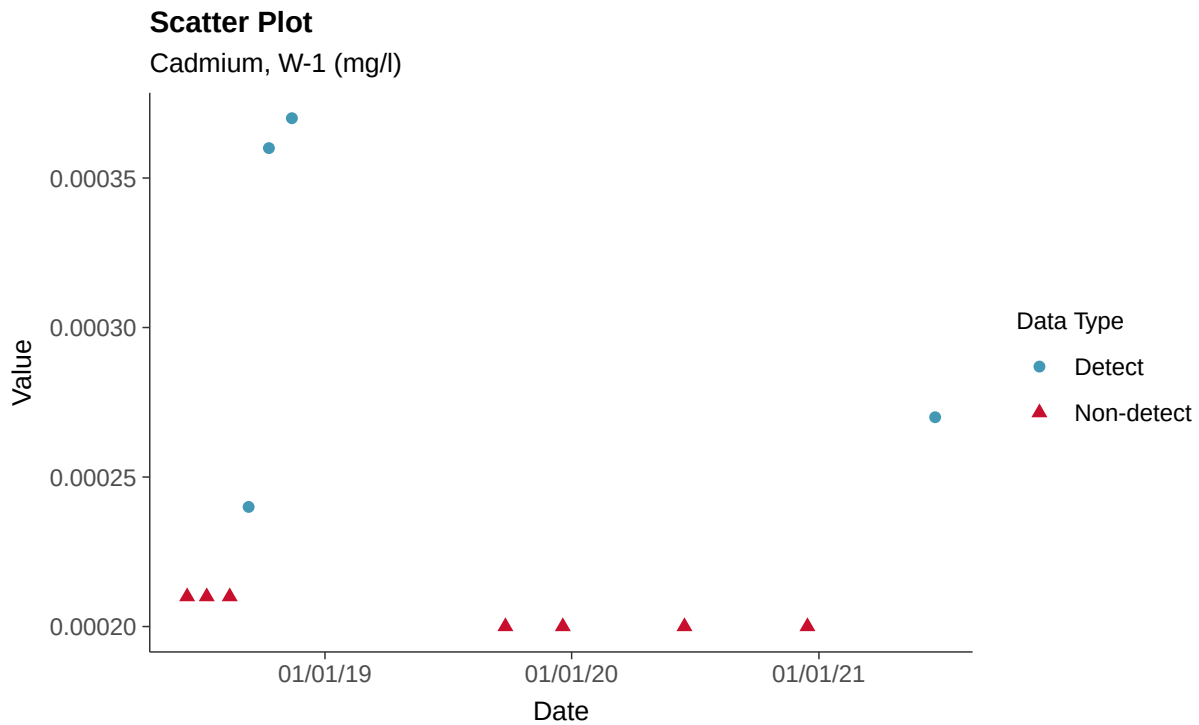
Trend Regression: Piecewise Linear-Linear-Linear

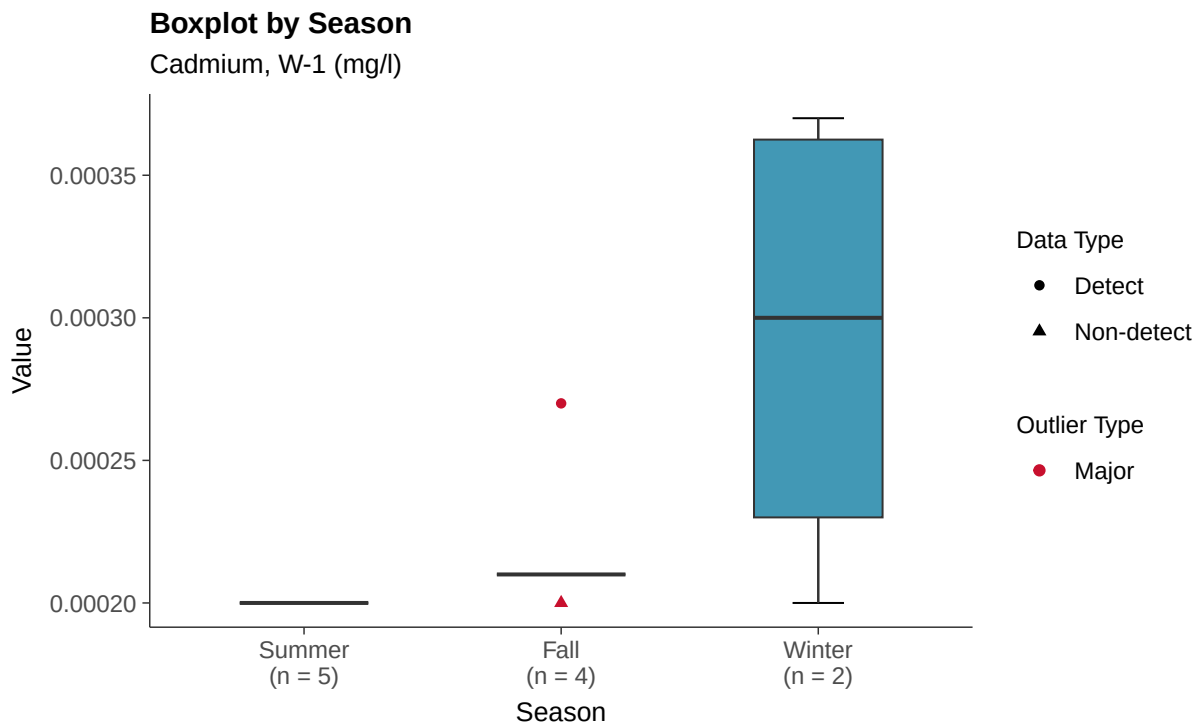
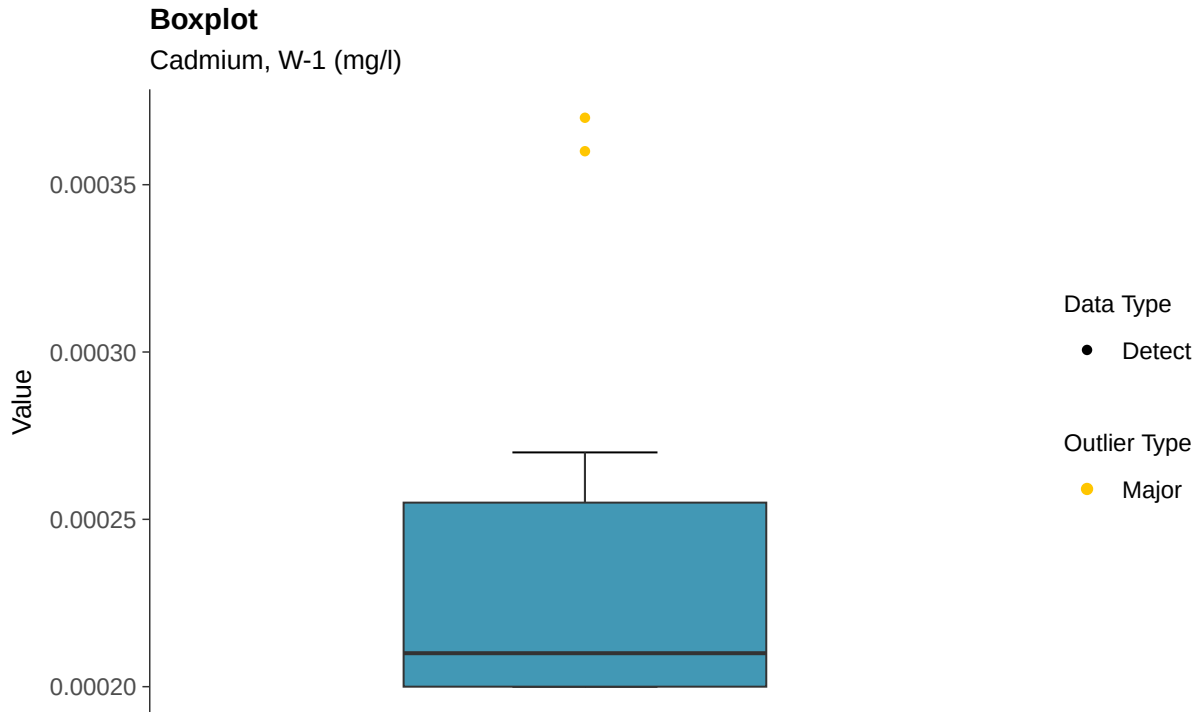
Beryllium, W-1 (mg/l)

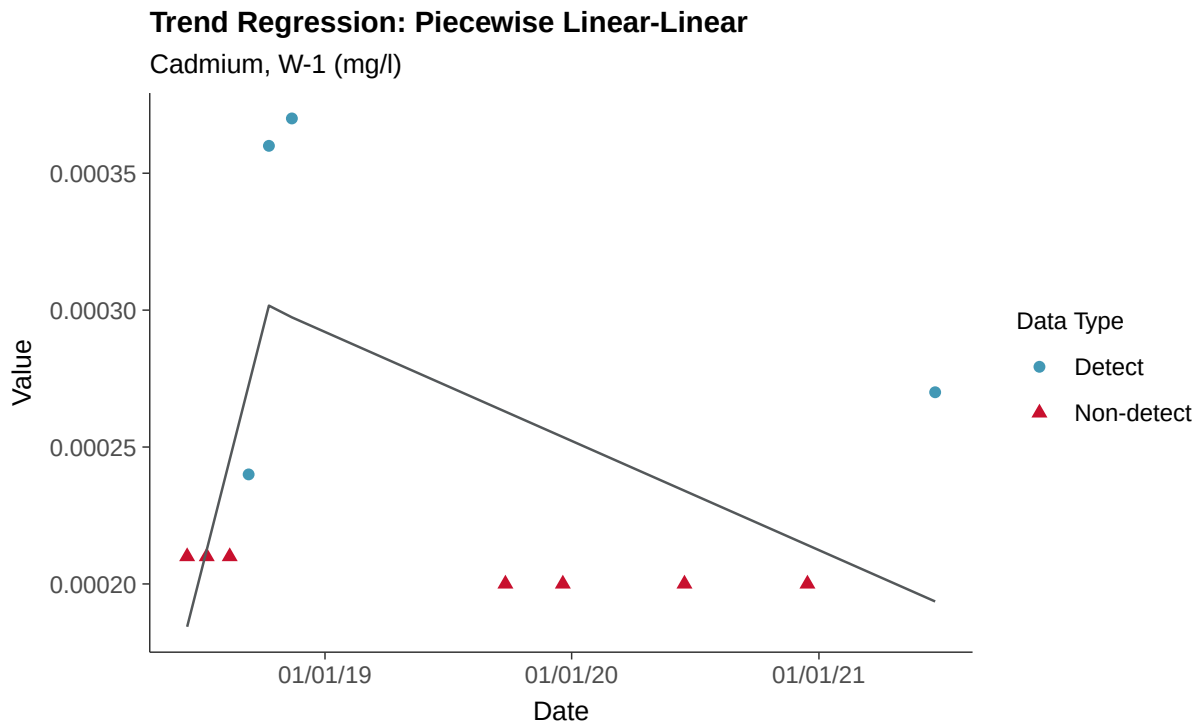
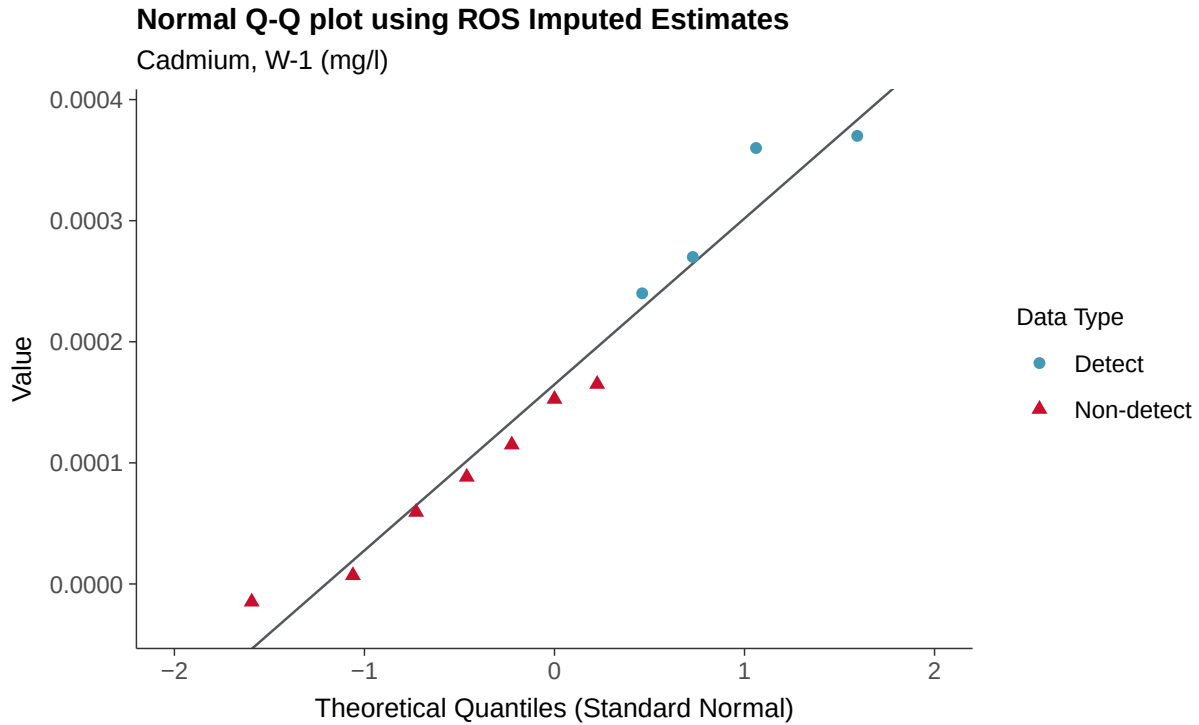


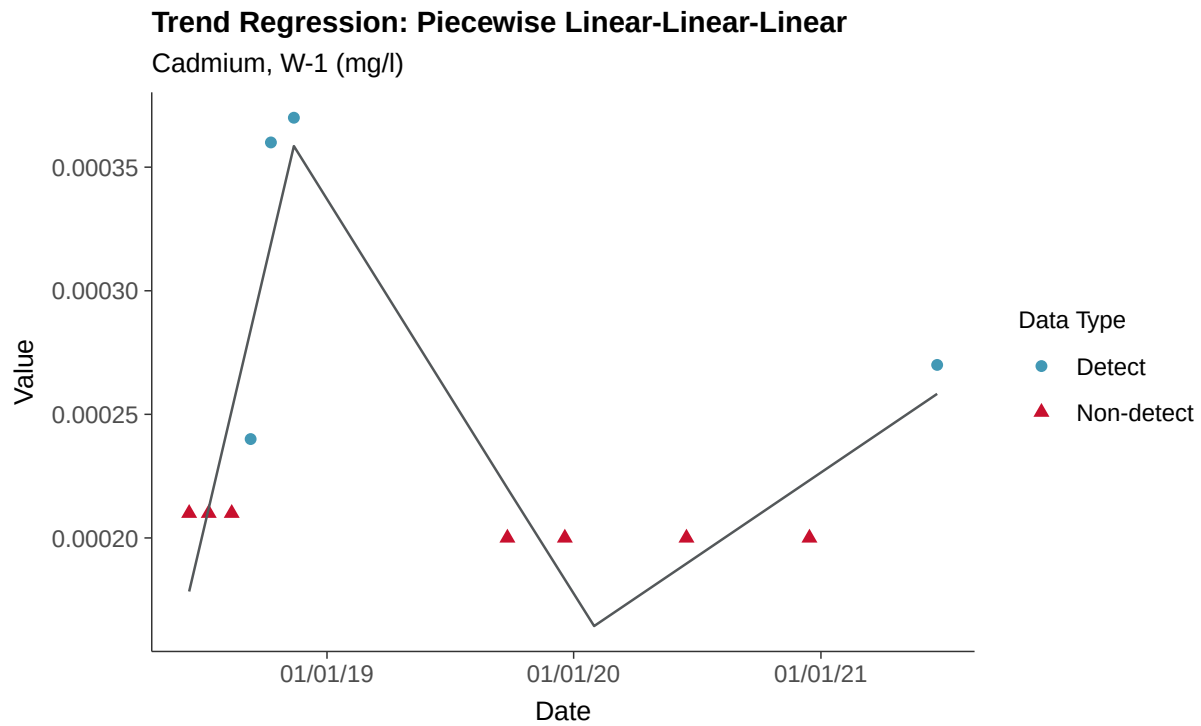
Appendix IV: Cadmium, W-1

ID: 1_2_106



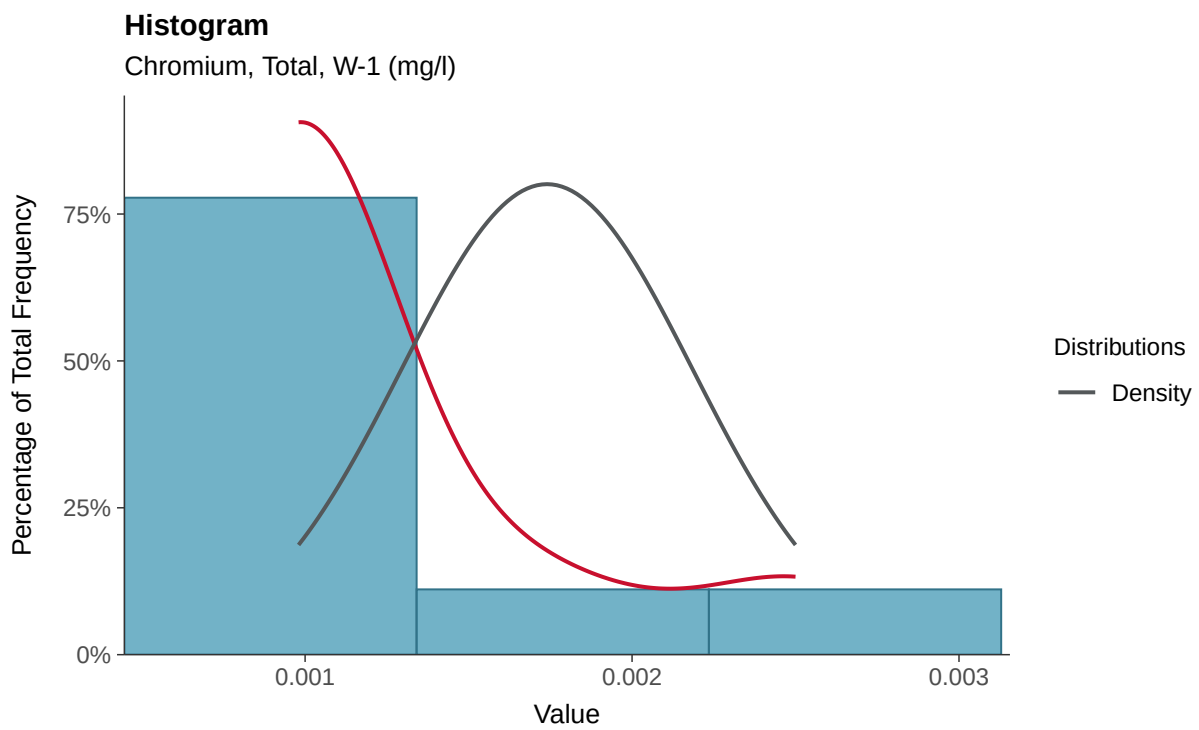
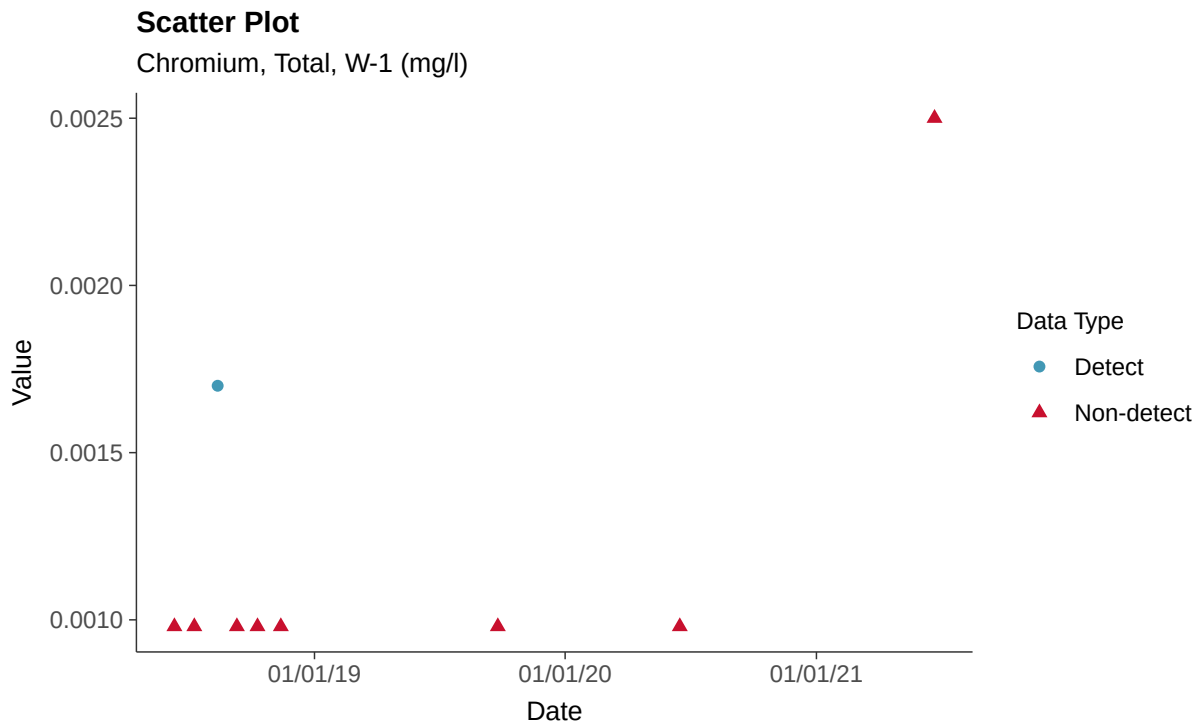


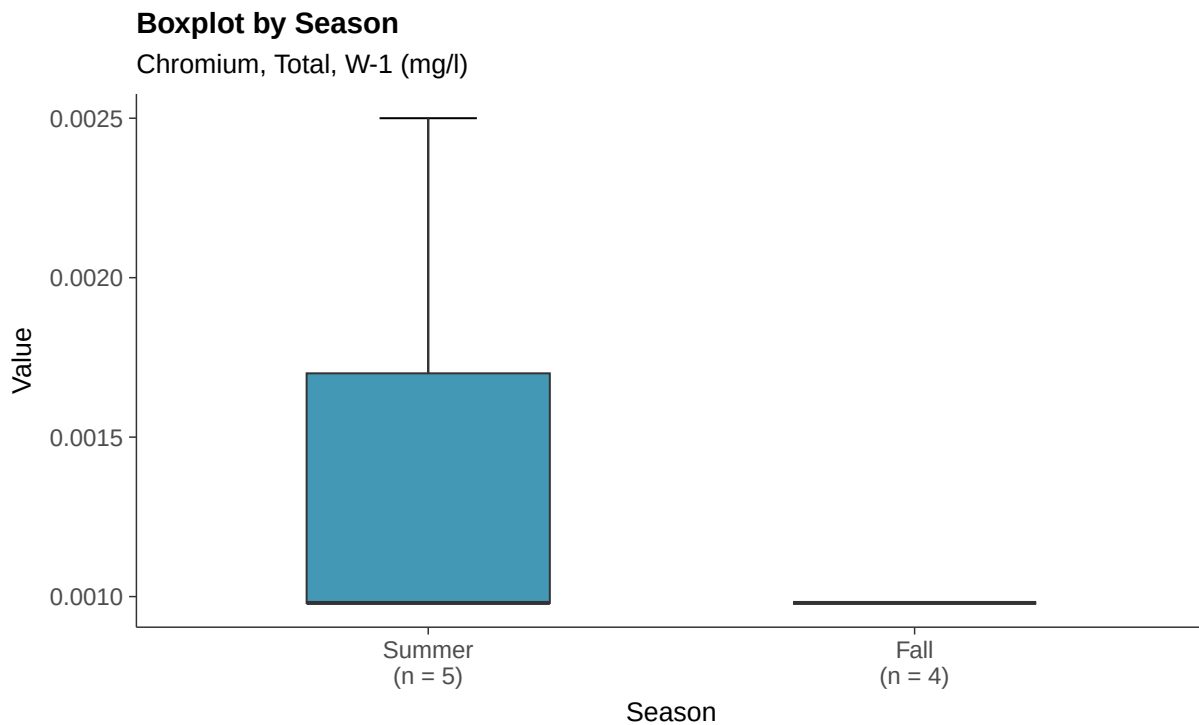
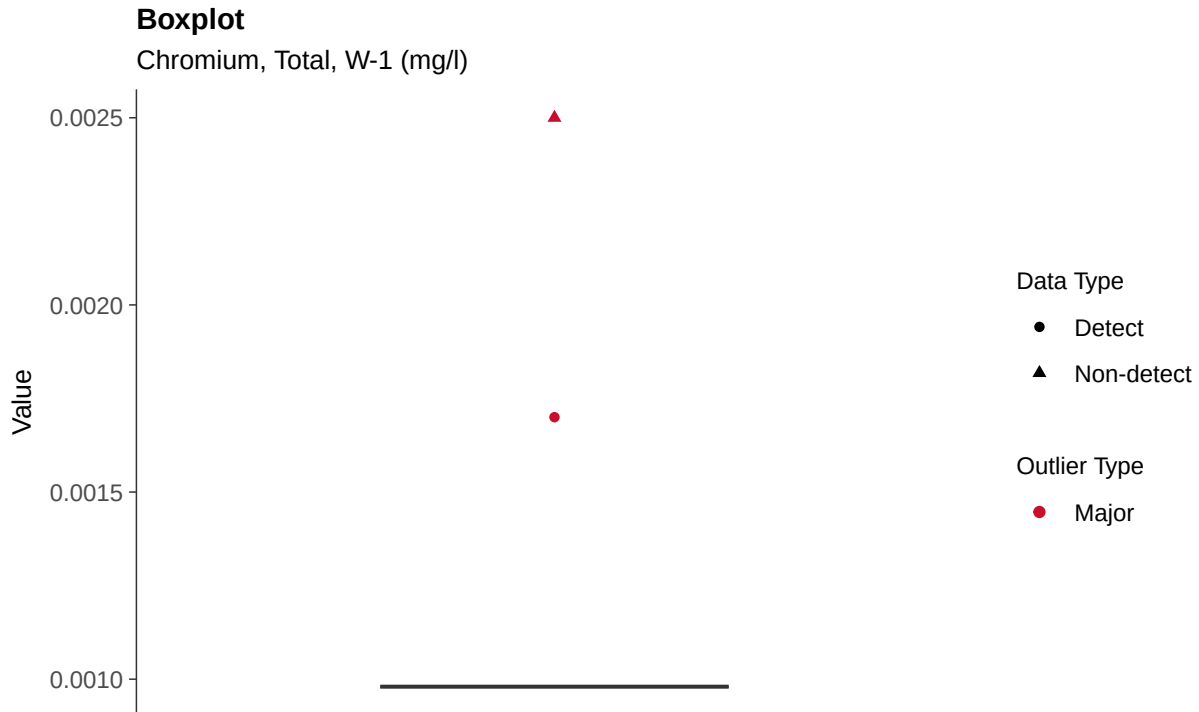




Appendix IV: Chromium, Total, W-1

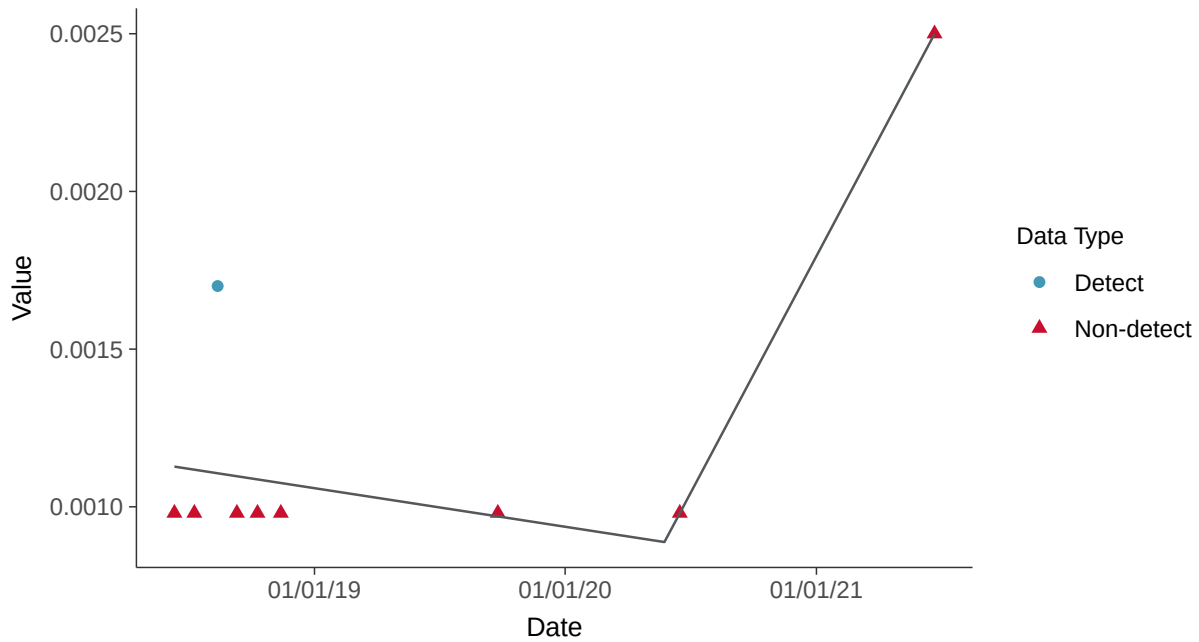
ID: 1_2_109





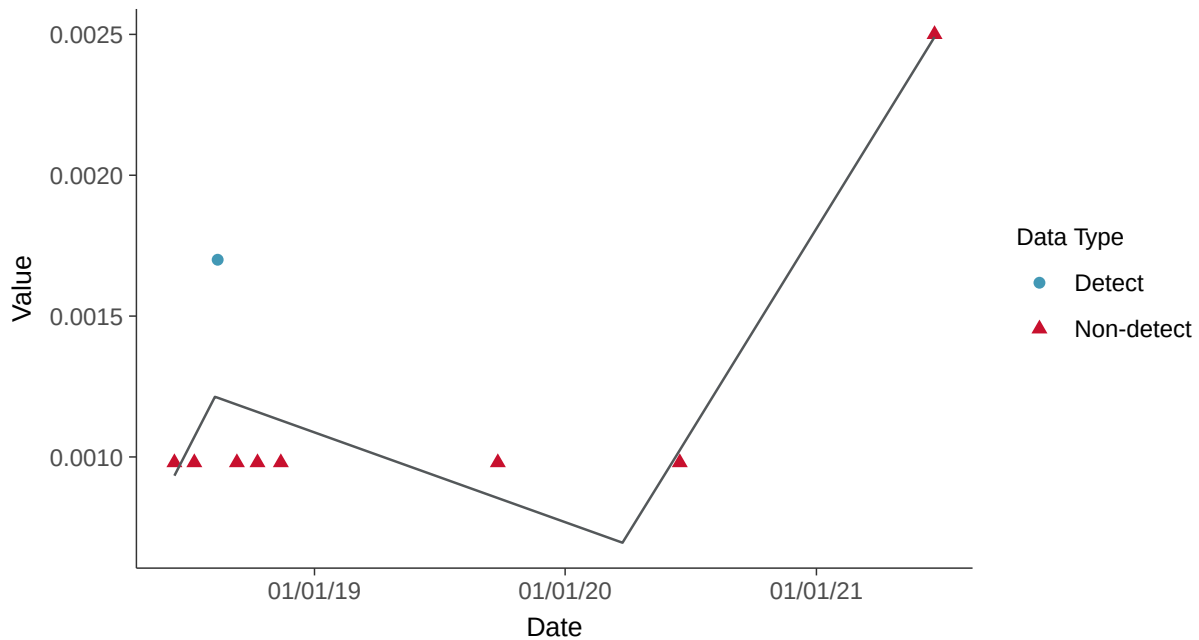
Trend Regression: Piecewise Linear-Linear

Chromium, Total, W-1 (mg/l)



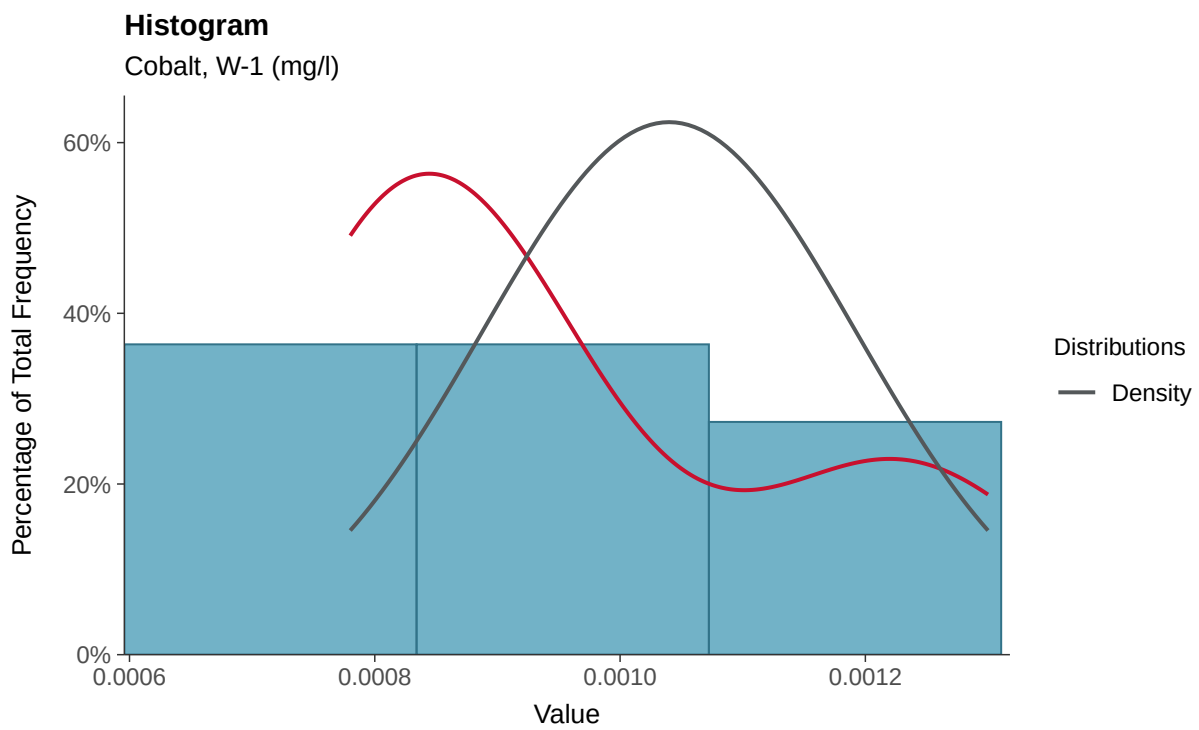
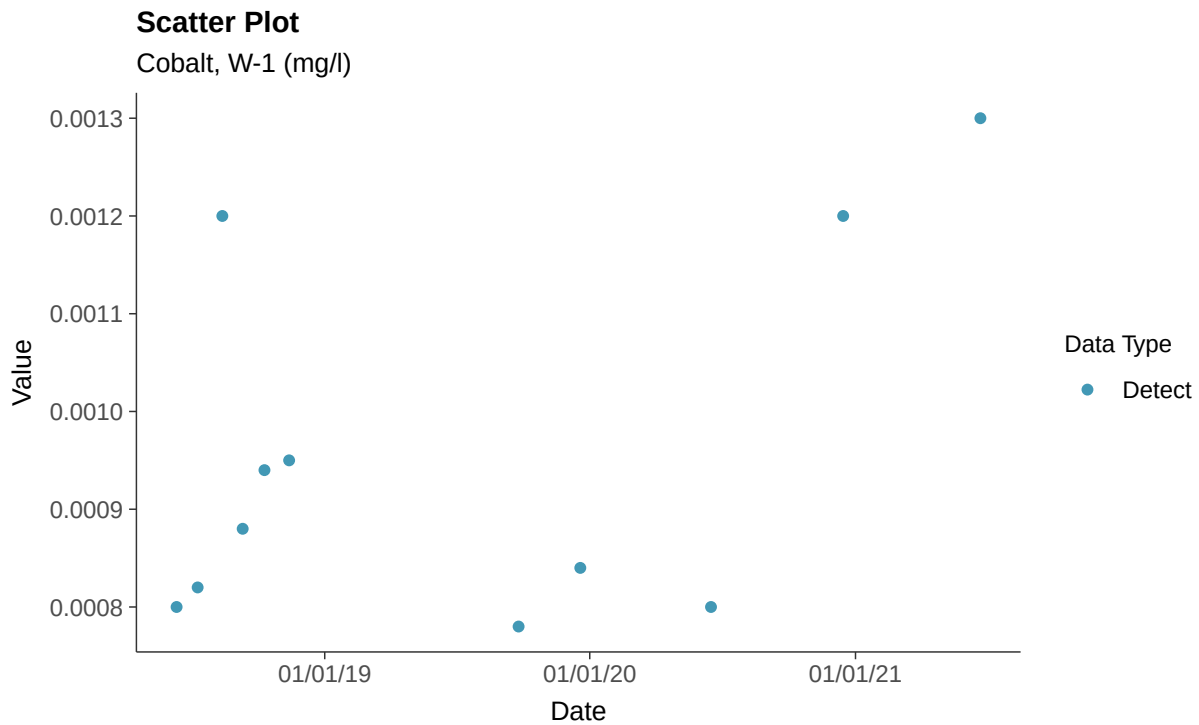
Trend Regression: Piecewise Linear-Linear-Linear

Chromium, Total, W-1 (mg/l)



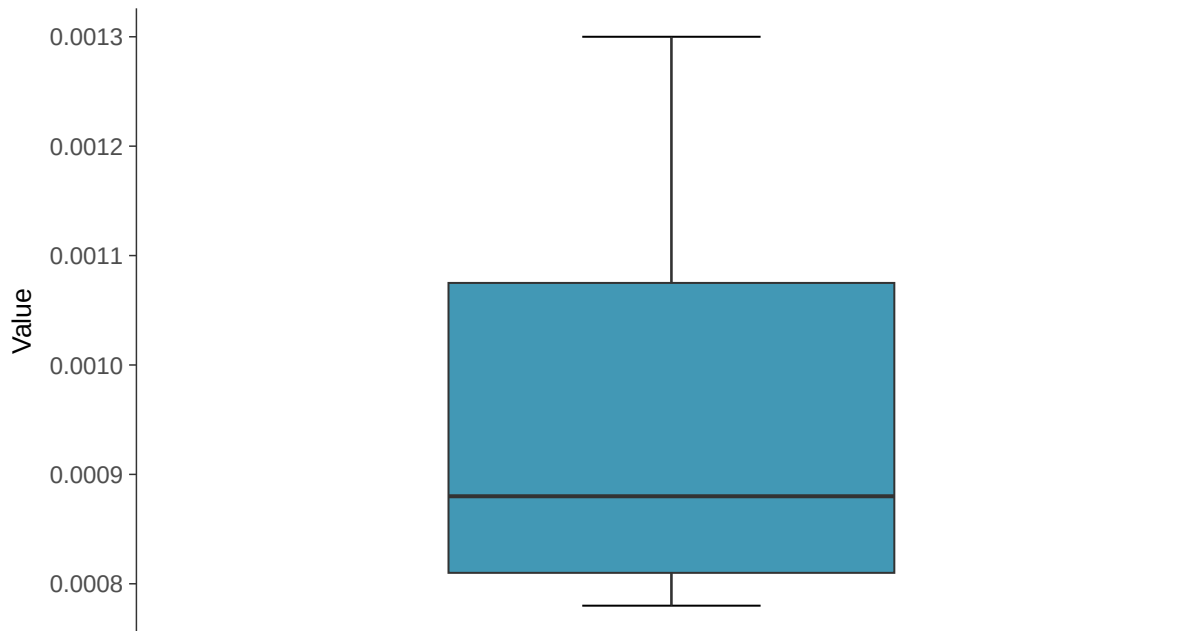
Appendix IV: Cobalt, W-1

ID: 1_2_110



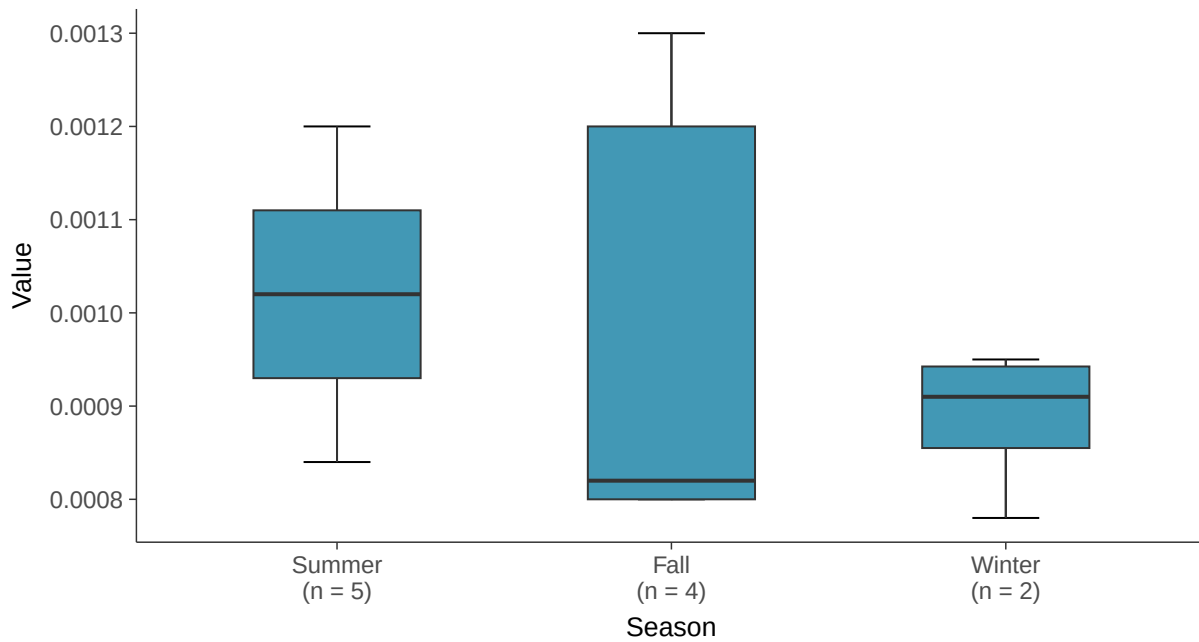
Boxplot

Cobalt, W-1 (mg/l)

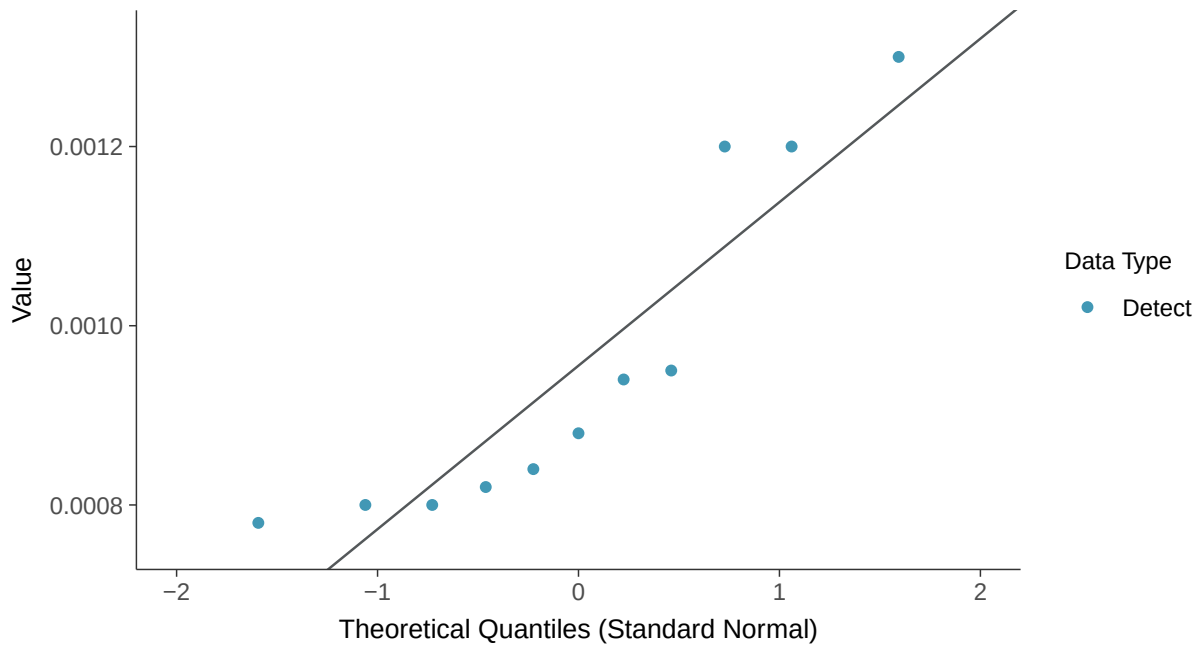


Boxplot by Season

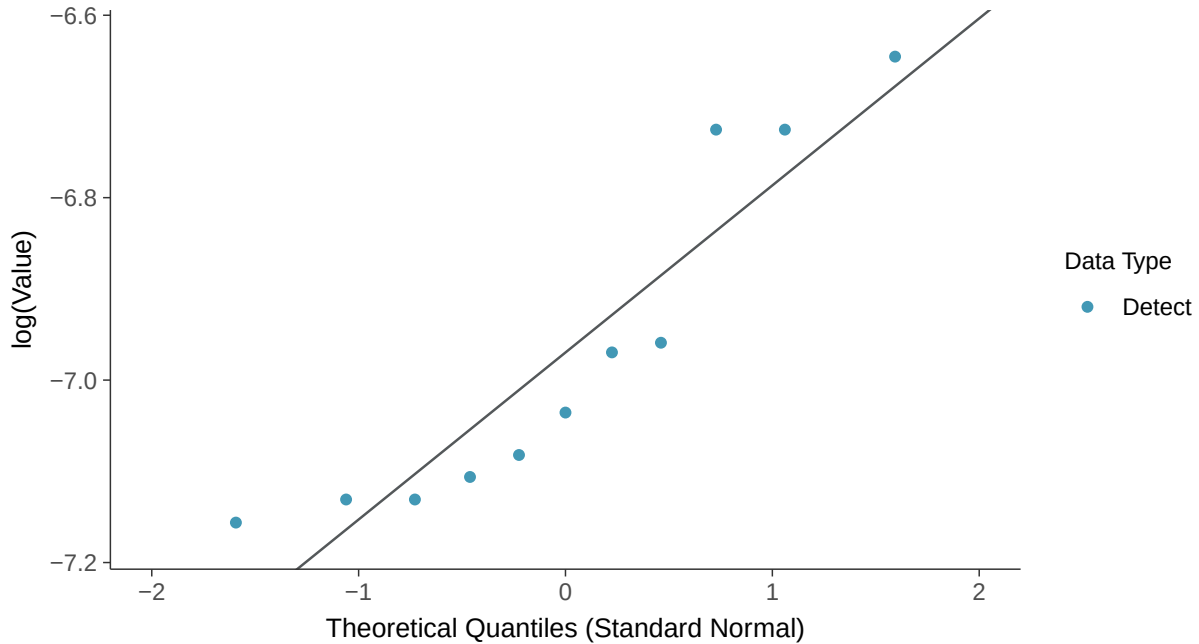
Cobalt, W-1 (mg/l)

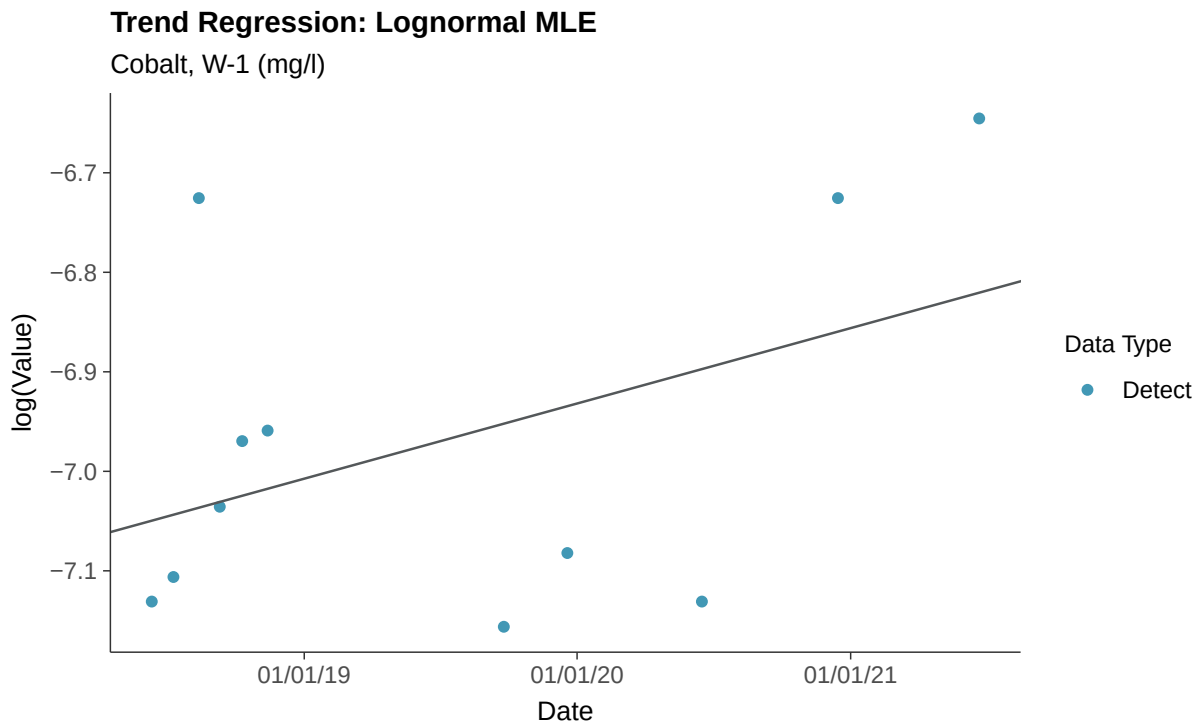
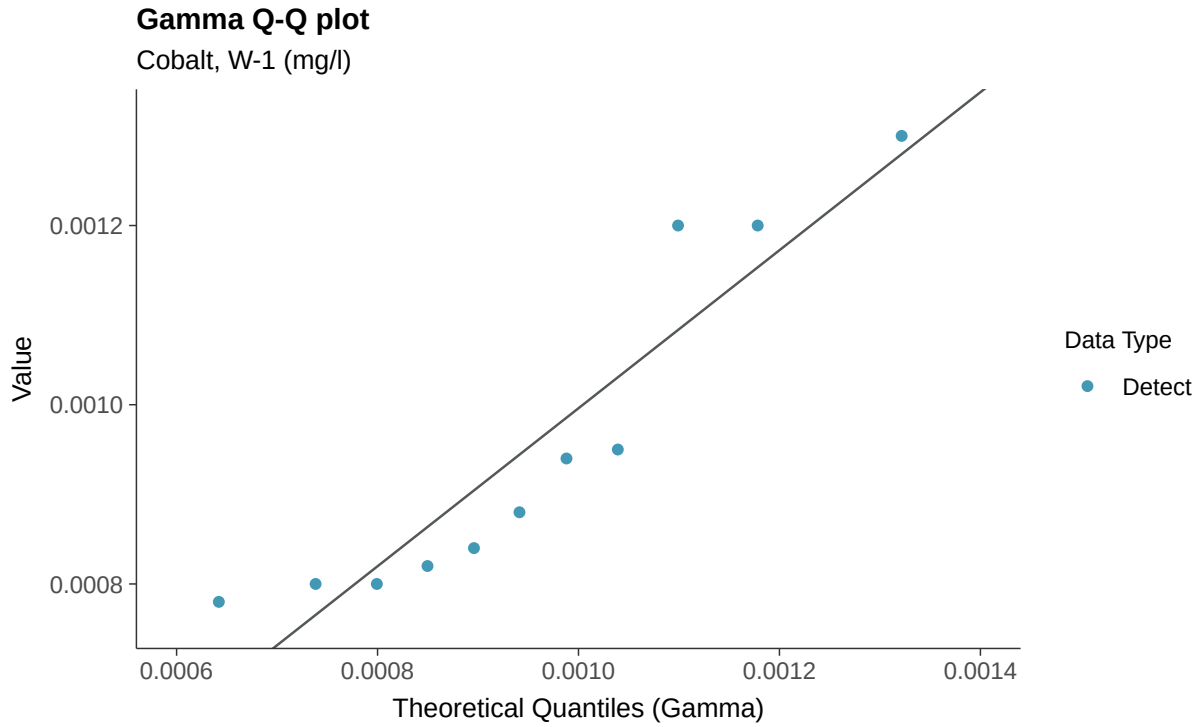


Normal Q-Q plot
Cobalt, W-1 (mg/l)



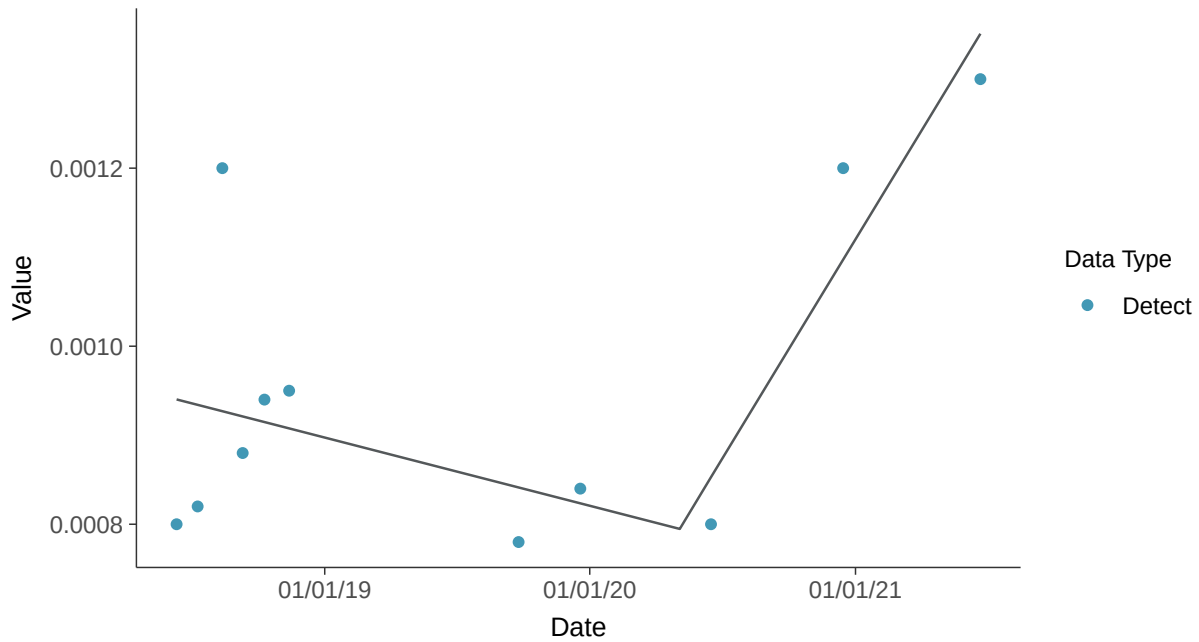
Lognormal Q-Q plot
Cobalt, W-1 (mg/l)





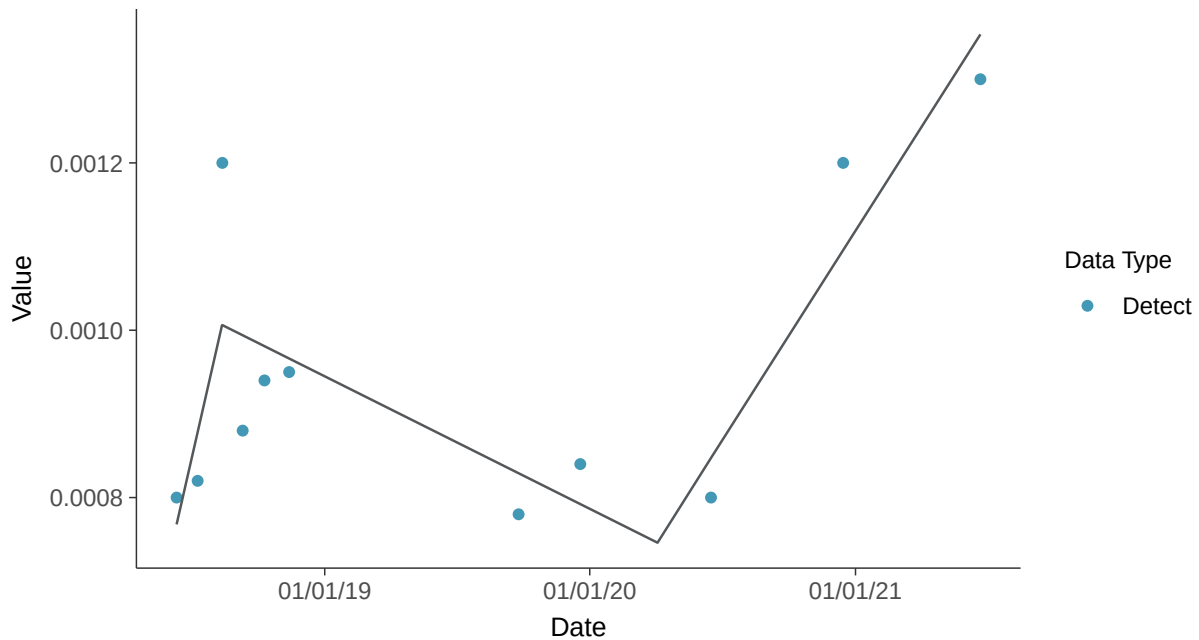
Trend Regression: Piecewise Linear-Linear

Cobalt, W-1 (mg/l)



Trend Regression: Piecewise Linear-Linear-Linear

Cobalt, W-1 (mg/l)

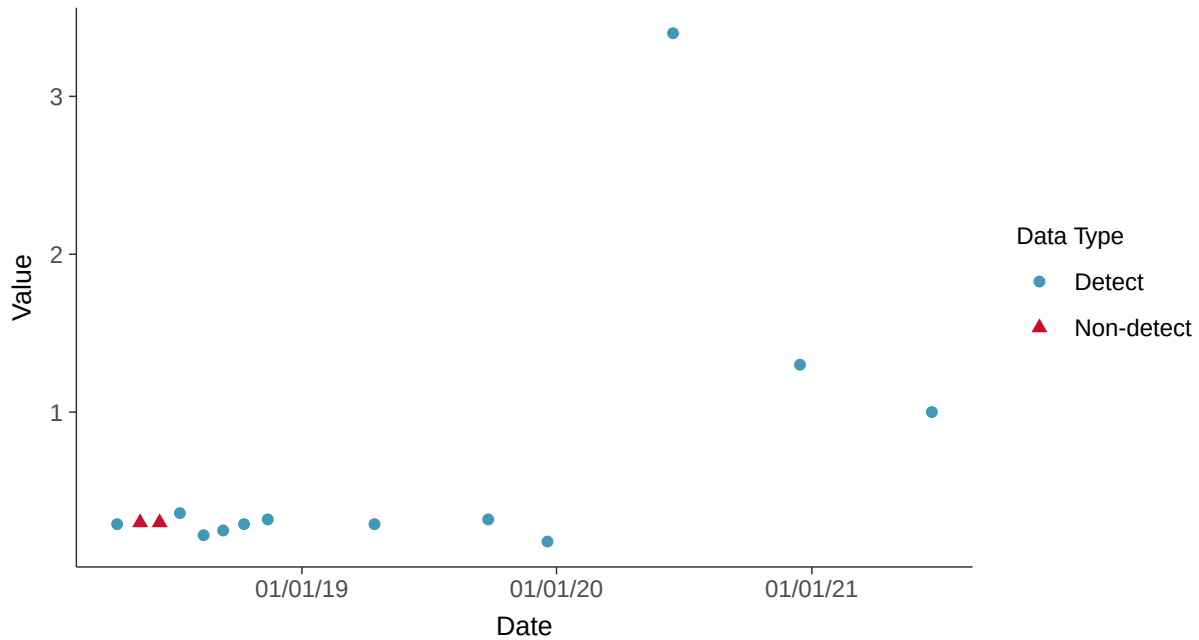


Appendix IV: Fluoride (App IV), W-1

ID: 1_2_113

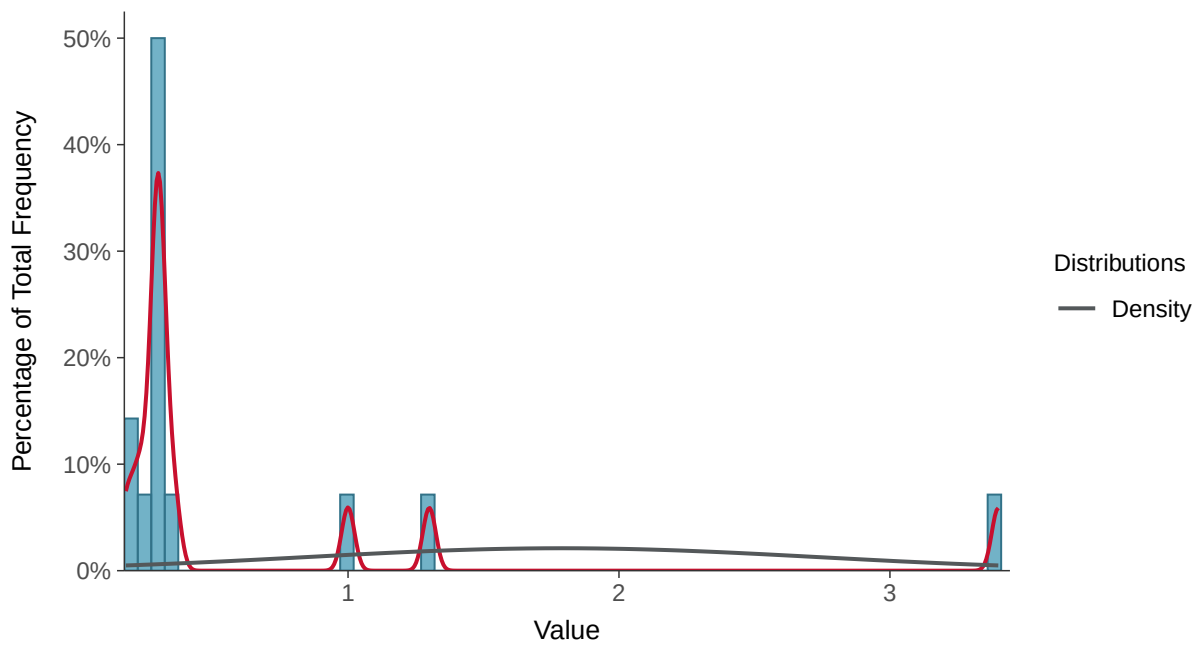
Scatter Plot

Fluoride (App IV), W-1 (mg/l)



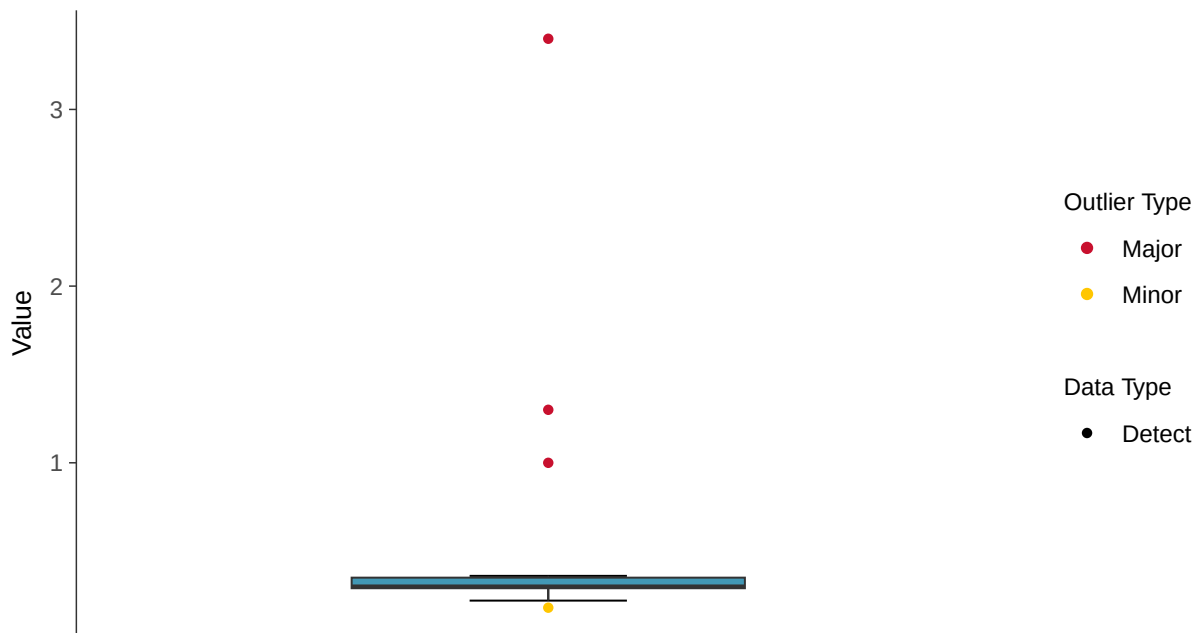
Histogram

Fluoride (App IV), W-1 (mg/l)



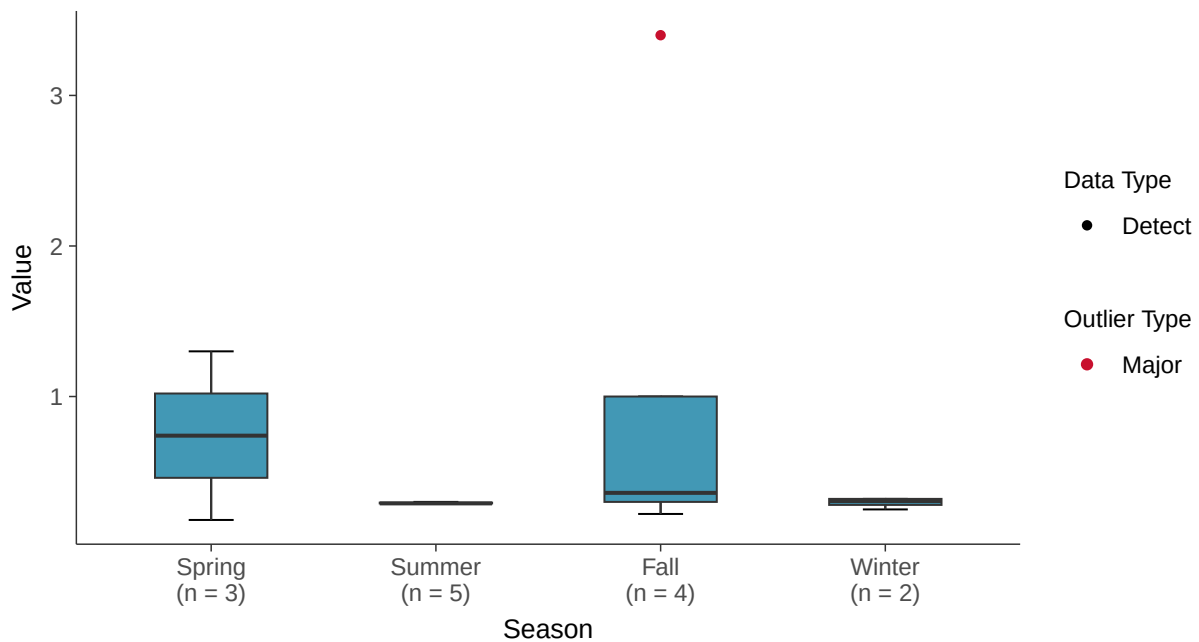
Boxplot

Fluoride (App IV), W-1 (mg/l)



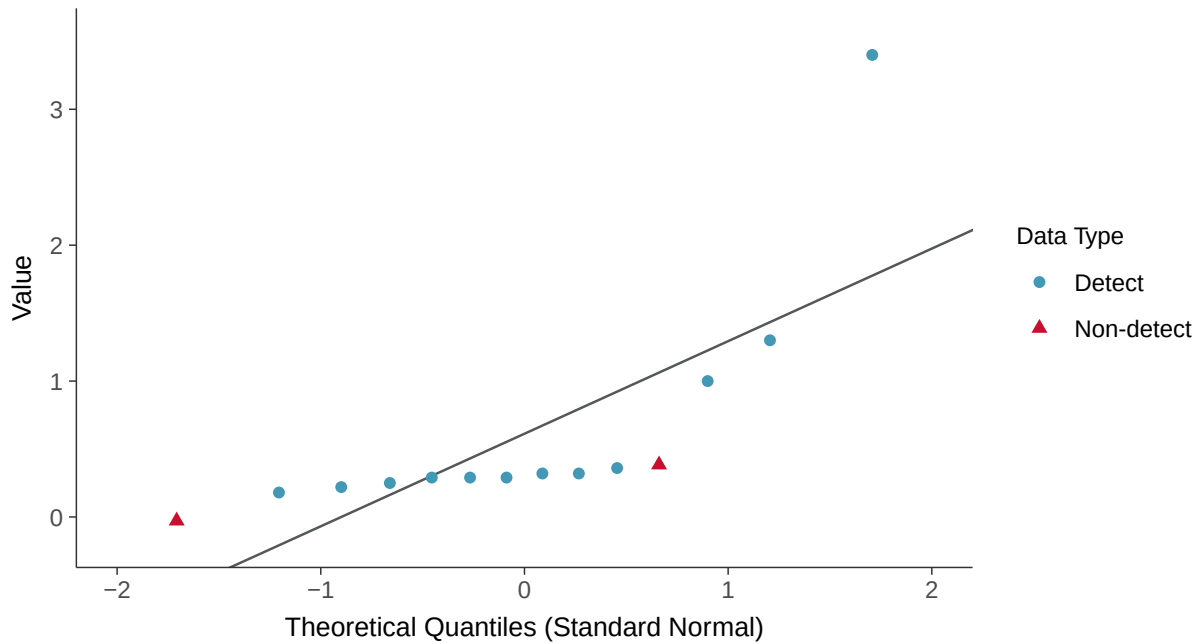
Boxplot by Season

Fluoride (App IV), W-1 (mg/l)



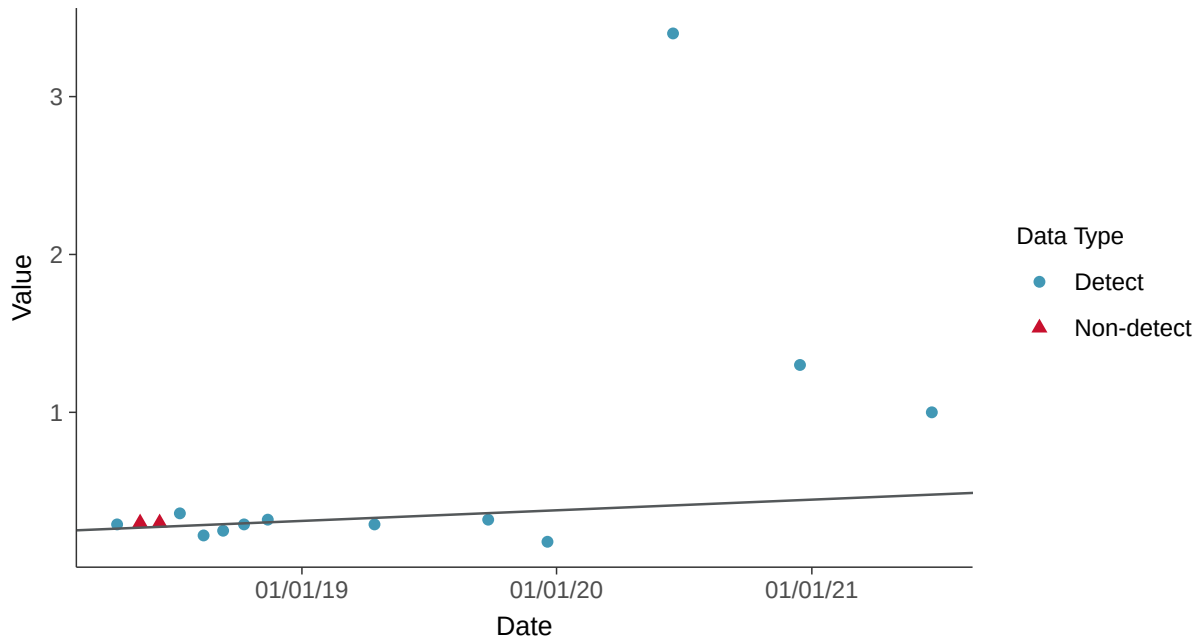
Normal Q-Q plot using ROS Imputed Estimates

Fluoride (App IV), W-1 (mg/l)



Trend Regression: Mann-Kendall/Theil-Sen Estimate

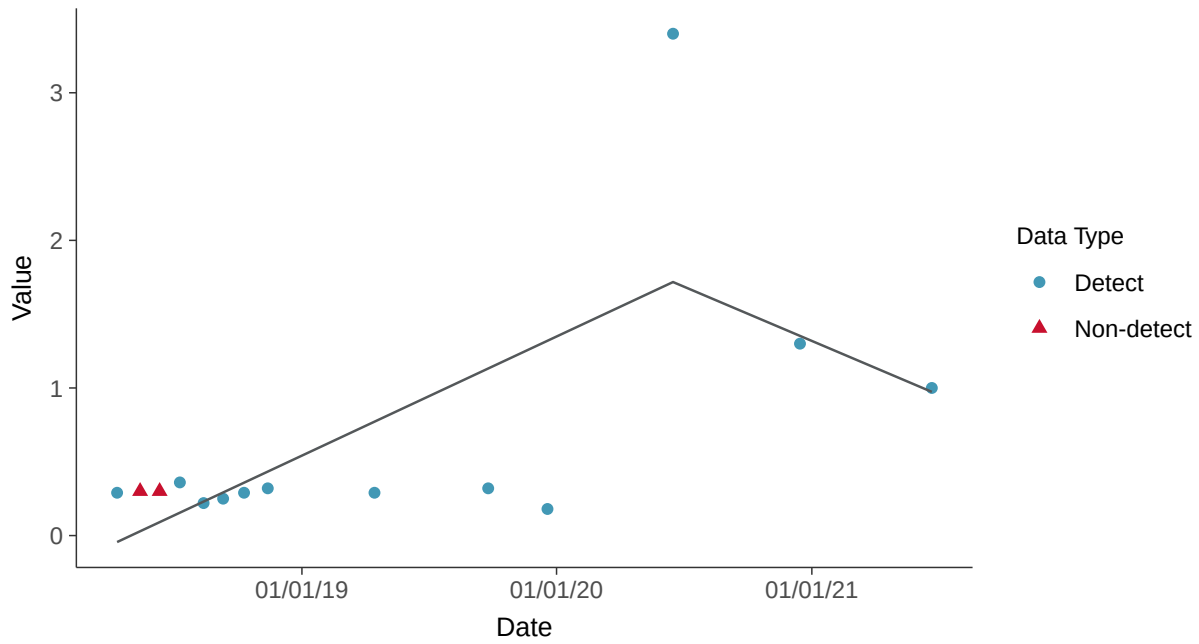
Fluoride (App IV), W-1 (mg/l)





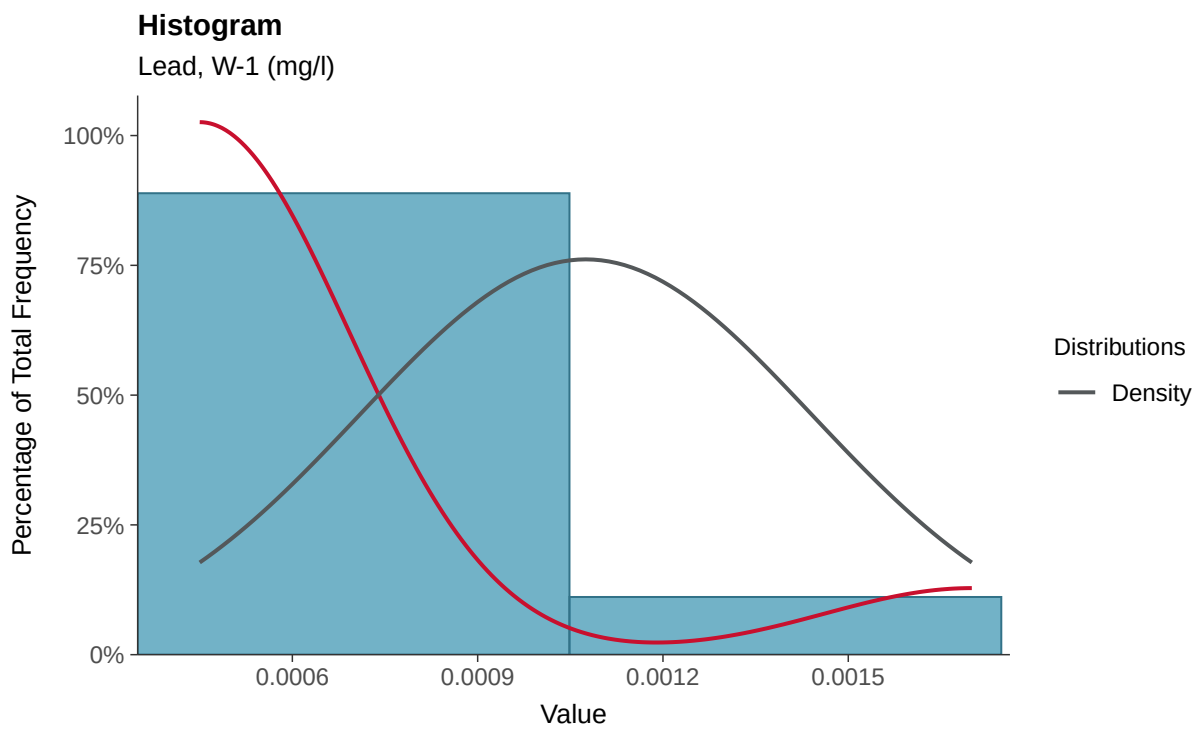
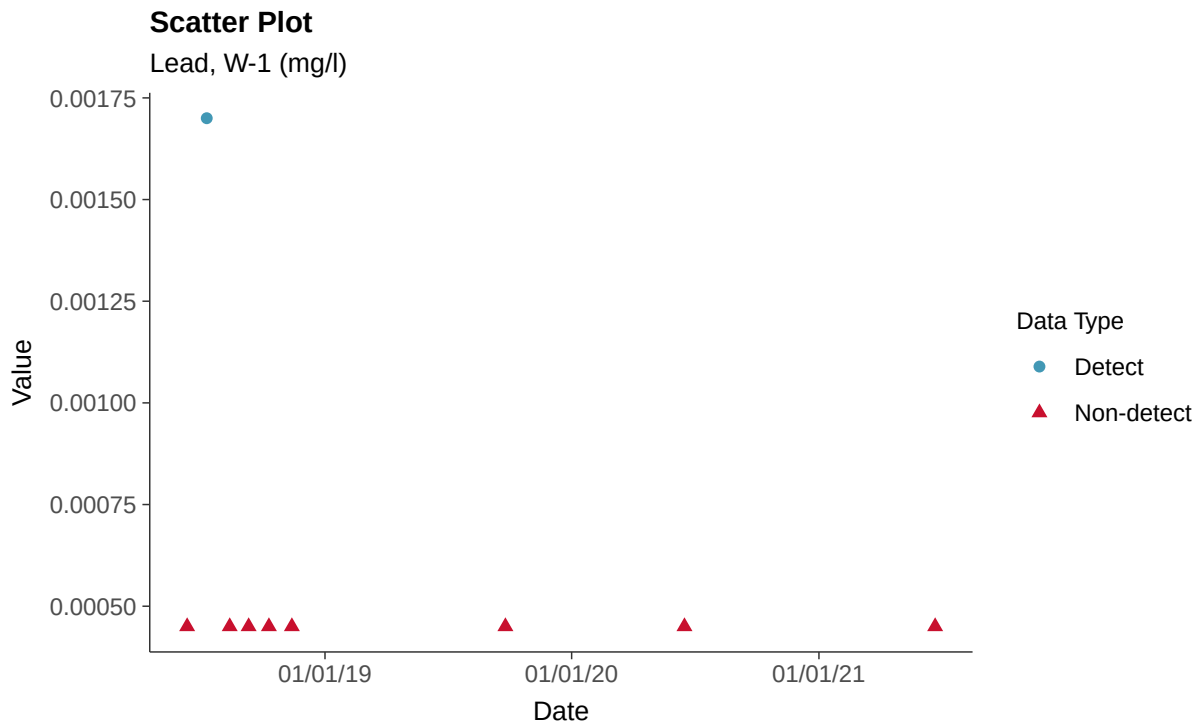
Trend Regression: Piecewise Linear-Linear

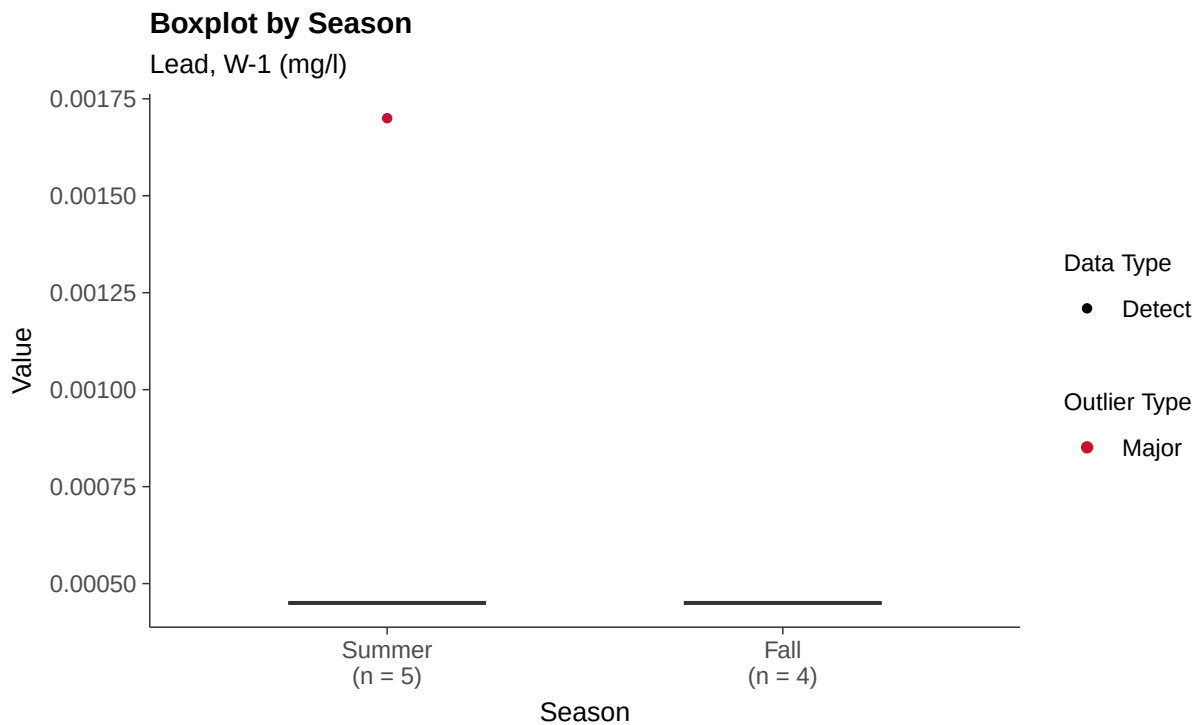
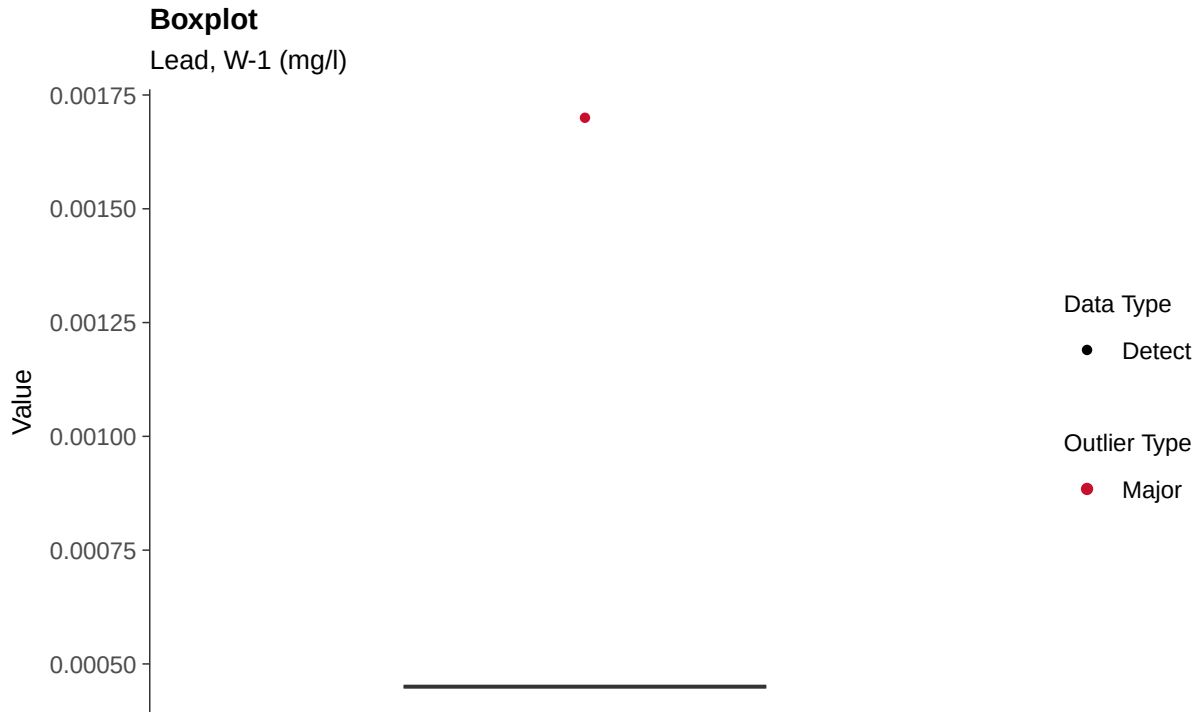
Fluoride (App IV), W-1 (mg/l)



Appendix IV: Lead, W-1

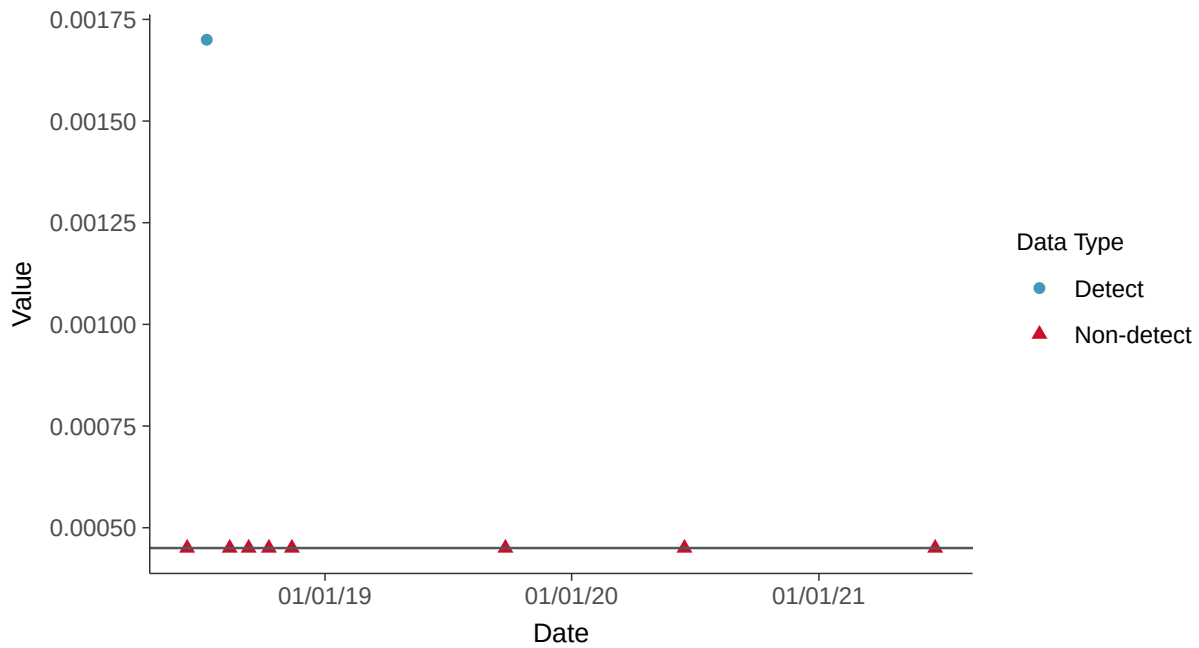
ID: 1_2_114





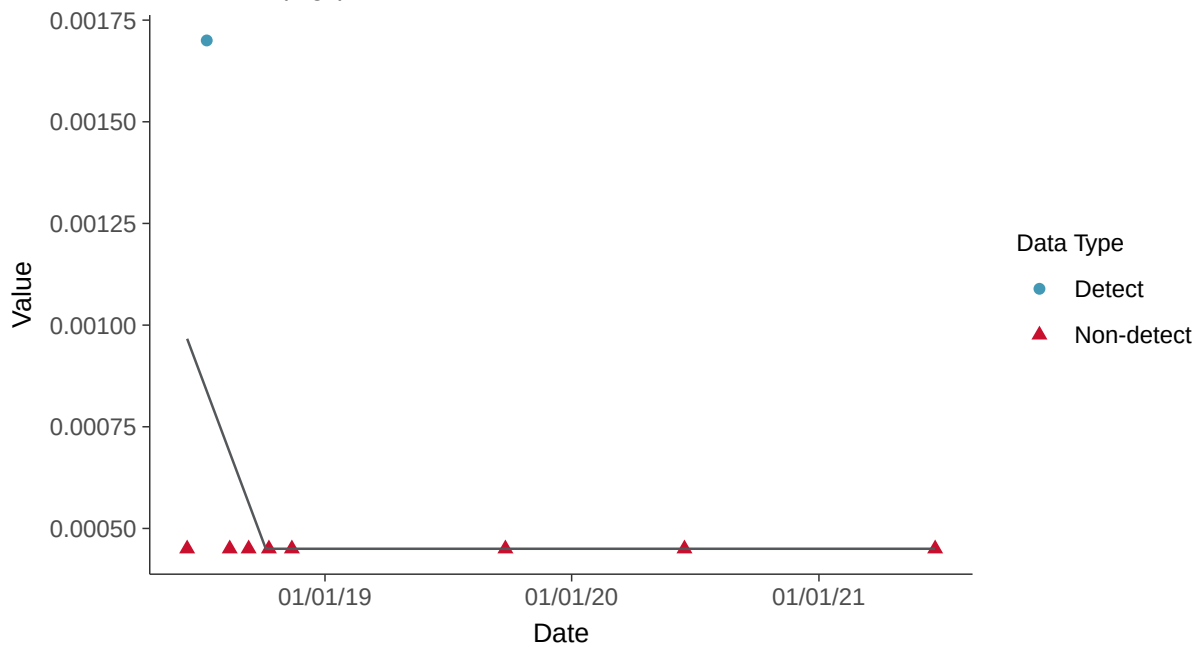
Trend Regression: Mann-Kendall/Theil-Sen Estimate

Lead, W-1 (mg/l)



Trend Regression: Piecewise Linear-Linear

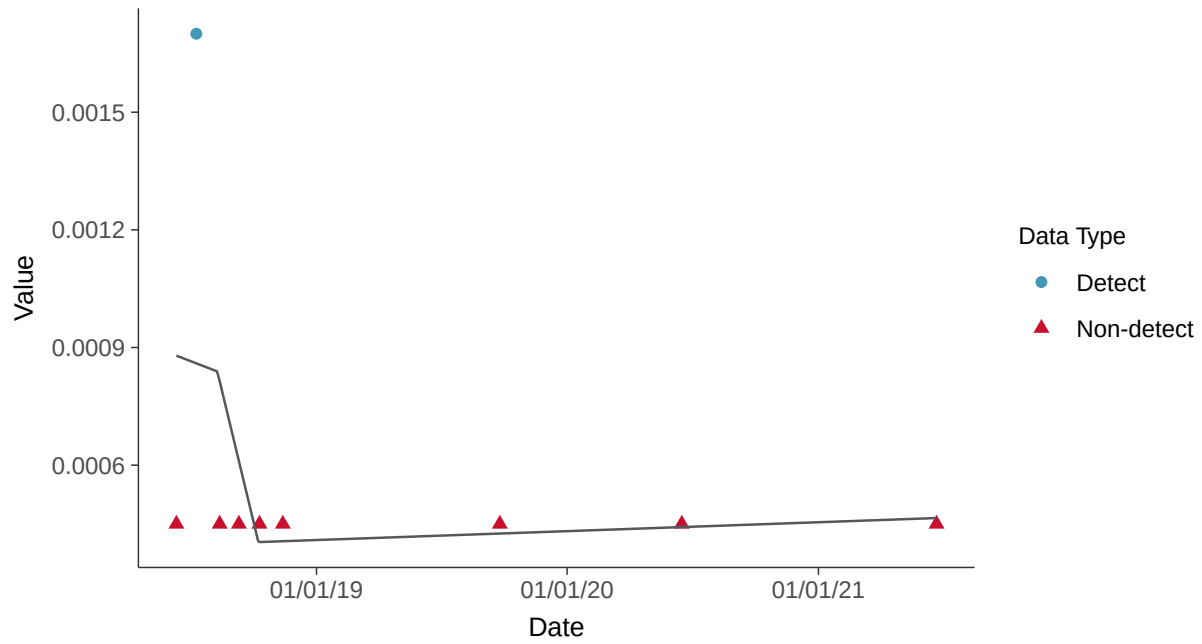
Lead, W-1 (mg/l)





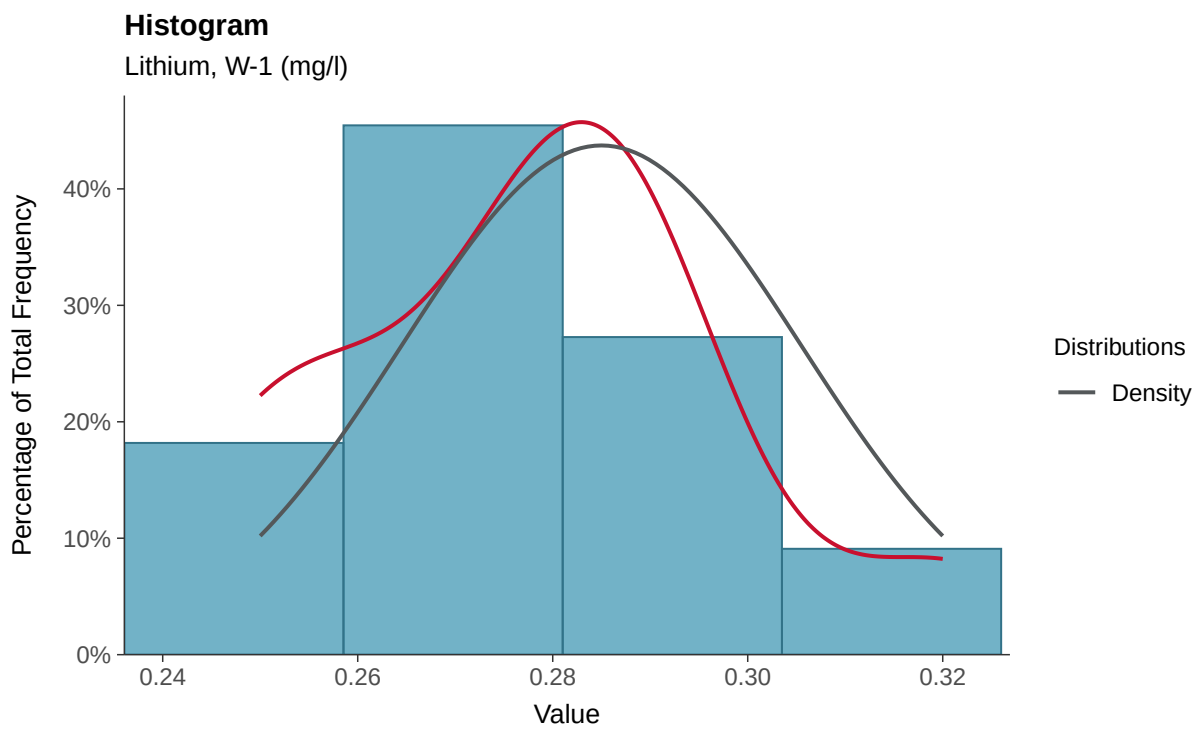
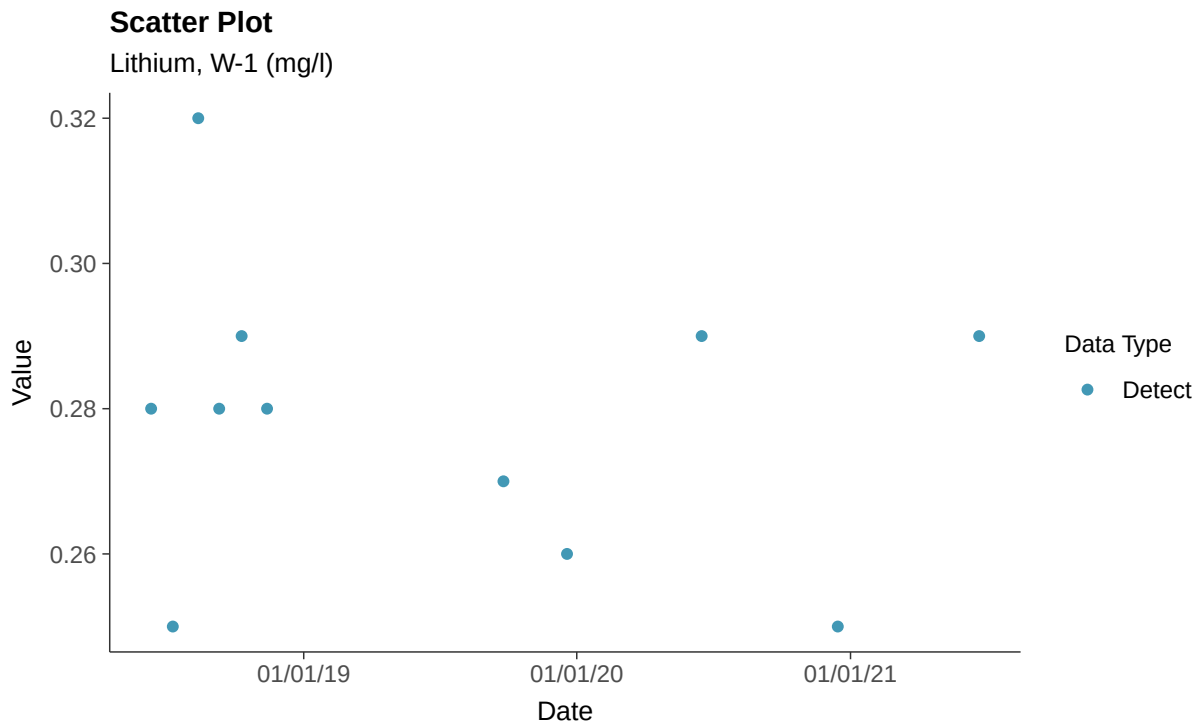
Trend Regression: Piecewise Linear-Linear-Linear

Lead, W-1 (mg/l)



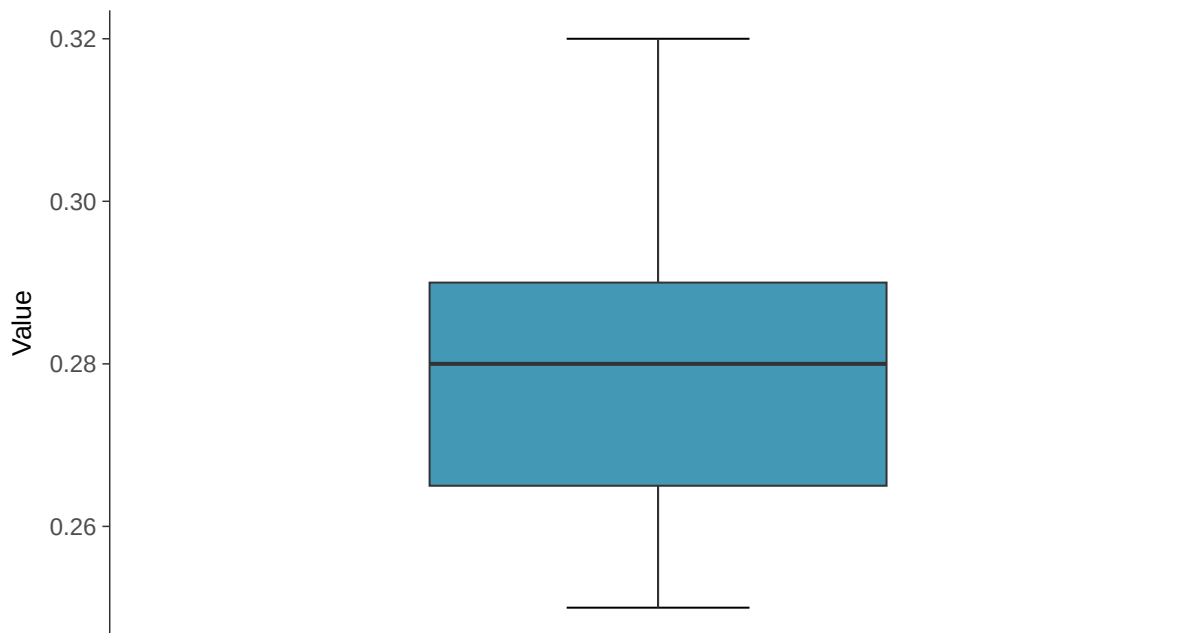
Appendix IV: Lithium, W-1

ID: 1_2_115



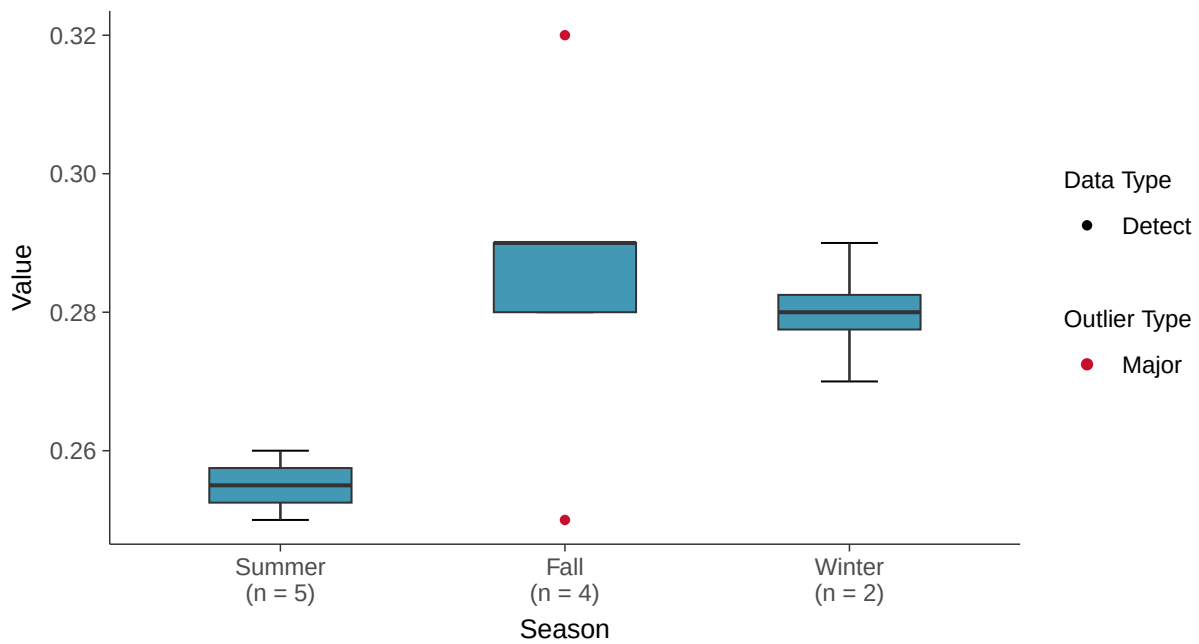
Boxplot

Lithium, W-1 (mg/l)

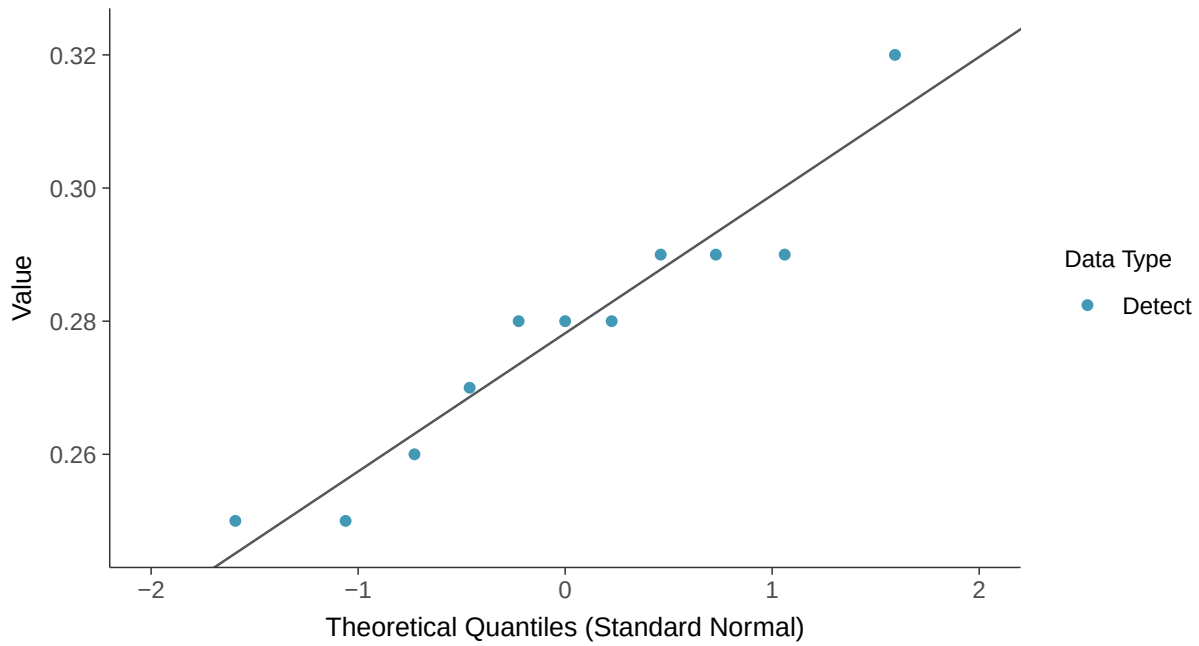


Boxplot by Season

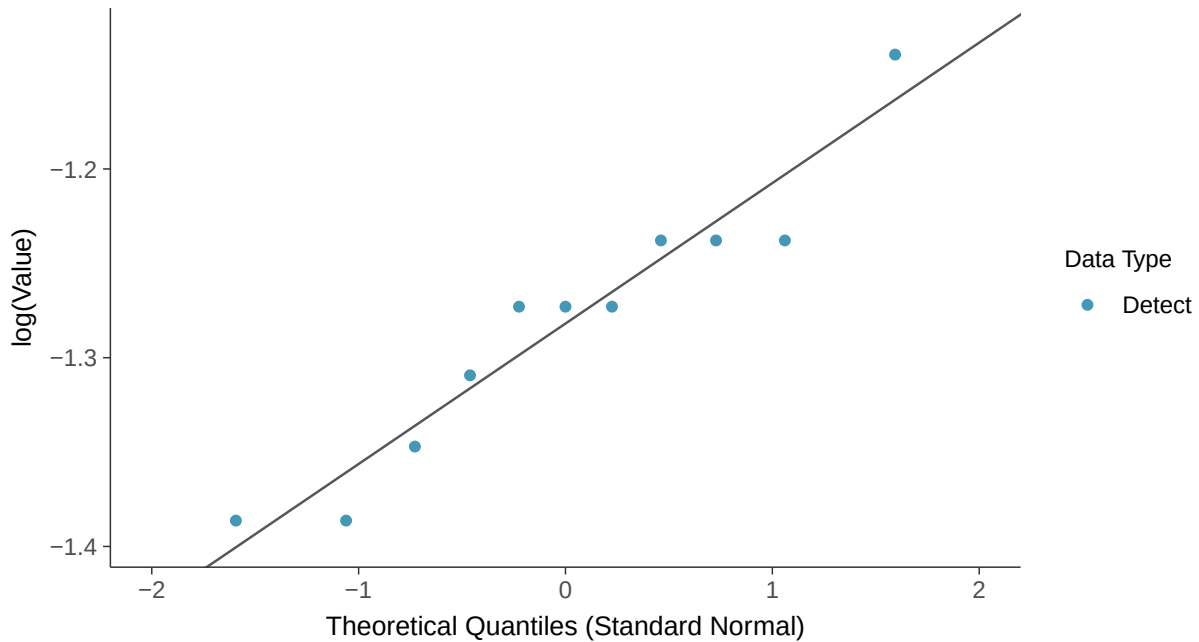
Lithium, W-1 (mg/l)



Normal Q-Q plot
Lithium, W-1 (mg/l)

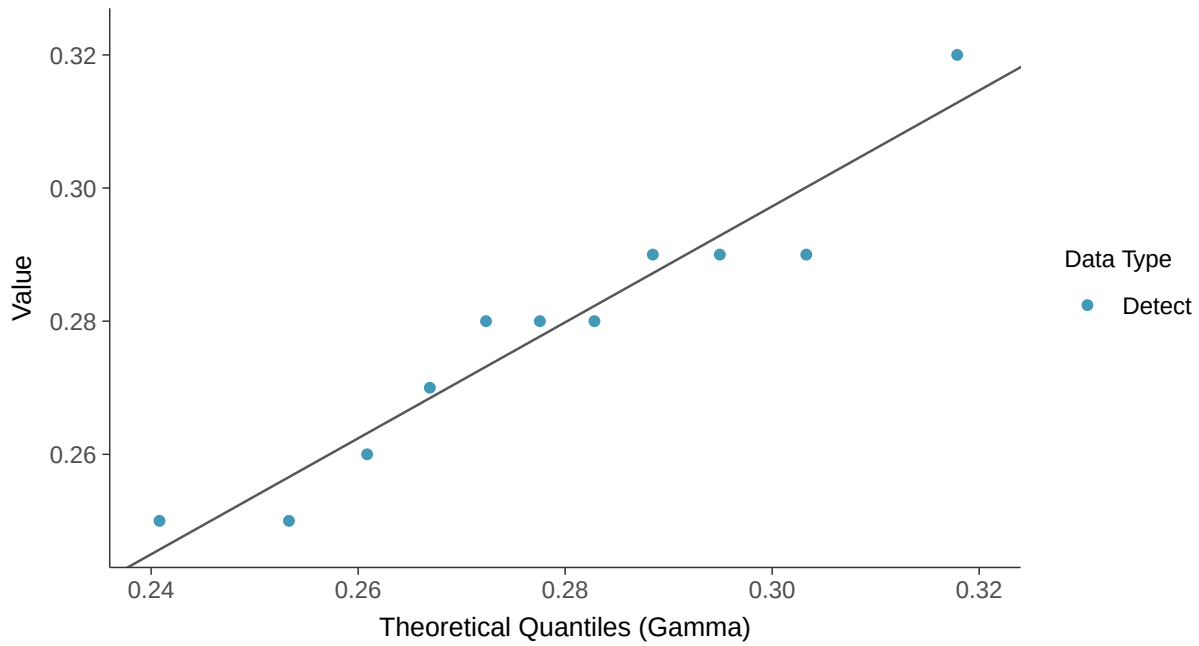


Lognormal Q-Q plot
Lithium, W-1 (mg/l)



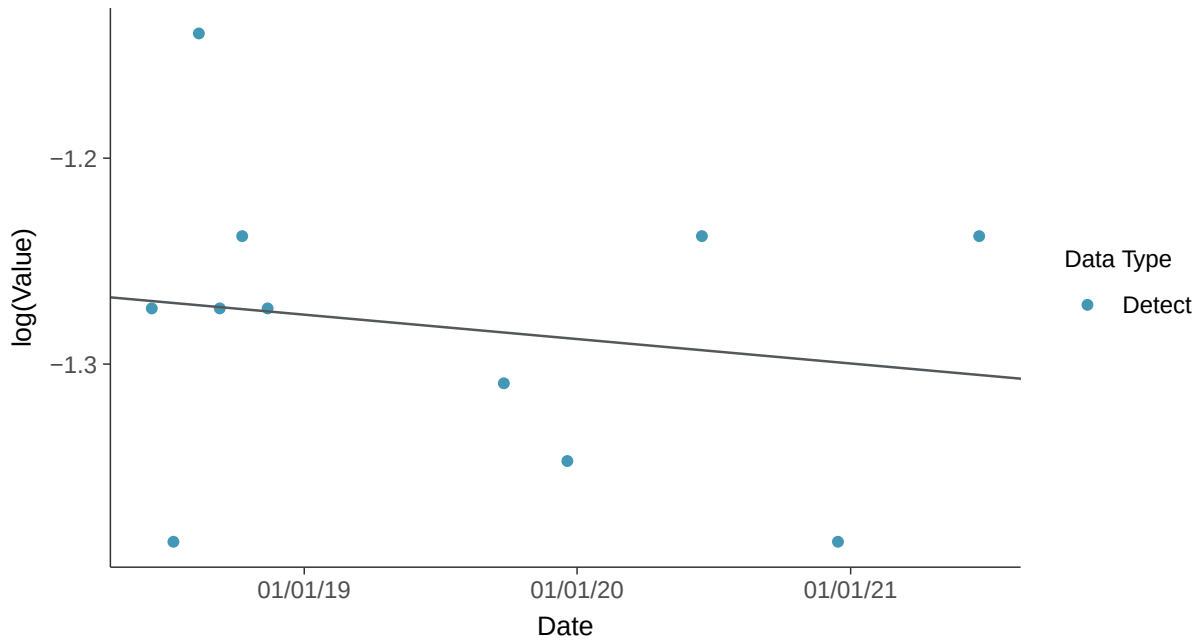
Gamma Q-Q plot

Lithium, W-1 (mg/l)



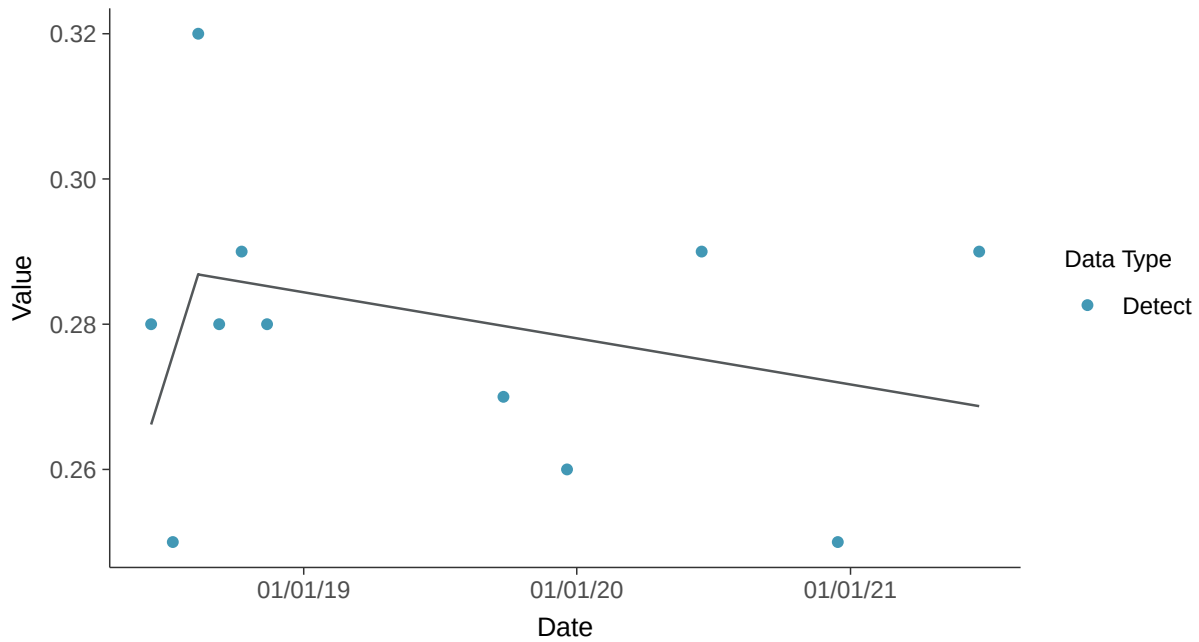
Trend Regression: Lognormal MLE

Lithium, W-1 (mg/l)



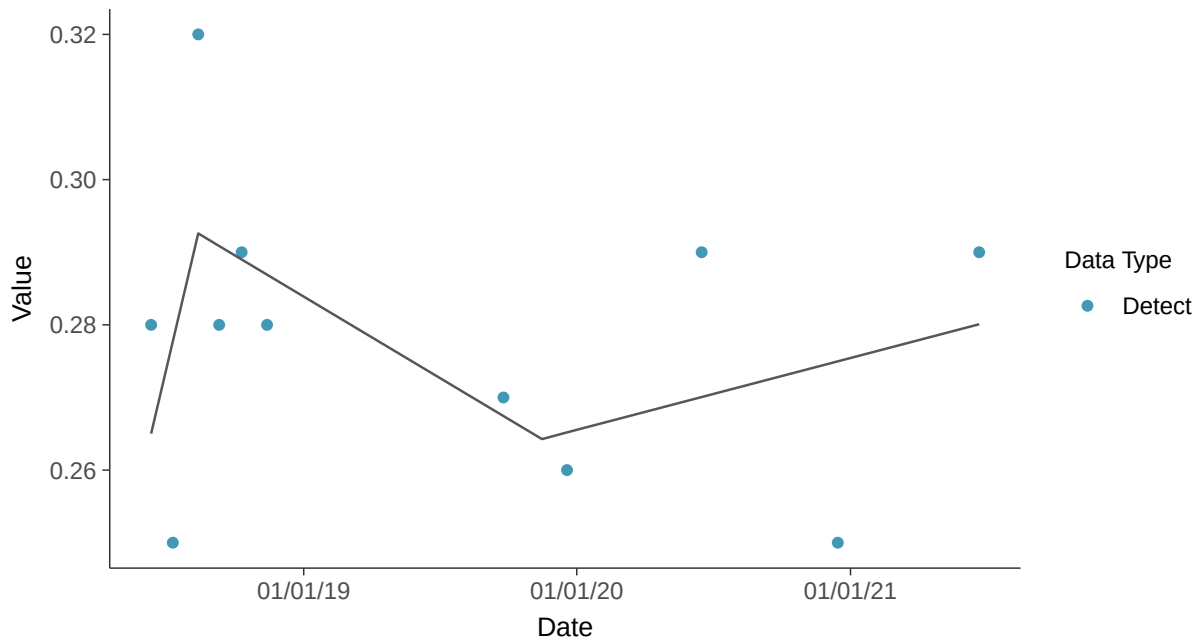
Trend Regression: Piecewise Linear-Linear

Lithium, W-1 (mg/l)



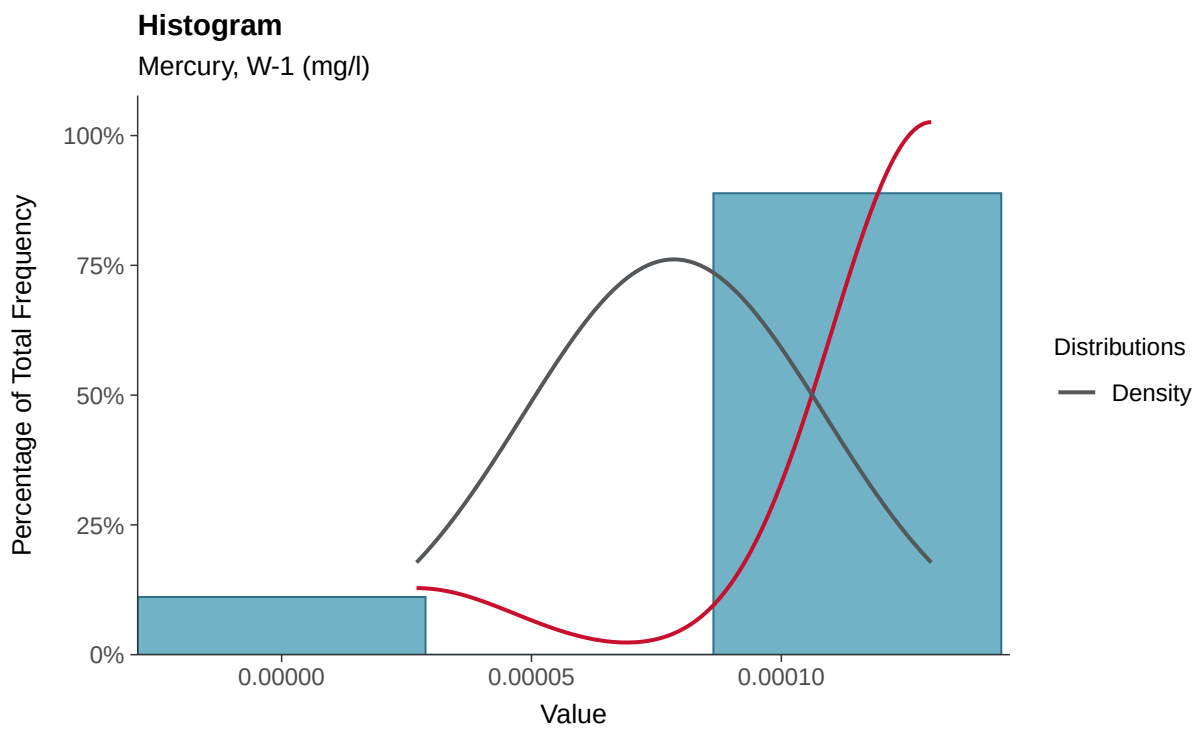
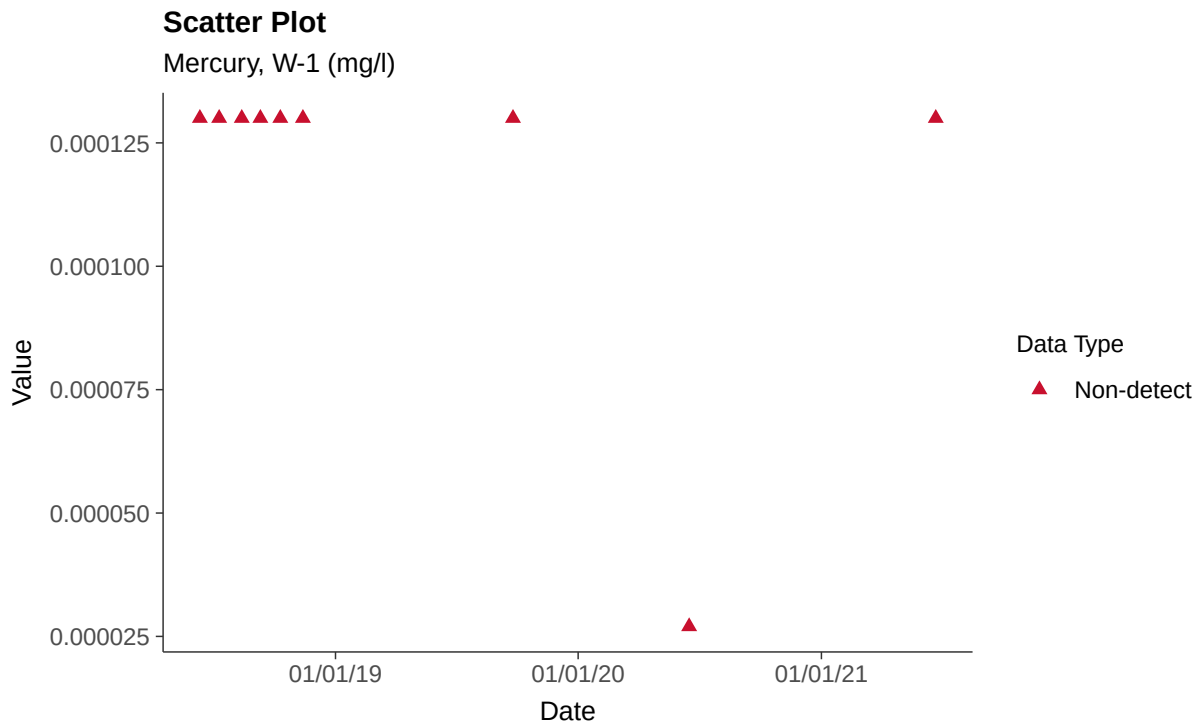
Trend Regression: Piecewise Linear-Linear-Linear

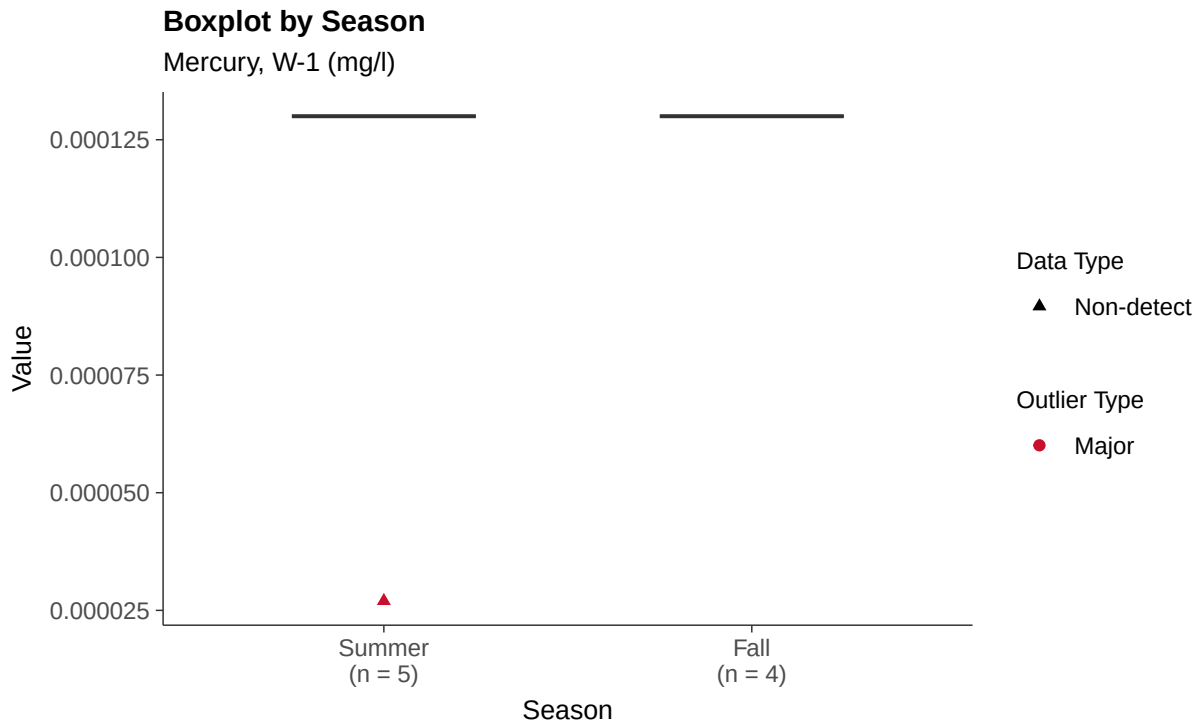
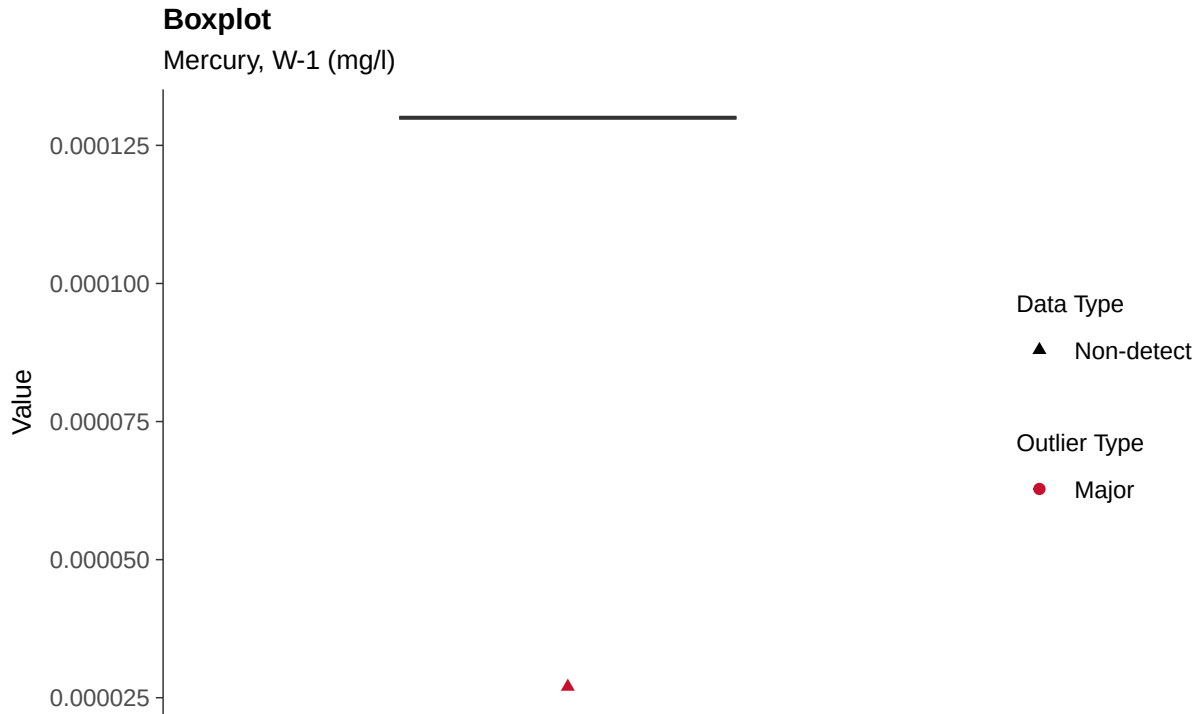
Lithium, W-1 (mg/l)

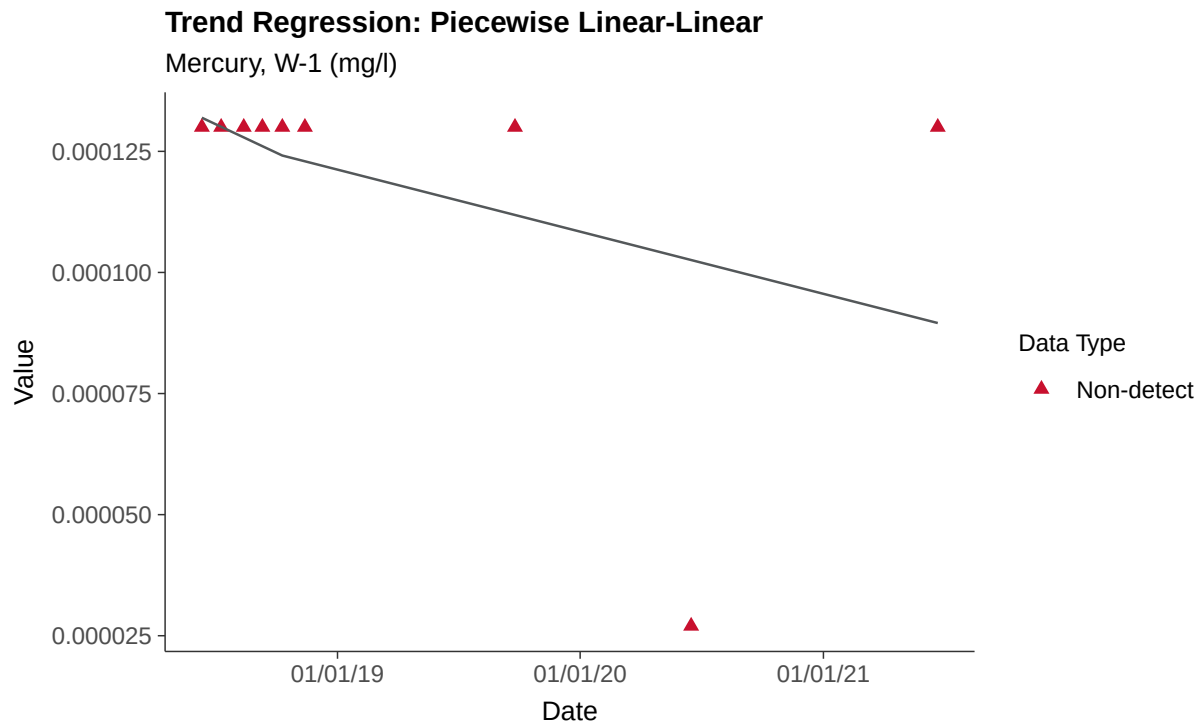


Appendix IV: Mercury, W-1

ID: 1_2_116

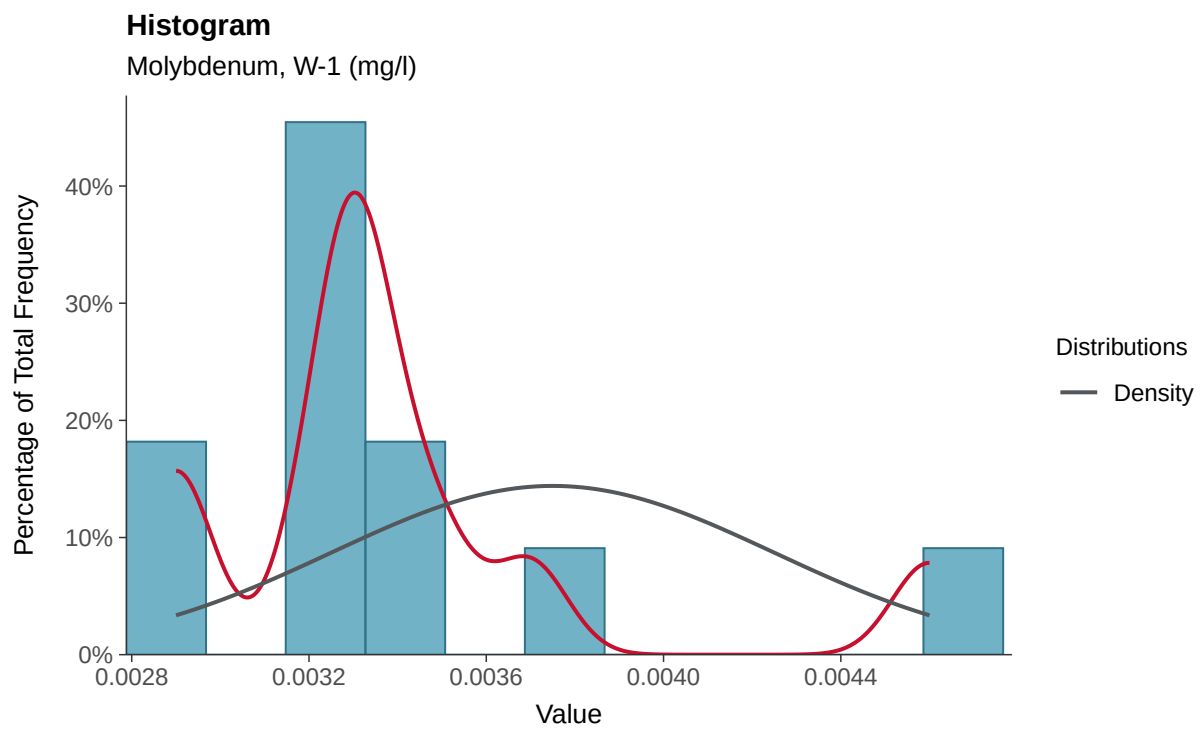
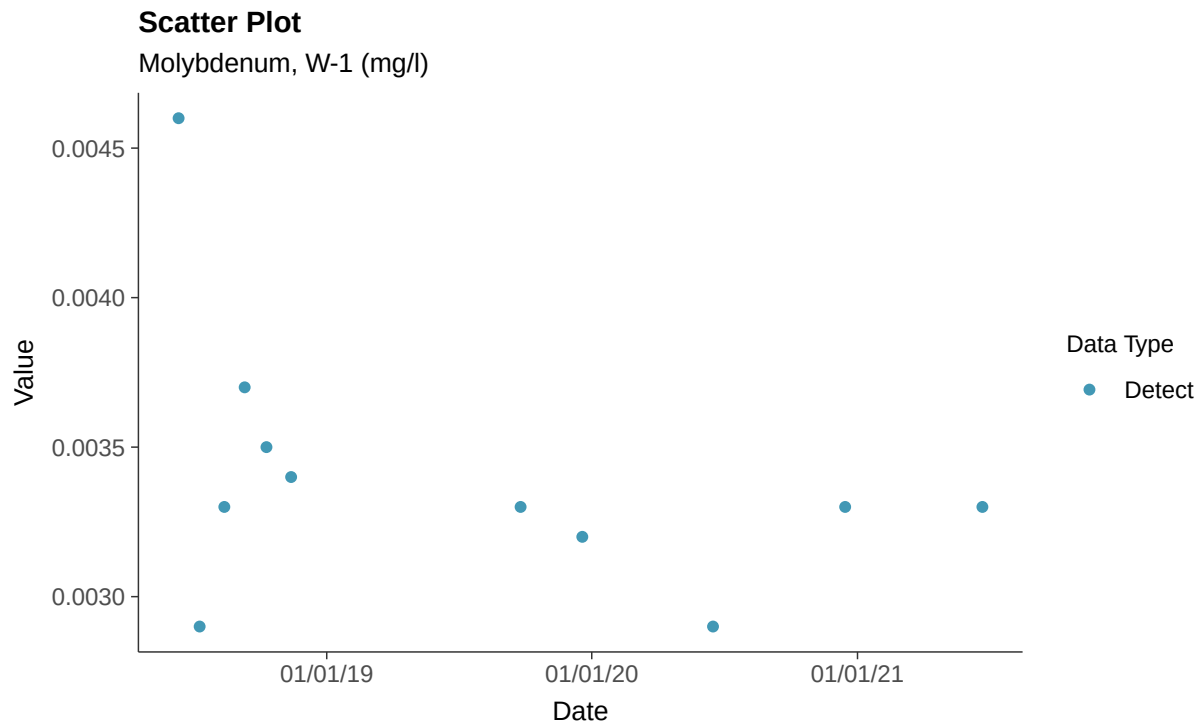


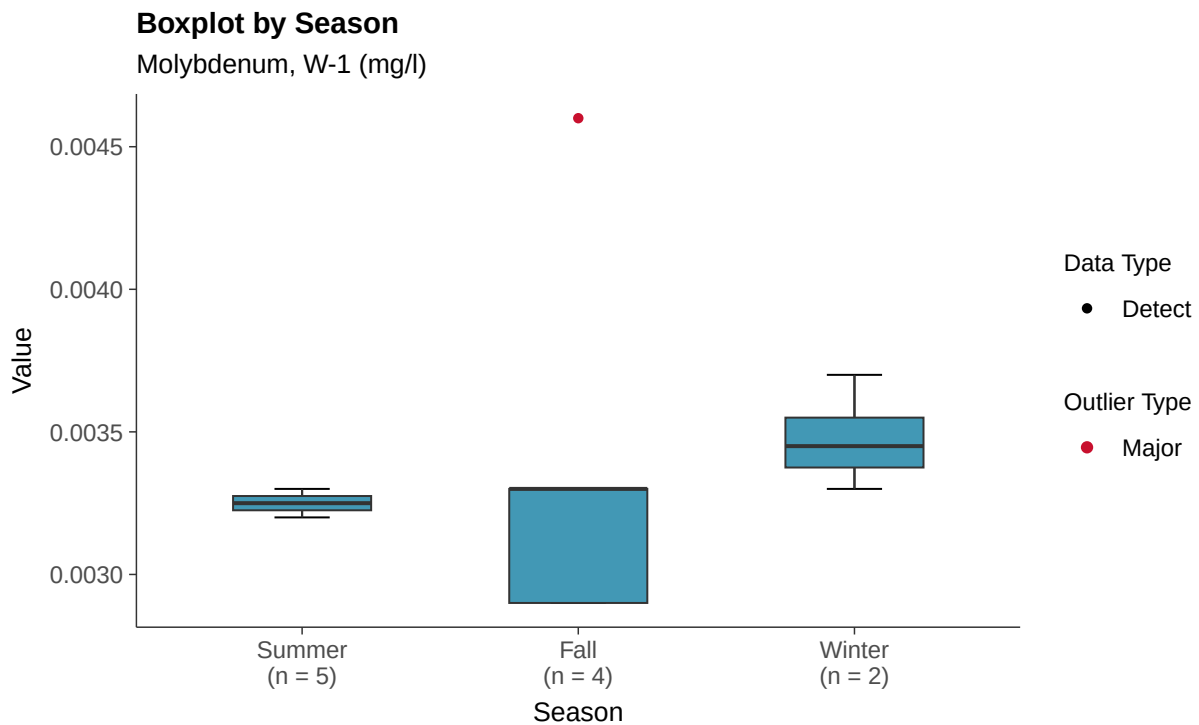
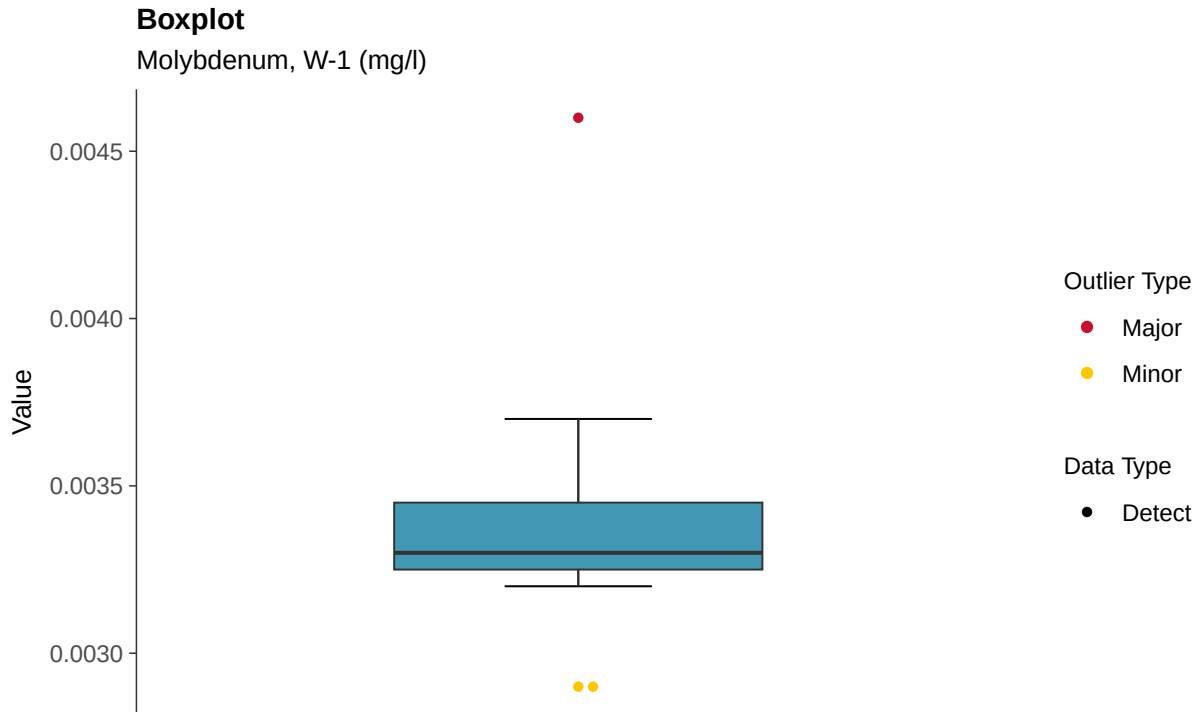




Appendix IV: Molybdenum, W-1

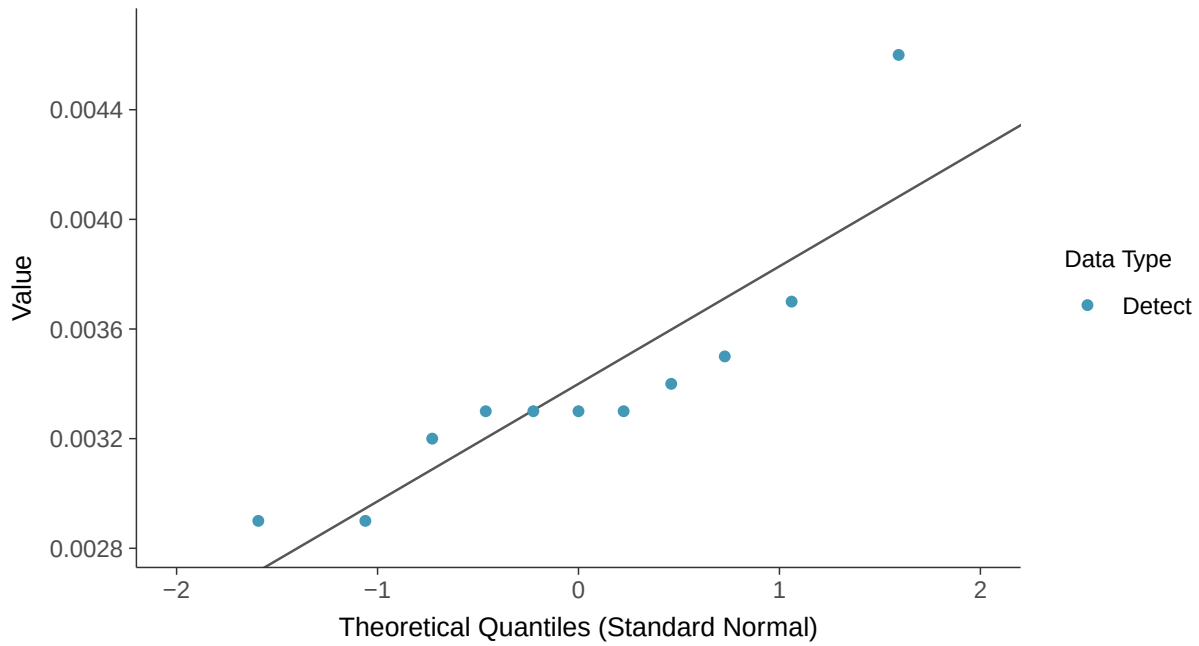
ID: 1_2_117





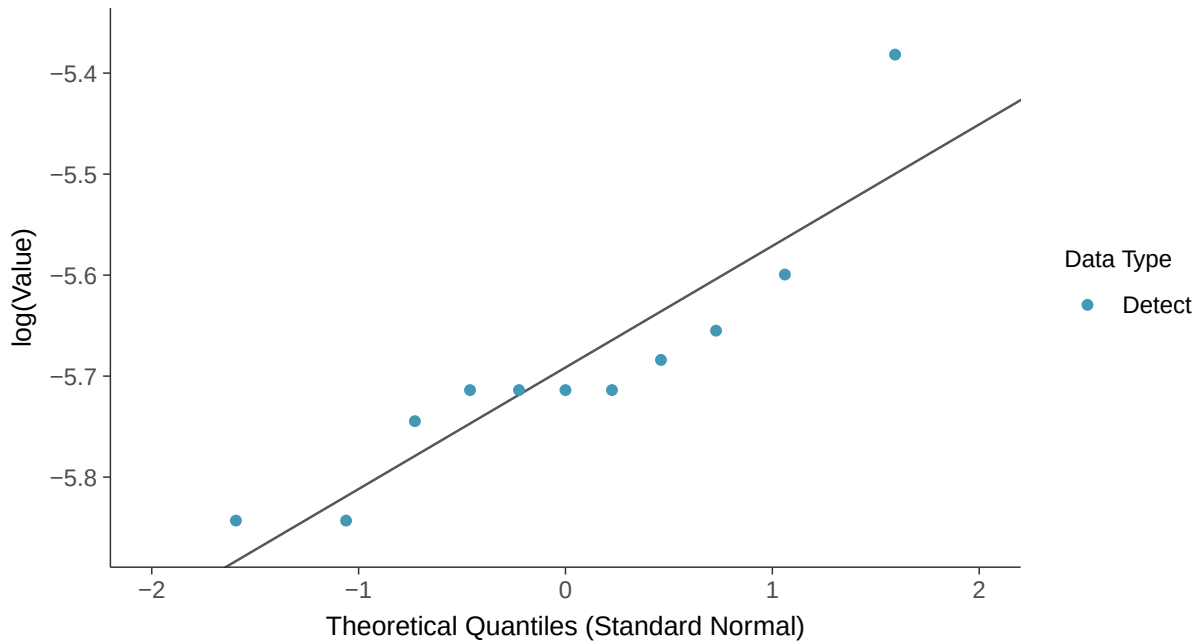
Normal Q-Q plot

Molybdenum, W-1 (mg/l)

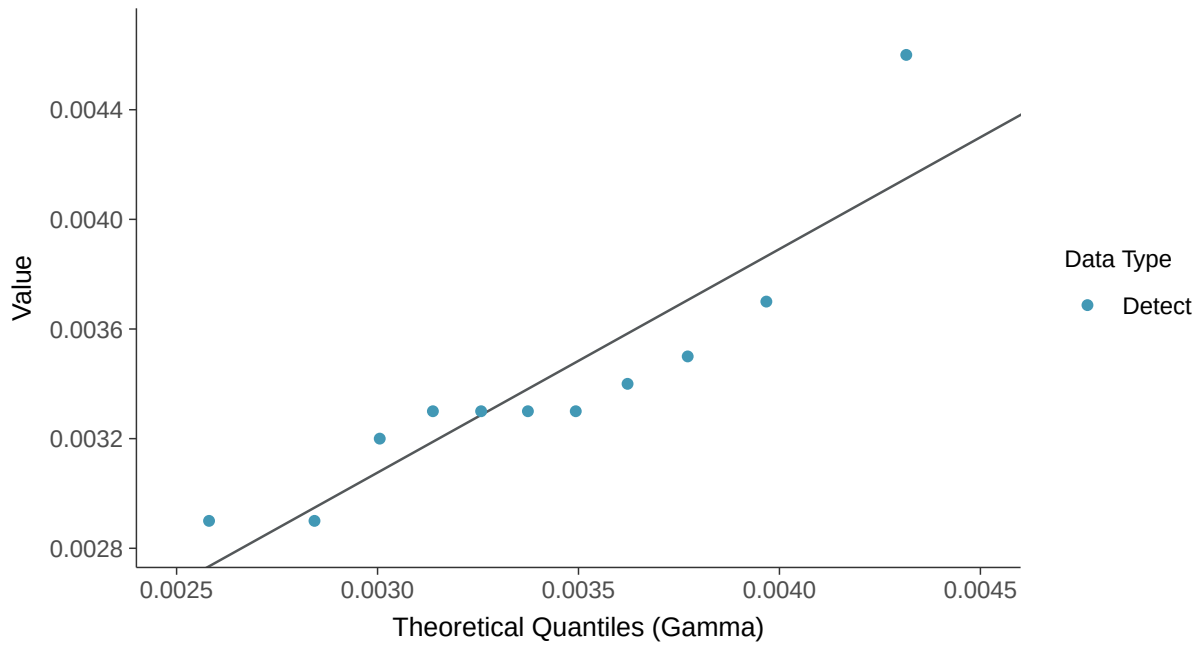


Lognormal Q-Q plot

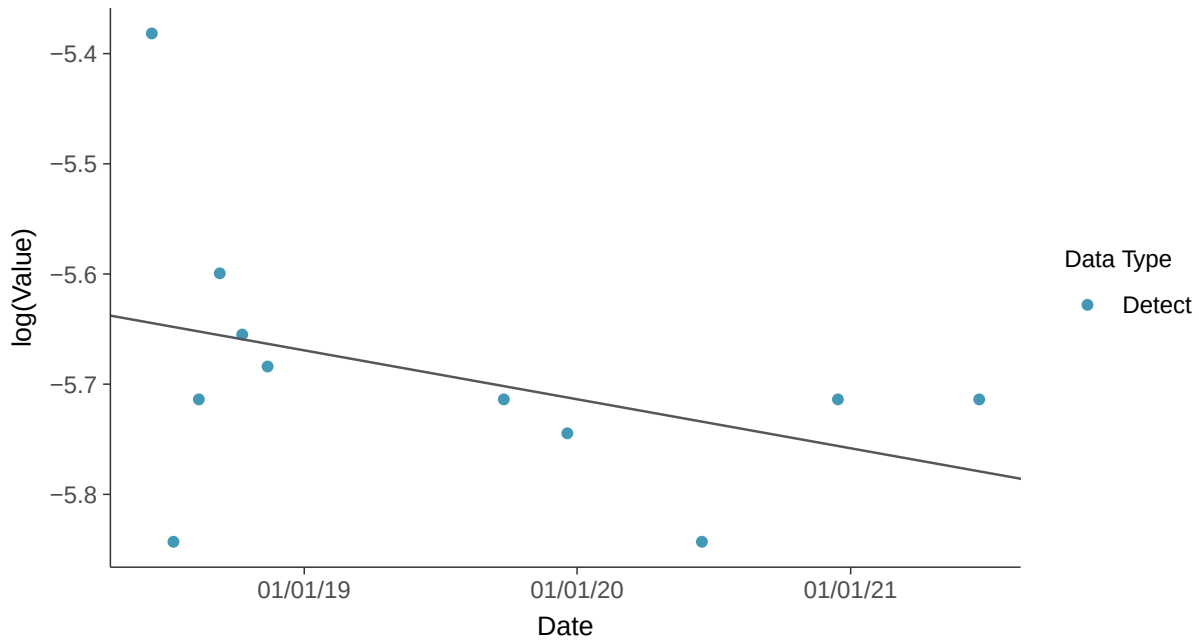
Molybdenum, W-1 (mg/l)



Gamma Q-Q plot
Molybdenum, W-1 (mg/l)



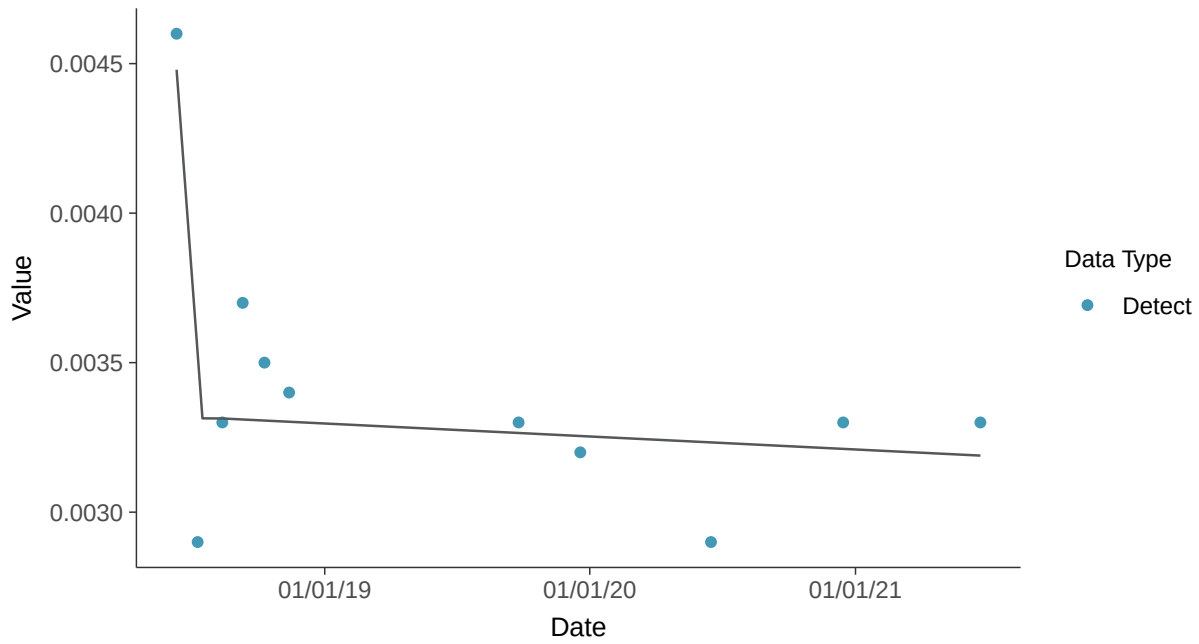
Trend Regression: Lognormal MLE
Molybdenum, W-1 (mg/l)





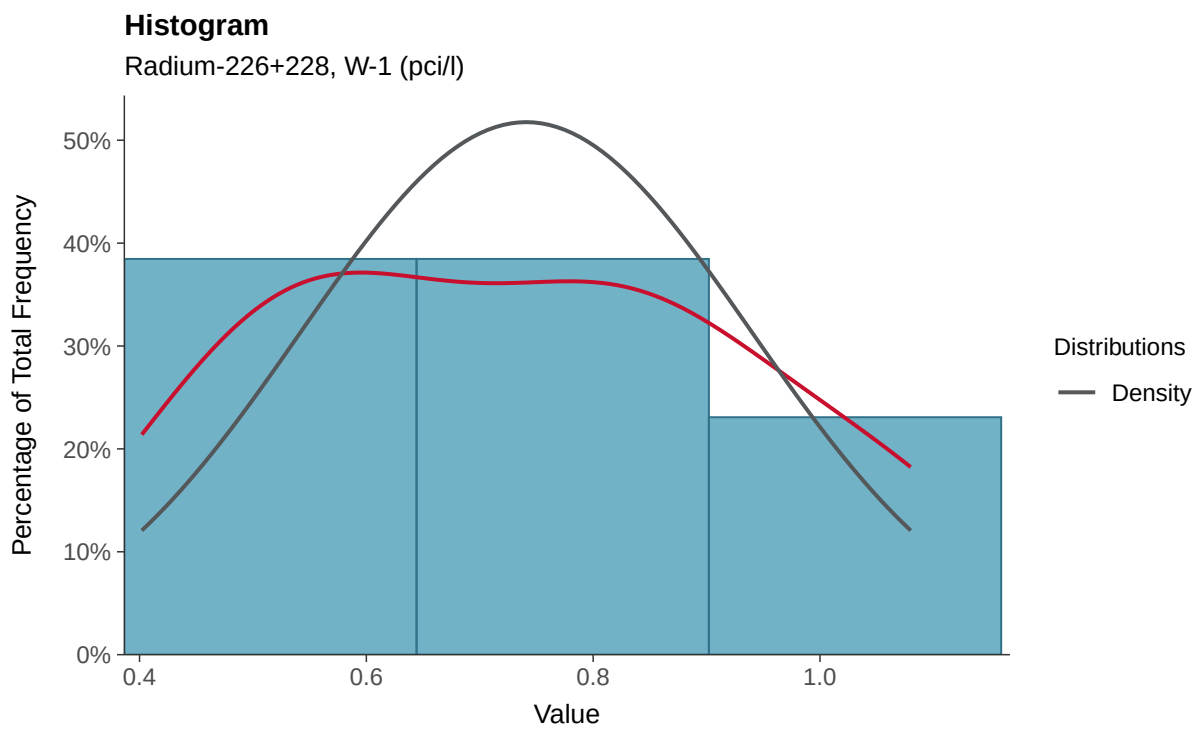
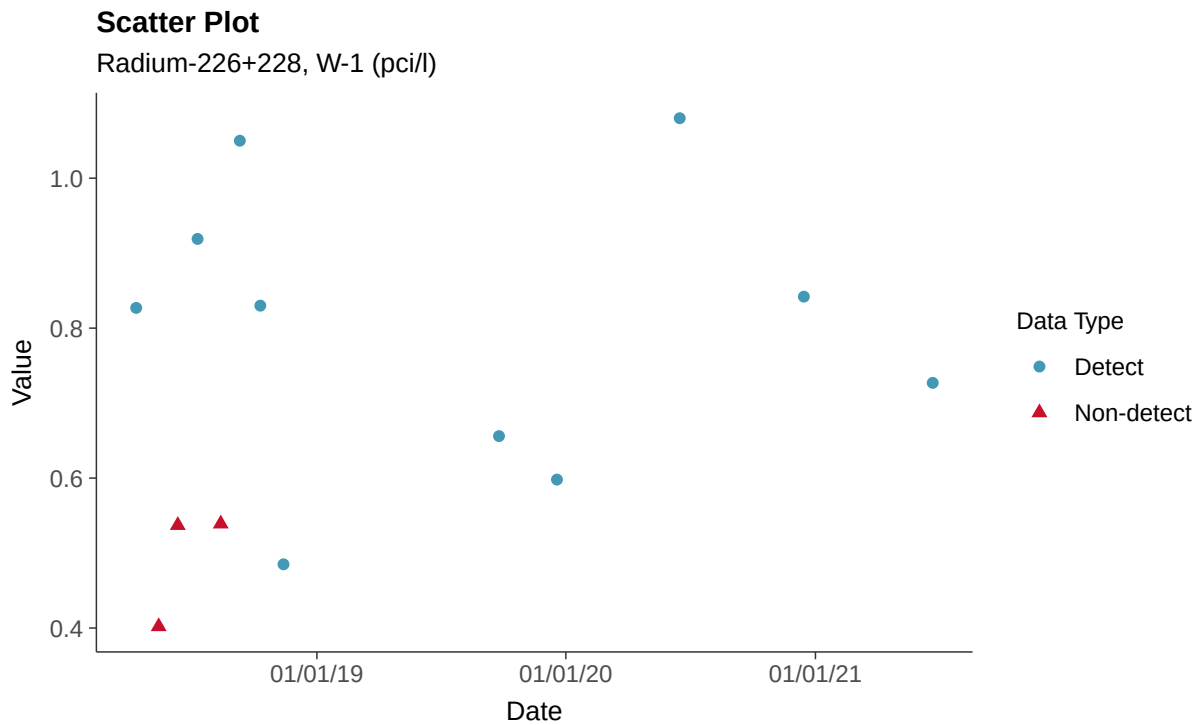
Trend Regression: Piecewise Linear-Linear

Molybdenum, W-1 (mg/l)



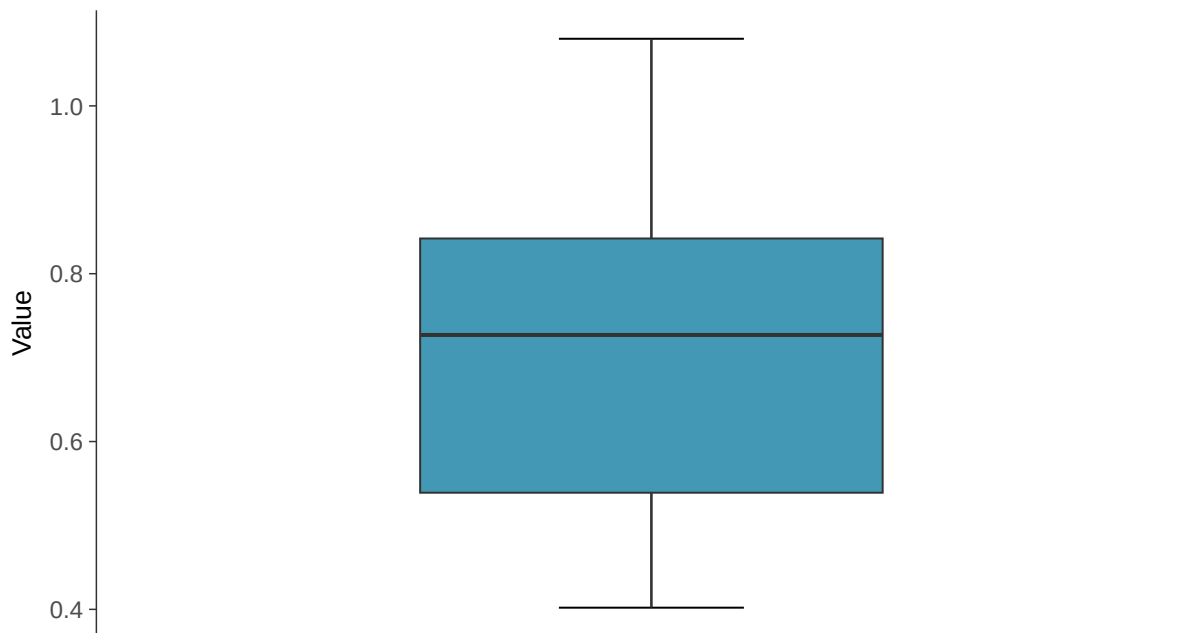
Appendix IV: Radium-226+228, W-1

ID: 1_2_122



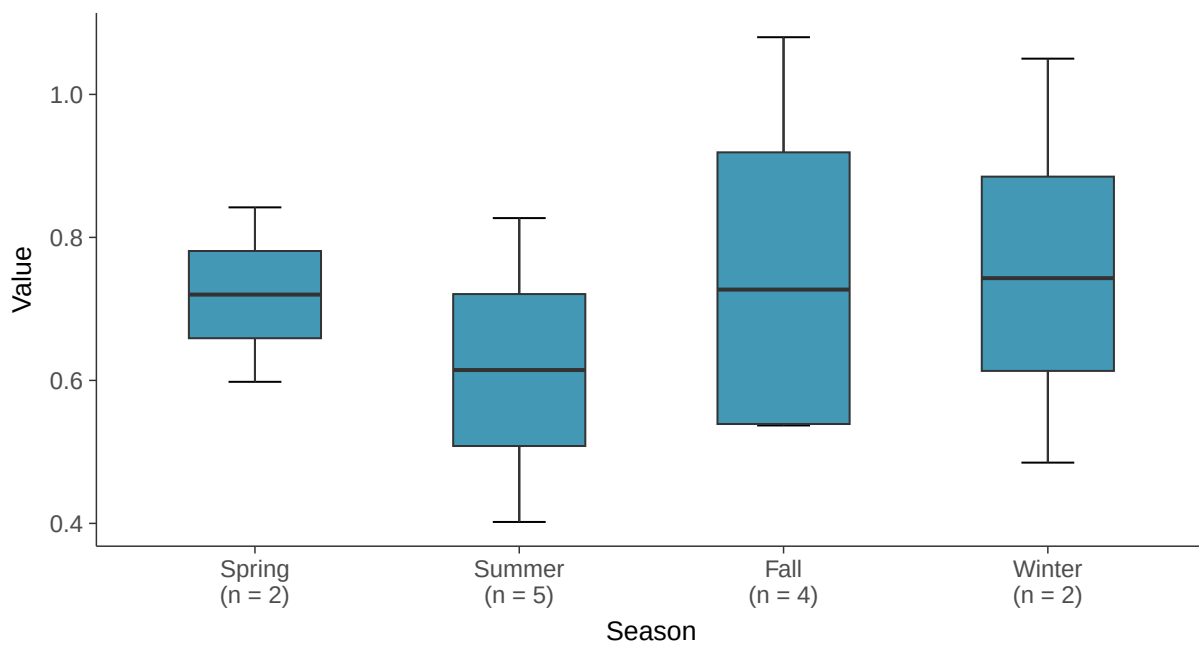
Boxplot

Radium-226+228, W-1 (pci/l)



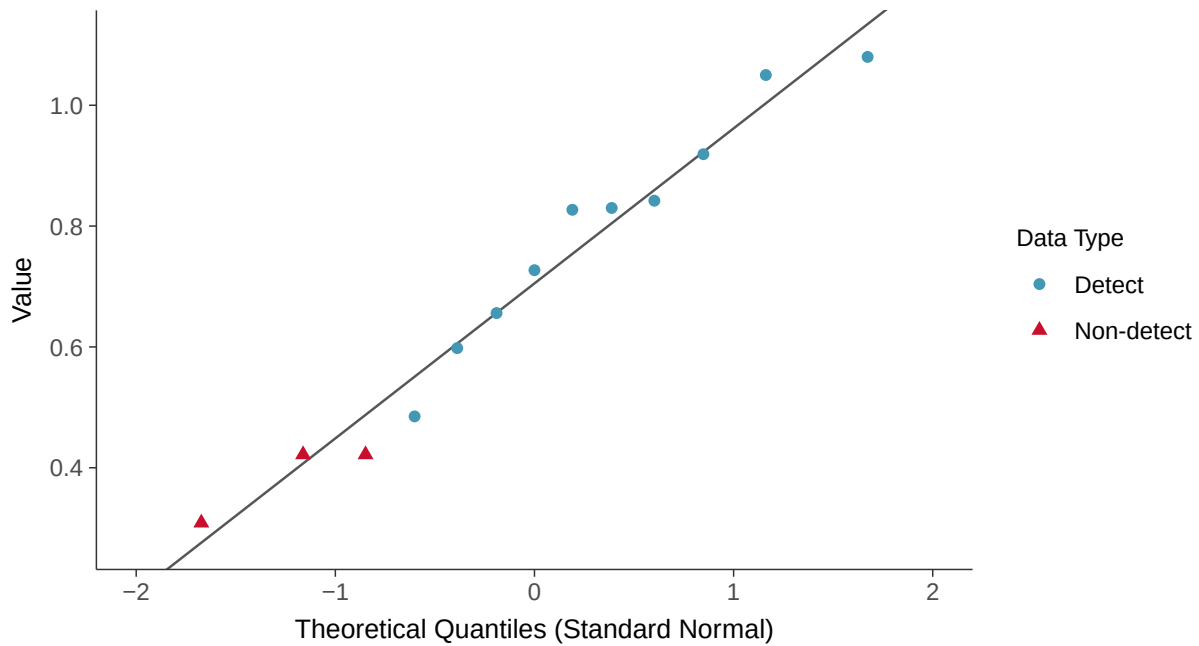
Boxplot by Season

Radium-226+228, W-1 (pci/l)



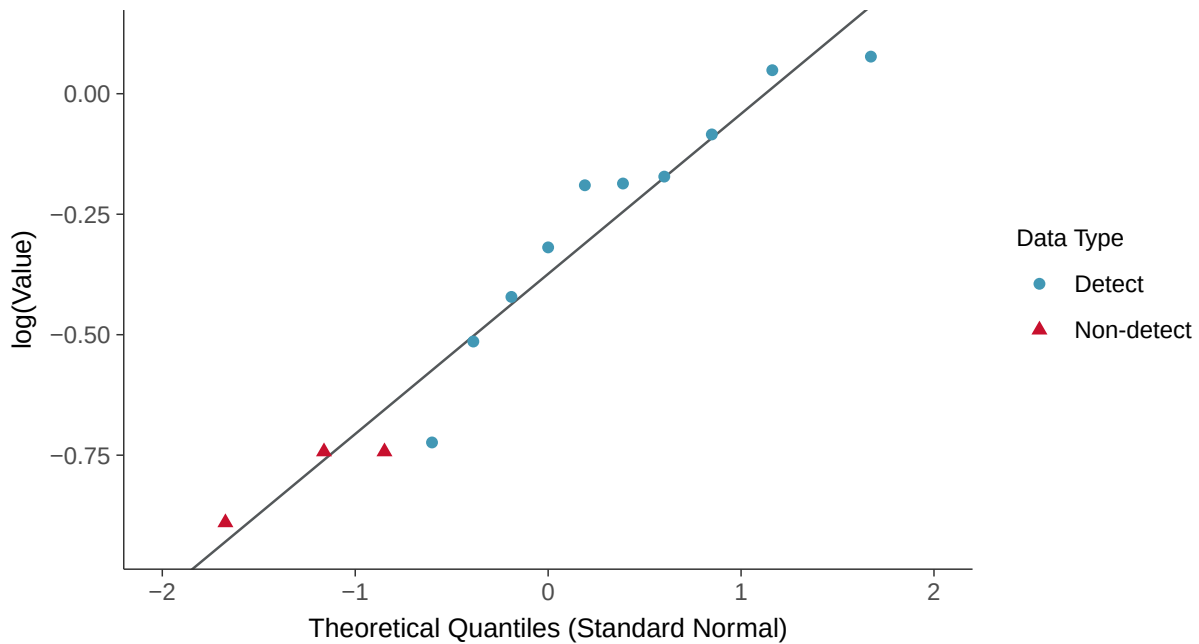
Normal Q-Q plot using ROS Imputed Estimates

Radium-226+228, W-1 (pci/l)



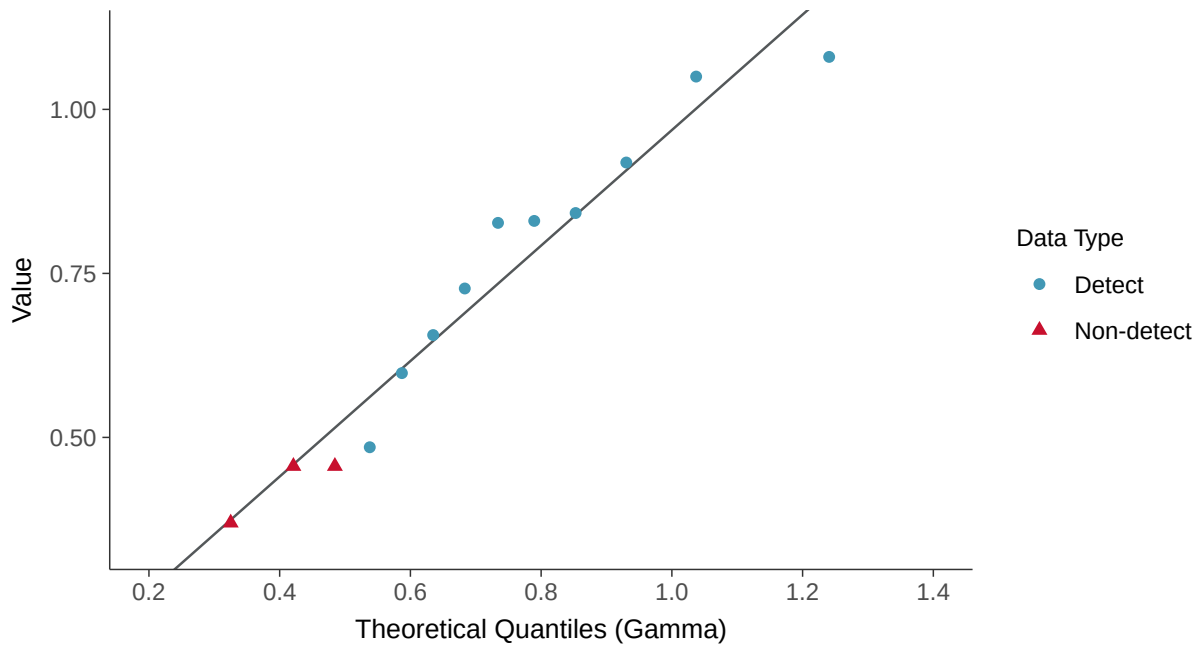
Lognormal Q-Q plot using ROS Imputed Estimates

Radium-226+228, W-1 (pci/l)



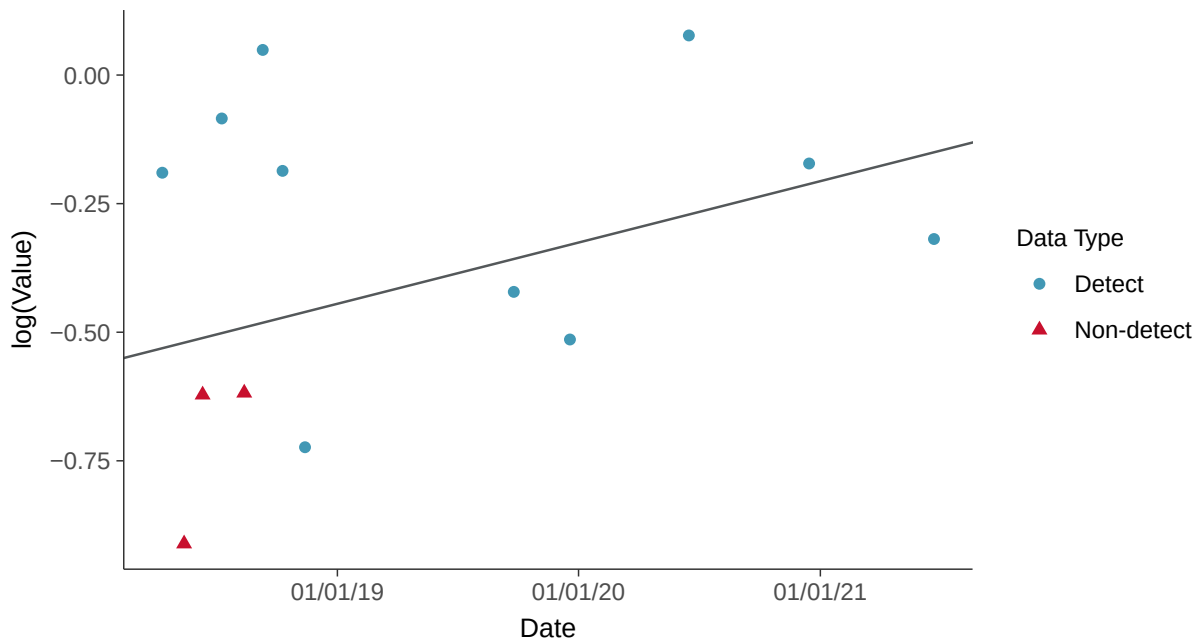
Gamma Q-Q plot using ROS Imputed Estimates

Radium-226+228, W-1 (pci/l)



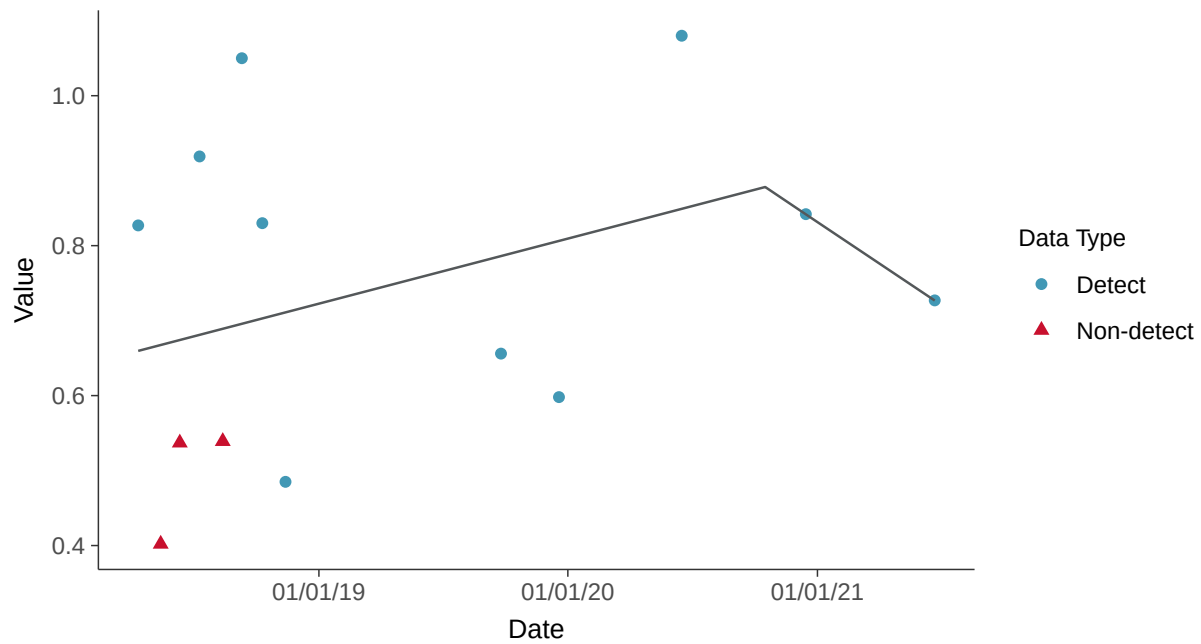
Trend Regression: Lognormal MLE

Radium-226+228, W-1 (pci/l)



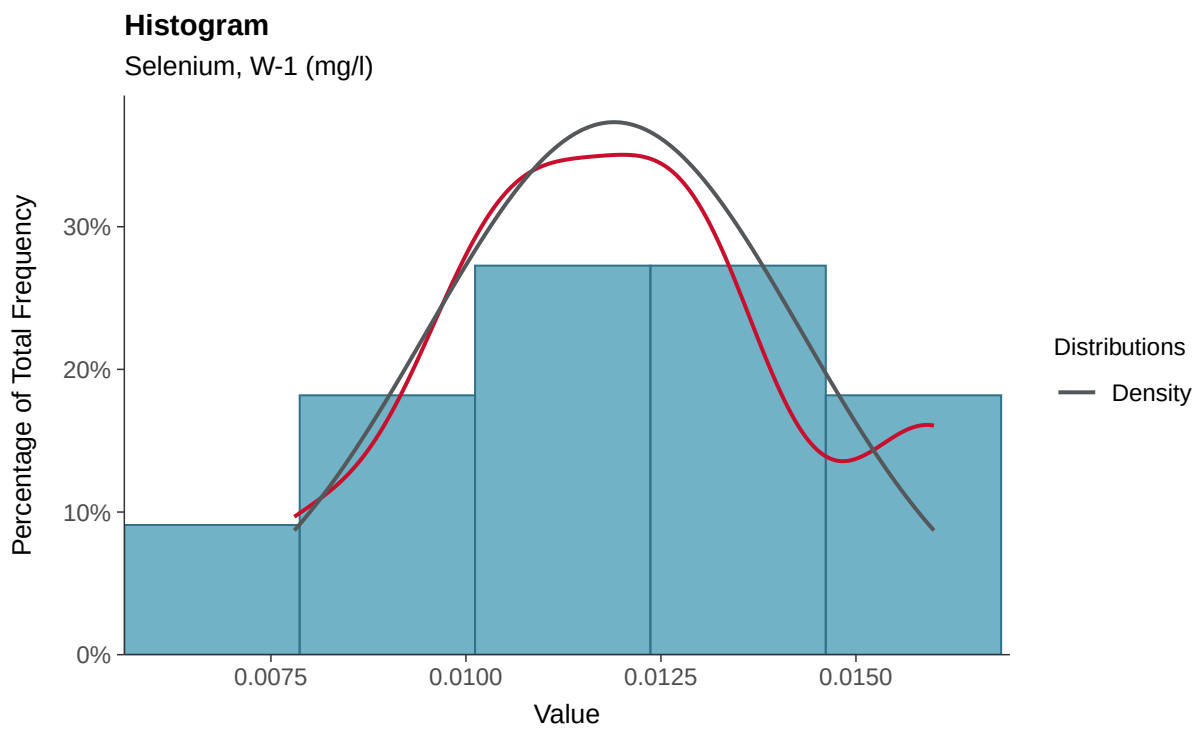
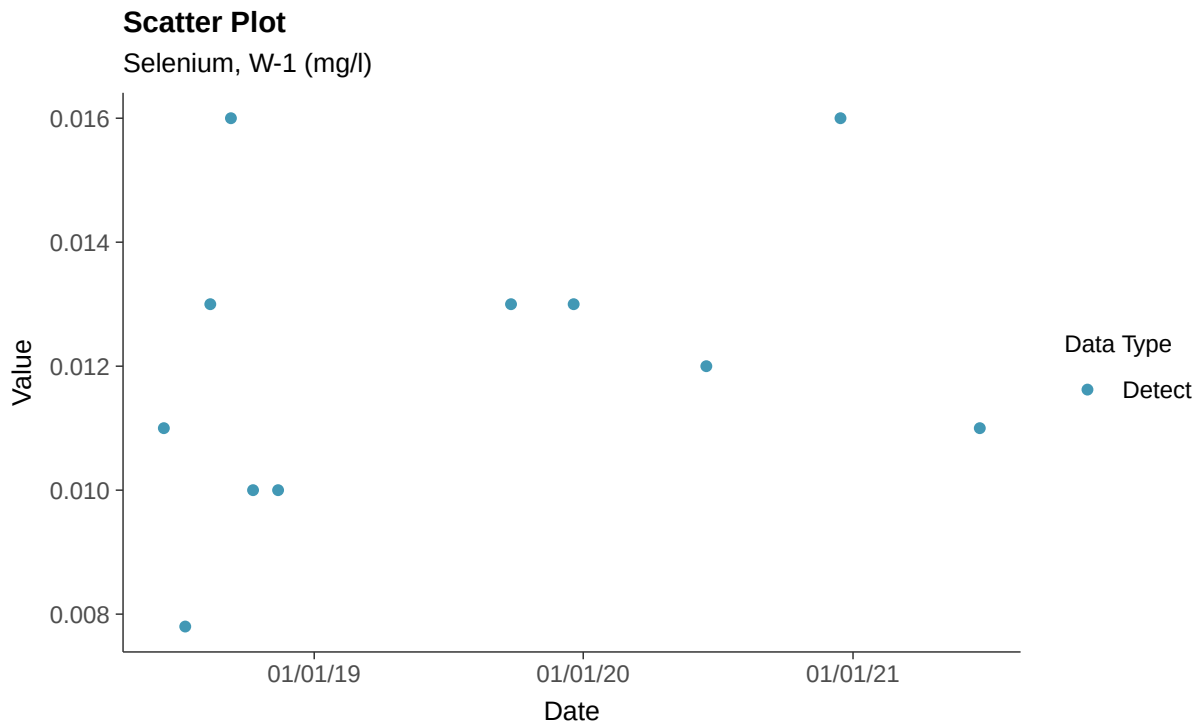
Trend Regression: Piecewise Linear-Linear

Radium-226+228, W-1 (pci/l)



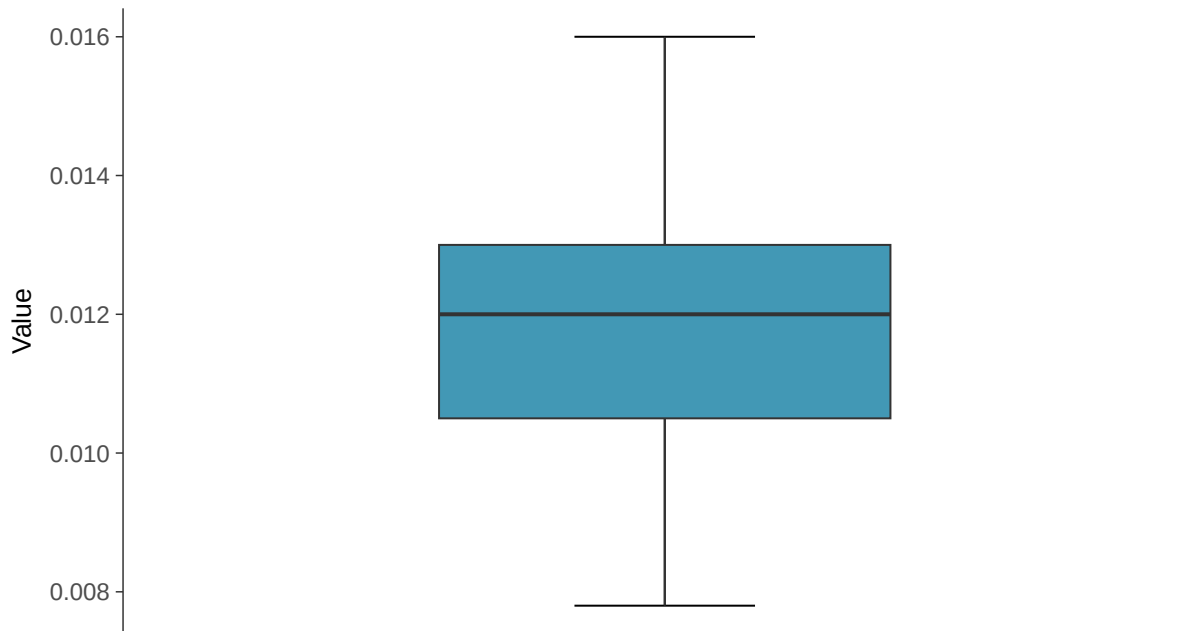
Appendix IV: Selenium, W-1

ID: 1_2_124



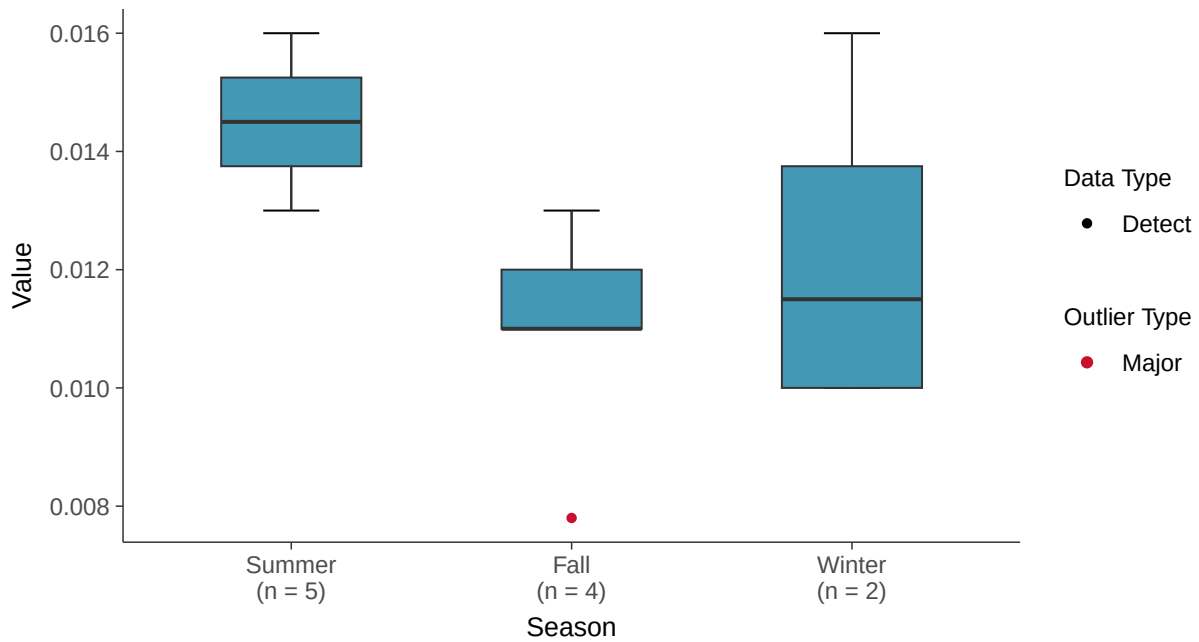
Boxplot

Selenium, W-1 (mg/l)

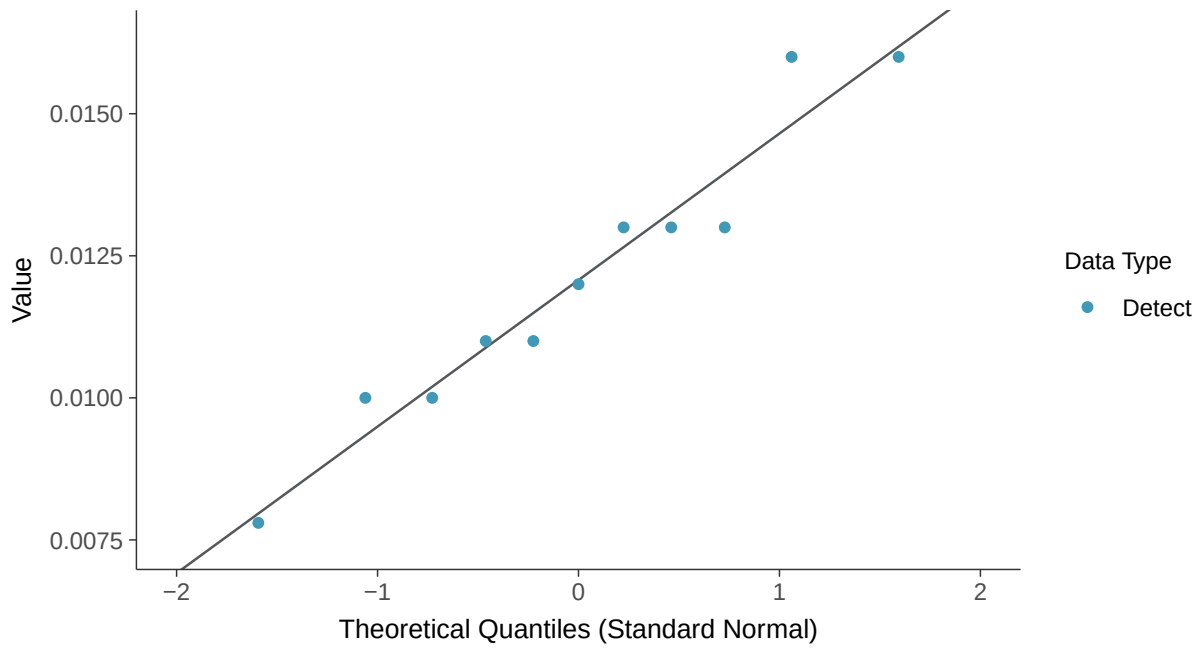


Boxplot by Season

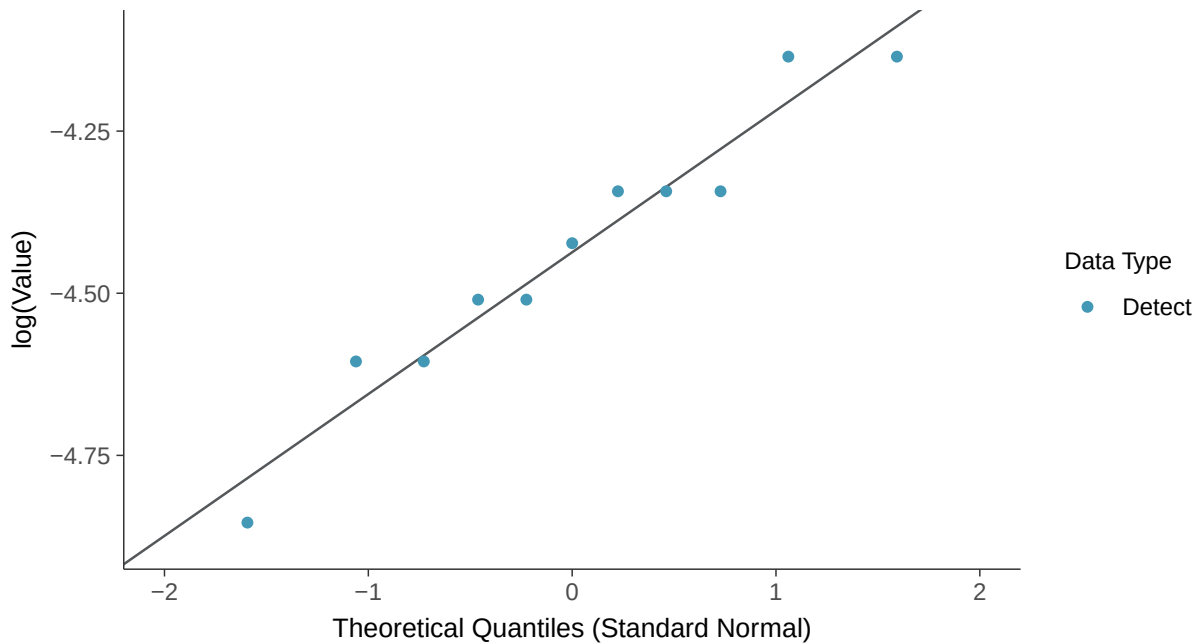
Selenium, W-1 (mg/l)

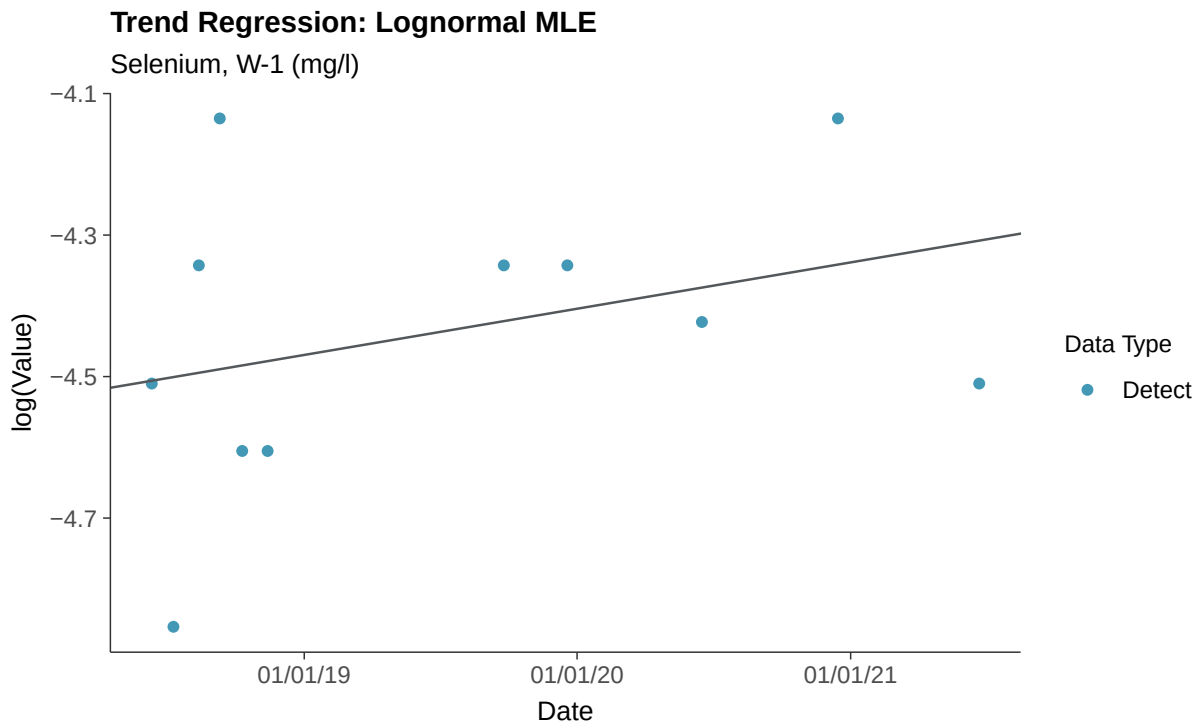
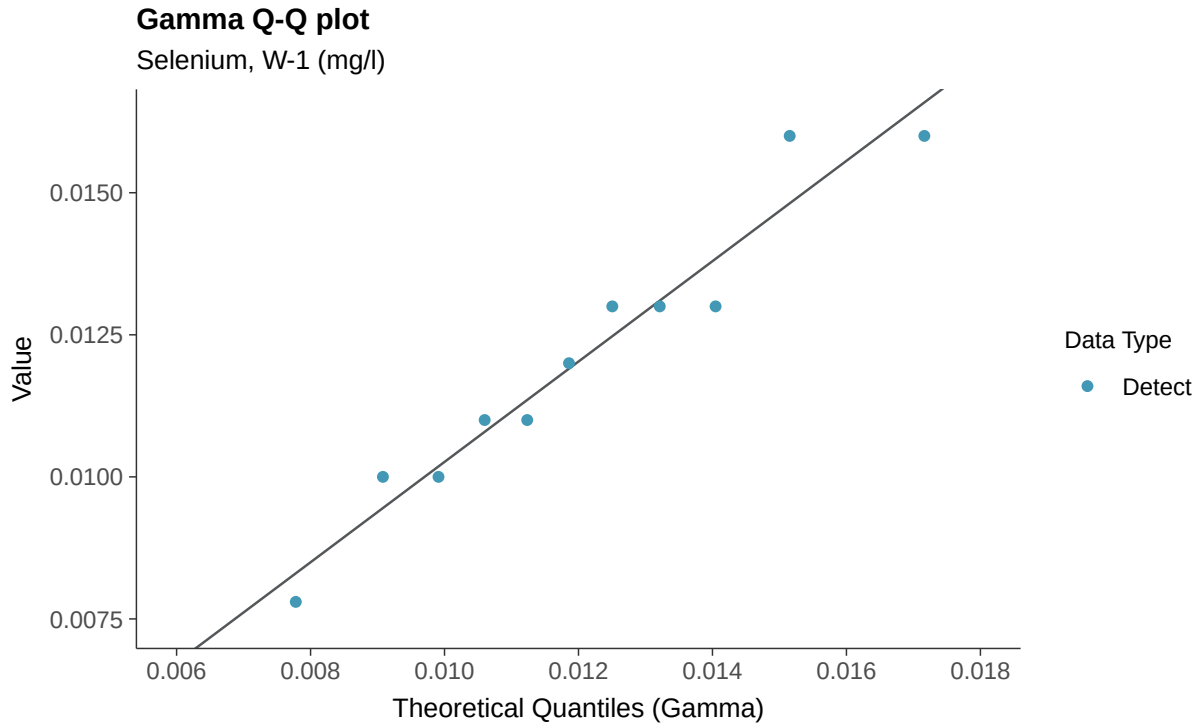


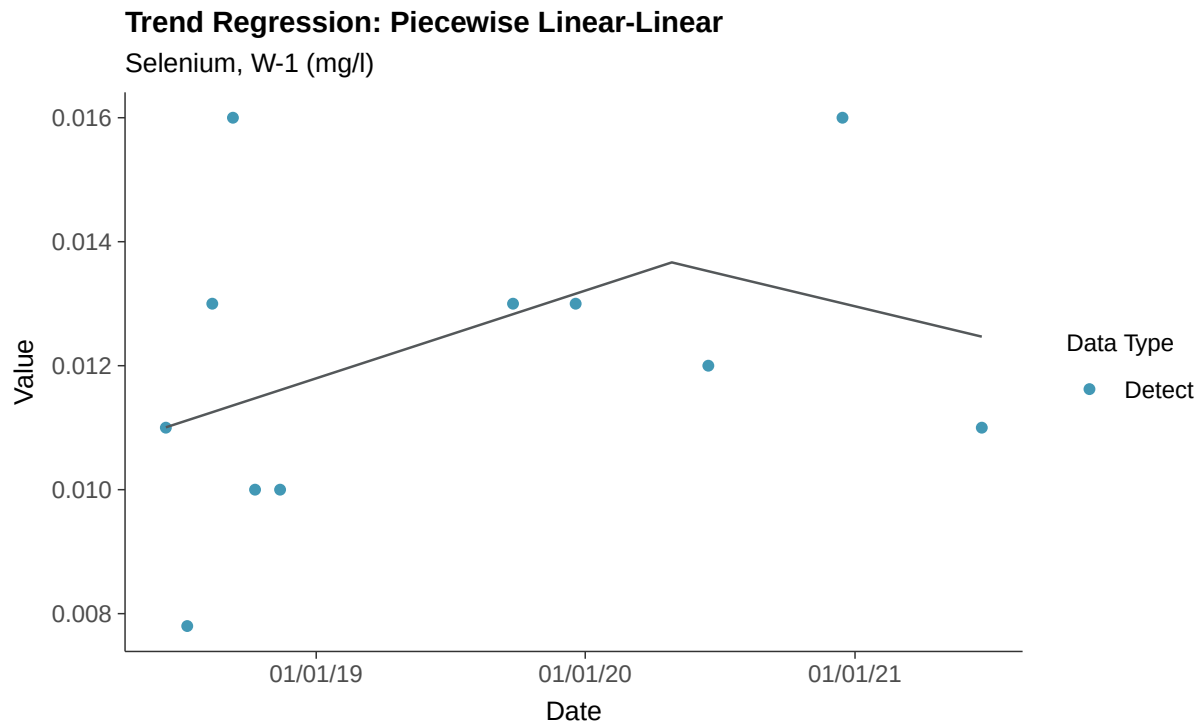
Normal Q-Q plot
Selenium, W-1 (mg/l)



Lognormal Q-Q plot
Selenium, W-1 (mg/l)

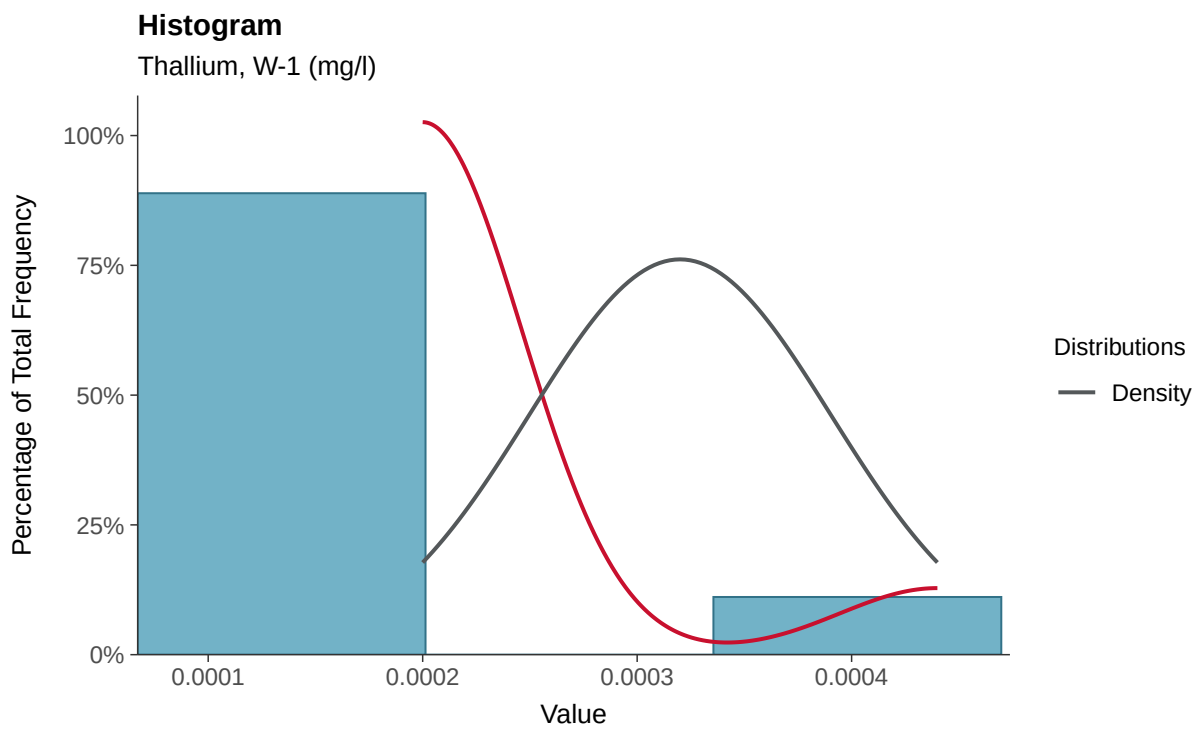
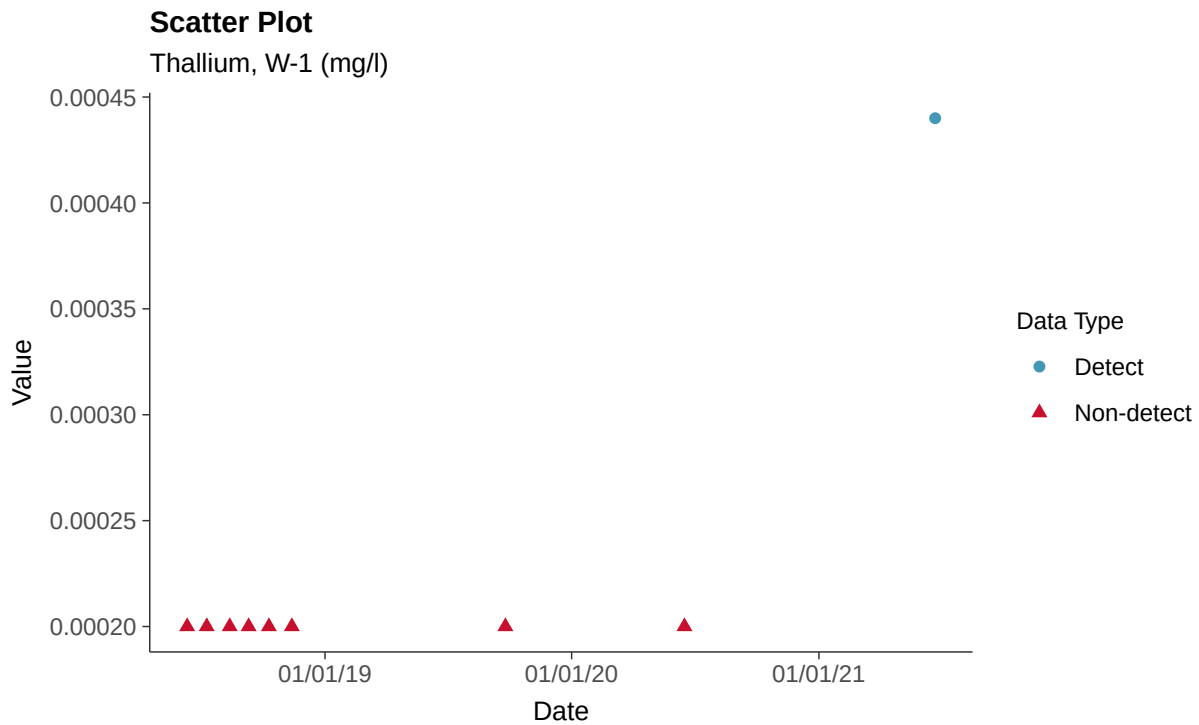


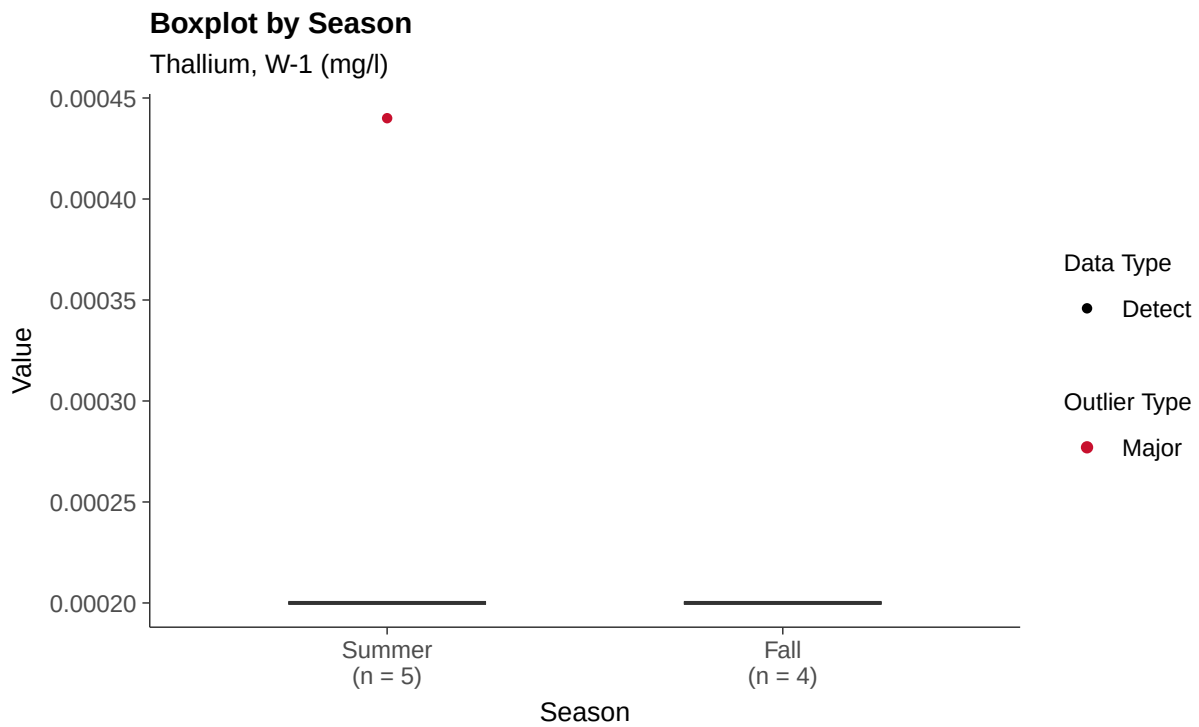
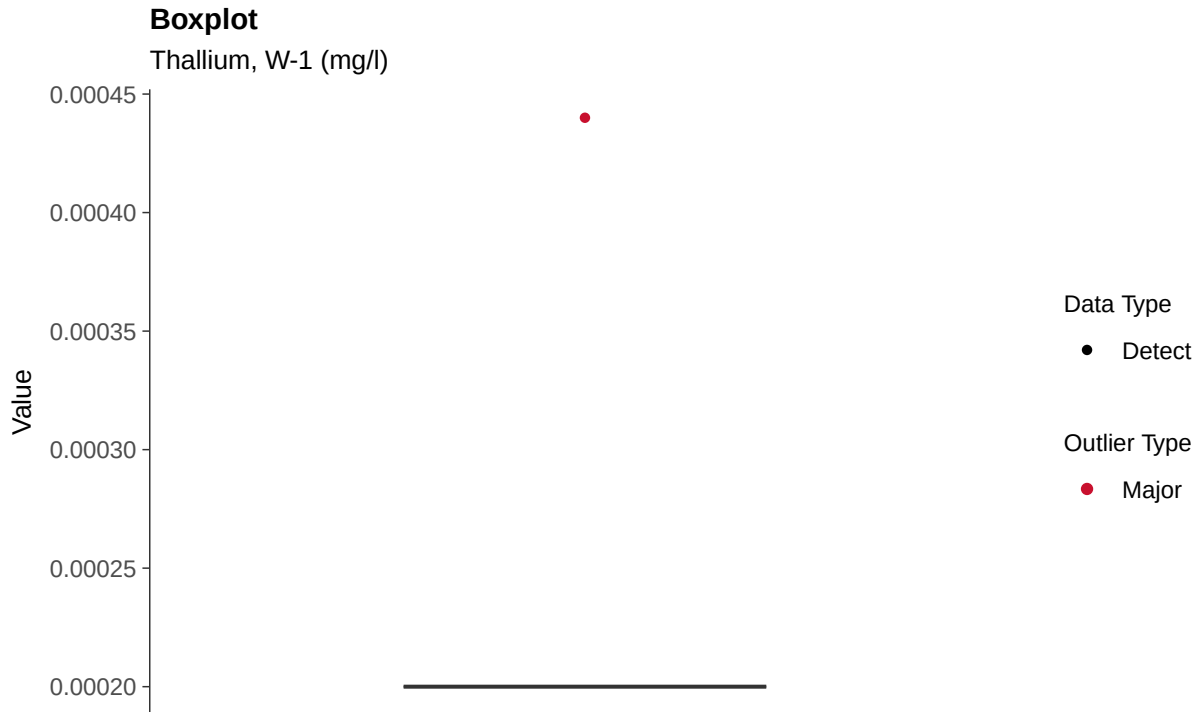




Appendix IV: Thallium, W-1

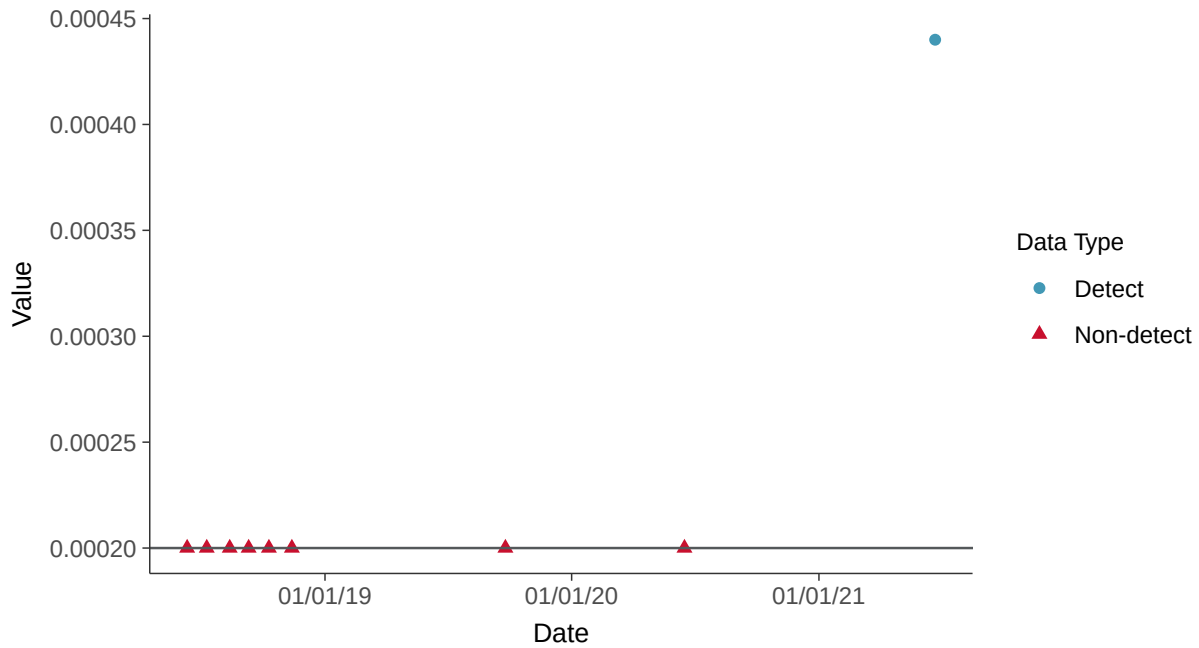
ID: 1_2_128





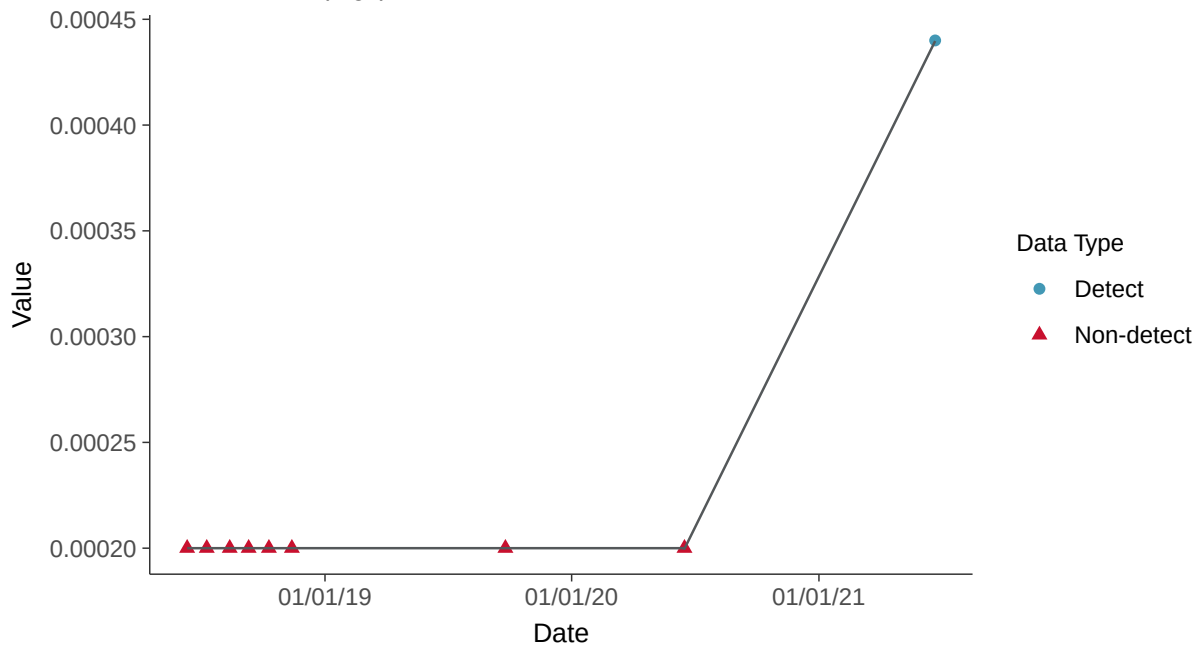
Trend Regression: Mann-Kendall/Theil-Sen Estimate

Thallium, W-1 (mg/l)



Trend Regression: Piecewise Linear-Linear

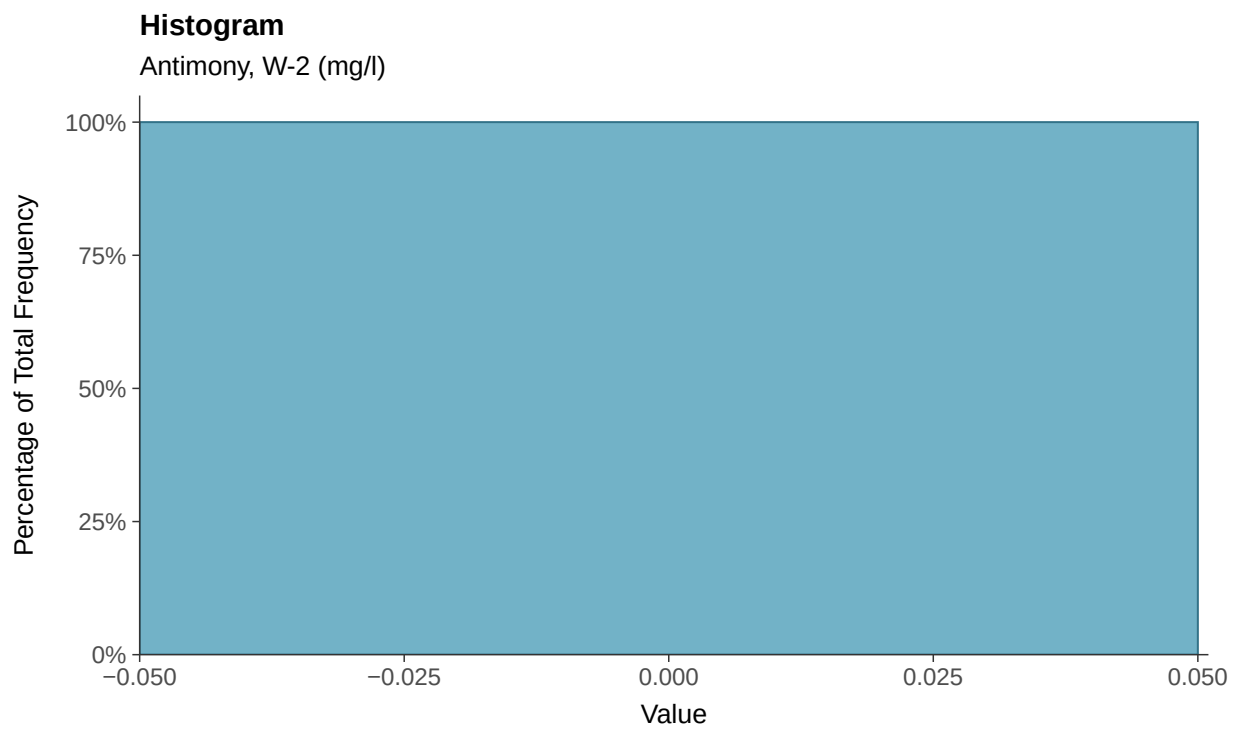
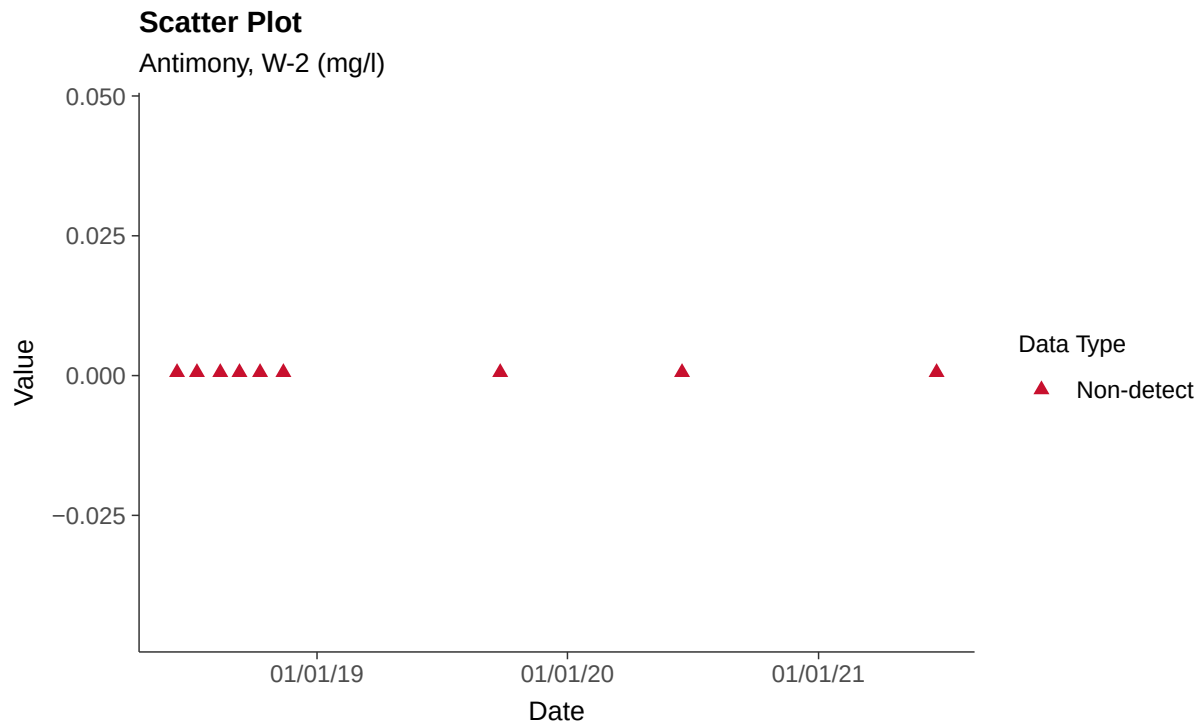
Thallium, W-1 (mg/l)





Appendix IV: Antimony, W-2

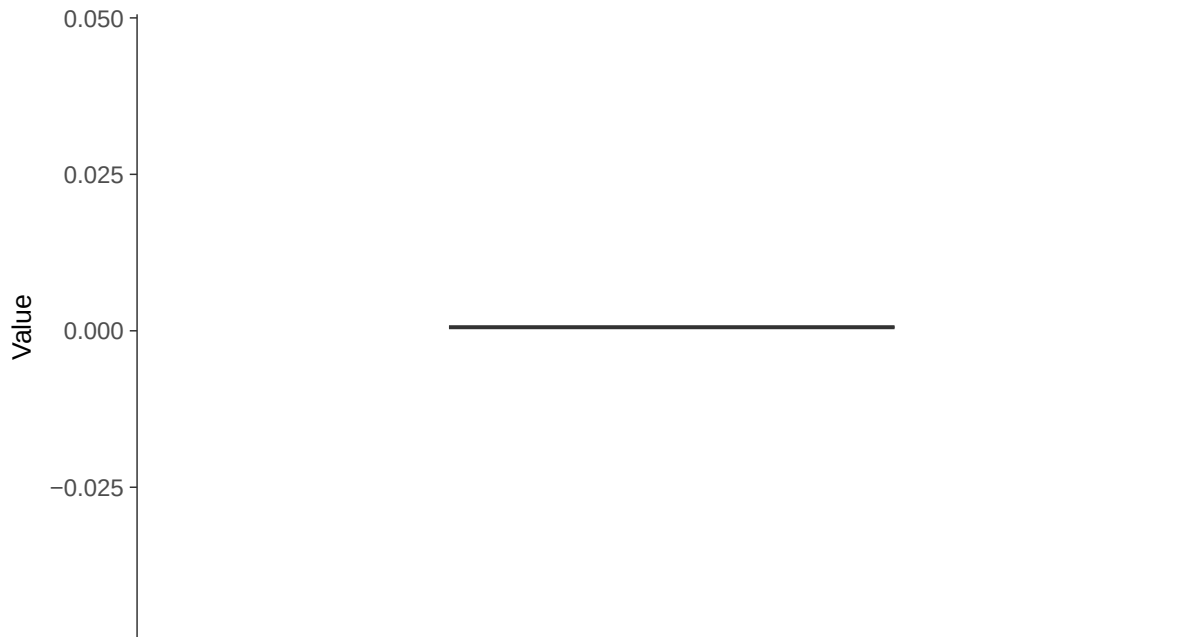
ID: 2_2_101





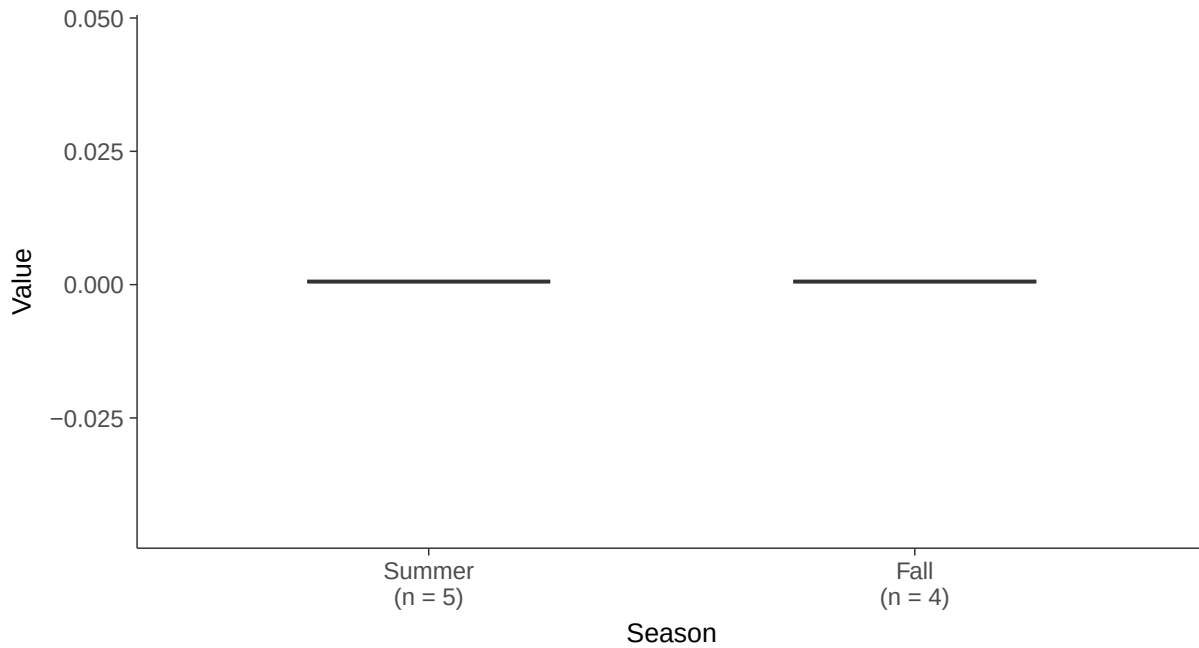
Boxplot

Antimony, W-2 (mg/l)



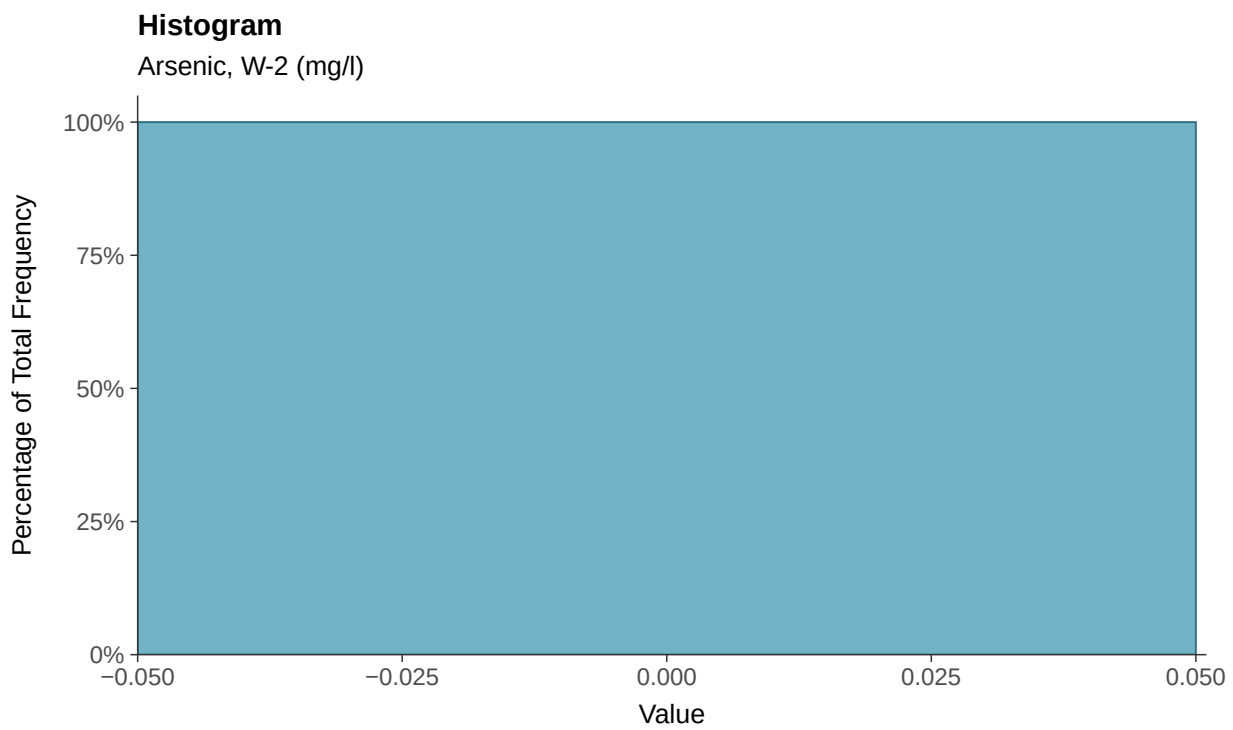
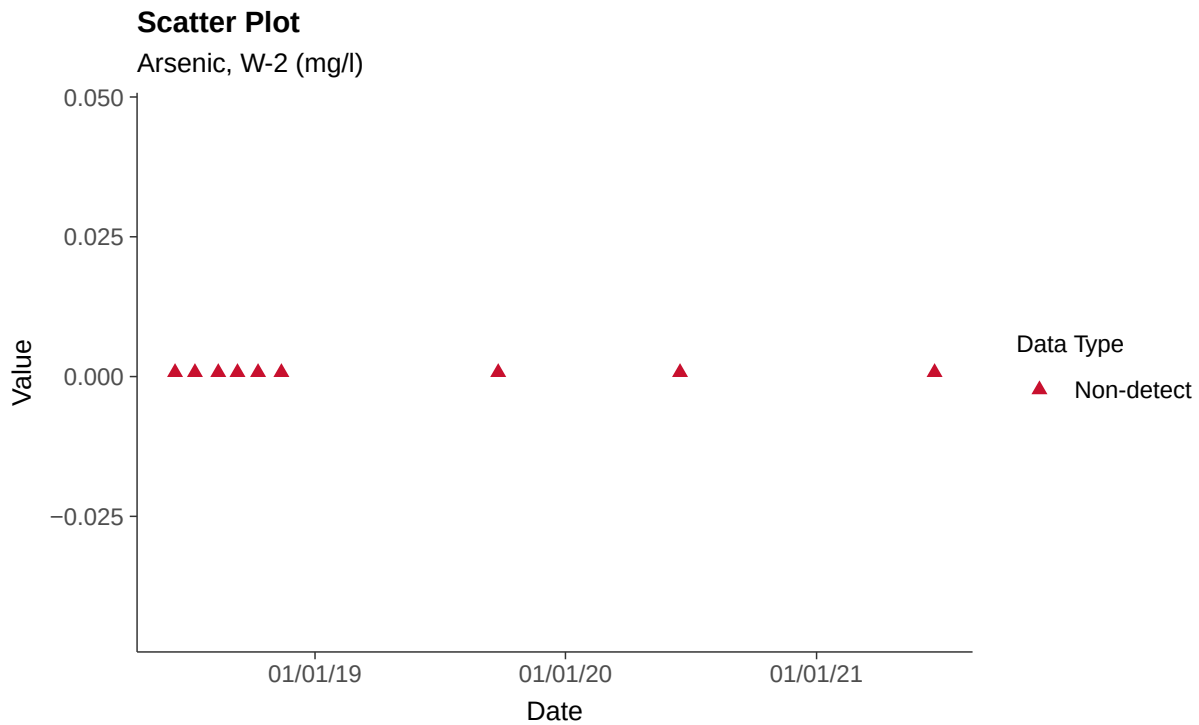
Boxplot by Season

Antimony, W-2 (mg/l)



Appendix IV: Arsenic, W-2

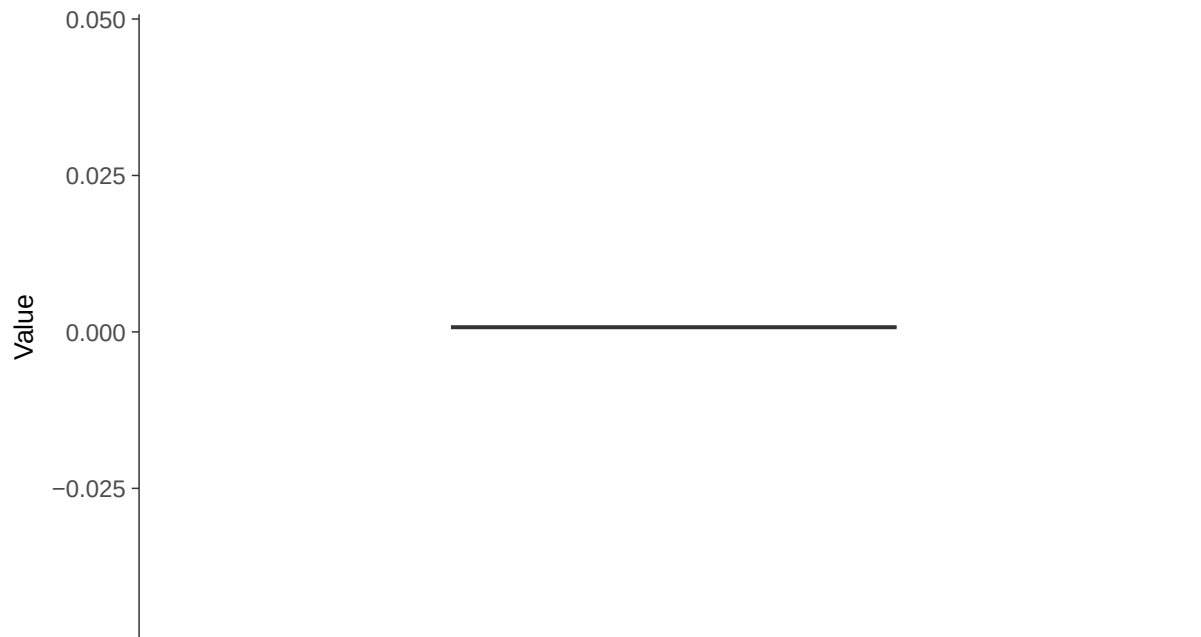
ID: 2_2_102





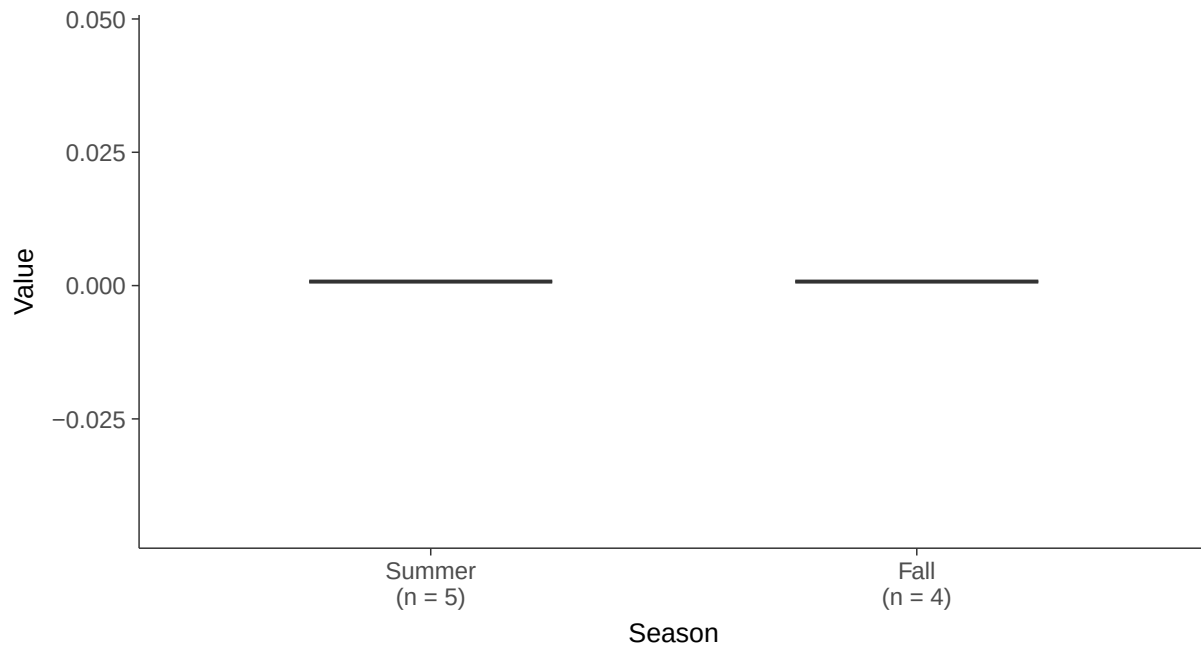
Boxplot

Arsenic, W-2 (mg/l)



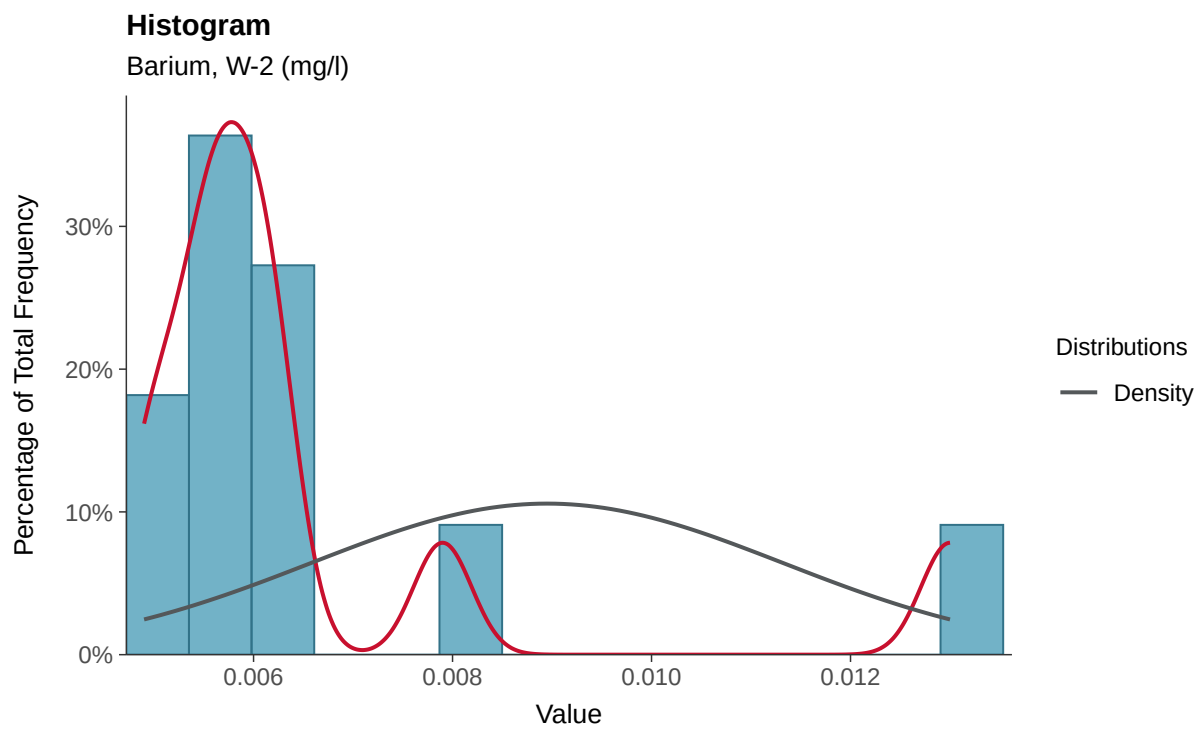
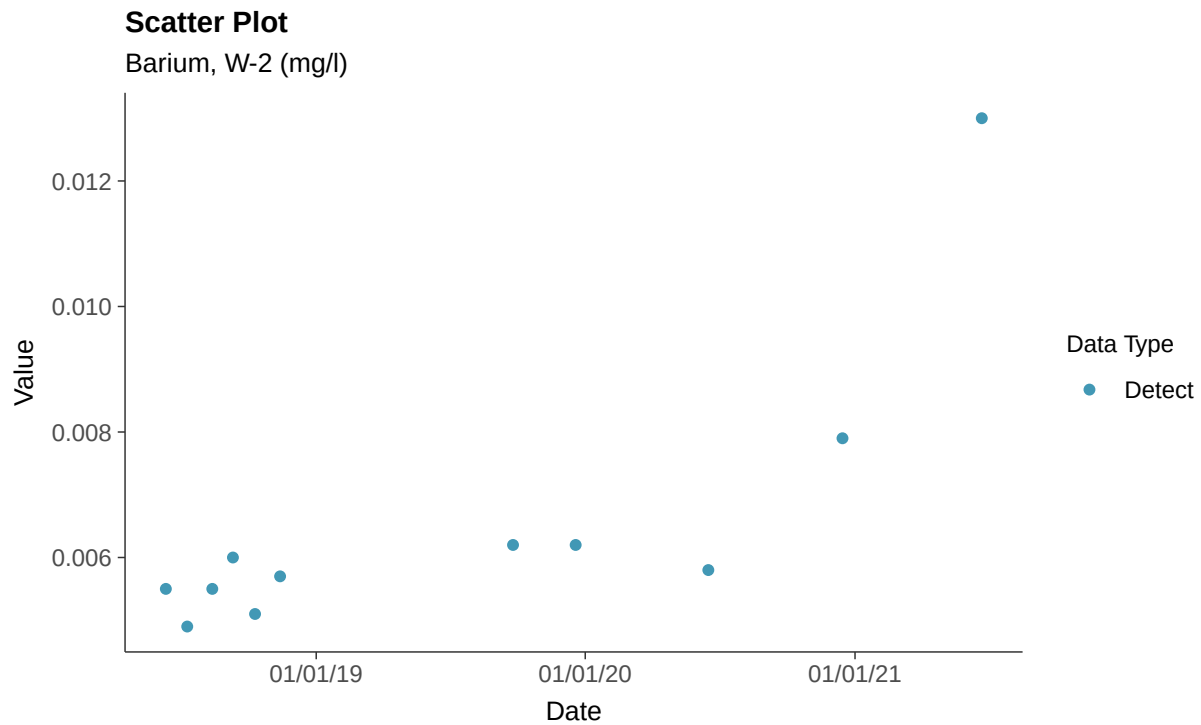
Boxplot by Season

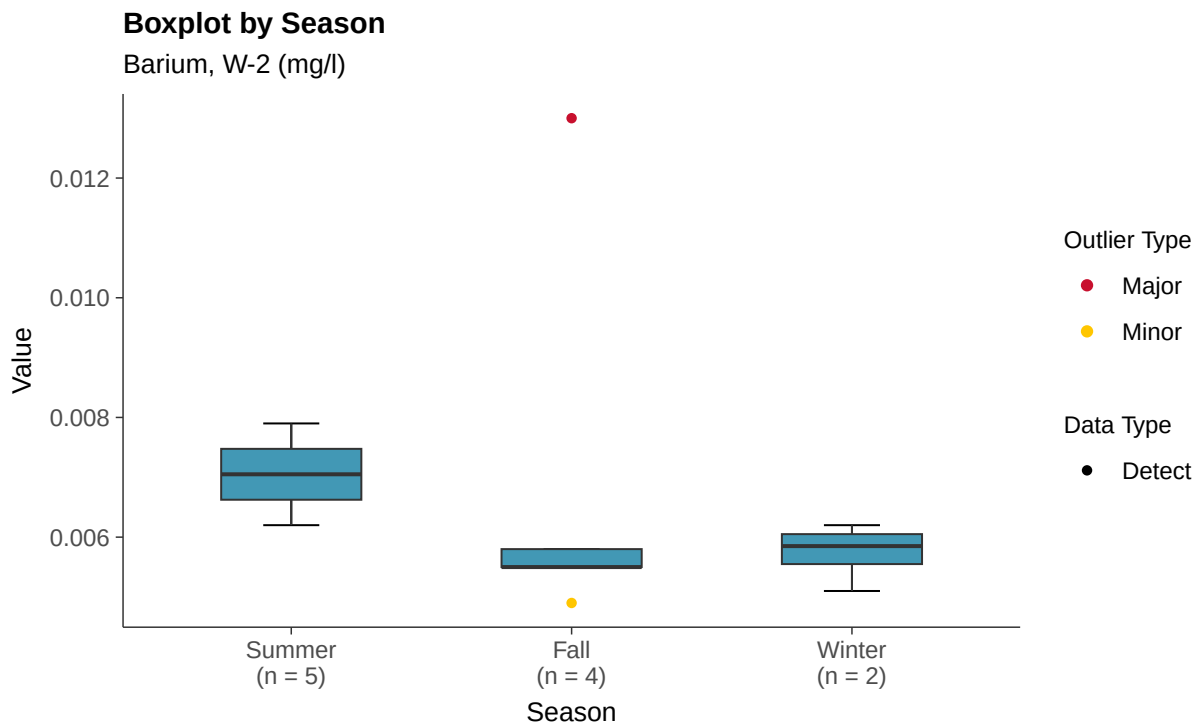
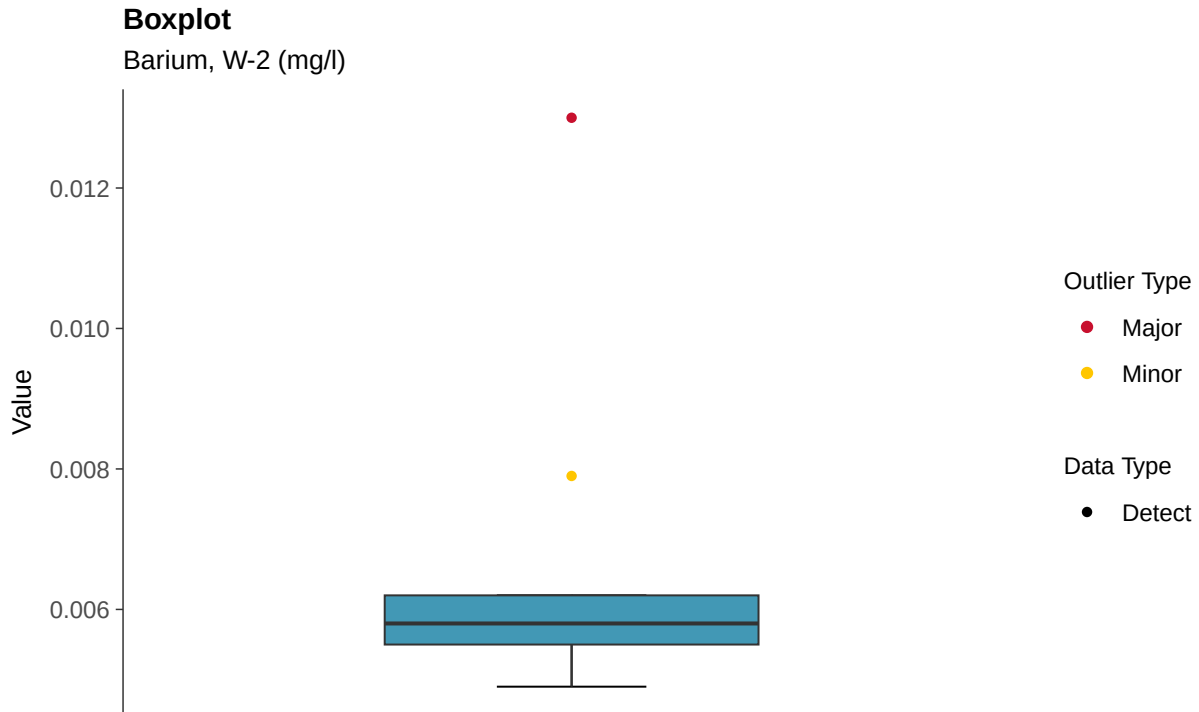
Arsenic, W-2 (mg/l)



Appendix IV: Barium, W-2

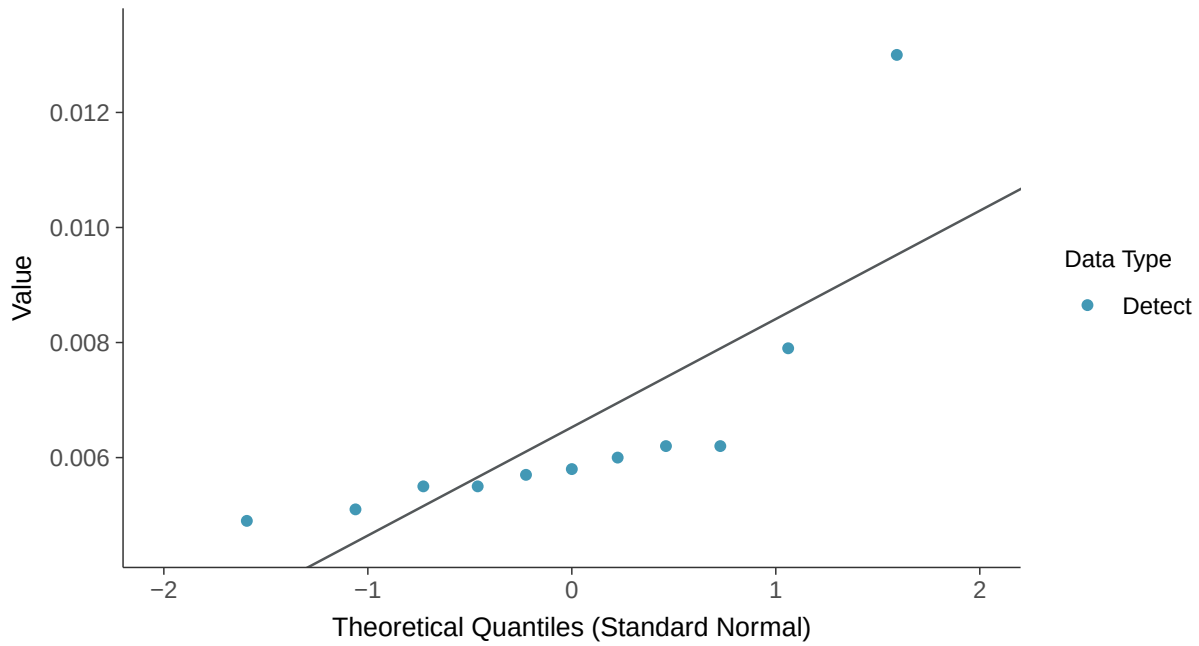
ID: 2_2_103





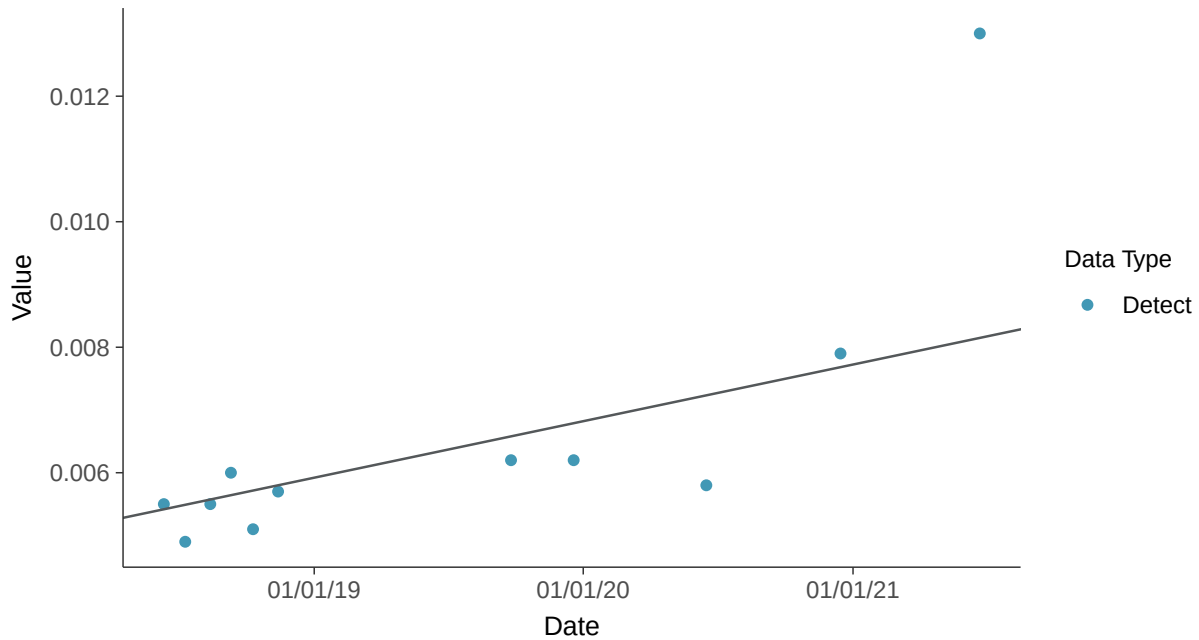
Normal Q-Q plot

Barium, W-2 (mg/l)



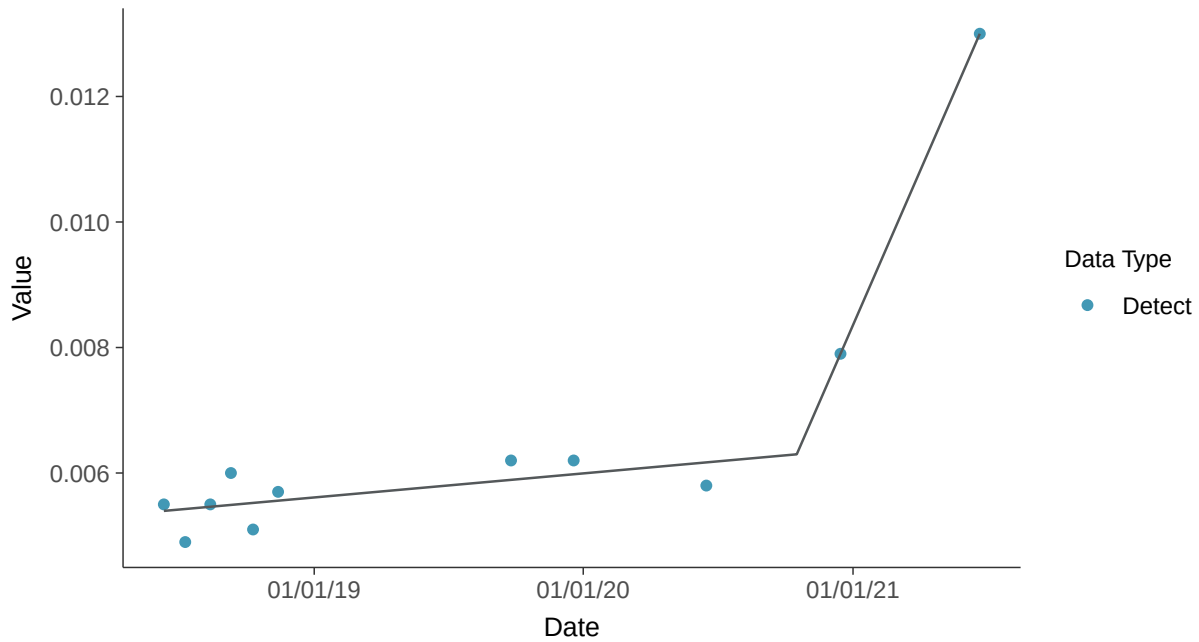
Trend Regression: Mann-Kendall/Theil-Sen Estimate

Barium, W-2 (mg/l)



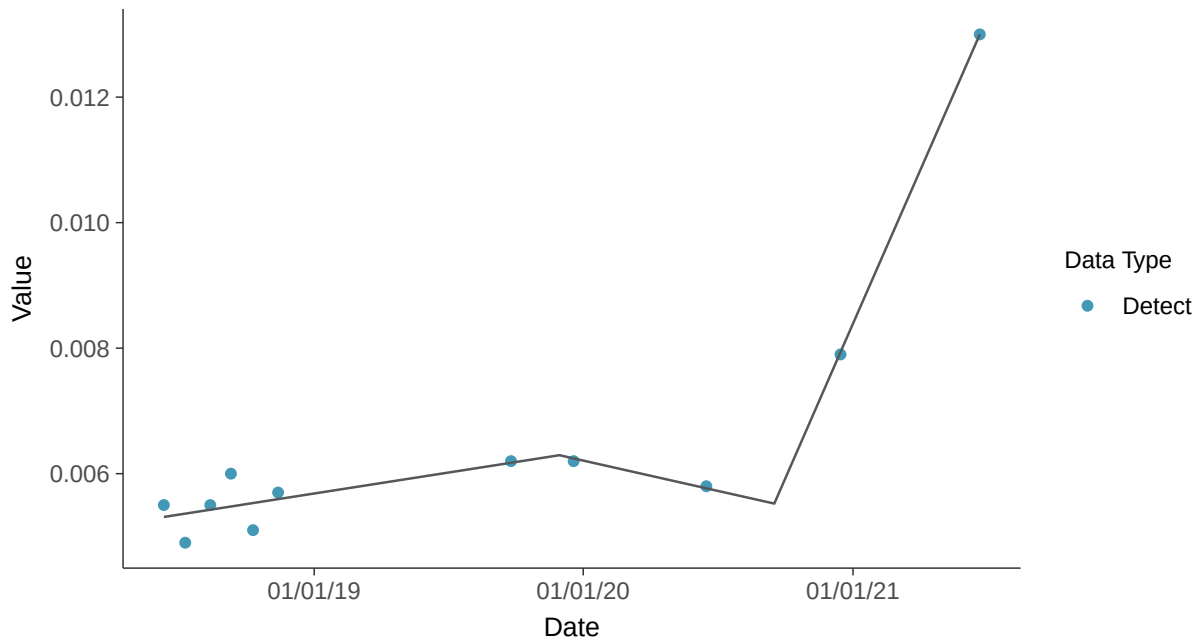
Trend Regression: Piecewise Linear-Linear

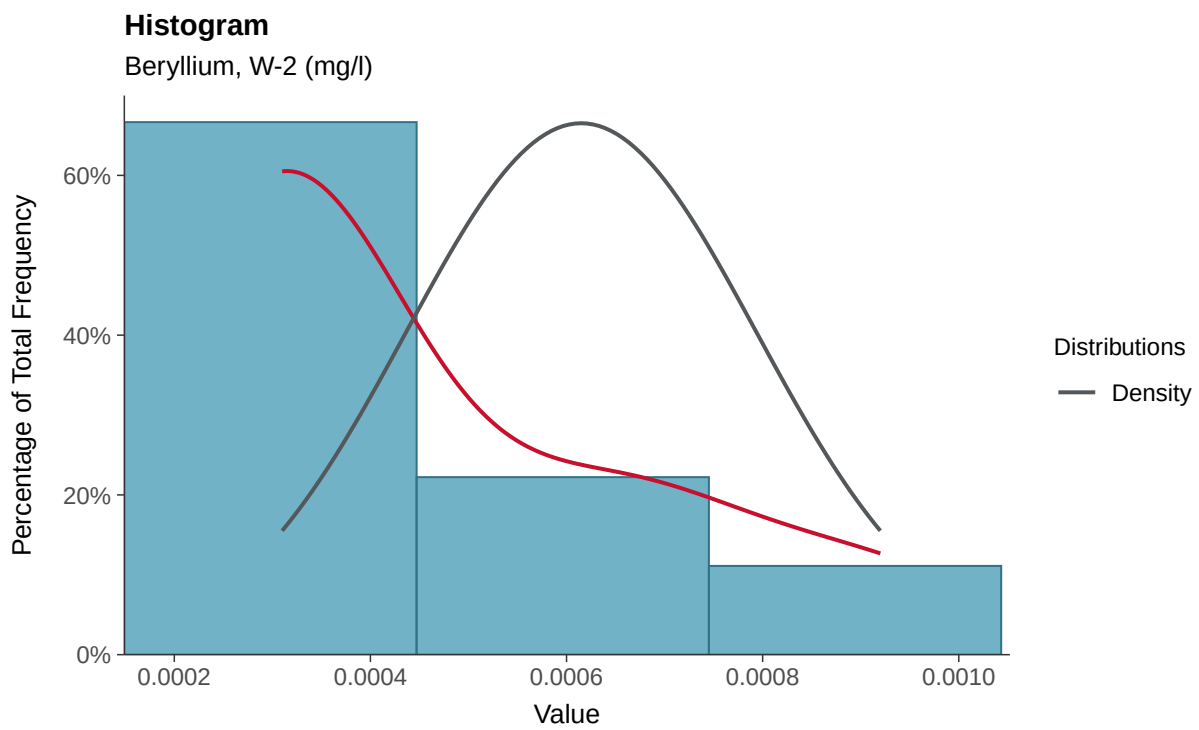
Barium, W-2 (mg/l)



Trend Regression: Piecewise Linear-Linear-Linear

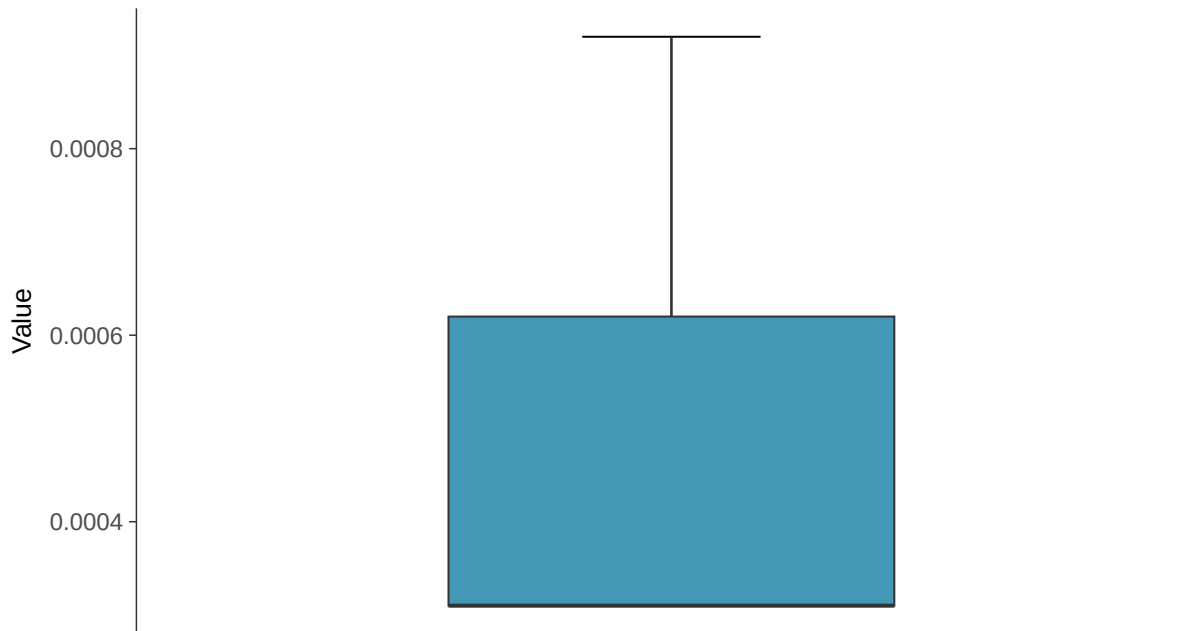
Barium, W-2 (mg/l)





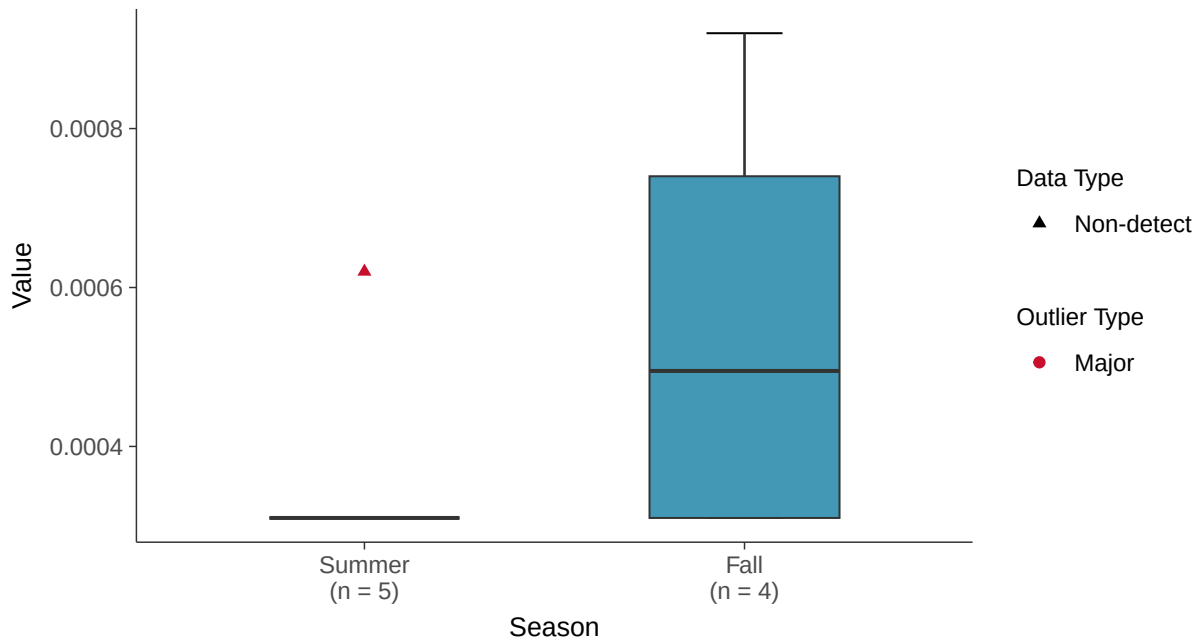
Boxplot

Beryllium, W-2 (mg/l)



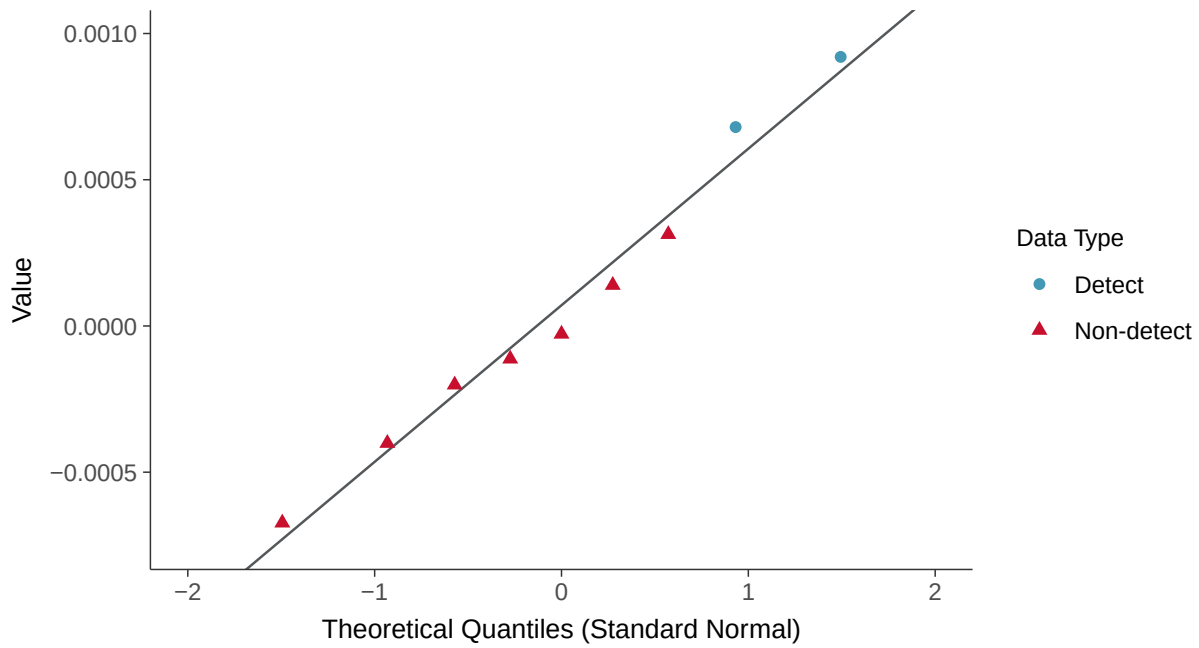
Boxplot by Season

Beryllium, W-2 (mg/l)



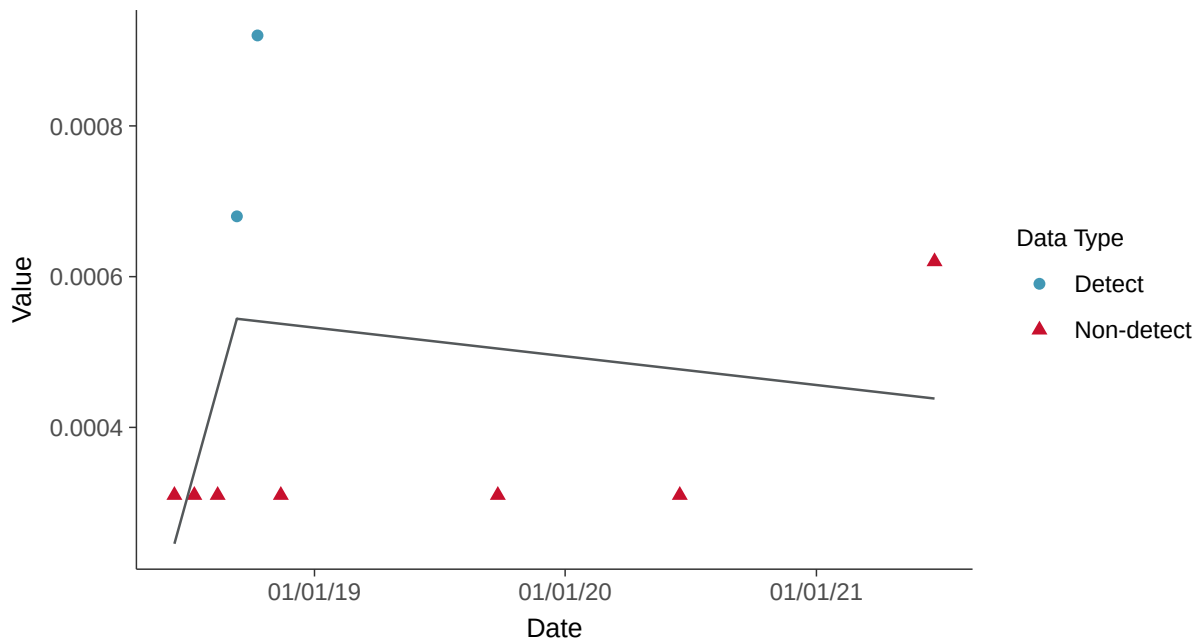
Normal Q-Q plot using ROS Imputed Estimates

Beryllium, W-2 (mg/l)



Trend Regression: Piecewise Linear-Linear

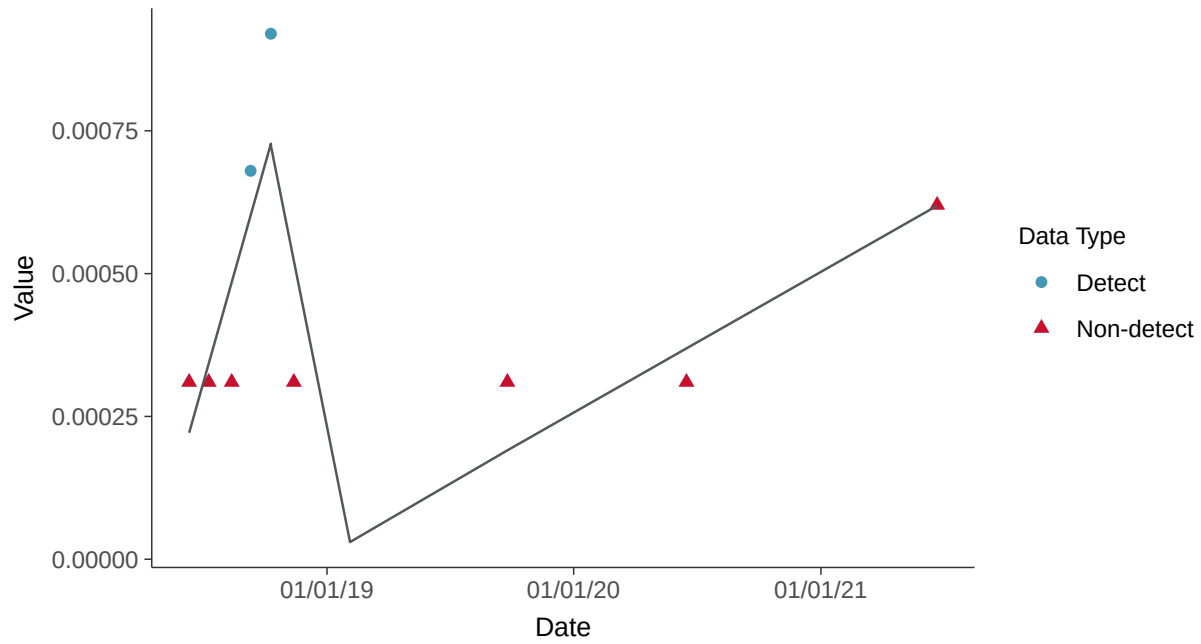
Beryllium, W-2 (mg/l)





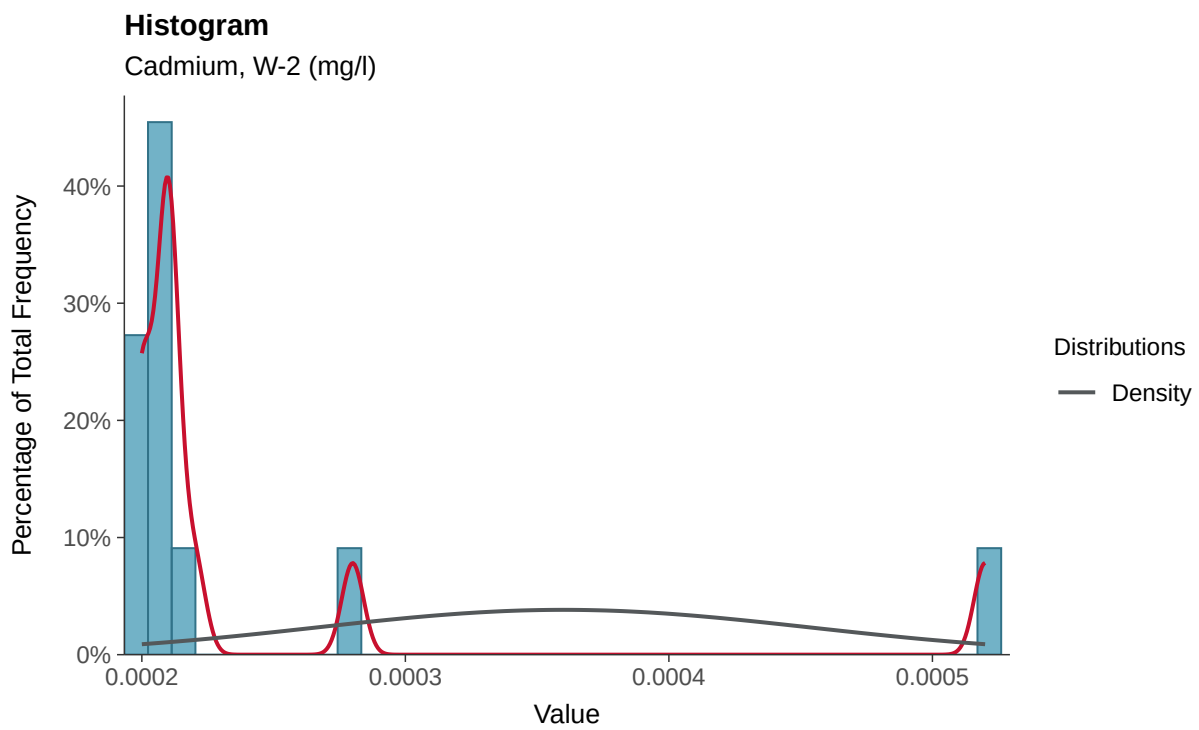
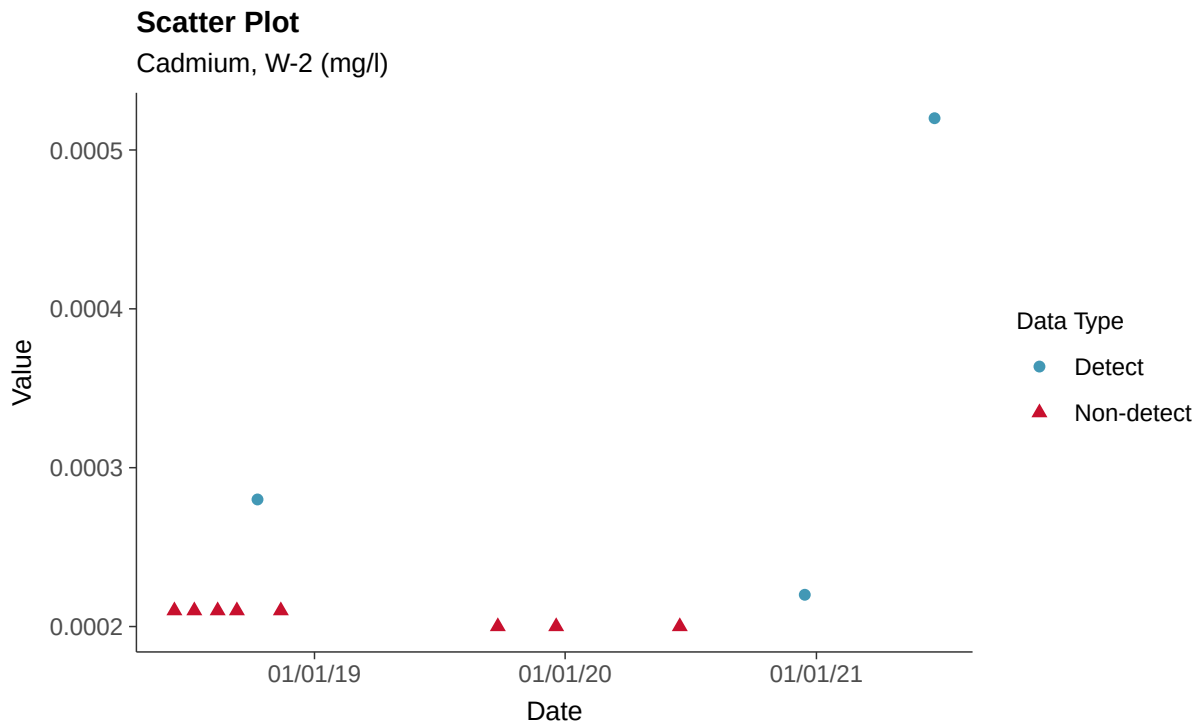
Trend Regression: Piecewise Linear-Linear-Linear

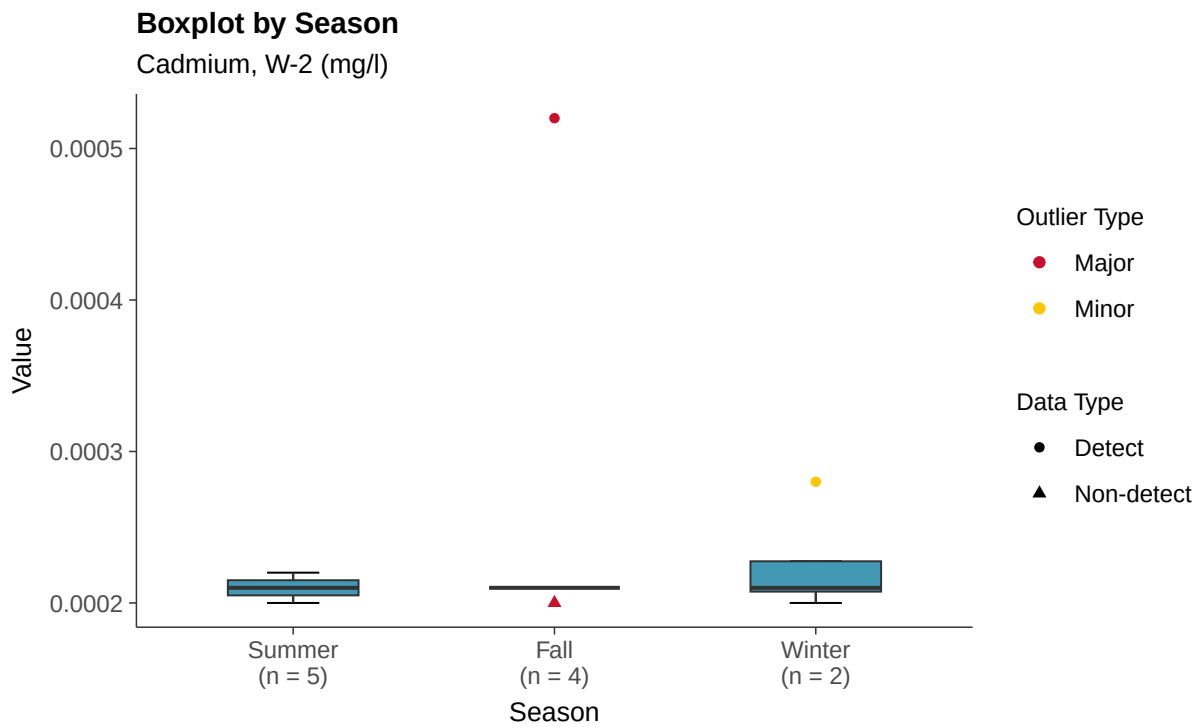
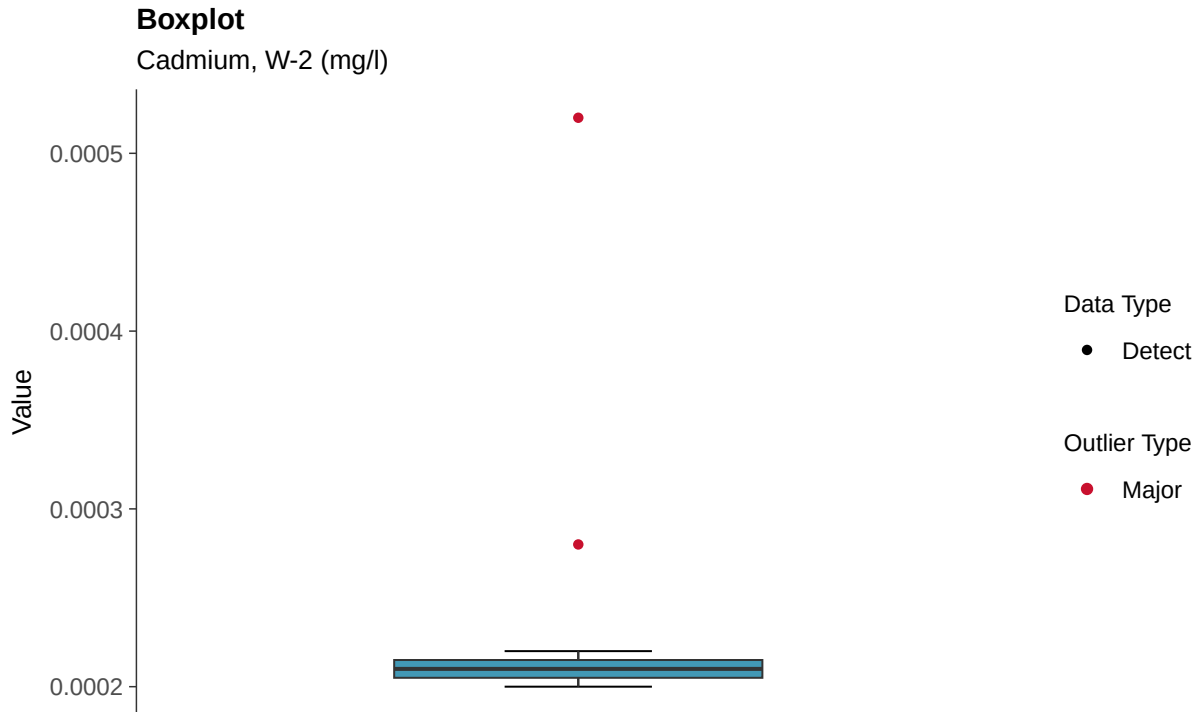
Beryllium, W-2 (mg/l)



Appendix IV: Cadmium, W-2

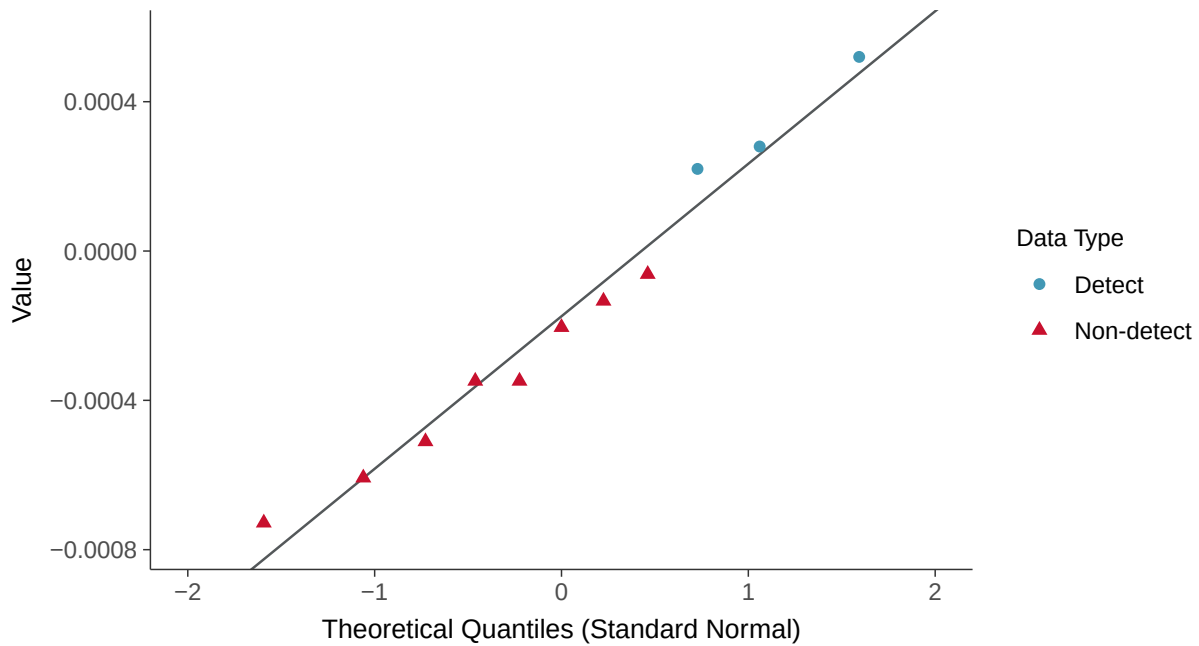
ID: 2_2_106





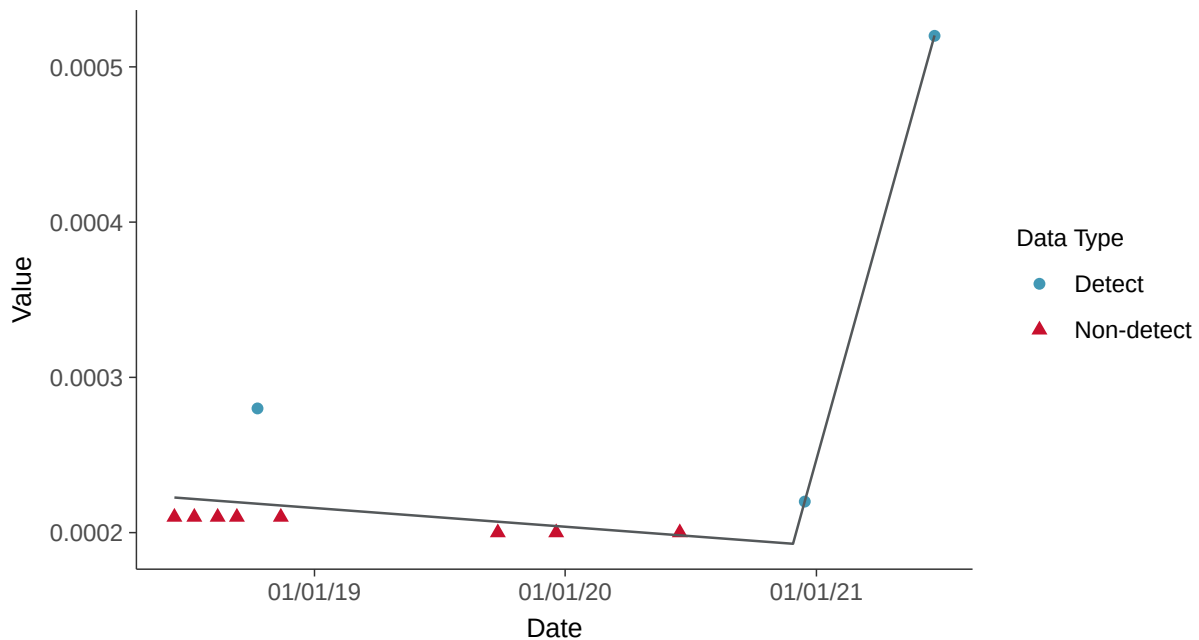
Normal Q-Q plot using ROS Imputed Estimates

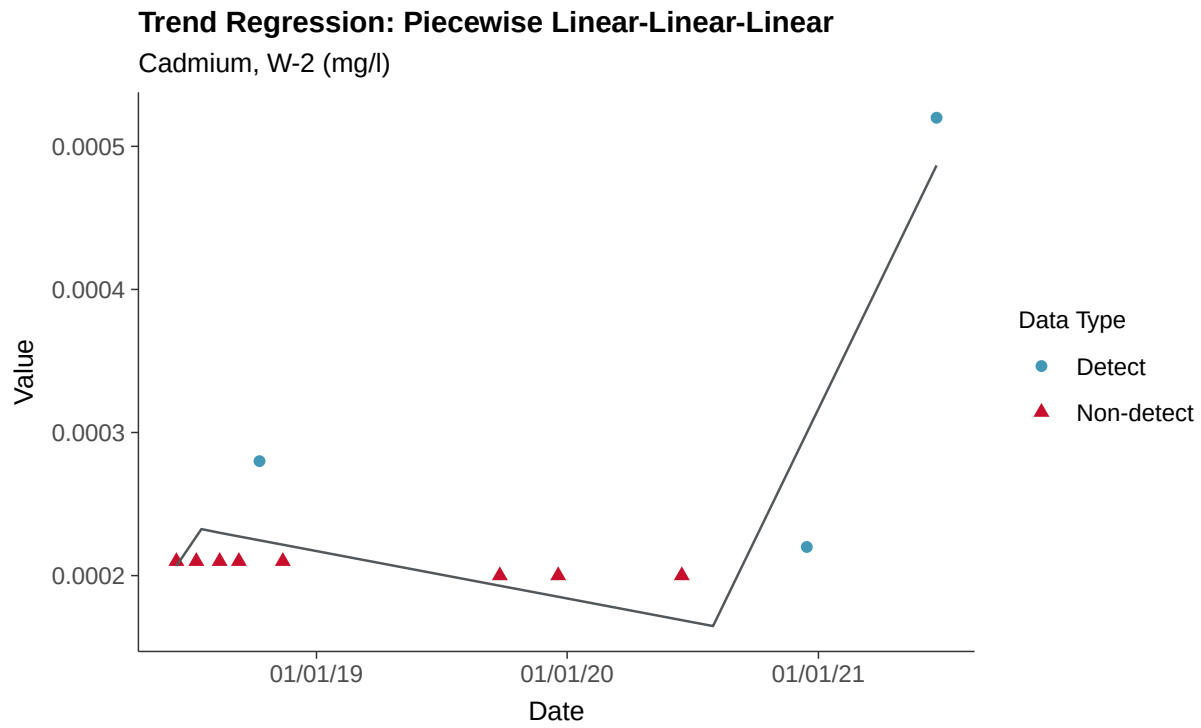
Cadmium, W-2 (mg/l)



Trend Regression: Piecewise Linear-Linear

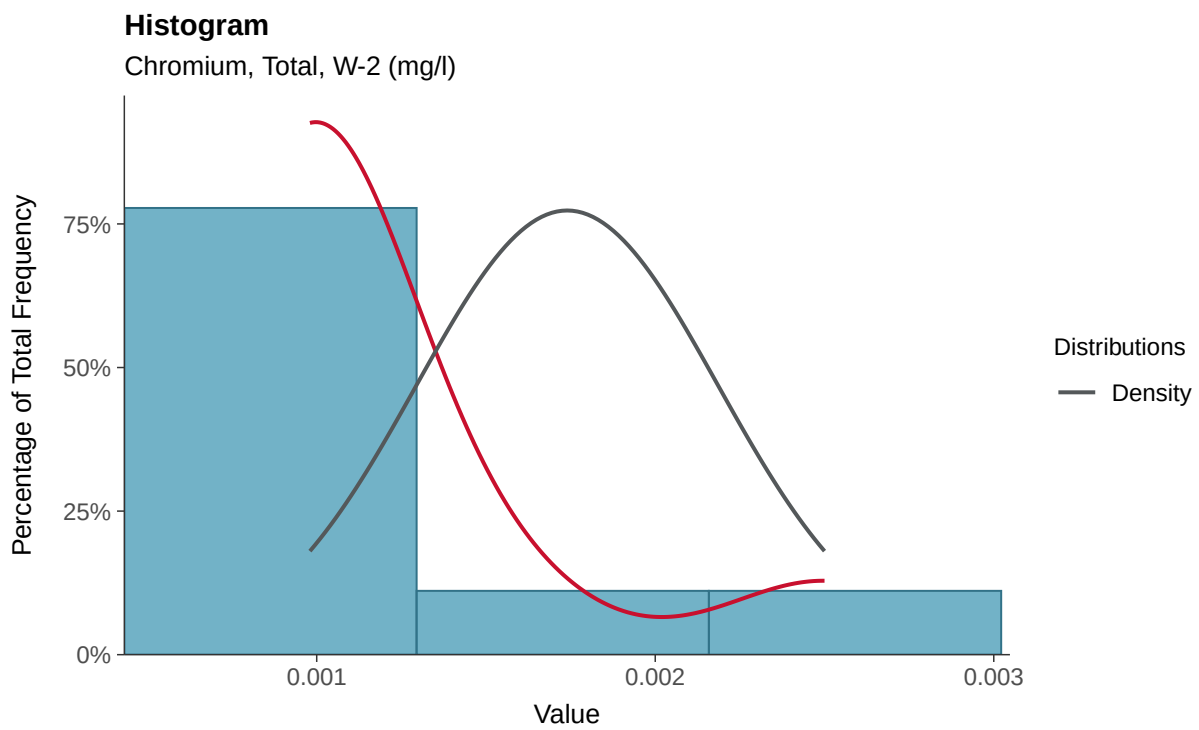
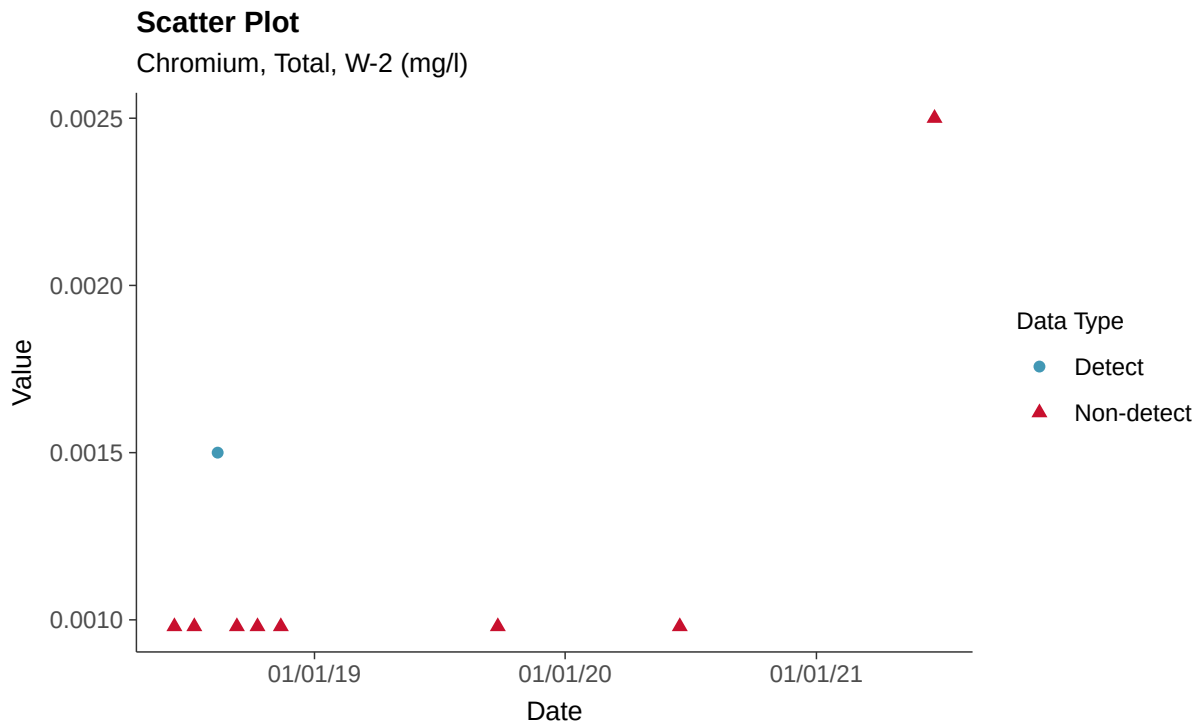
Cadmium, W-2 (mg/l)

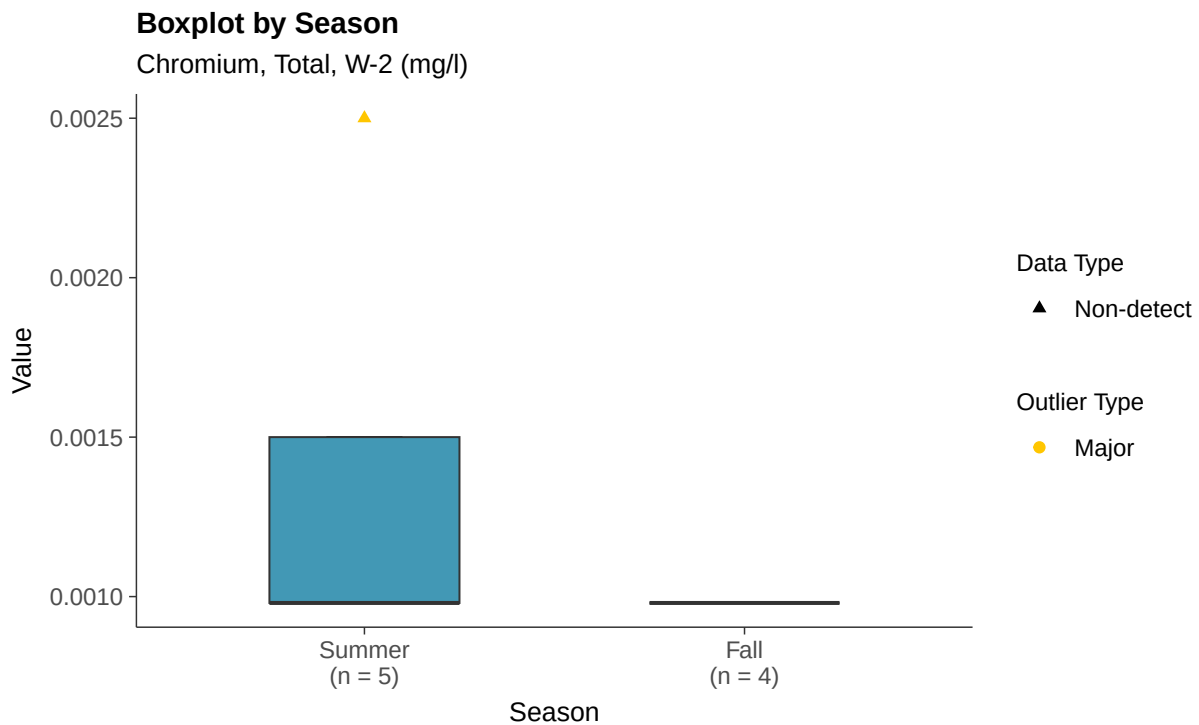
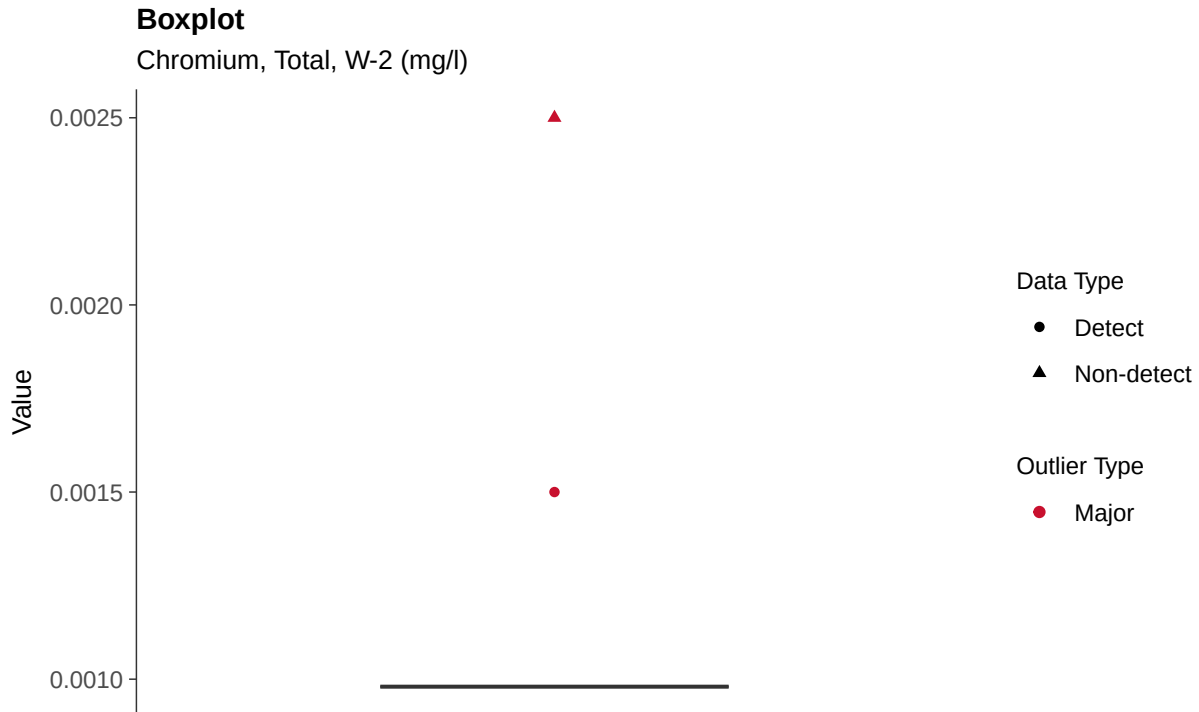




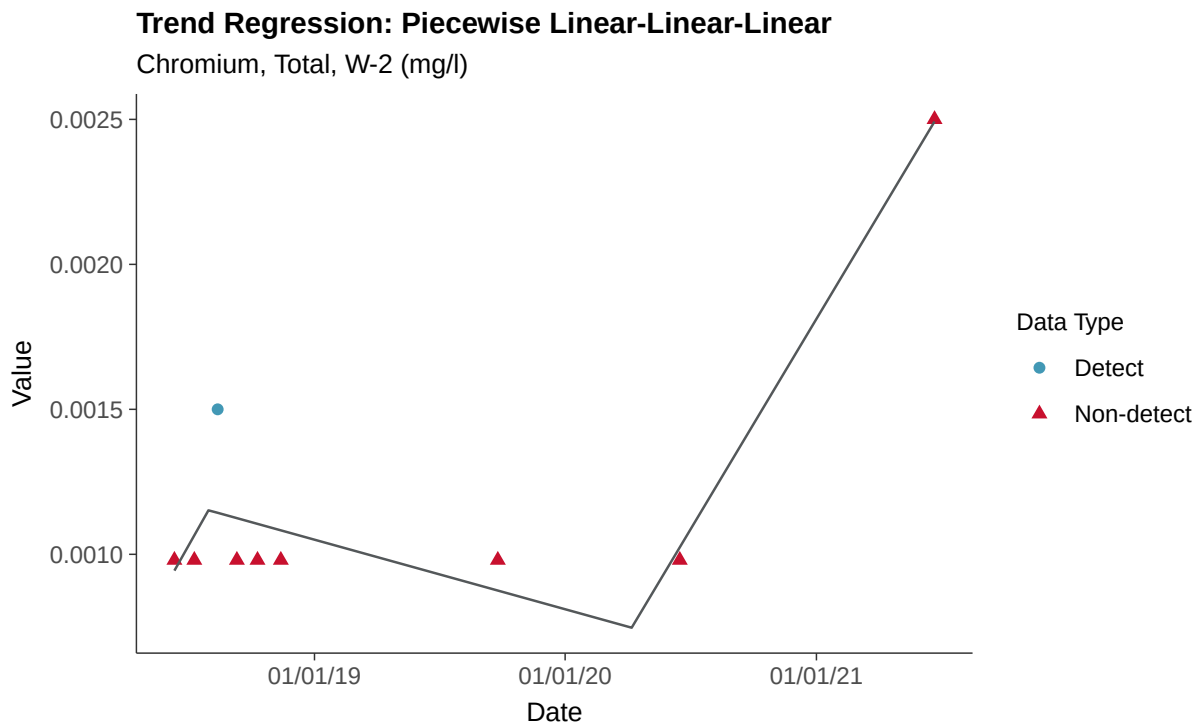
Appendix IV: Chromium, Total, W-2

ID: 2_2_109



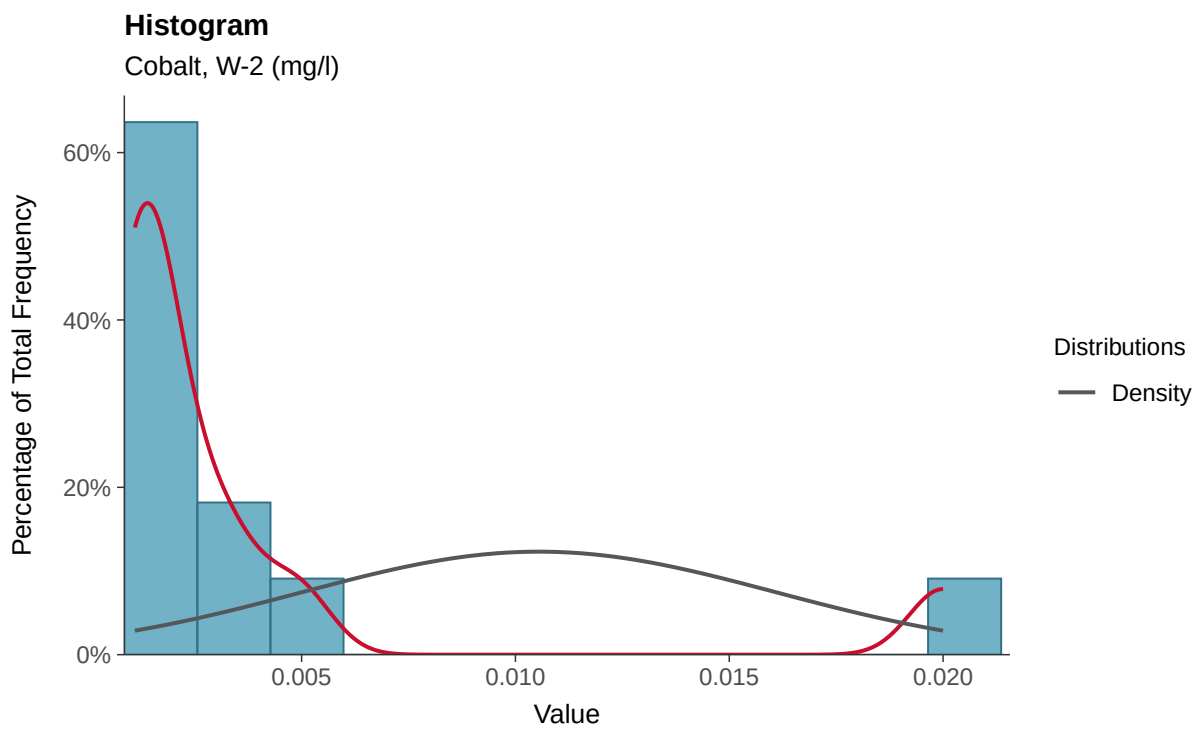
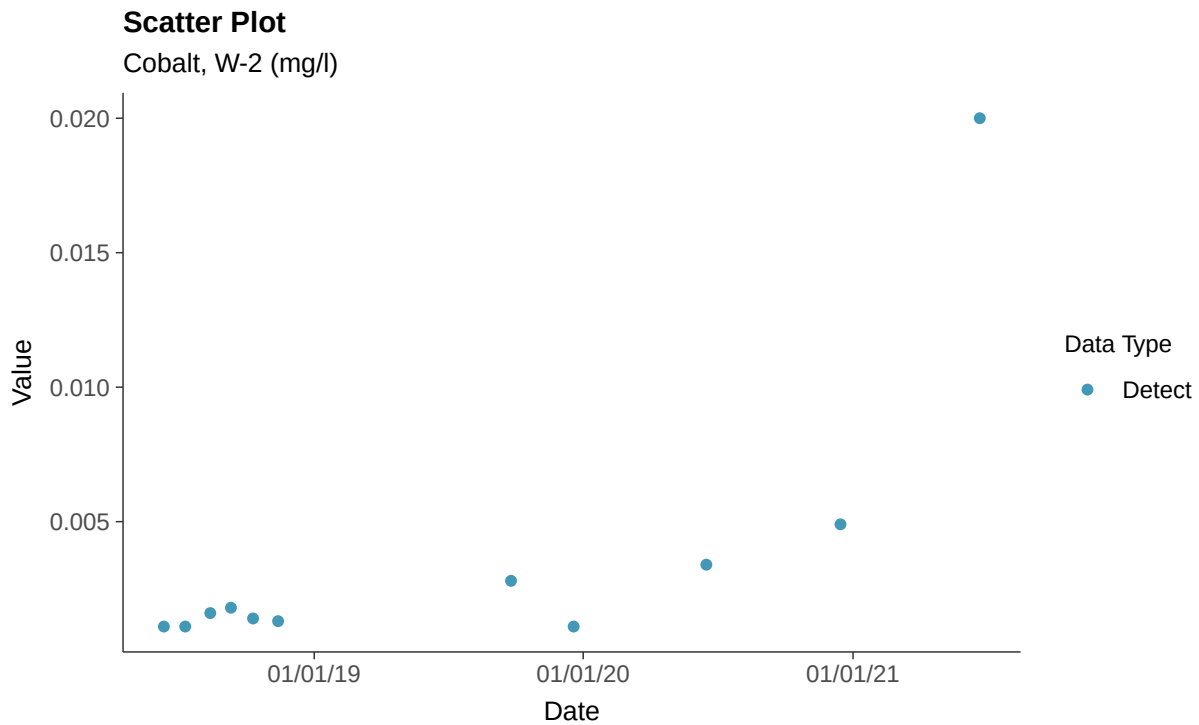


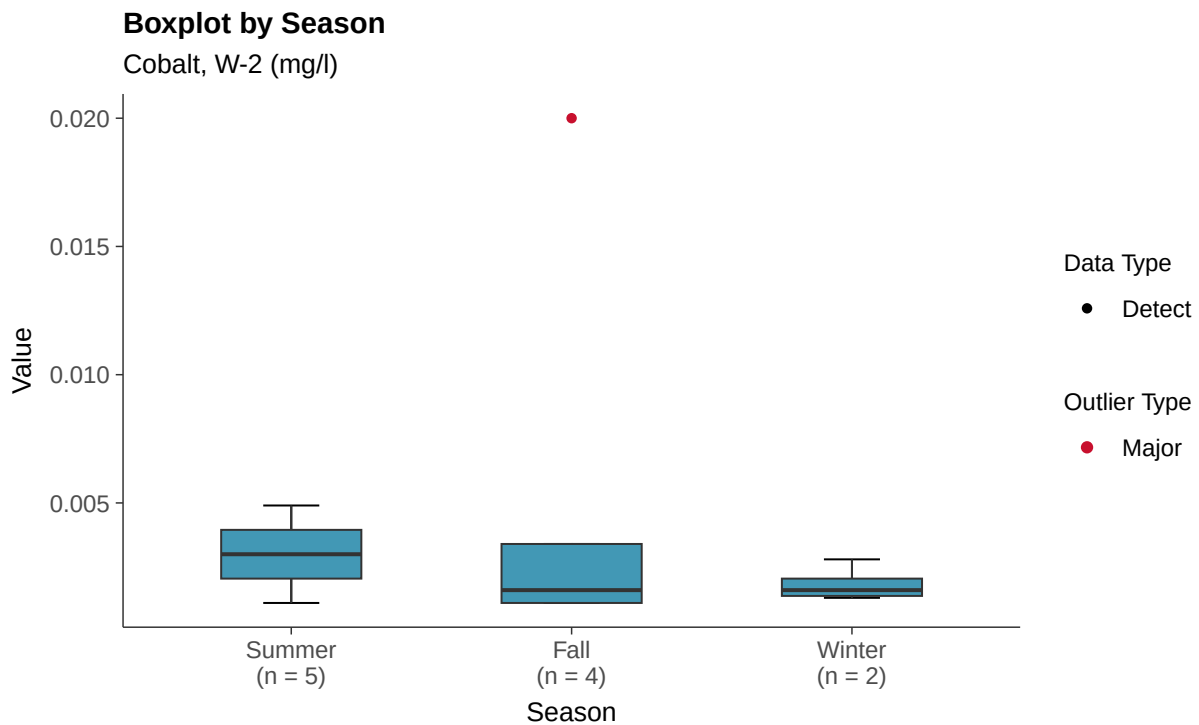
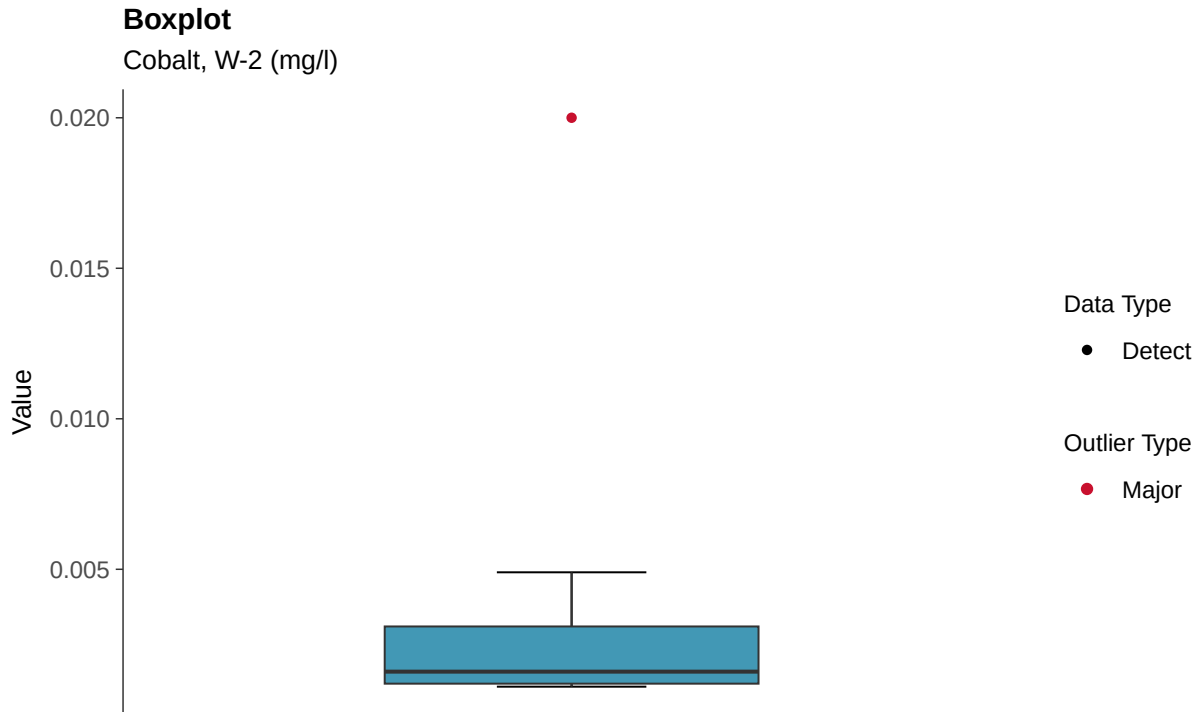
Chromium, Total, W-2 (mg/l)



Appendix IV: Cobalt, W-2

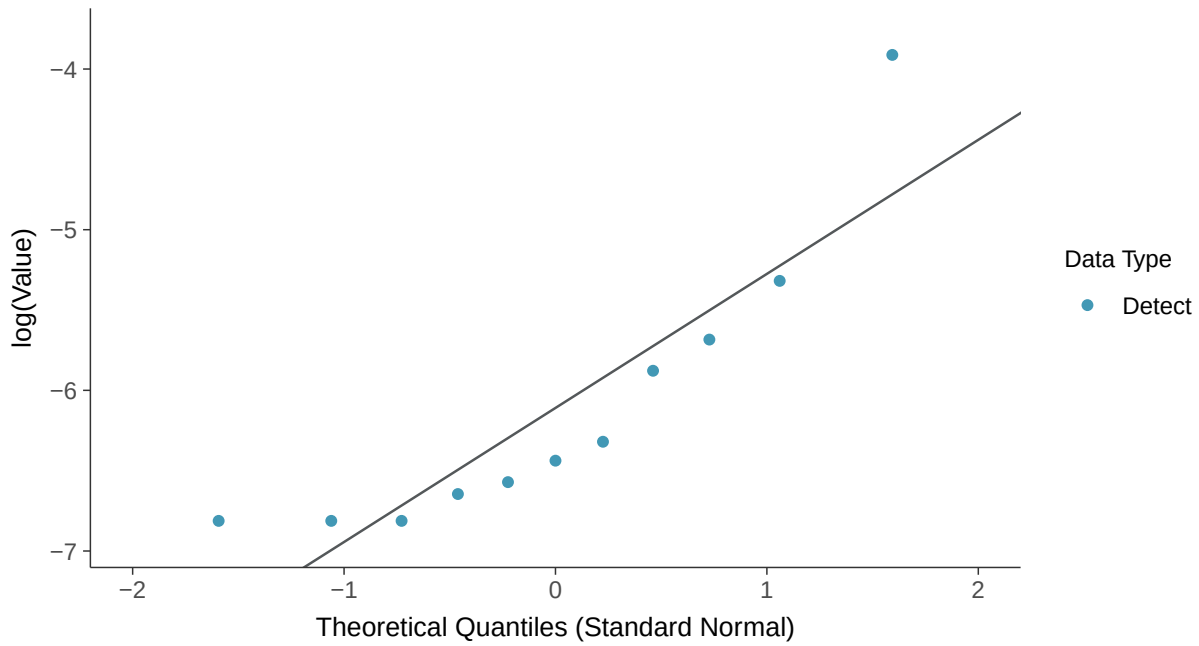
ID: 2_2_110





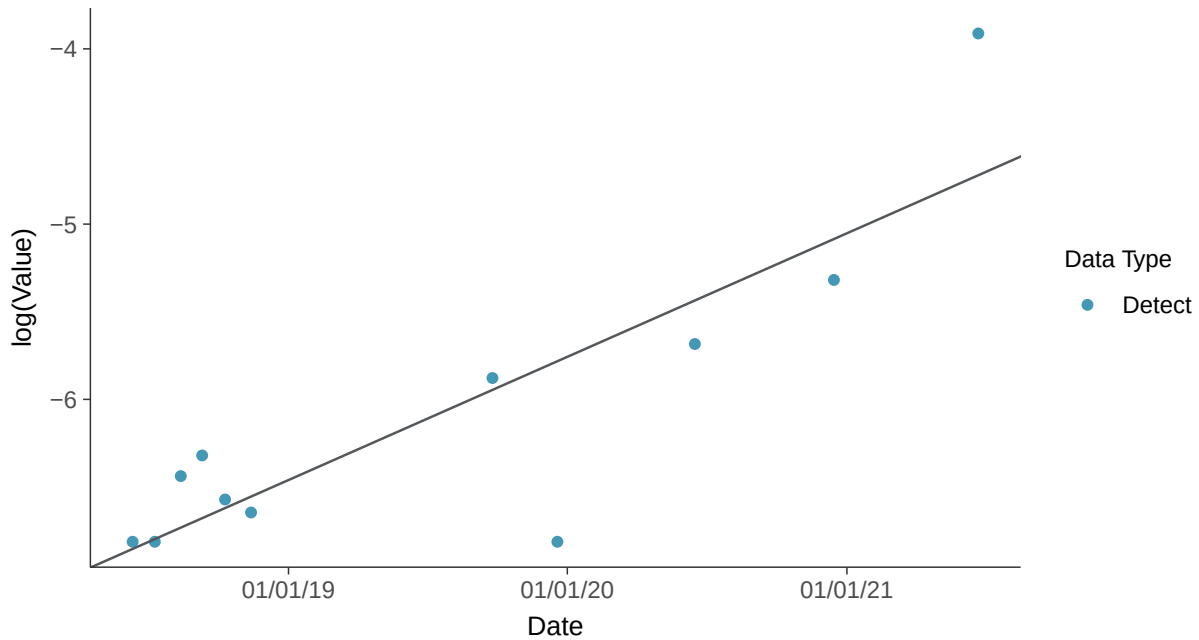
Lognormal Q-Q plot

Cobalt, W-2 (mg/l)



Trend Regression: Lognormal MLE

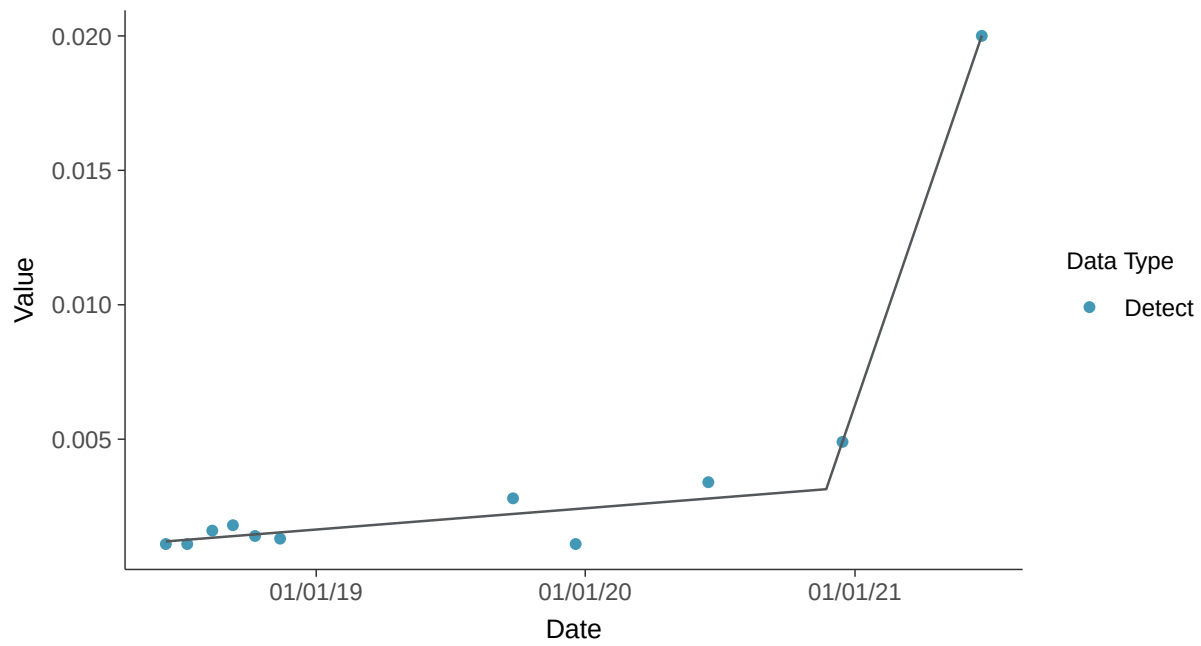
Cobalt, W-2 (mg/l)

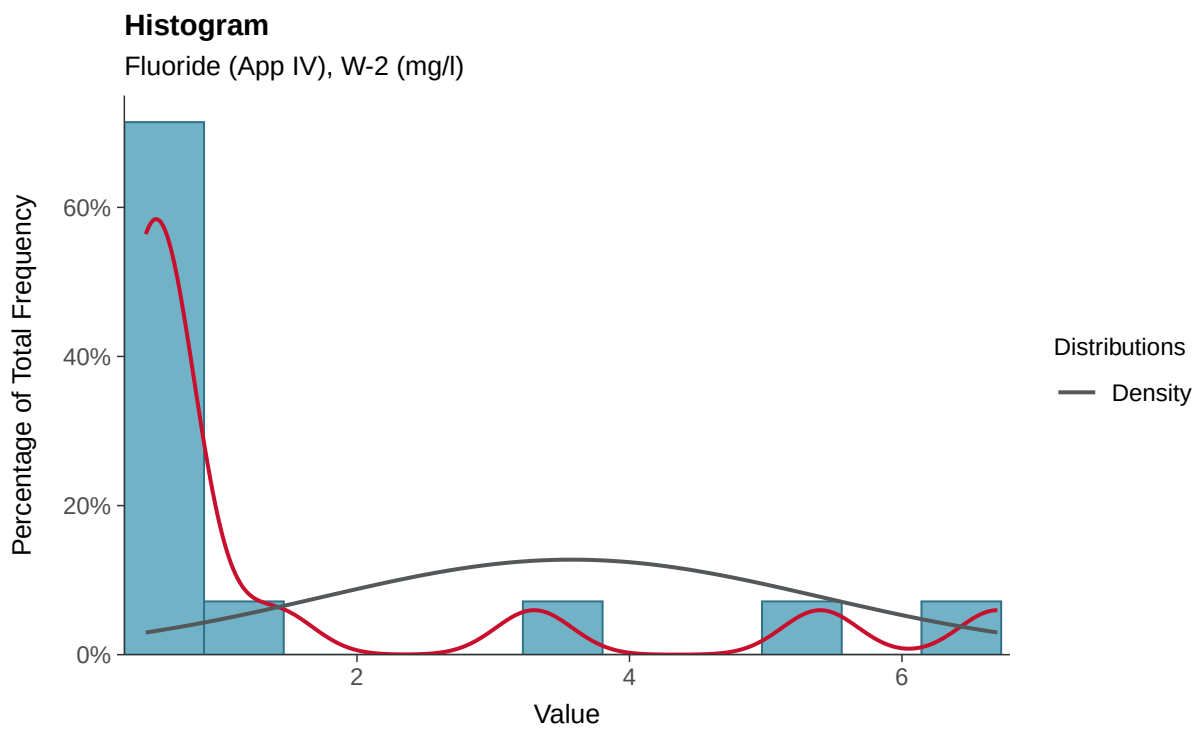




Trend Regression: Piecewise Linear-Linear

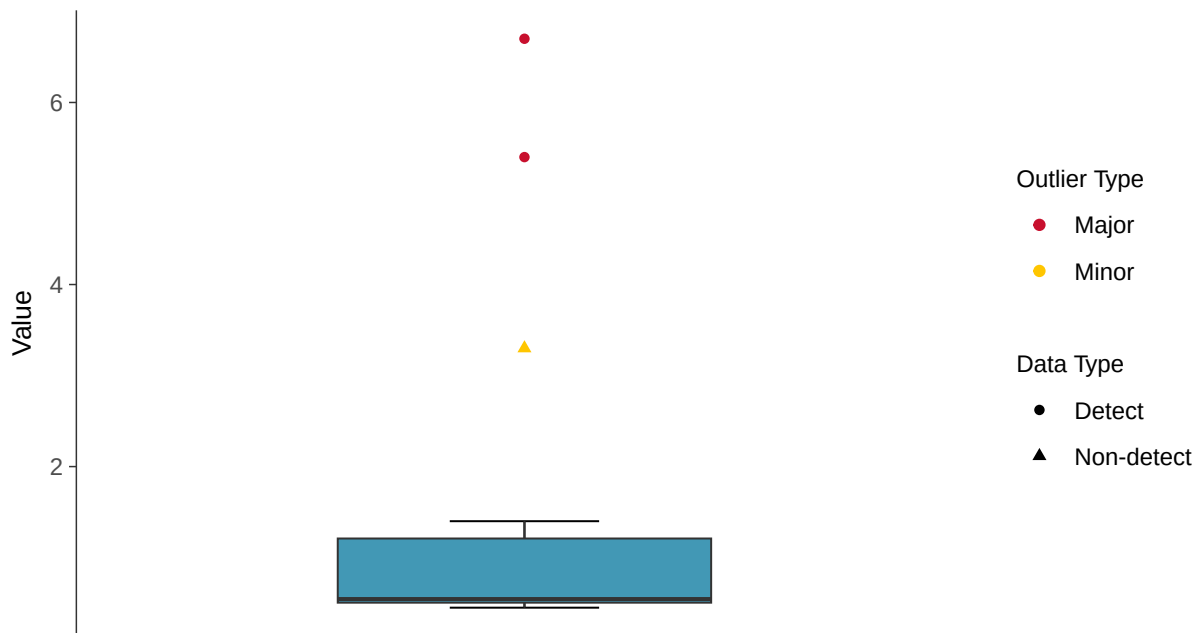
Cobalt, W-2 (mg/l)





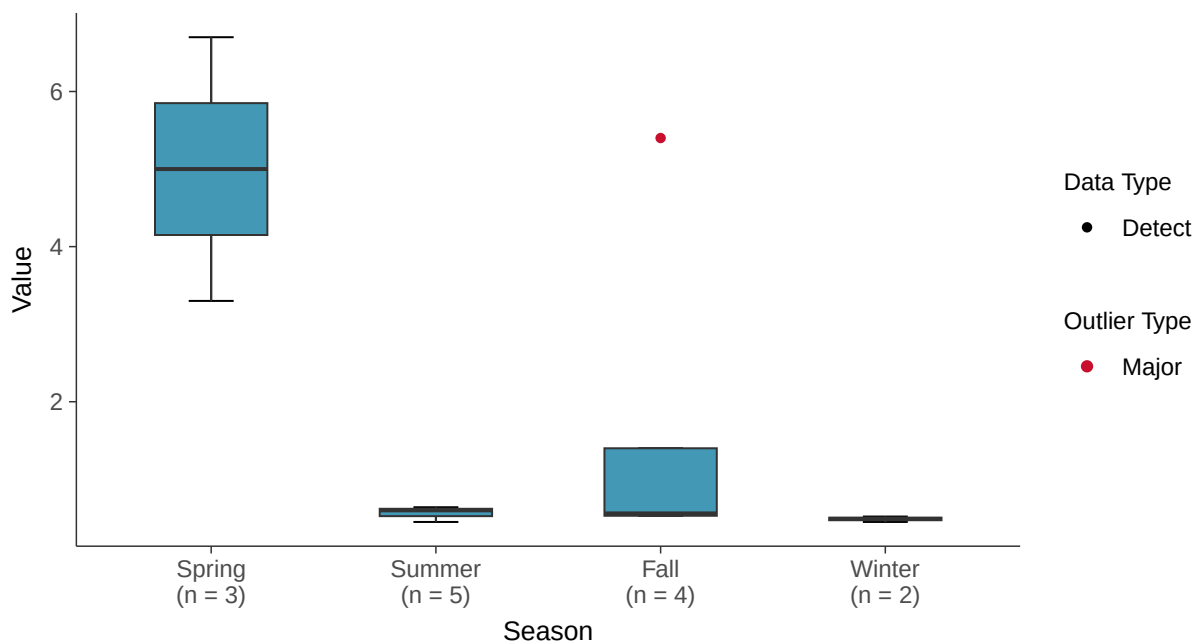
Boxplot

Fluoride (App IV), W-2 (mg/l)

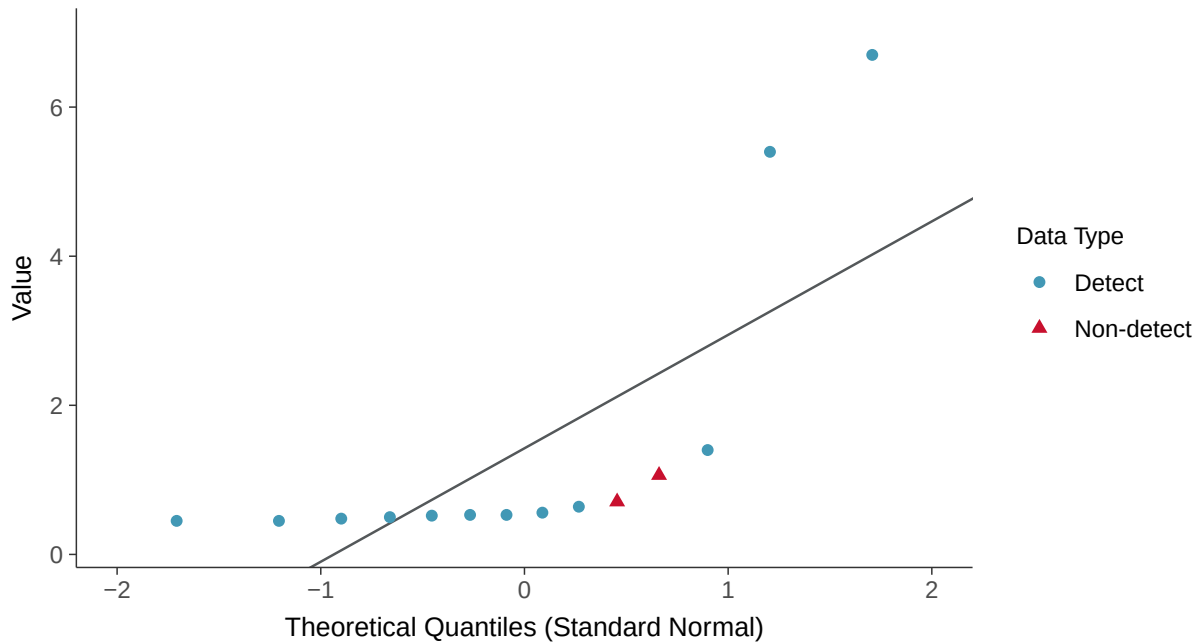


Boxplot by Season

Fluoride (App IV), W-2 (mg/l)

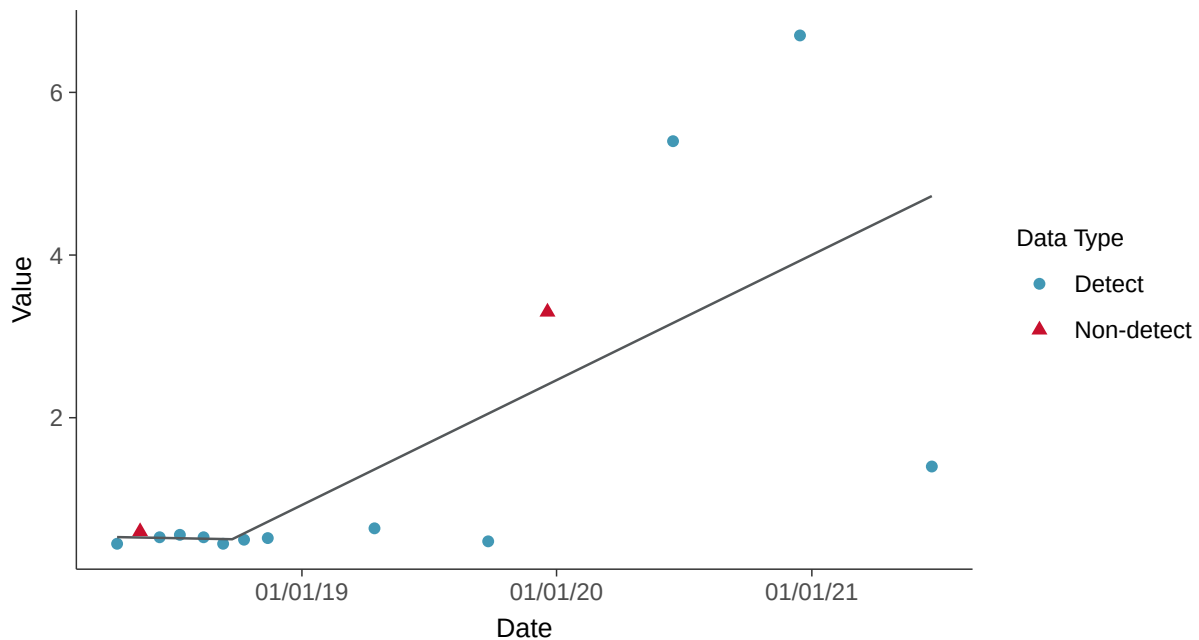


Fluoride (App IV), W-2 (mg/l)



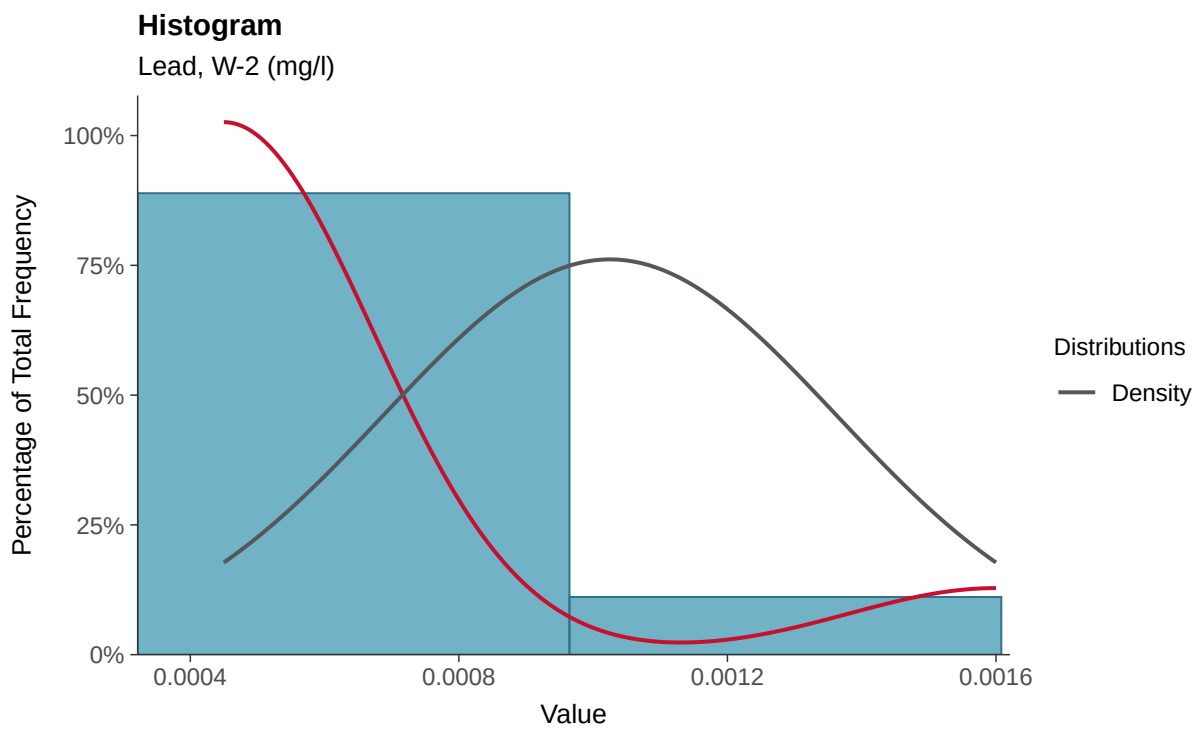
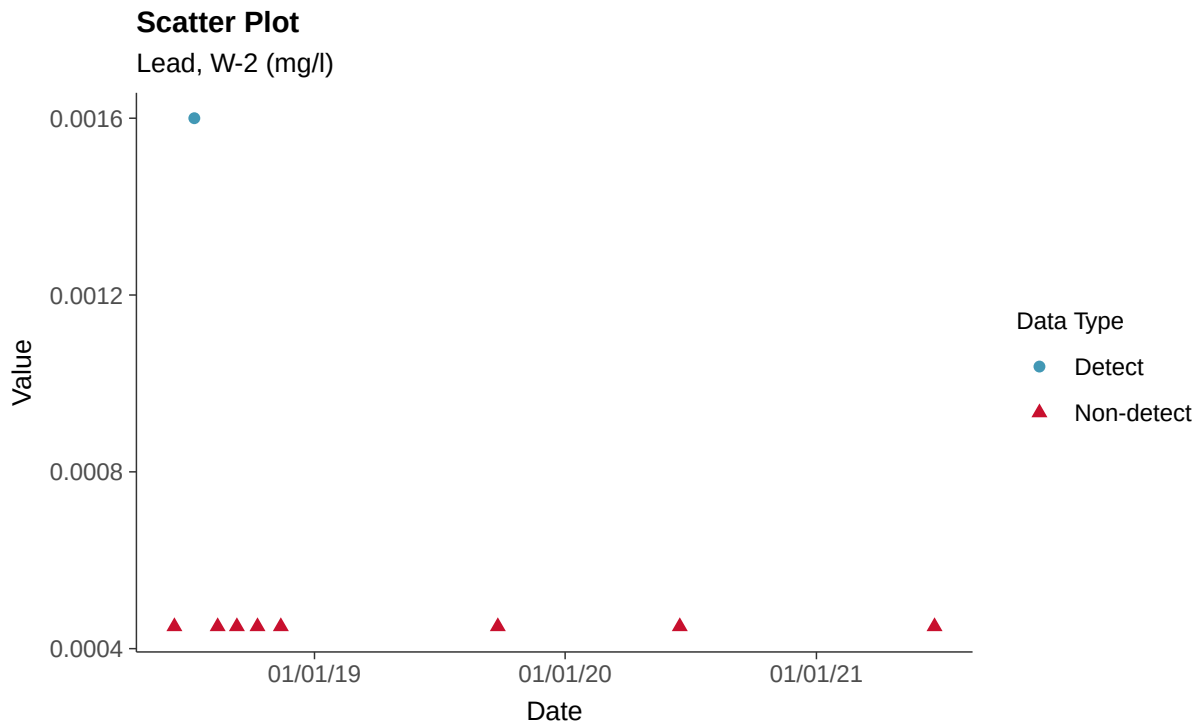
Trend Regression: Piecewise Linear-Linear

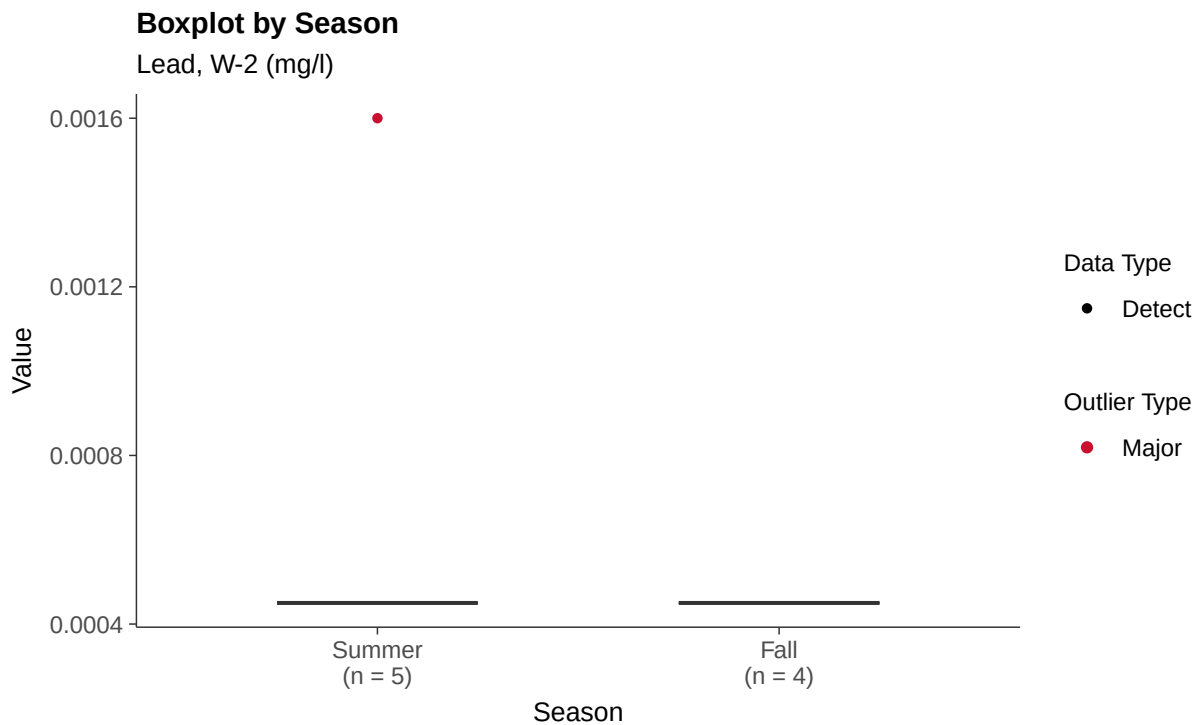
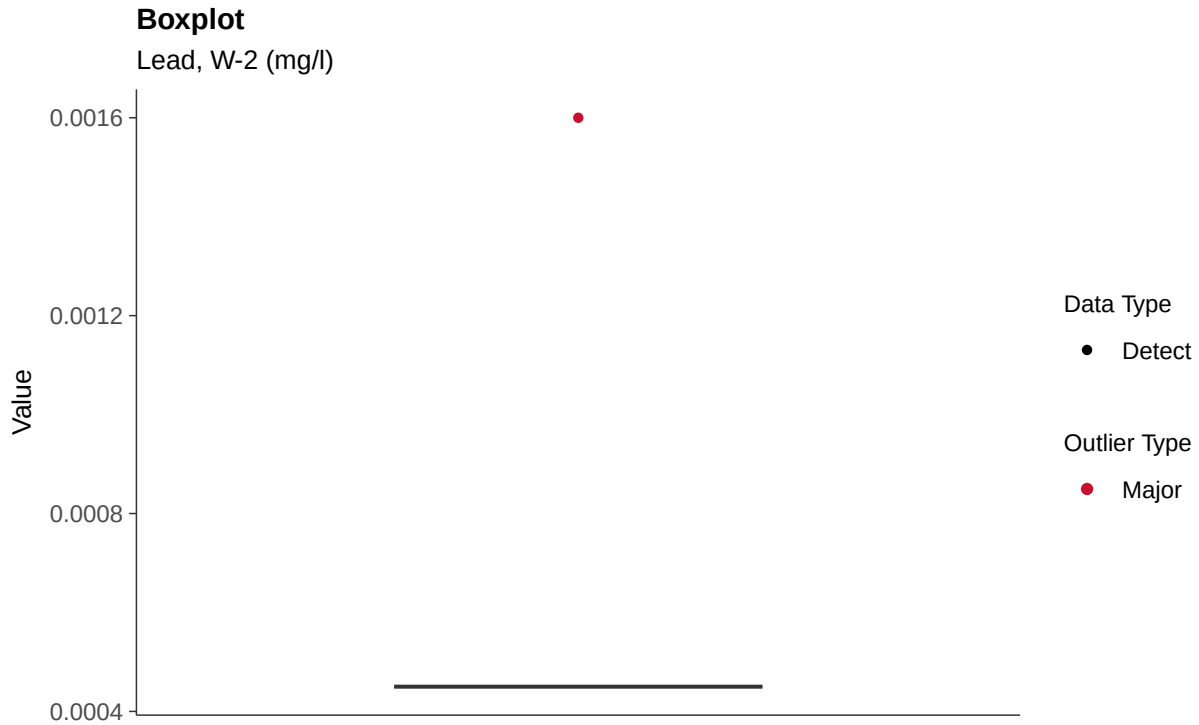
Fluoride (App IV), W-2 (mg/l)



Appendix IV: Lead, W-2

ID: 2_2_114

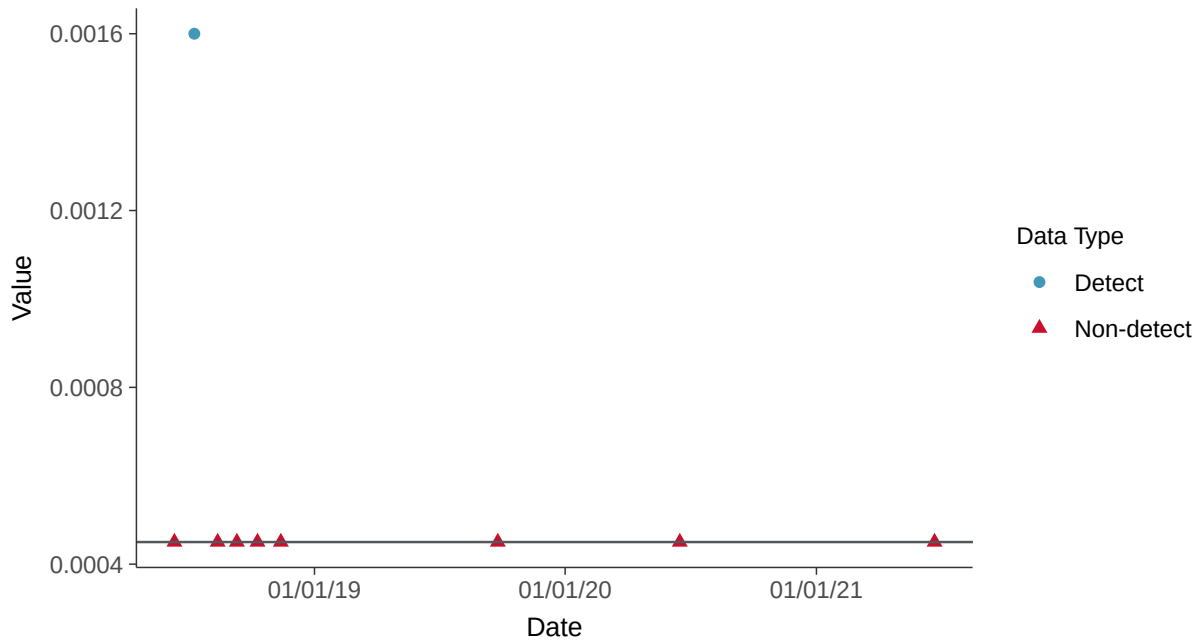






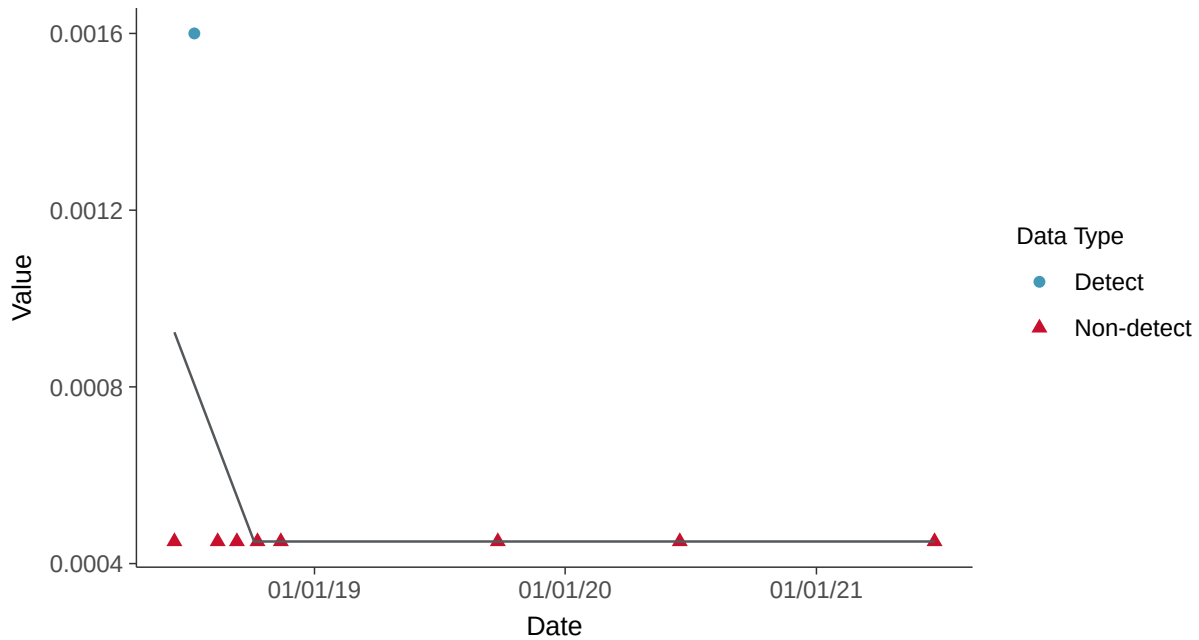
Trend Regression: Mann-Kendall/Theil-Sen Estimate

Lead, W-2 (mg/l)



Trend Regression: Piecewise Linear-Linear

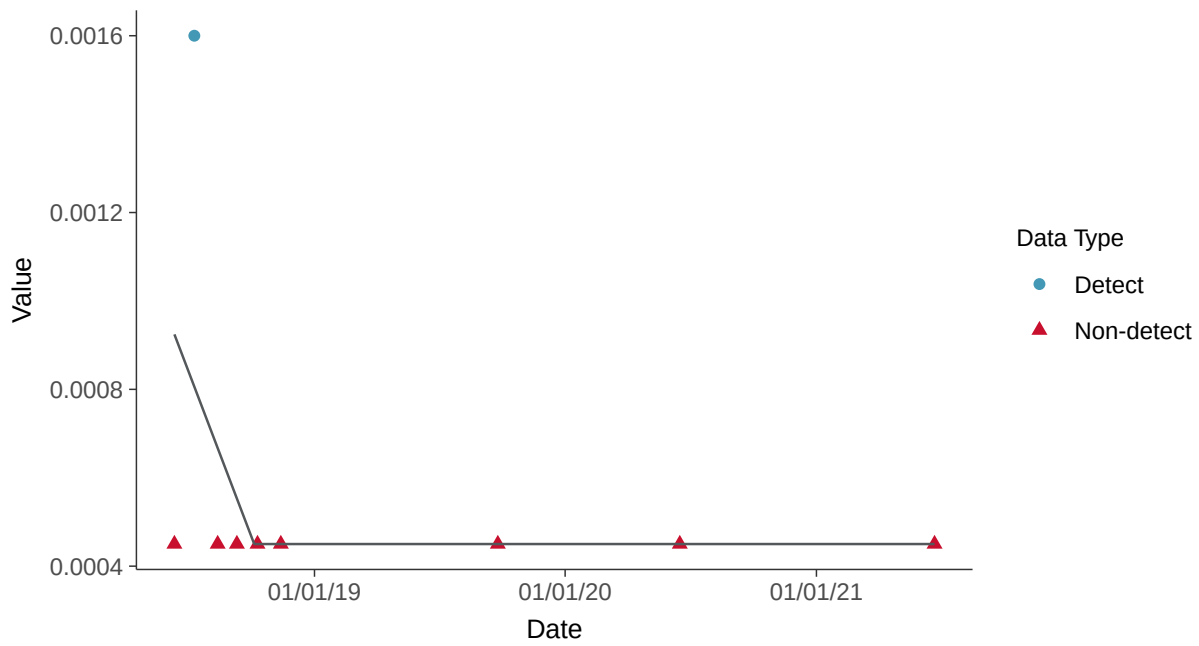
Lead, W-2 (mg/l)





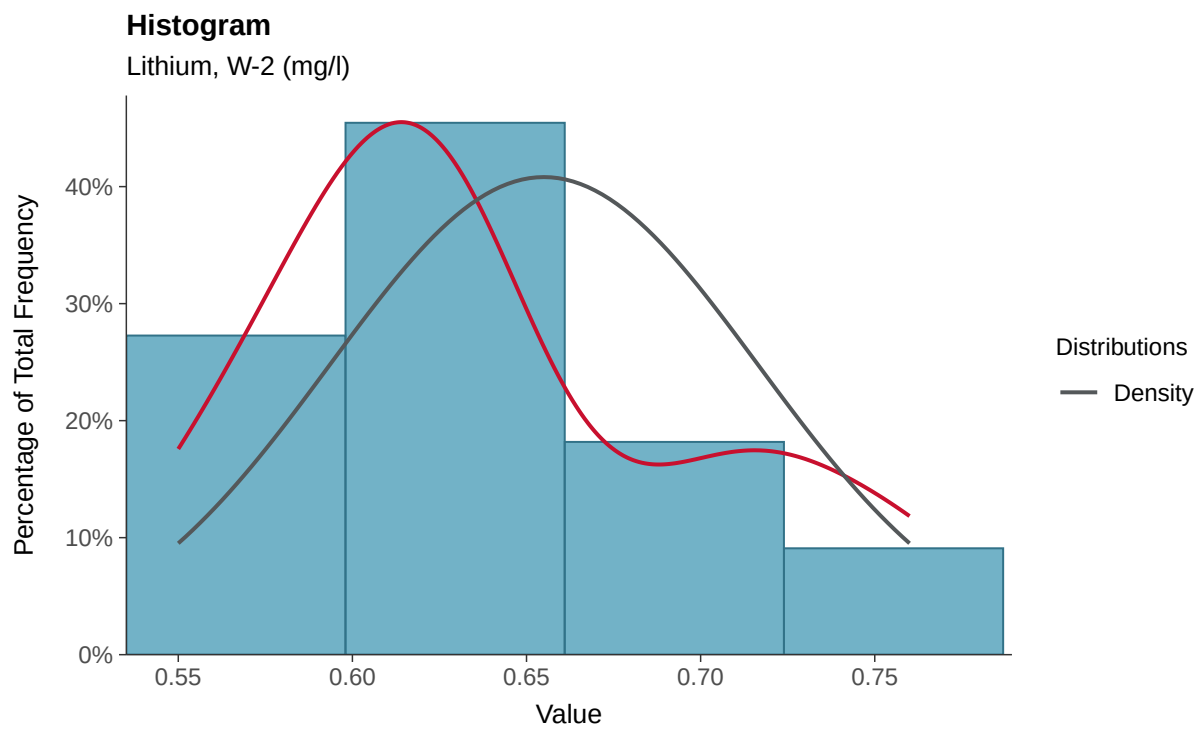
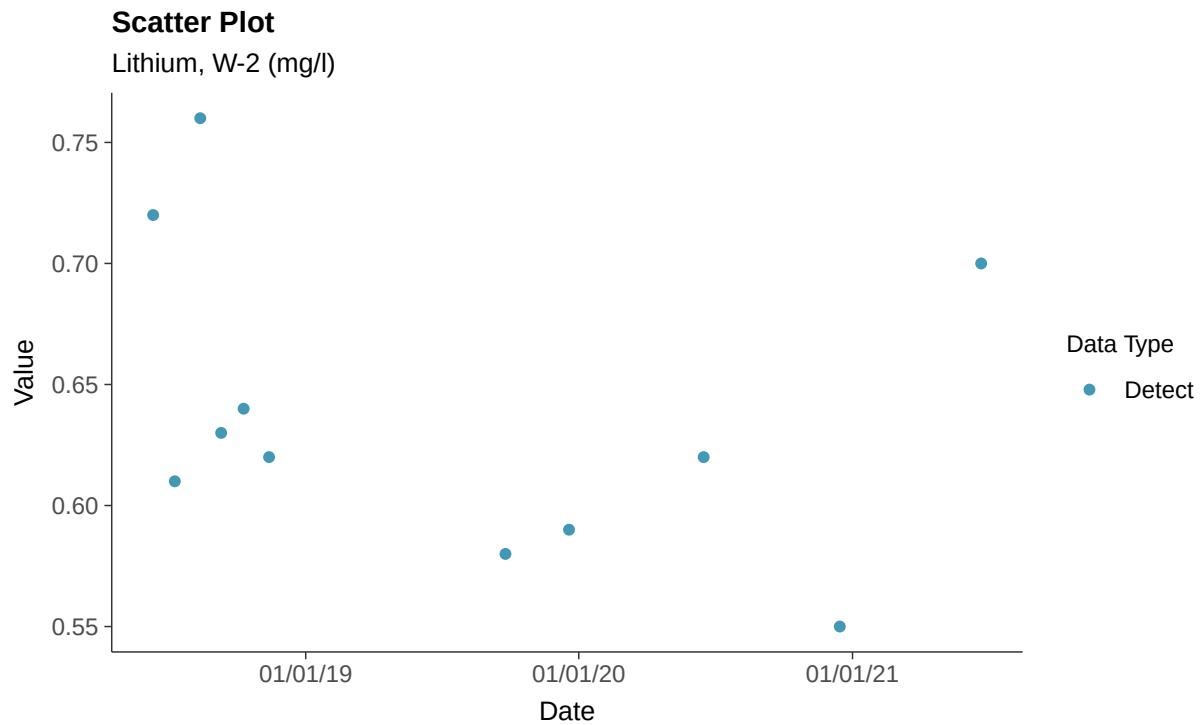
Trend Regression: Piecewise Linear-Linear-Linear

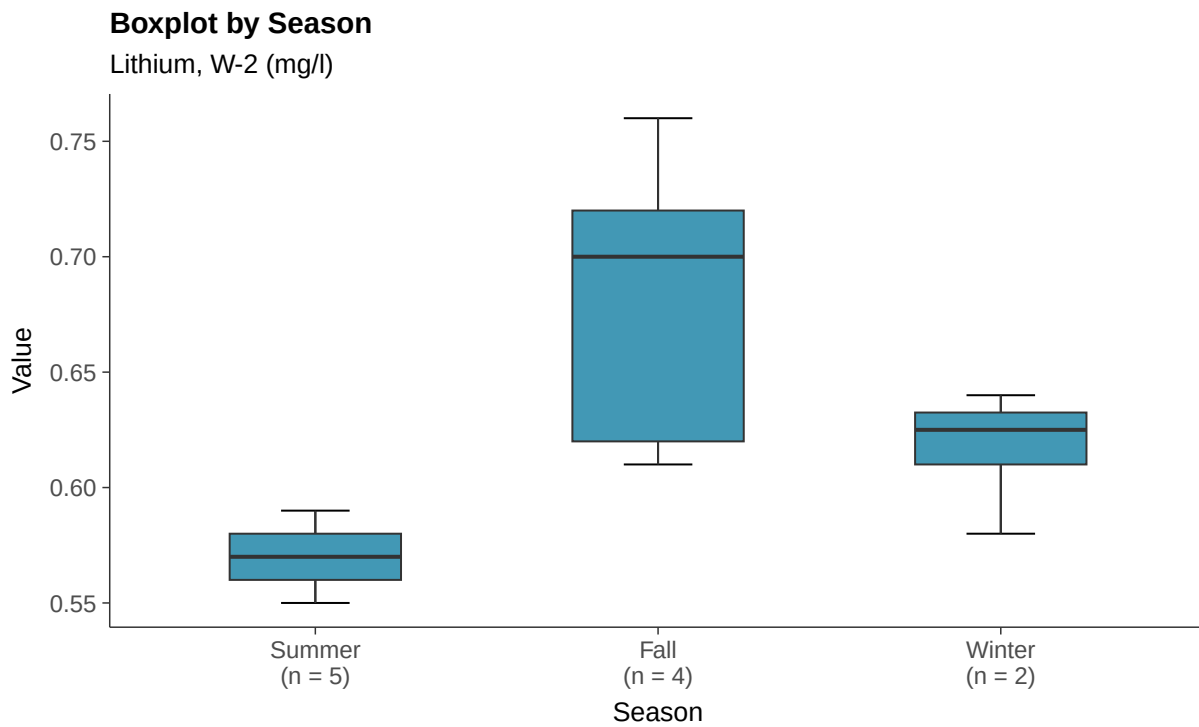
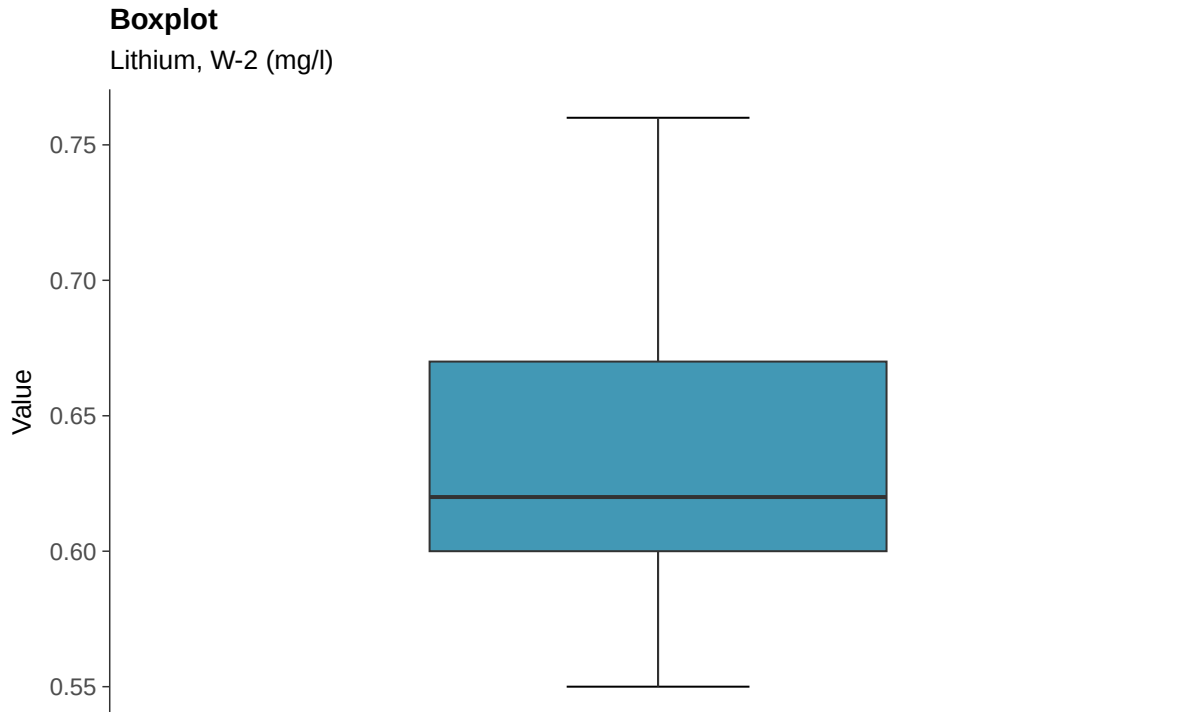
Lead, W-2 (mg/l)



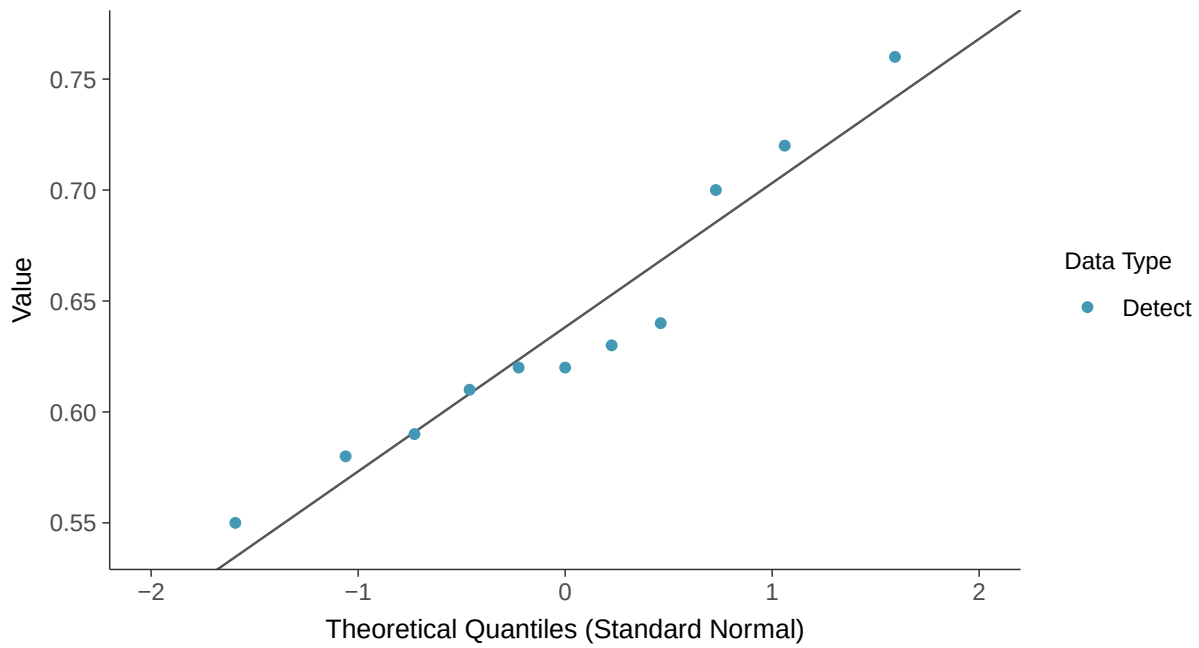
Appendix IV: Lithium, W-2

ID: 2_2_115

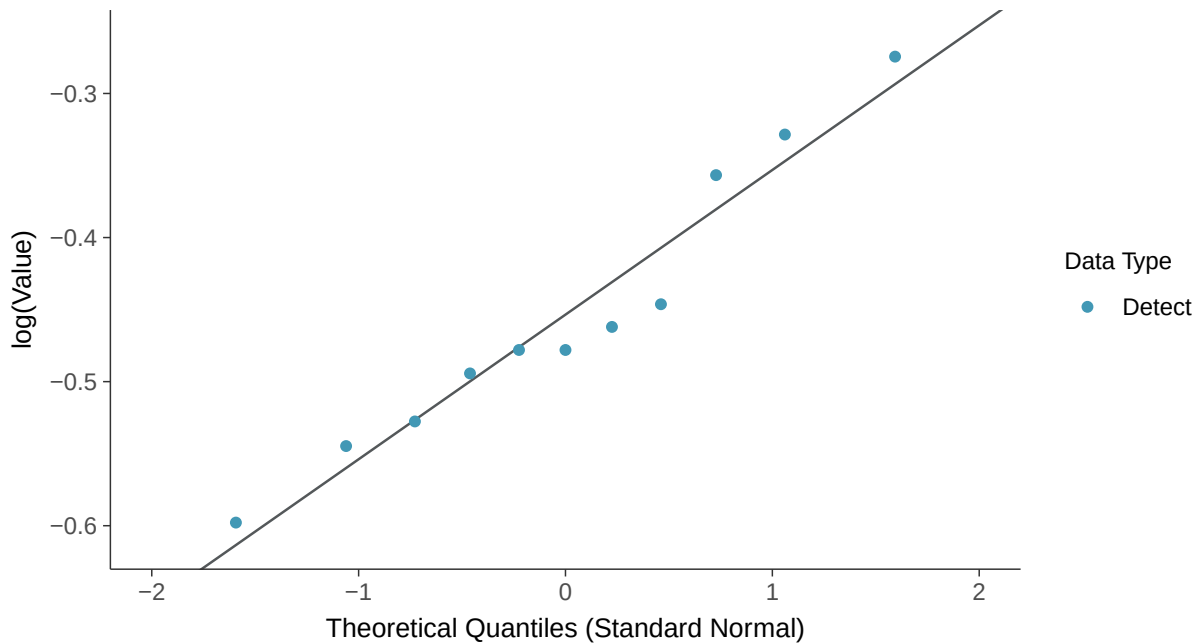




Normal Q-Q plot
Lithium, W-2 (mg/l)

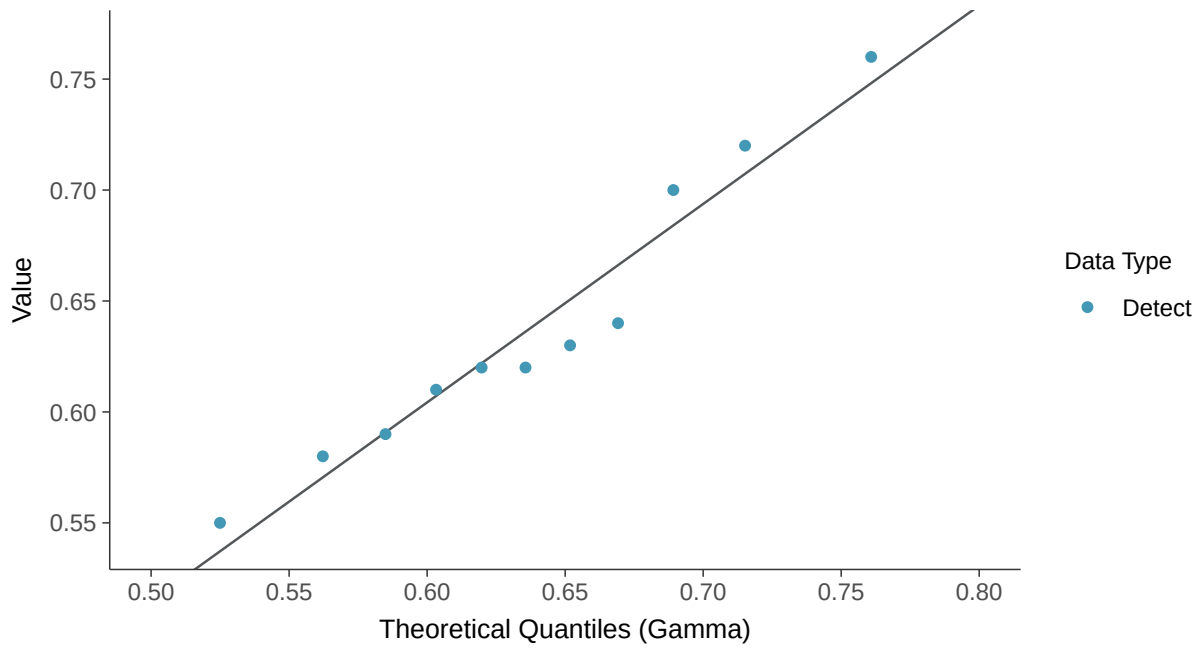


Lognormal Q-Q plot
Lithium, W-2 (mg/l)



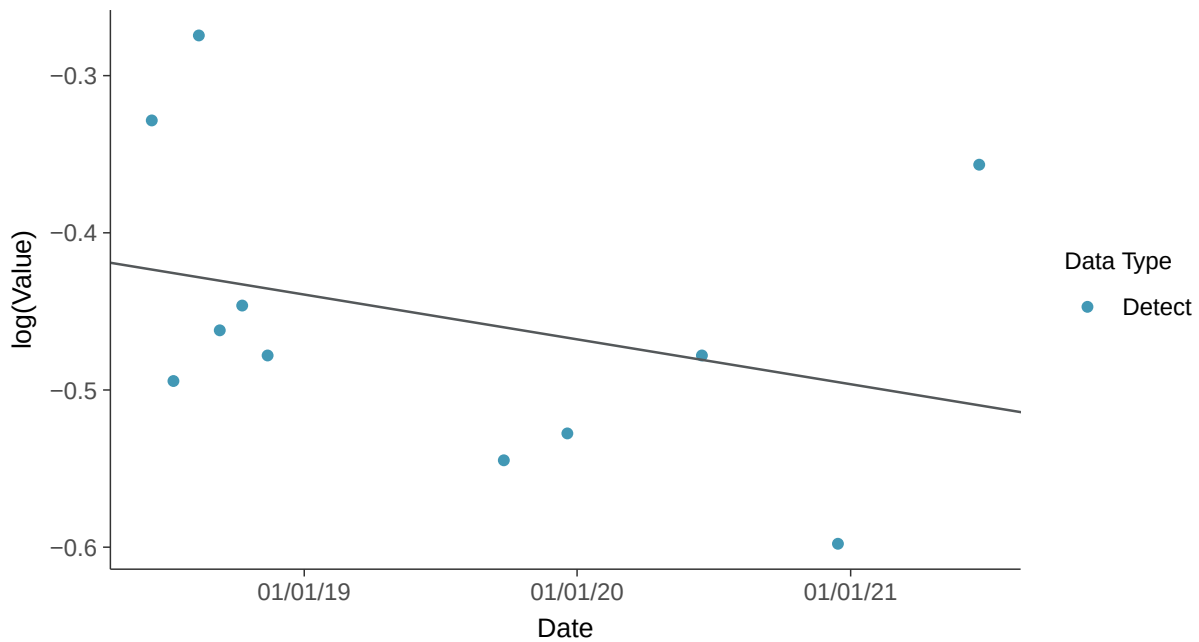
Gamma Q-Q plot

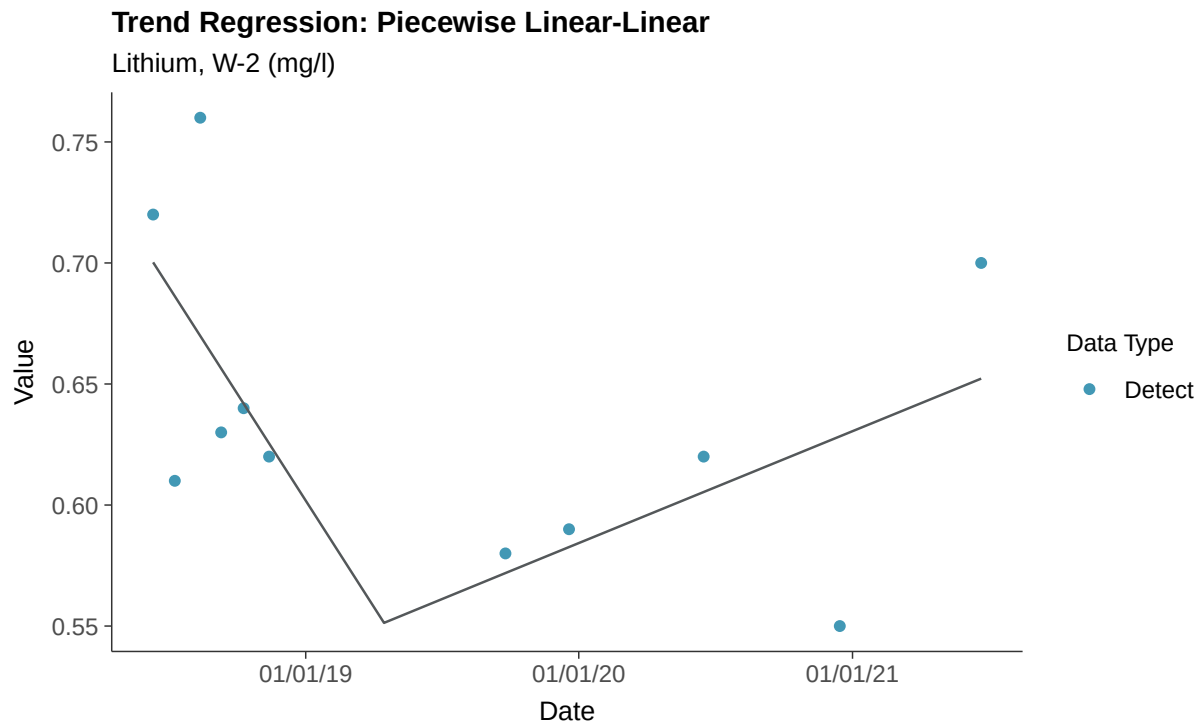
Lithium, W-2 (mg/l)



Trend Regression: Lognormal MLE

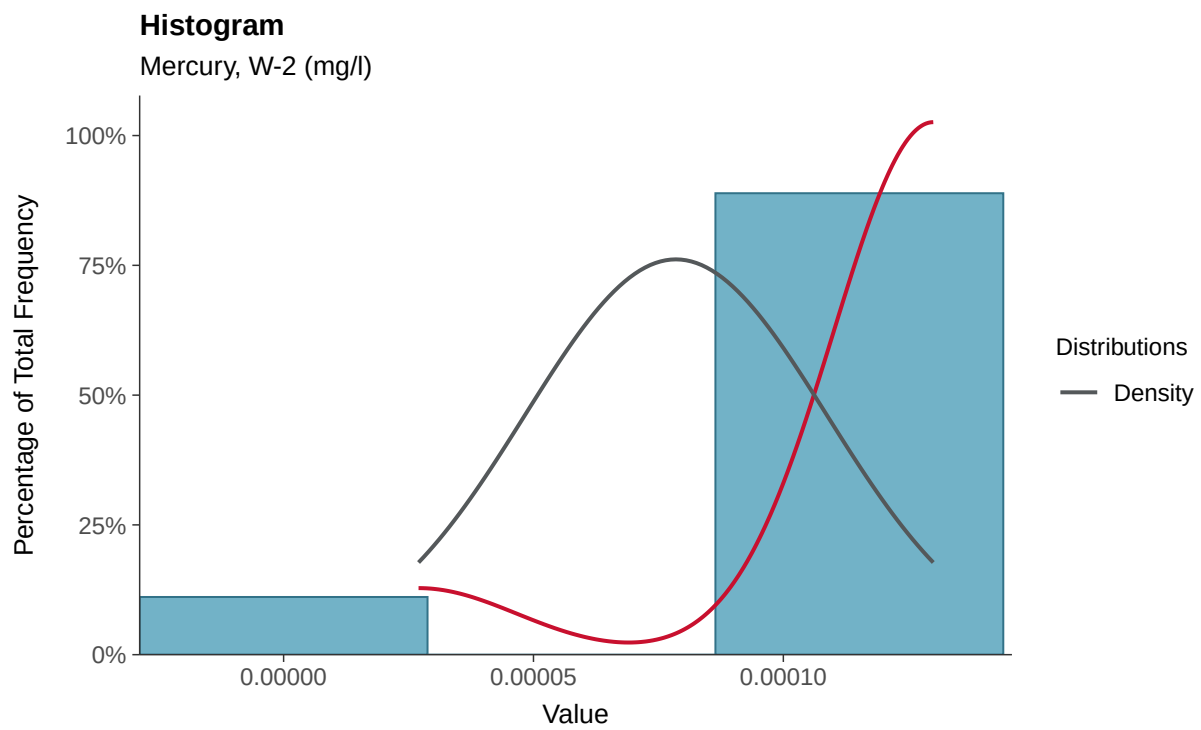
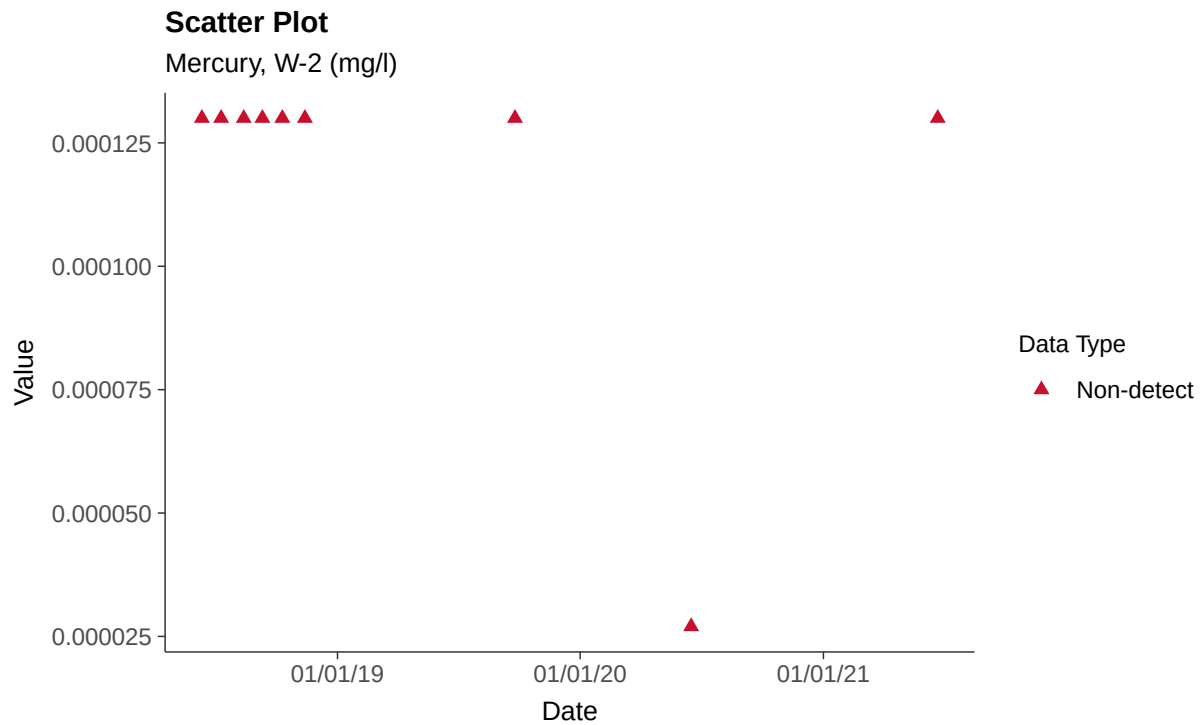
Lithium, W-2 (mg/l)

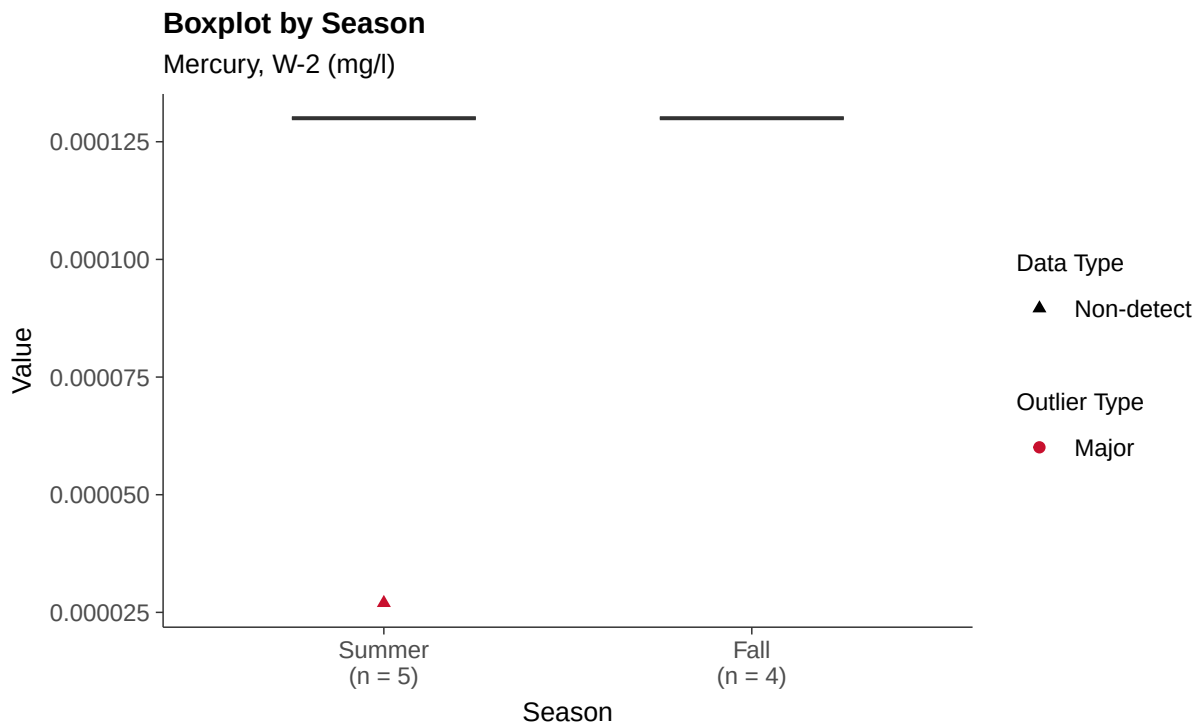
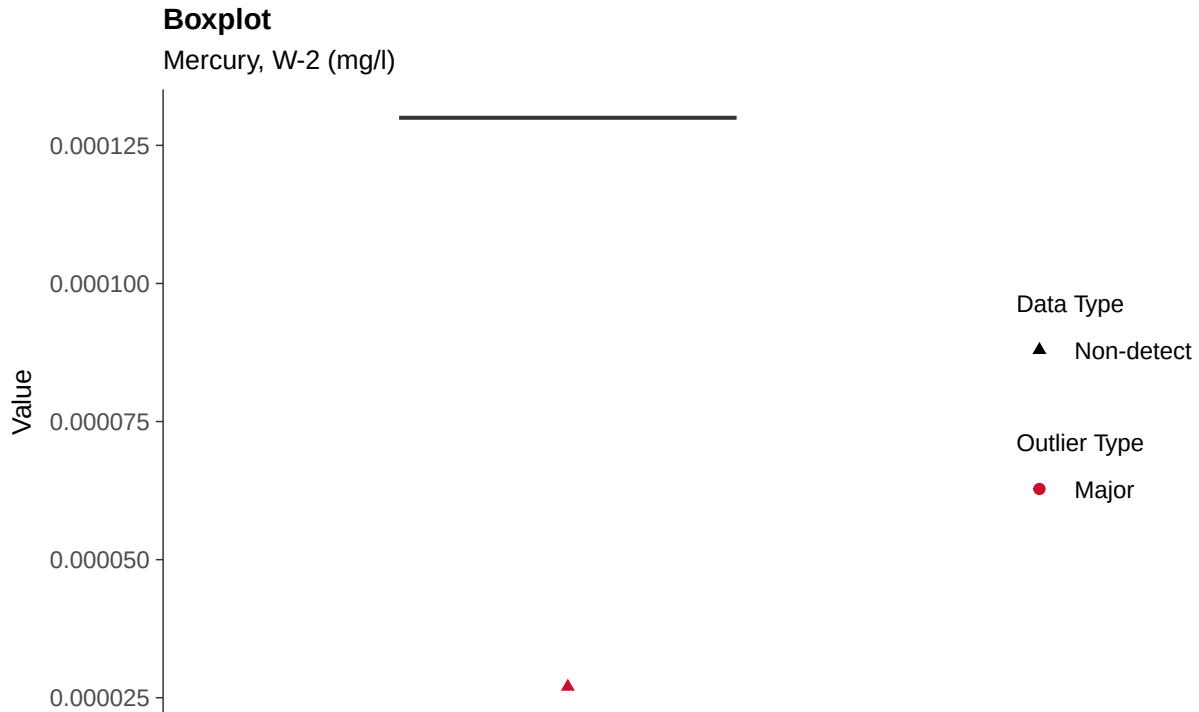


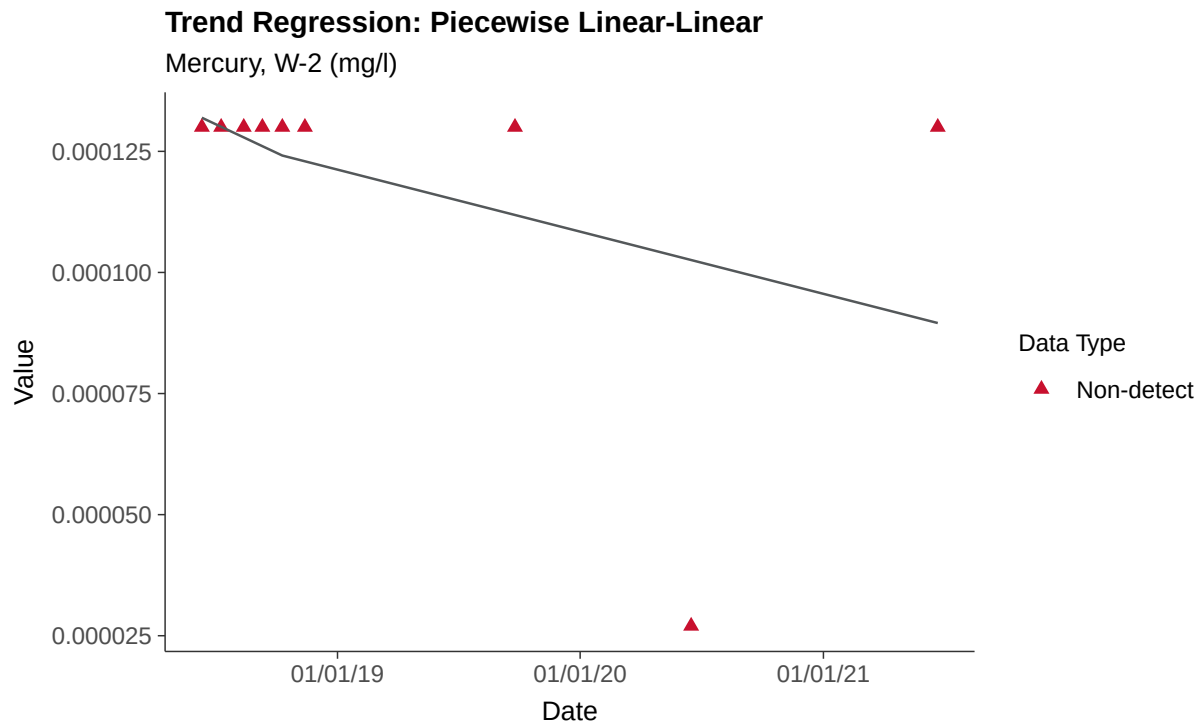


Appendix IV: Mercury, W-2

ID: 2_2_116

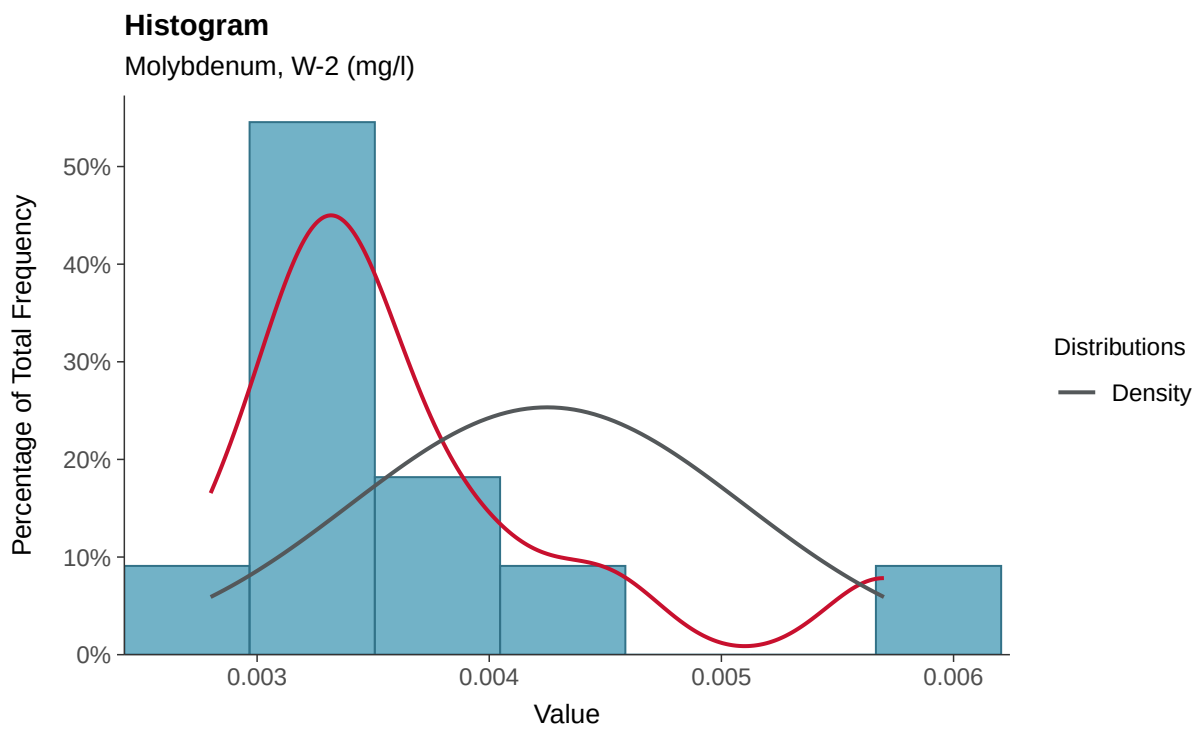
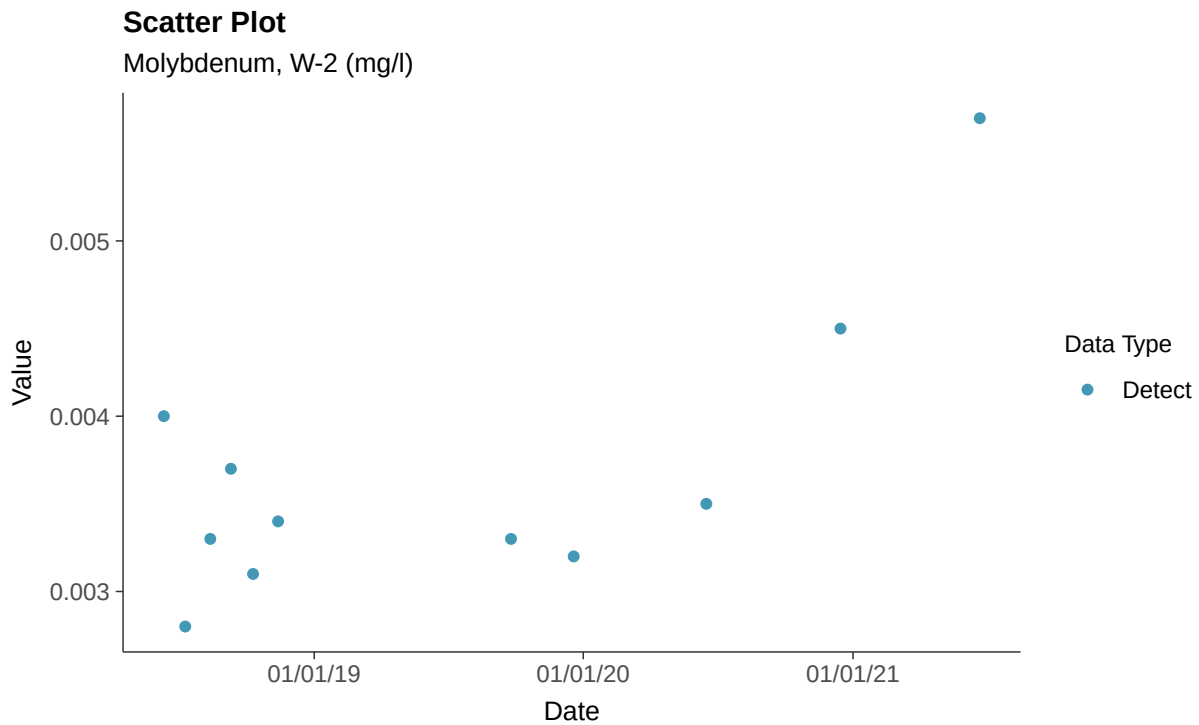






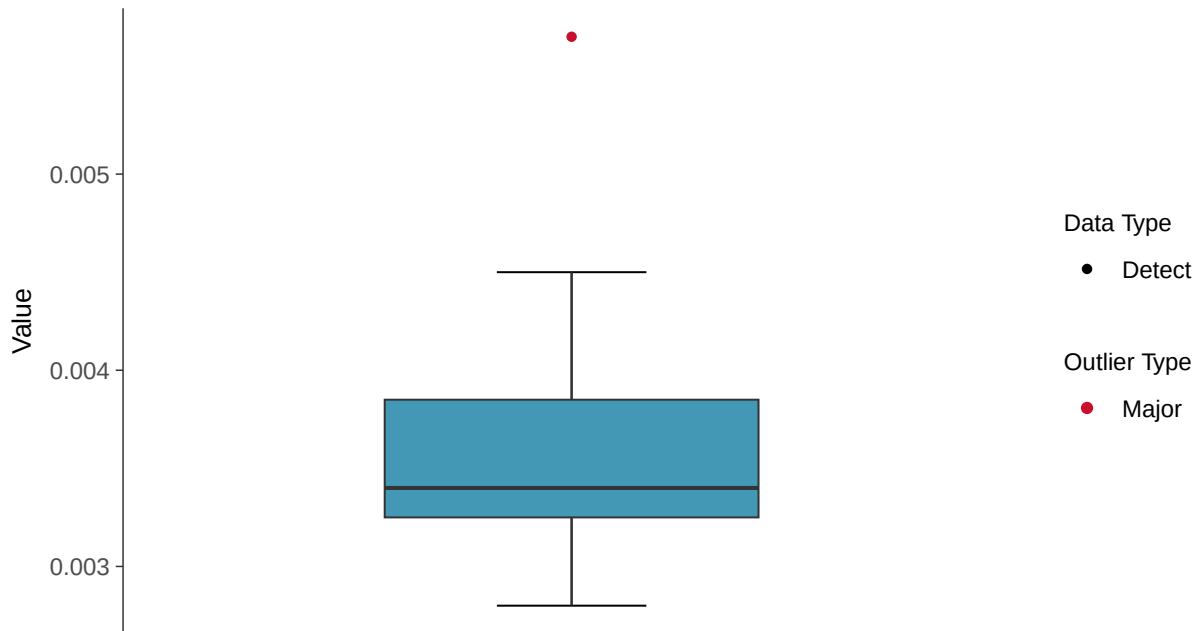
Appendix IV: Molybdenum, W-2

ID: 2_2_117



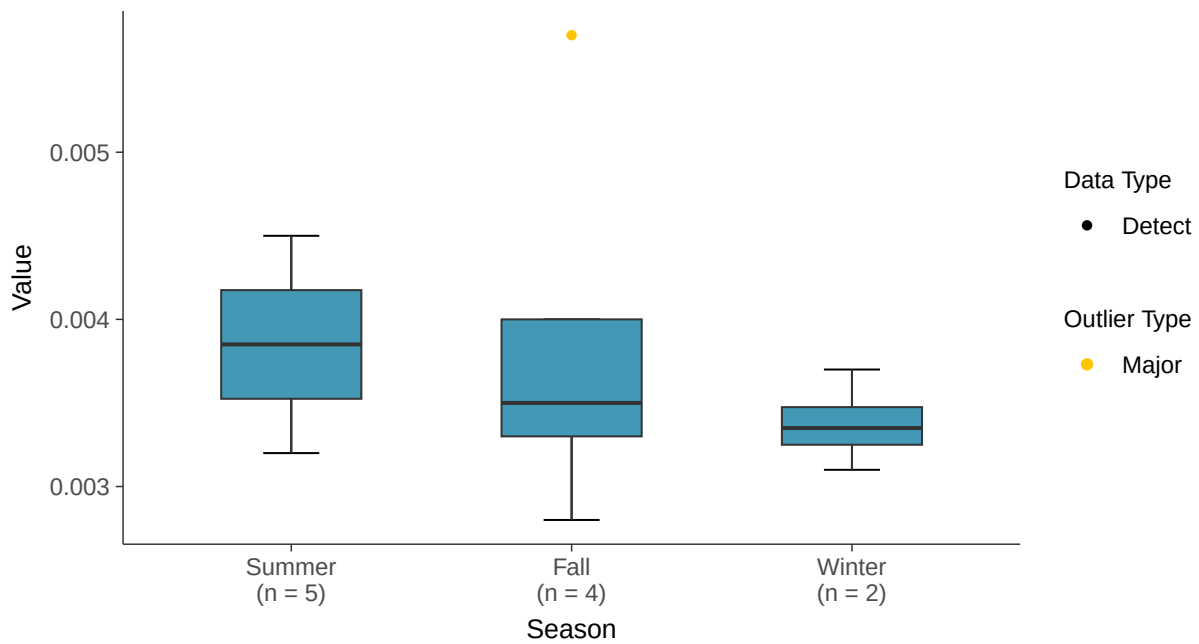
Boxplot

Molybdenum, W-2 (mg/l)



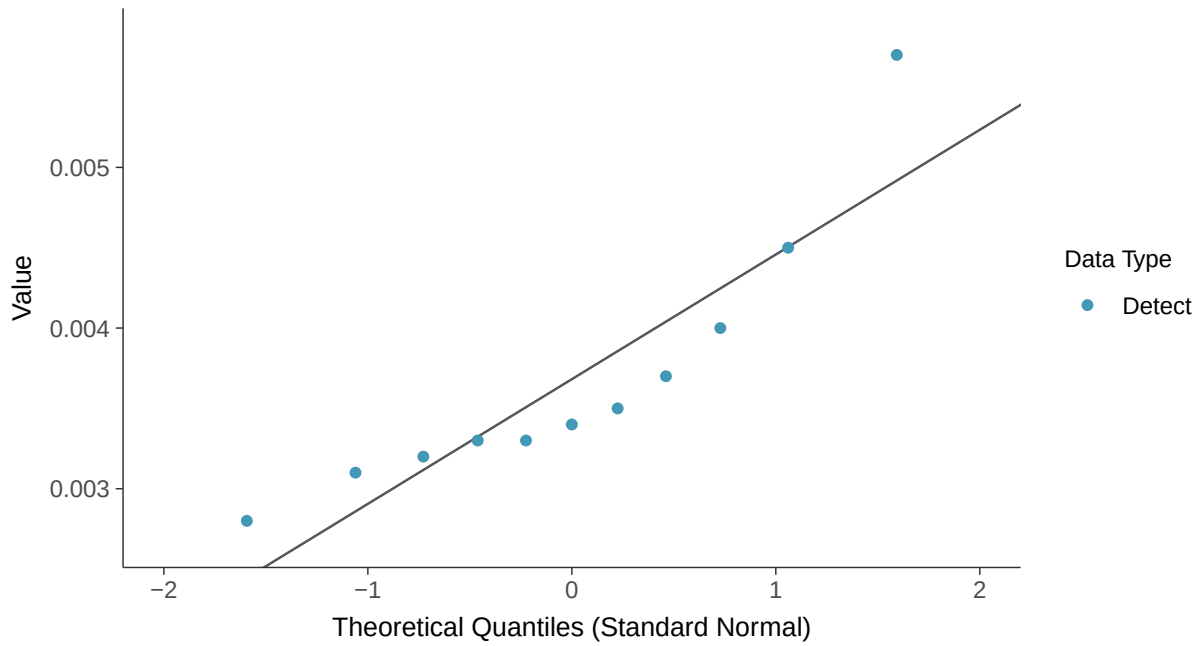
Boxplot by Season

Molybdenum, W-2 (mg/l)



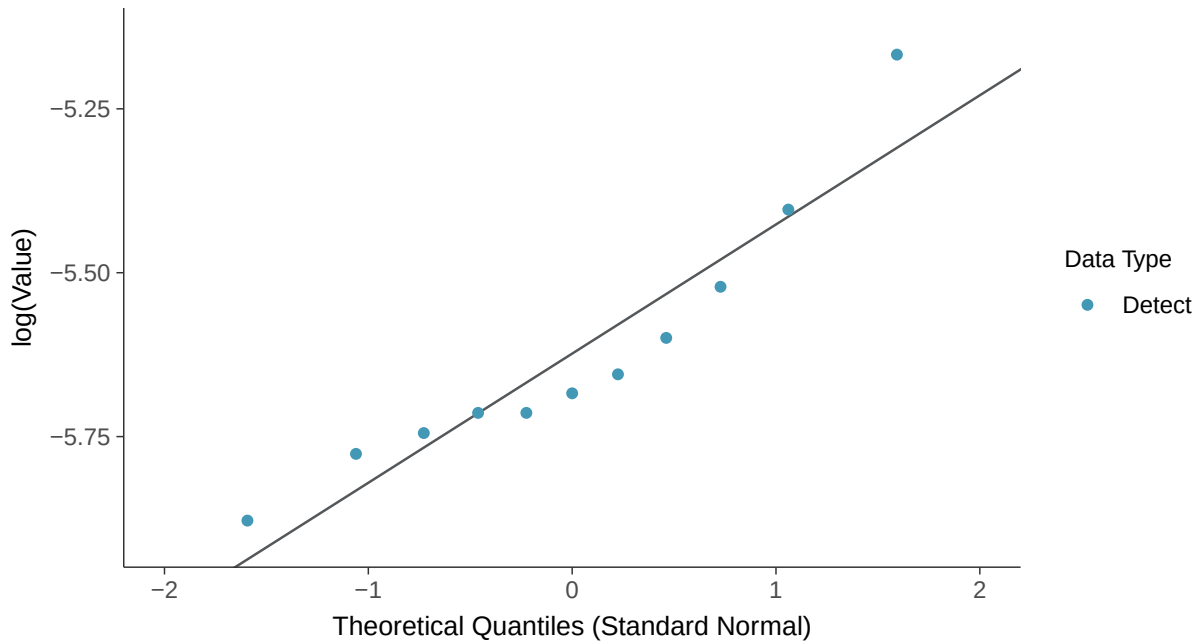
Normal Q-Q plot

Molybdenum, W-2 (mg/l)



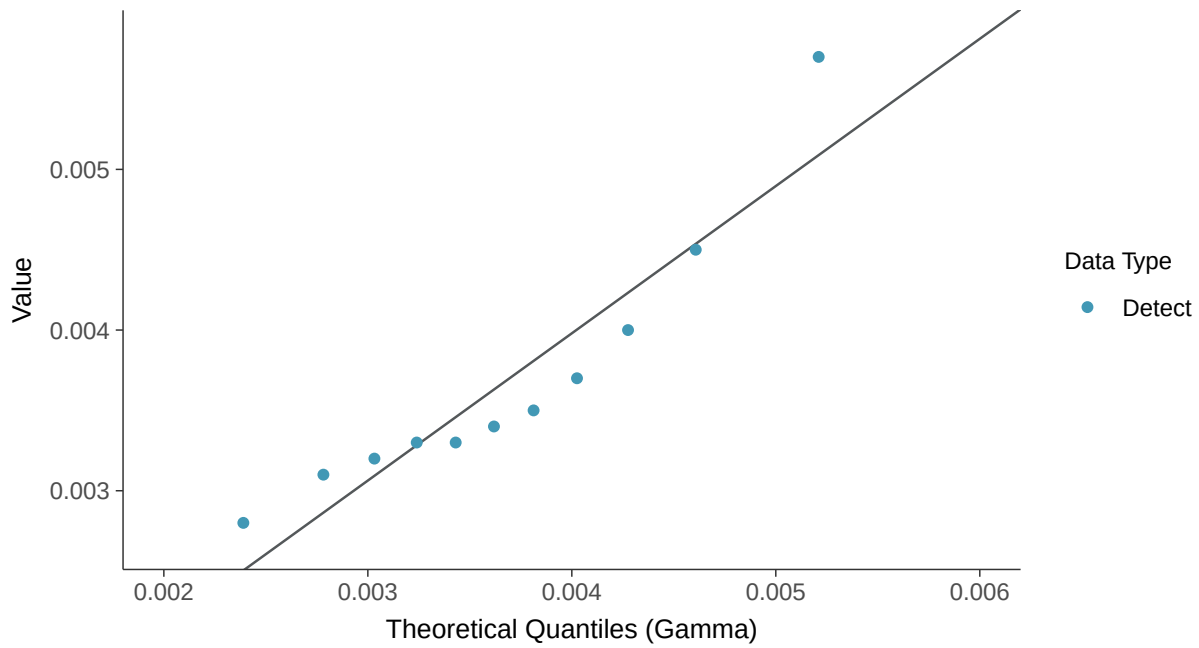
Lognormal Q-Q plot

Molybdenum, W-2 (mg/l)



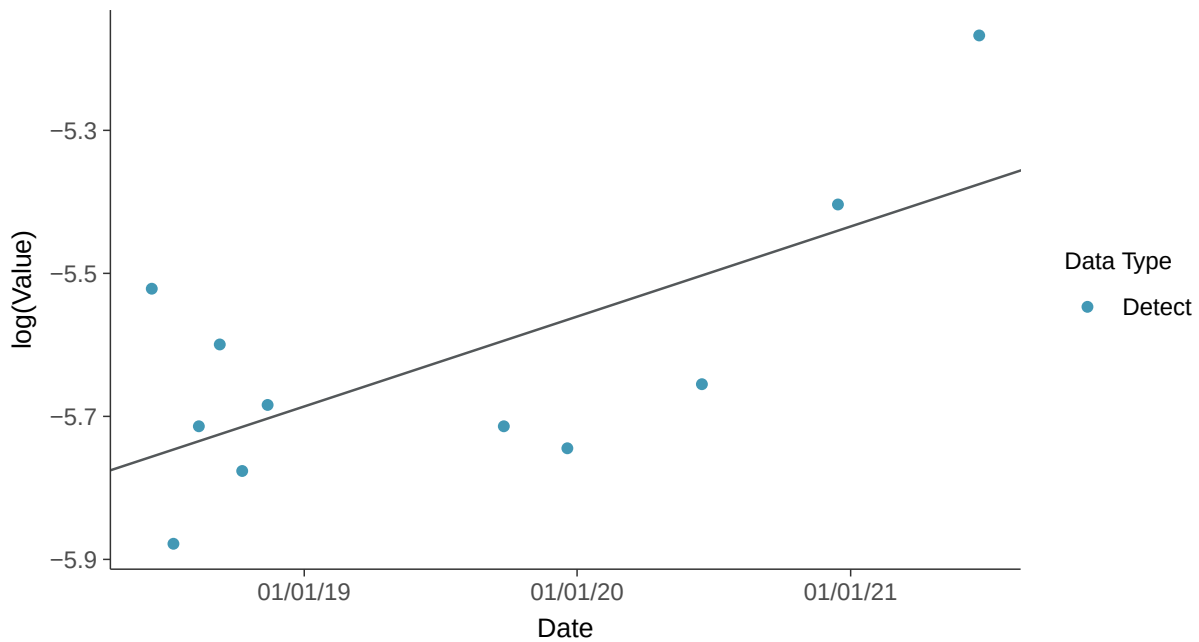
Gamma Q-Q plot

Molybdenum, W-2 (mg/l)



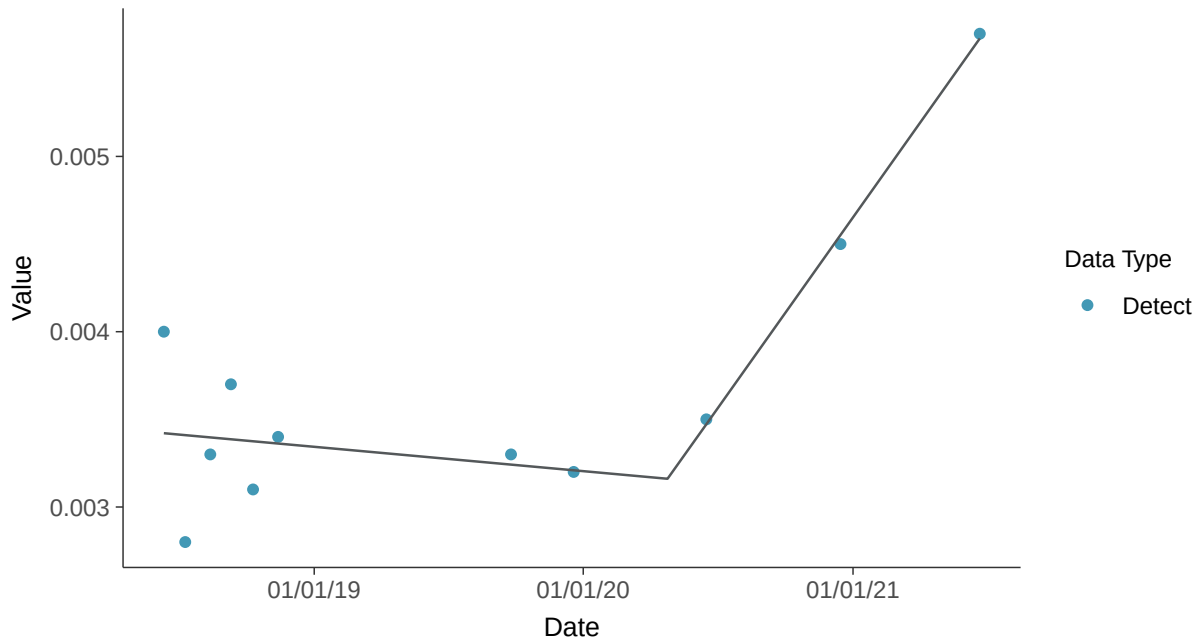
Trend Regression: Lognormal MLE

Molybdenum, W-2 (mg/l)



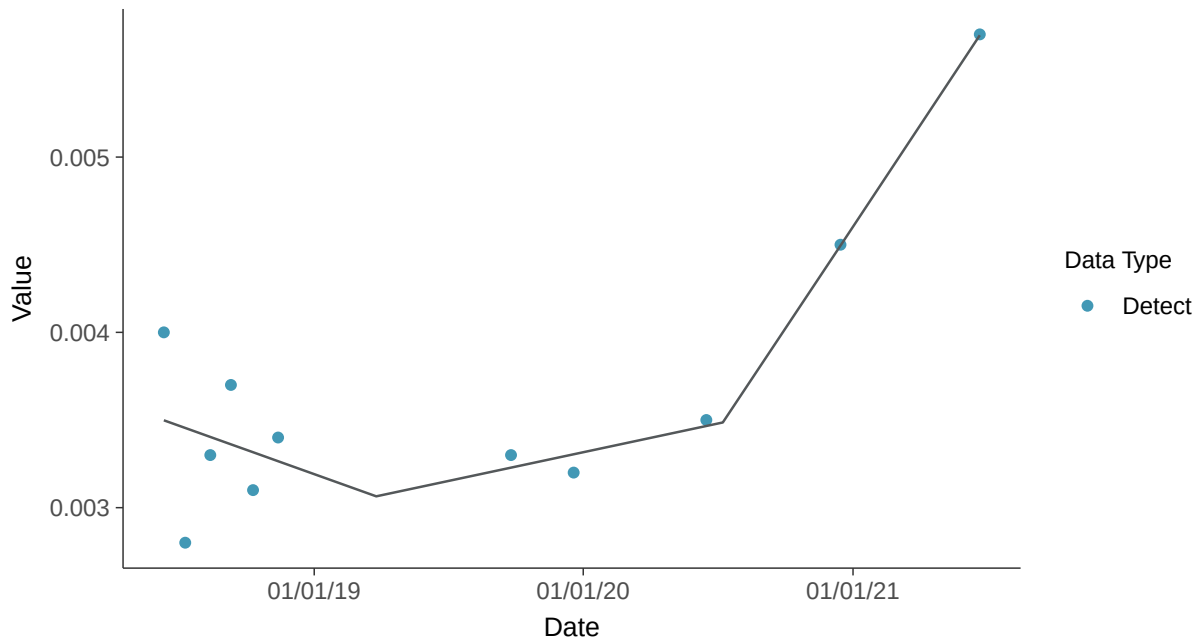
Trend Regression: Piecewise Linear-Linear

Molybdenum, W-2 (mg/l)



Trend Regression: Piecewise Linear-Linear-Linear

Molybdenum, W-2 (mg/l)

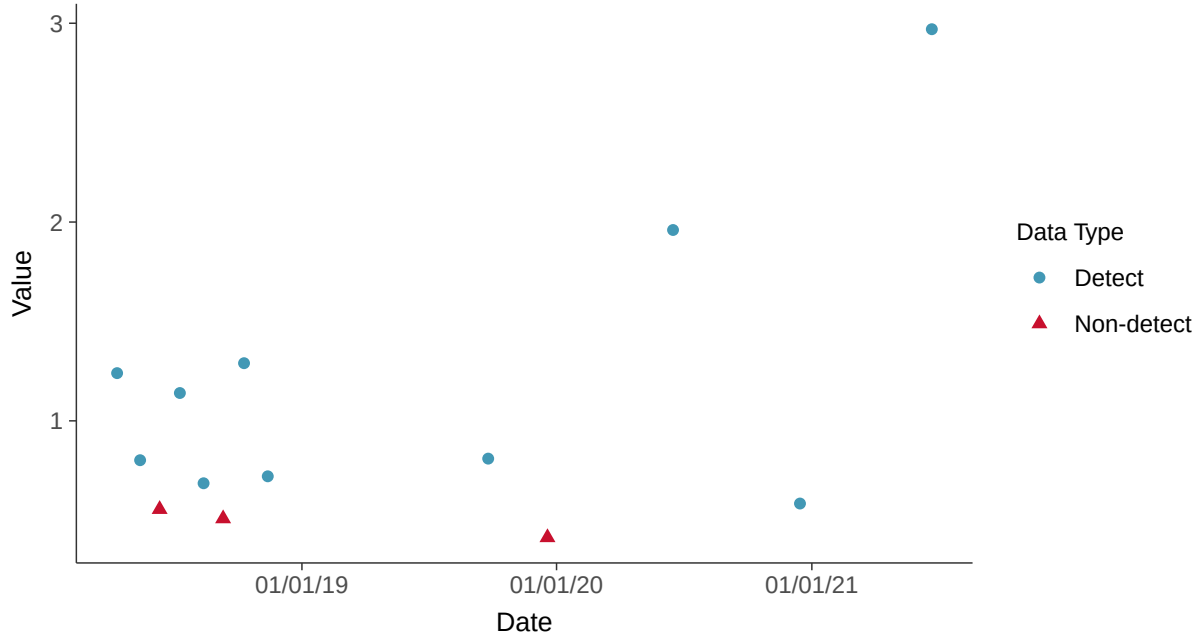


Appendix IV: Radium-226+228, W-2

ID: 2_2_122

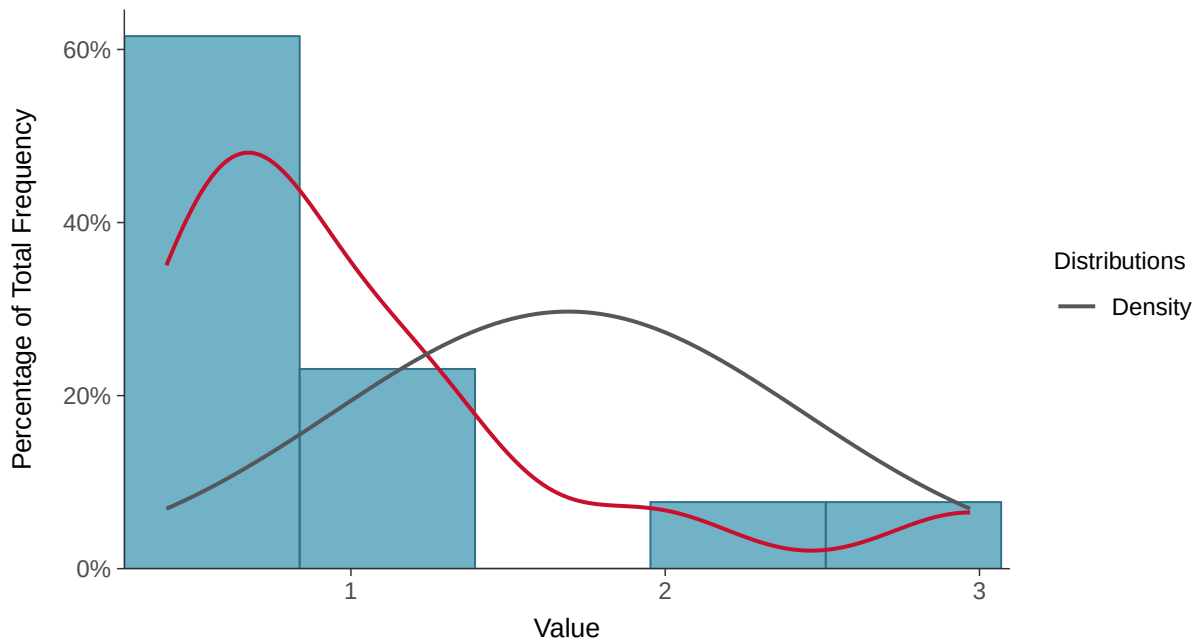
Scatter Plot

Radium-226+228, W-2 (pci/l)



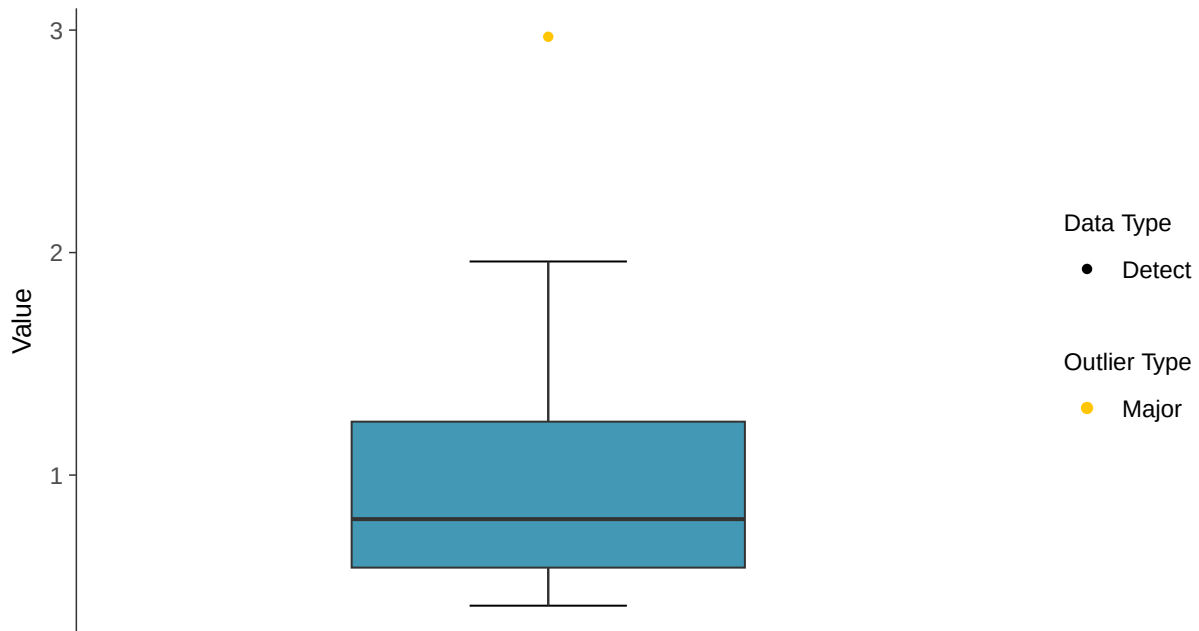
Histogram

Radium-226+228, W-2 (pci/l)



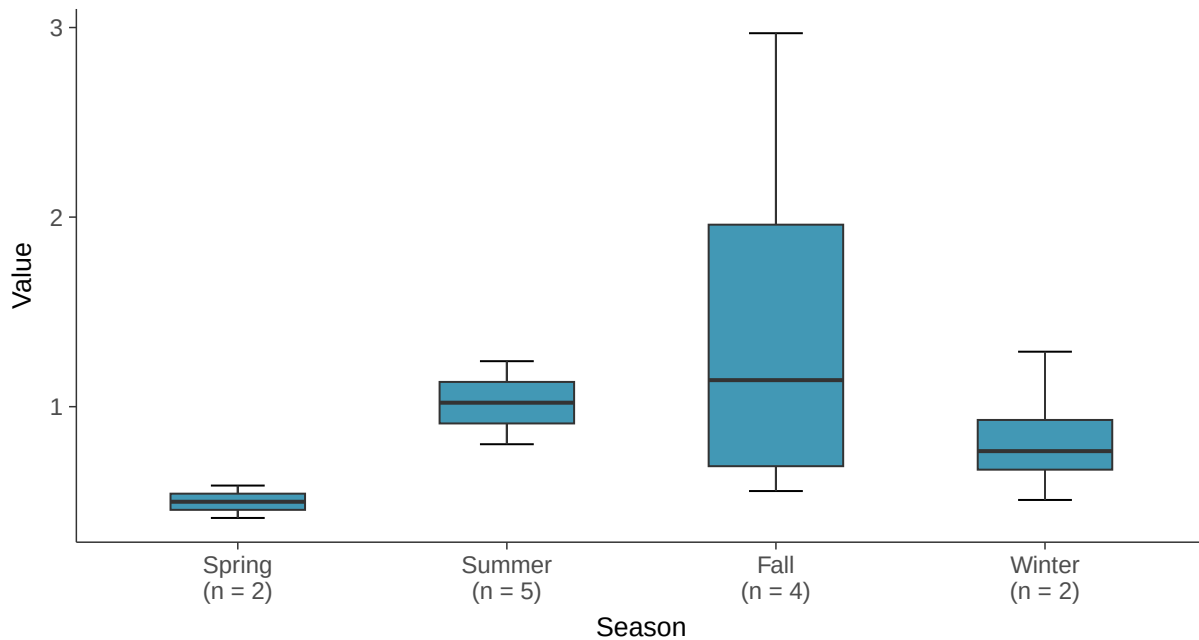
Boxplot

Radium-226+228, W-2 (pci/l)



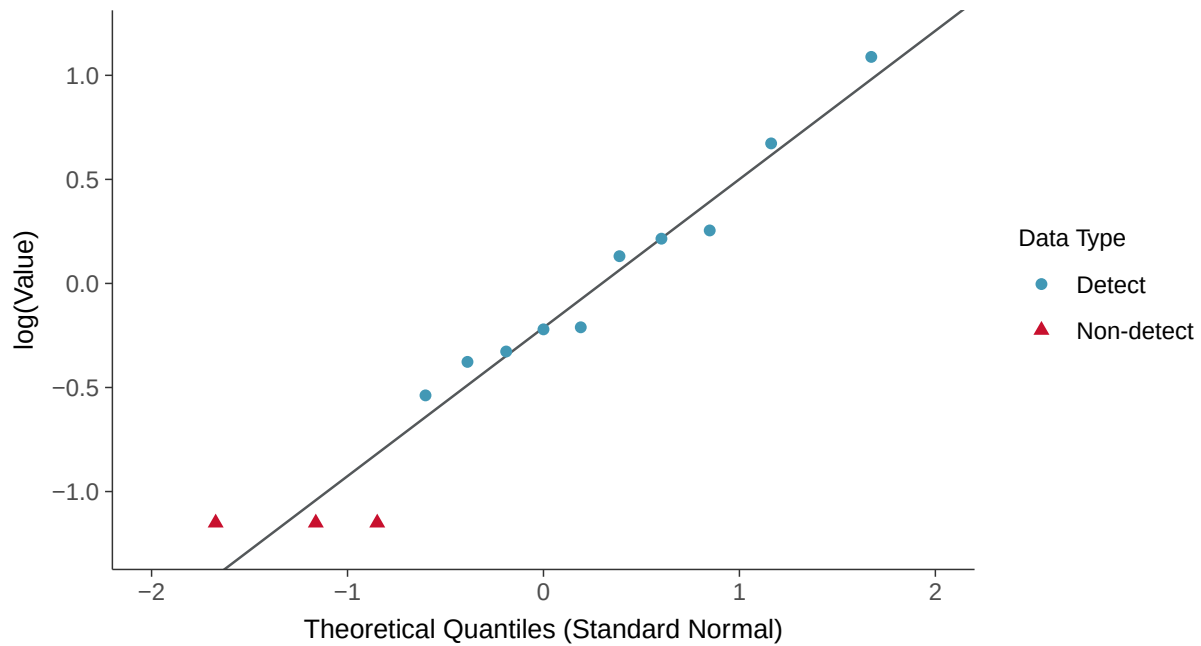
Boxplot by Season

Radium-226+228, W-2 (pci/l)



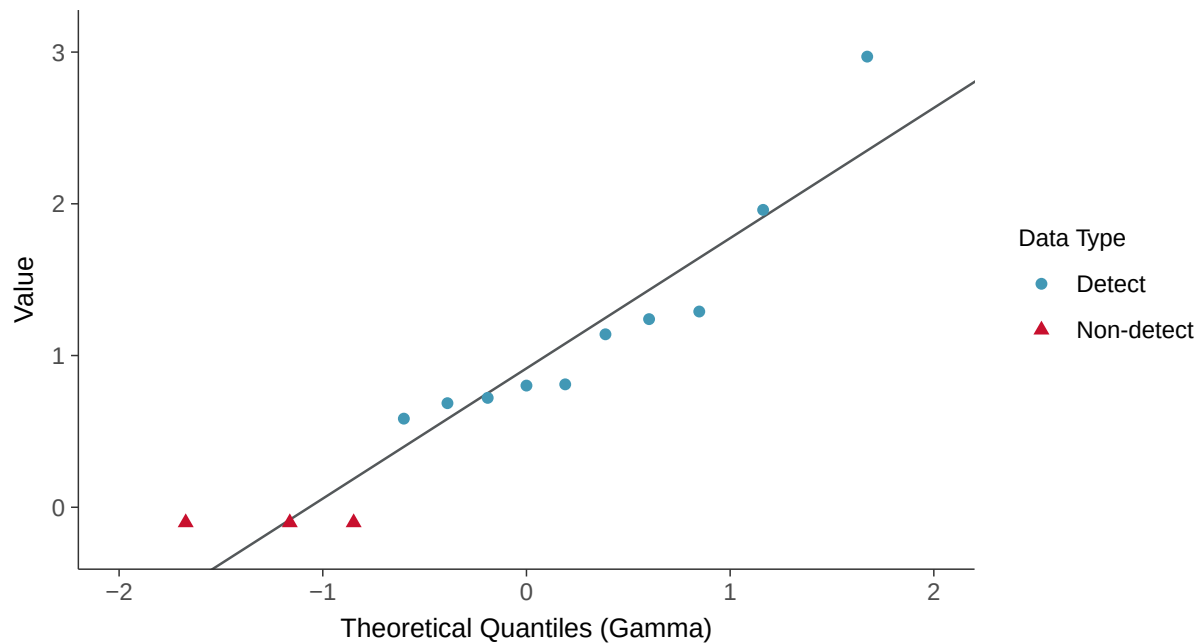
Lognormal Q-Q plot using ROS Imputed Estimates

Radium-226+228, W-2 (pci/l)



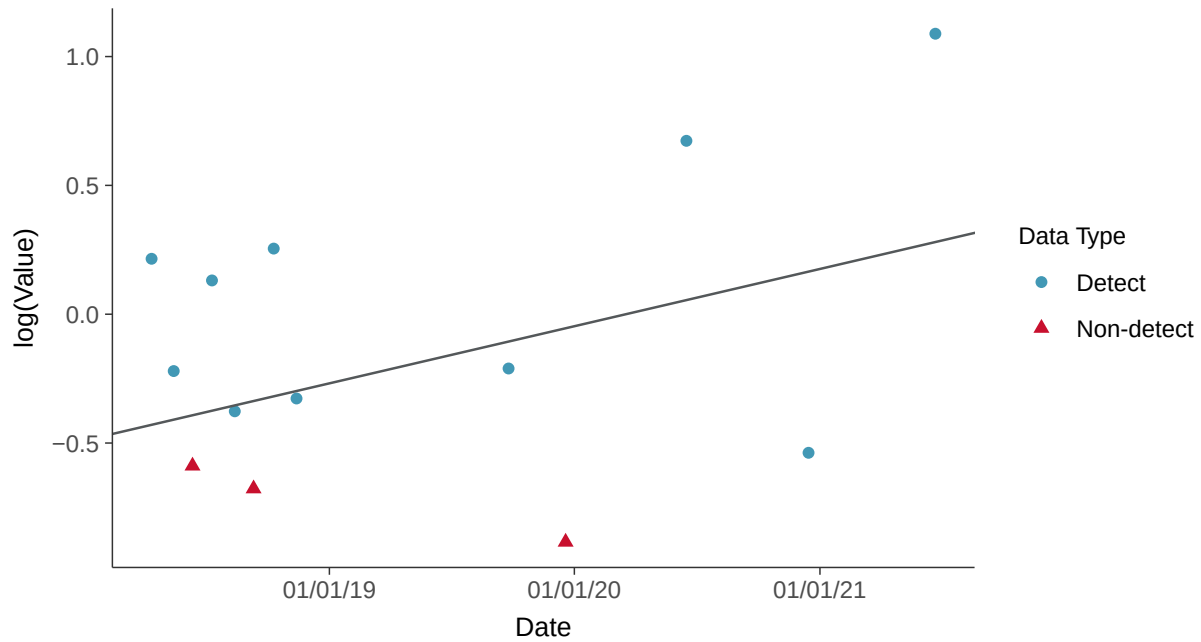
Gamma Q-Q plot using ROS Imputed Estimates

Radium-226+228, W-2 (pci/l)



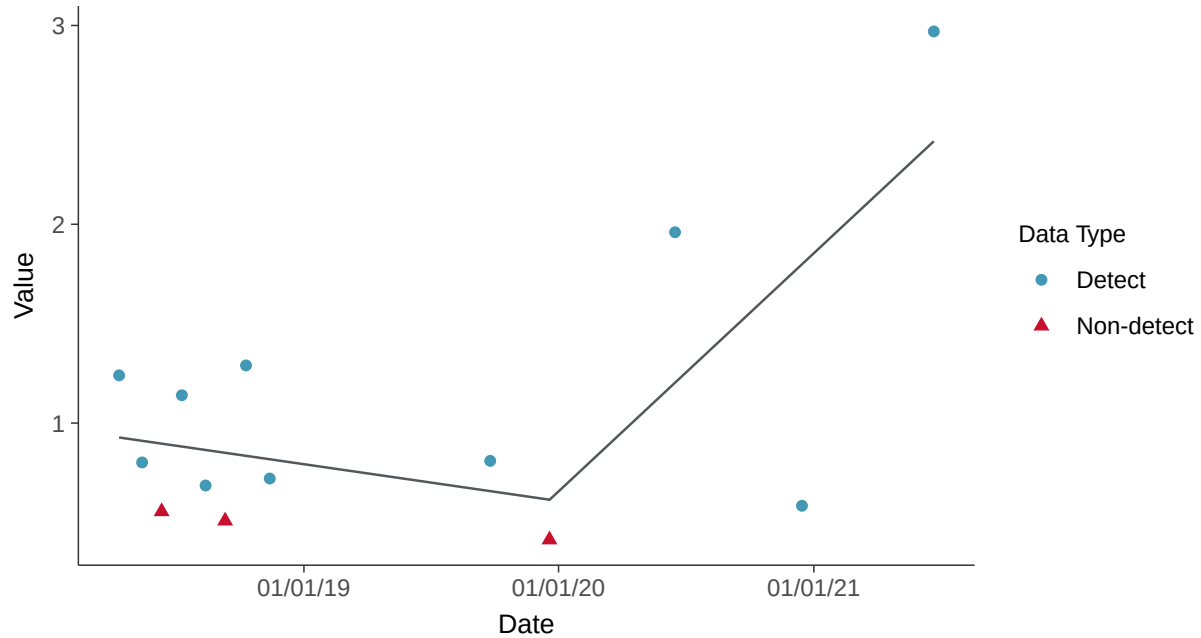
Trend Regression: Lognormal MLE

Radium-226+228, W-2 (pci/l)



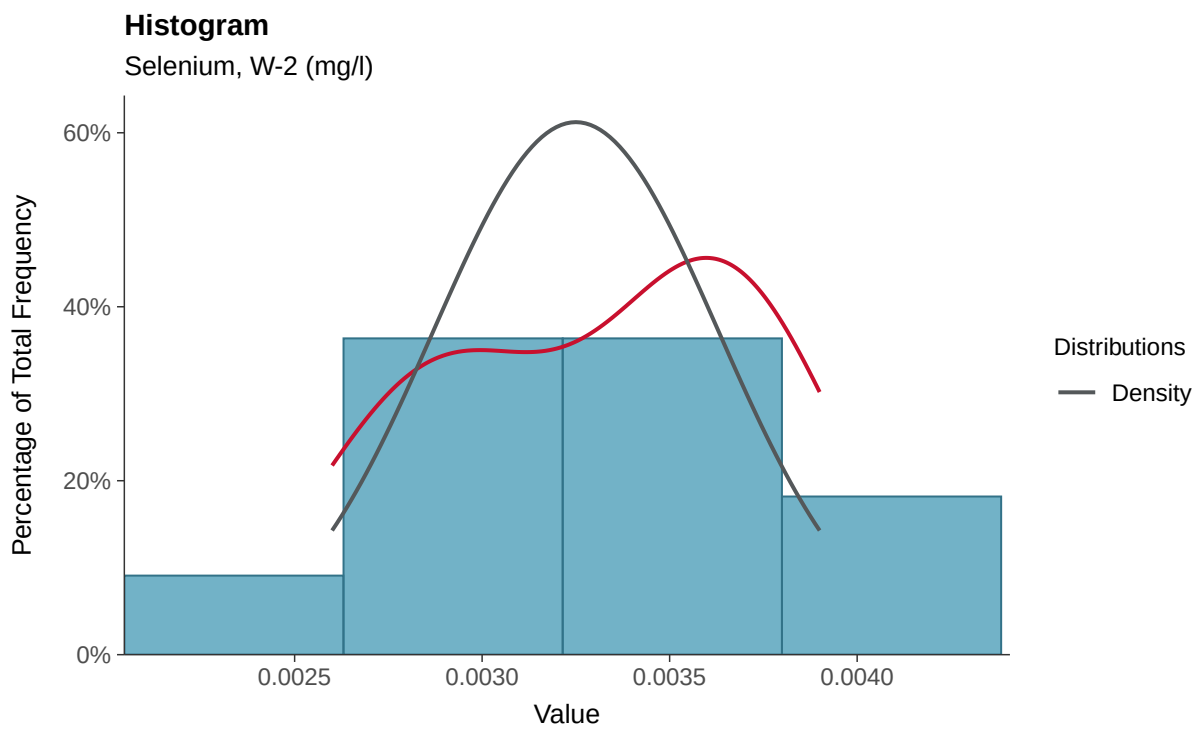
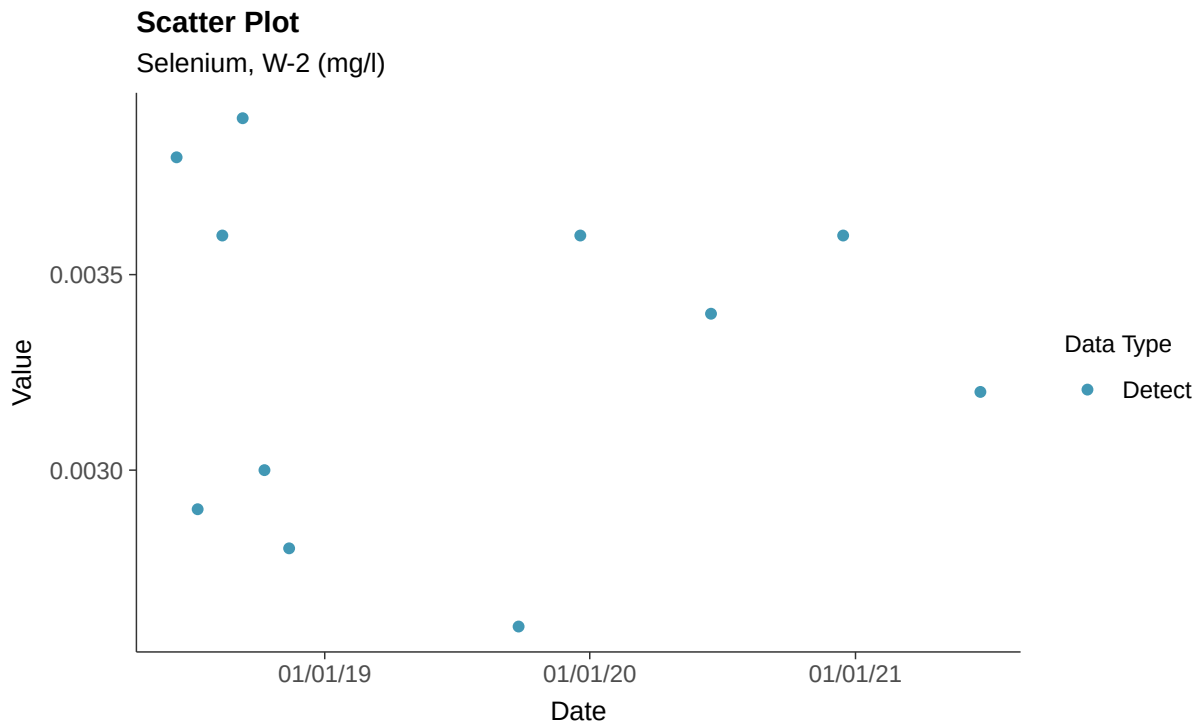
Trend Regression: Piecewise Linear-Linear

Radium-226+228, W-2 (pci/l)



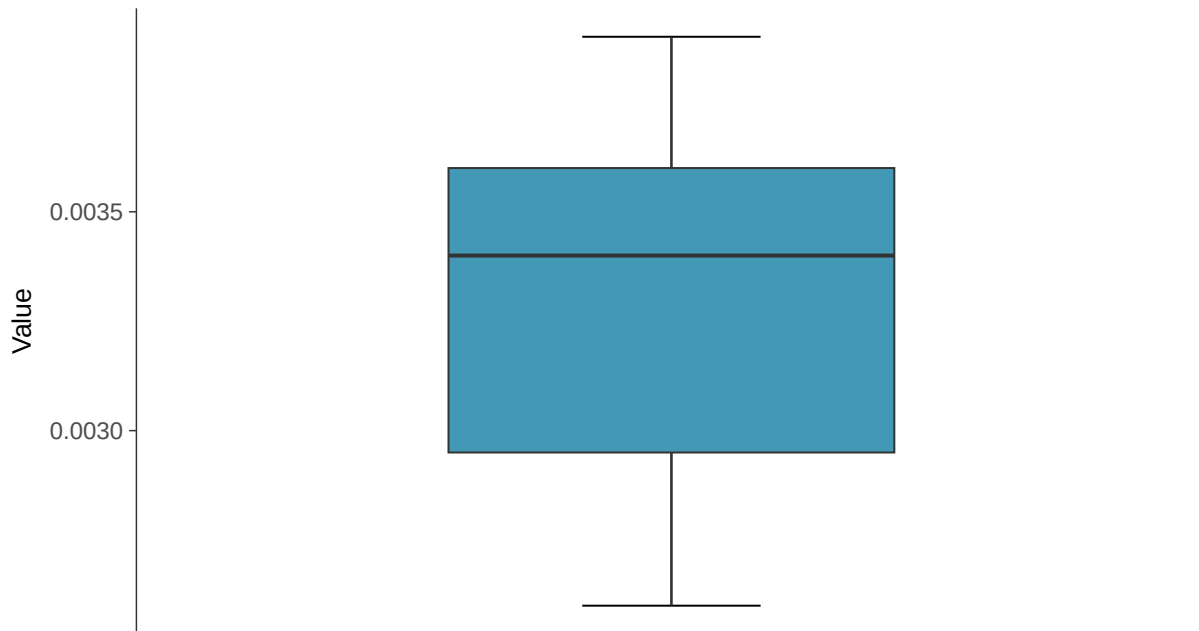
Appendix IV: Selenium, W-2

ID: 2_2_124



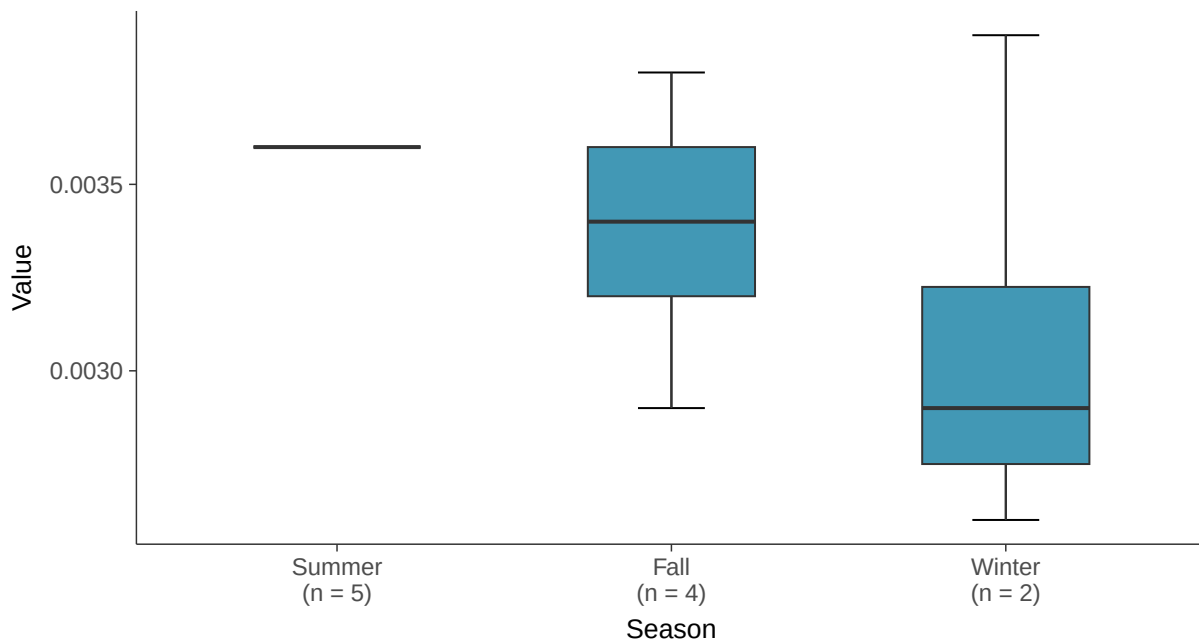
Boxplot

Selenium, W-2 (mg/l)

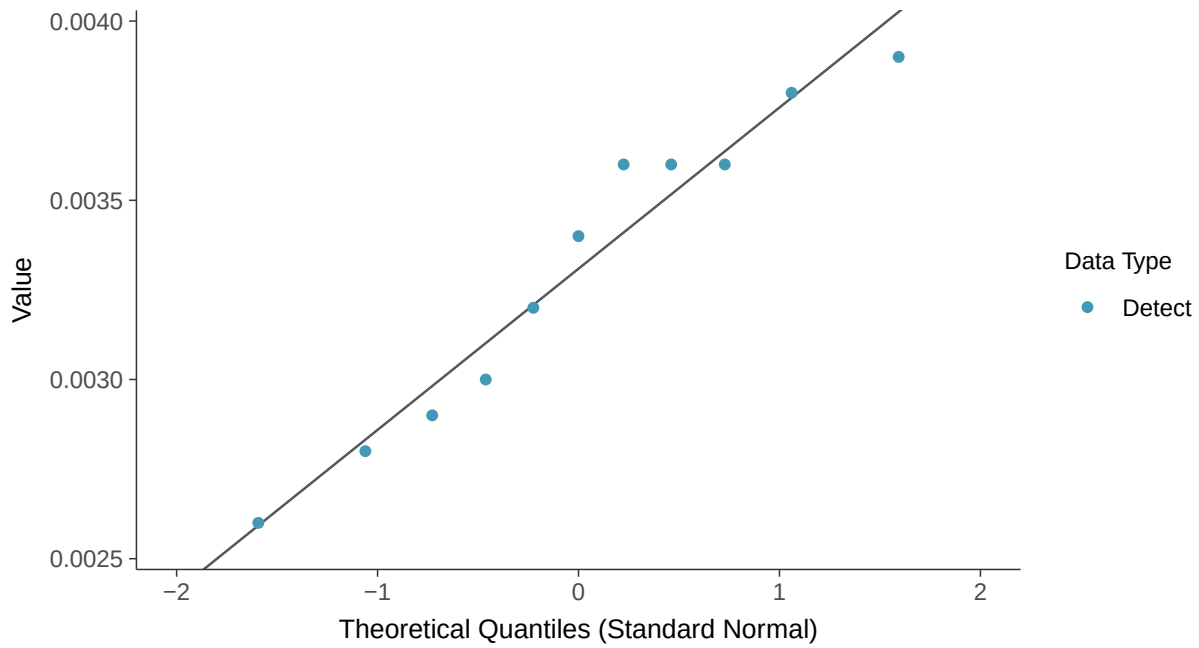


Boxplot by Season

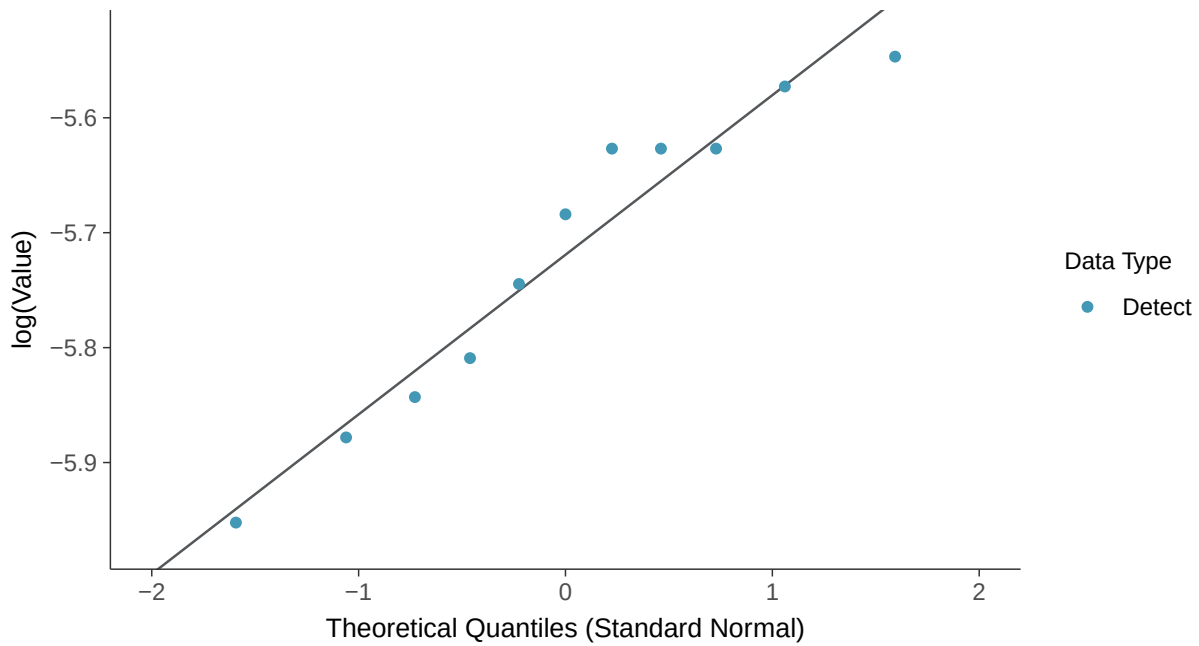
Selenium, W-2 (mg/l)



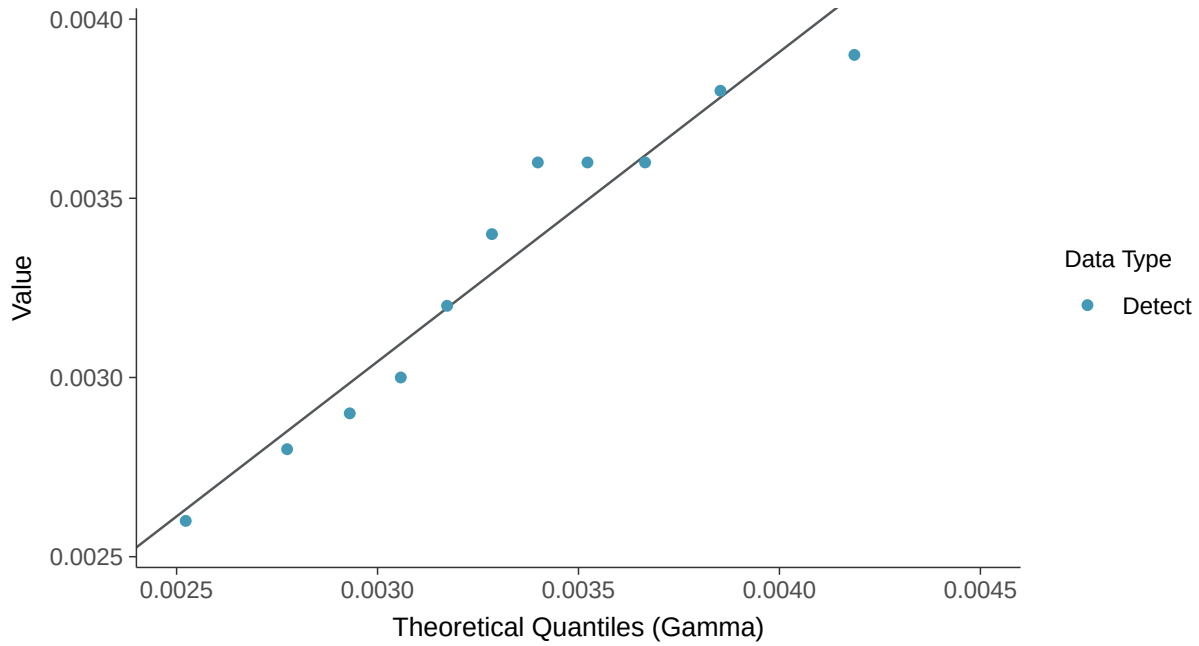
Normal Q-Q plot
Selenium, W-2 (mg/l)



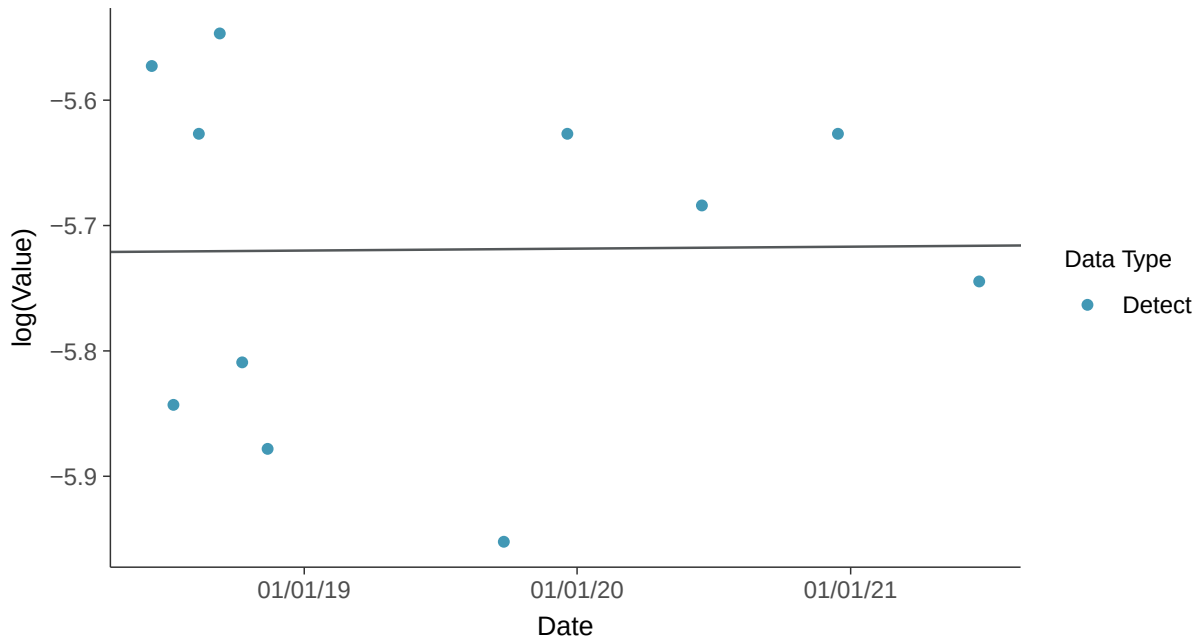
Lognormal Q-Q plot
Selenium, W-2 (mg/l)



Gamma Q-Q plot
Selenium, W-2 (mg/l)

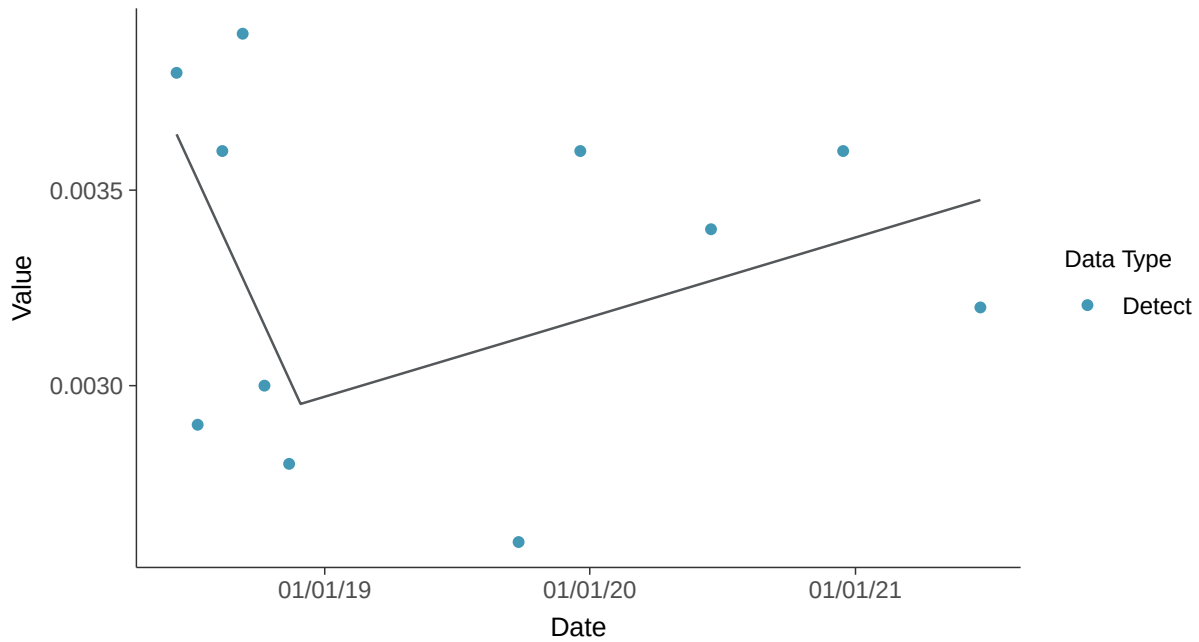


Trend Regression: Lognormal MLE
Selenium, W-2 (mg/l)



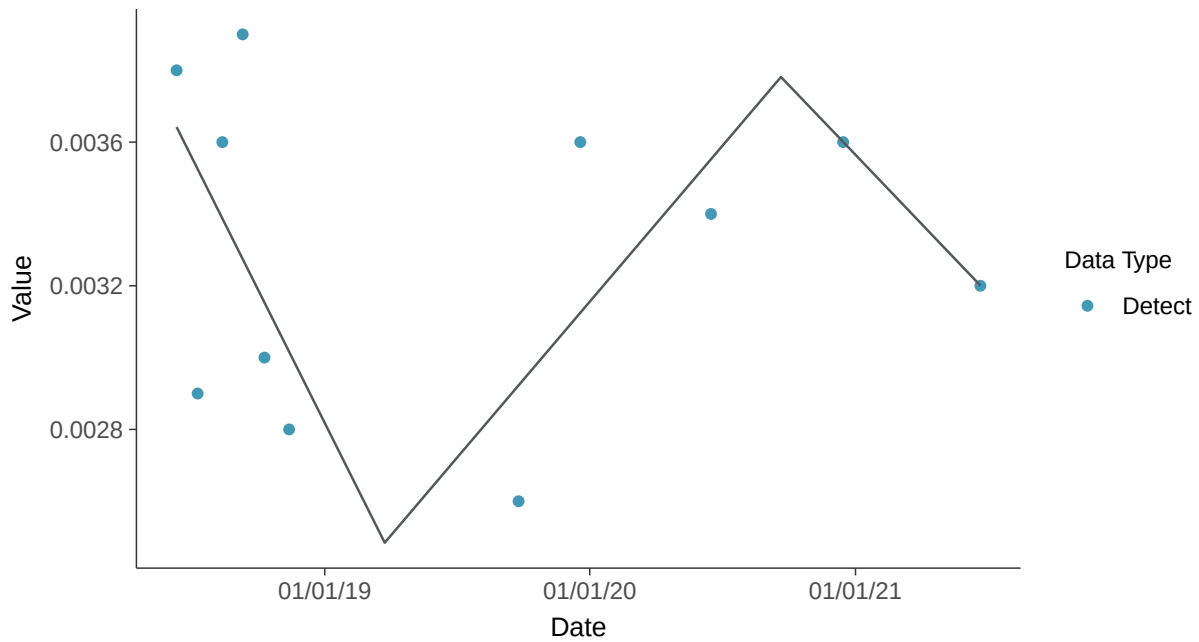
Trend Regression: Piecewise Linear-Linear

Selenium, W-2 (mg/l)



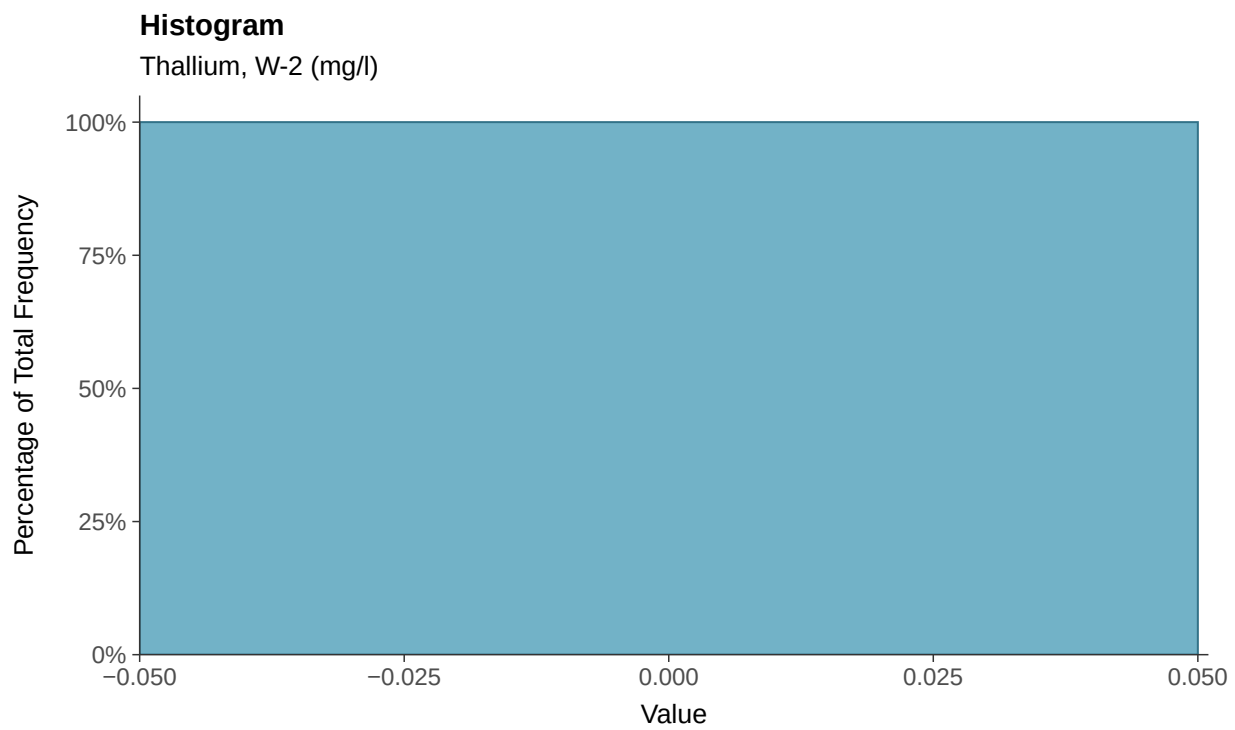
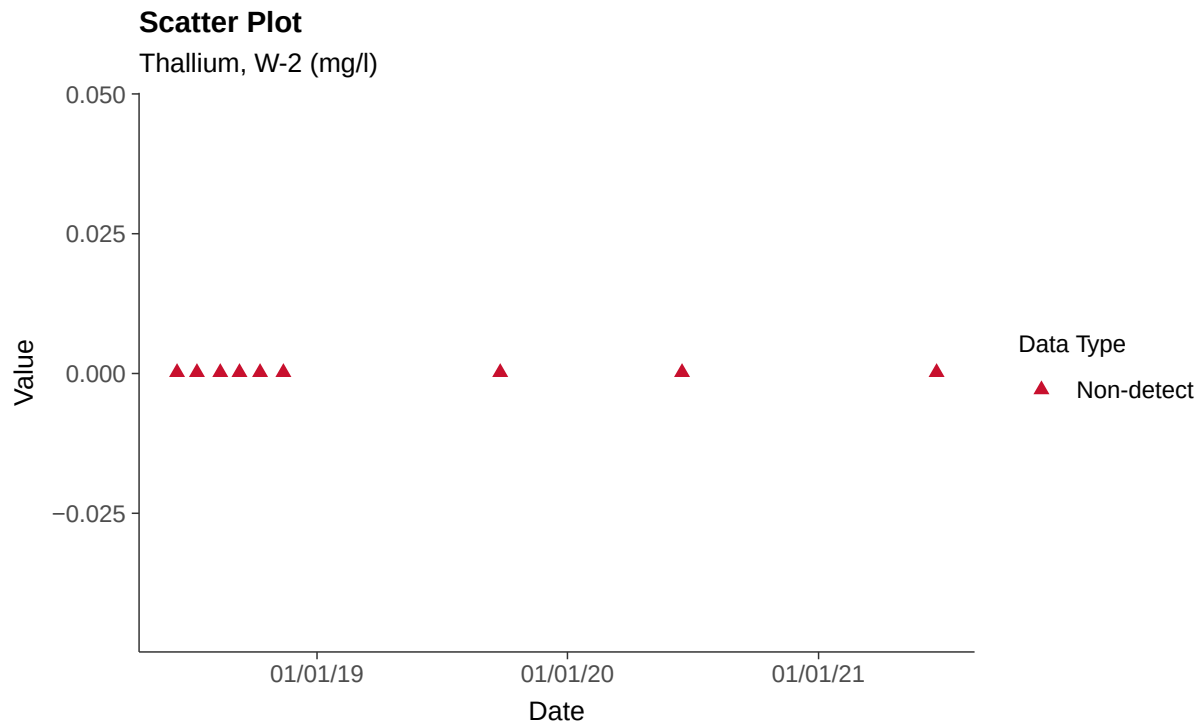
Trend Regression: Piecewise Linear-Linear-Linear

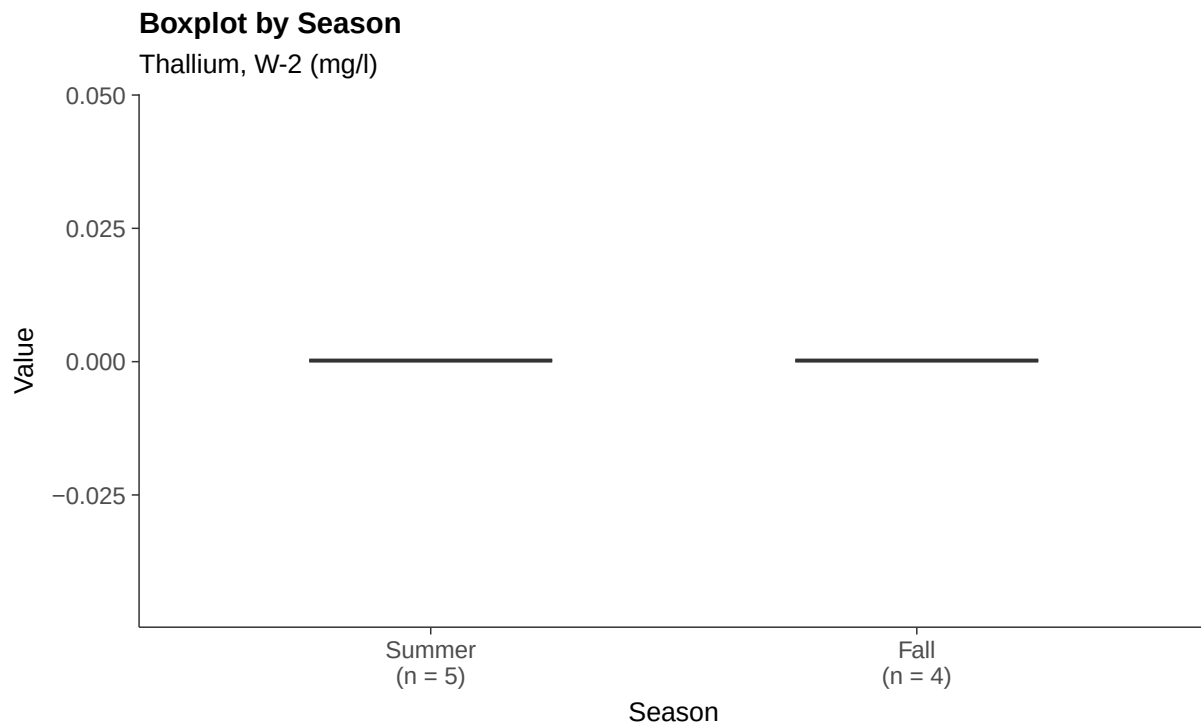
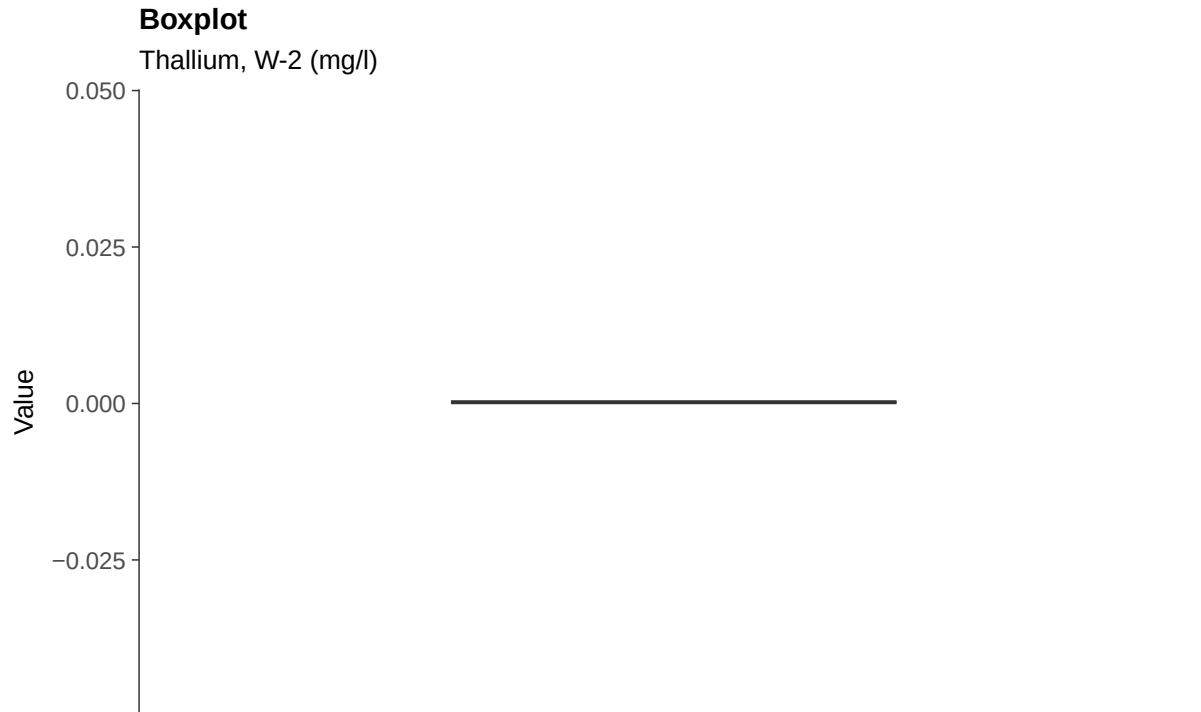
Selenium, W-2 (mg/l)



Appendix IV: Thallium, W-2

ID: 2_2_128

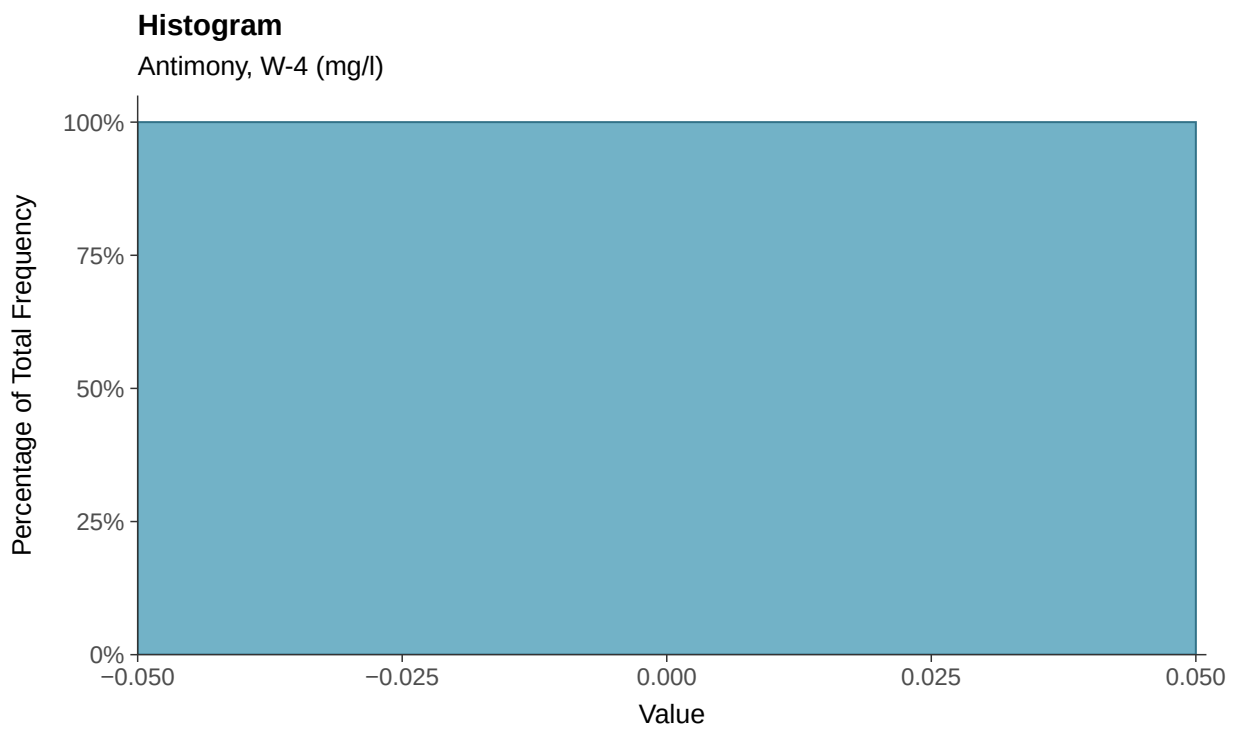
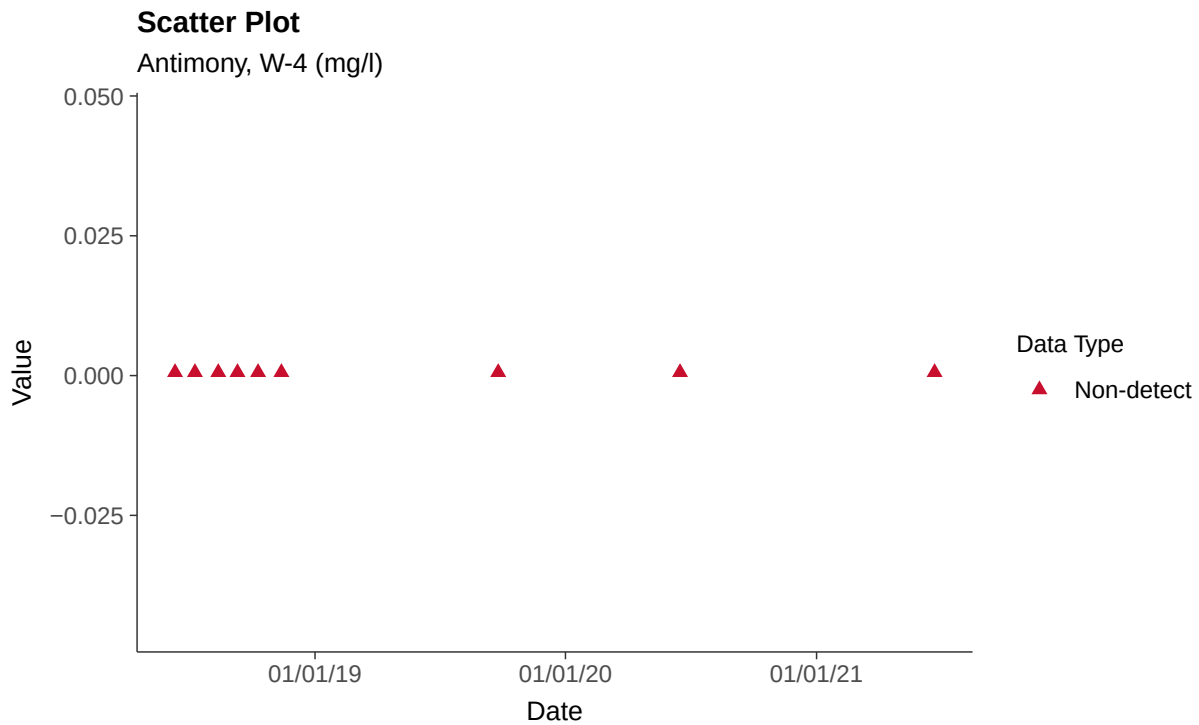


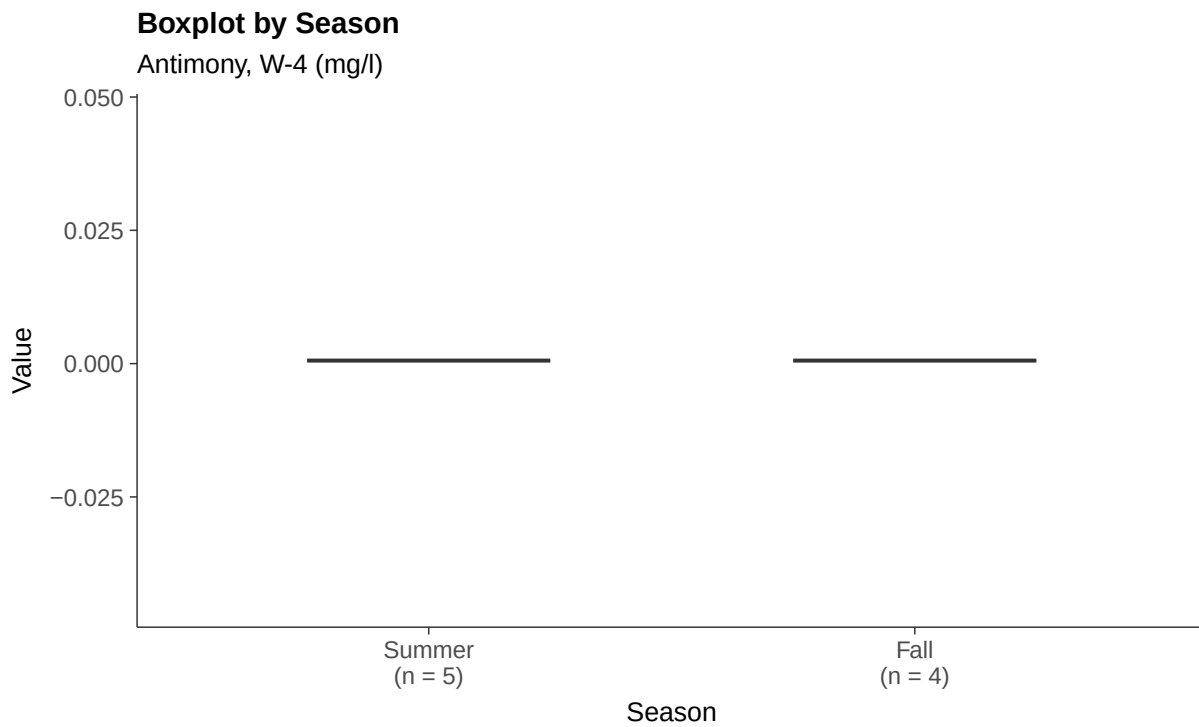
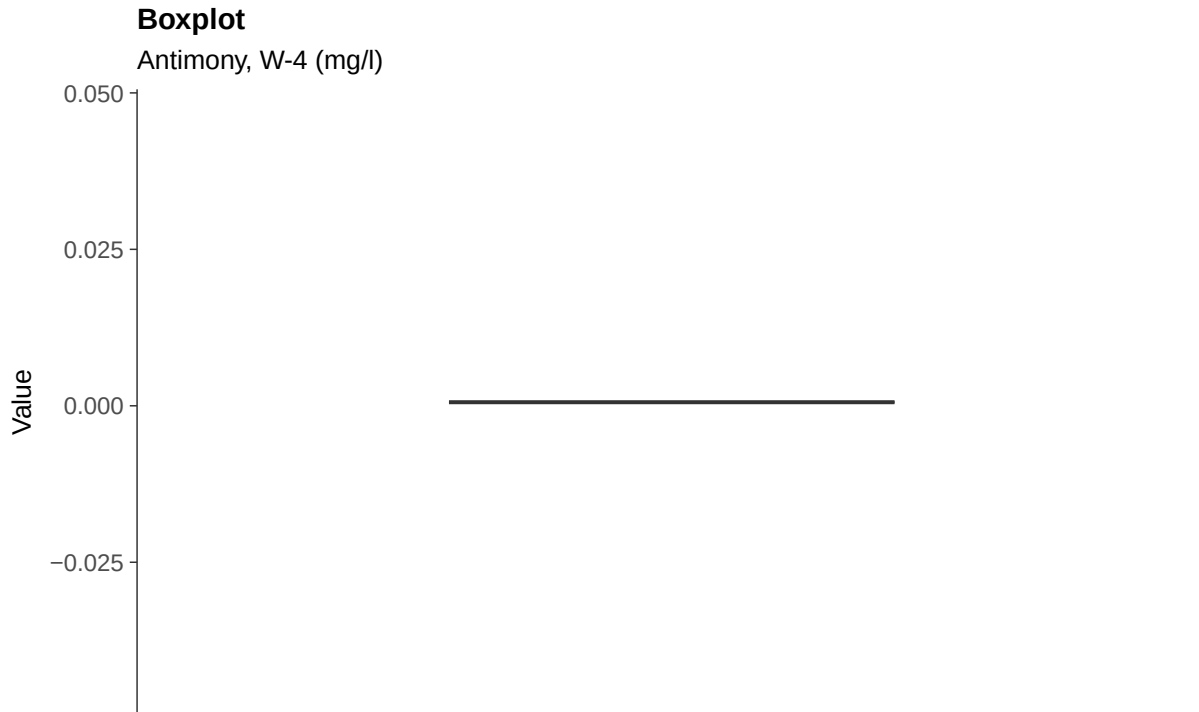




Appendix IV: Antimony, W-4

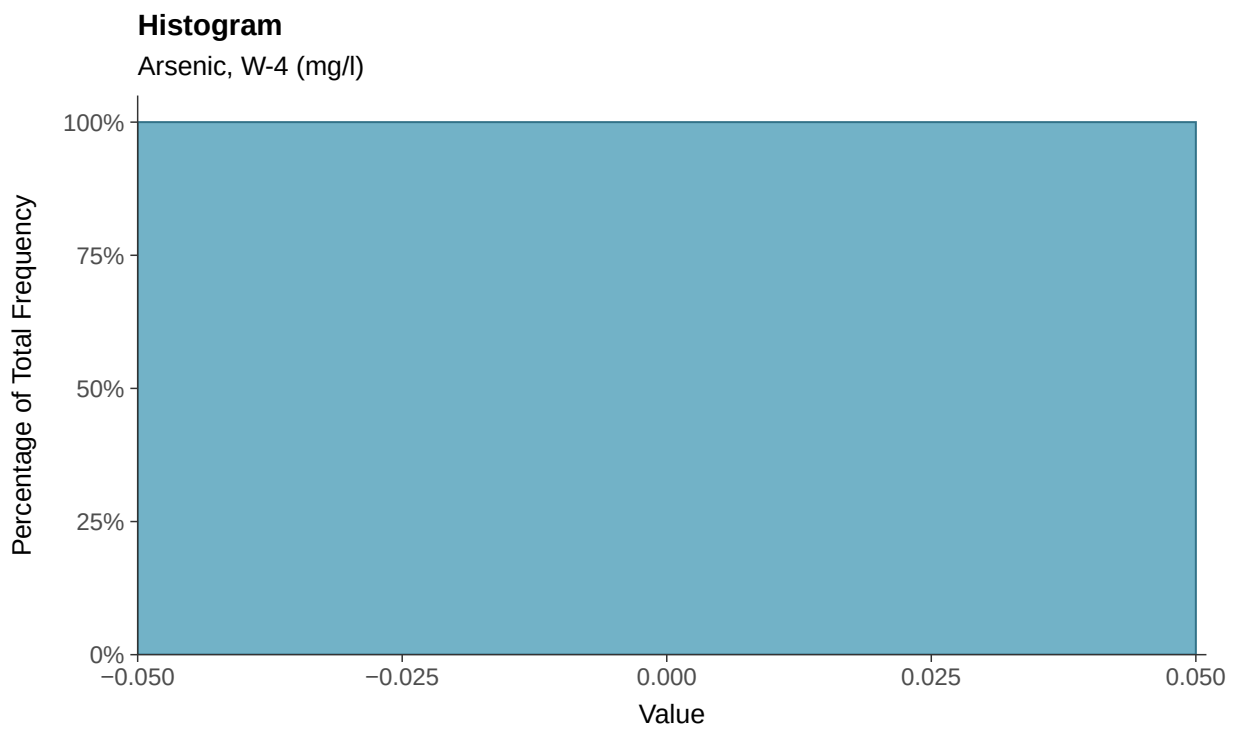
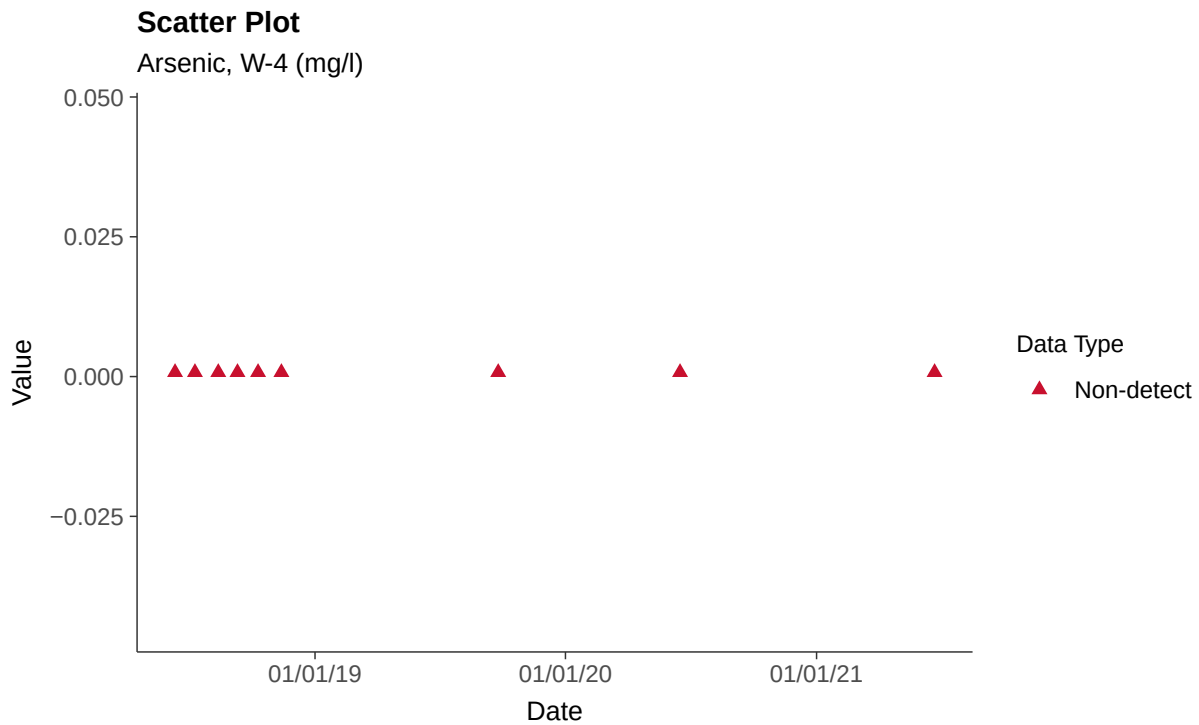
ID: 3_2_101

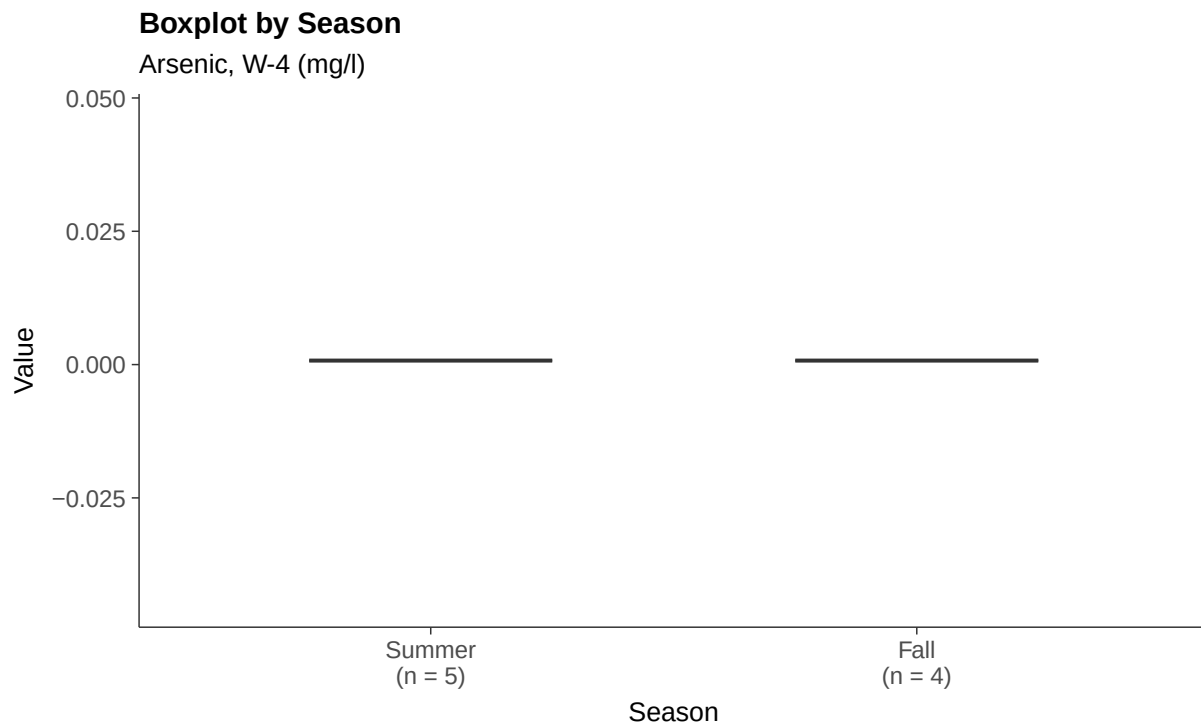
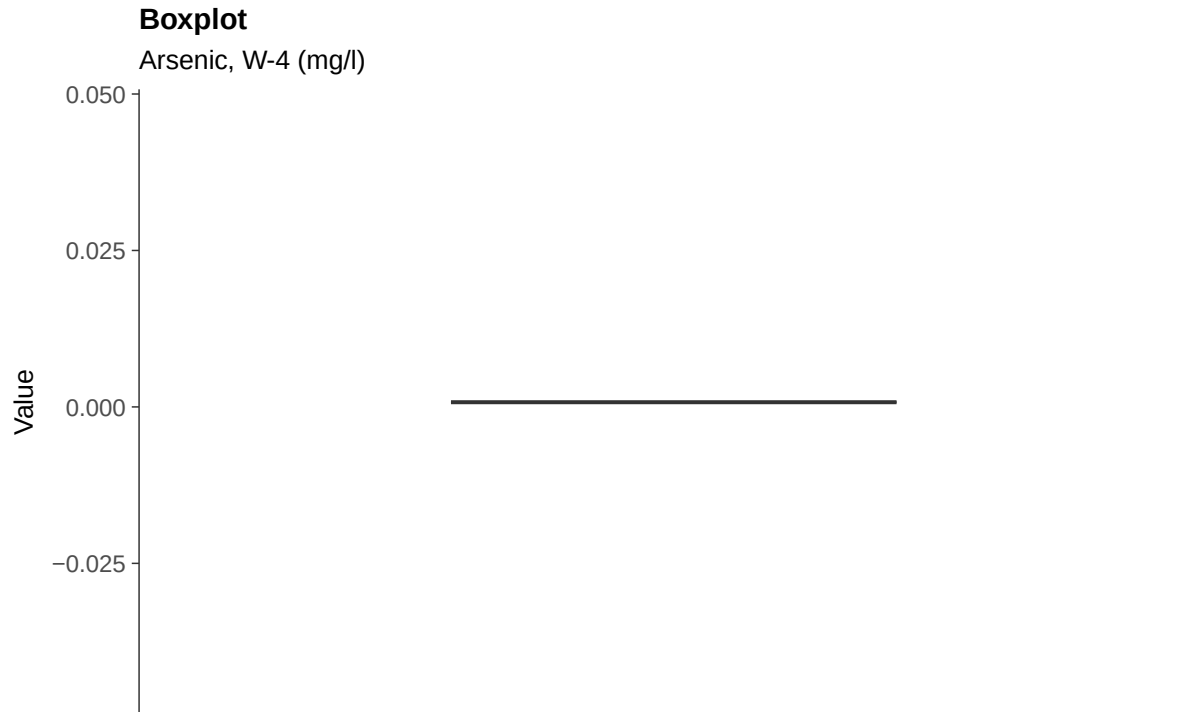




Appendix IV: Arsenic, W-4

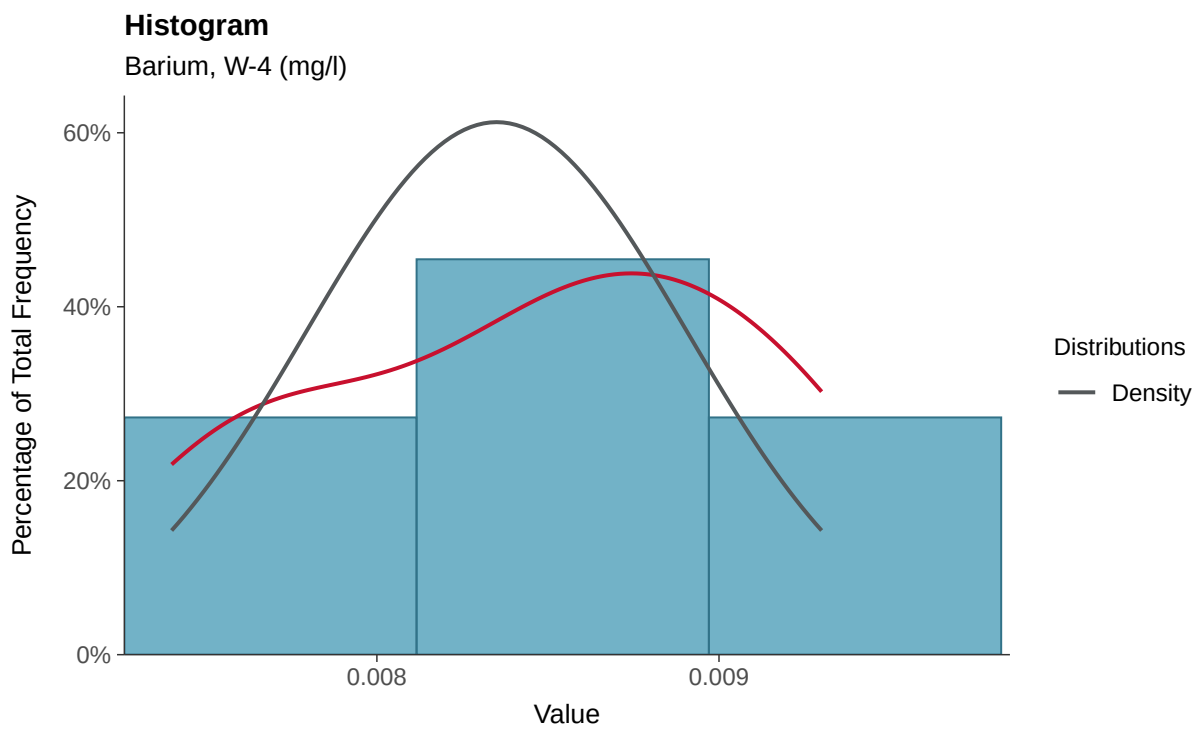
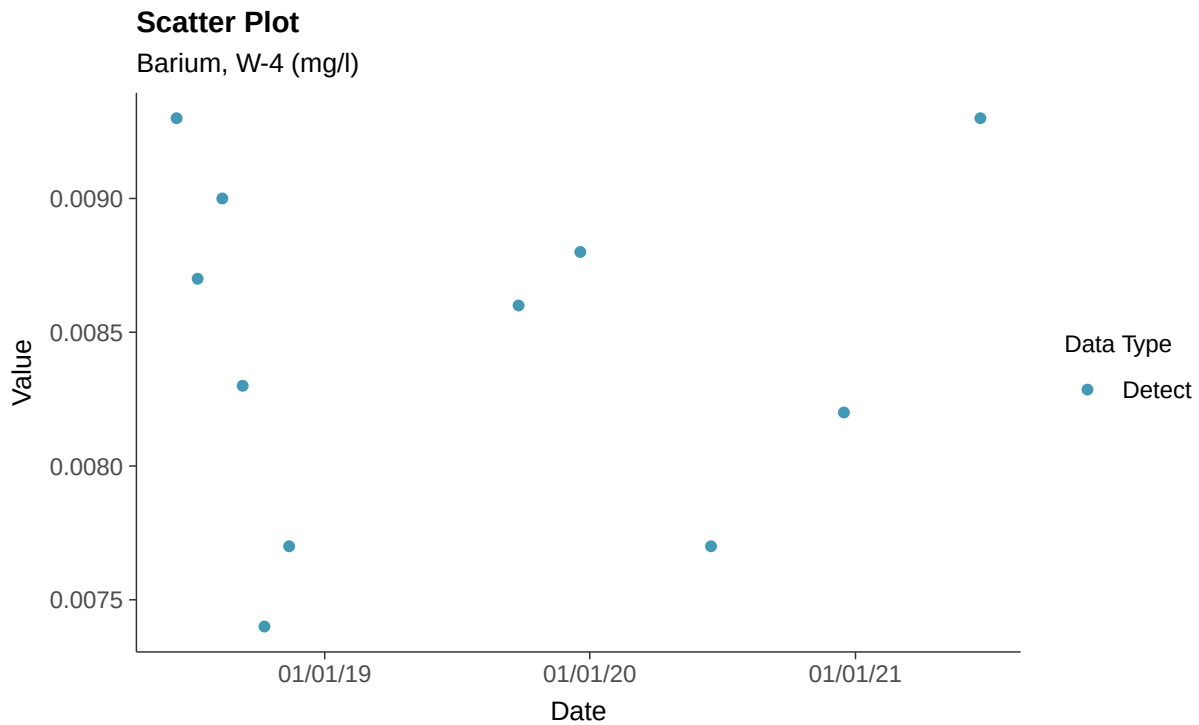
ID: 3_2_102





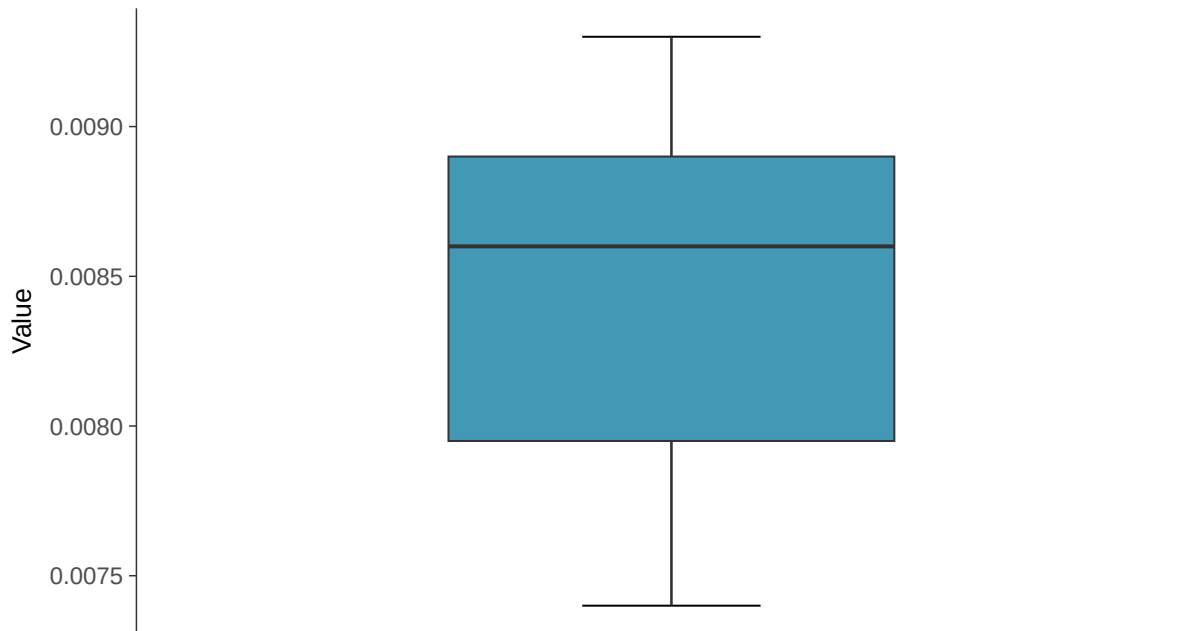
Appendix IV: Barium, W-4

ID: 3_2_103



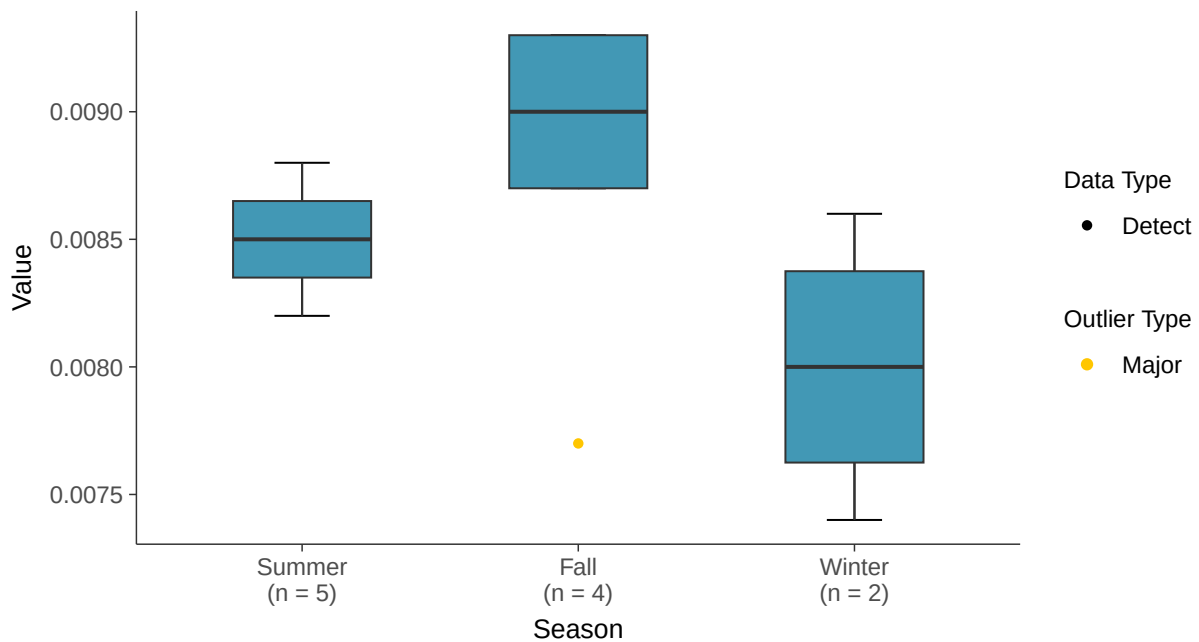
Boxplot

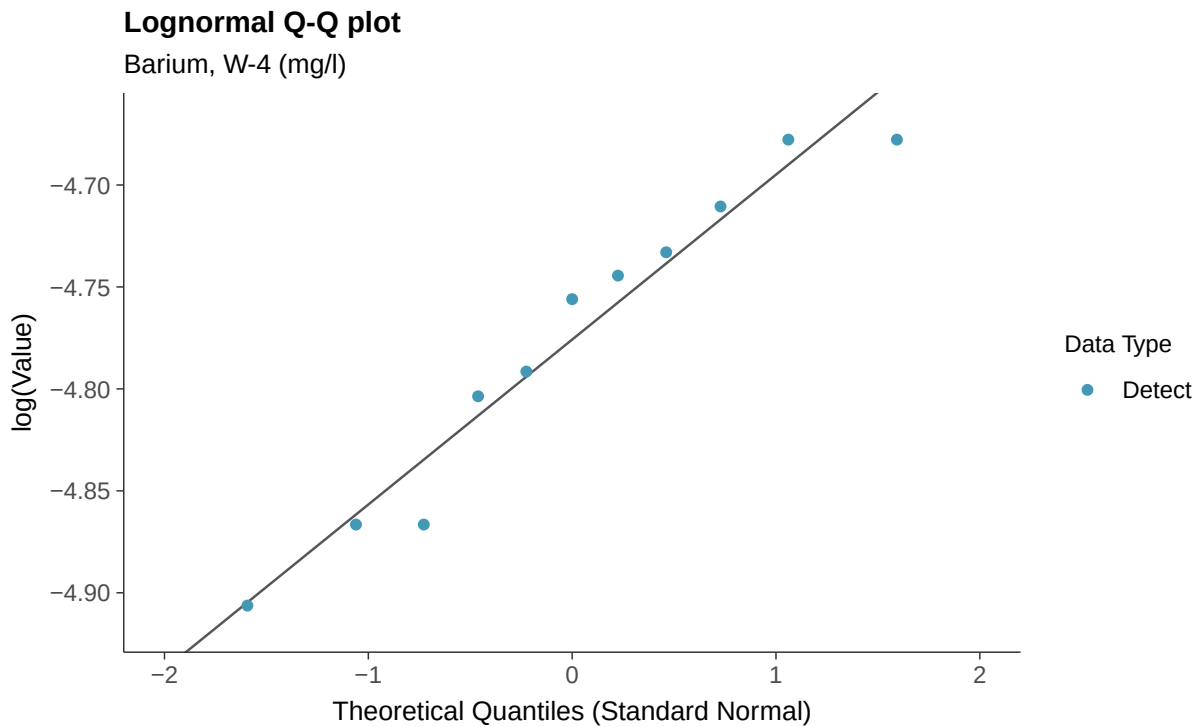
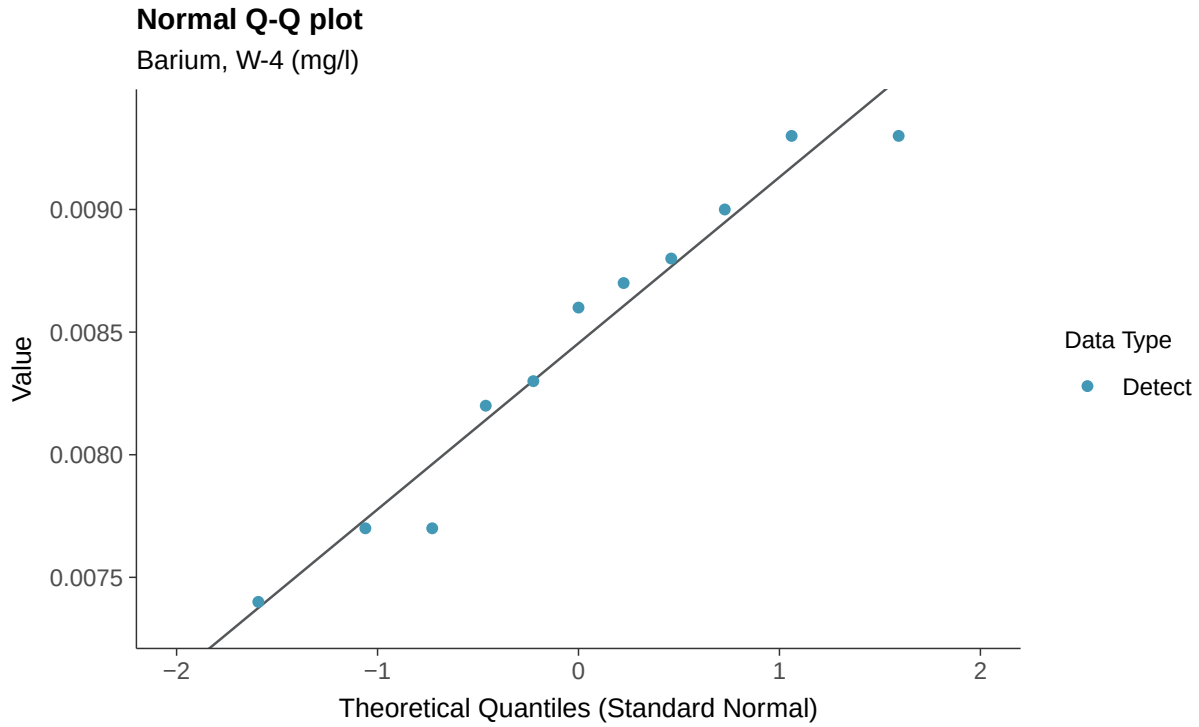
Barium, W-4 (mg/l)

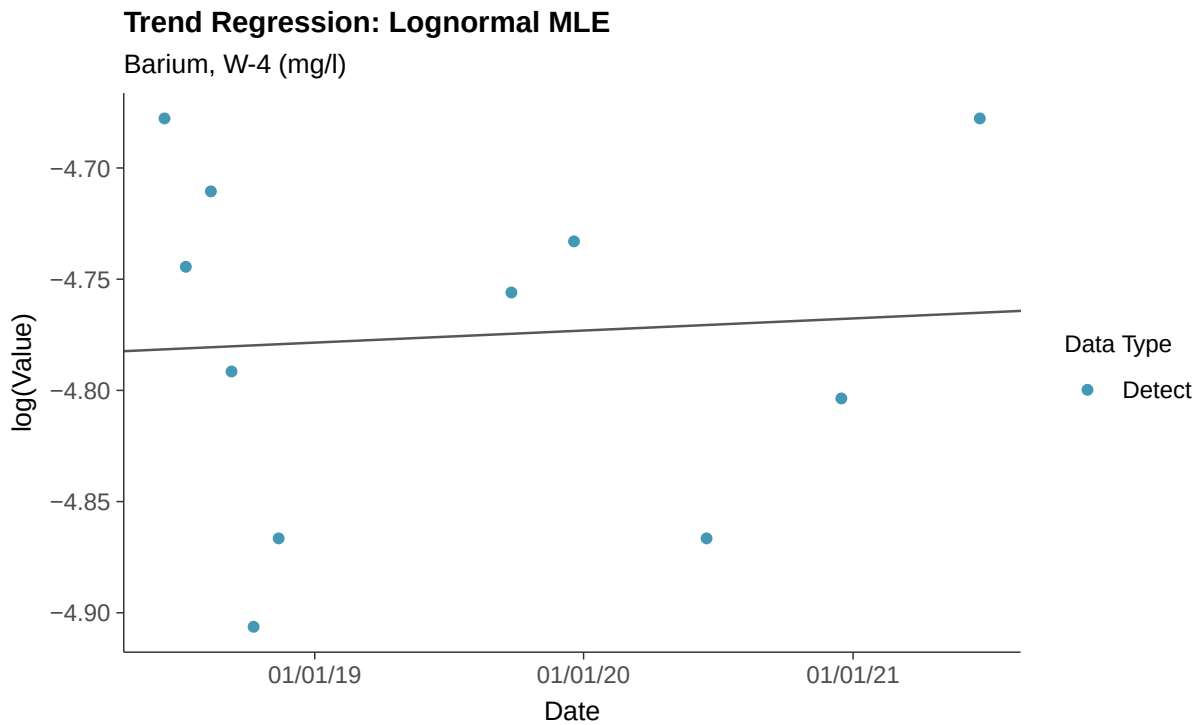
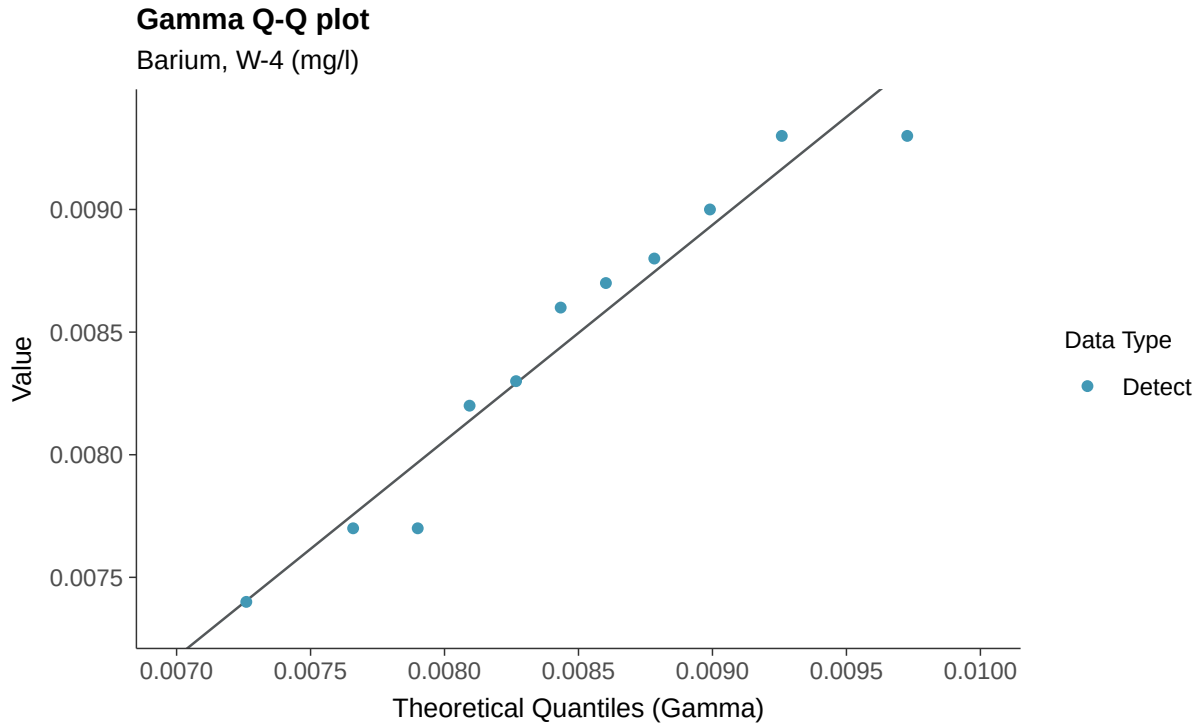


Boxplot by Season

Barium, W-4 (mg/l)

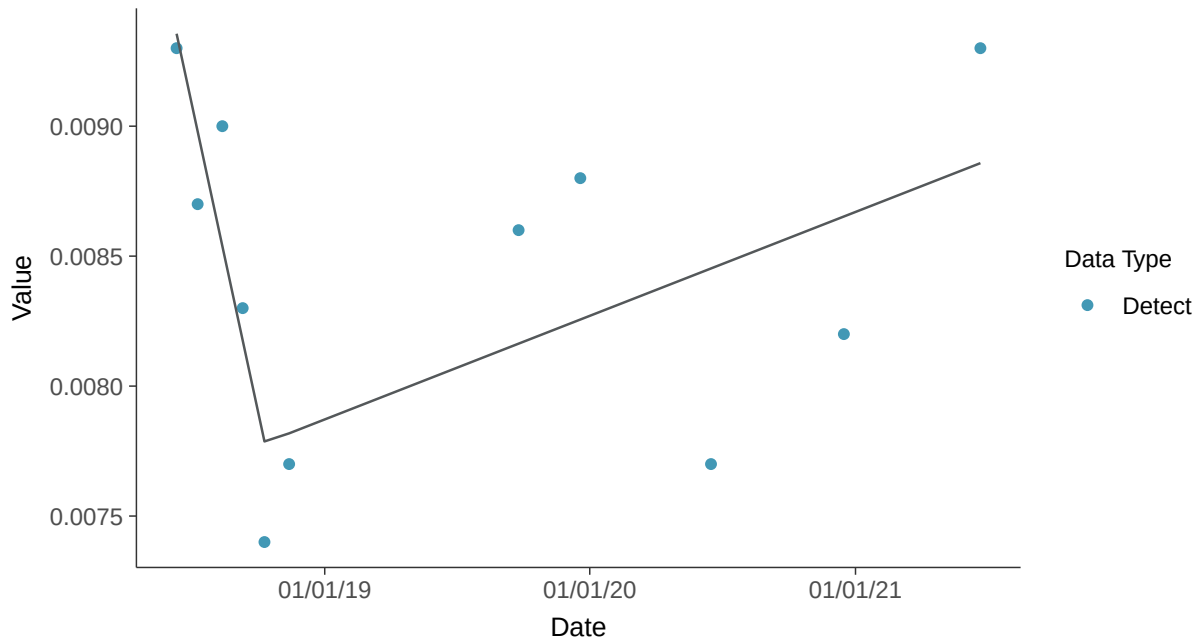






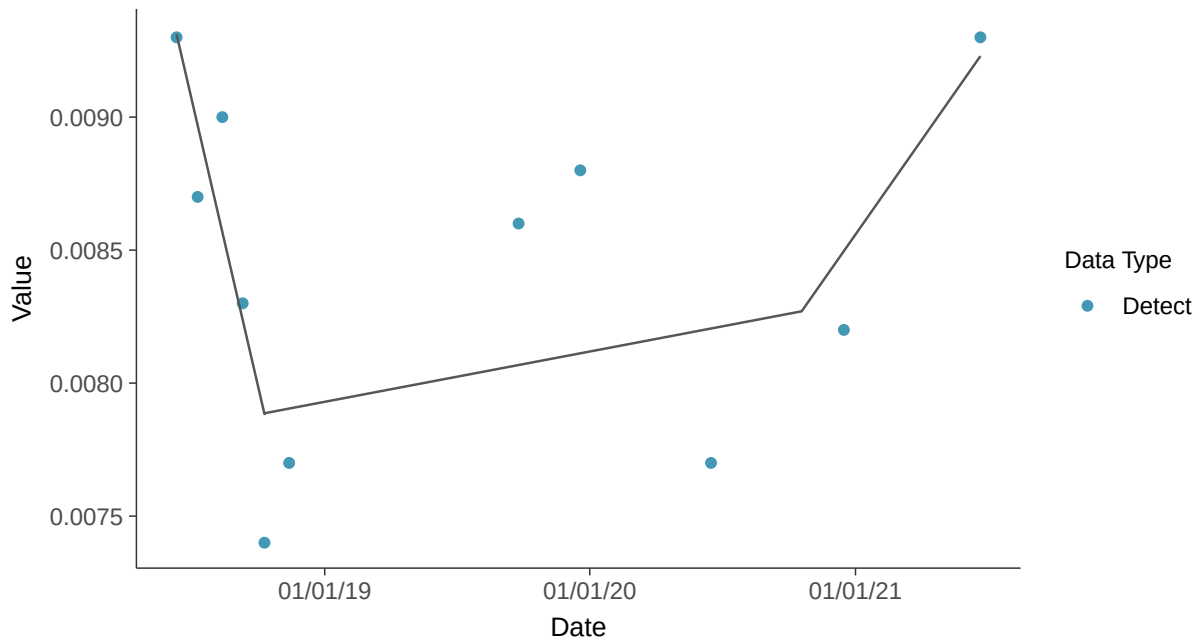
Trend Regression: Piecewise Linear-Linear

Barium, W-4 (mg/l)



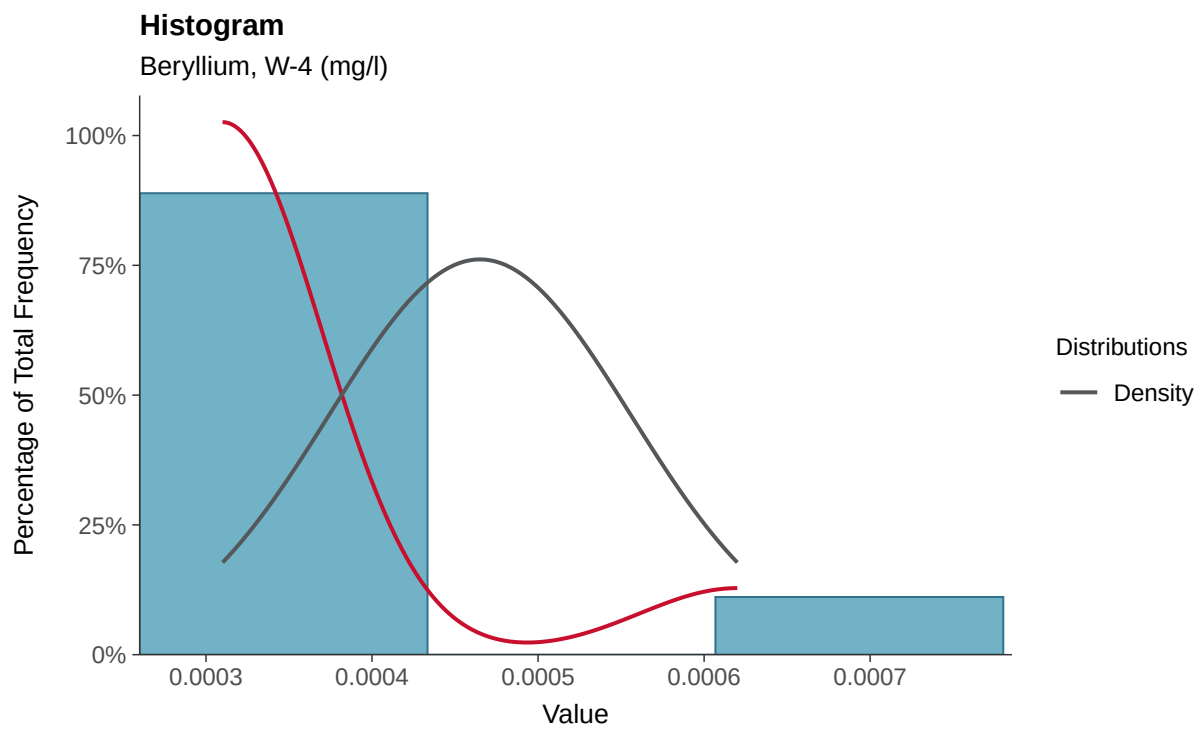
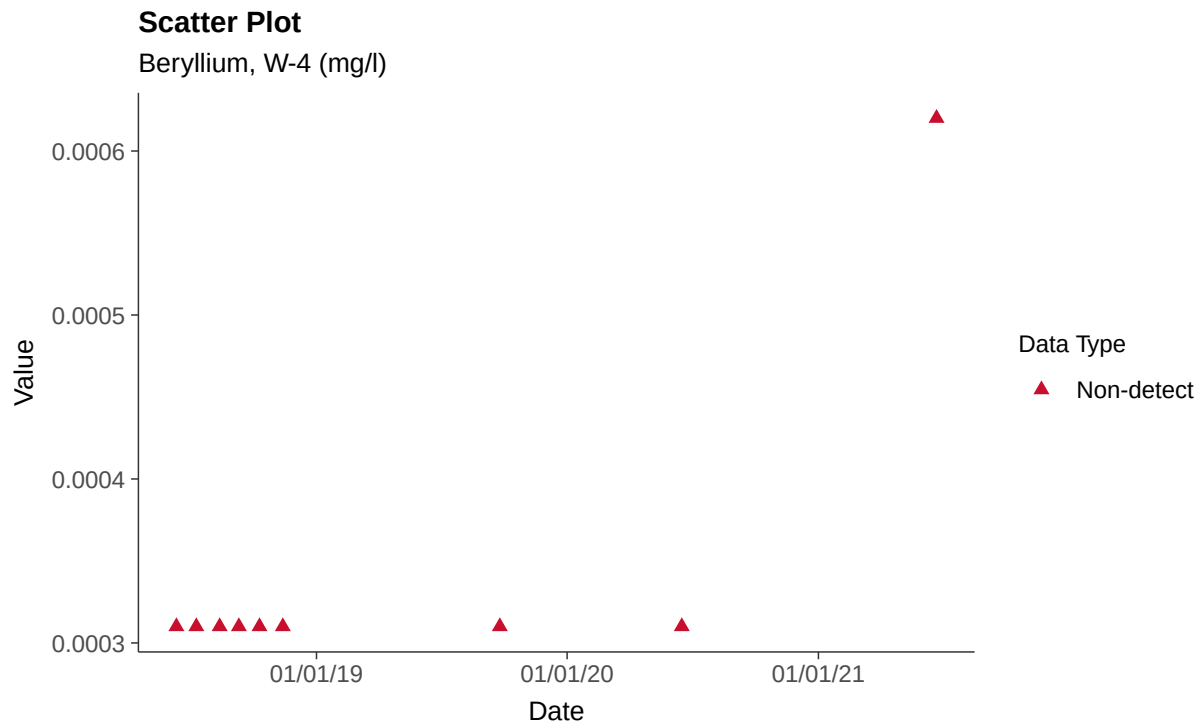
Trend Regression: Piecewise Linear-Linear-Linear

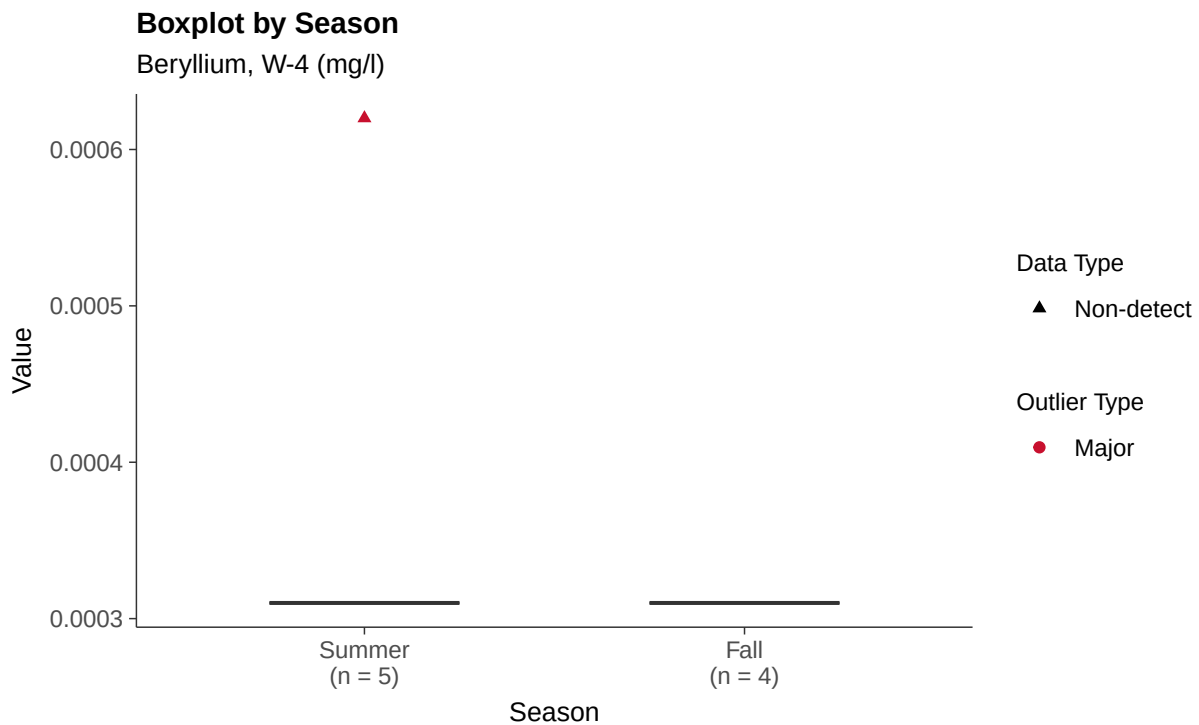
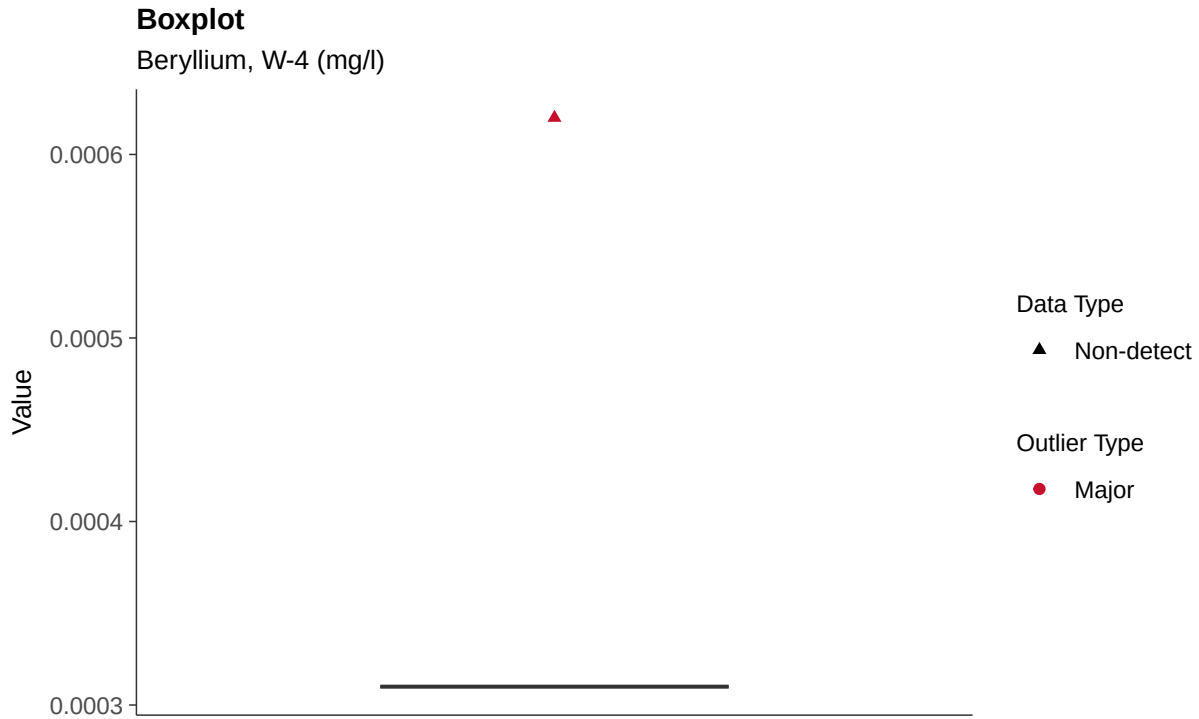
Barium, W-4 (mg/l)



Appendix IV: Beryllium, W-4

ID: 3_2_104

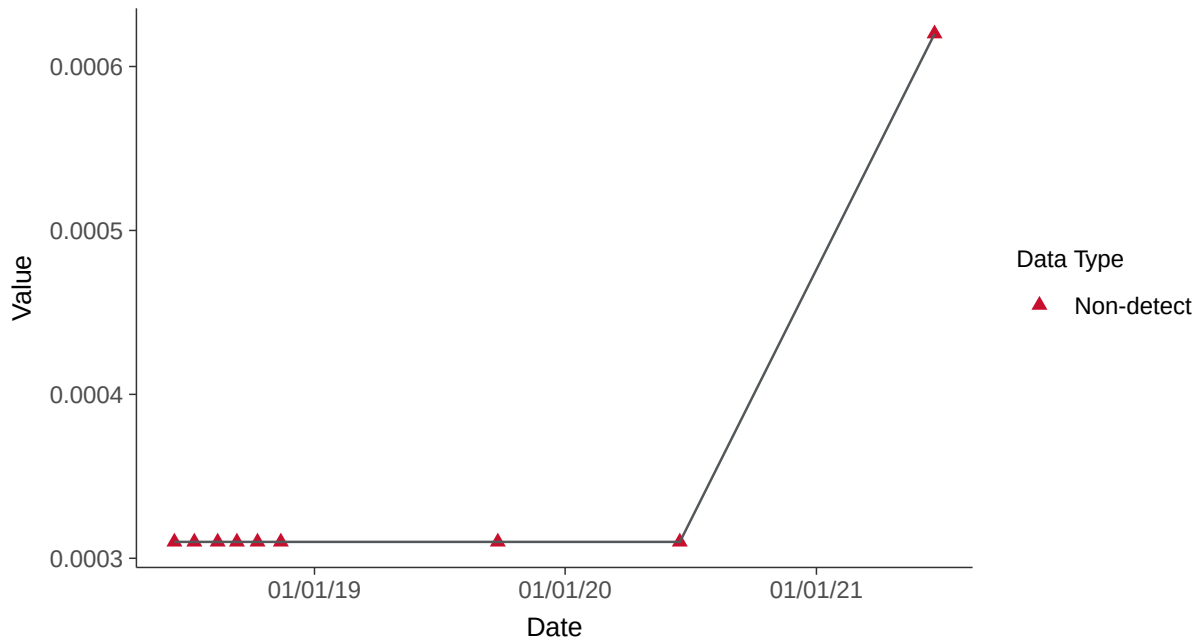






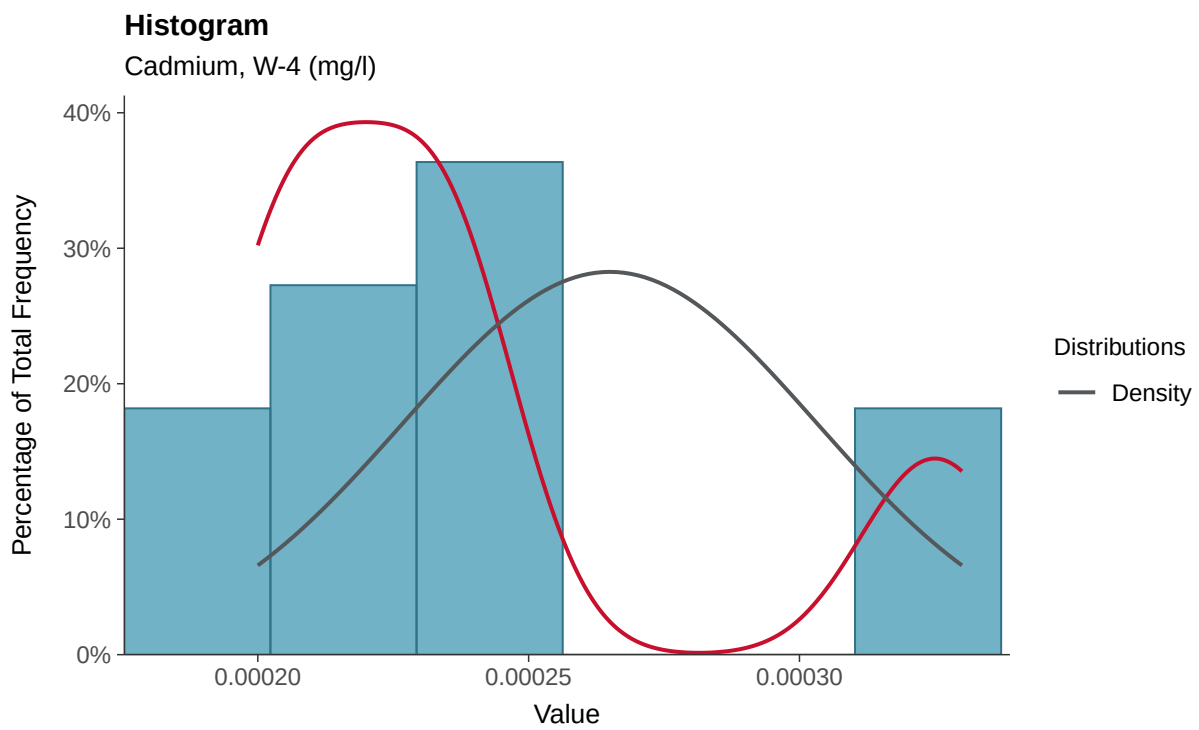
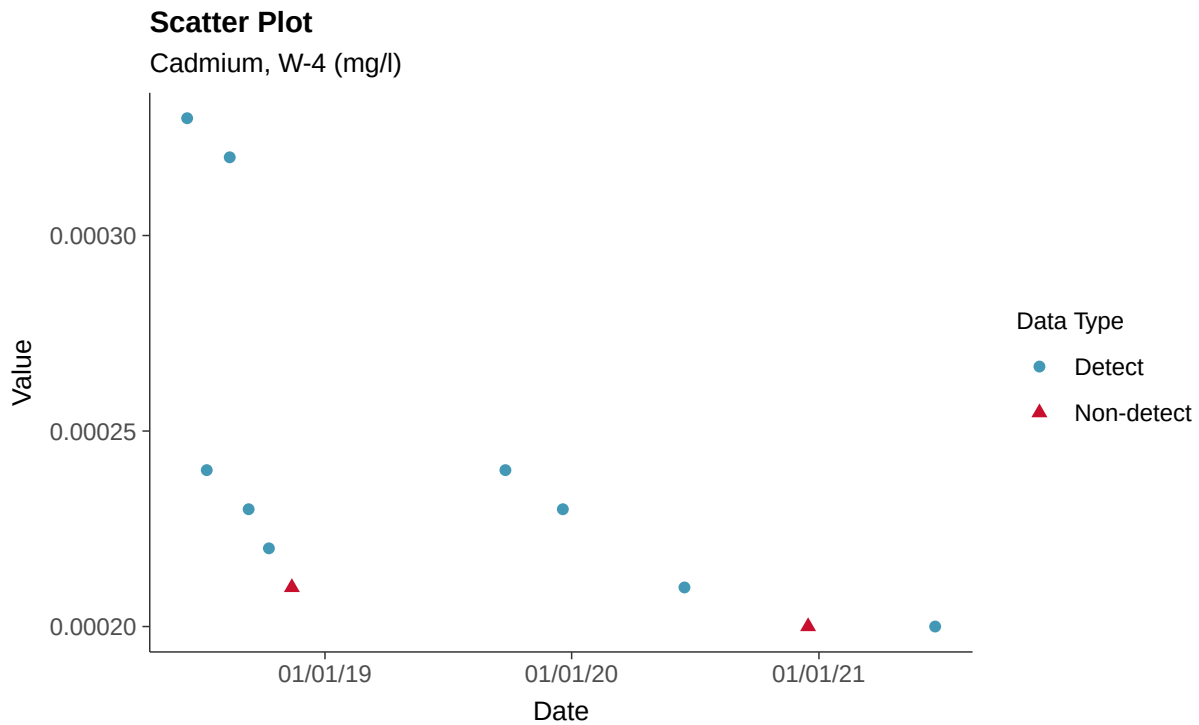
Trend Regression: Piecewise Linear-Linear

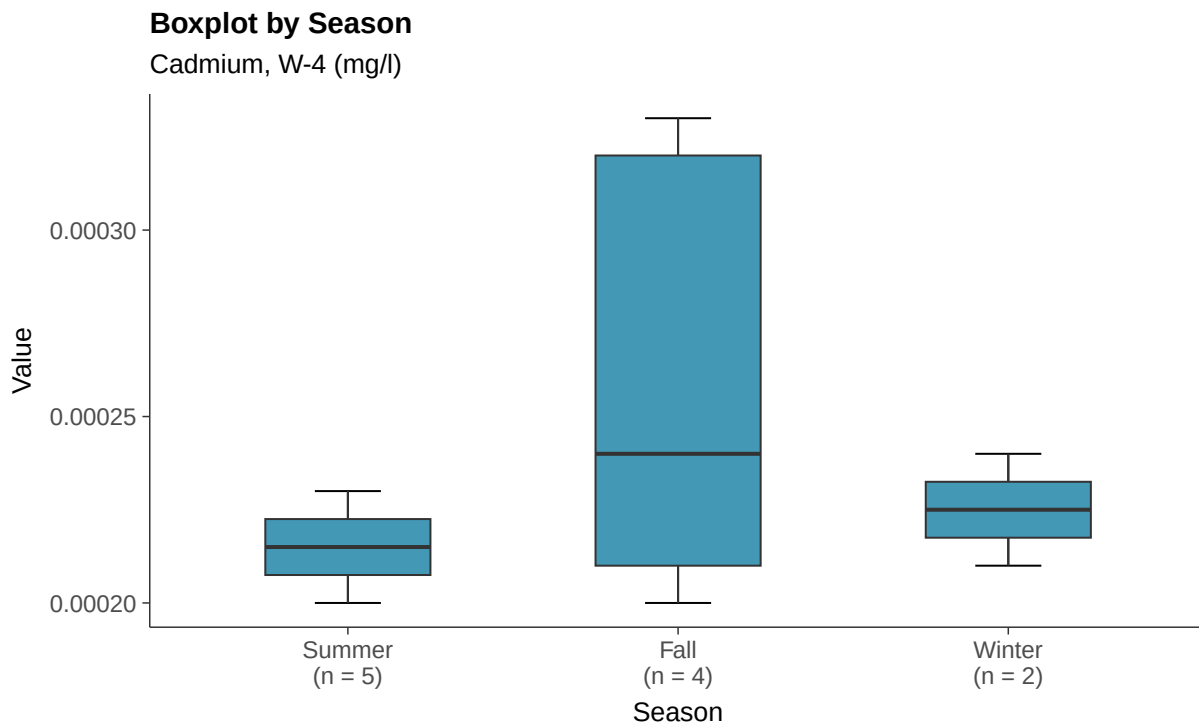
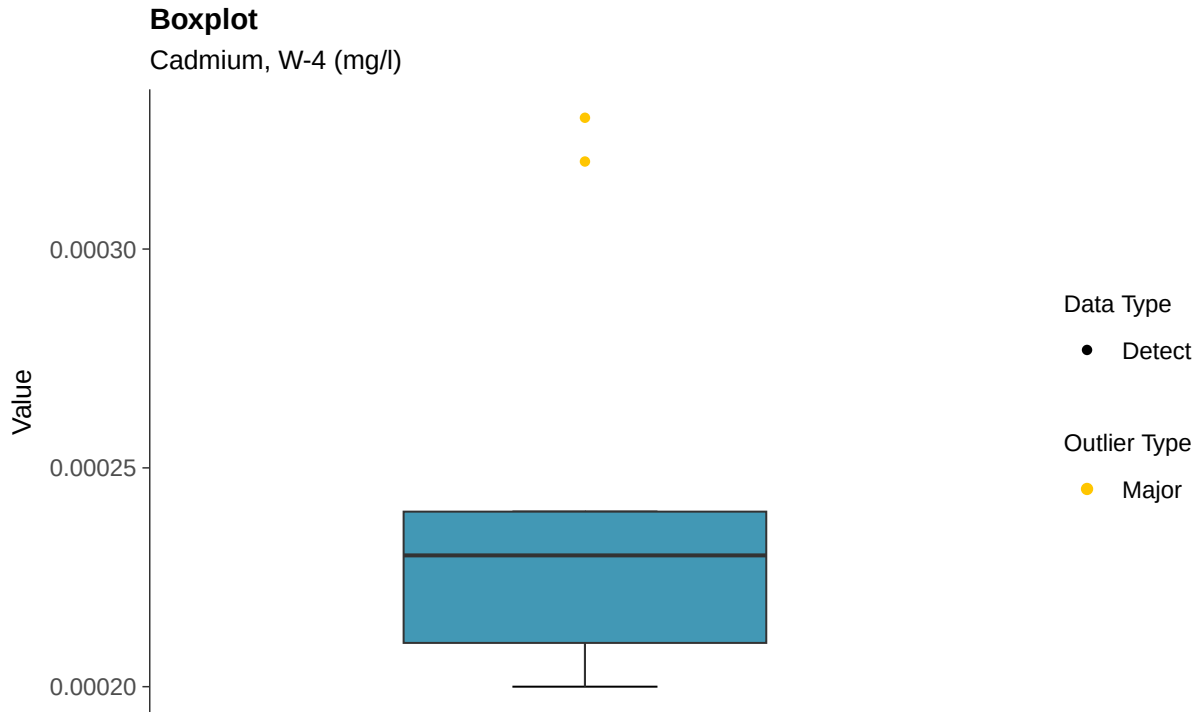
Beryllium, W-4 (mg/l)



Appendix IV: Cadmium, W-4

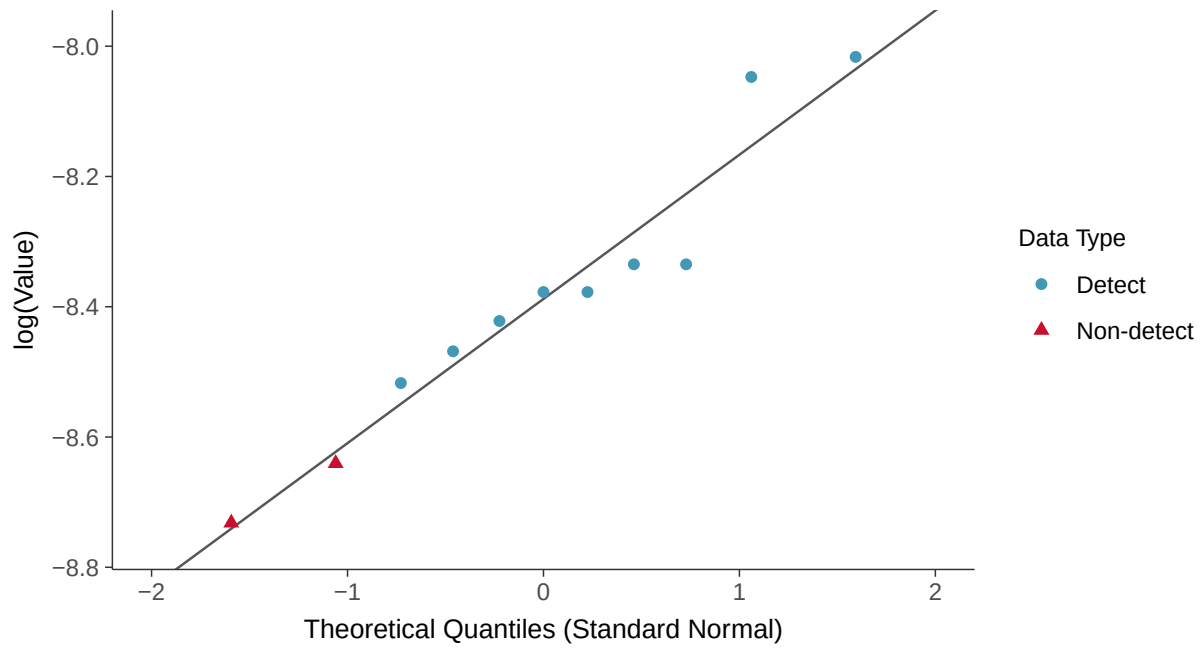
ID: 3_2_106





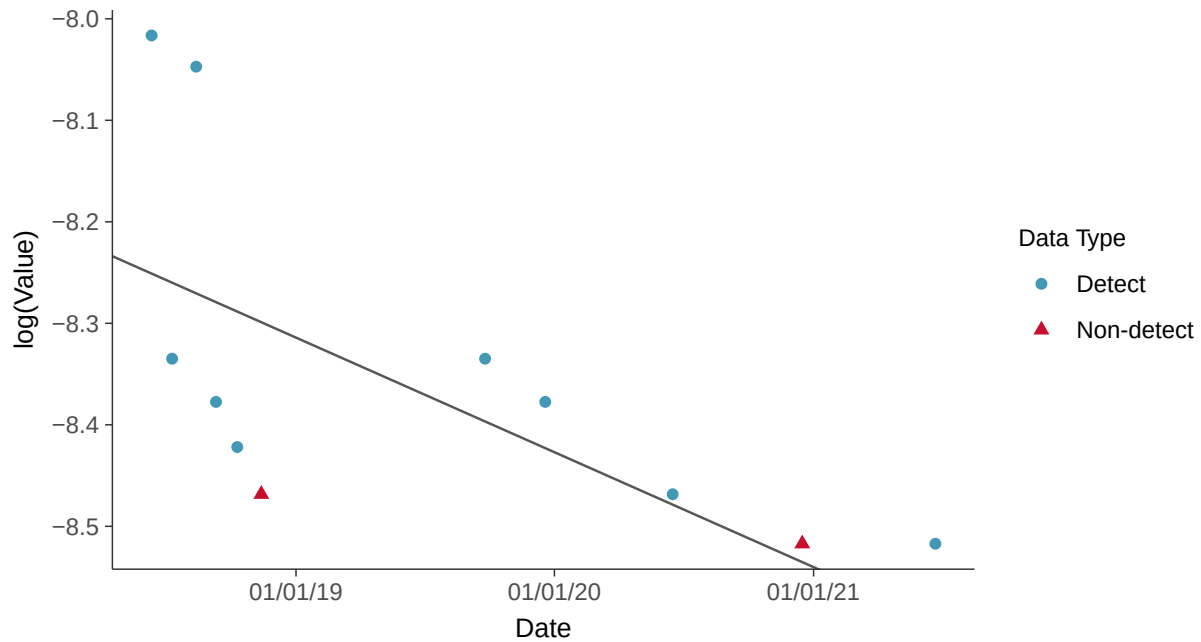
Lognormal Q-Q plot using ROS Imputed Estimates

Cadmium, W-4 (mg/l)



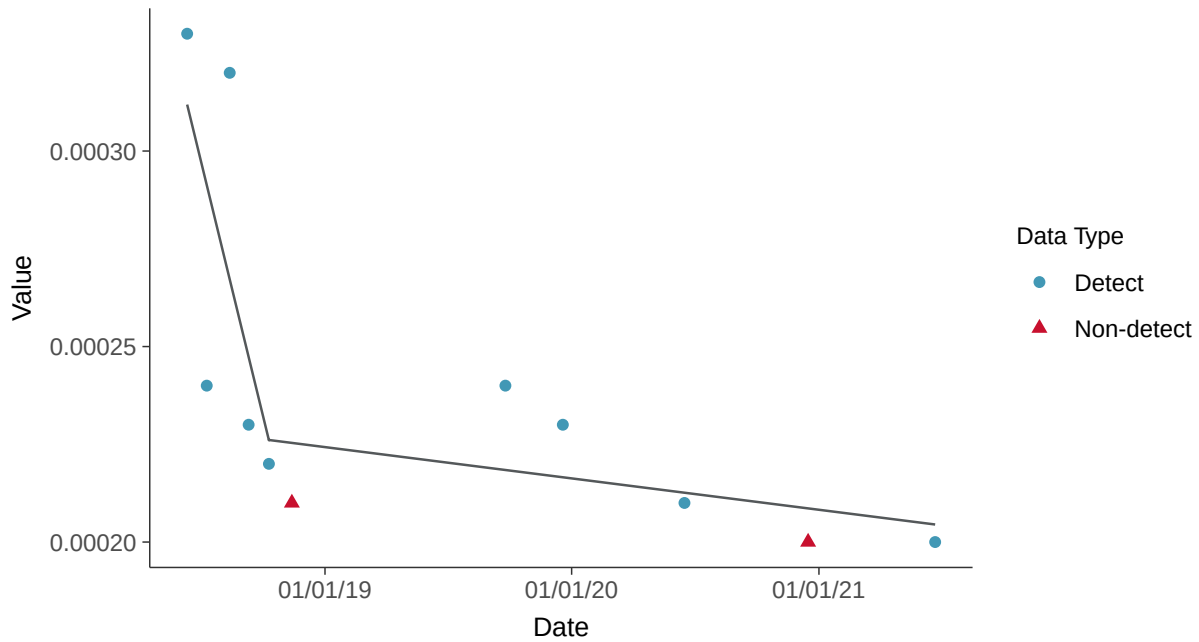
Trend Regression: Lognormal MLE

Cadmium, W-4 (mg/l)



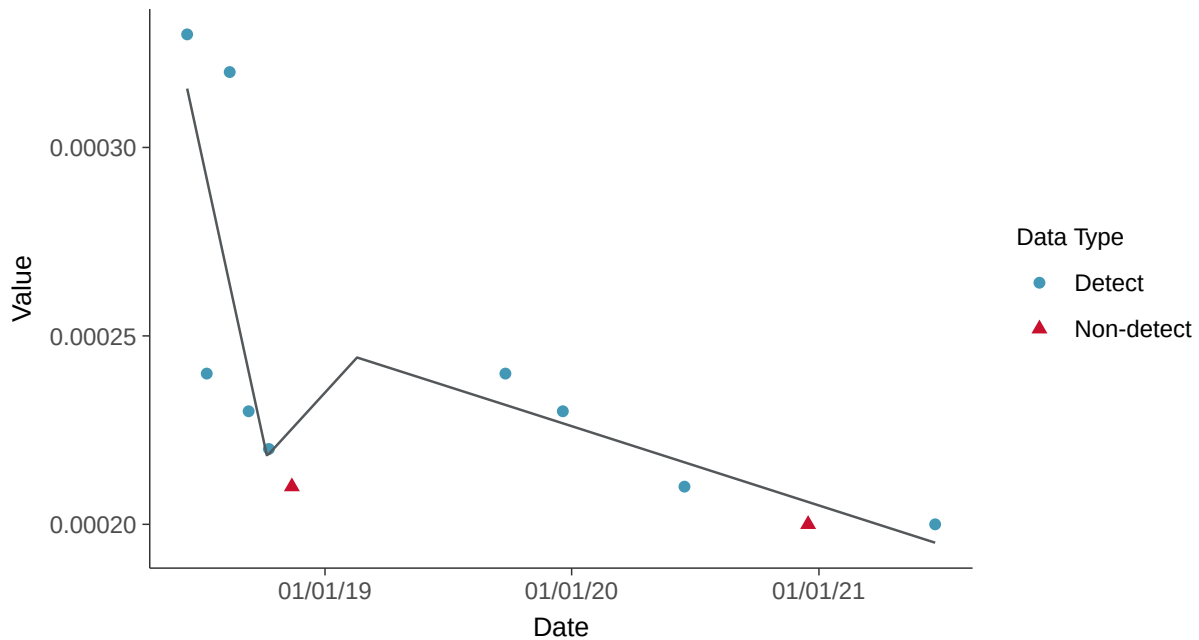
Trend Regression: Piecewise Linear-Linear

Cadmium, W-4 (mg/l)



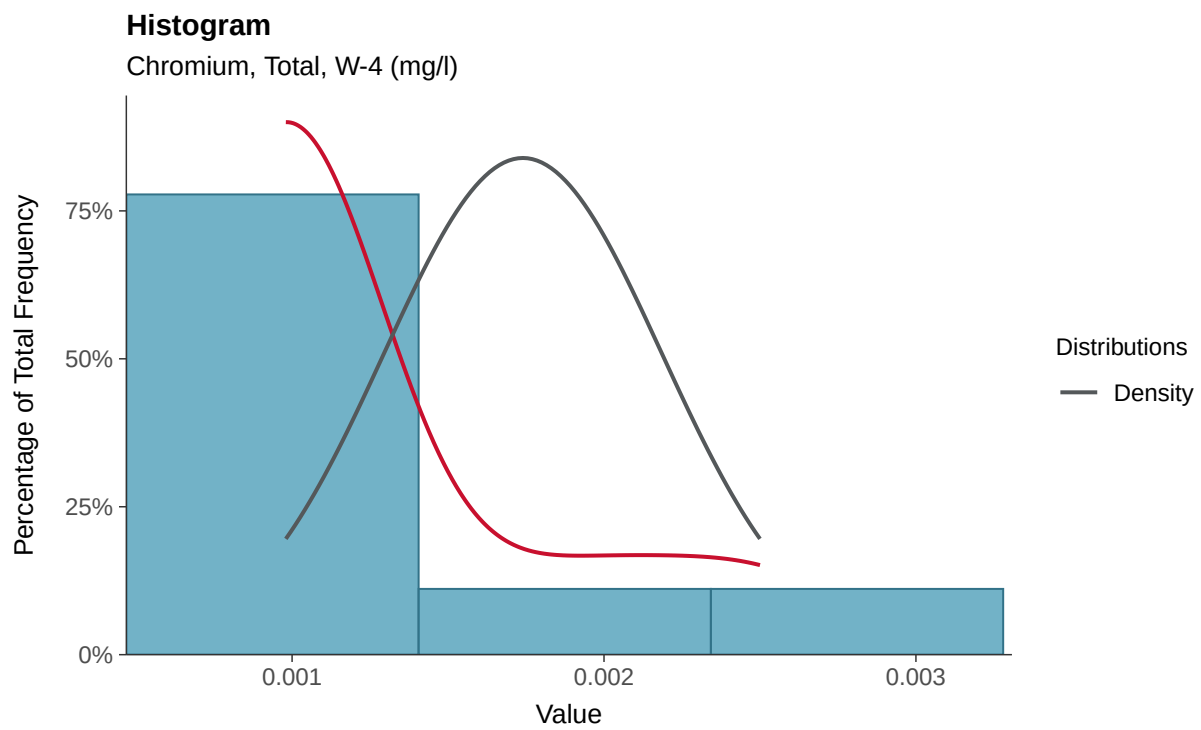
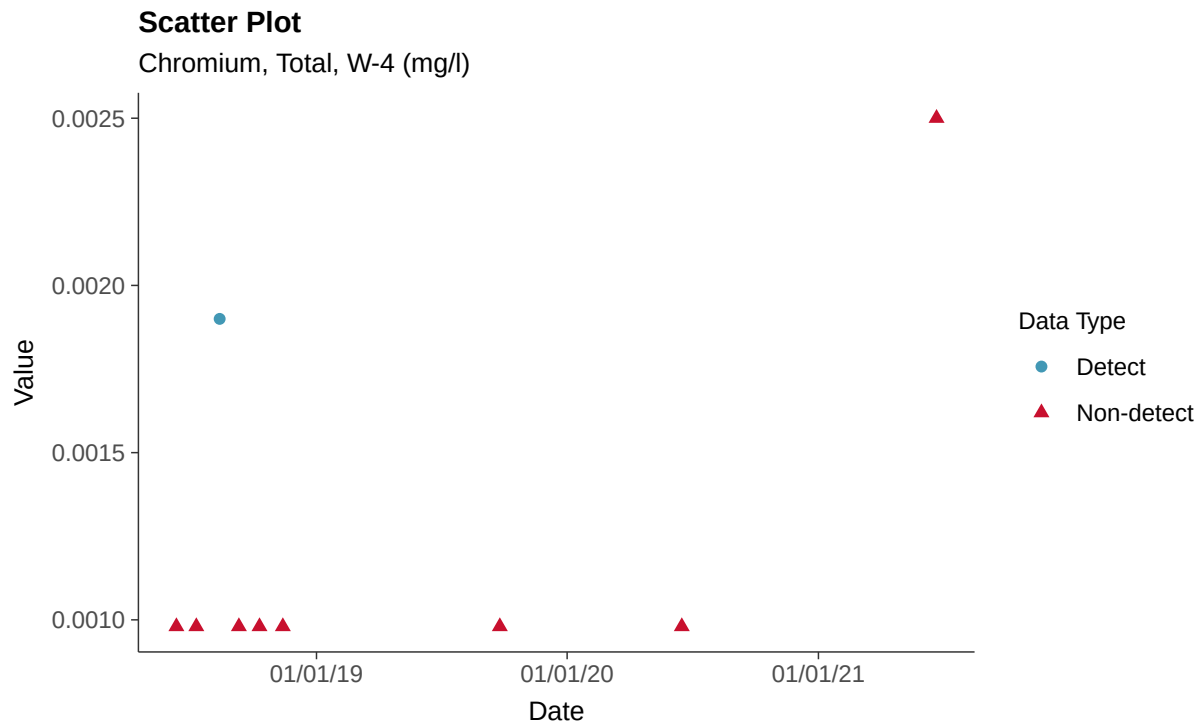
Trend Regression: Piecewise Linear-Linear-Linear

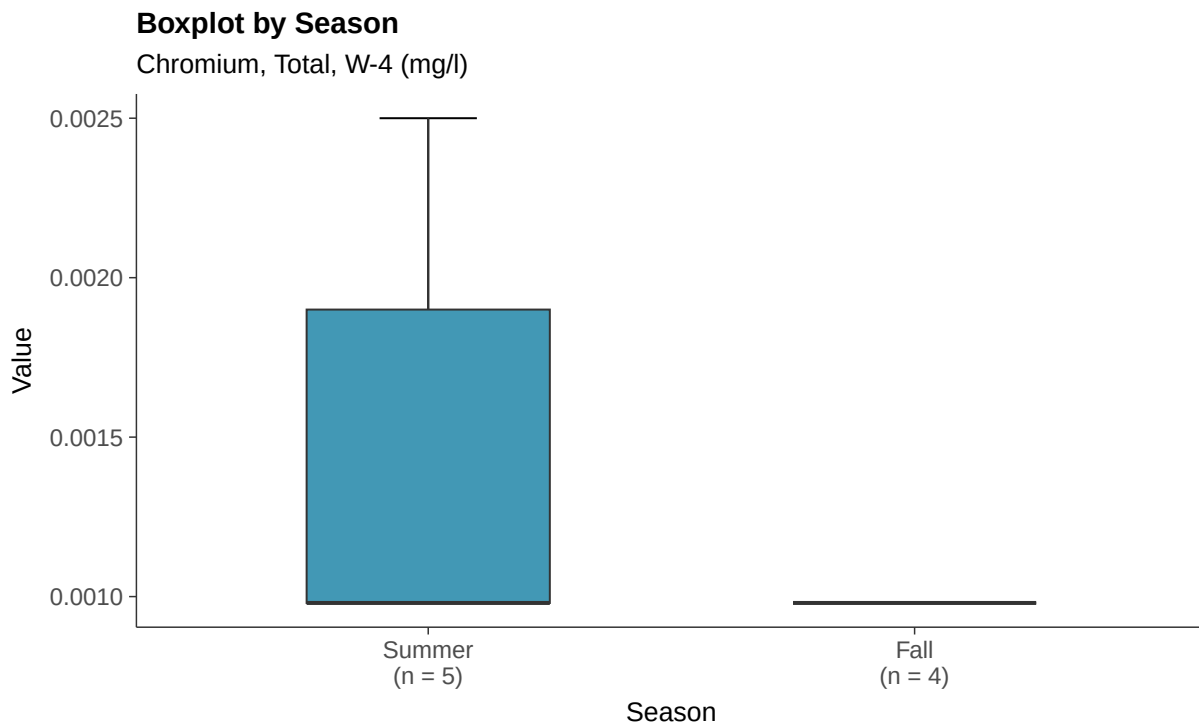
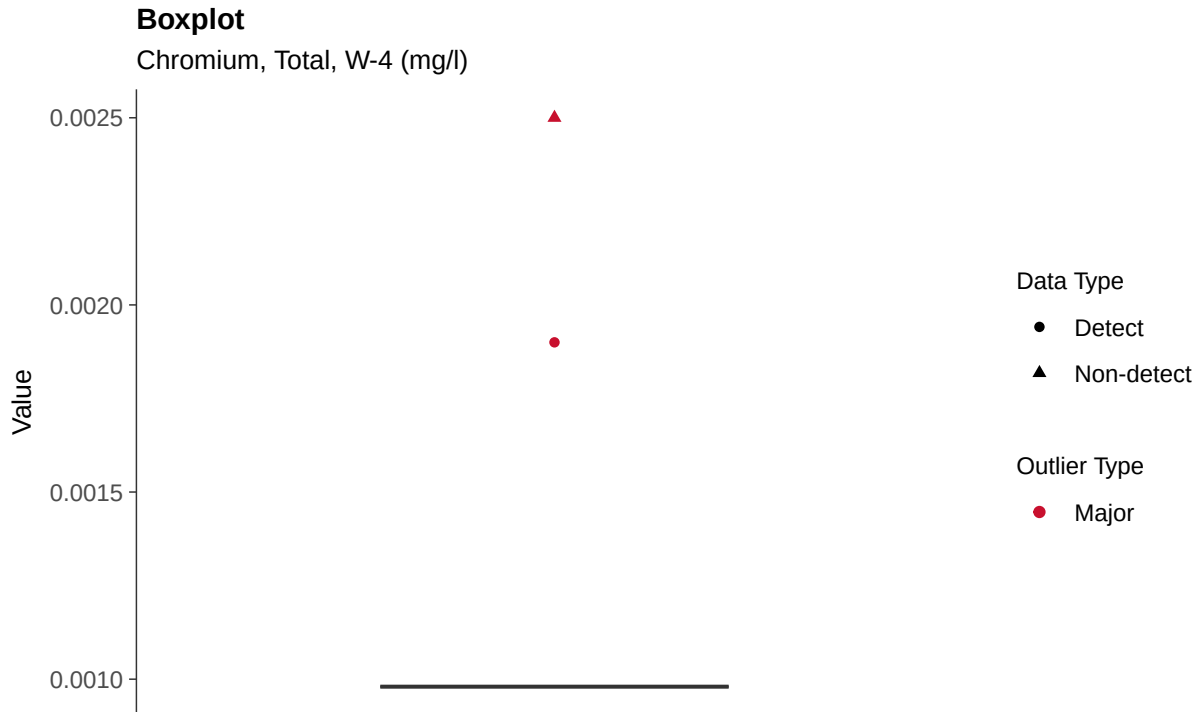
Cadmium, W-4 (mg/l)



Appendix IV: Chromium, Total, W-4

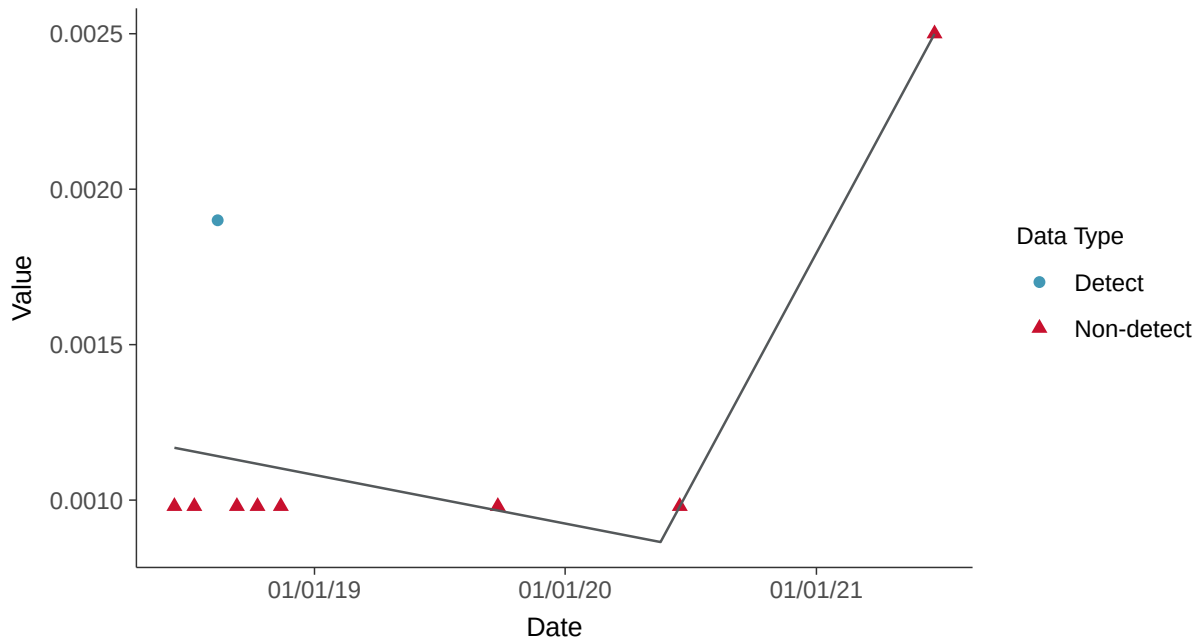
ID: 3_2_109





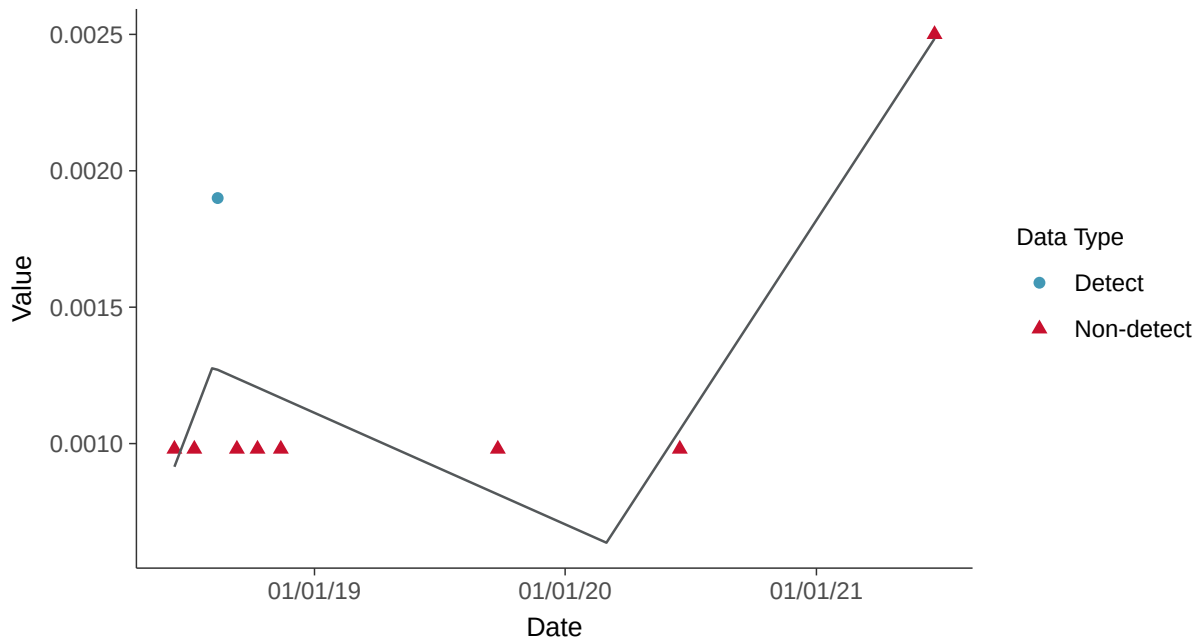
Trend Regression: Piecewise Linear-Linear

Chromium, Total, W-4 (mg/l)



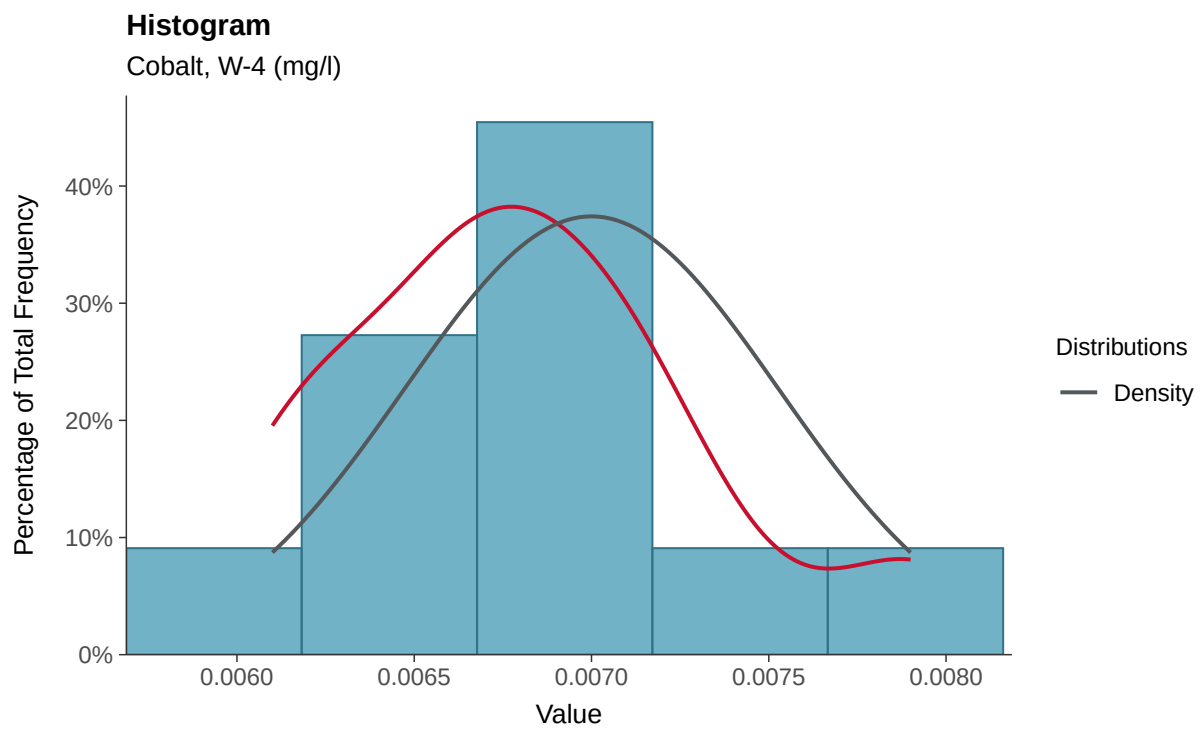
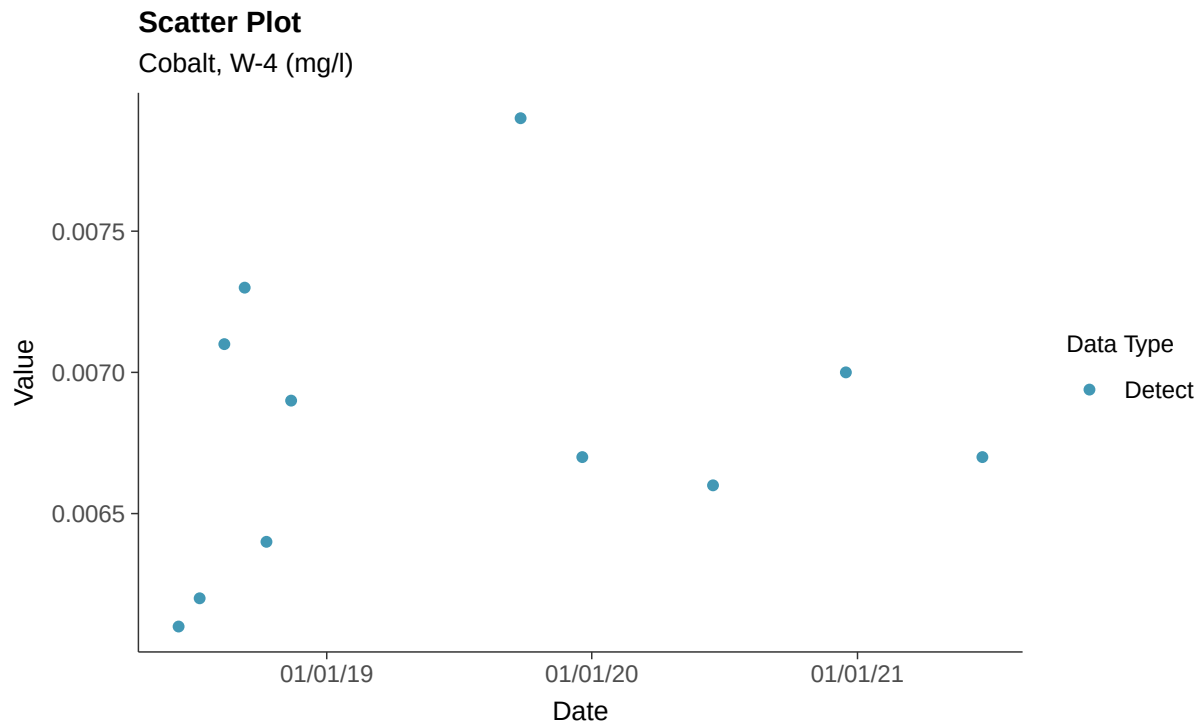
Trend Regression: Piecewise Linear-Linear-Linear

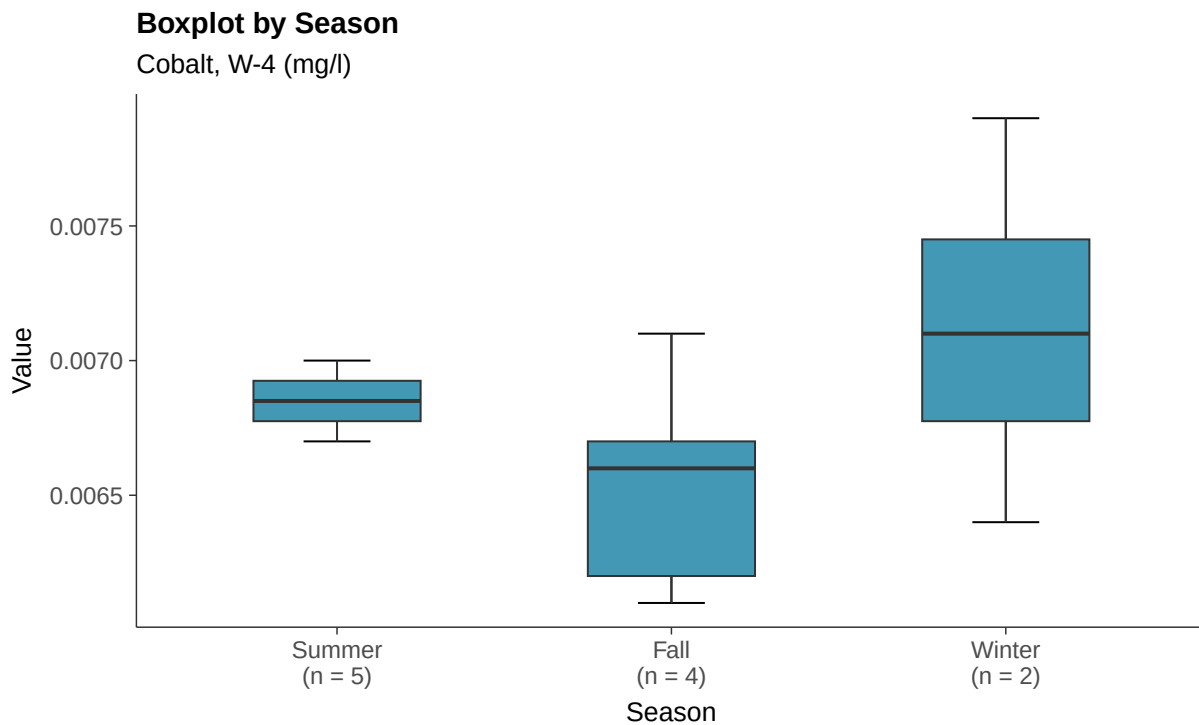
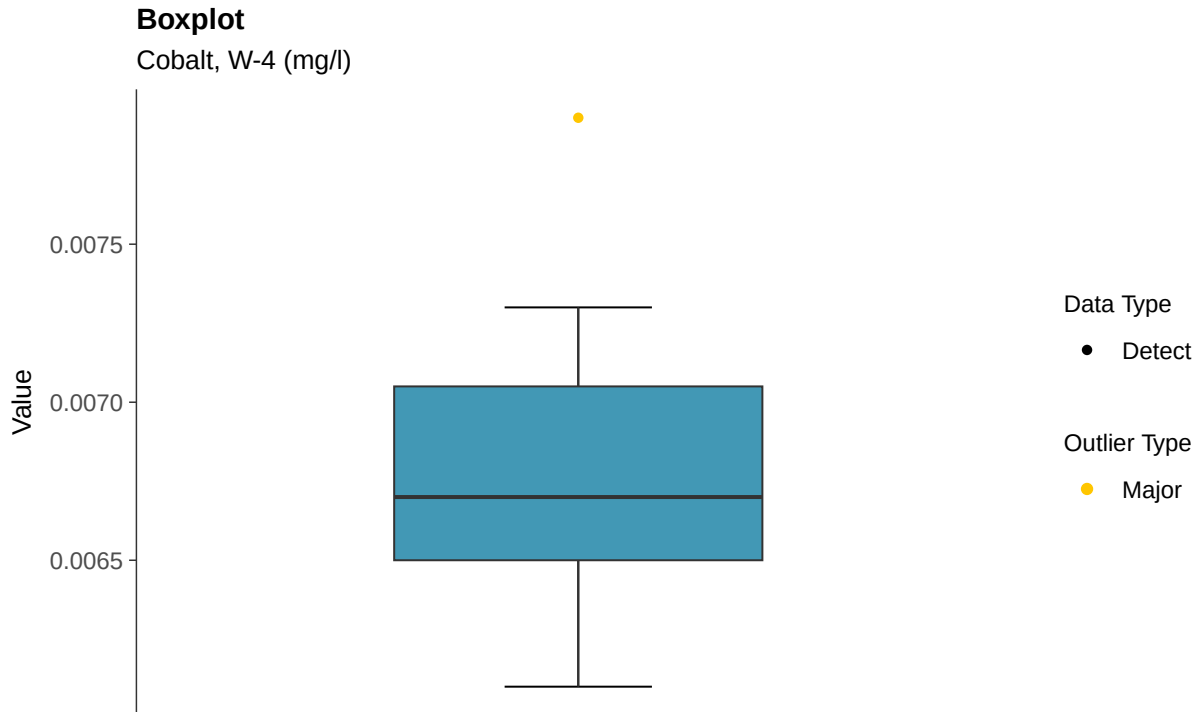
Chromium, Total, W-4 (mg/l)



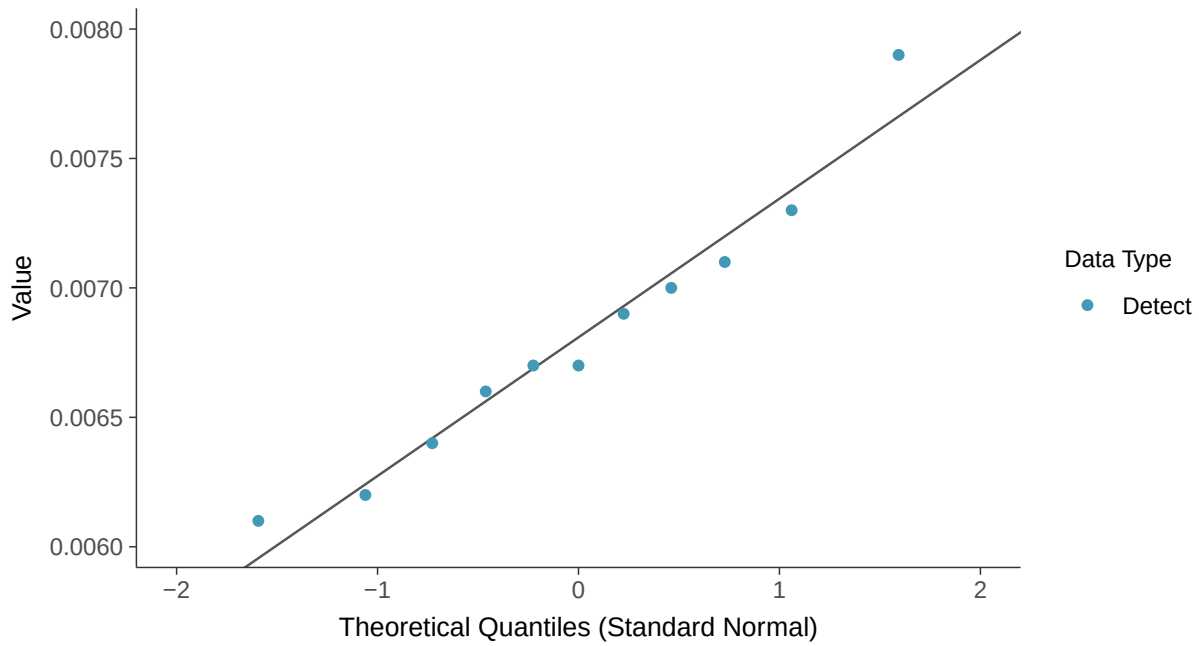
Appendix IV: Cobalt, W-4

ID: 3_2_110

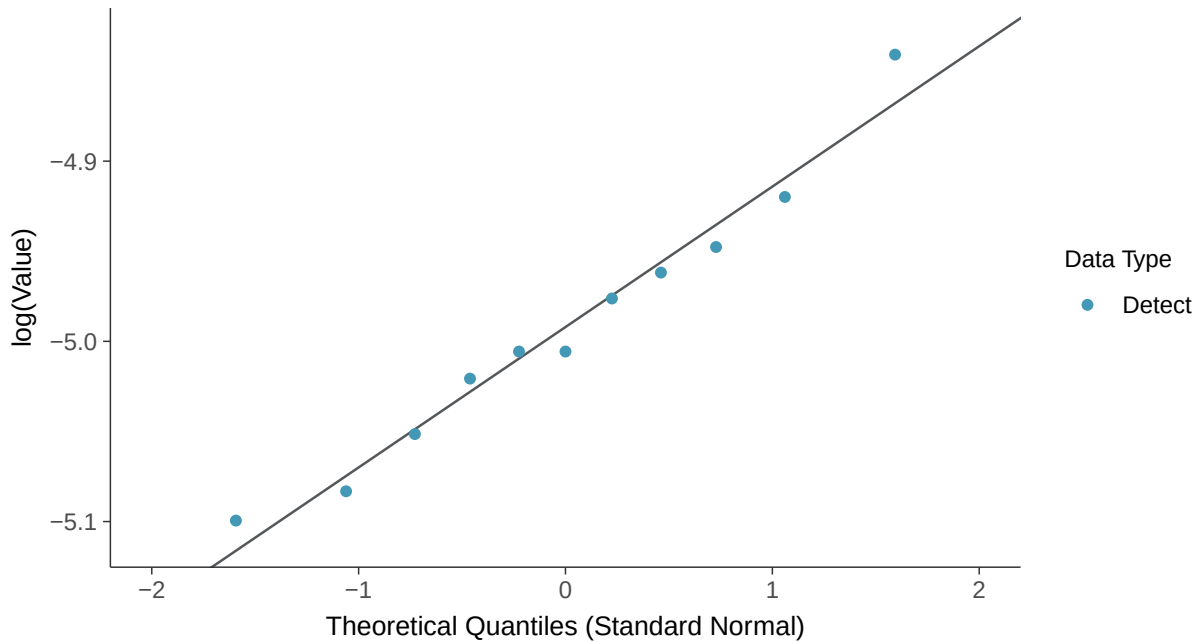


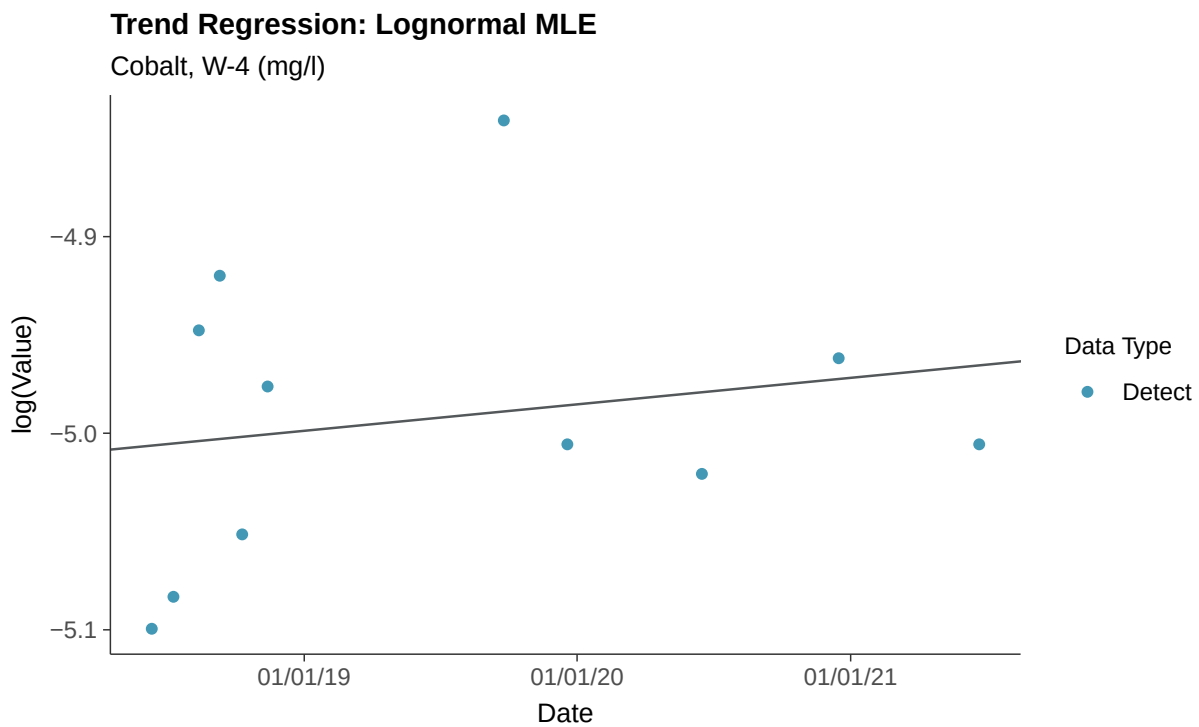
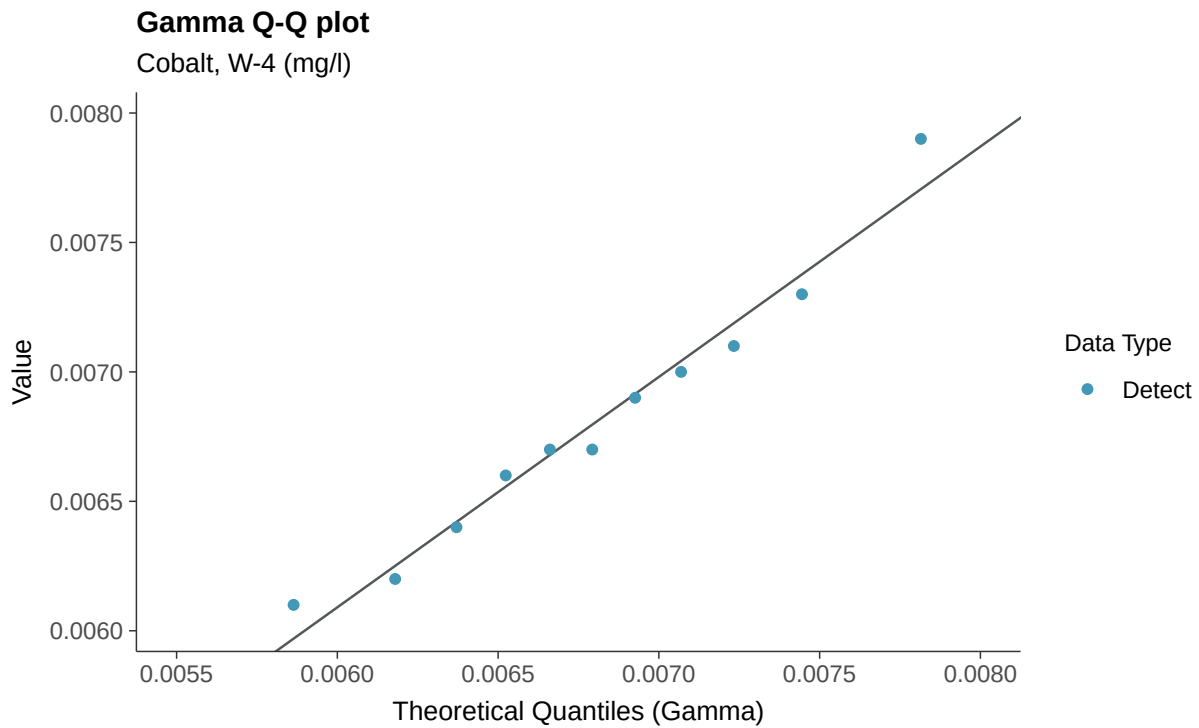


Normal Q-Q plot
Cobalt, W-4 (mg/l)



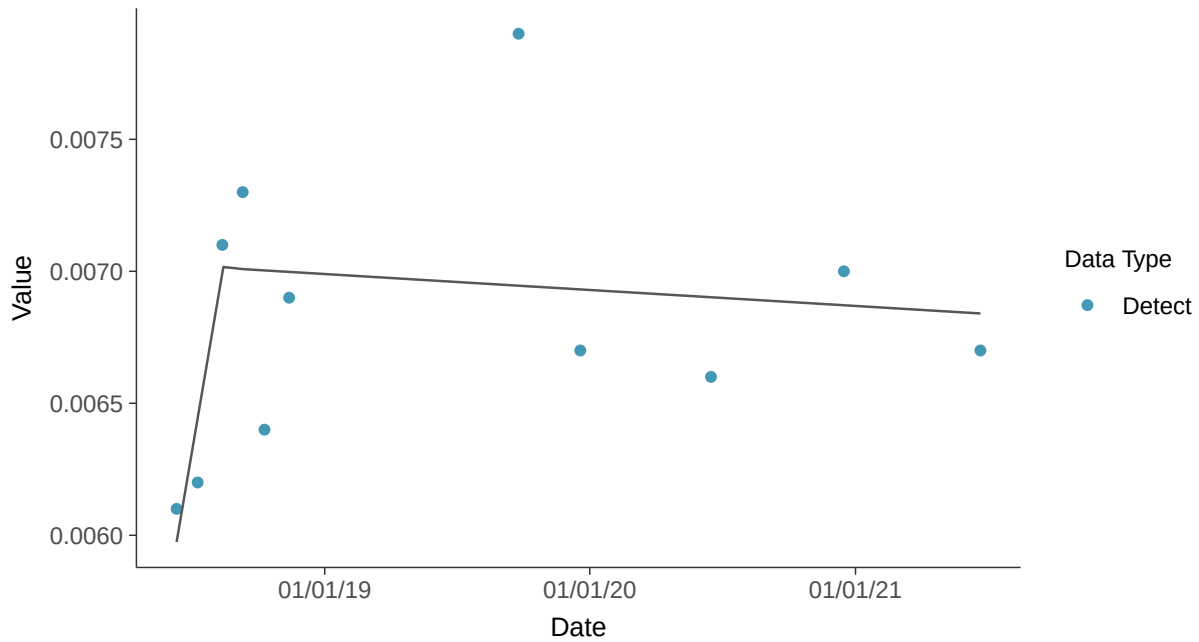
Lognormal Q-Q plot
Cobalt, W-4 (mg/l)





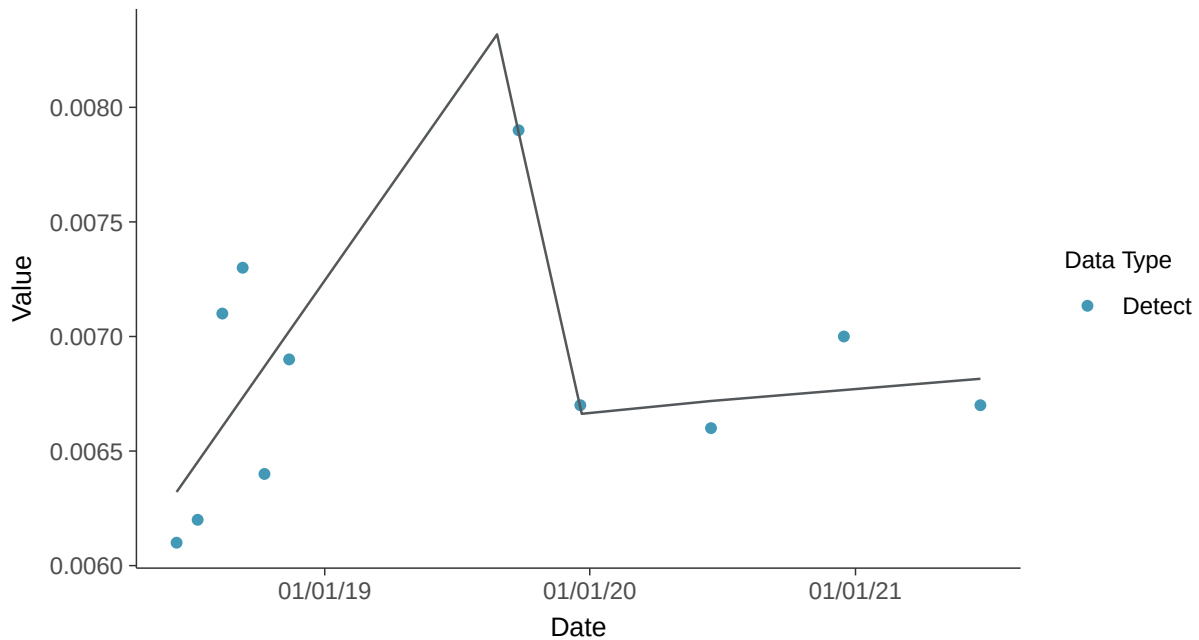
Trend Regression: Piecewise Linear-Linear

Cobalt, W-4 (mg/l)



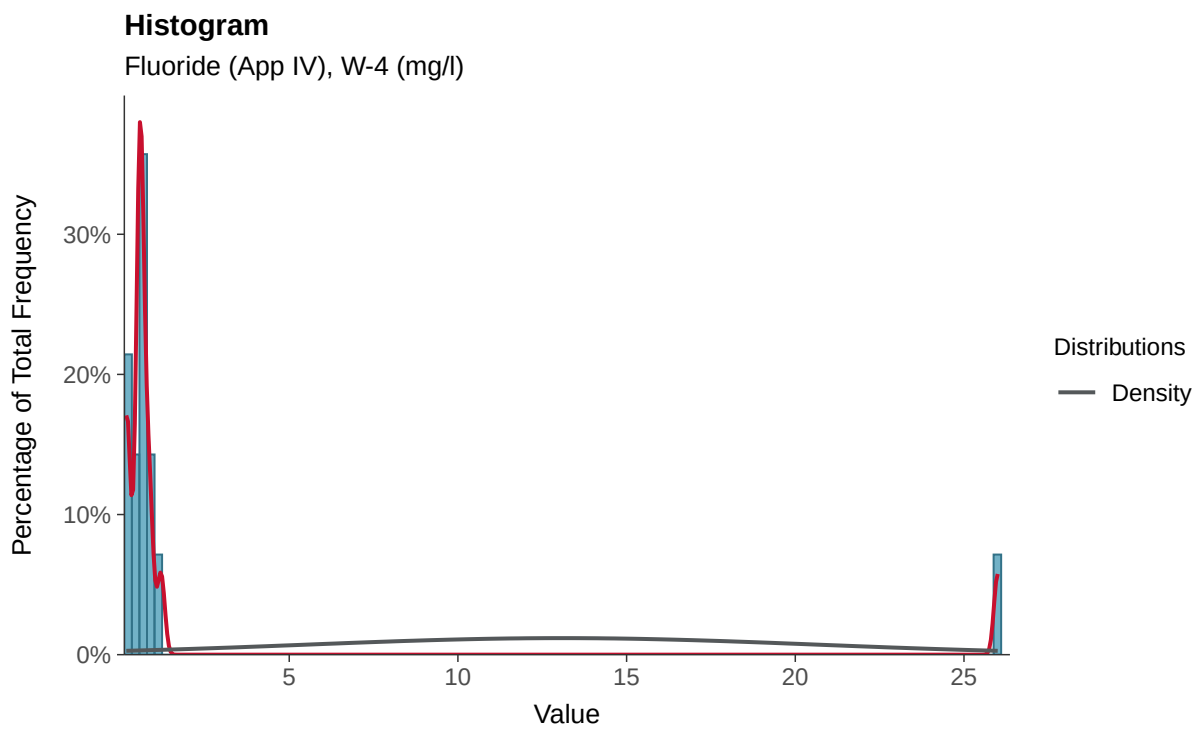
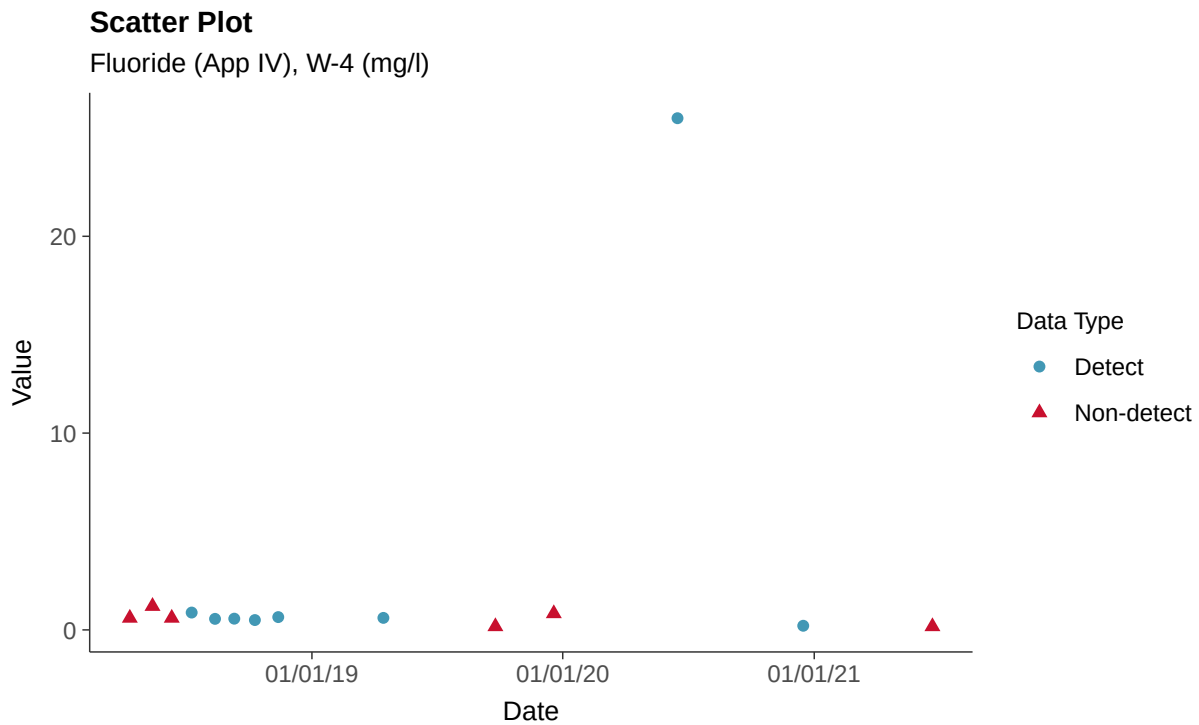
Trend Regression: Piecewise Linear-Linear-Linear

Cobalt, W-4 (mg/l)



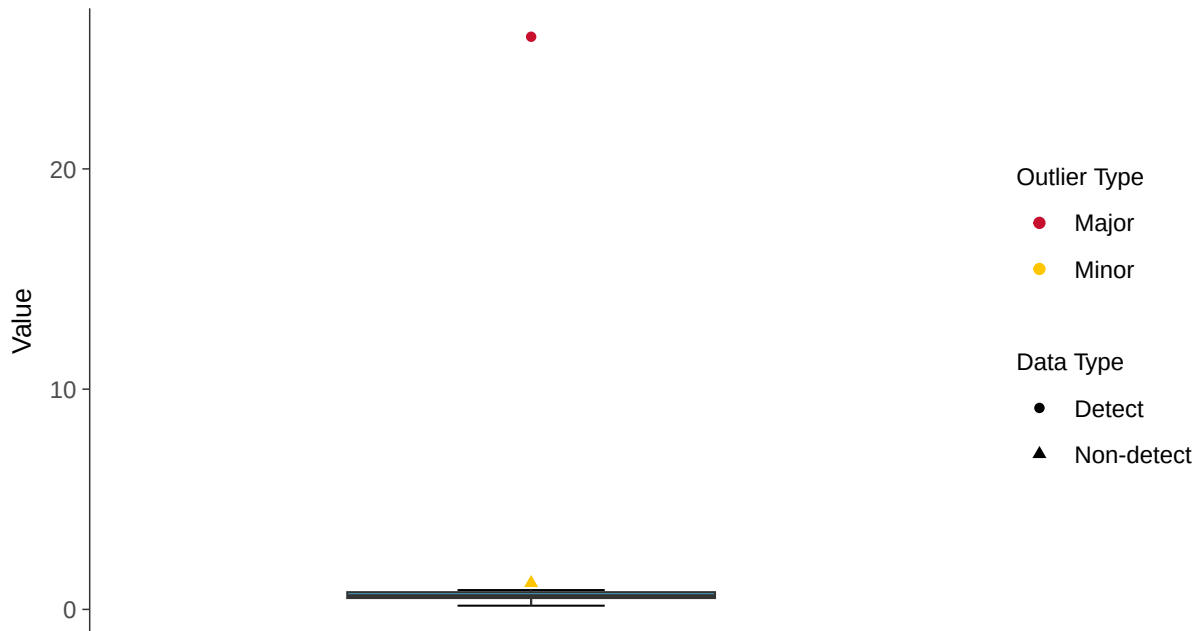
Appendix IV: Fluoride (App IV), W-4

ID: 3_2_113



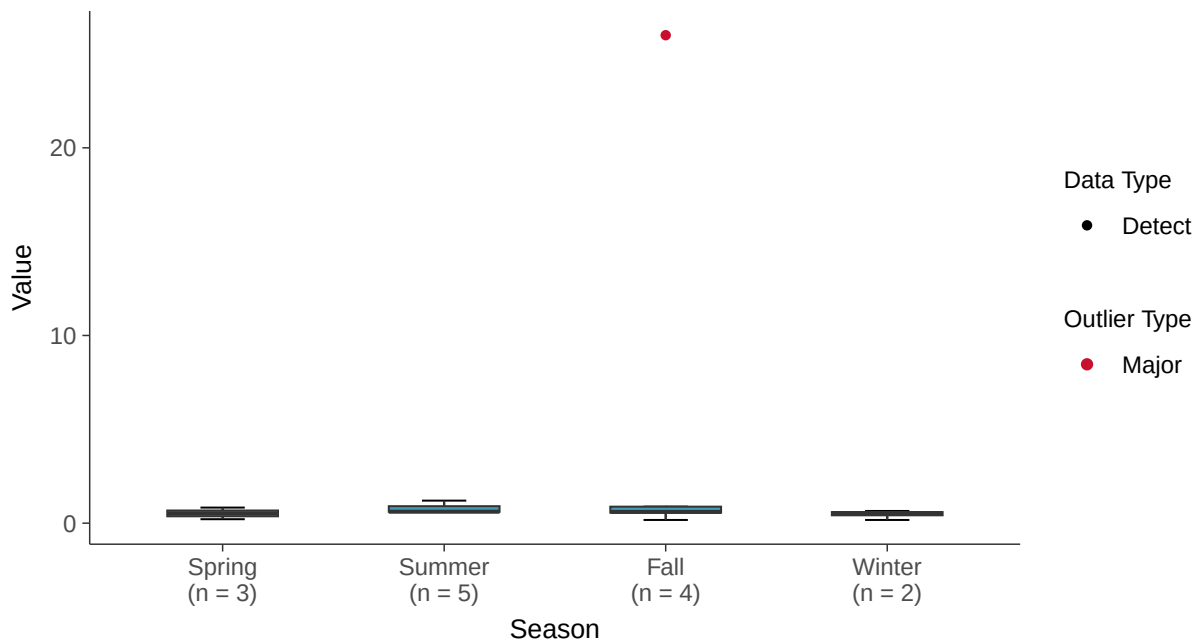
Boxplot

Fluoride (App IV), W-4 (mg/l)



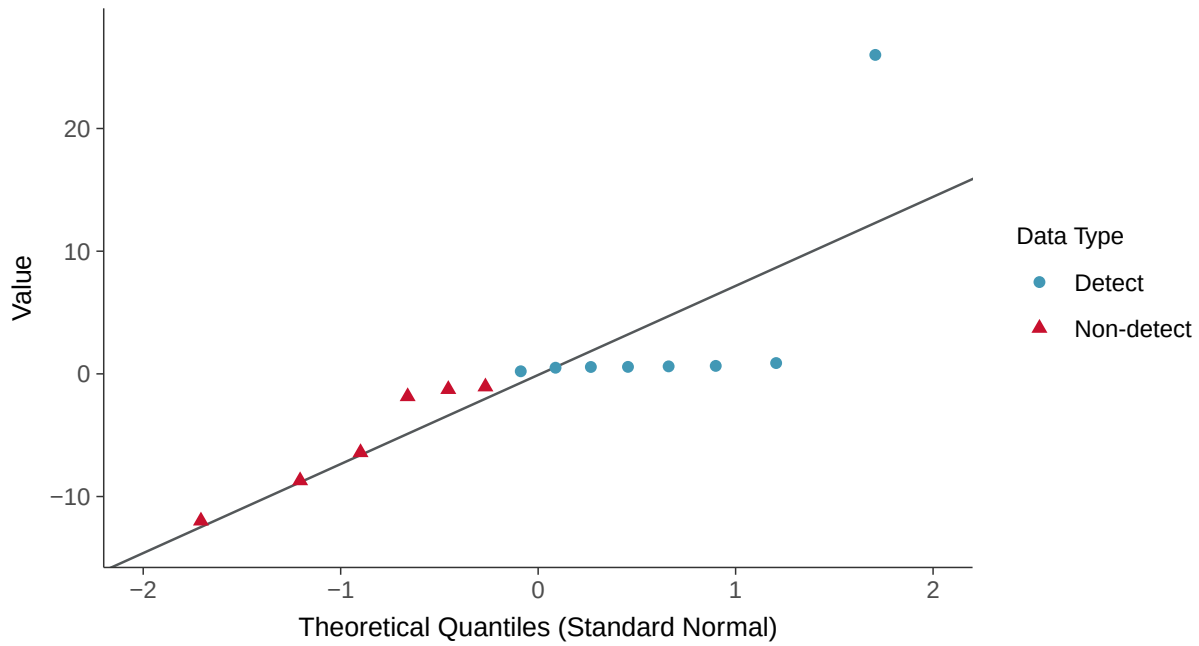
Boxplot by Season

Fluoride (App IV), W-4 (mg/l)



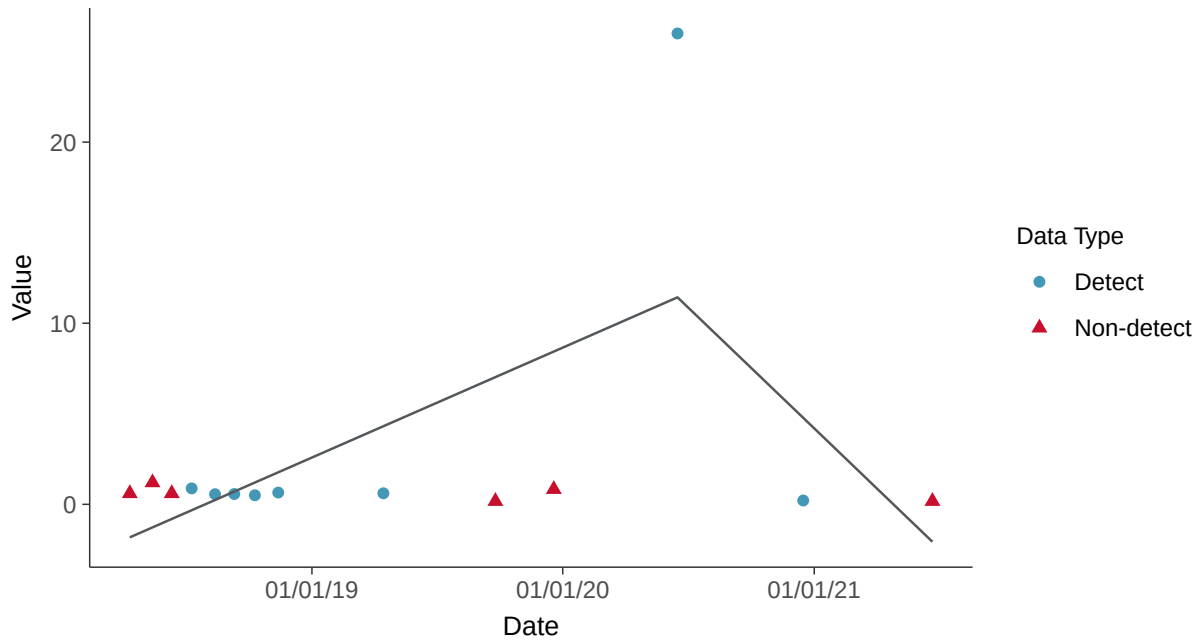
Normal Q-Q plot using ROS Imputed Estimates

Fluoride (App IV), W-4 (mg/l)



Trend Regression: Piecewise Linear-Linear

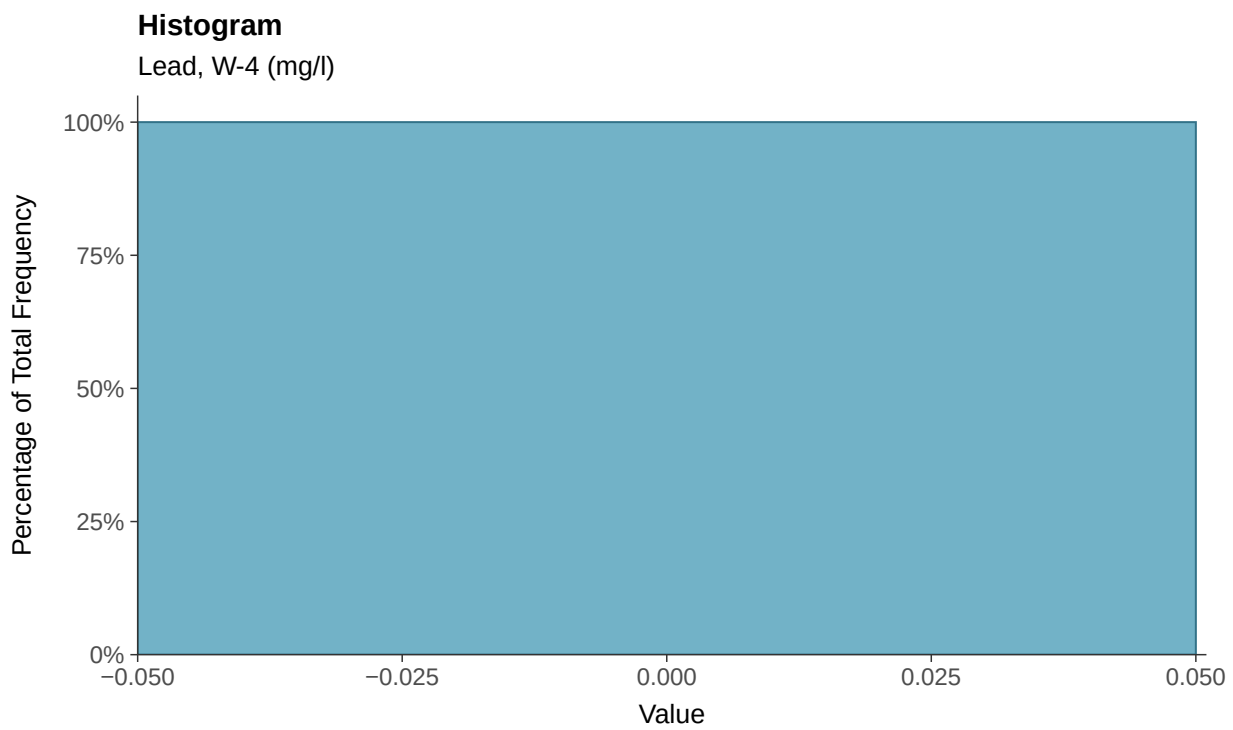
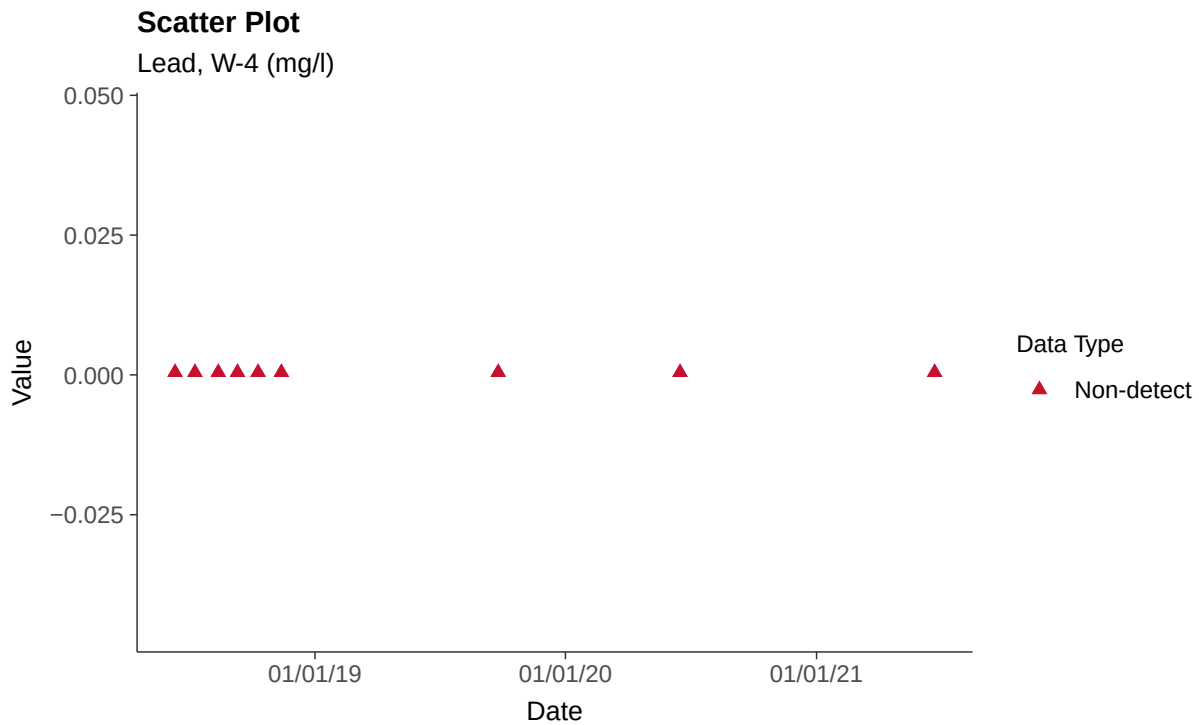
Fluoride (App IV), W-4 (mg/l)

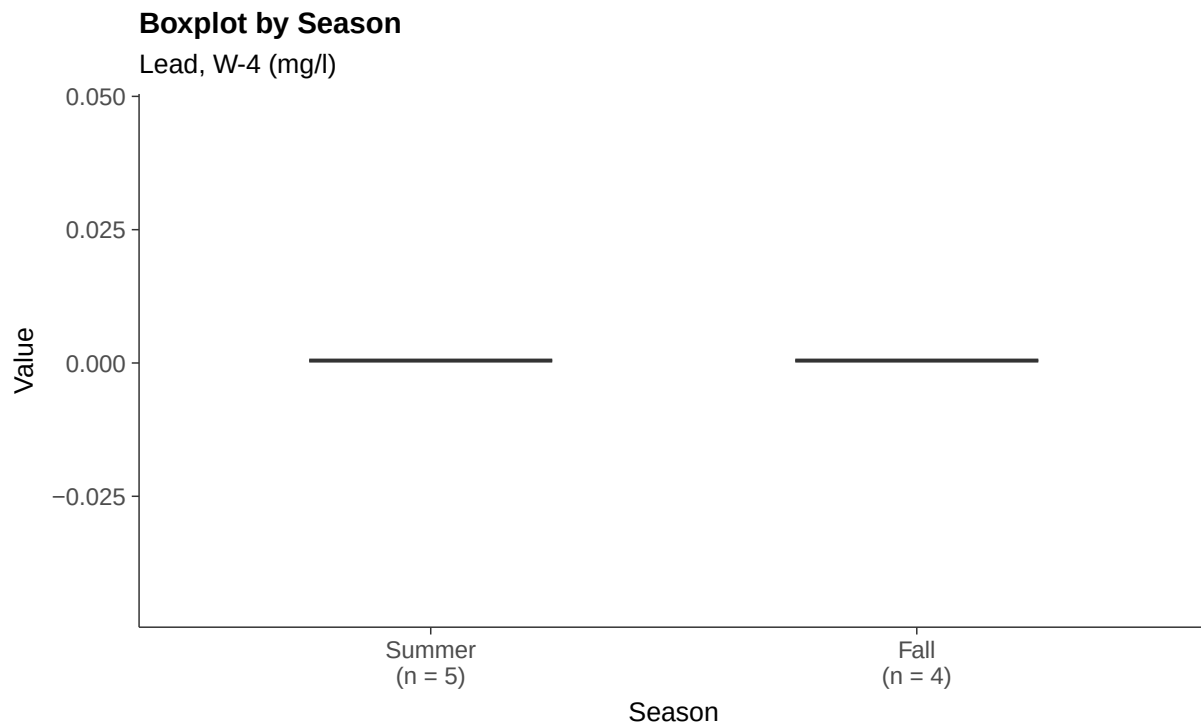
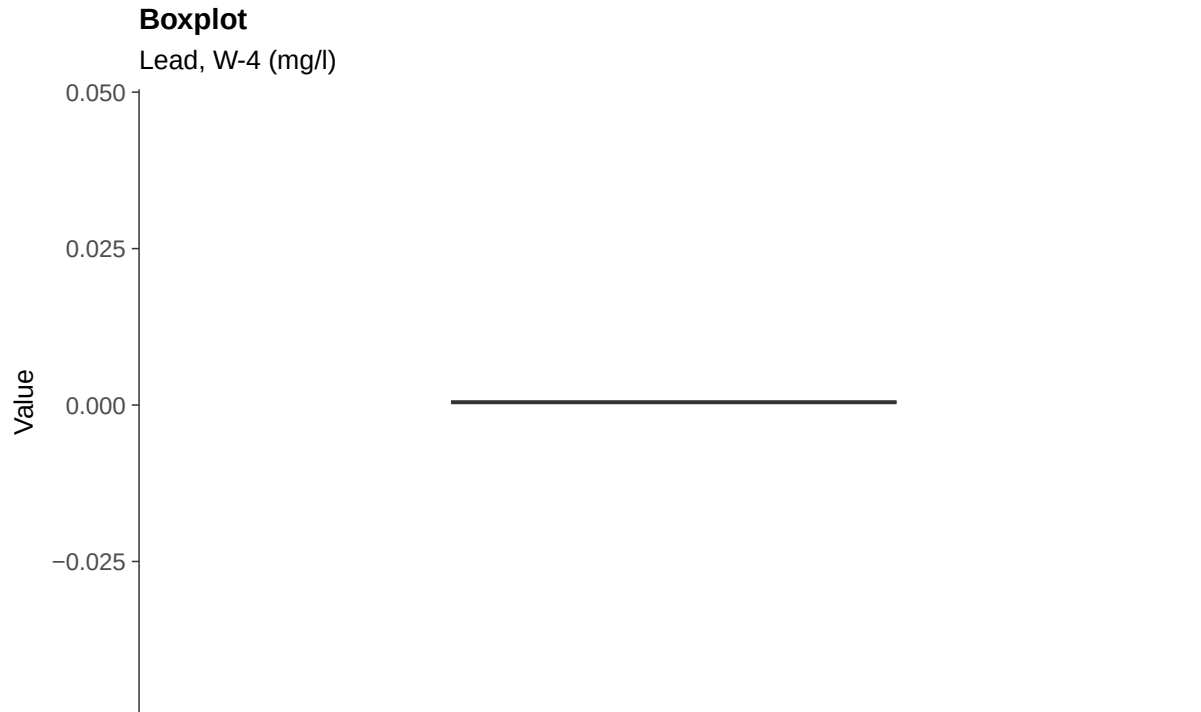




Appendix IV: Lead, W-4

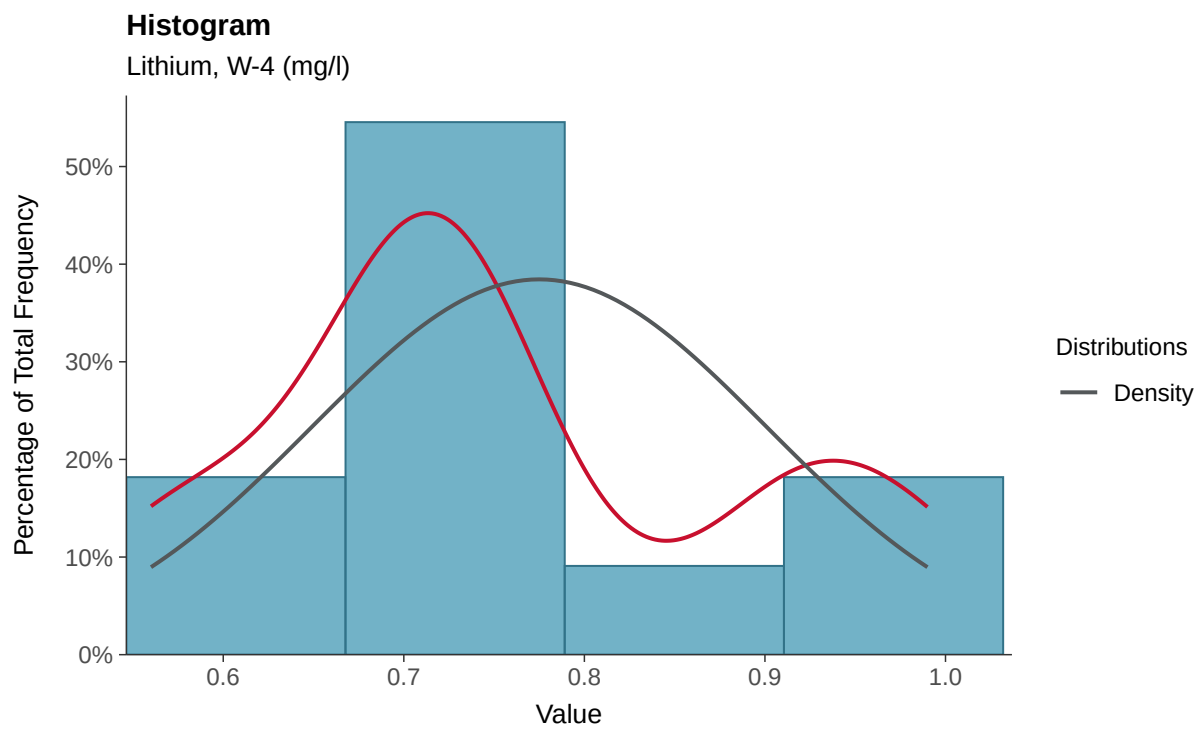
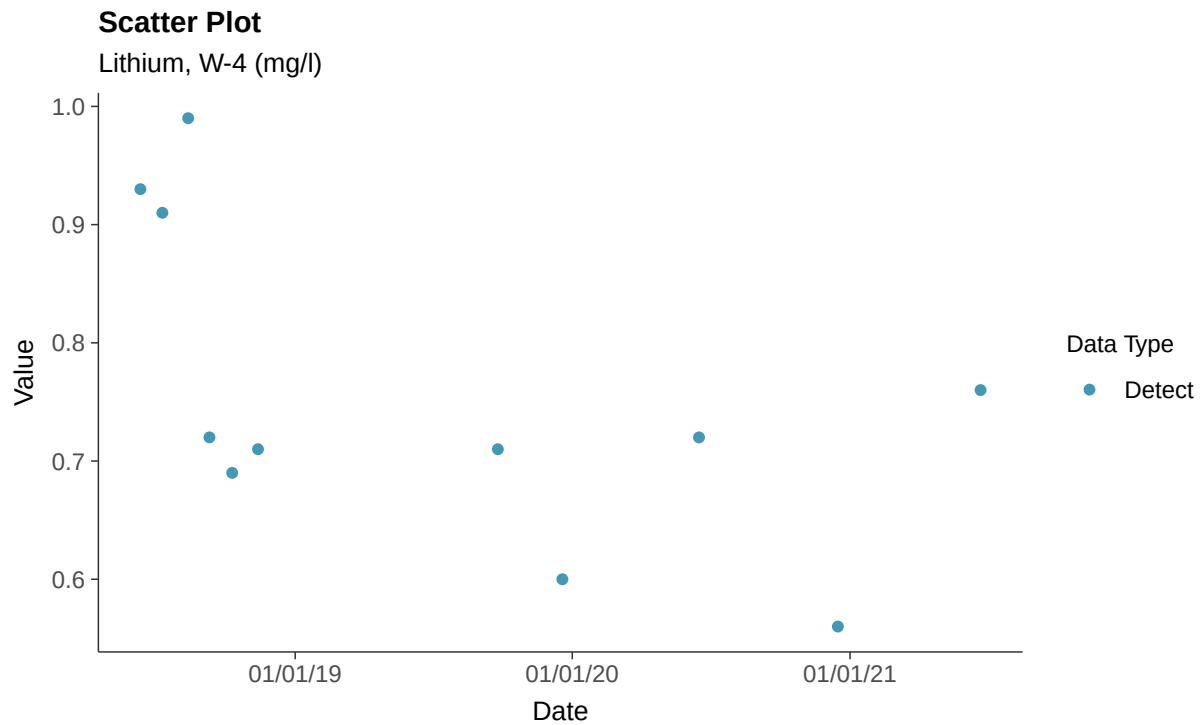
ID: 3_2_114





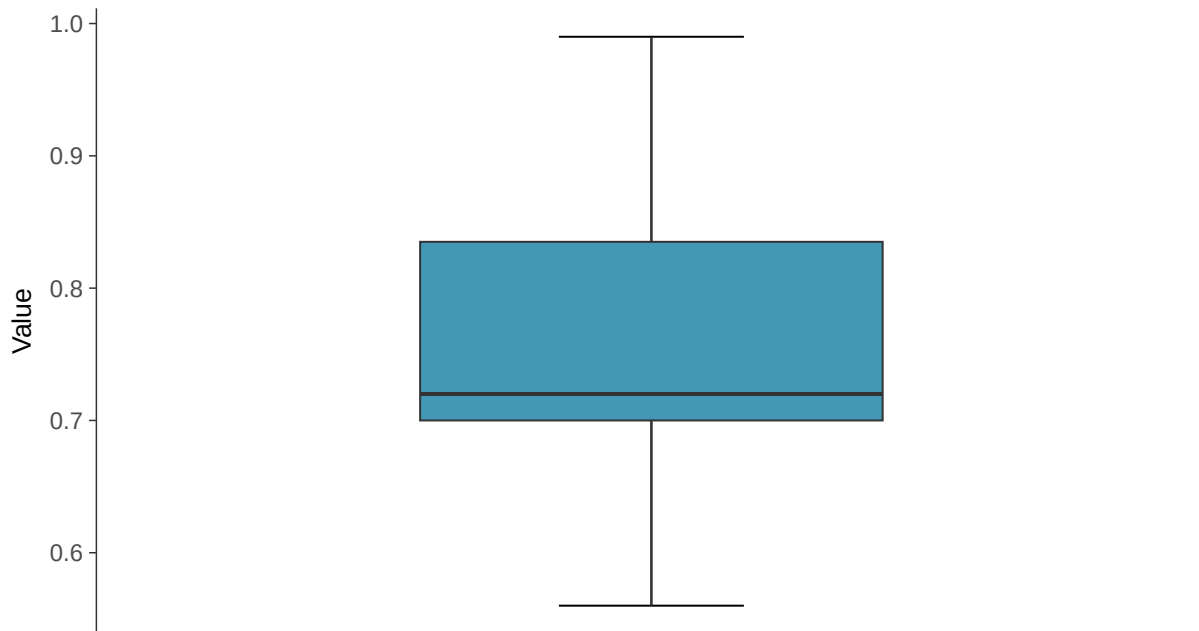
Appendix IV: Lithium, W-4

ID: 3_2_115



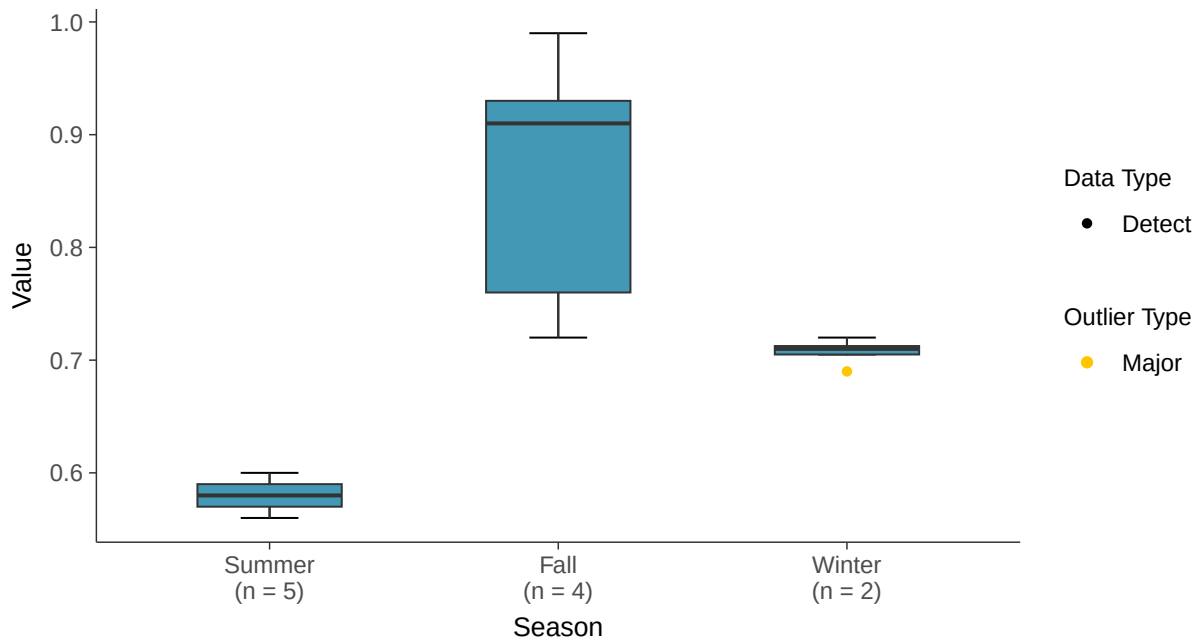
Boxplot

Lithium, W-4 (mg/l)



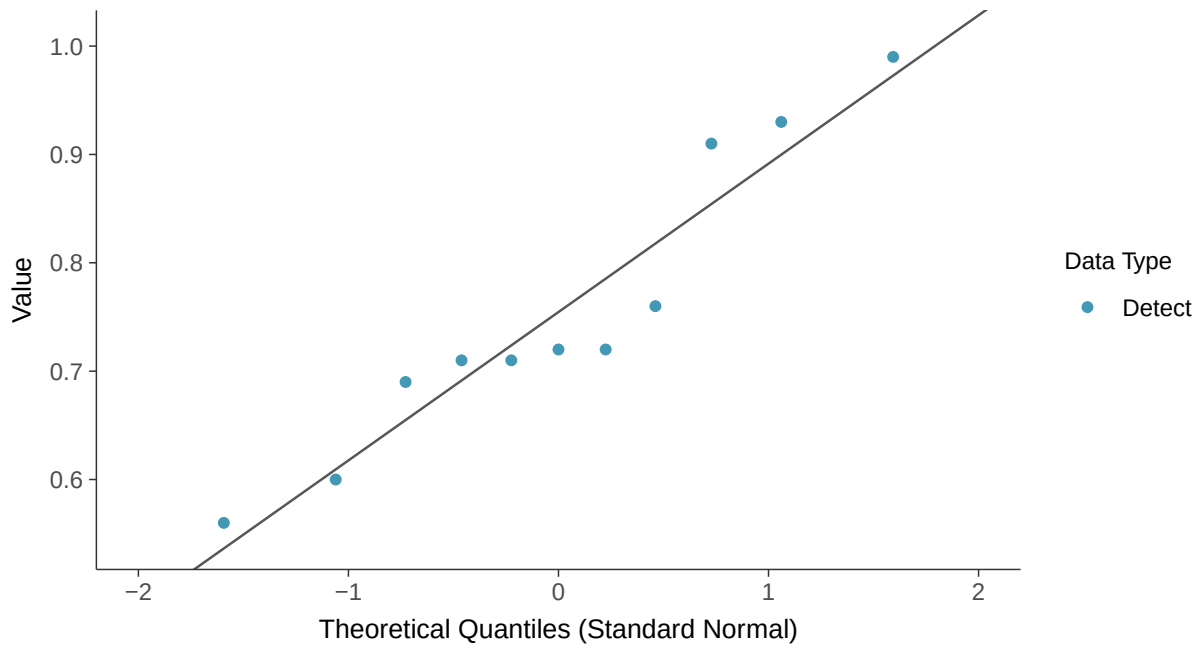
Boxplot by Season

Lithium, W-4 (mg/l)



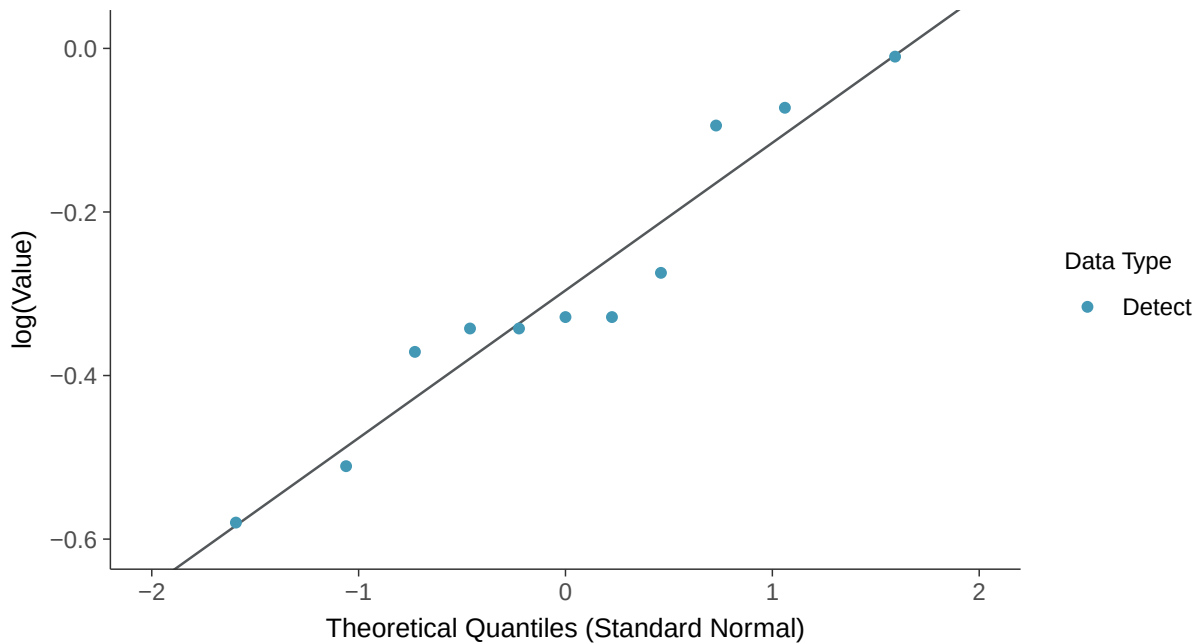
Normal Q-Q plot

Lithium, W-4 (mg/l)



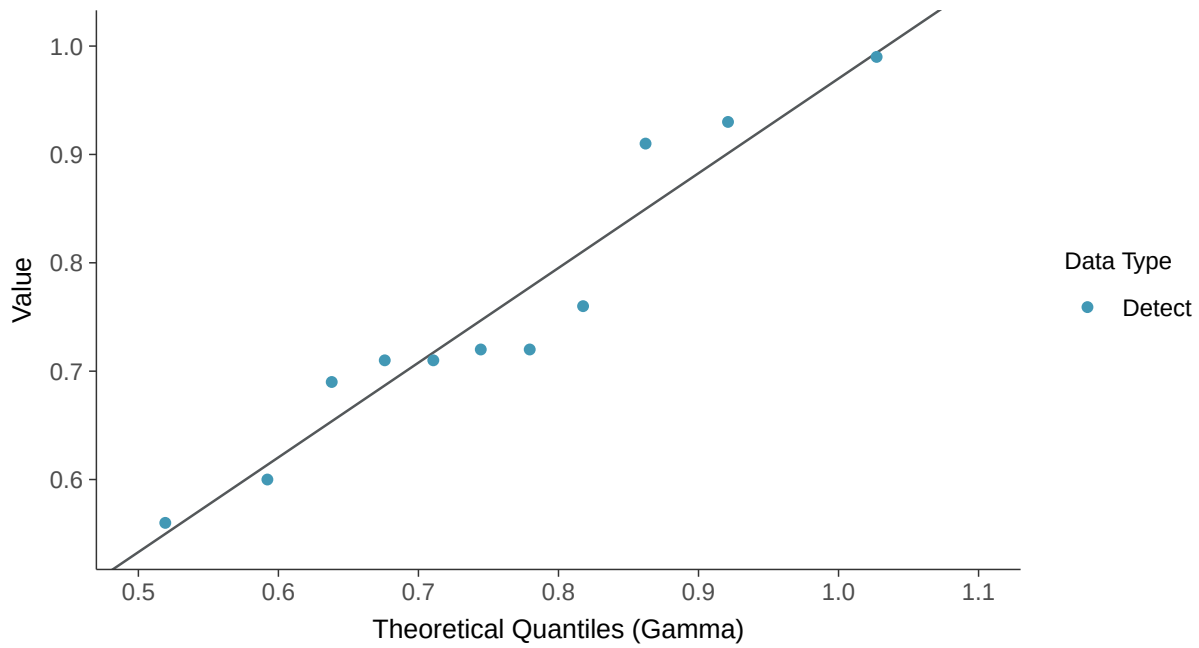
Lognormal Q-Q plot

Lithium, W-4 (mg/l)



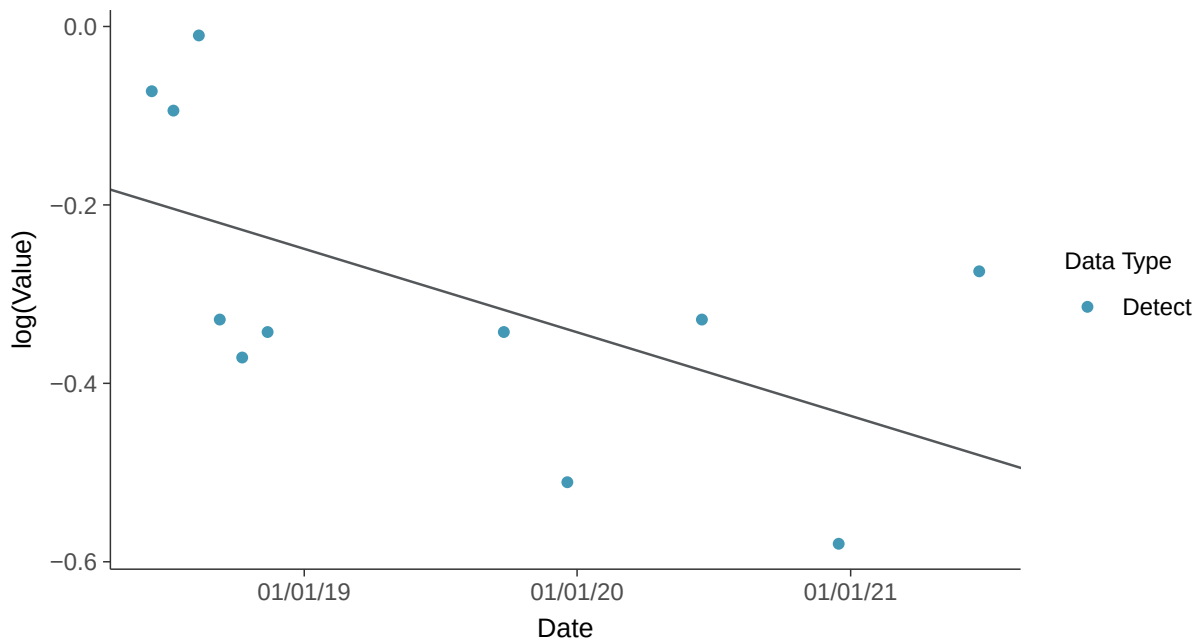
Gamma Q-Q plot

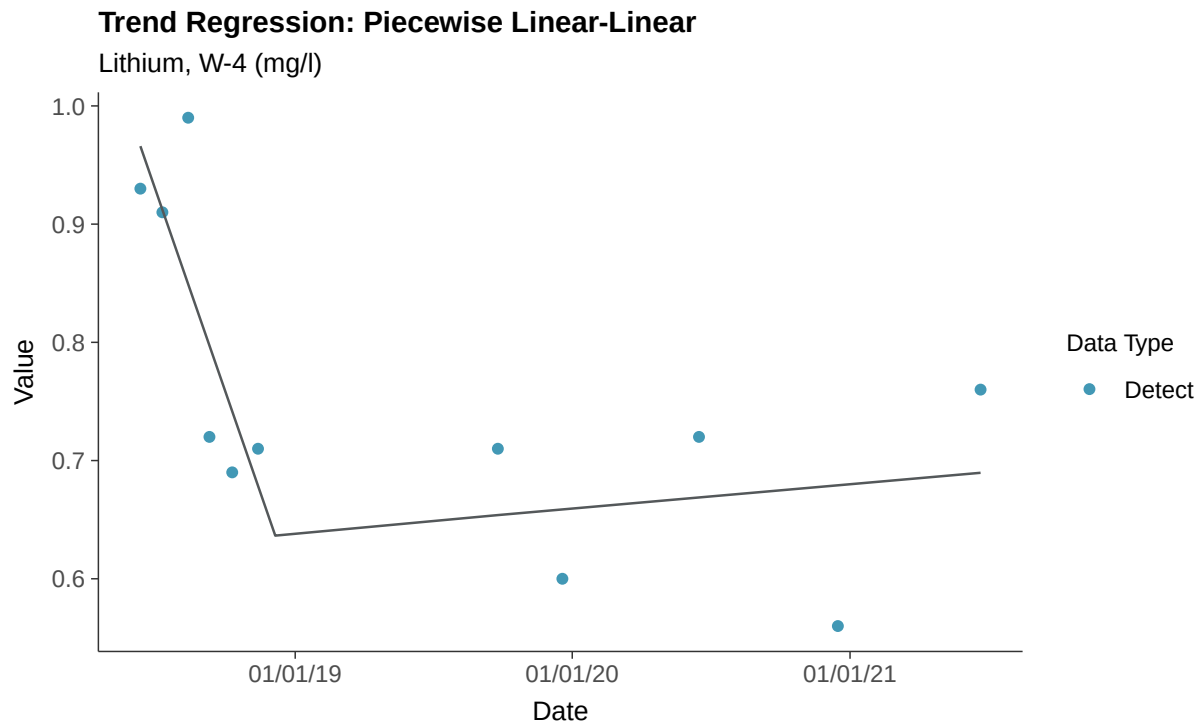
Lithium, W-4 (mg/l)



Trend Regression: Lognormal MLE

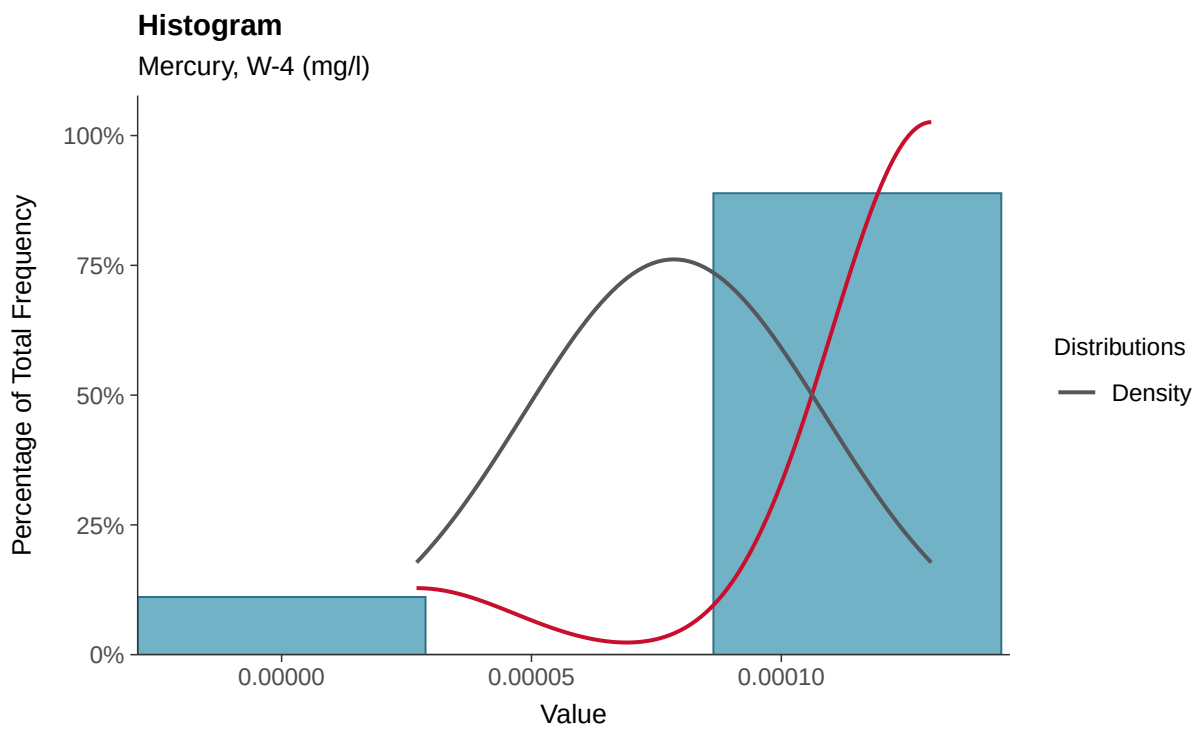
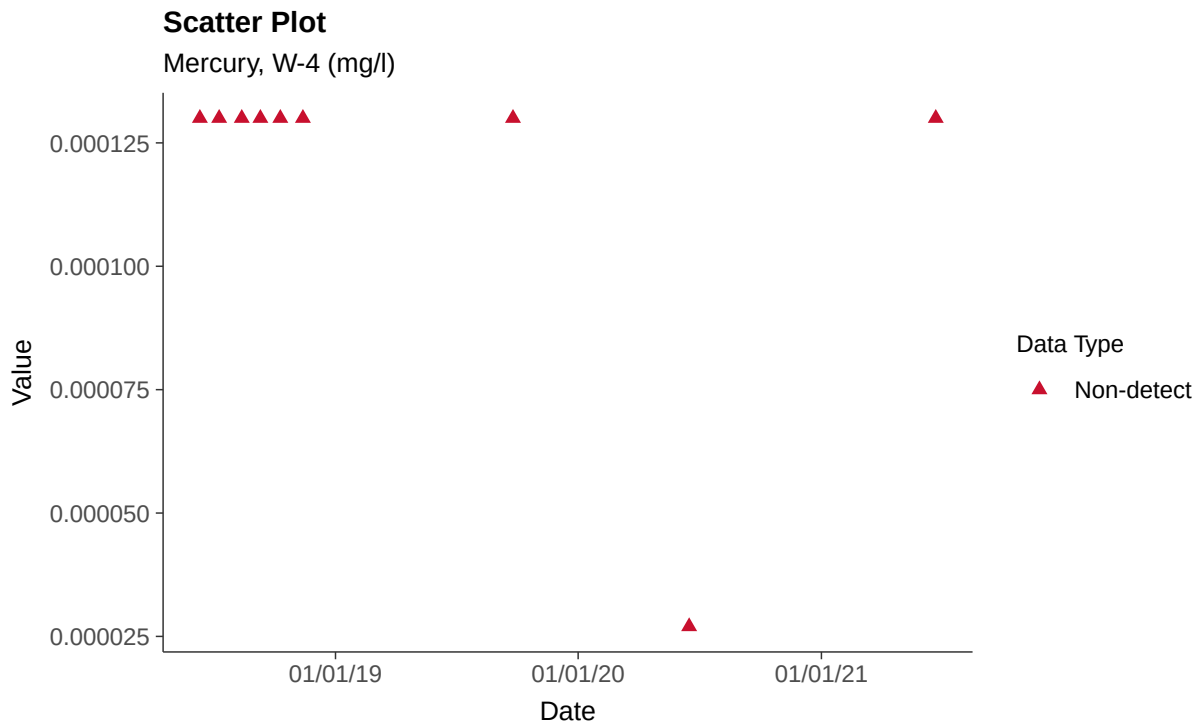
Lithium, W-4 (mg/l)

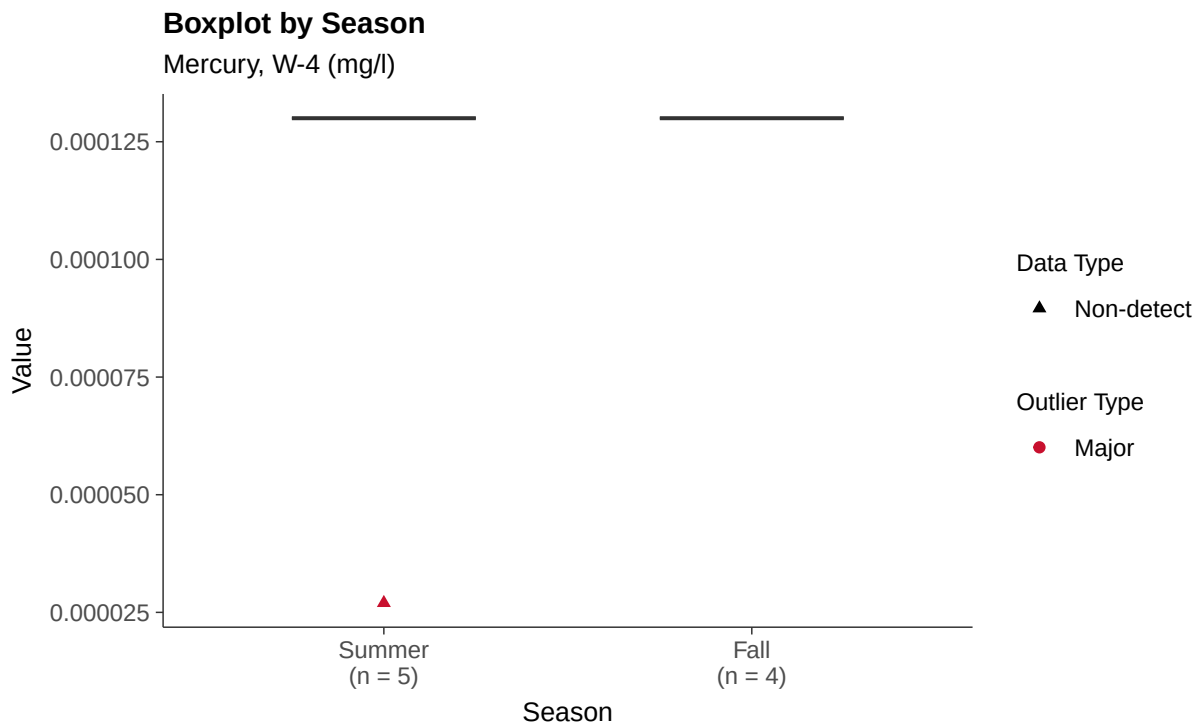
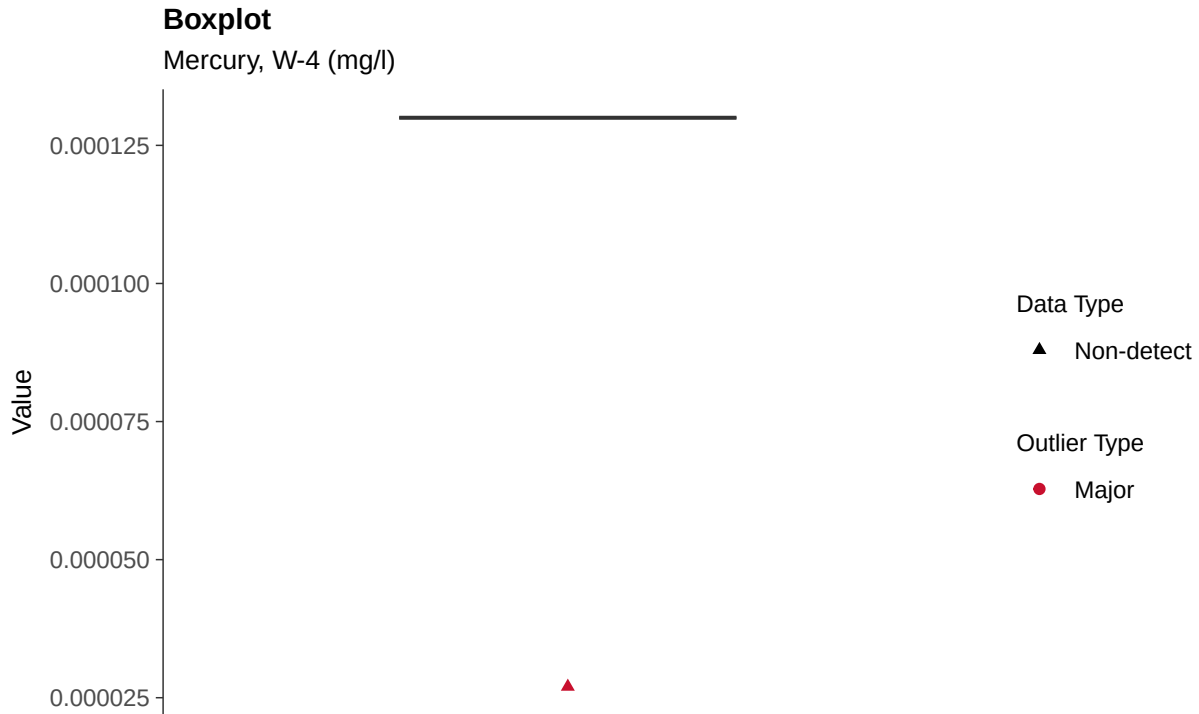


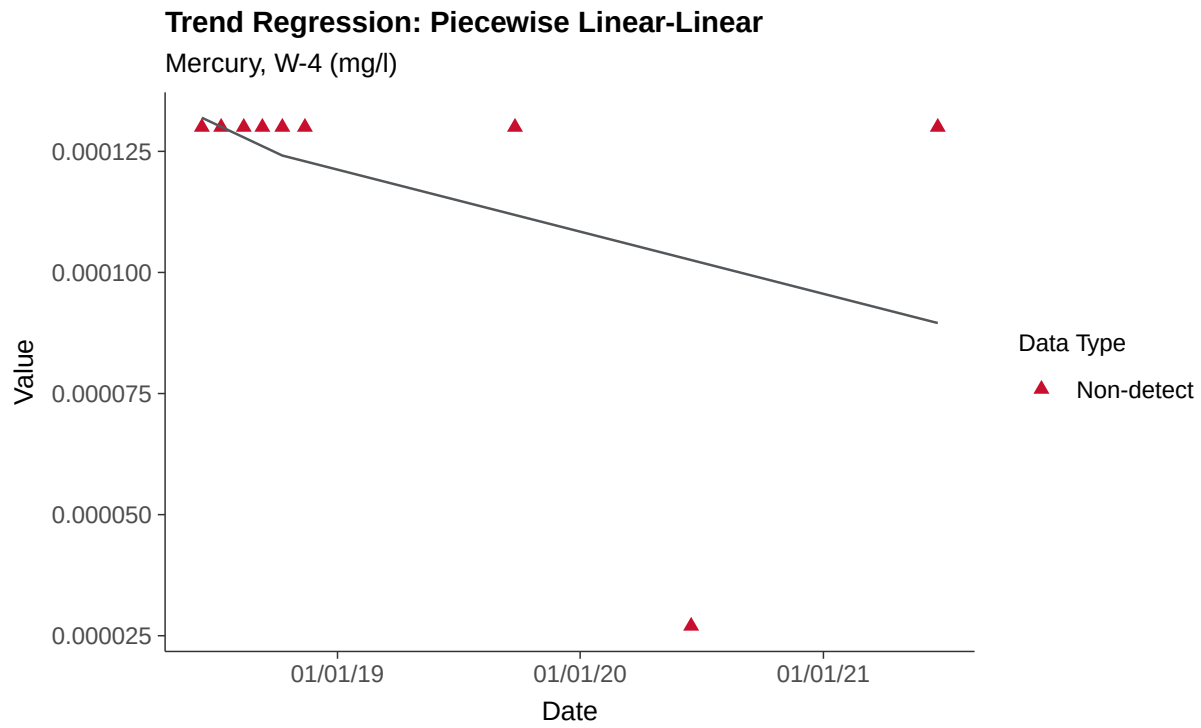


Appendix IV: Mercury, W-4

ID: 3_2_116

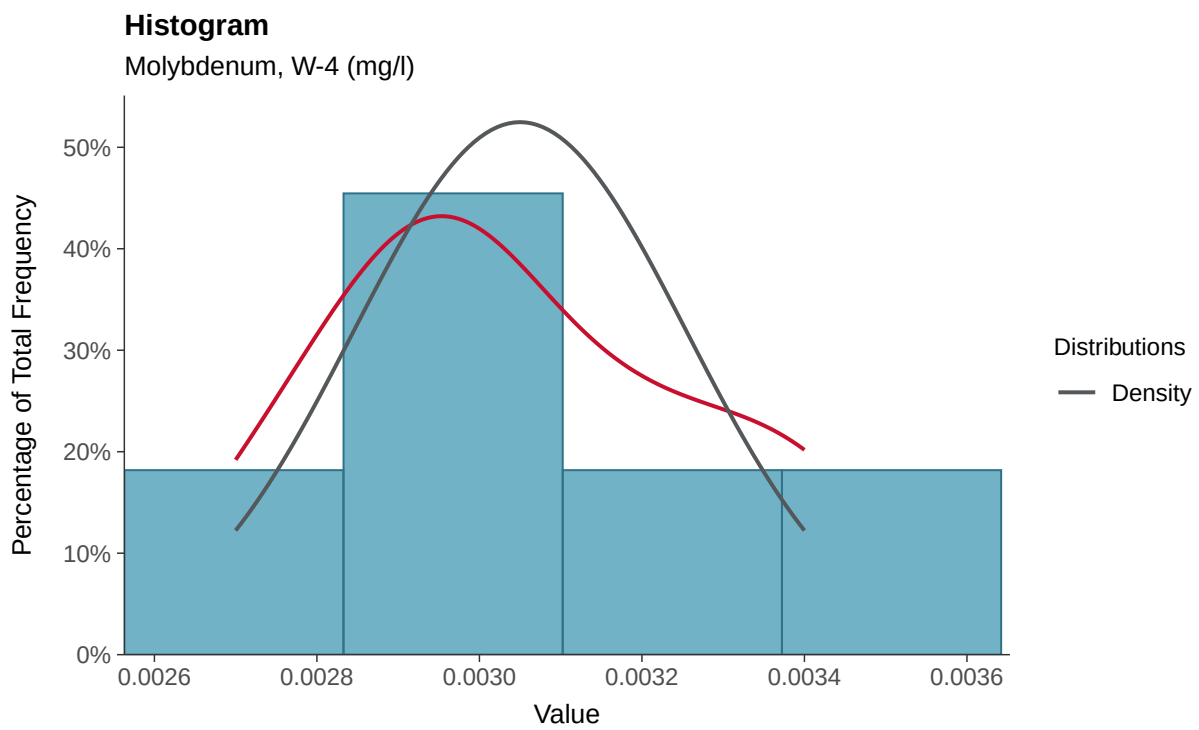
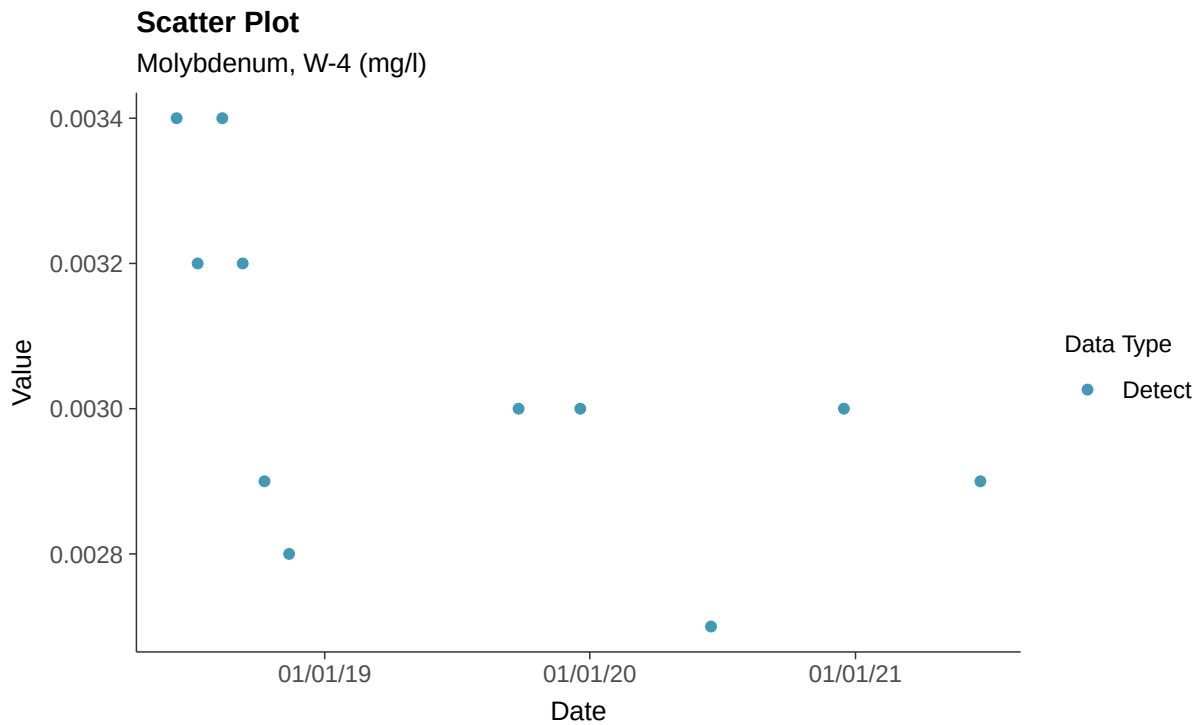






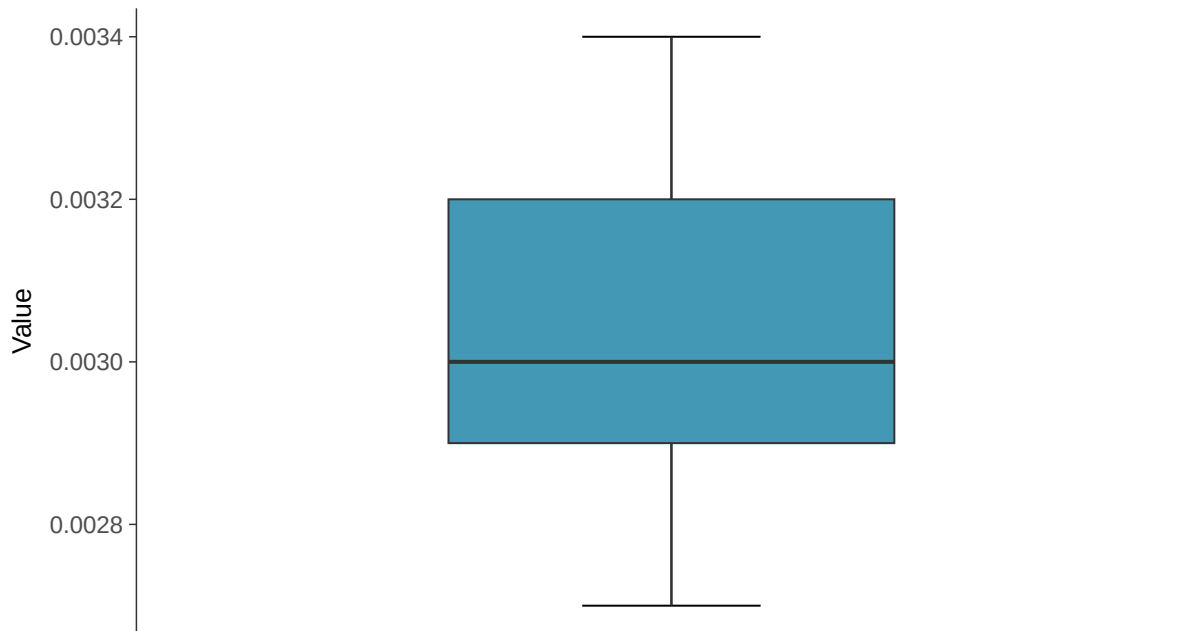
Appendix IV: Molybdenum, W-4

ID: 3_2_117



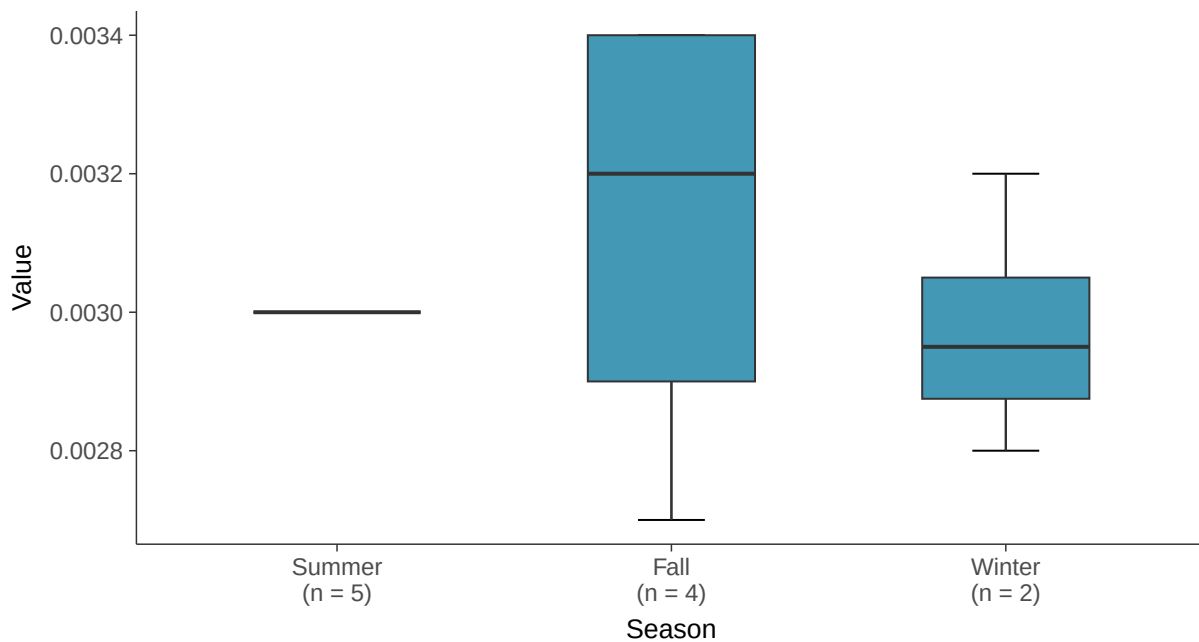
Boxplot

Molybdenum, W-4 (mg/l)



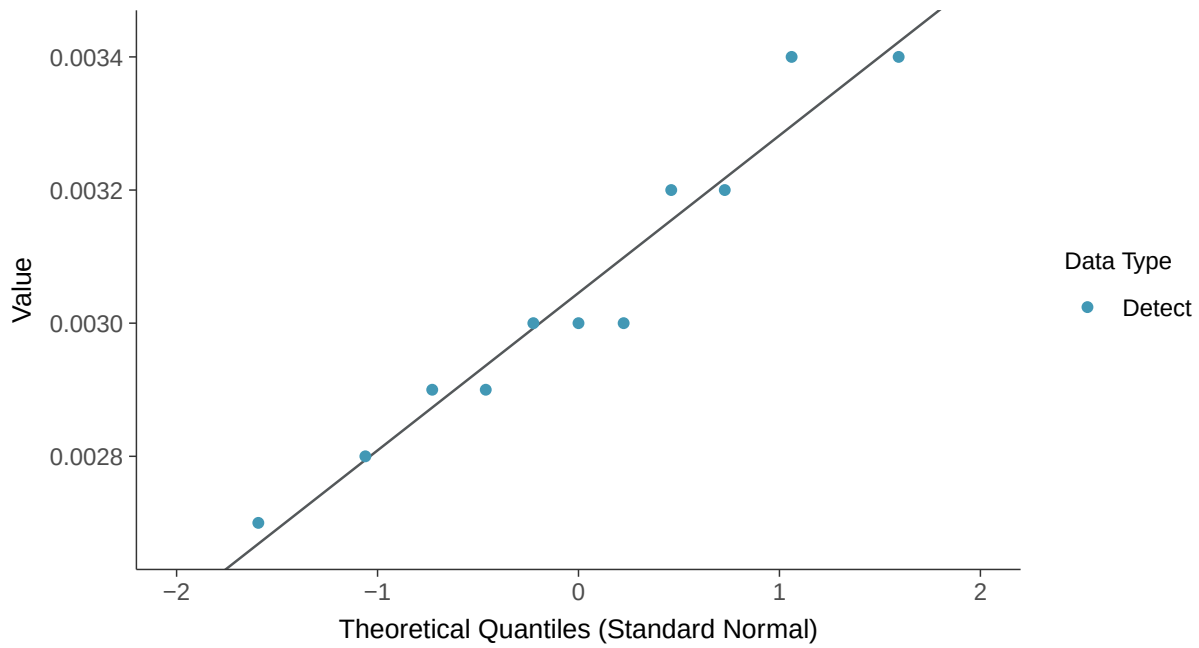
Boxplot by Season

Molybdenum, W-4 (mg/l)



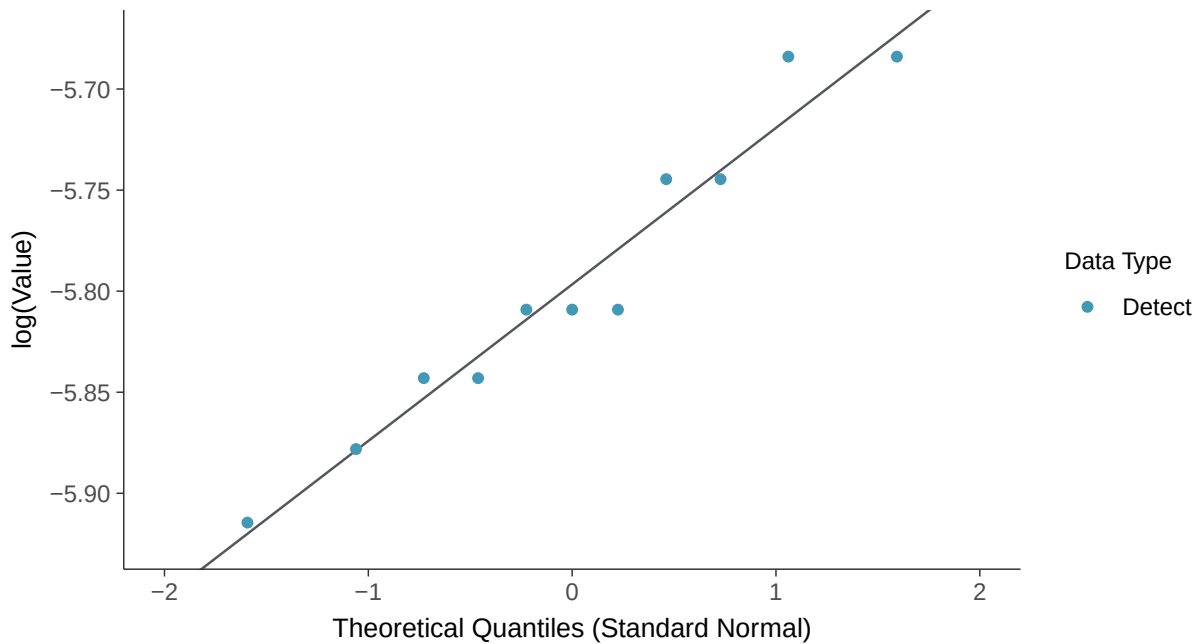
Normal Q-Q plot

Molybdenum, W-4 (mg/l)

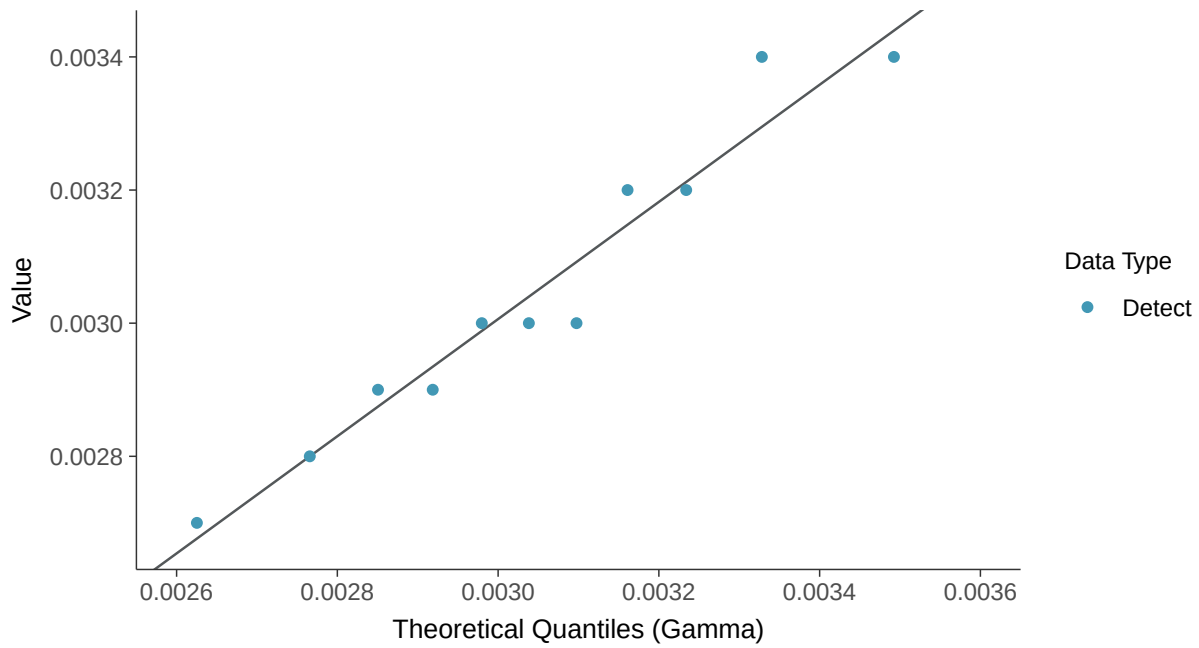


Lognormal Q-Q plot

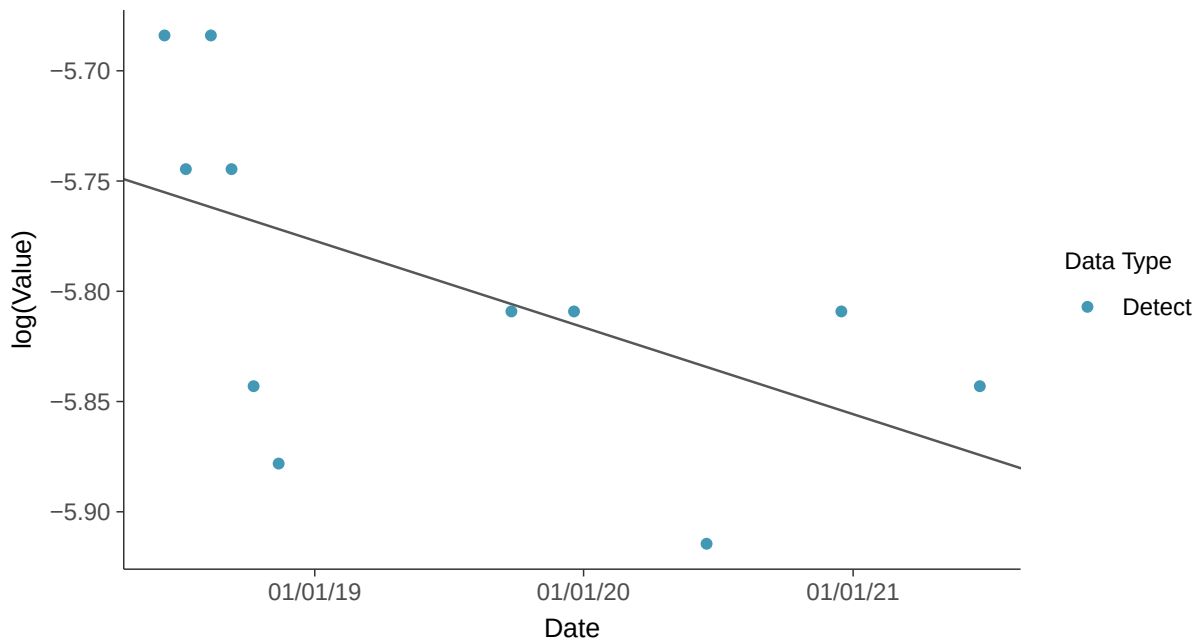
Molybdenum, W-4 (mg/l)



Gamma Q-Q plot
Molybdenum, W-4 (mg/l)

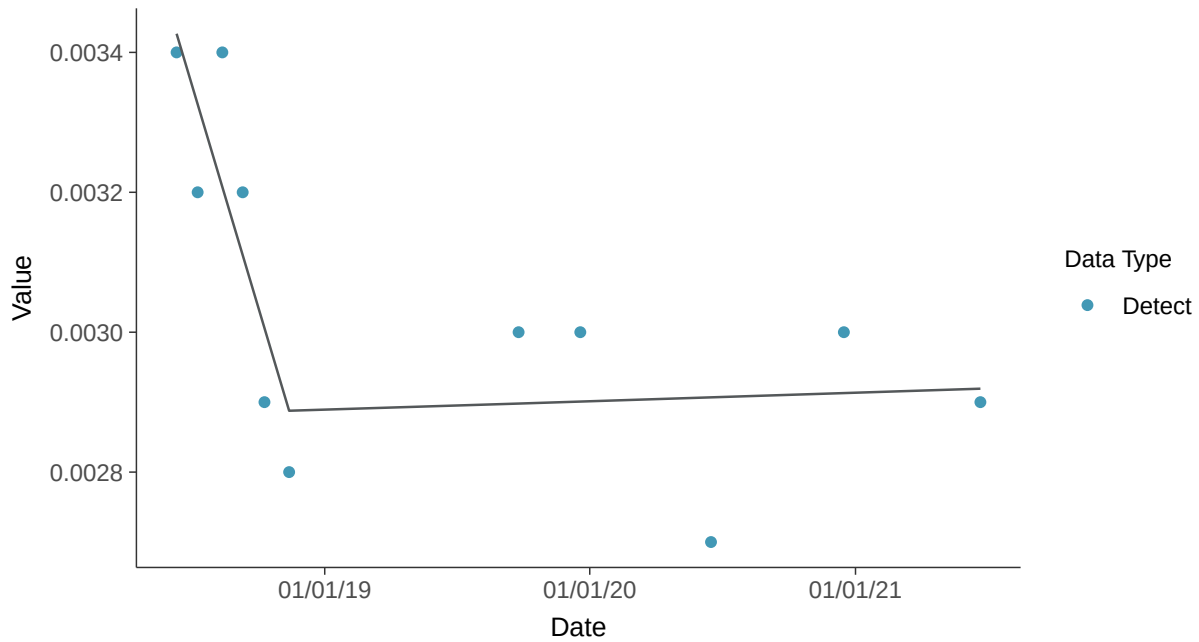


Trend Regression: Lognormal MLE
Molybdenum, W-4 (mg/l)



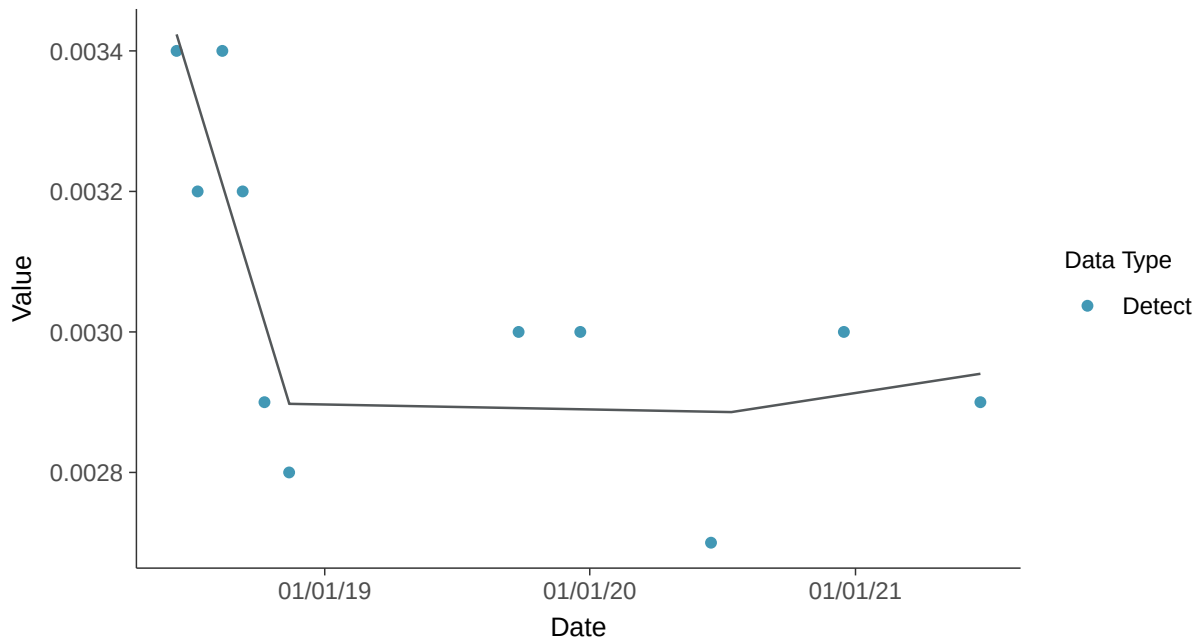
Trend Regression: Piecewise Linear-Linear

Molybdenum, W-4 (mg/l)



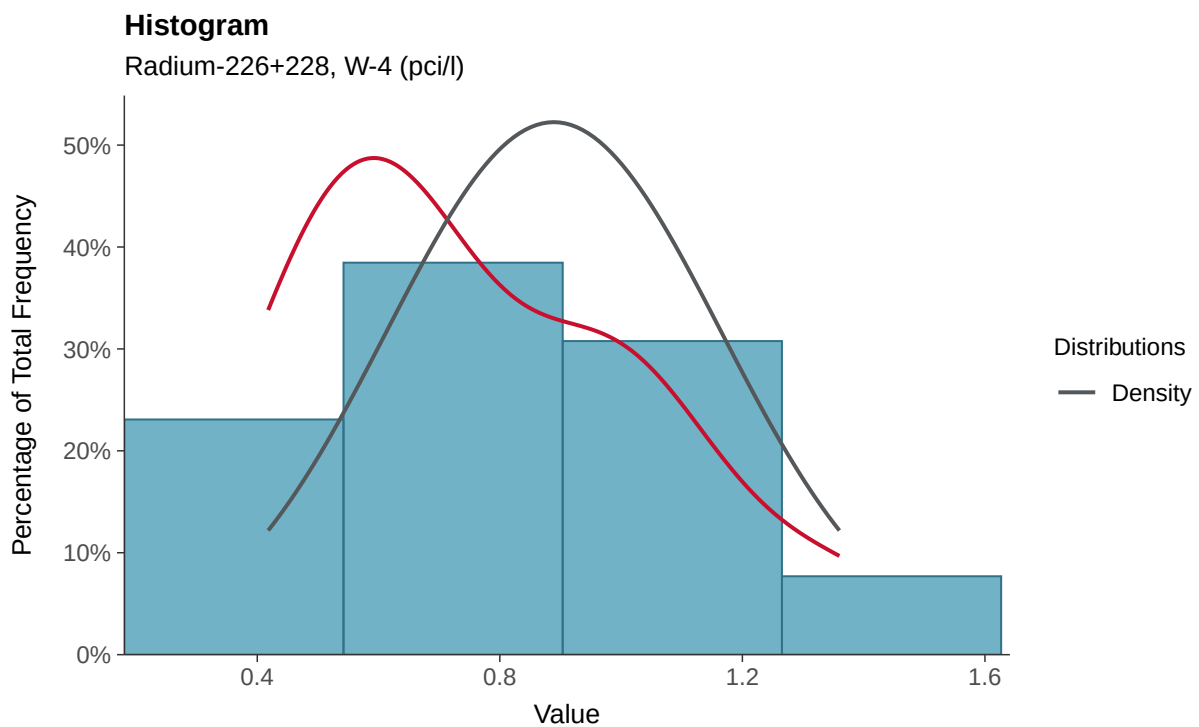
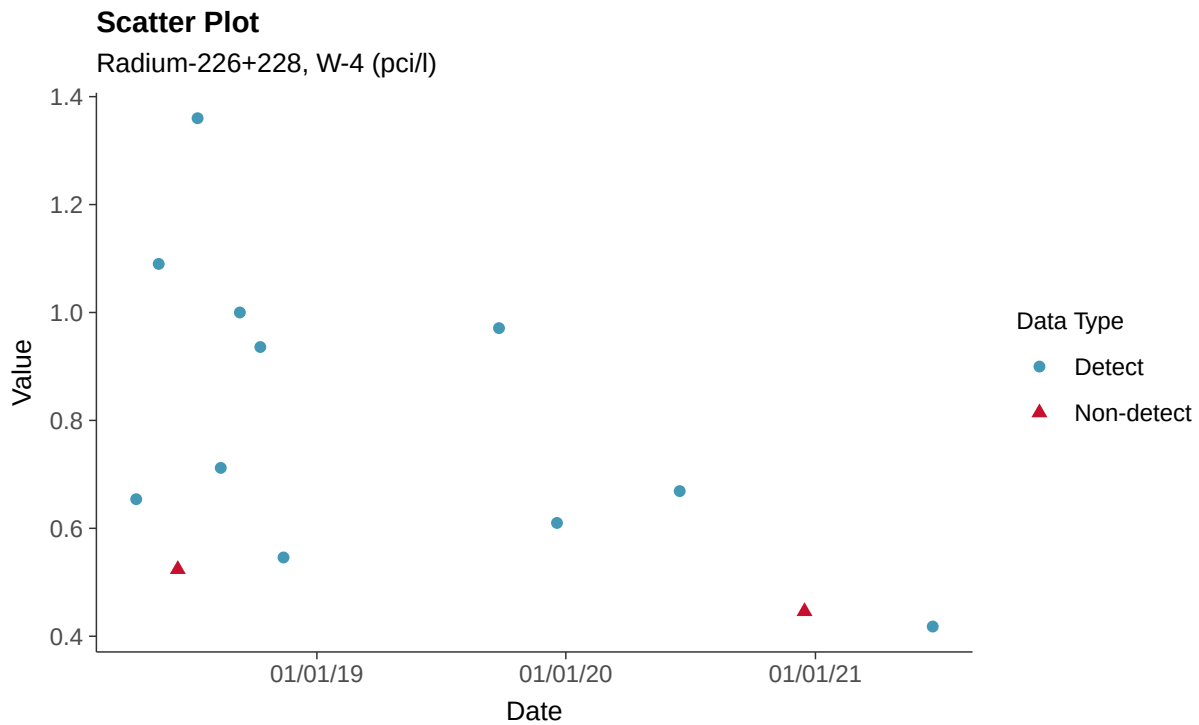
Trend Regression: Piecewise Linear-Linear-Linear

Molybdenum, W-4 (mg/l)



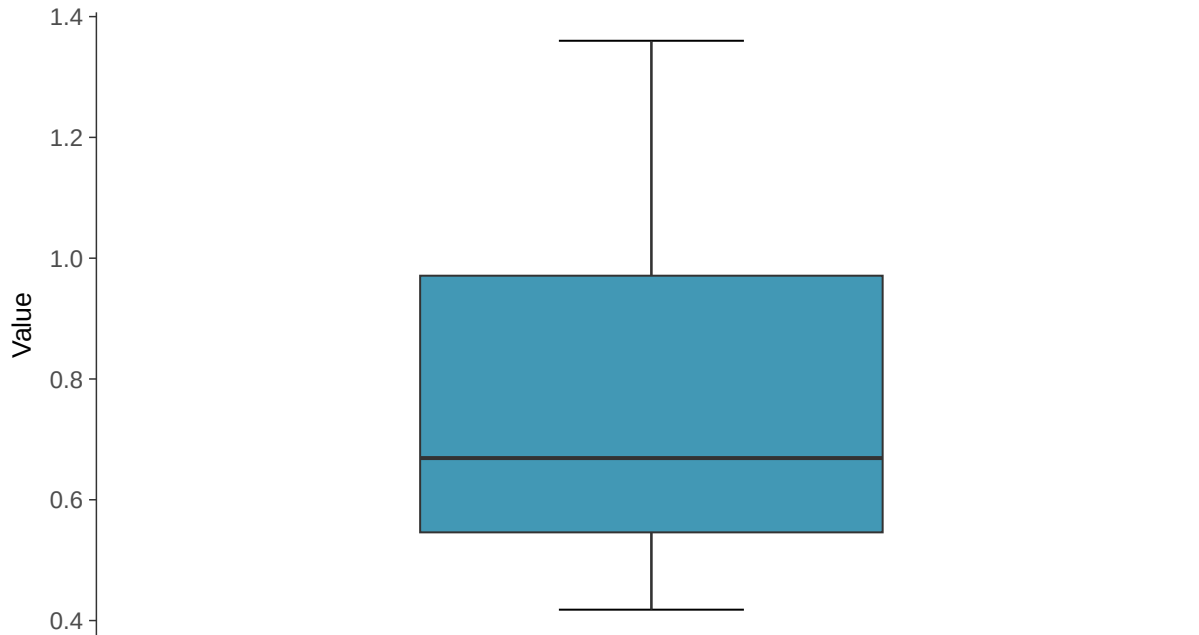
Appendix IV: Radium-226+228, W-4

ID: 3_2_122



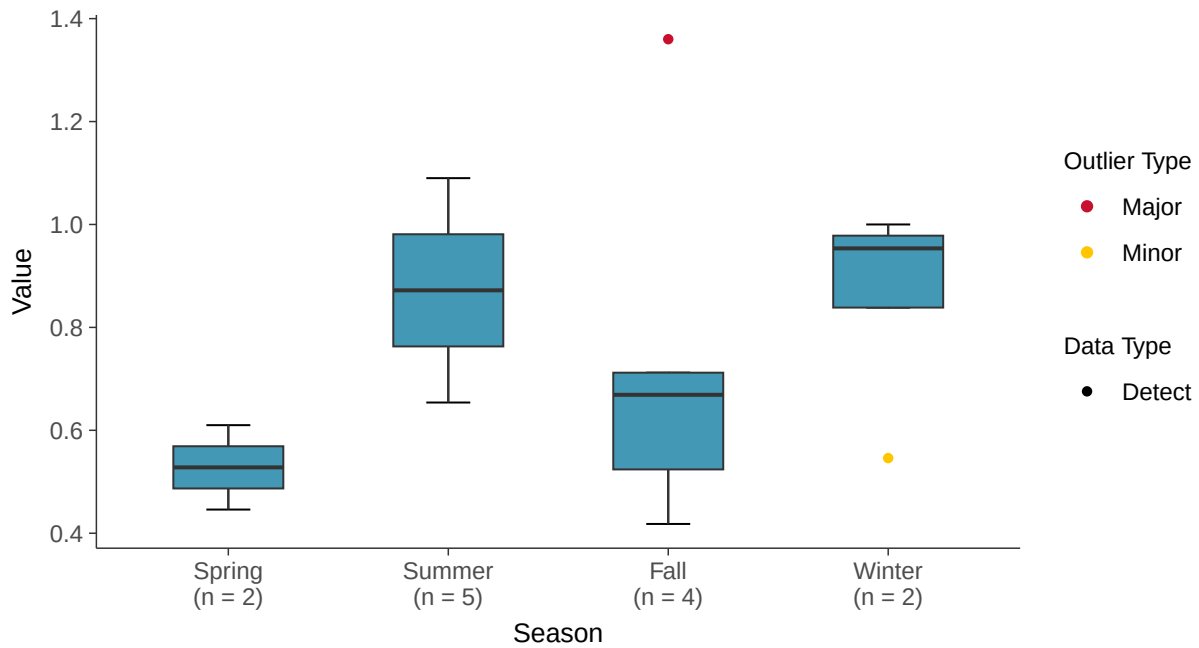
Boxplot

Radium-226+228, W-4 (pci/l)



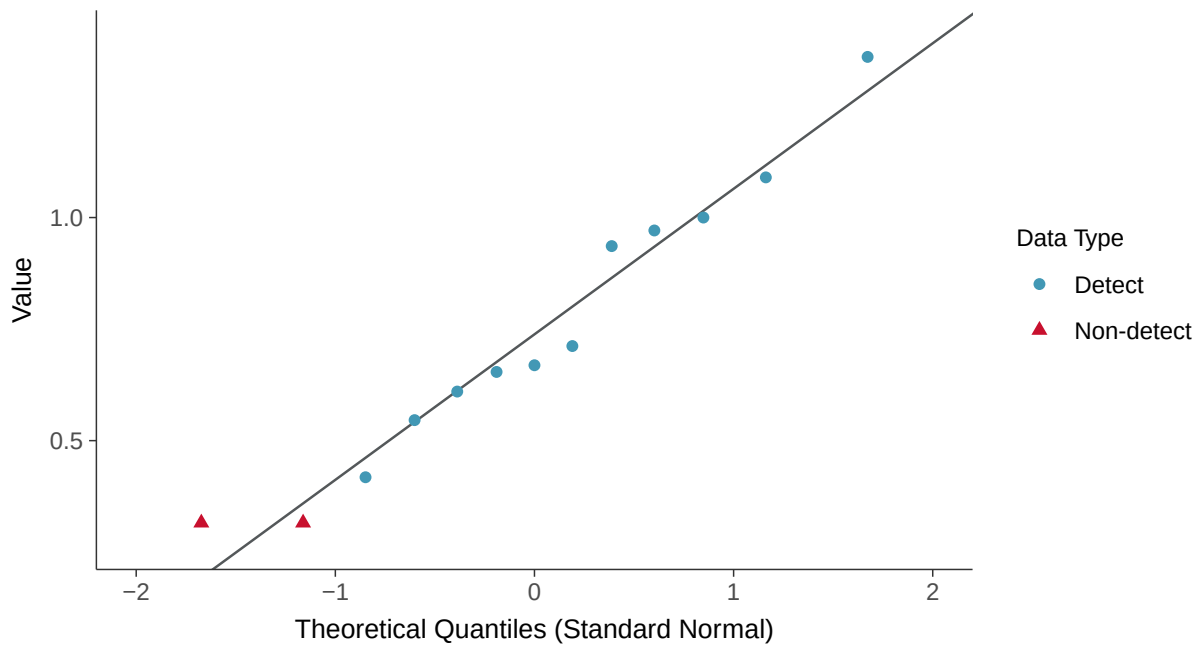
Boxplot by Season

Radium-226+228, W-4 (pci/l)



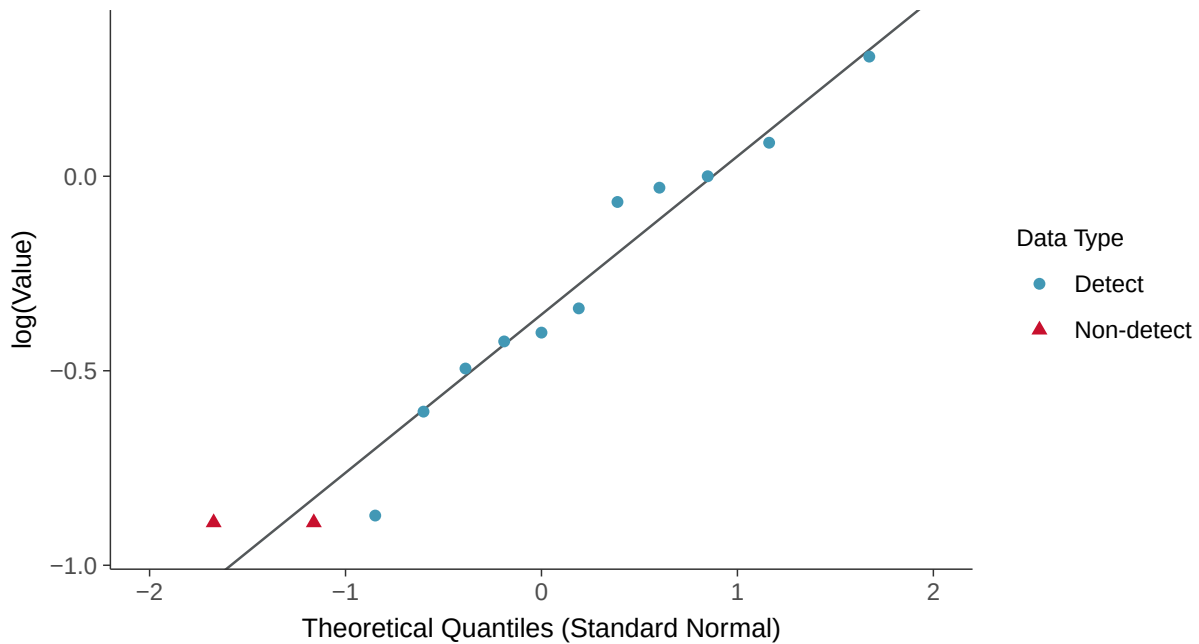
Normal Q-Q plot using ROS Imputed Estimates

Radium-226+228, W-4 (pci/l)



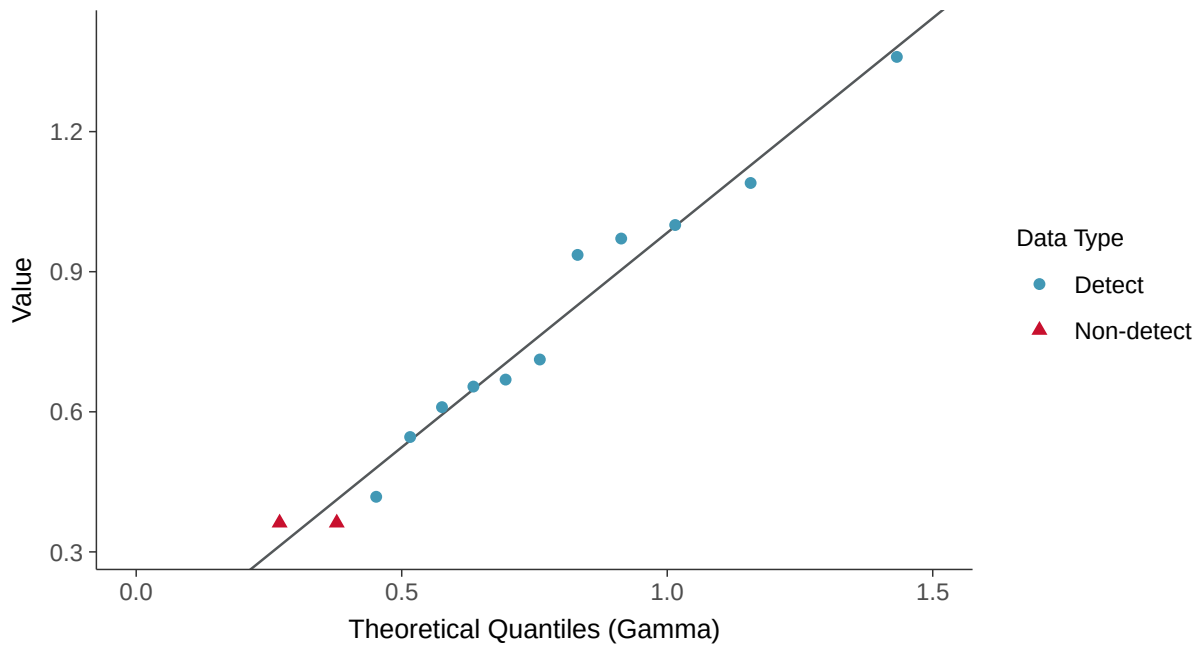
Lognormal Q-Q plot using ROS Imputed Estimates

Radium-226+228, W-4 (pci/l)



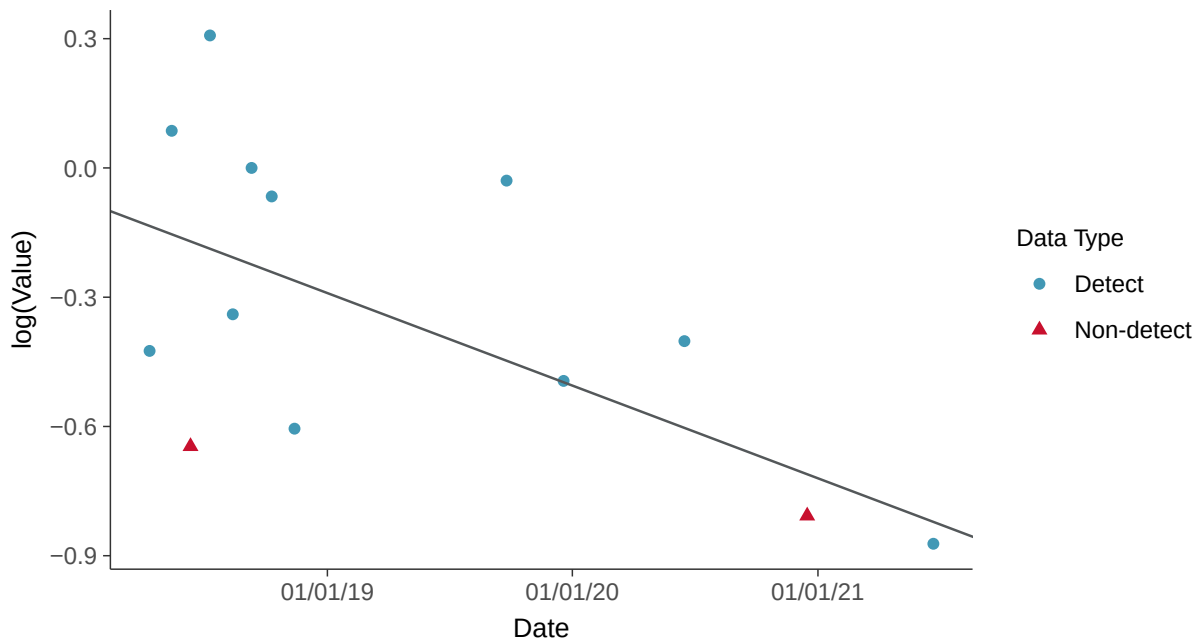
Gamma Q-Q plot using ROS Imputed Estimates

Radium-226+228, W-4 (pci/l)



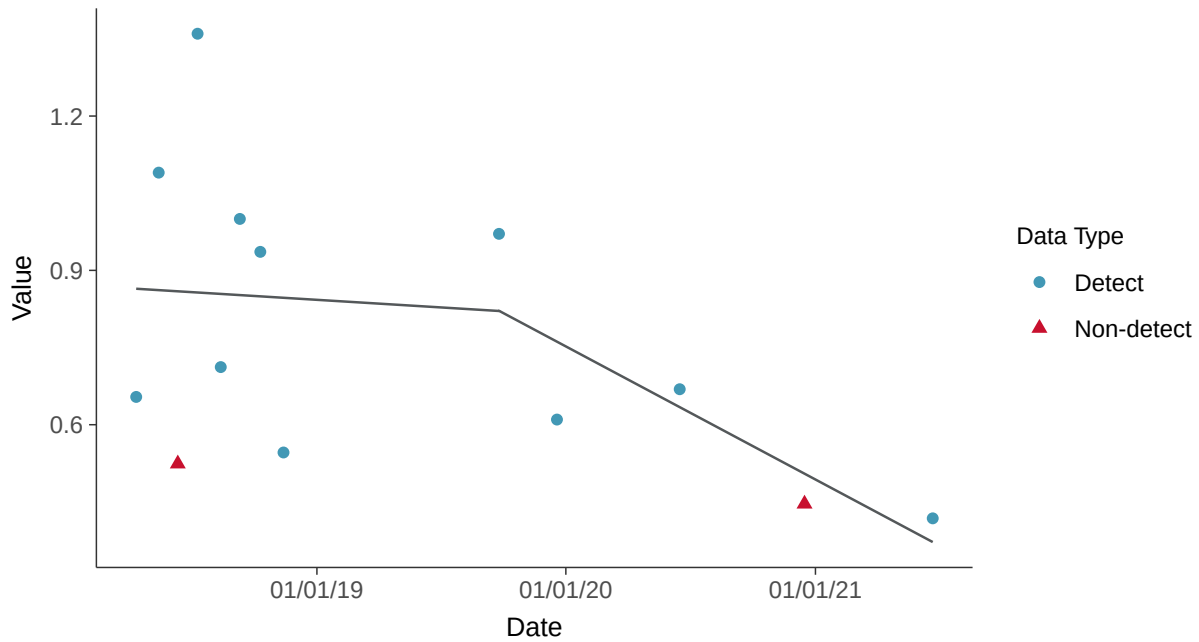
Trend Regression: Lognormal MLE

Radium-226+228, W-4 (pci/l)



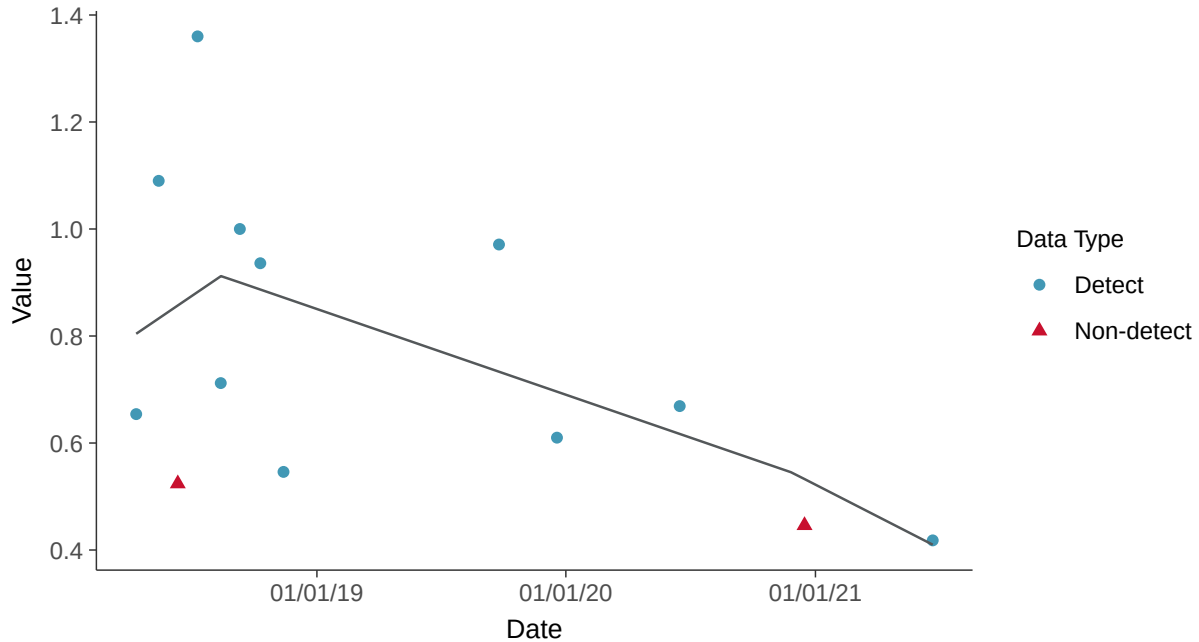
Trend Regression: Piecewise Linear-Linear

Radium-226+228, W-4 (pci/l)



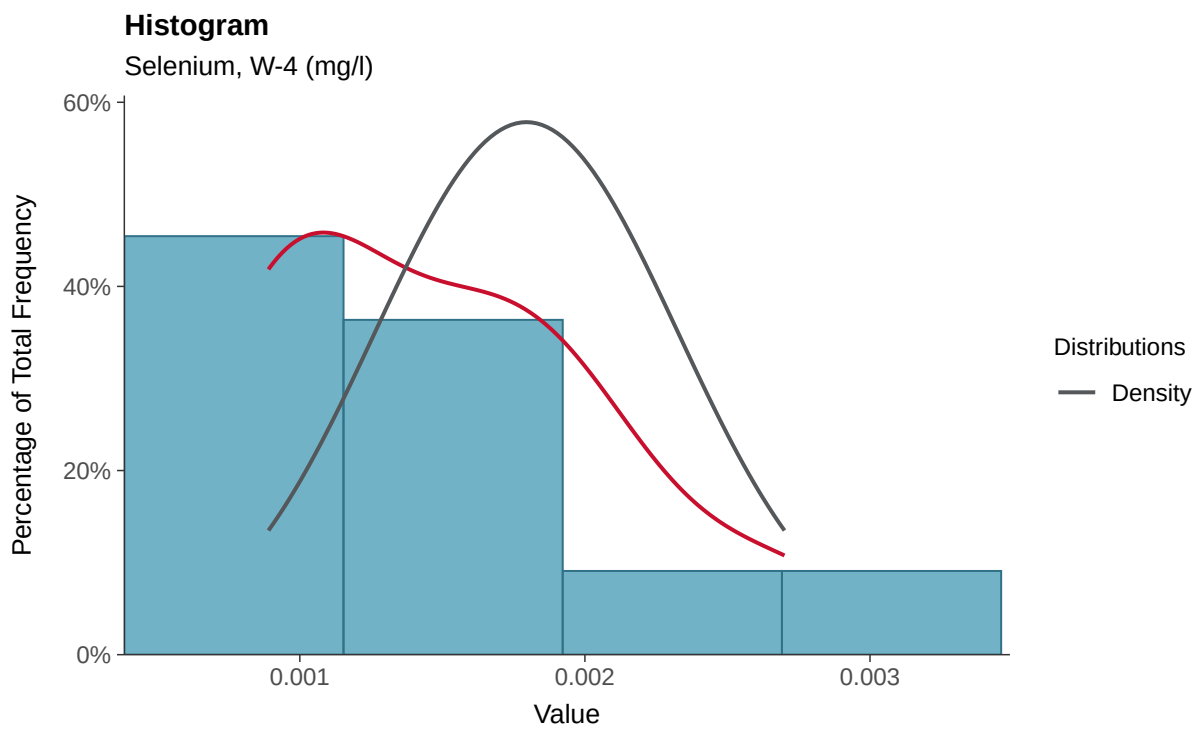
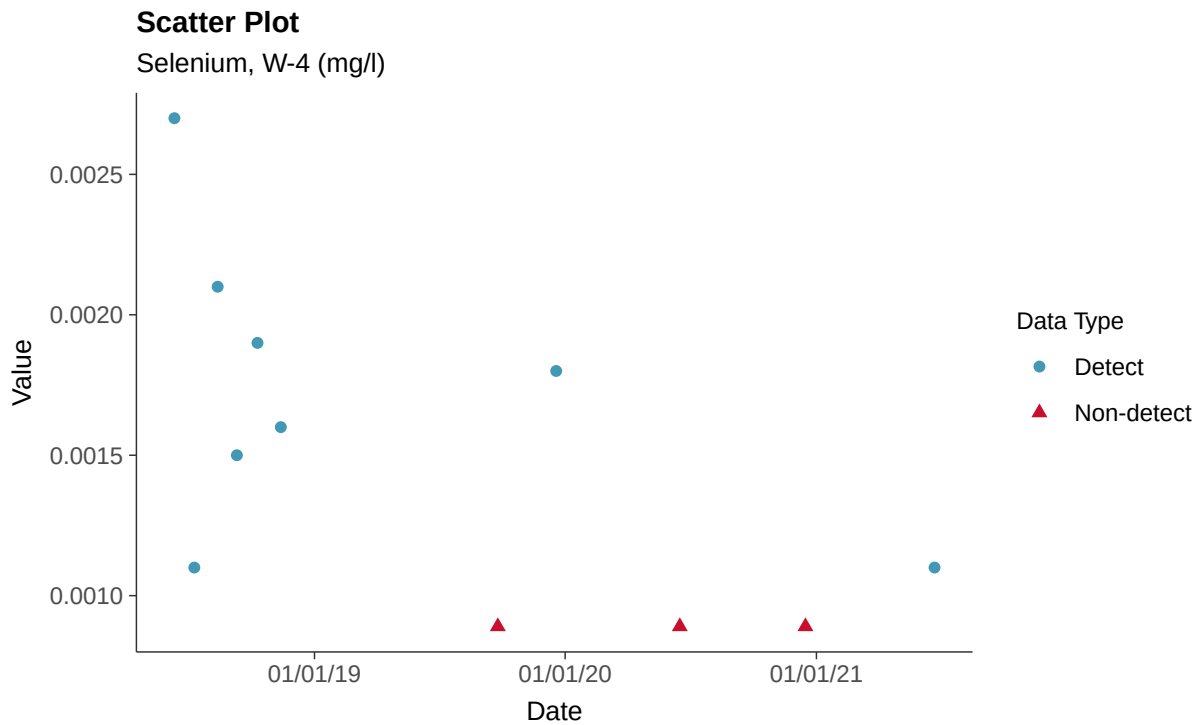
Trend Regression: Piecewise Linear-Linear-Linear

Radium-226+228, W-4 (pci/l)



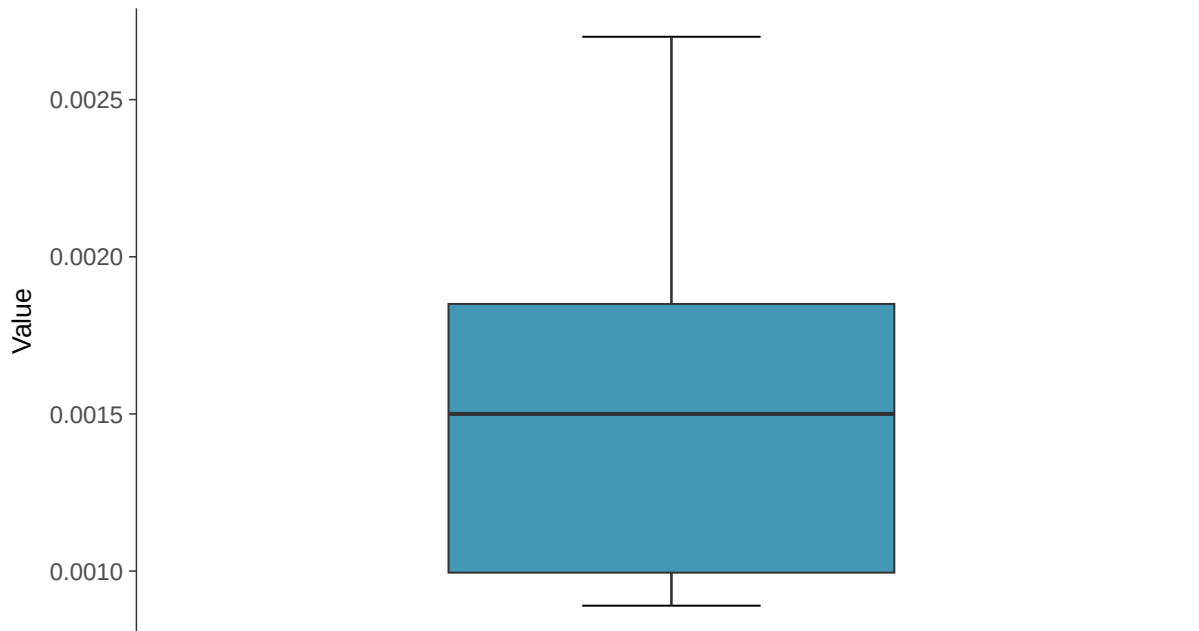
Appendix IV: Selenium, W-4

ID: 3_2_124



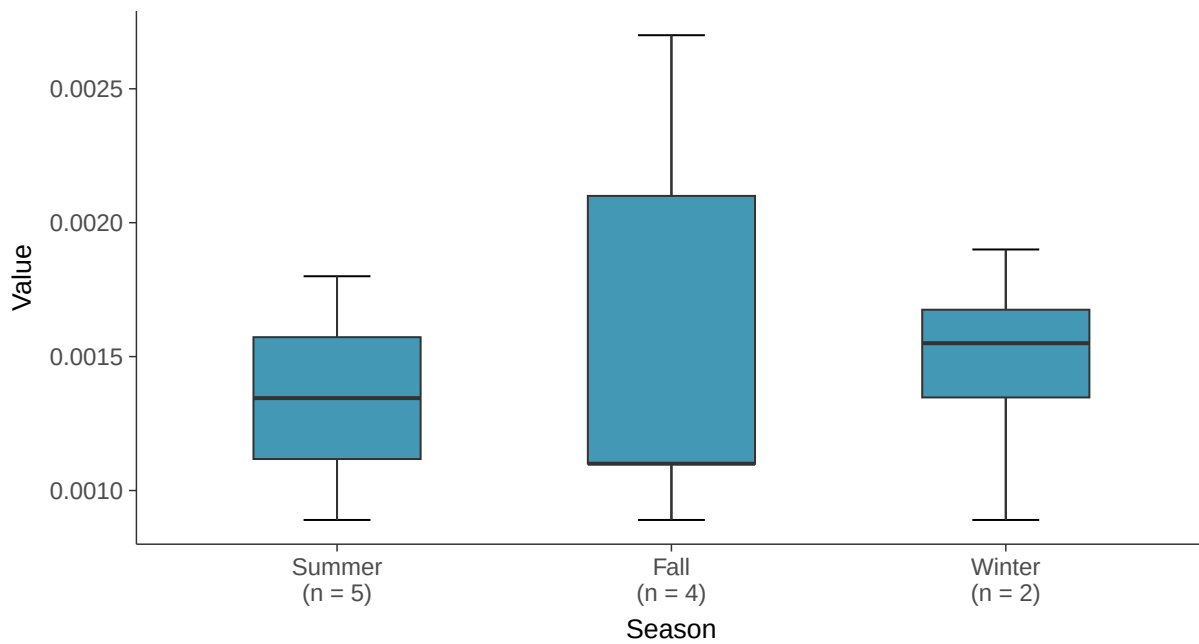
Boxplot

Selenium, W-4 (mg/l)



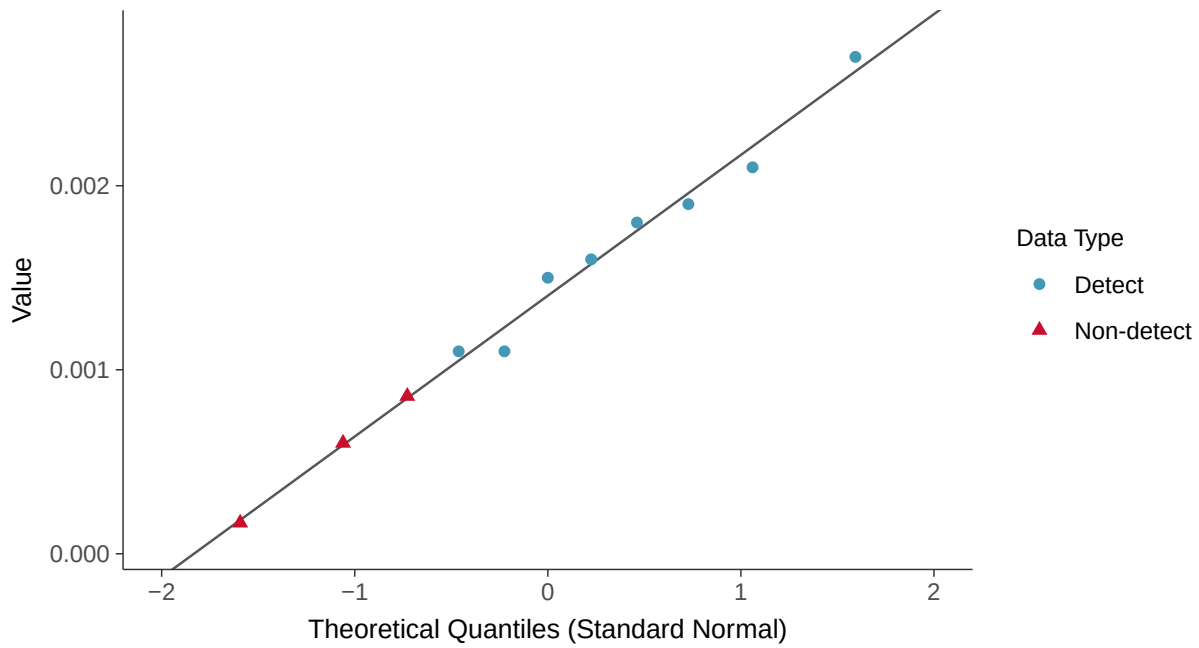
Boxplot by Season

Selenium, W-4 (mg/l)



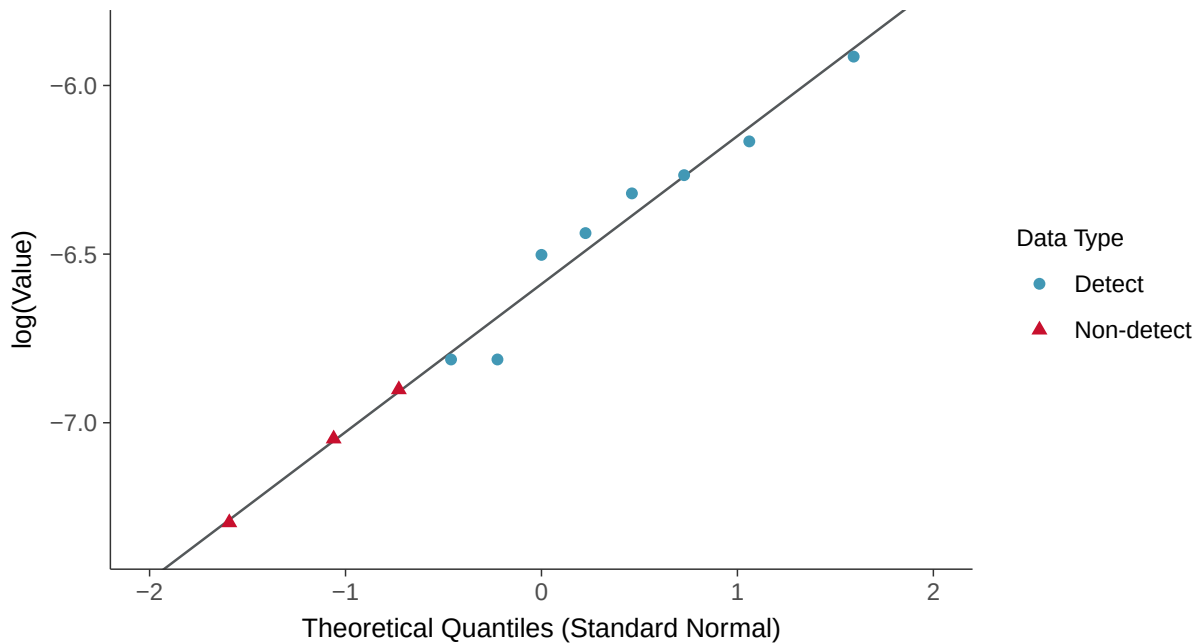
Normal Q-Q plot using ROS Imputed Estimates

Selenium, W-4 (mg/l)



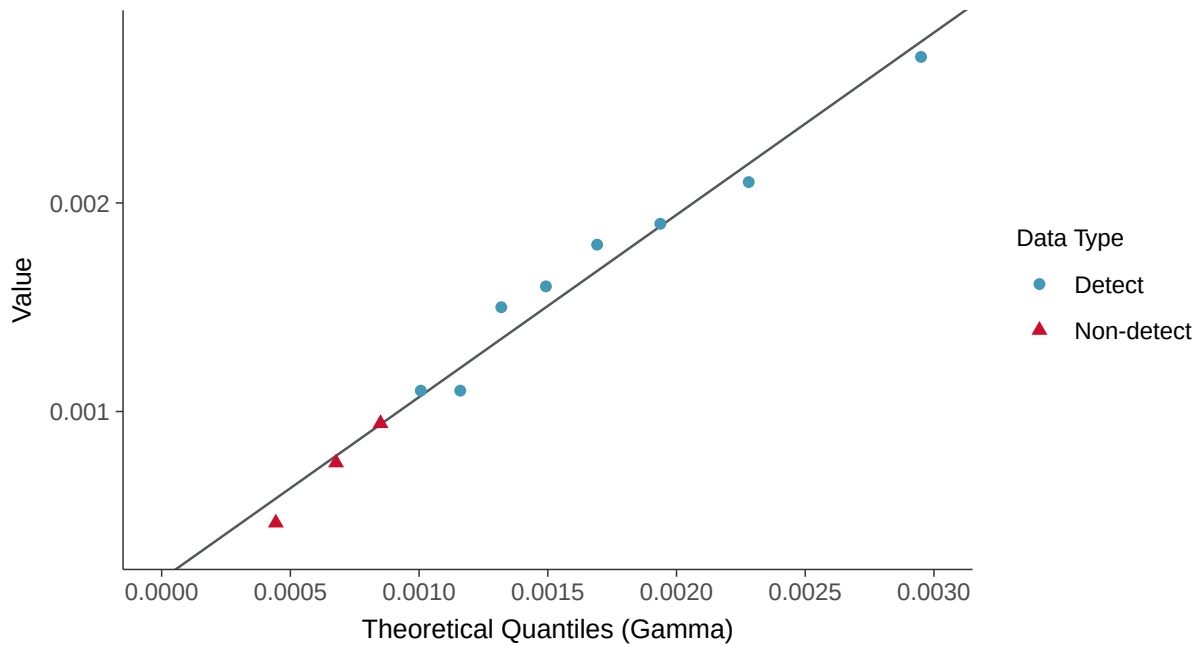
Lognormal Q-Q plot using ROS Imputed Estimates

Selenium, W-4 (mg/l)



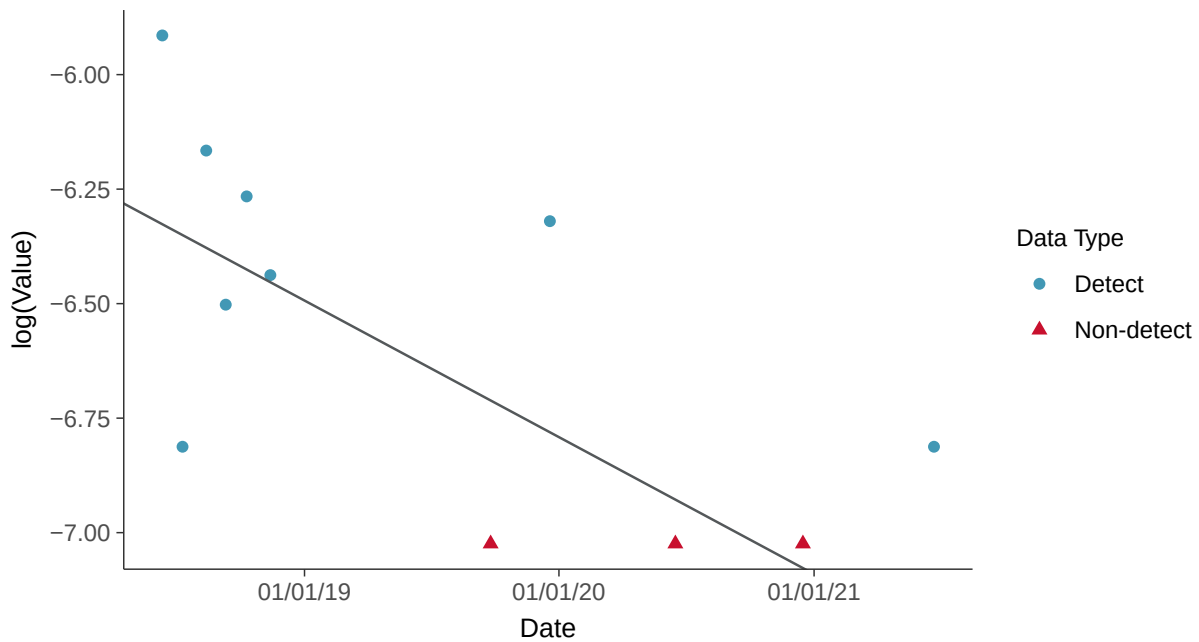
Gamma Q-Q plot using ROS Imputed Estimates

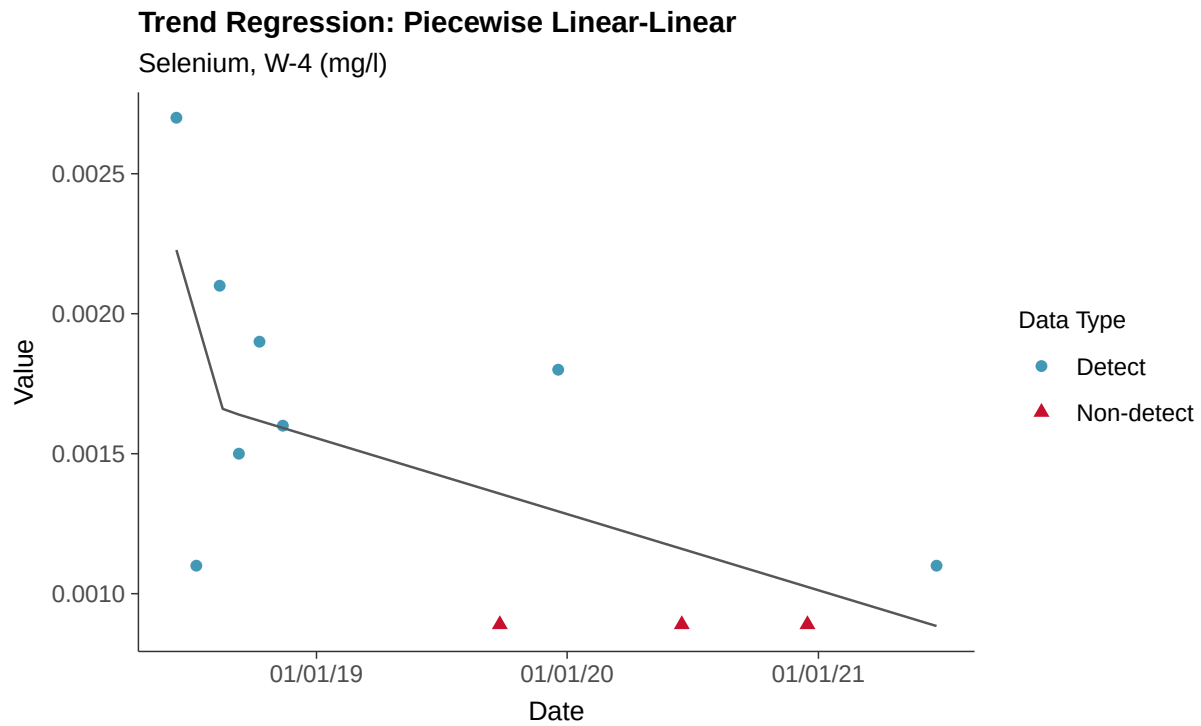
Selenium, W-4 (mg/l)



Trend Regression: Lognormal MLE

Selenium, W-4 (mg/l)

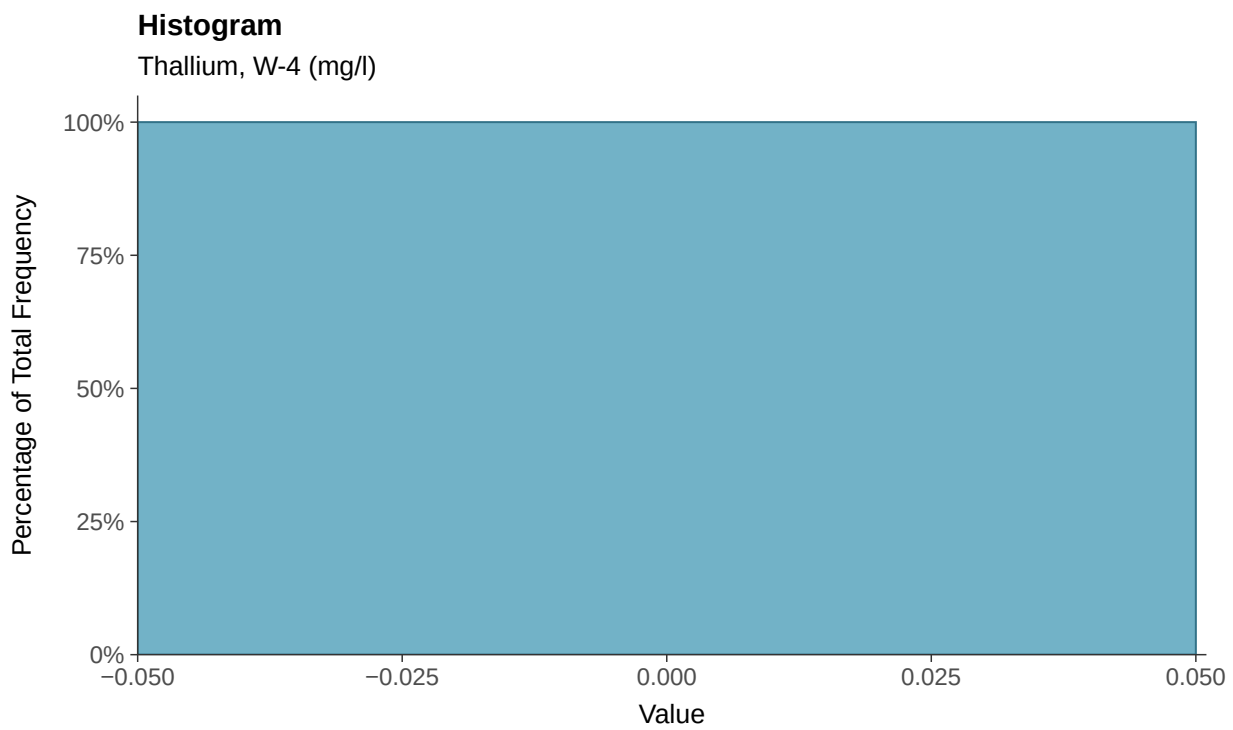
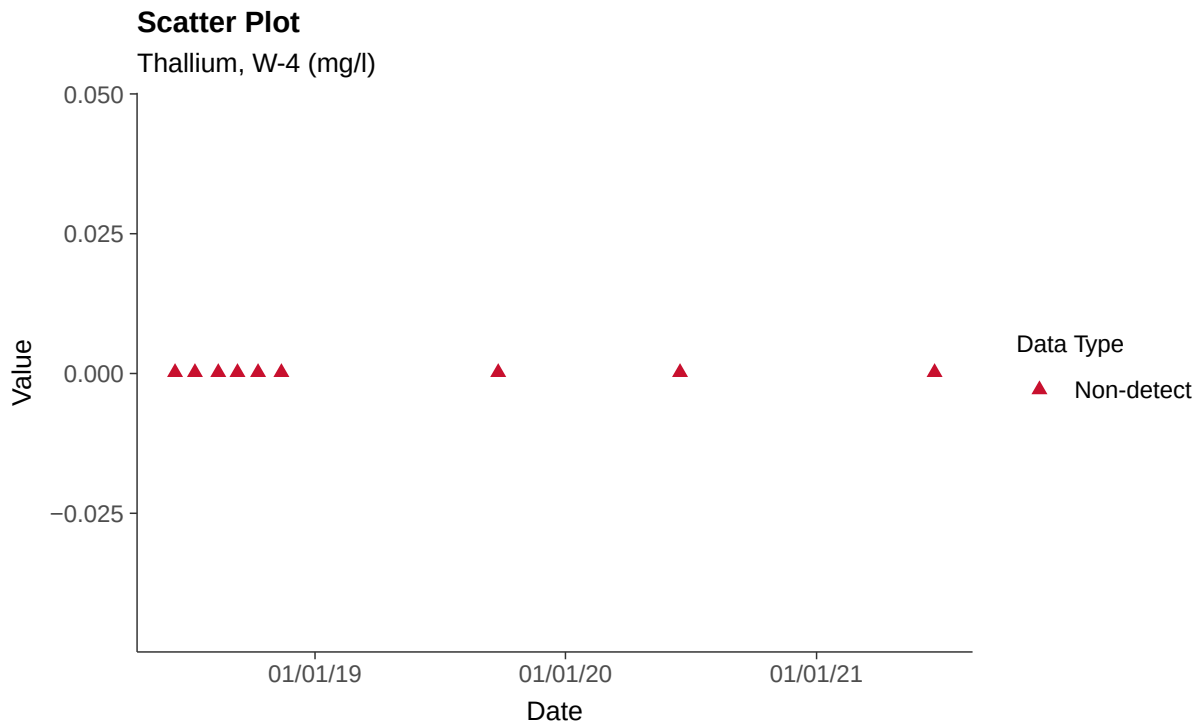






Appendix IV: Thallium, W-4

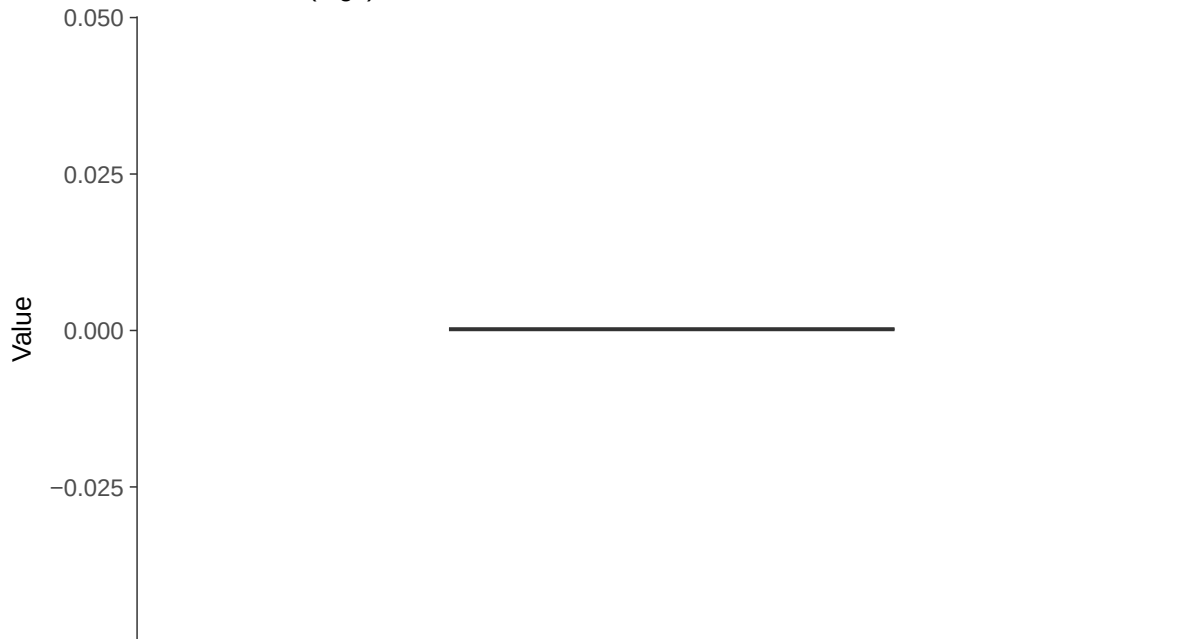
ID: 3_2_128





Boxplot

Thallium, W-4 (mg/l)



Boxplot by Season

Thallium, W-4 (mg/l)

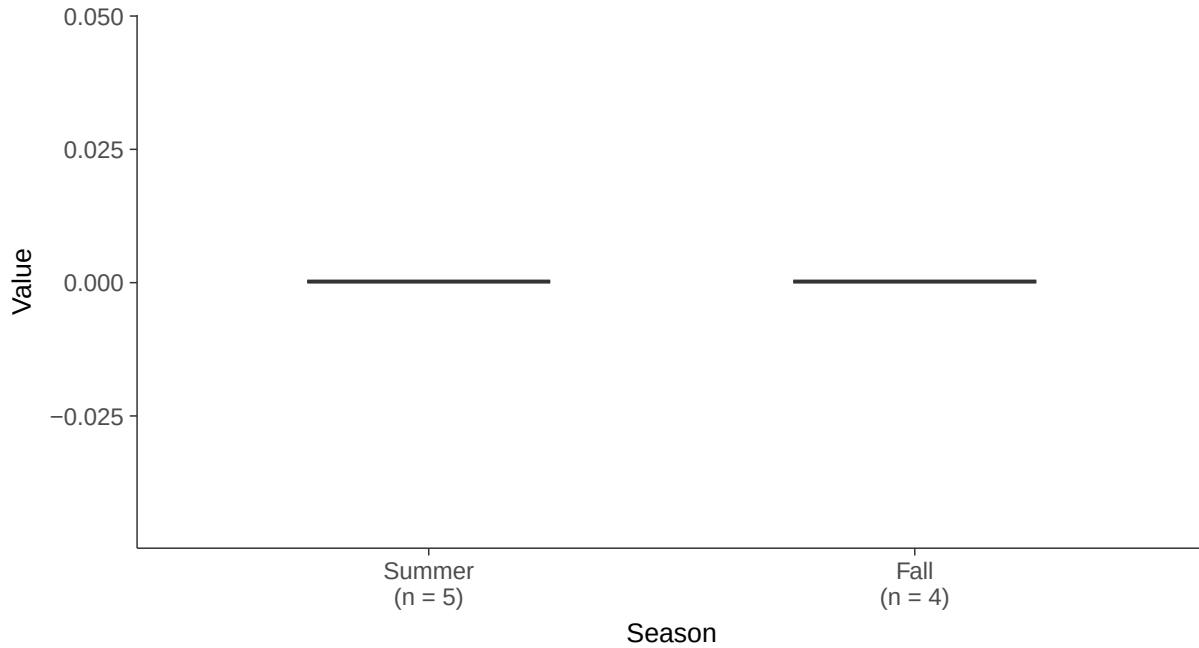


Table 1: Summary Statistics, Non-Detects Included

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Date Range	Distributions Fit ^a	Recommended Distribution	Mean	Median	Minimum	Maximum	SD	CV	MAD/0.675	Skewness	Kurtosis
1_1_108	W-1	Appendix III	Boron	mg/l	14	0	0%	2018-04-11 to 2022-06-13	Gamma; Lognormal; Normal	Gamma	0.604	0.620	0.480	0.840	0.0889	0.147	0.0593	1.19	3.09
1_1_110	W-1	Appendix III	Calcium	mg/l	15	0	0%	2018-04-11 to 2022-06-13	Gamma; Lognormal; Normal	Gamma	338	340	300	380	22.7	0.0673	14.8	0.242	0.567
1_1_111	W-1	Appendix III	Chloride (as Cl)	mg/l	15	0	0%	2018-04-11 to 2022-06-13	Lognormal; Normal	Lognormal	39.4	41.0	21.0	67.0	11.3	0.286	5.93	0.470	1.81
1_1_115	W-1	Appendix III	Fluoride	mg/l	16	2	12%	2018-04-11 to 2022-06-13	Nonparametric	Nonparametric	0.596	0.310	0.180	3.40	0.806	1.35	0.0593	3.22	11.0
1_1_123	W-1	Appendix III	pH (field)	su	16	0	0%	2018-04-11 to 2022-06-13	Gamma; Lognormal; Normal	Gamma	7.21	7.20	6.91	7.44	0.130	0.0181	0.0963	-0.163	1.06
1_1_124	W-1	Appendix III	pH (lab)	su	15	0	0%	2018-04-11 to 2022-06-13	Gamma; Lognormal; Normal	Gamma	7.61	7.60	7.40	7.80	0.119	0.0156	0.148	0.00350	-0.791
1_1_131	W-1	Appendix III	Sulfate (as SO4)	mg/l	15	0	0%	2018-04-11 to 2022-06-13	Nonparametric	Nonparametric	2787	2700	2500	4500	482	0.173	148	3.64	13.8
1_1_135	W-1	Appendix III	Total Dissolved Solids	mg/l	15	0	0%	2018-04-11 to 2022-06-13	Nonparametric	Nonparametric	4160	4300	1300	4600	814	0.196	296	-3.51	13.0
1_2_104	W-1	Appendix IV	Antimony	mg/l	11	11	100%	2018-06-11 to 2022-06-13		Nonparametric	0.000555	0.000570	0.000400	0.000570	0.0000513	0.0924	0	-3.32	11.0
1_2_105	W-1	Appendix IV	Arsenic	mg/l	11	11	100%	2018-06-11 to 2022-06-13		Nonparametric	0.000712	0.000750	0.000330	0.000750	0.000127	0.178	0	-3.32	11.0
1_2_106	W-1	Appendix IV	Barium	mg/l	13	0	0%	2018-06-11 to 2022-06-13	Gamma; Lognormal; Normal	Gamma	0.00980	0.00960	0.00860	0.0110	0.000790	0.0806	0.000593	0.449	-0.641
1_2_107	W-1	Appendix IV	Beryllium	mg/l	11	7	64%	2018-06-11 to 2022-06-13		Nonparametric	0.000515	0.000350	0.0000800	0.00110	0.000312	0.606	0.000400	0.680	-0.358
1_2_109	W-1	Appendix IV	Cadmium	mg/l	13	9	69%	2018-06-11 to 2022-06-13		Nonparametric	0.000242	0.000210	0.000200	0.000370	0.0000604	0.250	0.0000148	1.51	1.13
1_2_112	W-1	Appendix IV	Chromium, Total	mg/l	11	10	91%	2018-06-11 to 2022-06-13		Nonparametric	0.00128	0.000980	0.000500	0.00250	0.000663	0.518	0	1.29	0.502
1_2_113	W-1	Appendix IV	Cobalt	mg/l	13	0	0%	2018-06-11 to 2022-06-13	Gamma; Lognormal; Normal	Gamma	0.000944	0.000880	0.000760	0.00130	0.000181	0.192	0.000119	0.981	-0.363
1_2_116	W-1	Appendix IV	Fluoride (App IV)	mg/l	16	2	12%	2018-04-11 to 2022-06-13	Nonparametric	Nonparametric	0.596	0.310	0.180	3.40	0.806	1.35	0.0593	3.22	11.0
1_2_117	W-1	Appendix IV	Lead	mg/l	11	10	91%	2018-06-11 to 2022-06-13		Nonparametric	0.000539	0.000450	0.000180	0.00170	0.000393	0.730	0	3.03	9.86
1_2_118	W-1	Appendix IV	Lithium	mg/l	13	0	0%	2018-06-11 to 2022-06-13	Gamma; Lognormal; Normal	Gamma	0.280	0.280	0.250	0.320	0.0208	0.0743	0.0148	0.328	-0.109
1_2_120	W-1	Appendix IV	Mercury	mg/l	11	11	100%	2018-06-11 to 2022-06-13		Nonparametric	0.000114	0.000130	0.0000270	0.000130	0.0000356	0.311	0	-2.12	3.46
1_2_121	W-1	Appendix IV	Molybdenum	mg/l	13	0	0%	2018-06-11 to 2022-06-13	Gamma; Lognormal	Gamma	0.00335	0.00330	0.00290	0.00460	0.000443	0.132	0.000148	1.92	5.24
1_2_127	W-1	Appendix IV	Radium-226+228	pci/l	15	3	20%	2018-04-11 to 2022-06-13	Gamma; Lognormal; Normal	Gamma	0.787	0.827	0.402	1.26	0.252	0.321	0.330	0.235	-0.873
1_2_129	W-1	Appendix IV	Selenium	mg/l	13	0	0%	2018-06-11 to 2022-06-13	Normal	Normal	0.0106	0.0110	0.000940	0.0160	0.00434	0.410	0.00296	-1.04	0.987
1_2_134	W-1	Appendix IV	Thallium	mg/l	11	10	91%	2018-06-11 to 2022-06-13		Nonparametric	0.000212	0.000200	0.0000890	0.000440	0.0000827	0.391	0	2.17	7.36
1_3_114	W-1	Supplemental	Conductivity (field)	us/cm	16	0	0%	2018-04-11 to 2022-06-13	Gamma; Lognormal; Normal	Gamma	4550	4572	4216	4732	139	0.0306	128	-1.01	0.891
1_3_122	W-1	Supplemental	Oxidation-reduction Potential (field)	mV	16	0	0%	2018-04-11 to 2022-06-13	Nonparametric	Nonparametric	268	122	-89.6	2721	658	2.46	46.4	3.91	15.5
1_3_126	W-1	Supplemental	Radium-226	pci/l	15	8	53%	2018-04-11 to 2022-06-13	Gamma; Lognormal; Normal	Nonparametric	0.204	0.178	0.0856	0.404	0.107	0.527	0.111	0.695	-0.697
1_3_128	W-1	Supplemental	Radium-228	pci/l	15	6	40%	2018-04-11 to 2022-06-13	Gamma; Lognormal; Normal	Gamma	0.666	0.561	0.402	1.16	0.234	0.351	0.172	1.01	-0.0122
1_3_132	W-1	Supplemental	Temperature (field)	deg c	16	0	0%	2018-04-11 to 2022-06-13	Gamma; Lognormal; Normal	Gamma	10.3	10.2	8.50	11.9	0.996	0.0965	1.19	-0.116	-0.953
1_3_133	W-1	Supplemental	Temperature (lab)	deg c	15	0	0%	2018-04-11 to 2022-06-13	Gamma; Lognormal; Normal	Gamma	20.6	20.7	19.1	21.9	0.978	0.0475	1.33	-0.257	-1.21
1_3_136	W-1	Supplemental	Total Suspended Solids	mg/l	13	6	46%	2018-05-14 to 2022-06-13	Nonparametric	Nonparametric	2.11	2.00	1.10	5.20	1.39	0.658	1.33	1.58	1.66
1_3_137	W-1	Supplemental	Turbidity (field)	ntu	16	0	0%	2018-04-11 to 2022-06-13	Normal	Normal	0.887	0.860	0.0200	2.44	0.687	0.775	0.578	0.864	0.741
2_1_108	W-2	Appendix III	Boron	mg/l	14	0	0%	2018-04-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	9.30	9.05	7.80	12.0	1.19	0.128	1.33	0.923	0.518
2_1_110	W-2	Appendix III	Calcium	mg/l	15	0	0%	2018-04-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	361	370	300	410	31.4	0.0868	29.6	-0.623	-0.0547
2_1_111	W-2	Appendix III	Chloride (as Cl)	mg/l	15	0	0%	2018-04-11 to 2022-06-14	Gamma; Normal	Gamma	86.5	85.0	64.0	110	9.72	0.112	4.44	0.200	3.28
2_1_115	W-2	Appendix III	Fluoride	mg/l	16	2	12%	2018-04-11 to 2022-06-14	Nonparametric	Nonparametric	1.45	0.550	0.450	6.70	1.95	1.34	0.0889	2.11	3.42
2_1_123	W-2	Appendix III	pH (field)	su	16	0	0%	2018-04-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	7.34	7.34	6.90	7.65	0.163	0.0222	0.104	-0.811	3.15
2_1_124	W-2	Appendix III	pH (lab)	su	15	0	0%	2018-04-11 to 2022-06-14		Nonparametric	7.63	7.60	7.50	7.70	0.0617	0.00809	0	-0.312	-0.404
2_1_131	W-2	Appendix III	Sulfate (as SO4)	mg/l	15	0	0%	2018-04-11 to 2022-06-14	Nonparametric	Nonparametric	4507	4500	4100	5400	306	0.0679	148	1.64	4.99
2_1_135	W-2	Appendix III	Total Dissolved Solids	mg/l	15	0	0%	2018-04-11 to 2022-06-14	Nonparametric	Nonparametric	6760	7100	4100	7300	810	0.120	296	-2.82	9.09
2_2_104	W-2	Appendix IV	Antimony	mg/l	11	10	91%	2018-06-11 to 2022-06-14		Nonparametric	0.000627	0.000570	0.000570	0.00120	0.000190	0.303	0	3.32	11.0
2_2_105	W-2	Appendix IV	Arsenic	mg/l	11	11	100%	2018-06-11 to 2022-06-14		Nonparametric	0.000712	0.000750	0.000330	0.000750	0.000127	0.178	0	-3.32	11.0
2_2_106	W-2	Appendix IV	Barium	mg/l	13	0	0%	2018-06-11 to 2022-06-14	Nonparametric	Nonparametric	0.00678	0.00600	0.00490	0.0130	0.00223	0.330	0.000741	2.14	4.81

(Table continues on next page)

^a Non-detects are excluded from goodness-of-fit tests.

Table 1: Summary Statistics, Non-Detects Included *(continued)*

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Date Range	Distributions Fit ^a	Recommended Distribution	Mean	Median	Minimum	Maximum	SD	CV	MAD/0.675	Skewness	Kurtosis
2_2_107	W-2	Appendix IV	Beryllium	mg/l	11	8	73%	2018-06-11 to 2022-06-14		Nonparametric	0.000478	0.000310	0.000310	0.000920	0.000213	0.445	0	0.916	-0.101
2_2_109	W-2	Appendix IV	Cadmium	mg/l	13	9	69%	2018-06-11 to 2022-06-14		Nonparametric	0.000248	0.000210	0.000200	0.000520	0.0000876	0.353	0.0000148	2.85	8.85
2_2_112	W-2	Appendix IV	Chromium, Total	mg/l	11	10	91%	2018-06-11 to 2022-06-14		Nonparametric	0.00126	0.000980	0.000500	0.00250	0.000653	0.518	0	1.42	0.996
2_2_113	W-2	Appendix IV	Cobalt	mg/l	13	0	0%	2018-06-11 to 2022-06-14	Gamma; Lognormal	Gamma	0.00412	0.00180	0.00110	0.0200	0.00522	1.27	0.00104	2.71	7.98
2_2_116	W-2	Appendix IV	Fluoride (App IV)	mg/l	16	2	12%	2018-04-11 to 2022-06-14	Nonparametric	Nonparametric	1.45	0.550	0.450	6.70	1.95	1.34	0.0889	2.11	3.42
2_2_117	W-2	Appendix IV	Lead	mg/l	11	9	82%	2018-06-11 to 2022-06-14		Nonparametric	0.000534	0.000450	0.000220	0.00160	0.000360	0.675	0	3.07	10.0
2_2_118	W-2	Appendix IV	Lithium	mg/l	13	0	0%	2018-06-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	0.641	0.620	0.550	0.760	0.0612	0.0955	0.0444	0.614	-0.416
2_2_120	W-2	Appendix IV	Mercury	mg/l	11	11	100%	2018-06-11 to 2022-06-14		Nonparametric	0.000114	0.000130	0.0000270	0.000130	0.0000356	0.311	0	-2.12	3.46
2_2_121	W-2	Appendix IV	Molybdenum	mg/l	13	0	0%	2018-06-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	0.00386	0.00350	0.00280	0.00570	0.000901	0.233	0.000593	1.14	0.431
2_2_127	W-2	Appendix IV	Radium-226+228	pci/l	15	3	20%	2018-04-11 to 2022-06-14	Gamma; Lognormal	Gamma	1.19	0.810	0.413	3.01	0.832	0.697	0.489	1.49	1.32
2_2_129	W-2	Appendix IV	Selenium	mg/l	13	0	0%	2018-06-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	0.00315	0.00320	0.00200	0.00390	0.000571	0.181	0.000593	-0.525	-0.497
2_2_134	W-2	Appendix IV	Thallium	mg/l	11	9	82%	2018-06-11 to 2022-06-14		Nonparametric	0.000204	0.000200	0.000110	0.000330	0.0000499	0.245	0	1.18	5.68
2_3_114	W-2	Supplemental	Conductivity (field)	us/cm	16	0	0%	2018-04-11 to 2022-06-14	Nonparametric	Nonparametric	6800	6912	4531	7982	703	0.103	285	-2.19	7.94
2_3_122	W-2	Supplemental	Oxidation-reduction Potential (field)	mV	16	0	0%	2018-04-11 to 2022-06-14	Nonparametric	Nonparametric	262	107	-76.3	2721	660	2.52	72.5	3.91	15.5
2_3_126	W-2	Supplemental	Radium-226	pci/l	15	5	33%	2018-04-11 to 2022-06-14	Gamma; Lognormal	Gamma	0.256	0.237	0.0991	0.628	0.135	0.527	0.0711	1.76	3.63
2_3_128	W-2	Supplemental	Radium-228	pci/l	15	4	27%	2018-04-11 to 2022-06-14	Gamma; Lognormal	Gamma	0.992	0.629	0.413	2.75	0.727	0.732	0.244	1.62	1.65
2_3_132	W-2	Supplemental	Temperature (field)	deg c	16	0	0%	2018-04-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	10.1	10.1	8.30	11.8	1.08	0.107	1.11	-0.129	-0.825
2_3_133	W-2	Supplemental	Temperature (lab)	deg c	15	0	0%	2018-04-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	20.6	20.8	18.4	22.2	1.07	0.0518	1.19	-0.411	-0.164
2_3_136	W-2	Supplemental	Total Suspended Solids	mg/l	13	3	23%	2018-05-14 to 2022-06-14	Gamma; Lognormal	Gamma	2.99	1.60	1.10	14.0	3.50	1.17	0.741	2.98	9.60
2_3_137	W-2	Supplemental	Turbidity (field)	ntu	16	0	0%	2018-04-11 to 2022-06-14	Gamma; Normal	Gamma	1.29	0.975	0.0200	4.12	1.34	1.03	1.41	0.860	-0.403
3_1_108	W-4	Appendix III	Boron	mg/l	14	0	0%	2018-04-11 to 2022-06-14	Gamma; Lognormal	Gamma	0.968	0.940	0.340	2.20	0.423	0.437	0.237	1.79	5.71
3_1_110	W-4	Appendix III	Calcium	mg/l	15	0	0%	2018-04-11 to 2022-06-14	Nonparametric	Nonparametric	341	360	78.0	430	79.4	0.233	29.6	-2.81	9.58
3_1_111	W-4	Appendix III	Chloride (as Cl)	mg/l	15	0	0%	2018-04-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	355	360	280	390	29.7	0.0838	29.6	-1.26	1.64
3_1_115	W-4	Appendix III	Fluoride	mg/l	16	6	38%	2018-04-11 to 2022-06-14	Nonparametric	Nonparametric	2.18	0.605	0.170	26.0	6.36	2.92	0.133	3.99	15.9
3_1_123	W-4	Appendix III	pH (field)	su	16	0	0%	2018-04-11 to 2022-06-14	Lognormal; Normal	Lognormal	7.11	7.11	6.82	7.45	0.140	0.0196	0.0667	0.557	2.13
3_1_124	W-4	Appendix III	pH (lab)	su	15	0	0%	2018-04-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	7.48	7.50	7.30	7.60	0.0941	0.0126	0.148	-0.142	-0.849
3_1_131	W-4	Appendix III	Sulfate (as SO4)	mg/l	15	0	0%	2018-04-11 to 2022-06-14	Nonparametric	Nonparametric	13200	13000	12000	15000	775	0.0587	0	0.681	1.08
3_1_135	W-4	Appendix III	Total Dissolved Solids	mg/l	15	0	0%	2018-04-11 to 2022-06-14	Gamma; Normal	Gamma	19267	20000	11000	25000	3011	0.156	1481	-1.20	4.12
3_2_104	W-4	Appendix IV	Antimony	mg/l	11	11	100%	2018-06-11 to 2022-06-14		Nonparametric	0.000555	0.000570	0.000400	0.000570	0.0000513	0.0924	0	-3.32	11.0
3_2_105	W-4	Appendix IV	Arsenic	mg/l	11	10	91%	2018-06-11 to 2022-06-14		Nonparametric	0.000742	0.000750	0.000660	0.000750	0.0000271	0.0366	0	-3.32	11.0
3_2_106	W-4	Appendix IV	Barium	mg/l	13	0	0%	2018-06-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	0.00832	0.00830	0.00740	0.00930	0.000678	0.0815	0.000889	0.0904	-1.49
3_2_107	W-4	Appendix IV	Beryllium	mg/l	11	11	100%	2018-06-11 to 2022-06-14		Nonparametric	0.000345	0.000310	0.0000800	0.000620	0.000152	0.440	0	0.776	1.43
3_2_109	W-4	Appendix IV	Cadmium	mg/l	13	4	31%	2018-06-11 to 2022-06-14	Lognormal	Lognormal	0.000238	0.000230	0.000200	0.000330	0.0000434	0.182	0.0000296	1.35	0.883
3_2_112	W-4	Appendix IV	Chromium, Total	mg/l	11	10	91%	2018-06-11 to 2022-06-14		Nonparametric	0.00130	0.000980	0.000500	0.00250	0.000678	0.523	0	1.17	0.000602
3_2_113	W-4	Appendix IV	Cobalt	mg/l	13	0	0%	2018-06-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	0.00671	0.00670	0.00570	0.00790	0.000563	0.0840	0.000444	0.322	0.752
3_2_116	W-4	Appendix IV	Fluoride (App IV)	mg/l	16	6	38%	2018-04-11 to 2022-06-14	Nonparametric	Nonparametric	2.18	0.605	0.170	26.0	6.36	2.92	0.133	3.99	15.9
3_2_117	W-4	Appendix IV	Lead	mg/l	11	11	100%	2018-06-11 to 2022-06-14		Nonparametric	0.000425	0.000450	0.000180	0.000450	0.0000814	0.191	0	-3.32	11.0
3_2_118	W-4	Appendix IV	Lithium	mg/l	13	0	0%	2018-06-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	0.746	0.720	0.560	0.990	0.133	0.178	0.133	0.490	-0.531
3_2_120	W-4	Appendix IV	Mercury	mg/l	11	11	100%	2018-06-11 to 2022-06-14		Nonparametric	0.000114	0.000130	0.0000270	0.000130	0.0000356	0.311	0	-2.12	3.46
3_2_121	W-4	Appendix IV	Molybdenum	mg/l	13	0	0%	2018-06-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	0.00299	0.00300	0.00260	0.00340	0.000250	0.0835	0.000296	0.330	-0.643
3_2_127	W-4	Appendix IV	Radium-226+228	pci/l	15	2	13%	2018-04-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	0.879	0.712	0.418	1.87	0.411	0.468	0.384	1.09	0.851
3_2_129	W-4	Appendix IV	Selenium	mg/l	13	5	38%	2018-06-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	0.00136	0.00110	0.000370	0.00270	0.000639	0.469	0.000593	0.601	0.0270

(Table continues on next page)

^a Non-detects are excluded from goodness-of-fit tests.

Table 1: Summary Statistics, Non-Detects Included *(continued)*

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Date Range	Distributions Fit ^a	Recommended Distribution	Mean	Median	Minimum	Maximum	SD	CV	MAD/0.675	Skewness	Kurtosis
3_2_134	W-4	Appendix IV	Thallium	mg/l	11	11	100%	2018-06-11 to 2022-06-14		Nonparametric	0.000190	0.000200	0.0000890	0.000200	0.0000335	0.176	0	-3.32	11.0
3_3_114	W-4	Supplemental	Conductivity (field)	us/cm	16	0	0%	2018-04-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	17187	17639	14864	18373	1006	0.0586	985	-0.759	-0.0241
3_3_122	W-4	Supplemental	Oxidation-reduction Potential (field)	mV	16	0	0%	2018-04-11 to 2022-06-14	Normal	Normal	57.6	61	-105	185	66.9	1.16	41.7	-0.693	1.85
3_3_126	W-4	Supplemental	Radium-226	pci/l	15	7	47%	2018-04-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	0.214	0.184	0.0945	0.443	0.0961	0.449	0.0726	1.10	0.786
3_3_128	W-4	Supplemental	Radium-228	pci/l	15	6	40%	2018-04-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	0.723	0.560	0.394	1.68	0.362	0.501	0.159	1.67	2.41
3_3_132	W-4	Supplemental	Temperature (field)	deg c	16	0	0%	2018-04-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	9.47	9.32	7.70	11.6	1.21	0.128	1.56	0.116	-1.08
3_3_133	W-4	Supplemental	Temperature (lab)	deg c	15	0	0%	2018-04-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	20.6	20.4	19.0	23.1	1.31	0.0633	1.33	0.656	-0.648
3_3_136	W-4	Supplemental	Total Suspended Solids	mg/l	13	3	23%	2018-05-14 to 2022-06-14	Gamma; Lognormal	Gamma	6.61	4.40	1.10	25.0	7.53	1.14	4.15	1.81	2.52
3_3_137	W-4	Supplemental	Turbidity (field)	ntu	16	0	0%	2018-04-11 to 2022-06-14	Normal	Normal	1.73	1.73	0.0200	4.10	1.21	0.700	1.15	0.281	-0.367

^a Non-detects are excluded from goodness-of-fit tests.

Table 2: Summary Statistics, Non-Detects Excluded

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Date Range	Distributions Fit	Recommended Distribution	Mean	Median	Minimum	Maximum	SD	CV	MAD/0.675	Skewness	Kurtosis
1_1_108	W-1	Appendix III	Boron	mg/l	14	0	0%	2018-04-11 to 2022-06-13	Gamma; Lognormal; Normal	Gamma	0.604	0.620	0.480	0.840	0.0889	0.147	0.0593	1.19	3.09
1_1_110	W-1	Appendix III	Calcium	mg/l	15	0	0%	2018-04-11 to 2022-06-13	Gamma; Lognormal; Normal	Gamma	338	340	300	380	22.7	0.0673	14.8	0.242	0.567
1_1_111	W-1	Appendix III	Chloride (as Cl)	mg/l	15	0	0%	2018-04-11 to 2022-06-13	Lognormal; Normal	Lognormal	39.4	41.0	21.0	67.0	11.3	0.286	5.93	0.470	1.81
1_1_115	W-1	Appendix III	Fluoride	mg/l	16	2	12%	2018-04-11 to 2022-06-13	Nonparametric	Nonparametric	0.638	0.320	0.180	3.40	0.856	1.34	0.0667	2.99	9.49
1_1_123	W-1	Appendix III	pH (field)	su	16	0	0%	2018-04-11 to 2022-06-13	Gamma; Lognormal; Normal	Gamma	7.21	7.20	6.91	7.44	0.130	0.0181	0.0963	-0.163	1.06
1_1_124	W-1	Appendix III	pH (lab)	su	15	0	0%	2018-04-11 to 2022-06-13	Gamma; Lognormal; Normal	Gamma	7.61	7.60	7.40	7.80	0.119	0.0156	0.148	0.00350	-0.791
1_1_131	W-1	Appendix III	Sulfate (as SO4)	mg/l	15	0	0%	2018-04-11 to 2022-06-13	Nonparametric	Nonparametric	2787	2700	2500	4500	482	0.173	148	3.64	13.8
1_1_135	W-1	Appendix III	Total Dissolved Solids	mg/l	15	0	0%	2018-04-11 to 2022-06-13	Nonparametric	Nonparametric	4160	4300	1300	4600	814	0.196	296	-3.51	13.0
1_2_106	W-1	Appendix IV	Barium	mg/l	13	0	0%	2018-06-11 to 2022-06-13	Gamma; Lognormal; Normal	Gamma	0.00980	0.00960	0.00860	0.0110	0.000790	0.0806	0.000593	0.449	-0.641
1_2_107	W-1	Appendix IV	Beryllium	mg/l	11	7	64%	2018-06-11 to 2022-06-13		Nonparametric	0.000777	0.000830	0.000350	0.00110	0.000327	0.421	0.000289	-0.757	-0.369
1_2_109	W-1	Appendix IV	Cadmium	mg/l	13	9	69%	2018-06-11 to 2022-06-13		Nonparametric	0.000310	0.000315	0.000240	0.000370	0.0000648	0.209	0.0000741	-0.162	-4.85
1_2_112	W-1	Appendix IV	Chromium, Total	mg/l	11	10	91%	2018-06-11 to 2022-06-13		Nonparametric	0.00170	0.00170	0.00170	0.00170	NA	NA	0	NA	NA
1_2_113	W-1	Appendix IV	Cobalt	mg/l	13	0	0%	2018-06-11 to 2022-06-13	Gamma; Lognormal; Normal	Gamma	0.000944	0.000880	0.000760	0.00130	0.000181	0.192	0.000119	0.981	-0.363
1_2_116	W-1	Appendix IV	Fluoride (App IV)	mg/l	16	2	12%	2018-04-11 to 2022-06-13	Nonparametric	Nonparametric	0.638	0.320	0.180	3.40	0.856	1.34	0.0667	2.99	9.49
1_2_117	W-1	Appendix IV	Lead	mg/l	11	10	91%	2018-06-11 to 2022-06-13		Nonparametric	0.00170	0.00170	0.00170	0.00170	NA	NA	0	NA	NA
1_2_118	W-1	Appendix IV	Lithium	mg/l	13	0	0%	2018-06-11 to 2022-06-13	Gamma; Lognormal; Normal	Gamma	0.280	0.280	0.250	0.320	0.0208	0.0743	0.0148	0.328	-0.109
1_2_121	W-1	Appendix IV	Molybdenum	mg/l	13	0	0%	2018-06-11 to 2022-06-13	Gamma; Lognormal	Gamma	0.00335	0.00330	0.00290	0.00460	0.000443	0.132	0.000148	1.92	5.24
1_2_127	W-1	Appendix IV	Radium-226+228	pci/l	15	3	20%	2018-04-11 to 2022-06-13	Gamma; Lognormal; Normal	Gamma	0.860	0.836	0.485	1.26	0.225	0.261	0.292	0.0615	-0.499
1_2_129	W-1	Appendix IV	Selenium	mg/l	13	0	0%	2018-06-11 to 2022-06-13	Normal	Normal	0.0106	0.0110	0.000940	0.0160	0.00434	0.410	0.00296	-1.04	0.987
1_2_134	W-1	Appendix IV	Thallium	mg/l	11	10	91%	2018-06-11 to 2022-06-13		Nonparametric	0.000440	0.000440	0.000440	0.000440	NA	NA	0	NA	NA
1_3_114	W-1	Supplemental	Conductivity (field)	us/cm	16	0	0%	2018-04-11 to 2022-06-13	Gamma; Lognormal; Normal	Gamma	4550	4572	4216	4732	139	0.0306	128	-1.01	0.891
1_3_122	W-1	Supplemental	Oxidation-reduction Potential (field)	mV	16	0	0%	2018-04-11 to 2022-06-13	Nonparametric	Nonparametric	268	122	-89.6	2721	658	2.46	46.4	3.91	15.5
1_3_126	W-1	Supplemental	Radium-226	pci/l	15	8	53%	2018-04-11 to 2022-06-13	Gamma; Lognormal; Normal	Nonparametric	0.257	0.248	0.0884	0.404	0.126	0.492	0.185	-0.210	-1.83
1_3_128	W-1	Supplemental	Radium-228	pci/l	15	6	40%	2018-04-11 to 2022-06-13	Gamma; Lognormal; Normal	Gamma	0.787	0.746	0.481	1.16	0.229	0.291	0.274	0.448	-0.970
1_3_132	W-1	Supplemental	Temperature (field)	deg c	16	0	0%	2018-04-11 to 2022-06-13	Gamma; Lognormal; Normal	Gamma	10.3	10.2	8.50	11.9	0.996	0.0965	1.19	-0.116	-0.953
1_3_133	W-1	Supplemental	Temperature (lab)	deg c	15	0	0%	2018-04-11 to 2022-06-13	Gamma; Lognormal; Normal	Gamma	20.6	20.7	19.1	21.9	0.978	0.0475	1.33	-0.257	-1.21
1_3_136	W-1	Supplemental	Total Suspended Solids	mg/l	13	6	46%	2018-05-14 to 2022-06-13	Nonparametric	Nonparametric	2.97	2.40	2.00	5.20	1.40	0.472	0.593	1.19	-0.722
1_3_137	W-1	Supplemental	Turbidity (field)	ntu	16	0	0%	2018-04-11 to 2022-06-13	Normal	Normal	0.887	0.860	0.0200	2.44	0.687	0.775	0.578	0.864	0.741
2_1_108	W-2	Appendix III	Boron	mg/l	14	0	0%	2018-04-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	9.30	9.05	7.80	12.0	1.19	0.128	1.33	0.923	0.518
2_1_110	W-2	Appendix III	Calcium	mg/l	15	0	0%	2018-04-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	361	370	300	410	31.4	0.0868	29.6	-0.623	-0.0547
2_1_111	W-2	Appendix III	Chloride (as Cl)	mg/l	15	0	0%	2018-04-11 to 2022-06-14	Gamma; Normal	Gamma	86.5	85.0	64.0	110	9.72	0.112	4.44	0.200	3.28
2_1_115	W-2	Appendix III	Fluoride	mg/l	16	2	12%	2018-04-11 to 2022-06-14	Nonparametric	Nonparametric	1.38	0.535	0.450	6.70	2.01	1.46	0.0667	2.31	4.18
2_1_123	W-2	Appendix III	pH (field)	su	16	0	0%	2018-04-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	7.34	7.34	6.90	7.65	0.163	0.0222	0.104	-0.811	3.15
2_1_124	W-2	Appendix III	pH (lab)	su	15	0	0%	2018-04-11 to 2022-06-14		Nonparametric	7.63	7.60	7.50	7.70	0.0617	0.00809	0	-0.312	-0.404
2_1_131	W-2	Appendix III	Sulfate (as SO4)	mg/l	15	0	0%	2018-04-11 to 2022-06-14	Nonparametric	Nonparametric	4507	4500	4100	5400	306	0.0679	148	1.64	4.99
2_1_135	W-2	Appendix III	Total Dissolved Solids	mg/l	15	0	0%	2018-04-11 to 2022-06-14	Nonparametric	Nonparametric	6760	7100	4100	7300	810	0.120	296	-2.82	9.09
2_2_104	W-2	Appendix IV	Antimony	mg/l	11	10	91%	2018-06-11 to 2022-06-14		Nonparametric	0.00120	0.00120	0.00120	0.00120	NA	NA	0	NA	NA
2_2_106	W-2	Appendix IV	Barium	mg/l	13	0	0%	2018-06-11 to 2022-06-14	Nonparametric	Nonparametric	0.00678	0.00600	0.00490	0.0130	0.00223	0.330	0.000741	2.14	4.81
2_2_107	W-2	Appendix IV	Beryllium	mg/l	11	8	73%	2018-06-11 to 2022-06-14		Nonparametric	0.000720	0.000680	0.000560	0.000920	0.000183	0.255	0.000178	0.935	NA
2_2_109	W-2	Appendix IV	Cadmium	mg/l	13	9	69%	2018-06-11 to 2022-06-14		Nonparametric	0.000327	0.000285	0.000220	0.000520	0.000132	0.403	0.0000519	1.66	3.12
2_2_112	W-2	Appendix IV	Chromium, Total	mg/l	11	10	91%	2018-06-11 to 2022-06-14		Nonparametric	0.00150	0.00150	0.00150	0.00150	NA	NA	0	NA	NA
2_2_113	W-2	Appendix IV	Cobalt	mg/l	13	0	0%	2018-06-11 to 2022-06-14	Gamma; Lognormal	Gamma	0.00412	0.00180	0.00110	0.0200	0.00522	1.27	0.00104	2.71	7.98
2_2_116	W-2	Appendix IV	Fluoride (App IV)	mg/l	16	2	12%	2018-04-11 to 2022-06-14	Nonparametric	Nonparametric	1.38	0.535	0.450	6.70	2.01	1.46	0.0667	2.31	4.18

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Table 2: Summary Statistics, Non-Detects Excluded *(continued)*

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Date Range	Distributions Fit	Recommended Distribution	Mean	Median	Minimum	Maximum	SD	CV	MAD/0.675	Skewness	Kurtosis
2_2_117	W-2	Appendix IV	Lead	mg/l	11	9	82%	2018-06-11 to 2022-06-14		Nonparametric	0.000910	0.000910	0.000220	0.00160	0.000976	1.07	0.00102	NA	NA
2_2_118	W-2	Appendix IV	Lithium	mg/l	13	0	0%	2018-06-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	0.641	0.620	0.550	0.760	0.0612	0.0955	0.0444	0.614	-0.416
2_2_121	W-2	Appendix IV	Molybdenum	mg/l	13	0	0%	2018-06-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	0.00386	0.00350	0.00280	0.00570	0.000901	0.233	0.000593	1.14	0.431
2_2_127	W-2	Appendix IV	Radium-226+228	pci/l	15	3	20%	2018-04-11 to 2022-06-14	Gamma; Lognormal	Gamma	1.37	1.18	0.584	3.01	0.844	0.616	0.620	1.32	0.592
2_2_129	W-2	Appendix IV	Selenium	mg/l	13	0	0%	2018-06-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	0.00315	0.00320	0.00200	0.00390	0.000571	0.181	0.000593	-0.525	-0.497
2_2_134	W-2	Appendix IV	Thallium	mg/l	11	9	82%	2018-06-11 to 2022-06-14		Nonparametric	0.000220	0.000220	0.000110	0.000330	0.000156	0.707	0.000163	NA	NA
2_3_114	W-2	Supplemental	Conductivity (field)	us/cm	16	0	0%	2018-04-11 to 2022-06-14	Nonparametric	Nonparametric	6800	6912	4531	7982	703	0.103	285	-2.19	7.94
2_3_122	W-2	Supplemental	Oxidation-reduction Potential (field)	mV	16	0	0%	2018-04-11 to 2022-06-14	Nonparametric	Nonparametric	262	107	-76.3	2721	660	2.52	72.5	3.91	15.5
2_3_126	W-2	Supplemental	Radium-226	pci/l	15	5	33%	2018-04-11 to 2022-06-14	Gamma; Lognormal	Gamma	0.296	0.250	0.151	0.628	0.145	0.489	0.0630	1.64	2.44
2_3_128	W-2	Supplemental	Radium-228	pci/l	15	4	27%	2018-04-11 to 2022-06-14	Gamma; Lognormal	Gamma	1.18	1.00	0.487	2.75	0.773	0.657	0.570	1.25	0.323
2_3_132	W-2	Supplemental	Temperature (field)	deg c	16	0	0%	2018-04-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	10.1	10.1	8.30	11.8	1.08	0.107	1.11	-0.129	-0.825
2_3_133	W-2	Supplemental	Temperature (lab)	deg c	15	0	0%	2018-04-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	20.6	20.8	18.4	22.2	1.07	0.0518	1.19	-0.411	-0.164
2_3_136	W-2	Supplemental	Total Suspended Solids	mg/l	13	3	23%	2018-05-14 to 2022-06-14	Gamma; Lognormal	Gamma	3.56	2.60	1.20	14.0	3.85	1.08	1.78	2.66	7.60
2_3_137	W-2	Supplemental	Turbidity (field)	ntu	16	0	0%	2018-04-11 to 2022-06-14	Gamma; Normal	Gamma	1.29	0.975	0.0200	4.12	1.34	1.03	1.41	0.860	-0.403
3_1_108	W-4	Appendix III	Boron	mg/l	14	0	0%	2018-04-11 to 2022-06-14	Gamma; Lognormal	Gamma	0.968	0.940	0.340	2.20	0.423	0.437	0.237	1.79	5.71
3_1_110	W-4	Appendix III	Calcium	mg/l	15	0	0%	2018-04-11 to 2022-06-14	Nonparametric	Nonparametric	341	360	78.0	430	79.4	0.233	29.6	-2.81	9.58
3_1_111	W-4	Appendix III	Chloride (as Cl)	mg/l	15	0	0%	2018-04-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	355	360	280	390	29.7	0.0838	29.6	-1.26	1.64
3_1_115	W-4	Appendix III	Fluoride	mg/l	16	6	38%	2018-04-11 to 2022-06-14	Nonparametric	Nonparametric	3.13	0.615	0.210	26.0	8.04	2.57	0.0889	3.16	9.99
3_1_123	W-4	Appendix III	pH (field)	su	16	0	0%	2018-04-11 to 2022-06-14	Lognormal; Normal	Lognormal	7.11	7.11	6.82	7.45	0.140	0.0196	0.0667	0.557	2.13
3_1_124	W-4	Appendix III	pH (lab)	su	15	0	0%	2018-04-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	7.48	7.50	7.30	7.60	0.0941	0.0126	0.148	-0.142	-0.849
3_1_131	W-4	Appendix III	Sulfate (as SO4)	mg/l	15	0	0%	2018-04-11 to 2022-06-14	Nonparametric	Nonparametric	13200	13000	12000	15000	775	0.0587	0	0.681	1.08
3_1_135	W-4	Appendix III	Total Dissolved Solids	mg/l	15	0	0%	2018-04-11 to 2022-06-14	Gamma; Normal	Gamma	19267	20000	11000	25000	3011	0.156	1481	-1.20	4.12
3_2_105	W-4	Appendix IV	Arsenic	mg/l	11	10	91%	2018-06-11 to 2022-06-14		Nonparametric	0.000660	0.000660	0.000660	0.000660	NA	NA	0	NA	NA
3_2_106	W-4	Appendix IV	Barium	mg/l	13	0	0%	2018-06-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	0.00832	0.00830	0.00740	0.00930	0.000678	0.0815	0.000889	0.0904	-1.49
3_2_109	W-4	Appendix IV	Cadmium	mg/l	13	4	31%	2018-06-11 to 2022-06-14	Lognormal	Lognormal	0.000247	0.000230	0.000200	0.000330	0.0000464	0.188	0.0000148	1.28	0.317
3_2_112	W-4	Appendix IV	Chromium, Total	mg/l	11	10	91%	2018-06-11 to 2022-06-14		Nonparametric	0.00190	0.00190	0.00190	0.00190	NA	NA	0	NA	NA
3_2_113	W-4	Appendix IV	Cobalt	mg/l	13	0	0%	2018-06-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	0.00671	0.00670	0.00570	0.00790	0.000563	0.0840	0.000444	0.322	0.752
3_2_116	W-4	Appendix IV	Fluoride (App IV)	mg/l	16	6	38%	2018-04-11 to 2022-06-14	Nonparametric	Nonparametric	3.13	0.615	0.210	26.0	8.04	2.57	0.0889	3.16	9.99
3_2_118	W-4	Appendix IV	Lithium	mg/l	13	0	0%	2018-06-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	0.746	0.720	0.560	0.990	0.133	0.178	0.133	0.490	-0.531
3_2_121	W-4	Appendix IV	Molybdenum	mg/l	13	0	0%	2018-06-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	0.00299	0.00300	0.00260	0.00340	0.000250	0.0835	0.000296	0.330	-0.643
3_2_127	W-4	Appendix IV	Radium-226+228	pci/l	15	2	13%	2018-04-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	0.940	0.936	0.418	1.87	0.409	0.435	0.418	0.972	0.726
3_2_129	W-4	Appendix IV	Selenium	mg/l	13	5	38%	2018-06-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	0.00172	0.00170	0.00110	0.00270	0.000531	0.308	0.000444	0.615	0.408
3_3_114	W-4	Supplemental	Conductivity (field)	us/cm	16	0	0%	2018-04-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	17187	17639	14864	18373	1006	0.0586	985	-0.759	-0.0241
3_3_122	W-4	Supplemental	Oxidation-reduction Potential (field)	mV	16	0	0%	2018-04-11 to 2022-06-14	Normal	Normal	57.6	61	-105	185	66.9	1.16	41.7	-0.693	1.85
3_3_126	W-4	Supplemental	Radium-226	pci/l	15	7	47%	2018-04-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	0.256	0.237	0.135	0.443	0.107	0.417	0.0985	0.659	-0.573
3_3_128	W-4	Supplemental	Radium-228	pci/l	15	6	40%	2018-04-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	0.883	0.753	0.475	1.68	0.395	0.447	0.286	1.10	0.681
3_3_132	W-4	Supplemental	Temperature (field)	deg c	16	0	0%	2018-04-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	9.47	9.32	7.70	11.6	1.21	0.128	1.56	0.116	-1.08
3_3_133	W-4	Supplemental	Temperature (lab)	deg c	15	0	0%	2018-04-11 to 2022-06-14	Gamma; Lognormal; Normal	Gamma	20.6	20.4	19.0	23.1	1.31	0.0633	1.33	0.656	-0.648
3_3_136	W-4	Supplemental	Total Suspended Solids	mg/l	13	3	23%	2018-05-14 to 2022-06-14	Gamma; Lognormal	Gamma	8.26	5.20	1.60	25.0	7.91	0.957	3.85	1.55	1.36
3_3_137	W-4	Supplemental	Turbidity (field)	ntu	16	0	0%	2018-04-11 to 2022-06-14	Normal	Normal	1.73	1.73	0.0200	4.10	1.21	0.700	1.15	0.281	-0.367

Hayden Alluvial Downgradient Wells W-1, W-2, W-4 as of June 2022																						HDR	
Table 3: Goodness-of-Fit Tests, Non-Detects Excluded																							
ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Normal		Lognormal		Gamma				Log-SD (NDs excl.)	ProUCL Distributions Fit	Recommended Distribution					
								S-W		Lilliefors		S-W		Lilliefors					K-S		A-D		
								Stat.	p-Value	Stat.	p-Value	Stat.	p-Value	Stat.	p-Value				Stat.	p-Value	Stat.	p-Value	
1_1_108	W-1	Appendix III	Boron	mg/l	14	0	0%	0.879	0.057	0.201	0.130	0.918	0.207	0.174	0.295	0.177	>= 0.10	0.540	>= 0.10	0.141	Gamma; Lognormal; Normal	Gamma	
1_1_110	W-1	Appendix III	Calcium	mg/l	15	0	0%	0.909	0.132	0.198	0.116	0.912	0.146	0.186	0.176	0.189	>= 0.10	0.626	0.05 <= p < 0.10	0.067	Gamma; Lognormal; Normal	Gamma	
1_1_111	W-1	Appendix III	Chloride (as Cl)	mg/l	15	0	0%	0.902	0.102	0.223	0.043	0.897	0.085	0.271	0.004	0.260	< 0.01	0.770	0.01 <= p < 0.05	0.302	Lognormal; Normal	Lognormal	
1_1_115	W-1	Appendix III	Fluoride	mg/l	16	2	12%	0.536	0.000	0.408	0.000	0.773	0.002	0.346	0.000	0.393	< 0.01	1.959	< 0.01	0.806	Nonparametric	Nonparametric	
1_1_123	W-1	Appendix III	pH (field)	su	16	0	0%	0.939	0.337	0.155	0.384	0.938	0.324	0.152	0.418	0.152	>= 0.10	0.495	>= 0.10	0.018	Gamma; Lognormal; Normal	Gamma	
1_1_124	W-1	Appendix III	pH (lab)	su	15	0	0%	0.931	0.279	0.167	0.311	0.931	0.281	0.168	0.303	0.176	>= 0.10	0.532	>= 0.10	0.016	Gamma; Lognormal; Normal	Gamma	
1_1_131	W-1	Appendix III	Sulfate (as SO4)	mg/l	15	0	0%	0.450	0.000	0.422	0.000	0.504	0.000	0.390	0.000	0.401	< 0.01	3.104	< 0.01	0.140	Nonparametric	Nonparametric	
1_1_135	W-1	Appendix III	Total Dissolved Solids	mg/l	15	0	0%	0.494	0.000	0.404	0.000	0.406	0.000	0.458	0.000	0.445	< 0.01	3.494	< 0.01	0.316	Nonparametric	Nonparametric	
1_2_104	W-1	Appendix IV	Antimony	mg/l	11	11	100%	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric	
1_2_105	W-1	Appendix IV	Arsenic	mg/l	11	11	100%	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric	
1_2_106	W-1	Appendix IV	Barium	mg/l	13	0	0%	0.908	0.170	0.169	0.391	0.920	0.252	0.162	0.460	0.170	>= 0.10	0.485	>= 0.10	0.080	Gamma; Lognormal; Normal	Gamma	
1_2_107	W-1	Appendix IV	Beryllium	mg/l	11	7	64%	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		0.509		Nonparametric	
1_2_109	W-1	Appendix IV	Cadmium	mg/l	13	9	69%	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		0.214		Nonparametric	
1_2_112	W-1	Appendix IV	Chromium, Total	mg/l	11	10	91%	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric	
1_2_113	W-1	Appendix IV	Cobalt	mg/l	13	0	0%	0.853	0.031	0.179	0.307	0.880	0.071	0.173	0.361	0.183	>= 0.10	0.728	0.05 <= p < 0.10	0.181	Gamma; Lognormal; Normal	Gamma	
1_2_116	W-1	Appendix IV	Fluoride (App IV)	mg/l	16	2	12%	0.536	0.000	0.408	0.000	0.773	0.002	0.346	0.000	0.393	< 0.01	1.959	< 0.01	0.806	Nonparametric	Nonparametric	
1_2_117	W-1	Appendix IV	Lead	mg/l	11	10	91%	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric	
1_2_118	W-1	Appendix IV	Lithium	mg/l	13	0	0%	0.951	0.609	0.162	0.465	0.954	0.659	0.152	0.570	0.148	>= 0.10	0.291	>= 0.10	0.074	Gamma; Lognormal; Normal	Gamma	
1_2_120	W-1	Appendix IV	Mercury	mg/l	11	11	100%	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric	
1_2_121	W-1	Appendix IV	Molybdenum	mg/l	13	0	0%	0.781	0.004	0.241	0.038	0.829	0.015	0.222	0.080	0.230	0.05 <= p < 0.10	0.922	0.01 <= p < 0.05	0.122	Gamma; Lognormal	Gamma	
1_2_127	W-1	Appendix IV	Radium-226+228	pci/l	15	3	20%	0.979	0.980	0.134	0.797	0.968	0.884	0.158	0.563	0.146	>= 0.10	0.208	>= 0.10	0.275	Gamma; Lognormal; Normal	Gamma	
1_2_129	W-1	Appendix IV	Selenium	mg/l	13	0	0%	0.902	0.142	0.216	0.099	0.679	0.000	0.328	0.000	0.306	< 0.01	1.274	< 0.01	0.770	Normal	Normal	
1_2_134	W-1	Appendix IV	Thallium	mg/l	11	10	91%	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric	
1_3_114	W-1	Supplemental	Conductivity (field)	us/cm	16	0	0%	0.930	0.240	0.148	0.458	0.922	0.179	0.155	0.388	0.148	>= 0.10	0.440	>= 0.10	0.031	Gamma; Lognormal; Normal	Gamma	
1_3_122	W-1	Supplemental	Oxidation-reduction Potential (field)	mV	16	0	0%	0.374	0.000	0.467	0.000	NA	NA	NA	NA	NA		NA		NA		Nonparametric	
1_3_126	W-1	Supplemental	Radium-226	pci/l	15	8	53%	0.911	0.404	0.217	0.406	0.887	0.259	0.211	0.450	0.234	>= 0.10	0.394	>= 0.10	0.596	Gamma; Lognormal; Normal	Nonparametric	
1_3_128	W-1	Supplemental	Radium-228	pci/l	15	6	40%	0.940	0.582	0.225	0.210	0.961	0.806	0.175	0.594	0.194	>= 0.10	0.271	>= 0.10	0.292	Gamma; Lognormal; Normal	Gamma	
1_3_132	W-1	Supplemental	Temperature (field)	deg c	16	0	0%	0.968	0.797	0.125	0.727	0.965	0.753	0.130	0.666	0.137	>= 0.10	0.266	>= 0.10	0.098	Gamma; Lognormal; Normal	Gamma	
1_3_133	W-1	Supplemental	Temperature (lab)	deg c	15	0	0%	0.924	0.224	0.128	0.732	0.921	0.201	0.134	0.670	0.138	>= 0.10	0.419	>= 0.10	0.048	Gamma; Lognormal; Normal	Gamma	
1_3_136	W-1	Supplemental	Total Suspended Solids	mg/l	13	6	46%	0.712	0.005	0.372	0.004	0.743	0.011	0.337	0.016	0.362	< 0.01	1.000	< 0.01	0.420	Nonparametric	Nonparametric	
1_3_137	W-1	Supplemental	Turbidity (field)	ntu	16	0	0%	0.917	0.149	0.162	0.312	0.737	0.000	0.310	0.000	0.235	0.01 <= p < 0.05	1.120	< 0.01	1.625	Normal	Normal	
2_1_108	W-2	Appendix III	Boron	mg/l	14	0	0%	0.926	0.267	0.162	0.406	0.948	0.537	0.151	0.526	0.156	>= 0.10	0.336	>= 0.10	0.124	Gamma; Lognormal; Normal	Gamma	
2_1_110	W-2	Appendix III	Calcium	mg/l	15	0	0%	0.928	0.259	0.209	0.077	0.912	0.146	0.220	0.049	0.222	0.01 <= p < 0.05	0.639	0.05 <= p < 0.10	0.090	Gamma; Lognormal; Normal	Gamma	
2_1_111	W-2	Appendix III	Chloride (as Cl)	mg/l	15	0	0%	0.887	0.060	0.218	0.054	0.876	0.041	0.232	0.028	0.221	0.05 <= p < 0.10	0.801	0.01 <= p < 0.05	0.114	Gamma; Normal	Gamma	
2_1_115	W-2	Appendix III	Fluoride	mg/l	16	2	12%	0.512	0.000	0.429	0.000	0.622	0.000	0.380	0.000	0.422	< 0.01	2.917	< 0.01	0.903	Nonparametric	Nonparametric	
2_1_123	W-2	Appendix III	pH (field)	su	16	0	0%	0.902	0.087	0.197	0.099	0.895	0.068	0.193	0.114	0.192	>= 0.10	0.688	0.05 <= p < 0.10	0.022	Gamma; Lognormal; Normal	Gamma	
2_1_124	W-2	Appendix III	pH (lab)	su	15	0	0%	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA		0.008		Nonparametric	
2_1_131	W-2	Appendix III	Sulfate (as SO4)	mg/l	15	0	0%	0.832	0.010	0.247	0.014	0.861	0.025	0.232	0.030	0.235	0.01 <= p < 0.05	0.766	0.01 <= p < 0.05	0.065	Nonparametric	Nonparametric	
2_1_135	W-2	Appendix III	Total Dissolved Solids	mg/l	15	0	0%	0.646	0.000	0.253	0.011	0.580	0.000	0.278	0.003	0.252	0.01 <= p < 0.05	2.028	< 0.01	0.145	Nonparametric	Nonparametric	
(Table continues on next page)																							
Note: p-values above 0.05 suggest a fit to the tested distribution; a distribution passes its GOF test when at least one of the two p-values is above 0.05.																							

Table 3: Goodness-of-Fit Tests, Non-Detects Excluded *(continued)*

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Normal		Lognormal				Gamma				Log-SD (NDs excl.)	ProUCL Distributions Fit	Recommended Distribution		
								S-W		Lilliefors		S-W		Lilliefors		K-S					A-D	
								Stat.	p-Value	Stat.	p-Value	Stat.	p-Value	Stat.	p-Value	Stat.	p-Value				Stat.	p-Value
2_2_104	W-2	Appendix IV	Antimony	mg/l	11	10	91%	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA	Nonparametric		
2_2_105	W-2	Appendix IV	Arsenic	mg/l	11	11	100%	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA	Nonparametric		
2_2_106	W-2	Appendix IV	Barium	mg/l	13	0	0%	0.742	0.002	0.294	0.003	0.837	0.020	0.265	0.013	0.281	< 0.01	1.013	< 0.01	0.273	Nonparametric	Nonparametric
2_2_107	W-2	Appendix IV	Beryllium	mg/l	11	8	73%	NA	NA	NA	NA	NA	NA	NA	NA		NA		0.250		Nonparametric	
2_2_109	W-2	Appendix IV	Cadmium	mg/l	13	9	69%	NA	NA	NA	NA	NA	NA	NA	NA		NA		0.365		Nonparametric	
2_2_112	W-2	Appendix IV	Chromium, Total	mg/l	11	10	91%	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric	
2_2_113	W-2	Appendix IV	Cobalt	mg/l	13	0	0%	0.626	0.000	0.287	0.004	0.879	0.068	0.198	0.178	0.226	0.05 <= p < 0.10	0.908	0.01 <= p < 0.05	0.905	Gamma; Lognormal	Gamma
2_2_116	W-2	Appendix IV	Fluoride (App IV)	mg/l	16	2	12%	0.512	0.000	0.429	0.000	0.622	0.000	0.380	0.000	0.422	< 0.01	2.917	< 0.01	0.903	Nonparametric	Nonparametric
2_2_117	W-2	Appendix IV	Lead	mg/l	11	9	82%	NA	NA	NA	NA	NA	NA	NA	NA		NA		1.403		Nonparametric	
2_2_118	W-2	Appendix IV	Lithium	mg/l	13	0	0%	0.934	0.388	0.197	0.180	0.947	0.550	0.180	0.298	0.185	>= 0.10	0.439	>= 0.10	0.094	Gamma; Lognormal; Normal	Gamma
2_2_120	W-2	Appendix IV	Mercury	mg/l	11	11	100%	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric	
2_2_121	W-2	Appendix IV	Molybdenum	mg/l	13	0	0%	0.870	0.052	0.194	0.198	0.918	0.237	0.174	0.344	0.188	>= 0.10	0.563	>= 0.10	0.217	Gamma; Lognormal; Normal	Gamma
2_2_127	W-2	Appendix IV	Radium-226+228	pci/l	15	3	20%	0.796	0.008	0.287	0.007	0.908	0.201	0.186	0.302	0.223	>= 0.10	0.641	0.05 <= p < 0.10	0.549	Gamma; Lognormal	Gamma
2_2_129	W-2	Appendix IV	Selenium	mg/l	13	0	0%	0.949	0.581	0.171	0.372	0.924	0.283	0.166	0.422	0.178	>= 0.10	0.357	>= 0.10	0.195	Gamma; Lognormal; Normal	Gamma
2_2_134	W-2	Appendix IV	Thallium	mg/l	11	9	82%	NA	NA	NA	NA	NA	NA	NA	NA		NA		0.777		Nonparametric	
2_3_114	W-2	Supplemental	Conductivity (field)	us/cm	16	0	0%	0.736	0.000	0.280	0.002	0.667	0.000	0.310	0.000	0.289	< 0.01	1.790	< 0.01	0.118	Nonparametric	Nonparametric
2_3_122	W-2	Supplemental	Oxidation-reduction Potential (field)	mV	16	0	0%	0.379	0.000	0.451	0.000	NA	NA	NA	NA	NA		NA		NA	Nonparametric	Nonparametric
2_3_126	W-2	Supplemental	Radium-226	pci/l	15	5	33%	0.818	0.024	0.293	0.015	0.935	0.499	0.209	0.245	0.236	>= 0.10	0.509	>= 0.10	0.423	Gamma; Lognormal	Gamma
2_3_128	W-2	Supplemental	Radium-228	pci/l	15	4	27%	0.810	0.013	0.282	0.015	0.899	0.178	0.198	0.265	0.216	>= 0.10	0.658	0.05 <= p < 0.10	0.591	Gamma; Lognormal	Gamma
2_3_132	W-2	Supplemental	Temperature (field)	deg c	16	0	0%	0.948	0.465	0.118	0.798	0.942	0.376	0.138	0.569	0.129	>= 0.10	0.360	>= 0.10	0.109	Gamma; Lognormal; Normal	Gamma
2_3_133	W-2	Supplemental	Temperature (lab)	deg c	15	0	0%	0.969	0.841	0.155	0.433	0.963	0.745	0.163	0.346	0.163	>= 0.10	0.264	>= 0.10	0.052	Gamma; Lognormal; Normal	Gamma
2_3_136	W-2	Supplemental	Total Suspended Solids	mg/l	13	3	23%	0.631	0.000	0.337	0.002	0.880	0.130	0.189	0.397	0.250	0.05 <= p < 0.10	0.731	0.05 <= p < 0.10	0.770	Gamma; Lognormal	Gamma
2_3_137	W-2	Supplemental	Turbidity (field)	ntu	16	0	0%	0.862	0.020	0.171	0.244	0.791	0.002	0.229	0.025	0.222	0.05 <= p < 0.10	0.916	0.01 <= p < 0.05	2.154	Gamma; Normal	Gamma
3_1_108	W-4	Appendix III	Boron	mg/l	14	0	0%	0.807	0.006	0.306	0.001	0.906	0.137	0.239	0.029	0.251	0.01 <= p < 0.05	0.686	0.05 <= p < 0.10	0.422	Gamma; Lognormal	Gamma
3_1_110	W-4	Appendix III	Calcium	mg/l	15	0	0%	0.677	0.000	0.265	0.006	0.494	0.000	0.360	0.000	0.333	< 0.01	2.623	< 0.01	0.403	Nonparametric	Nonparametric
3_1_111	W-4	Appendix III	Chloride (as Cl)	mg/l	15	0	0%	0.882	0.051	0.178	0.230	0.856	0.021	0.198	0.118	0.184	>= 0.10	0.740	0.01 <= p < 0.05	0.089	Gamma; Lognormal; Normal	Gamma
3_1_115	W-4	Appendix III	Fluoride	mg/l	16	6	38%	0.385	0.000	0.510	0.000	0.621	0.000	0.376	0.000	0.484	< 0.01	2.577	< 0.01	1.273	Nonparametric	Nonparametric
3_1_123	W-4	Appendix III	pH (field)	su	16	0	0%	0.912	0.125	0.233	0.021	0.915	0.139	0.229	0.025	0.228	0.01 <= p < 0.05	0.738	0.01 <= p < 0.05	0.020	Lognormal; Normal	Lognormal
3_1_124	W-4	Appendix III	pH (lab)	su	15	0	0%	0.880	0.048	0.202	0.100	0.881	0.048	0.202	0.103	0.210	0.05 <= p < 0.10	0.847	0.01 <= p < 0.05	0.013	Gamma; Lognormal; Normal	Gamma
3_1_131	W-4	Appendix III	Sulfate (as SO4)	mg/l	15	0	0%	0.832	0.010	0.335	0.000	0.837	0.012	0.327	0.000	0.332	< 0.01	1.386	< 0.01	0.058	Nonparametric	Nonparametric
3_1_135	W-4	Appendix III	Total Dissolved Solids	mg/l	15	0	0%	0.852	0.018	0.216	0.059	0.773	0.002	0.248	0.014	0.218	0.05 <= p < 0.10	1.172	< 0.01	0.180	Gamma; Normal	Gamma
3_2_104	W-4	Appendix IV	Antimony	mg/l	11	11	100%	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric	
3_2_105	W-4	Appendix IV	Arsenic	mg/l	11	10	91%	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric	
3_2_106	W-4	Appendix IV	Barium	mg/l	13	0	0%	0.916	0.223	0.205	0.140	0.916	0.223	0.205	0.142	0.215	>= 0.10	0.464	>= 0.10	0.082	Gamma; Lognormal; Normal	Gamma
3_2_107	W-4	Appendix IV	Beryllium	mg/l	11	11	100%	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric	
3_2_109	W-4	Appendix IV	Cadmium	mg/l	13	4	31%	0.797	0.019	0.335	0.004	0.837	0.053	0.308	0.014	0.320	0.01 <= p < 0.05	0.819	0.01 <= p < 0.05	0.175	Lognormal	Lognormal
3_2_112	W-4	Appendix IV	Chromium, Total	mg/l	11	10	91%	NA	NA	NA	NA	NA	NA	NA	NA		NA		NA		Nonparametric	
3_2_113	W-4	Appendix IV	Cobalt	mg/l	13	0	0%	0.984	0.993	0.121	0.870	0.988	0.999	0.131	0.786	0.124	>= 0.10	0.159	>= 0.10	0.084	Gamma; Lognormal; Normal	Gamma
3_2_116	W-4	Appendix IV	Fluoride (App IV)	mg/l	16	6	38%	0.385	0.000	0.510	0.000	0.621	0.000	0.376	0.000	0.484	< 0.01	2.577	< 0.01	1.273	Nonparametric	Nonparametric

(Table continues on next page)

Note: p-values above 0.05 suggest a fit to the tested distribution; a distribution passes its GOF test when at least one of the two p-values is above 0.05.

Table 3: Goodness-of-Fit Tests, Non-Detects Excluded *(continued)*

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Normal				Lognormal				Gamma				Log-SD (NDs excl.)	ProUCL Distributions Fit	Recommended Distribution
								S-W		Lilliefors		S-W		Lilliefors		K-S		A-D				
								Stat.	p-Value	Stat.	p-Value	Stat.	p-Value	Stat.	p-Value	Stat.	p-Value	Stat.	p-Value			
3_2_117	W-4	Appendix IV	Lead	mg/l	11	11	100%	NA	NA	NA	NA	NA	NA	NA	NA			NA		NA	Nonparametric	
3_2_118	W-4	Appendix IV	Lithium	mg/l	13	0	0%	0.933	0.376	0.193	0.203	0.947	0.552	0.164	0.445	0.176	>= 0.10	0.377	>= 0.10	0.176	Gamma; Lognormal; Normal	Gamma
3_2_120	W-4	Appendix IV	Mercury	mg/l	11	11	100%	NA	NA	NA	NA	NA	NA	NA	NA			NA		NA	Nonparametric	
3_2_121	W-4	Appendix IV	Molybdenum	mg/l	13	0	0%	0.948	0.563	0.180	0.297	0.955	0.682	0.165	0.435	0.169	>= 0.10	0.293	>= 0.10	0.083	Gamma; Lognormal; Normal	Gamma
3_2_127	W-4	Appendix IV	Radium-226+228	pci/l	15	2	13%	0.923	0.279	0.173	0.359	0.979	0.972	0.138	0.714	0.160	>= 0.10	0.247	>= 0.10	0.424	Gamma; Lognormal; Normal	Gamma
3_2_129	W-4	Appendix IV	Selenium	mg/l	13	5	38%	0.944	0.655	0.130	0.955	0.950	0.709	0.157	0.811	0.164	>= 0.10	0.231	>= 0.10	0.309	Gamma; Lognormal; Normal	Gamma
3_2_134	W-4	Appendix IV	Thallium	mg/l	11	11	100%	NA	NA	NA	NA	NA	NA	NA	NA			NA		NA	Nonparametric	
3_3_114	W-4	Supplemental	Conductivity (field)	us/cm	16	0	0%	0.897	0.073	0.234	0.019	0.889	0.053	0.238	0.016	0.244	0.01 <= p < 0.05	0.726	0.05 <= p < 0.10	0.060	Gamma; Lognormal; Normal	Gamma
3_3_122	W-4	Supplemental	Oxidation-reduction Potential (field)	mV	16	0	0%	0.938	0.327	0.190	0.127	NA	NA	NA	NA			NA		NA	Normal	Normal
3_3_126	W-4	Supplemental	Radium-226	pci/l	15	7	47%	0.918	0.414	0.235	0.218	0.940	0.610	0.208	0.389	0.233	>= 0.10	0.353	>= 0.10	0.415	Gamma; Lognormal; Normal	Gamma
3_3_128	W-4	Supplemental	Radium-228	pci/l	15	6	40%	0.900	0.251	0.184	0.507	0.958	0.779	0.138	0.892	0.156	>= 0.10	0.277	>= 0.10	0.420	Gamma; Lognormal; Normal	Gamma
3_3_132	W-4	Supplemental	Temperature (field)	deg c	16	0	0%	0.961	0.688	0.103	0.921	0.960	0.666	0.113	0.850	0.116	>= 0.10	0.247	>= 0.10	0.129	Gamma; Lognormal; Normal	Gamma
3_3_133	W-4	Supplemental	Temperature (lab)	deg c	15	0	0%	0.921	0.197	0.139	0.611	0.929	0.261	0.135	0.657	0.140	>= 0.10	0.423	>= 0.10	0.062	Gamma; Lognormal; Normal	Gamma
3_3_136	W-4	Supplemental	Total Suspended Solids	mg/l	13	3	23%	0.778	0.008	0.273	0.034	0.959	0.777	0.120	0.952	0.167	>= 0.10	0.406	>= 0.10	0.891	Gamma; Lognormal	Gamma
3_3_137	W-4	Supplemental	Turbidity (field)	ntu	16	0	0%	0.939	0.333	0.163	0.304	0.677	0.000	0.323	0.000	0.270	< 0.01	1.653	< 0.01	1.886	Normal	Normal

Note: p-values above 0.05 suggest a fit to the tested distribution; a distribution passes its GOF test when at least one of the two p-values is above 0.05.

Table 4: Autocorrelation Tests, Non-Detects Excluded

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Autocorrelation	Box-Ljung p-value	Sig.
1_1_108	W-1	Appendix III	Boron	mg/l	14	0	0%	0.005	0.985	
1_1_110	W-1	Appendix III	Calcium	mg/l	15	0	0%	0.132	0.573	
1_1_111	W-1	Appendix III	Chloride (as Cl)	mg/l	15	0	0%	0.489	0.037	*
1_1_115	W-1	Appendix III	Fluoride	mg/l	16	2	12%	0.186	0.440	
1_1_123	W-1	Appendix III	pH (field)	su	16	0	0%	0.043	0.851	
1_1_124	W-1	Appendix III	pH (lab)	su	15	0	0%	0.347	0.139	
1_1_131	W-1	Appendix III	Sulfate (as SO4)	mg/l	15	0	0%	0.031	0.895	
1_1_135	W-1	Appendix III	Total Dissolved Solids	mg/l	15	0	0%	-0.070	0.766	
1_2_106	W-1	Appendix IV	Barium	mg/l	13	0	0%	-0.057	0.817	
1_2_107	W-1	Appendix IV	Beryllium	mg/l	11	7	64%	0.227	0.521	
1_2_109	W-1	Appendix IV	Cadmium	mg/l	13	9	69%	-0.230	0.515	
1_2_112	W-1	Appendix IV	Chromium, Total	mg/l	11	10	91%	NA	NA	
1_2_113	W-1	Appendix IV	Cobalt	mg/l	13	0	0%	0.165	0.506	
1_2_116	W-1	Appendix IV	Fluoride (App IV)	mg/l	16	2	12%	0.186	0.440	
1_2_117	W-1	Appendix IV	Lead	mg/l	11	10	91%	NA	NA	
1_2_118	W-1	Appendix IV	Lithium	mg/l	13	0	0%	-0.423	0.088	
1_2_121	W-1	Appendix IV	Molybdenum	mg/l	13	0	0%	-0.158	0.524	
1_2_127	W-1	Appendix IV	Radium-226+228	pci/l	15	3	20%	0.195	0.445	
1_2_129	W-1	Appendix IV	Selenium	mg/l	13	0	0%	0.366	0.140	
1_2_134	W-1	Appendix IV	Thallium	mg/l	11	10	91%	NA	NA	
1_3_114	W-1	Supplemental	Conductivity (field)	us/cm	16	0	0%	0.002	0.993	
1_3_122	W-1	Supplemental	Oxidation-reduction Potential (field)	mV	16	0	0%	-0.088	0.701	
1_3_126	W-1	Supplemental	Radium-226	pci/l	15	8	53%	-0.121	0.695	
1_3_128	W-1	Supplemental	Radium-228	pci/l	15	6	40%	0.182	0.522	
1_3_132	W-1	Supplemental	Temperature (field)	deg c	16	0	0%	0.070	0.758	
1_3_133	W-1	Supplemental	Temperature (lab)	deg c	15	0	0%	0.672	0.004	**
1_3_136	W-1	Supplemental	Total Suspended Solids	mg/l	13	6	46%	-0.249	0.420	
1_3_137	W-1	Supplemental	Turbidity (field)	ntu	16	0	0%	0.060	0.794	
2_1_108	W-2	Appendix III	Boron	mg/l	14	0	0%	0.527	0.029	*
2_1_110	W-2	Appendix III	Calcium	mg/l	15	0	0%	0.135	0.563	
2_1_111	W-2	Appendix III	Chloride (as Cl)	mg/l	15	0	0%	0.231	0.324	
2_1_115	W-2	Appendix III	Fluoride	mg/l	16	2	12%	0.464	0.054	
2_1_123	W-2	Appendix III	pH (field)	su	16	0	0%	-0.197	0.389	
2_1_124	W-2	Appendix III	pH (lab)	su	15	0	0%	0.292	0.213	
2_1_131	W-2	Appendix III	Sulfate (as SO4)	mg/l	15	0	0%	0.099	0.672	
2_1_135	W-2	Appendix III	Total Dissolved Solids	mg/l	15	0	0%	-0.216	0.356	
2_2_104	W-2	Appendix IV	Antimony	mg/l	11	10	91%	NA	NA	
2_2_106	W-2	Appendix IV	Barium	mg/l	13	0	0%	0.550	0.026	*
2_2_107	W-2	Appendix IV	Beryllium	mg/l	11	8	73%	-0.595	0.103	
2_2_109	W-2	Appendix IV	Cadmium	mg/l	13	9	69%	-0.436	0.217	
2_2_112	W-2	Appendix IV	Chromium, Total	mg/l	11	10	91%	NA	NA	
2_2_113	W-2	Appendix IV	Cobalt	mg/l	13	0	0%	0.389	0.117	

(Table continues on next page)

*** p < 0.001, ** p < 0.01, * p < 0.05

Table 4: Autocorrelation Tests, Non-Detects Excluded *(continued)*

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Autocorrelation	Box-Ljung p-value	Sig.
2_2_116	W-2	Appendix IV	Fluoride (App IV)	mg/l	16	2	12%	0.464	0.054	
2_2_117	W-2	Appendix IV	Lead	mg/l	11	9	82%	-0.500	0.157	
2_2_118	W-2	Appendix IV	Lithium	mg/l	13	0	0%	-0.203	0.414	
2_2_121	W-2	Appendix IV	Molybdenum	mg/l	13	0	0%	0.411	0.098	
2_2_127	W-2	Appendix IV	Radium-226+228	pci/l	15	3	20%	0.148	0.564	
2_2_129	W-2	Appendix IV	Selenium	mg/l	13	0	0%	0.233	0.348	
2_2_134	W-2	Appendix IV	Thallium	mg/l	11	9	82%	-0.500	0.157	
2_3_114	W-2	Supplemental	Conductivity (field)	us/cm	16	0	0%	-0.355	0.119	
2_3_122	W-2	Supplemental	Oxidation-reduction Potential (field)	mV	16	0	0%	-0.109	0.633	
2_3_126	W-2	Supplemental	Radium-226	pci/l	15	5	33%	-0.334	0.223	
2_3_128	W-2	Supplemental	Radium-228	pci/l	15	4	27%	0.168	0.524	
2_3_132	W-2	Supplemental	Temperature (field)	deg c	16	0	0%	0.145	0.525	
2_3_133	W-2	Supplemental	Temperature (lab)	deg c	15	0	0%	0.509	0.030	*
2_3_136	W-2	Supplemental	Total Suspended Solids	mg/l	13	3	23%	0.180	0.510	
2_3_137	W-2	Supplemental	Turbidity (field)	ntu	16	0	0%	0.230	0.314	
3_1_108	W-4	Appendix III	Boron	mg/l	14	0	0%	0.110	0.648	
3_1_110	W-4	Appendix III	Calcium	mg/l	15	0	0%	-0.125	0.593	
3_1_111	W-4	Appendix III	Chloride (as Cl)	mg/l	15	0	0%	0.319	0.174	
3_1_115	W-4	Appendix III	Fluoride	mg/l	16	6	38%	-0.136	0.620	
3_1_123	W-4	Appendix III	pH (field)	su	16	0	0%	-0.093	0.685	
3_1_124	W-4	Appendix III	pH (lab)	su	15	0	0%	0.271	0.248	
3_1_131	W-4	Appendix III	Sulfate (as SO4)	mg/l	15	0	0%	0.162	0.490	
3_1_135	W-4	Appendix III	Total Dissolved Solids	mg/l	15	0	0%	0.096	0.683	
3_2_105	W-4	Appendix IV	Arsenic	mg/l	11	10	91%	NA	NA	
3_2_106	W-4	Appendix IV	Barium	mg/l	13	0	0%	0.096	0.698	
3_2_109	W-4	Appendix IV	Cadmium	mg/l	13	4	31%	0.046	0.872	
3_2_112	W-4	Appendix IV	Chromium, Total	mg/l	11	10	91%	NA	NA	
3_2_113	W-4	Appendix IV	Cobalt	mg/l	13	0	0%	0.104	0.674	
3_2_116	W-4	Appendix IV	Fluoride (App IV)	mg/l	16	6	38%	-0.136	0.620	
3_2_118	W-4	Appendix IV	Lithium	mg/l	13	0	0%	0.320	0.197	
3_2_121	W-4	Appendix IV	Molybdenum	mg/l	13	0	0%	0.477	0.054	
3_2_127	W-4	Appendix IV	Radium-226+228	pci/l	15	2	13%	0.022	0.929	
3_2_129	W-4	Appendix IV	Selenium	mg/l	13	5	38%	-0.529	0.073	
3_3_114	W-4	Supplemental	Conductivity (field)	us/cm	16	0	0%	0.399	0.081	
3_3_122	W-4	Supplemental	Oxidation-reduction Potential (field)	mV	16	0	0%	0.236	0.302	
3_3_126	W-4	Supplemental	Radium-226	pci/l	15	7	47%	0.457	0.122	
3_3_128	W-4	Supplemental	Radium-228	pci/l	15	6	40%	0.056	0.845	
3_3_132	W-4	Supplemental	Temperature (field)	deg c	16	0	0%	-0.558	0.015	*
3_3_133	W-4	Supplemental	Temperature (lab)	deg c	15	0	0%	0.386	0.099	
3_3_136	W-4	Supplemental	Total Suspended Solids	mg/l	13	3	23%	0.126	0.645	
3_3_137	W-4	Supplemental	Turbidity (field)	ntu	16	0	0%	0.050	0.825	

*** p < 0.001, ** p < 0.01, * p < 0.05

Table 5: Outlier Counts by Date

Date	Count
2018-06-11	1
2018-07-10	1
2018-10-10	3
2019-04-15	2
2020-06-16	4
2020-12-15	5
2020-12-16	1
2021-06-22	3

Table 6: Outliers Identified at the 1% Significance Level, Non-Detects Excluded

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	No. Detects	Date	Dilution	Value
1_1_115	W-1	Appendix III	Fluoride	mg/l	16	2	12%	14	2020-06-16	1	3.40
1_1_131	W-1	Appendix III	Sulfate (as SO4)	mg/l	15	0	0%	15	2019-04-15	50	4500
1_1_135	W-1	Appendix III	Total Dissolved Solids	mg/l	15	0	0%	15	2018-10-10	1	1300
1_2_116	W-1	Appendix IV	Fluoride (App IV)	mg/l	16	2	12%	14	2020-06-16	1	3.40
1_2_121	W-1	Appendix IV	Molybdenum	mg/l	13	0	0%	13	2018-06-11	1	0.00460
1_3_122	W-1	Supplemental	Oxidation-reduction Potential (field)	mV	16	0	0%	16	2020-12-15	NA	2721
2_1_115	W-2	Appendix III	Fluoride	mg/l	16	2	12%	14	2020-12-15	1	6.70
2_1_131	W-2	Appendix III	Sulfate (as SO4)	mg/l	15	0	0%	15	2019-04-15	100	5400
2_1_135	W-2	Appendix III	Total Dissolved Solids	mg/l	15	0	0%	15	2018-10-10	1	4100
2_2_106	W-2	Appendix IV	Barium	mg/l	13	0	0%	13	2021-06-22	1	0.0130
2_2_113	W-2	Appendix IV	Cobalt	mg/l	13	0	0%	13	2021-06-22	1	0.0200
2_2_116	W-2	Appendix IV	Fluoride (App IV)	mg/l	16	2	12%	14	2020-12-15	1	6.70
2_3_114	W-2	Supplemental	Conductivity (field)	us/cm	16	0	0%	16	2020-12-15	NA	4531
2_3_122	W-2	Supplemental	Oxidation-reduction Potential (field)	mV	16	0	0%	16	2020-12-15	NA	2721
2_3_136	W-2	Supplemental	Total Suspended Solids	mg/l	13	3	23%	10	2021-06-22	1	14.0
3_1_108	W-4	Appendix III	Boron	mg/l	14	0	0%	14	2020-12-16	1	2.20
3_1_110	W-4	Appendix III	Calcium	mg/l	15	0	0%	15	2018-07-10	1	78.0
3_1_115	W-4	Appendix III	Fluoride	mg/l	16	6	38%	10	2020-06-16	20	26.0
3_1_135	W-4	Appendix III	Total Dissolved Solids	mg/l	15	0	0%	15	2018-10-10	1	11000
3_2_116	W-4	Appendix IV	Fluoride (App IV)	mg/l	16	6	38%	10	2020-06-16	20	26.0

Table 7: Seasonality Tests

ID	Well	Constituent Type	Constituent	Unit	% NDs	Full							Without Non-Detects												
						Sample Size					p-Value			Sample Size					p-Value						
						Winter	Spring	Summer	Fall	Total	Kruskal-Wallis	ANOVA	Log ANOVA	Winter	Spring	Summer	Fall	Total	Kruskal-Wallis	ANOVA	Log ANOVA				
1_1_108	W-1	Appendix III	Boron	mg/l	0%	3	3	5	3	14	0.480	0.379	0.369	3	3	5	3	14	0.480	0.379	0.369				
1_1_110	W-1	Appendix III	Calcium	mg/l	0%	3	3	6	3	15	0.095	0.093	0.096	3	3	6	3	15	0.095	0.093	0.096				
1_1_111	W-1	Appendix III	Chloride (as Cl)	mg/l	0%	3	3	6	3	15	0.597	0.673	0.511	3	3	6	3	15	0.597	0.673	0.511				
1_1_115	W-1	Appendix III	Fluoride	mg/l	12%	3	3	6	4	16	0.447	0.606	0.563	3	2	5	4	14	0.459	0.582	0.547				
1_1_123	W-1	Appendix III	pH (field)	su	0%	3	3	6	4	16	0.223	0.348	0.343	3	3	6	4	16	0.223	0.348	0.343				
1_1_124	W-1	Appendix III	pH (lab)	su	0%	3	3	6	3	15	0.090	0.070	0.071	3	3	6	3	15	0.090	0.070	0.071				
1_1_131	W-1	Appendix III	Sulfate (as SO4)	mg/l	0%	3	3	6	3	15	0.841	0.312	0.327	3	3	6	3	15	0.841	0.312	0.327				
1_1_135	W-1	Appendix III	Total Dissolved Solids	mg/l	0%	3	3	6	3	15	0.648	0.332	0.305	3	3	6	3	15	0.648	0.332	0.305				
1_2_104	W-1	Appendix IV	Antimony	mg/l	100%	1	0	6	4	11	0.659	0.706	0.706	NA	NA	NA	NA	NA	NA	NA	NA				
1_2_105	W-1	Appendix IV	Arsenic	mg/l	100%	1	0	6	4	11	0.659	0.706	0.706	NA	NA	NA	NA	NA	NA	NA	NA				
1_2_106	W-1	Appendix IV	Barium	mg/l	0%	3	0	6	4	13	0.203	0.284	0.275	3	0	6	4	13	0.203	0.284	0.275				
1_2_107	W-1	Appendix IV	Beryllium	mg/l	64%	1	0	6	4	11	0.116	0.071	0.138	0	0	1	3	4	0.180	0.129	0.066				
1_2_109	W-1	Appendix IV	Cadmium	mg/l	69%	3	0	6	4	13	0.085	0.092	0.095	0	0	1	3	4	0.655	0.589	0.622				
1_2_112	W-1	Appendix IV	Chromium, Total	mg/l	91%	1	0	6	4	11	0.225	0.112	0.217	0	0	1	0	1	NA	NA	NA				
1_2_113	W-1	Appendix IV	Cobalt	mg/l	0%	3	0	6	4	13	0.542	0.699	0.700	3	0	6	4	13	0.542	0.699	0.700				
1_2_116	W-1	Appendix IV	Fluoride (App IV)	mg/l	12%	3	3	6	4	16	0.447	0.606	0.563	3	2	5	4	14	0.459	0.582	0.547				
1_2_117	W-1	Appendix IV	Lead	mg/l	91%	1	0	6	4	11	1.000	0.825	0.980	0	0	1	0	1	NA	NA	NA				
1_2_118	W-1	Appendix IV	Lithium	mg/l	0%	3	0	6	4	13	0.093	0.120	0.119	3	0	6	4	13	0.093	0.120	0.119				
1_2_120	W-1	Appendix IV	Mercury	mg/l	100%	1	0	6	4	11	0.400	0.459	0.495	NA	NA	NA	NA	NA	NA	NA	NA				
1_2_121	W-1	Appendix IV	Molybdenum	mg/l	0%	3	0	6	4	13	0.157	0.823	0.747	3	0	6	4	13	0.157	0.823	0.747				
1_2_127	W-1	Appendix IV	Radium-226+228	pci/l	20%	3	2	6	4	15	0.571	0.698	0.658	3	1	4	4	12	0.601	0.733	0.696				
1_2_129	W-1	Appendix IV	Selenium	mg/l	0%	3	0	6	4	13	0.598	0.606	0.626	3	0	6	4	13	0.598	0.606	0.626				
1_2_134	W-1	Appendix IV	Thallium	mg/l	91%	1	0	6	4	11	1.000	0.928	1.000	0	0	1	0	1	NA	NA	NA				
1_3_114	W-1	Supplemental	Conductivity (field)	us/cm	0%	3	3	6	4	16	0.038	*	0.087	0.096	3	3	6	4	16	0.038	*	0.087			
1_3_122	W-1	Supplemental	Oxidation-reduction Potential (field)	mV	0%	3	3	6	4	16	0.383	0.209	NA	3	3	6	4	16	0.383	0.209	NA				
1_3_126	W-1	Supplemental	Radium-226	pci/l	53%	3	2	6	4	15	0.057	0.042	*	0.032	*	1	1	2	3	7	0.206	0.205	0.078		
1_3_128	W-1	Supplemental	Radium-228	pci/l	40%	3	2	6	4	15	0.244	0.391	0.373	3	1	4	1	9	0.894	0.950	0.963				
1_3_132	W-1	Supplemental	Temperature (field)	deg c	0%	3	3	6	4	16	0.038	*	0.012	*	0.012	*	3	3	6	4	16	0.038	*	0.012	*
1_3_133	W-1	Supplemental	Temperature (lab)	deg c	0%	3	3	6	3	15	0.309	0.285	0.284	3	3	6	3	15	0.309	0.285	0.284				
1_3_136	W-1	Supplemental	Total Suspended Solids	mg/l	46%	3	1	6	3	13	0.656	0.719	0.662	2	0	4	1	7	0.964	0.883	0.905				
1_3_137	W-1	Supplemental	Turbidity (field)	ntu	0%	3	3	6	4	16	0.051	0.005	**	0.342	3	3	6	4	16	0.051	0.005	**	0.342		
2_1_108	W-2	Appendix III	Boron	mg/l	0%	3	3	5	3	14	0.113	0.174	0.157	3	3	5	3	14	0.113	0.174	0.157				
2_1_110	W-2	Appendix III	Calcium	mg/l	0%	3	3	6	3	15	0.158	0.105	0.107	3	3	6	3	15	0.158	0.105	0.107				
2_1_111	W-2	Appendix III	Chloride (as Cl)	mg/l	0%	3	3	6	3	15	0.214	0.470	0.498	3	3	6	3	15	0.214	0.470	0.498				
2_1_115	W-2	Appendix III	Fluoride	mg/l	12%	3	3	6	4	16	0.043	*	0.167	0.108	2	2	6	4	14	0.061	0.325	0.316			
2_1_123	W-2	Appendix III	pH (field)	su	0%	3	3	6	4	16	0.383	0.304	0.305	3	3	6	4	16	0.383	0.304	0.305				
2_1_124	W-2	Appendix III	pH (lab)	su	0%	3	3	6	3	15	0.055	0.047	*	0.048	*	3	3	6	3	15	0.055	0.047	*	0.048	*
2_1_131	W-2	Appendix III	Sulfate (as SO4)	mg/l	0%	3	3	6	3	15	0.112	0.105	0.100	3	3	6	3	15	0.112	0.105	0.100				
2_1_135	W-2	Appendix III	Total Dissolved Solids	mg/l	0%	3	3	6	3	15	0.574	0.475	0.438	3	3	6	3	15	0.574	0.475	0.438				

(Table continues on next page)

*** p < 0.001, ** p < 0.01, * p < 0.05

						Full											Without Non-Detects										
						Sample Size					p-Value			Sample Size					p-Value								
ID	Well	Constituent Type	Constituent	Unit	% NDs	Winter	Spring	Summer	Fall	Total	Kruskal-Wallis	ANOVA	Log ANOVA	Winter	Spring	Summer	Fall	Total	Kruskal-Wallis	ANOVA	Log ANOVA						
2_2_104	W-2	Appendix IV	Antimony	mg/l	91%	1	0	6	4	11	0.659	0.706	0.706	0	0	1	0	1	NA	NA	NA						
2_2_105	W-2	Appendix IV	Arsenic	mg/l	100%	1	0	6	4	11	0.659	0.706	0.706	NA	NA	NA	NA	NA	NA	NA	NA						
2_2_106	W-2	Appendix IV	Barium	mg/l	0%	3	0	6	4	13	0.200	0.502	0.394	3	0	6	4	13	0.200	0.502	0.394						
2_2_107	W-2	Appendix IV	Beryllium	mg/l	73%	1	0	6	4	11	0.391	0.473	0.494	0	0	1	2	3	0.221	0.454	0.413						
2_2_109	W-2	Appendix IV	Cadmium	mg/l	69%	3	0	6	4	13	0.876	0.739	0.793	2	0	1	1	4	0.407	0.216	0.309						
2_2_112	W-2	Appendix IV	Chromium, Total	mg/l	91%	1	0	6	4	11	0.225	0.102	0.198	0	0	1	0	1	NA	NA	NA						
2_2_113	W-2	Appendix IV	Cobalt	mg/l	0%	3	0	6	4	13	0.733	0.607	0.578	3	0	6	4	13	0.733	0.607	0.578						
2_2_116	W-2	Appendix IV	Fluoride (App IV)	mg/l	12%	3	3	6	4	16	0.043	*	0.167	0.108	2	2	6	4	14	0.061	0.325	0.316					
2_2_117	W-2	Appendix IV	Lead	mg/l	82%	1	0	6	4	11	1.000	0.817	0.956	0	0	2	0	2	NA	NA	NA						
2_2_118	W-2	Appendix IV	Lithium	mg/l	0%	3	0	6	4	13	0.048	*	0.023	*	0.021	*	3	0	6	4	13	0.048	*	0.023	*	0.021	*
2_2_120	W-2	Appendix IV	Mercury	mg/l	100%	1	0	6	4	11	0.400	0.459	0.495	NA	NA	NA	NA	NA	NA	NA	NA						
2_2_121	W-2	Appendix IV	Molybdenum	mg/l	0%	3	0	6	4	13	0.509	0.454	0.488	3	0	6	4	13	0.509	0.454	0.488						
2_2_127	W-2	Appendix IV	Radium-226+228	pci/l	20%	3	2	6	4	15	0.833	0.755	0.780	2	2	5	3	12	0.943	0.640	0.749						
2_2_129	W-2	Appendix IV	Selenium	mg/l	0%	3	0	6	4	13	0.951	0.946	0.956	3	0	6	4	13	0.951	0.946	0.956						
2_2_134	W-2	Appendix IV	Thallium	mg/l	82%	1	0	6	4	11	0.054	0.005	**	0.058	1	0	1	0	2	0.317	NA	NA					
2_3_114	W-2	Supplemental	Conductivity (field)	us/cm	0%	3	3	6	4	16	0.510	0.386	0.343	3	3	6	4	16	0.510	0.386	0.343						
2_3_122	W-2	Supplemental	Oxidation-reduction Potential (field)	mV	0%	3	3	6	4	16	0.471	0.208	NA	3	3	6	4	16	0.471	0.208	NA						
2_3_126	W-2	Supplemental	Radium-226	pci/l	33%	3	2	6	4	15	0.513	0.407	0.248	1	2	5	2	10	0.620	0.879	0.938						
2_3_128	W-2	Supplemental	Radium-228	pci/l	27%	3	2	6	4	15	0.823	0.748	0.857	2	2	4	3	11	0.451	0.516	0.592						
2_3_132	W-2	Supplemental	Temperature (field)	deg c	0%	3	3	6	4	16	0.011	*	0.000	***	0.000	***	3	3	6	4	16	0.011	*	0.000	***	0.000	***
2_3_133	W-2	Supplemental	Temperature (lab)	deg c	0%	3	3	6	3	15	0.144	0.191	0.194	3	3	6	3	15	0.144	0.191	0.194						
2_3_136	W-2	Supplemental	Total Suspended Solids	mg/l	23%	3	1	6	3	13	0.279	0.594	0.408	1	1	6	2	10	0.438								

(Table continues on next page)

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table 7: Seasonality Tests (continued)

ID	Well	Constituent Type	Constituent	Unit	% NDs	Full											Without Non-Detects										
						Sample Size					p-Value						Sample Size					p-Value					
						Winter	Spring	Summer	Fall	Total	Kruskal-Wallis	ANOVA	Log ANOVA	Winter	Spring	Summer	Fall	Total	Kruskal-Wallis	ANOVA	Log ANOVA						
3_2_117	W-4	Appendix IV	Lead	mg/l	100%	1	0	6	4	11	0.659	0.706	0.706	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA				
3_2_118	W-4	Appendix IV	Lithium	mg/l	0%	3	0	6	4	13	0.006	**	0.001	**	0.001	***	3	0	6	4	13	0.006	**	0.001	**	0.001	***
3_2_120	W-4	Appendix IV	Mercury	mg/l	100%	1	0	6	4	11	0.400	0.459	0.495	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
3_2_121	W-4	Appendix IV	Molybdenum	mg/l	0%	3	0	6	4	13	0.744	0.561	0.575	3	0	6	4	13	0.744	0.561	0.575						
3_2_127	W-4	Appendix IV	Radium-226+228	pci/l	13%	3	2	6	4	15	0.969	0.981	0.989	2	2	5	4	13	0.978	0.780	0.923						
3_2_129	W-4	Appendix IV	Selenium	mg/l	38%	3	0	6	4	13	0.751	0.869	0.808	1	0	4	3	8	0.972	0.977	0.966						
3_2_134	W-4	Appendix IV	Thallium	mg/l	100%	1	0	6	4	11	0.659	0.706	0.706	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
3_3_114	W-4	Supplemental	Conductivity (field)	us/cm	0%	3	3	6	4	16	0.208	0.221	0.235	3	3	6	4	16	0.208	0.221	0.235						
3_3_122	W-4	Supplemental	Oxidation-reduction Potential (field)	mV	0%	3	3	6	4	16	0.636	0.559	NA	3	3	6	4	16	0.636	0.559	NA						
3_3_126	W-4	Supplemental	Radium-226	pci/l	47%	3	2	6	4	15	0.181	0.196	0.146	2	1	3	2	8	0.283	0.190	0.177						
3_3_128	W-4	Supplemental	Radium-228	pci/l	40%	3	2	6	4	15	0.797	0.878	0.968	2	2	2	3	9	0.485	0.519	0.563						
3_3_132	W-4	Supplemental	Temperature (field)	deg c	0%	3	3	6	4	16	0.020	*	0.005	**	0.004	**	3	3	6	4	16	0.020	*	0.005	**	0.004	**
3_3_133	W-4	Supplemental	Temperature (lab)	deg c	0%	3	3	6	3	15	0.302	0.233	0.241	3	3	6	3	15	0.302	0.233	0.241						
3_3_136	W-4	Supplemental	Total Suspended Solids	mg/l	23%	3	1	6	3	13	0.711	0.817	0.770	2	1	5	2	10	0.551	0.799	0.655						
3_3_137	W-4	Supplemental	Turbidity (field)	ntu	0%	3	3	6	4	16	0.469	0.662	0.541	3	3	6	4	16	0.469	0.662	0.541						

*** p < 0.001, ** p < 0.01, * p < 0.05

Table 8: Trend Tests: Lognormal MLE and MK

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Type	Method	Slope	p-value	Trend
1_1_108	W-1	Appendix III	Boron	mg/l	14	0	0%	Parametric	Lognormal MLE	-0.0000678	0.327	↔
1_1_110	W-1	Appendix III	Calcium	mg/l	15	0	0%	Parametric	Lognormal MLE	0.0000111	0.736	↔
1_1_111	W-1	Appendix III	Chloride (as Cl)	mg/l	15	0	0%	Parametric	Lognormal MLE	-0.0000354	0.812	↔
1_1_115	W-1	Appendix III	Fluoride	mg/l	16	2	12%	Nonparametric	MK	0.0000675	0.085	↔
1_1_123	W-1	Appendix III	pH (field)	su	16	0	0%	Parametric	Lognormal MLE	0.0000154	0.057	↔
1_1_124	W-1	Appendix III	pH (lab)	su	15	0	0%	Parametric	Lognormal MLE	-0.0000119	0.093	↔
1_1_131	W-1	Appendix III	Sulfate (as SO4)	mg/l	15	0	0%	Nonparametric	MK	0	0.751	↔
1_1_135	W-1	Appendix III	Total Dissolved Solids	mg/l	15	0	0%	Nonparametric	MK	-0.169	0.188	↔
1_2_106	W-1	Appendix IV	Barium	mg/l	13	0	0%	Parametric	Lognormal MLE	-0.0000231	0.585	↔
1_2_113	W-1	Appendix IV	Cobalt	mg/l	13	0	0%	Parametric	Lognormal MLE	0.0000532	0.580	↔
1_2_116	W-1	Appendix IV	Fluoride (App IV)	mg/l	16	2	12%	Nonparametric	MK	0.0000675	0.085	↔
1_2_118	W-1	Appendix IV	Lithium	mg/l	13	0	0%	Parametric	Lognormal MLE	0.00000997	0.801	↔
1_2_121	W-1	Appendix IV	Molybdenum	mg/l	13	0	0%	Parametric	Lognormal MLE	-0.000108	0.063	↔
1_2_127	W-1	Appendix IV	Radium-226+228	pci/l	15	3	20%	Parametric	Lognormal MLE	0.000413	0.017	↔
1_2_129	W-1	Appendix IV	Selenium	mg/l	13	0	0%	Parametric	Lognormal MLE	-0.000906	0.006	↓
1_3_114	W-1	Supplemental	Conductivity (field)	us/cm	16	0	0%	Parametric	Lognormal MLE	-0.0000272	0.049	↔
1_3_122	W-1	Supplemental	Oxidation-reduction Potential (field)	mV	16	0	0%	Nonparametric	MK	0.0226	0.620	↔
1_3_128	W-1	Supplemental	Radium-228	pci/l	15	6	40%	Parametric	Lognormal MLE	0.000602	0.001	↑
1_3_132	W-1	Supplemental	Temperature (field)	deg c	16	0	0%	Parametric	Lognormal MLE	0.0000414	0.381	↔
1_3_133	W-1	Supplemental	Temperature (lab)	deg c	15	0	0%	Parametric	Lognormal MLE	0.0000520	0.008	↑
1_3_136	W-1	Supplemental	Total Suspended Solids	mg/l	13	6	46%	Nonparametric	MK	0	0.896	↔
1_3_137	W-1	Supplemental	Turbidity (field)	ntu	16	0	0%	Parametric	Lognormal MLE	0.00111	0.143	↔
2_1_108	W-2	Appendix III	Boron	mg/l	14	0	0%	Parametric	Lognormal MLE	0.000217	0.000	↑
2_1_110	W-2	Appendix III	Calcium	mg/l	15	0	0%	Parametric	Lognormal MLE	0.0000514	0.224	↔
2_1_111	W-2	Appendix III	Chloride (as Cl)	mg/l	15	0	0%	Parametric	Lognormal MLE	0.000107	0.029	↔
2_1_123	W-2	Appendix III	pH (field)	su	16	0	0%	Parametric	Lognormal MLE	0.0000208	0.034	↔
2_1_124	W-2	Appendix III	pH (lab)	su	15	0	0%	Nonparametric	MK	0	0.021	↔
2_1_131	W-2	Appendix III	Sulfate (as SO4)	mg/l	15	0	0%	Nonparametric	MK	0.0656	0.545	↔
2_1_135	W-2	Appendix III	Total Dissolved Solids	mg/l	15	0	0%	Nonparametric	MK	-0.154	0.395	↔
2_2_104	W-2	Appendix IV	Antimony	mg/l	11	10	91%	Nonparametric	MK	0	0.155	↔
2_2_106	W-2	Appendix IV	Barium	mg/l	13	0	0%	Nonparametric	MK	0.00000224	0.002	↑
2_2_113	W-2	Appendix IV	Cobalt	mg/l	13	0	0%	Parametric	Lognormal MLE	0.00146	0.000	↑
2_2_117	W-2	Appendix IV	Lead	mg/l	11	9	82%	Nonparametric	MK	0	0.061	↔
2_2_118	W-2	Appendix IV	Lithium	mg/l	13	0	0%	Parametric	Lognormal MLE	-0.0000192	0.701	↔
2_2_121	W-2	Appendix IV	Molybdenum	mg/l	13	0	0%	Parametric	Lognormal MLE	0.000323	0.000	↑
2_2_127	W-2	Appendix IV	Radium-226+228	pci/l	15	3	20%	Parametric	Lognormal MLE	0.000681	0.032	↔
2_2_129	W-2	Appendix IV	Selenium	mg/l	13	0	0%	Parametric	Lognormal MLE	-0.000204	0.021	↔
2_2_134	W-2	Appendix IV	Thallium	mg/l	11	9	82%	Nonparametric	MK	0	1.000	↔
2_3_114	W-2	Supplemental	Conductivity (field)	us/cm	16	0	0%	Nonparametric	MK	-0.146	0.558	↔
2_3_122	W-2	Supplemental	Oxidation-reduction Potential (field)	mV	16	0	0%	Nonparametric	MK	-0.00669	0.964	↔
2_3_126	W-2	Supplemental	Radium-226	pci/l	15	5	33%	Parametric	Lognormal MLE	-0.000115	0.715	↔
2_3_128	W-2	Supplemental	Radium-228	pci/l	15	4	27%	Parametric	Lognormal MLE	0.000822	0.009	↑
2_3_132	W-2	Supplemental	Temperature (field)	deg c	16	0	0%	Parametric	Lognormal MLE	-0.00000503	0.926	↔

(Table continues on next page)

Table 8: Trend Tests: Lognormal MLE and MK *(continued)*

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Type	Method	Slope	p-value	Trend
2_3_133	W-2	Supplemental	Temperature (lab)	deg c	15	0	0%	Parametric	Lognormal MLE	0.0000343	0.160	↔
2_3_136	W-2	Supplemental	Total Suspended Solids	mg/l	13	3	23%	Parametric	Lognormal MLE	0.000654	0.131	↔
2_3_137	W-2	Supplemental	Turbidity (field)	ntu	16	0	0%	Parametric	Lognormal MLE	-0.000447	0.674	↔
3_1_108	W-4	Appendix III	Boron	mg/l	14	0	0%	Parametric	Lognormal MLE	-0.000344	0.076	↔
3_1_110	W-4	Appendix III	Calcium	mg/l	15	0	0%	Nonparametric	MK	-0.0134	0.342	↔
3_1_111	W-4	Appendix III	Chloride (as Cl)	mg/l	15	0	0%	Parametric	Lognormal MLE	-0.0000826	0.031	↔
3_1_123	W-4	Appendix III	pH (field)	su	16	0	0%	Parametric	Lognormal MLE	0.0000188	0.026	↔
3_1_124	W-4	Appendix III	pH (lab)	su	15	0	0%	Parametric	Lognormal MLE	-0.00000699	0.241	↔
3_1_131	W-4	Appendix III	Sulfate (as SO4)	mg/l	15	0	0%	Nonparametric	MK	0	0.089	↔
3_1_135	W-4	Appendix III	Total Dissolved Solids	mg/l	15	0	0%	Parametric	Lognormal MLE	-0.0000295	0.740	↔
3_2_105	W-4	Appendix IV	Arsenic	mg/l	11	10	91%	Nonparametric	MK	0	0.155	↔
3_2_106	W-4	Appendix IV	Barium	mg/l	13	0	0%	Parametric	Lognormal MLE	-0.0000459	0.273	↔
3_2_109	W-4	Appendix IV	Cadmium	mg/l	13	4	31%	Parametric	Lognormal MLE	-0.000333	0.003	↓
3_2_113	W-4	Appendix IV	Cobalt	mg/l	13	0	0%	Parametric	Lognormal MLE	-0.0000394	0.366	↔
3_2_118	W-4	Appendix IV	Lithium	mg/l	13	0	0%	Parametric	Lognormal MLE	-0.000153	0.070	↔
3_2_121	W-4	Appendix IV	Molybdenum	mg/l	13	0	0%	Parametric	Lognormal MLE	-0.000111	0.001	↓
3_2_127	W-4	Appendix IV	Radium-226+228	pci/l	15	2	13%	Parametric	Lognormal MLE	0.000118	0.632	↔
3_2_129	W-4	Appendix IV	Selenium	mg/l	13	5	38%	Parametric	Lognormal MLE	-0.00113	0.000	↓
3_3_114	W-4	Supplemental	Conductivity (field)	us/cm	16	0	0%	Parametric	Lognormal MLE	-0.0000950	0.000	↓
3_3_126	W-4	Supplemental	Radium-226	pci/l	15	7	47%	Parametric	Lognormal MLE	-0.000441	0.193	↔
3_3_128	W-4	Supplemental	Radium-228	pci/l	15	6	40%	Parametric	Lognormal MLE	0.000236	0.451	↔
3_3_132	W-4	Supplemental	Temperature (field)	deg c	16	0	0%	Parametric	Lognormal MLE	-0.0000327	0.605	↔
3_3_133	W-4	Supplemental	Temperature (lab)	deg c	15	0	0%	Parametric	Lognormal MLE	0.0000364	0.215	↔
3_3_136	W-4	Supplemental	Total Suspended Solids	mg/l	13	3	23%	Parametric	Lognormal MLE	-0.000197	0.780	↔
3_3_137	W-4	Supplemental	Turbidity (field)	ntu	16	0	0%	Parametric	Lognormal MLE	0.000351	0.706	↔

Table 9: Trend Tests: Piecewise Linear-Linear

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Line 1			Line 2			Break 1	R-Squared	Overall Trend
								Slope	p-Value	Trend	Slope	p-Value	Trend			
1_1_108	W-1	Appendix III	Boron	mg/l	14	0	0%	0.000127	0.091	↔	-0.000484	0.115	↔	2020-12-15	0.513	↔
1_1_110	W-1	Appendix III	Calcium	mg/l	15	0	0%	-0.663	0.179	↔	0.0157	0.203	↔	2018-06-29	0.394	↔
1_1_111	W-1	Appendix III	Chloride (as Cl)	mg/l	15	0	0%	-0.0268	0.000	↓	0.0854	0.000	↑	2020-12-14	0.947	↔
1_1_115	W-1	Appendix III	Fluoride	mg/l	16	2	12%	0.00219	0.016	↔	-0.00207	0.236	↔	2020-06-16	0.447	↔
1_1_123	W-1	Appendix III	pH (field)	su	16	0	0%	0.00120	0.698	↔	0.0000983	0.217	↔	2018-06-11	0.202	↔
1_1_124	W-1	Appendix III	pH (lab)	su	15	0	0%	0.000148	0.810	↔	-0.000162	0.203	↔	2019-04-14	0.203	↔
1_1_131	W-1	Appendix III	Sulfate (as SO4)	mg/l	15	0	0%	2.88	0.199	↔	-0.957	0.043	↔	2019-04-14	0.415	↔
1_1_135	W-1	Appendix III	Total Dissolved Solids	mg/l	15	0	0%	-4.62	0.516	↔	0.435	0.505	↔	2018-10-09	0.094	↔
1_2_104	W-1	Appendix IV	Antimony	mg/l	11	11	100%	0.000000000000000184	0.132	↔	-0.000000899	0.000	↓	2021-12-05	1.000	↔
1_2_105	W-1	Appendix IV	Arsenic	mg/l	11	11	100%	0.000000000000000455	0.132	↔	-0.00000222	0.000	↓	2021-12-05	1.000	↔
1_2_106	W-1	Appendix IV	Barium	mg/l	13	0	0%	0.000000523	0.421	↔	-0.00000529	0.385	↔	2021-07-22	0.279	↔

(Table continues on next page)

Table 9: Trend Tests: Piecewise Linear-Linear *(continued)*

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Line 1			Line 2			Break 1	R-Squared	Overall Trend
								Slope	p-Value	Trend	Slope	p-Value	Trend			
1_2_107	W-1	Appendix IV	Beryllium	mg/l	11	7	64%	0.00000519	0.224	↔	-0.000000423	0.076	↔	2018-10-09	0.487	↔
1_2_109	W-1	Appendix IV	Cadmium	mg/l	13	9	69%	-0.0000000842	0.353	↔	0.0000000814	0.627	↔	2020-07-17	0.124	↔
1_2_112	W-1	Appendix IV	Chromium, Total	mg/l	11	10	91%	-0.000000577	0.922	↔	0.000000511	0.594	↔	2018-11-13	0.135	↔
1_2_113	W-1	Appendix IV	Cobalt	mg/l	13	0	0%	0.000000223	0.148	↔	-0.00000127	0.359	↔	2021-08-25	0.294	↔
1_2_116	W-1	Appendix IV	Fluoride (App IV)	mg/l	16	2	12%	0.00219	0.016	↔	-0.00207	0.236	↔	2020-06-16	0.447	↔
1_2_117	W-1	Appendix IV	Lead	mg/l	11	10	91%	-0.00000444	0.471	↔	-0.000000109	0.730	↔	2018-09-27	0.276	↔
1_2_118	W-1	Appendix IV	Lithium	mg/l	13	0	0%	-0.0000229	0.311	↔	0.0000714	0.417	↔	2020-12-15	0.226	↔
1_2_120	W-1	Appendix IV	Mercury	mg/l	11	11	100%	-0.0000000945	0.752	↔	-0.0000000107	0.823	↔	2019-05-18	0.241	↔
1_2_121	W-1	Appendix IV	Molybdenum	mg/l	13	0	0%	-0.00000348	0.320	↔	-0.000000117	0.809	↔	2018-11-22	0.305	↔
1_2_127	W-1	Appendix IV	Radium-226+228	pci/l	15	3	20%	-0.00000200	0.999	↔	0.000427	0.125	↔	2019-09-24	0.330	↔
1_2_129	W-1	Appendix IV	Selenium	mg/l	13	0	0%	0.00000396	0.130	↔	-0.0000280	0.015	↔	2021-01-10	0.779	↔
1_2_134	W-1	Appendix IV	Thallium	mg/l	11	10	91%	0.000000154	0.018	↔	-0.000000757	0.106	↔	2021-06-22	0.695	↔
1_3_114	W-1	Supplemental	Conductivity (field)	us/cm	16	0	0%	-1.24	0.548	↔	-0.0895	0.299	↔	2018-07-25	0.257	↔
1_3_122	W-1	Supplemental	Oxidation-reduction Potential (field)	mV	16	0	0%	1.25	0.039	↔	-2.47	0.314	↔	2020-12-15	0.351	↔
1_3_126	W-1	Supplemental	Radium-226	pci/l	15	8	53%	0.00271	0.156	↔	-0.000157	0.005	↓	2018-07-08	0.597	↔
1_3_128	W-1	Supplemental	Radium-228	pci/l	15	6	40%	-0.000456	0.568	↔	0.000577	0.006	↑	2019-04-10	0.662	↔
1_3_132	W-1	Supplemental	Temperature (field)	deg c	16	0	0%	0.0137	0.192	↔	-0.000141	0.826	↔	2018-08-13	0.260	↔
1_3_133	W-1	Supplemental	Temperature (lab)	deg c	15	0	0%	0.00843	0.005	↑	-0.000830	0.113	↔	2019-03-13	0.810	↔
1_3_136	W-1	Supplemental	Total Suspended Solids	mg/l	13	6	46%	0.00164	0.146	↔	-0.00810	0.439	↔	2021-06-22	0.302	↔
1_3_137	W-1	Supplemental	Turbidity (field)	ntu	16	0	0%	0.00243	0.808	↔	0.000639	0.137	↔	2018-08-12	0.278	↔
2_1_108	W-2	Appendix III	Boron	mg/l	14	0	0%	0.00167	0.001	↑	0.00526	0.138	↔	2021-07-20	0.896	↔
2_1_110	W-2	Appendix III	Calcium	mg/l	15	0	0%	-0.773	0.221	↔	0.0356	0.037	↔	2018-07-09	0.472	↔
2_1_111	W-2	Appendix III	Chloride (as Cl)	mg/l	15	0	0%	0.0420	0.364	↔	-0.000904	0.920	↔	2019-04-13	0.358	↔
2_1_115	W-2	Appendix III	Fluoride	mg/l	16	2	12%	0.00528	0.002	↑	-0.0101	0.005	↓	2020-12-14	0.706	↔
2_1_123	W-2	Appendix III	pH (field)	su	16	0	0%	-0.000274	0.871	↔	0.000178	0.113	↔	2018-09-09	0.237	↔
2_1_124	W-2	Appendix III	pH (lab)	su	15	0	0%	-0.000113	0.029	↔	0.000172	0.387	↔	2021-06-21	0.519	↔
2_1_131	W-2	Appendix III	Sulfate (as SO4)	mg/l	15	0	0%	0.947	0.578	↔	-0.279	0.412	↔	2019-04-14	0.104	↔
2_1_135	W-2	Appendix III	Total Dissolved Solids	mg/l	15	0	0%	-3.66	0.611	↔	0.274	0.677	↔	2018-10-09	0.057	↔
2_2_104	W-2	Appendix IV	Antimony	mg/l	11	10	91%	-0.000000000000000678	0.132	↔	0.00000332	0.000	↑	2021-12-05	1.000	↔
2_2_105	W-2	Appendix IV	Arsenic	mg/l	11	11	100%	0.000000000000000452	0.132	↔	-0.00000221	0.000	↓	2021-12-05	1.000	↔
2_2_106	W-2	Appendix IV	Barium	mg/l	13	0	0%	0.00000457	0.004	↑	-0.0000132	0.265	↔	2021-09-30	0.668	↔
2_2_107	W-2	Appendix IV	Beryllium	mg/l	11	8	73%	0.00000301	0.573	↔	0.00000000775	0.962	↔	2018-09-09	0.206	↔
2_2_109	W-2	Appendix IV	Cadmium	mg/l	13	9	69%	0.000000129	0.088	↔	-0.000000197	0.759	↔	2021-06-22	0.317	↔
2_2_112	W-2	Appendix IV	Chromium, Total	mg/l	11	10	91%	-0.000000358	0.950	↔	0.000000524	0.574	↔	2018-11-13	0.156	↔
2_2_113	W-2	Appendix IV	Cobalt	mg/l	13	0	0%	0.0000104	0.010	↑	-0.0000184	0.547	↔	2021-06-29	0.571	↔
2_2_116	W-2	Appendix IV	Fluoride (App IV)	mg/l	16	2	12%	0.00528	0.002	↑	-0.0101	0.005	↓	2020-12-14	0.706	↔
2_2_117	W-2	Appendix IV	Lead	mg/l	11	9	82%	-0.00000408	0.470	↔	-0.0000000930	0.748	↔	2018-09-28	0.273	↔
2_2_118	W-2	Appendix IV	Lithium	mg/l	13	0	0%	-0.000482	0.284	↔	0.000102	0.125	↔	2019-04-04	0.403	↔
2_2_120	W-2	Appendix IV	Mercury	mg/l	11	11	100%	-0.0000000944	0.752	↔	-0.0000000107	0.822	↔	2019-05-19	0.241	↔
2_2_121	W-2	Appendix IV	Molybdenum	mg/l	13	0	0%	-0.00000151	0.739	↔	0.00000228	0.005	↑	2019-06-03	0.705	↔
2_2_127	W-2	Appendix IV	Radium-226+228	pci/l	15	3	20%	-0.000736	0.846	↔	0.00155	0.081	↔	2019-05-17	0.394	↔
2_2_129	W-2	Appendix IV	Selenium	mg/l	13	0	0%	0.0000000728	0.878	↔	-0.00000334	0.098	↔	2021-04-16	0.519	↔

(Table continues on next page)

Table 9: Trend Tests: Piecewise Linear-Linear *(continued)*

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Line 1			Line 2			Break 1	R-Squared	Overall Trend
								Slope	p-Value	Trend	Slope	p-Value	Trend			
2_2_134	W-2	Appendix IV	Thallium	mg/l	11	9	82%	0.0000000444	0.926	↔	-0.0000000721	0.925	↔	2019-05-19	0.008	↔
2_3_114	W-2	Supplemental	Conductivity (field)	us/cm	16	0	0%	0.204	0.980	↔	-0.346	0.503	↔	2018-09-09	0.052	↔
2_3_122	W-2	Supplemental	Oxidation-reduction Potential (field)	mV	16	0	0%	1.20	0.052	↔	-2.30	0.359	↔	2020-12-15	0.317	↔
2_3_126	W-2	Supplemental	Radium-226	pci/l	15	5	33%	-0.000193	0.424	↔	0.000145	0.579	↔	2019-12-19	0.085	↔
2_3_128	W-2	Supplemental	Radium-228	pci/l	15	4	27%	-0.000372	0.907	↔	0.00137	0.069	↔	2019-05-31	0.438	↔
2_3_132	W-2	Supplemental	Temperature (field)	deg c	16	0	0%	0.0230	0.018	↔	-0.00106	0.068	↔	2018-08-13	0.557	↔
2_3_133	W-2	Supplemental	Temperature (lab)	deg c	15	0	0%	0.0124	0.003	↑	-0.00114	0.115	↔	2018-12-20	0.695	↔
2_3_136	W-2	Supplemental	Total Suspended Solids	mg/l	13	3	23%	0.00513	0.074	↔	-0.0105	0.679	↔	2021-06-22	0.332	↔
2_3_137	W-2	Supplemental	Turbidity (field)	ntu	16	0	0%	-0.00130	0.662	↔	0.00185	0.341	↔	2019-12-18	0.099	↔
3_1_108	W-4	Appendix III	Boron	mg/l	14	0	0%	0.000626	0.166	↔	-0.00237	0.016	↔	2020-12-15	0.539	↔
3_1_110	W-4	Appendix III	Calcium	mg/l	15	0	0%	-1.52	0.217	↔	0.0563	0.264	↔	2018-07-10	0.250	↔
3_1_111	W-4	Appendix III	Chloride (as Cl)	mg/l	15	0	0%	-0.0962	0.031	↔	0.0608	0.134	↔	2020-05-10	0.588	↔
3_1_115	W-4	Appendix III	Fluoride	mg/l	16	6	38%	0.0137	0.073	↔	-0.0166	0.283	↔	2020-06-16	0.300	↔
3_1_123	W-4	Appendix III	pH (field)	su	16	0	0%	0.00121	0.839	↔	0.000129	0.111	↔	2018-05-16	0.242	↔
3_1_124	W-4	Appendix III	pH (lab)	su	15	0	0%	-0.00169	0.439	↔	-0.0000150	0.782	↔	2018-07-09	0.270	↔
3_1_131	W-4	Appendix III	Sulfate (as SO4)	mg/l	15	0	0%	3.63	0.631	↔	-1.03	0.049	↔	2018-09-04	0.343	↔
3_1_135	W-4	Appendix III	Total Dissolved Solids	mg/l	15	0	0%	-23.9	0.343	↔	1.05	0.645	↔	2018-10-09	0.188	↔
3_2_104	W-4	Appendix IV	Antimony	mg/l	11	11	100%	0.000000000000000183	0.132	↔	-0.000000895	0.000	↓	2021-12-05	1.000	↔
3_2_105	W-4	Appendix IV	Arsenic	mg/l	11	10	91%	0.000000000000000968	0.132	↔	-0.000000474	0.000	↓	2021-12-05	1.000	↔
3_2_106	W-4	Appendix IV	Barium	mg/l	13	0	0%	-0.0000101	0.308	↔	0.000000107	0.828	↔	2018-10-09	0.330	↔
3_2_107	W-4	Appendix IV	Beryllium	mg/l	11	11	100%	0.000000183	0.897	↔	0.0000000191	0.932	↔	2019-08-09	0.069	↔
3_2_109	W-4	Appendix IV	Cadmium	mg/l	13	4	31%	-0.000000722	0.071	↔	0.0000000107	0.723	↔	2018-10-27	0.541	↔
3_2_112	W-4	Appendix IV	Chromium, Total	mg/l	11	10	91%	-0.000000746	0.903	↔	0.000000507	0.608	↔	2018-11-25	0.115	↔
3_2_113	W-4	Appendix IV	Cobalt	mg/l	13	0	0%	0.00000452	0.244	↔	-0.00000134	0.029	↔	2019-03-23	0.483	↔
3_2_116	W-4	Appendix IV	Fluoride (App IV)	mg/l	16	6	38%	0.0137	0.073	↔	-0.0166	0.283	↔	2020-06-16	0.300	↔
3_2_117	W-4	Appendix IV	Lead	mg/l	11	11	100%	0.000000000000000290	0.132	↔	-0.00000142	0.000	↓	2021-12-05	1.000	↔
3_2_118	W-4	Appendix IV	Lithium	mg/l	13	0	0%	-0.00185	0.032	↔	0.0000758	0.486	↔	2018-12-13	0.619	↔
3_2_120	W-4	Appendix IV	Mercury	mg/l	11	11	100%	-0.0000000944	0.752	↔	-0.0000000107	0.822	↔	2019-05-19	0.241	↔
3_2_121	W-4	Appendix IV	Molybdenum	mg/l	13	0	0%	-0.00000322	0.075	↔	-0.000000120	0.387	↔	2018-11-08	0.716	↔
3_2_127	W-4	Appendix IV	Radium-226+228	pci/l	15	2	13%	-0.000350	0.298	↔	0.00257	0.091	↔	2021-03-18	0.428	↔
3_2_129	W-4	Appendix IV	Selenium	mg/l	13	5	38%	-0.00000841	0.441	↔	-0.000000797	0.032	↔	2018-08-14	0.603	↔
3_2_134	W-4	Appendix IV	Thallium	mg/l	11	11	100%	0.000000000000000119	0.132	↔	-0.000000584	0.000	↓	2021-12-05	1.000	↔
3_3_114	W-4	Supplemental	Conductivity (field)	us/cm	16	0	0%	-0.378	0.912	↔	-1.96	0.008	↓	2019-04-14	0.656	↔
3_3_122	W-4	Supplemental	Oxidation-reduction Potential (field)	mV	16	0	0%	0.0416	0.501	↔	-0.246	0.362	↔	2020-12-16	0.228	↔
3_3_126	W-4	Supplemental	Radium-226	pci/l	15	7	47%	0.00274	0.141	↔	-0.000130	0.013	↔	2018-06-25	0.528	↔
3_3_128	W-4	Supplemental	Radium-228	pci/l	15	6	40%	-0.000249	0.349	↔	0.00232	0.059	↔	2021-02-27	0.535	↔
3_3_132	W-4	Supplemental	Temperature (field)	deg c	16	0	0%	0.0124	0.532	↔	-0.000661	0.418	↔	2018-07-24	0.100	↔
3_3_133	W-4	Supplemental	Temperature (lab)	deg c	15	0	0%	0.00879	0.017	↔	-0.00194	0.167	↔	2019-05-07	0.545	↔
3_3_136	W-4	Supplemental	Total Suspended Solids	mg/l	13	3	23%	0.0122	0.031	↔	-0.0518	0.293	↔	2021-06-22	0.486	↔
3_3_137	W-4	Supplemental	Turbidity (field)	ntu	16	0	0%	-0.00153	0.438	↔	0.00286	0.208	↔	2020-06-15	0.171	↔

ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Line 1			Line 2			Line 3			Break 1	Break 2	R-Squared	Overall Trend
								Slope	p-Value	Trend	Slope	p-Value	Trend	Slope	p-Value	Trend				
1_1_108	W-1	Appendix III	Boron	mg/l	14	0	0%	-0.00141	0.653	↔	0.000171	0.055	↔	-0.000516	0.102	↔	2018-06-18	2020-12-15	0.613	↔
1_1_110	W-1	Appendix III	Calcium	mg/l	15	0	0%	-0.722	0.100	↔	0.0860	0.293	↔	-0.0317	0.191	↔	2018-07-09	2019-12-18	0.641	↔
1_1_111	W-1	Appendix III	Chloride (as Cl)	mg/l	15	0	0%	-0.0268	0.000	↓	0.0582	0.025	↔	0.101	0.001	↑	2020-11-17	2021-07-10	0.957	↔
1_1_115	W-1	Appendix III	Fluoride	mg/l	16	2	12%	-0.000907	0.534	↔	0.00928	0.003	↑	-0.00363	0.008	↓	2019-09-06	2020-06-16	0.796	↔
1_1_123	W-1	Appendix III	pH (field)	su	16	0	0%	0.00185	0.352	↔	-0.00304	0.346	↔	0.000180	0.102	↔	2018-08-12	2018-10-15	0.373	↔
1_1_124	W-1	Appendix III	pH (lab)	su	15	0	0%	-0.00200	0.232	↔	0.00264	0.324	↔	-0.000202	0.041	↔	2018-08-11	2018-11-12	0.508	↔
1_2_104	W-1	Appendix IV	Antimony	mg/l	11	11	100%	-0.000000407	0.872	↔	0.000000244	0.493	↔	-0.000000590	0.019	↔	2018-10-13	2021-08-18	0.899	↔
1_2_105	W-1	Appendix IV	Arsenic	mg/l	11	11	100%	-0.0000000000654	0.770	↔	0.0000000000334	0.304	↔	-0.00000222	0.000	↓	2018-10-11	2021-12-05	1.000	↔
1_2_106	W-1	Appendix IV	Barium	mg/l	13	0	0%	-0.000000605	0.957	↔	0.00000455	0.486	↔	-0.00000794	0.240	↔	2020-11-25	2021-08-05	0.361	↔
1_2_107	W-1	Appendix IV	Beryllium	mg/l	11	7	64%	0.00000489	0.182	↔	-0.000000302	0.517	↔	-0.00000163	0.503	↔	2018-10-10	2021-11-07	0.530	↔
1_2_109	W-1	Appendix IV	Cadmium	mg/l	13	9	69%	0.00000113	0.034	↔	-0.000000379	0.029	↔	0.000000112	0.165	↔	2018-11-12	2020-03-06	0.727	↔
1_2_113	W-1	Appendix IV	Cobalt	mg/l	13	0	0%	-0.000000227	0.392	↔	0.00000130	0.265	↔	-0.00000165	0.020	↔	2020-04-19	2021-06-15	0.662	↔
1_2_116	W-1	Appendix IV	Fluoride (App IV)	mg/l	16	2	12%	-0.000907	0.534	↔	0.00928	0.003	↑	-0.00363	0.008	↓	2019-09-06	2020-06-16	0.796	↔
1_2_117	W-1	Appendix IV	Lead	mg/l	11	10	91%	-0.00000444	0.541	↔	-0.0000000000217	1.000	↔	-0.00000143	0.698	↔	2018-10-05	2021-12-05	0.303	↔
1_2_118	W-1	Appendix IV	Lithium	mg/l	13	0	0%	0.000389	0.730	↔	-0.0000337	0.228	↔	0.0000854	0.365	↔	2018-08-12	2021-01-16	0.338	↔
1_2_120	W-1	Appendix IV	Mercury	mg/l	11	11	100%	0.0000000910	0.922	↔	-0.0000000979	0.224	↔	0.0000000447	0.787	↔	2018-09-09	2020-06-16	0.381	↔
1_2_134	W-1	Appendix IV	Thallium	mg/l	11	10	91%	-0.000000140	0.695	↔	0.000000347	0.016	↔	-0.000000904	0.039	↔	2019-07-30	2021-06-22	0.861	↔
1_3_114	W-1	Supplemental	Conductivity (field)	us/cm	16	0	0%	-1.61	0.470	↔	0.300	0.888	↔	-0.165	0.241	↔	2018-08-05	2019-04-14	0.299	↔
1_3_122	W-1	Supplemental	Oxidation-reduction Potential (field)	mV	16	0	0%	-0.806	0.657	↔	3.44	0.059	↔	-3.55	0.140	↔	2019-07-23	2020-12-15	0.522	↔
1_3_126	W-1	Supplemental	Radium-226	pci/l	15	8	53%	0.00309	0.022	↔	-0.000325	0.066	↔	-0.00000453	0.973	↔	2018-07-10	2020-03-04	0.693	↔
1_3_132	W-1	Supplemental	Temperature (field)	deg c	16	0	0%	0.0137	0.207	↔	-0.00181	0.442	↔	0.00142	0.426	↔	2018-09-08	2020-05-17	0.350	↔
1_3_133	W-1	Supplemental	Temperature (lab)	deg c	15	0	0%	-0.000677	0.952	↔	0.0144	0.016	↔	-0.000816	0.121	↔	2018-07-09	2019-01-03	0.849	↔
2_1_108	W-2	Appendix III	Boron	mg/l	14	0	0%	0.00367	0.253	↔	0.00140	0.041	↔	0.00619	0.112	↔	2018-11-12	2021-08-28	0.906	↔
2_1_110	W-2	Appendix III	Calcium	mg/l	15	0	0%	-0.398	0.038	↔	0.196	0.439	↔	-0.00941	0.792	↔	2018-10-20	2019-09-23	0.551	↔
2_1_111	W-2	Appendix III	Chloride (as Cl)	mg/l	15	0	0%	-0.106	0.212	↔	0.113	0.522	↔	-0.00656	0.415	↔	2018-08-13	2019-03-11	0.601	↔
2_1_115	W-2	Appendix III	Fluoride	mg/l	16	2	12%	0.000244	0.935	↔	0.0175	0.005	↑	-0.0107	0.001	↓	2019-09-02	2020-08-09	0.850	↔
2_1_135	W-2	Appendix III	Total Dissolved Solids	mg/l	15	0	0%	-6.26	0.306	↔	4.51	0.610	↔	-0.611	0.628	↔	2018-10-10	2019-06-02	0.164	↔
2_2_104	W-2	Appendix IV	Antimony	mg/l	11	10	91%	0.000000161	0.816	↔	-0.000000103	0.606	↔	0.00000220	0.018	↔	2018-11-24	2021-08-18	0.901	↔
2_2_105	W-2	Appendix IV	Arsenic	mg/l	11	11	100%	-0.000000102	0.826	↔	0.0000000665	0.618	↔	-0.00000146	0.018	↔	2018-11-17	2021-08-18	0.900	↔
2_2_107	W-2	Appendix IV	Beryllium	mg/l	11	8	73%	0.00000355	0.297	↔	-0.00000193	0.834	↔	0.000000389	0.194	↔	2018-10-09	2019-05-31	0.515	↔
2_2_109	W-2	Appendix IV	Cadmium	mg/l	13	9	69%	-0.000000347	0.623	↔	0.000000246	0.185	↔	-0.000000533	0.437	↔	2019-03-08	2021-10-22	0.425	↔
2_2_112	W-2	Appendix IV	Chromium, Total	mg/l	11	10	91%	-0.00000193	0.482	↔	0.00000230	0.025	↔	-0.0000105	0.008	↓	2019-05-21	2021-11-22	0.874	↔
2_2_113	W-2	Appendix IV	Cobalt	mg/l	13	0	0%	-0.00000826	0.759	↔	0.0000231	0.009	↑	-0.0000288	0.283	↔	2019-07-31	2021-06-22	0.762	↔
2_2_116	W-2	Appendix IV	Fluoride (App IV)	mg/l	16	2	12%	0.000244	0.935	↔	0.0175	0.005	↑	-0.0107	0.001	↓	2019-09-02	2020-08-09	0.850	↔
2_2_117	W-2	Appendix IV	Lead	mg/l	11	9	82%	-0.00000408	0.541	↔	-0.0000000000199	1.000	↔	-0.00000121	0.719	↔	2018-10-05	2021-12-05	0.297	↔
2_2_120	W-2	Appendix IV	Mercury	mg/l	11	11	100%	0.0000000909	0.922	↔	-0.0000000978	0.485	↔	0.0000000445	0.573	↔	2018-09-09	2020-06-15	0.381	↔
2_2_121	W-2	Appendix IV	Molybdenum	mg/l	13	0	0%	-0.000000843	0.605	↔	0.00000383	0.148	↔	0.000000947	0.703	↔	2019-11-04	2021-01-25	0.739	↔
2_2_129	W-2	Appendix IV	Selenium	mg/l	13	0	0%	-0.00000404	0.249	↔	0.0000118	0.132	↔	-0.00000214	0.021	↔	2019-08-01	2020-01-24	0.692	↔
2_3_114	W-2	Supplemental	Conductivity (field)	us/cm	16	0	0%	1.07	0.791	↔	-1.88	0.279	↔	1.70	0.594	↔	2019-04-03	2020-12-15	0.184	↔
2_3_122	W-2	Supplemental	Oxidation-reduction Potential (field)	mV	16	0	0%	-0.557	0.627	↔	4.25	0.074	↔	-3.65	0.121	↔	2019-10-23	2020-12-15	0.546	↔
2_3_126	W-2	Supplemental	Radium-226	pci/l	15	5	33%	0.00182	0.618	↔	-0.00104	0.521	↔	0.000145	0.410	↔	2018-07-09	2019-02-14	0.178	↔

(Table continues on next page)

Table 10: Trend Tests: Piecewise Linear-Linear-Linear (*continued*)

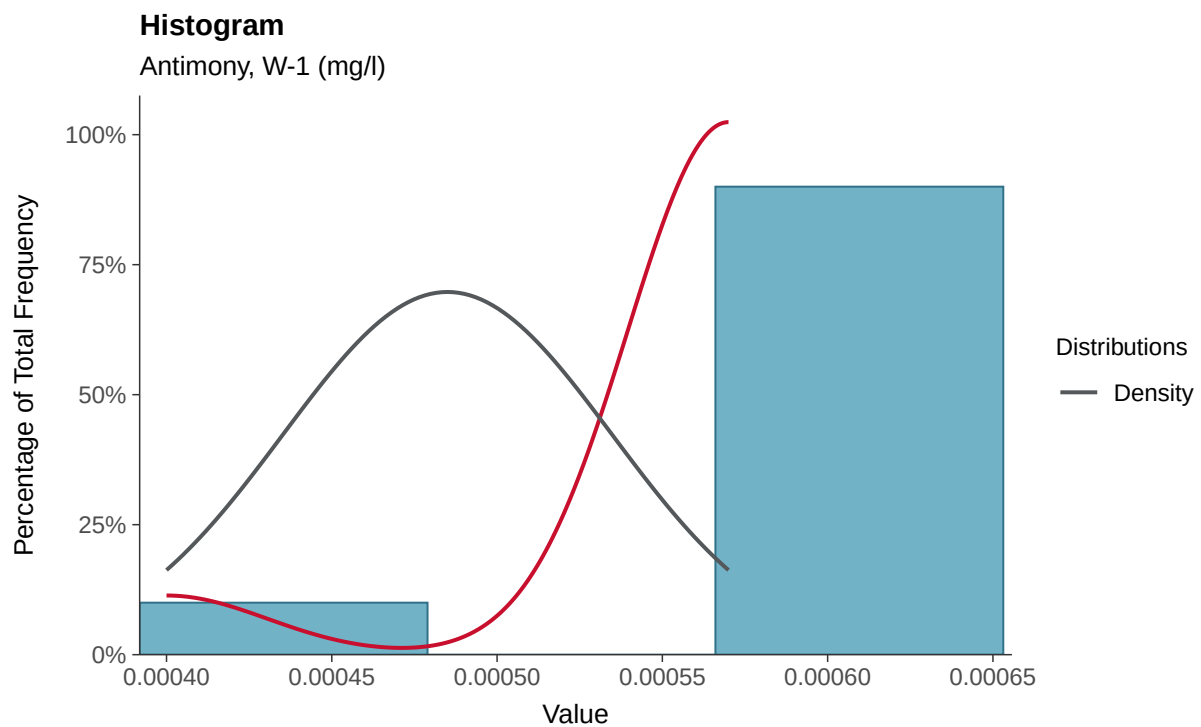
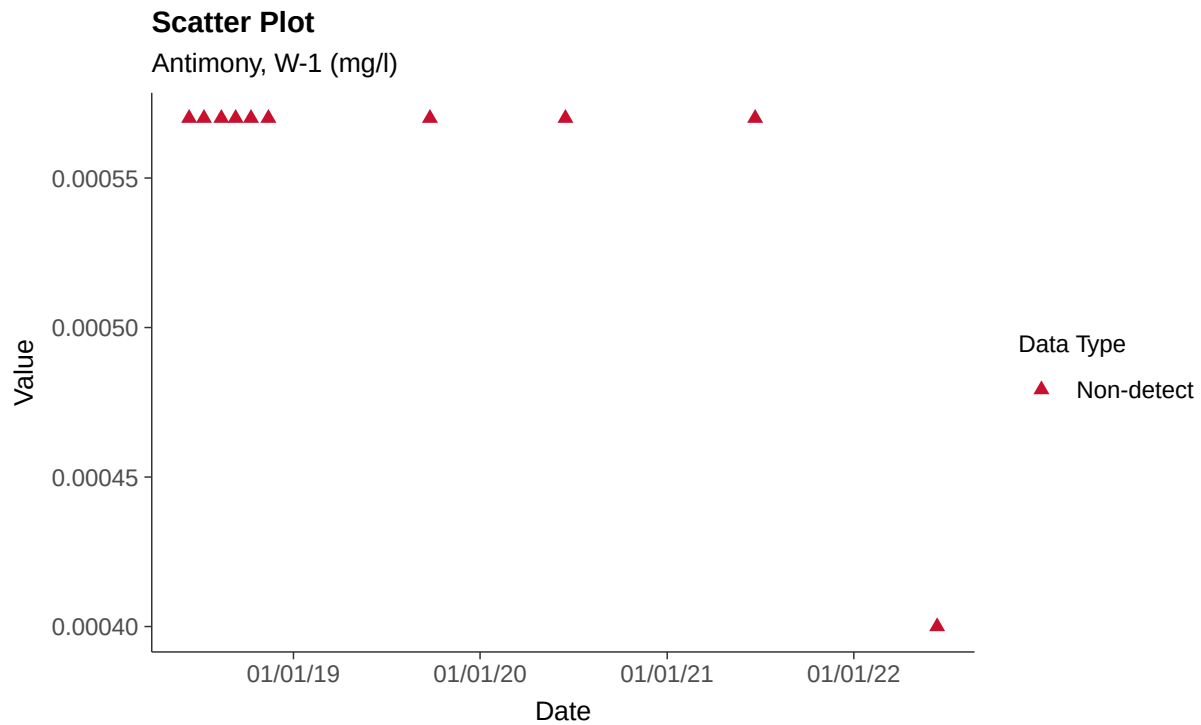
ID	Well	Constituent Type	Constituent	Unit	n	No. NDs	% NDs	Line 1			Line 2			Line 3			Break 1	Break 2	R-Squared	Overall Trend
								Slope	p-Value	Trend	Slope	p-Value	Trend	Slope	p-Value	Trend				
2_3_132	W-2	Supplemental	Temperature (field)	deg c	16	0	0%	0.0242	0.015	↔	-0.00630	0.728	↔	-0.000230	0.762	↔	2018-08-31	2019-04-14	0.637	↔
2_3_133	W-2	Supplemental	Temperature (lab)	deg c	15	0	0%	0.0125	0.007	↑	-0.00181	0.147	↔	0.000801	0.882	↔	2019-01-08	2021-06-22	0.716	↔
2_3_136	W-2	Supplemental	Total Suspended Solids	mg/l	13	3	23%	-0.00877	0.665	↔	0.0163	0.225	↔	-0.0187	0.176	↔	2019-08-27	2021-06-21	0.534	↔
3_1_108	W-4	Appendix III	Boron	mg/l	14	0	0%	-0.00194	0.370	↔	0.00105	0.180	↔	-0.00262	0.011	↔	2018-10-27	2020-12-15	0.650	↔
3_1_110	W-4	Appendix III	Calcium	mg/l	15	0	0%	-2.38	0.064	↔	0.805	0.482	↔	-0.0254	0.743	↔	2018-07-10	2018-12-30	0.425	↔
3_1_115	W-4	Appendix III	Fluoride	mg/l	16	6	38%	-0.00900	0.612	↔	0.0538	0.088	↔	-0.0259	0.084	↔	2019-07-31	2020-06-16	0.513	↔
3_1_124	W-4	Appendix III	pH (lab)	su	15	0	0%	-0.00331	0.010	↓	0.00167	0.125	↔	-0.000137	0.075	↔	2018-07-12	2018-11-24	0.666	↔
3_1_135	W-4	Appendix III	Total Dissolved Solids	mg/l	15	0	0%	102	0.430	↔	-53.7	0.108	↔	1.90	0.443	↔	2018-06-02	2018-10-10	0.406	↔
3_2_104	W-4	Appendix IV	Antimony	mg/l	11	11	100%	-0.00000000000000114	0.872	↔	0.000000000000000191	0.231	↔	-0.000000895	0.000	↓	2018-07-10	2021-12-05	1.000	↔
3_2_105	W-4	Appendix IV	Arsenic	mg/l	11	10	91%	-0.0000000217	0.871	↔	0.0000000130	0.488	↔	-0.000000312	0.018	↔	2018-10-16	2021-08-18	0.900	↔
3_2_106	W-4	Appendix IV	Barium	mg/l	13	0	0%	-0.0000124	0.097	↔	0.00000320	0.288	↔	-0.000000795	0.365	↔	2018-11-02	2019-10-10	0.509	↔
3_2_107	W-4	Appendix IV	Beryllium	mg/l	11	11	100%	-0.0000000965	0.322	↔	0.000000600	0.006	↑	-0.00000292	0.000	↓	2019-12-31	2021-11-21	0.975	↔
3_2_109	W-4	Appendix IV	Cadmium	mg/l	13	4	31%	-0.000000694	0.181	↔	-0.000000277	0.460	↔	0.000000308	0.239	↔	2018-10-09	2021-10-24	0.681	↔
3_2_112	W-4	Appendix IV	Chromium, Total	mg/l	11	10	91%	-0.000000428	0.676	↔	0.00000410	0.035	↔	-0.0000105	0.013	↔	2020-05-18	2021-10-20	0.848	↔
3_2_113	W-4	Appendix IV	Cobalt	mg/l	13	0	0%	0.00000660	0.134	↔	-0.00000492	0.575	↔	-0.00000105	0.271	↔	2019-04-21	2019-12-19	0.536	↔
3_2_116	W-4	Appendix IV	Fluoride (App IV)	mg/l	16	6	38%	-0.00900	0.612	↔	0.0538	0.088	↔	-0.0259	0.084	↔	2019-07-31	2020-06-16	0.513	↔
3_2_117	W-4	Appendix IV	Lead	mg/l	11	11	100%	-0.000000000000000118	0.915	↔	0.000000000000000314	0.215	↔	-0.00000142	0.000	↓	2018-08-05	2021-12-05	1.000	↔
3_2_120	W-4	Appendix IV	Mercury	mg/l	11	11	100%	0.0000000909	0.922	↔	-0.0000000978	0.485	↔	0.0000000445	0.573	↔	2018-09-09	2020-06-15	0.381	↔
3_2_121	W-4	Appendix IV	Molybdenum	mg/l	13	0	0%	-0.00000356	0.080	↔	0.0000000288	0.924	↔	-0.000000381	0.583	↔	2018-11-09	2020-12-16	0.739	↔
3_2_129	W-4	Appendix IV	Selenium	mg/l	13	5	38%	-0.00000332	0.441	↔	-0.000000406	0.698	↔	-0.00000274	0.505	↔	2019-01-19	2021-11-29	0.608	↔
3_2_134	W-4	Appendix IV	Thallium	mg/l	11	11	100%	-0.000000000000180	0.827	↔	0.0000000000000862	0.241	↔	-0.000000584	0.000	↓	2018-10-02	2021-12-05	1.000	↔
3_3_122	W-4	Supplemental	Oxidation-reduction Potential (field)	mV	16	0	0%	-0.288	0.613	↔	0.0761	0.448	↔	-0.281	0.334	↔	2018-09-10	2020-12-30	0.270	↔
3_3_132	W-4	Supplemental	Temperature (field)	deg c	16	0	0%	0.0132	0.374	↔	-0.0131	0.674	↔	-0.0000769	0.953	↔	2018-09-03	2018-12-03	0.147	↔
3_3_133	W-4	Supplemental	Temperature (lab)	deg c	15	0	0%	-0.00705	0.881	↔	0.0100	0.042	↔	-0.00220	0.152	↔	2018-06-08	2019-05-13	0.574	↔
3_3_136	W-4	Supplemental	Total Suspended Solids	mg/l	13	3	23%	-0.00757	0.439	↔	0.0852	0.045	↔	-0.0655	0.008	↓	2020-04-25	2021-03-12	0.790	↔

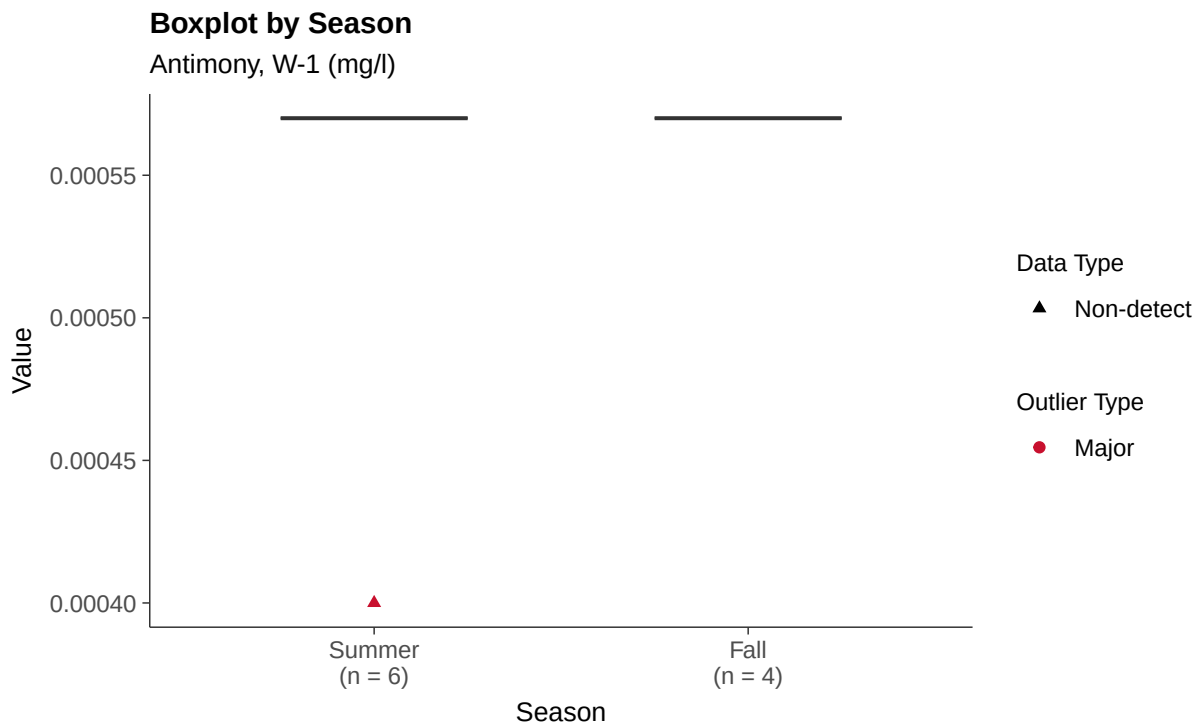
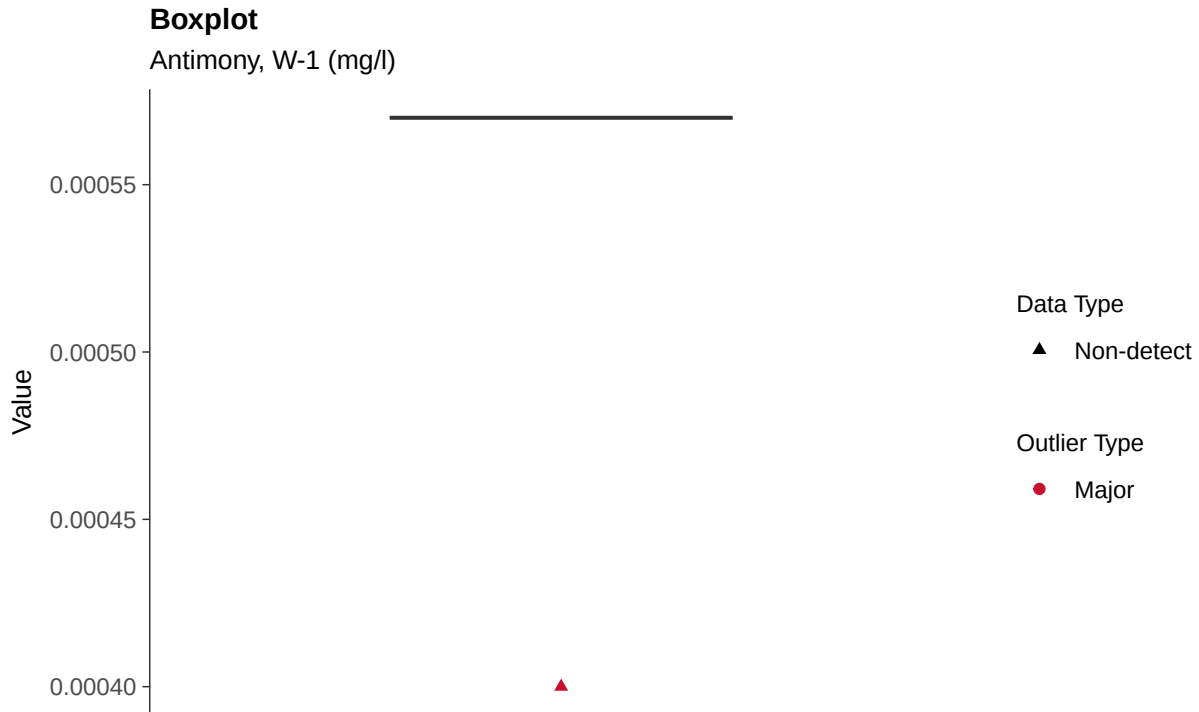
Hayden Alluvial – 95% Lower Confidence Limits for Assessment Monitoring

Code	Well	Type	Constituent	Unit	n	% NDs	Range of Sampling Period	Method	95% LCL
1_2_104	W-1	Appendix IV	Antimony	mg/l	11	100%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.00057
1_2_105	W-1	Appendix IV	Arsenic	mg/l	11	100%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.00075
1_2_106	W-1	Appendix IV	Barium	mg/l	13	0%	2018-03-11 to 2022-06-14	Adjusted Gamma LCL	0.0094
1_2_107	W-1	Appendix IV	Beryllium	mg/l	11	64%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.00031
1_2_109	W-1	Appendix IV	Cadmium	mg/l	13	69%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.00020
1_2_112	W-1	Appendix IV	Chromium, Total	mg/l	11	91%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.00098
1_2_113	W-1	Appendix IV	Cobalt	mg/l	13	0%	2018-03-11 to 2022-06-14	Adjusted Gamma LCL	0.00085
1_2_116	W-1	Appendix IV	Fluoride (App IV)	mg/l	16	12%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.29
1_2_117	W-1	Appendix IV	Lead	mg/l	11	91%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.00045
1_2_118	W-1	Appendix IV	Lithium	mg/l	13	0%	2018-03-11 to 2022-06-14	Adjusted Gamma LCL	0.27
1_2_120	W-1	Appendix IV	Mercury	mg/l	11	100%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.00013
1_2_121	W-1	Appendix IV	Molybdenum	mg/l	13	0%	2018-03-11 to 2022-06-14	Adjusted Gamma LCL	0.0031
1_2_127	W-1	Appendix IV	Radium-226+228	pci/l	15	20%	2018-03-11 to 2022-06-14	Gamma MLE Bootstrap LCL	0.644
1_2_129	W-1	Appendix IV	Selenium	mg/l	13	0%	2018-03-11 to 2022-06-14	Normal LCL	0.0084
1_2_134	W-1	Appendix IV	Thallium	mg/l	11	91%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.00020
2_2_104	W-2	Appendix IV	Antimony	mg/l	11	91%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.00057
2_2_105	W-2	Appendix IV	Arsenic	mg/l	11	100%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.00075
2_2_106	W-2	Appendix IV	Barium	mg/l	13	0%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.0055
2_2_107	W-2	Appendix IV	Beryllium	mg/l	11	73%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.00031
2_2_109	W-2	Appendix IV	Cadmium	mg/l	13	69%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.00021
2_2_112	W-2	Appendix IV	Chromium, Total	mg/l	11	91%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.00098
2_2_113	W-2	Appendix IV	Cobalt	mg/l	13	0%	2018-03-11 to 2022-06-14	Adjusted Gamma LCL	0.0026
2_2_116	W-2	Appendix IV	Fluoride (App IV)	mg/l	16	12%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.52
2_2_117	W-2	Appendix IV	Lead	mg/l	11	82%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.00045
2_2_118	W-2	Appendix IV	Lithium	mg/l	13	0%	2018-03-11 to 2022-06-14	Adjusted Gamma LCL	0.61
2_2_120	W-2	Appendix IV	Mercury	mg/l	11	100%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.00013
2_2_121	W-2	Appendix IV	Molybdenum	mg/l	13	0%	2018-03-11 to 2022-06-14	Adjusted Gamma LCL	0.0034
2_2_127	W-2	Appendix IV	Radium-226+228	pci/l	15	20%	2018-03-11 to 2022-06-14	Gamma MLE Bootstrap LCL	0.809
2_2_129	W-2	Appendix IV	Selenium	mg/l	13	0%	2018-03-11 to 2022-06-14	Adjusted Gamma LCL	0.0028
2_2_134	W-2	Appendix IV	Thallium	mg/l	11	82%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.00020
3_2_104	W-4	Appendix IV	Antimony	mg/l	11	100%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.00057
3_2_105	W-4	Appendix IV	Arsenic	mg/l	11	91%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.00075
3_2_106	W-4	Appendix IV	Barium	mg/l	13	0%	2018-03-11 to 2022-06-14	Adjusted Gamma LCL	0.0079
3_2_107	W-4	Appendix IV	Beryllium	mg/l	11	100%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.00031
3_2_109	W-4	Appendix IV	Cadmium	mg/l	13	31%	2018-03-11 to 2022-06-14	Lognormal MLE Likelihood Profile LCL	0.00021
3_2_112	W-4	Appendix IV	Chromium, Total	mg/l	11	91%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.00098
3_2_113	W-4	Appendix IV	Cobalt	mg/l	13	0%	2018-03-11 to 2022-06-14	Adjusted Gamma LCL	0.0064
3_2_116	W-4	Appendix IV	Fluoride (App IV)	mg/l	16	38%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.56
3_2_117	W-4	Appendix IV	Lead	mg/l	11	100%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.00045
3_2_118	W-4	Appendix IV	Lithium	mg/l	13	0%	2018-03-11 to 2022-06-14	Adjusted Gamma LCL	0.68
3_2_120	W-4	Appendix IV	Mercury	mg/l	11	100%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.00013
3_2_121	W-4	Appendix IV	Molybdenum	mg/l	13	0%	2018-03-11 to 2022-06-14	Adjusted Gamma LCL	0.0029
3_2_127	W-4	Appendix IV	Radium-226+228	pci/l	15	13%	2018-03-11 to 2022-06-14	Gamma MLE Bootstrap LCL	0.691
3_2_129	W-4	Appendix IV	Selenium	mg/l	13	38%	2018-03-11 to 2022-06-14	Gamma MLE Bootstrap LCL	0.0009
3_2_134	W-4	Appendix IV	Thallium	mg/l	11	100%	2018-03-11 to 2022-06-14	Nonparametric LCL around the Median	0.00020

Appendix IV: Antimony, W-1

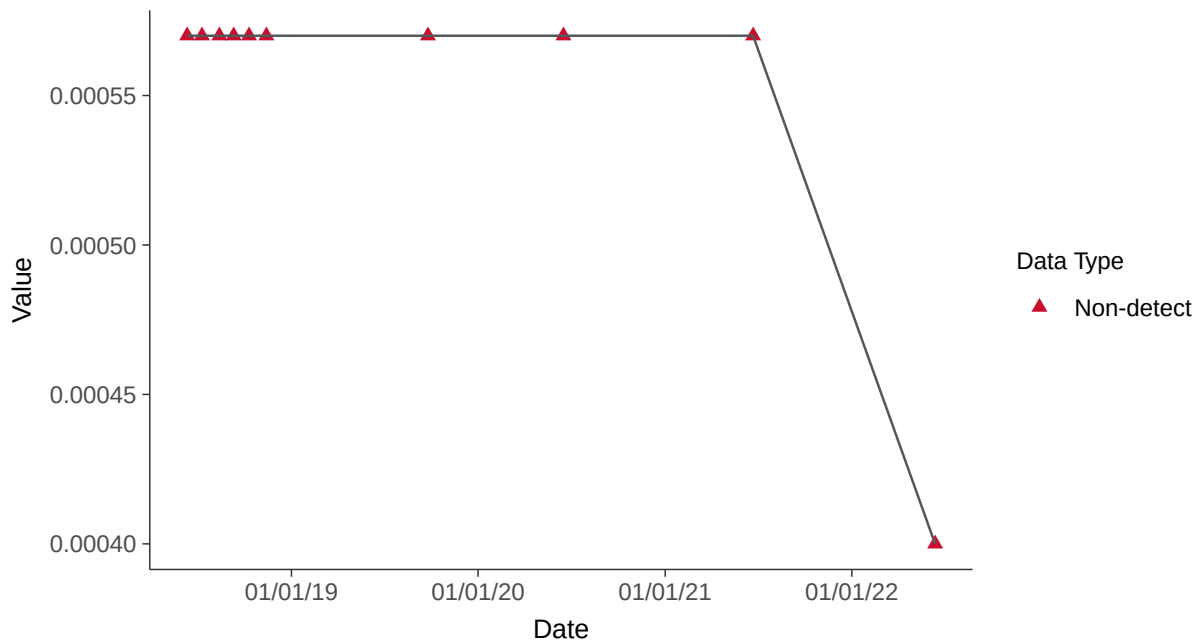
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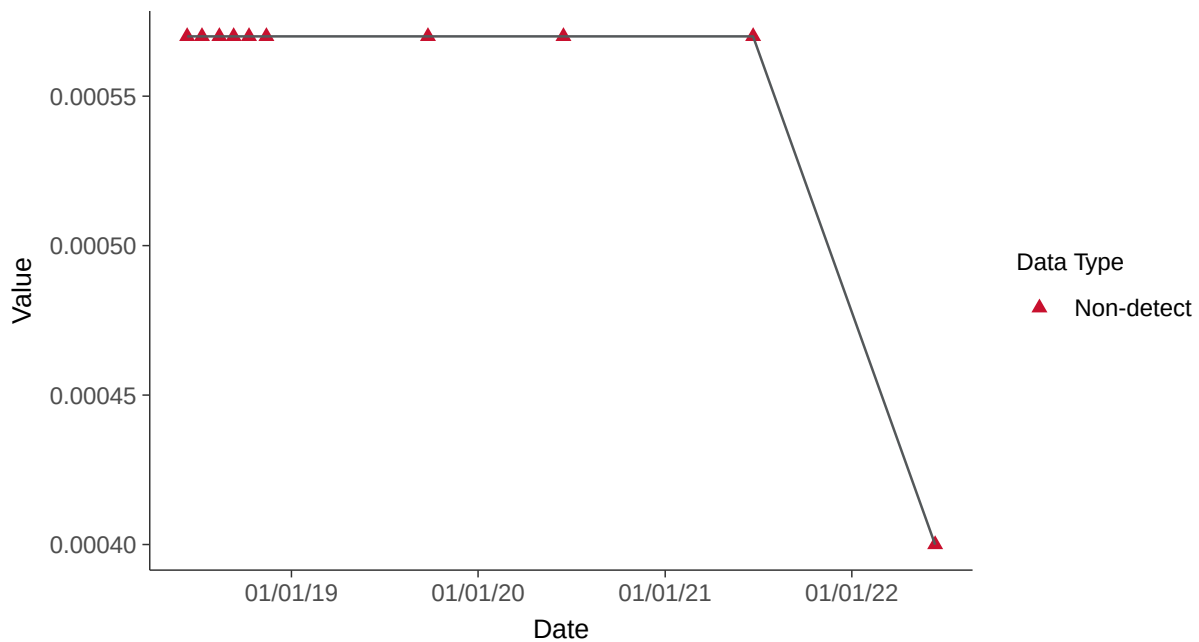
Trend Regression: Piecewise Linear-Linear

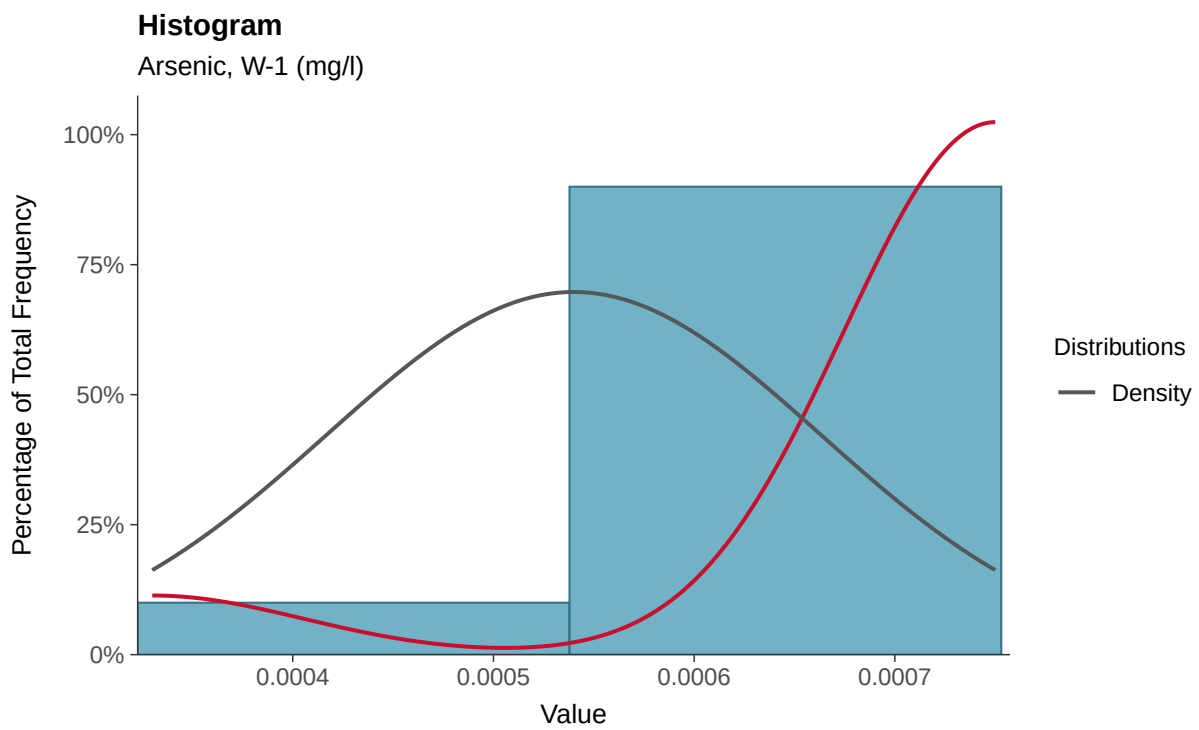
Antimony, W-1 (mg/l)

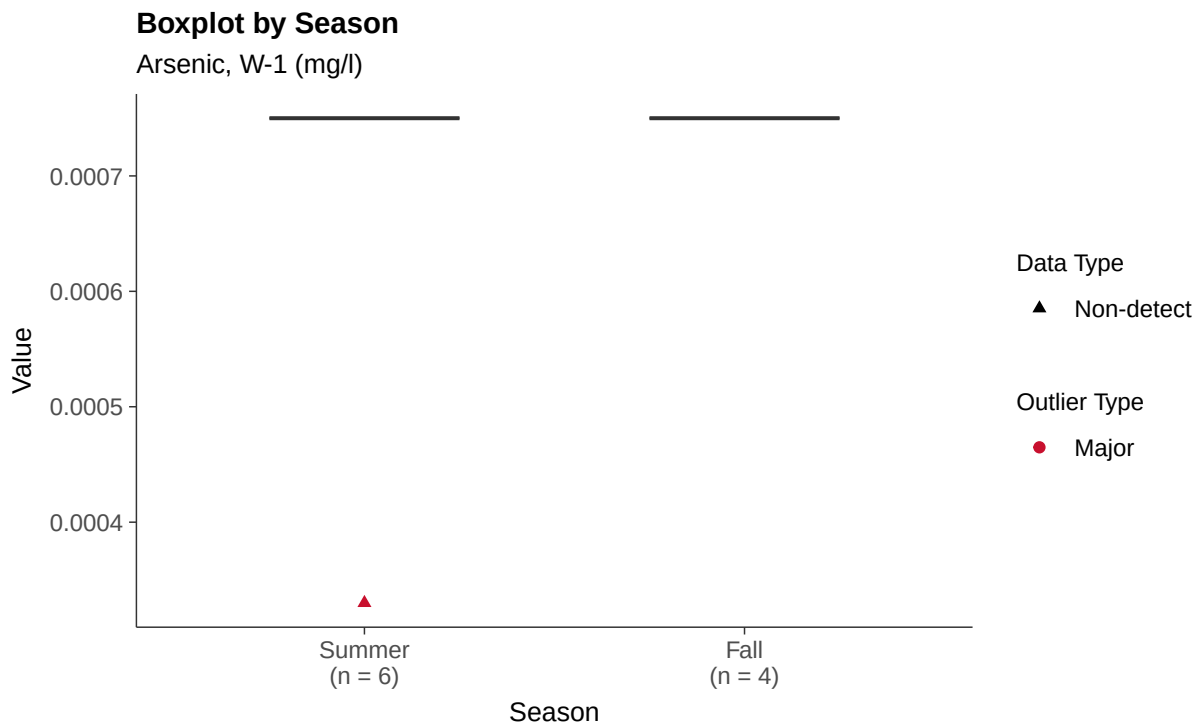
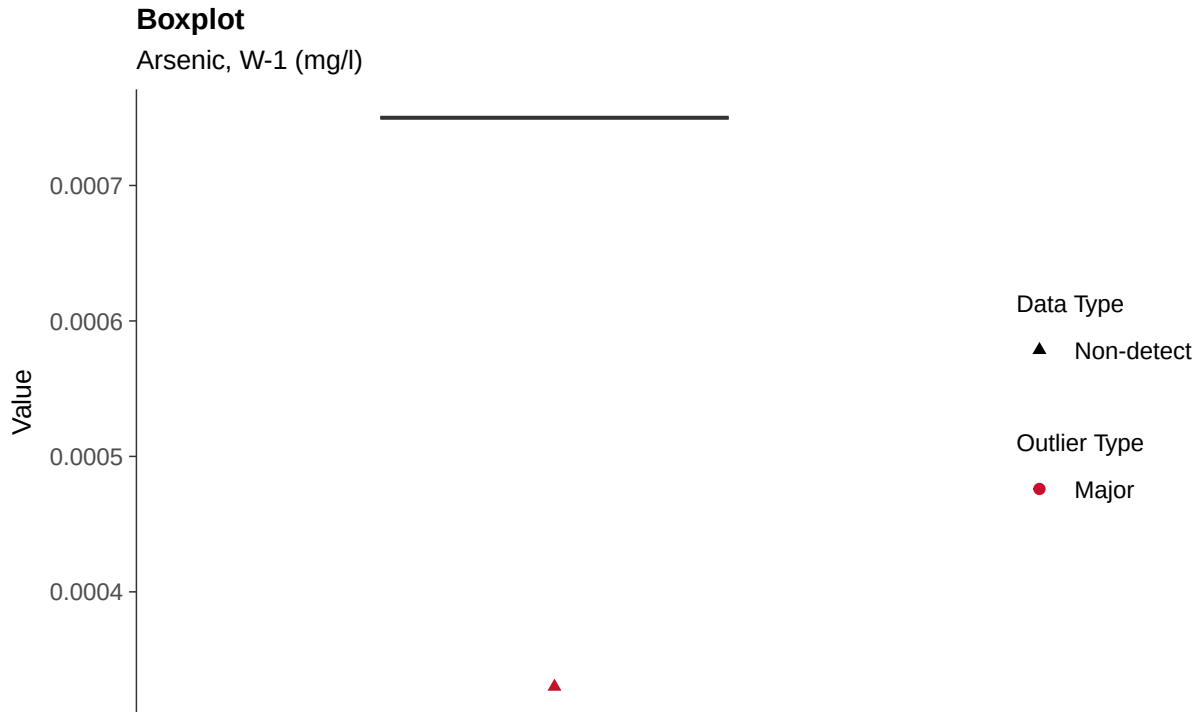


Trend Regression: Piecewise Linear-Linear-Linear

Antimony, W-1 (mg/l)



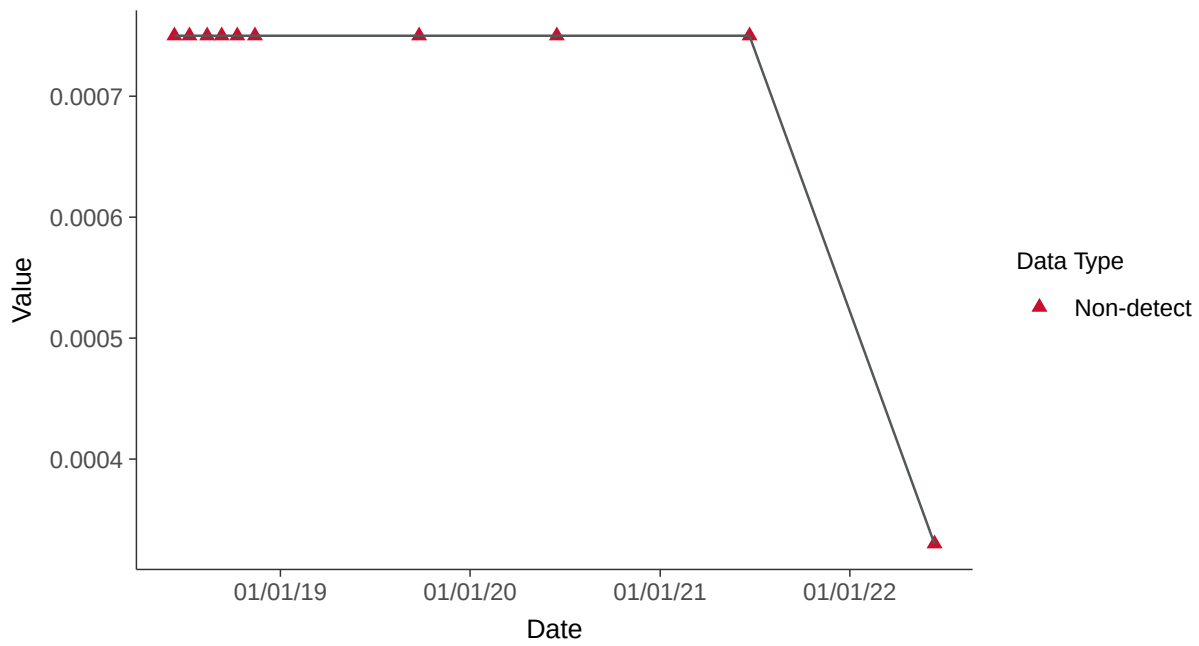






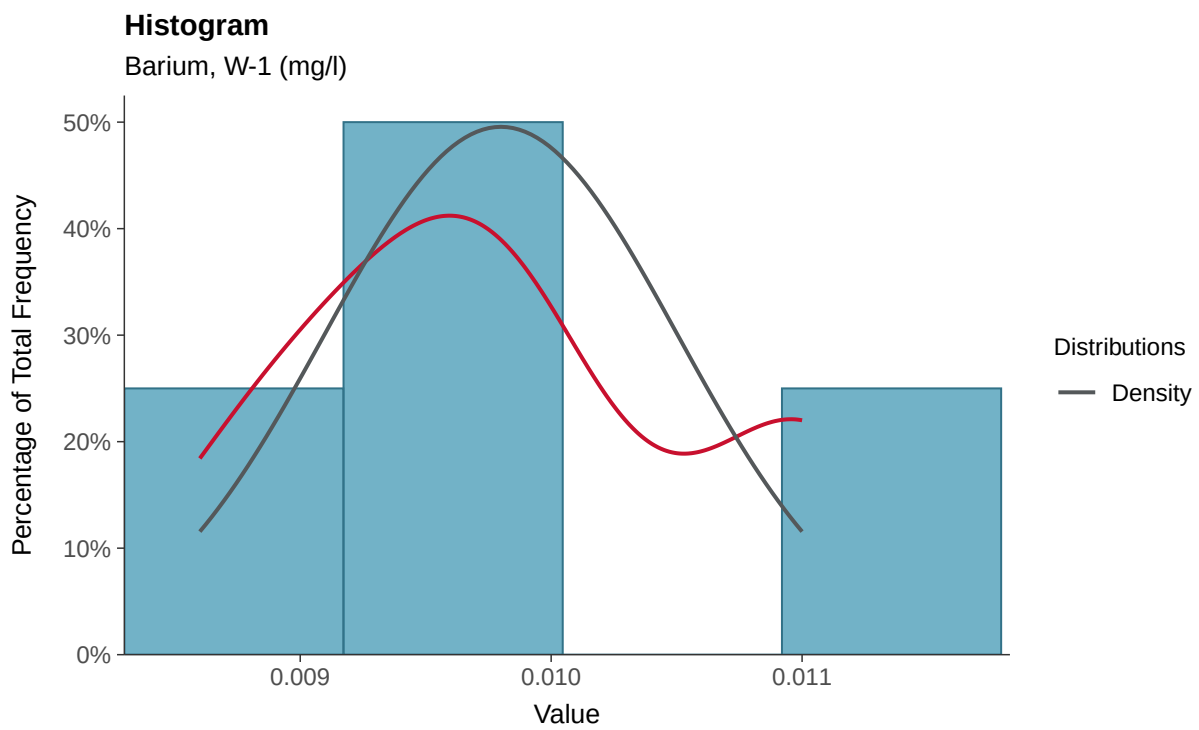
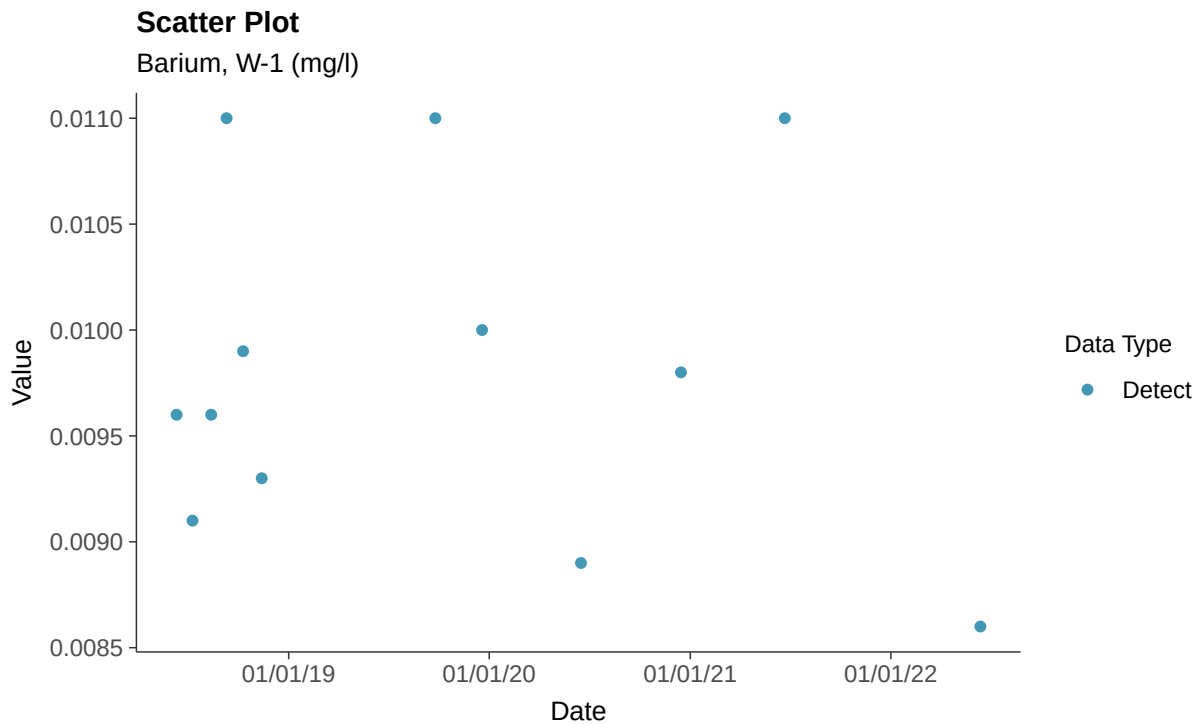
Trend Regression: Piecewise Linear-Linear

Arsenic, W-1 (mg/l)



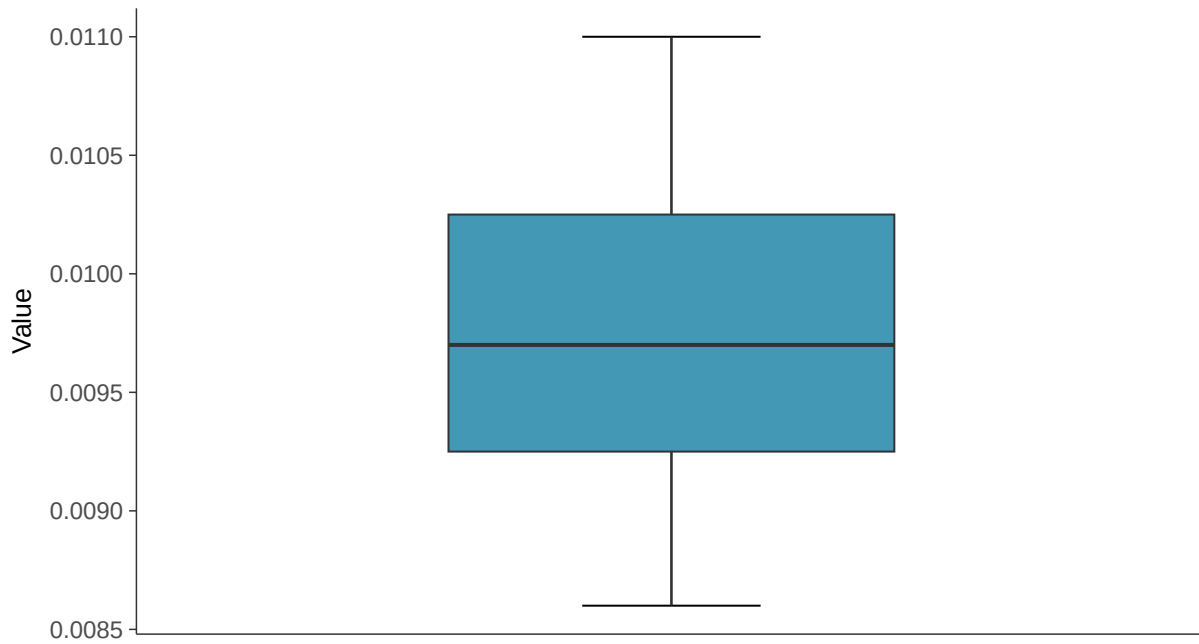
Appendix IV: Barium, W-1

ID: 1_2_106



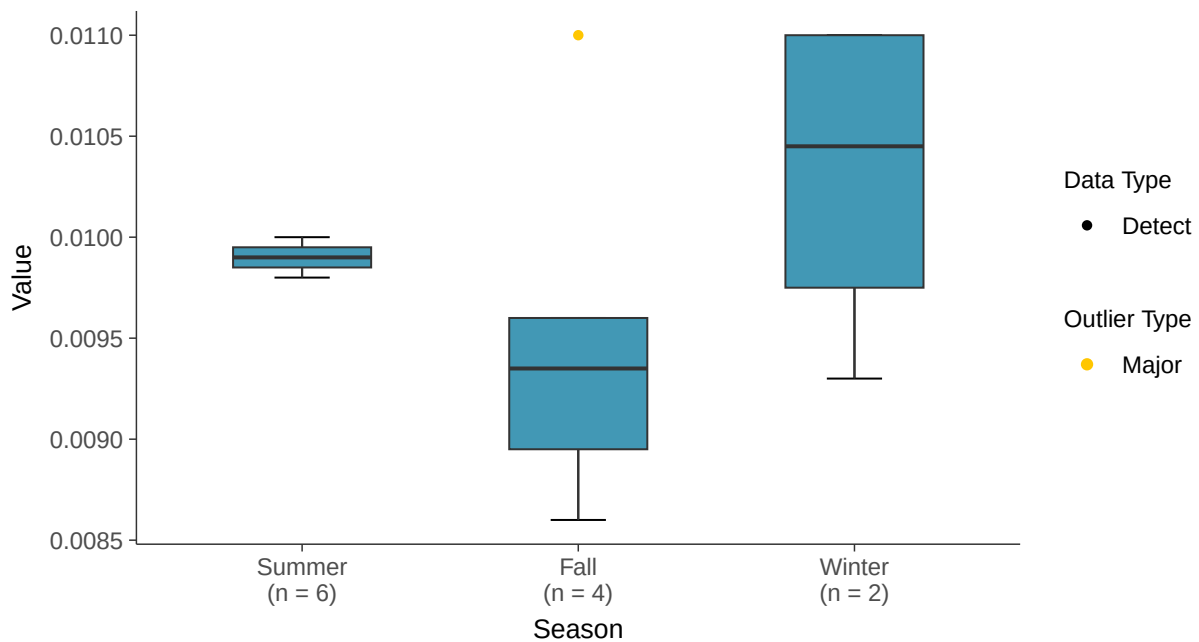
Boxplot

Barium, W-1 (mg/l)



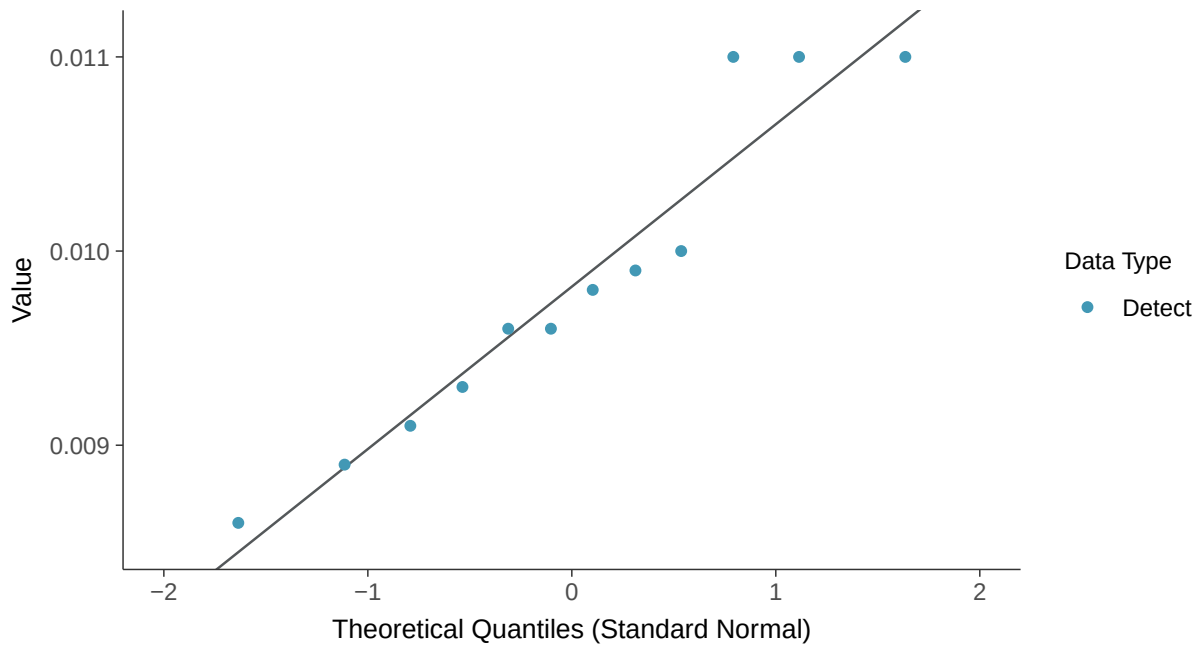
Boxplot by Season

Barium, W-1 (mg/l)



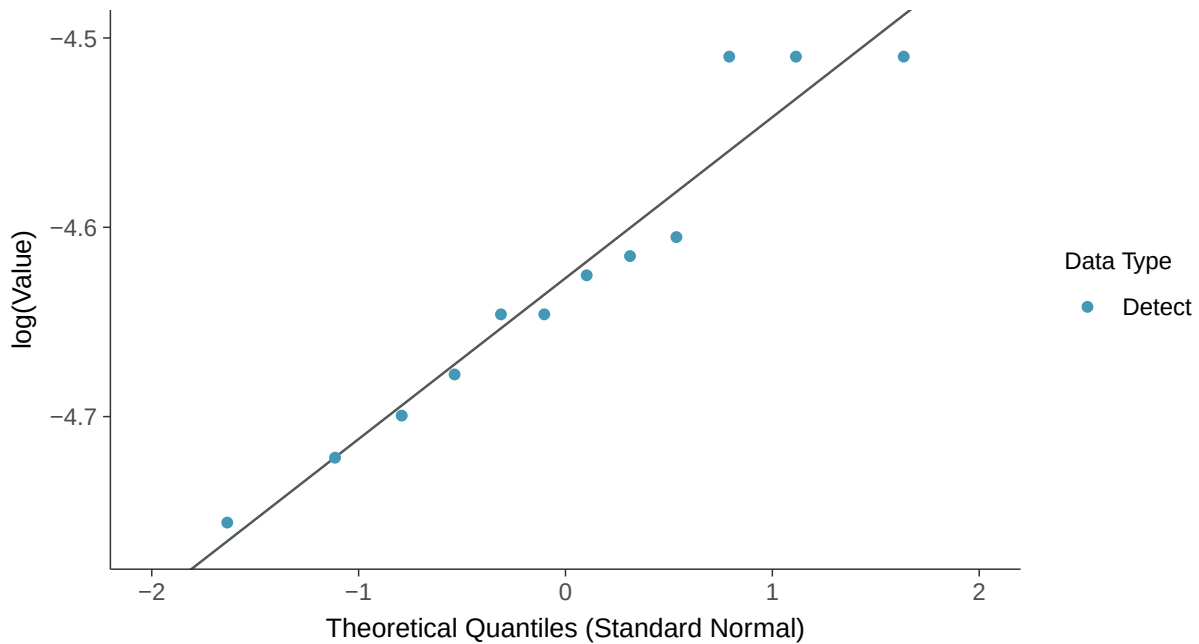
Normal Q-Q plot

Barium, W-1 (mg/l)



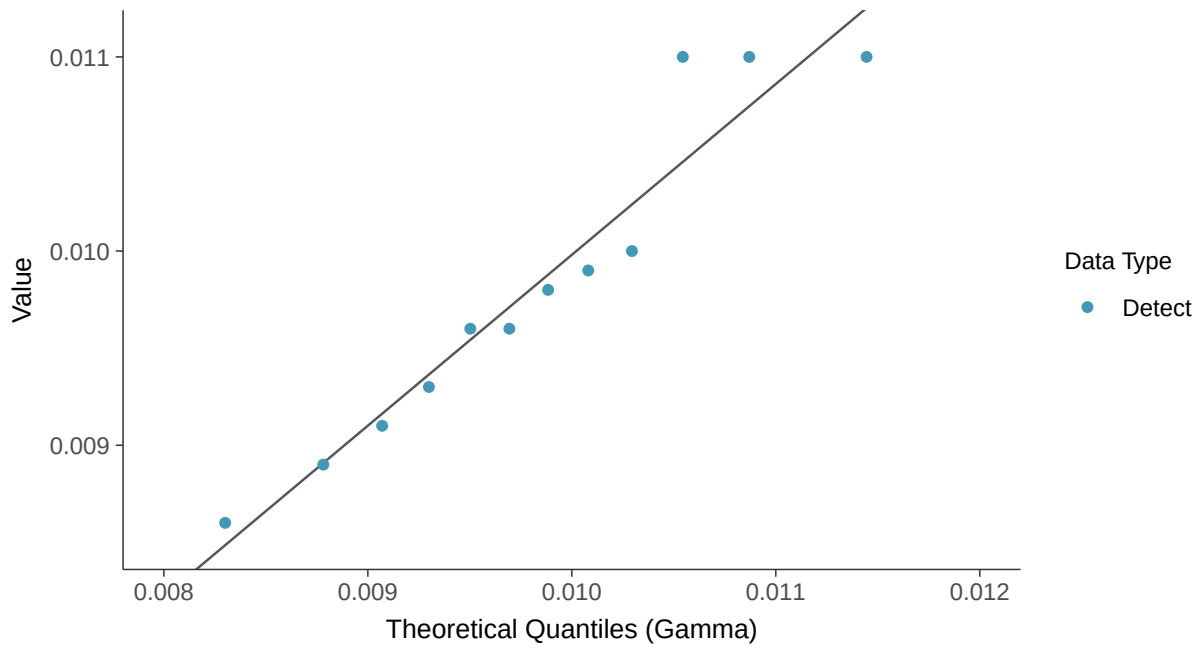
Lognormal Q-Q plot

Barium, W-1 (mg/l)



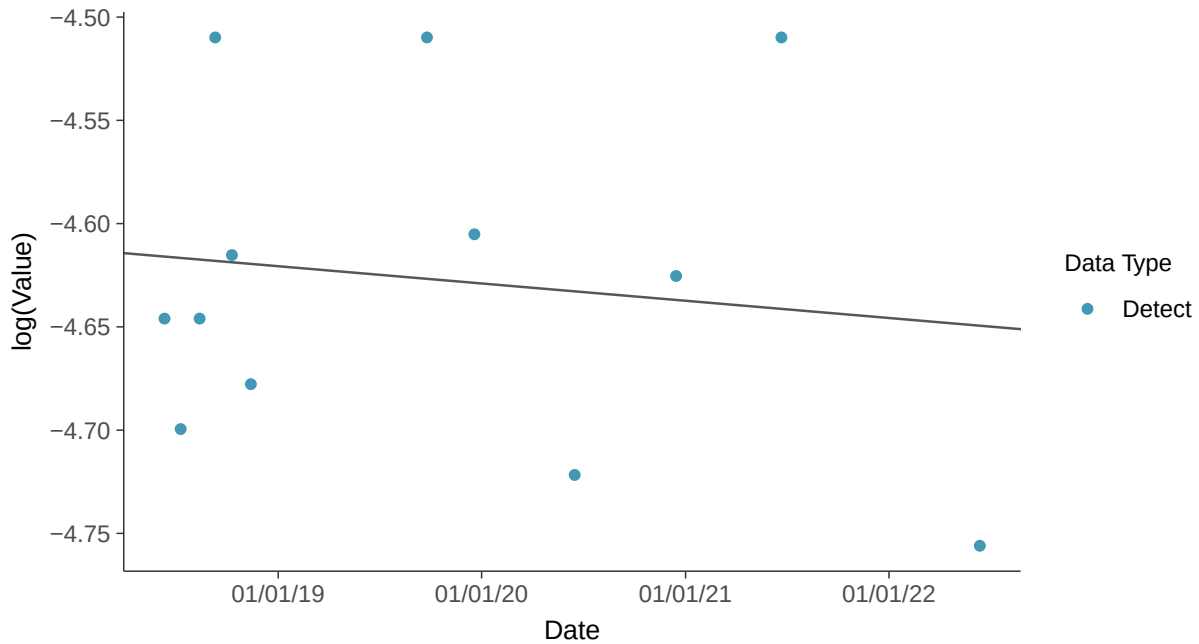
Gamma Q-Q plot

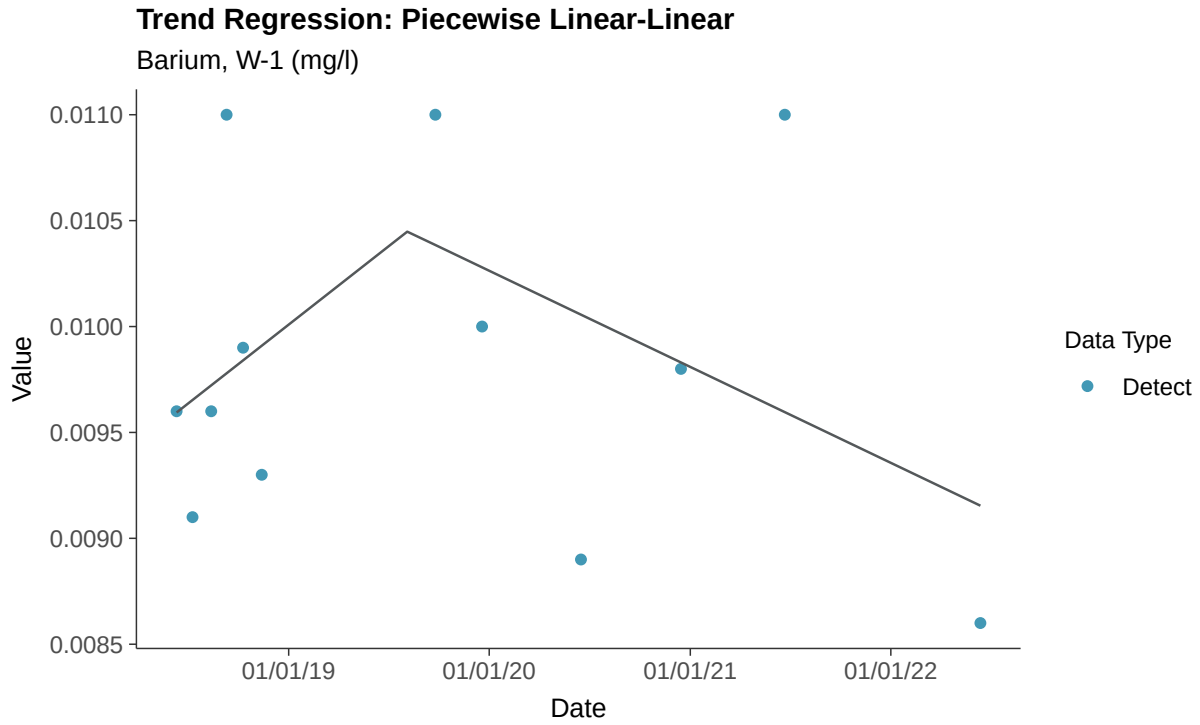
Barium, W-1 (mg/l)



Trend Regression: Lognormal MLE

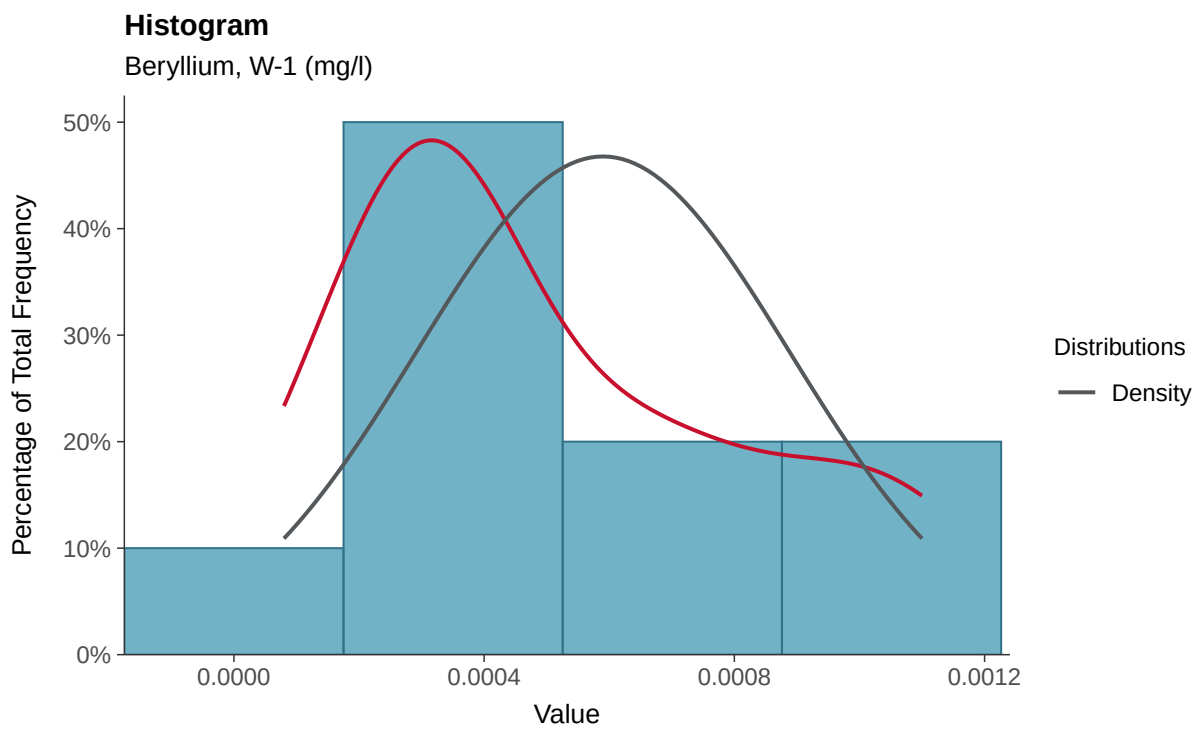
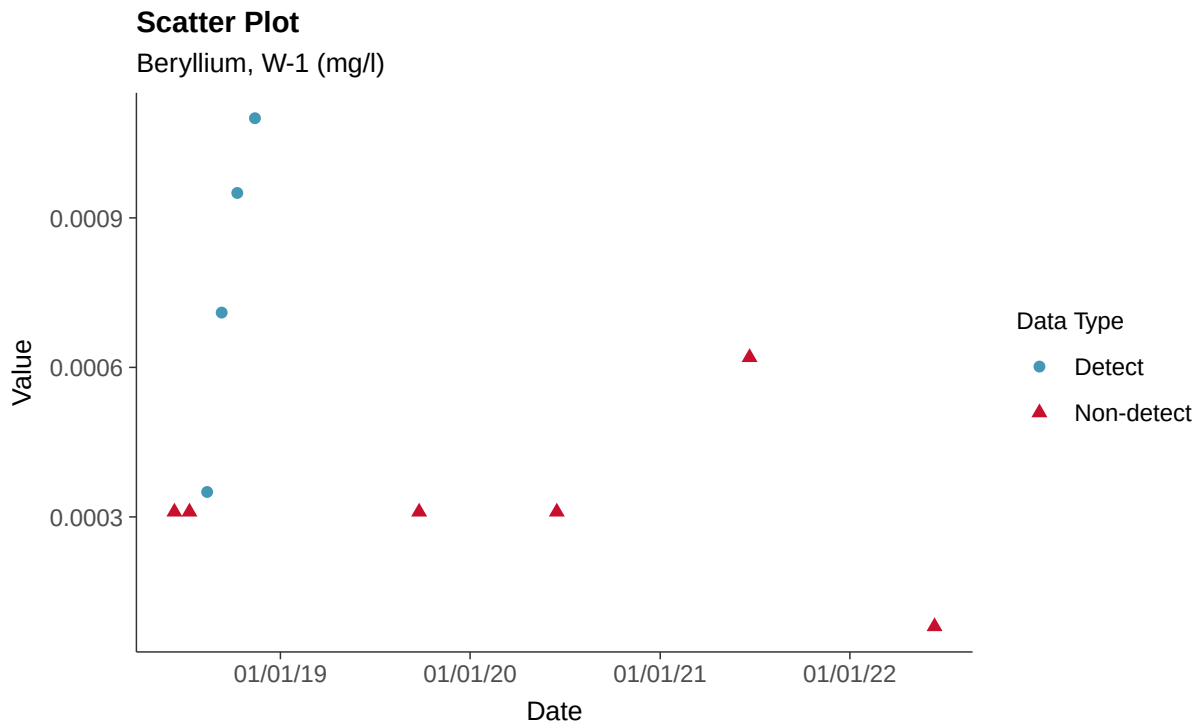
Barium, W-1 (mg/l)





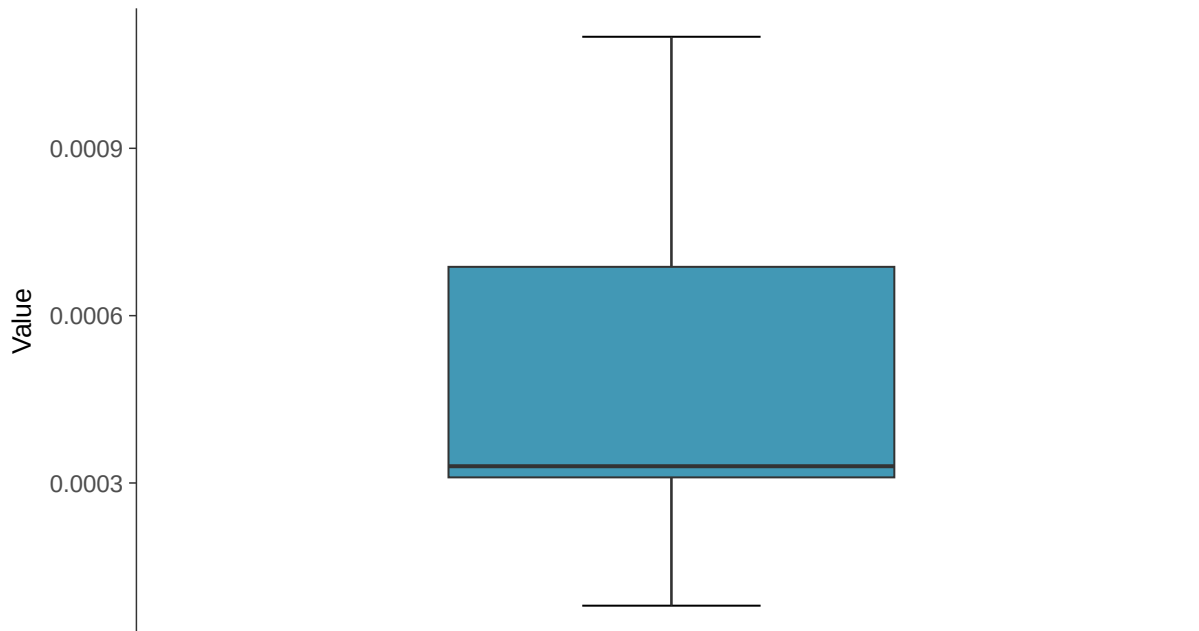
Appendix IV: Beryllium, W-1

ID: 1_2_107



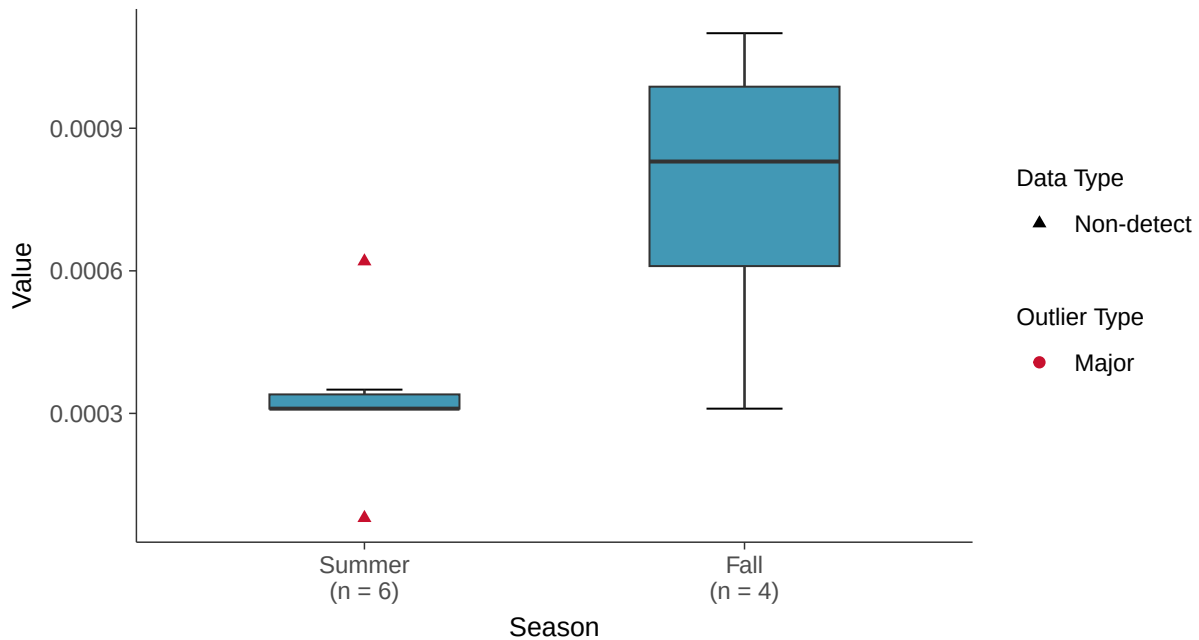
Boxplot

Beryllium, W-1 (mg/l)



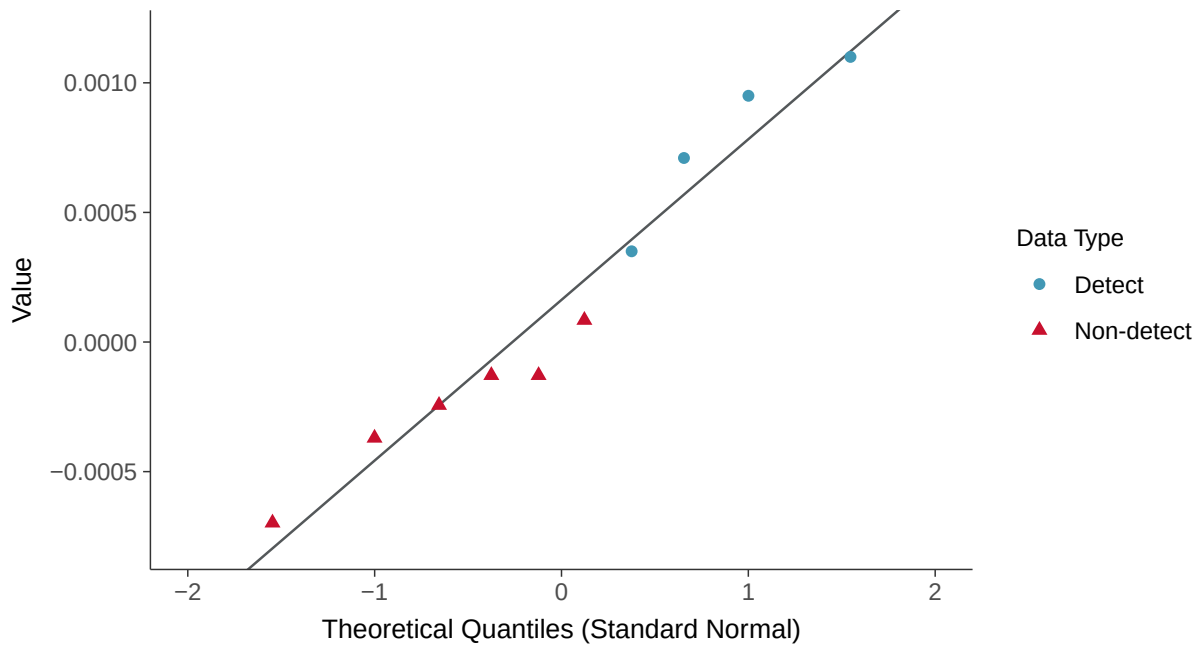
Boxplot by Season

Beryllium, W-1 (mg/l)



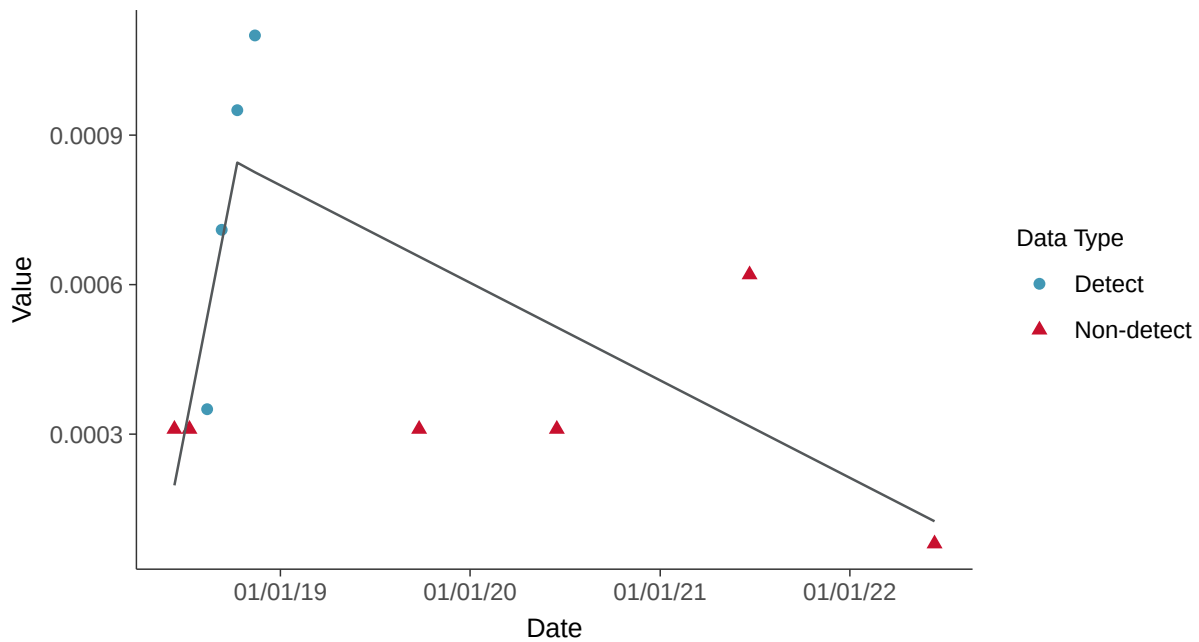
Normal Q-Q plot using ROS Imputed Estimates

Beryllium, W-1 (mg/l)



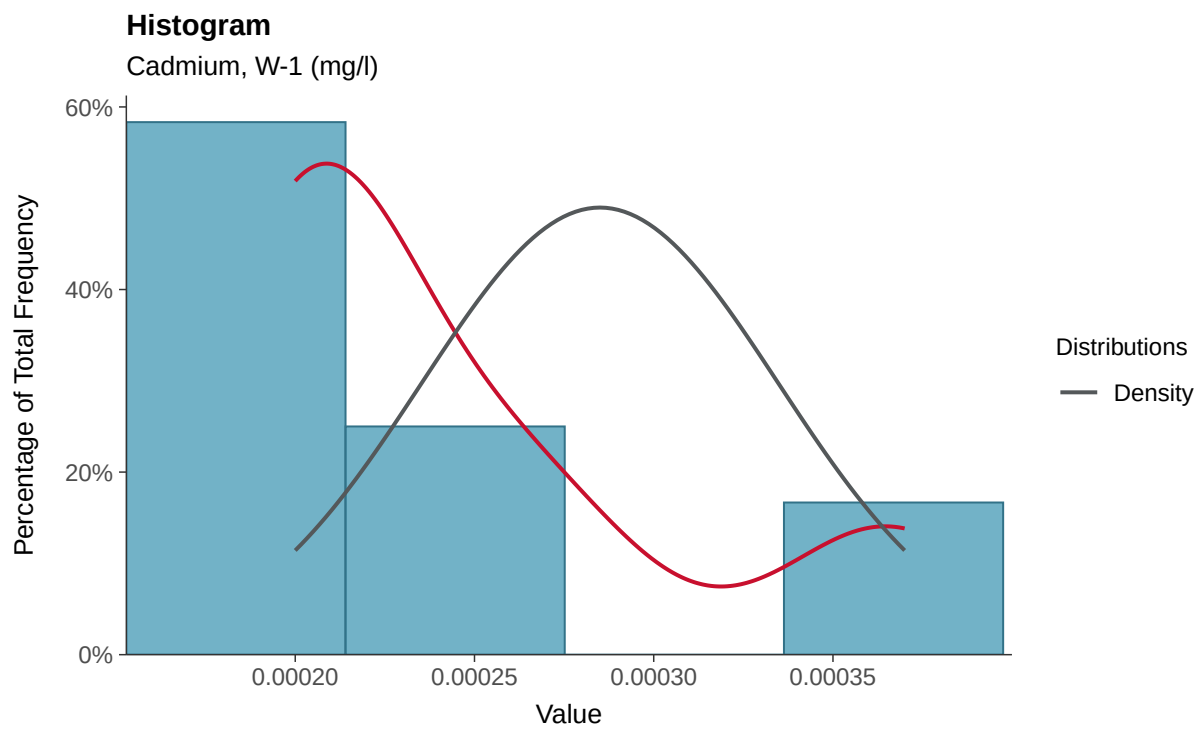
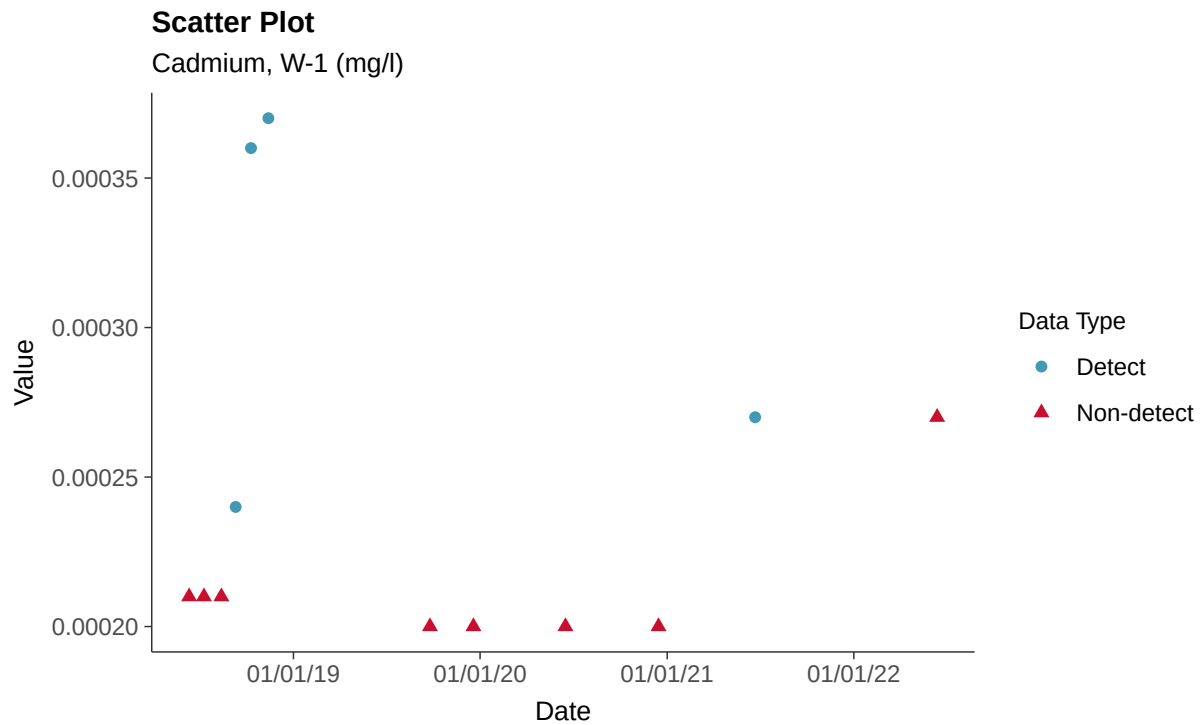
Trend Regression: Piecewise Linear-Linear

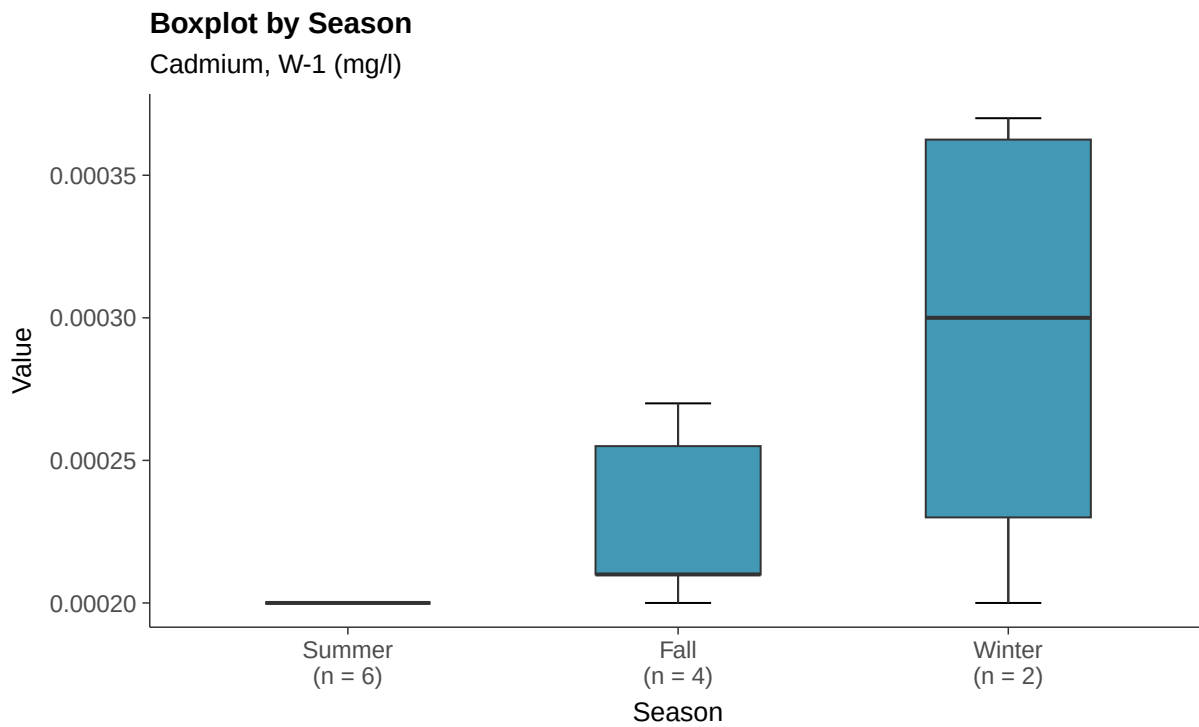
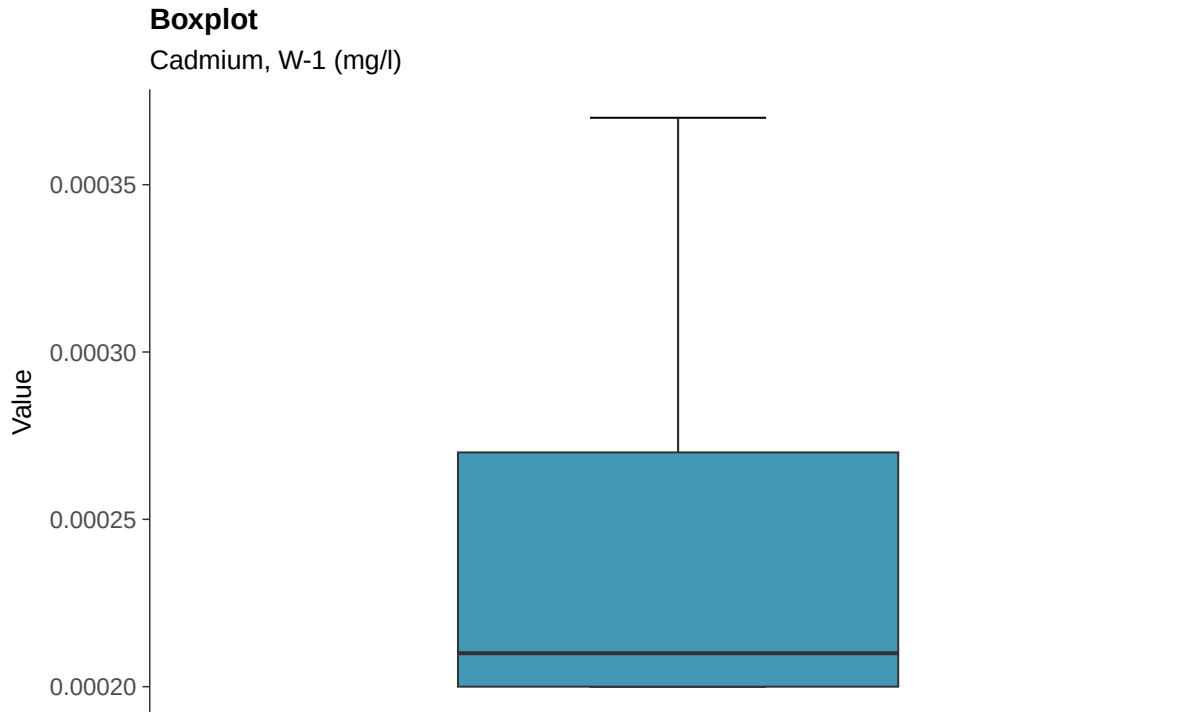
Beryllium, W-1 (mg/l)



Appendix IV: Cadmium, W-1

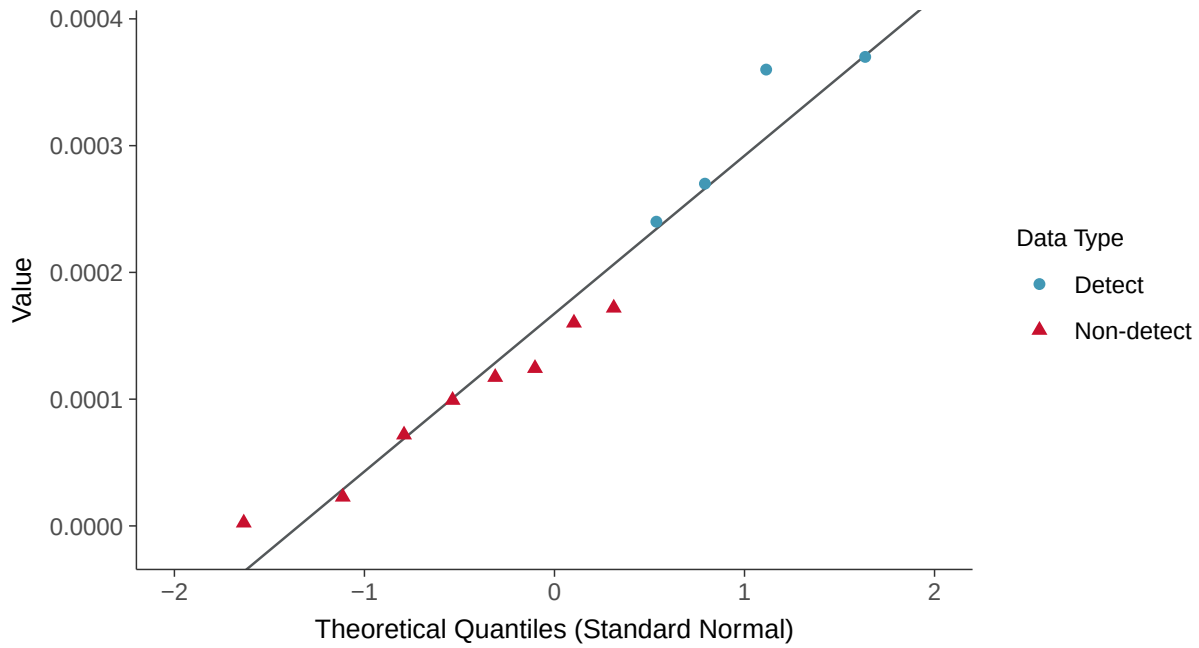
ID: 1_2_109





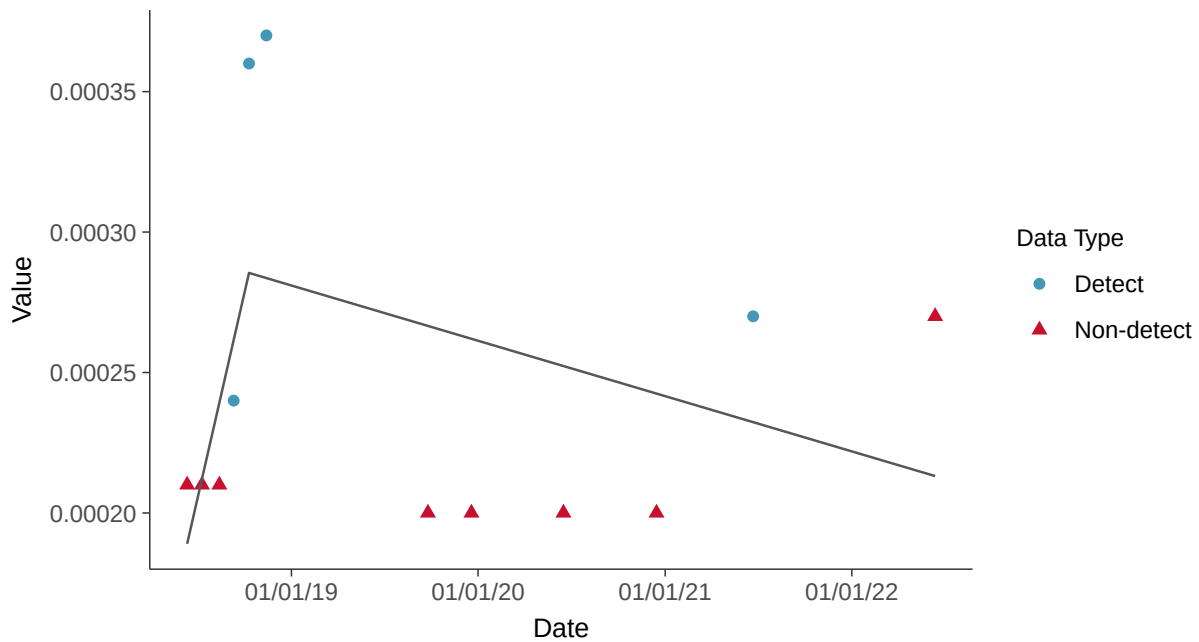
Normal Q-Q plot using ROS Imputed Estimates

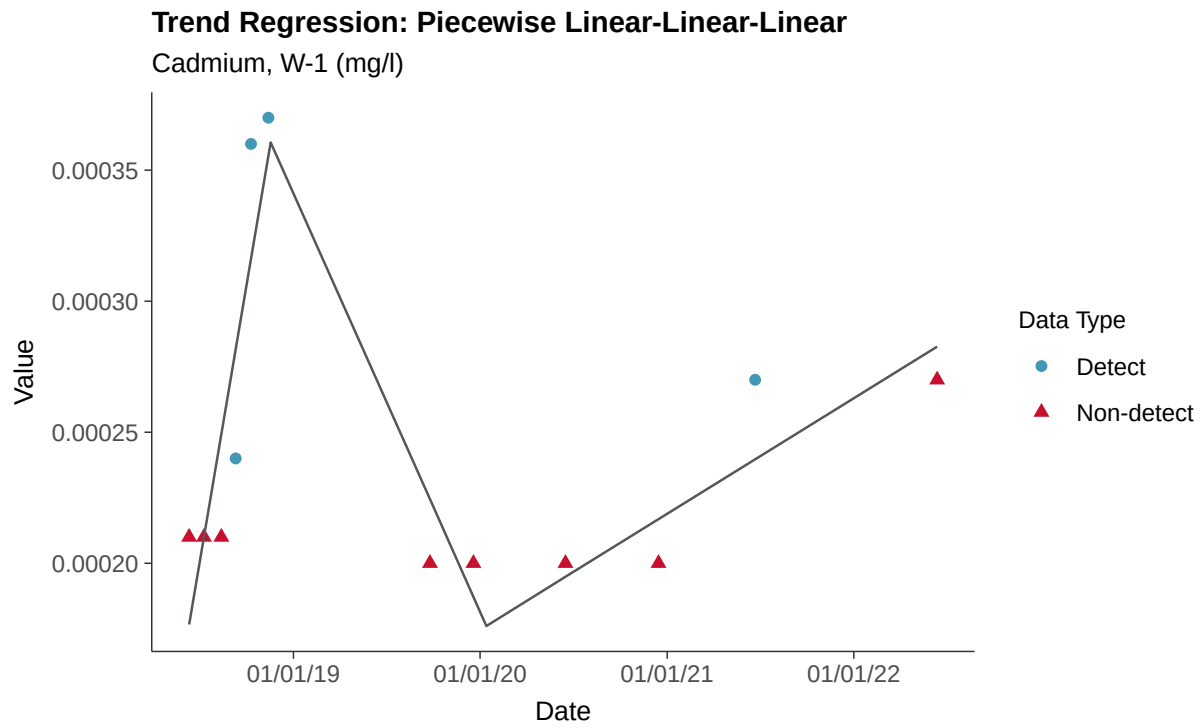
Cadmium, W-1 (mg/l)



Trend Regression: Piecewise Linear-Linear

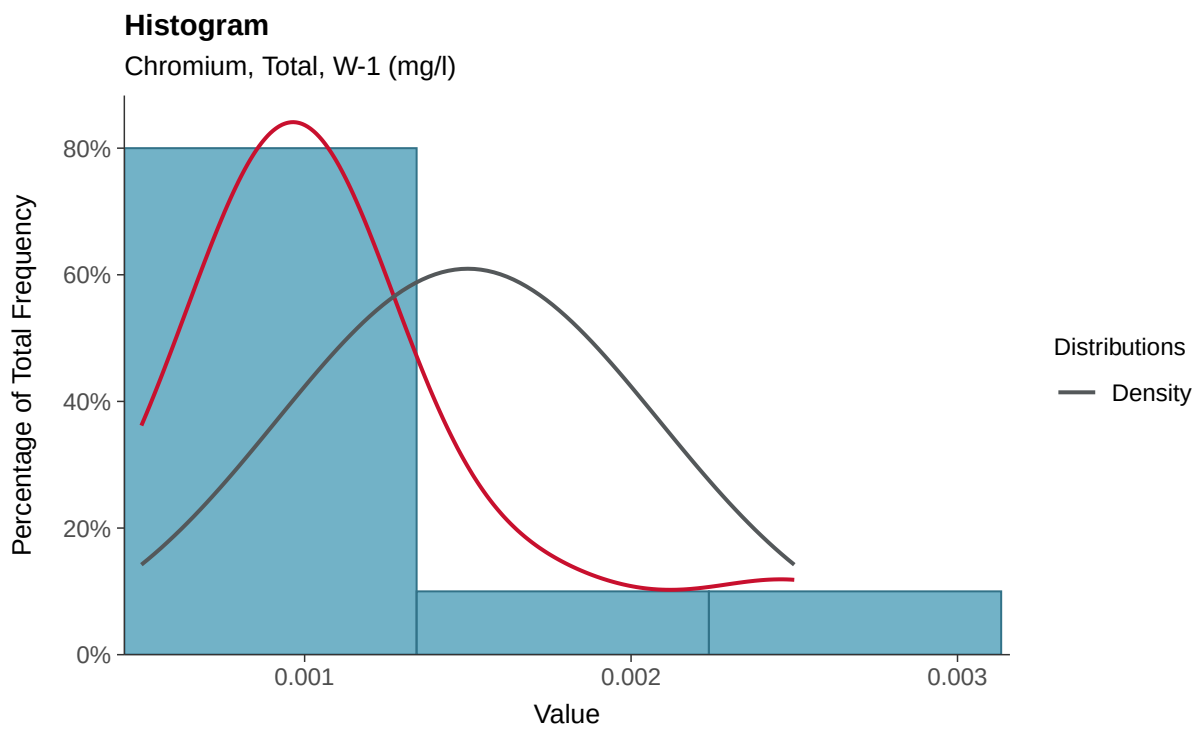
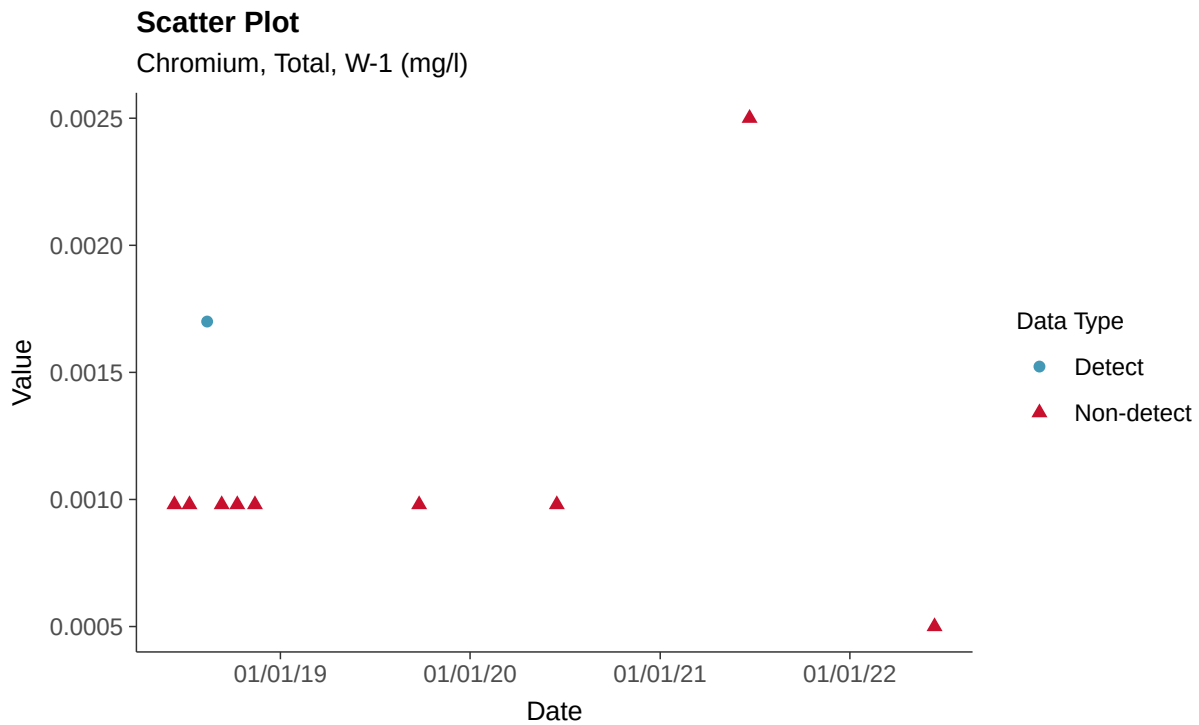
Cadmium, W-1 (mg/l)

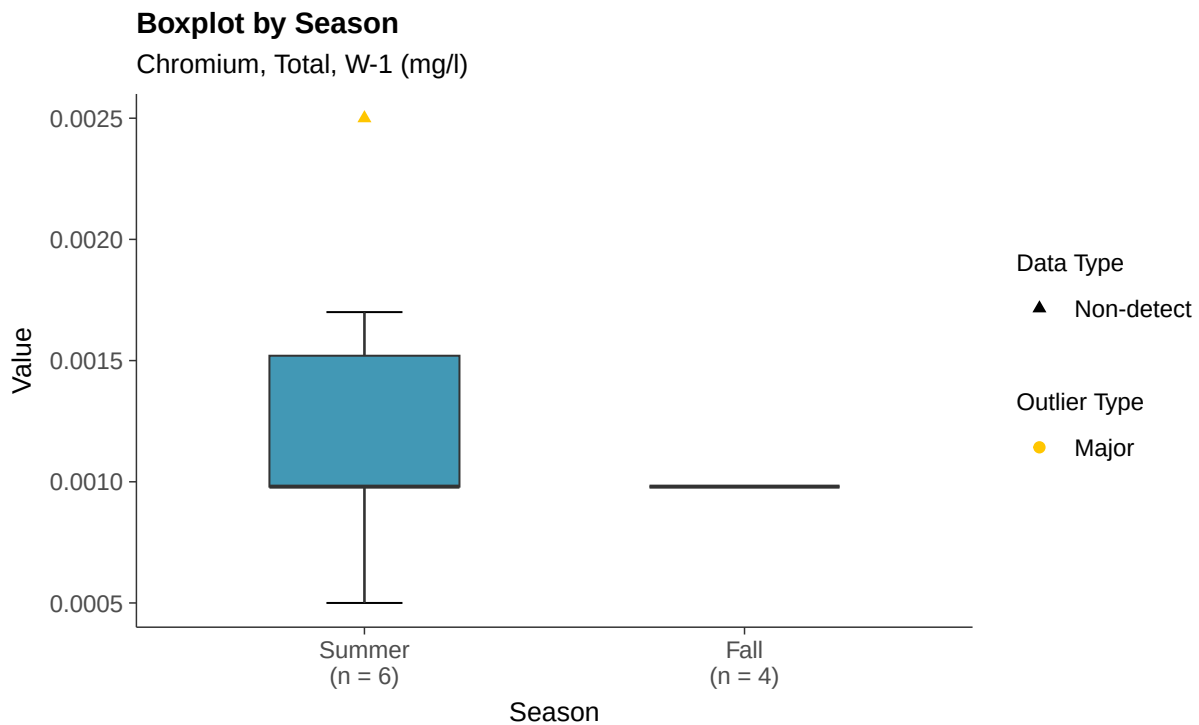
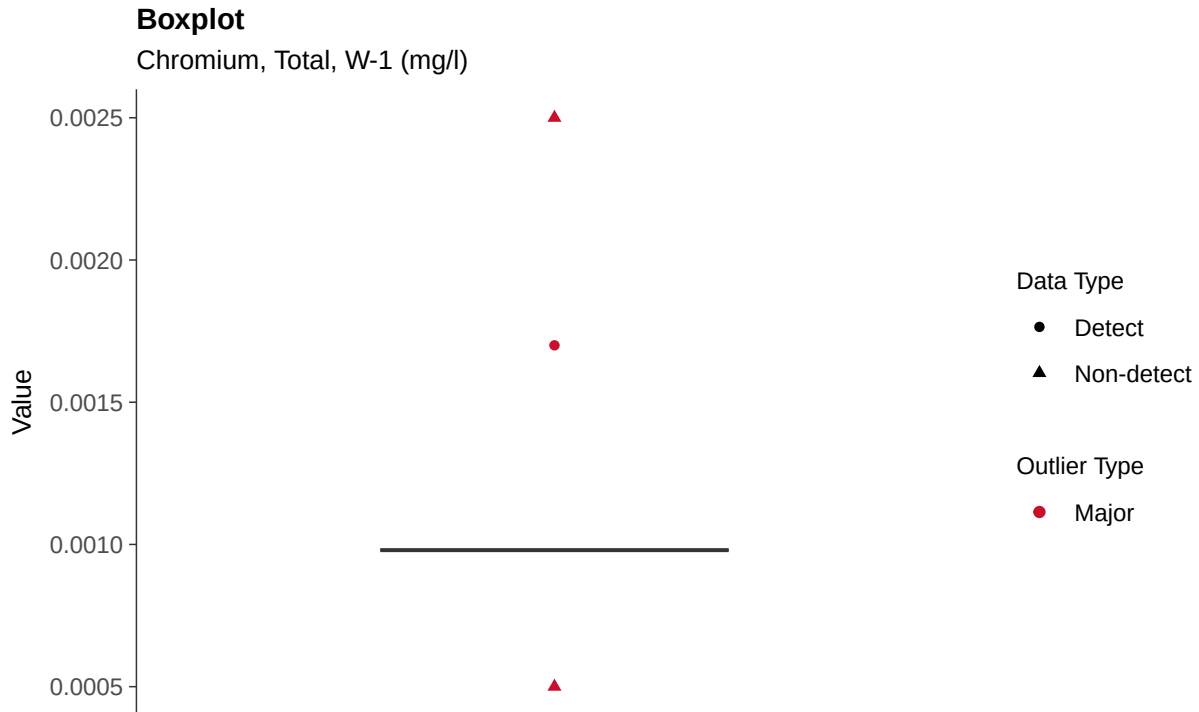




Appendix IV: Chromium, Total, W-1

ID: 1_2_112

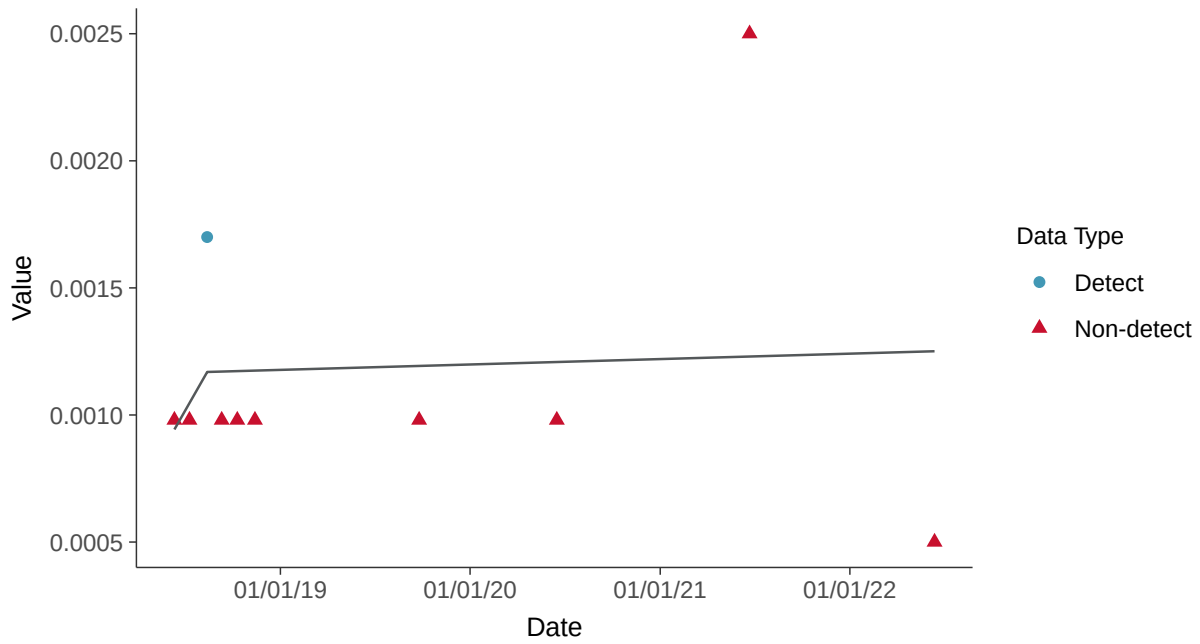






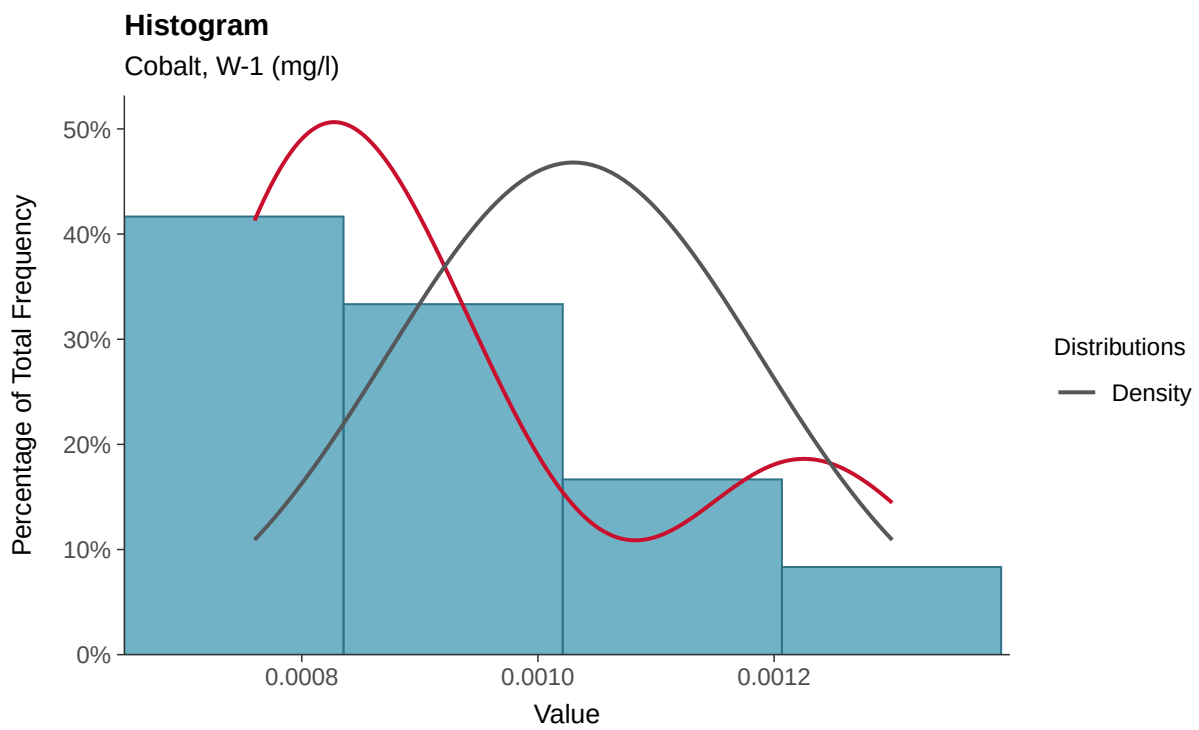
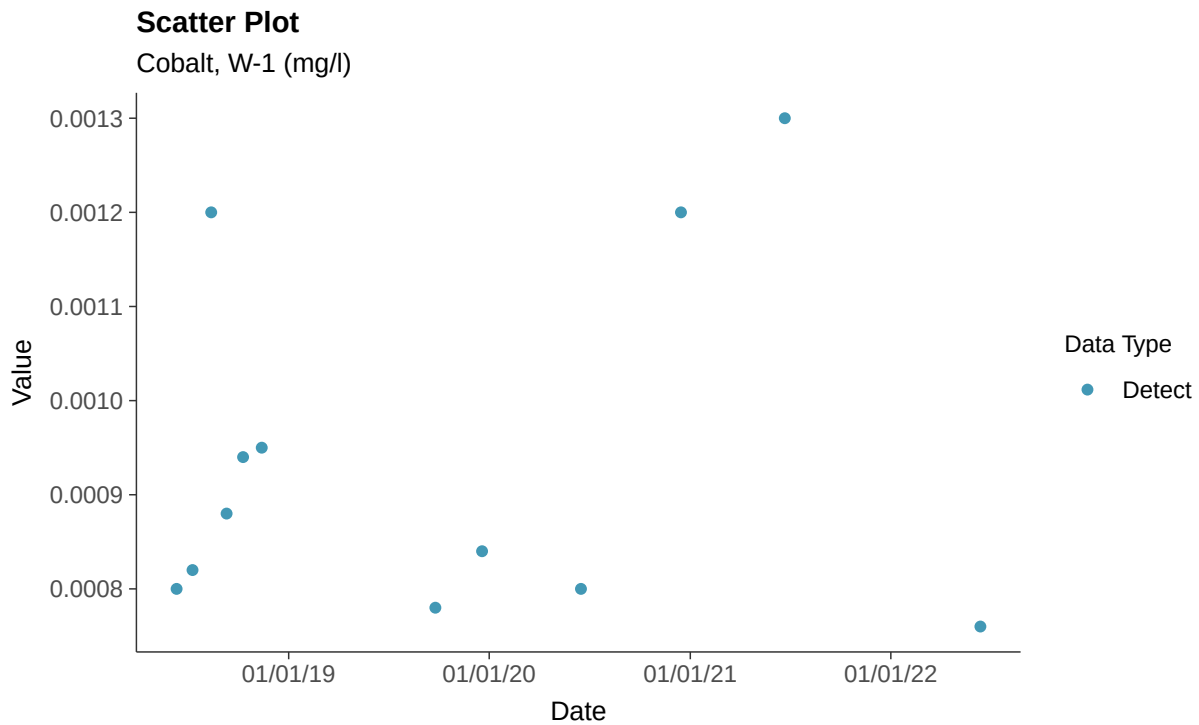
Trend Regression: Piecewise Linear-Linear

Chromium, Total, W-1 (mg/l)



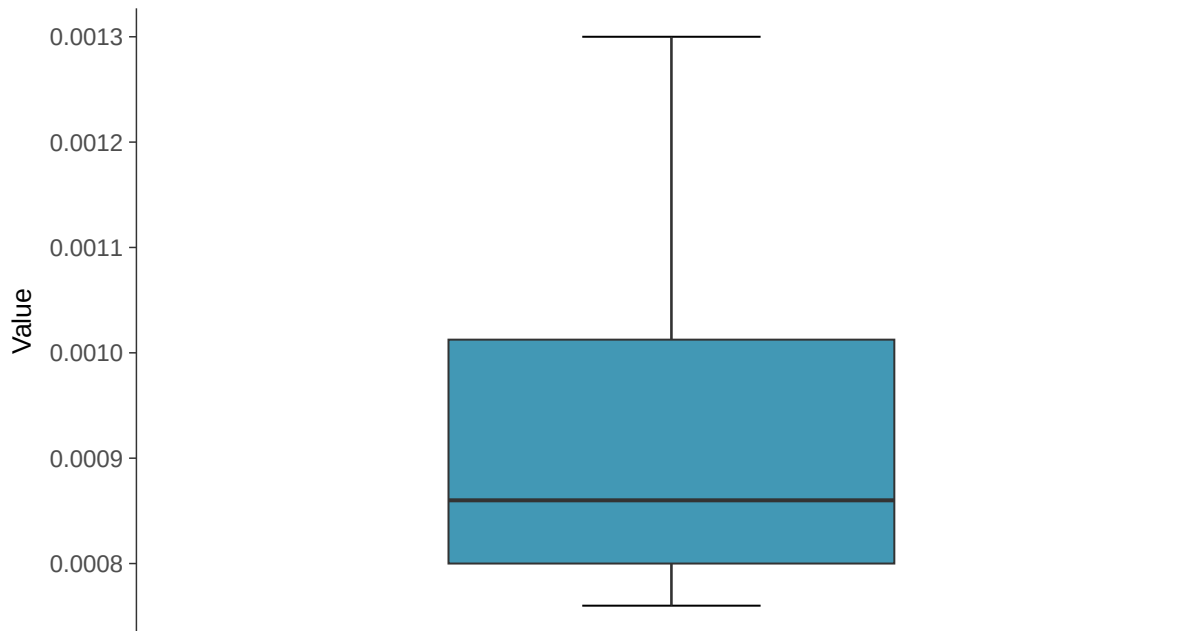
Appendix IV: Cobalt, W-1

ID: 1_2_113



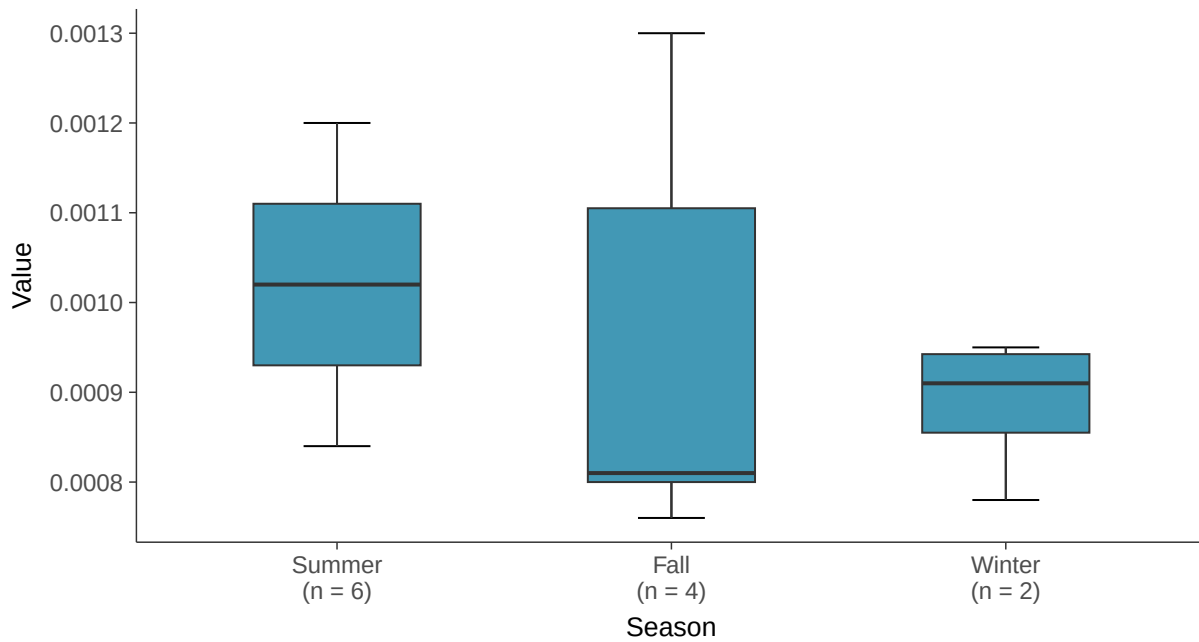
Boxplot

Cobalt, W-1 (mg/l)

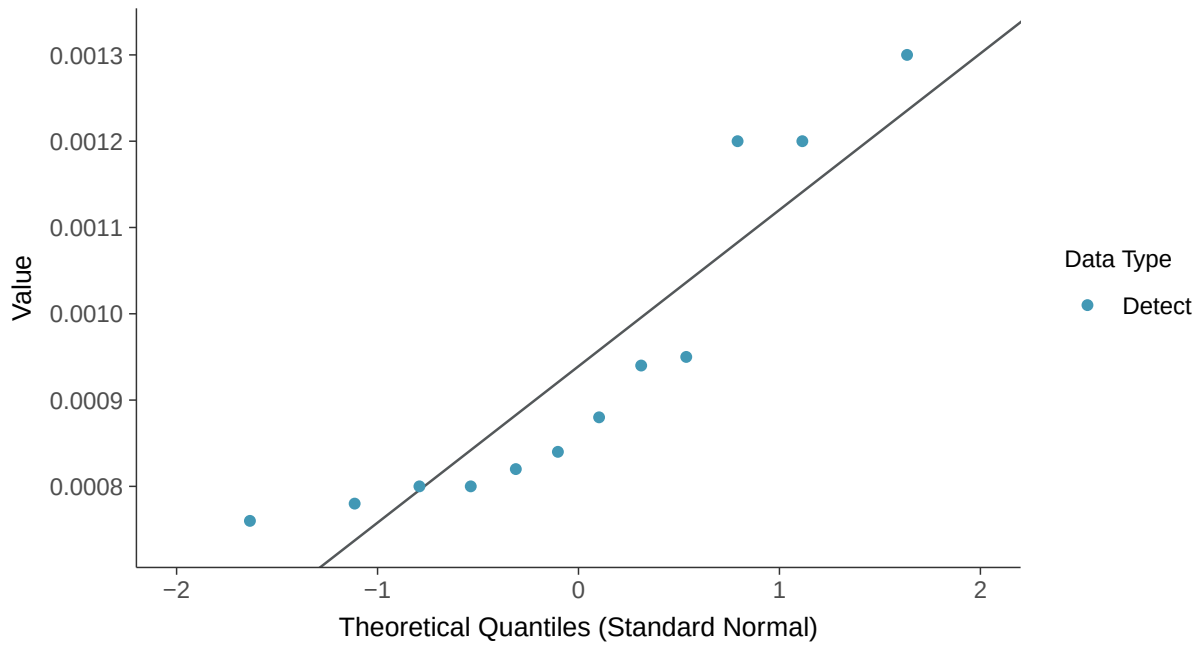


Boxplot by Season

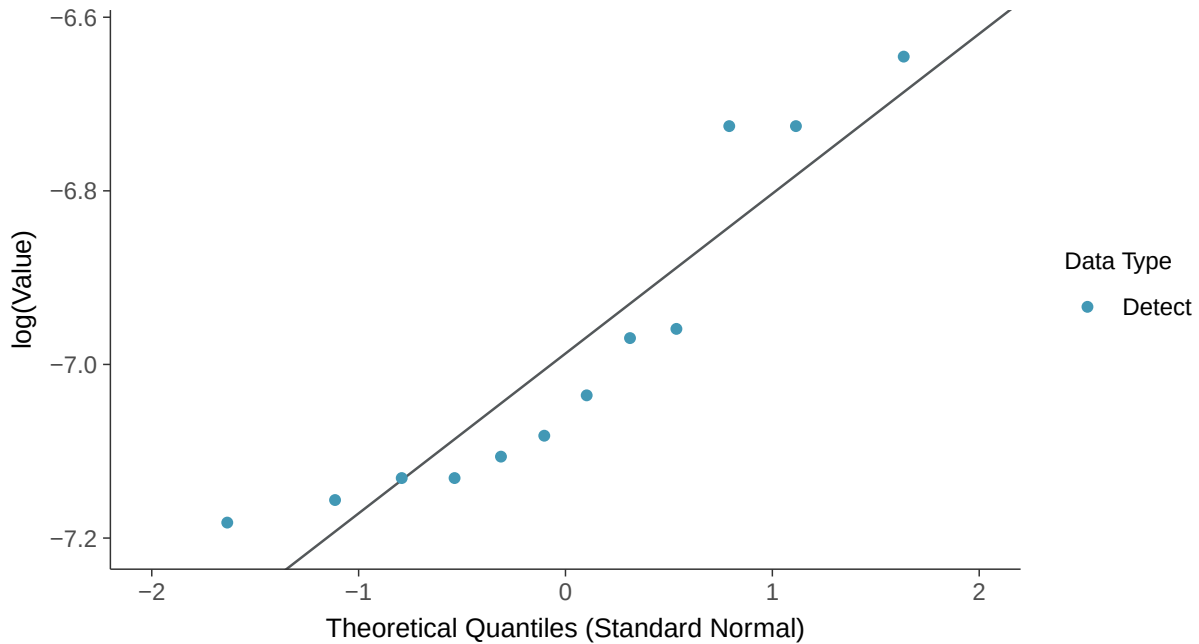
Cobalt, W-1 (mg/l)

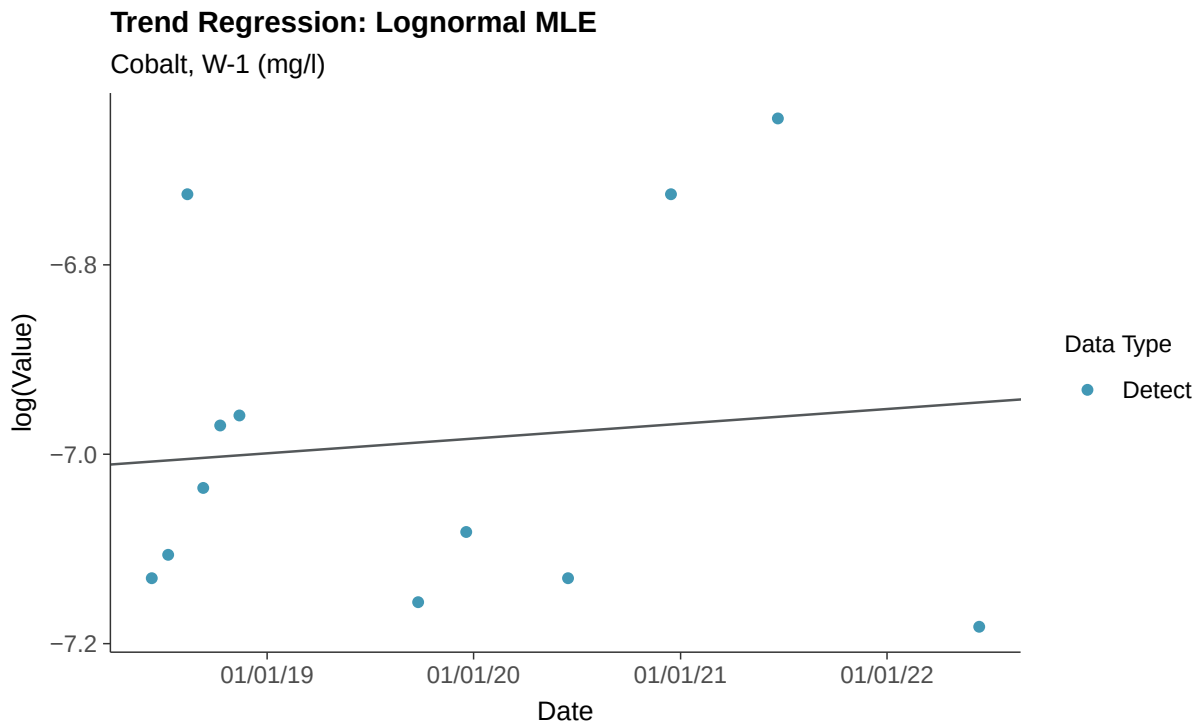
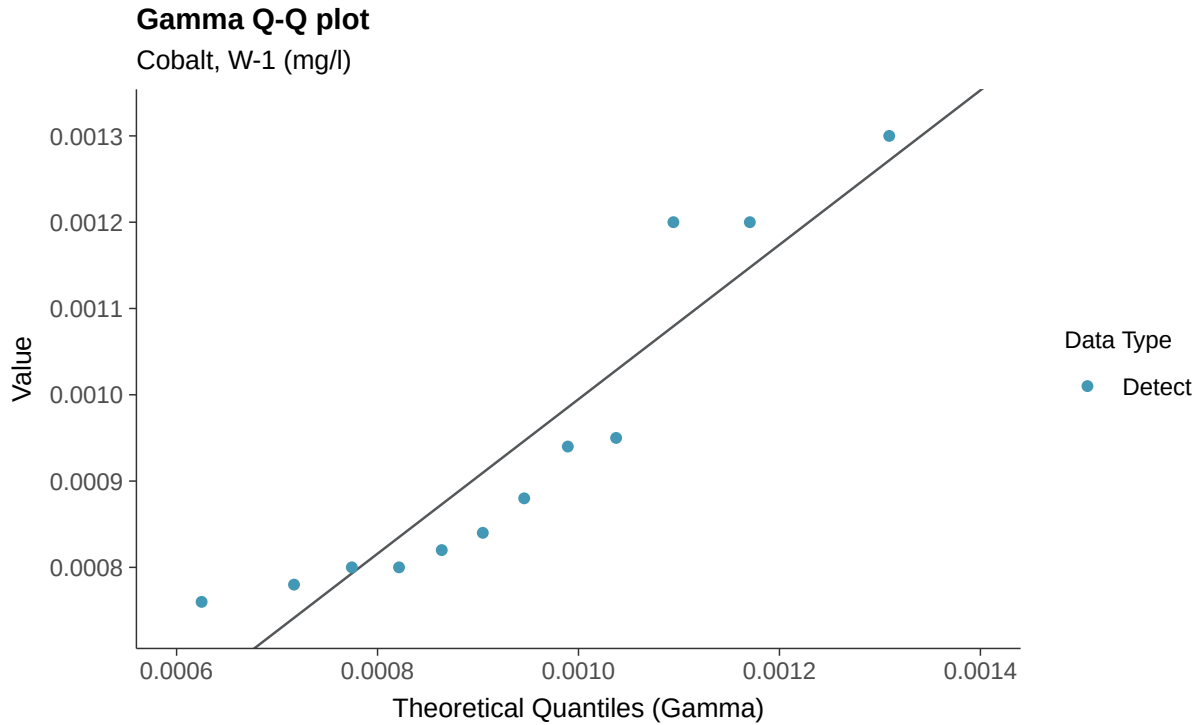


Normal Q-Q plot
Cobalt, W-1 (mg/l)



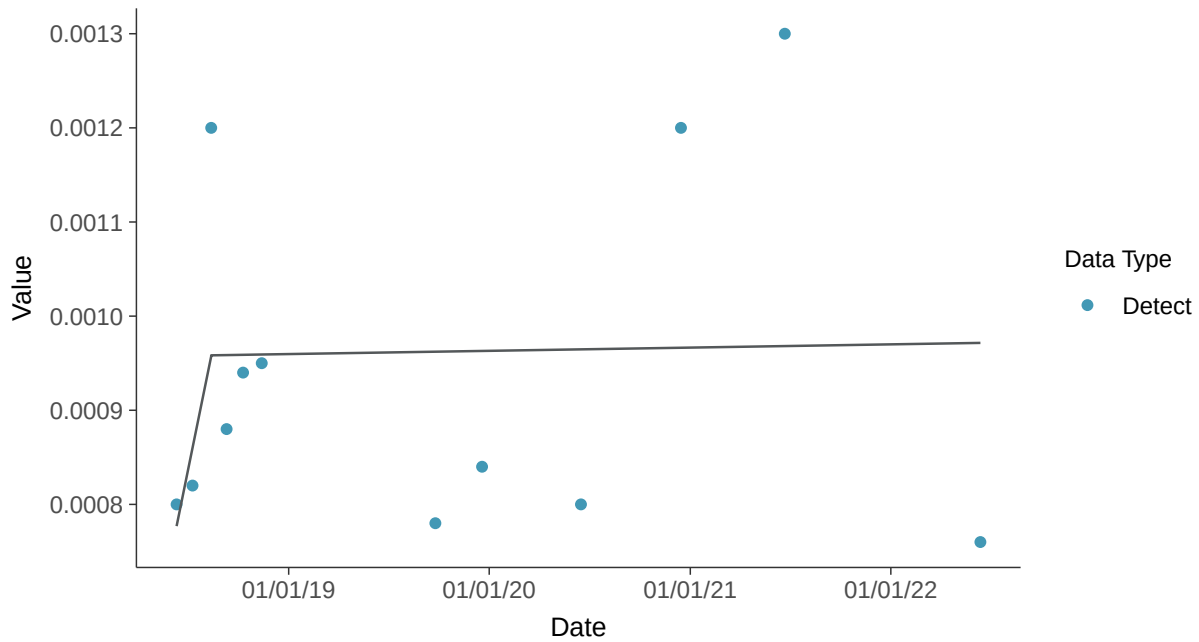
Lognormal Q-Q plot
Cobalt, W-1 (mg/l)





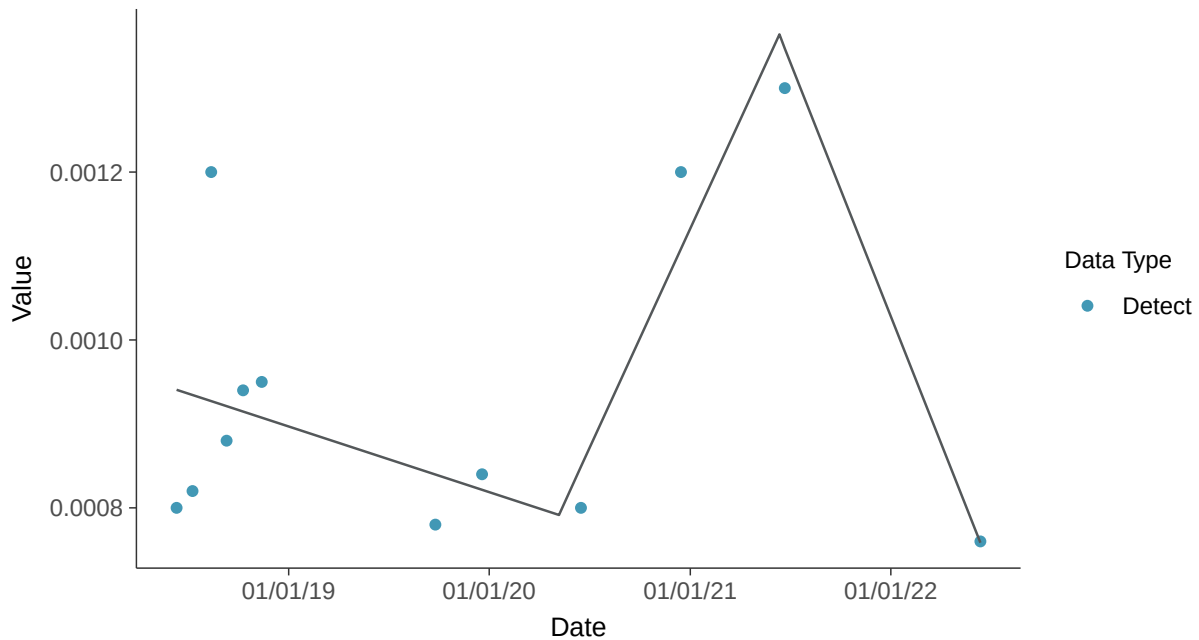
Trend Regression: Piecewise Linear-Linear

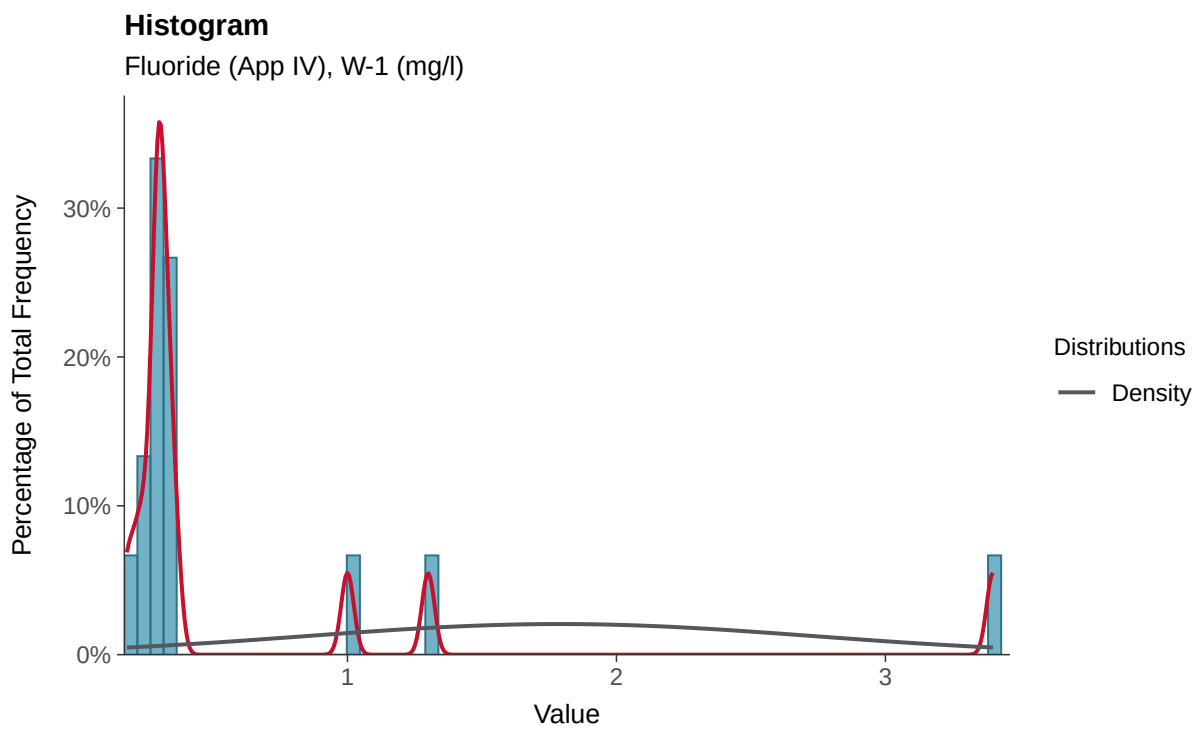
Cobalt, W-1 (mg/l)



Trend Regression: Piecewise Linear-Linear-Linear

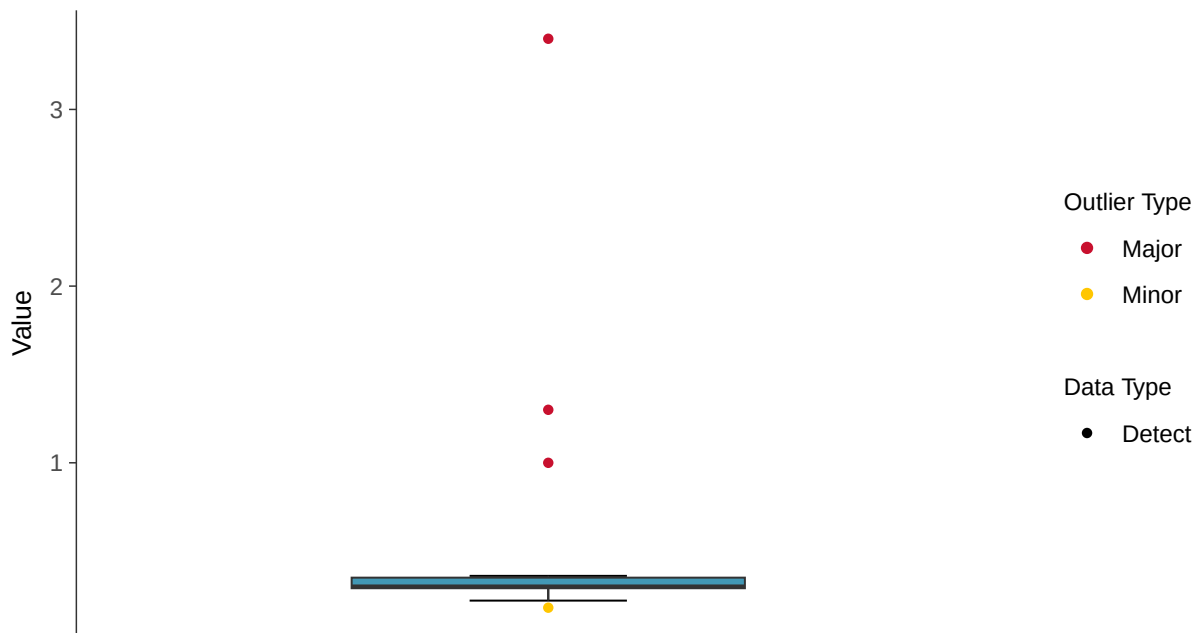
Cobalt, W-1 (mg/l)





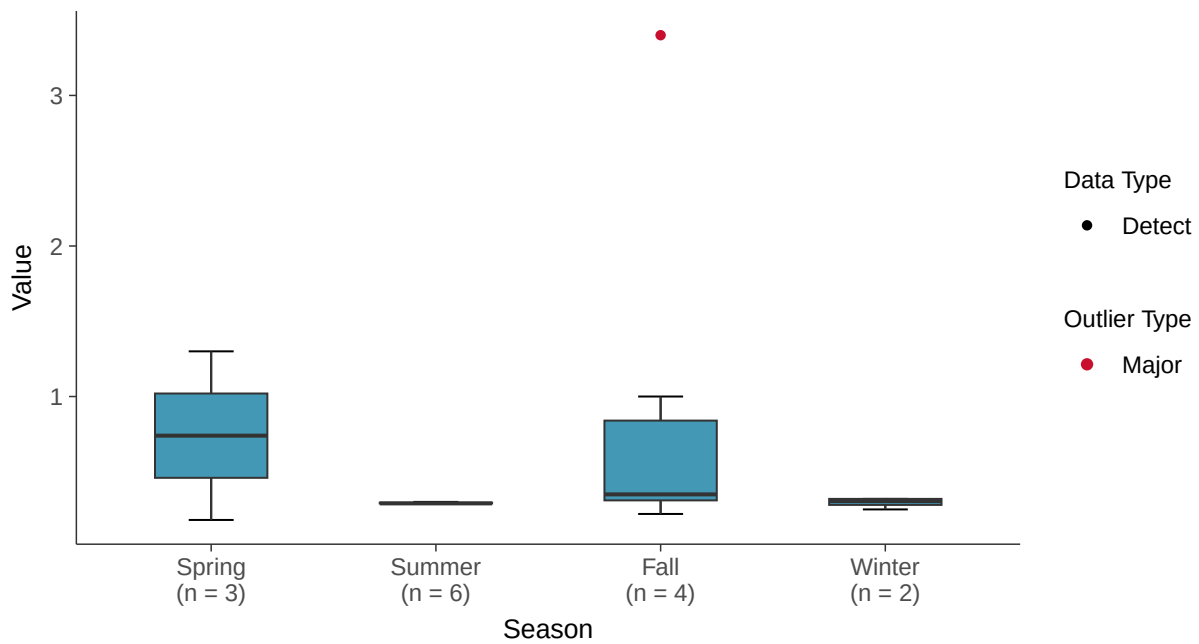
Boxplot

Fluoride (App IV), W-1 (mg/l)



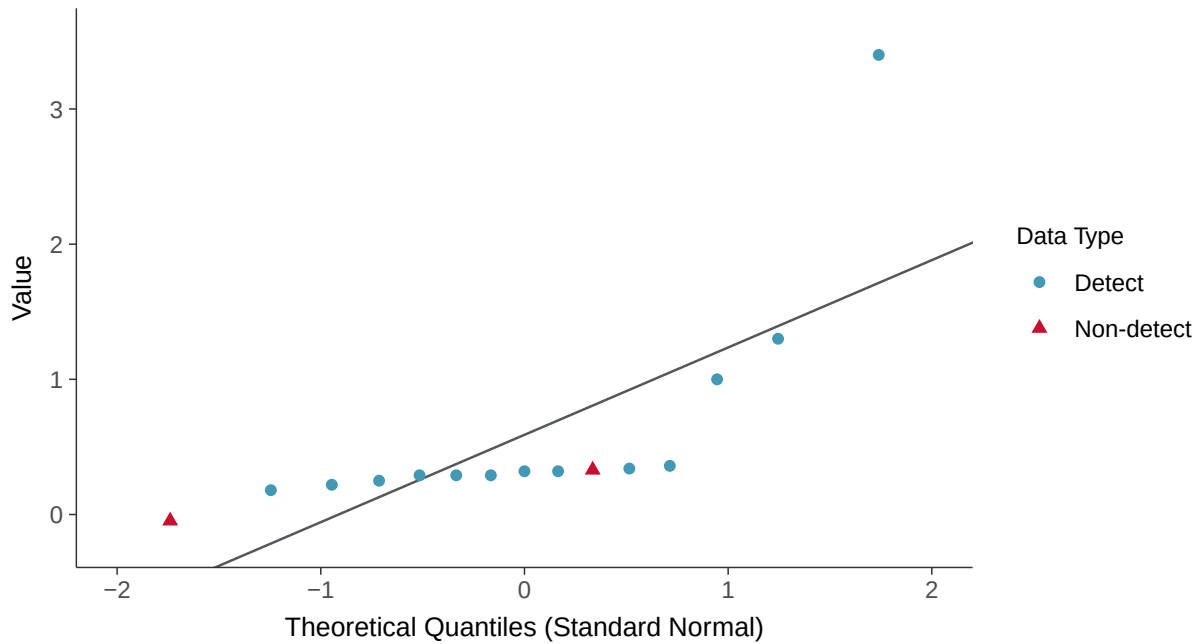
Boxplot by Season

Fluoride (App IV), W-1 (mg/l)



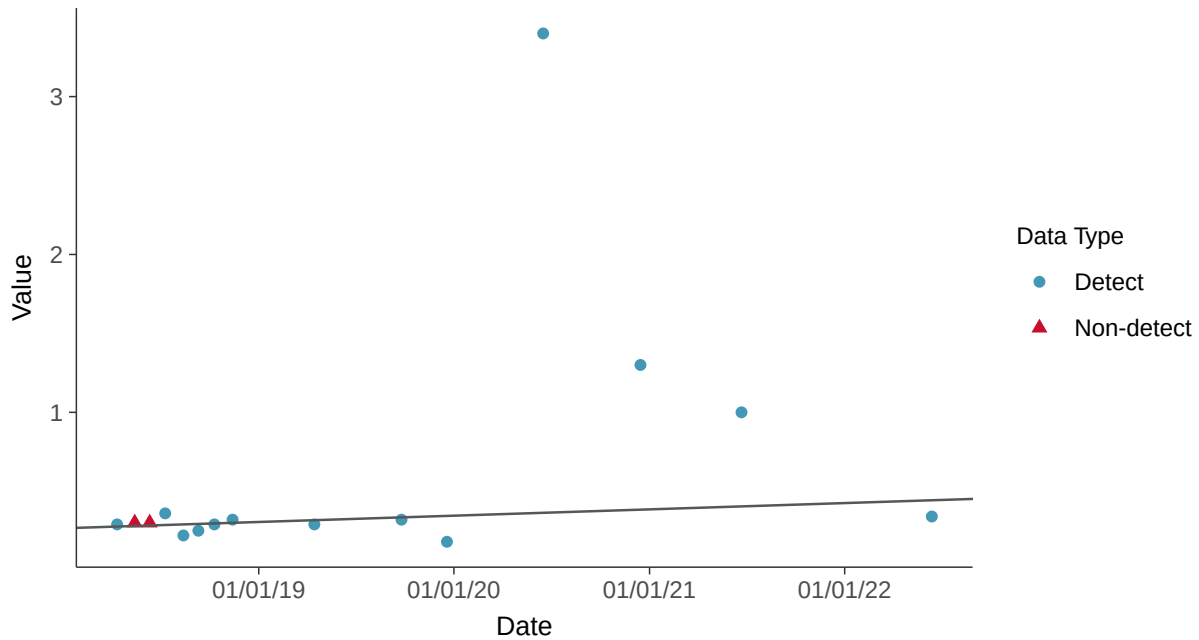
Normal Q-Q plot using ROS Imputed Estimates

Fluoride (App IV), W-1 (mg/l)



Trend Regression: Mann-Kendall/Theil-Sen Estimate

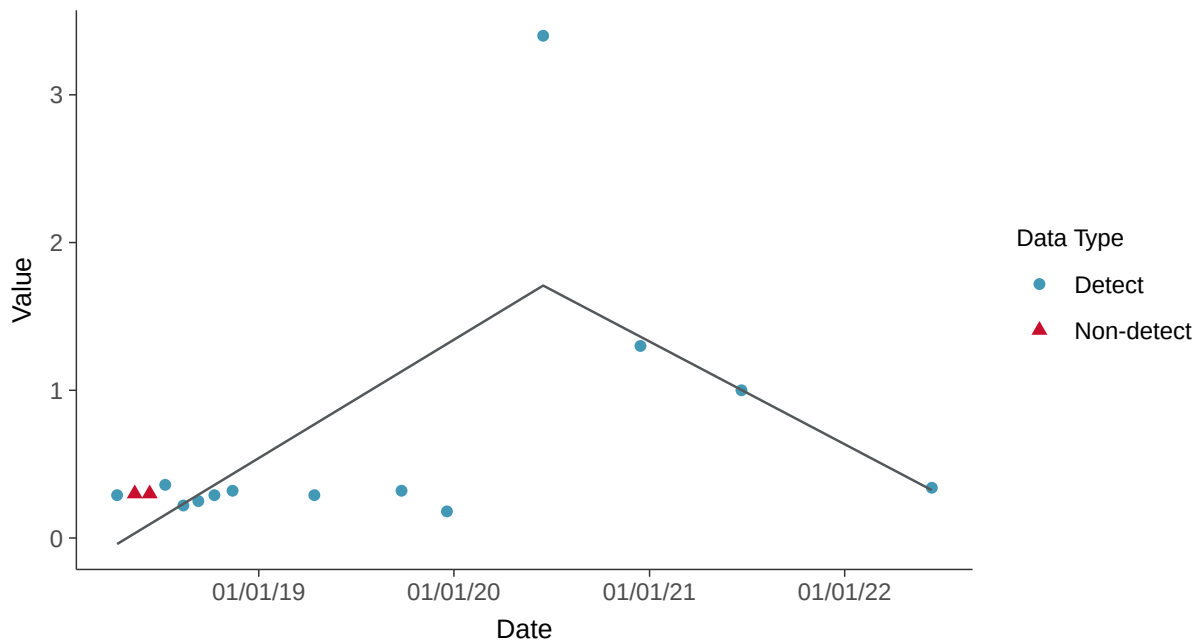
Fluoride (App IV), W-1 (mg/l)





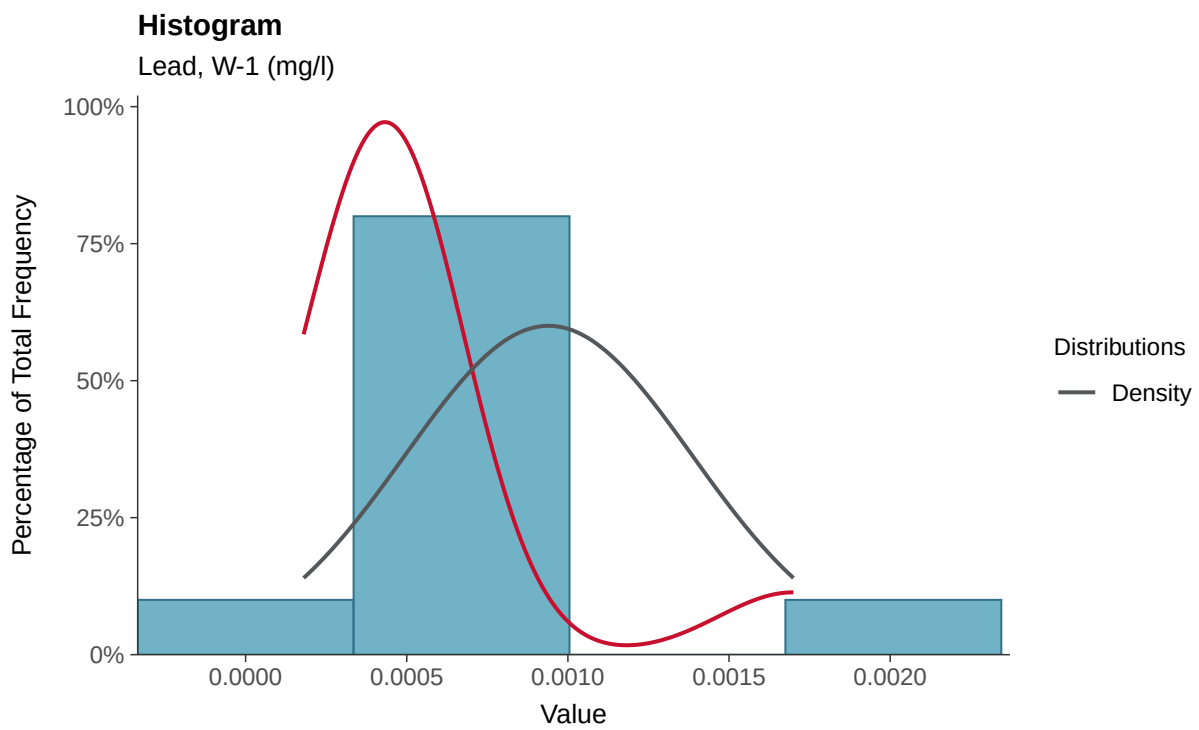
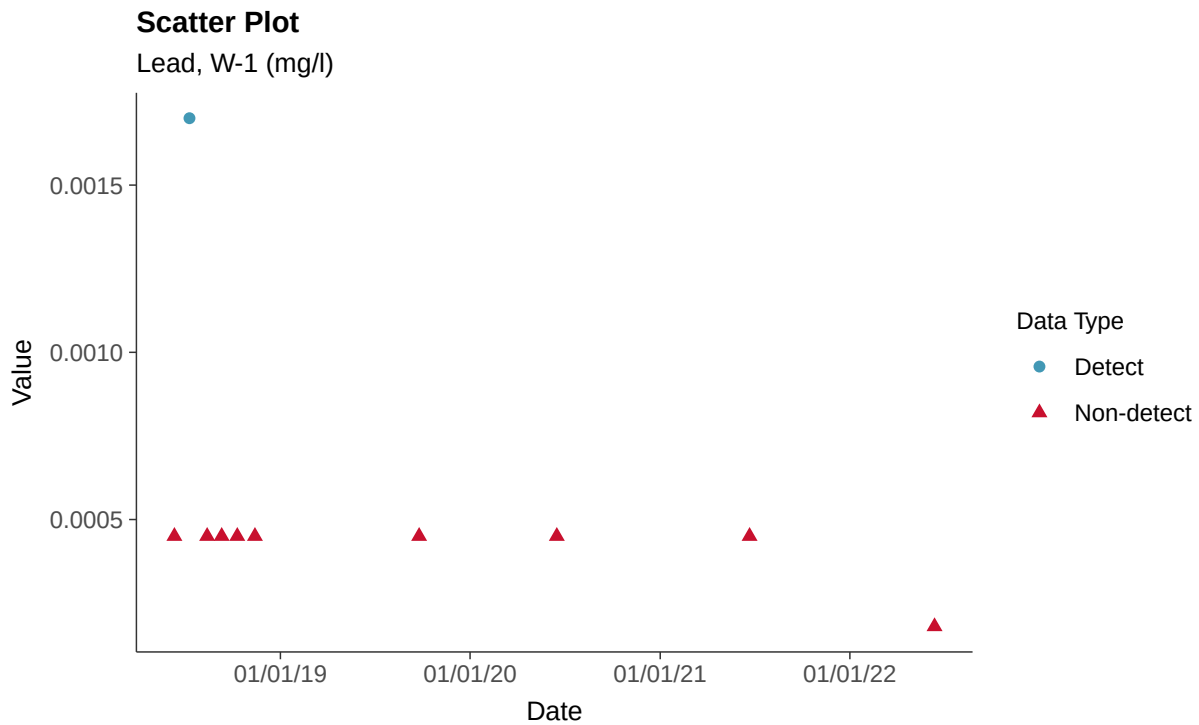
Trend Regression: Piecewise Linear-Linear

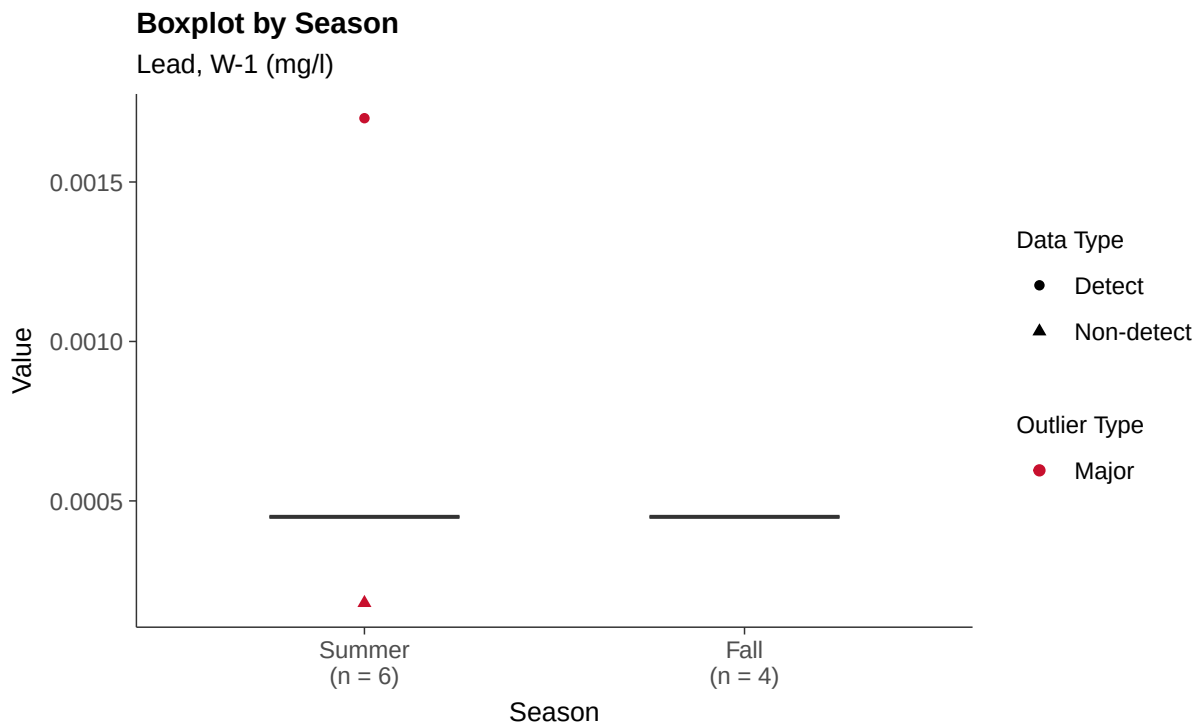
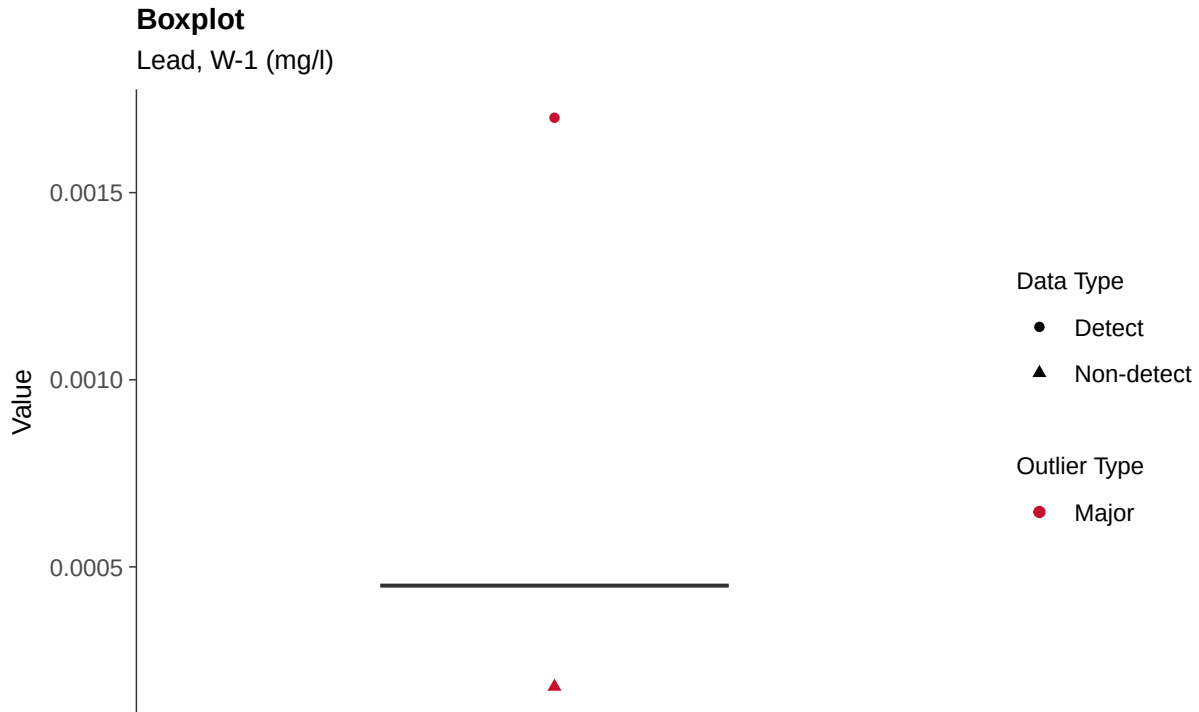
Fluoride (App IV), W-1 (mg/l)



Appendix IV: Lead, W-1

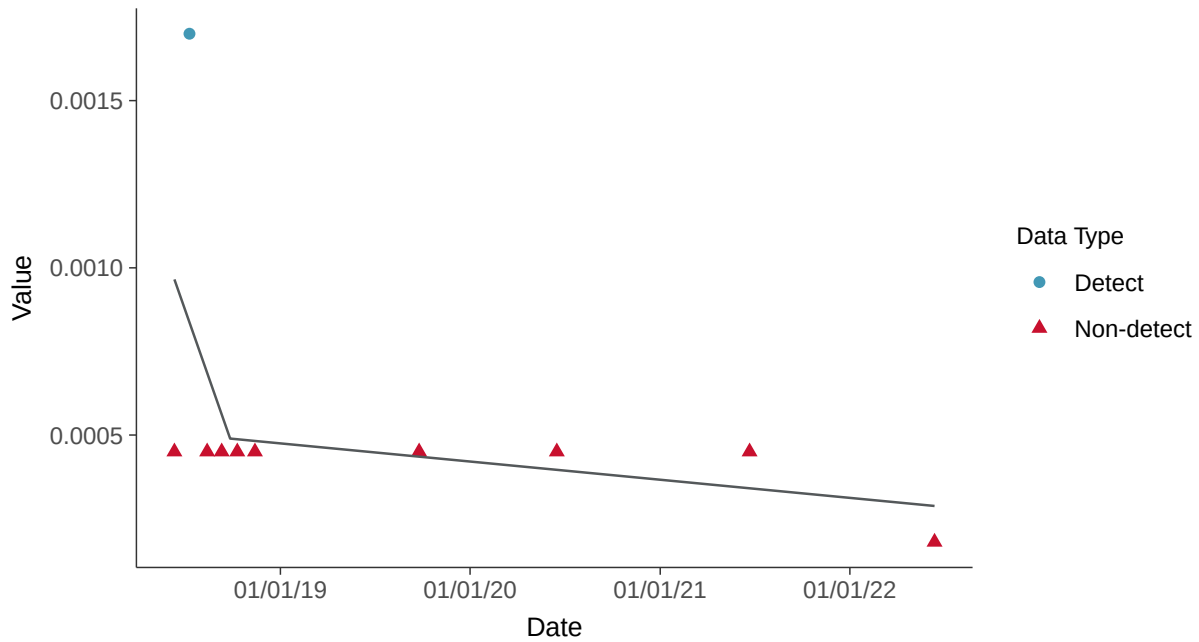
ID: 1_2_117





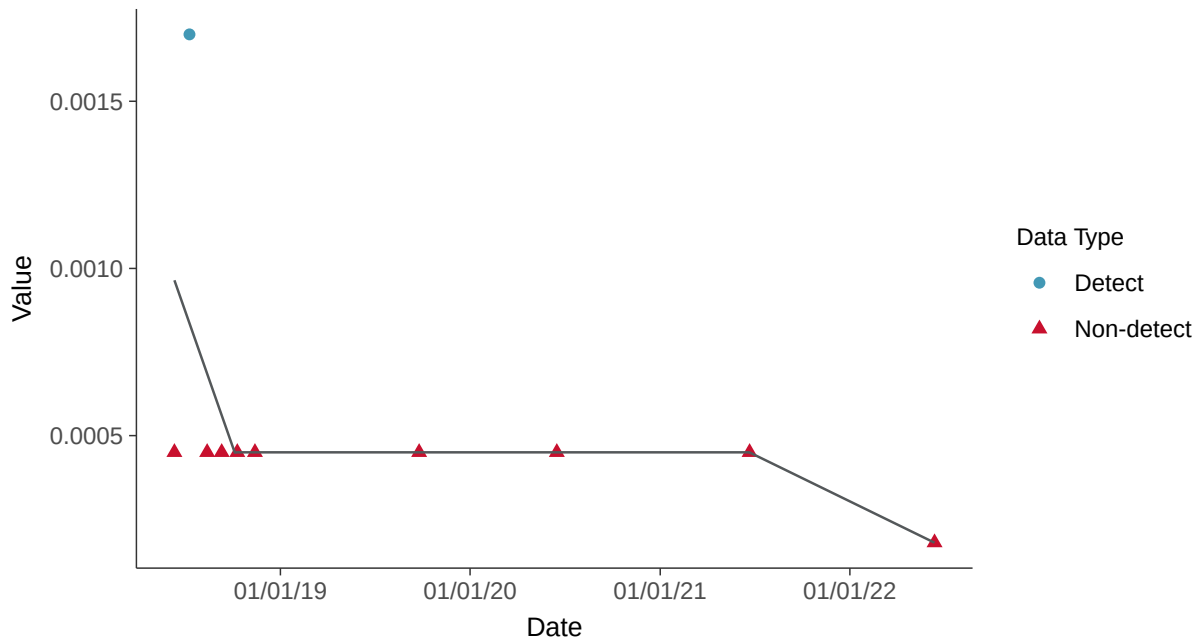
Trend Regression: Piecewise Linear-Linear

Lead, W-1 (mg/l)



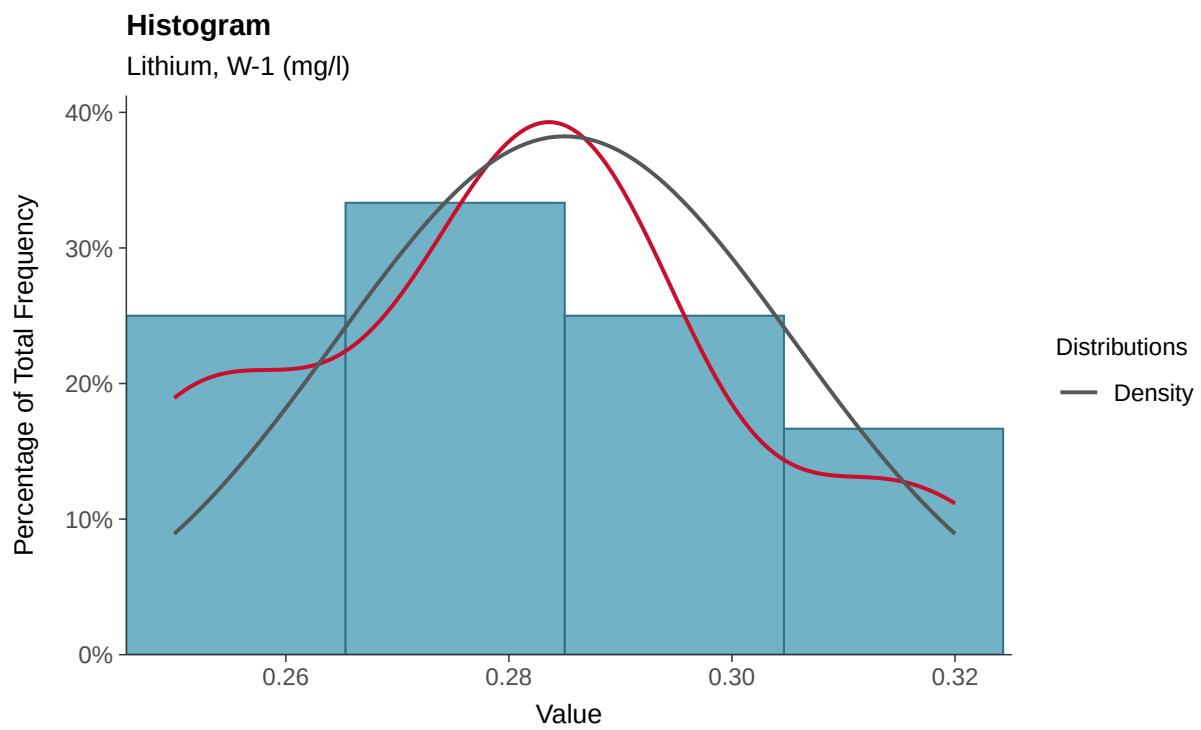
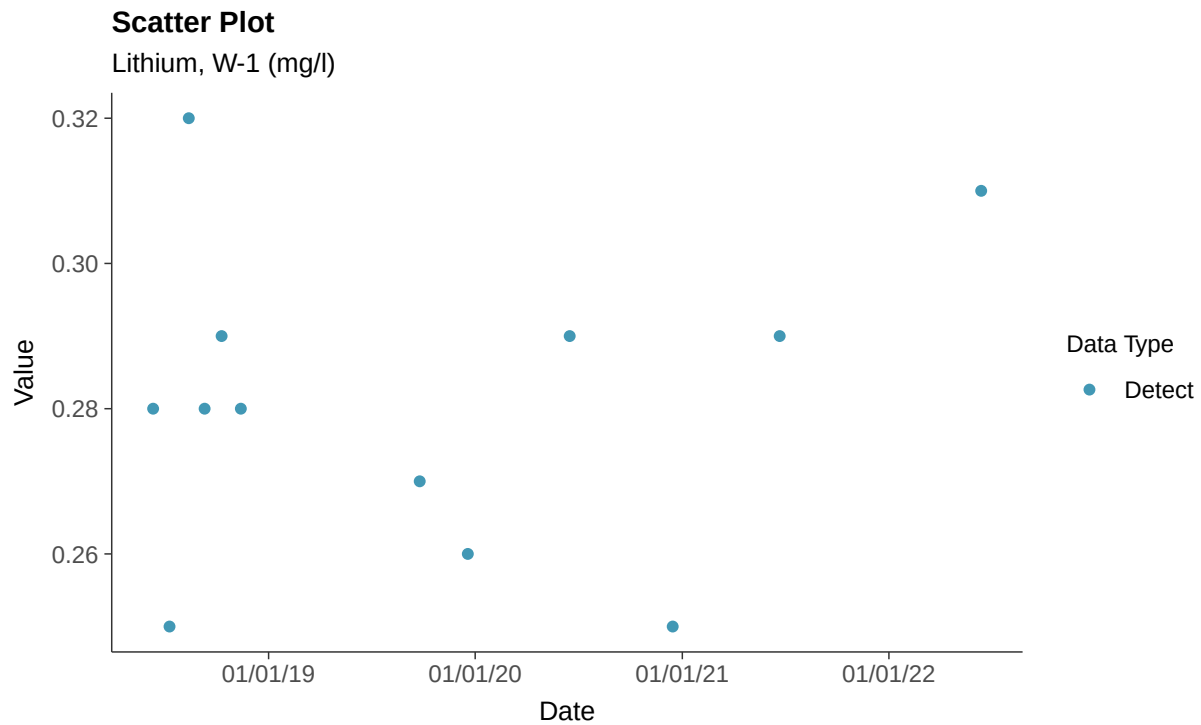
Trend Regression: Piecewise Linear-Linear-Linear

Lead, W-1 (mg/l)



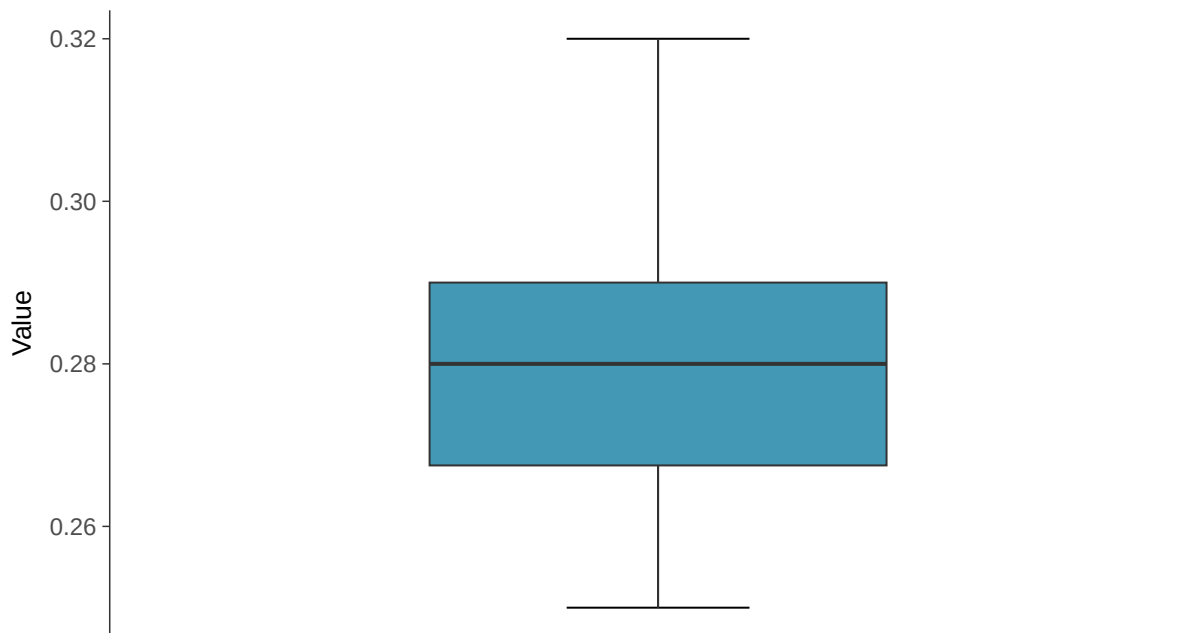
Appendix IV: Lithium, W-1

ID: 1_2_118



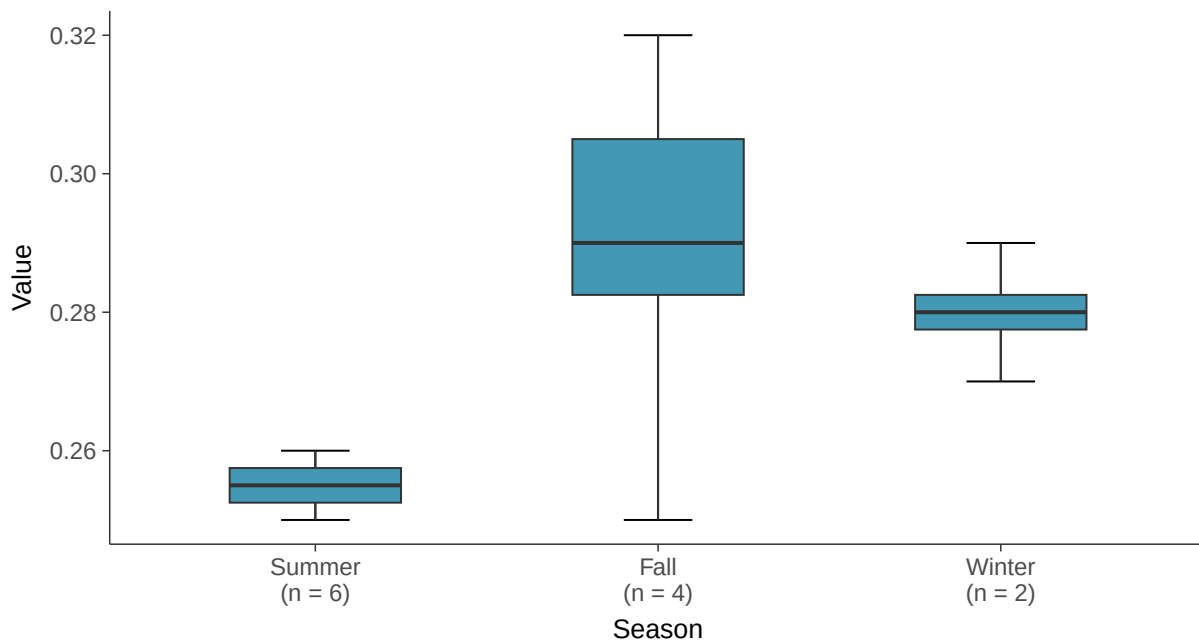
Boxplot

Lithium, W-1 (mg/l)

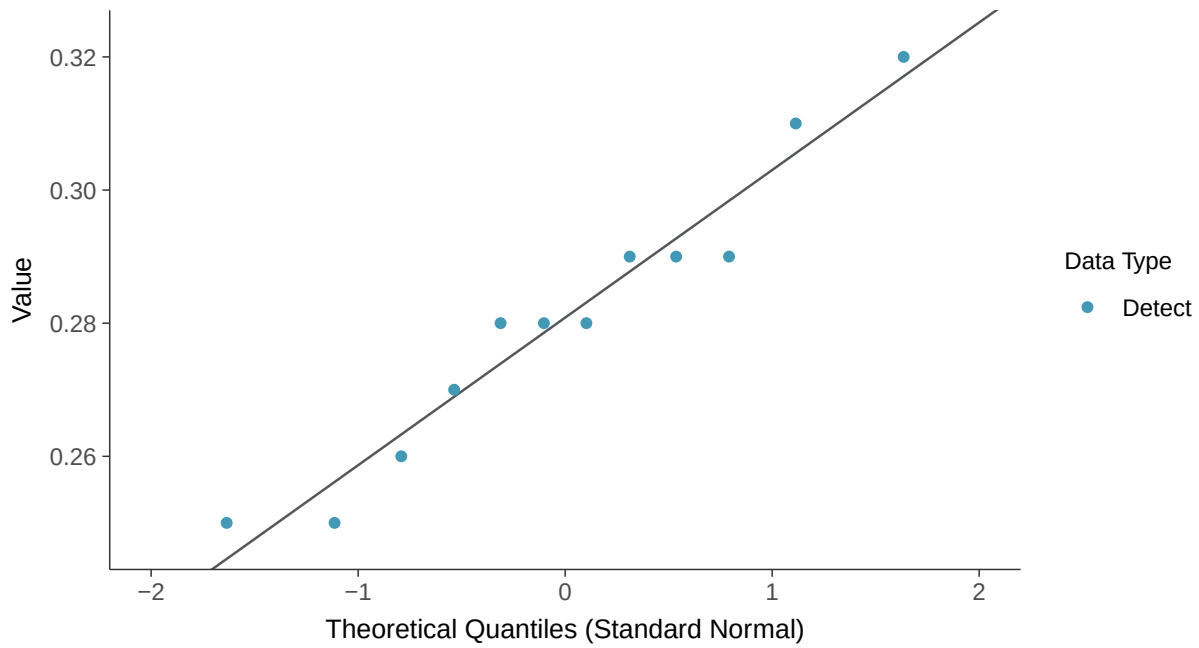


Boxplot by Season

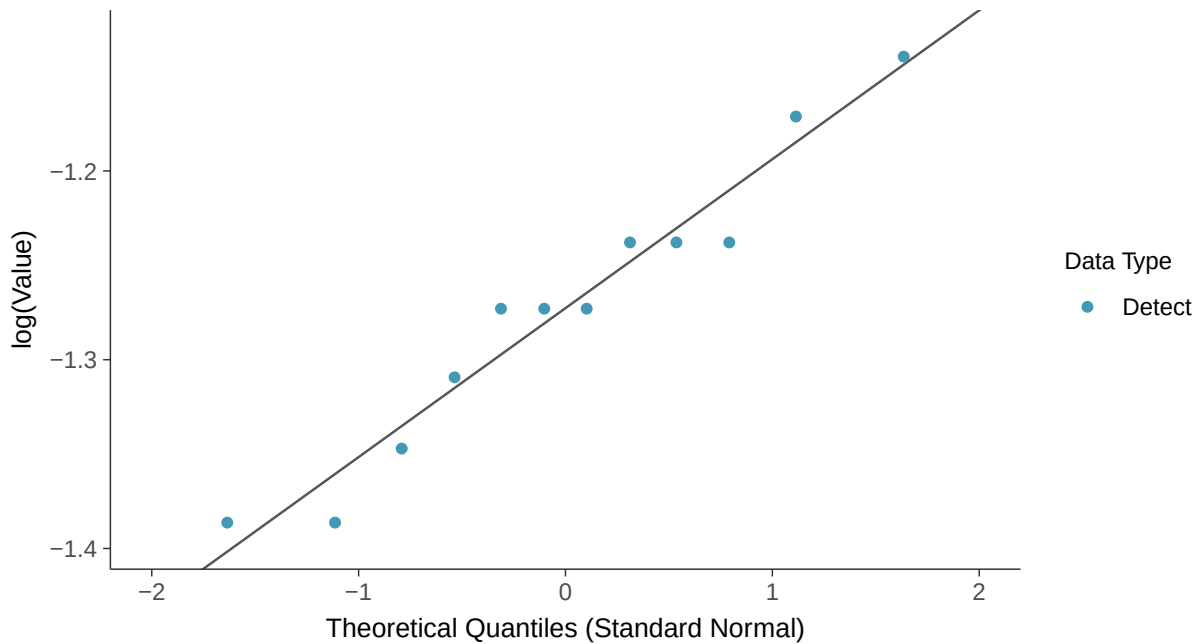
Lithium, W-1 (mg/l)

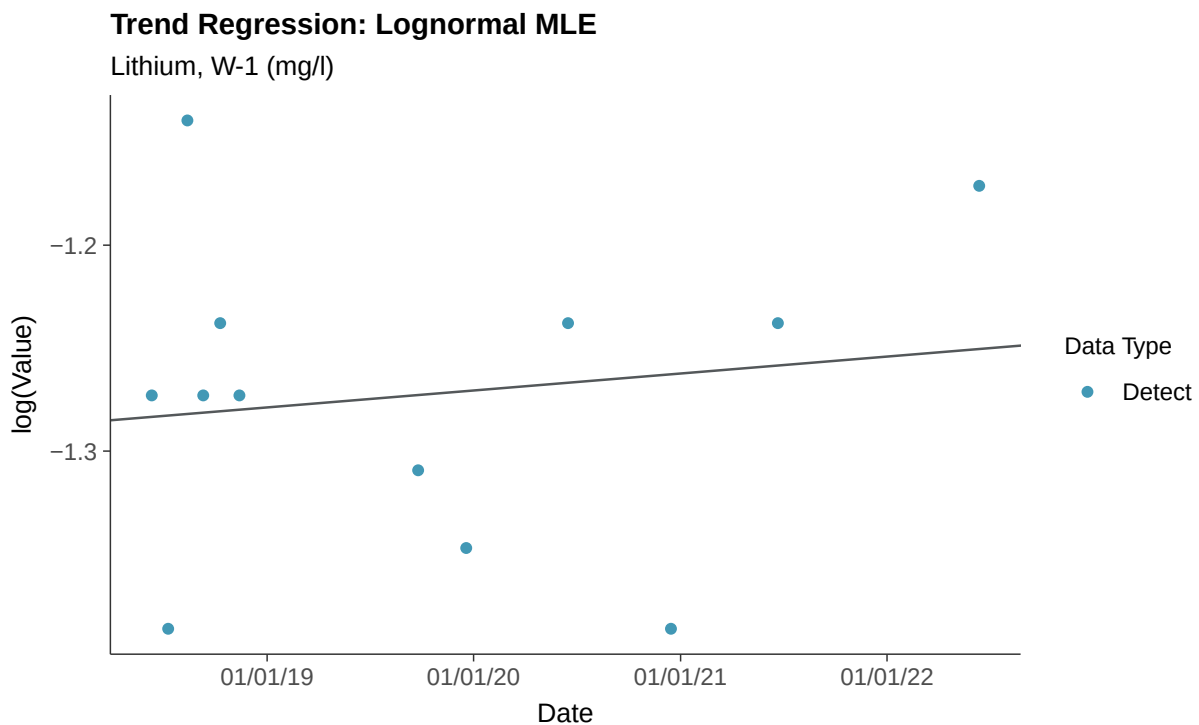
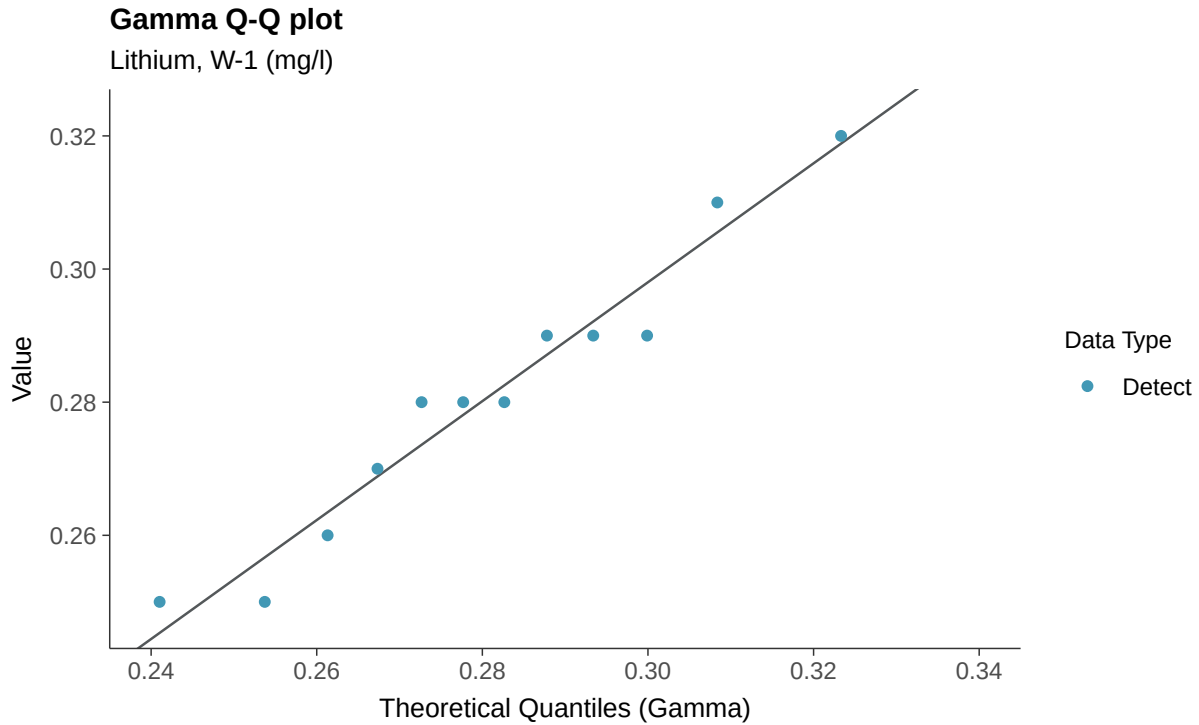


Normal Q-Q plot
Lithium, W-1 (mg/l)



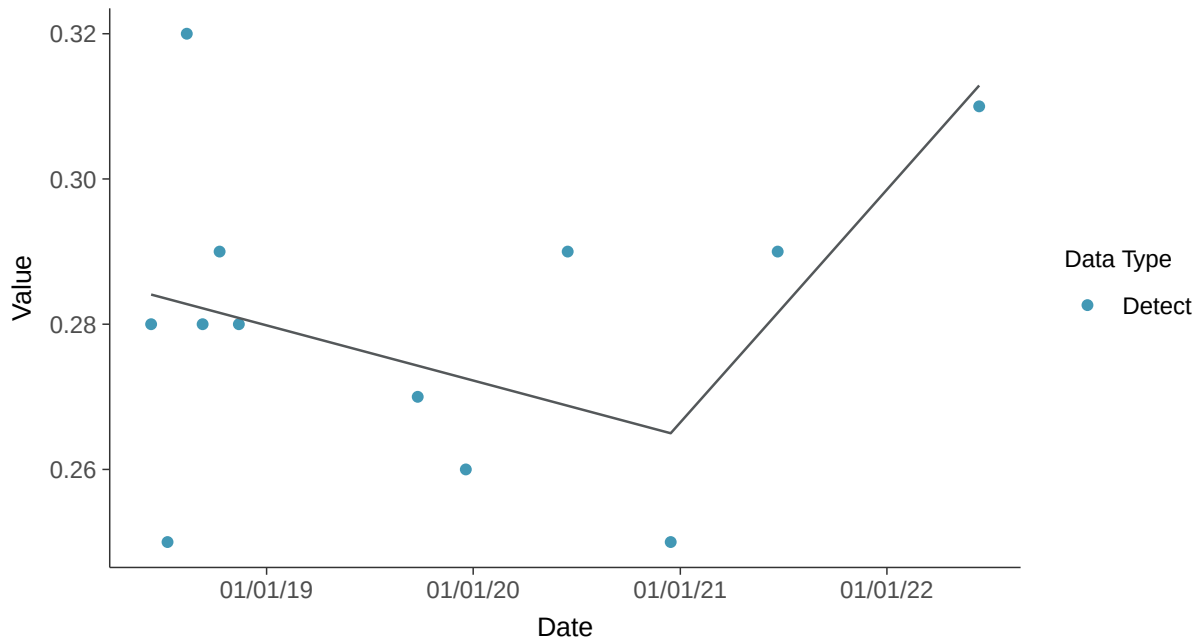
Lognormal Q-Q plot
Lithium, W-1 (mg/l)





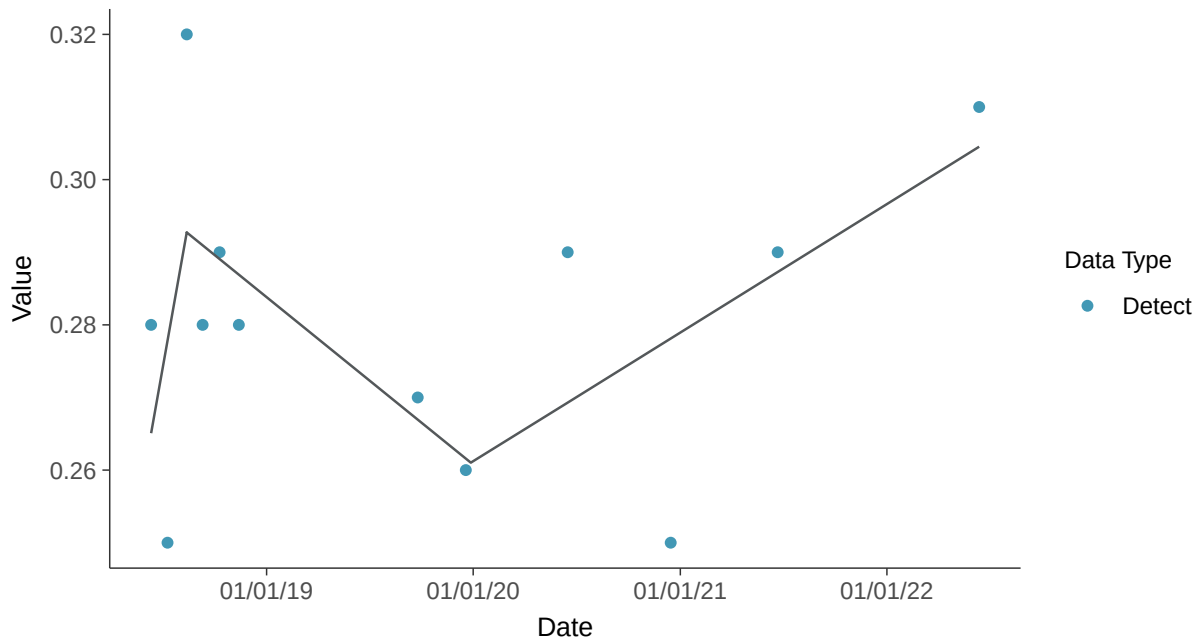
Trend Regression: Piecewise Linear-Linear

Lithium, W-1 (mg/l)



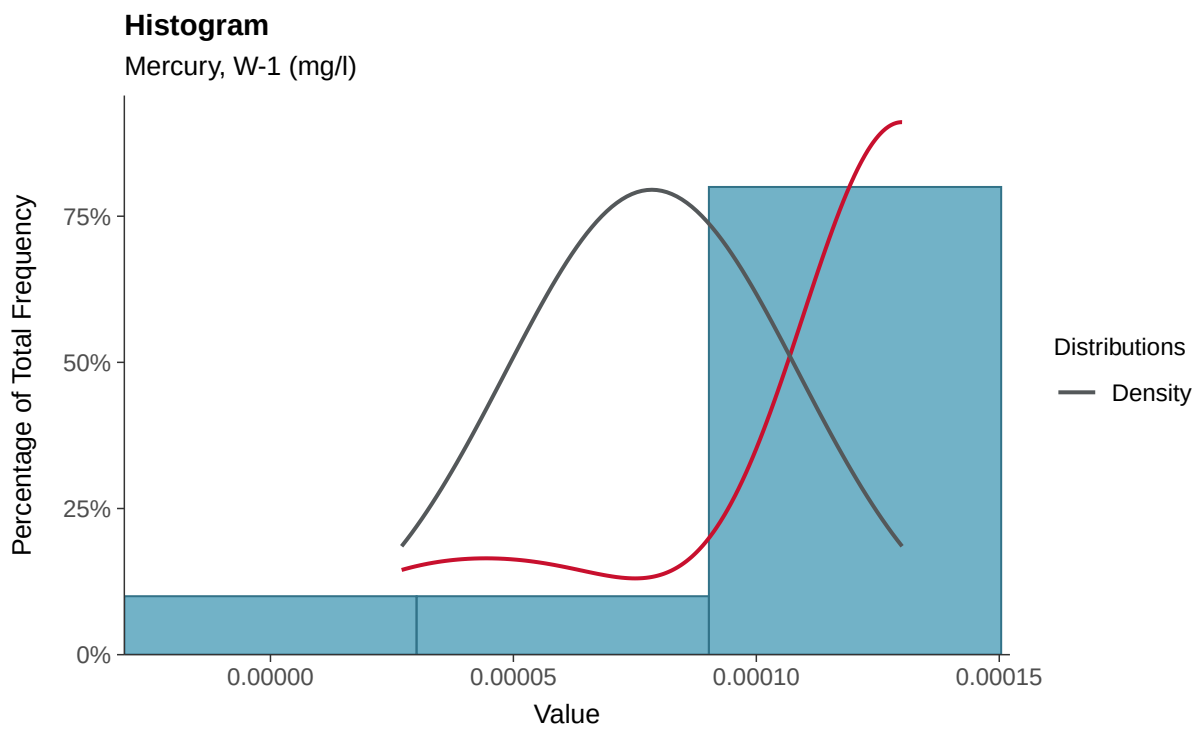
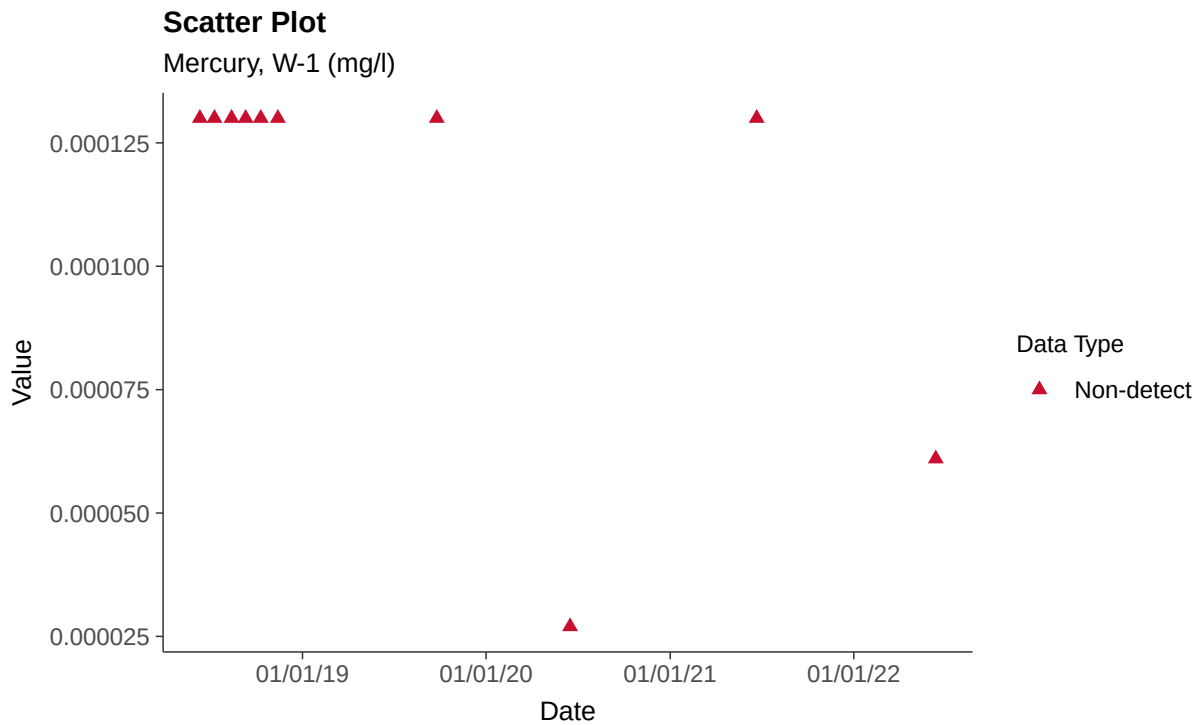
Trend Regression: Piecewise Linear-Linear-Linear

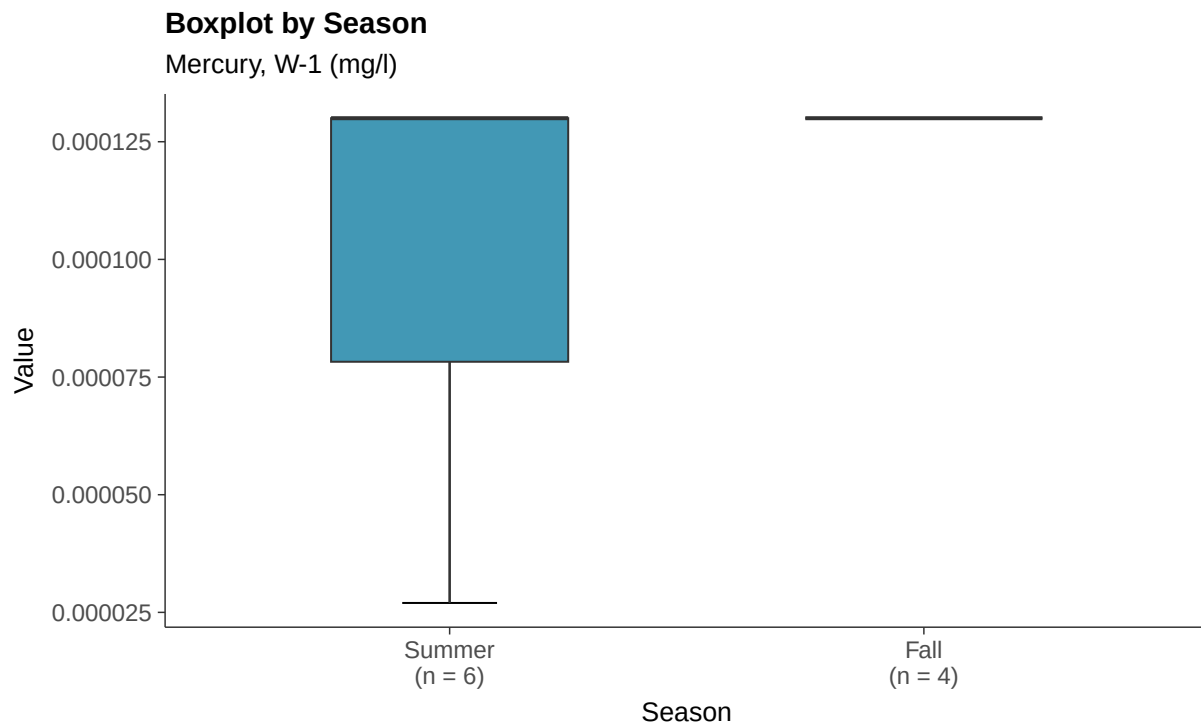
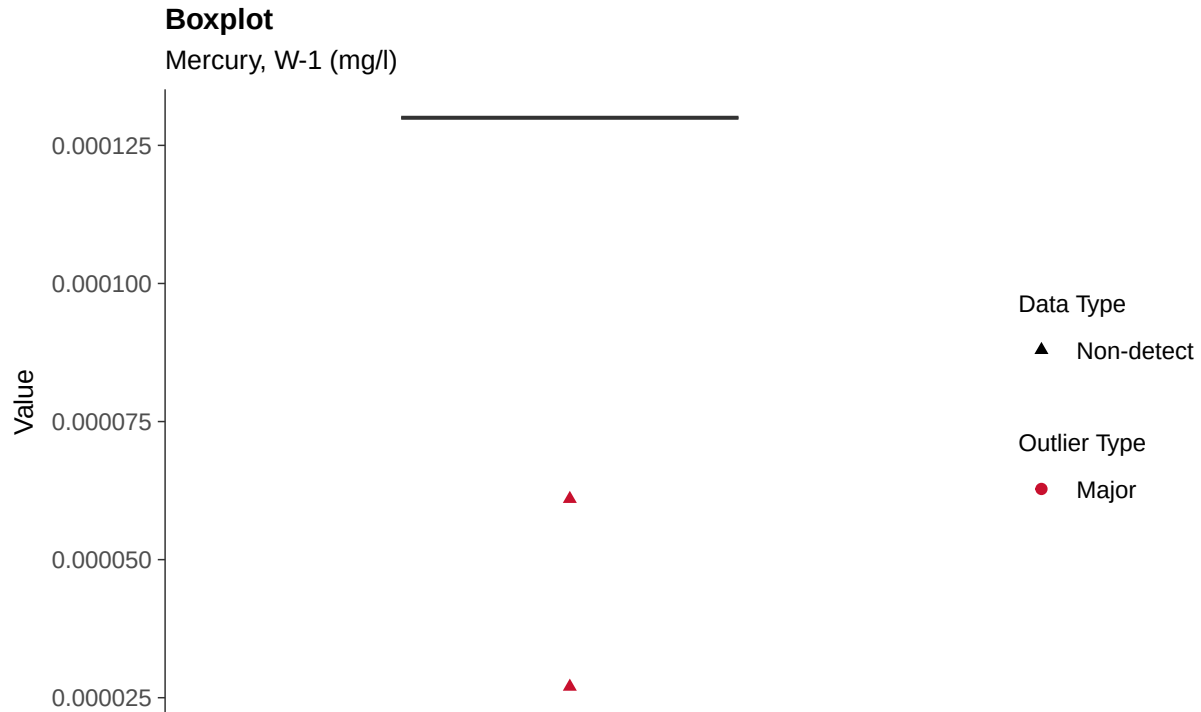
Lithium, W-1 (mg/l)



Appendix IV: Mercury, W-1

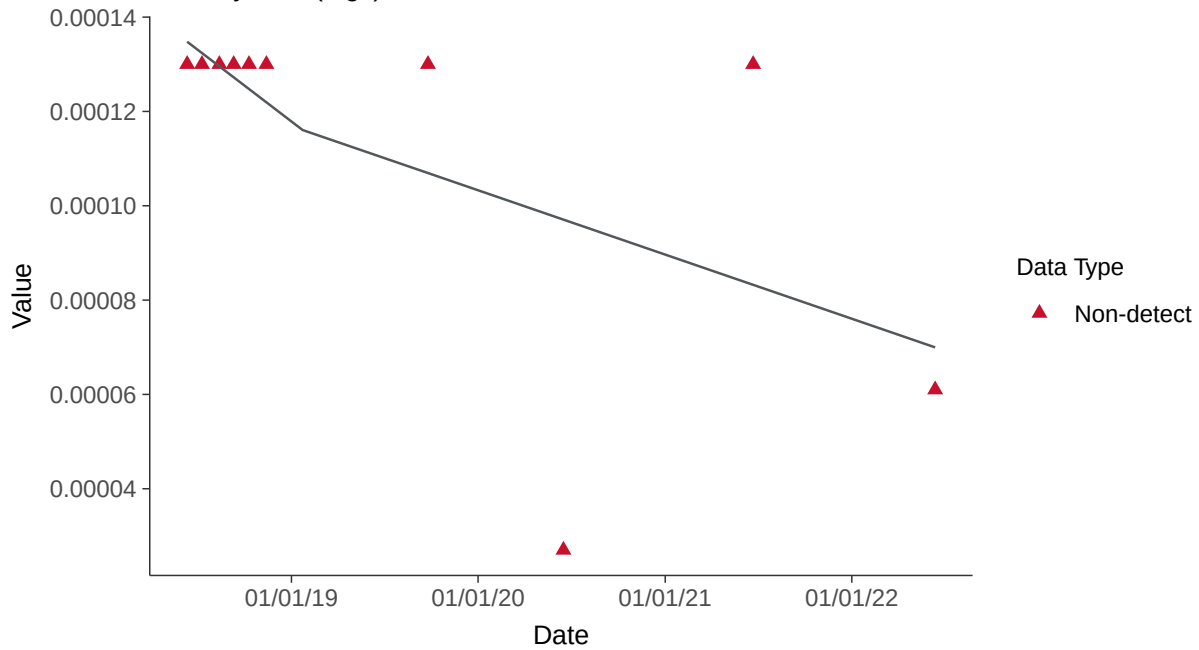
ID: 1_2_120





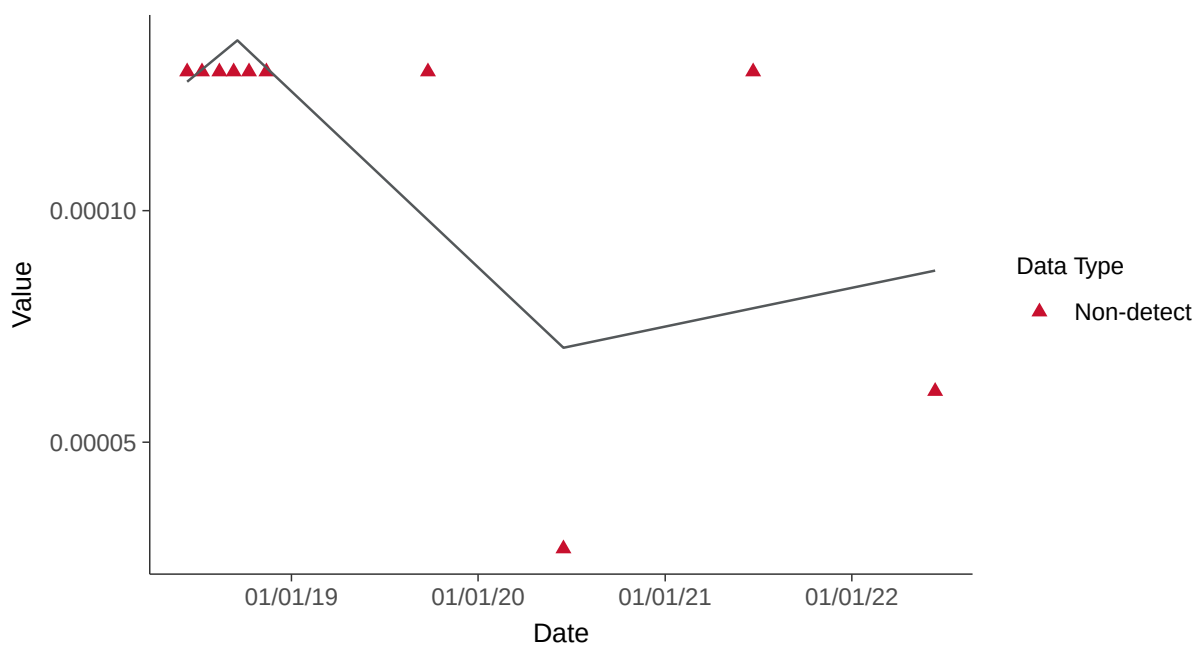
Trend Regression: Piecewise Linear-Linear

Mercury, W-1 (mg/l)



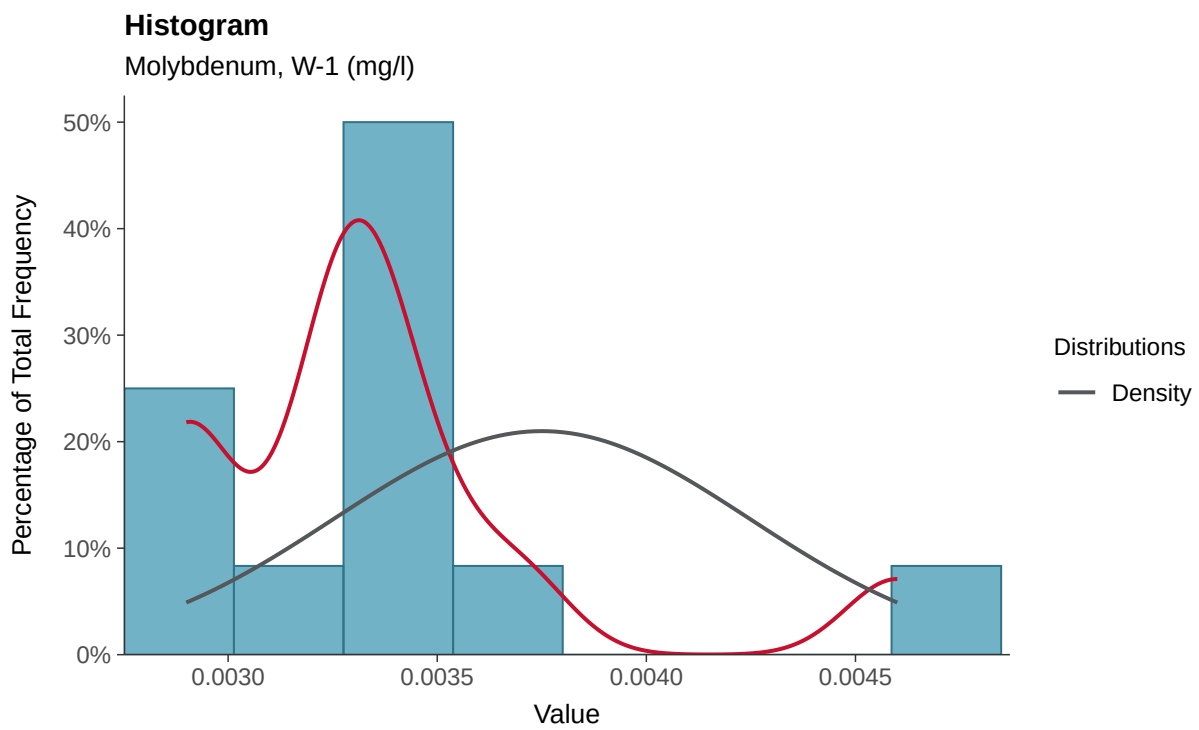
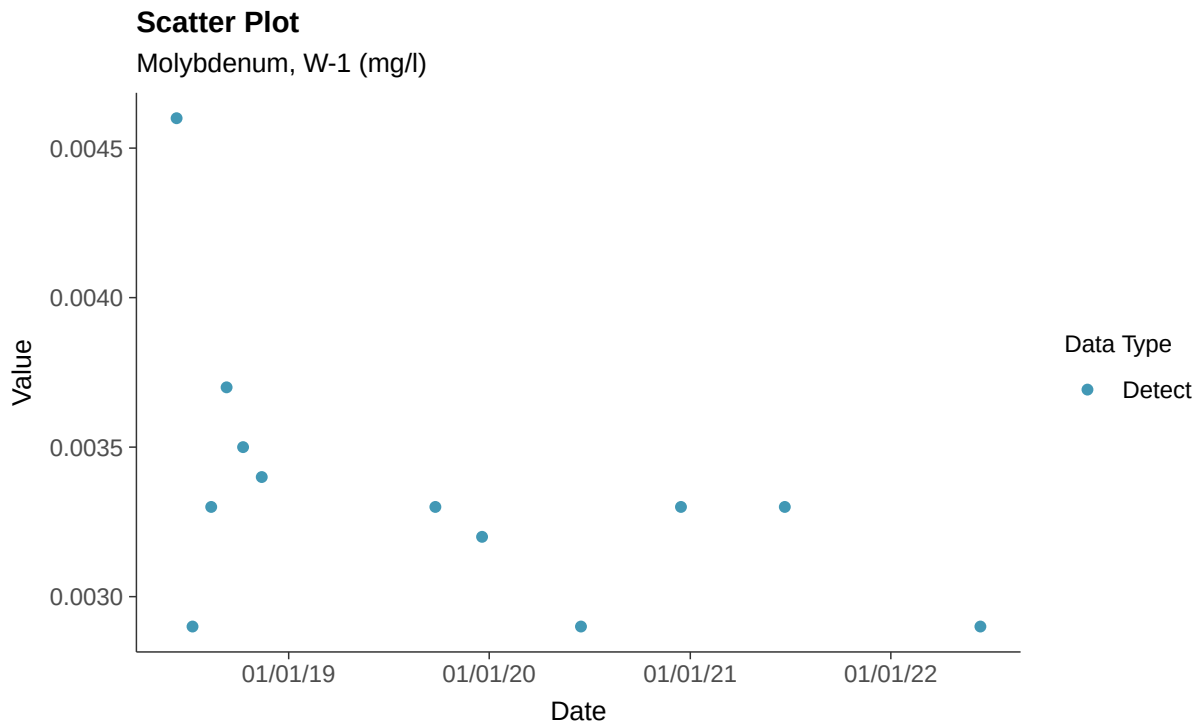
Trend Regression: Piecewise Linear-Linear-Linear

Mercury, W-1 (mg/l)



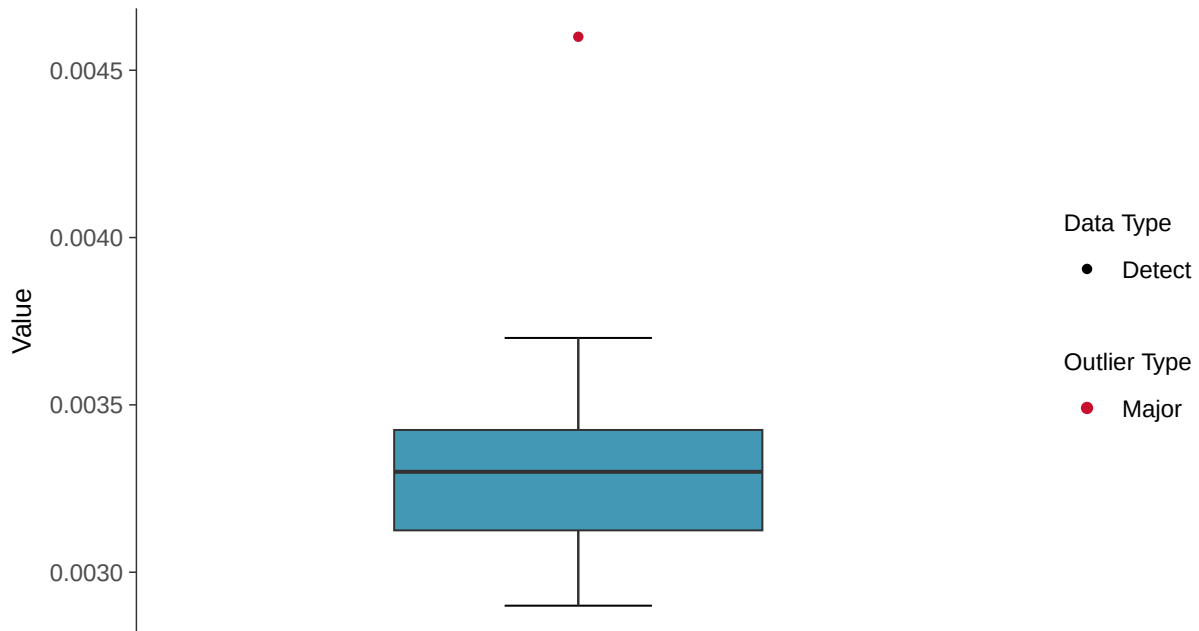
Appendix IV: Molybdenum, W-1

ID: 1_2_121



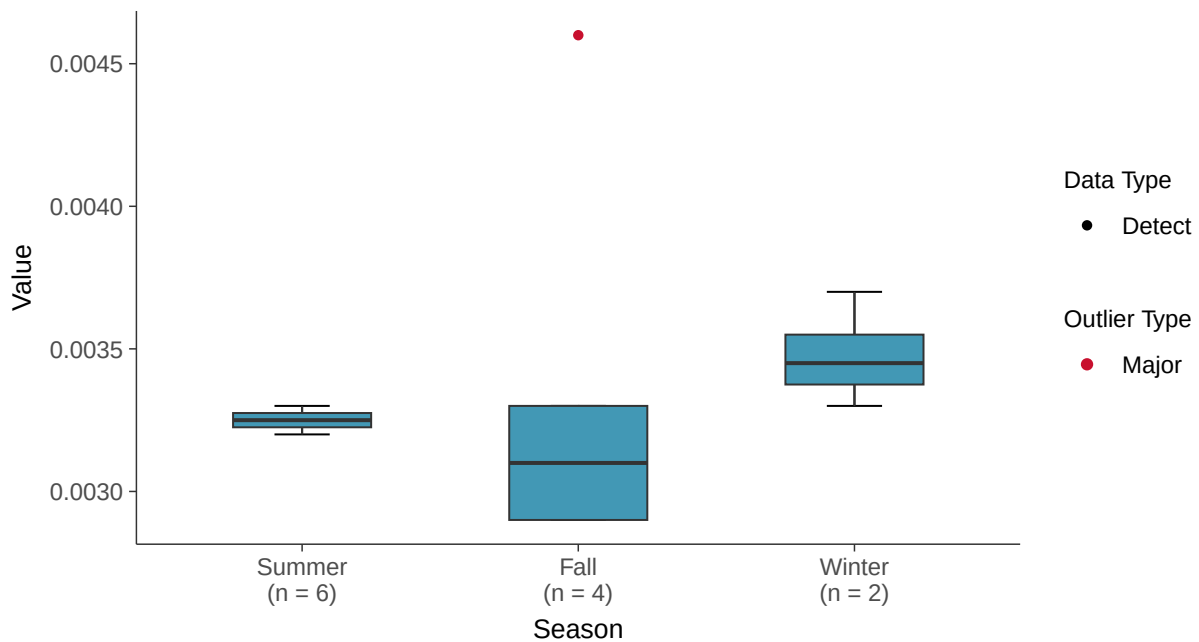
Boxplot

Molybdenum, W-1 (mg/l)



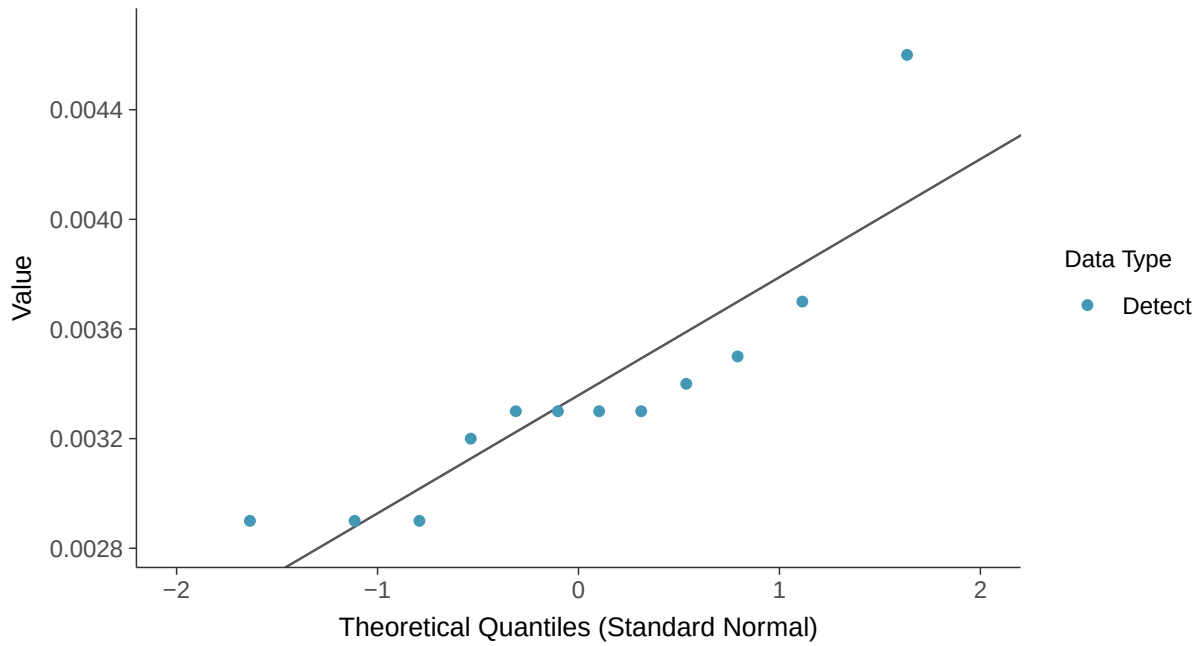
Boxplot by Season

Molybdenum, W-1 (mg/l)



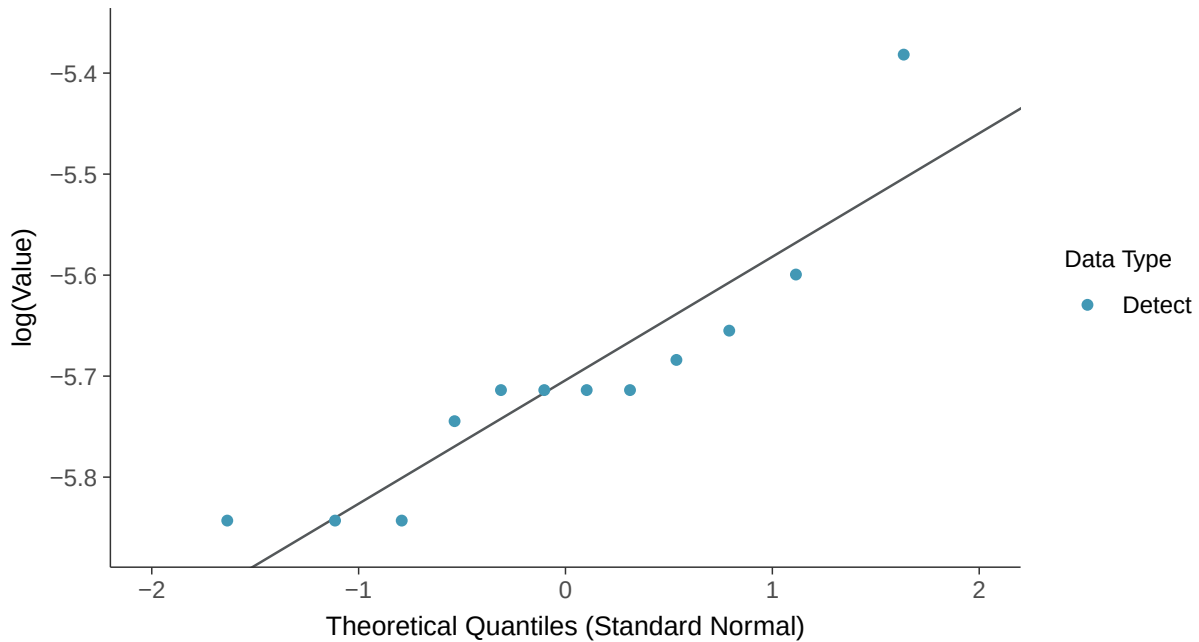
Normal Q-Q plot

Molybdenum, W-1 (mg/l)



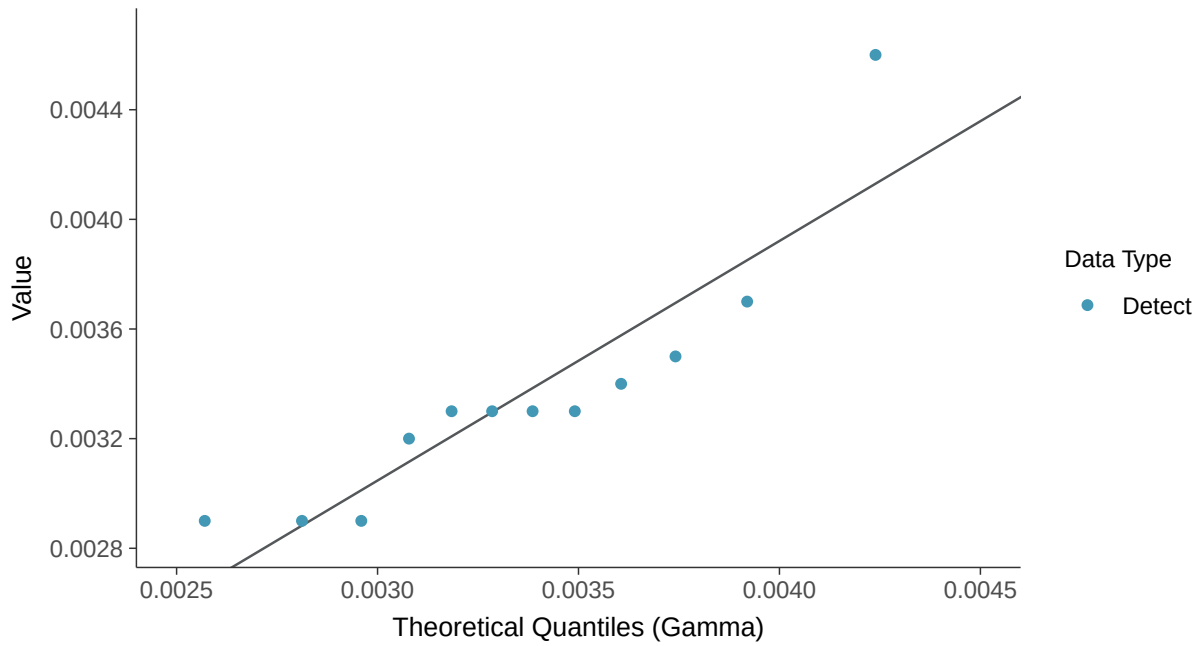
Lognormal Q-Q plot

Molybdenum, W-1 (mg/l)



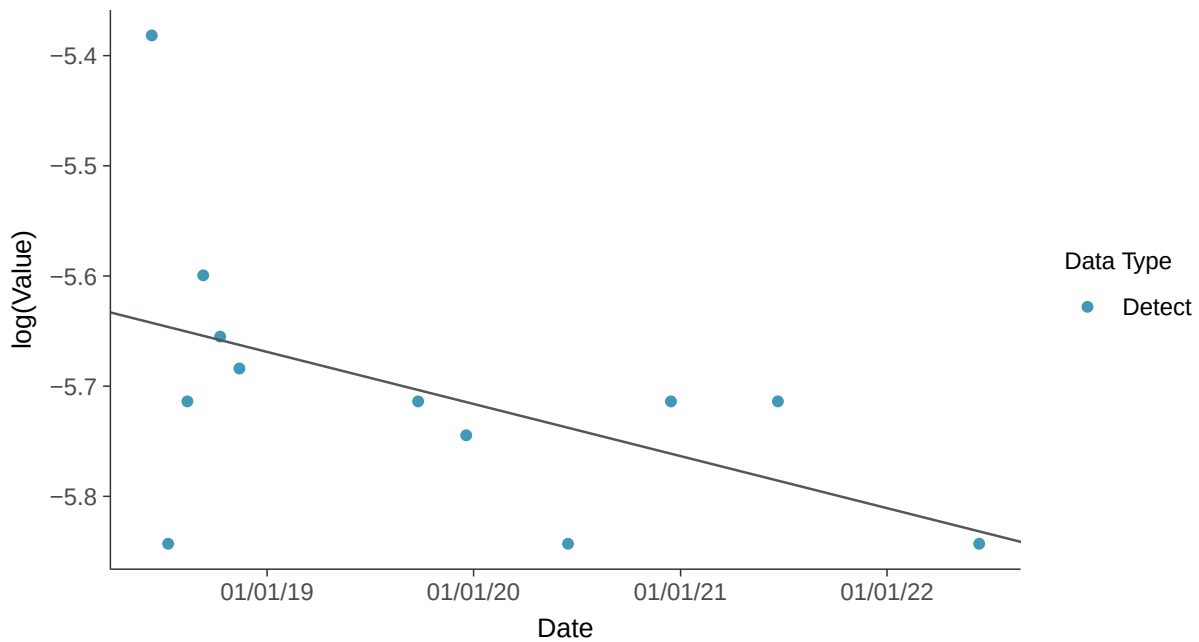
Gamma Q-Q plot

Molybdenum, W-1 (mg/l)



Trend Regression: Lognormal MLE

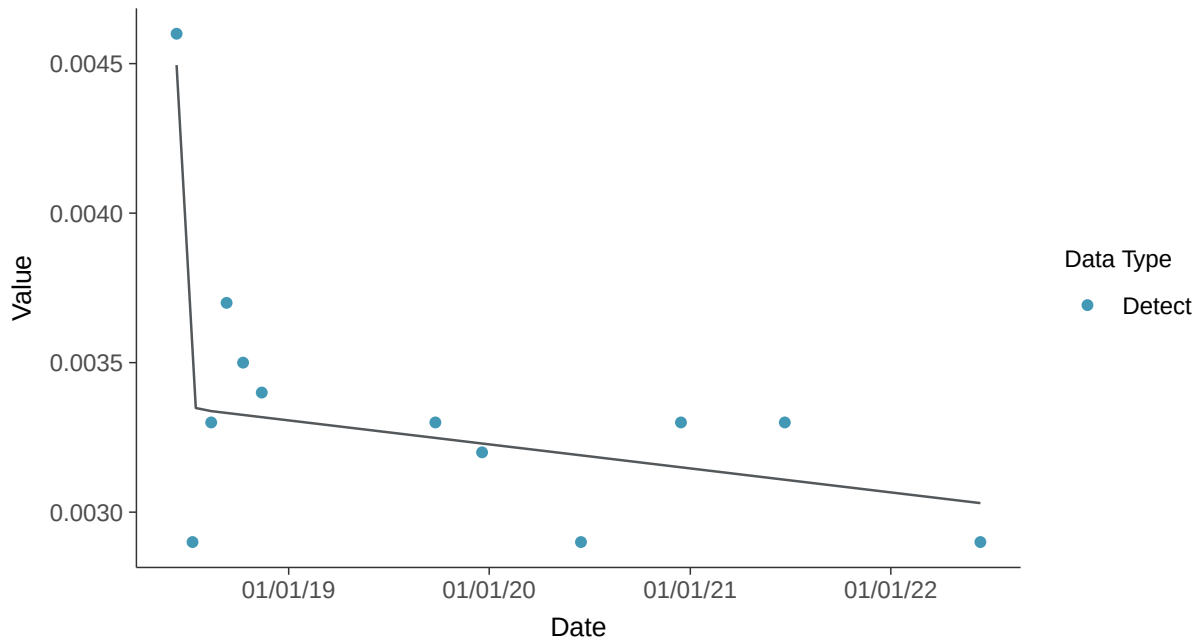
Molybdenum, W-1 (mg/l)





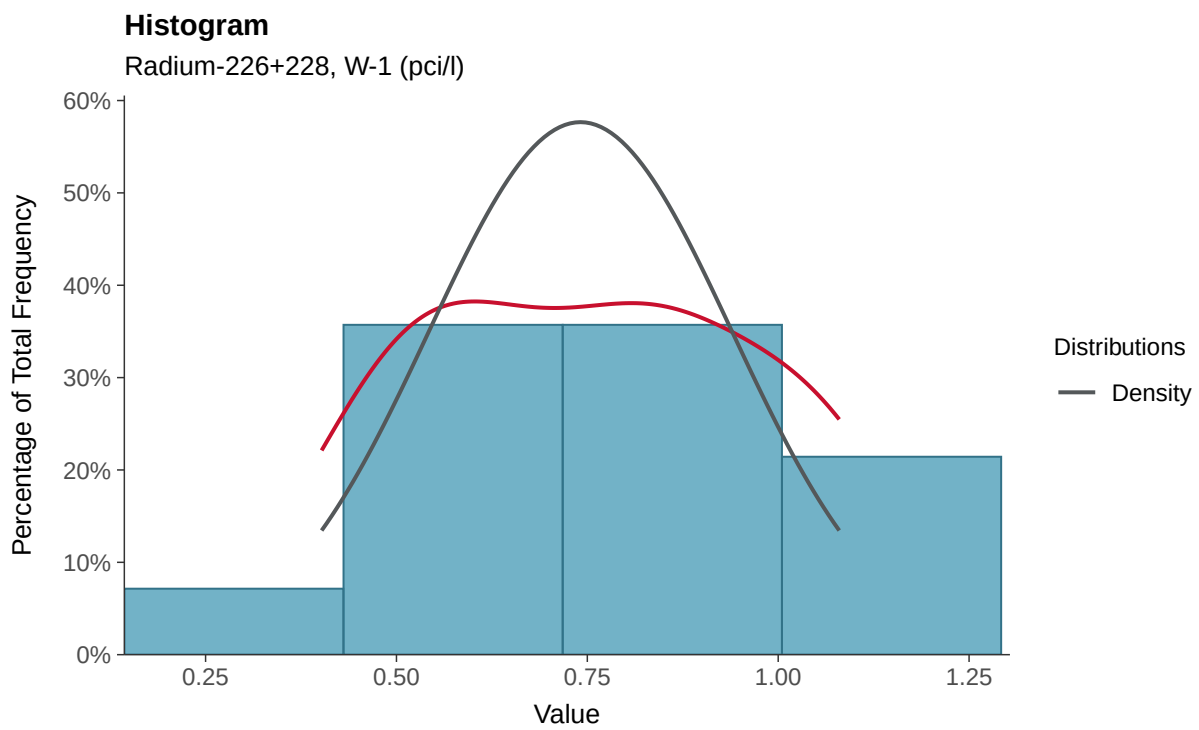
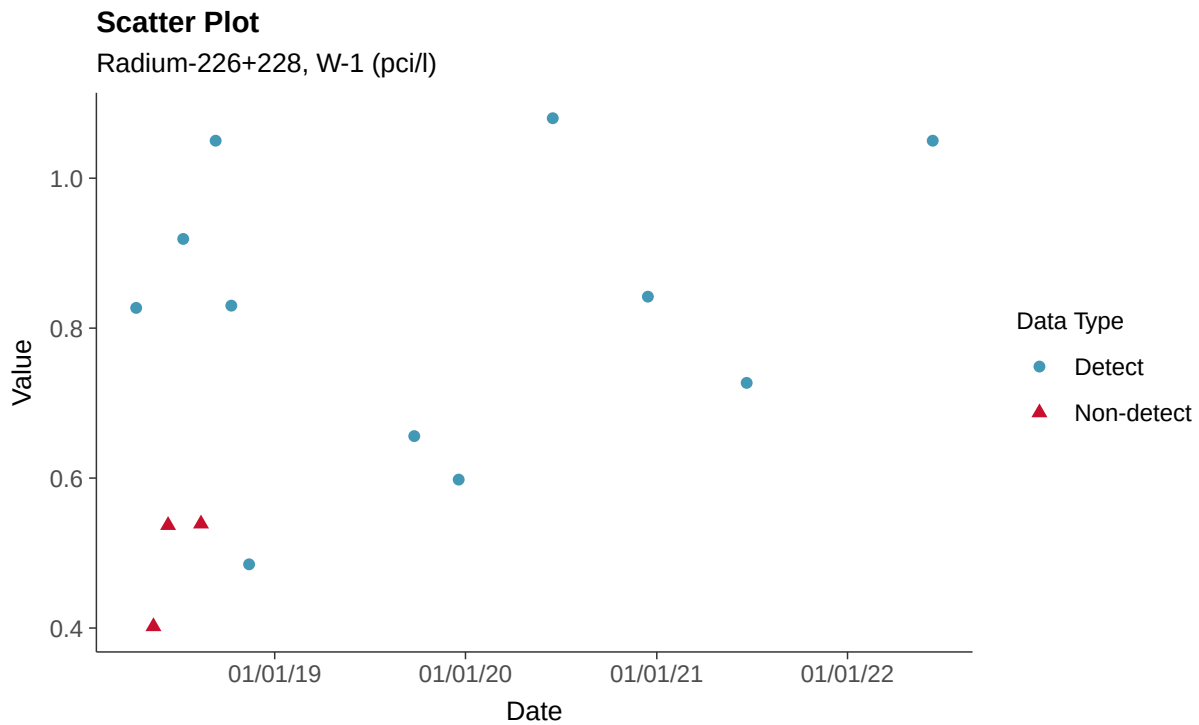
Trend Regression: Piecewise Linear-Linear

Molybdenum, W-1 (mg/l)



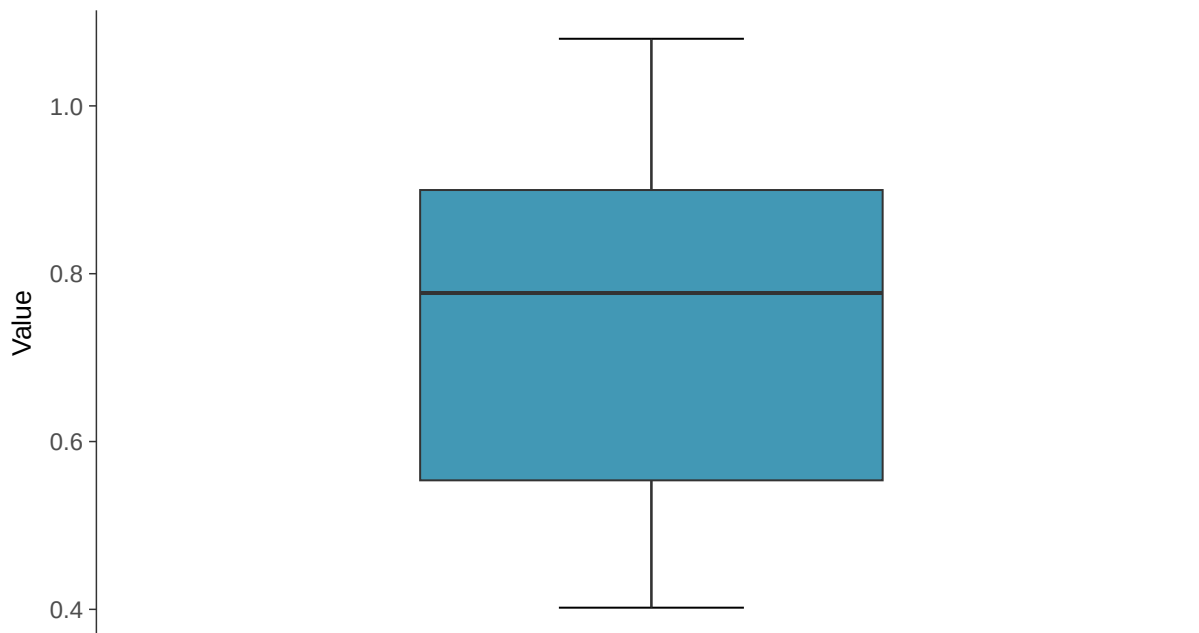
Appendix IV: Radium-226+228, W-1

ID: 1_2_127



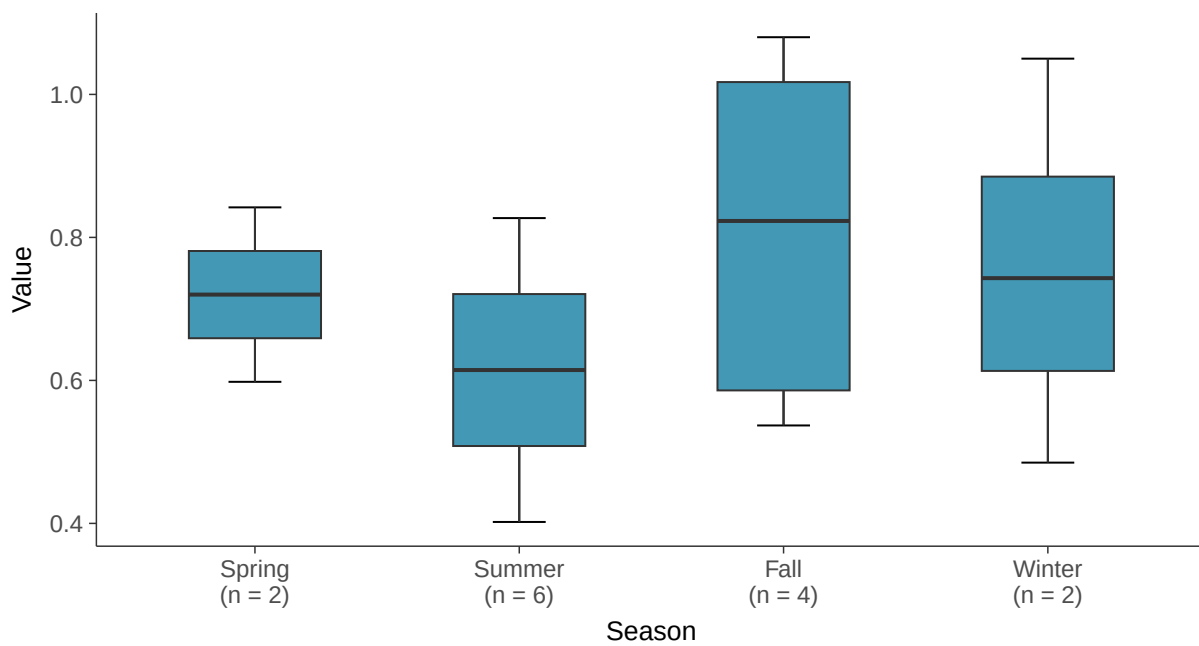
Boxplot

Radium-226+228, W-1 (pci/l)



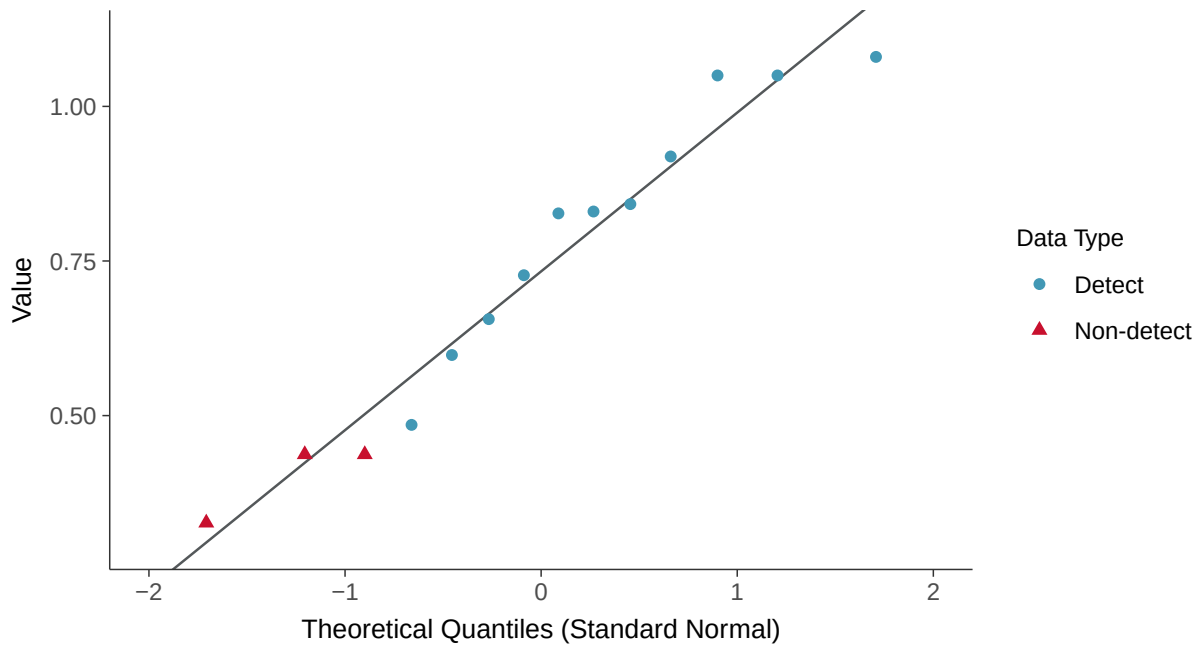
Boxplot by Season

Radium-226+228, W-1 (pci/l)



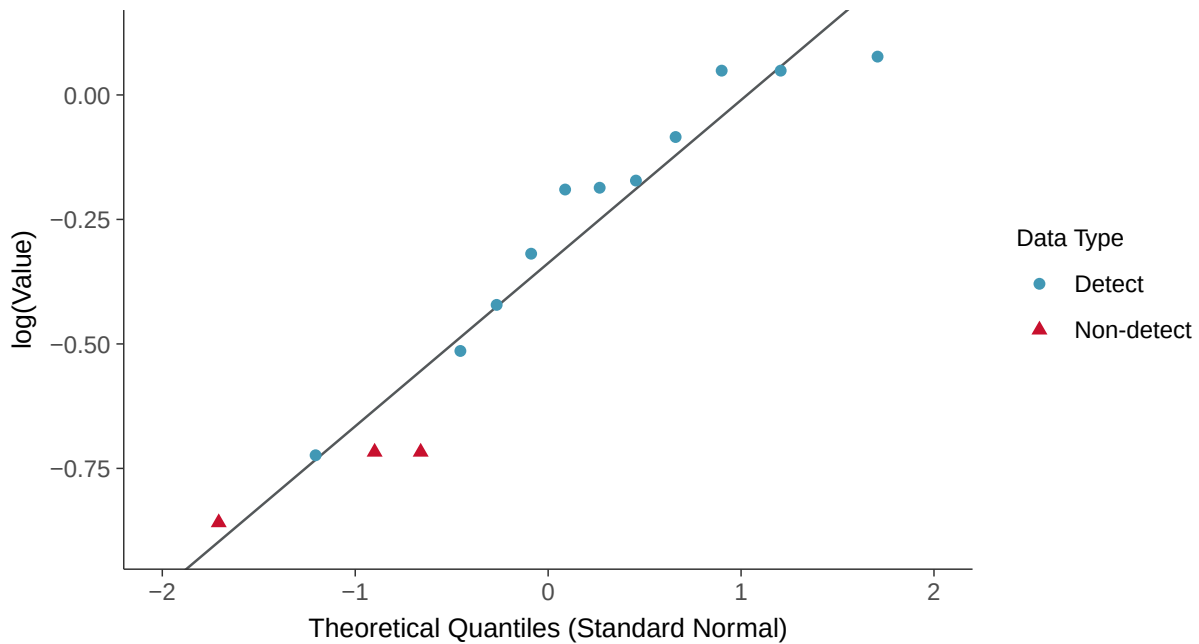
Normal Q-Q plot using ROS Imputed Estimates

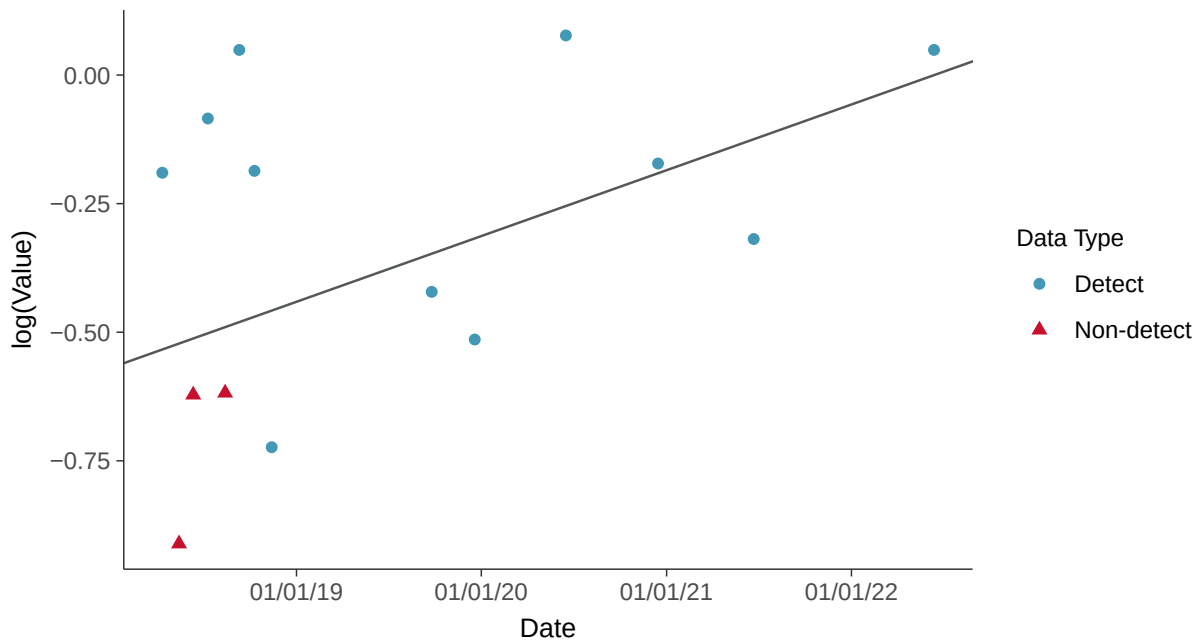
Radium-226+228, W-1 (pci/l)



Lognormal Q-Q plot using ROS Imputed Estimates

Radium-226+228, W-1 (pci/l)

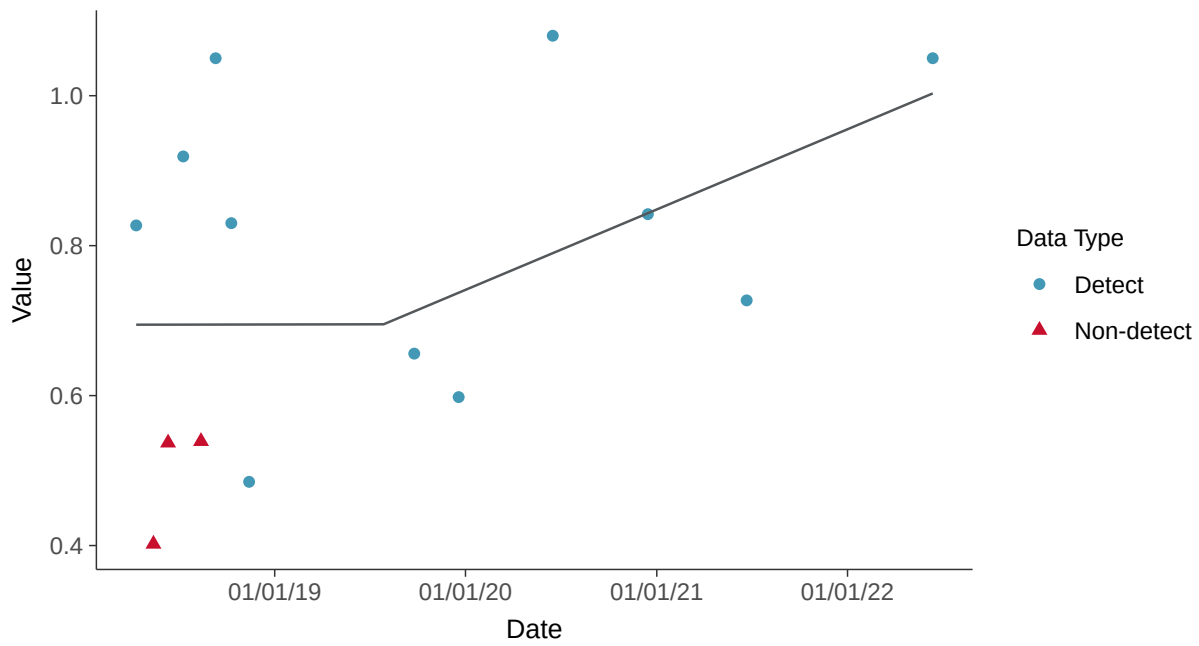






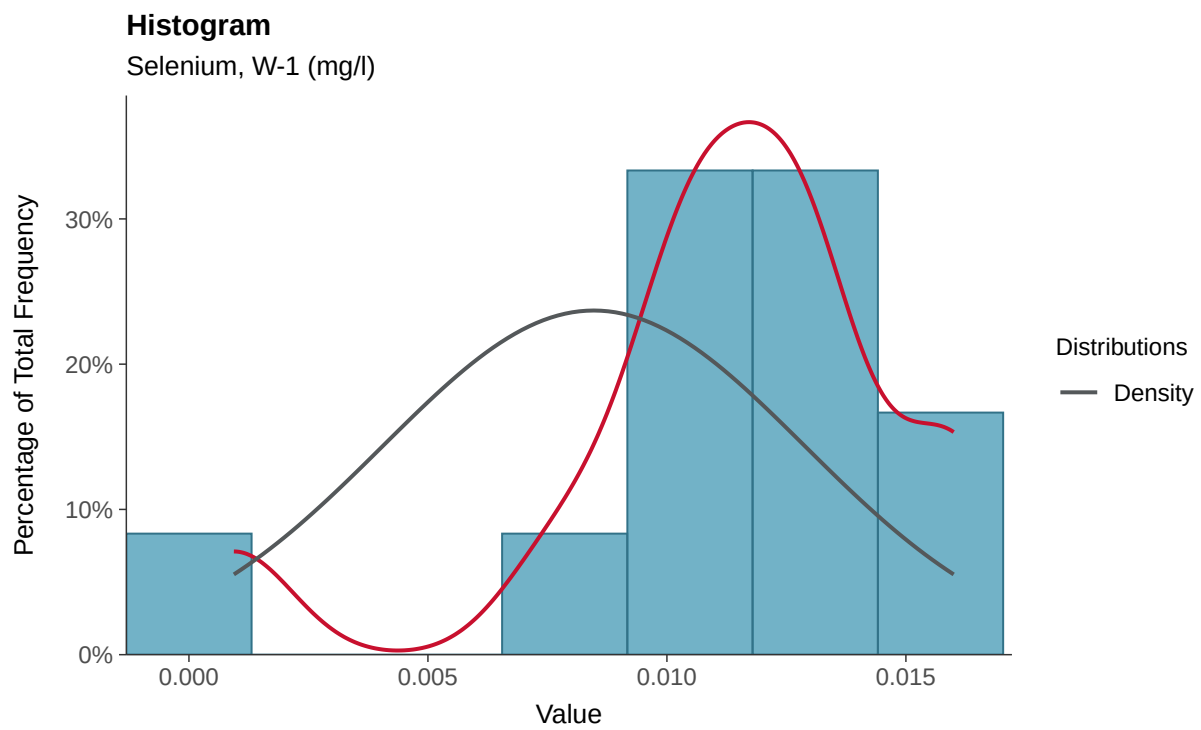
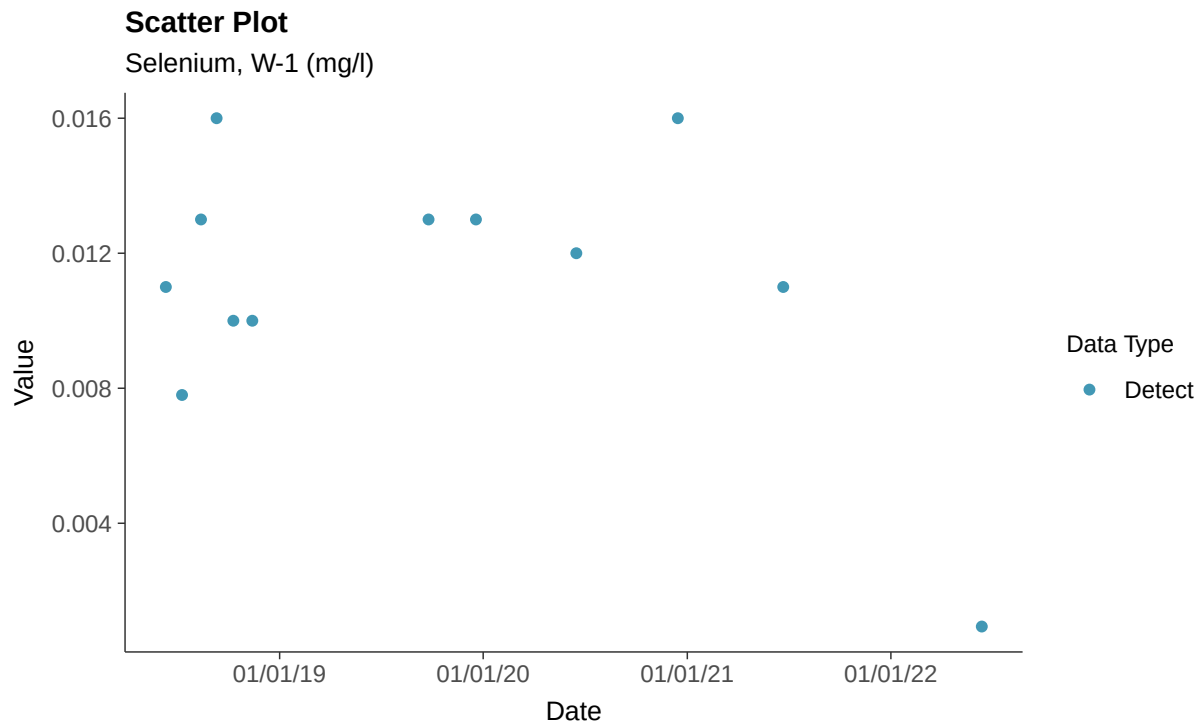
Trend Regression: Piecewise Linear-Linear

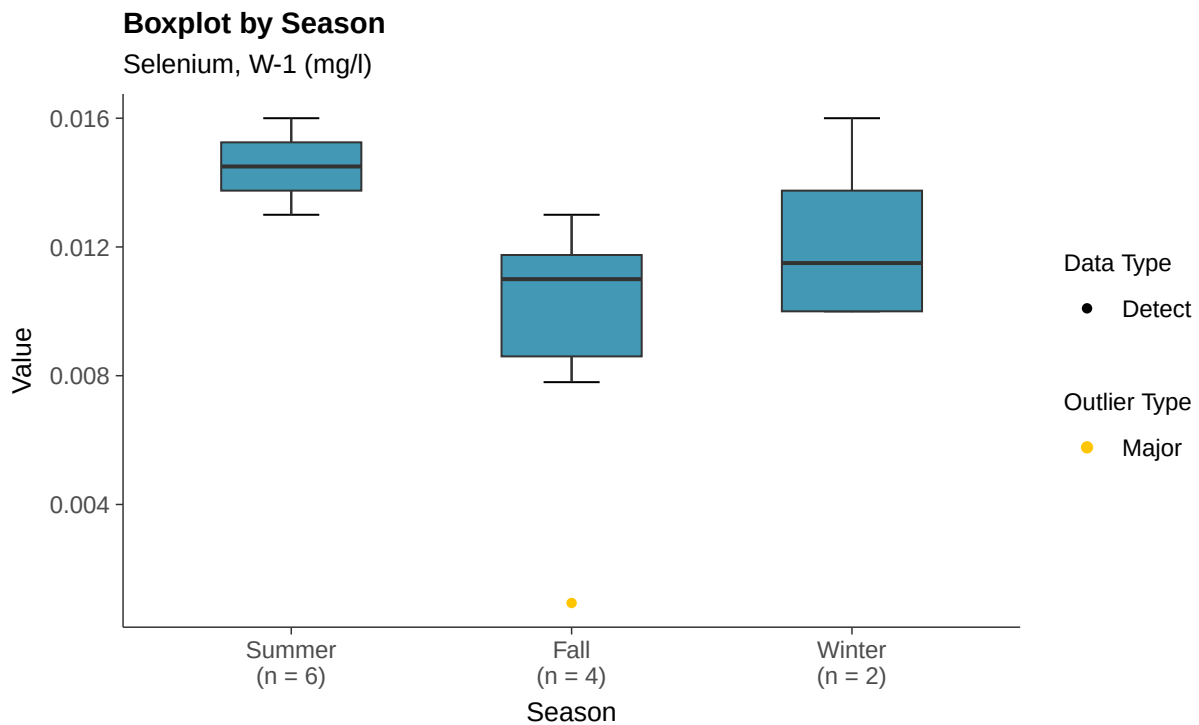
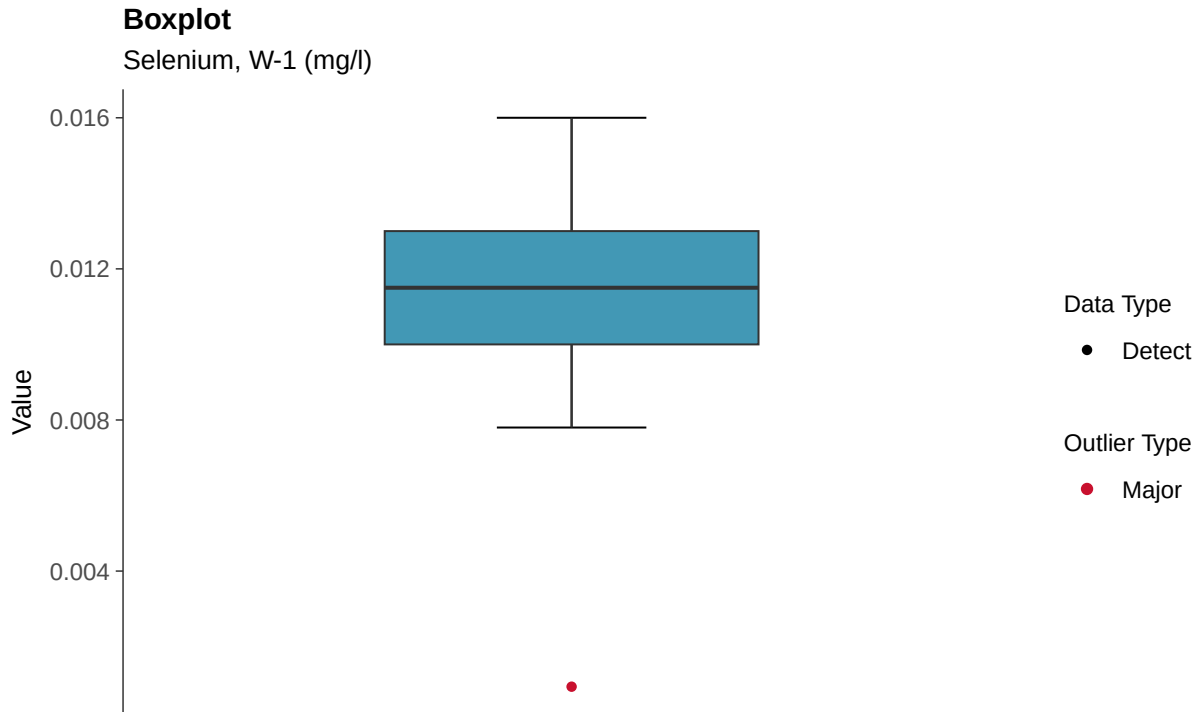
Radium-226+228, W-1 (pci/l)

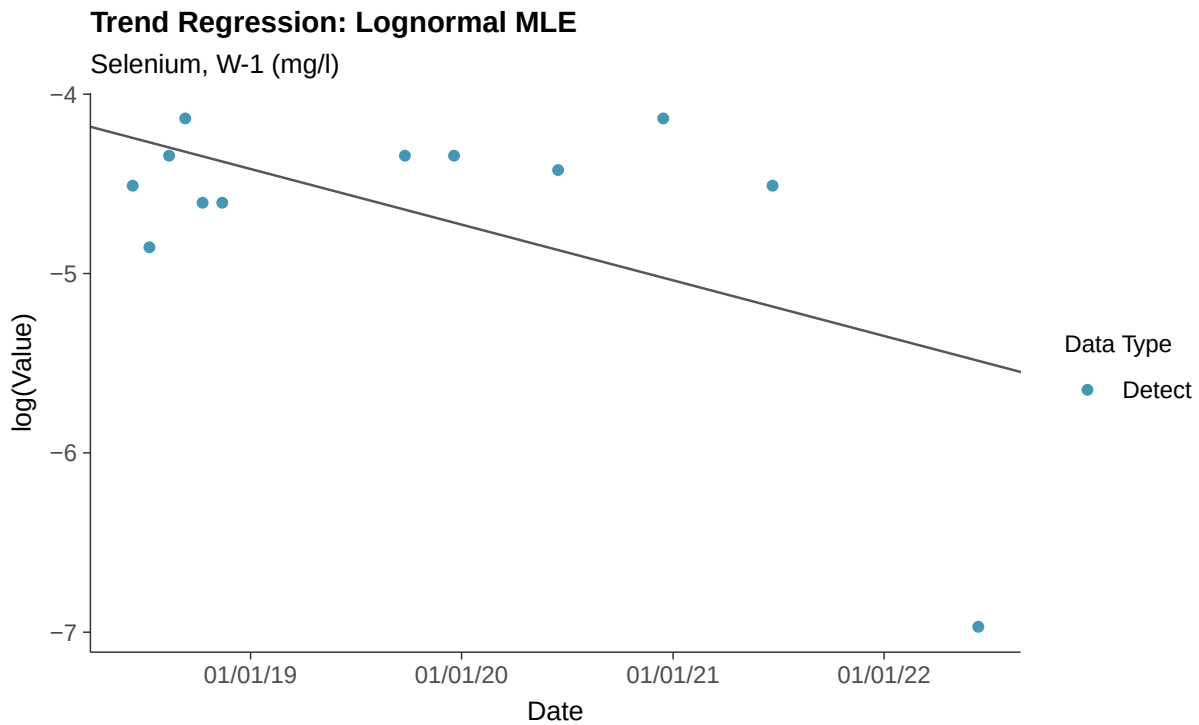
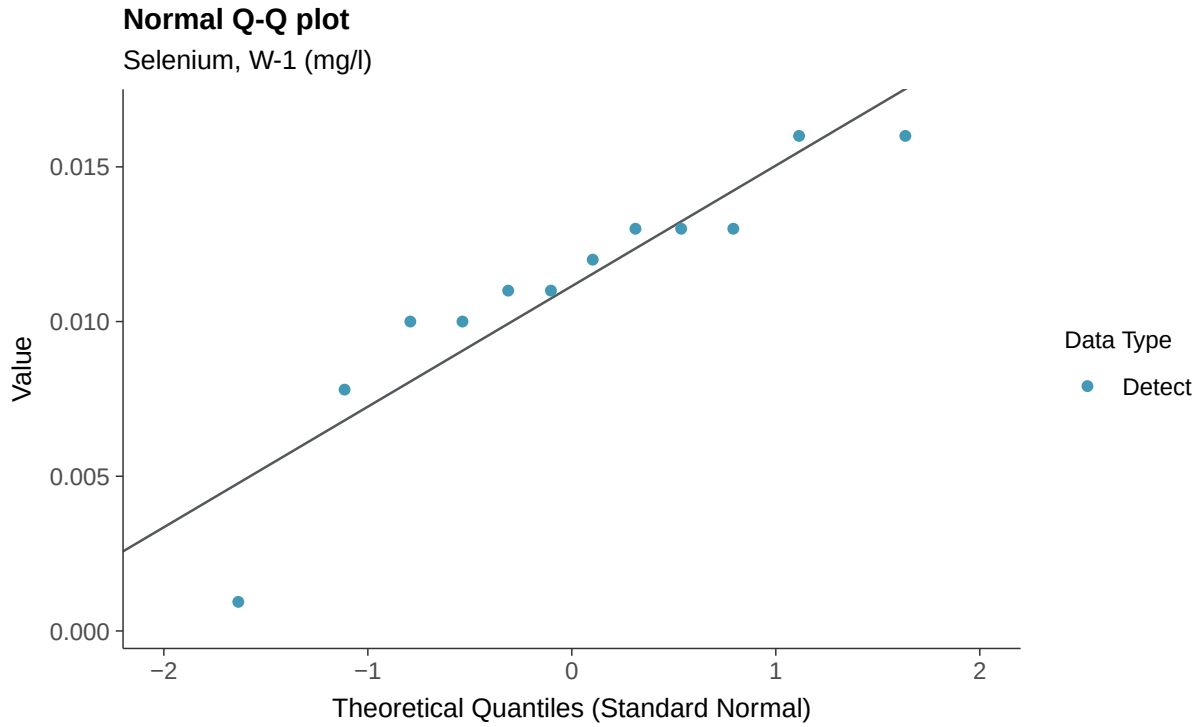


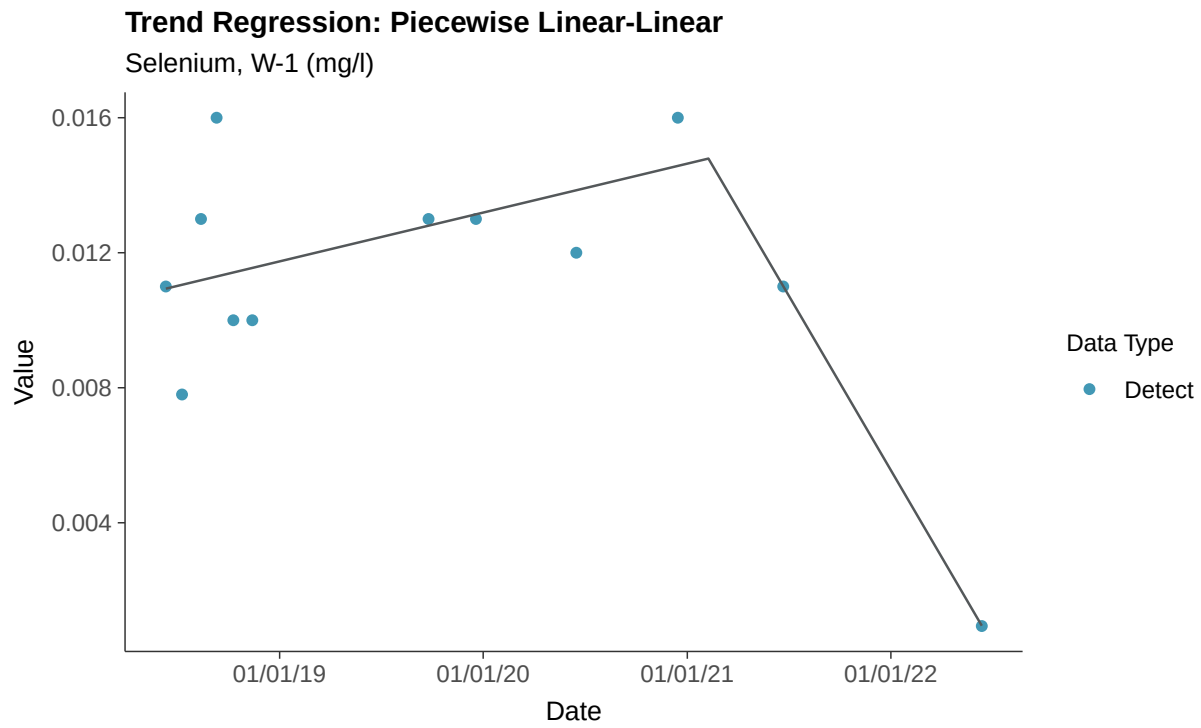
Appendix IV: Selenium, W-1

ID: 1_2_129



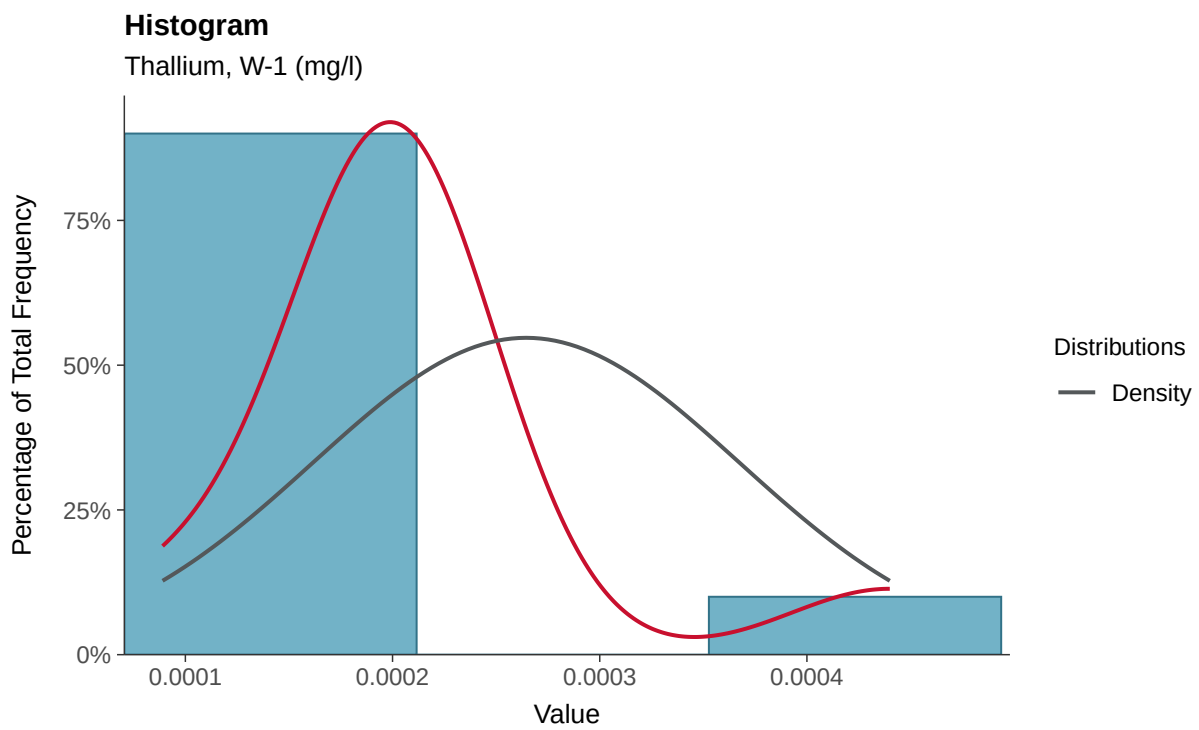
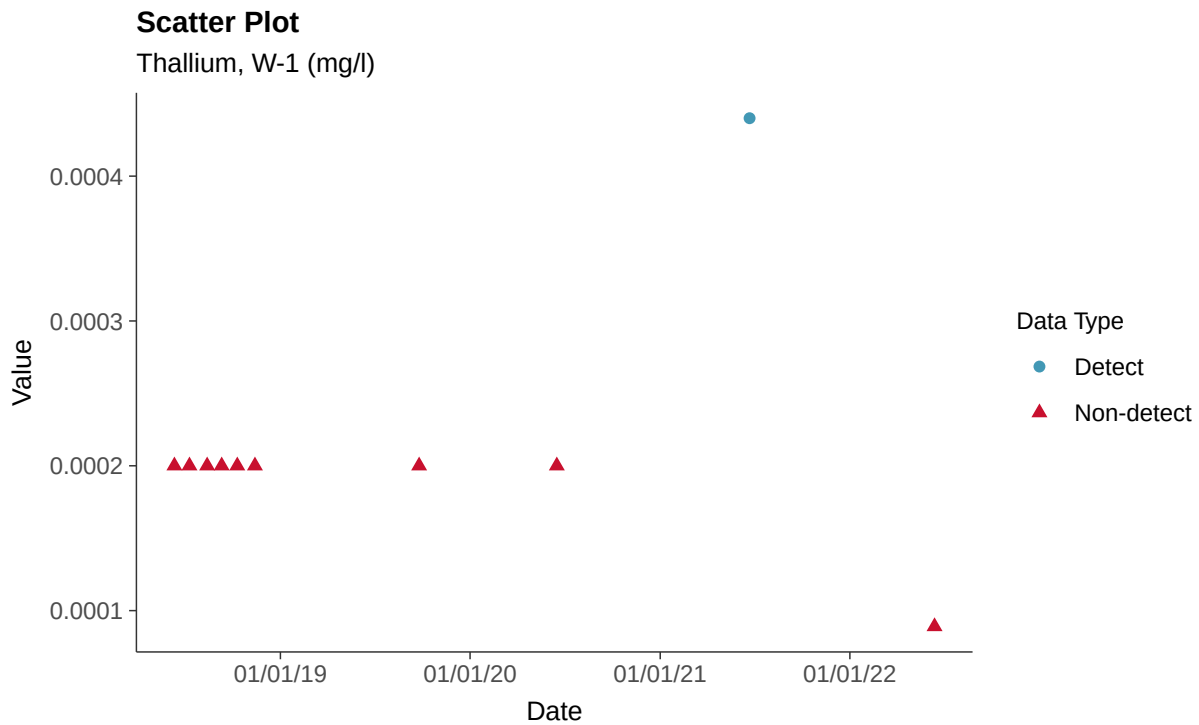


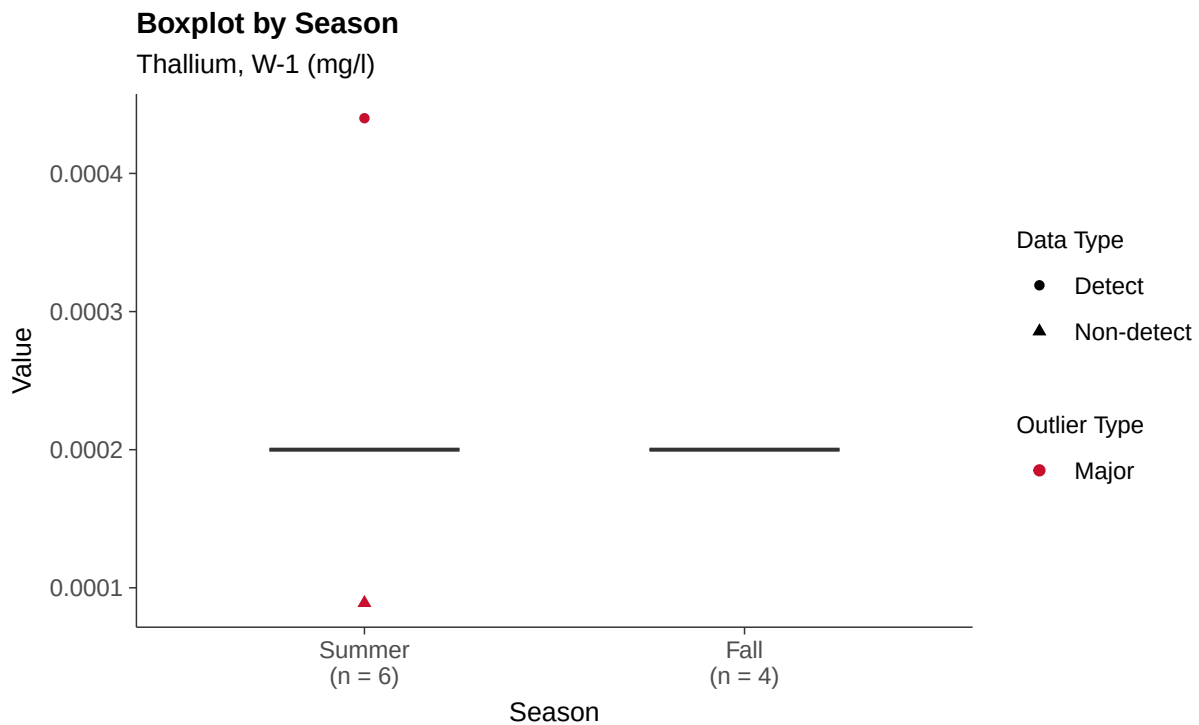
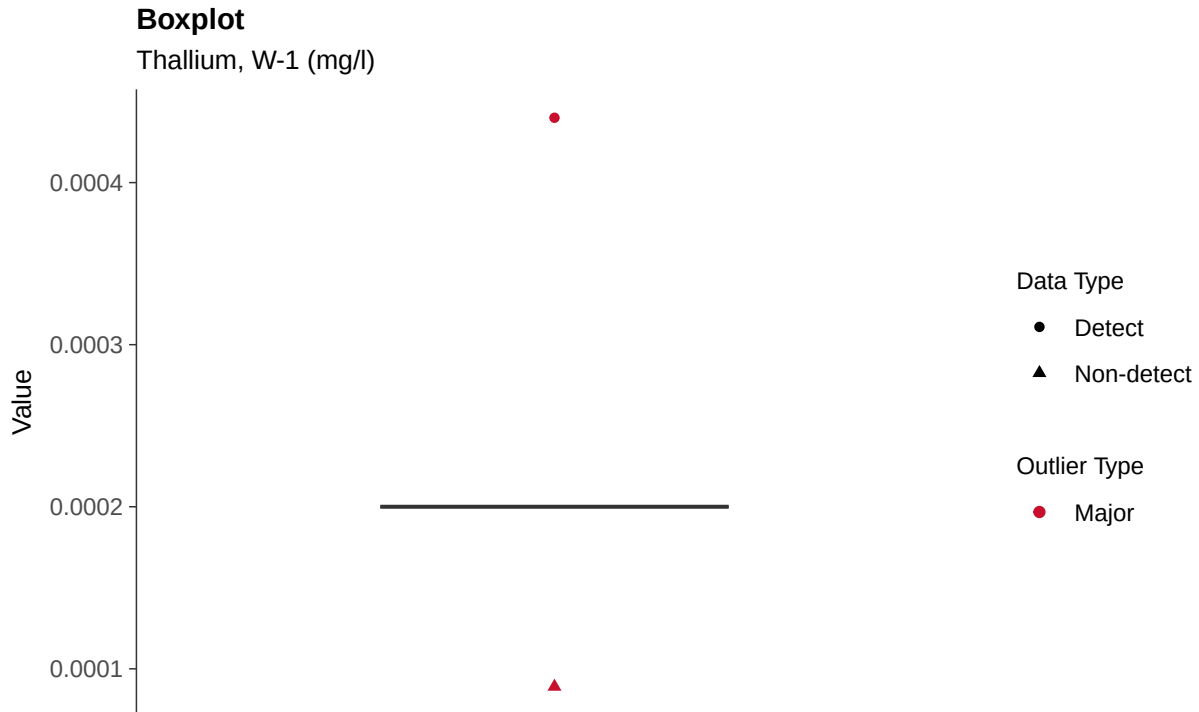




Appendix IV: Thallium, W-1

ID: 1_2_134

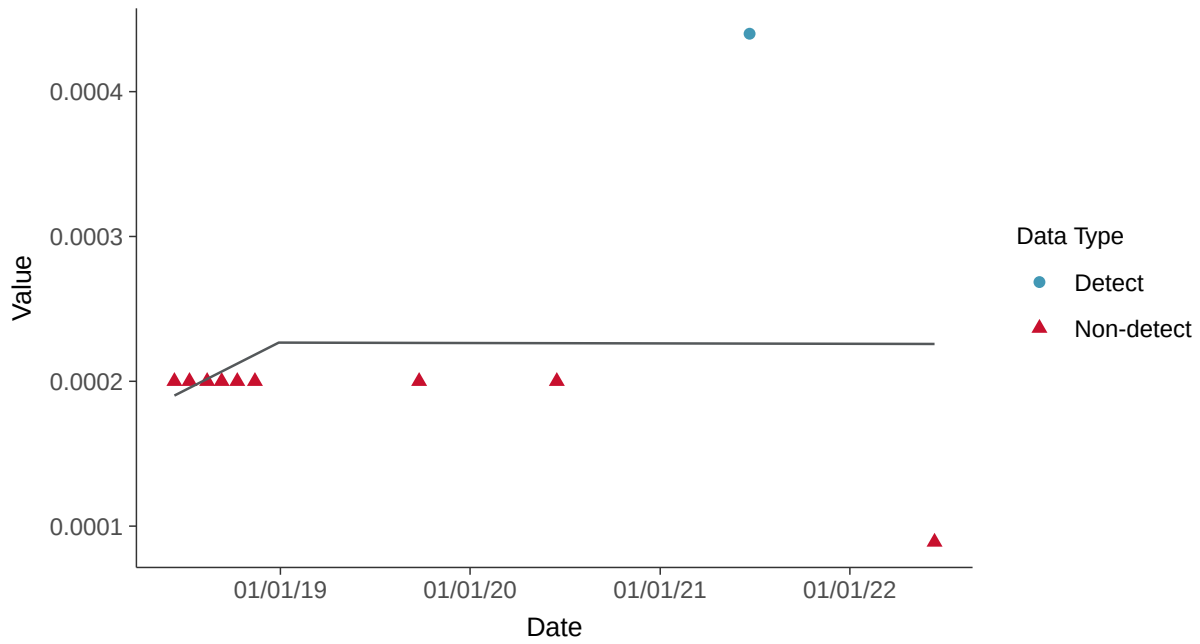






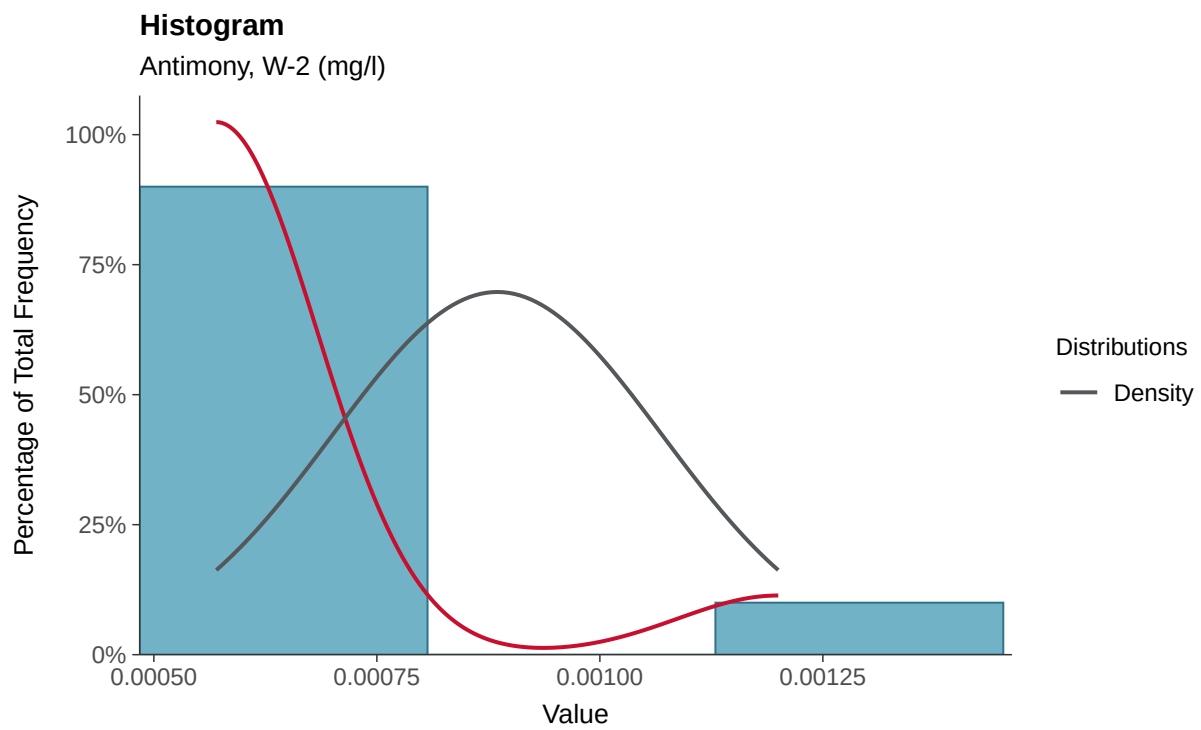
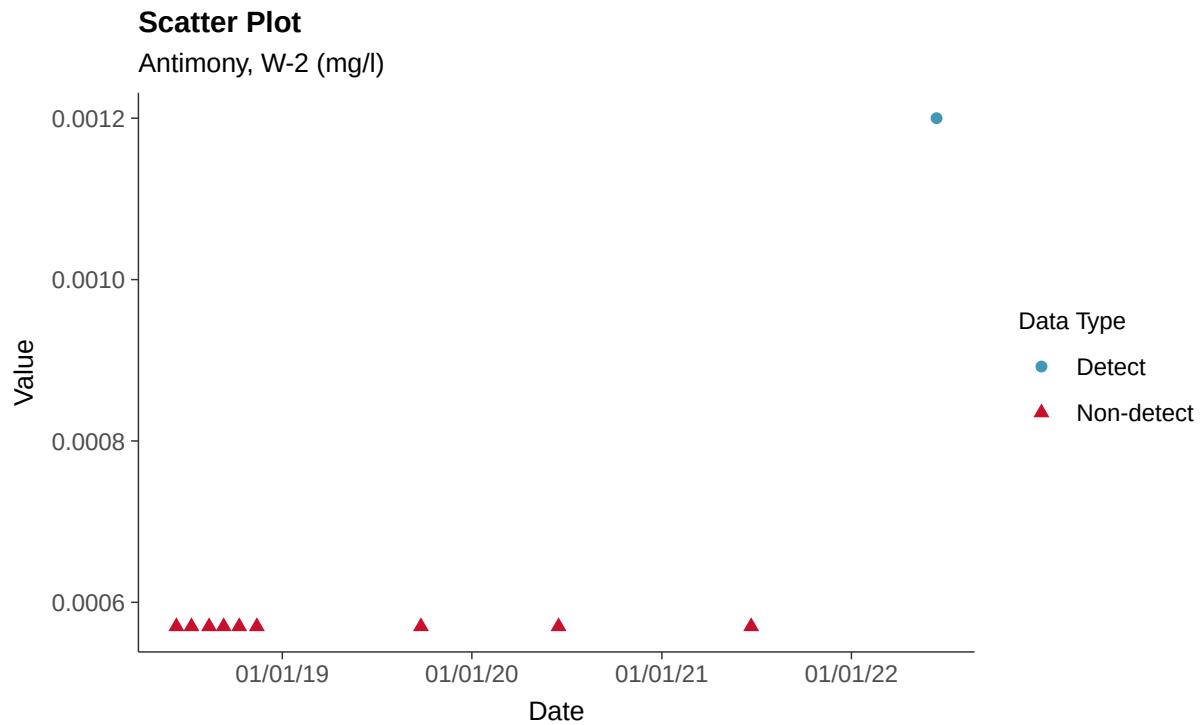
Trend Regression: Piecewise Linear-Linear

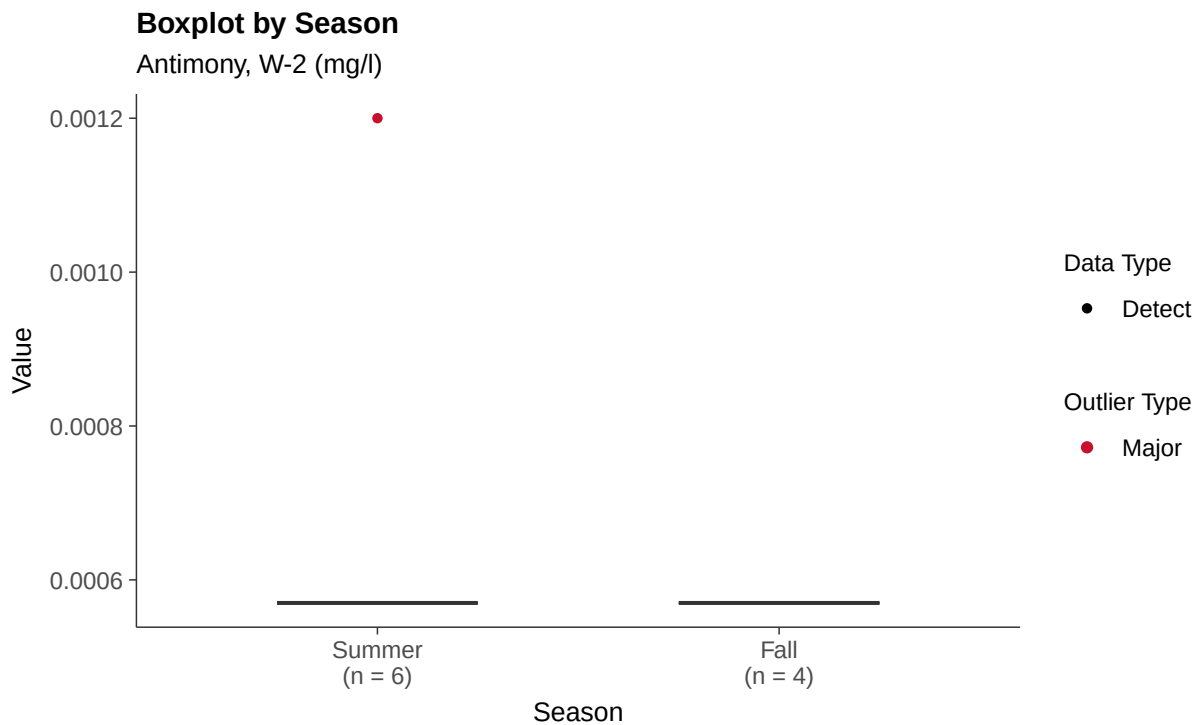
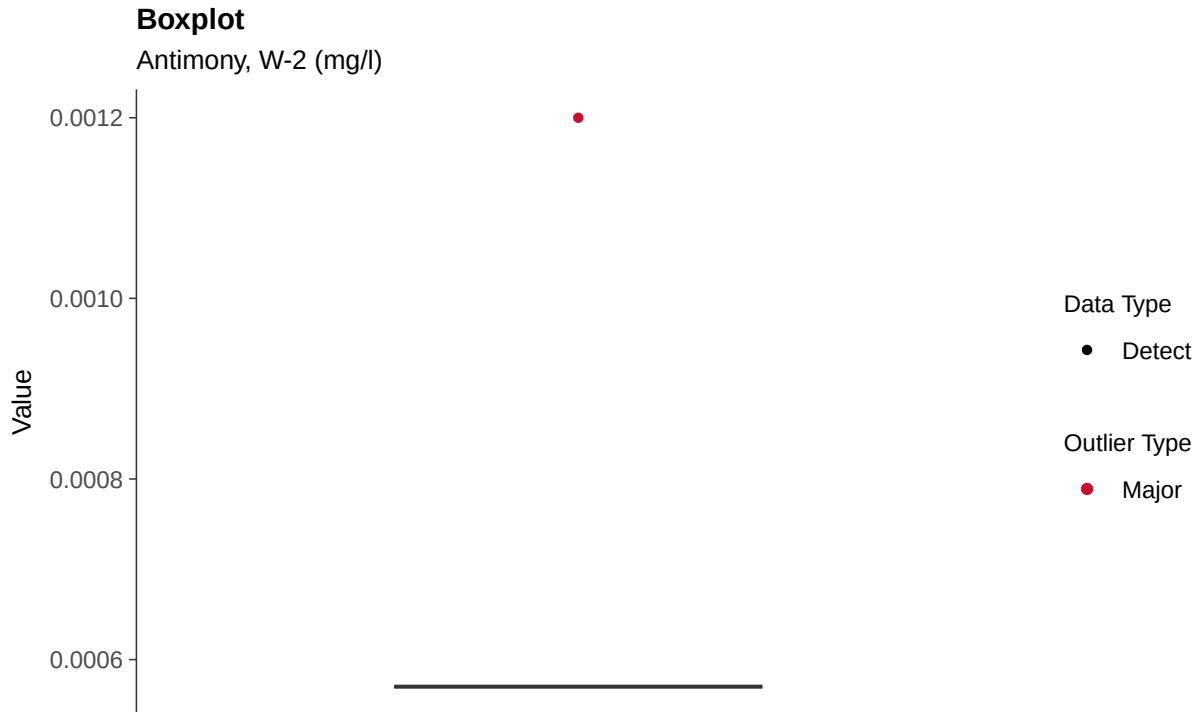
Thallium, W-1 (mg/l)



Appendix IV: Antimony, W-2

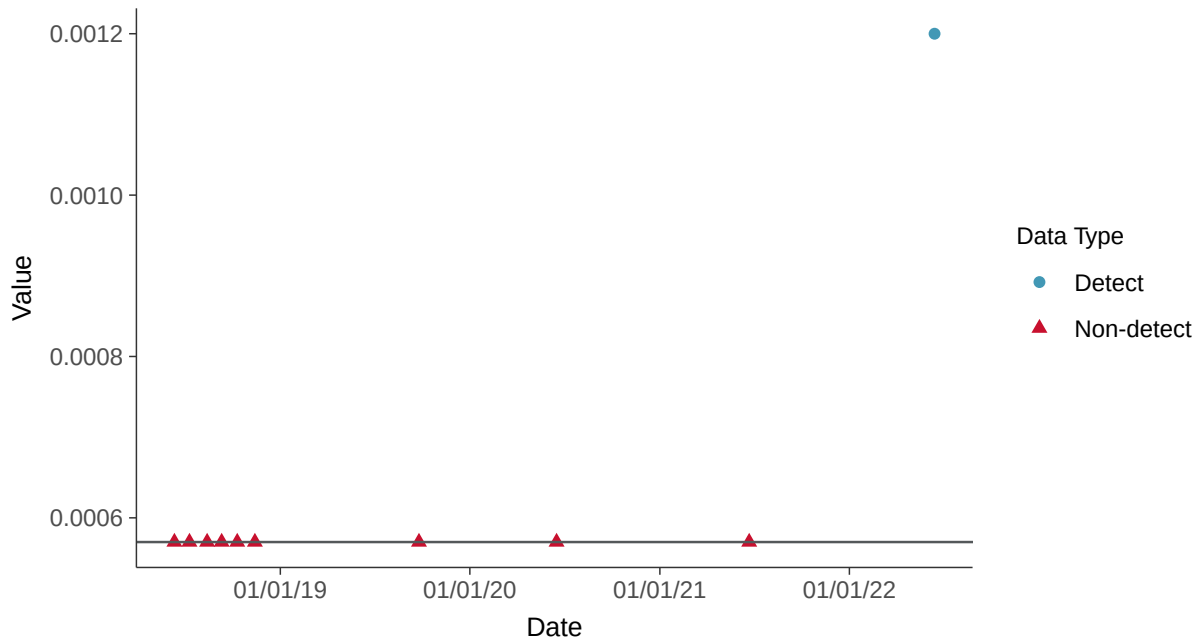
ID: 2_2_104





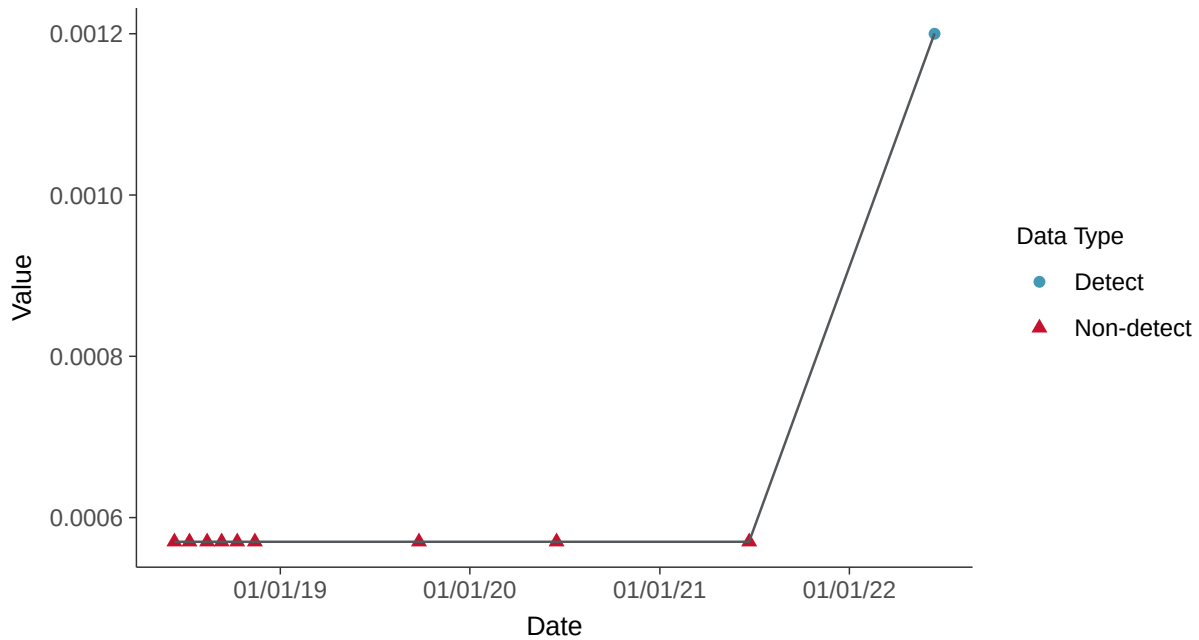
Trend Regression: Mann-Kendall/Theil-Sen Estimate

Antimony, W-2 (mg/l)



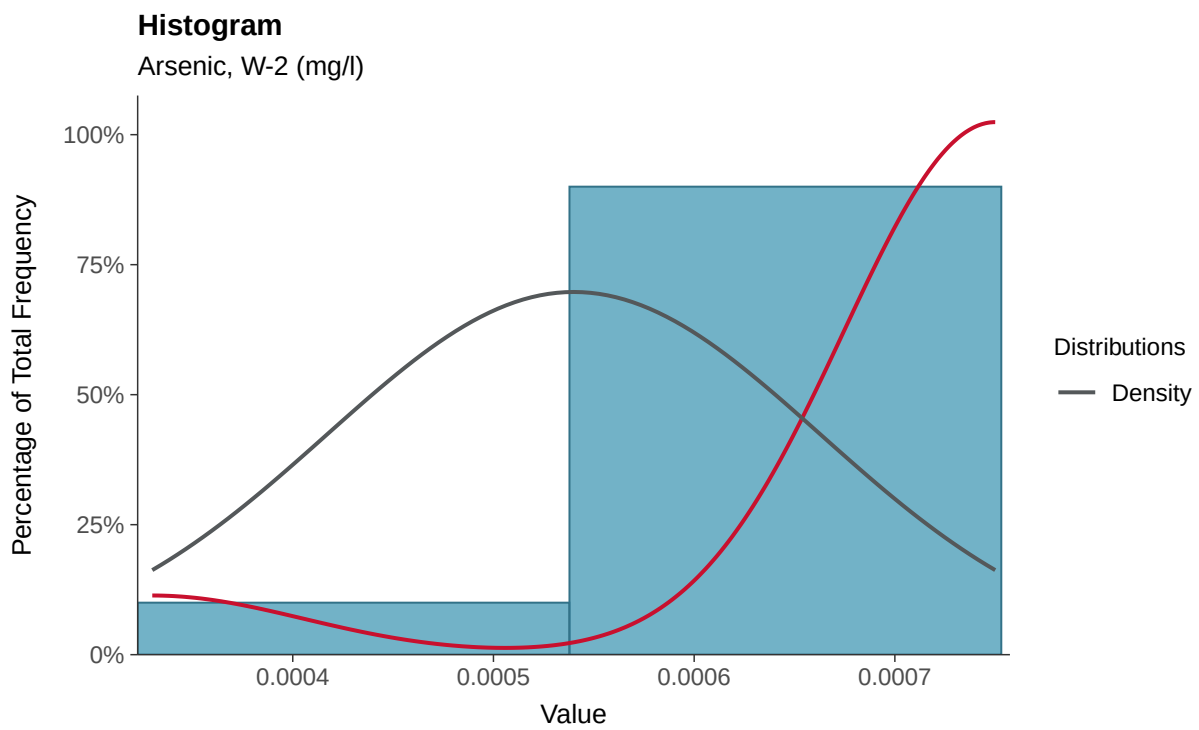
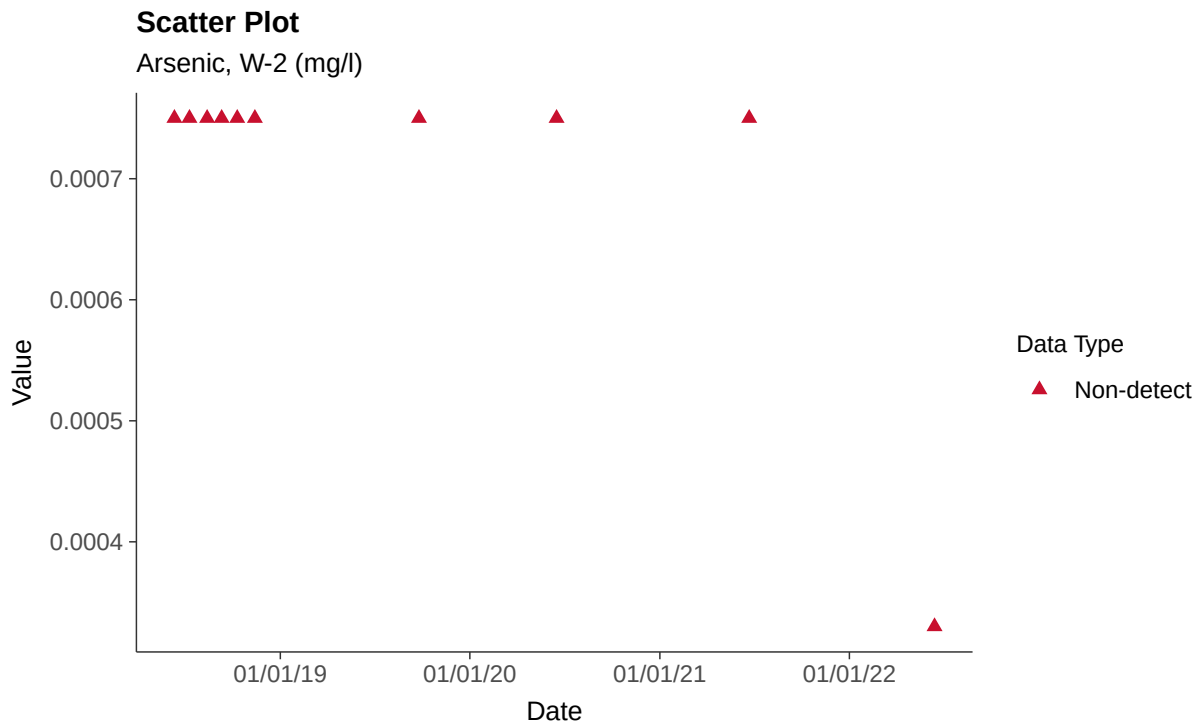
Trend Regression: Piecewise Linear-Linear

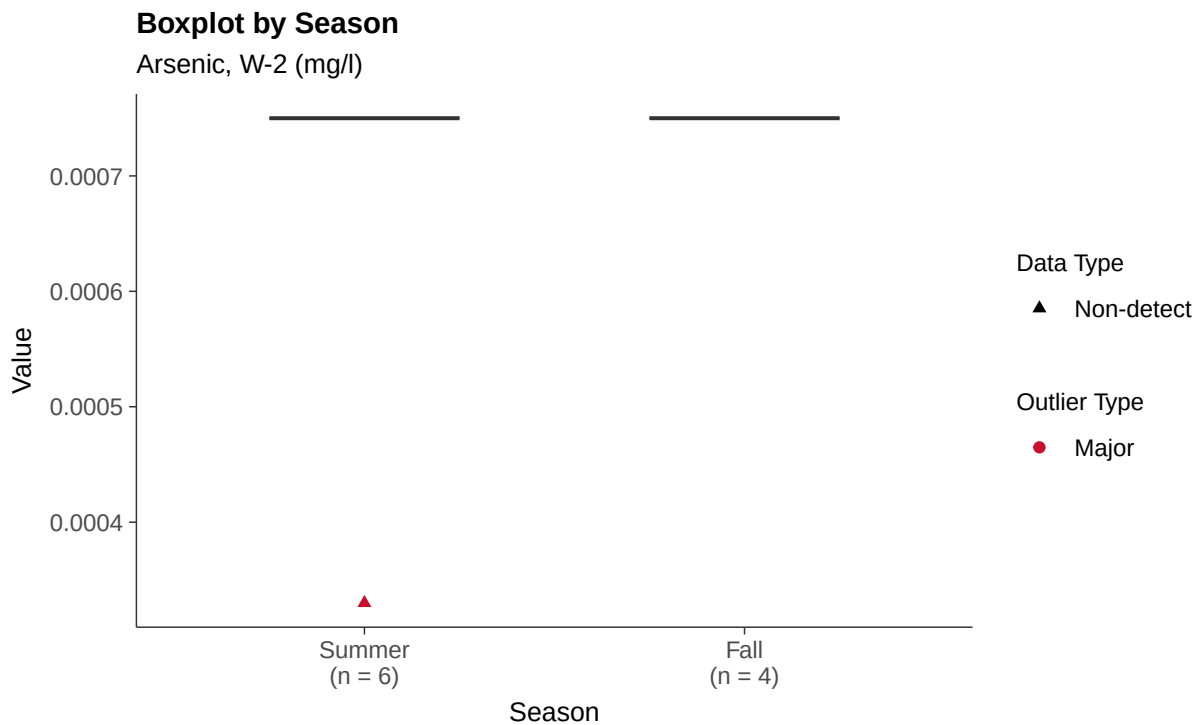
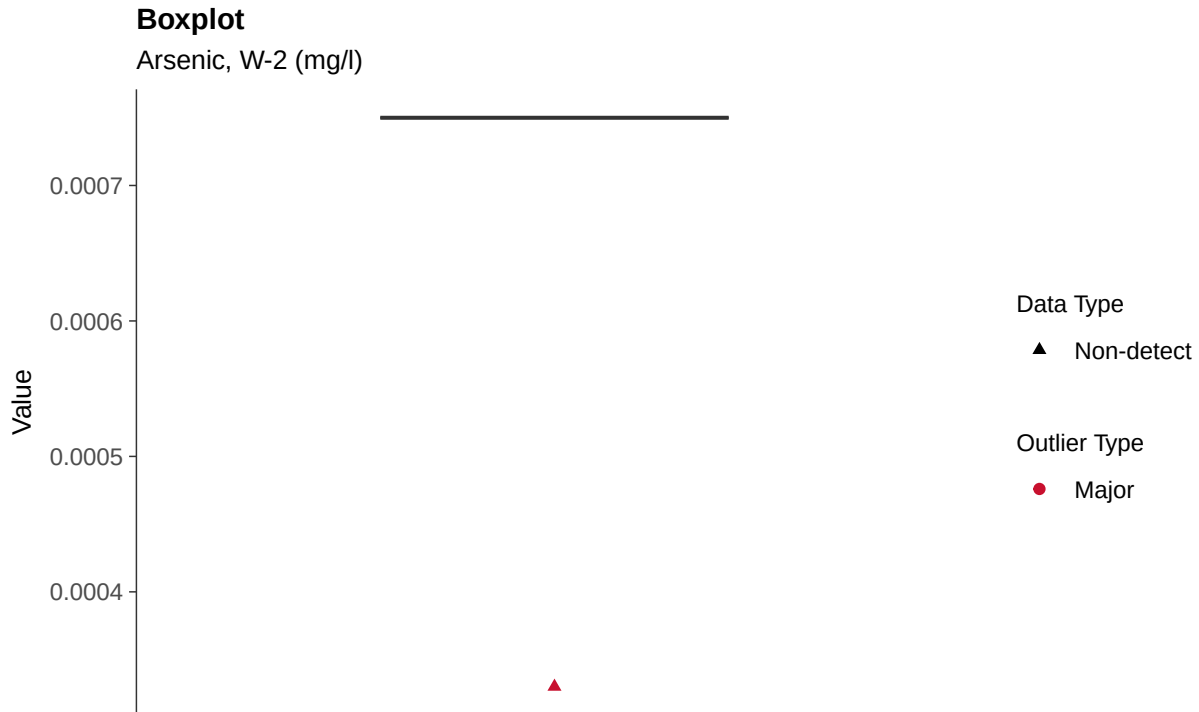
Antimony, W-2 (mg/l)



Appendix IV: Arsenic, W-2

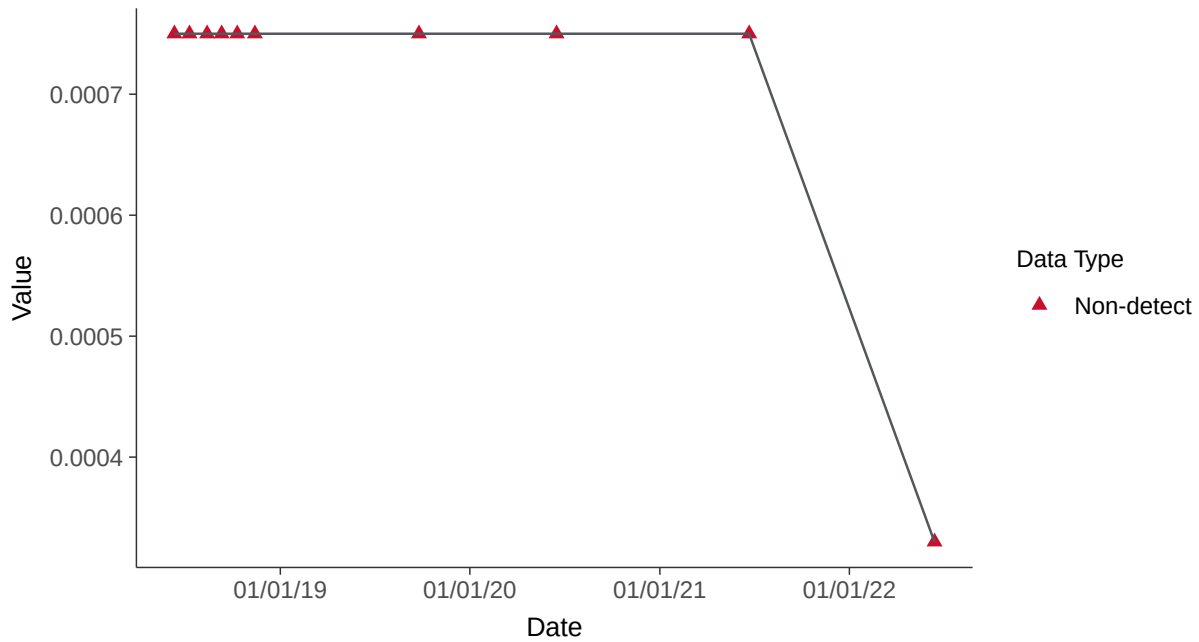
ID: 2_2_105





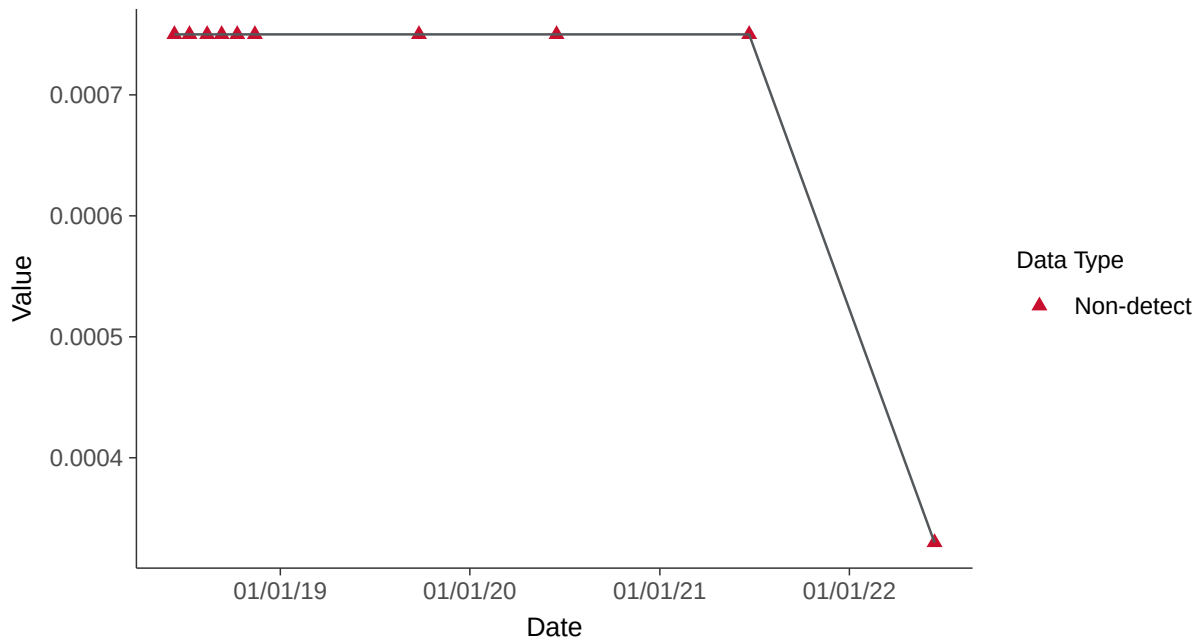
Trend Regression: Piecewise Linear-Linear

Arsenic, W-2 (mg/l)



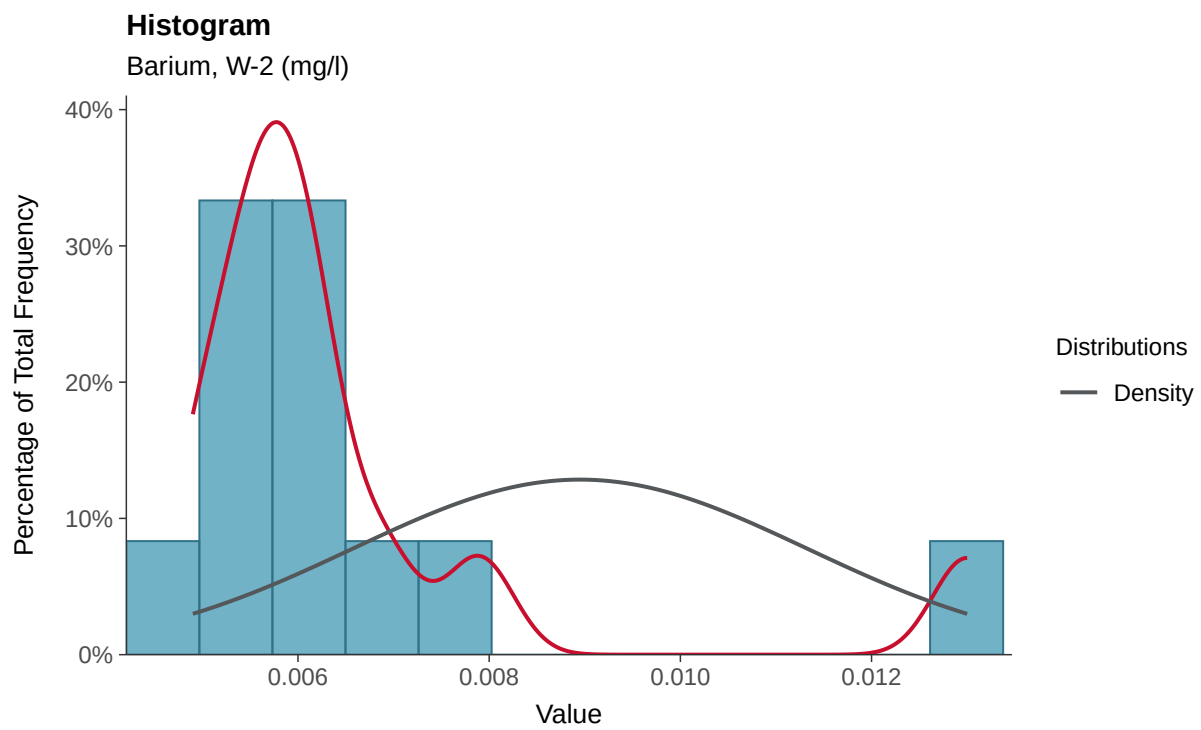
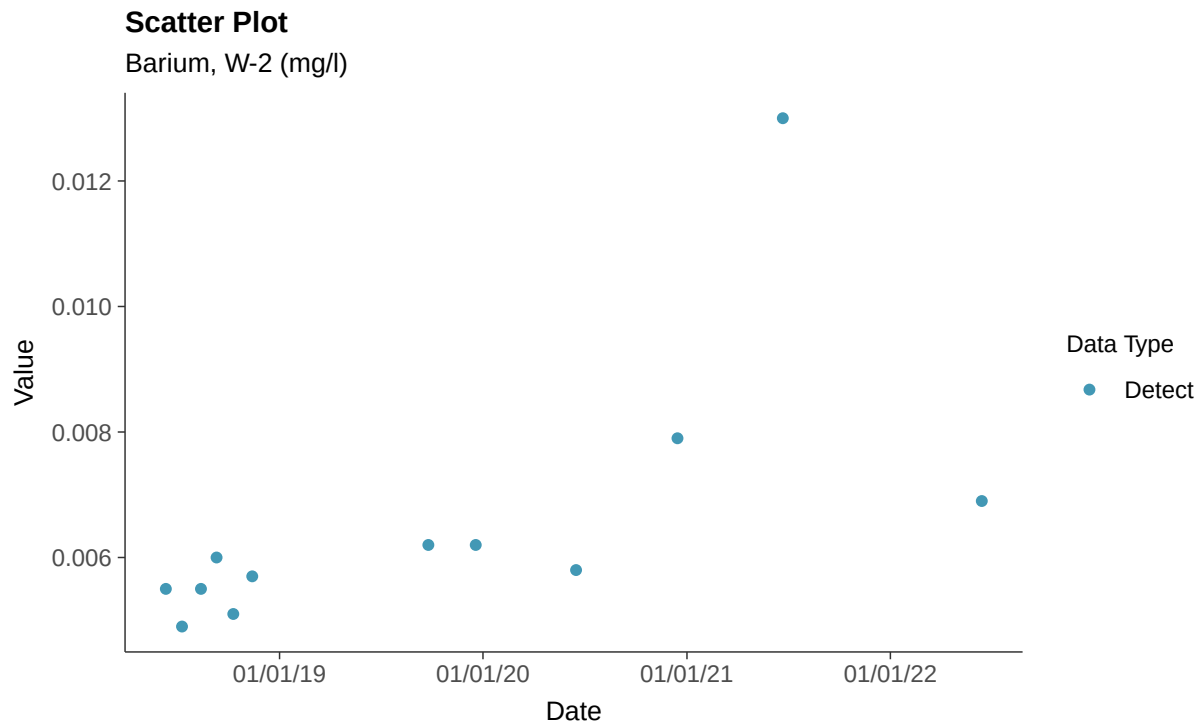
Trend Regression: Piecewise Linear-Linear-Linear

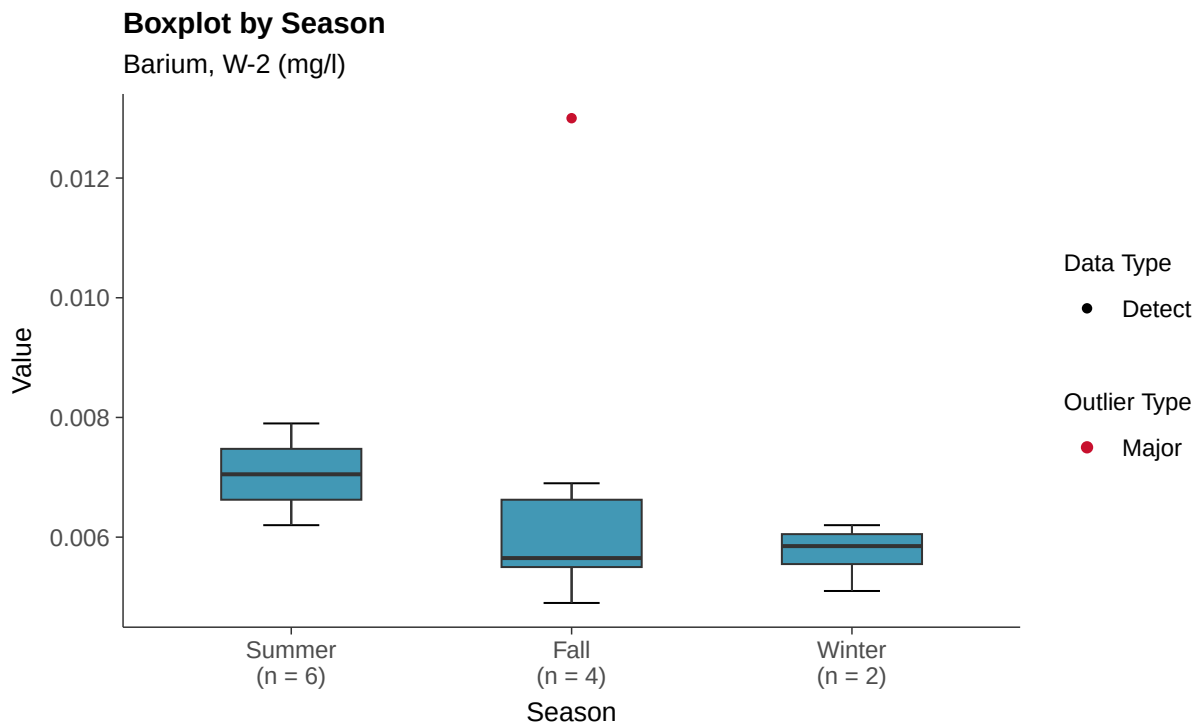
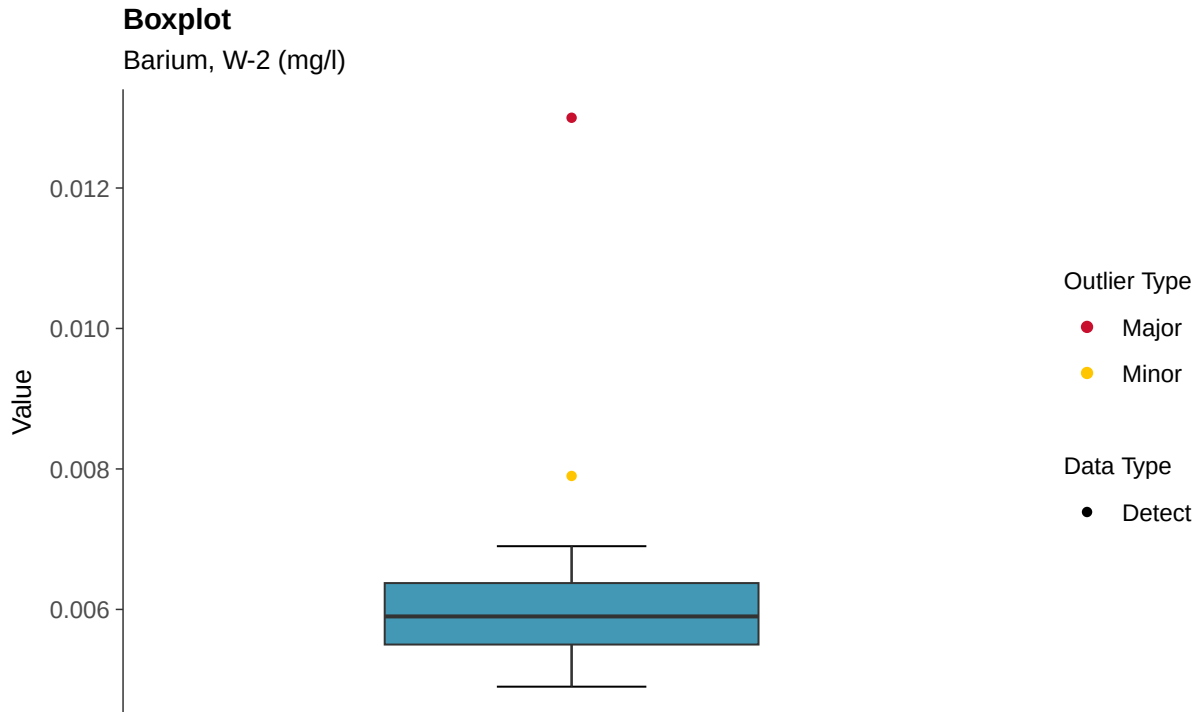
Arsenic, W-2 (mg/l)



Appendix IV: Barium, W-2

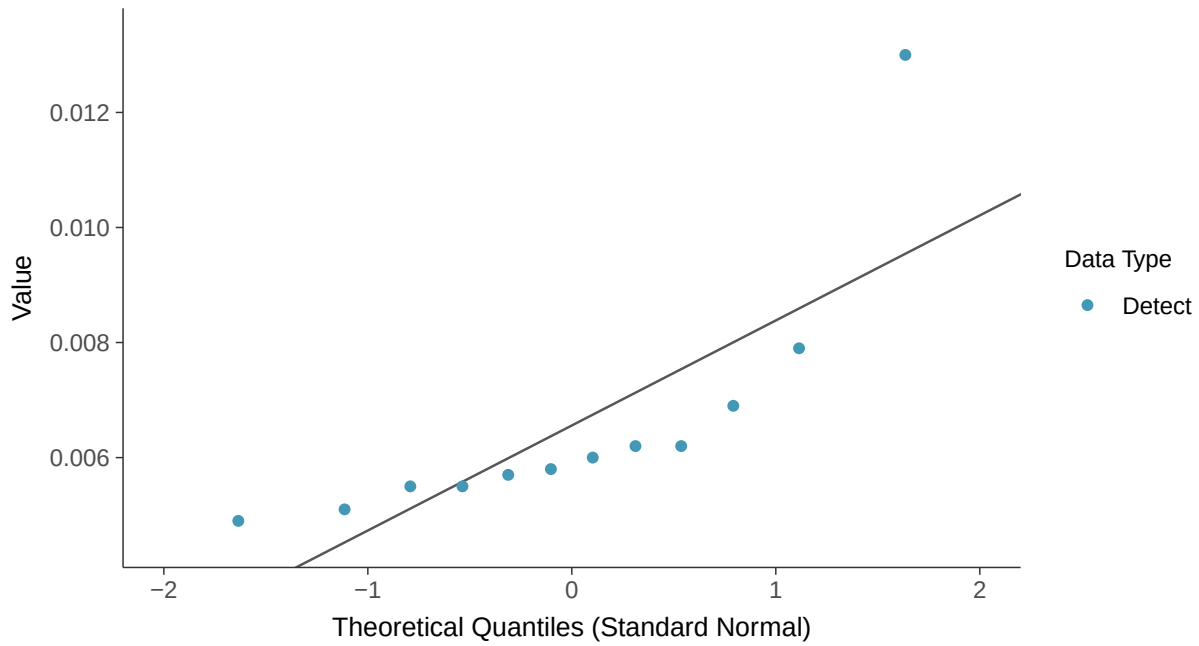
ID: 2_2_106





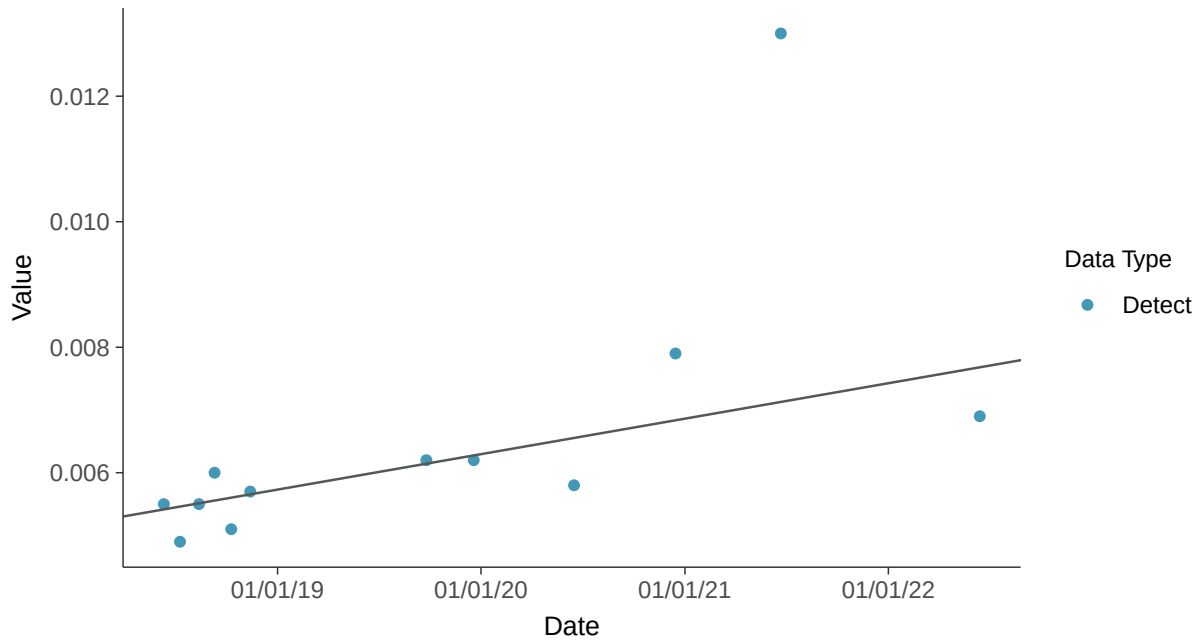
Normal Q-Q plot

Barium, W-2 (mg/l)



Trend Regression: Mann-Kendall/Theil-Sen Estimate

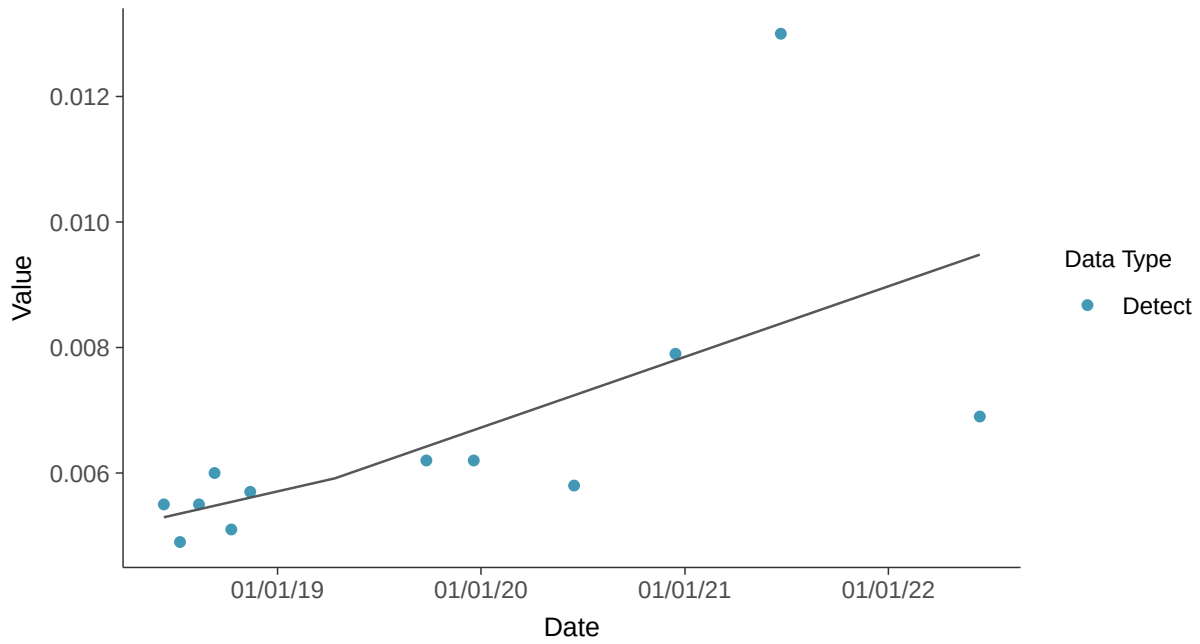
Barium, W-2 (mg/l)





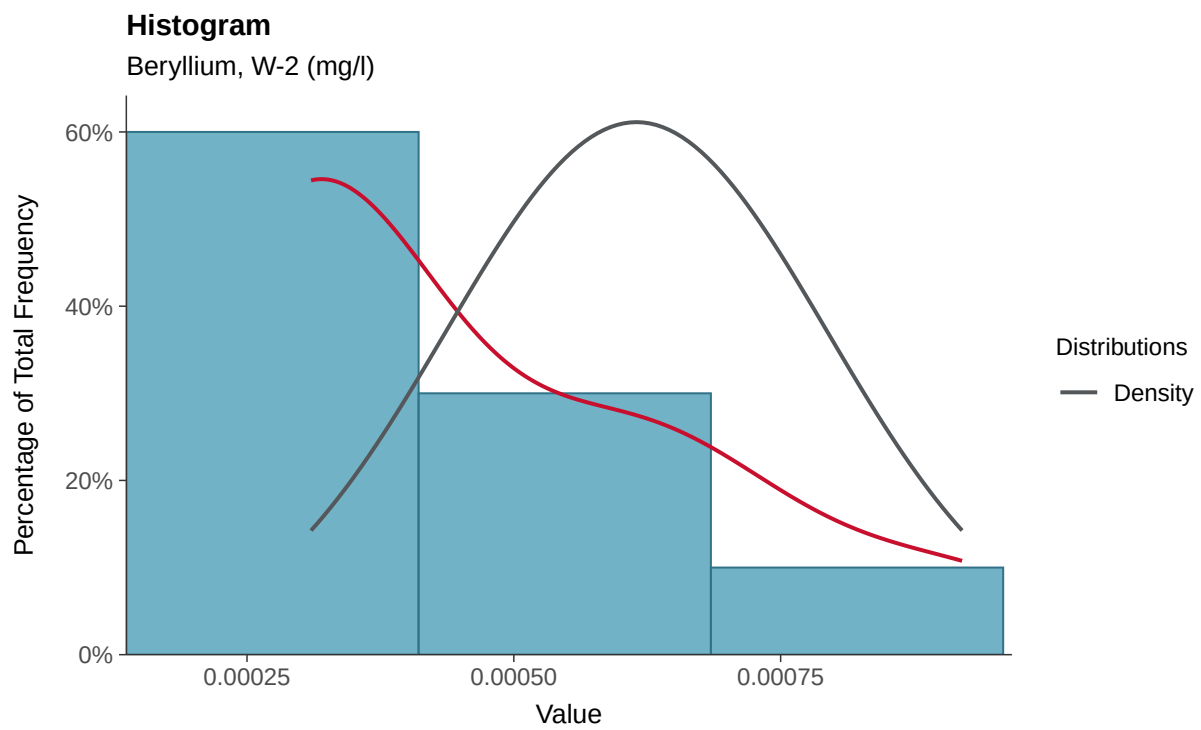
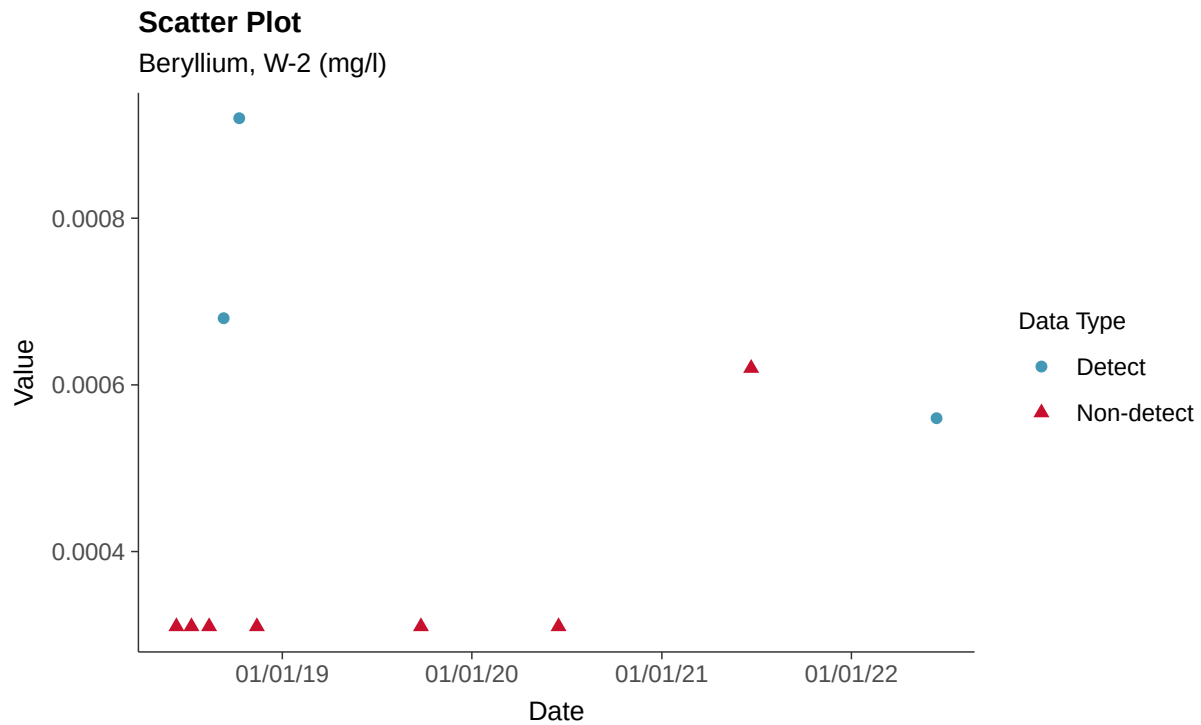
Trend Regression: Piecewise Linear-Linear

Barium, W-2 (mg/l)



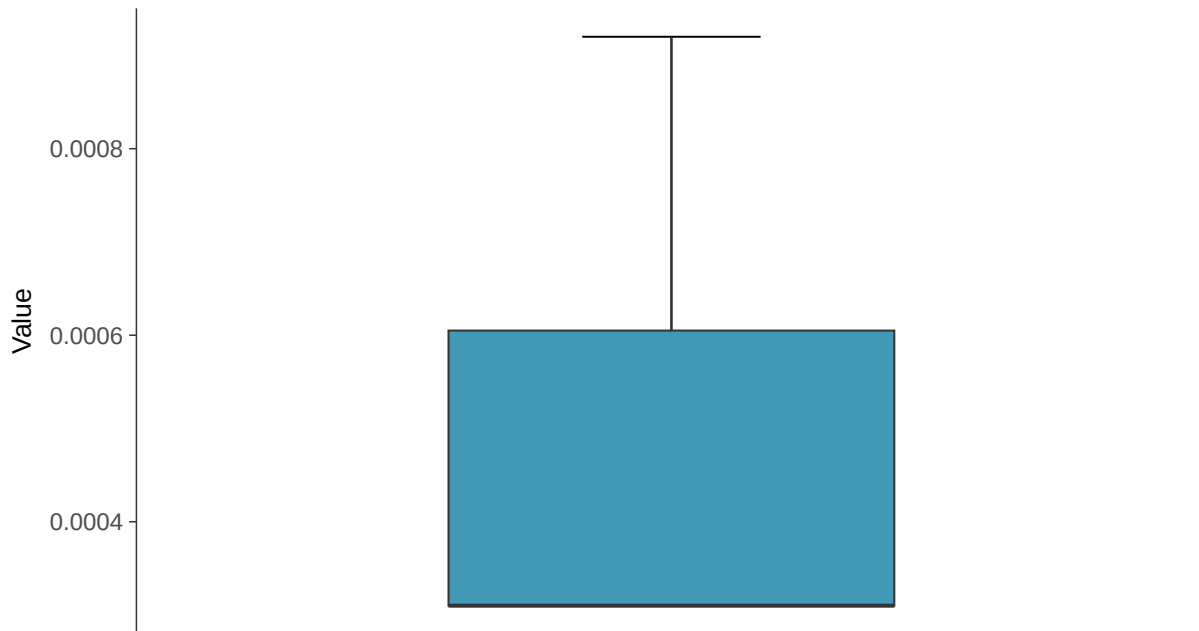
Appendix IV: Beryllium, W-2

ID: 2_2_107



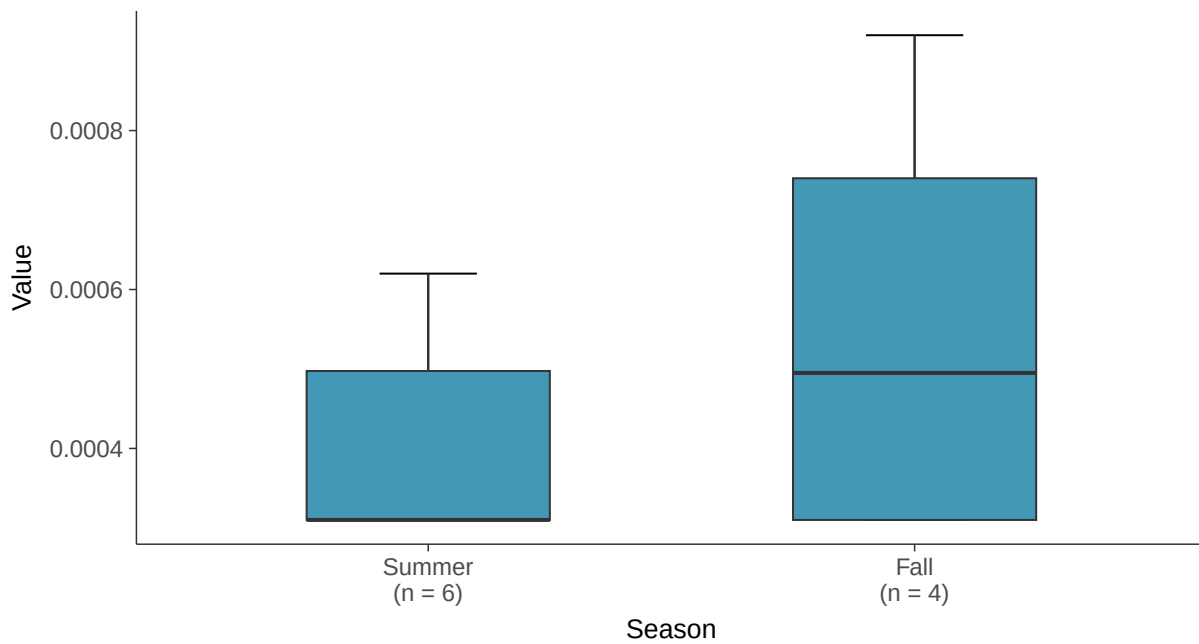
Boxplot

Beryllium, W-2 (mg/l)



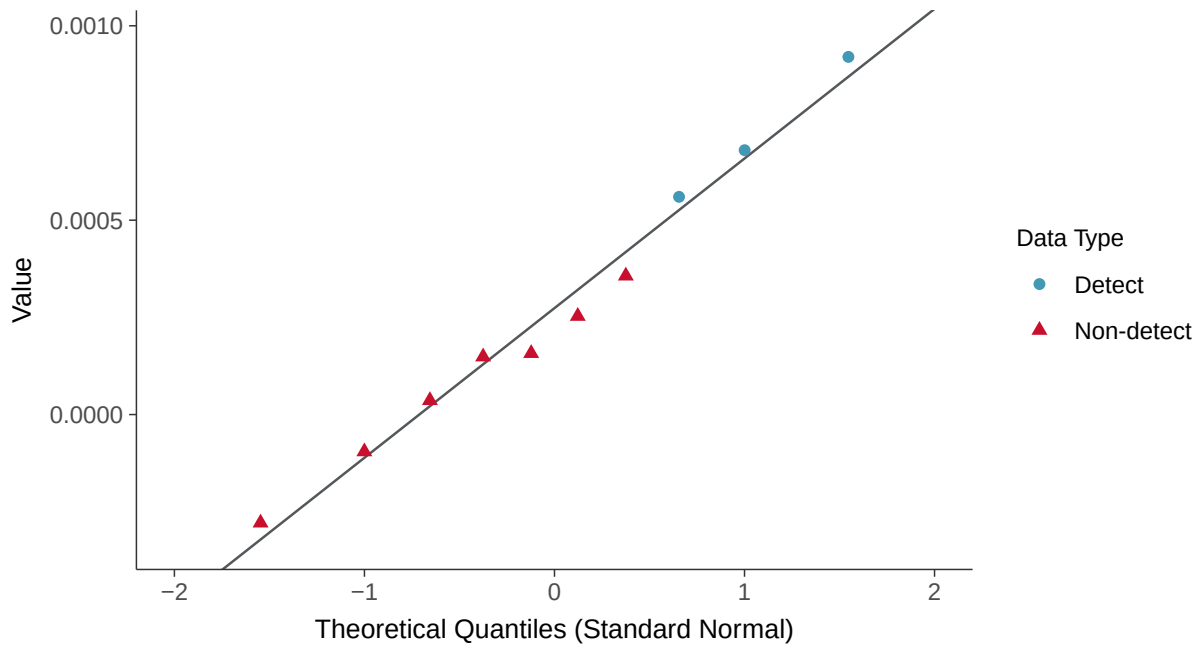
Boxplot by Season

Beryllium, W-2 (mg/l)



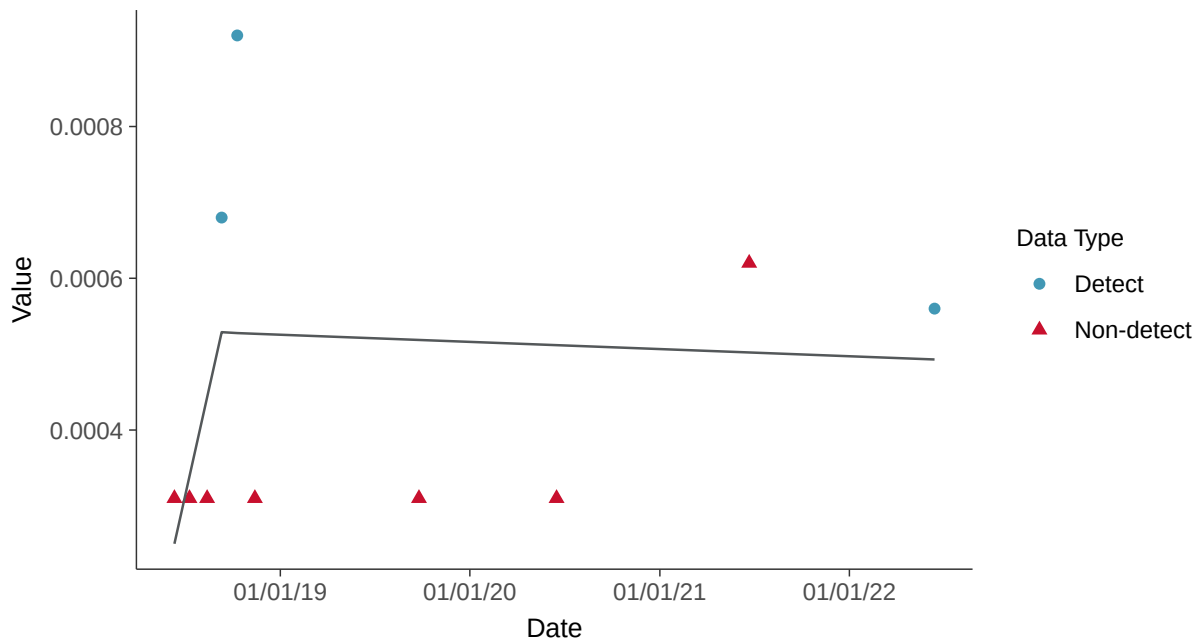
Normal Q-Q plot using ROS Imputed Estimates

Beryllium, W-2 (mg/l)



Trend Regression: Piecewise Linear-Linear

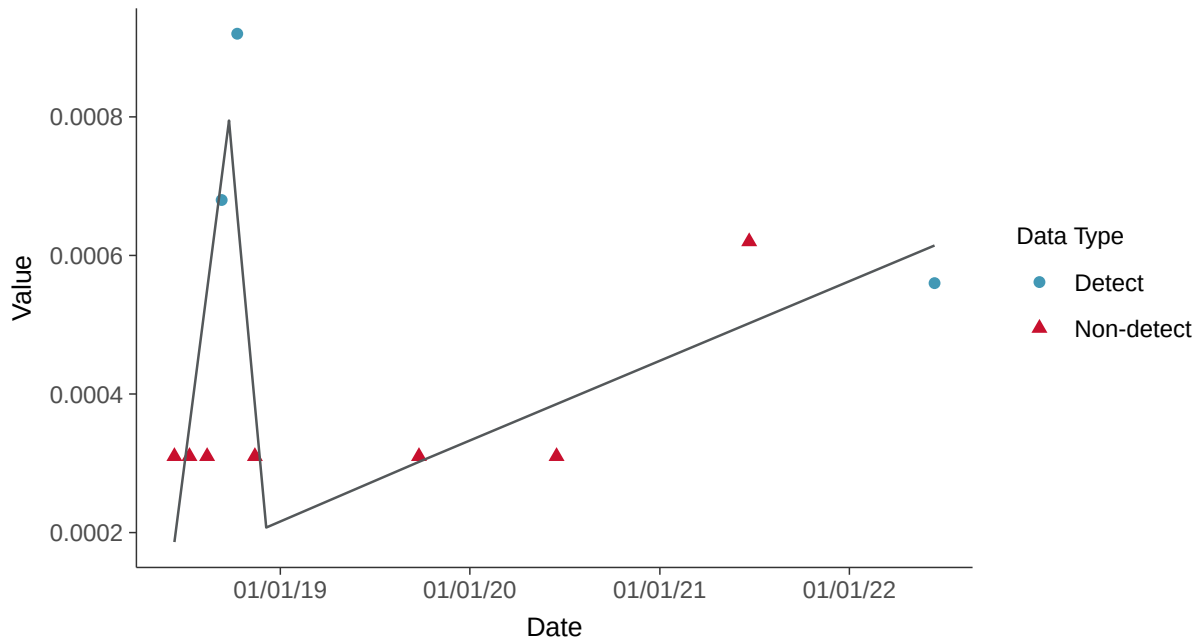
Beryllium, W-2 (mg/l)





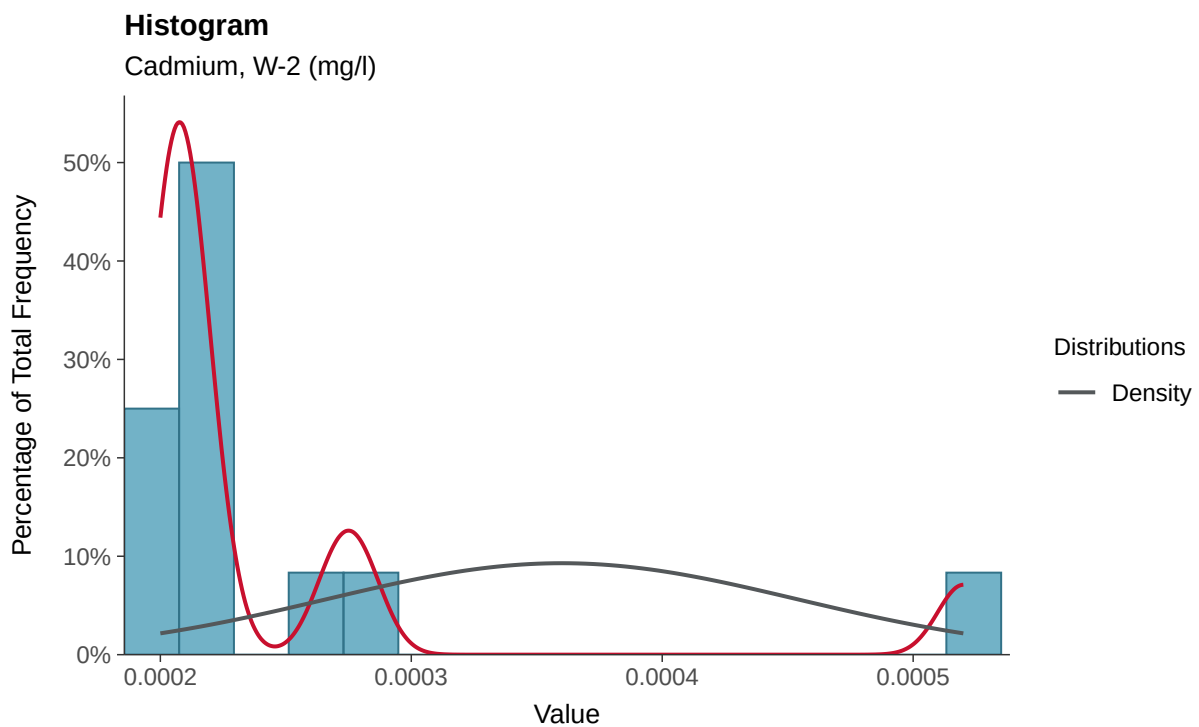
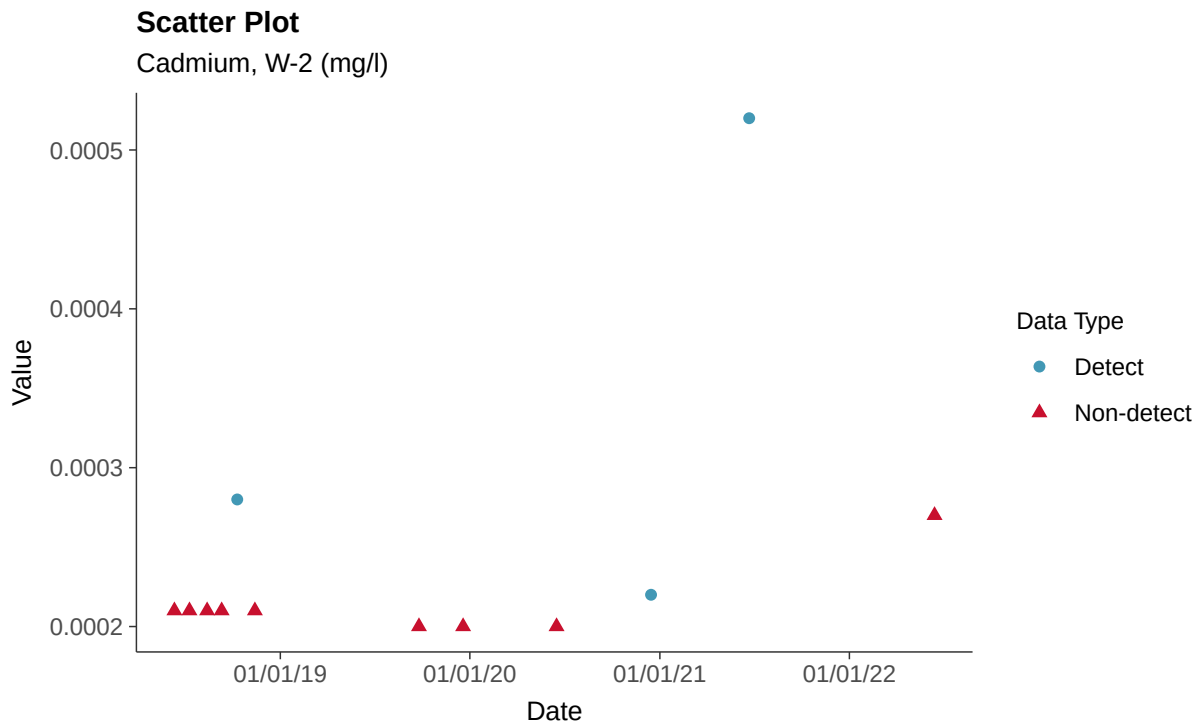
Trend Regression: Piecewise Linear-Linear-Linear

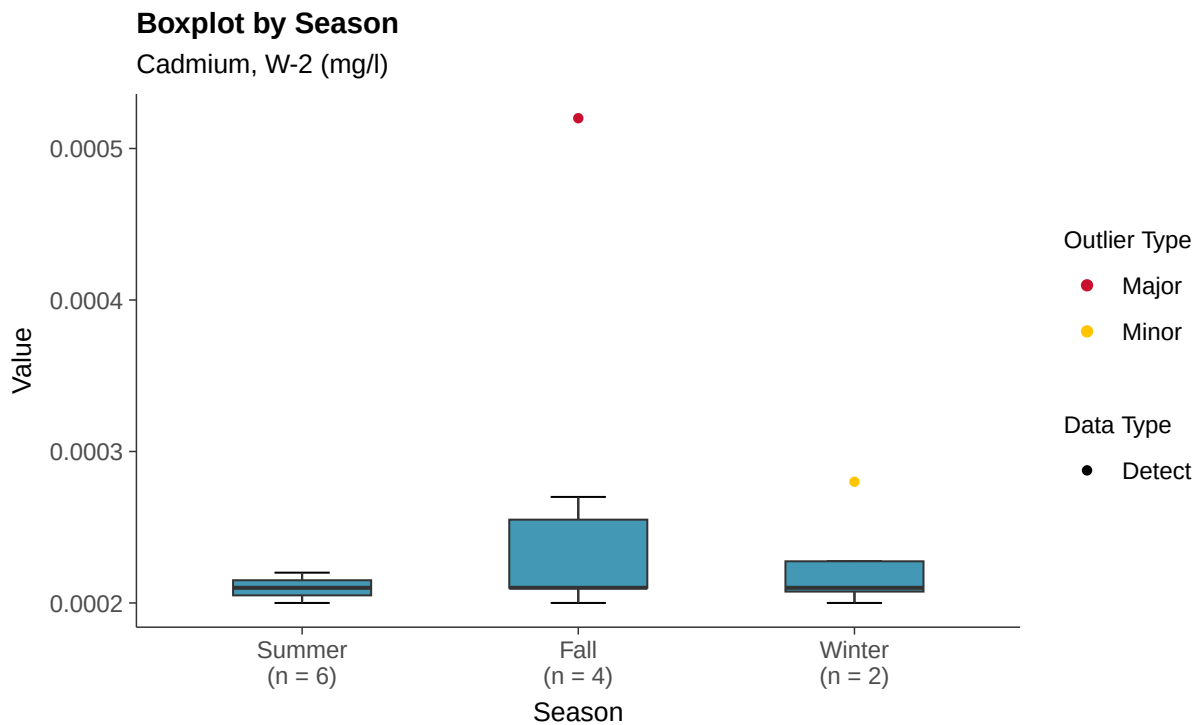
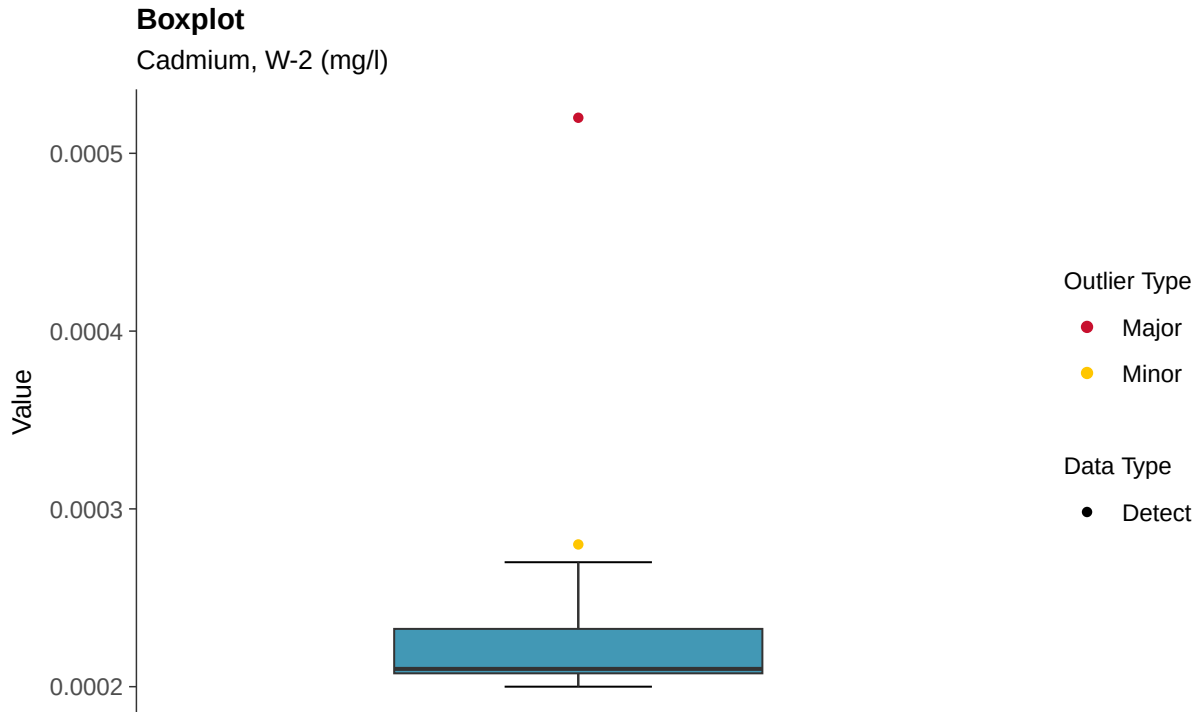
Beryllium, W-2 (mg/l)



Appendix IV: Cadmium, W-2

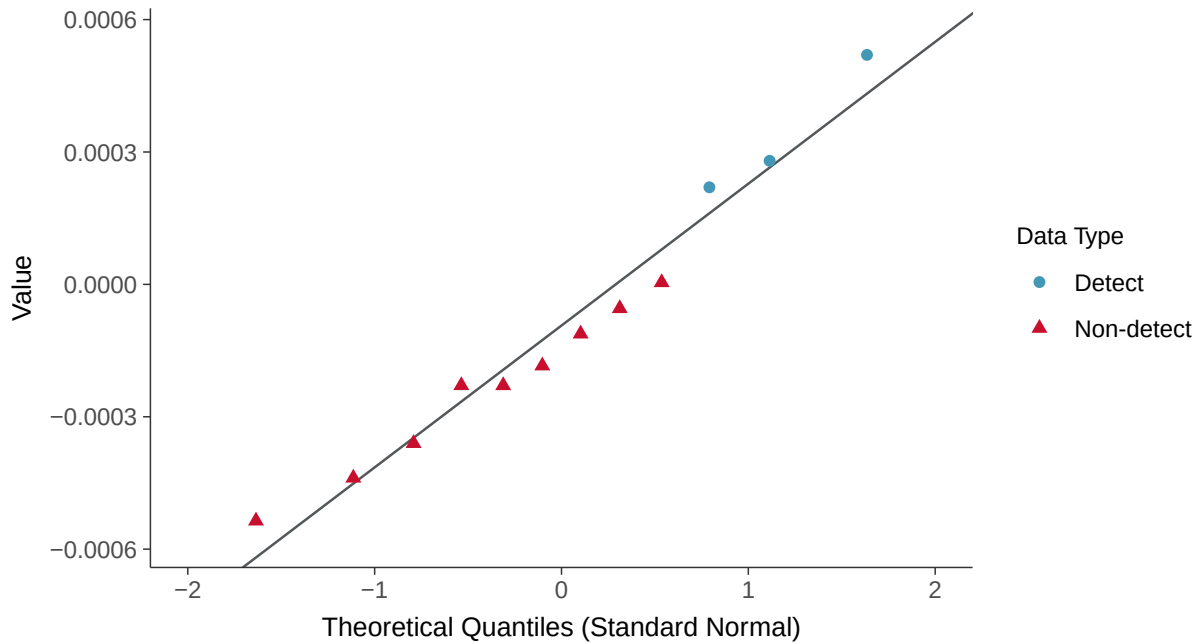
ID: 2_2_109





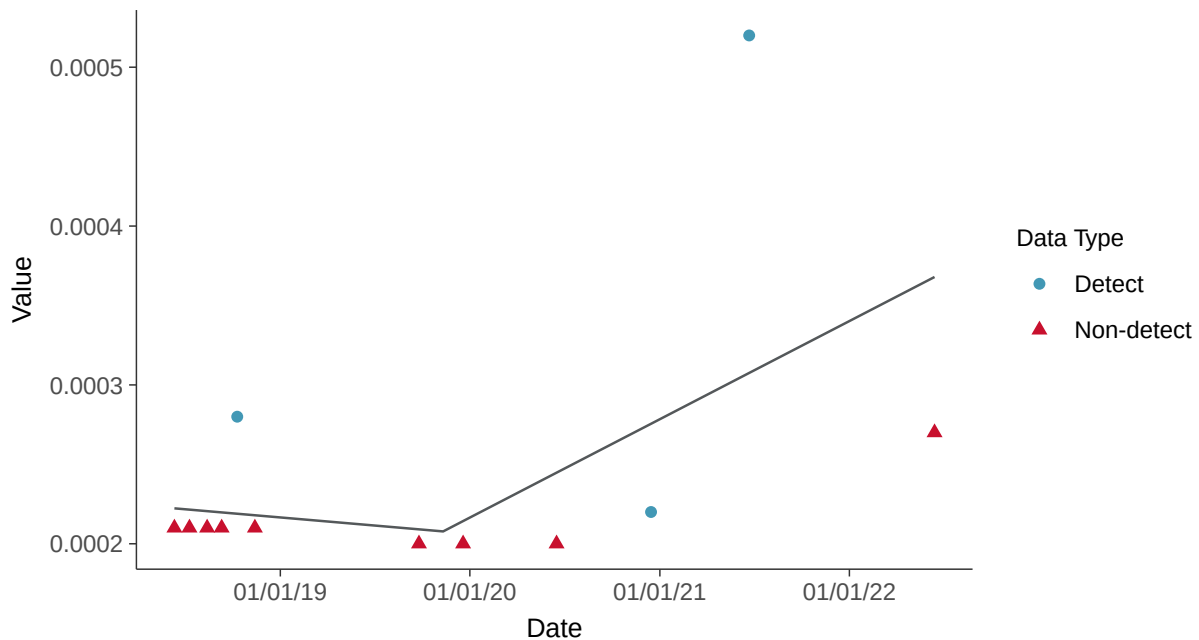
Normal Q-Q plot using ROS Imputed Estimates

Cadmium, W-2 (mg/l)



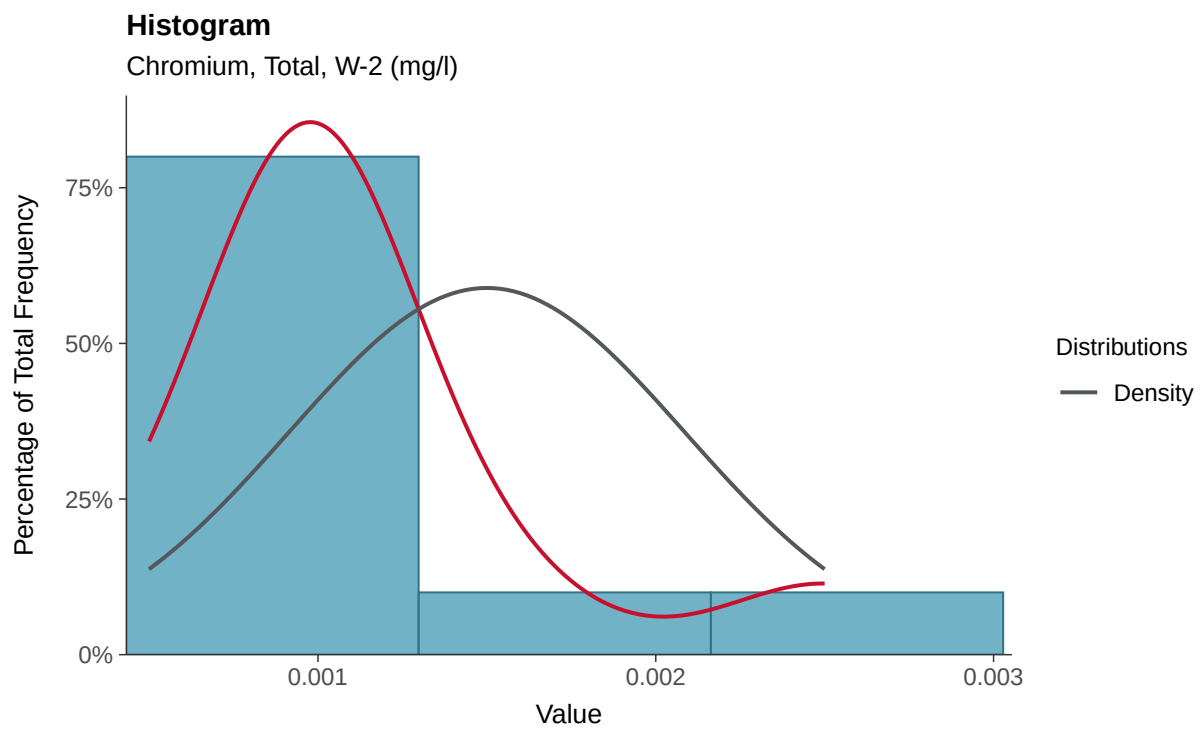
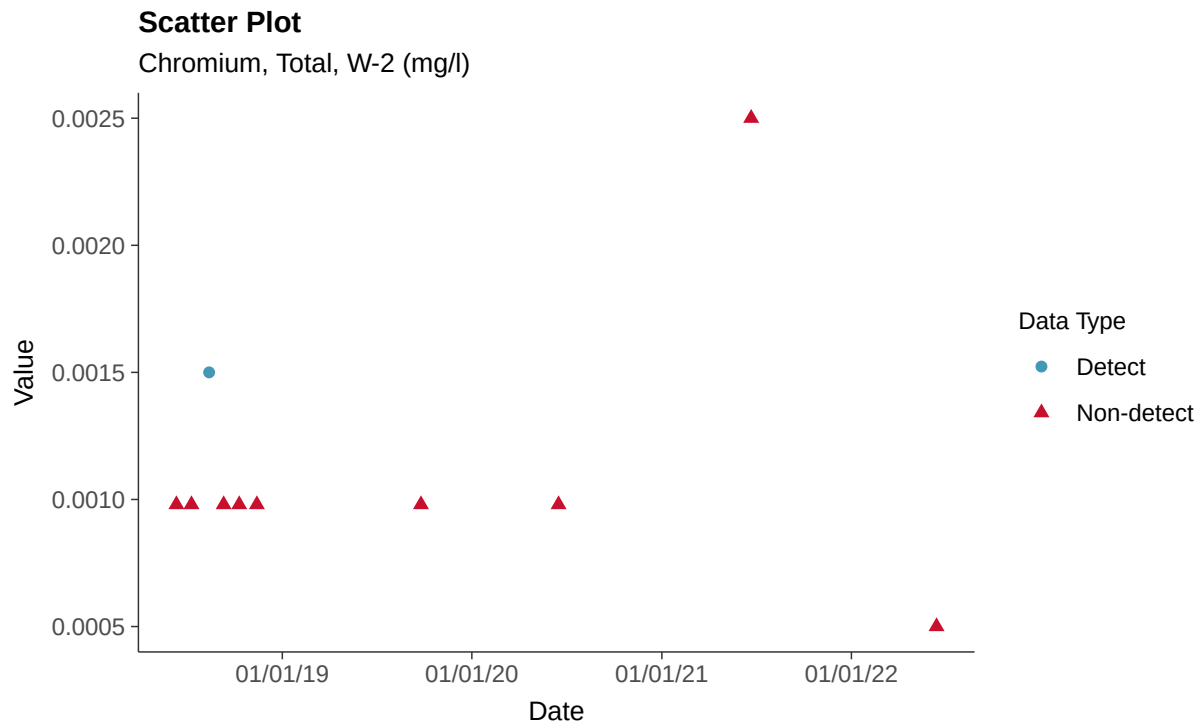
Trend Regression: Piecewise Linear-Linear

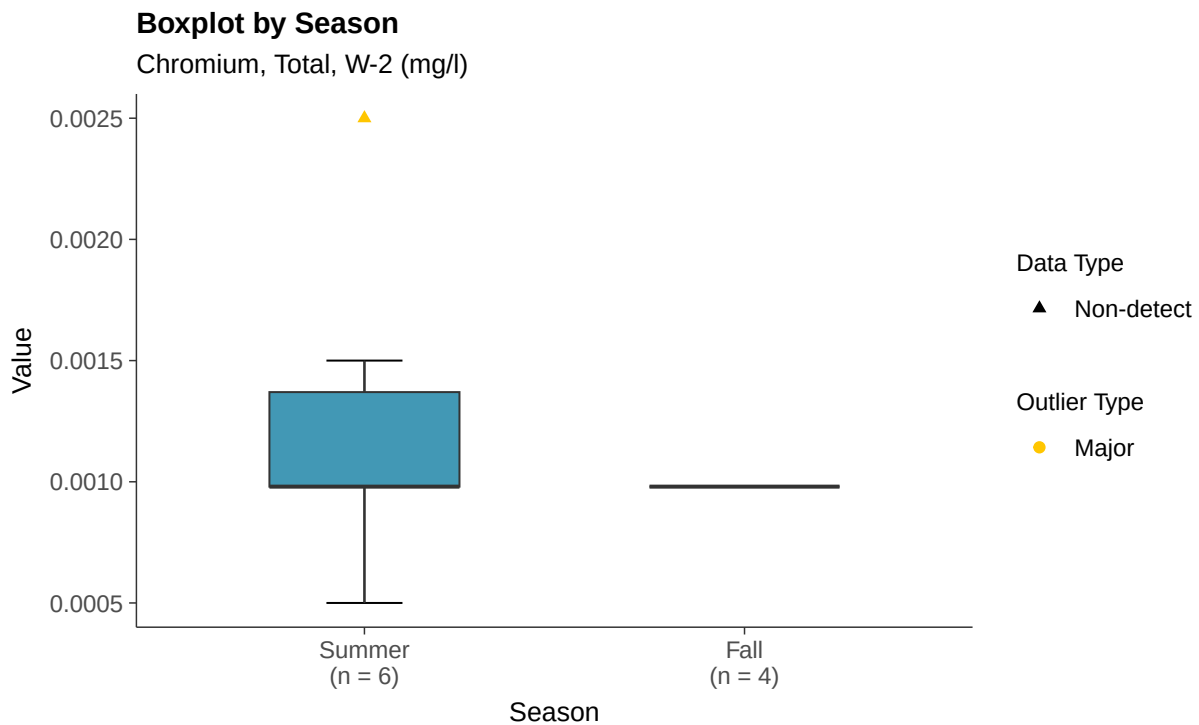
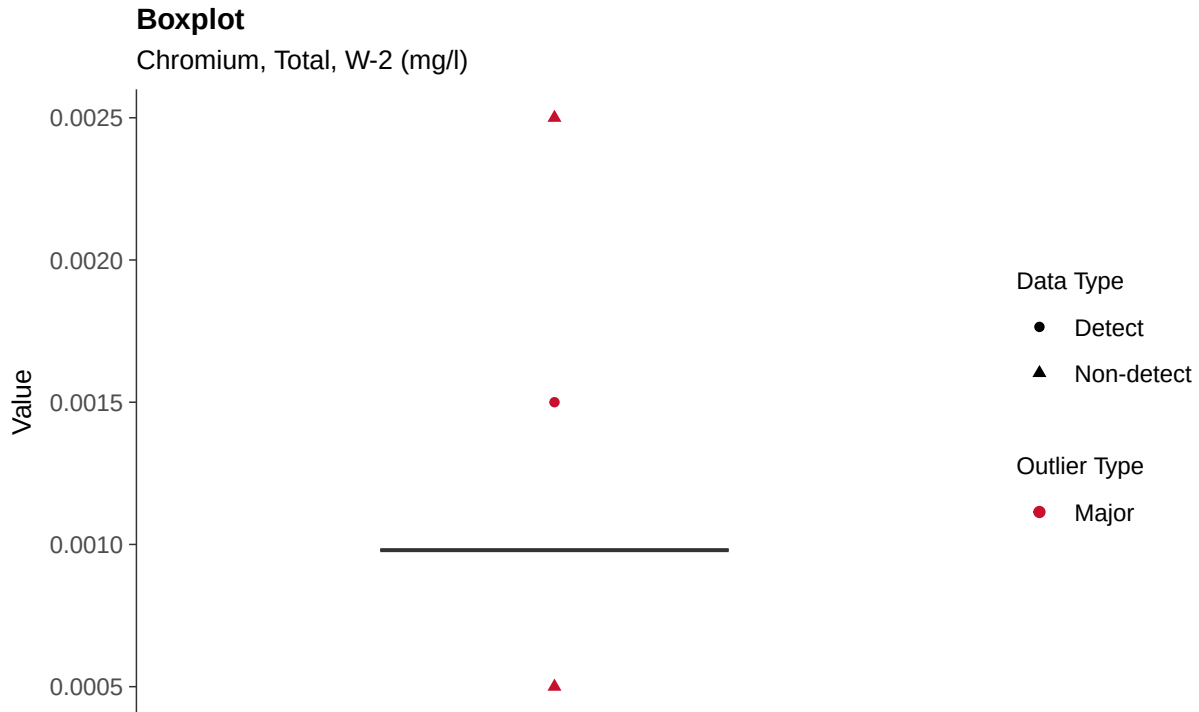
Cadmium, W-2 (mg/l)



Appendix IV: Chromium, Total, W-2

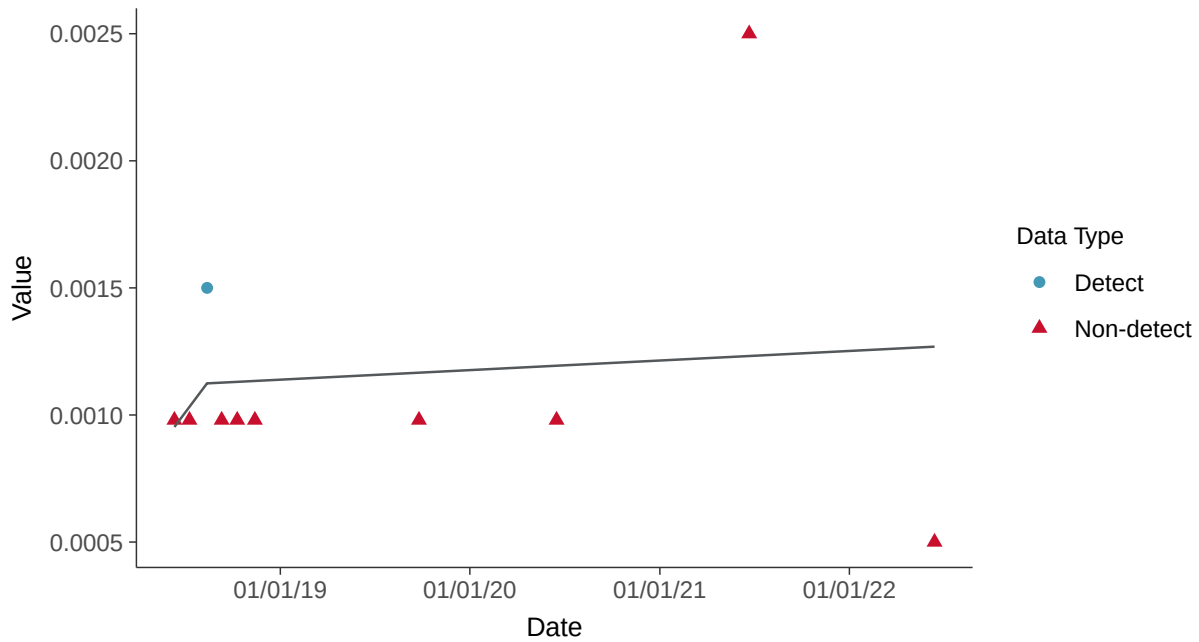
ID: 2_2_112





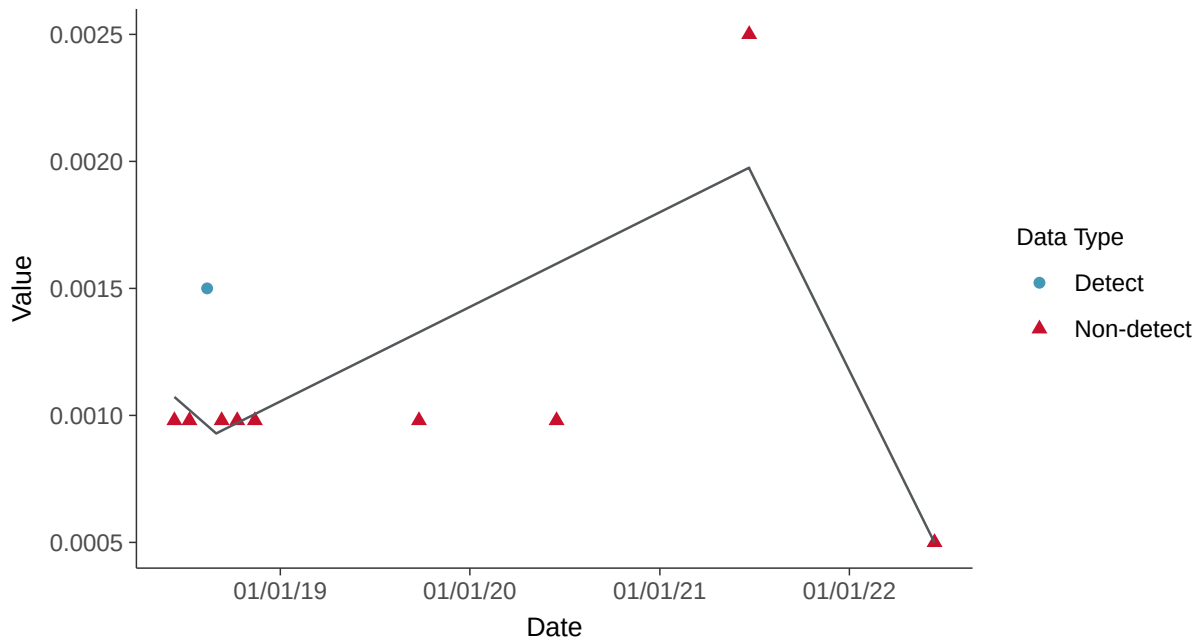
Trend Regression: Piecewise Linear-Linear

Chromium, Total, W-2 (mg/l)



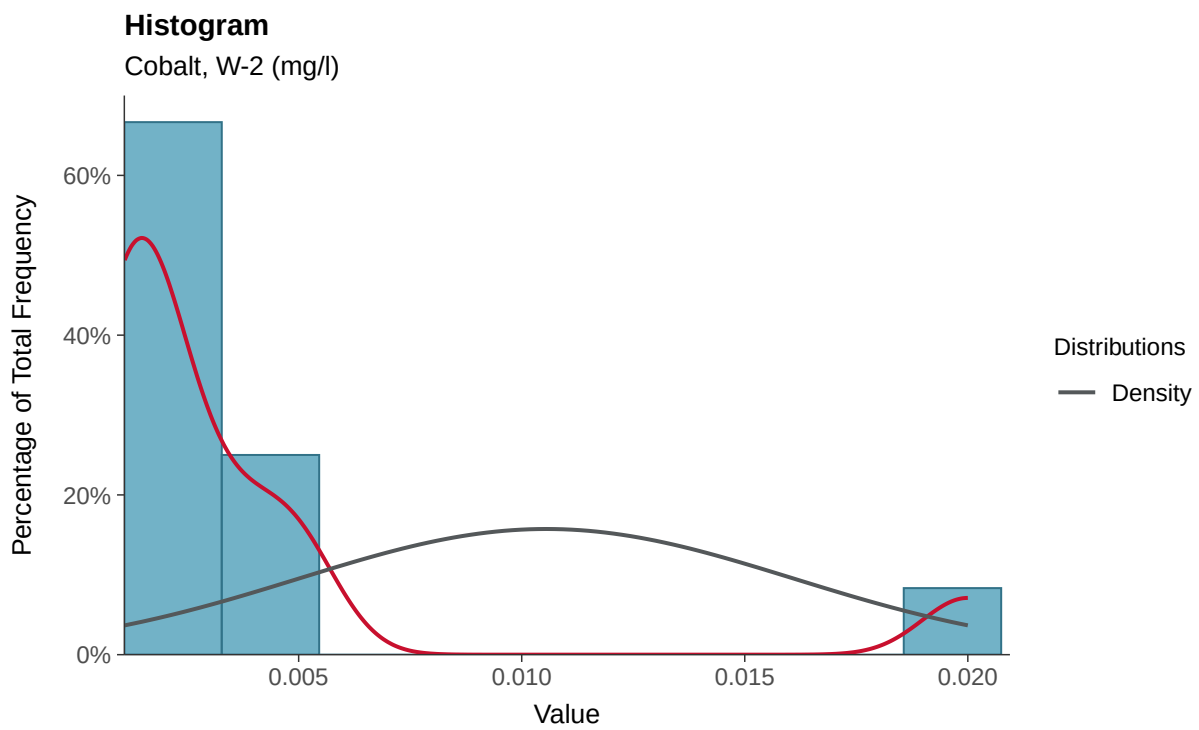
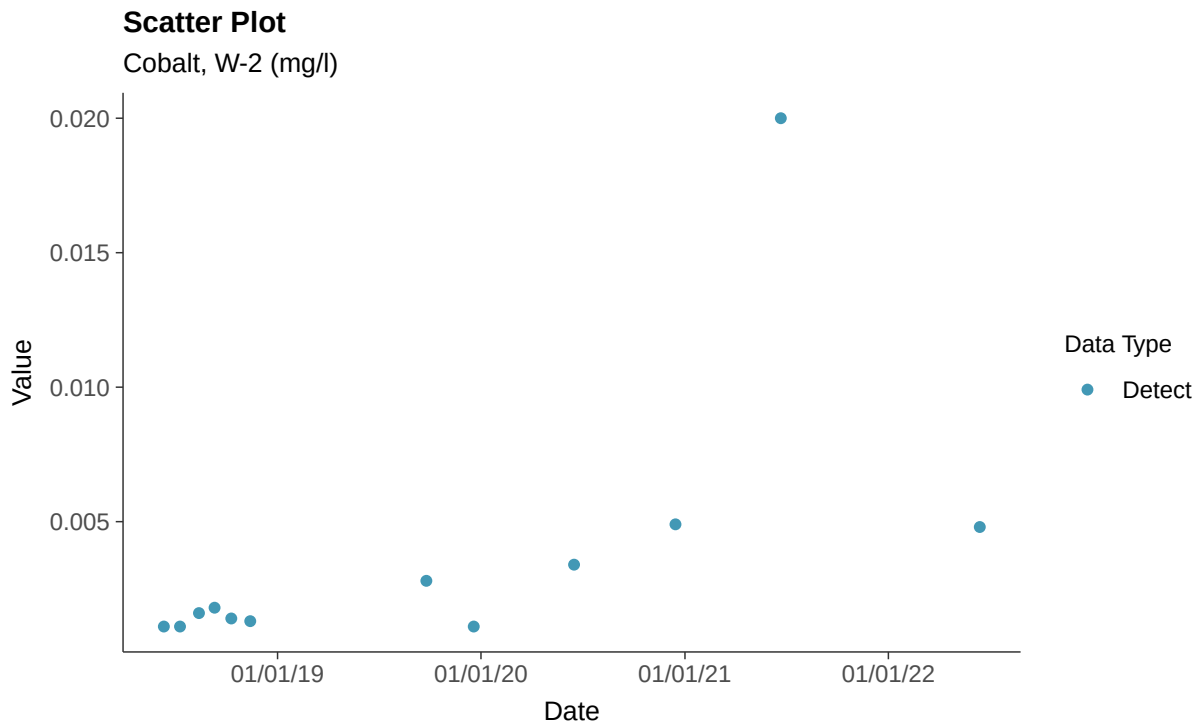
Trend Regression: Piecewise Linear-Linear-Linear

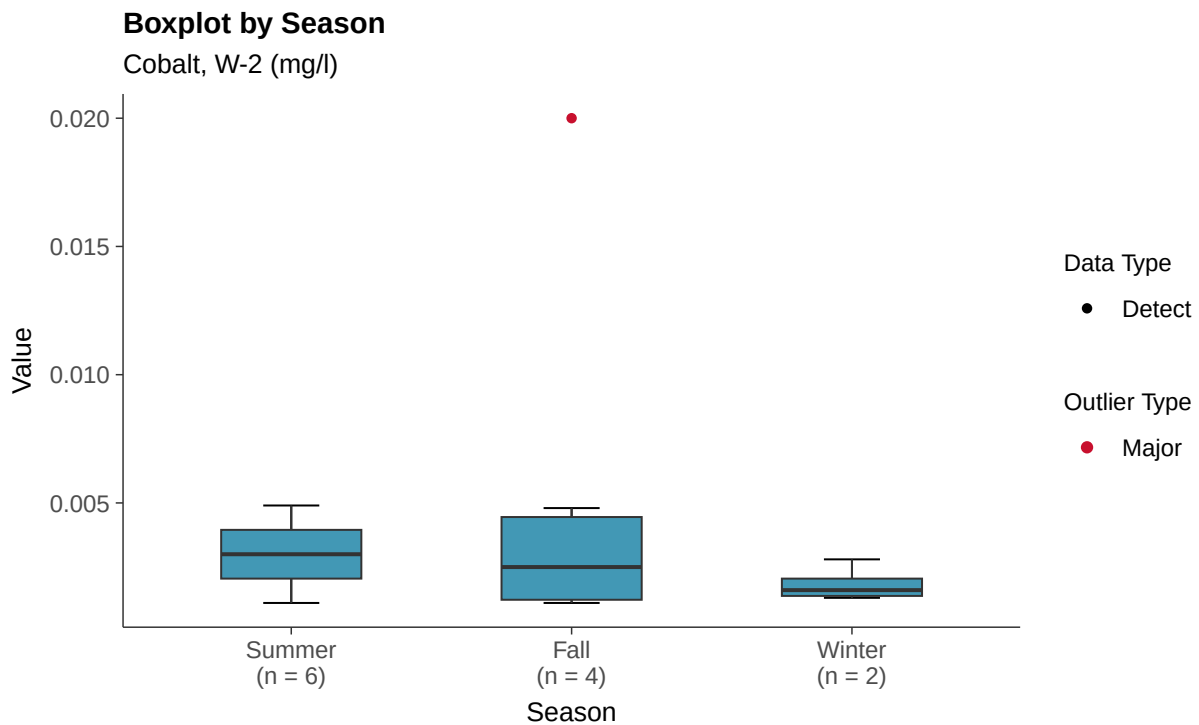
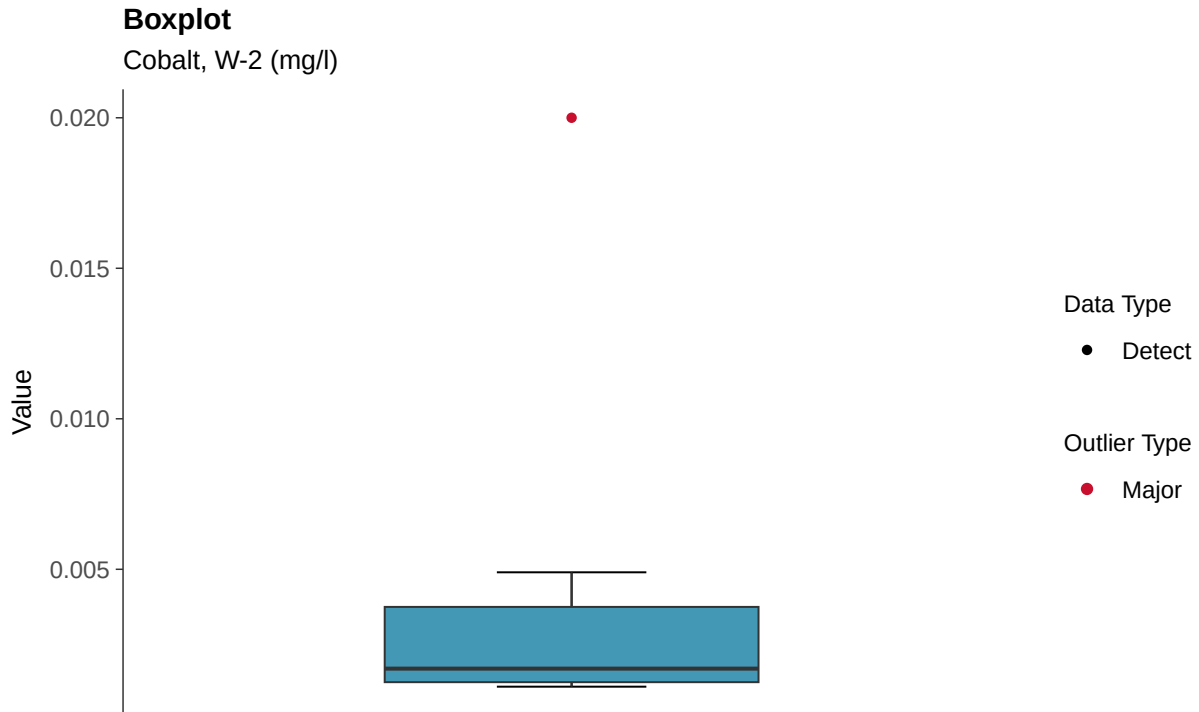
Chromium, Total, W-2 (mg/l)



Appendix IV: Cobalt, W-2

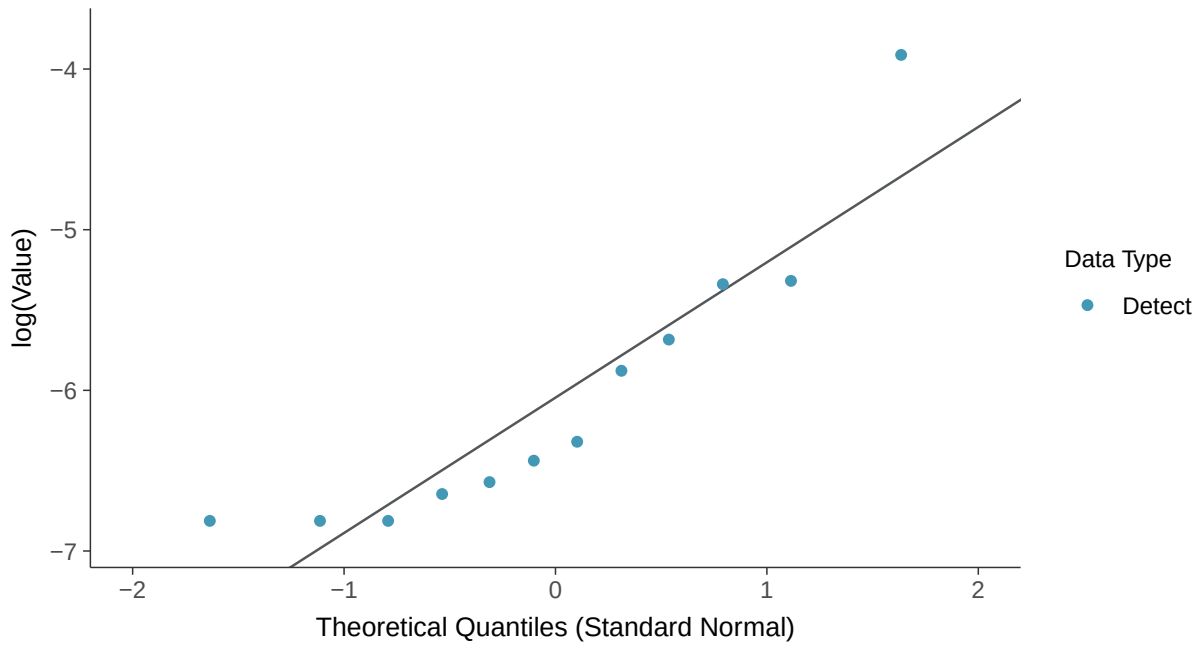
ID: 2_2_113





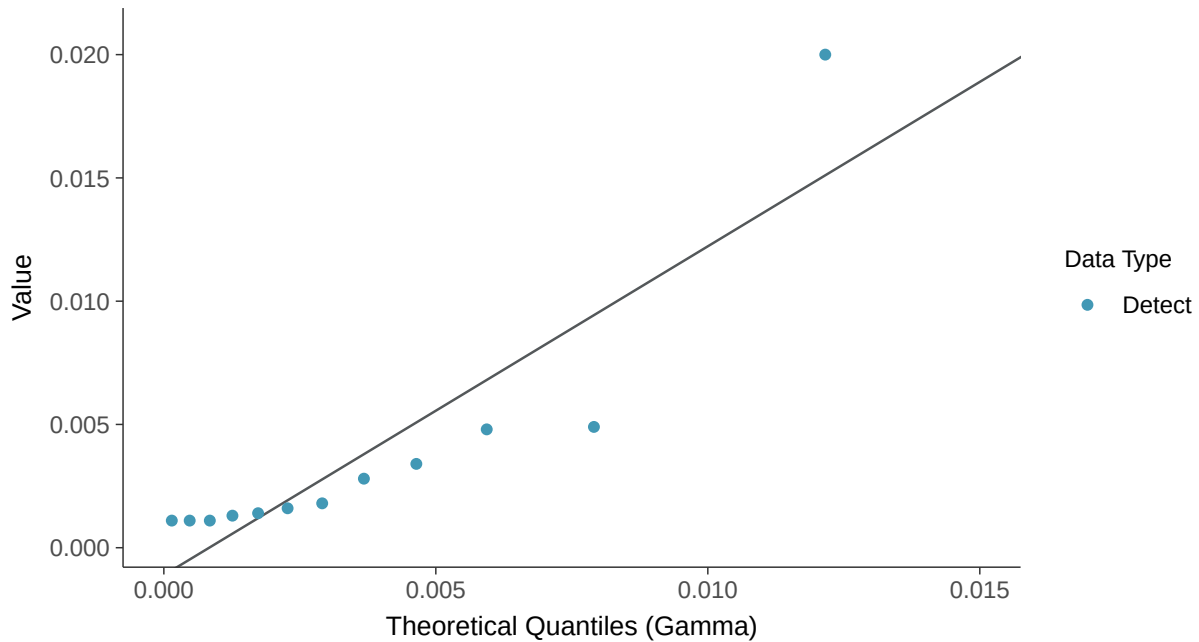
Lognormal Q-Q plot

Cobalt, W-2 (mg/l)



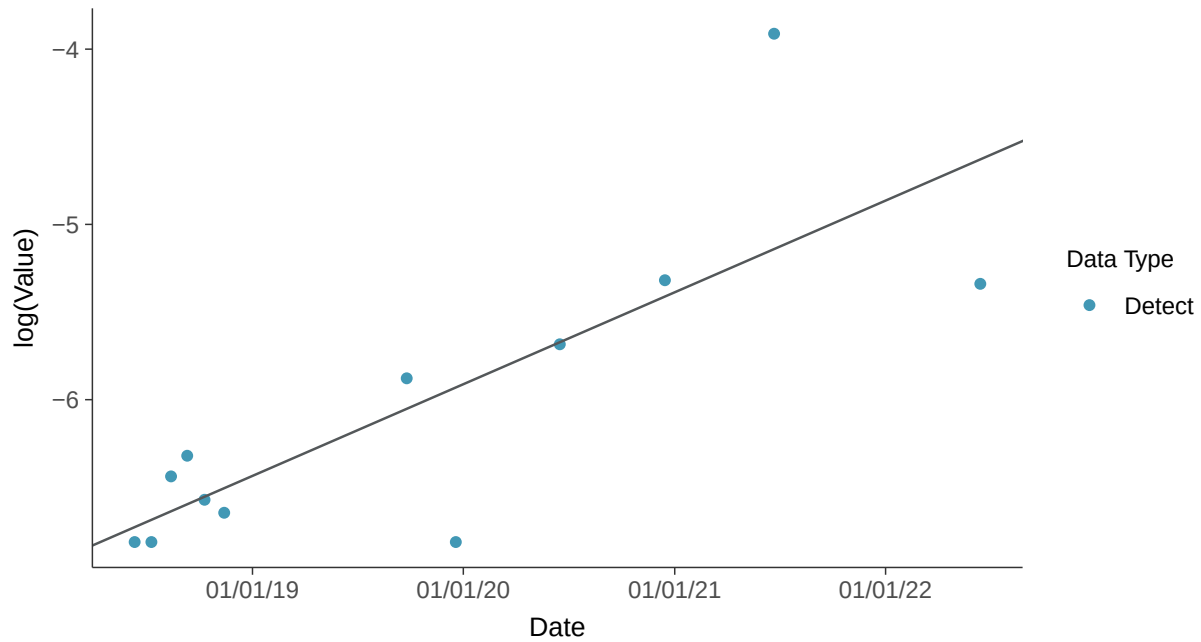
Gamma Q-Q plot

Cobalt, W-2 (mg/l)



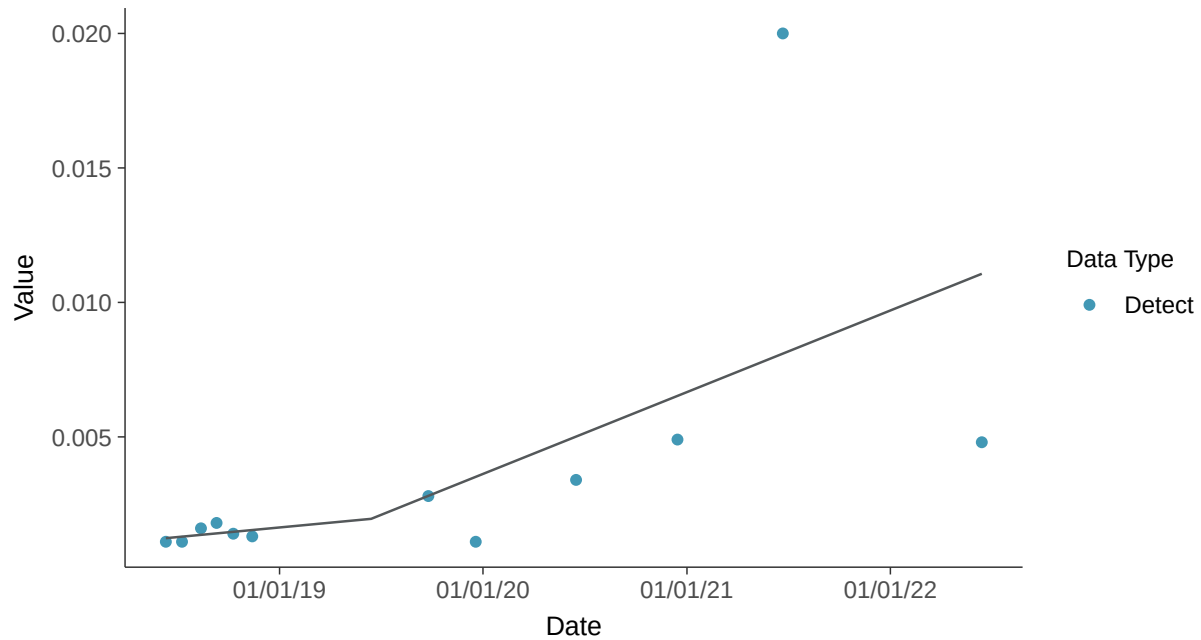
Trend Regression: Lognormal MLE

Cobalt, W-2 (mg/l)



Trend Regression: Piecewise Linear-Linear

Cobalt, W-2 (mg/l)

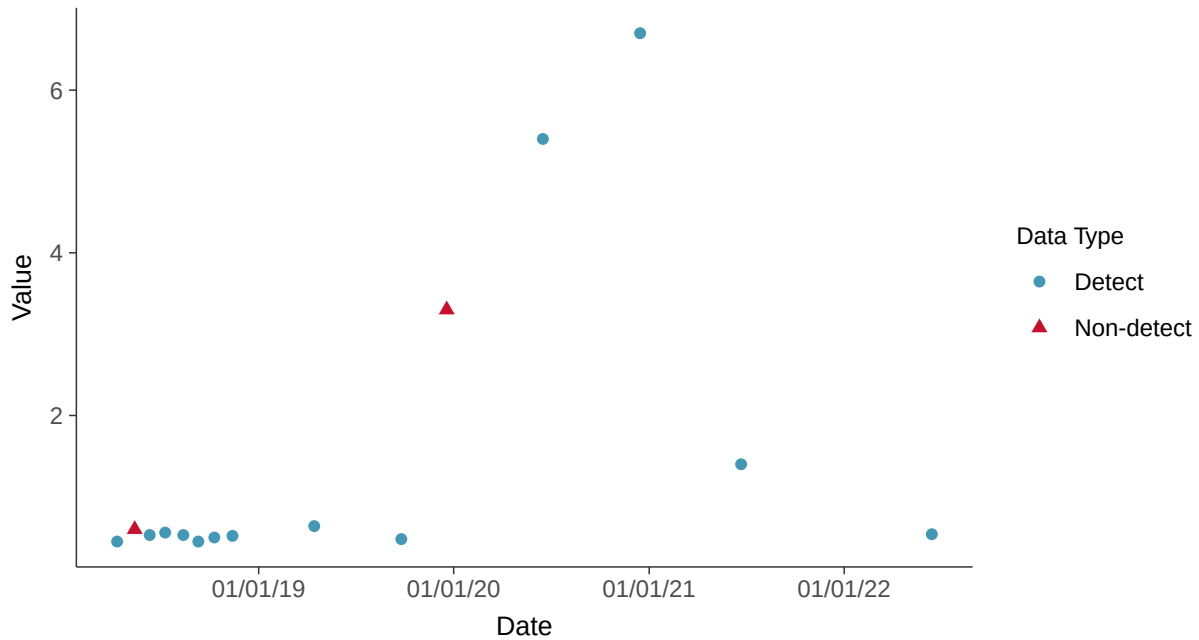


Appendix IV: Fluoride (App IV), W-2

ID: 2_2_116

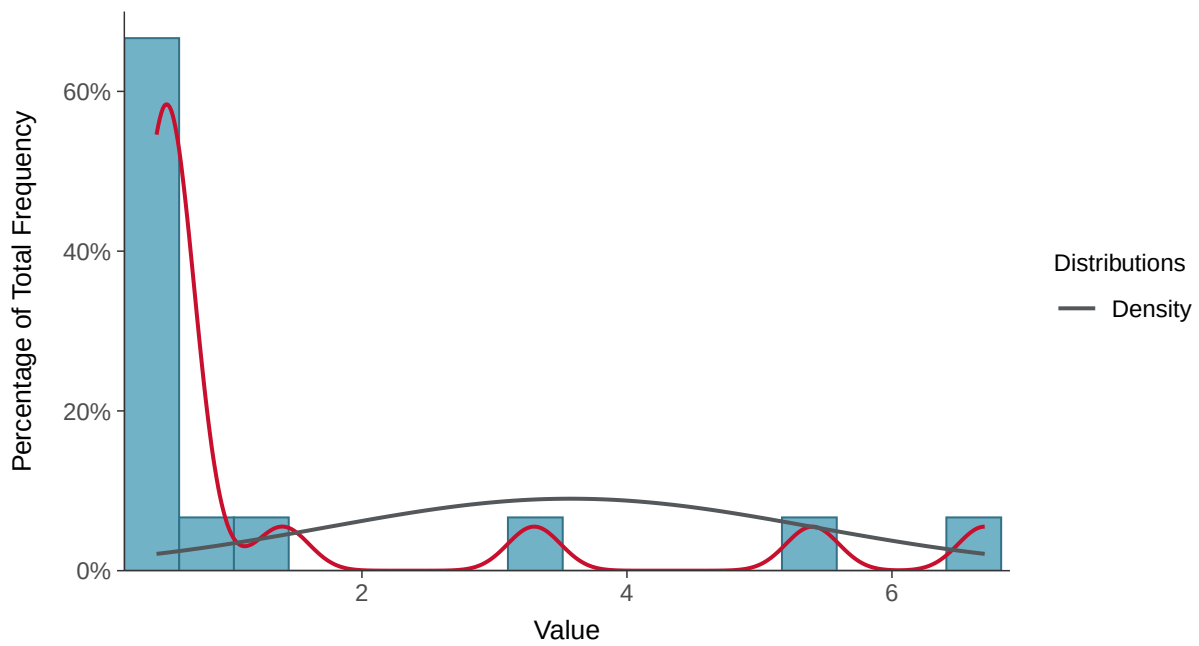
Scatter Plot

Fluoride (App IV), W-2 (mg/l)



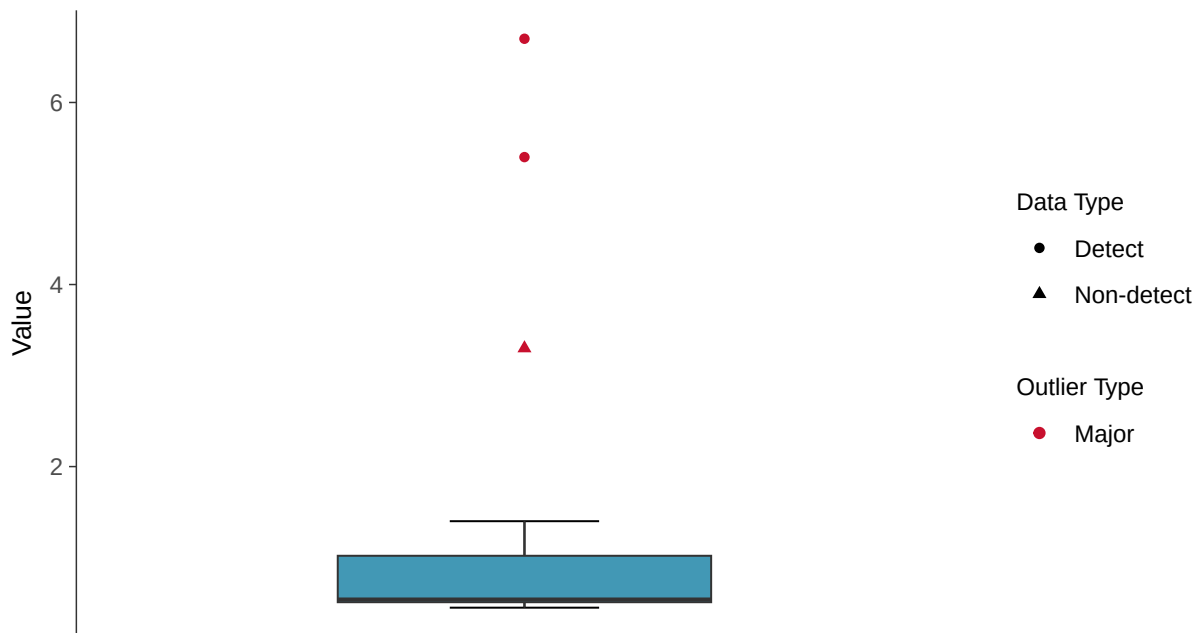
Histogram

Fluoride (App IV), W-2 (mg/l)



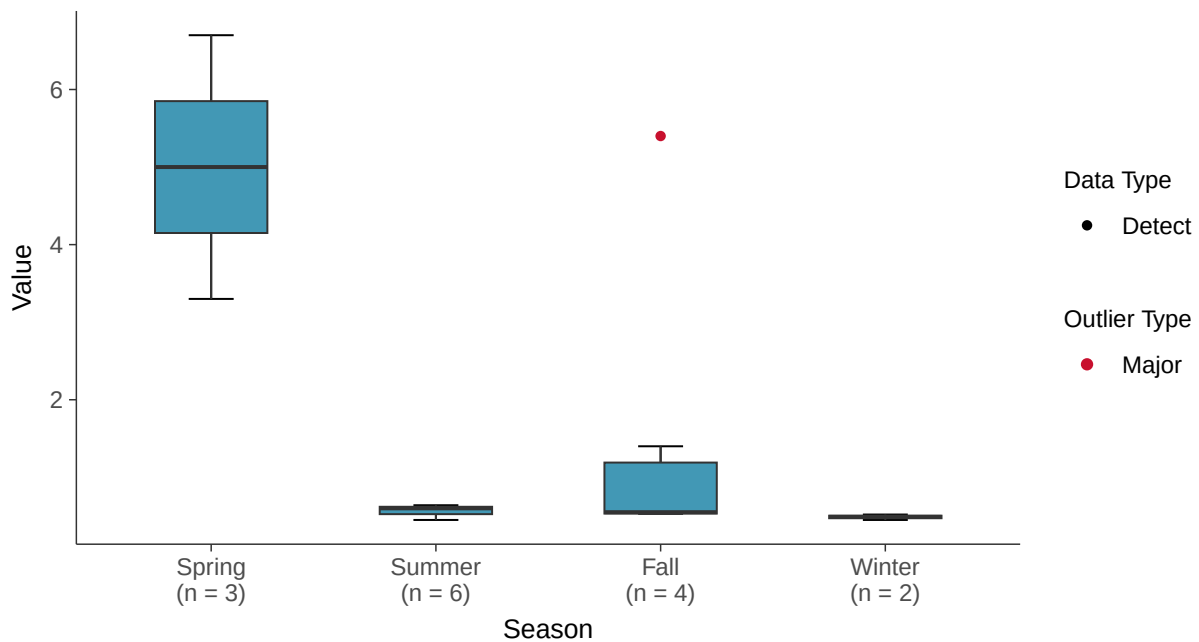
Boxplot

Fluoride (App IV), W-2 (mg/l)

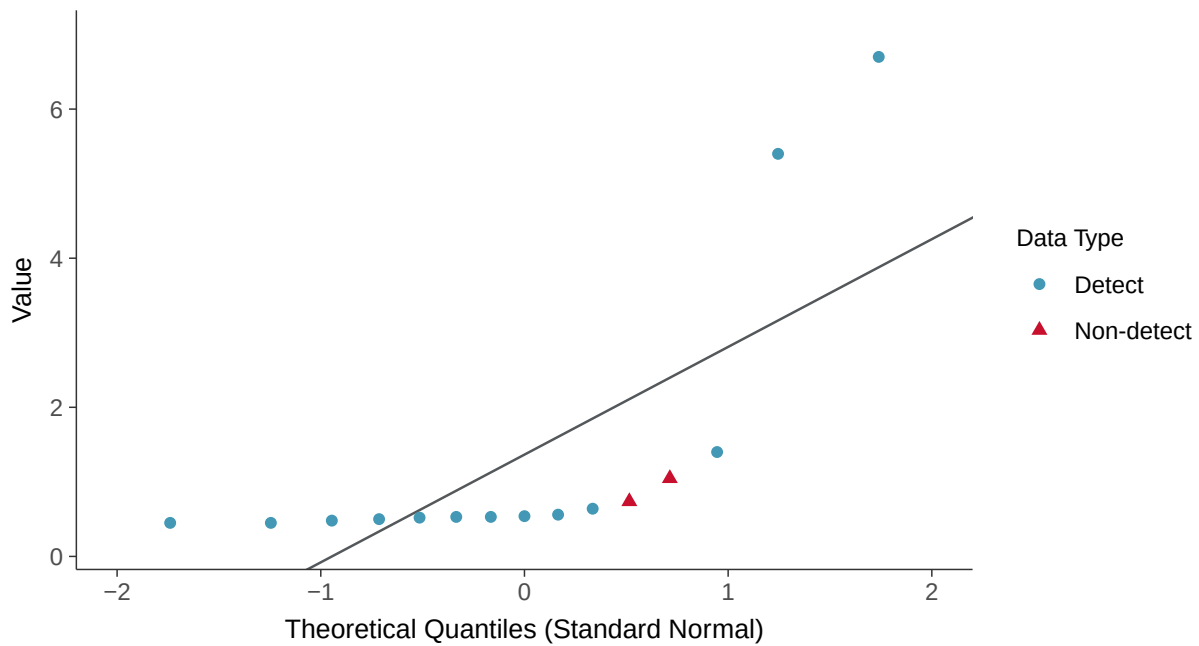


Boxplot by Season

Fluoride (App IV), W-2 (mg/l)

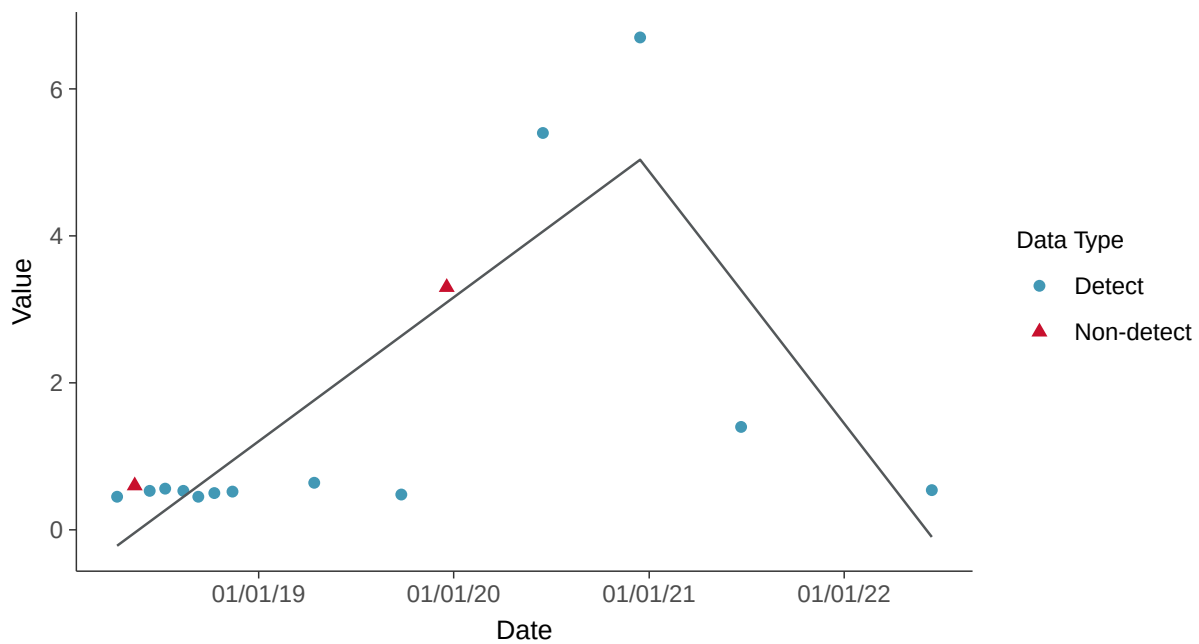


Fluoride (App IV), W-2 (mg/l)

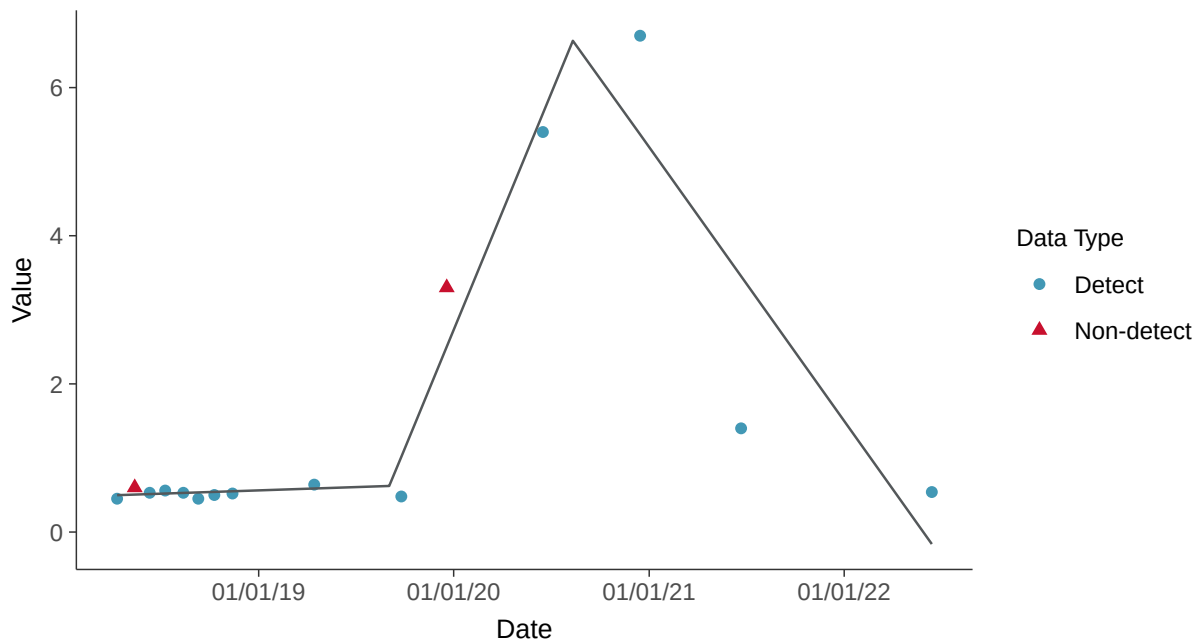


Trend Regression: Piecewise Linear-Linear

Fluoride (App IV), W-2 (mg/l)

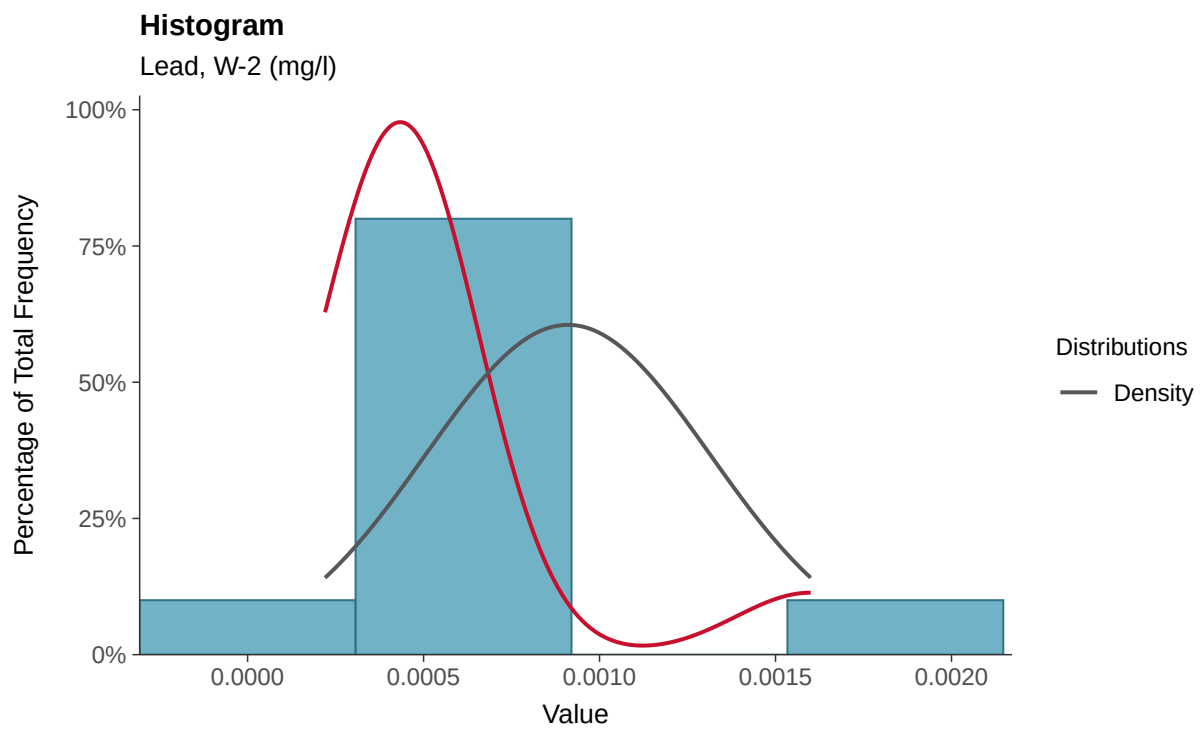
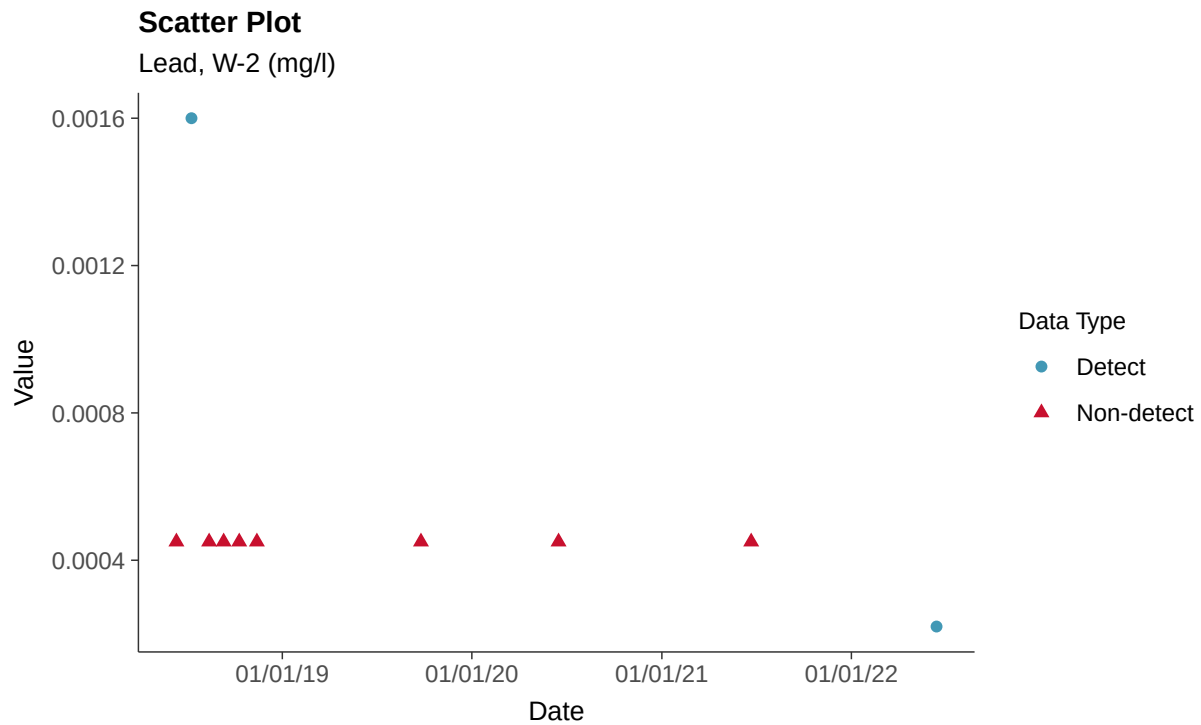


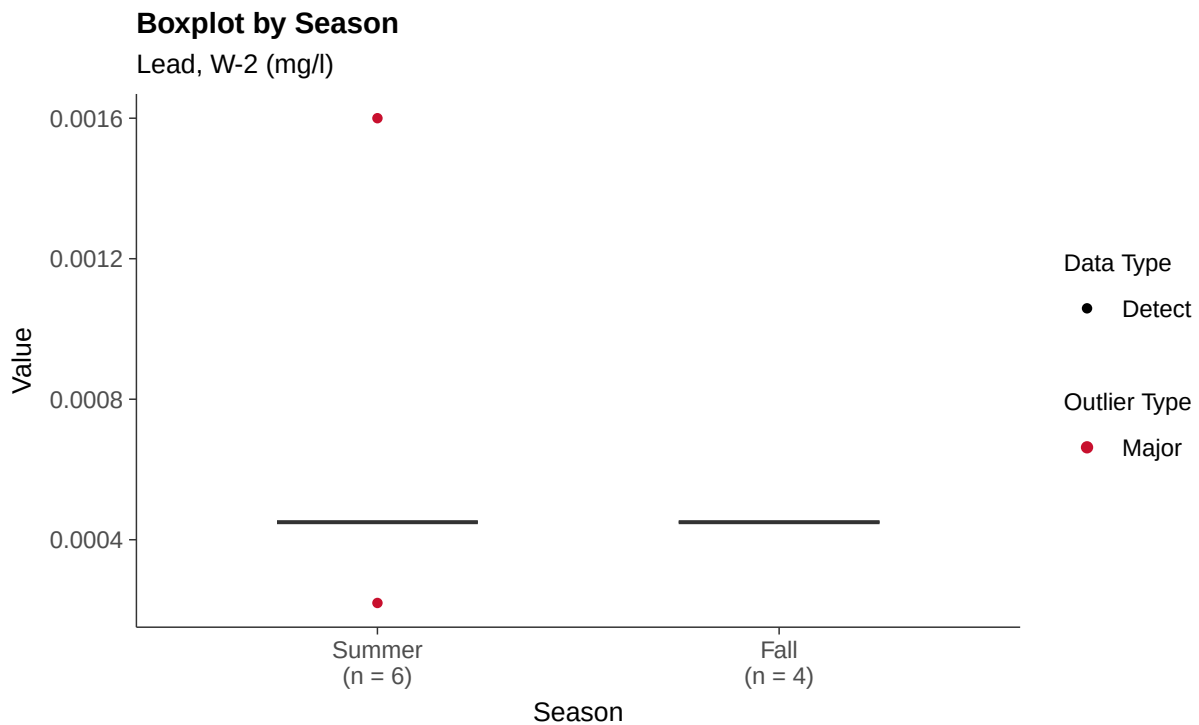
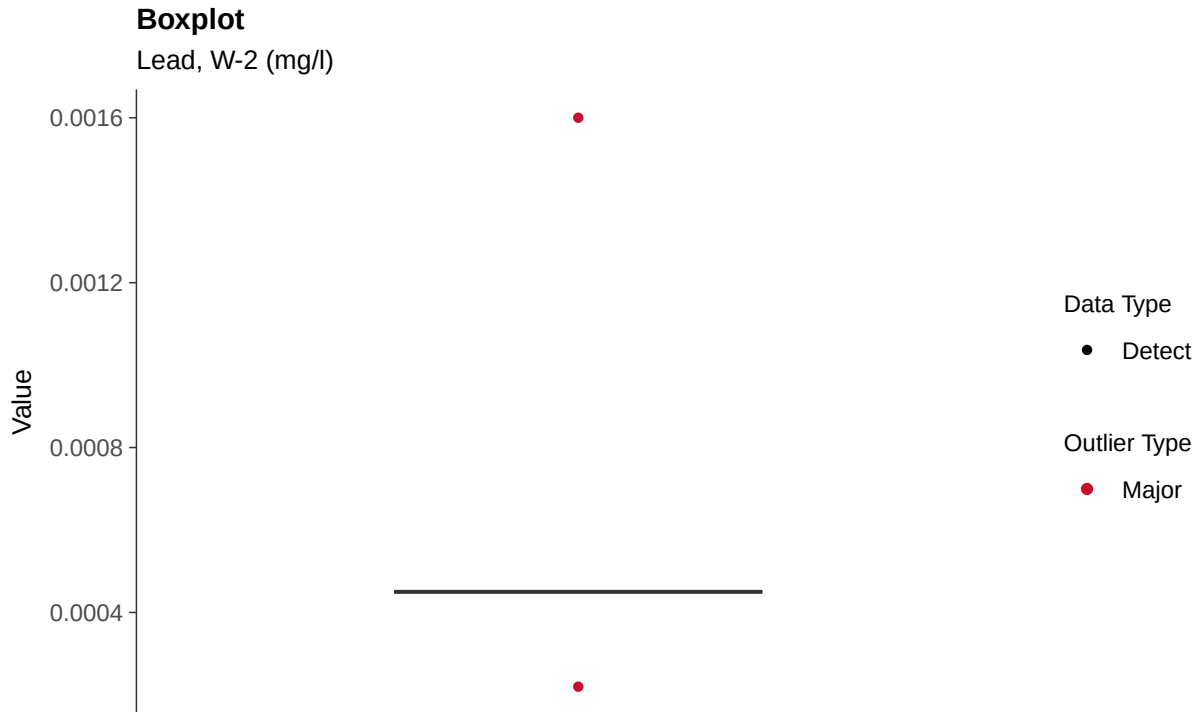
Fluoride (App IV), W-2 (mg/l)



Appendix IV: Lead, W-2

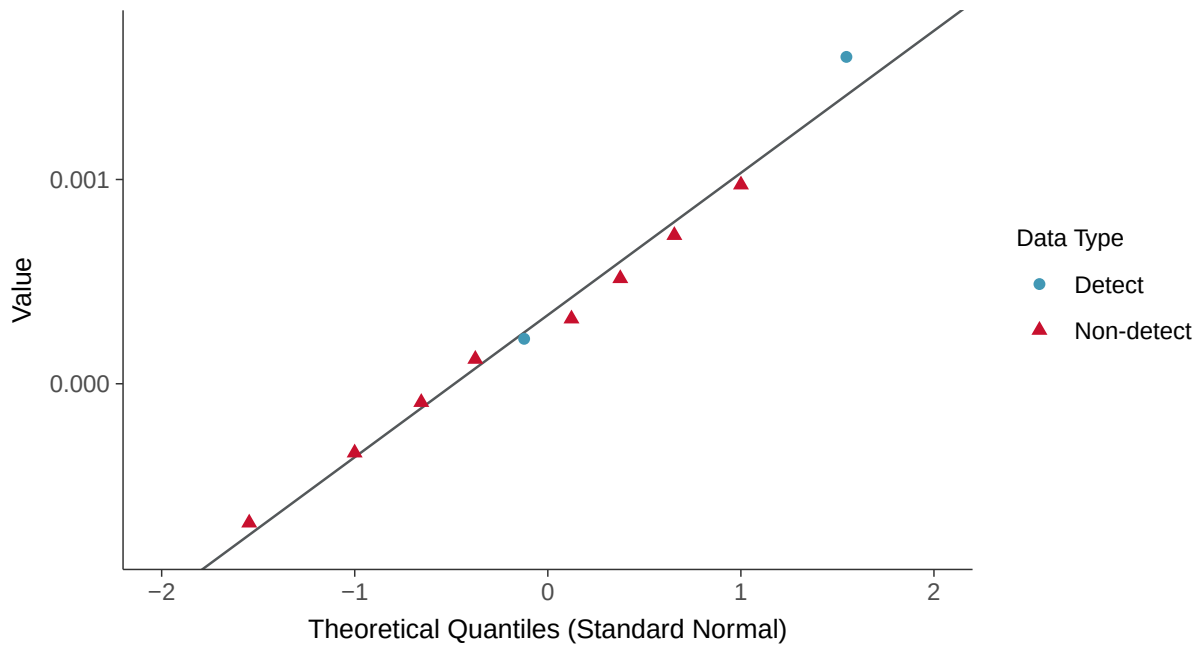
ID: 2_2_117





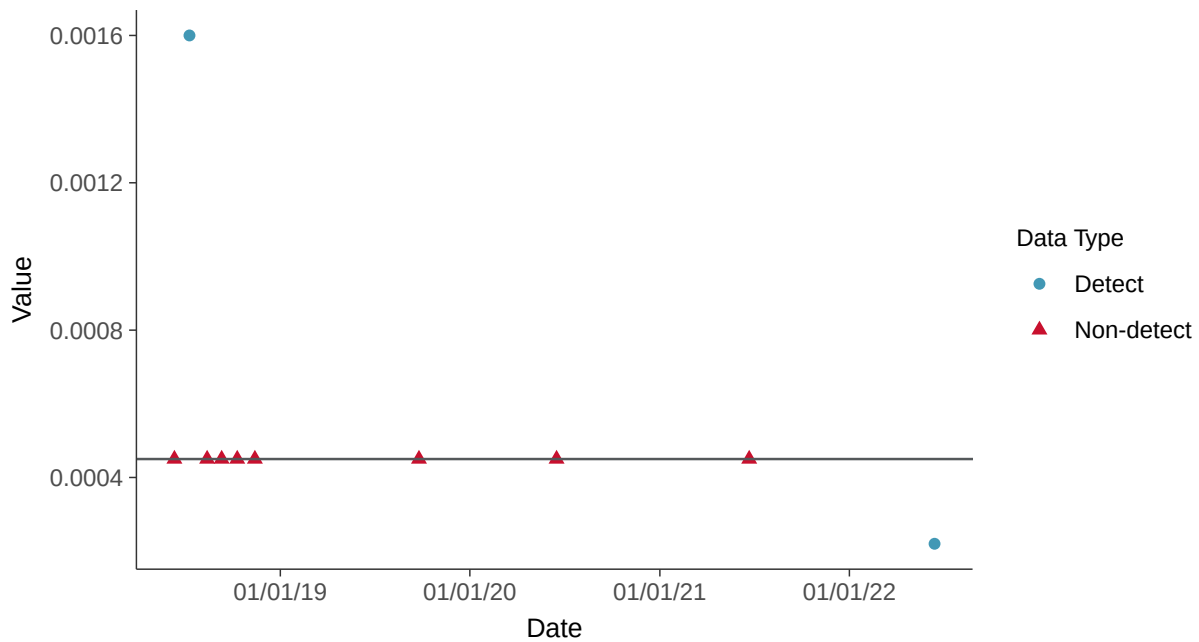
Normal Q-Q plot using ROS Imputed Estimates

Lead, W-2 (mg/l)



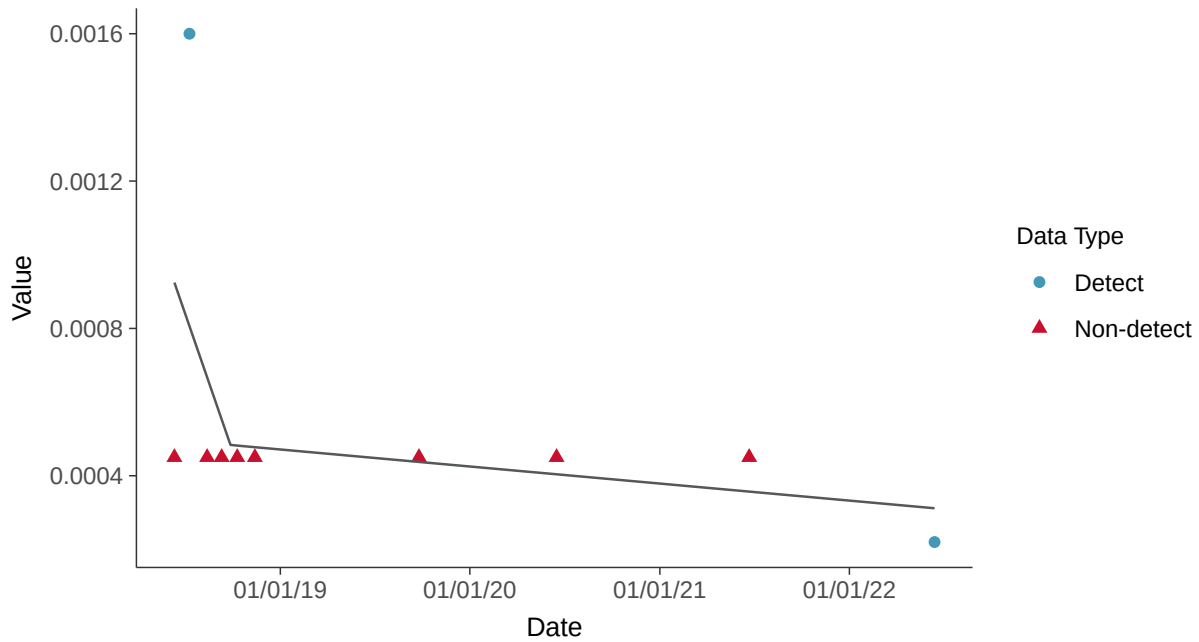
Trend Regression: Mann-Kendall/Theil-Sen Estimate

Lead, W-2 (mg/l)



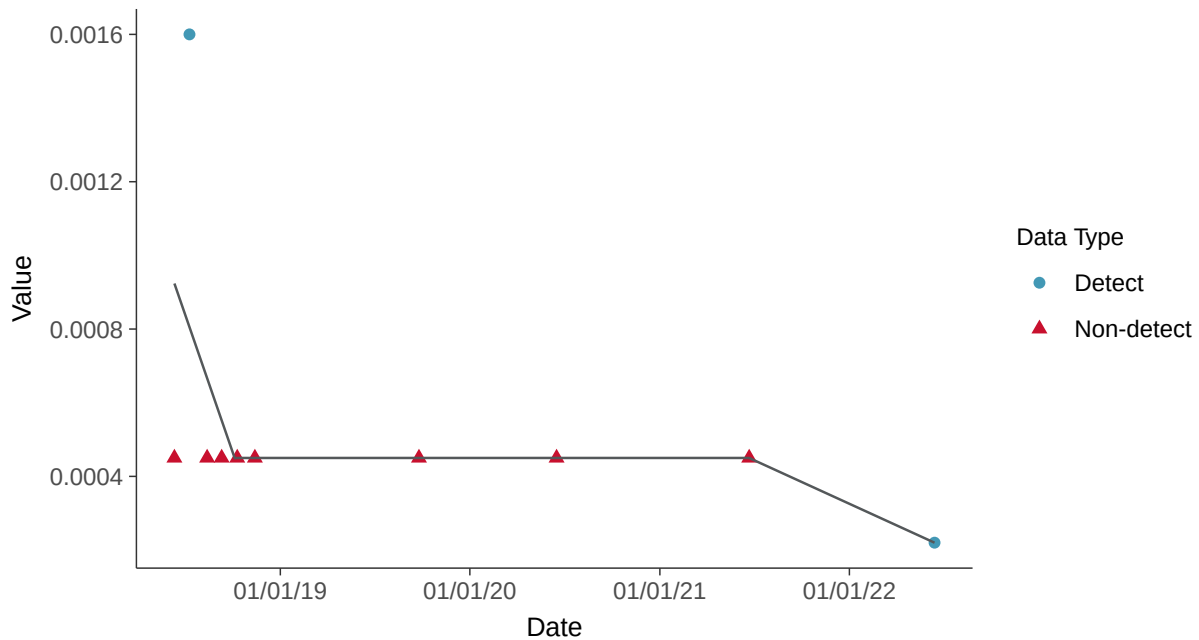
Trend Regression: Piecewise Linear-Linear

Lead, W-2 (mg/l)



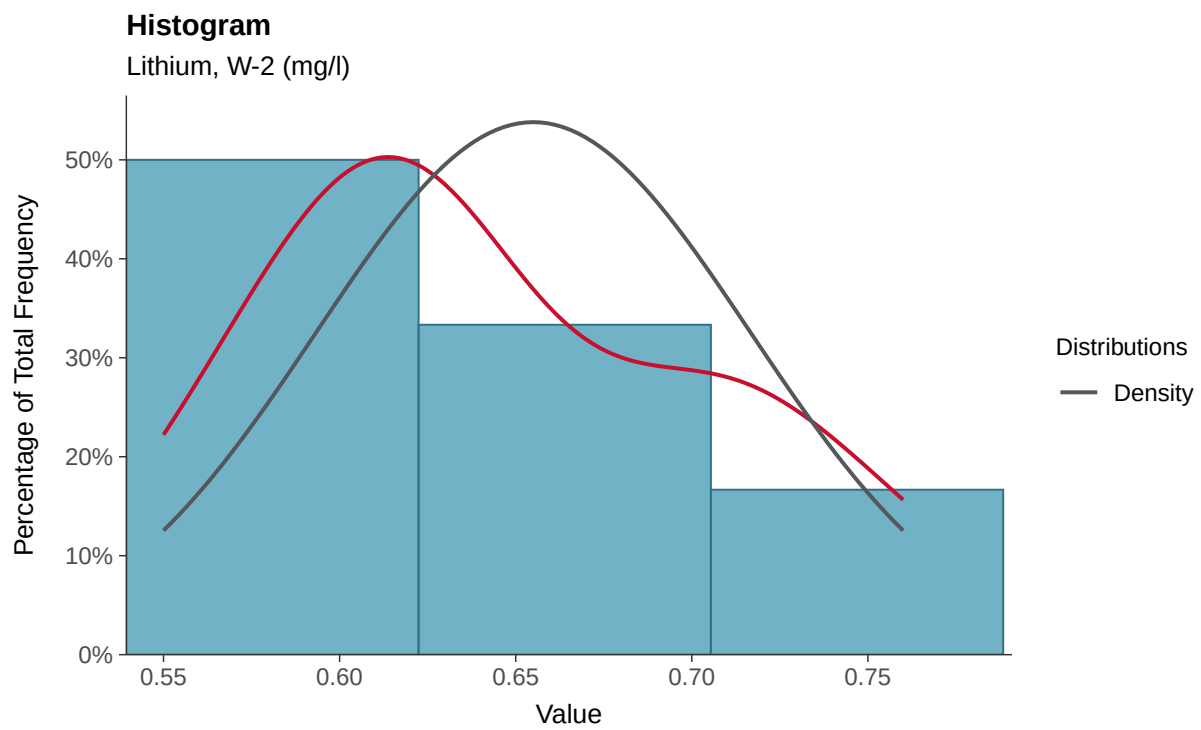
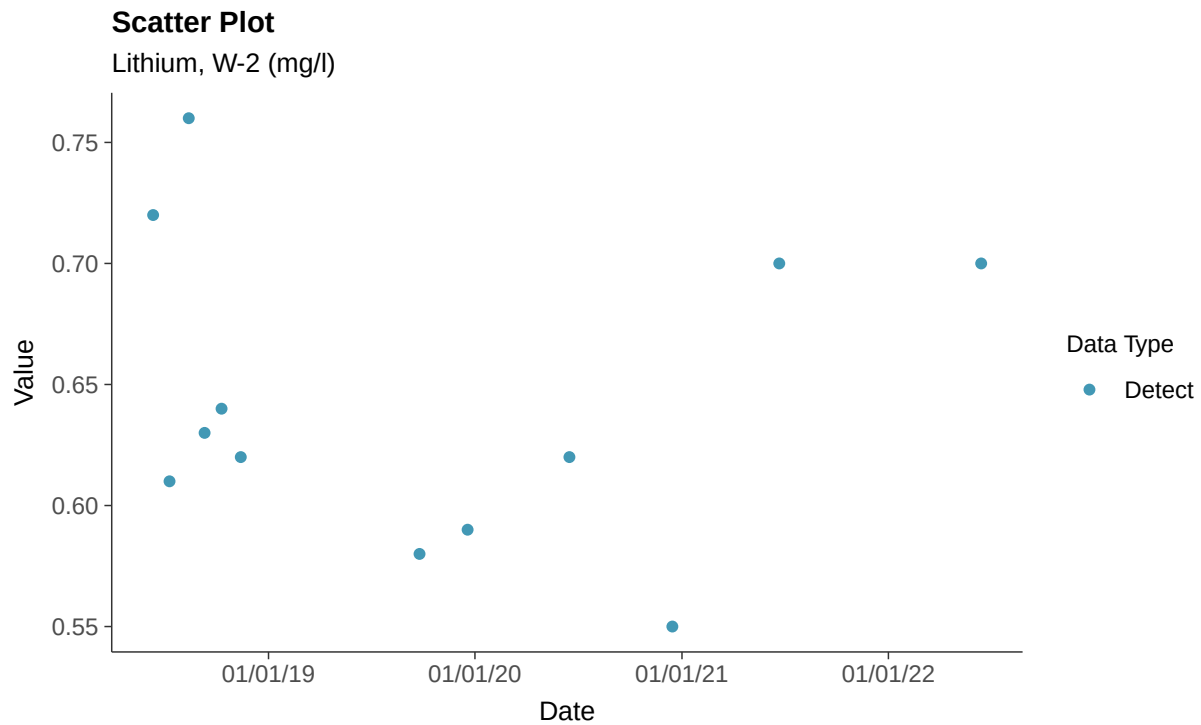
Trend Regression: Piecewise Linear-Linear-Linear

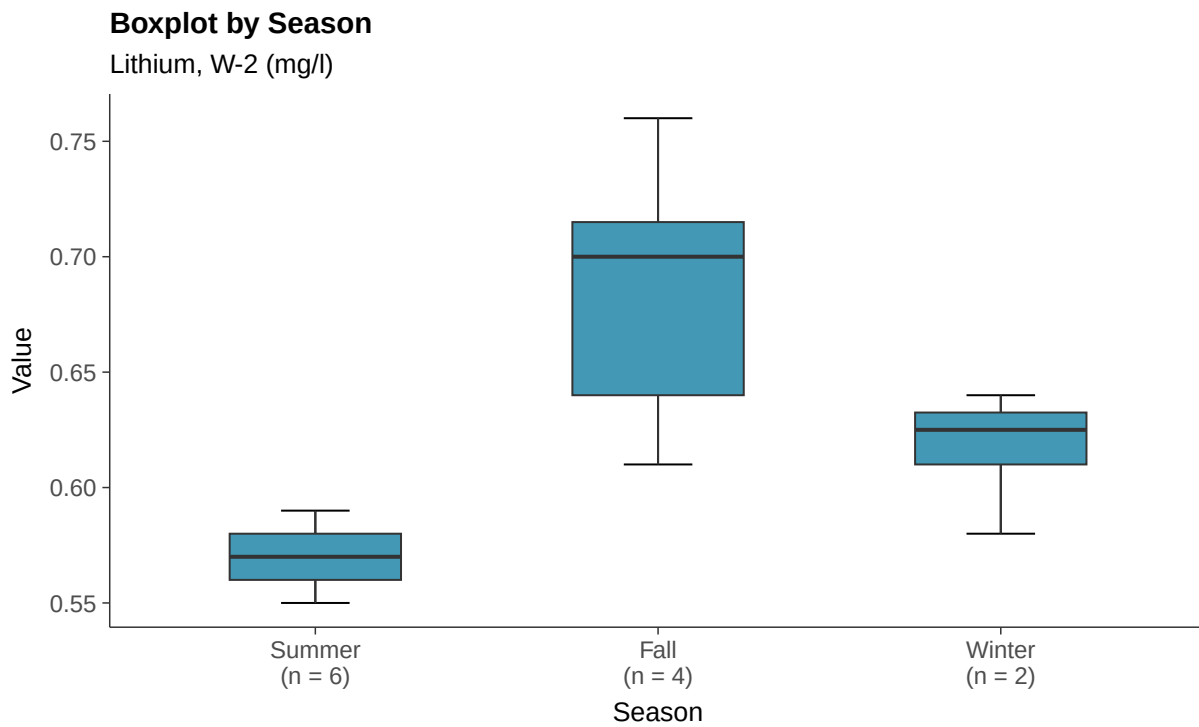
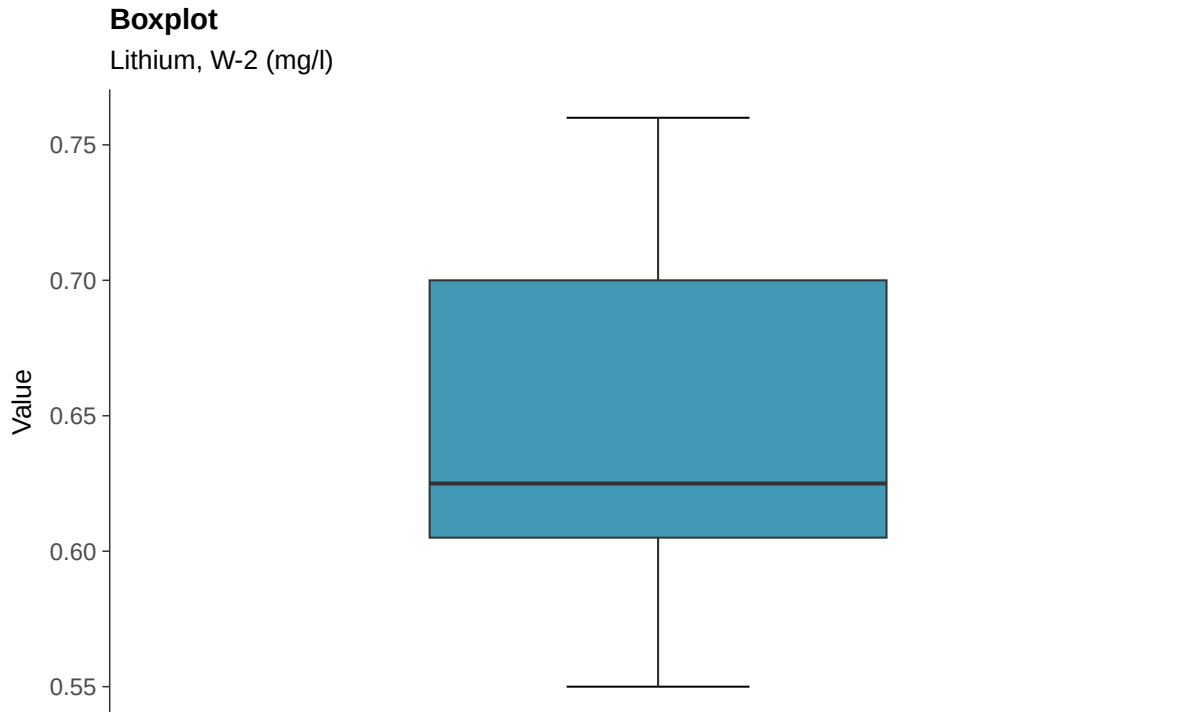
Lead, W-2 (mg/l)



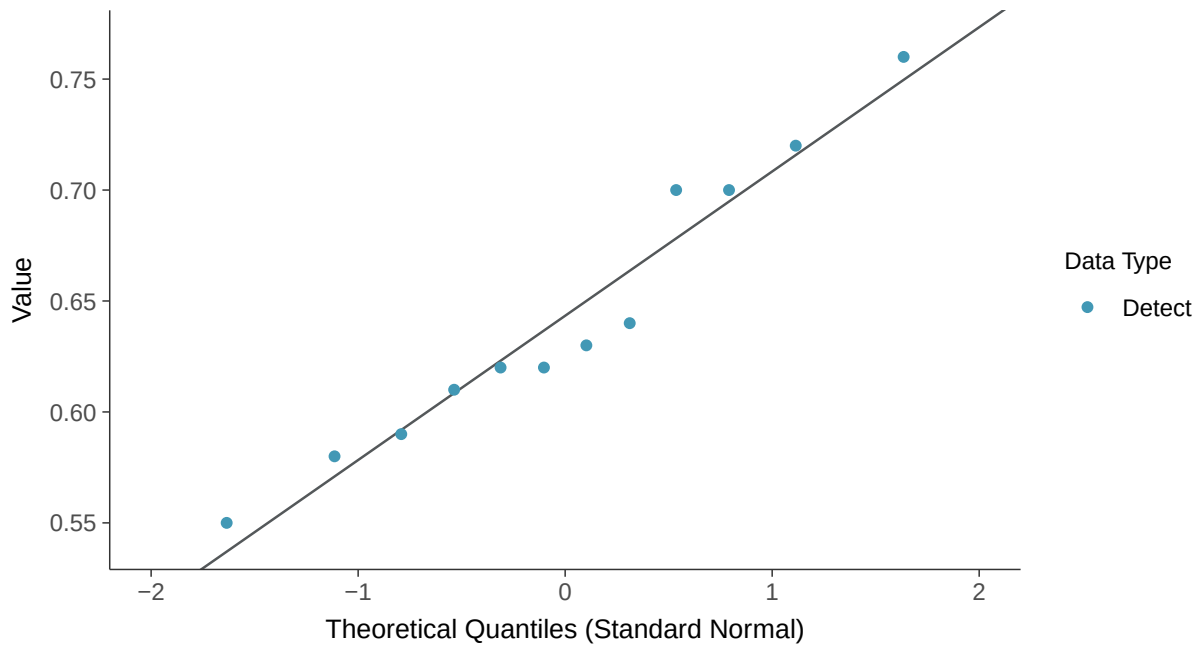
Appendix IV: Lithium, W-2

ID: 2_2_118

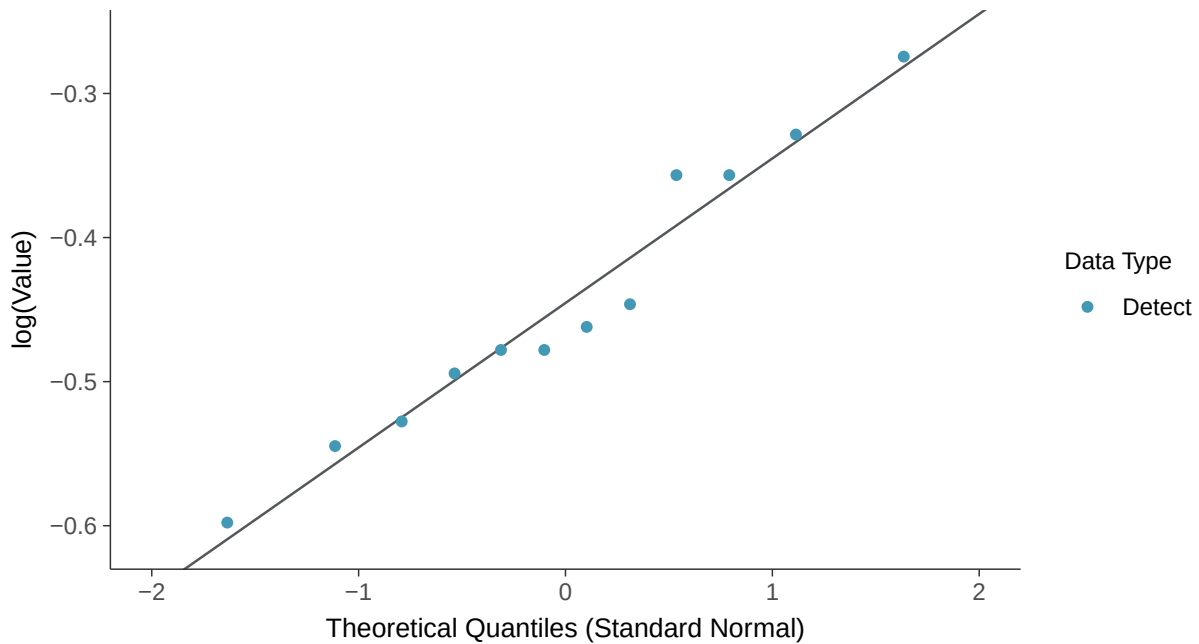




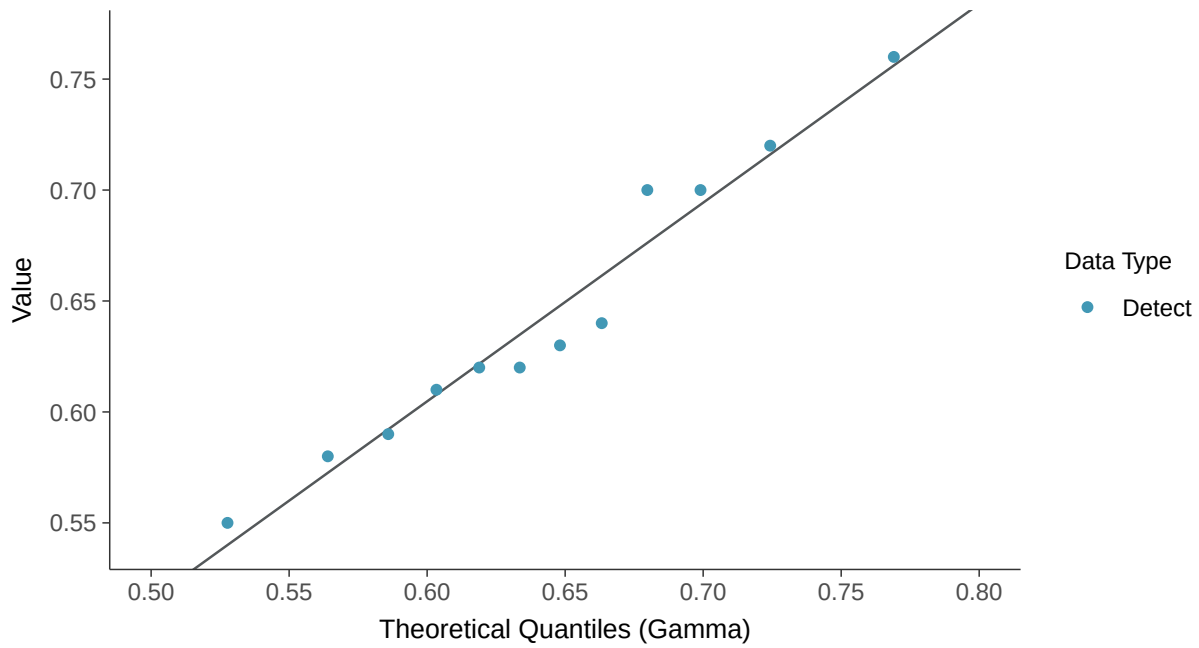
Normal Q-Q plot
Lithium, W-2 (mg/l)



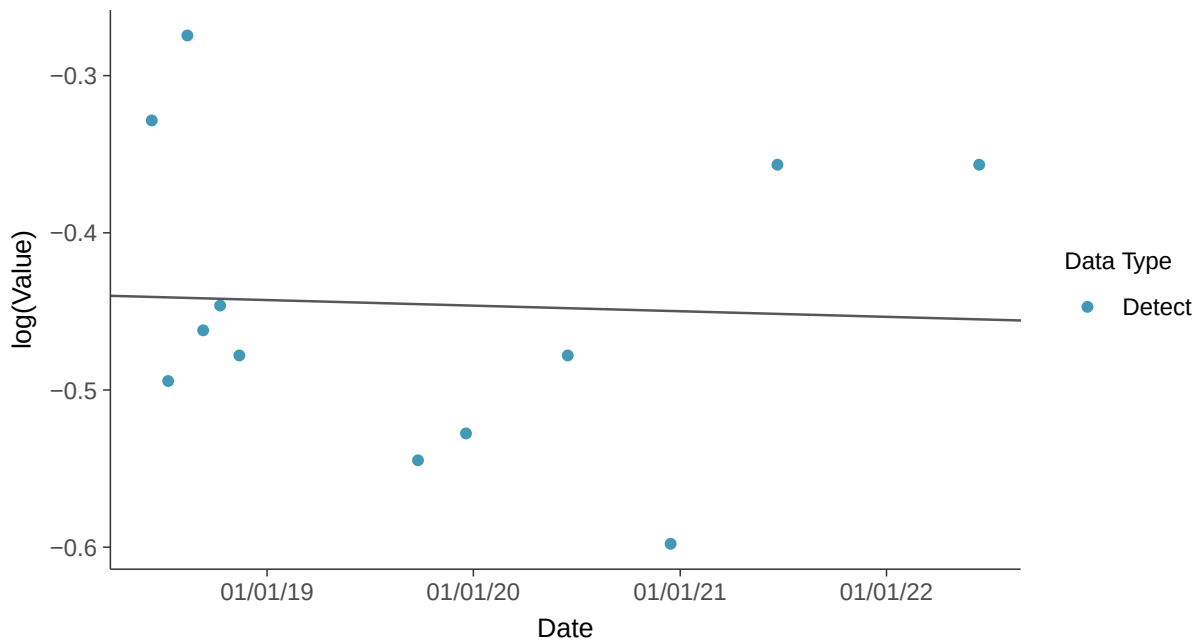
Lognormal Q-Q plot
Lithium, W-2 (mg/l)

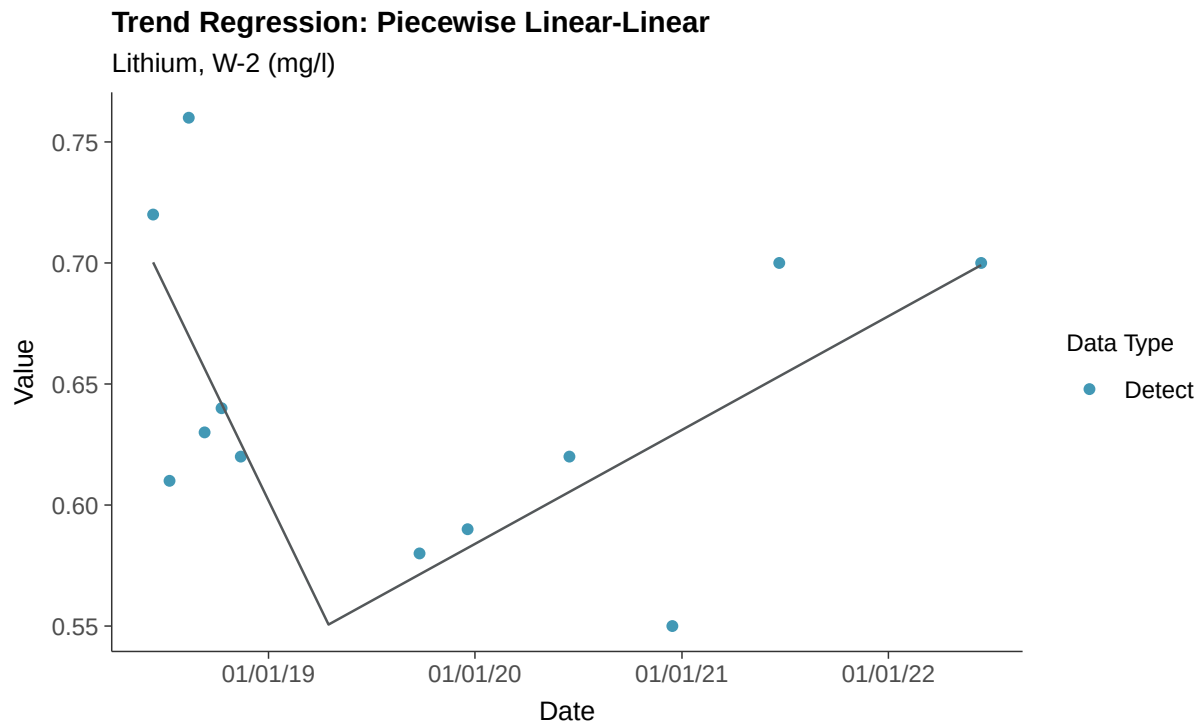


Gamma Q-Q plot
Lithium, W-2 (mg/l)



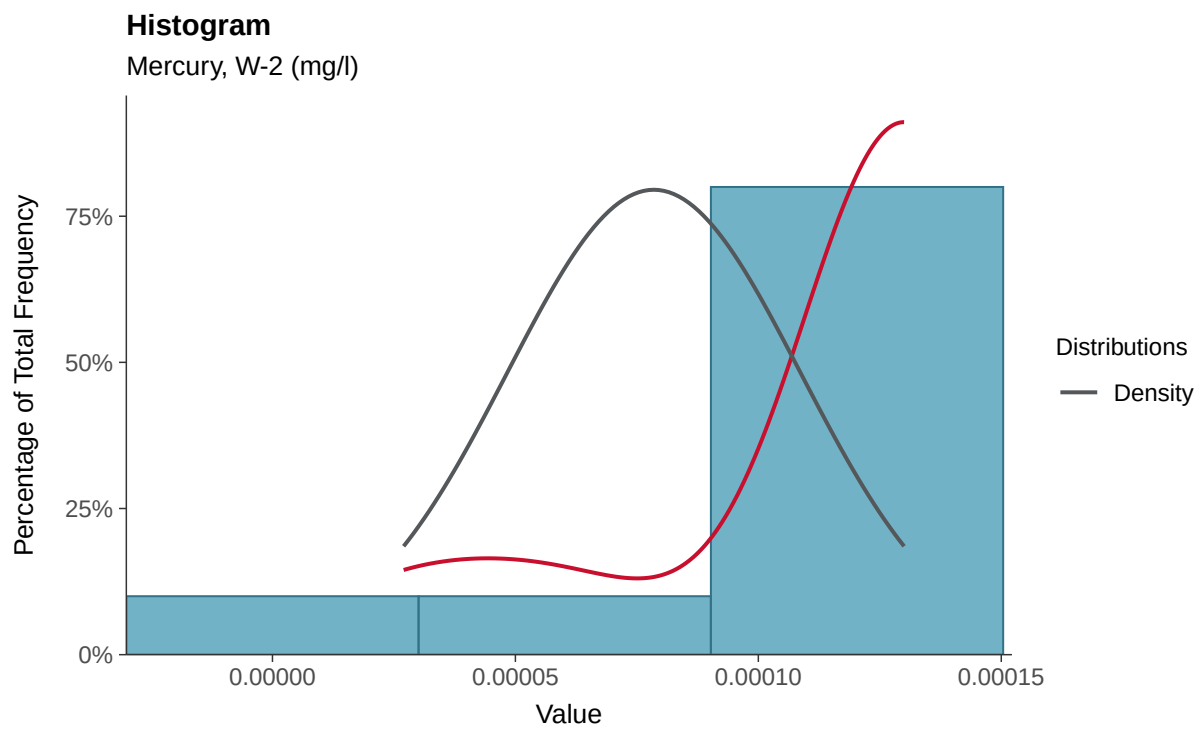
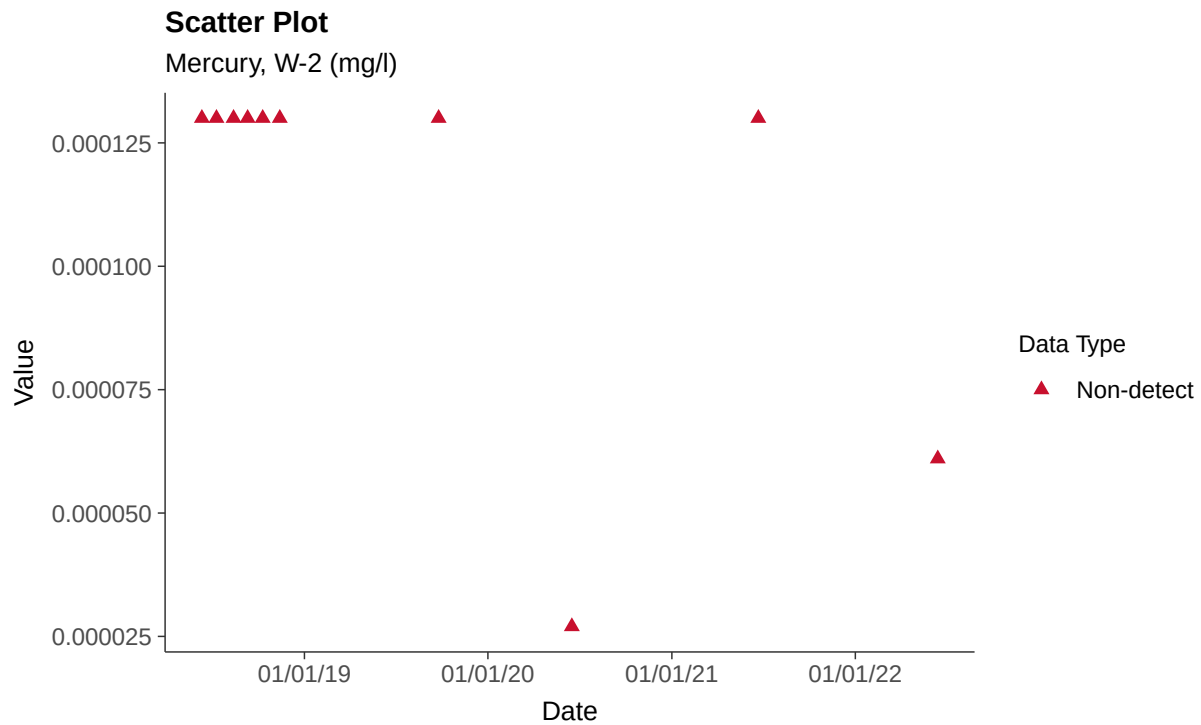
Trend Regression: Lognormal MLE
Lithium, W-2 (mg/l)

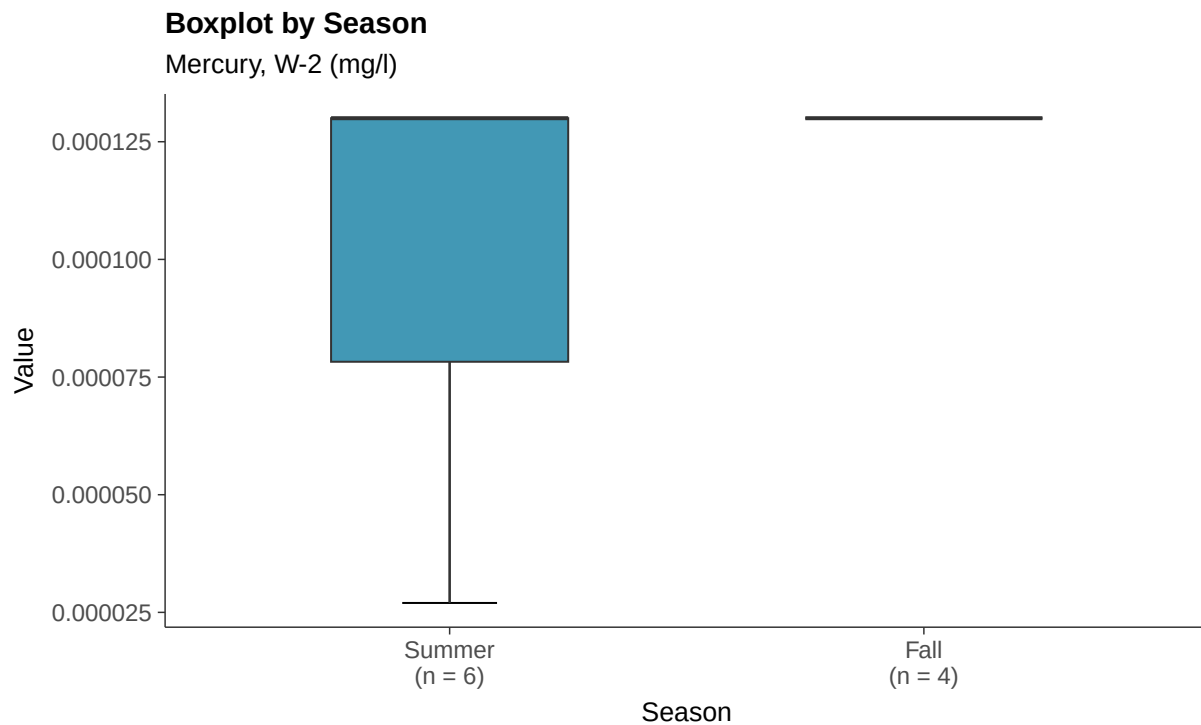
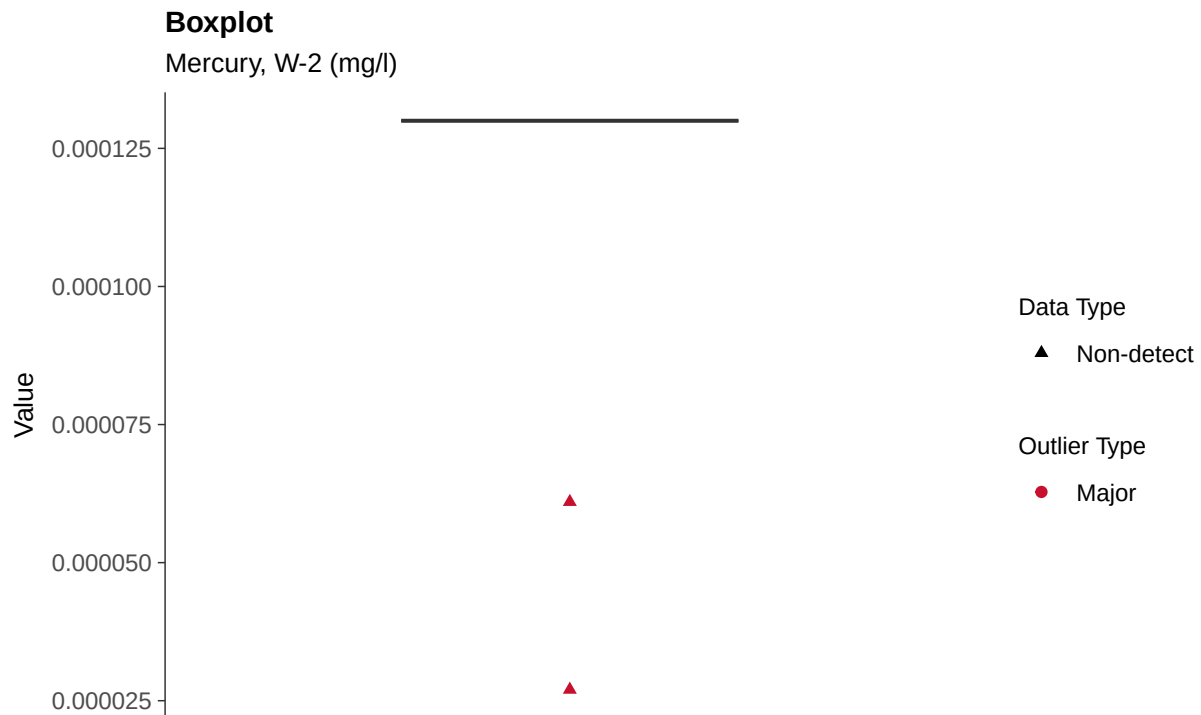


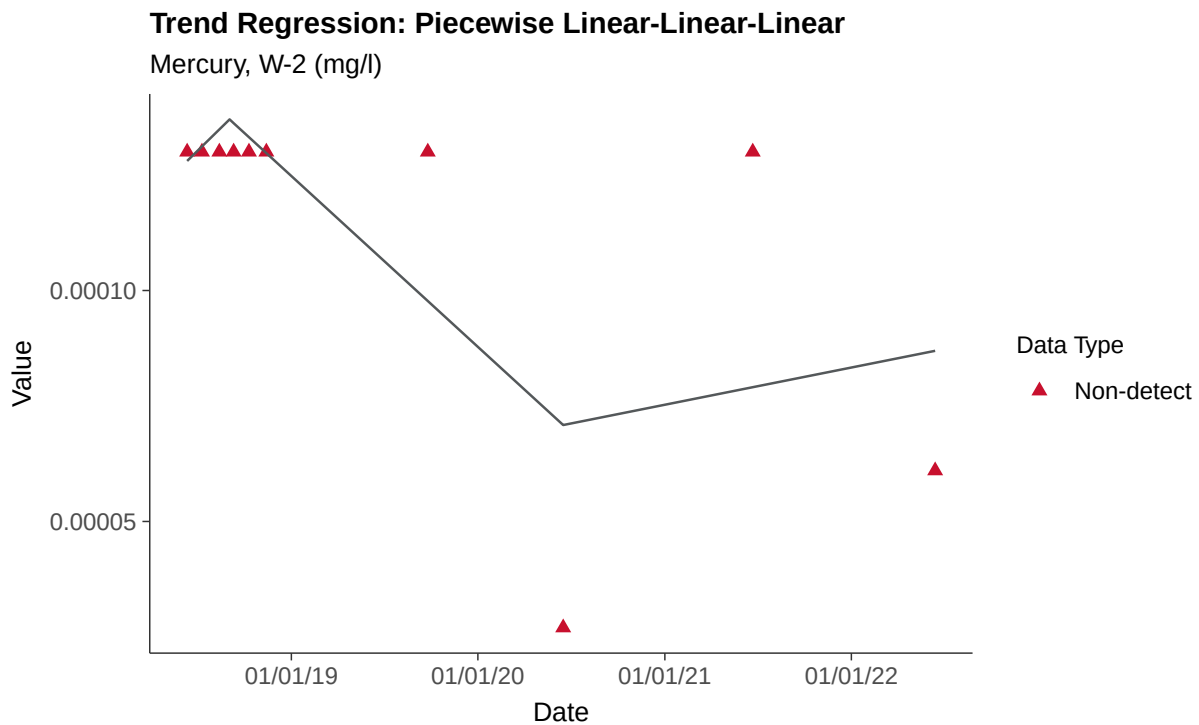
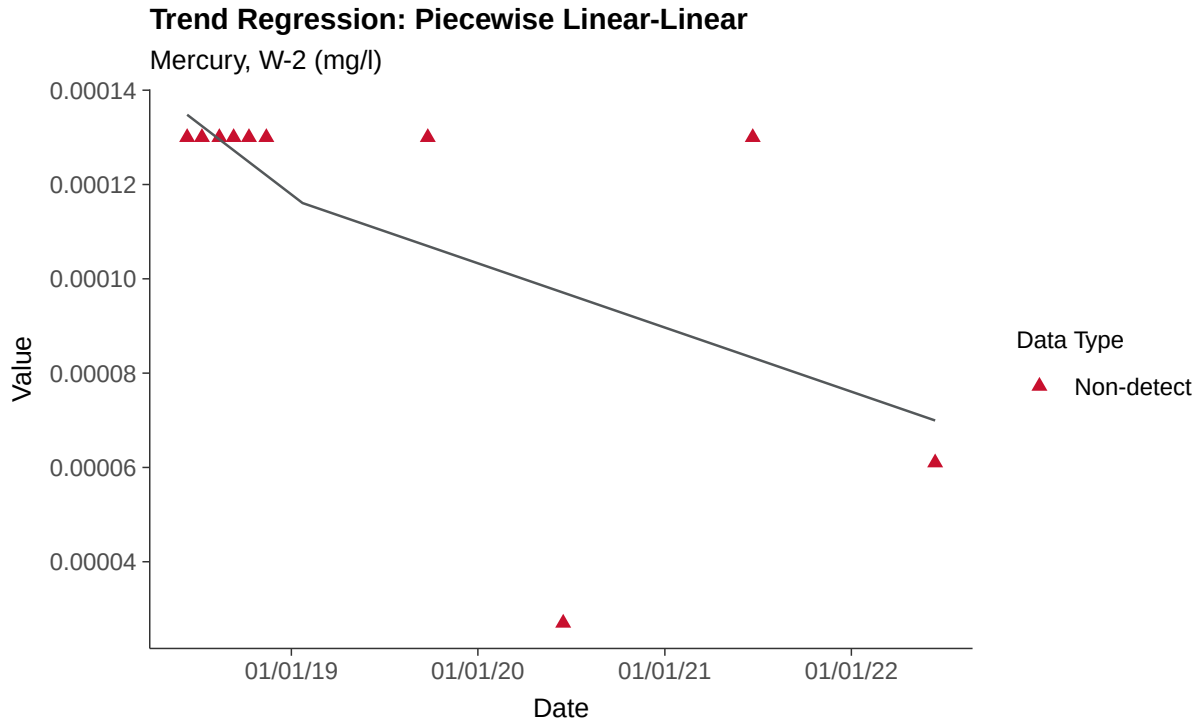


Appendix IV: Mercury, W-2

ID: 2_2_120





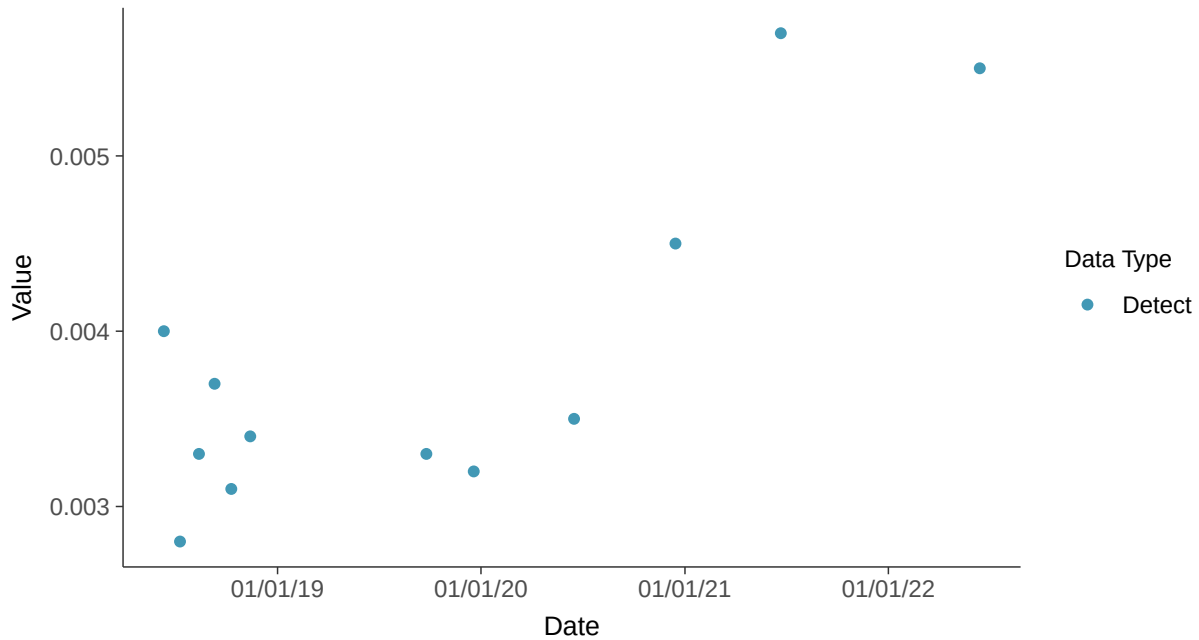


Appendix IV: Molybdenum, W-2

ID: 2_2_121

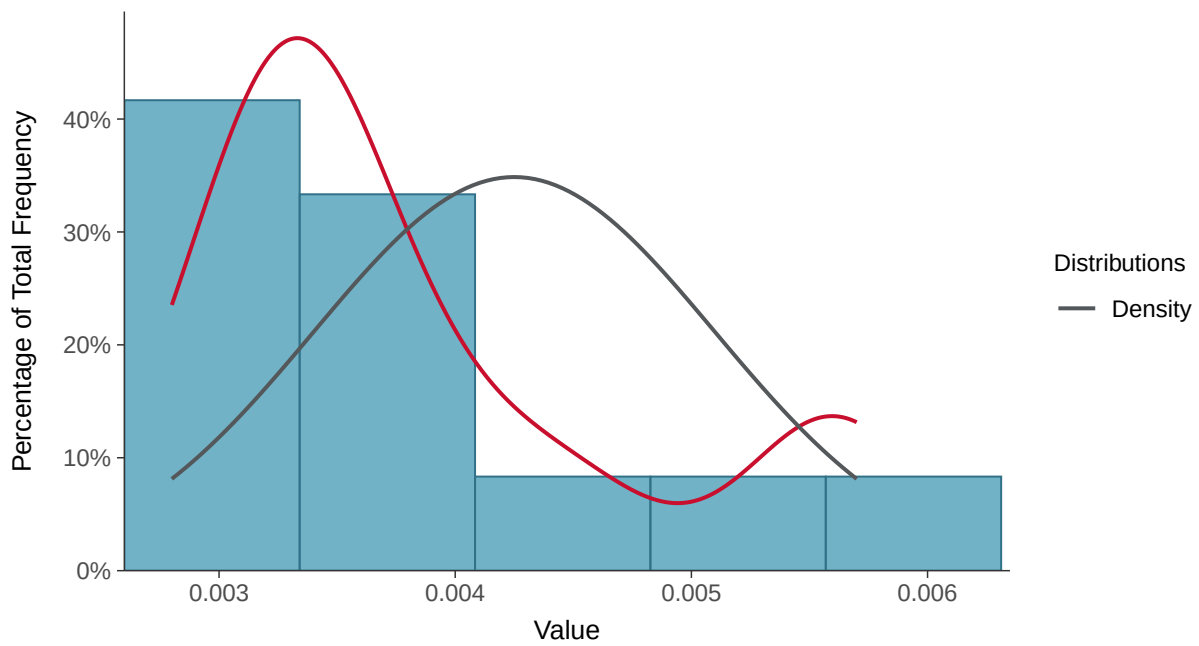
Scatter Plot

Molybdenum, W-2 (mg/l)



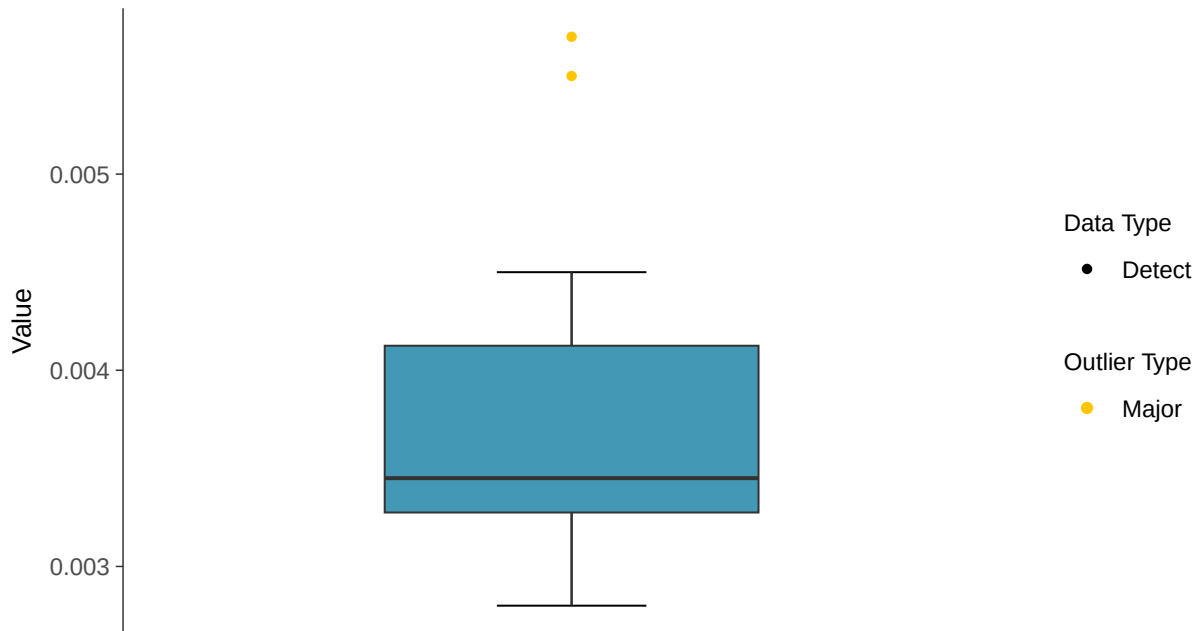
Histogram

Molybdenum, W-2 (mg/l)



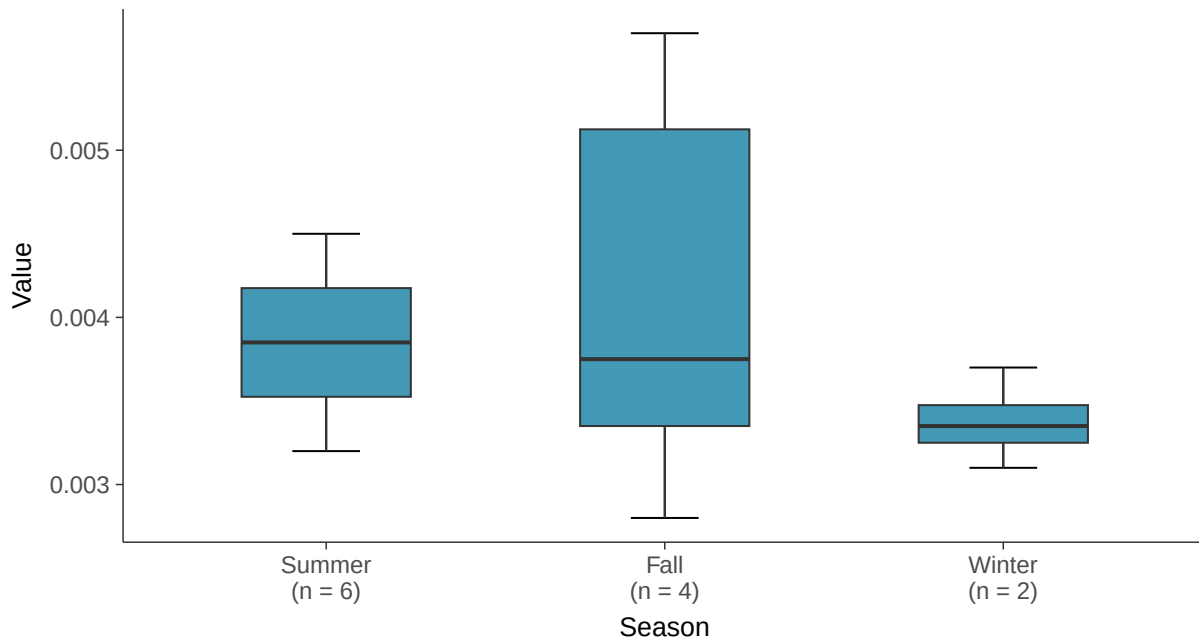
Boxplot

Molybdenum, W-2 (mg/l)



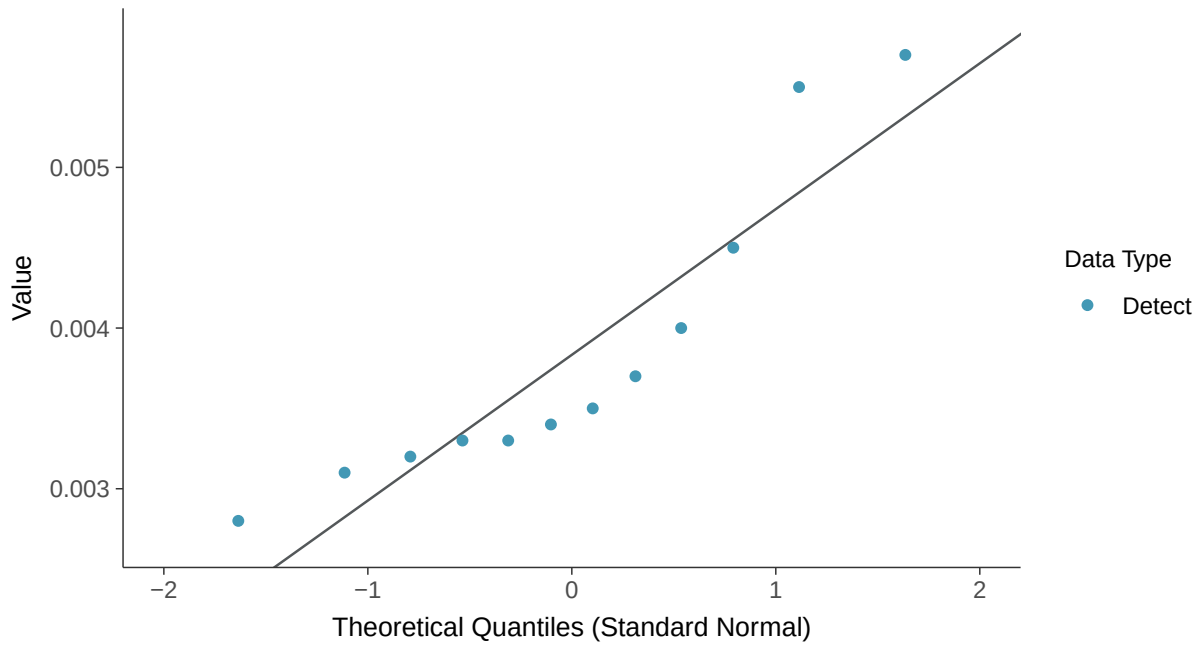
Boxplot by Season

Molybdenum, W-2 (mg/l)



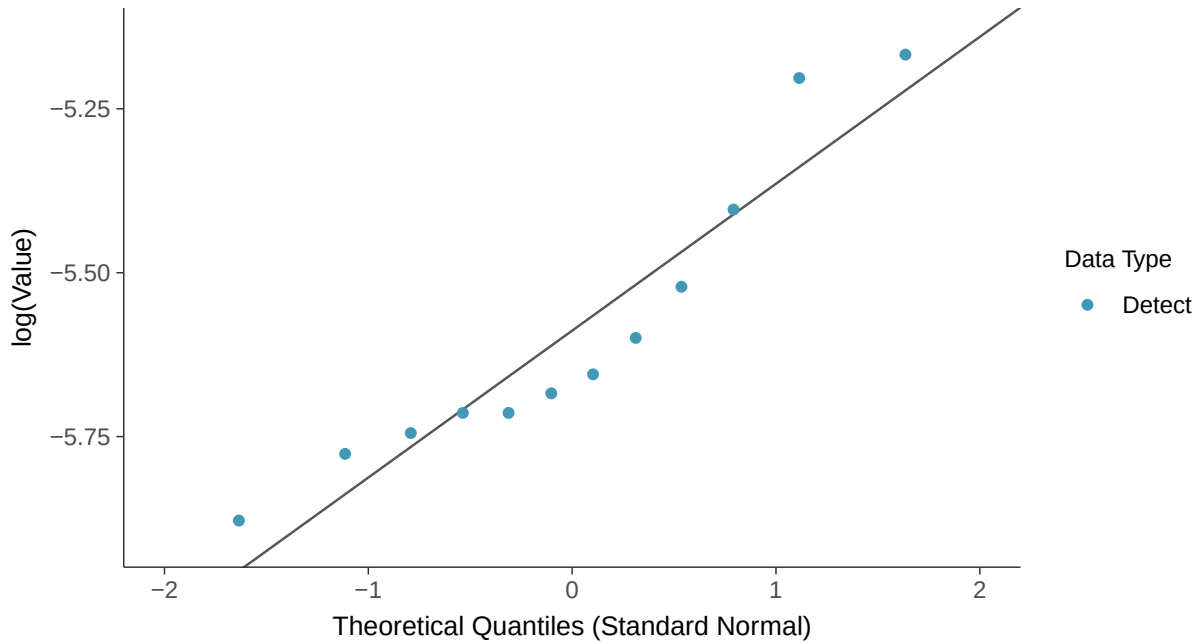
Normal Q-Q plot

Molybdenum, W-2 (mg/l)



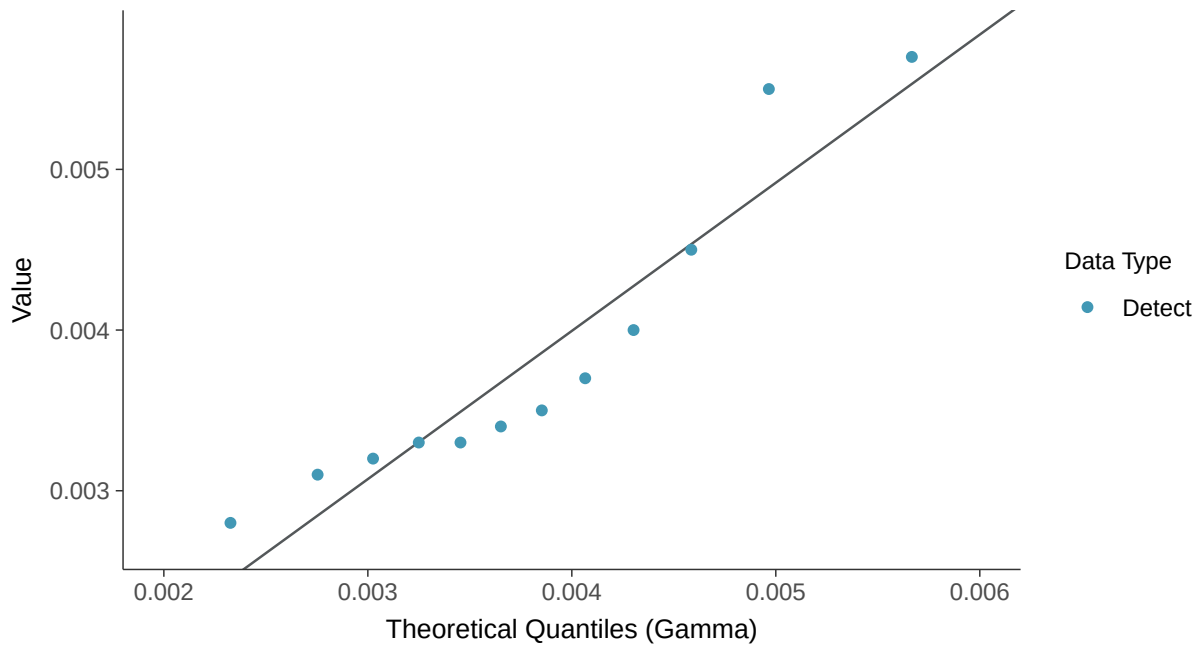
Lognormal Q-Q plot

Molybdenum, W-2 (mg/l)



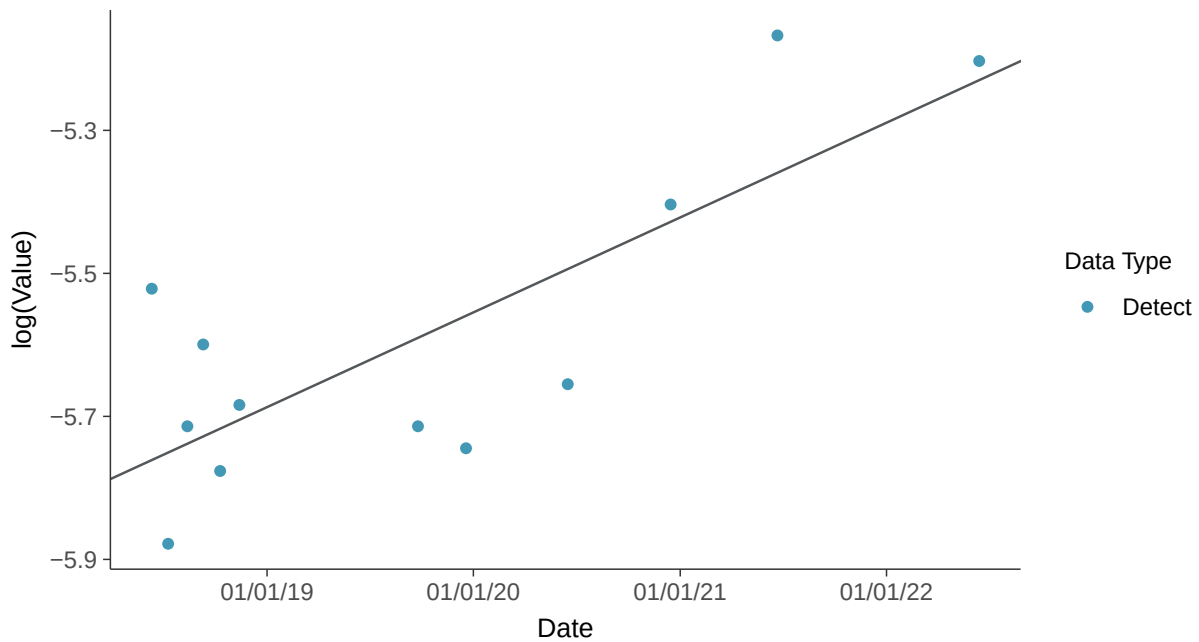
Gamma Q-Q plot

Molybdenum, W-2 (mg/l)



Trend Regression: Lognormal MLE

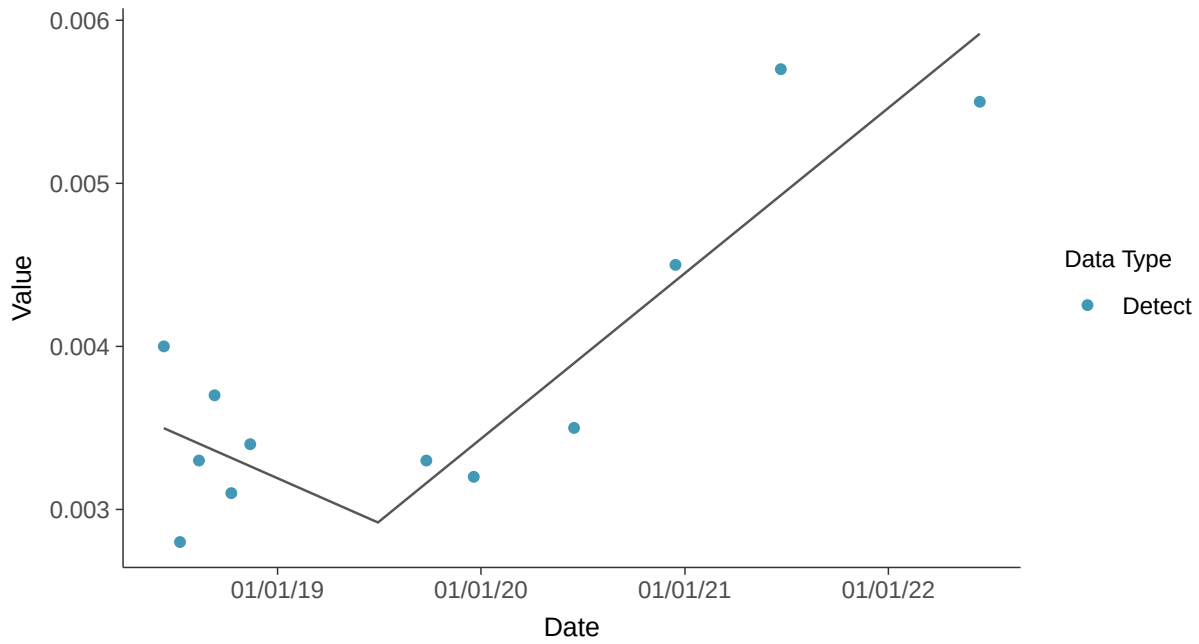
Molybdenum, W-2 (mg/l)





Trend Regression: Piecewise Linear-Linear

Molybdenum, W-2 (mg/l)

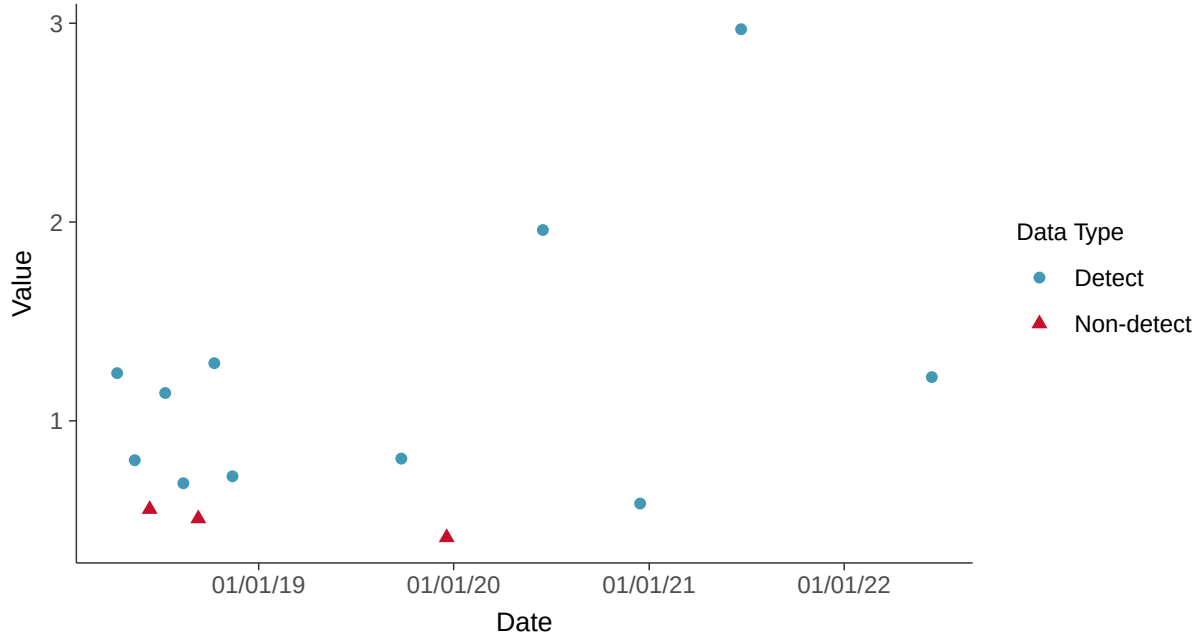


Appendix IV: Radium-226+228, W-2

ID: 2_2_127

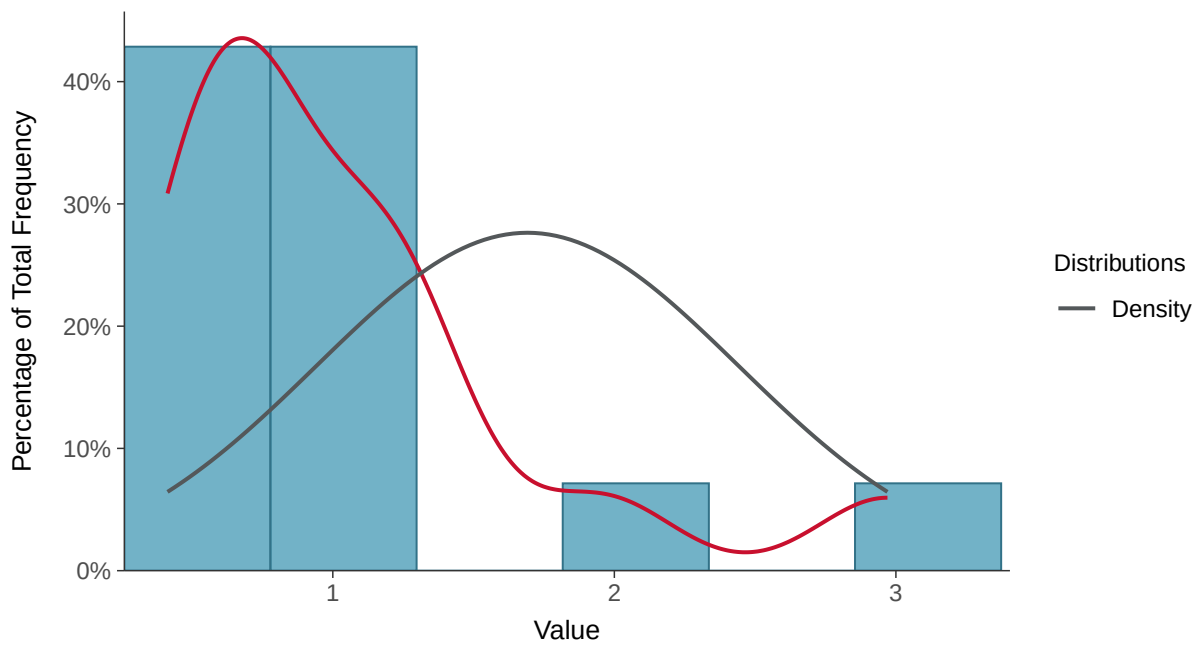
Scatter Plot

Radium-226+228, W-2 (pci/l)



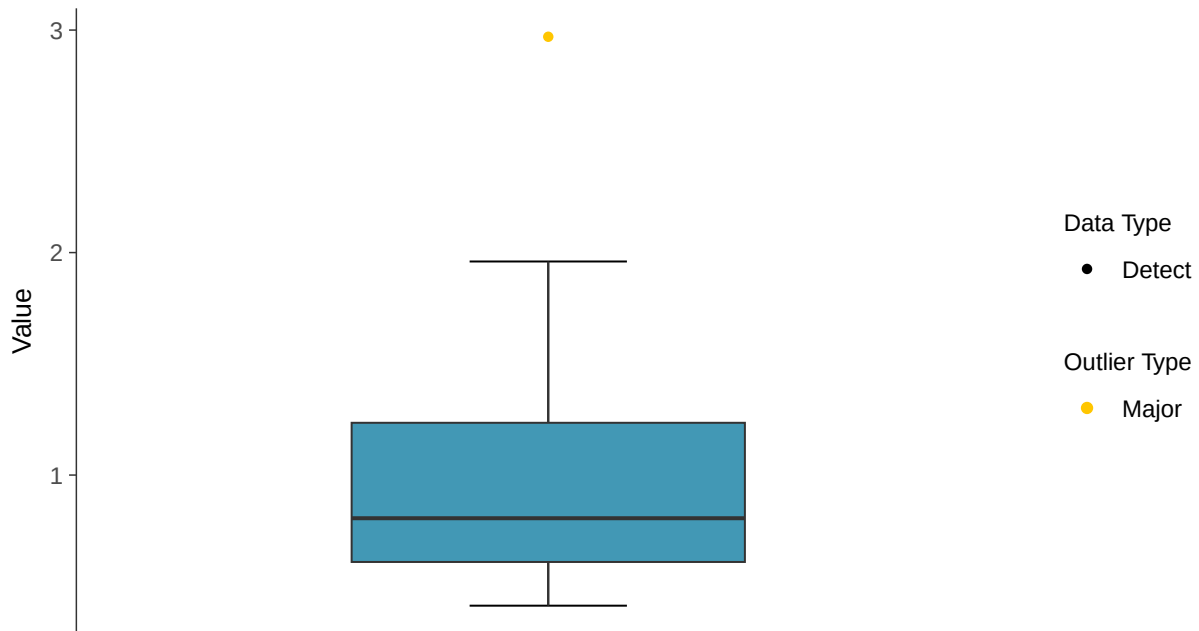
Histogram

Radium-226+228, W-2 (pci/l)



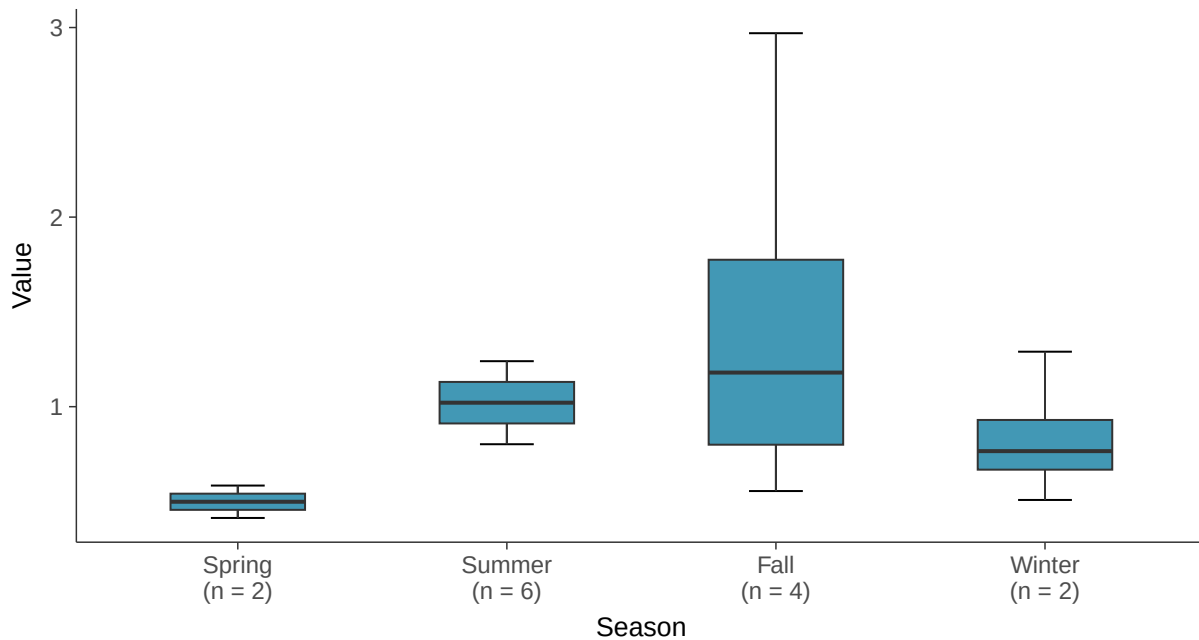
Boxplot

Radium-226+228, W-2 (pci/l)



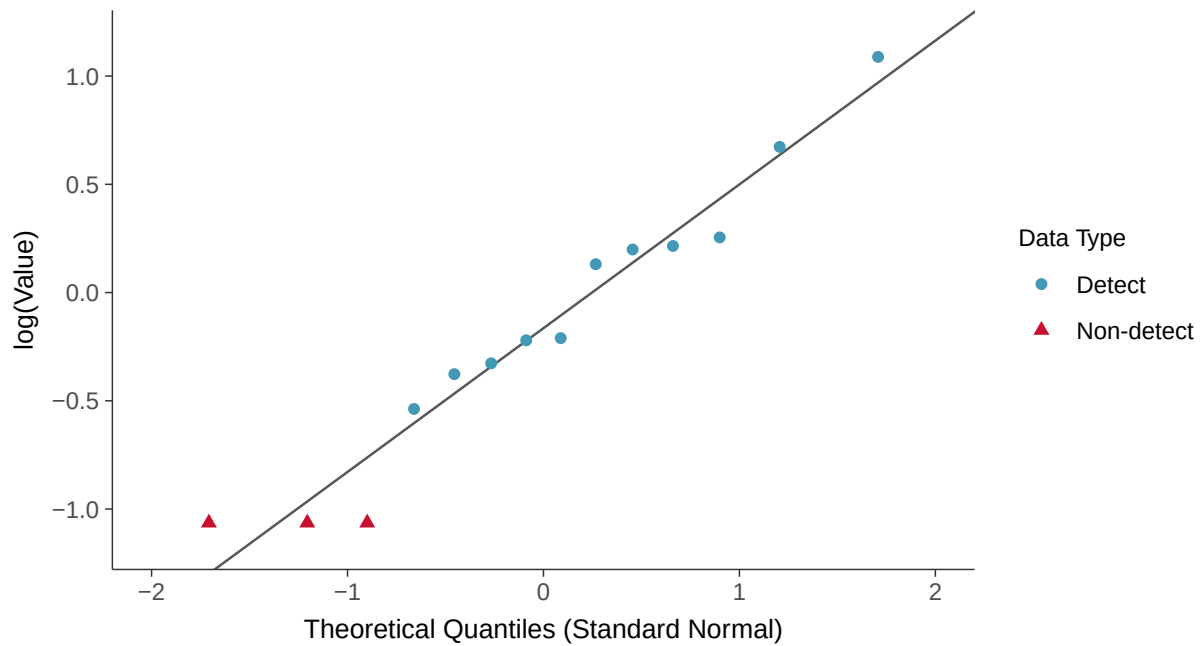
Boxplot by Season

Radium-226+228, W-2 (pci/l)



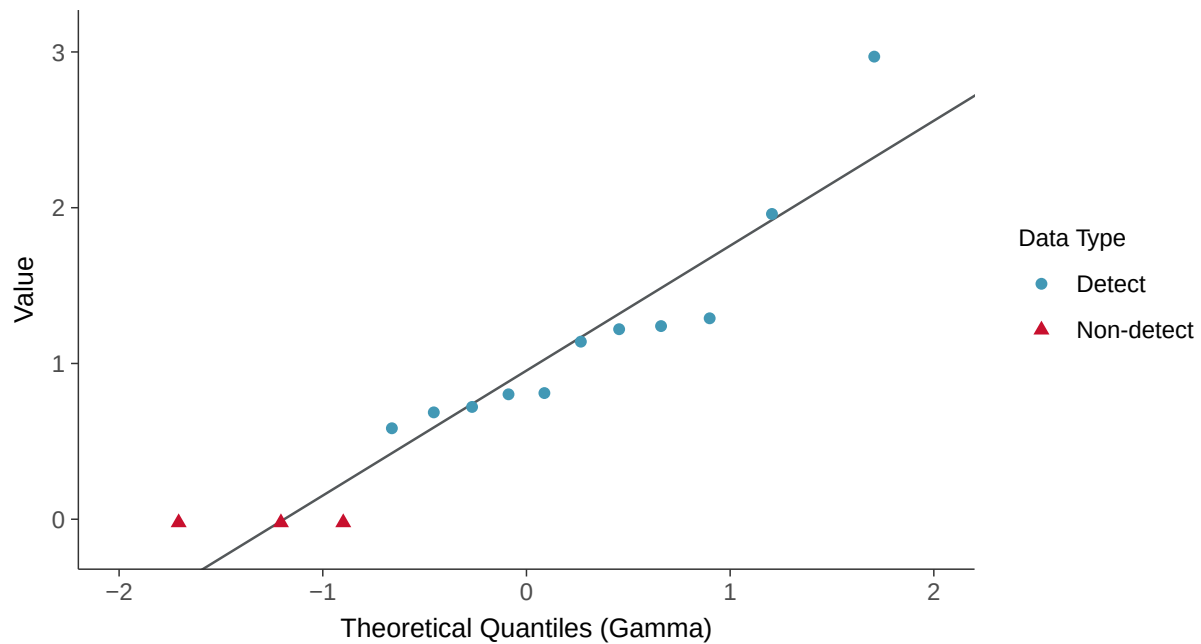
Lognormal Q-Q plot using ROS Imputed Estimates

Radium-226+228, W-2 (pci/l)



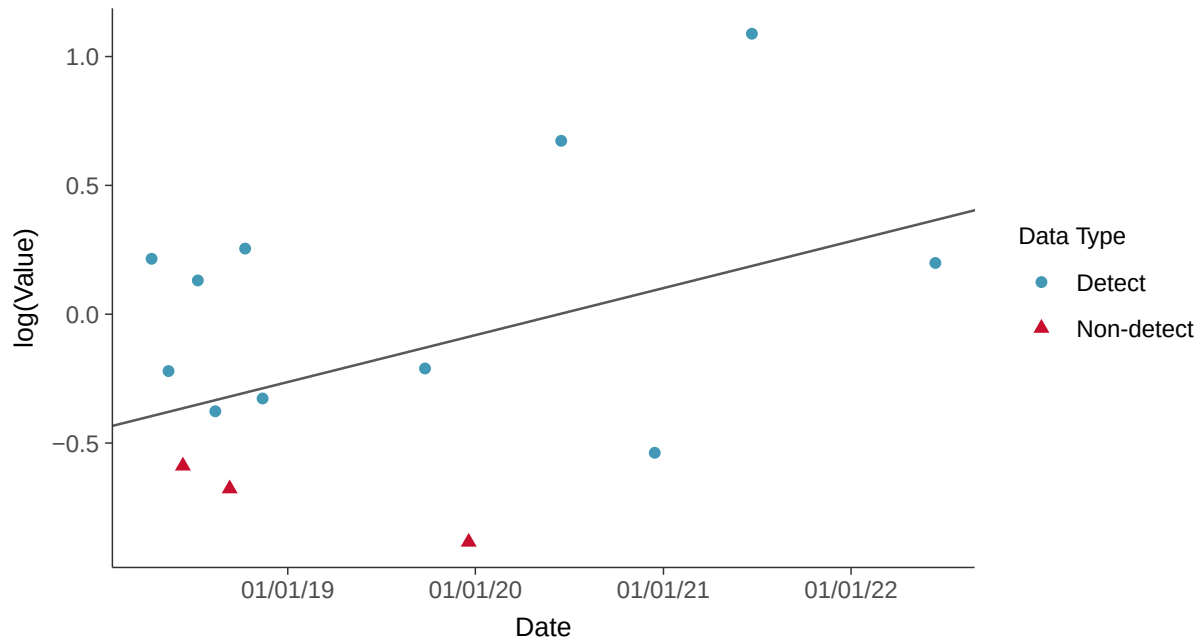
Gamma Q-Q plot using ROS Imputed Estimates

Radium-226+228, W-2 (pci/l)



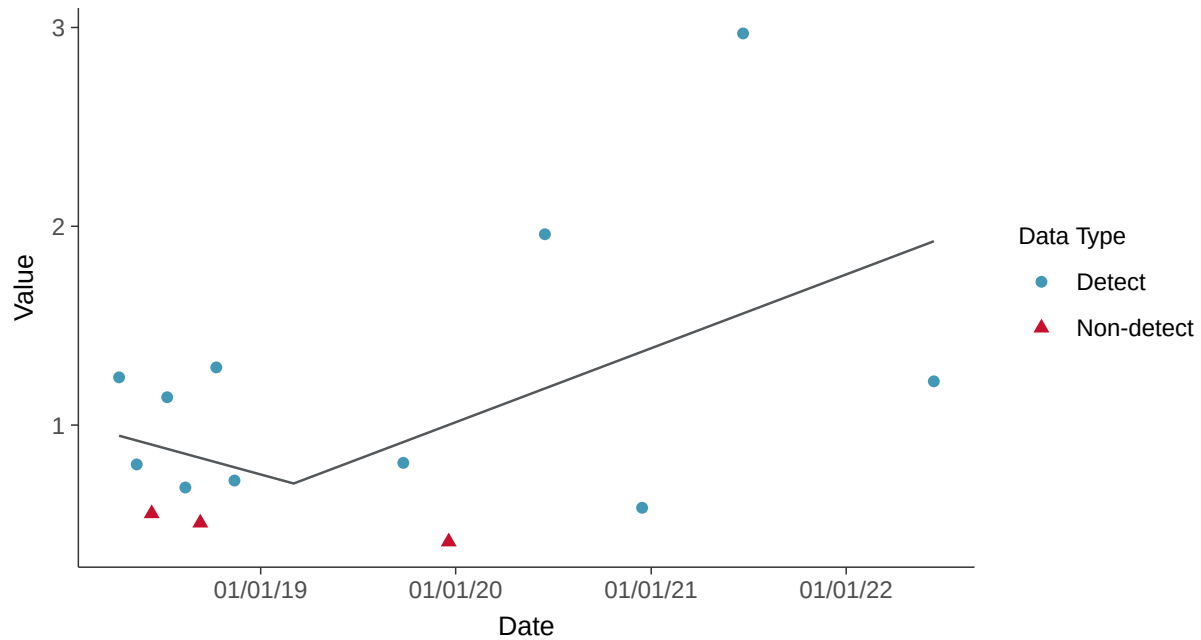
Trend Regression: Lognormal MLE

Radium-226+228, W-2 (pci/l)



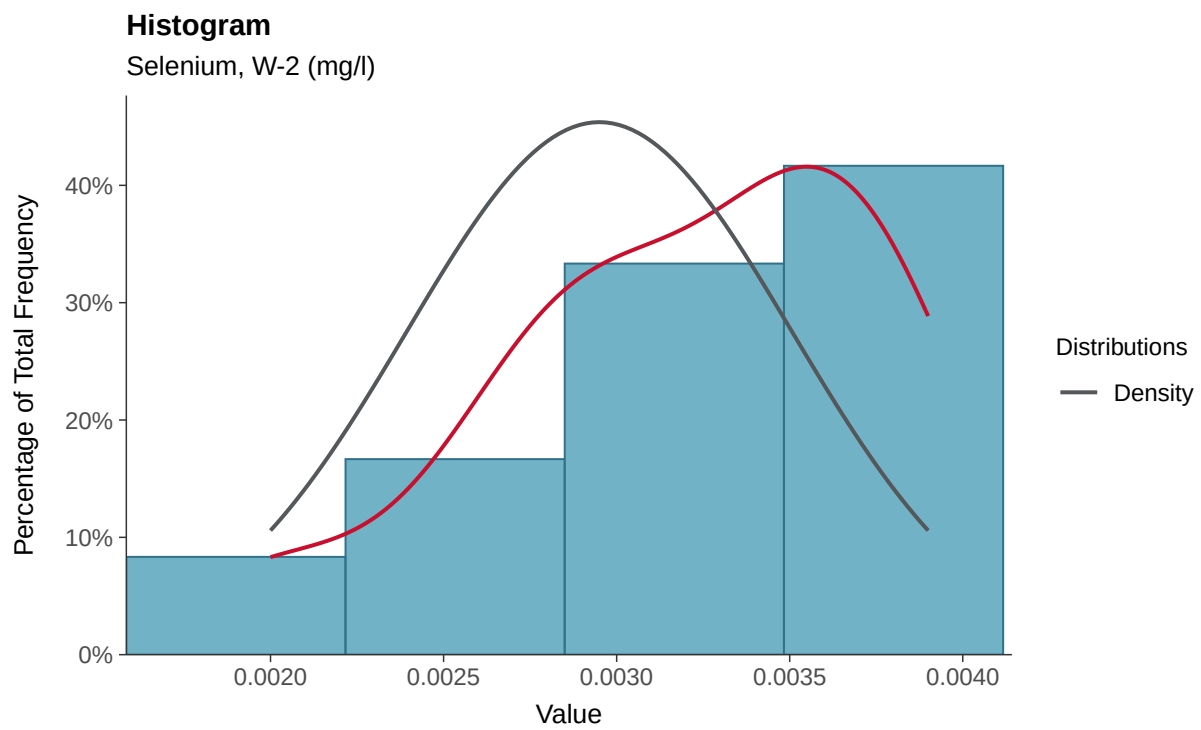
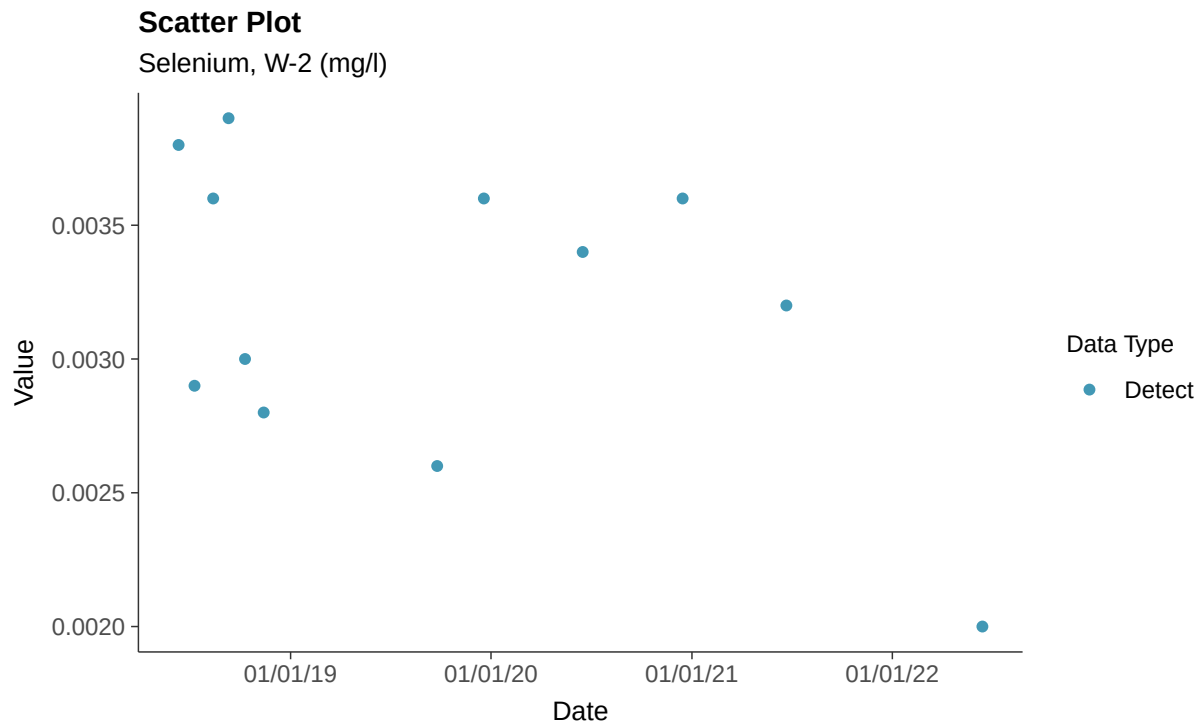
Trend Regression: Piecewise Linear-Linear

Radium-226+228, W-2 (pci/l)



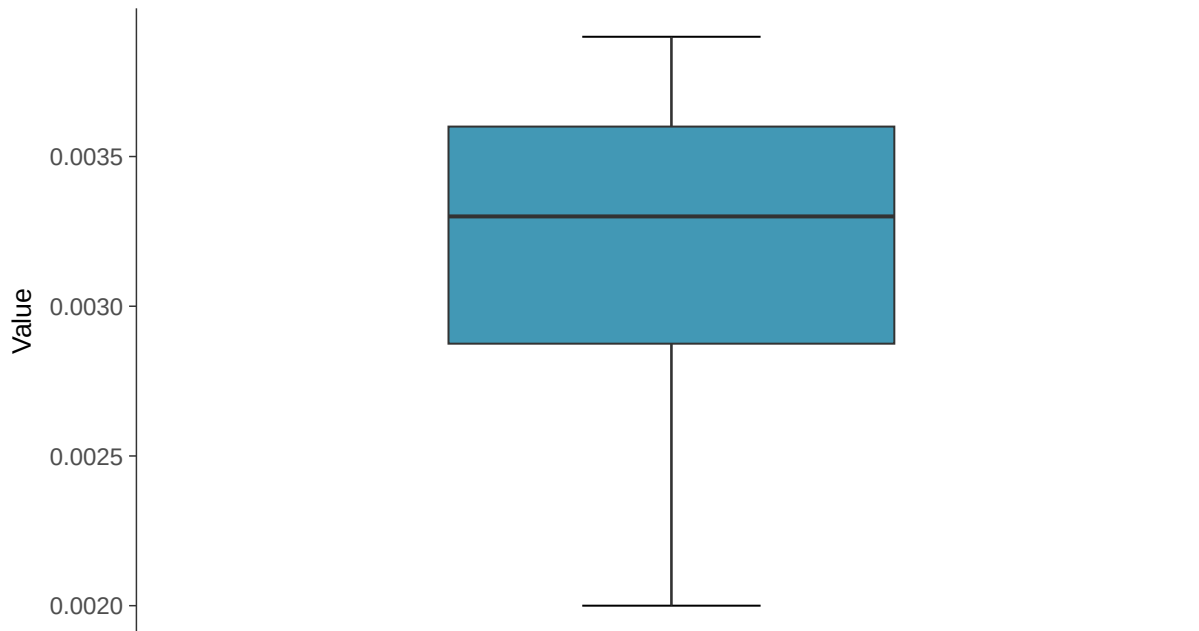
Appendix IV: Selenium, W-2

ID: 2_2_129



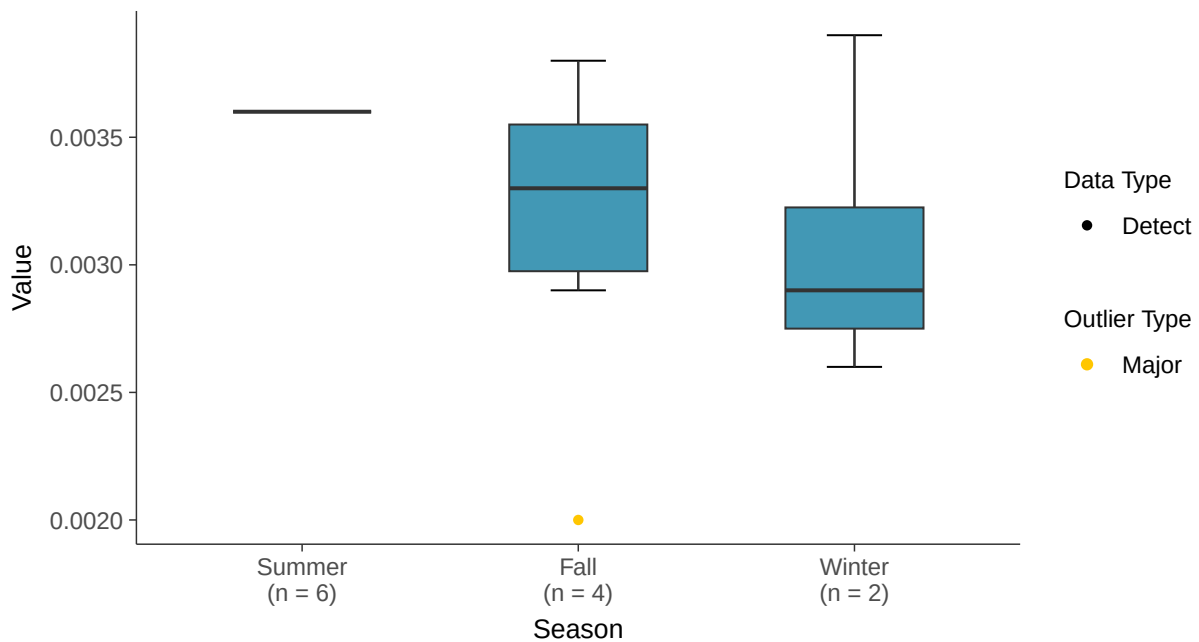
Boxplot

Selenium, W-2 (mg/l)



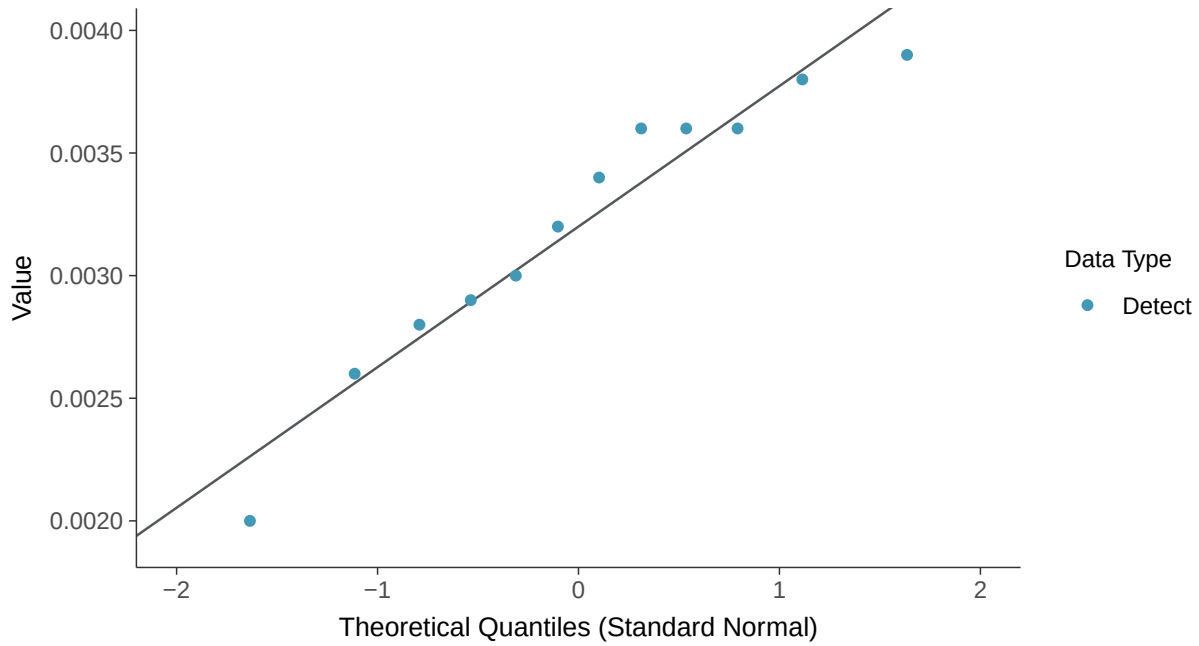
Boxplot by Season

Selenium, W-2 (mg/l)



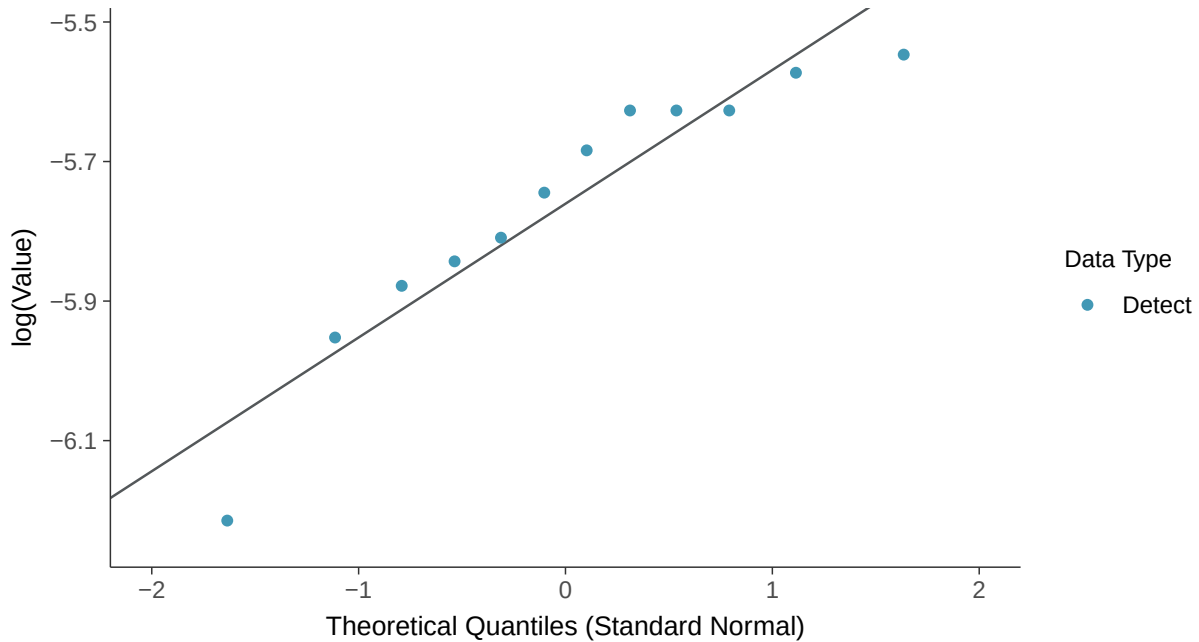
Normal Q-Q plot

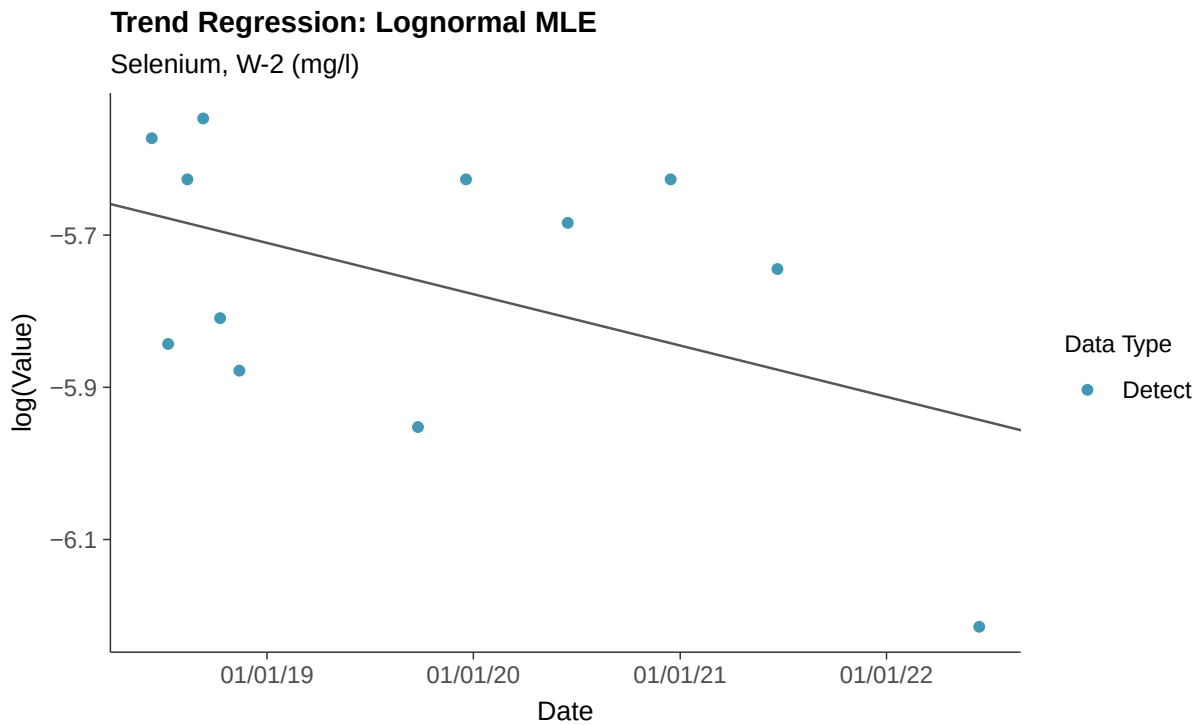
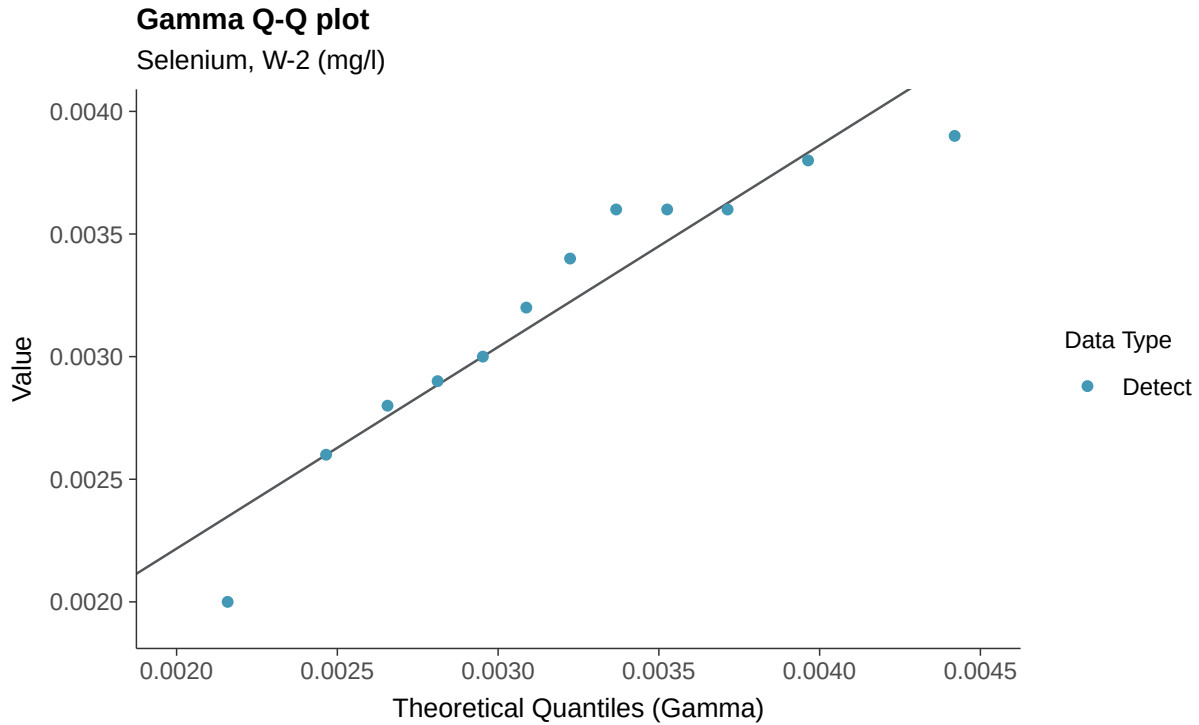
Selenium, W-2 (mg/l)



Lognormal Q-Q plot

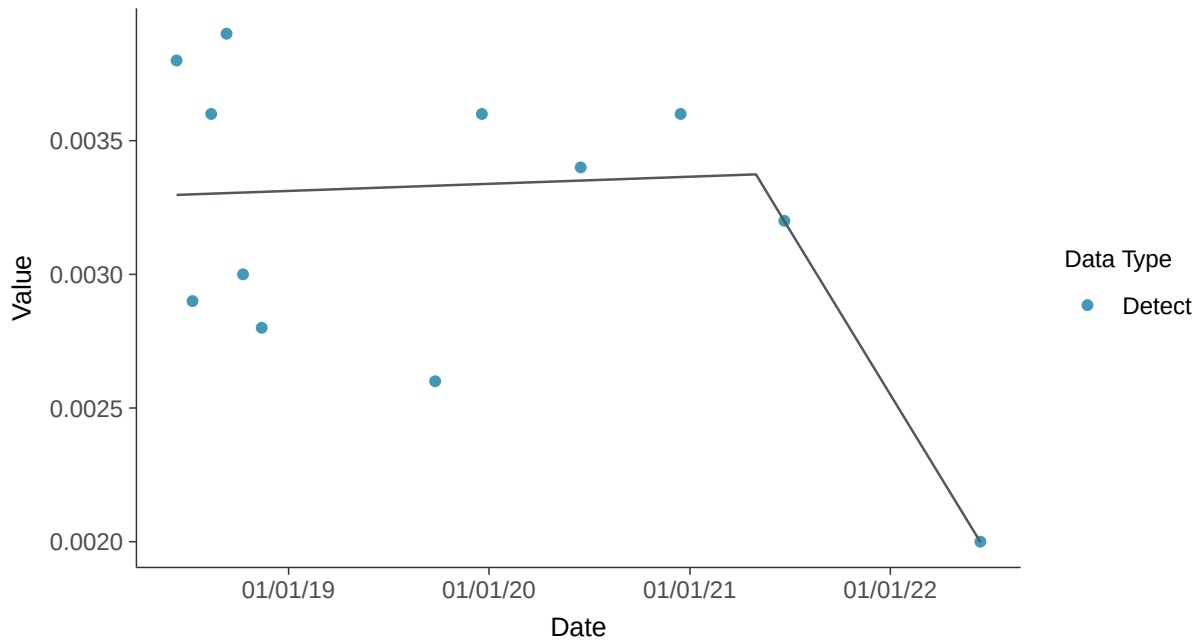
Selenium, W-2 (mg/l)





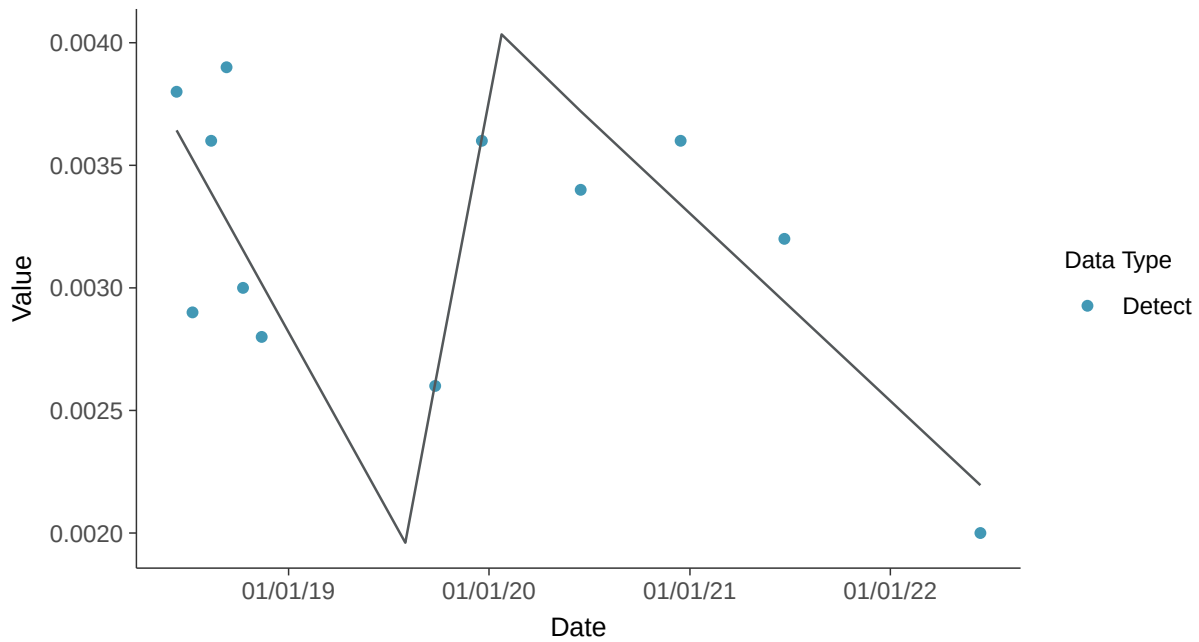
Trend Regression: Piecewise Linear-Linear

Selenium, W-2 (mg/l)



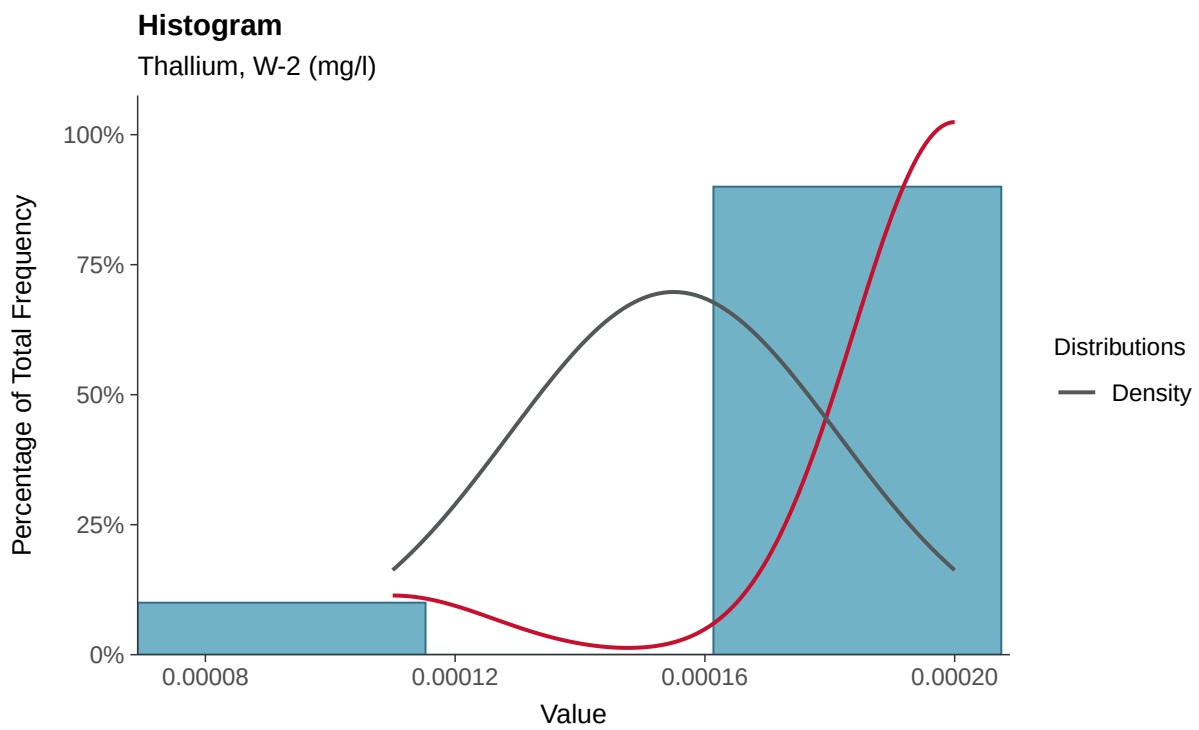
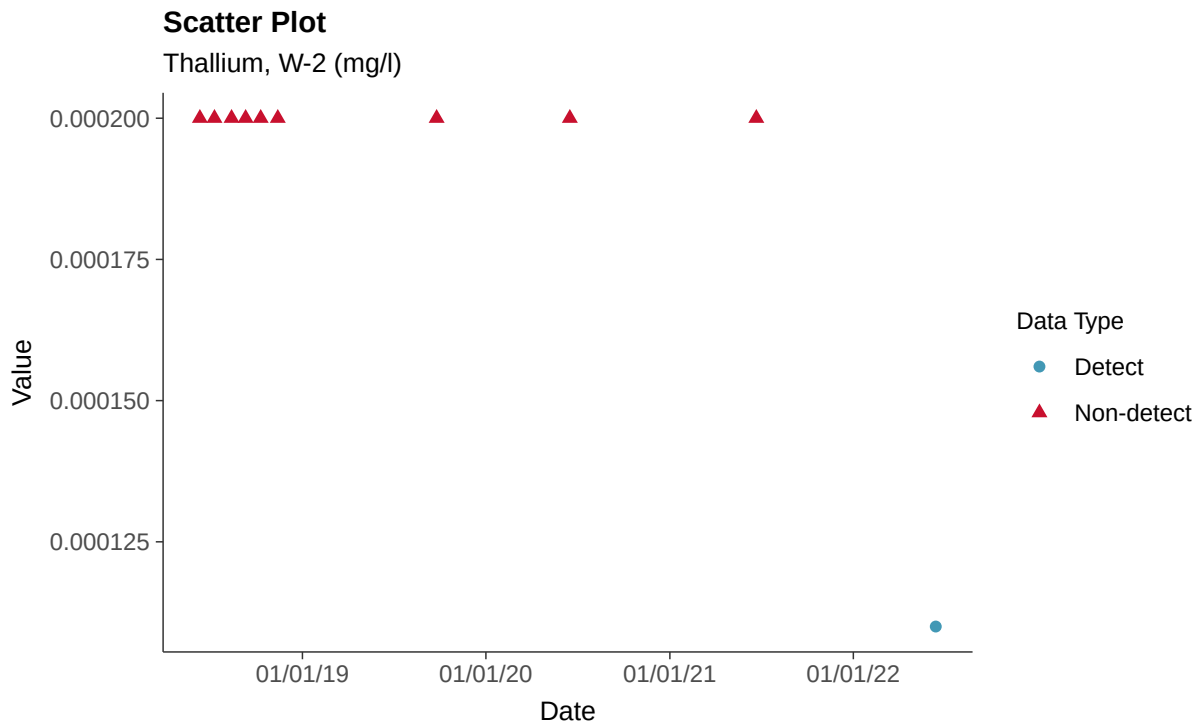
Trend Regression: Piecewise Linear-Linear-Linear

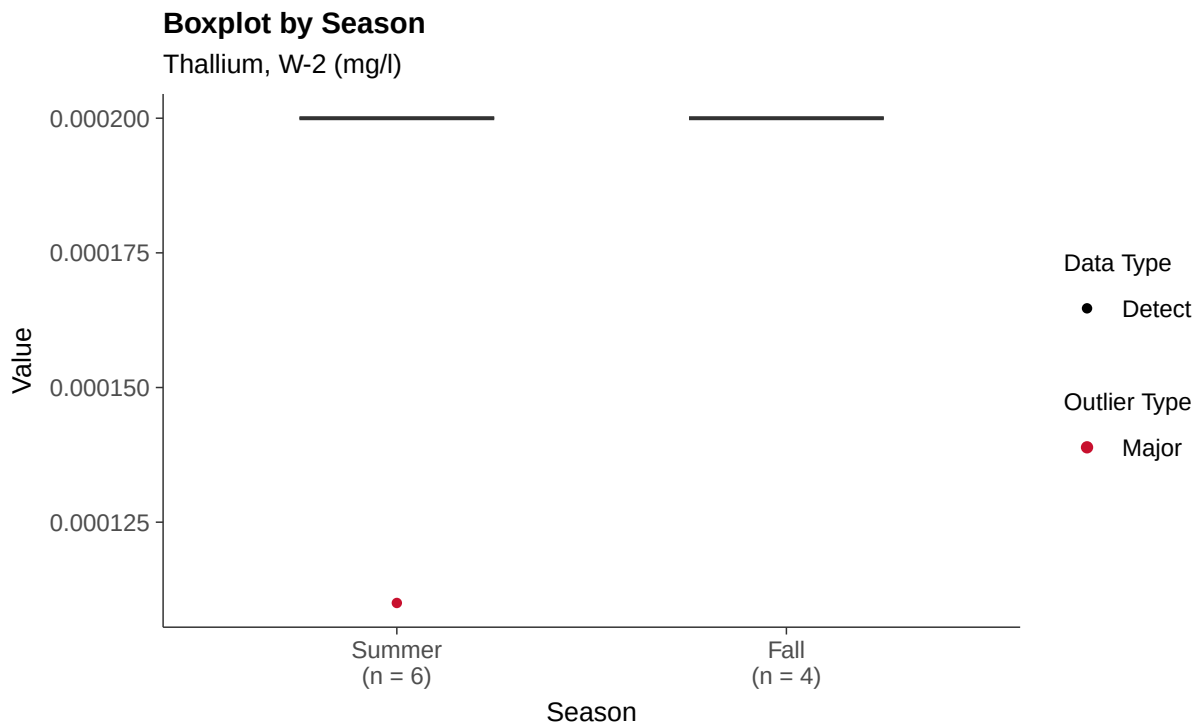
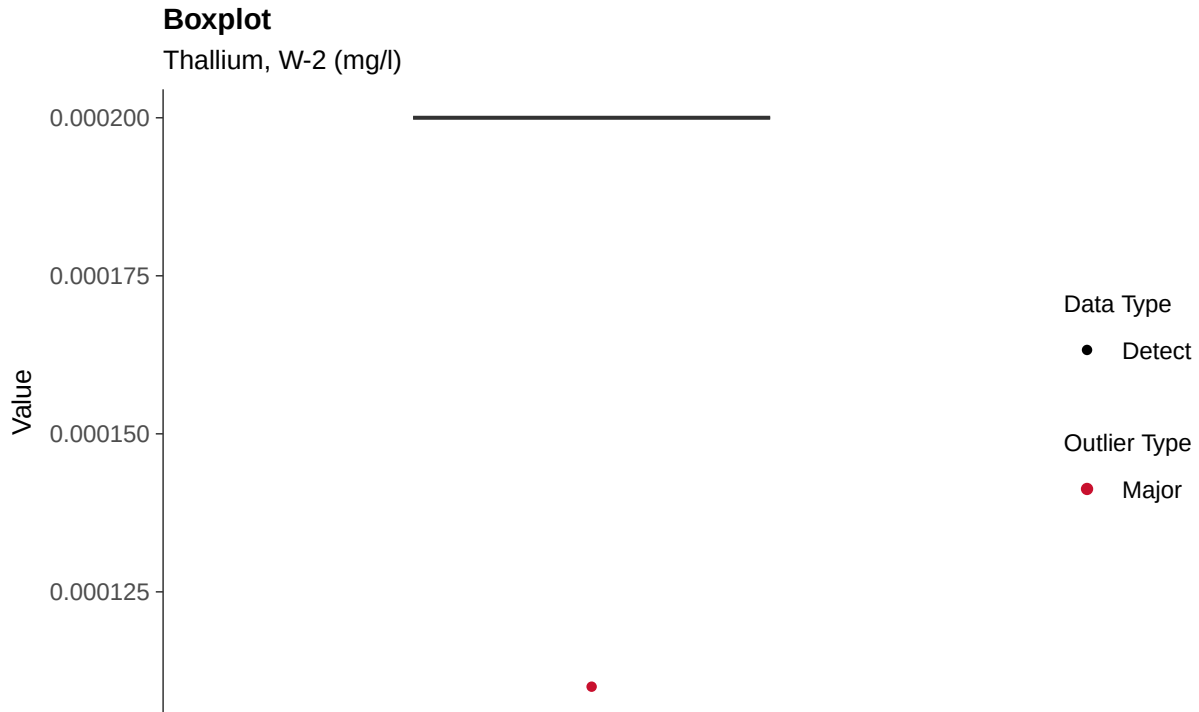
Selenium, W-2 (mg/l)



Appendix IV: Thallium, W-2

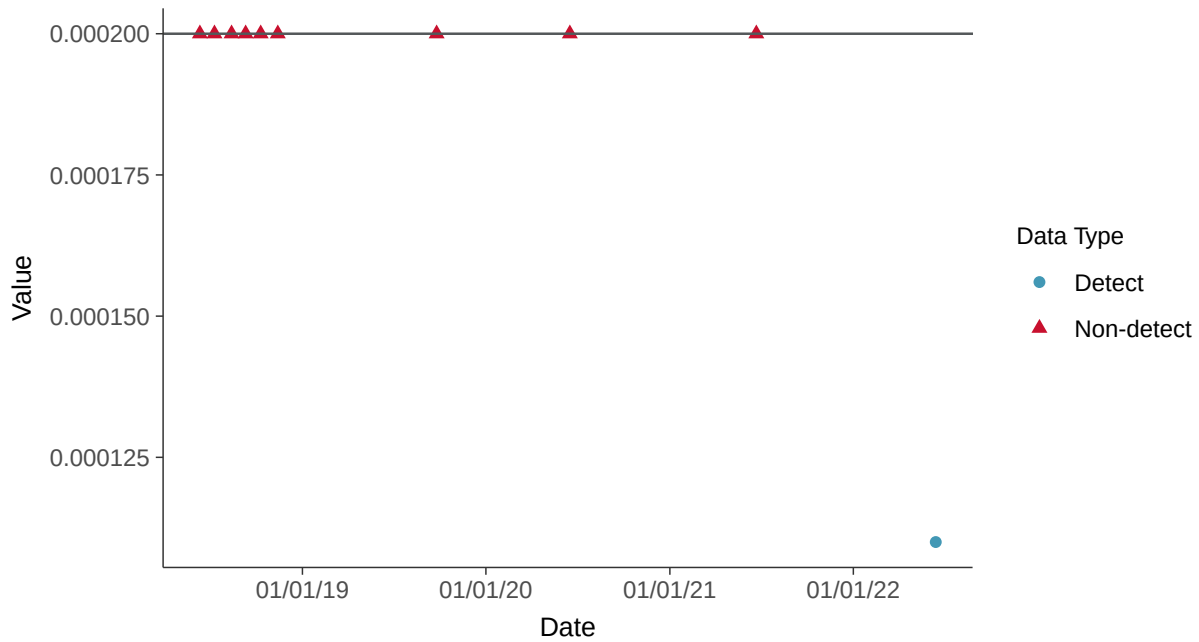
ID: 2_2_134





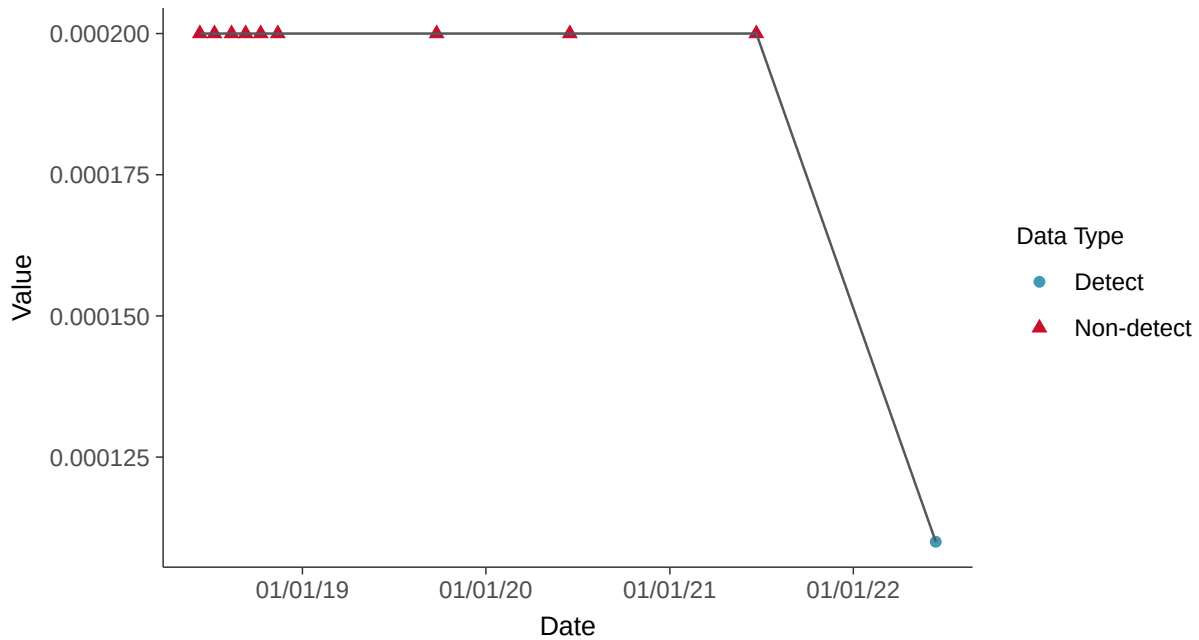
Trend Regression: Mann-Kendall/Theil-Sen Estimate

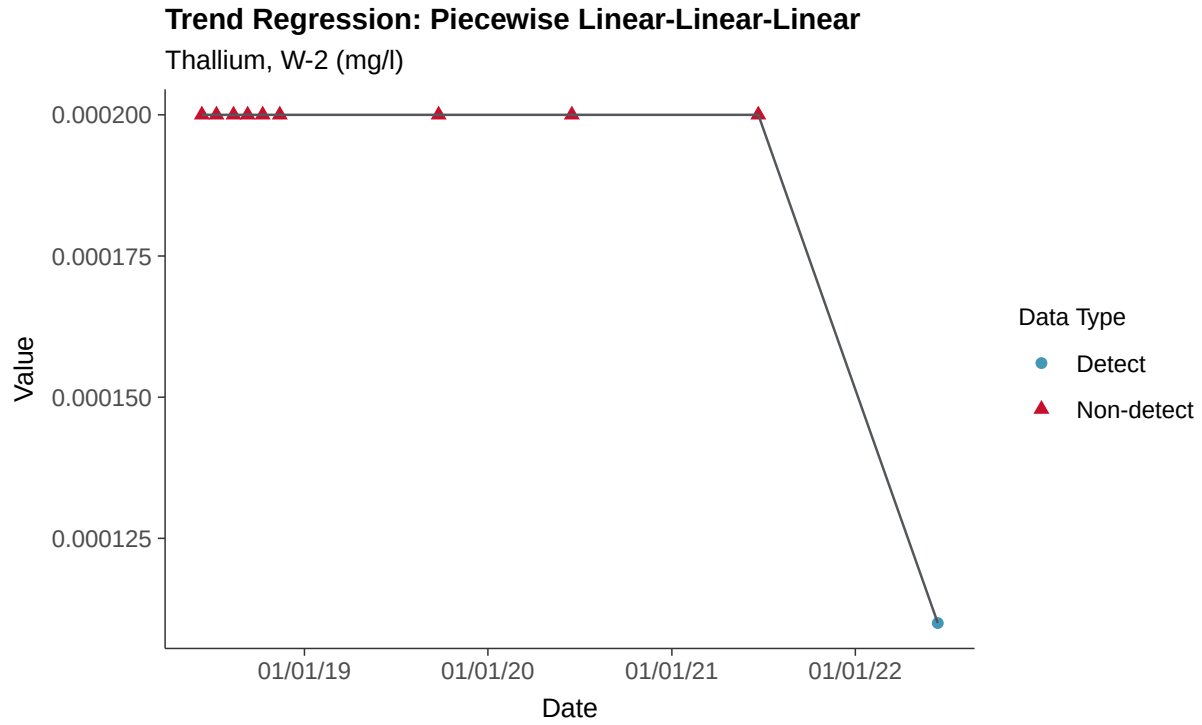
Thallium, W-2 (mg/l)



Trend Regression: Piecewise Linear-Linear

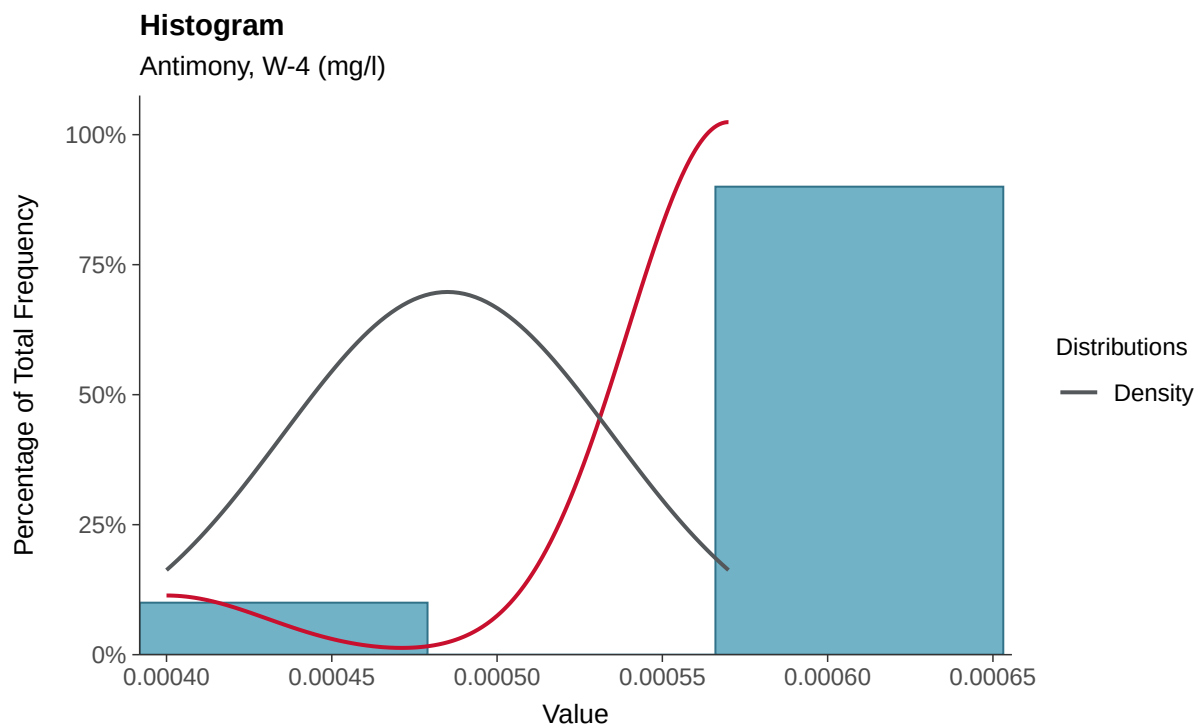
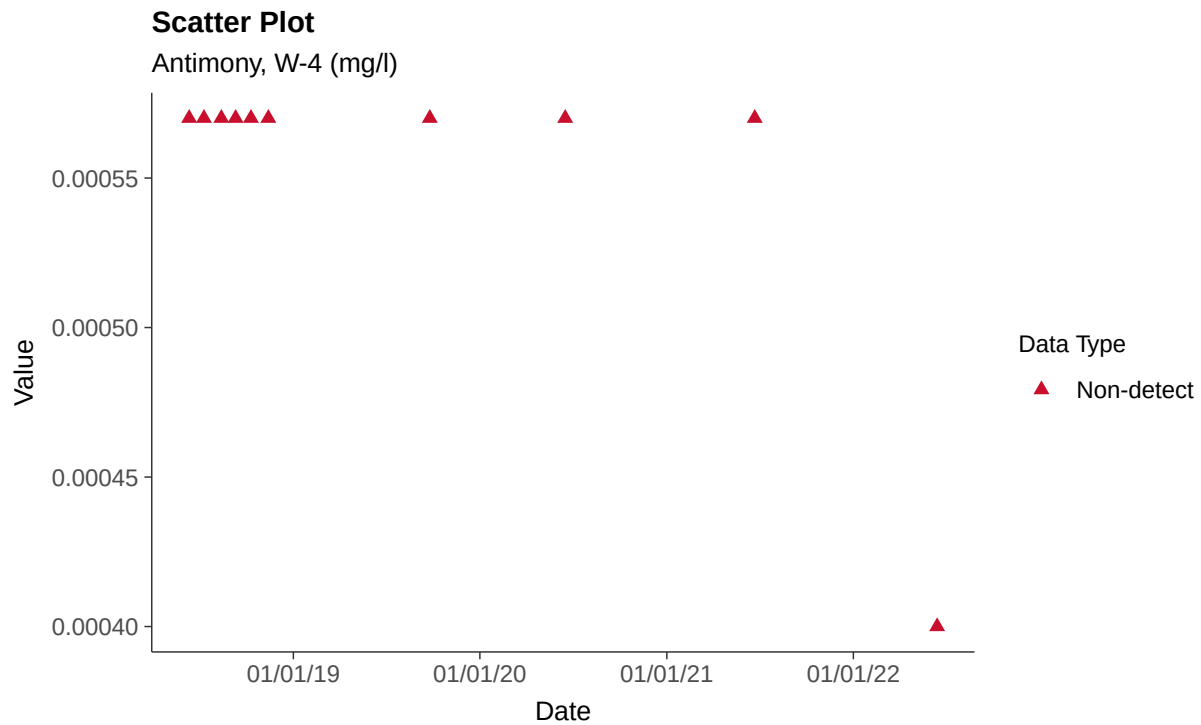
Thallium, W-2 (mg/l)

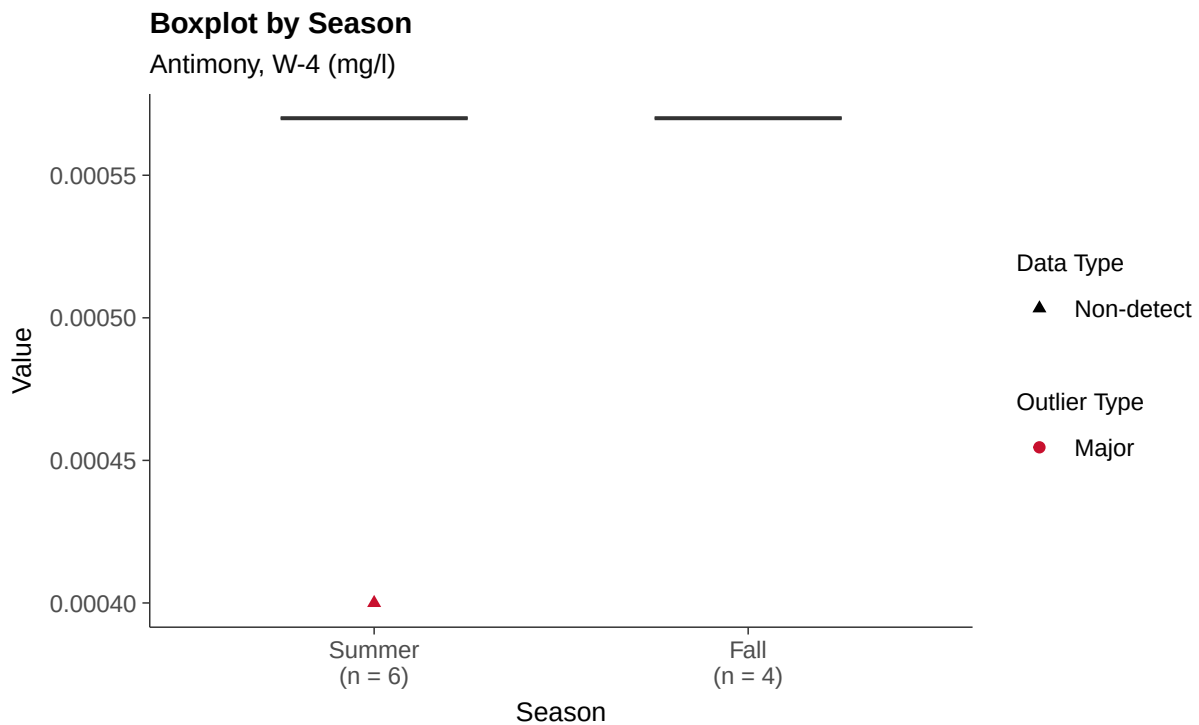
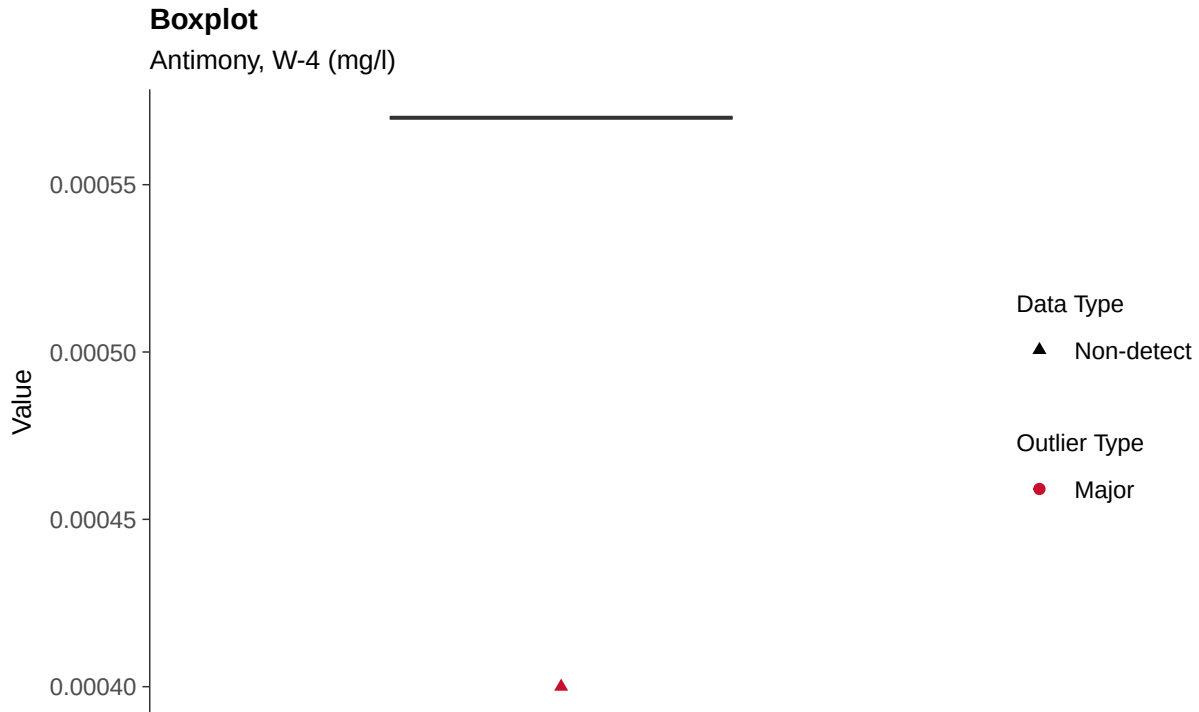




Appendix IV: Antimony, W-4

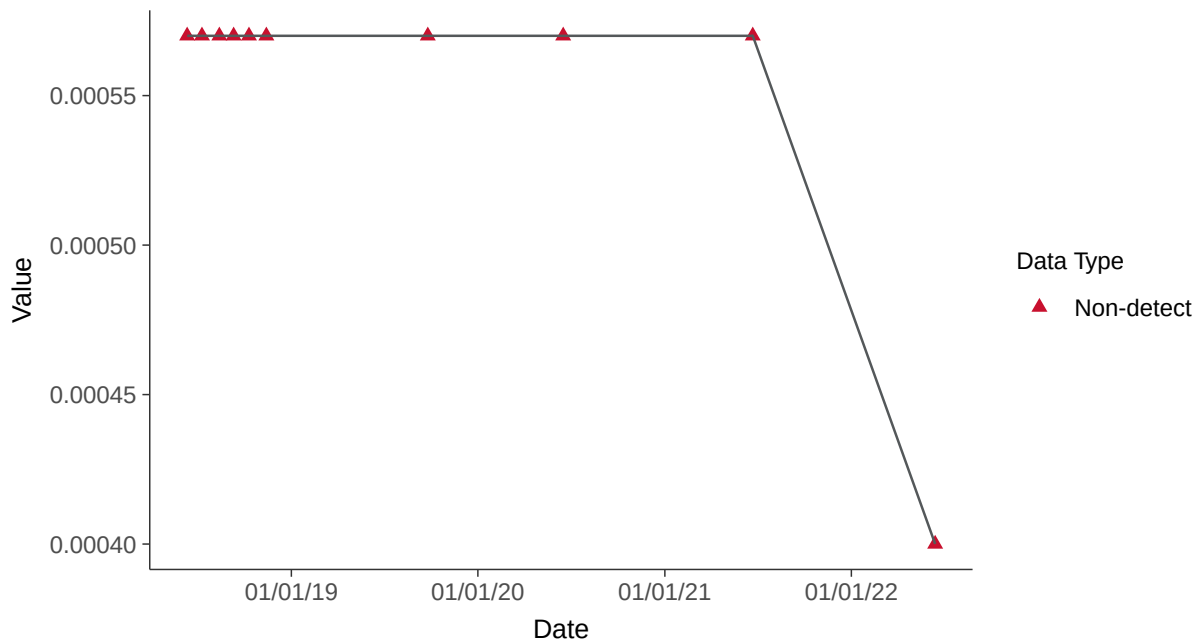
ID: 3_2_104





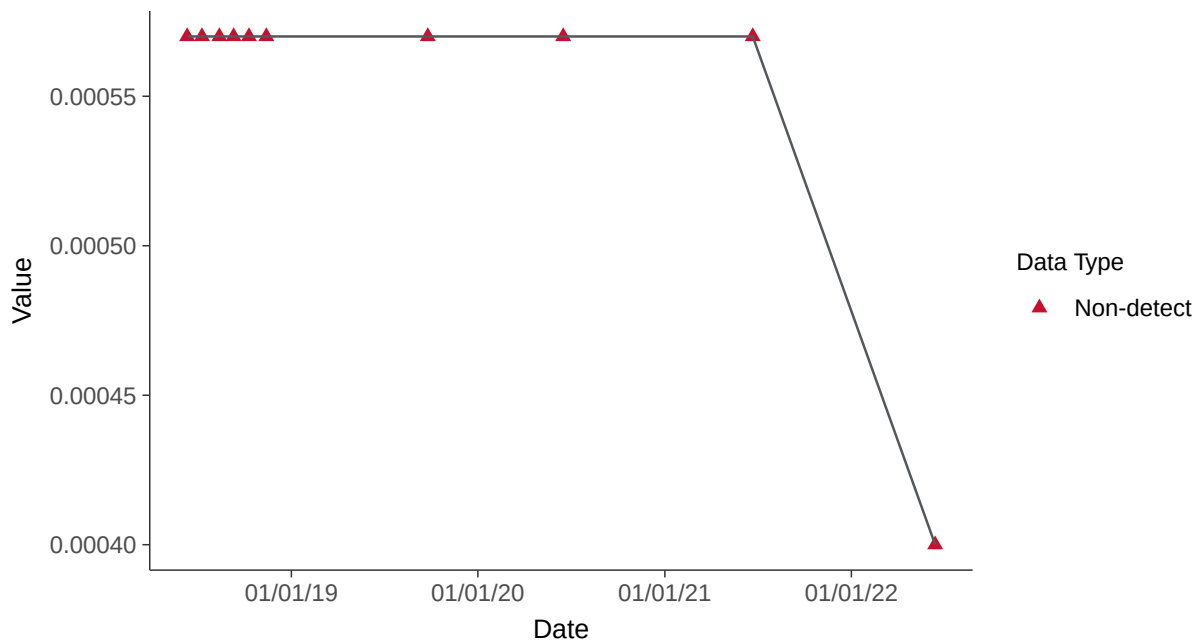
Trend Regression: Piecewise Linear-Linear

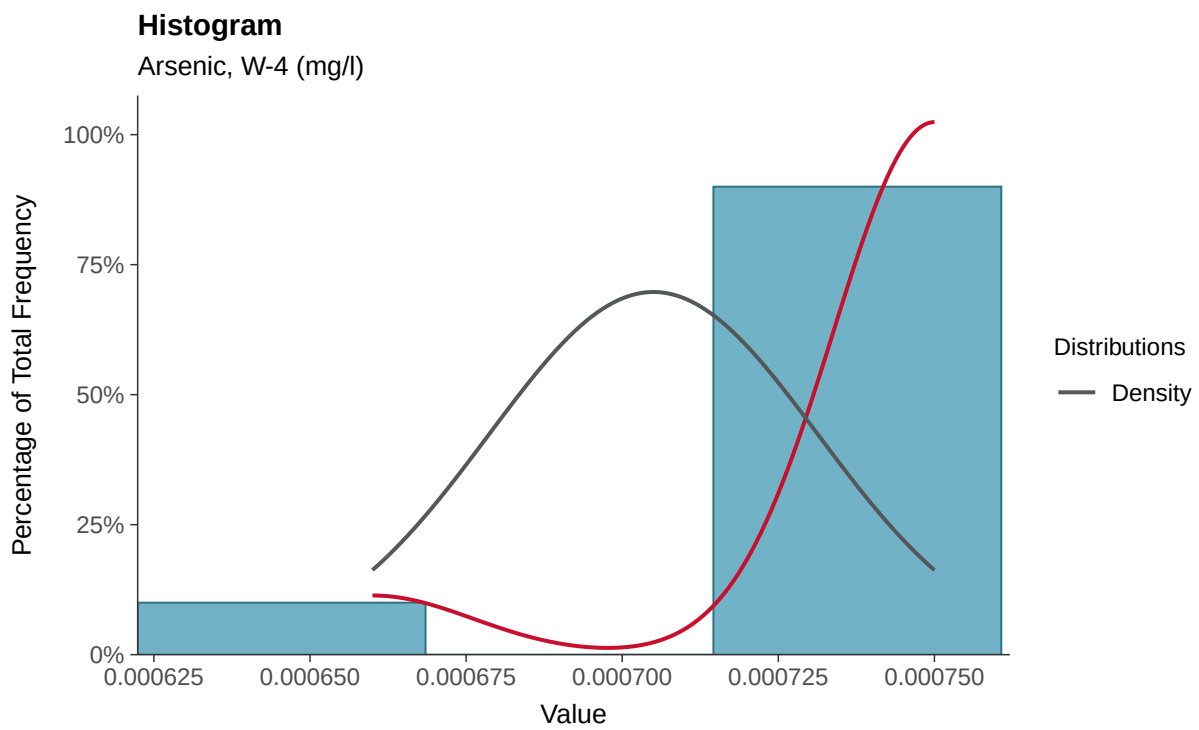
Antimony, W-4 (mg/l)

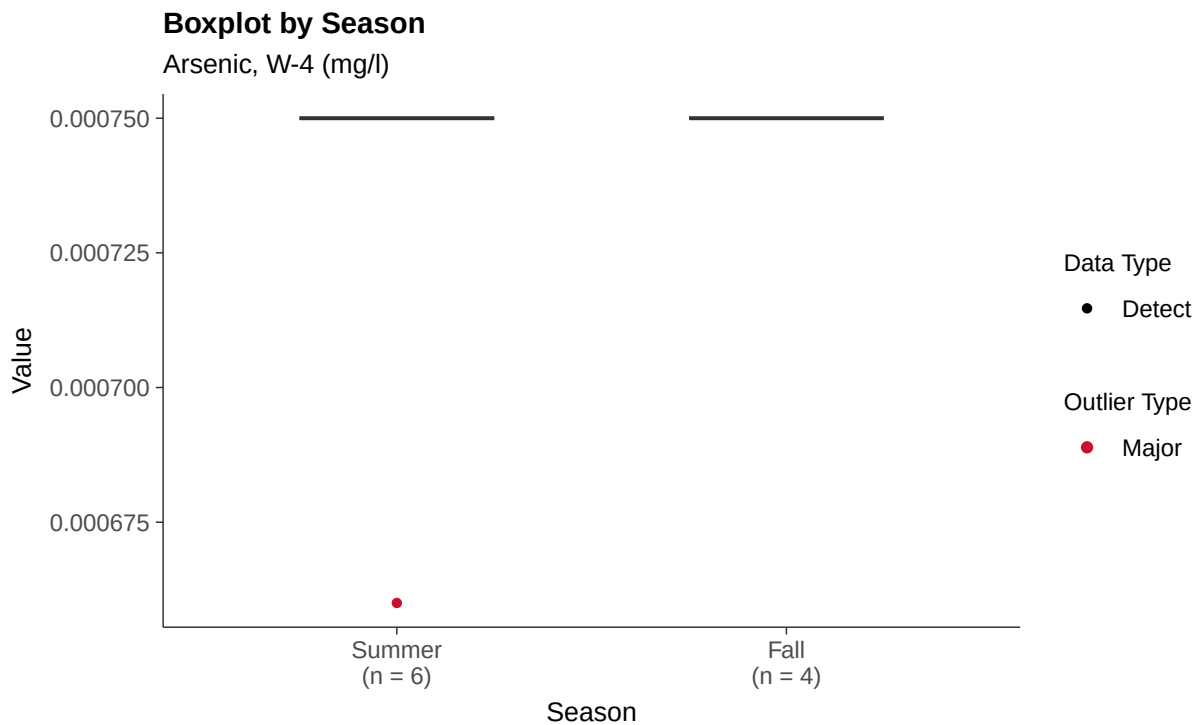
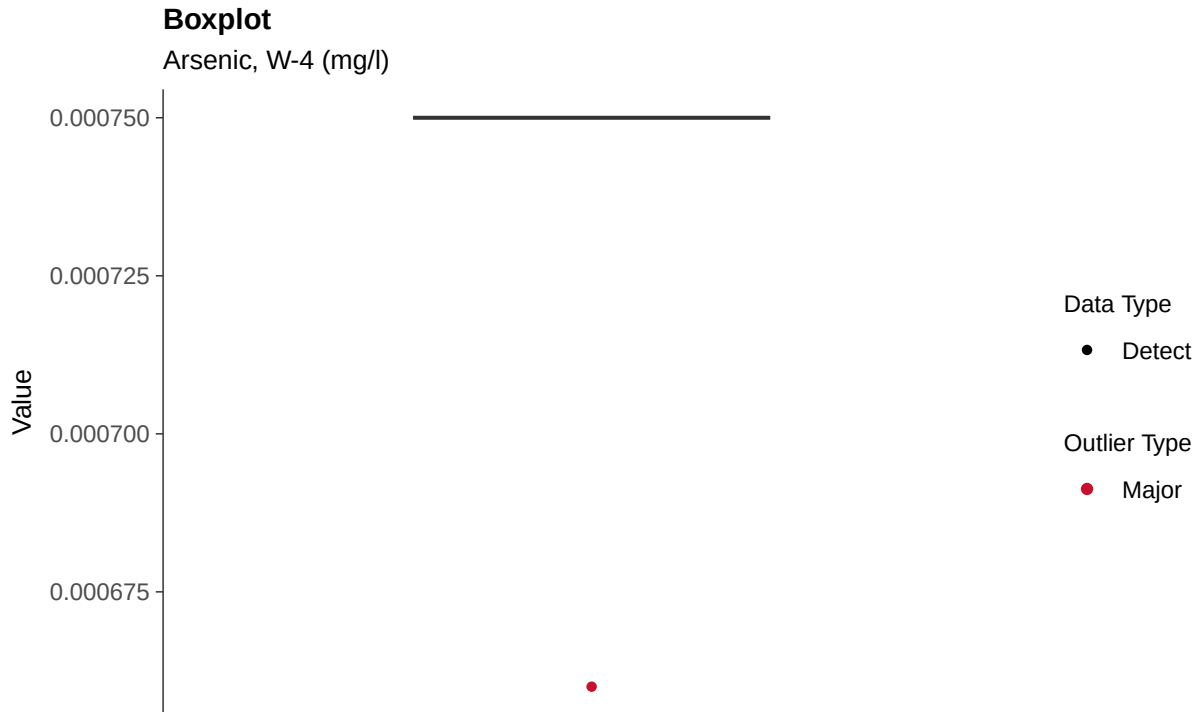


Trend Regression: Piecewise Linear-Linear-Linear

Antimony, W-4 (mg/l)

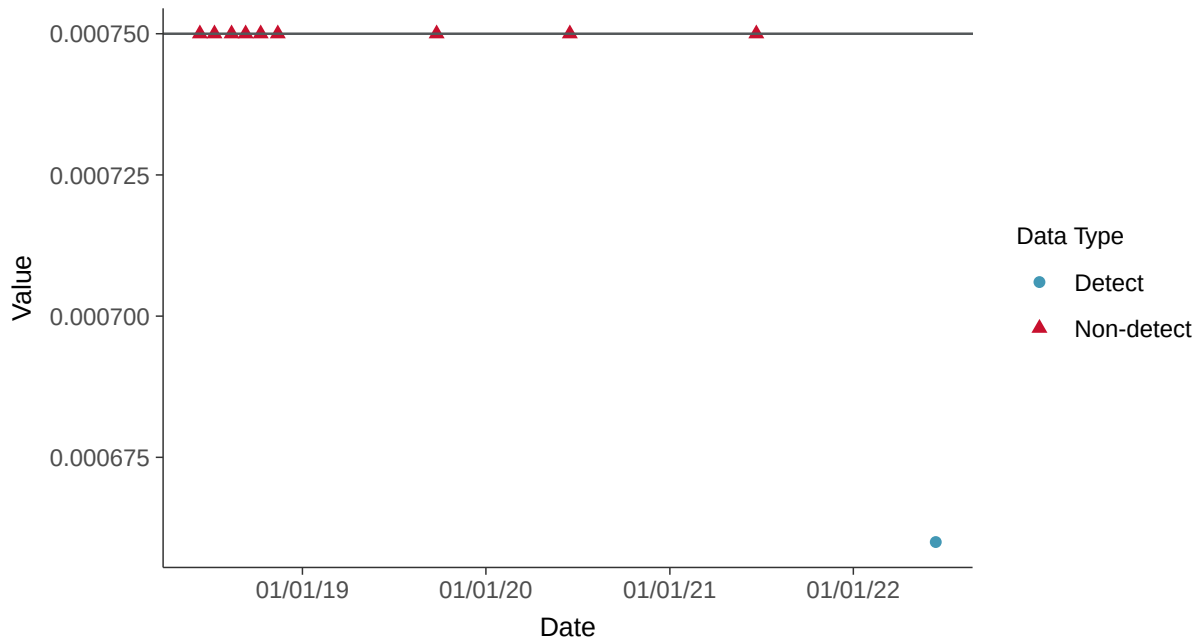






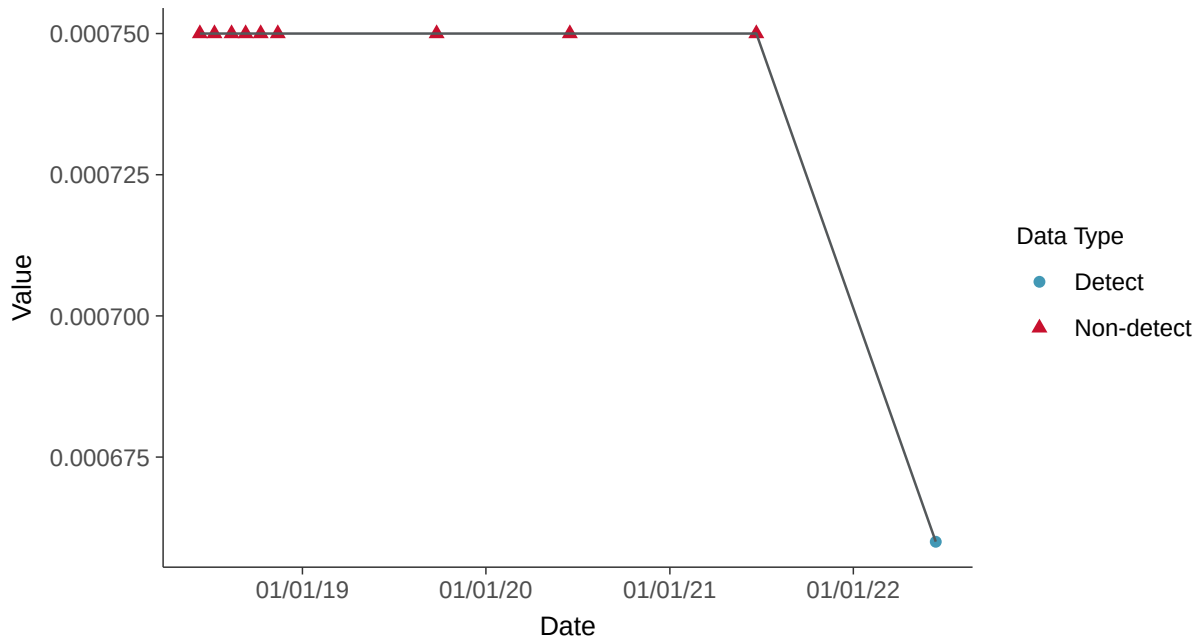
Trend Regression: Mann-Kendall/Theil-Sen Estimate

Arsenic, W-4 (mg/l)



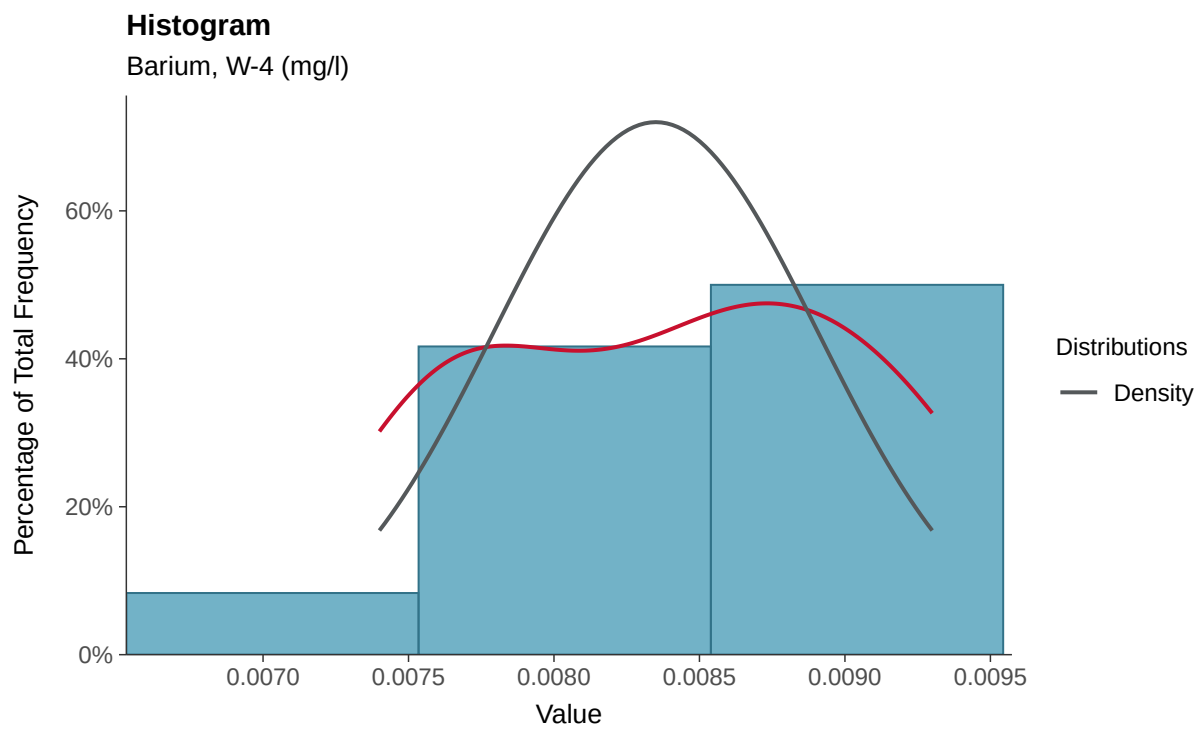
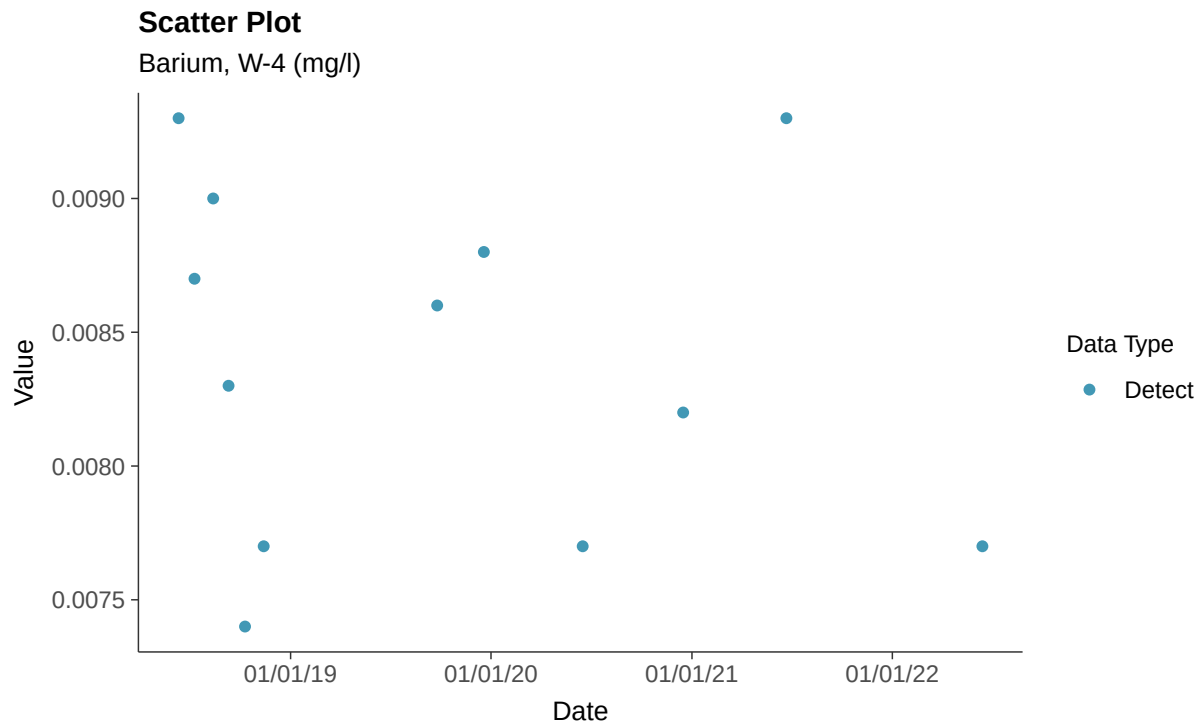
Trend Regression: Piecewise Linear-Linear-Linear

Arsenic, W-4 (mg/l)



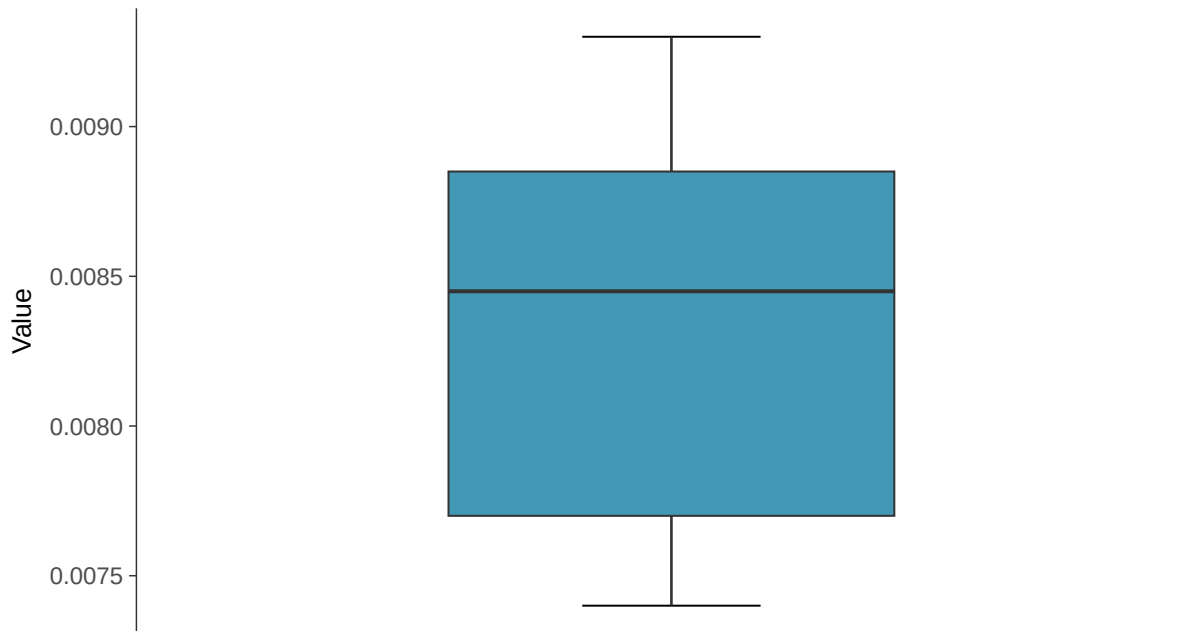
Appendix IV: Barium, W-4

ID: 3_2_106



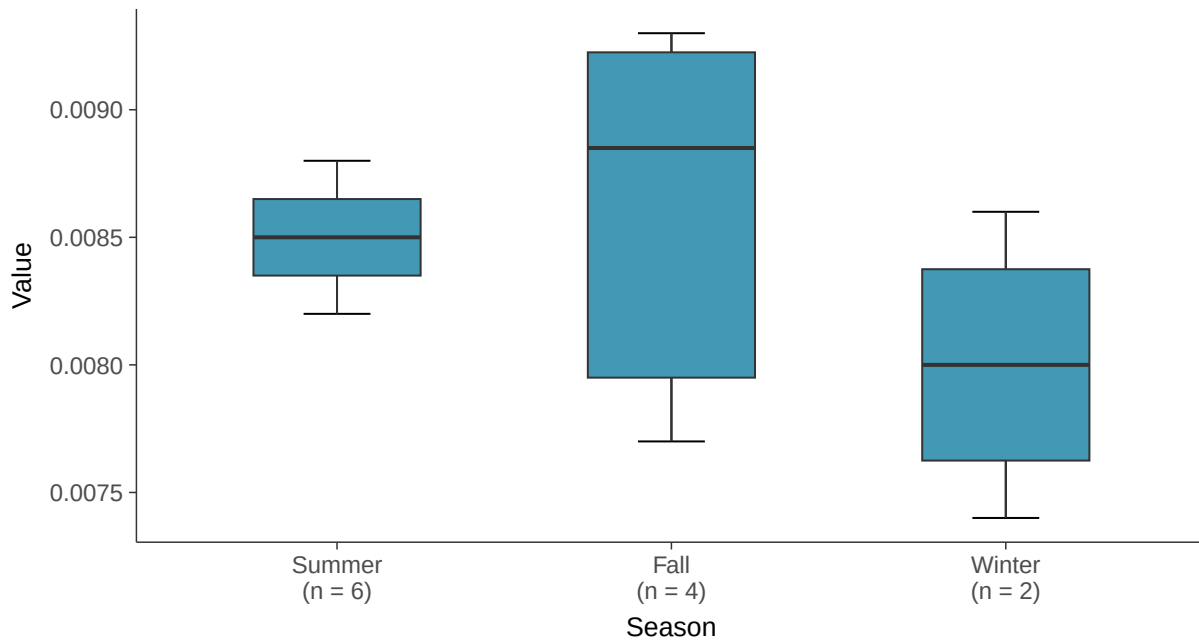
Boxplot

Barium, W-4 (mg/l)

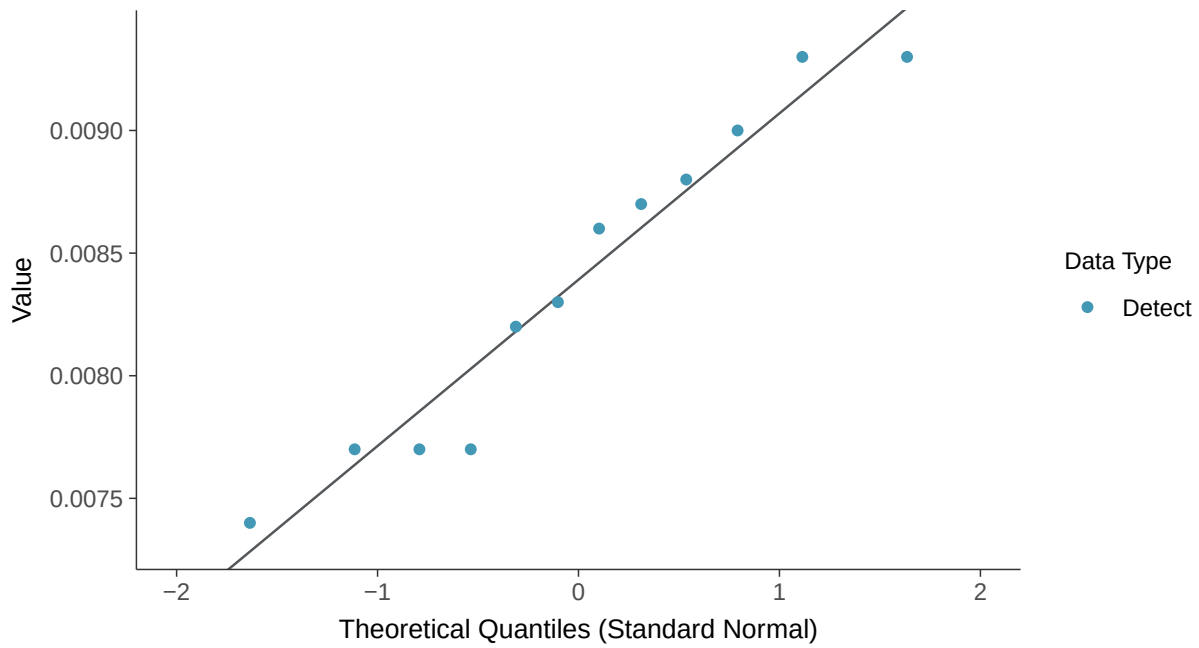


Boxplot by Season

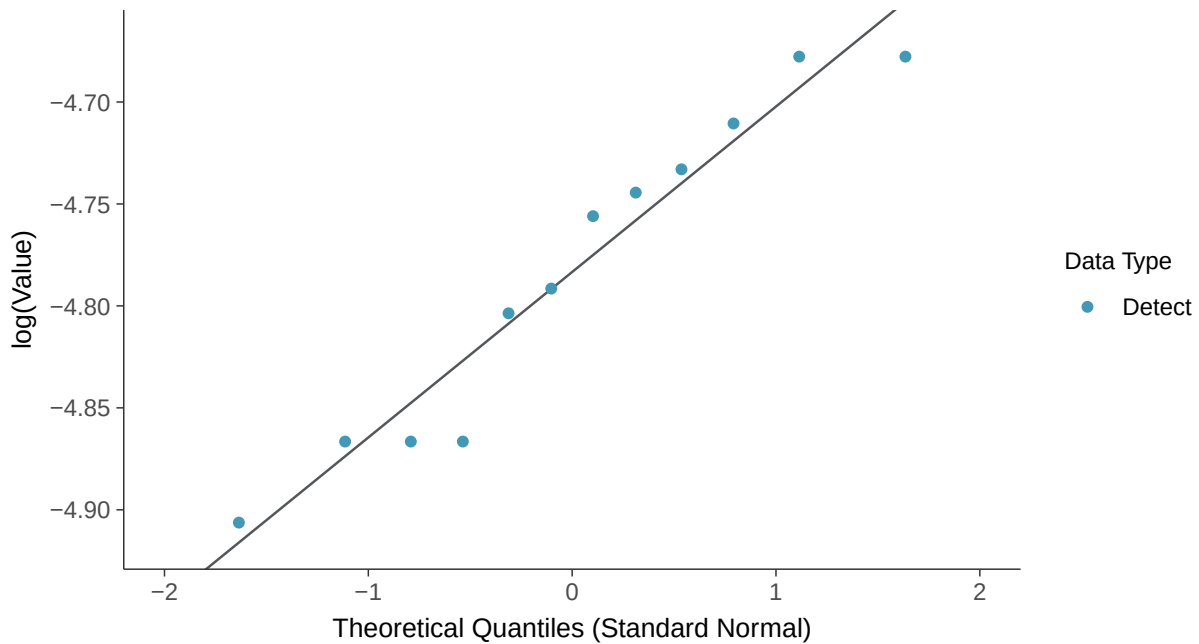
Barium, W-4 (mg/l)

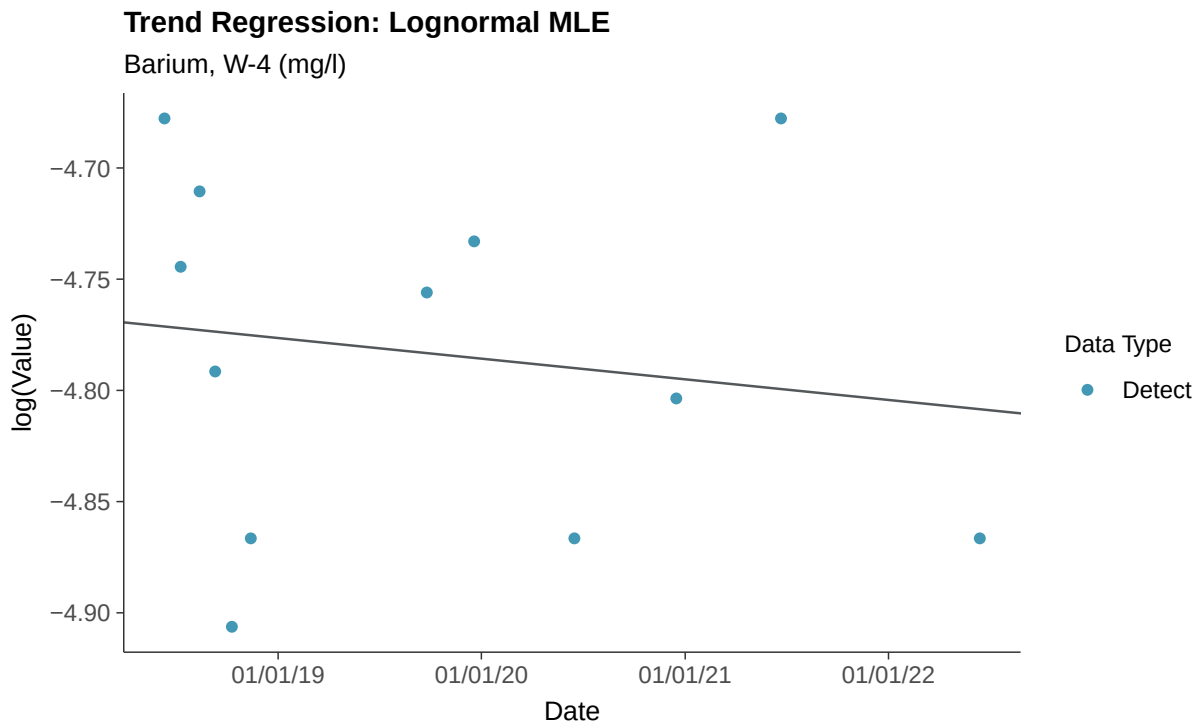
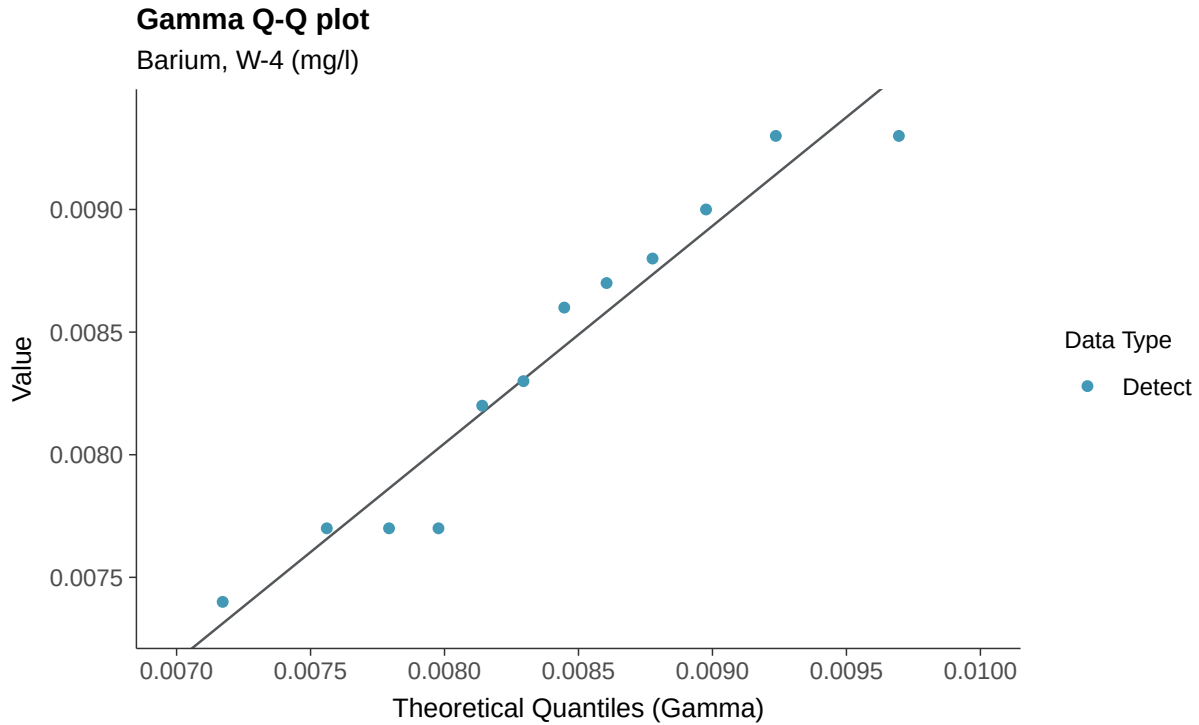


Normal Q-Q plot
Barium, W-4 (mg/l)



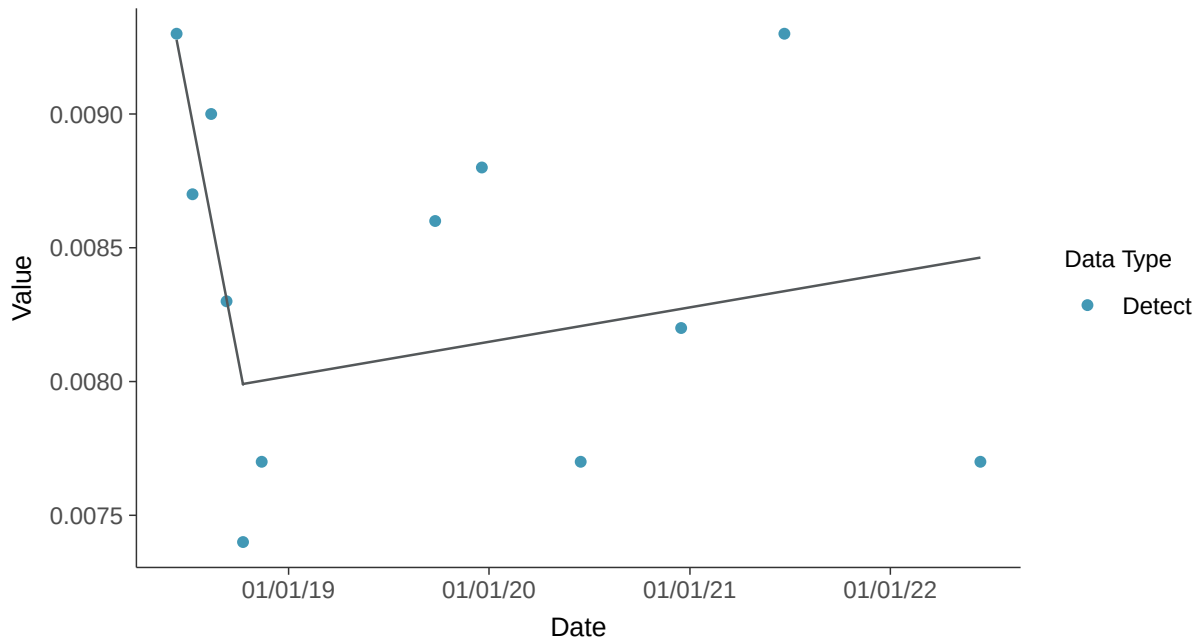
Lognormal Q-Q plot
Barium, W-4 (mg/l)





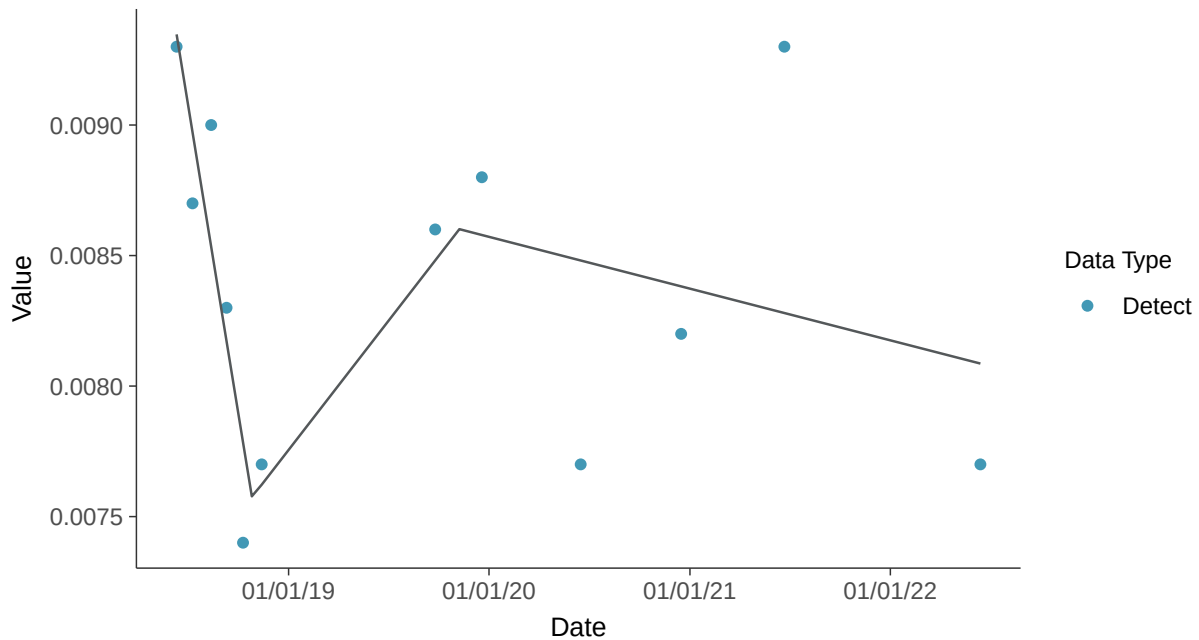
Trend Regression: Piecewise Linear-Linear

Barium, W-4 (mg/l)



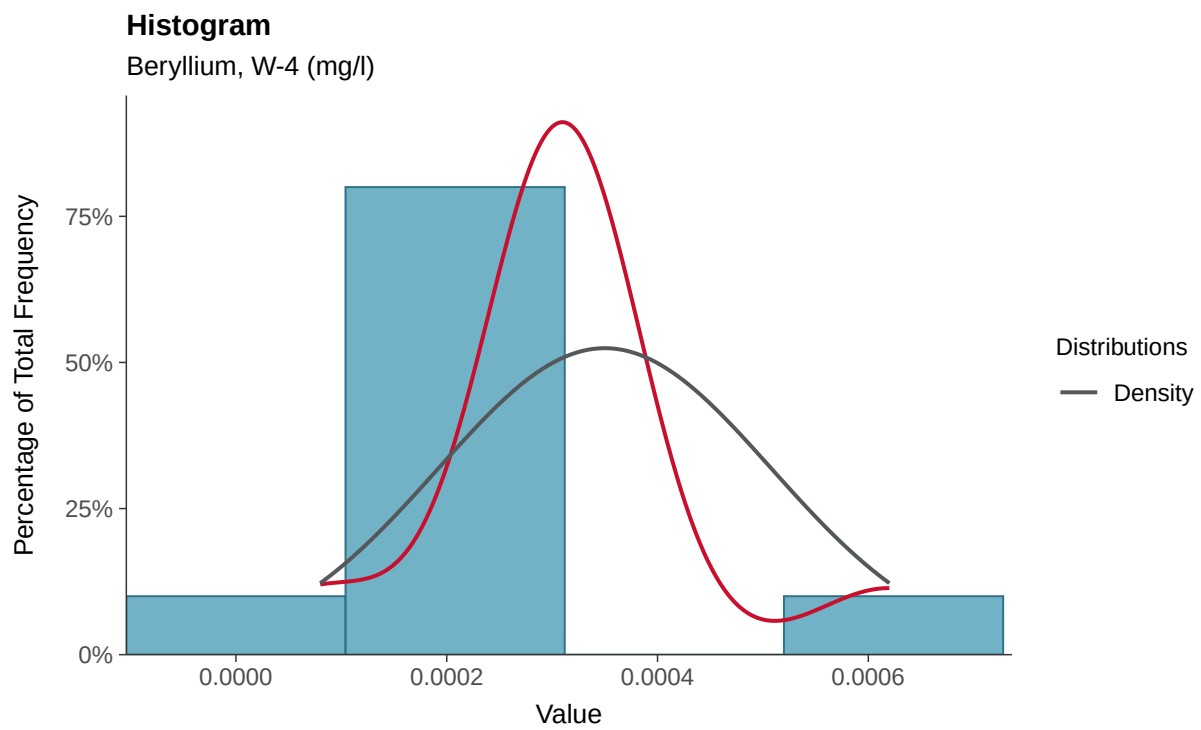
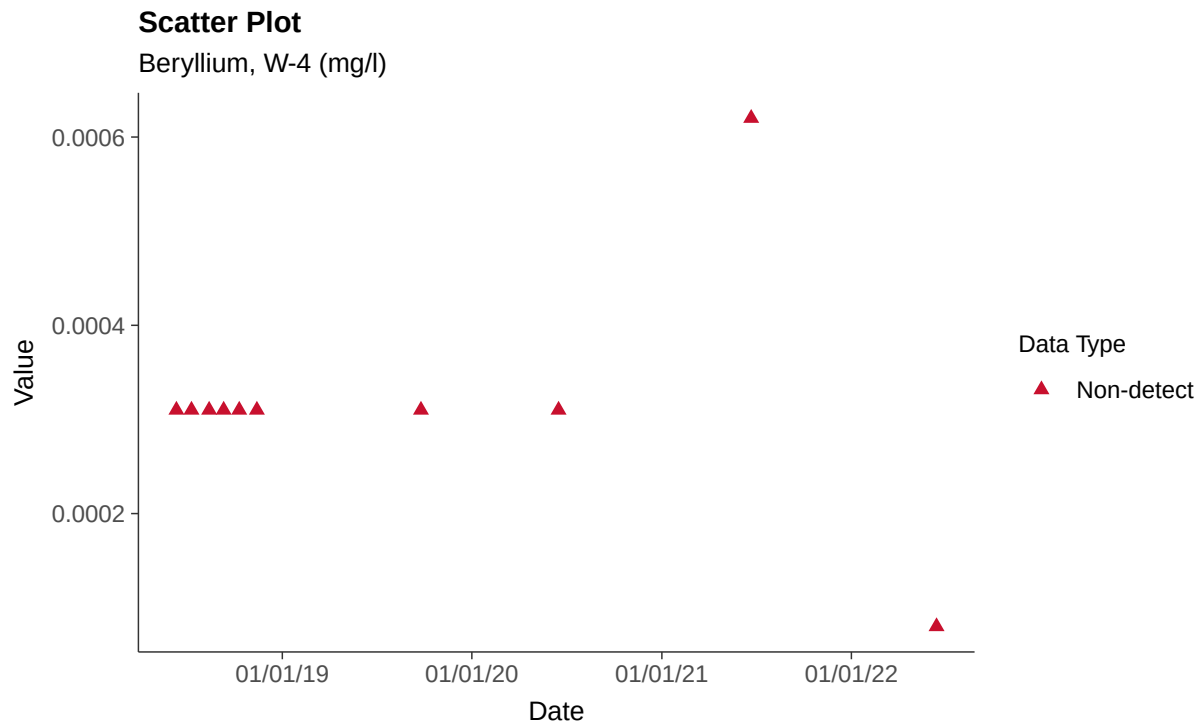
Trend Regression: Piecewise Linear-Linear-Linear

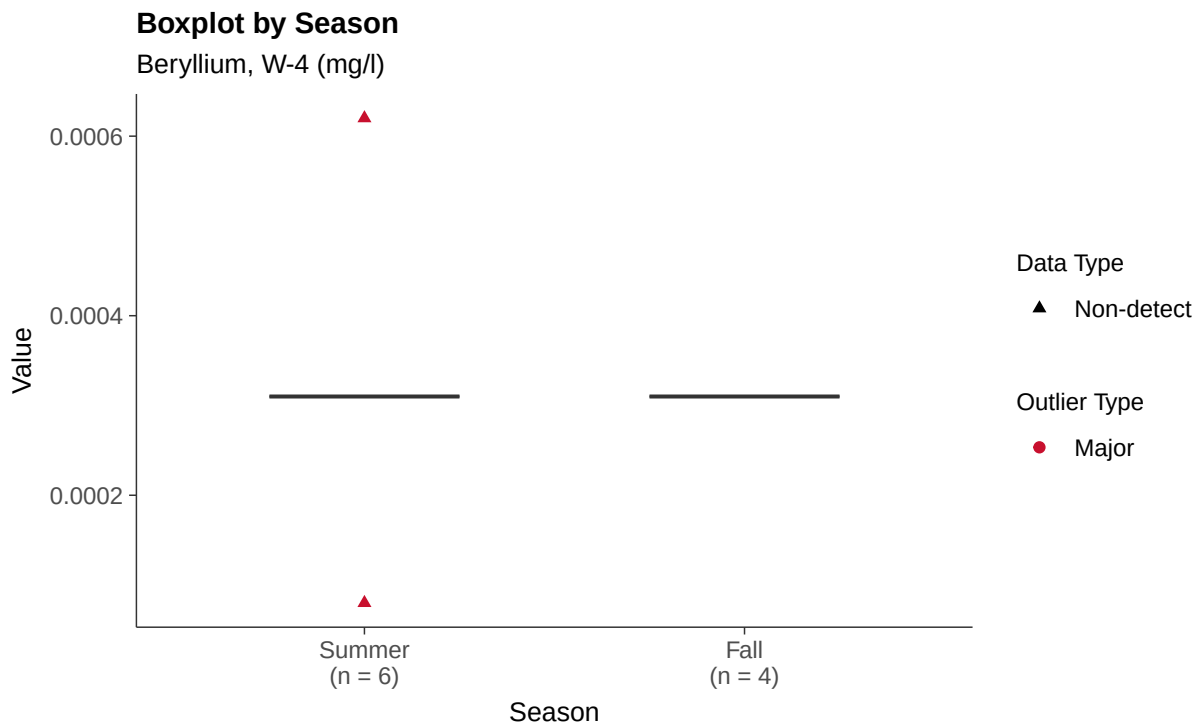
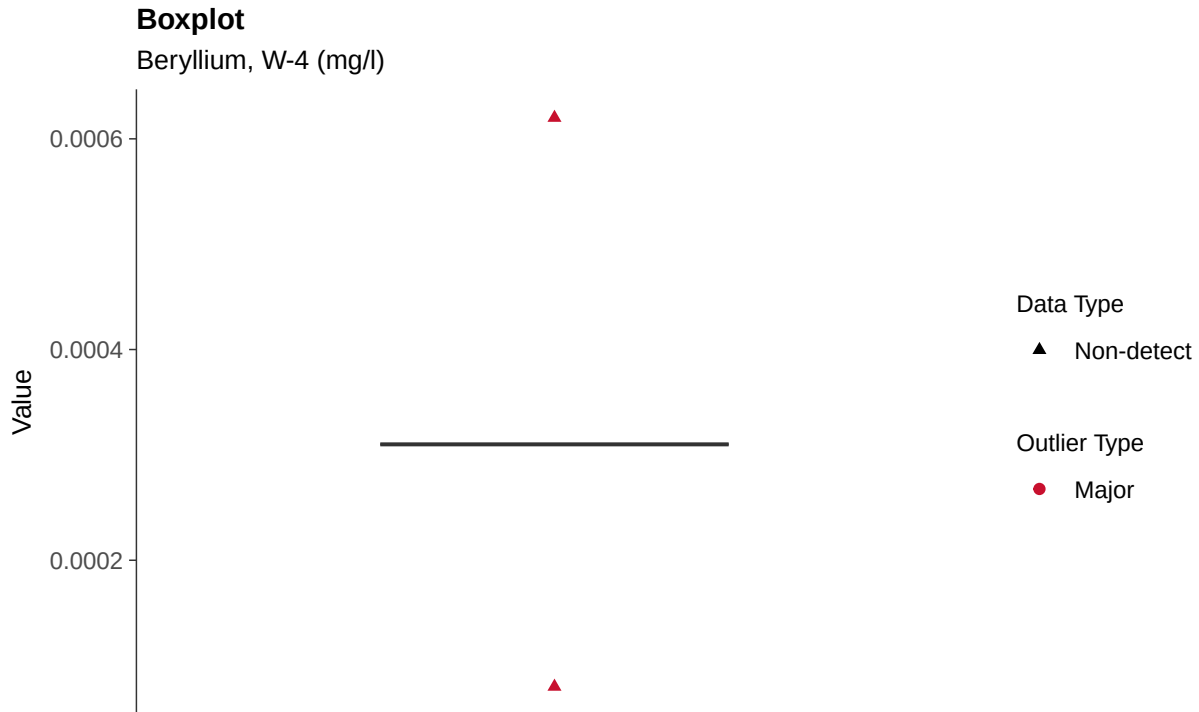
Barium, W-4 (mg/l)



Appendix IV: Beryllium, W-4

ID: 3_2_107

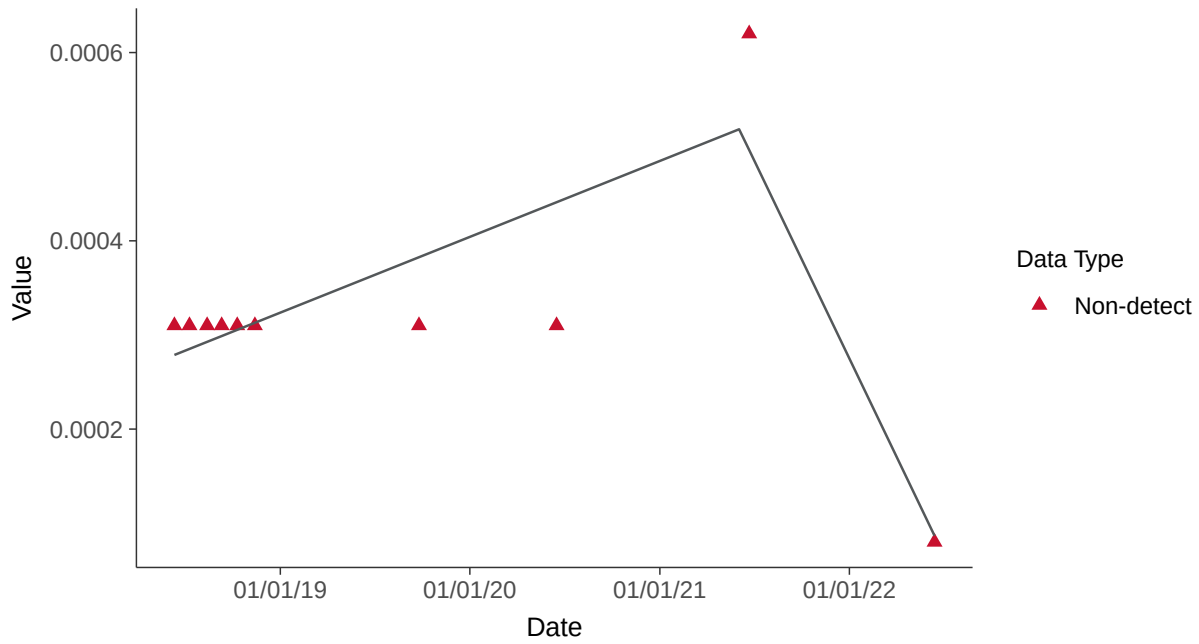






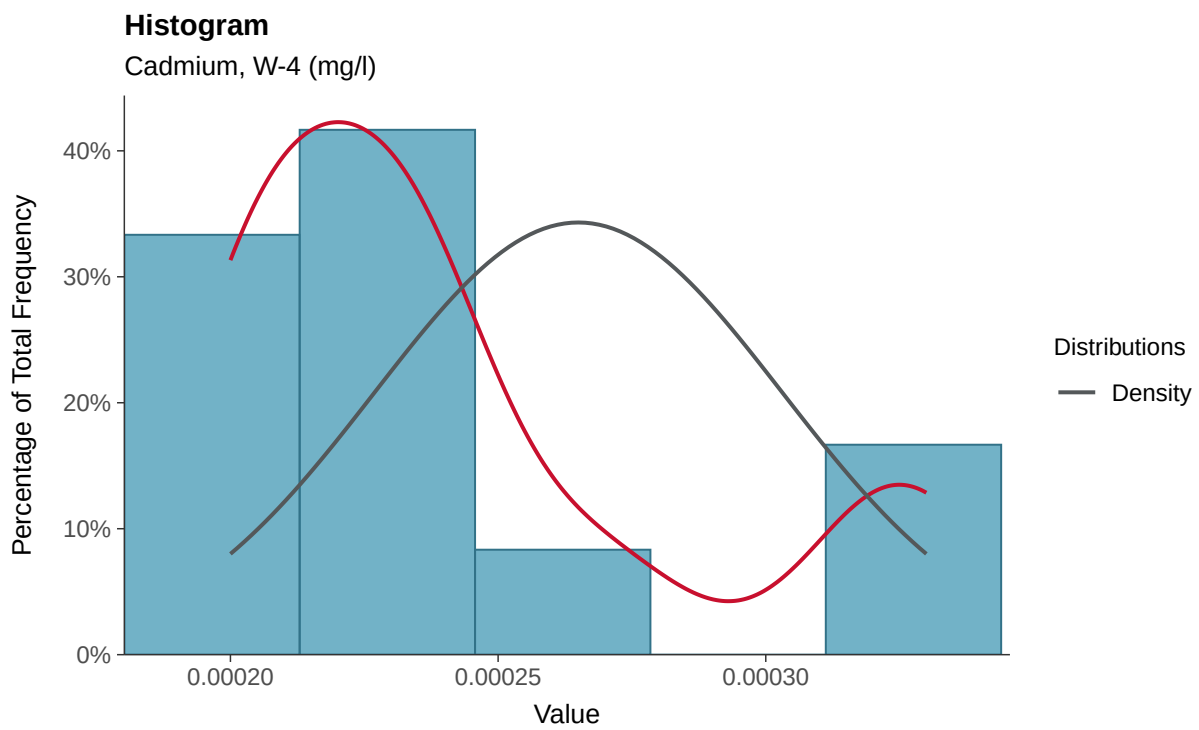
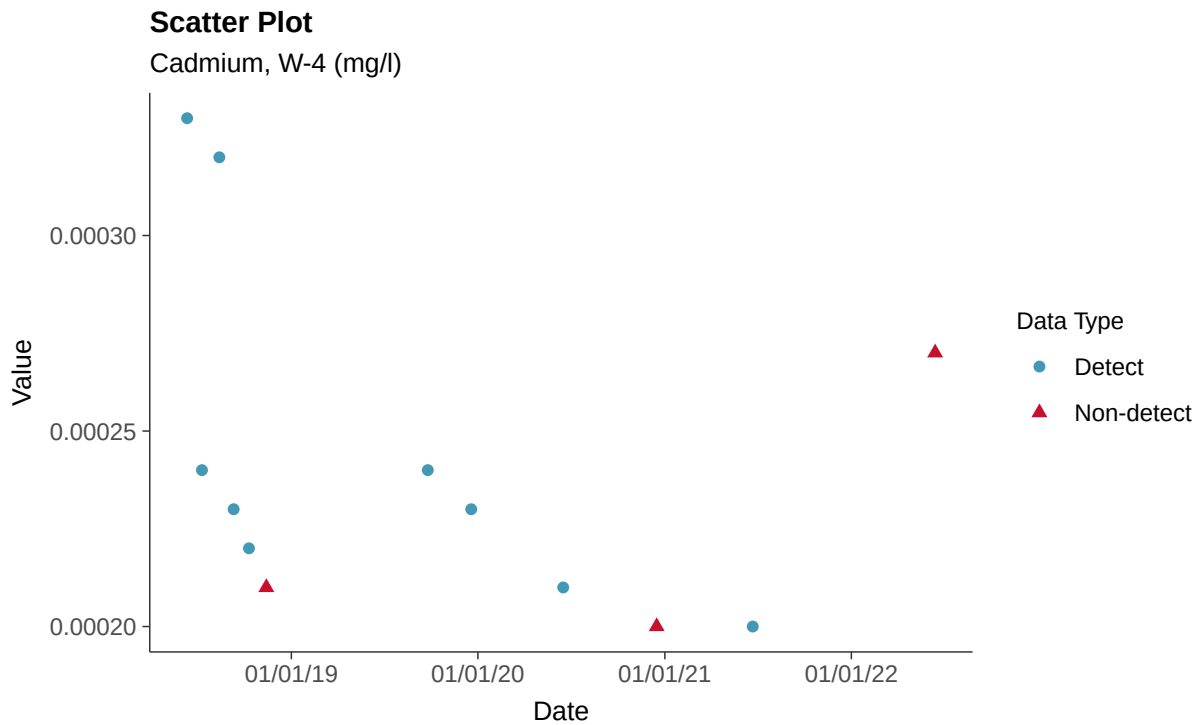
Trend Regression: Piecewise Linear-Linear

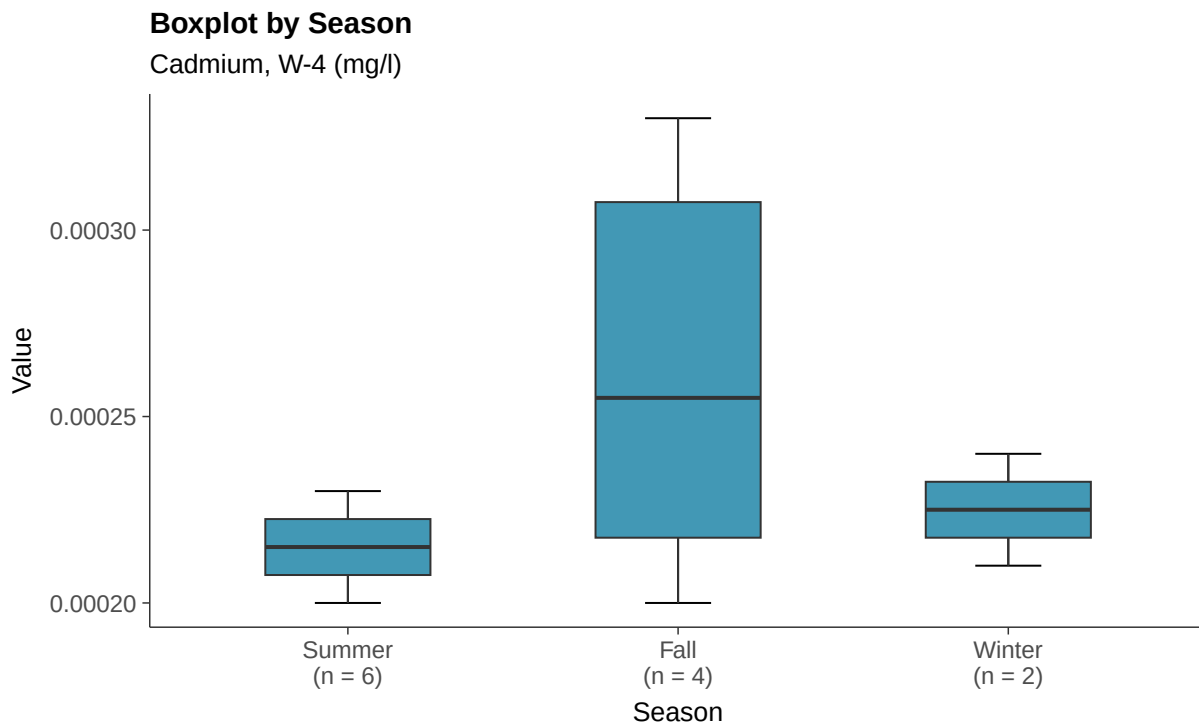
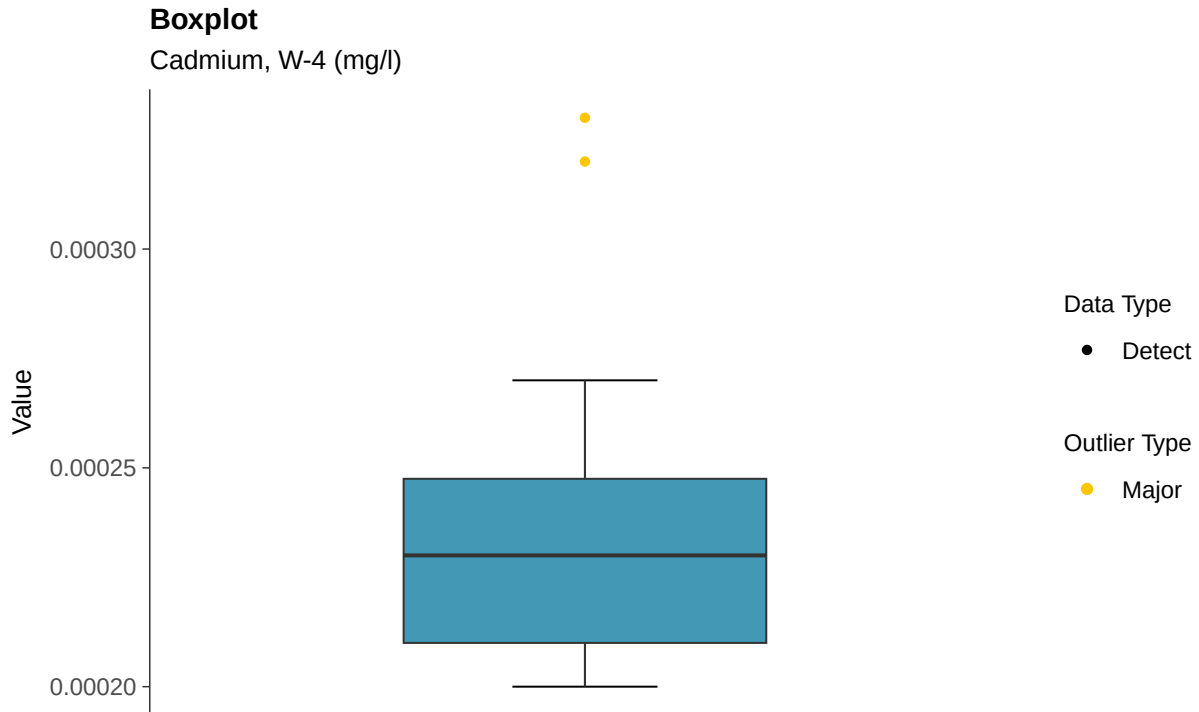
Beryllium, W-4 (mg/l)



Appendix IV: Cadmium, W-4

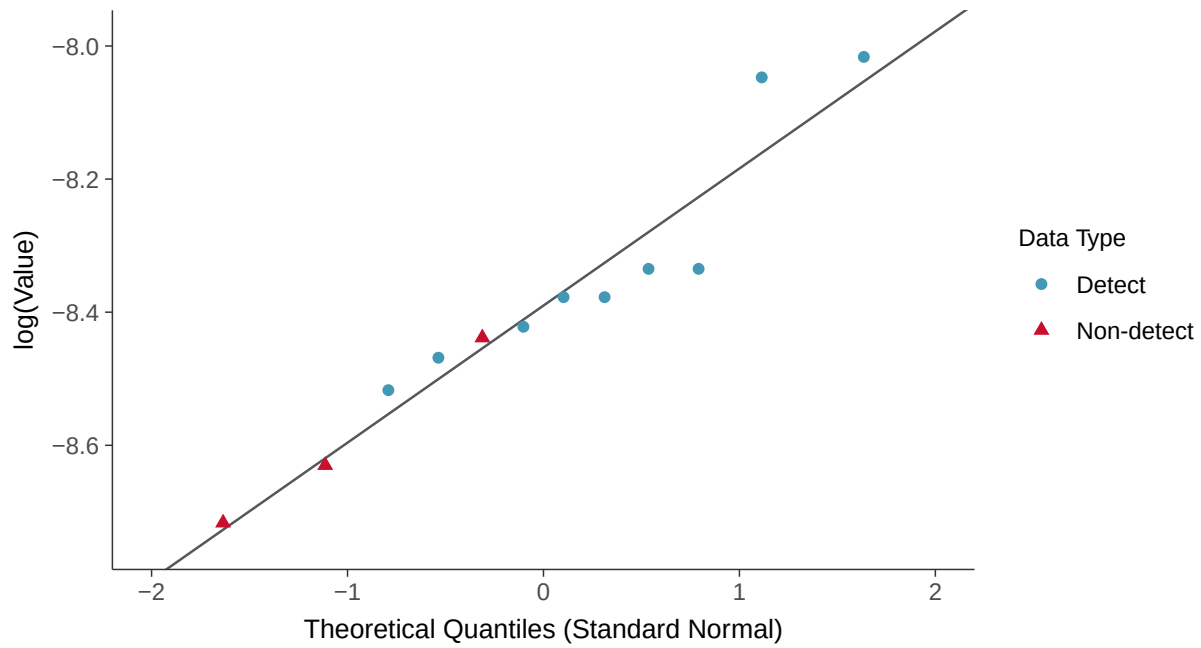
ID: 3_2_109





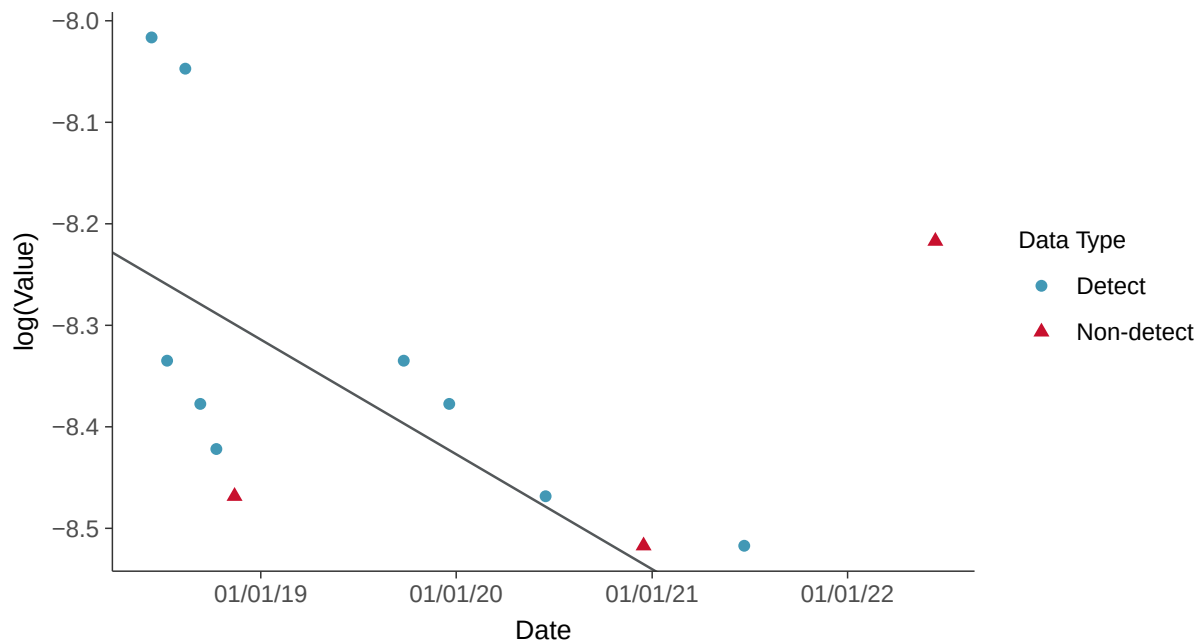
Lognormal Q-Q plot using ROS Imputed Estimates

Cadmium, W-4 (mg/l)



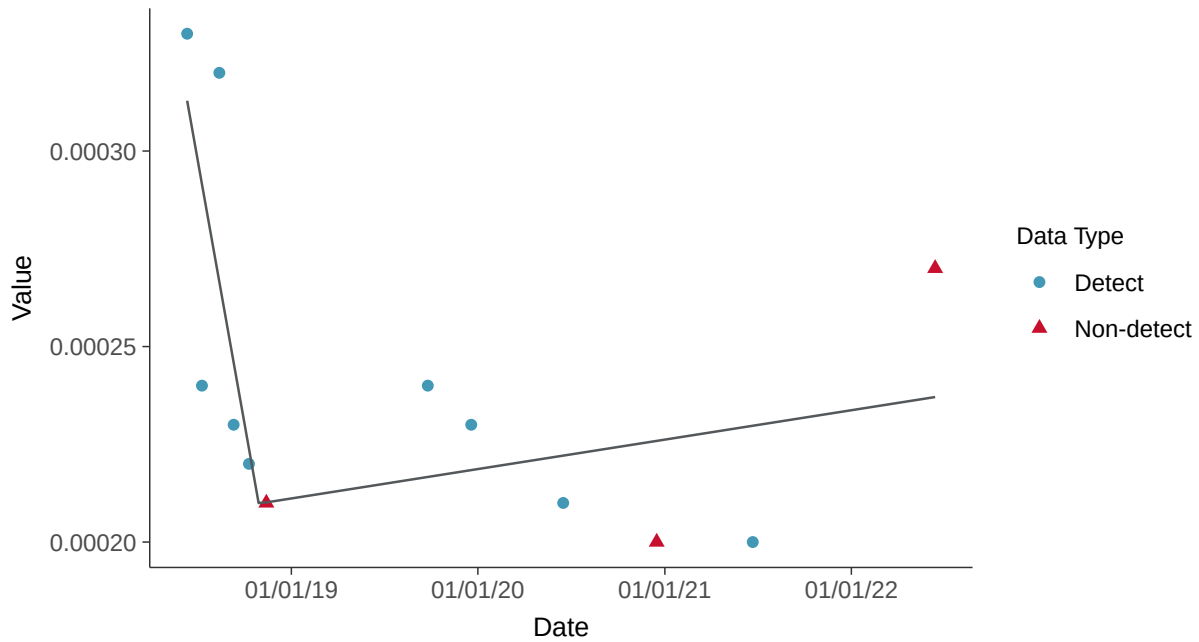
Trend Regression: Lognormal MLE

Cadmium, W-4 (mg/l)



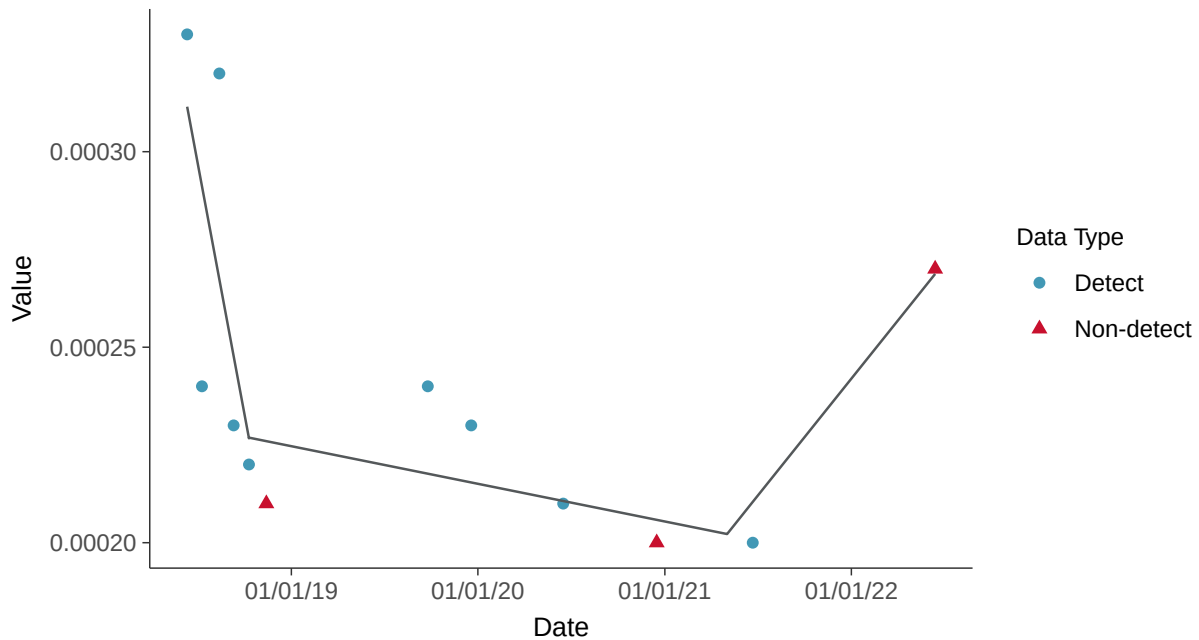
Trend Regression: Piecewise Linear-Linear

Cadmium, W-4 (mg/l)



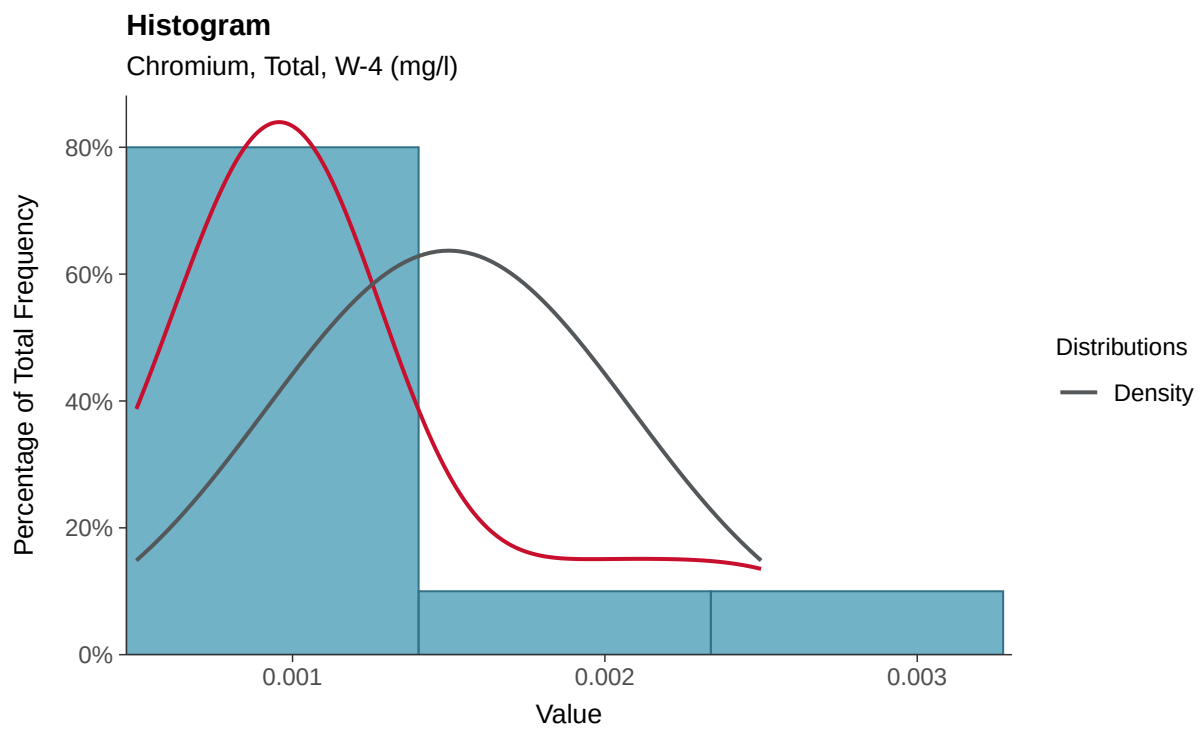
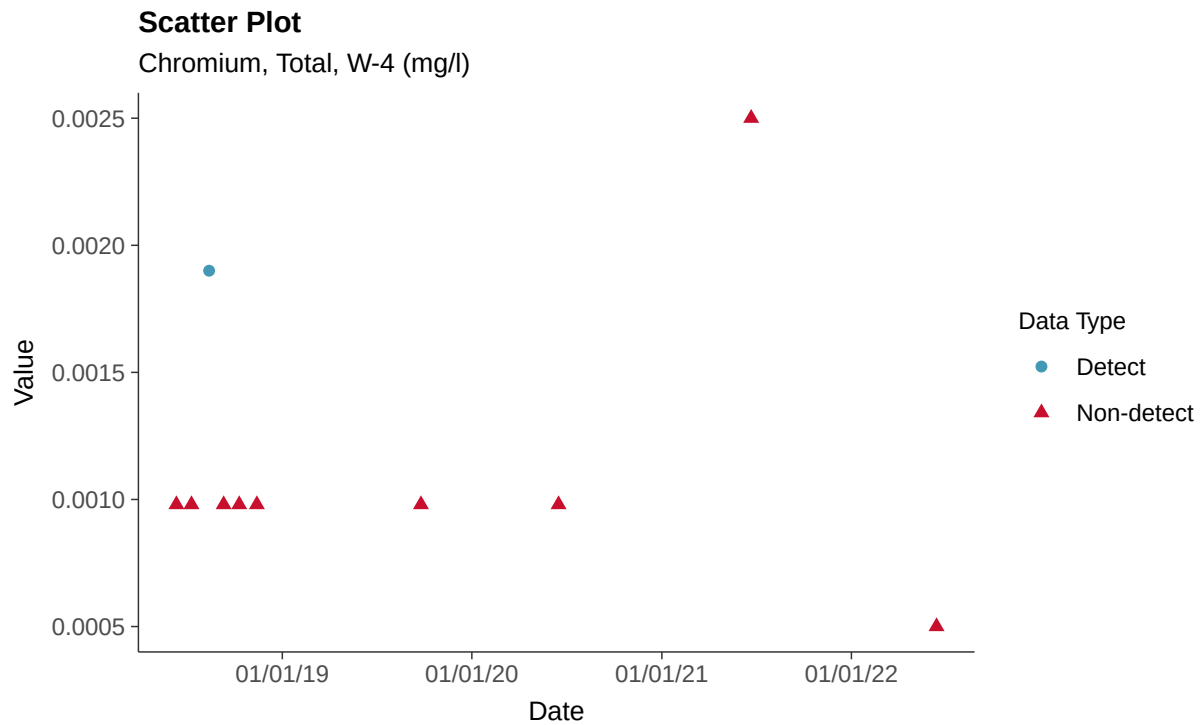
Trend Regression: Piecewise Linear-Linear-Linear

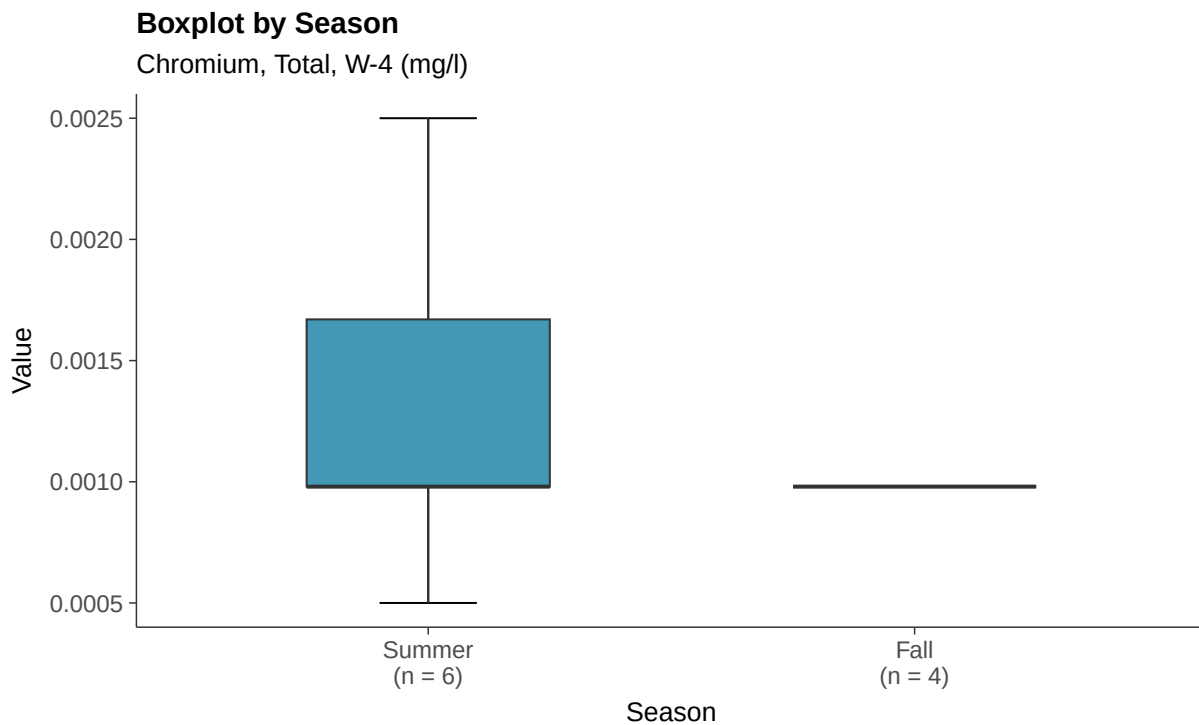
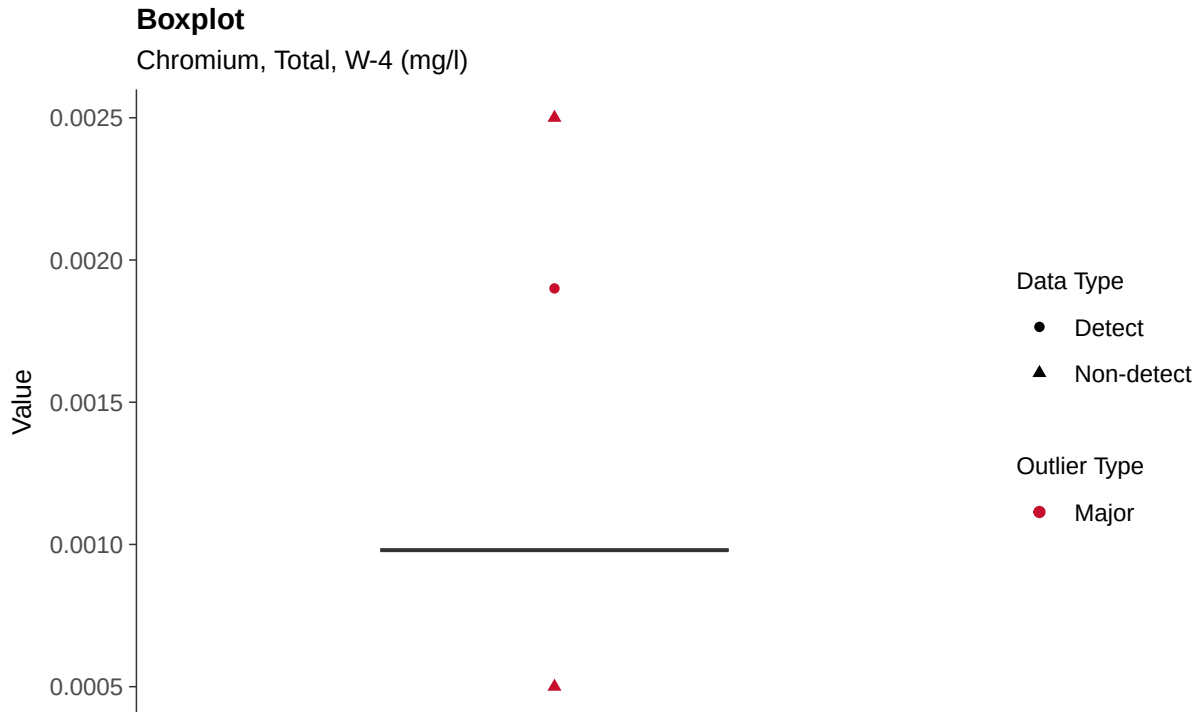
Cadmium, W-4 (mg/l)



Appendix IV: Chromium, Total, W-4

ID: 3_2_112

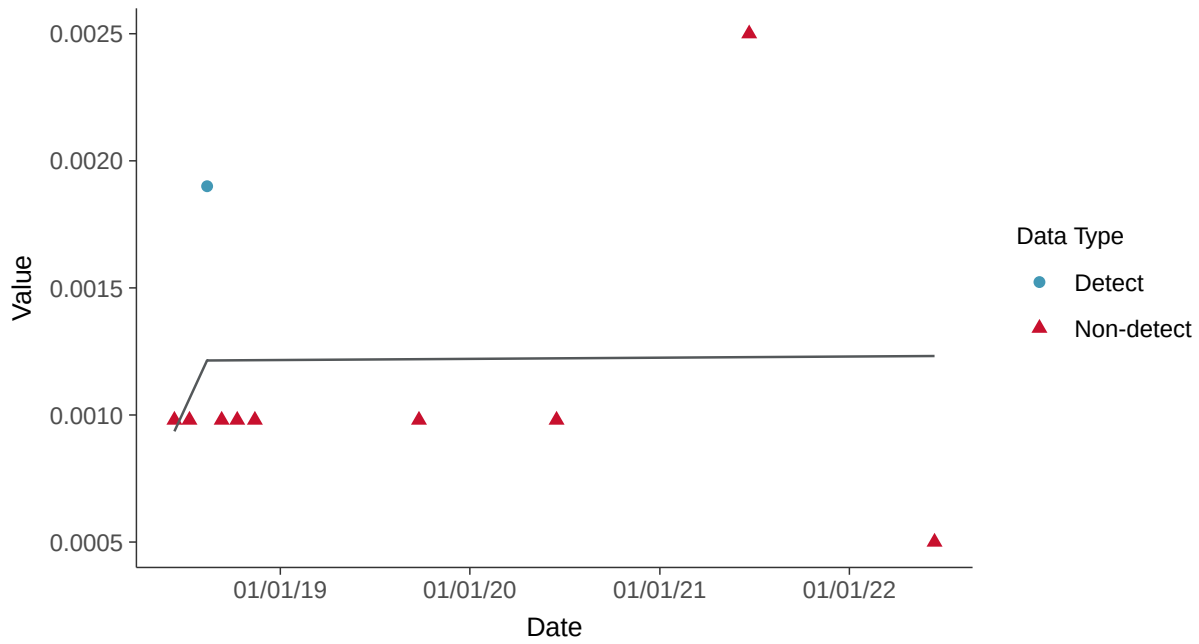






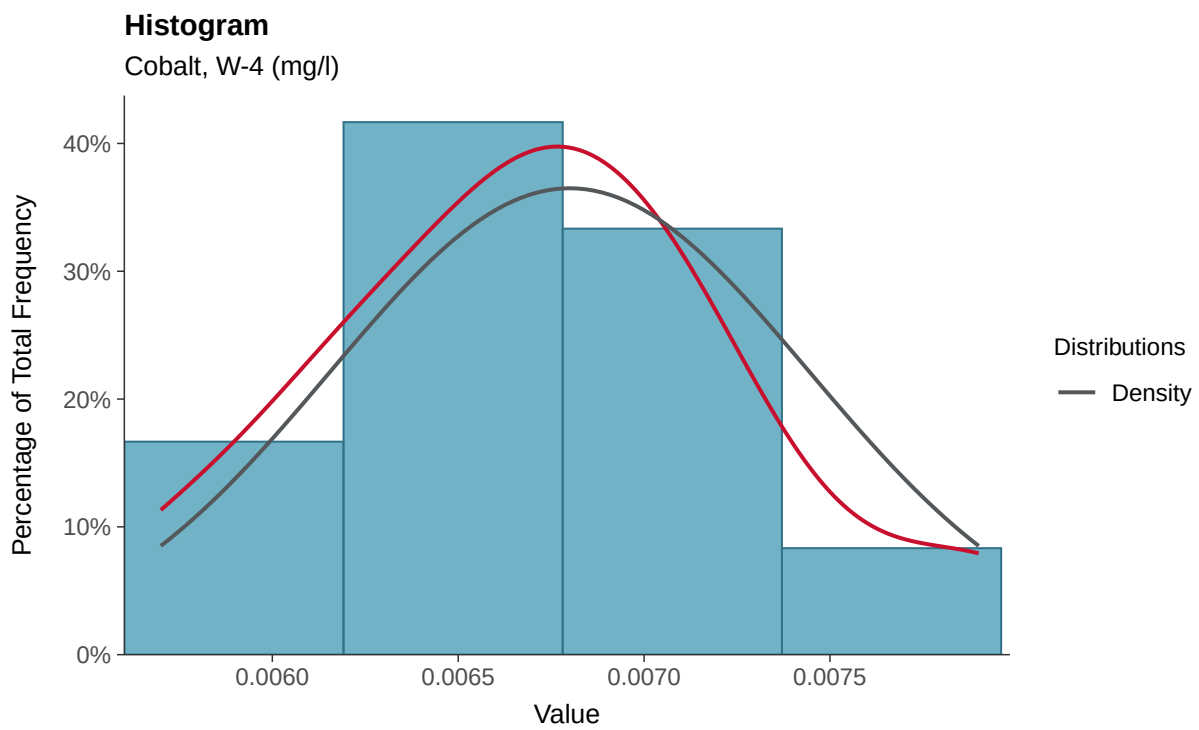
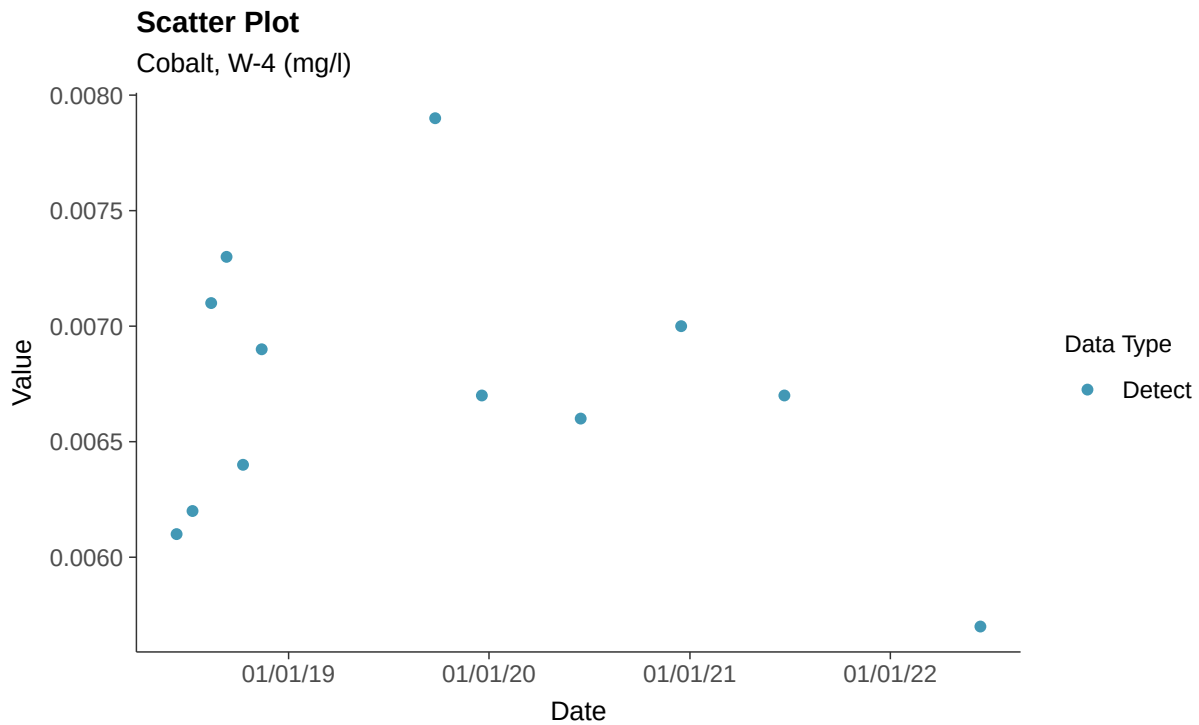
Trend Regression: Piecewise Linear-Linear

Chromium, Total, W-4 (mg/l)



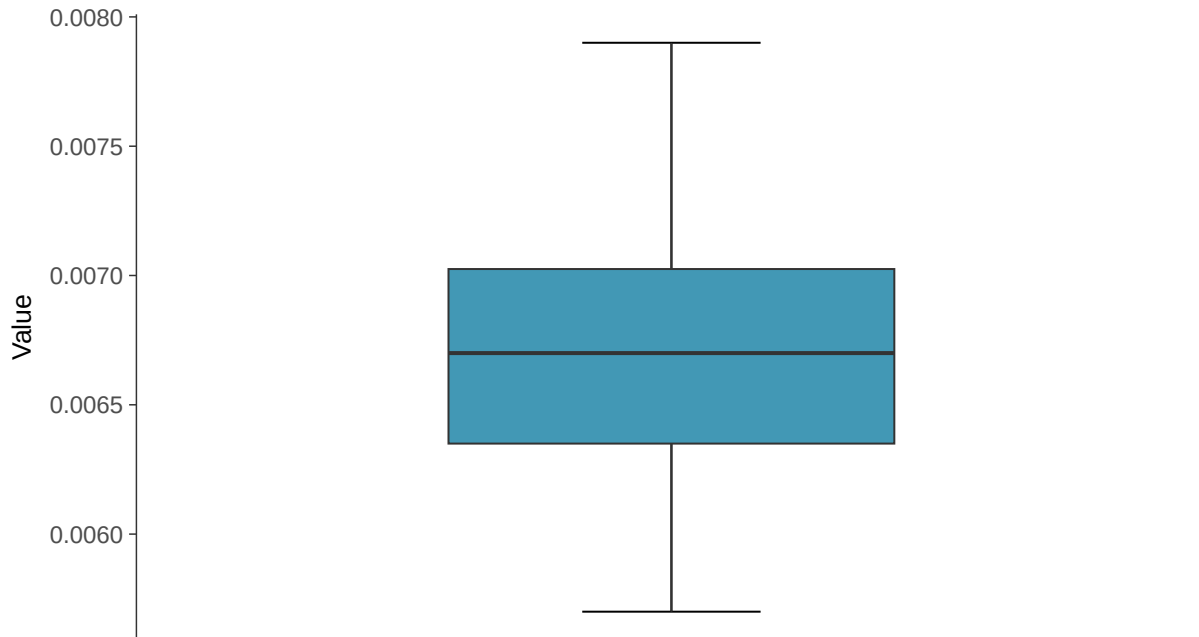
Appendix IV: Cobalt, W-4

ID: 3_2_113



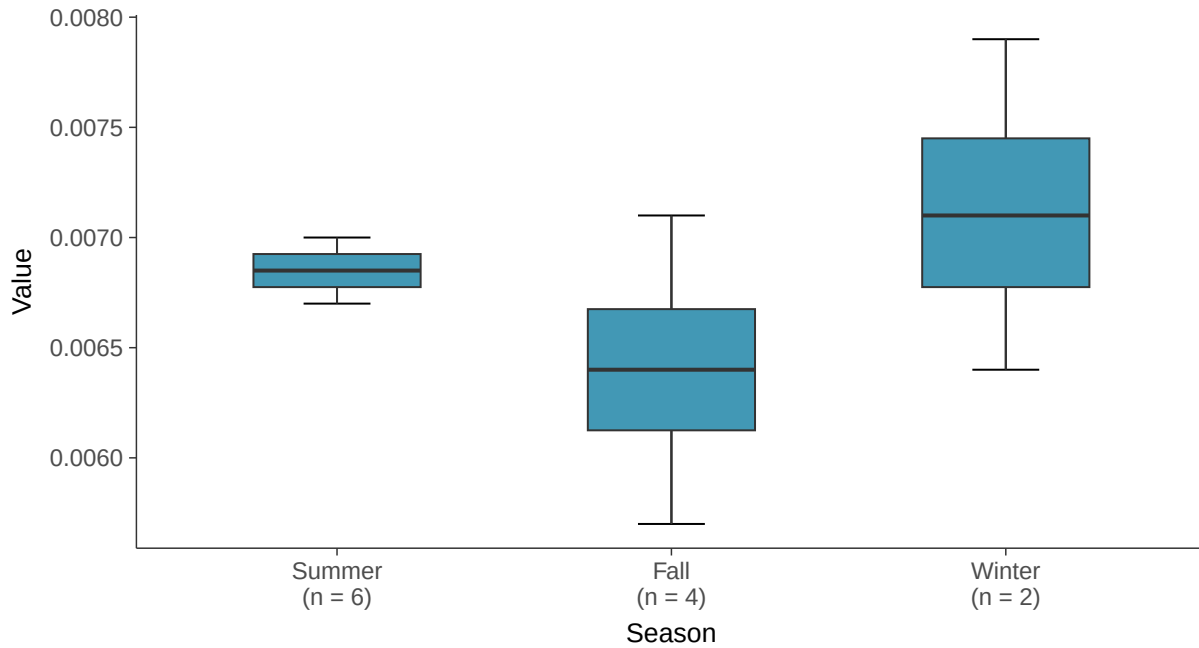
Boxplot

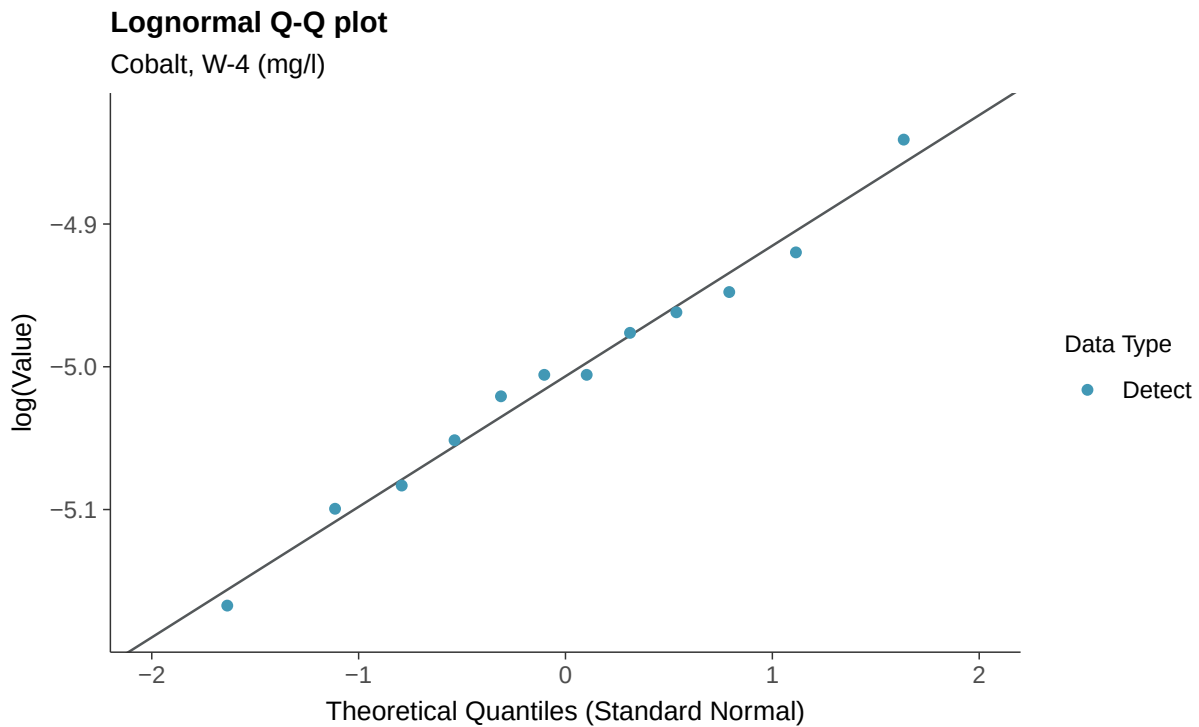
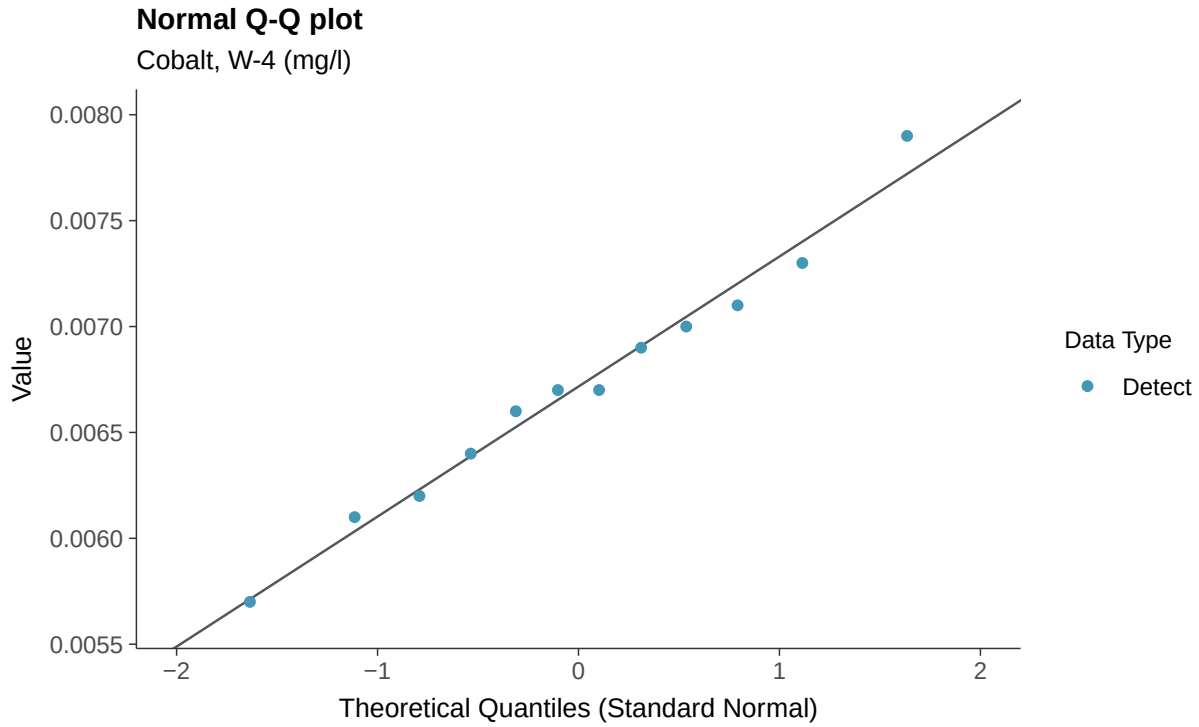
Cobalt, W-4 (mg/l)



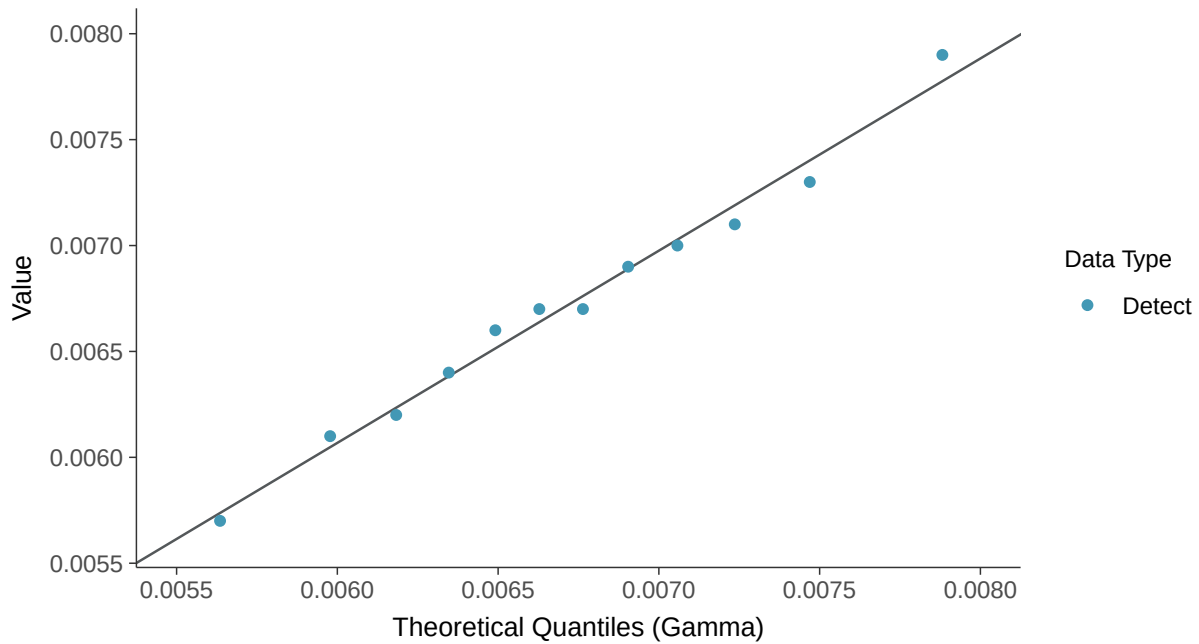
Boxplot by Season

Cobalt, W-4 (mg/l)

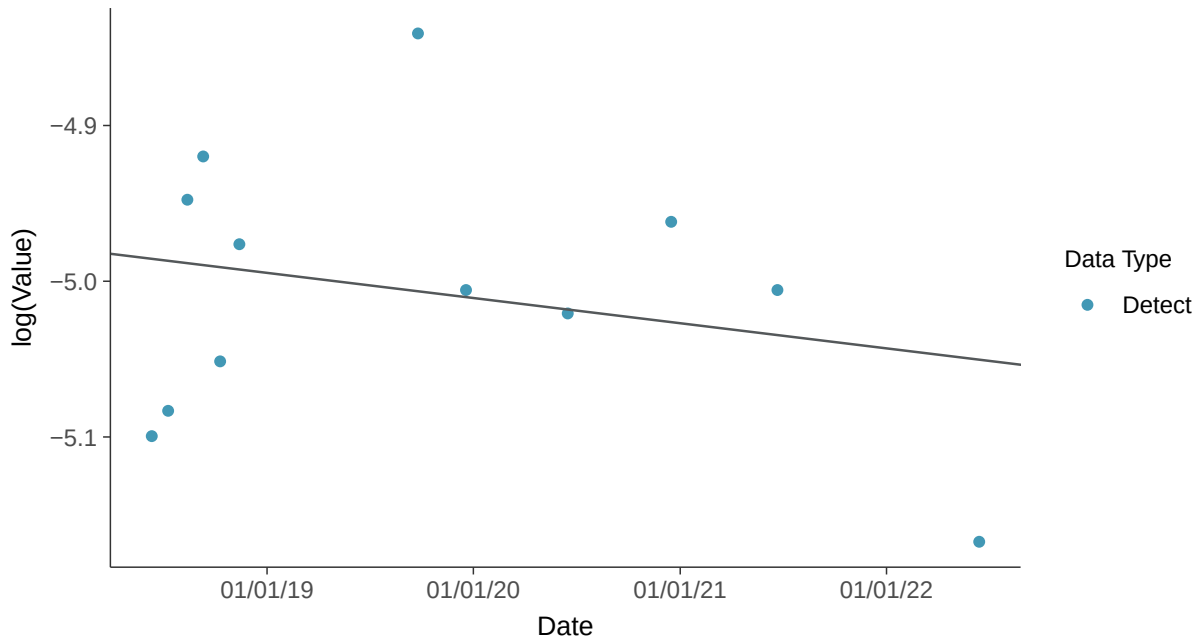




Gamma Q-Q plot
Cobalt, W-4 (mg/l)

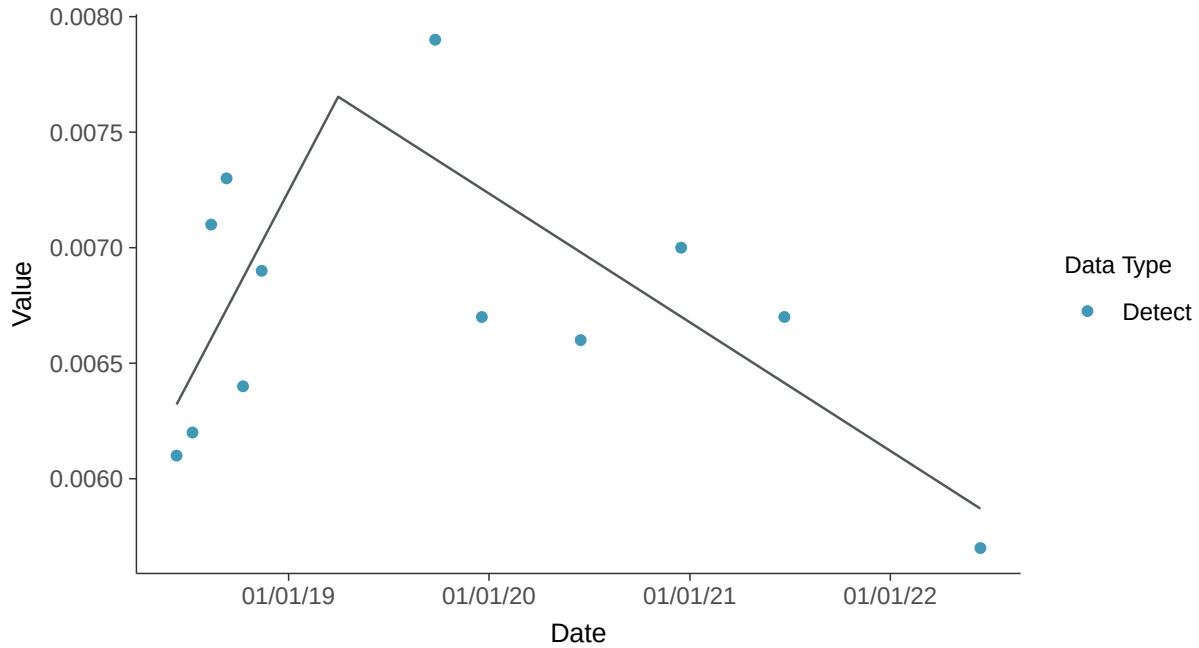


Trend Regression: Lognormal MLE
Cobalt, W-4 (mg/l)



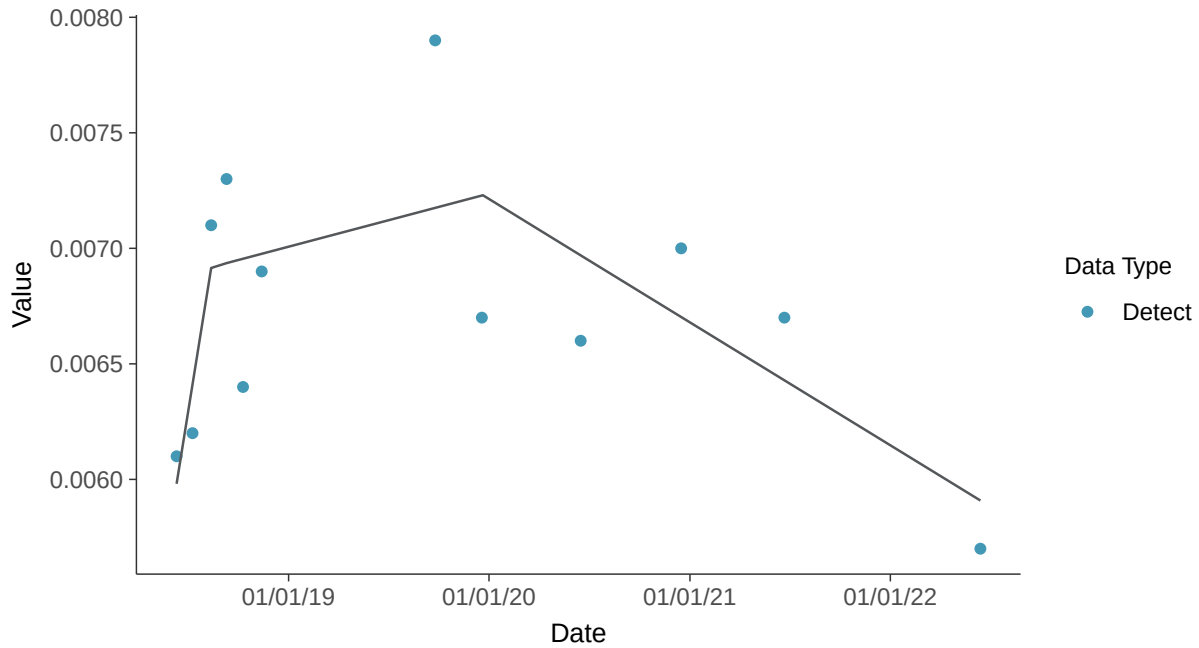
Trend Regression: Piecewise Linear-Linear

Cobalt, W-4 (mg/l)



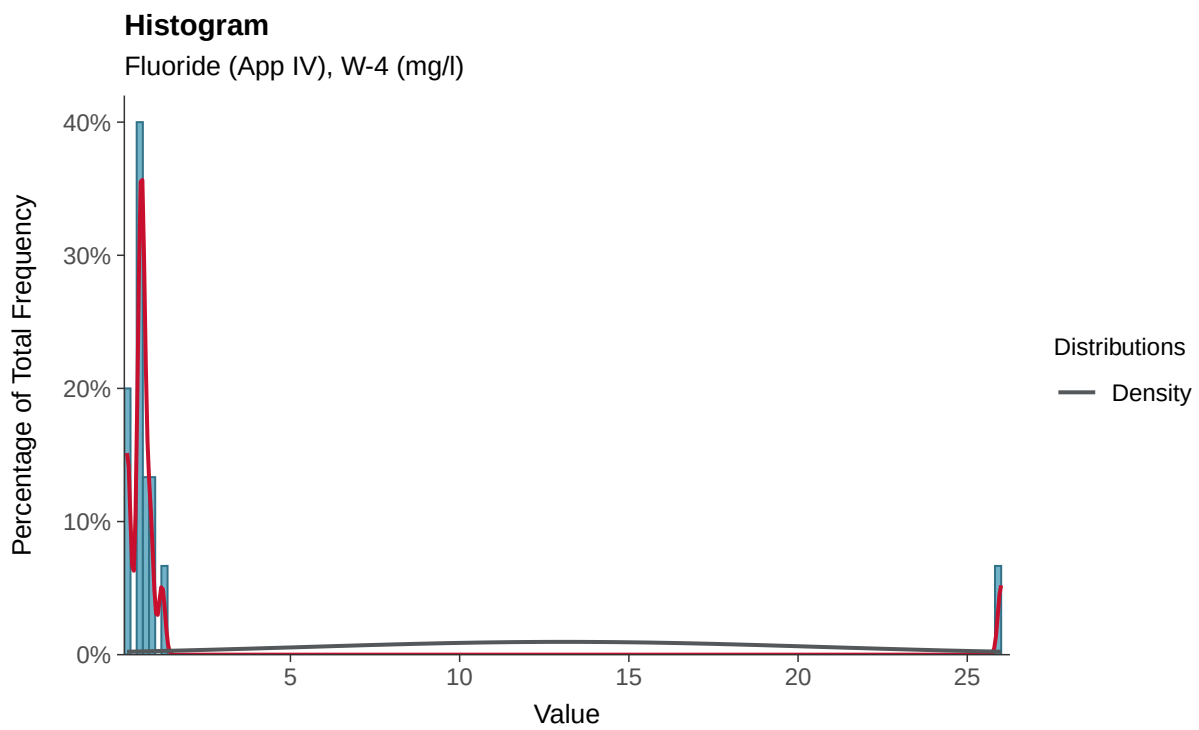
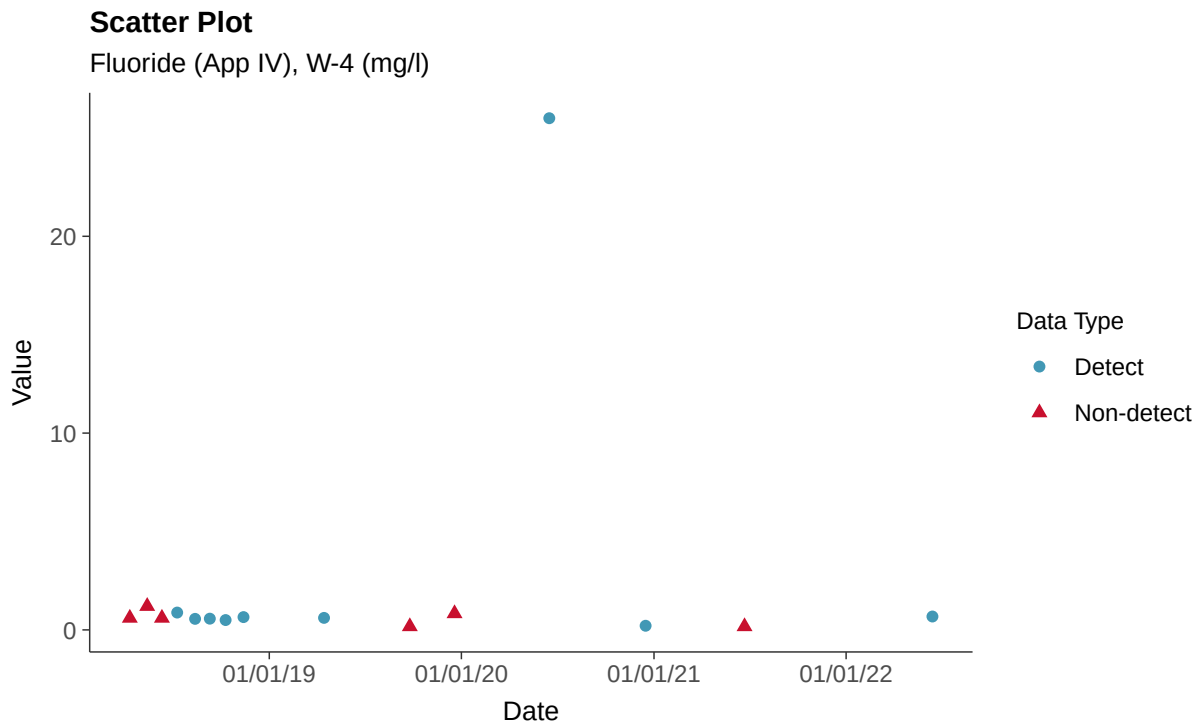
Trend Regression: Piecewise Linear-Linear-Linear

Cobalt, W-4 (mg/l)



Appendix IV: Fluoride (App IV), W-4

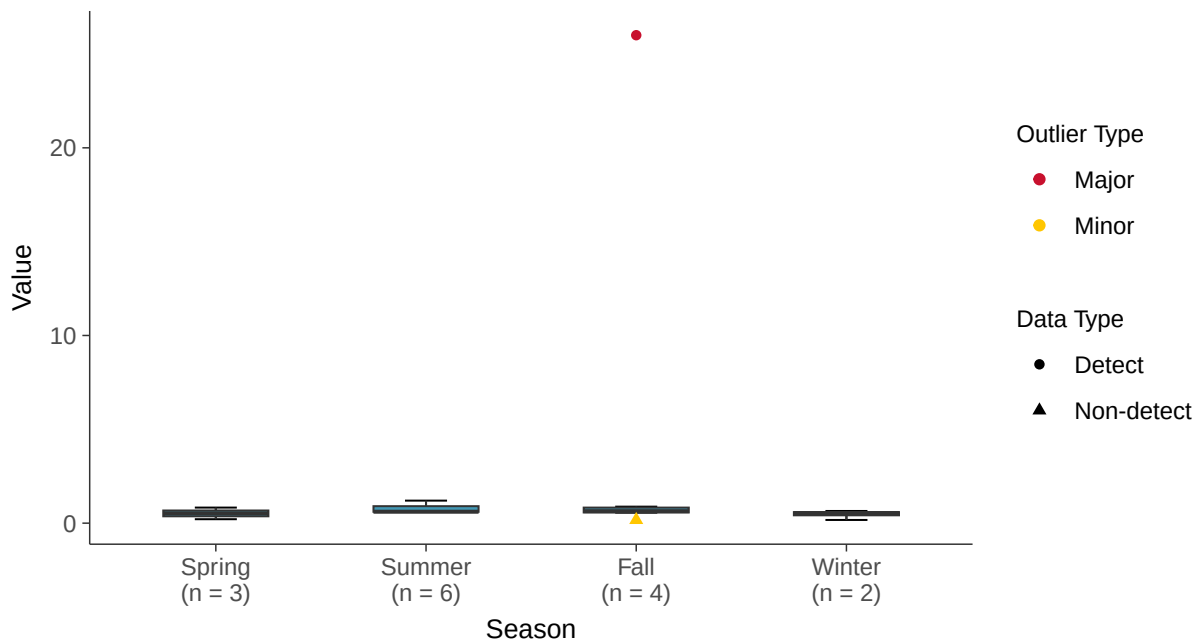
ID: 3_2_116



Fluoride (App IV), W-4 (mg/l)

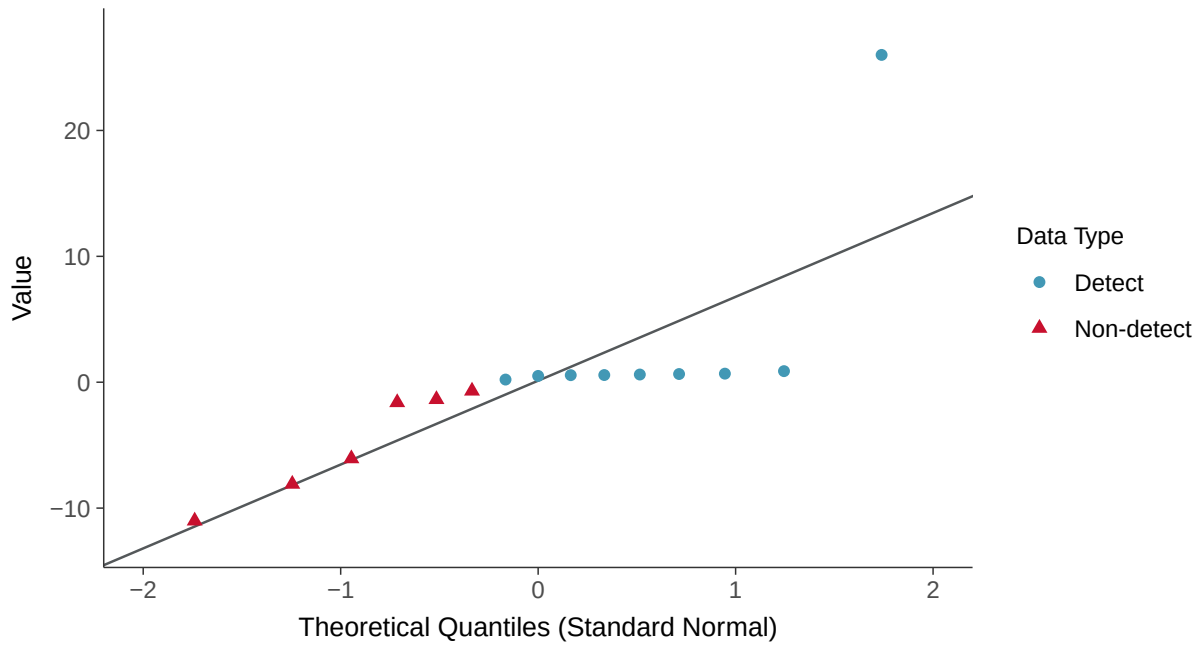


Fluoride (App IV), W-4 (mg/l)



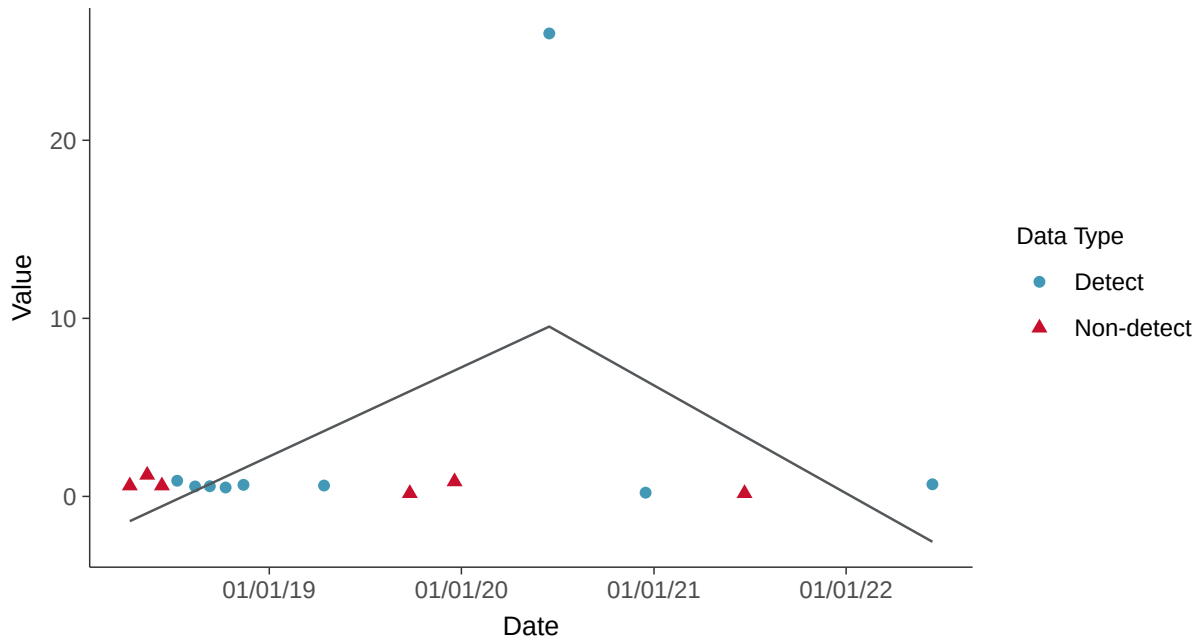
Normal Q-Q plot using ROS Imputed Estimates

Fluoride (App IV), W-4 (mg/l)



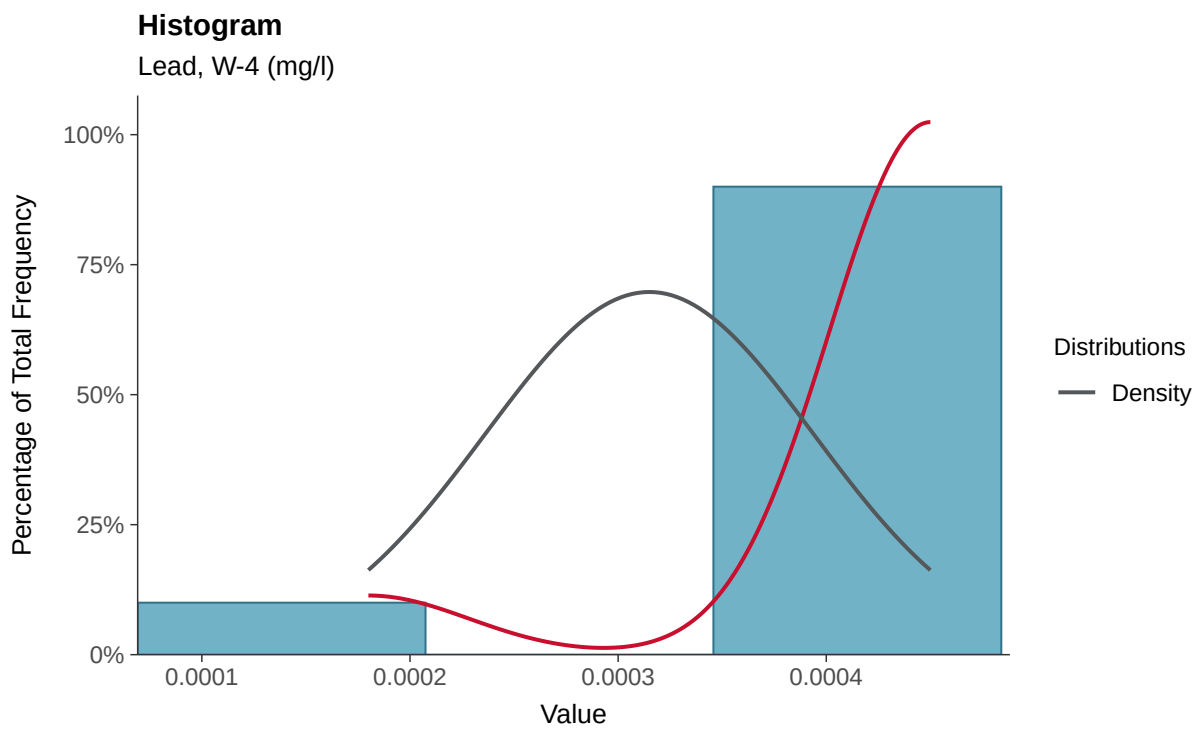
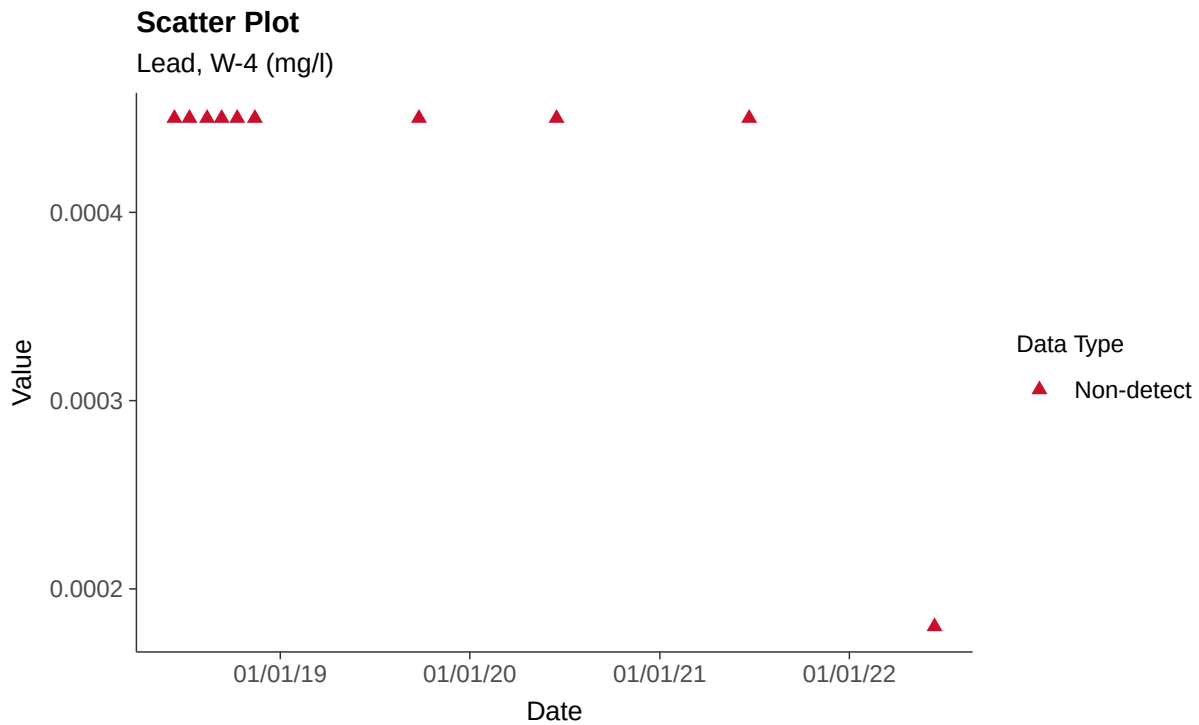
Trend Regression: Piecewise Linear-Linear

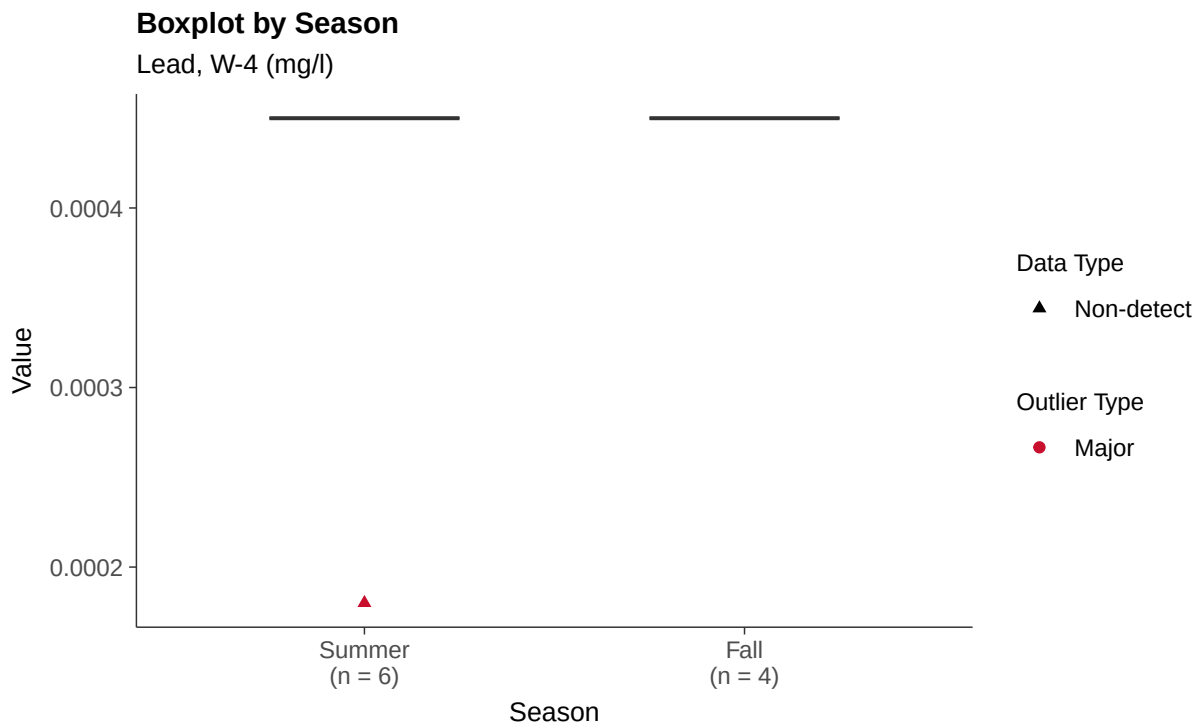
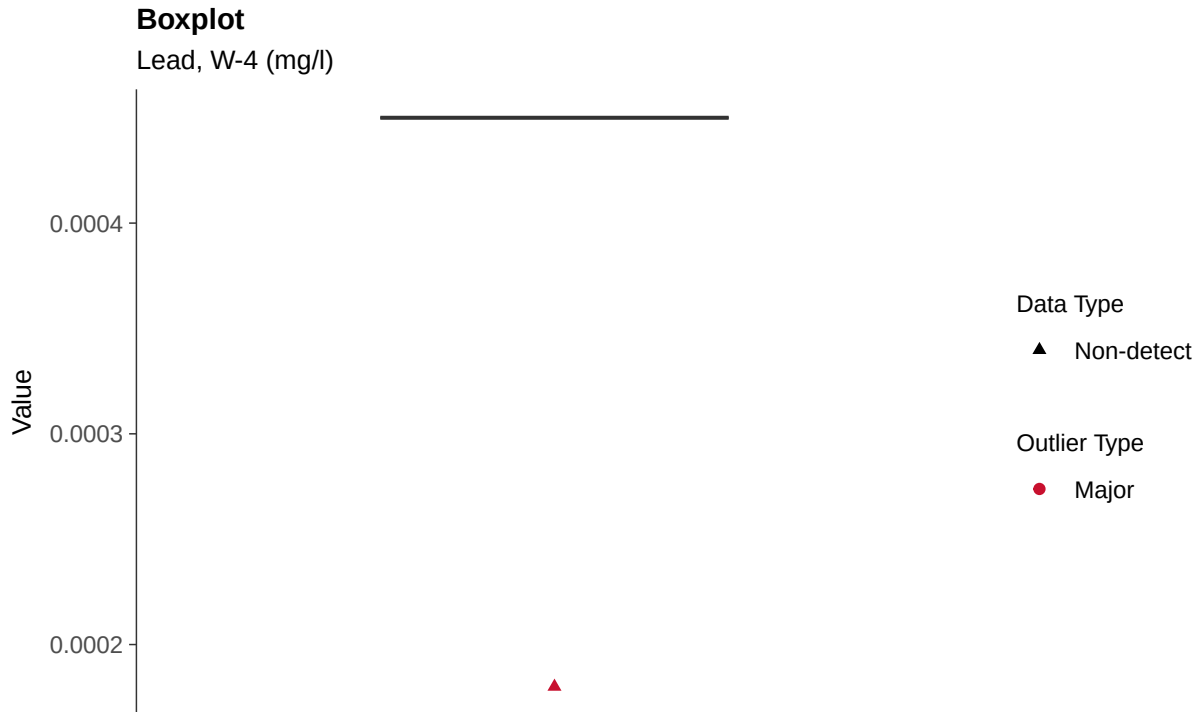
Fluoride (App IV), W-4 (mg/l)



Appendix IV: Lead, W-4

ID: 3_2_117

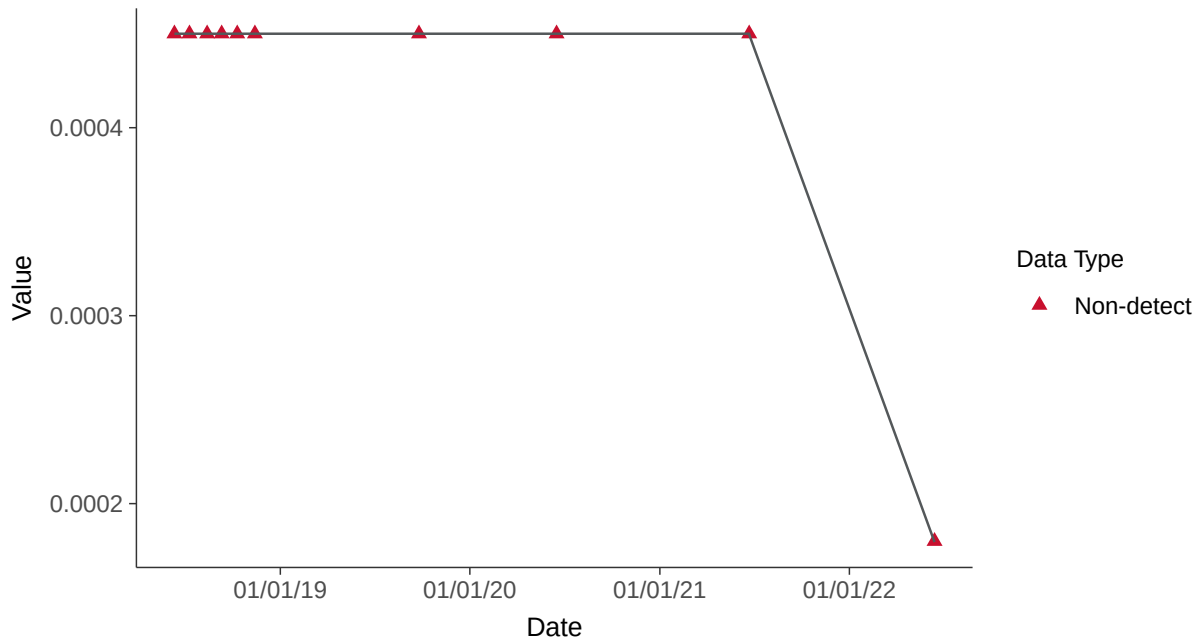






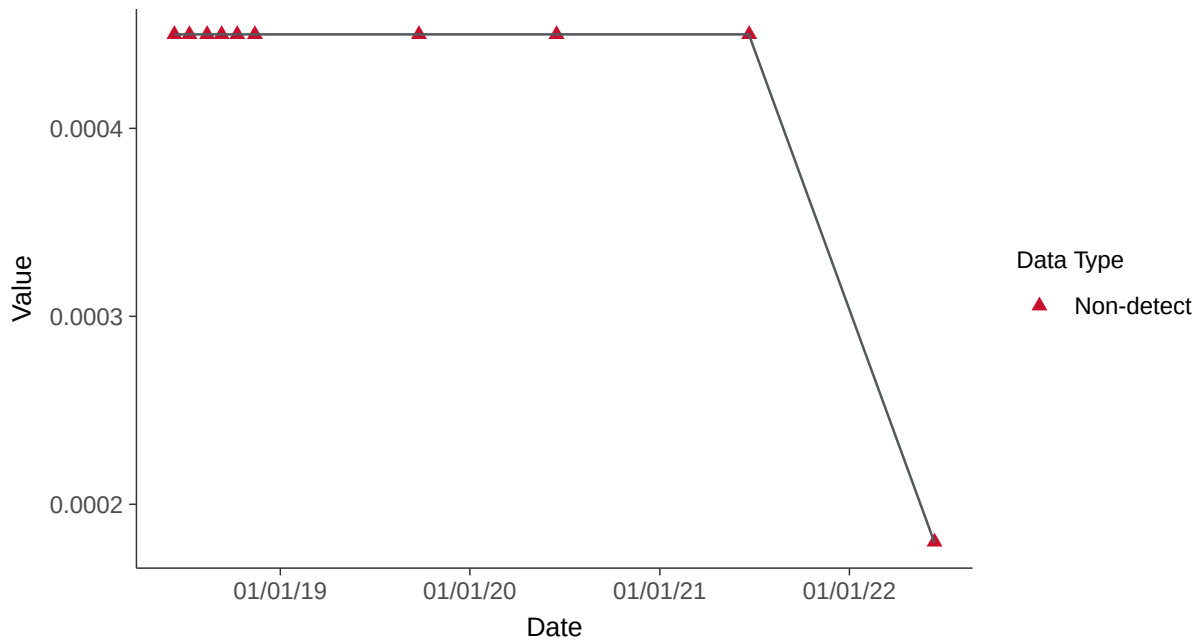
Trend Regression: Piecewise Linear-Linear

Lead, W-4 (mg/l)



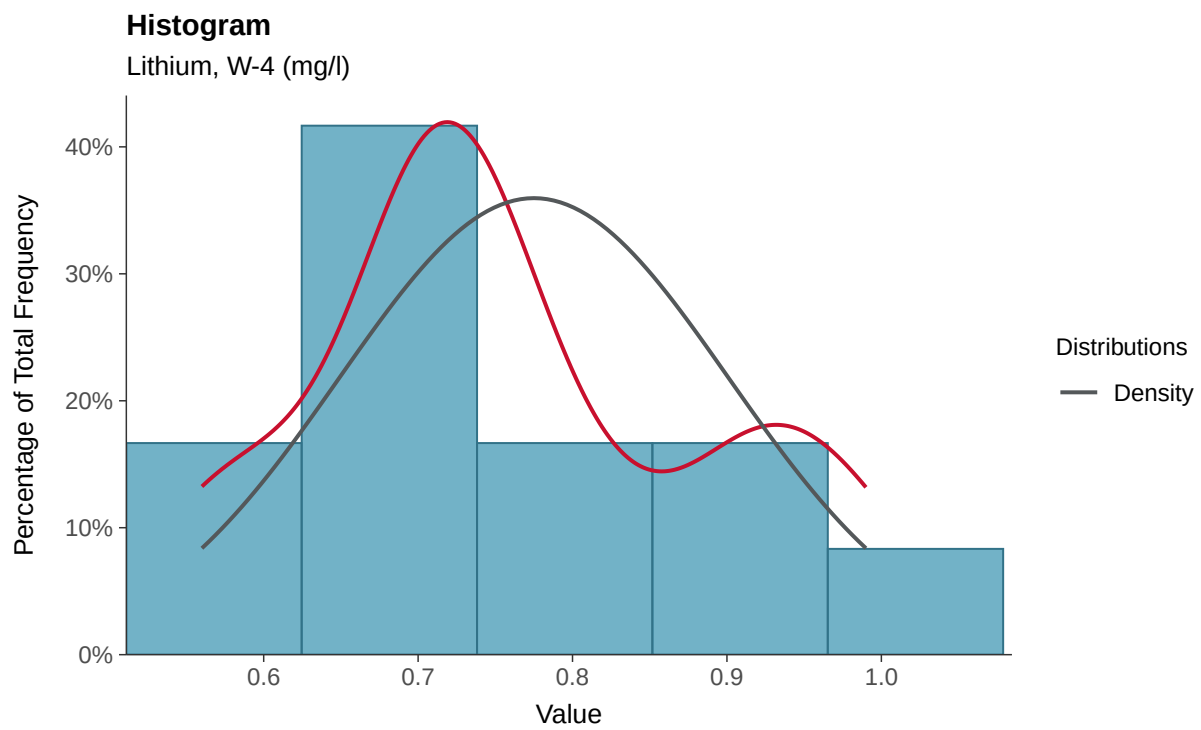
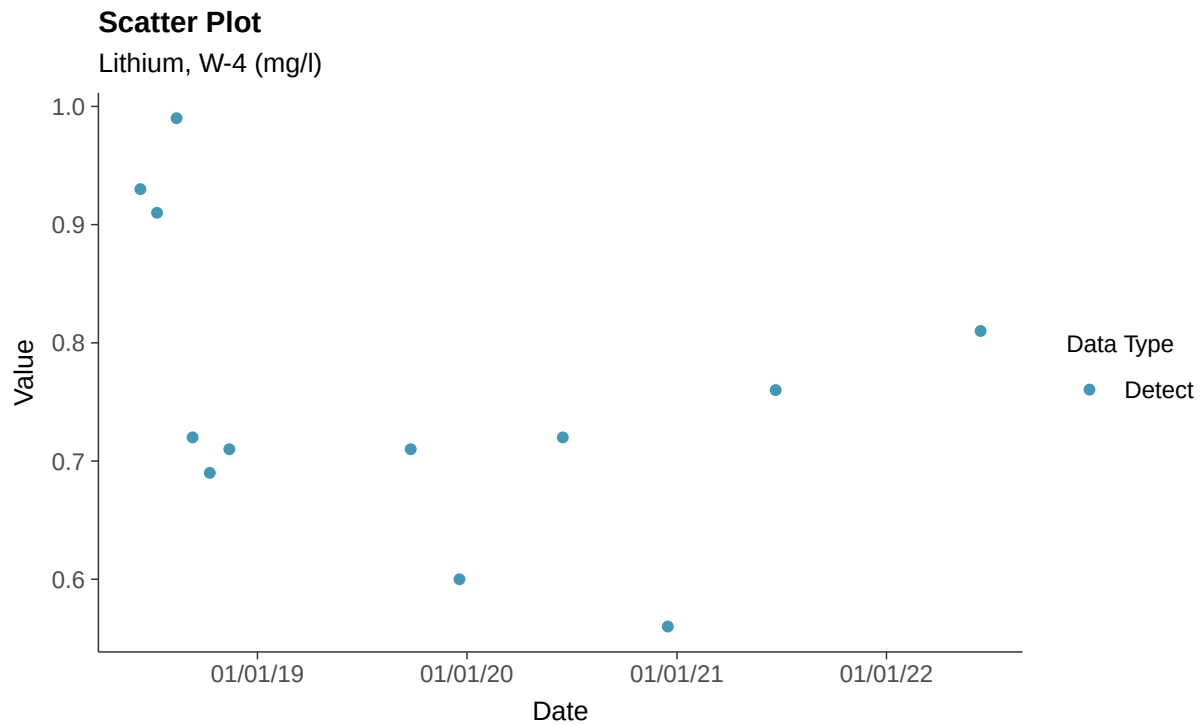
Trend Regression: Piecewise Linear-Linear-Linear

Lead, W-4 (mg/l)



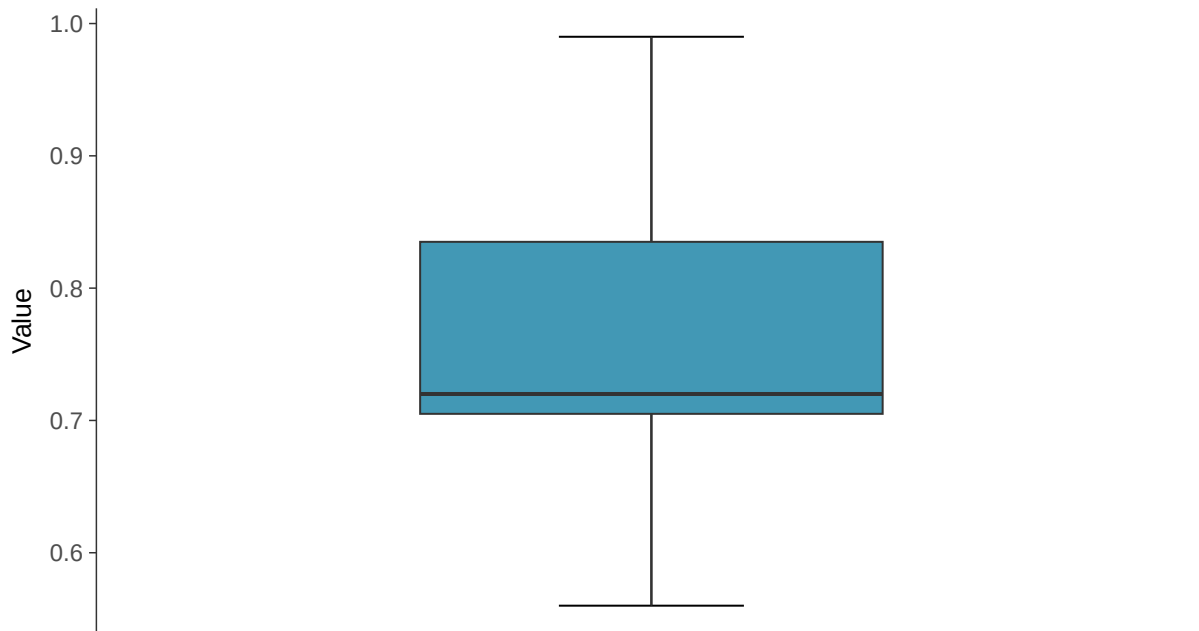
Appendix IV: Lithium, W-4

ID: 3_2_118



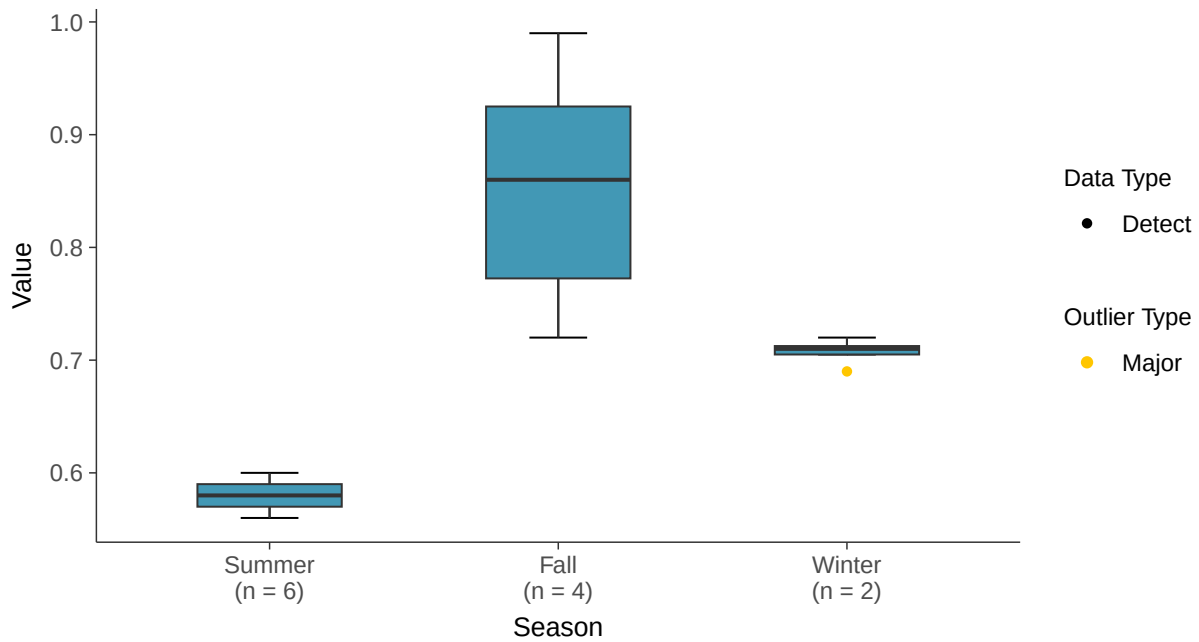
Boxplot

Lithium, W-4 (mg/l)



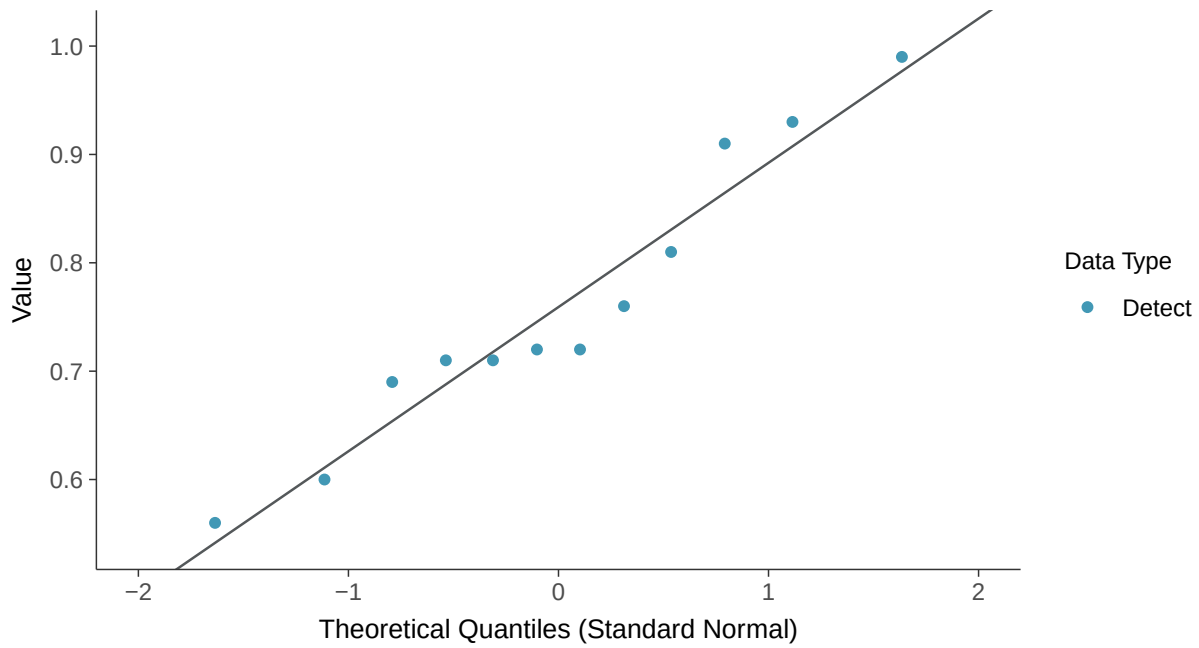
Boxplot by Season

Lithium, W-4 (mg/l)



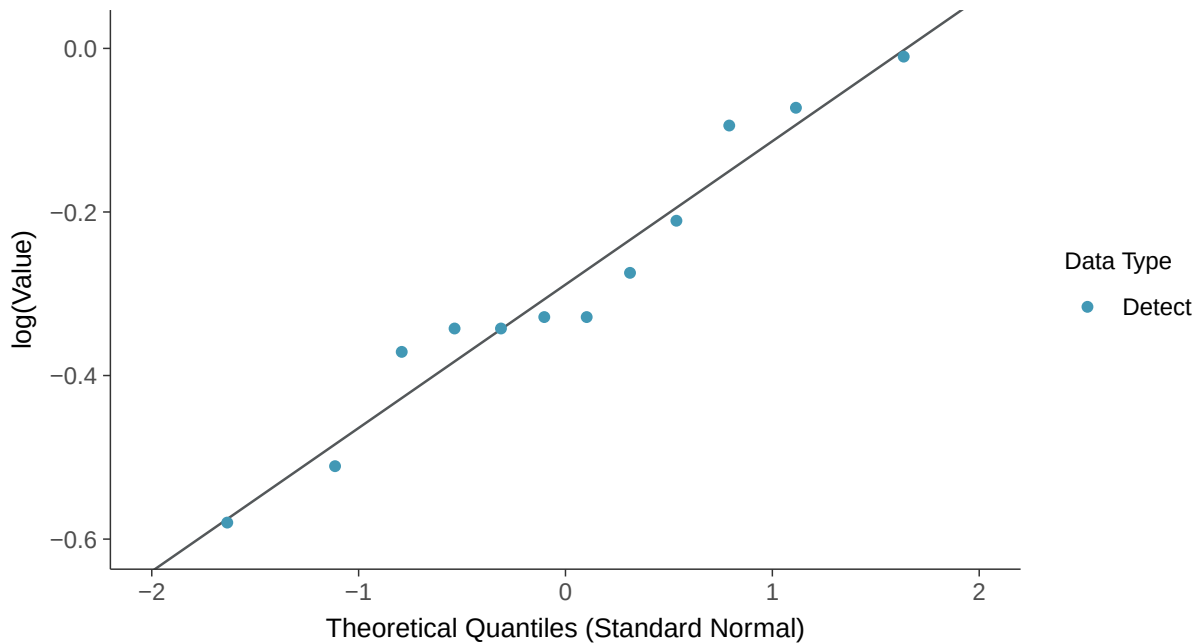
Normal Q-Q plot

Lithium, W-4 (mg/l)



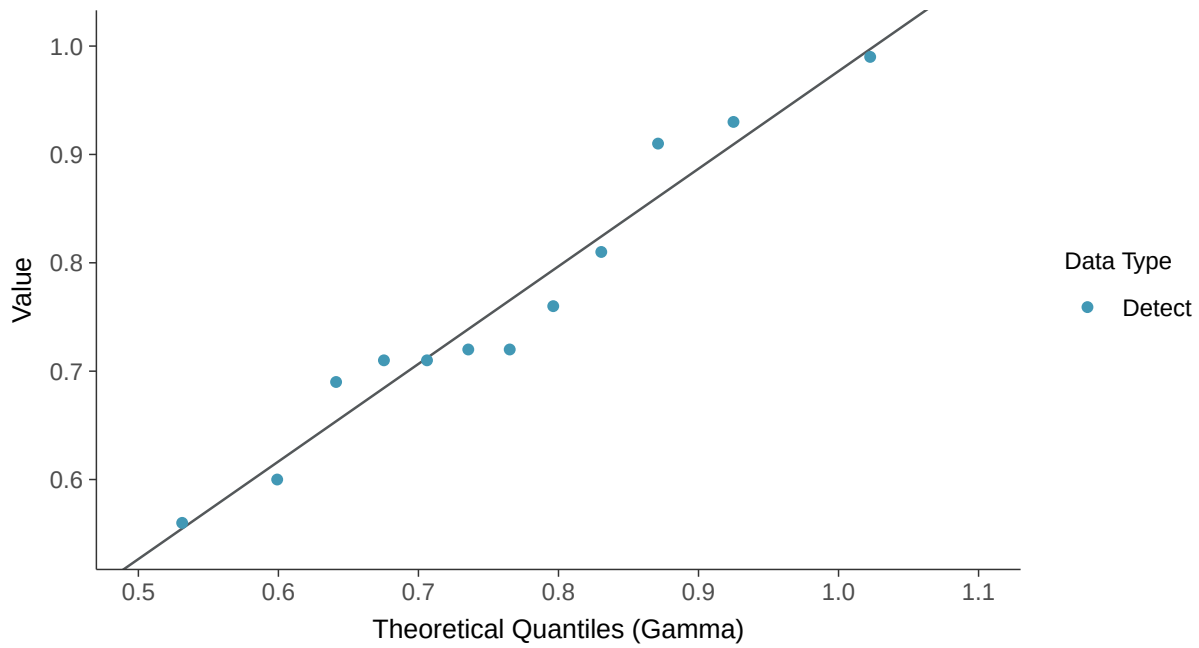
Lognormal Q-Q plot

Lithium, W-4 (mg/l)



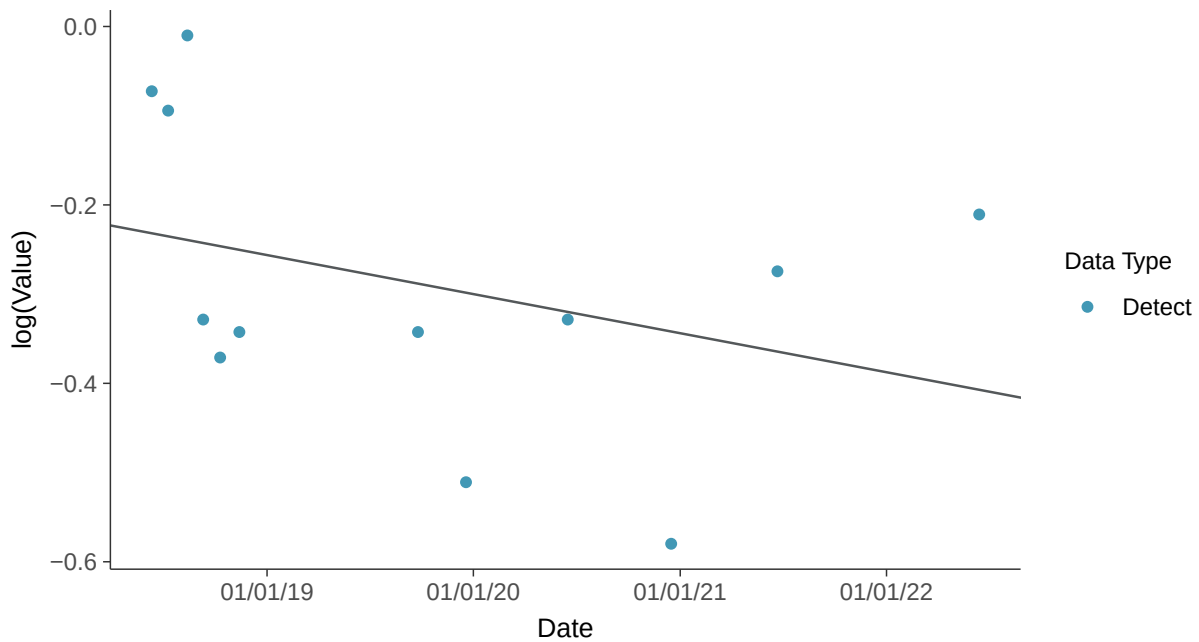
Gamma Q-Q plot

Lithium, W-4 (mg/l)



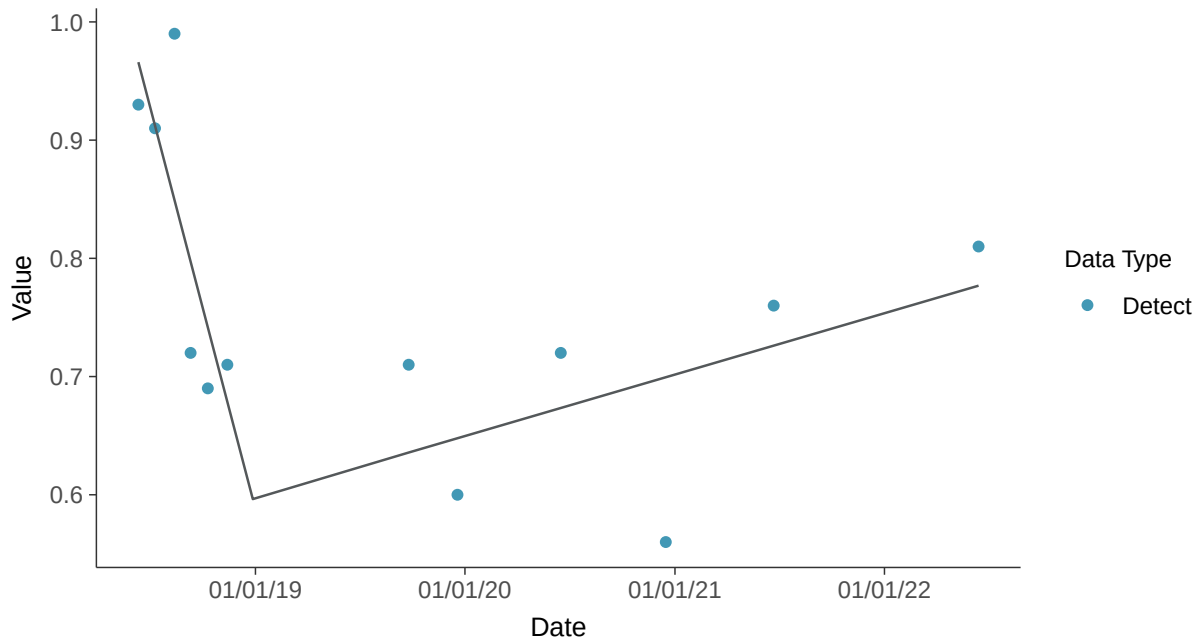
Trend Regression: Lognormal MLE

Lithium, W-4 (mg/l)



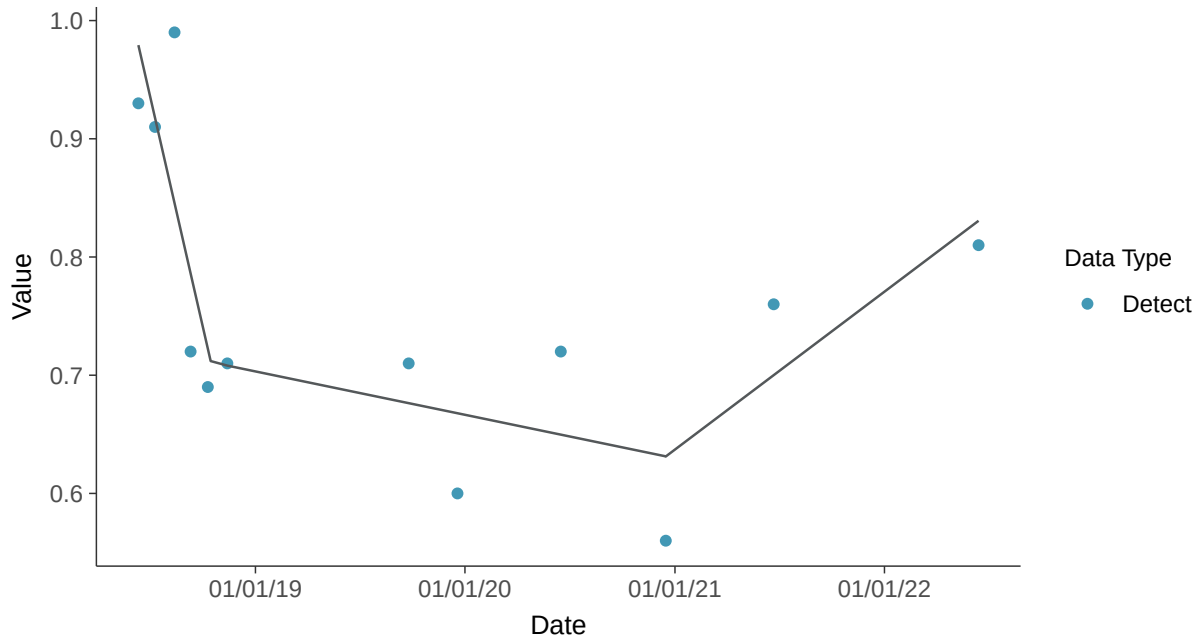
Trend Regression: Piecewise Linear-Linear

Lithium, W-4 (mg/l)



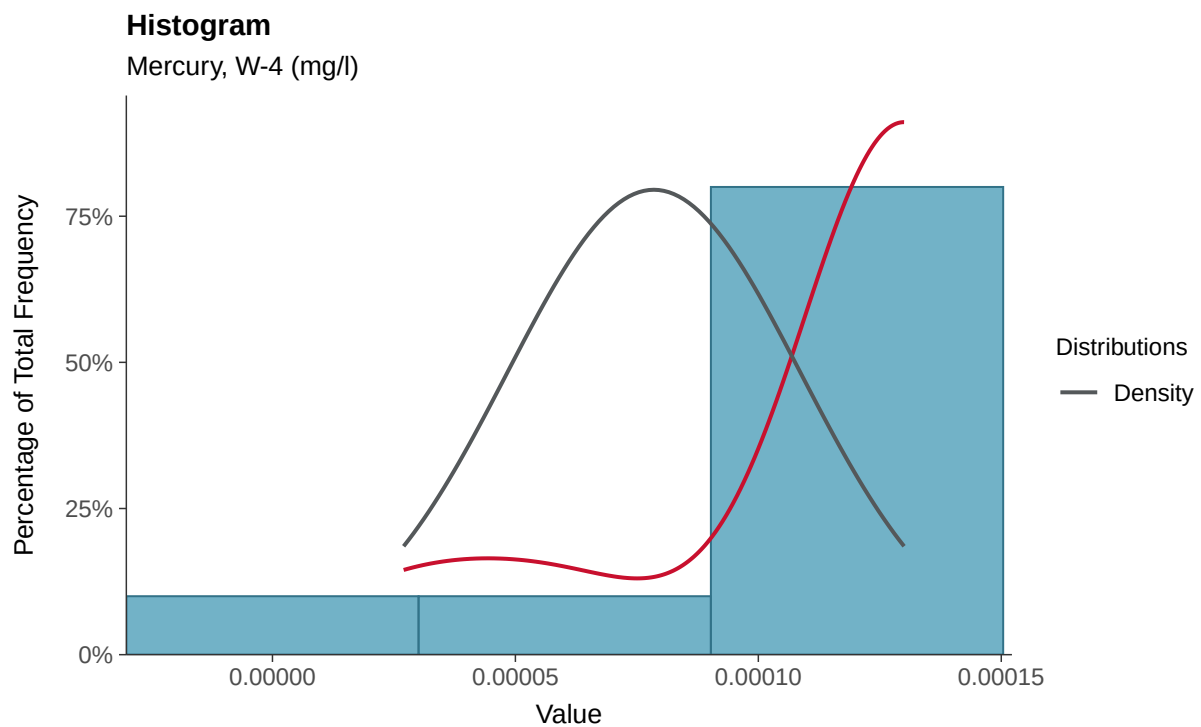
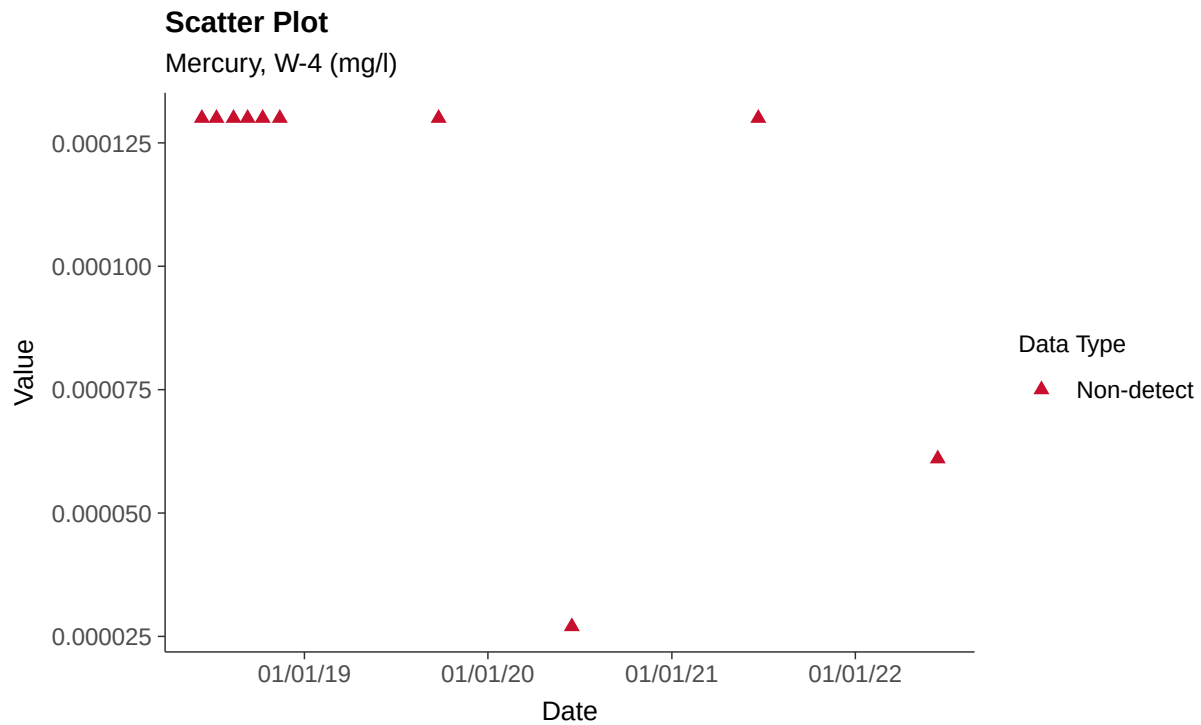
Trend Regression: Piecewise Linear-Linear-Linear

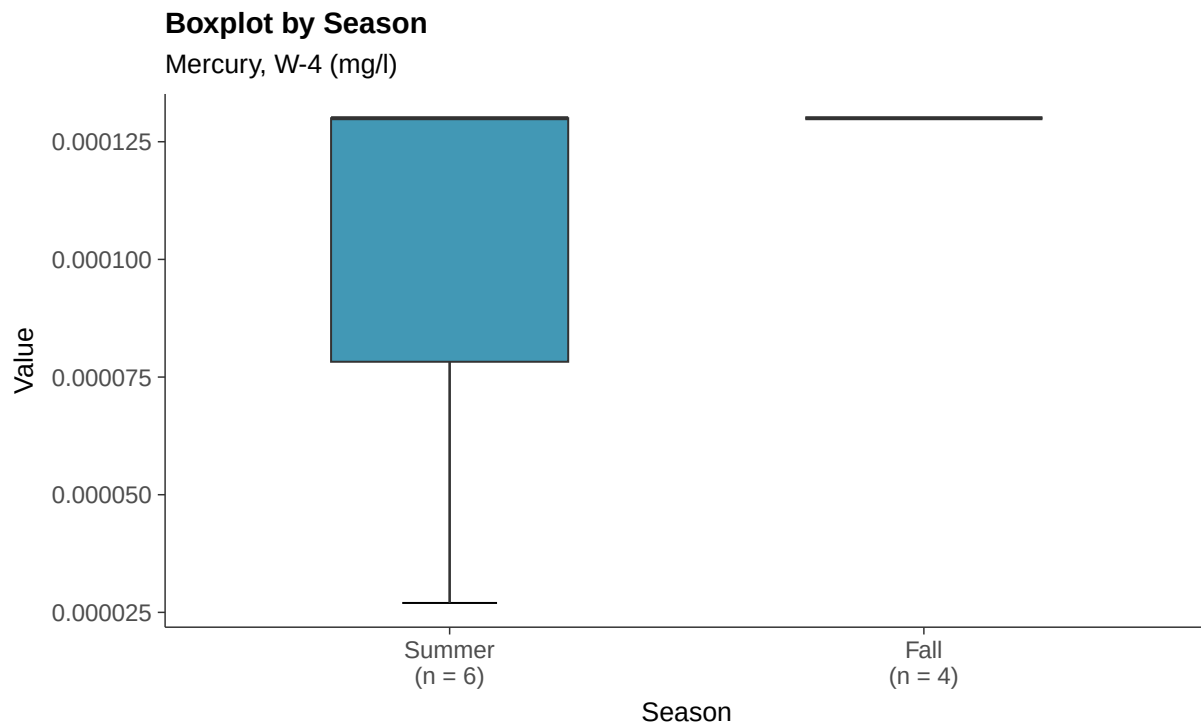
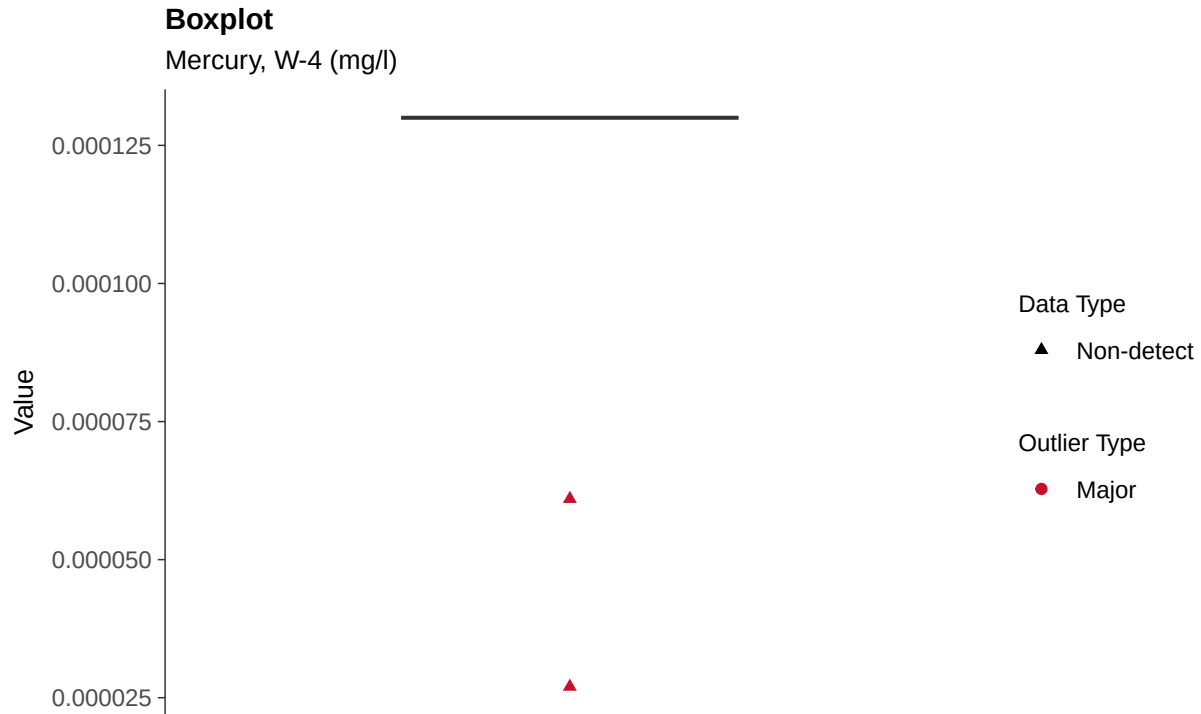
Lithium, W-4 (mg/l)

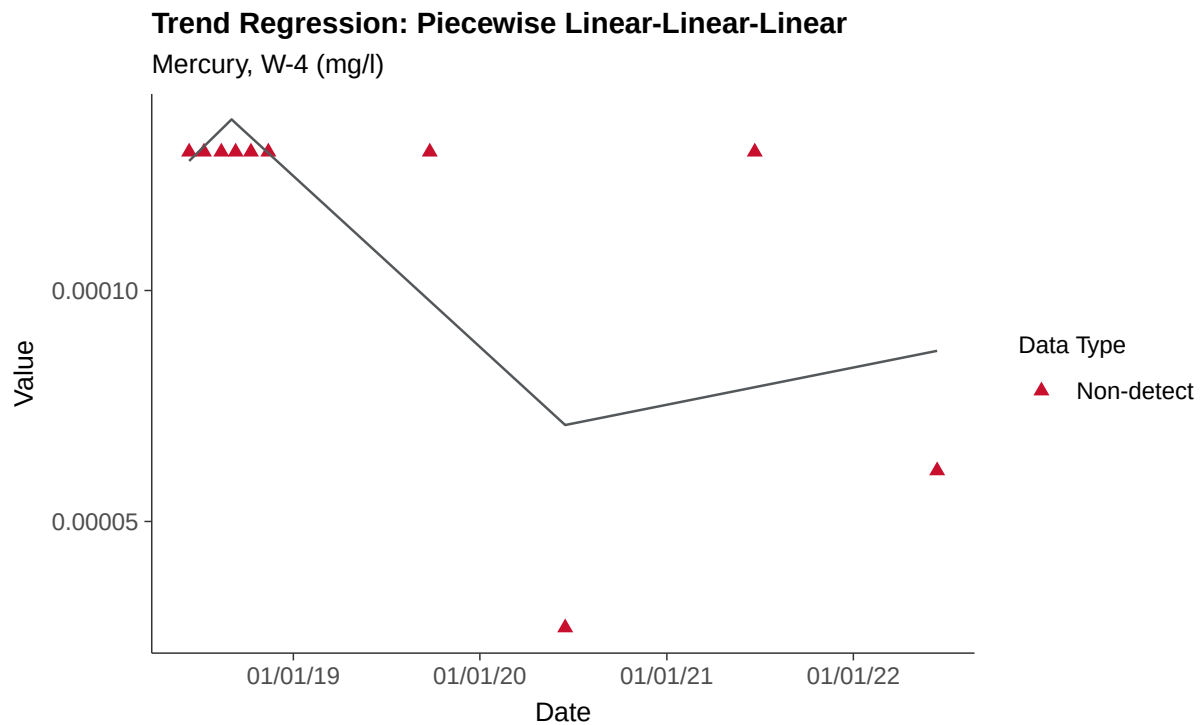
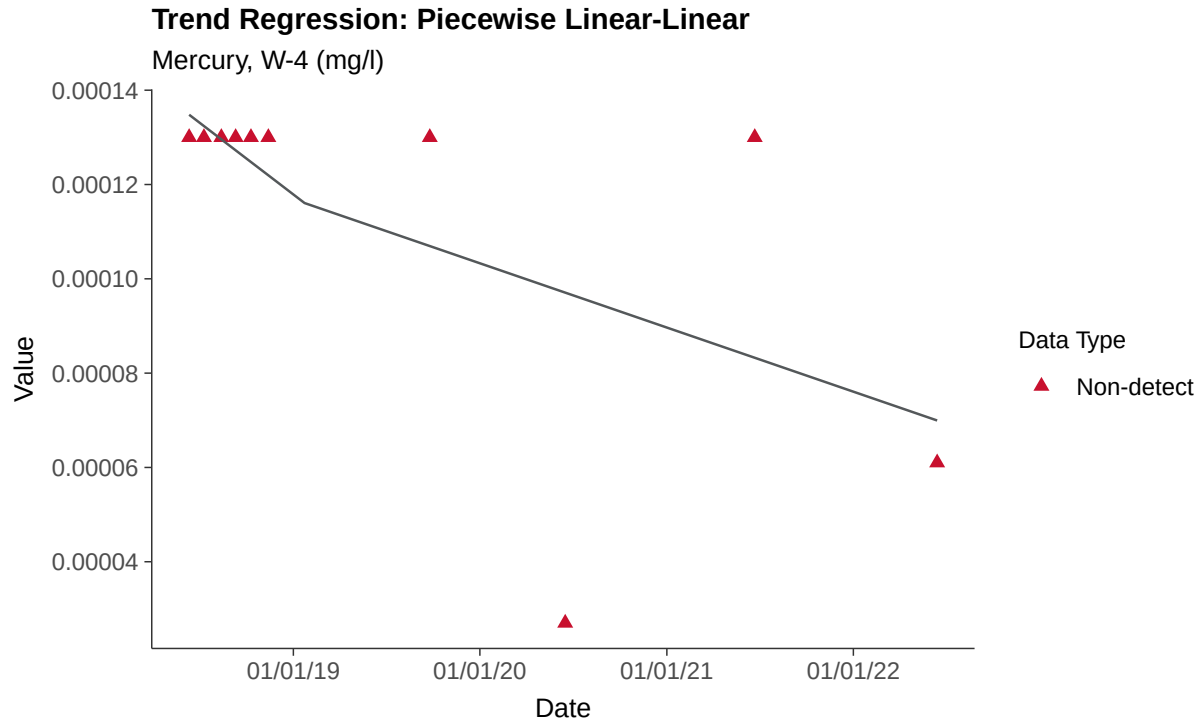


Appendix IV: Mercury, W-4

ID: 3_2_120





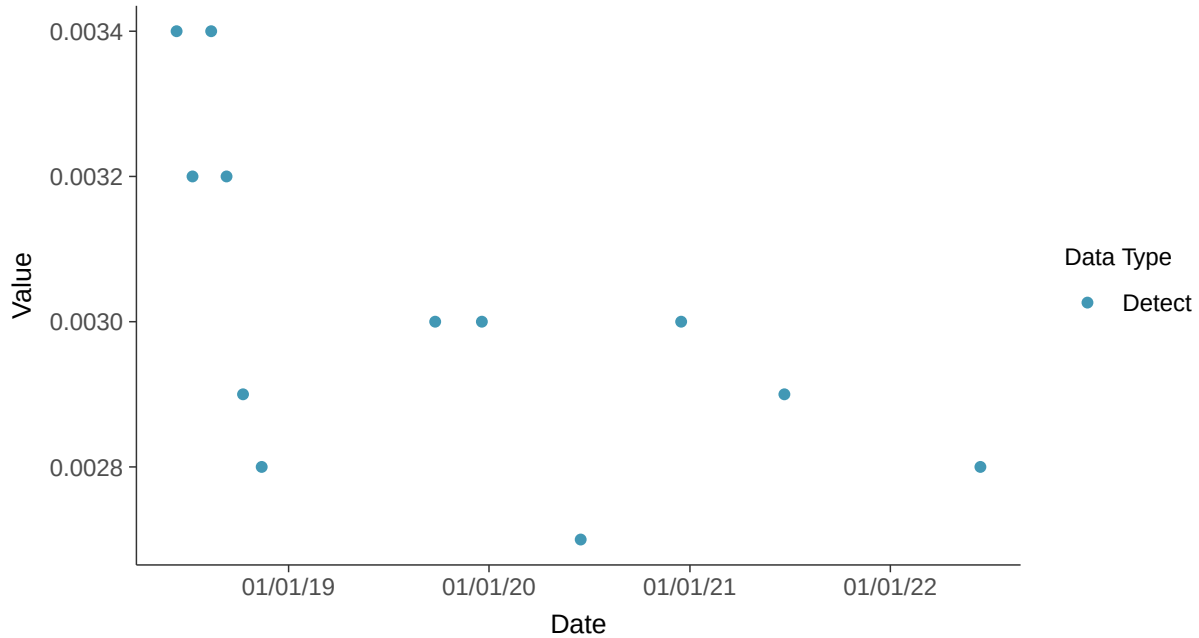


Appendix IV: Molybdenum, W-4

ID: 3_2_121

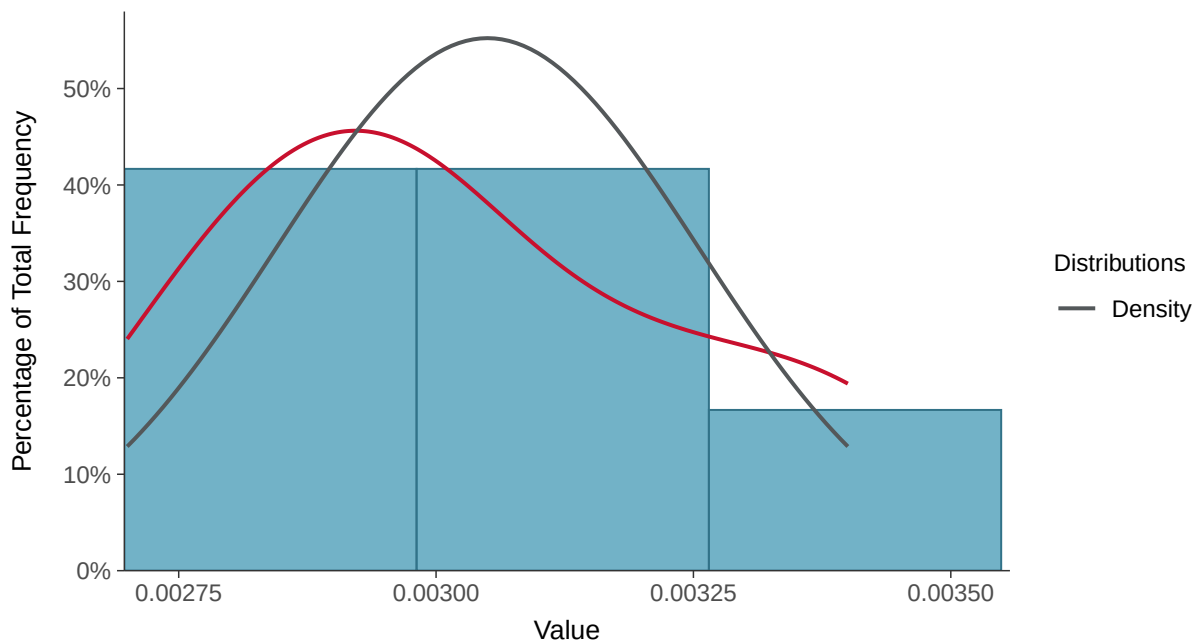
Scatter Plot

Molybdenum, W-4 (mg/l)



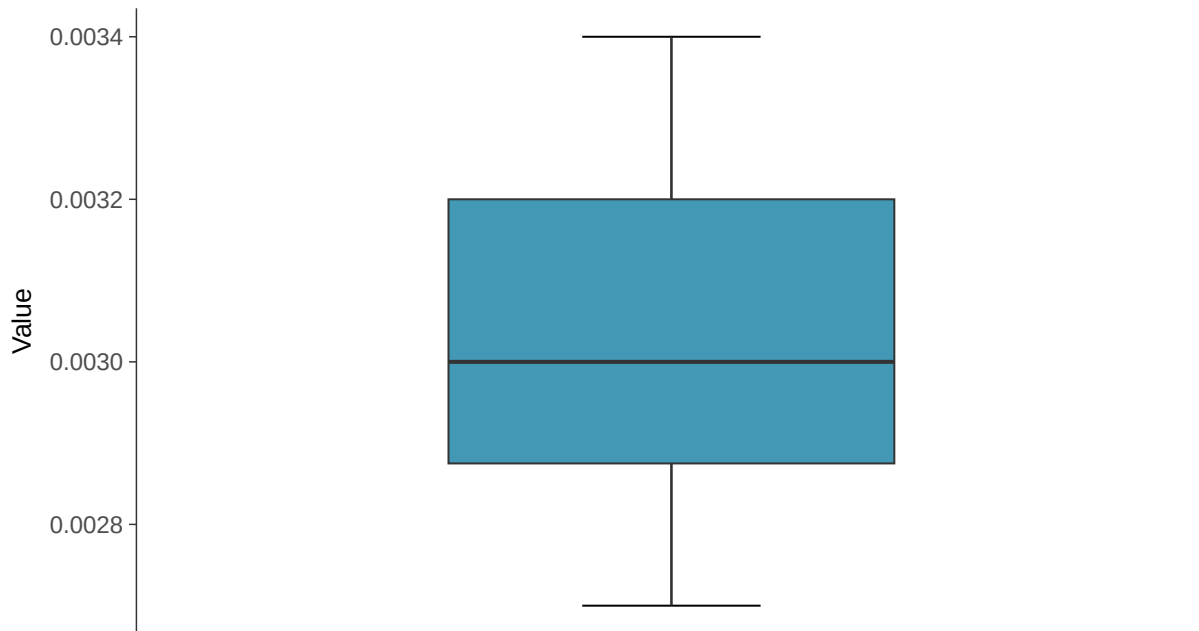
Histogram

Molybdenum, W-4 (mg/l)



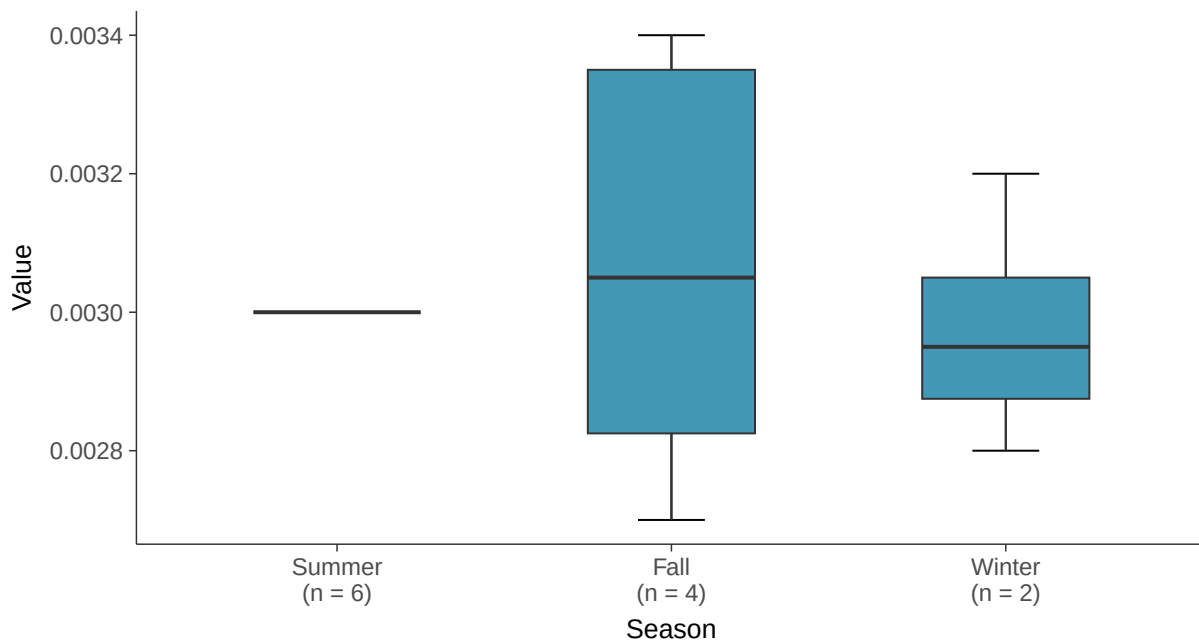
Boxplot

Molybdenum, W-4 (mg/l)



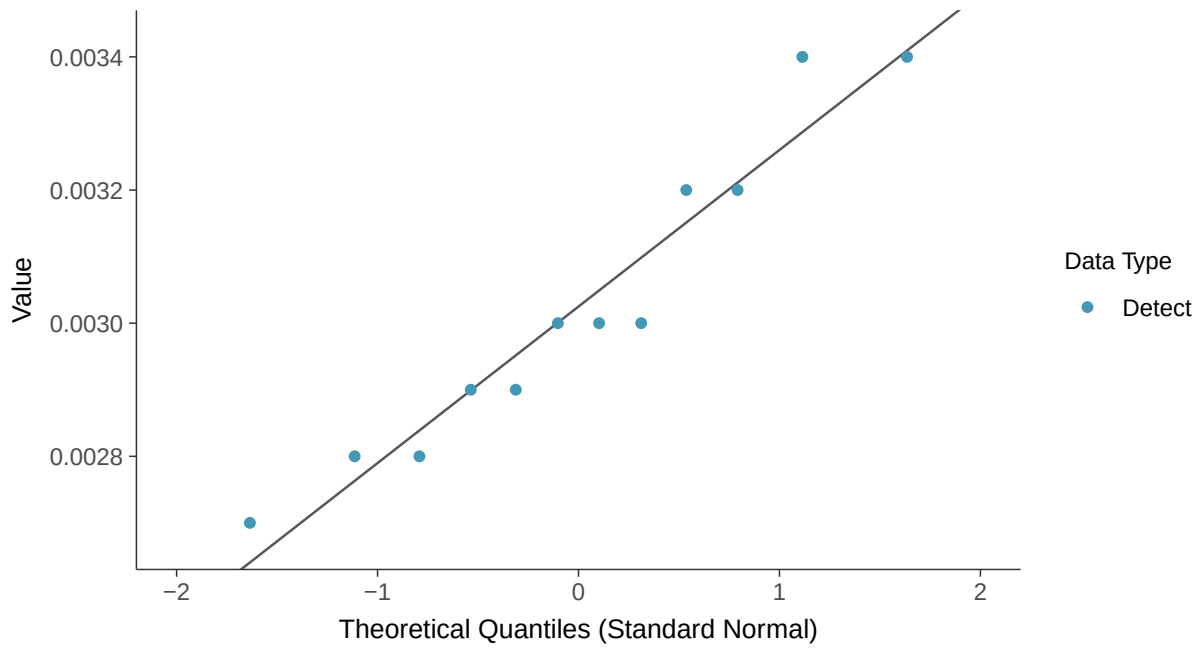
Boxplot by Season

Molybdenum, W-4 (mg/l)



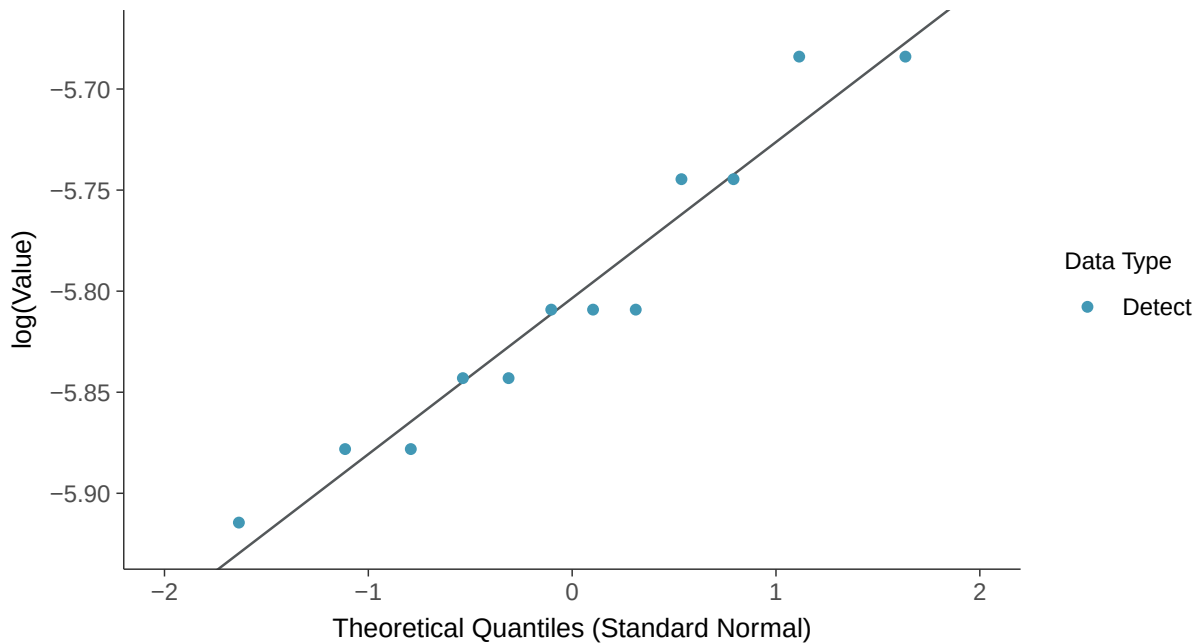
Normal Q-Q plot

Molybdenum, W-4 (mg/l)



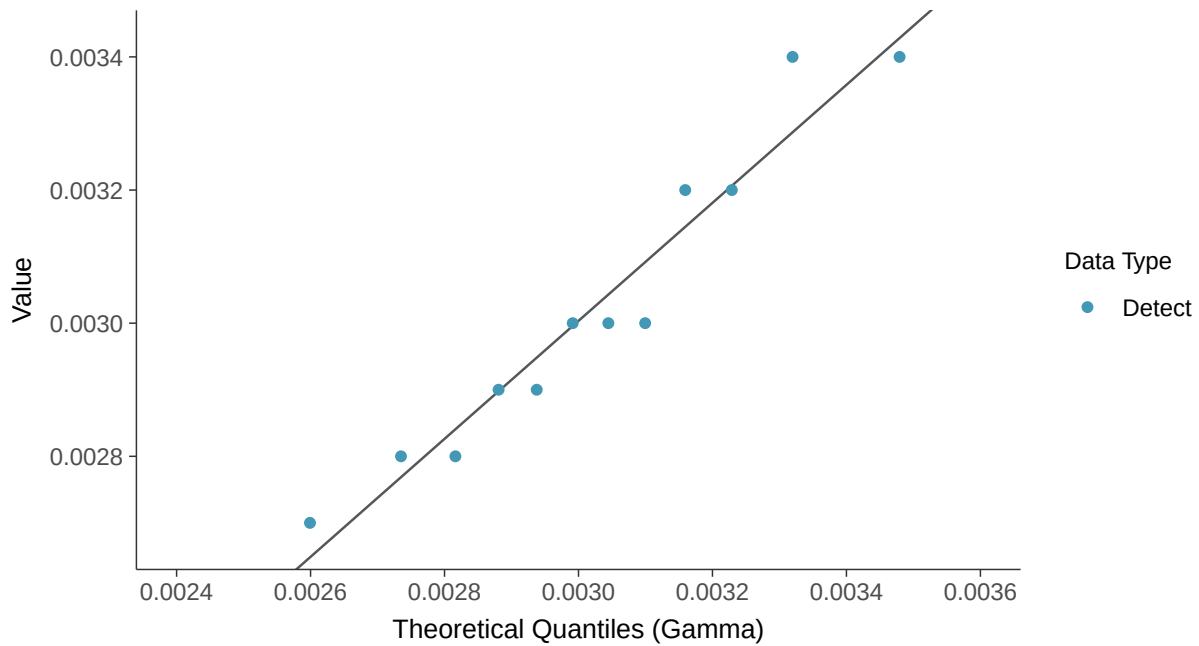
Lognormal Q-Q plot

Molybdenum, W-4 (mg/l)



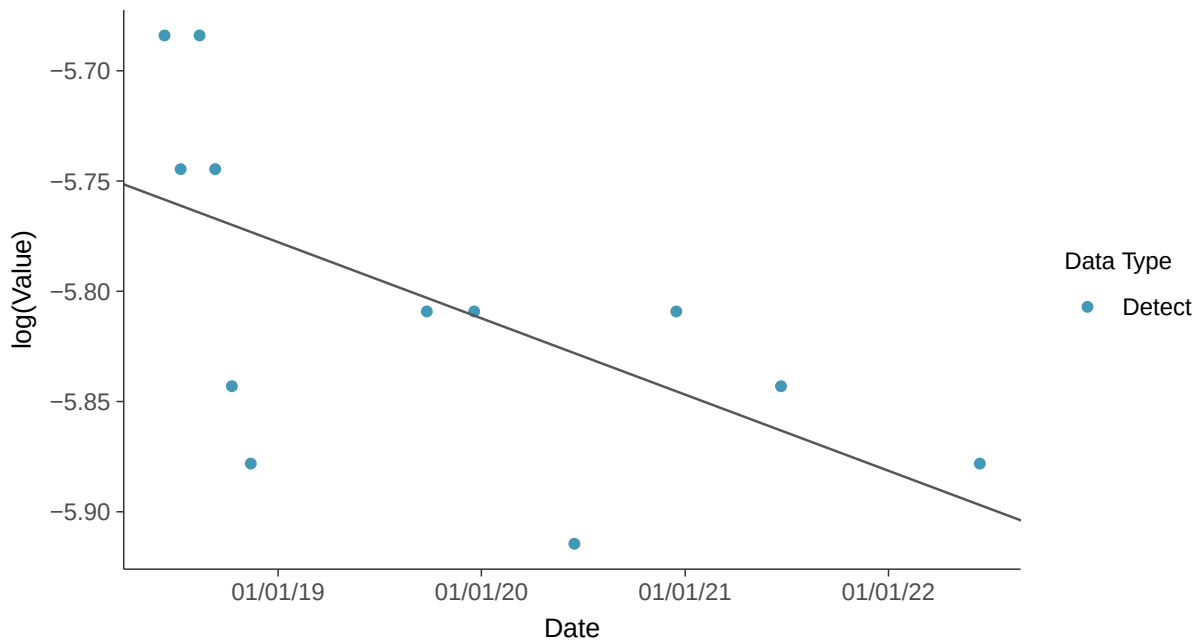
Gamma Q-Q plot

Molybdenum, W-4 (mg/l)



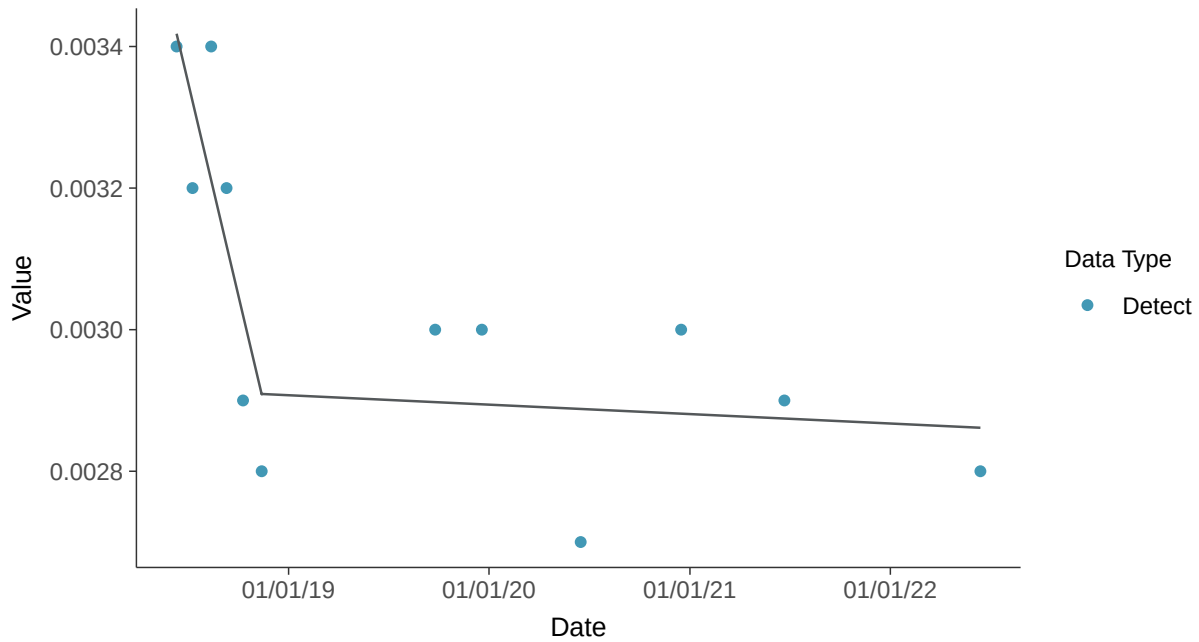
Trend Regression: Lognormal MLE

Molybdenum, W-4 (mg/l)



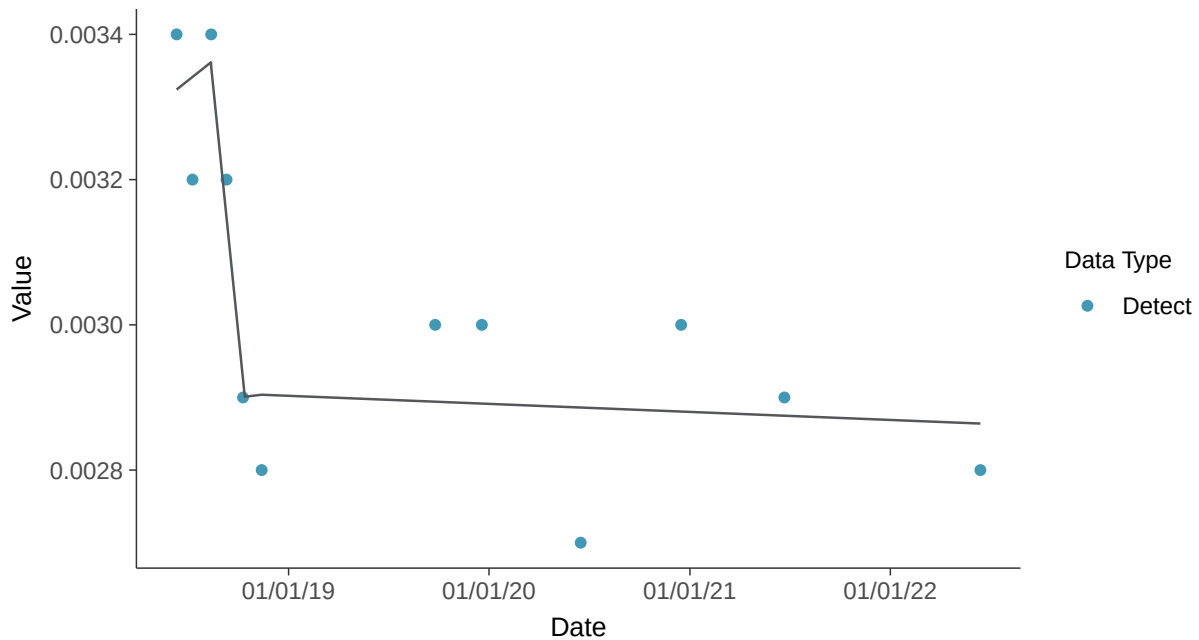
Trend Regression: Piecewise Linear-Linear

Molybdenum, W-4 (mg/l)



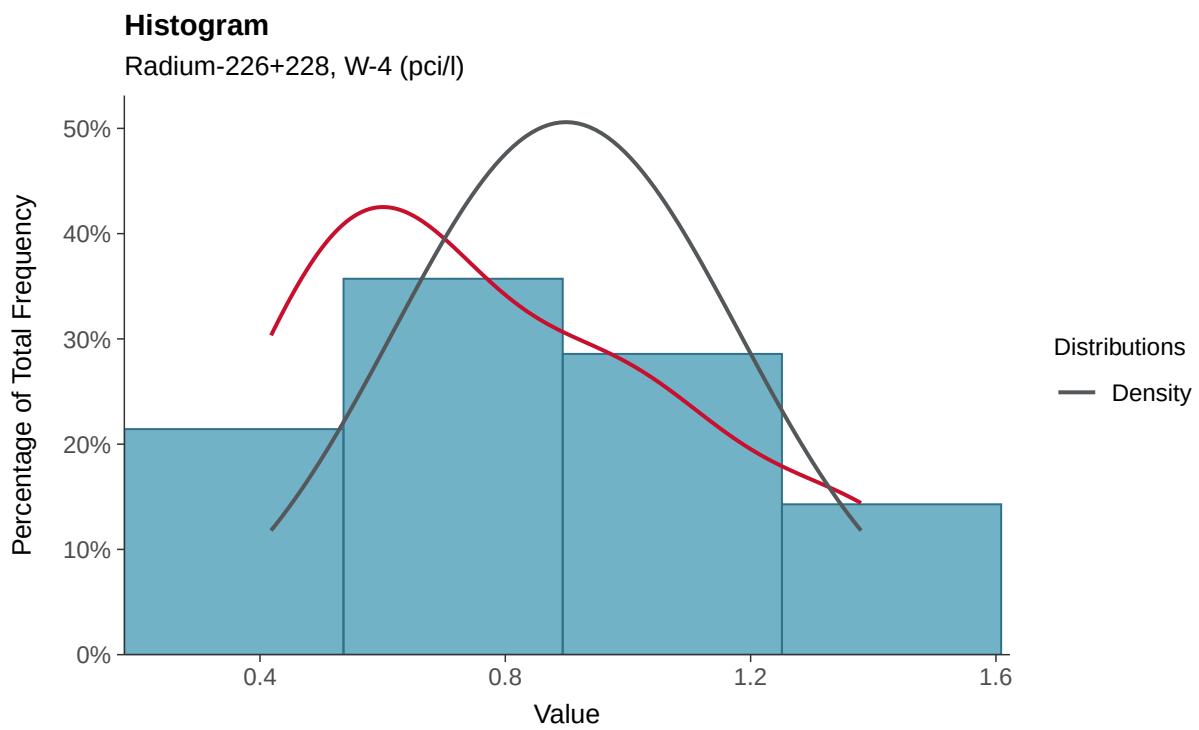
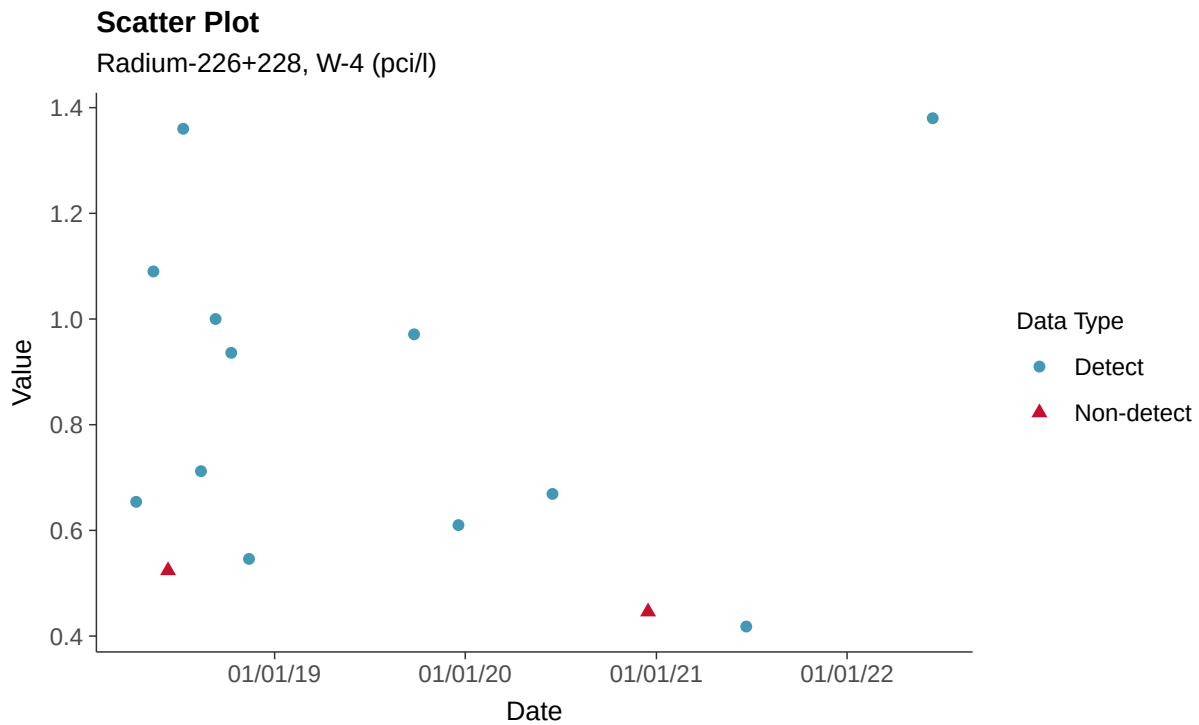
Trend Regression: Piecewise Linear-Linear-Linear

Molybdenum, W-4 (mg/l)



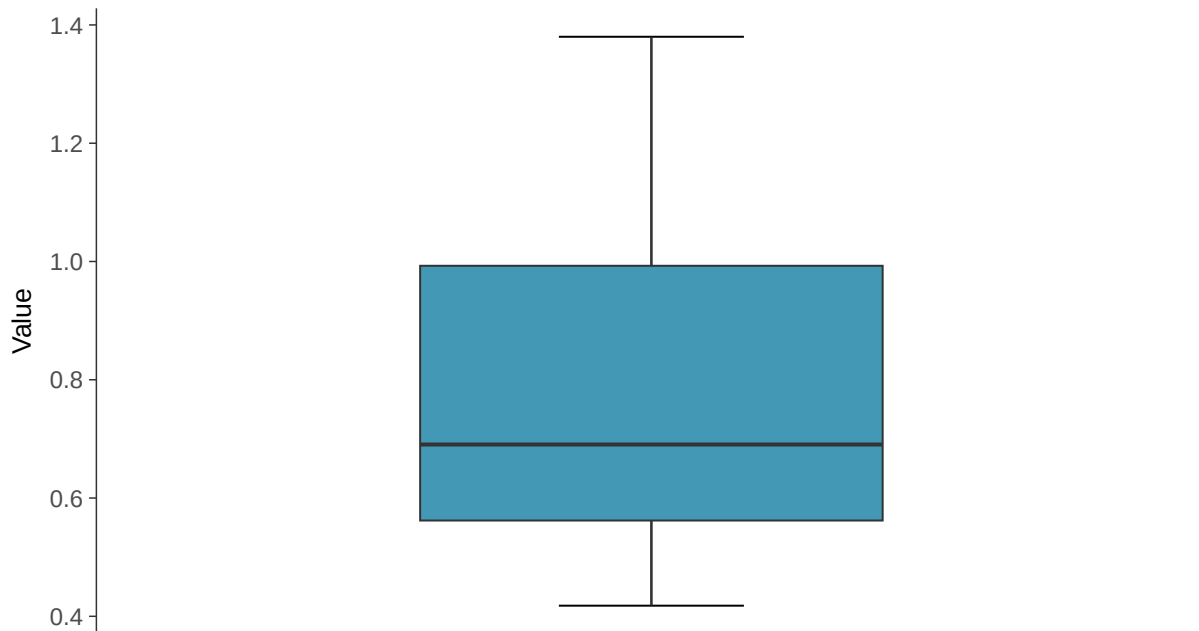
Appendix IV: Radium-226+228, W-4

ID: 3_2_127



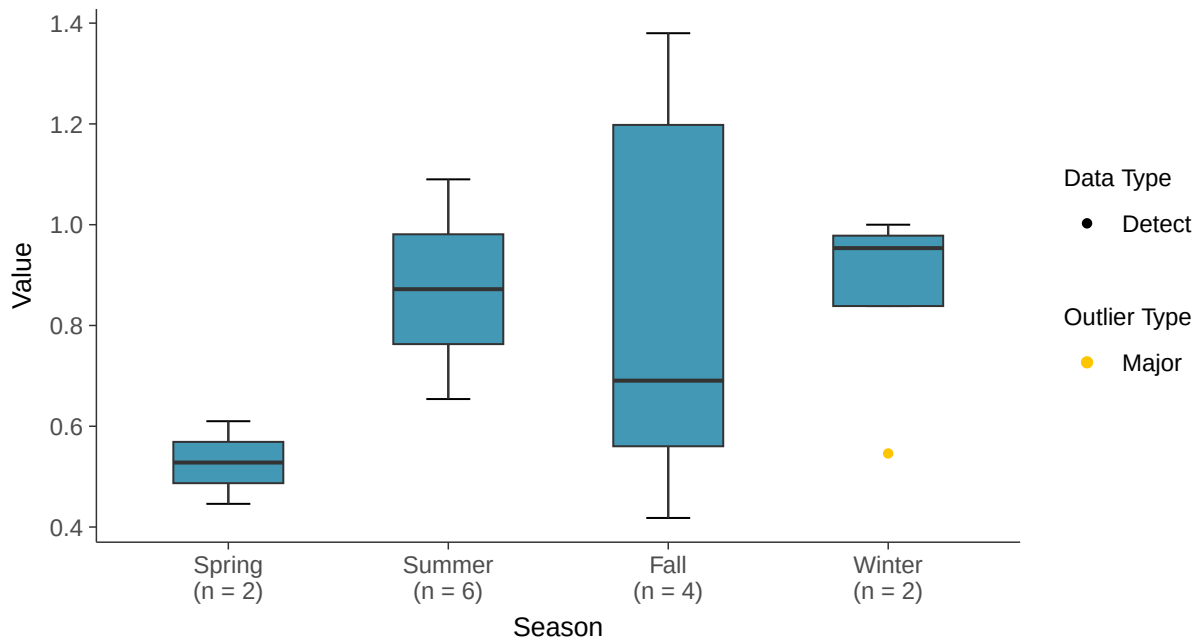
Boxplot

Radium-226+228, W-4 (pci/l)



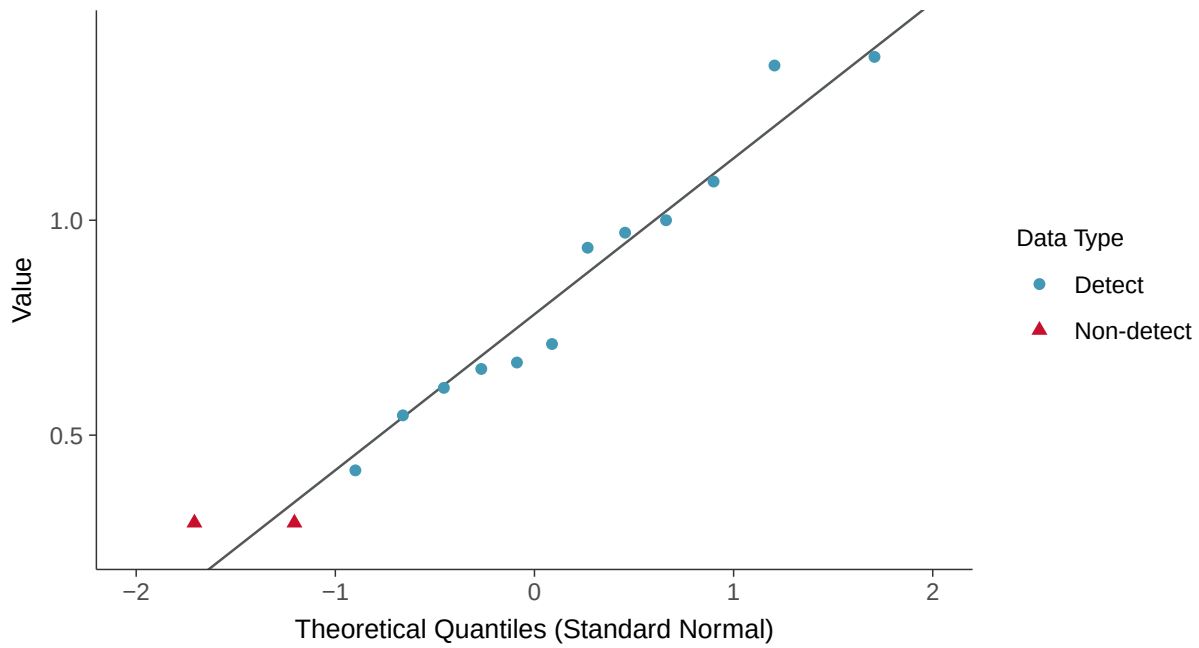
Boxplot by Season

Radium-226+228, W-4 (pci/l)



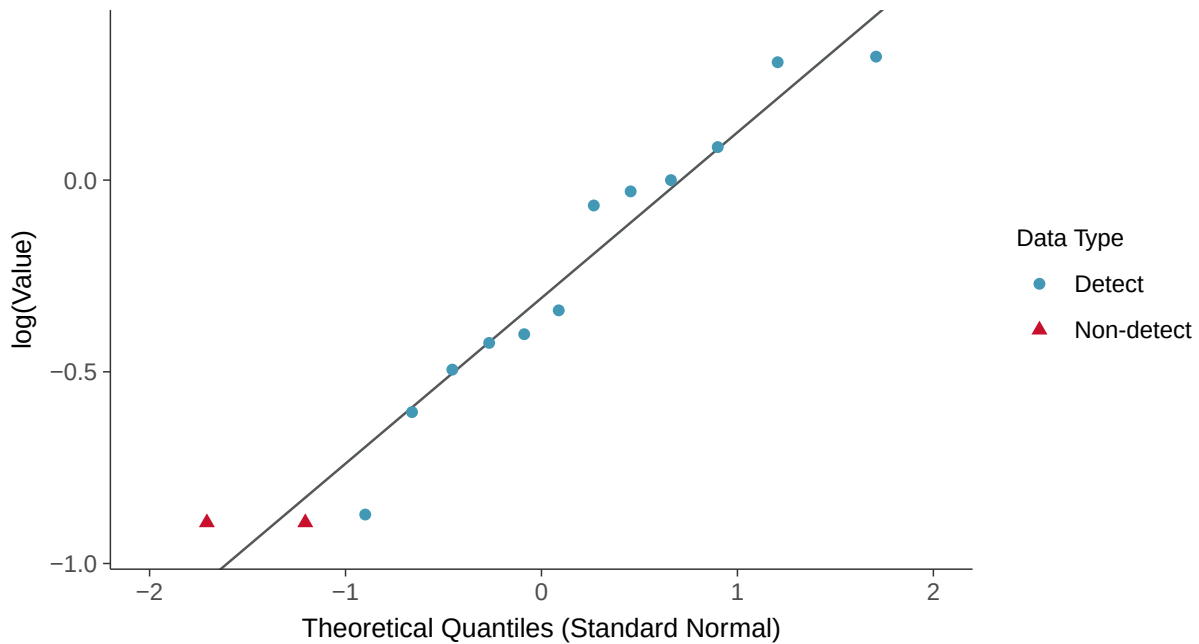
Normal Q-Q plot using ROS Imputed Estimates

Radium-226+228, W-4 (pci/l)



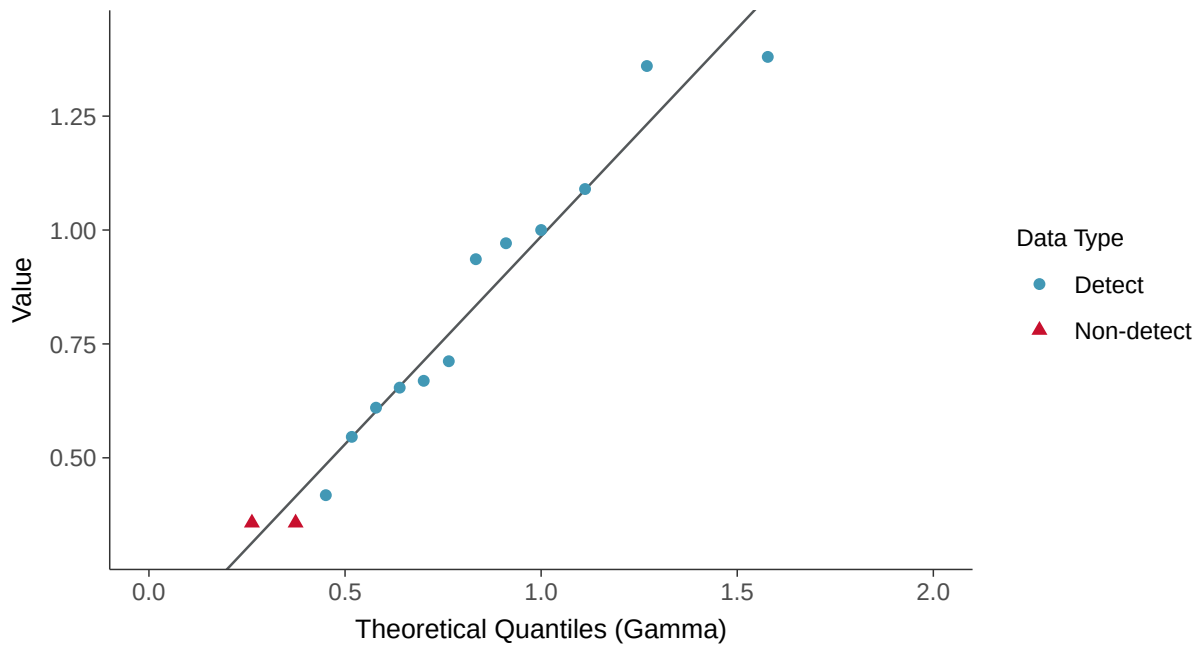
Lognormal Q-Q plot using ROS Imputed Estimates

Radium-226+228, W-4 (pci/l)



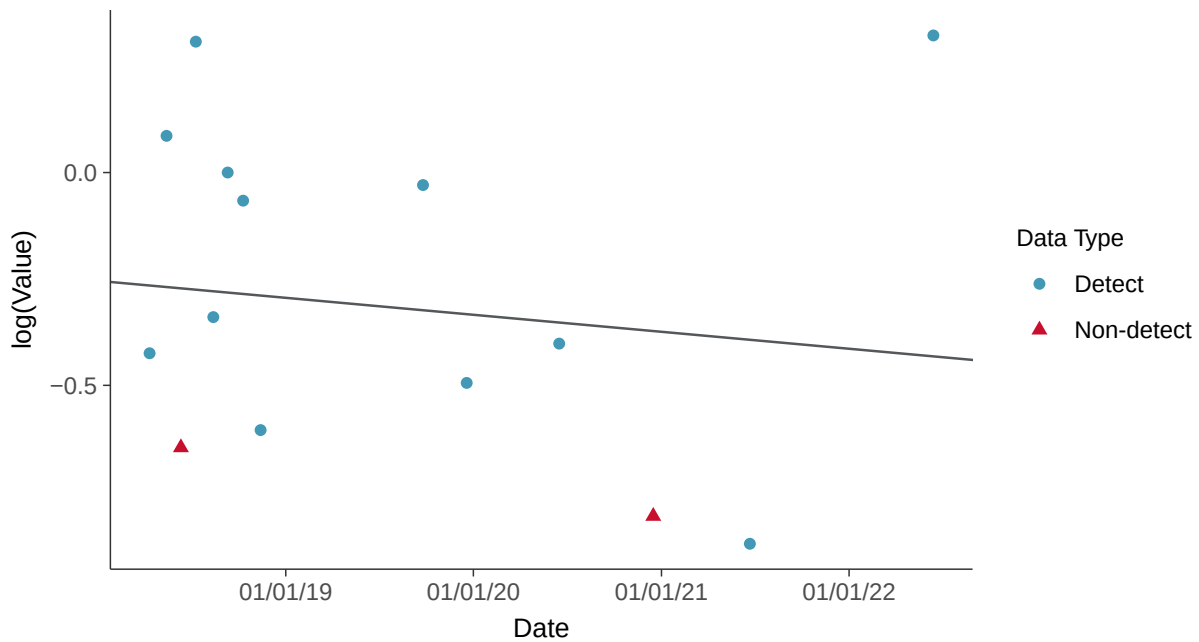
Gamma Q-Q plot using ROS Imputed Estimates

Radium-226+228, W-4 (pci/l)



Trend Regression: Lognormal MLE

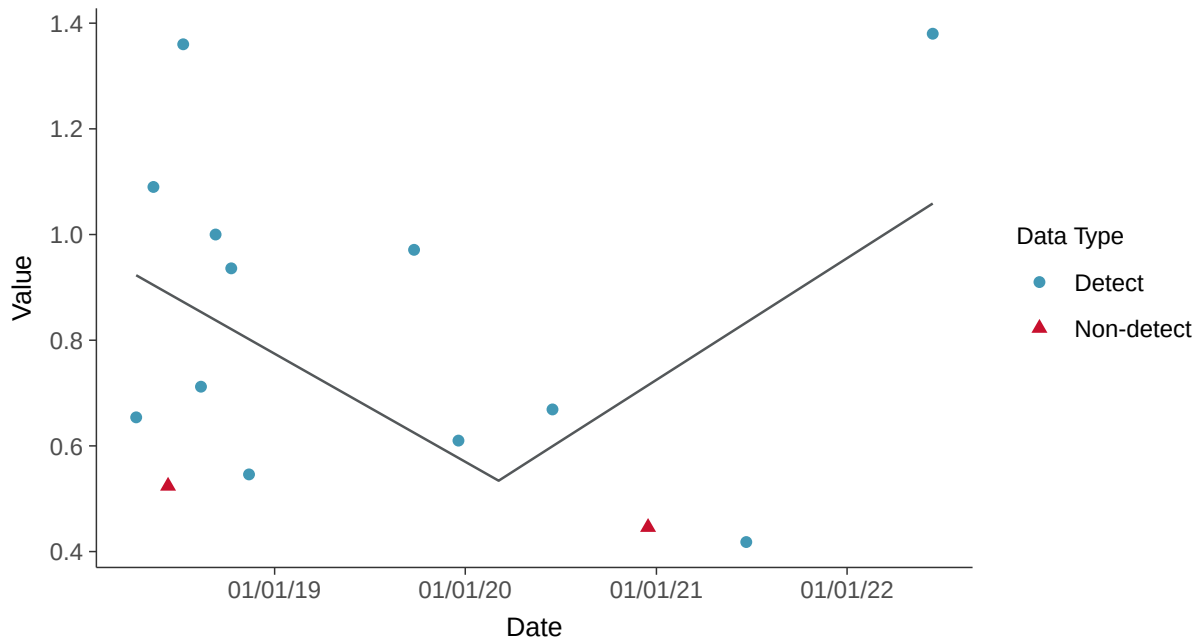
Radium-226+228, W-4 (pci/l)





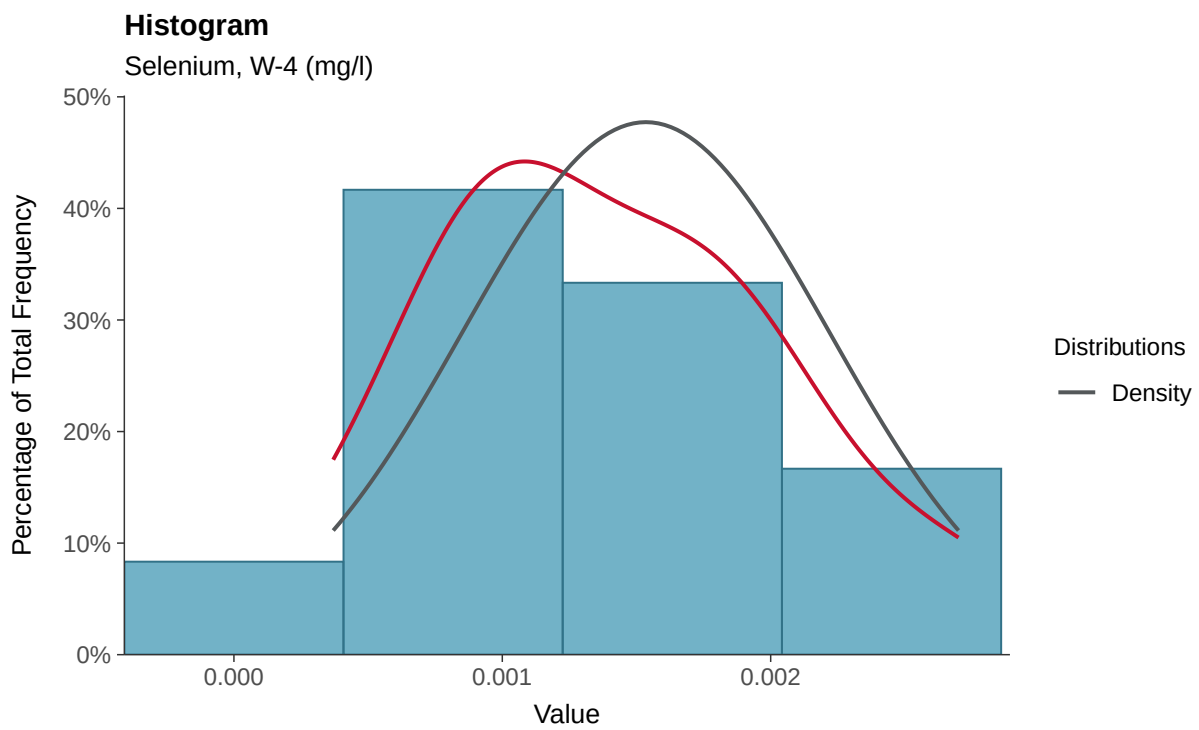
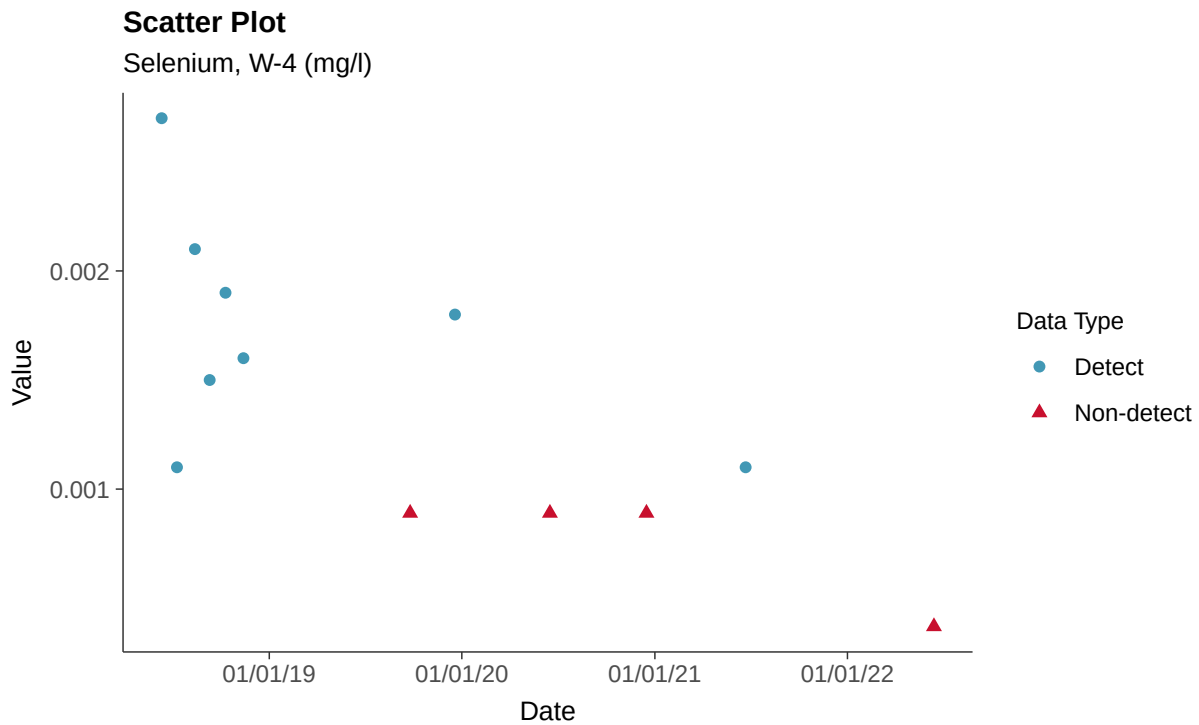
Trend Regression: Piecewise Linear-Linear

Radium-226+228, W-4 (pci/l)



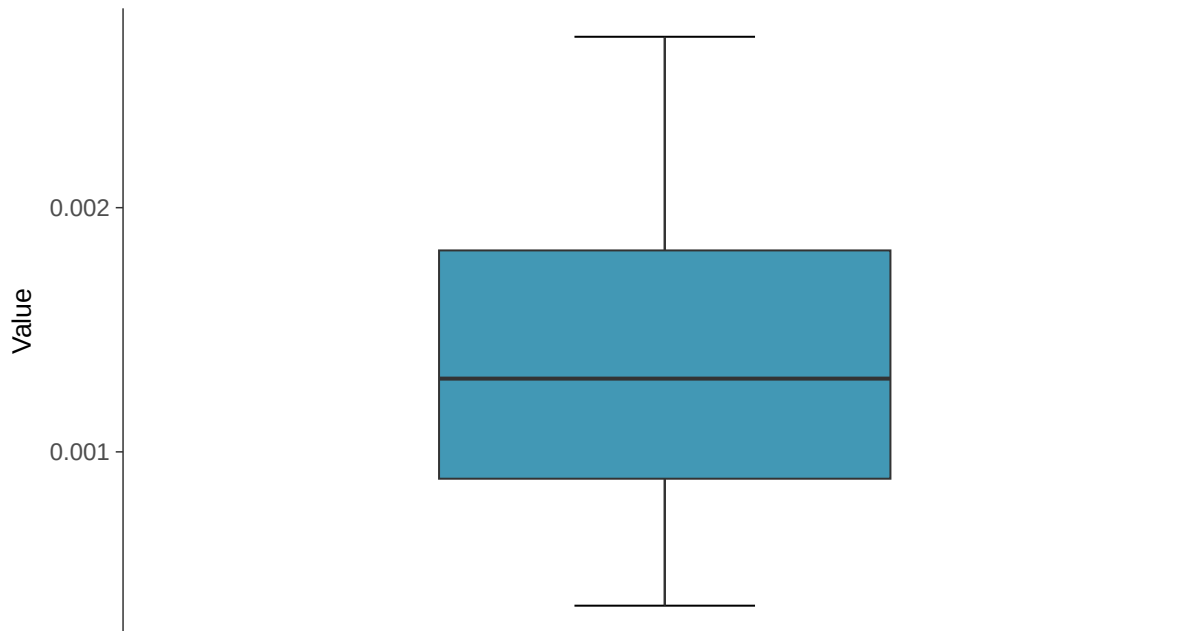
Appendix IV: Selenium, W-4

ID: 3_2_129



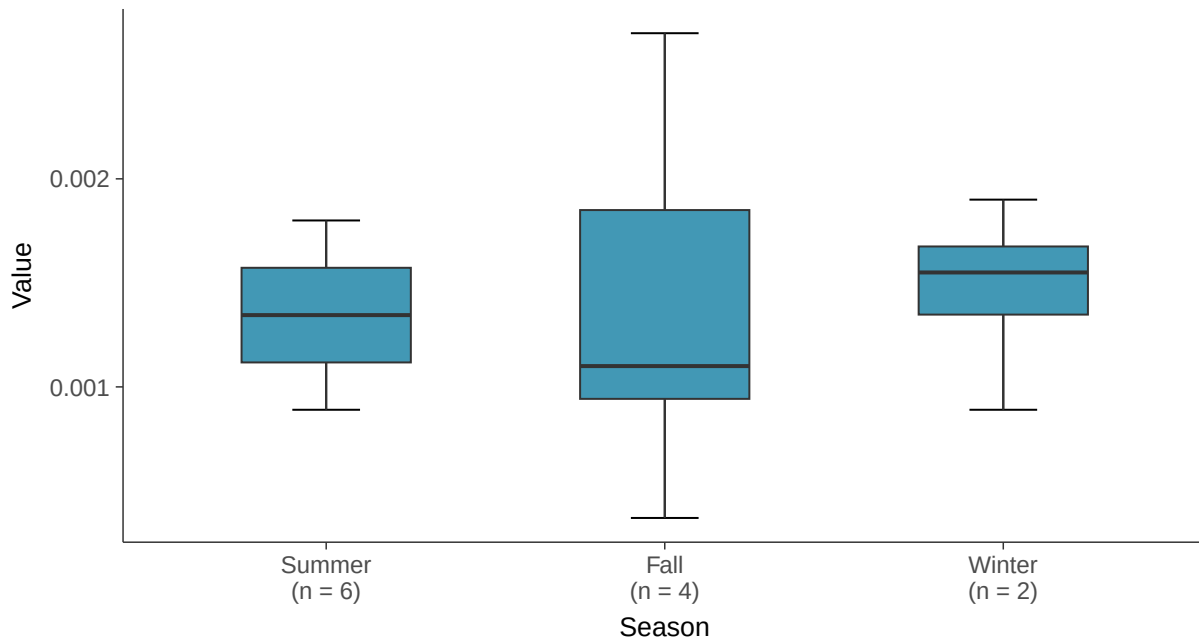
Boxplot

Selenium, W-4 (mg/l)



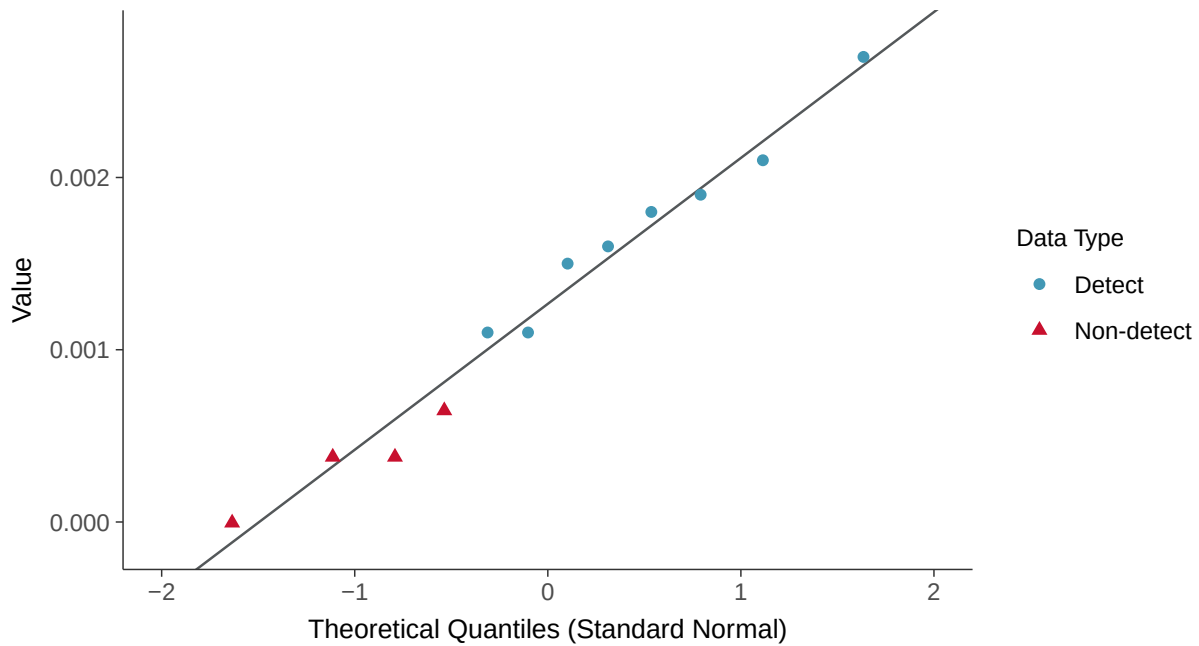
Boxplot by Season

Selenium, W-4 (mg/l)



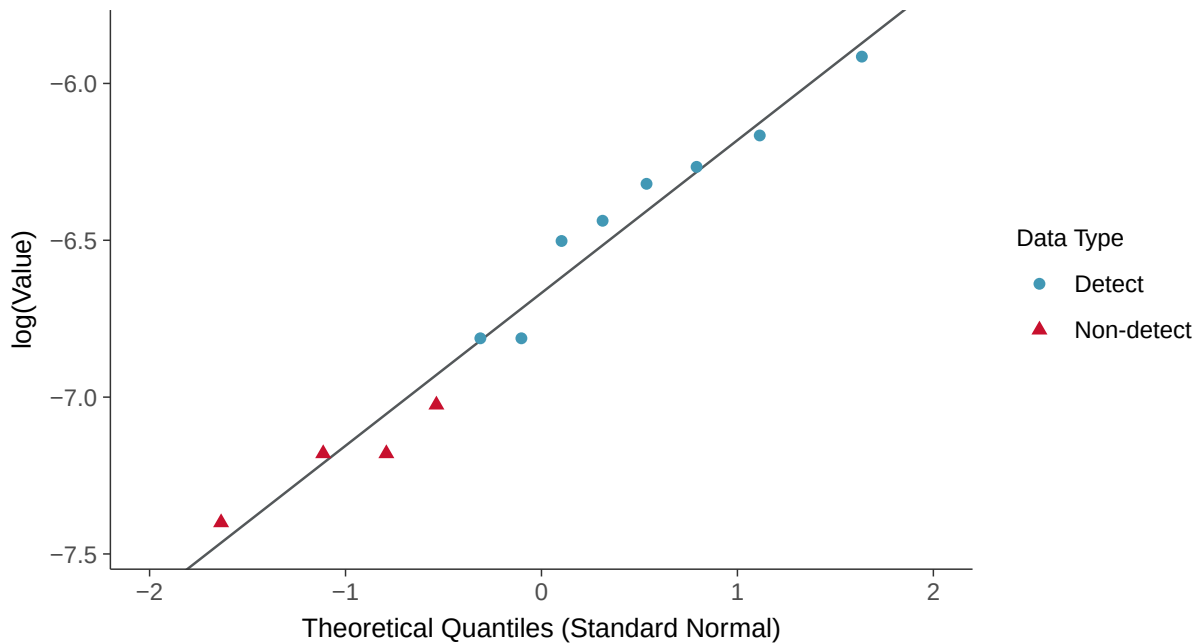
Normal Q-Q plot using ROS Imputed Estimates

Selenium, W-4 (mg/l)



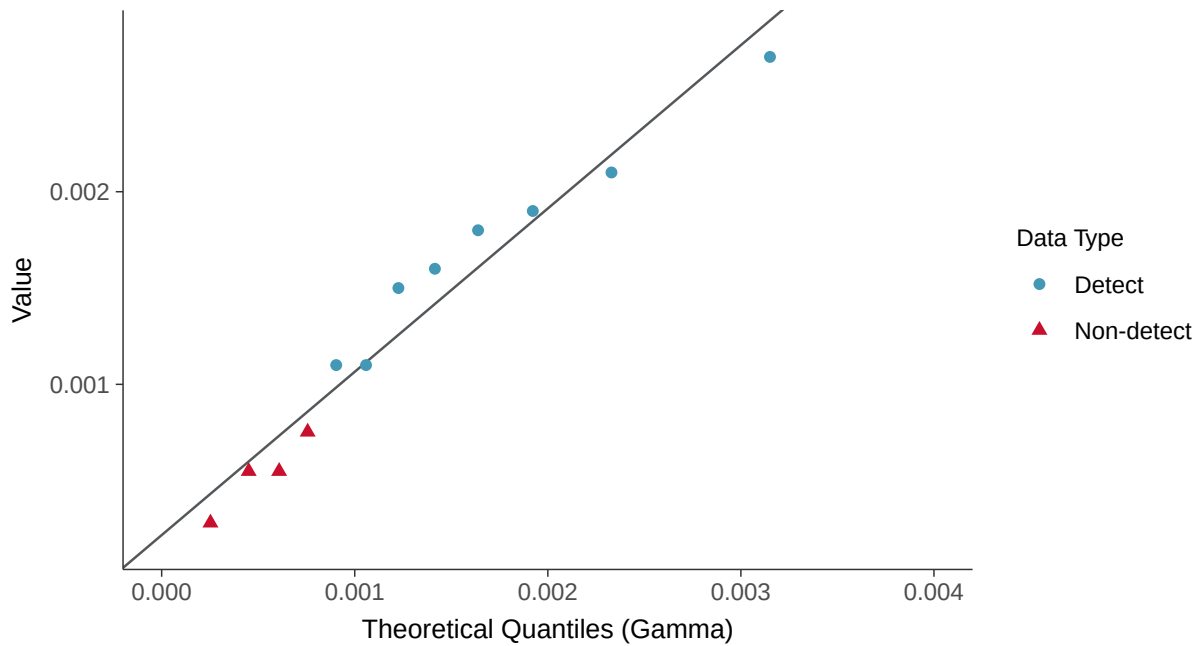
Lognormal Q-Q plot using ROS Imputed Estimates

Selenium, W-4 (mg/l)



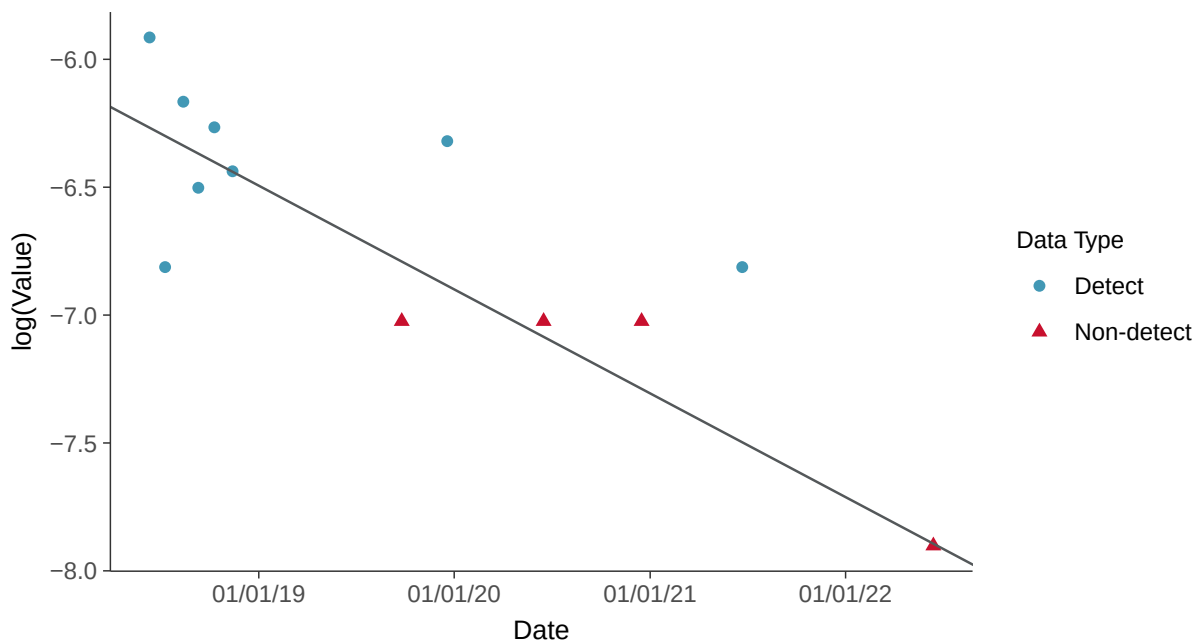
Gamma Q-Q plot using ROS Imputed Estimates

Selenium, W-4 (mg/l)



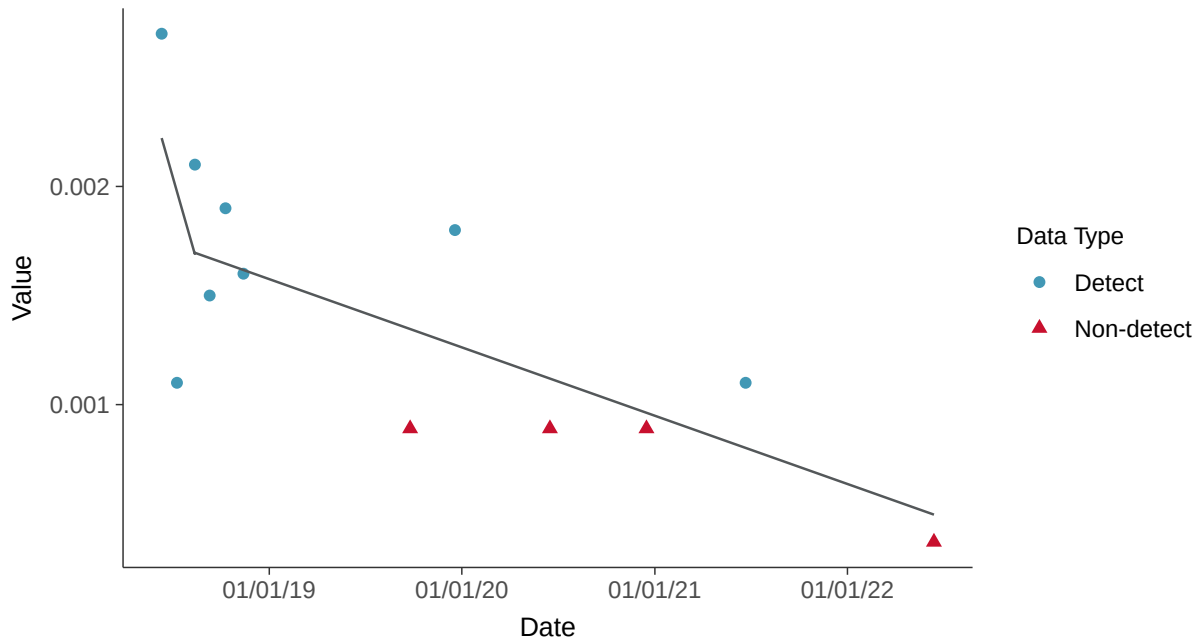
Trend Regression: Lognormal MLE

Selenium, W-4 (mg/l)



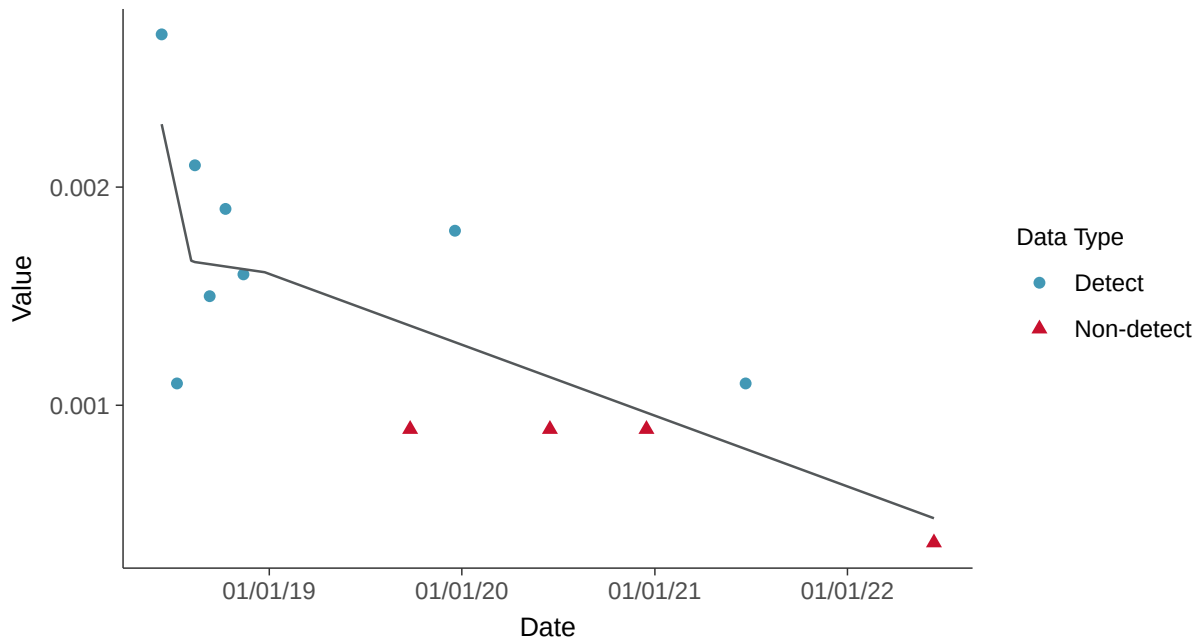
Trend Regression: Piecewise Linear-Linear

Selenium, W-4 (mg/l)



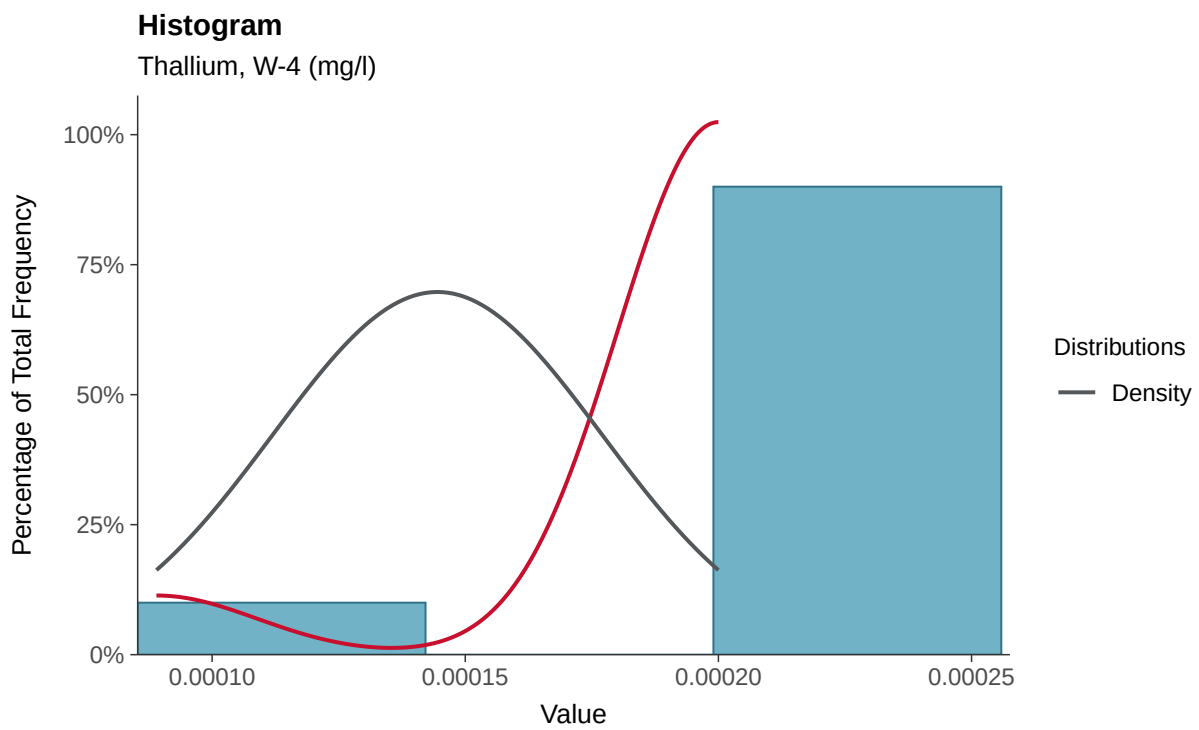
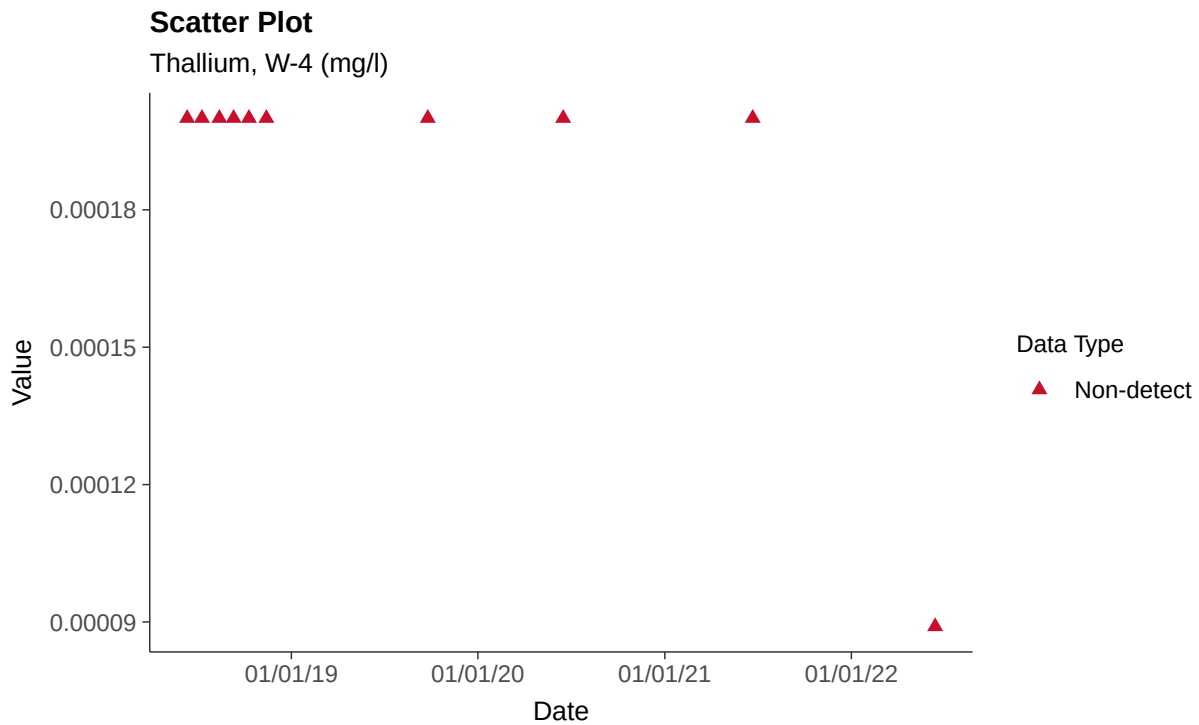
Trend Regression: Piecewise Linear-Linear-Linear

Selenium, W-4 (mg/l)



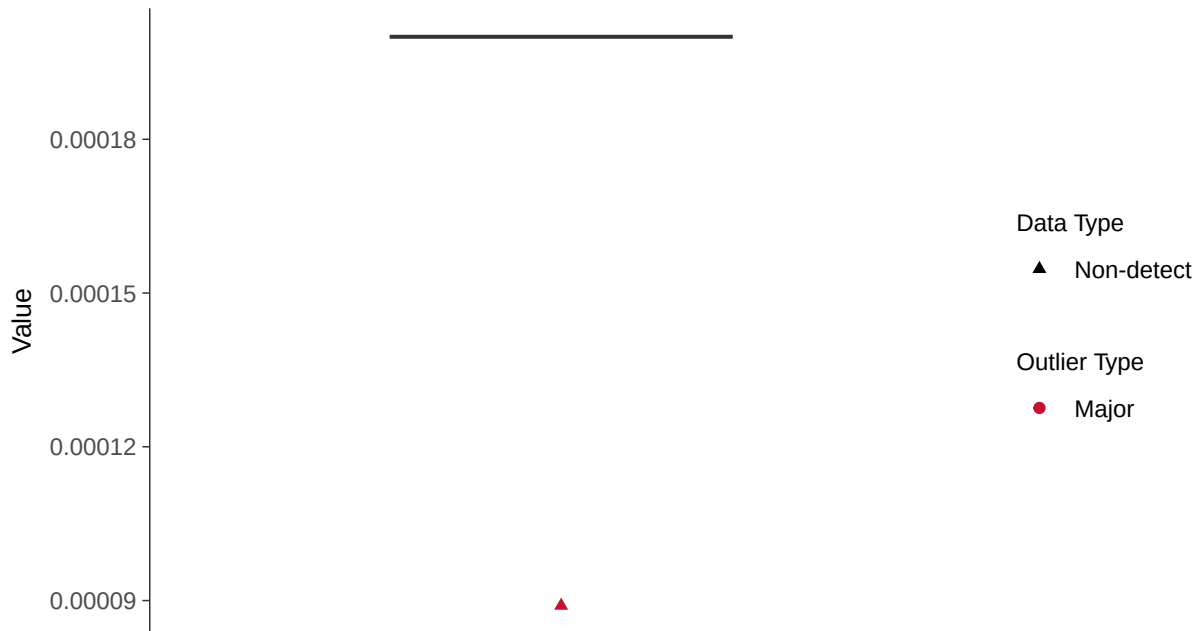
Appendix IV: Thallium, W-4

ID: 3_2_134



Boxplot

Thallium, W-4 (mg/l)



Boxplot by Season

Thallium, W-4 (mg/l)

