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ANNUAL GROUNDWATER MONITORING REPORT FOR 2024

COLORADO SPRINGS UTILITIES' CLEAR SPRING RANCH
Coal Combustion Residuals Landfill
El Paso County, Colorado

January 31, 2025

Prepared For:
40 CFR Part 257.90(e)
and
Colorado Department of Public Health and Environment
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1.0 EXECUTIVE SUMMARY

During the 2024 reporting period, Colorado Springs Utilities' (Utilities') Clear Spring Ranch (CSR) Coal Combustion Residuals (CCR) Landfill was operating pursuant to the assessment monitoring program set forth in 40 CFR §257.95. The landfill entered assessment monitoring in 2018.

During 2024, the following monitoring wells were determined to have a statistically significant increase over background for the following EPA CCR Rule Appendix III constituents pursuant to 40 CFR §257.94(e):

- Boron within monitoring wells SC-11 and SC-12
- Fluoride within monitoring well SC-12

As previously reported in the Annual Groundwater Monitoring Report for 2021, EPA CCR Rule Appendix IV constituent selenium was measured in downgradient well SC-10 at a statistically significant level exceeding the Groundwater Protection Standards (GWPS) during the second semi-annual (2021) sampling event. Utilities completed an Alternate Source Demonstration (ASD) in April 2022, in accordance with §257.95(g)(3)(ii). During 2024, no EPA CCR Rule Appendix IV constituents were measured at a statistically significant level exceeding the GWPS.

2.0 INTRODUCTION

This annual report summarizes the groundwater monitoring activities performed during 2024 in association with the CCR Landfill at Utilities' CSR. The landfill is located west-southwest of the intersection of Interstate 25 and Ray Nixon Road (Exit 125) in El Paso County, Colorado. CCR from Utilities' Ray Nixon Power Plant is placed in the landfill. CCR from Utilities' Martin Drake Power Plant was being placed in the landfill; however, the Martin Drake Power Plant ceased operation of its coal-burning units in Fall 2021 and CCR is no longer being generated at this power plant.

The CCR Landfill is regulated by the U.S. Environmental Protection Agency (EPA), the Colorado Department of Public Health & Environment (CDPHE), and El Paso County. The land-use is authorized via a Certificate of Designation (CD) obtained from El Paso County (CD #004-001).

The groundwater monitoring activities were performed for compliance with the EPA's Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments (40 CFR §257.50 through §257.107) (EPA CCR Rule) and the CDPHE's Regulations Pertaining to Solid Waste Sites and Facilities (6 CCR 1007-2, Part 1, Section 2.2 - Ground Water Monitoring).

The groundwater monitoring activities were conducted in general accordance with the Coal Combustion Residuals Landfill Groundwater Detection Monitoring Plan (AECOM 2017). This Monitoring Plan was approved by the CDPHE on November 14, 2017 (CDPHE 2017).

This report fulfills the EPA's, CDPHE's, and El Paso County's annual reporting requirements.

2.1 Groundwater Classification and Management

From its inception in the late 1970's, the CCR Landfill has been designed and operated to protect the Fountain Creek Alluvial Aquifer, which is the closest aquifer to the site used for drinking water purposes. The CCR Landfill is located approximately 0.5 miles upgradient of a Retention Dam, described below. The

Fountain Creek Alluvial Aquifer is located approximately 0.5 miles downgradient of the Retention Dam. There are no drinking water or agricultural wells within the CD Area, in which the CCR Landfill is located. To protect the Fountain Creek Alluvial Aquifer, groundwater associated with the CCR Landfill is managed via a Retention Dam System. The Retention Dam was constructed downgradient of the CCR Landfill in 1978 to inhibit the off-site migration of surface water and groundwater. The dam has a bentonite core and is keyed into the underlying Pierre Shale bedrock. To improve the dam's performance, in the 1990s, Utilities installed a bentonite barrier wall along the upgradient toe of the dam. The Retention Dam System also includes a french drain and pump back system downgradient of the dam. The drain extends for approximately 525 feet along the southern portion of the dam. The french drain's collection trench is gravel filled and slopes towards a sump located at the northern end of the trench. An extraction well and pump remove water collected in the sump and pump it back to the upgradient Retention Dam pond. The dam is registered with and inspected by the Office of the State Engineer - Division of Water Resources - Dam Safety Branch (Dam I.D. #100401). A site plan is presented in Appendix A.

3.0 GROUNDWATER FLOW ANALYSIS AND GEOLOGIC PROFILE

The CCR Landfill is located within a small, west-east trending topographic depression that contains up to approximately 50 feet of Piney Creek Alluvium sediments underlain with, and bounded to the north and south, by Pierre Shale, which has a reported thickness of approximately 3,500 to 4,000 feet and forms a hydraulic barrier between the alluvium and any potential deeper water-bearing formations, if present.

The alluvium is concentrated in the lower areas and drainages, with Pierre Shale generally present nearer the ground surface along the higher topographic features and ridges. The groundwater flow beneath the CCR Landfill is present within hydraulically separated buried paleo-alluvial valley drainages, two of which are separated by a bedrock high located beneath the landfill. These two paleo-alluvial valley drainages are referred to as the "South Paleo-Alluvial Valley" and the "North Paleo-Alluvial Valley" (AECOM, 2022).

Groundwater elevation measurements collected October 14 and 15, 2024, were used to interpolate a potentiometric groundwater surface, which is depicted within Appendix A – Figure 2. The groundwater surface data suggests that groundwater beneath the CCR Landfill generally flows in an east / southeasterly direction towards the Retention Dam.

4.0 GROUNDWATER QUALITY SAMPLING AND ANALYSIS

As detailed in the CCR Landfill Groundwater Detection Monitoring Plan, the current groundwater quality monitoring well network for the CCR Landfill is comprised of five background wells (CC-1, FC-1, FC-2, FC-3A, & FC-3B), four downgradient wells (SC-10, SC-11, SC-12, & SC-13) along the eastern edge of the landfill, and one cross gradient well (SC-14) on the south side of the landfill. Two rounds of semi-annual Appendix III Detection Monitoring and Appendix IV Assessment Monitoring groundwater samples were collected from these wells in March 2024 and September 2024. The locations of the monitoring wells are depicted within Appendix A – Figure 2.

Groundwater samples were collected in general accordance with the 2017 CCR Landfill Groundwater Detection Monitoring Plan. The monitoring wells were purged using dedicated bladder pumps with tubing; after which, the groundwater samples were collected from the discharge tube of the bladder pump directly into laboratory-supplied sample containers. The sample containers were then labeled and placed into an insulated ice-chilled sample cooler. Samples were hand delivered to the analytical laboratory.

In 2018, Utilities' CCR Landfill migrated from Detection Monitoring to Assessment Monitoring. Assessment Monitoring is required whenever a statistically significant increase over background levels has been detected for one or more of the Detection Monitoring constituents. Assessment Monitoring must continue until concentrations of all Detection and Assessment Monitoring constituents are determined to be at or below background values using statistical procedures for two consecutive sampling events.

Boron and fluoride have been measured at concentrations estimated statistically as being significantly higher than background and have not been determined to be at or below background values using statistical procedures for two consecutive sampling events. Therefore, both Detection Monitoring and Assessment Monitoring continued throughout 2024.

4.1 Detection Monitoring

During 2024, Utilities collected groundwater samples semi-annually from the monitoring wells listed in Section 4.0 above and analyzed the samples using EPA and/or industry accepted methods for the Detection Monitoring constituents listed in Appendix III of the EPA CCR Rule (boron, calcium, chloride, fluoride, pH, sulfate, and total dissolved solids). The laboratory analytical results and sampling dates are summarized in the table presented in Appendix B. Copies of the analytical reports and chain of custody documentation are presented in Appendix C.

4.2 Assessment Monitoring

During 2024, Utilities collected groundwater samples semi-annually from the monitoring wells listed in Section 4.0 above and analyzed the samples using EPA and/or industry accepted methods for the Assessment Monitoring constituents listed in Appendix IV of the EPA CCR Rule (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, fluoride, lead, lithium, mercury, molybdenum, radium 226 + 228, selenium, and thallium). The laboratory analytical results and sampling dates are summarized in the table presented in Appendix B. Copies of the analytical reports and chain of custody documentation are presented in Appendix C.

4.3 Quality Assurance / Quality Control

Quality assurance and quality control (QA/QC) measures were implemented to ensure the reliability and validity of field and analytical data. Appendix C contains copies of the laboratory analytical reports along with QA/QC data. The QA/QC data includes duplicate samples (identified as Duplicate), equipment / decontamination blanks (identified by Equip-Blk), method blanks (identified as LRB – Lab Reagent Blank), matrix spike sample results, and laboratory control sample results.

The equipment blanks were collected using laboratory-provided distilled water. Analytes were not detected in the equipment blank samples. During the March 2024 sampling event a duplicate sample was collected from monitoring well SC-12. A duplicate sample was also collected during the September 2024 sampling event; however, a field data error was made such that the duplicate location was not recorded. September 2024 duplicate sample laboratory results are provided in the Appendix C laboratory report, but are not reflected elsewhere in this report due to the field error.

Utilities reviewed the analytical results for laboratory QC samples. Review included chain-of-custody record and laboratory-receipt form to verify custody, sample holding-times were met, and samples were properly handled from collection through laboratory analysis.

QA/QC exceptions noted include:

- In March 2024, calcium, fluoride, and selenium matrix spike samples were recovered outside of the established range. Associated data are qualified, as reflected in the Appendix C laboratory reports. Calcium, fluoride, and selenium concentrations from the affected samples were generally consistent with historic sample concentrations.
- In September 2024, some fluoride, cadmium, lead, selenium, and calcium matrix spike samples were recovered outside of the established range. Associated data are qualified as reflected in the Appendix C laboratory reports. Metal concentrations from the affected samples were generally consistent with historic sample concentrations.

Laboratory quality control activities are discussed in the Appendix C laboratory report case narratives.

4.4 Monitoring Well Installation, Repair, and Abandonment

No CCR landfill monitoring wells were installed, repaired, or abandoned in 2024.

5.0 STATISTICAL ANALYSIS RESULTS SUMMARY

The methods used to statistically analyze the Detection and Assessment Monitoring groundwater data, the rationale for the analytical methods, and the results of the 2024 statistical analysis are presented in Appendix D.

The 2024 groundwater sampling results suggest that the following EPA CCR Rule Appendix III constituents are present at concentrations estimated as being a statistically significant increase above background:

- Boron within monitoring wells SC-11 and SC-12
- Fluoride within monitoring well SC-12

During 2024, no EPA CCR Rule Appendix IV constituents were measured at a statistically significant level exceeding the GWPS.

6.0 GROUNDWATER PROTECTION STANDARDS (GWPS)

GWPS were established in accordance with §257.95(d)(2) of the EPA CCR Rule. The Rule states in §257.95(h) that the GWPS shall be:

(1) For constituents for which a maximum contaminant level (MCL) has been established under §141.62 and §141.66 of this title, the MCL for that constituent;

(2) For the following constituents:
(i) Cobalt 6 micrograms per liter (ug/l);
(ii) Lead 15 ug/l;
(iii) Lithium 40 ug/l; and
(iv) Molybdenum 100 ug/l.

(3) For constituents for which the background level is higher than the levels identified under paragraphs (h)(1) and (h)(2) of this section, the background concentration.

To create the GWPS, an upper tolerance limit (UTL) was calculated for each of the EPA CCR Rule Appendix IV constituents to establish their background concentration. Each UTL was then compared to the corresponding MCL or EPA CCR Rule standard. If a UTL was greater than the MCL or standard, then the UTL was used as the GWPS.

GWPS were calculated for the 2024 semi-annual sampling events and are provided in the statistical analysis report provided in Appendix D. A summary of the GWPS resulting from the 2024 sampling are presented in the table below:

GROUNDWATER PROTECTION STANDARDS

Appendix IV Constituent	MCL (ug/L)	EPA CCR Rule Standard (ug/L)	Background Higher than MCL or Standard *	Upper Tolerance Limit (ug/L)	GWPS (ug/L)
Antimony	**6**	-	No	4.13	**6**
Arsenic	10	-	Yes	**11**	**11**
Barium	**2000**	-	No	27.6	**2000**
Beryllium	**4**	-	No	2	**4**
Cadmium	**5**	-	No	5	**5**
Chromium	**100**	-	No	10	**100**
Cobalt	-	6	Yes	**11.8**	**11.8**
Fluoride	**4 mg/L**	-	No	0.837 mg/L	**4 mg/L**
Lead	-	**15**	No	5.2	**15**
Lithium	-	40	Yes	**1166**	**1166**
Mercury	**2**	-	No	0.009	**2**
Molybdenum	-	**100**	No	11	**100**
Selenium	50	-	Yes	**224**	**224**
Thallium	2	-	Yes	**4.18**	**4.18**
Radium 226 and 228 Combined	**5 pCi/L**	-	No	4.8 pCi/L	**5 pCi/L**

* Upper tolerance limit calculated for the constituents and compared to the MCL or the EPA CCR Rule standard. If the UTL was greater than the MCL or standard, then the UTL was used as the GWPS.

Once GWPS have been calculated, §257.95(g) requires that the owner / operator determine if any of the Appendix IV constituents are present at a statistically significant level exceeding the GWPS. To determine such, a confidence interval was calculated for each constituent and compared to the GWPS. A statistically significant level is identified if the confidence interval band fully exceeds the GWPS at the most recent sampling event. The confidence interval calculations for 2024 are provided in Appendix D. The confidence interval calculations indicate that no Appendix IV constituents exceeded the GWPS at a statistically significant level in 2024.

7.0 SUMMARY OF FINDINGS

Comparison of the groundwater flow to those historically measured shows de minimis differences in the groundwater flow regime beneath the site. Groundwater associated with the CCR Landfill continues to flow in an east / southeasterly direction towards the Retention Dam, which inhibits its migration off-site.

Statistical analysis suggests that boron concentrations at compliance groundwater monitoring wells SC-11 and SC-12 and fluoride concentrations at compliance groundwater monitoring well SC-12 exhibit a statistically significant increase over background concentrations; therefore, the CCR Landfill will continue with Assessment Monitoring in 2025.

No EPA CCR Rule Appendix IV constituents were measured at a statistically significant level exceeding the GWPS during 2024.

The overall CCR Landfill groundwater monitoring program was reviewed. It was identified that groundwater chemistry is different in the North Paleo-Alluvial Valley as compared to the South Paleo-Alluvial Valley, but the current background data set for statistical evaluation is based only on wells located within the South Paleo-Alluvial Valley (AECOM 2022). In consideration of this complex geology, a previously submitted Alternative Source Demonstration, the August 23, 2023 *Groundwater Monitoring Network Modification* letter (Appendix E), and other constraints, Utilities continues the effort to modify the groundwater monitoring program to account for the full diversity of background geochemical conditions of the North and South Paleo-Alluvial Valleys. Additional monitoring wells are being sampled to establish a new background dataset for the North Paleo-Alluvial Valley. A revised groundwater monitoring plan for the CCR Landfill will be completed following a minimum of eight background monitoring well sampling events. Utilities anticipates that the revised groundwater monitoring plan will be complete in 2025. As recommended in the August 23, 2023, *Groundwater Monitoring Network Modification* letter, Utilities continues to conduct activities in general accordance with the 2017 Professional Engineer-certified and CDPHE-approved Coal Combustion Residuals Landfill Groundwater Detection Monitoring Plan.

7.1 Risk

Utilities believes that the risk posed by the CCR Landfill to human health and the environment via the groundwater exposure pathway continues to be low for the following reasons:

- Groundwater underlying the CSR CD Area (which includes the CCR Landfill) is not used for domestic or agricultural purposes. There are no drinking water or agricultural wells within the CD Area and there is no reasonable potential for future domestic or agricultural uses of groundwater within this area, as it is owned and controlled by Utilities.

- Previously evaluated groundwater quality data indicated that groundwater upgradient of and underlying the CSR CD Area, in which the CCR Landfill is located, has a total dissolved solids (TDS) concentration exceeding 10,000 mg/L. The EPA, in their Guidelines for Groundwater Classification Under the EPA Groundwater Protection Strategy, classifies groundwater with TDS concentrations greater than or equal to 10,000 mg/L as Class III water (EPA 1988). Class III is defined as "groundwater not a potential source of drinking water and/or limited beneficial use." The high TDS of groundwater upgradient of and beneath the CD Area discourages its use for domestic or agricultural purposes.

- The CSR Retention Dam inhibits the off-site migration of stormwater and groundwater associated with the CCR Landfill; therefore, limiting the potential for exposure. The Retention Dam largely hydrologically disconnects the CCR Landfill associated groundwater from the downgradient Fountain Creek Alluvial Aquifer (i.e. the closest drinking water source).

7.2 Activities for 2025

For 2025, Utilities plans to continue with Detection Monitoring and Assessment Monitoring. Utilities will also continue conducting the activities described in the August 23, 2023, *Groundwater Monitoring Network Modification* letter sent to the CDPHE on August 23, 2023. See Appendix E.

8.0 REFERENCES

AECOM Technical Services. 2017. Coal Combustion Residuals (CCR) Ash Monofill Groundwater Detection Monitoring Plan Clear Spring Ranch, El Paso County, Colorado Revision 0. October 2017.

AECOM. 2022. Coal Combustion Residuals (CCR) Landfill Alternative Source Demonstration Assessment Monitoring, Selenium Clear Spring Ranch, El Paso County, Colorado Revision 0. April 2022.

CDPHE. 2017. E-Mail from Jill Parisi / CDPHE to Patti Zietlow / Colorado Springs Utilities Re: Clear Spring Ranch CCR Landfill Groundwater Detection Monitoring Plan. November 14, 2017.

Haley & Aldrich. 1994. Hannah Ranch Dam Seepage Analysis Preliminary Engineering Report. April 1994.

Haley & Aldrich. 1995. Hanna Ranch Supernatant Dam Design Summary Report. February 1995.

Layne Western. 1977. Ash Disposal Site, R.D. Nixon Power Plant. Carl Nuzman, Bruce Maxwell & Carl Larson. August 1977.

Title 40 of the Code of Federal Regulations (CFR) Part 257 Subpart D.

U.S. EPA. 1988. Guidelines for Groundwater Classification Under the EPA Groundwater Protection Strategy. Office of Groundwater Protection. June 1988.

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Report Distribution List:

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- Jill Parisi / Colorado Department of Public Health and Environment
- Justin Kilgore / El Paso County Planning Department
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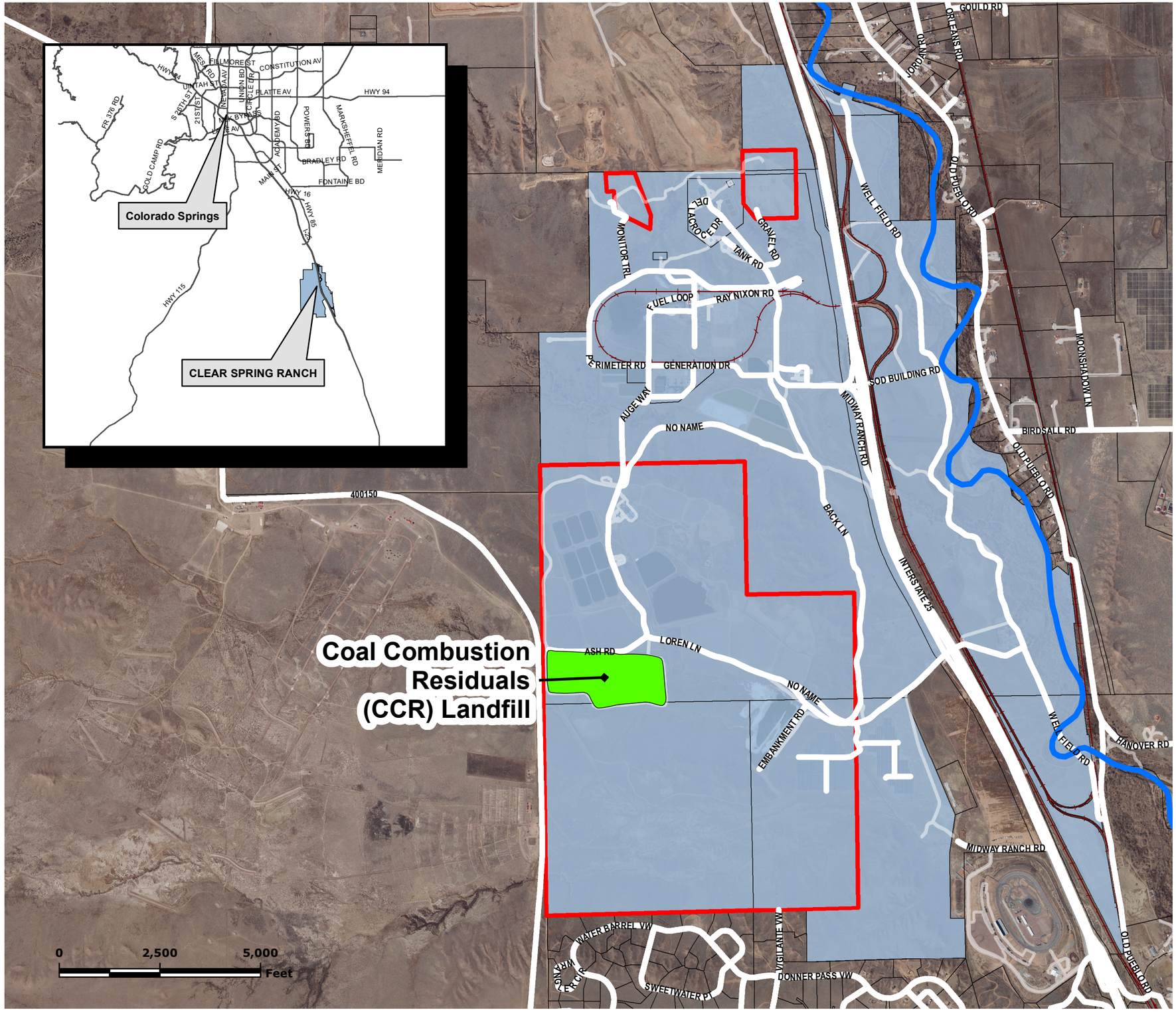
- Colorado Springs Utilities' CCR Landfill Website

APPENDIX A

Vicinity Map and Groundwater Elevation Contours



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Environmental Services
121 South Tejon Street, Fourth Floor
Colorado Springs, Colorado 80903

Orientation:

N W E S

Legend:

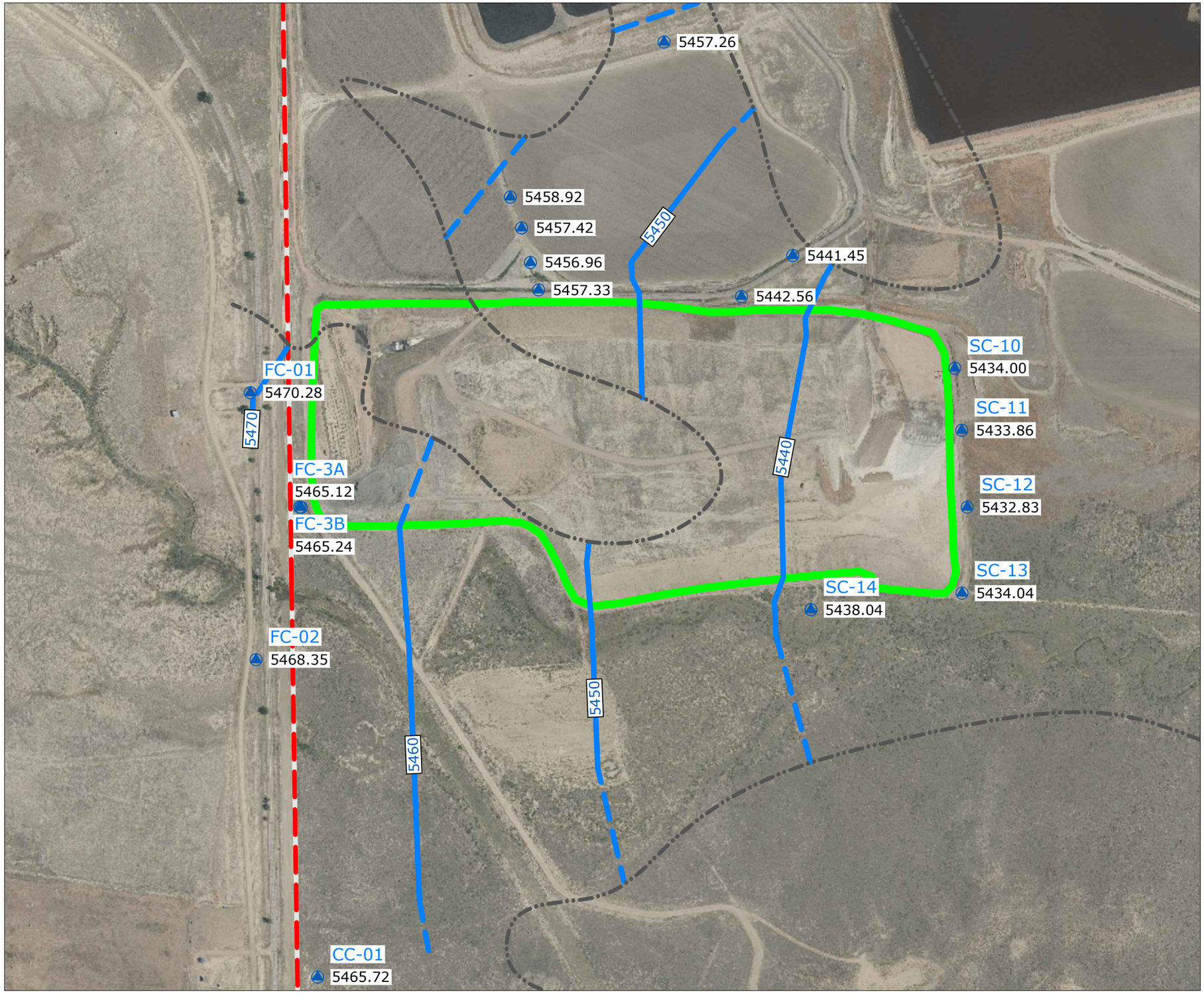
- Fountain Creek
- Boundary - Certificate of Designation CD-04-001
- Boundary - Clear Spring Ranch

VICINITY MAP

Clear Spring Ranch
Coal Combustion Residuals Landfill
El Paso County

Project No:	550-504-7
Prepared By:	Environmental Services
Date:	January 31, 2025

Figure Number 1



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Environmental Services
121 South Tejon Street, Fourth Floor
Colorado Springs, Colorado 80903

Orientation:

Legend:

- Coal Combustion Residuals (CCR) Landfill
- Boundary - Clear Spring Ranch Property
- Boundary - Certificate of Designation
- Boundary - Piney Creek Alluvium Hydrostratigraphic Unit (HSU) - Approximate
- Groundwater Potentiometric Surface (Dashed portions are estimated)
- Groundwater Monitoring Well Location
- ## Groundwater Elevation - Feet (Above mean sea level)

Notes:

- Groundwater Elevation Measurements Collected October 14-15, 2024.

Scale:

0 450 Feet 900 Feet

1 Inch = 450 Feet

GROUNDWATER ELEVATION CONTOURS - 2024

Clear Spring Ranch

Coal Combustion Residuals Landfill
El Paso County

Project No: 550-504-7	**Figure Number 2**
Prepared By: Environmental Services	
Date: January 31, 2025	

APPENDIX B

Groundwater Laboratory Analytical Results and Groundwater Depths / Elevations / Hydrographs

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CCR LANDFILL
Groundwater Laboratory Analytical Results

Monitoring Well ID	Sample Date	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chloride	Chromium	Cobalt	Fluoride	Lead	Lithium	Mercury	Molybdenum	pH	Radium 226 + 228	Selenium	Sulfate	Thallium	Total Dissolved Solids
		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	ug/L	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	SU	pCi/L	ug/L	mg/L	ug/L	mg/L
CC-1	3/18/2024	<2.0	<5.0	5.7	<1.0	1020	<1.0	419000	1750	<3.0	<5.00	0.21	<1.0	771	0.007	<2.0	6.9	2.20	170	21300	<1.0	34900
	9/17/2024	<2.0	<5.0	5.8	<1.0	1120	<1.0	416000	1690	<3.0	2.38	0.21	1.1	702	0.005	<2.0	6.9	2.04	180	21700	<1.0	35200
FC-1	3/18/2024	<2.0	<5.0	8.6	<1.0	1010	<1.0	378000	840	<3.0	<5.00	0.12	<1.0	949	0.002	2.1	7.1	4.18	<5.0	13900	<1.0	22000
	9/17/2024	<2.0	<5.0	9.0	<1.0	1040	<1.0	390000	802	<3.0	<2.00	0.12	<1.0	923	0.002	2.2	7.1	2.02	<5.0	13500	<1.0	21700
FC-2	3/18/2024	<2.0	<5.0	6.2	<1.0	921	<1.0	403000	109	<3.0	<5.00	0.49	<1.0	315	0.003	2.8	7.3	2.17	39	6390	<1.0	9780
	9/17/2024	<2.0	<5.0	6.4	<1.0	999	<1.0	397000	115	<3.0	<2.00	0.50	<1.0	276	0.002	2.8	7.3	0.377	37	6330	<1.0	10100
FC-3A	3/18/2024	<2.0	<5.0	11	<1.0	1040	<1.0	408000	144	<3.0	<5.00	0.44	<1.0	317	<0.002	6.9	7.4	0.601	55	5670	<1.0	9220
	9/18/2024	<2.0	<5.0	11	<1.0	1000	<1.0	408000	148	<3.0	<2.00	0.46	<1.0	253	0.002	7.9	7.4	0.146	46	5610	<1.0	9000
FC-3B	3/18/2024	<2.0	<5.0	11	<1.0	1170	<1.0	237000	233	<3.0	<5.00	0.61	<1.0	278	<0.002	11	7.2	1.16	<5.0	4270	<1.0	7600
	9/18/2024	<2.0	<5.0	11	<1.0	1190	<1.0	253000	212	<3.0	<2.00	0.64	<1.0	232	0.006	8.2	7.3	0.234	<5.0	4320	<1.0	7320
SC-10	3/19/2024	<2.0	<5.0	12	<1.0	1180	<1.0	403000	1000	<3.0	<5.00	0.49	<1.0	688	0.007	4.6	7.2	0.508	200	9810	<1.0	16900
	9/18/2024	<2.0	<5.0	9.7	<1.0	1270	<1.0	419000	998	<3.0	<2.00	0.50	<1.0	633	0.006	4.8	7.3	0.350	200	9800	<1.0	16500
SC-11	3/19/2024	<2.0	<5.0	12	<1.0	2570	<1.0	458000	1290	<3.0	<5.00	0.56	<1.0	623	0.011	2.9	7.2	0.878	330	8400	<1.0	16000
	9/18/2024	<2.0	<5.0	8.2	<1.0	2710	<1.0	467000	1270	<3.0	<2.00	0.58	<1.0	534	0.006	3.5	7.2	0.344	330	8580	<1.0	15600
SC-12	3/19/2024	<2.0	<5.0	6.4	<1.0	4400	<1.0	397000	340	<3.0	<5.00	0.89	<1.0	442	0.004	4.3	7.3	0.329	12	8120	<1.0	13400
	3/19/2024 Dup	<2.0	<5.0	6.2	<1.0	4420	<1.0	373000	341	<3.0	<5.00	0.88	<1.0	455	0.004	4.6	7.3	0.734	13	8060	<1.0	13500
	9/18/2024	<2.0	<5.0	5.8	<1.0	4600	<1.0	398000	353	<3.0	<2.00	0.88	<1.0	374	0.002	5.2	7.2	-0.100	12	8300	<1.0	13200
SC-13	3/19/2024	<2.0	<5.0	7.1	<1.0	1490	<1.0	378000	163	<3.0	<5.00	0.70	<1.0	363	0.002	3.6	7.3	0.684	31	6950	<1.0	11400
	9/18/2024	<2.0	<5.0	5.8	<1.0	1560	<1.0	406000	180	<3.0	<2.00	0.71	<1.0	288	0.002	3.5	7.3	-0.291	27	7570	<1.0	11900
SC-14	3/19/2024	<2.0	<5.0	5.4	<1.0	1390	<1.0	378000	152	<3.0	<5.00	0.69	<1.0	371	<0.002	11	7.2	0.680	7.8	6880	<1.0	11300
	9/18/2024	<2.0	<5.0	5.2	<1.0	1460	<1.0	398000	160	<3.0	<2.00	0.70	<1.0	246	0.001	11	7.3	0.235	7.0	7100	<1.0	10700

* Metals are Total / Total Recoverable
* See laboratory reports for data qualifiers
< Indicates the constituent was not detected above the stated laboratory reporting limit
Dup = Duplicate

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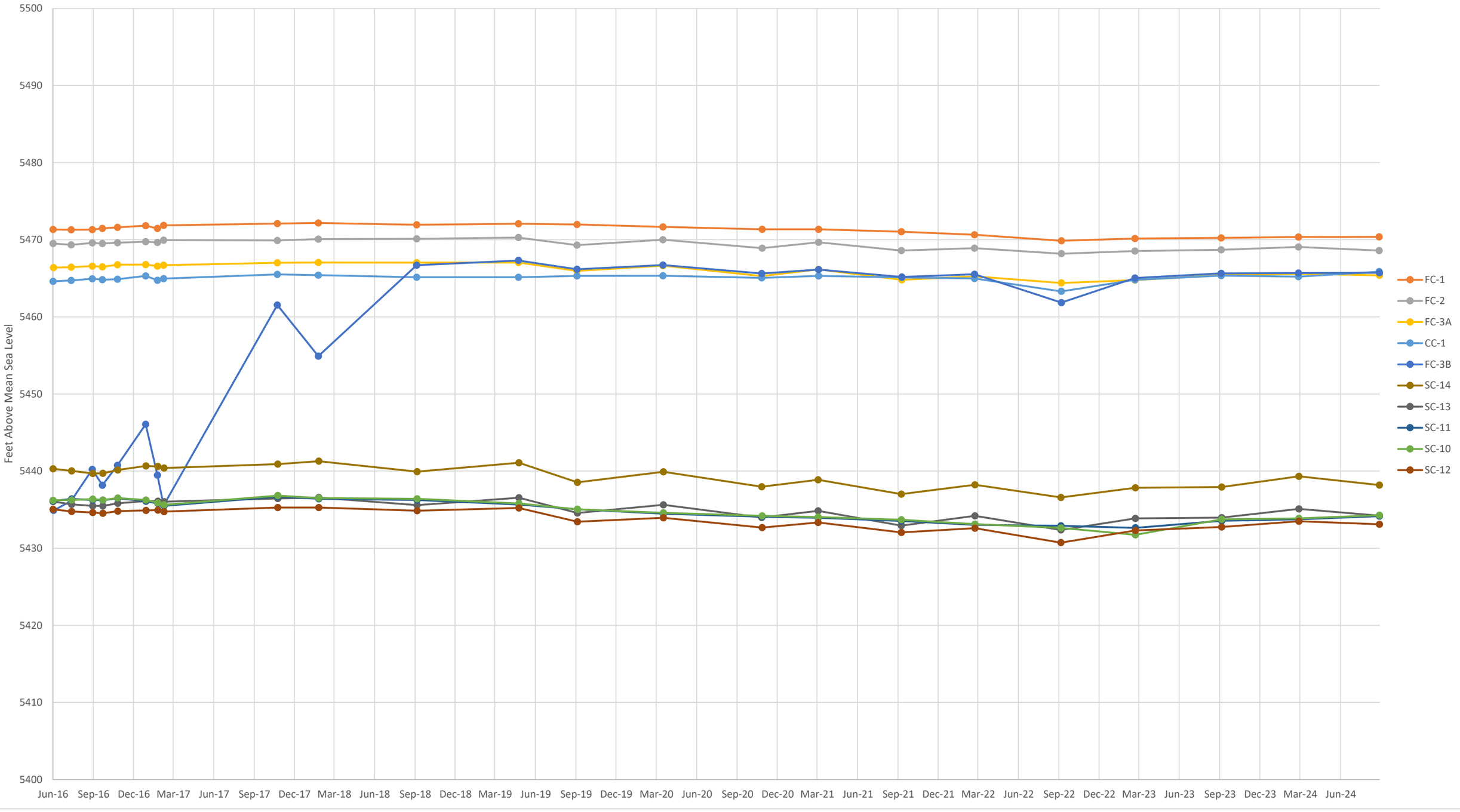
CCR LANDFILL
Groundwater Depths / Elevations

Monitoring Well ID	CC-1		FC-1		FC-2		FC-3A		FC-3B		SC-10		SC-11		SC-12		SC-13		SC-14	
Measuring Point Elevation	5478.67		5486.87		5483.00		5484.29		5483.75		5447.65		5444.54		5444.32		5445.98		5450.23	
Date Measured	Depth to Water	Water Surface Elevation	Depth to Water	Water Surface Elevation	Depth to Water	Water Surface Elevation	Depth to Water	Water Surface Elevation	Depth to Water	Water Surface Elevation	Depth to Water	Water Surface Elevation	Depth to Water	Water Surface Elevation	Depth to Water	Water Surface Elevation	Depth to Water	Water Surface Elevation	Depth to Water	Water Surface Elevation
6/22/2016	14.07	5,464.60	15.53	5,471.34	13.49	5,469.51	-	-	-	-	11.43	5,436.22	8.40	5,436.14	9.29	5,435.03	9.92	5,436.06	9.94	5,440.29
6/23/2016	-	-	-	-	-	-	17.91	5,466.38	48.85	5,434.90	-	-	-	-	-	-	-	-	-	-
8/2/2016	13.95	5,464.72	15.57	5,471.30	13.67	5,469.33	17.85	5,466.44	47.62	5,436.13	-	-	-	-	-	-	-	-	-	-
8/3/2016	-	-	-	-	-	-	-	-	-	-	11.40	5,436.25	8.15	5,436.39	9.56	5,434.76	10.30	5,435.68	10.21	5,440.02
9/19/2016	13.74	5,464.93	15.55	5,471.32	13.41	5,469.59	17.70	5,466.59	43.52	5,440.23	-	-	-	-	-	-	-	-	-	-
9/20/2016	-	-	-	-	-	-	-	-	-	-	11.28	5,436.37	8.28	5,436.26	9.70	5,434.62	10.50	5,435.48	10.54	5,439.69
10/12/2016	13.85	5,464.82	15.40	5,471.47	13.49	5,469.51	17.80	5,466.49	45.58	5,438.17	-	-	-	-	-	-	-	-	-	-
10/13/2016	-	-	-	-	-	-	-	-	-	-	11.39	5,436.26	8.30	5,436.24	9.79	5,434.53	10.49	5,435.49	10.52	5,439.71
11/15/2016	13.79	5,464.88	15.26	5,471.61	13.38	5,469.62	17.54	5,466.75	43.01	5,440.74	-	-	-	-	-	-	-	-	-	-
11/16/2016	-	-	-	-	-	-	-	-	-	-	11.15	5,436.50	8.07	5,436.47	9.51	5,434.81	10.15	5,435.83	10.08	5,440.15
1/18/2017	13.35	5,465.32	15.04	5,471.83	13.25	5,469.75	17.51	5,466.78	37.68	5,446.07	-	-	-	-	-	-	-	-	-	-
1/19/2017		-		-		-		-		-	11.40	5,436.25	8.44	5,436.10	9.42	5,434.90	9.87	5,436.11	9.56	5,440.67
2/14/2017	13.93	5,464.74	15.39	5,471.48	13.35	5,469.65	17.71	5,466.58	44.27	5,439.48	-	-	-	-	-	-	-	-	-	-
2/15/2017	-	-	-	-	-	-	-	-	-	-	11.78	5,435.87	8.74	5,435.80	9.38	5,434.94	9.88	5,436.10	9.64	5,440.59
2/28/2017	13.71	5,464.96	15.00	5,471.87	13.06	5,469.94	17.60	5,466.69	48.20	5,435.55	-	-	-	-	-	-	-	-	-	-
3/1/2017	-	-	-	-	-	-	-	-	-	-	12.03	5,435.62	9.05	5,435.49	9.57	5,434.75	9.95	5,436.03	9.83	5,440.40
11/13/2017	13.16	5,465.51	14.78	5,472.09	13.10	5,469.90	17.28	5,467.01	22.21	5,461.54	-	-	-	-	-	-	-	-	-	-
11/14/2017	-	-	-	-	-	-	-	-	-	-	10.82	5,436.83	7.85	5,436.69	9.05	5,435.27	9.54	5,436.44	9.32	5,440.91
2/14/2018	13.26	5,465.41	14.69	5,472.18	12.91	5,470.09	17.23	5,467.06	28.84	5,454.91	-	-	-	-	-	-	-	-	-	-
2/15/2018	-	-	-	-	-	-	-	-	-	-	11.15	5,436.50	8.13	5,436.41	9.04	5,435.28	9.40	5,436.58	8.94	5,441.29
9/25/2018	13.54	5,465.13	14.94	5,471.93	12.88	5,470.12	17.25	5,467.04	17.06	5,466.69	-	-	-	-	-	-	-	-	-	-
9/26/2018	-	-	-	-	-	-	-	-	-	-	11.24	5,436.41	8.28	5,436.26	9.45	5,434.87	10.39	5,435.59	10.30	5,439.93
5/14/2019	13.54	5,465.13	14.79	5,472.08	12.71	5,470.29	17.24	5,467.05	16.43	5,467.32	-	-	-	-	-	-	-	-	-	-
5/15/2019	-	-	-	-	-	-	-	-	-	-	11.85	5,435.80	8.87	5,435.67	9.11	5,435.21	9.44	5,436.54	9.14	5,441.09
9/24/2019	13.36	5,465.31	14.90	5,471.97	13.71	5,469.29	18.34	5,465.95	17.57	5,466.18	-	-	-	-	-	-	-	-	-	-
9/25/2019	-	-	-	-	-	-	-	-	-	-	12.62	5,435.03	9.50	5,435.04	10.89	5,433.43	11.41	5,434.57	11.69	5,438.54
4/6/2020	13.34	5,465.33	15.20	5,471.67	12.99	5,470.01	17.65	5,466.64	17.04	5,466.71	-	-	-	-	-	-	-	-	-	-
4/7/2020	-	-	-	-	-	-	-	-	-	-	13.06	5,434.59	10.07	5,434.47	10.38	5,433.94	10.35	5,435.63	10.32	5,439.91
11/16/2020	13.62	5,465.05	-	-	-	-	19.00	5,465.29	18.13	5,465.62	-	-	-	-	-	-	11.99	5,433.99	12.25	5,437.98
11/17/2020	-	-	15.52	5,471.35	14.09	5,468.91	-	-	-	-	13.45	5,434.20	10.45	5,434.09	11.65	5,432.67	-	-	-	-
3/24/2021	-	-	-	-	-	-	-	-	-	-	13.60	5,434.05	10.60	5,433.94	10.99	5,433.33	11.14	5,434.84	11.35	5,438.88
3/25/2021	13.35	5,465.32	15.51	5,471.36	13.32	5,469.68	18.14	5,466.15	17.62	5,466.13	-	-	-	-	-	-	-	-	-	-
9/29/2021	-	-	15.83	5,471.04	14.41	5,468.59	-	-	-	-	13.96	5,433.69	11.01	5,433.53	12.28	5,432.04	13.05	5,432.93	13.22	5,437.01
9/30/2021	13.56	5,465.11	-	-	-	-	19.48	5,464.81	18.57	5,465.18	-	-	-	-	-	-	-	-	-	-
3/14/2022	13.69	5,464.98	16.23	5,470.64	14.09	5,468.91	19.04	5,465.25	18.22	5,465.53	-	-	-	-	-	-	-	-	-	-
3/15/2022	-	-	-	-	-	-	-	-	-	-	14.52	5,433.13	11.51	5,433.03	11.72	5,432.60	11.78	5,434.20	12.01	5,438.22
9/26/2022	-	-	-	-	-	-	-	-	-	-	15.01	5,432.64	11.64	5,432.90	13.59	5,430.73	13.61	5,432.37	13.64	5,436.59
9/27/2022	15.36	5,463.31	17.00	5,469.87	14.80	5,468.20	19.88	5,464.41	21.91	5,461.84	-	-	-	-	-	-	-	-	-	-
3/13/2023	13.87	5,464.80	16.71	5,470.16	14.46	5,468.54	19.52	5,464.77	18.72	5,465.03	-	-	-	-	-	-	-	-	-	-
3/14/2023	-	-	-	-	-	-	-	-	-	-	15.91	5,431.74	11.89	5,432.65	12.01	5,432.31	12.12	5,433.86	12.40	5,437.83
9/25/2023	13.32	5,465.35	16.64	5,470.23	14.31	5,468.69	18.88	5,465.41	18.10	5,465.65	-	-	-	-	-	-	-	-	-	-
9/26/2023	-	-	-	-	-	-	-	-	-	-	13.91	5,433.74	10.98	5,433.56	11.57	5,432.75	12.02	5,433.96	12.30	5,437.93
3/18/2024	13.46	5,465.21	16.52	5,470.35	13.94	5,469.06	18.71	5,465.58	18.06	5,465.69	-	-	-	-	-	-	-	-	-	-
3/19/2024	-	-	-	-	-	-	-	-	-	-	13.78	5,433.87	10.80	5,433.74	10.83	5,433.49	10.88	5,435.10	10.90	5,439.33
9/17/2024	12.80	5,465.87	16.49	5,470.38	14.41	5,468.59	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9/18/2024	-	-	-	-	-	-	18.90	5,465.39	18.02	5,465.73	13.38	5,434.27	10.39	5,434.15	11.22	5,433.10	11.77	5,434.21	12.04	5,438.19

Depth to Water = Feet
Water Surface Elevation = Feet Above Mean Sea Level

CCR Landfill - Hydrographs



APPENDIX C

Laboratory Analytical Results

Colorado Springs Utilities

It's how we're all connected

Laboratory Report For:

Coal Combustion Residuals - Landfill

Colorado Springs Utilities Environmental Services

Report Authorized by: Wendy M Asay

Title: Environmental Specialist

Report Date: April 19, 2024

Report generated by: Wendy M. Asay

Colorado Springs Utilities Laboratory Services Section certifies that the test results meet all approved method and Laboratory Quality Assurance Plan requirements unless otherwise noted

Samples

496701	18-Mar-2024 15:16	Crooked Canyon Well #1
496702	18-Mar-2024 10:25	Fort Carson Well #1
496703	18-Mar-2024 11:30	Fort Carson Well #2
496704	18-Mar-2024 13:58	Fort Carson Well #3A
496705	18-Mar-2024 13:16	Fort Carson Well #3B
496706	19-Mar-2024 16:40	Equipment Blank
496707	19-Mar-2024 16:05	Sand Canyon Well #10
496708	19-Mar-2024 14:41	Sand Canyon Well #11
496709	19-Mar-2024 13:25	Sand Canyon Well #12
496710	19-Mar-2024 12:25	Sand Canyon Well #13
496711	19-Mar-2024 10:33	Sand Canyon Well #14
496712	19-Mar-2024 00:00	Field Duplicate sample

LIMS #: 496701

Sample Date: 3/18/2024 3:16:51 PM

Sample Point: CC_1

Sample Point Description: Crooked Canyon Well #1

Collection Comments: Perform MS/MSD

Sample Type: GRAB

Sampler Initials: JDC

Flag	Method	Analyte	Result	Units	RL	Data Qualifiers	Analyzed On	Dilution Factor
+	SM_4500HB	pH	6.9	SU	2.0			1
+	SM_2550_B	Temperature Centigrade (Field)	12.2	degrees C	0.000			1
+	SM_2510_B	Conductivity	28600	umhos/cm	1			1
+	SM_2580_B	Oxidation-Reduction Potential	157	mV	0			1
+	SM_4500_OG	Dissolved Oxygen	<1.0	mg/L	1.0			1
+	SM_2130_B	Turbidity	8.9	NTU	0.05			1
	NA	Depth to Water	13.46	ft.	0.000			1
	EPA_200_7	Boron (Total Recoverable)	1020	ug/L	20.0		03/25/2024	1
		Calcium (Total Recoverable)	419000	ug/L	1000	T1/D	03/25/2024	10
		Cobalt (Total Recoverable)	<5.00	ug/L	5.00		03/25/2024	1
		Lithium (Total Recoverable)	771	ug/L	300	D	03/25/2024	10
	EPA_1631	Mercury (Total)	0.007	ug/L	0.002		04/01/2024	1
	EPA_300_0	Chloride	1750	mg/L	25.0	D	03/29/2024	50
		Sulfate	21300	mg/L	500	D	03/29/2024	1000
*	EPA_6020_B	Antimony (Total)	<2.0	ug/L	2.0		04/01/2024	1
		Arsenic (Total)	<5.0	ug/L	5.0		04/01/2024	1
		Barium (Total)	5.7	ug/L	3.0		04/01/2024	1
		Beryllium (Total)	<1.0	ug/L	1.0		04/01/2024	1
		Cadmium (Total)	<1.0	ug/L	1.0		04/01/2024	1
		Chromium (Total)	<3.0	ug/L	3.0		04/01/2024	1
		Lead (Total)	<1.0	ug/L	1.0		04/01/2024	1
		Molybdenum (Total)	<2.0	ug/L	2.0		04/01/2024	1
		Selenium (Total)	170	ug/L	5.0	T1	04/01/2024	1
		Thallium (Total)	<1.0	ug/L	1.0		04/01/2024	1
	SM_2540_C	Total Dissolved Solids	34900	mg/L	10			1
	SM_4500_FC	Fluoride (Total)	0.21	mg/L	0.10	T	03/29/2024	1

LIMS #: 496702

Sample Date: 3/18/2024 10:25:51 AM

Sample Point: FC_1

Sample Point Description: Fort Carson Well #1

Collection Comments:

Sample Type: GRAB

Sampler Initials: JDC

Flag	Method	Analyte	Result	Units	RL	Data Qualifiers	Analyzed On	Dilution Factor
	EPA_300_0	Chloride	840	mg/L	25.0	D	03/29/2024	50
		Sulfate	13900	mg/L	250	D	03/29/2024	500
+	SM_4500HB	pH	7.1	SU	2.0			1
+	SM_2550_B	Temperature Centigrade (Field)	13.2	degrees C	0.000			1
+	SM_2510_B	Conductivity	21900	umhos/cm	1			1
+	SM_2580_B	Oxidation-Reduction Potential	242	mV	0			1
+	SM_4500_OG	Dissolved Oxygen	<1.0	mg/L	1.0			1
+	SM_2130_B	Turbidity	9.8	NTU	0.05			1
	NA	Depth to Water	16.52	ft.	0.000			1
	SM_2540_C	Total Dissolved Solids	22000	mg/L	10			1
	SM_4500_FC	Fluoride (Total)	0.12	mg/L	0.10	T	03/29/2024	1
	EPA_200_7	Boron (Total Recoverable)	1010	ug/L	20.0		03/25/2024	1
		Calcium (Total Recoverable)	378000	ug/L	1000	T1/D	03/25/2024	10
		Cobalt (Total Recoverable)	<5.00	ug/L	5.00		03/25/2024	1
		Lithium (Total Recoverable)	949	ug/L	300	D	03/25/2024	10
	EPA_1631	Mercury (Total)	0.002	ug/L	0.002		04/01/2024	1
*	EPA_6020_B	Antimony (Total)	<2.0	ug/L	2.0		03/26/2024	1
		Arsenic (Total)	<5.0	ug/L	5.0		03/26/2024	1
		Barium (Total)	8.6	ug/L	3.0		03/26/2024	1
		Beryllium (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Cadmium (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Chromium (Total)	<3.0	ug/L	3.0		03/26/2024	1
		Lead (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Molybdenum (Total)	2.1	ug/L	2.0		03/26/2024	1
		Selenium (Total)	<5.0	ug/L	5.0		03/26/2024	1
		Thallium (Total)	<1.0	ug/L	1.0		03/26/2024	1

LIMS #: 496703

Sample Date: 3/18/2024 11:30:51 AM

Sample Point: FC_2

Sample Point Description: Fort Carson Well #2

Collection Comments:

Sample Type: GRAB

Sampler Initials: JDC

Flag	Method	Analyte	Result	Units	RL	Data Qualifiers	Analyzed On	Dilution Factor
	EPA_300_0	Chloride	109	mg/L	25.0	D	03/29/2024	50
		Sulfate	6390	mg/L	250	D	03/29/2024	500
+	SM_4500HB	pH	7.3	SU	2.0			1
+	SM_2550_B	Temperature Centigrade (Field)	12.3	degrees C	0.000			1
+	SM_2510_B	Conductivity	9740	umhos/cm	1			1
+	SM_2580_B	Oxidation-Reduction Potential	189	mV	0			1
+	SM_4500_OG	Dissolved Oxygen	<1.0	mg/L	1.0			1
+	SM_2130_B	Turbidity	4.8	NTU	0.05			1
	NA	Depth to Water	13.94	ft.	0.000			1
	SM_2540_C	Total Dissolved Solids	9780	mg/L	10			1
	SM_4500_FC	Fluoride (Total)	0.49	mg/L	0.10	T	03/29/2024	1
	EPA_200_7	Boron (Total Recoverable)	921	ug/L	20.0		03/25/2024	1
		Calcium (Total Recoverable)	403000	ug/L	1000	T1/D	03/25/2024	10
		Cobalt (Total Recoverable)	<5.00	ug/L	5.00		03/25/2024	1
		Lithium (Total Recoverable)	315	ug/L	300	D	03/25/2024	10
	EPA_1631	Mercury (Total)	0.003	ug/L	0.002		04/01/2024	1
*	EPA_6020_B	Antimony (Total)	<2.0	ug/L	2.0		03/26/2024	1
		Arsenic (Total)	<5.0	ug/L	5.0		03/26/2024	1
		Barium (Total)	6.2	ug/L	3.0		03/26/2024	1
		Beryllium (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Cadmium (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Chromium (Total)	<3.0	ug/L	3.0		03/26/2024	1
		Lead (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Molybdenum (Total)	2.8	ug/L	2.0		03/26/2024	1
		Selenium (Total)	39	ug/L	5.0		03/26/2024	1
		Thallium (Total)	<1.0	ug/L	1.0		03/26/2024	1

LIMS #: 496704

Sample Date: 3/18/2024 1:58:51 PM

Sample Point: FC_3A

Sample Point Description: Fort Carson Well #3A

Collection Comments:

Sample Type: GRAB

Sampler Initials: JDC

Flag	Method	Analyte	Result	Units	RL	Data Qualifiers	Analyzed On	Dilution Factor
	EPA_300_0	Chloride	144	mg/L	25.0	D	03/29/2024	50
		Sulfate	5670	mg/L	250	D	03/29/2024	500
+	SM_4500HB	pH	7.4	SU	2.0			1
+	SM_2550_B	Temperature Centigrade (Field)	12.6	degrees C	0.000			1
+	SM_2510_B	Conductivity	8930	umhos/cm	1			1
+	SM_2580_B	Oxidation-Reduction Potential	107	mV	0			1
+	SM_4500_OG	Dissolved Oxygen	<1.0	mg/L	1.0			1
+	SM_2130_B	Turbidity	3.9	NTU	0.05			1
	NA	Depth to Water	18.71	ft.	0.000			1
	SM_2540_C	Total Dissolved Solids	9220	mg/L	10			1
	SM_4500_FC	Fluoride (Total)	0.44	mg/L	0.10	T	03/29/2024	1
	EPA_200_7	Boron (Total Recoverable)	1040	ug/L	20.0		03/25/2024	1
		Calcium (Total Recoverable)	408000	ug/L	1000	T1/D	03/25/2024	10
		Cobalt (Total Recoverable)	<5.00	ug/L	5.00		03/25/2024	1
		Lithium (Total Recoverable)	317	ug/L	300	D	03/25/2024	10
	EPA_1631	Mercury (Total)	<0.002	ug/L	0.002		04/01/2024	1
*	EPA_6020_B	Antimony (Total)	<2.0	ug/L	2.0		03/26/2024	1
		Arsenic (Total)	<5.0	ug/L	5.0		03/26/2024	1
		Barium (Total)	11	ug/L	3.0		03/26/2024	1
		Beryllium (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Cadmium (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Chromium (Total)	<3.0	ug/L	3.0		03/26/2024	1
		Lead (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Molybdenum (Total)	6.9	ug/L	2.0		03/26/2024	1
		Selenium (Total)	55	ug/L	5.0		03/26/2024	1
		Thallium (Total)	<1.0	ug/L	1.0		03/26/2024	1

LIMS #: 496705

Sample Date: 3/18/2024 1:16:51 PM

Sample Point: FC_3B

Sample Point Description: Fort Carson Well #3B

Collection Comments:

Sample Type: GRAB

Sampler Initials: JDC

Flag	Method	Analyte	Result	Units	RL	Data Qualifiers	Analyzed On	Dilution Factor
	EPA_300_0	Chloride	233	mg/L	25.0	D	03/29/2024	50
		Sulfate	4270	mg/L	250	D	03/29/2024	500
+	SM_4500HB	pH	7.2	SU	2.0			1
+	SM_2550_B	Temperature Centigrade (Field)	12.8	degrees C	0.000			1
+	SM_2510_B	Conductivity	8790	umhos/cm	1			1
+	SM_2580_B	Oxidation-Reduction Potential	-99	mV	0			1
+	SM_4500_OG	Dissolved Oxygen	<1.0	mg/L	1.0			1
+	SM_2130_B	Turbidity	11	NTU	0.05			1
	NA	Depth to Water	18.06	ft.	0.000			1
	SM_2540_C	Total Dissolved Solids	7600	mg/L	10			1
	SM_4500_FC	Fluoride (Total)	0.61	mg/L	0.10	T	03/29/2024	1
	EPA_200_7	Boron (Total Recoverable)	1170	ug/L	20.0		03/25/2024	1
		Calcium (Total Recoverable)	237000	ug/L	1000	T1/D	03/25/2024	10
		Cobalt (Total Recoverable)	<5.00	ug/L	5.00		03/25/2024	1
		Lithium (Total Recoverable)	278	ug/L	30.0		03/25/2024	1
	EPA_1631	Mercury (Total)	<0.002	ug/L	0.002		04/01/2024	1
*	EPA_6020_B	Antimony (Total)	<2.0	ug/L	2.0		03/26/2024	1
		Arsenic (Total)	<5.0	ug/L	5.0		03/26/2024	1
		Barium (Total)	11	ug/L	3.0		03/26/2024	1
		Beryllium (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Cadmium (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Chromium (Total)	<3.0	ug/L	3.0		03/26/2024	1
		Lead (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Molybdenum (Total)	11	ug/L	2.0		03/26/2024	1
		Selenium (Total)	<5.0	ug/L	5.0		03/26/2024	1
		Thallium (Total)	<1.0	ug/L	1.0		03/26/2024	1

LIMS #: 496706

Sample Date: 3/19/2024 4:40:52 PM

Sample Point: EQUIP_BLK

Sample Point Description: Equipment Blank

Collection Comments:

Sample Type: GRAB

Sampler Initials: JDC

Flag	Method	Analyte	Result	Units	RL	Data Qualifiers	Analyzed On	Dilution Factor
	EPA_300_0	Chloride	<0.50	mg/L	0.50		03/29/2024	1
		Sulfate	<0.50	mg/L	0.50		03/29/2024	1
	SM_2540_C	Total Dissolved Solids	<10	mg/L	10			1
	SM_4500_FC	Fluoride (Total)	<0.10	mg/L	0.10	T	03/29/2024	1
	EPA_200_7	Boron (Total Recoverable)	<20.0	ug/L	20.0		03/25/2024	1
		Calcium (Total Recoverable)	<100	ug/L	100	T1	03/25/2024	1
		Cobalt (Total Recoverable)	<5.00	ug/L	5.00		03/25/2024	1
		Lithium (Total Recoverable)	<30.0	ug/L	30.0		03/25/2024	1
	EPA_1631	Mercury (Total)	<0.002	ug/L	0.002		04/01/2024	1
*	EPA_6020_B	Antimony (Total)	<2.0	ug/L	2.0		03/26/2024	1
		Arsenic (Total)	<5.0	ug/L	5.0		03/26/2024	1
		Barium (Total)	<3.0	ug/L	3.0		03/26/2024	1
		Beryllium (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Cadmium (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Chromium (Total)	<3.0	ug/L	3.0		03/26/2024	1
		Lead (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Molybdenum (Total)	<2.0	ug/L	2.0		03/26/2024	1
		Selenium (Total)	<5.0	ug/L	5.0		03/26/2024	1
		Thallium (Total)	<1.0	ug/L	1.0		03/26/2024	1

LIMS #: 496707

Sample Date: 3/19/2024 4:05:43 PM

Sample Point: SC_10

Sample Point Description: Sand Canyon Well #10

Collection Comments: Perform MS/MSD; Turbid

Sample Type: GRAB

Sampler Initials: JDC

Flag	Method	Analyte	Result	Units	RL	Data Qualifiers	Analyzed On	Dilution Factor
+	SM_4500HB	pH	7.2	SU	2.0			1
+	SM_2550_B	Temperature Centigrade (Field)	14.2	degrees C	0.000			1
+	SM_2510_B	Conductivity	17500	umhos/cm	1			1
+	SM_2580_B	Oxidation-Reduction Potential	168	mV	0			1
+	SM_4500_OG	Dissolved Oxygen	<1.0	mg/L	1.0			1
+	SM_2130_B	Turbidity	27	NTU	0.05			1
	NA	Depth to Water	13.78	ft.	0.000			1
	EPA_200_7	Boron (Total Recoverable)	1180	ug/L	20.0		03/25/2024	1
		Calcium (Total Recoverable)	403000	ug/L	1000	T1/D	03/25/2024	10
		Cobalt (Total Recoverable)	<5.00	ug/L	5.00		03/25/2024	1
		Lithium (Total Recoverable)	688	ug/L	300	D	03/25/2024	10
	EPA_1631	Mercury (Total)	0.007	ug/L	0.002		04/01/2024	1
	EPA_300_0	Chloride	1000	mg/L	25.0	D	03/26/2024	50
		Sulfate	9810	mg/L	250	D	03/26/2024	500
*	EPA_6020_B	Antimony (Total)	<2.0	ug/L	2.0		04/01/2024	1
		Arsenic (Total)	<5.0	ug/L	5.0		04/01/2024	1
		Barium (Total)	12	ug/L	3.0		04/01/2024	1
		Beryllium (Total)	<1.0	ug/L	1.0		04/01/2024	1
		Cadmium (Total)	<1.0	ug/L	1.0		04/01/2024	1
		Chromium (Total)	<3.0	ug/L	3.0		04/01/2024	1
		Lead (Total)	<1.0	ug/L	1.0		04/01/2024	1
		Molybdenum (Total)	4.6	ug/L	2.0		04/01/2024	1
		Selenium (Total)	200	ug/L	5.0	T1	04/01/2024	1
		Thallium (Total)	<1.0	ug/L	1.0		04/01/2024	1
	SM_2540_C	Total Dissolved Solids	16900	mg/L	10			1
	SM_4500_FC	Fluoride (Total)	0.49	mg/L	0.10	T	03/29/2024	1

LIMS #: 496708

Sample Date: 3/19/2024 2:41:43 PM

Sample Point: SC_11

Sample Point Description: Sand Canyon Well #11

Collection Comments:

Sample Type: GRAB

Sampler Initials: JDC

Flag	Method	Analyte	Result	Units	RL	Data Qualifiers	Analyzed On	Dilution Factor
+	SM_4500HB	pH	7.2	SU	2.0			1
+	SM_2550_B	Temperature Centigrade (Field)	14.3	degrees C	0.000			1
+	SM_2510_B	Conductivity	16600	umhos/cm	1			1
+	SM_2580_B	Oxidation-Reduction Potential	203	mV	0			1
+	SM_4500_OG	Dissolved Oxygen	<1.0	mg/L	1.0			1
+	SM_2130_B	Turbidity	22	NTU	0.05			1
	NA	Depth to Water	10.80	ft.	0.000			1
	SM_2540_C	Total Dissolved Solids	16000	mg/L	10			1
	SM_4500_FC	Fluoride (Total)	0.56	mg/L	0.10	T	03/29/2024	1
	EPA_200_7	Boron (Total Recoverable)	2570	ug/L	20.0		03/25/2024	1
		Calcium (Total Recoverable)	458000	ug/L	1000	T1/D	03/25/2024	10
		Cobalt (Total Recoverable)	<5.00	ug/L	5.00		03/25/2024	1
		Lithium (Total Recoverable)	623	ug/L	300	D	03/25/2024	10
	EPA_1631	Mercury (Total)	0.011	ug/L	0.002		04/01/2024	1
	EPA_300_0	Chloride	1290	mg/L	25.0	D	03/26/2024	50
		Sulfate	8400	mg/L	250	D	03/26/2024	500
*	EPA_6020_B	Antimony (Total)	<2.0	ug/L	2.0		03/26/2024	1
		Arsenic (Total)	<5.0	ug/L	5.0		03/26/2024	1
		Barium (Total)	12	ug/L	3.0		03/26/2024	1
		Beryllium (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Cadmium (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Chromium (Total)	<3.0	ug/L	3.0		03/26/2024	1
		Lead (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Molybdenum (Total)	2.9	ug/L	2.0		03/26/2024	1
		Selenium (Total)	330	ug/L	5.0		03/26/2024	1
		Thallium (Total)	<1.0	ug/L	1.0		03/26/2024	1

LIMS #: 496709

Sample Date: 3/19/2024 1:25:43 PM

Sample Point: SC_12

Sample Point Description: Sand Canyon Well #12

Collection Comments:

Sample Type: GRAB

Sampler Initials: JDC

Flag	Method	Analyte	Result	Units	RL	Data Qualifiers	Analyzed On	Dilution Factor
+	SM_4500HB	pH	7.3	SU	2.0			1
+	SM_2550_B	Temperature Centigrade (Field)	14.2	degrees C	0.000			1
+	SM_2510_B	Conductivity	13200	umhos/cm	1			1
+	SM_2580_B	Oxidation-Reduction Potential	488	mV	0			1
+	SM_4500_OG	Dissolved Oxygen	<1.0	mg/L	1.0			1
+	SM_2130_B	Turbidity	3.5	NTU	0.05			1
	NA	Depth to Water	10.83	ft.	0.000			1
	SM_2540_C	Total Dissolved Solids	13400	mg/L	10			1
	SM_4500_FC	Fluoride (Total)	0.89	mg/L	0.10	T	03/29/2024	1
	EPA_200_7	Boron (Total Recoverable)	4400	ug/L	20.0		03/25/2024	1
		Calcium (Total Recoverable)	397000	ug/L	1000	T1/D	03/25/2024	10
		Cobalt (Total Recoverable)	<5.00	ug/L	5.00		03/25/2024	1
		Lithium (Total Recoverable)	442	ug/L	300	D	03/25/2024	10
	EPA_1631	Mercury (Total)	0.004	ug/L	0.002		04/01/2024	1
	EPA_300_0	Chloride	340	mg/L	25.0	D	03/26/2024	50
		Sulfate	8120	mg/L	250	D	03/26/2024	500
*	EPA_6020_B	Antimony (Total)	<2.0	ug/L	2.0		03/26/2024	1
		Arsenic (Total)	<5.0	ug/L	5.0		03/26/2024	1
		Barium (Total)	6.4	ug/L	3.0		03/26/2024	1
		Beryllium (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Cadmium (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Chromium (Total)	<3.0	ug/L	3.0		03/26/2024	1
		Lead (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Molybdenum (Total)	4.3	ug/L	2.0		03/26/2024	1
		Selenium (Total)	12	ug/L	5.0		03/26/2024	1
		Thallium (Total)	<1.0	ug/L	1.0		03/26/2024	1

LIMS #: 496710

Sample Date: 3/19/2024 12:25:43 PM

Sample Point: SC_13

Sample Point Description: Sand Canyon Well #13

Collection Comments:

Sample Type: GRAB

Sampler Initials: JDC

Flag	Method	Analyte	Result	Units	RL	Data Qualifiers	Analyzed On	Dilution Factor
+	SM_4500HB	pH	7.3	SU	2.0			1
+	SM_2550_B	Temperature Centigrade (Field)	12.1	degrees C	0.000			1
+	SM_2510_B	Conductivity	10700	umhos/cm	1			1
+	SM_2580_B	Oxidation-Reduction Potential	180	mV	0			1
+	SM_4500_OG	Dissolved Oxygen	<1.0	mg/L	1.0			1
+	SM_2130_B	Turbidity	7.3	NTU	0.05			1
	NA	Depth to Water	10.88	ft.	0.000			1
	SM_2540_C	Total Dissolved Solids	11400	mg/L	10			1
	SM_4500_FC	Fluoride (Total)	0.70	mg/L	0.10	T	03/29/2024	1
	EPA_200_7	Boron (Total Recoverable)	1490	ug/L	20.0		03/25/2024	1
		Calcium (Total Recoverable)	378000	ug/L	1000	T1/D	03/25/2024	10
		Cobalt (Total Recoverable)	<5.00	ug/L	5.00		03/25/2024	1
		Lithium (Total Recoverable)	363	ug/L	300	D	03/25/2024	10
	EPA_1631	Mercury (Total)	0.002	ug/L	0.002		04/01/2024	1
	EPA_300_0	Chloride	163	mg/L	25.0	D	03/26/2024	50
		Sulfate	6950	mg/L	250	D	03/26/2024	500
*	EPA_6020_B	Antimony (Total)	<2.0	ug/L	2.0		03/26/2024	1
		Arsenic (Total)	<5.0	ug/L	5.0		03/26/2024	1
		Barium (Total)	7.1	ug/L	3.0		03/26/2024	1
		Beryllium (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Cadmium (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Chromium (Total)	<3.0	ug/L	3.0		03/26/2024	1
		Lead (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Molybdenum (Total)	3.6	ug/L	2.0		03/26/2024	1
		Selenium (Total)	31	ug/L	5.0		03/26/2024	1
		Thallium (Total)	<1.0	ug/L	1.0		03/26/2024	1

LIMS #: 496711

Sample Date: 3/19/2024 10:33:43 AM

Sample Point: SC_14

Sample Point Description: Sand Canyon Well #14

Collection Comments:

Sample Type: GRAB

Sampler Initials: JDC

Flag	Method	Analyte	Result	Units	RL	Data Qualifiers	Analyzed On	Dilution Factor
+	SM_4500HB	pH	7.2	SU	2.0			1
+	SM_2550_B	Temperature Centigrade (Field)	11.5	degrees C	0.000			1
+	SM_2510_B	Conductivity	10700	umhos/cm	1			1
+	SM_2580_B	Oxidation-Reduction Potential	206	mV	0			1
+	SM_4500_OG	Dissolved Oxygen	<1.0	mg/L	1.0			1
+	SM_2130_B	Turbidity	3.6	NTU	0.05			1
	NA	Depth to Water	10.90	ft.	0.000			1
	SM_2540_C	Total Dissolved Solids	11300	mg/L	10			1
	SM_4500_FC	Fluoride (Total)	0.69	mg/L	0.10	T	03/29/2024	1
	EPA_200_7	Boron (Total Recoverable)	1390	ug/L	20.0		03/25/2024	1
		Calcium (Total Recoverable)	378000	ug/L	1000	T1/D	03/25/2024	10
		Cobalt (Total Recoverable)	<5.00	ug/L	5.00		03/25/2024	1
		Lithium (Total Recoverable)	371	ug/L	300	D	03/25/2024	10
	EPA_1631	Mercury (Total)	<0.002	ug/L	0.002		04/01/2024	1
	EPA_300_0	Chloride	152	mg/L	25.0	D	03/26/2024	50
		Sulfate	6880	mg/L	250	D	03/26/2024	500
*	EPA_6020_B	Antimony (Total)	<2.0	ug/L	2.0		03/26/2024	1
		Arsenic (Total)	<5.0	ug/L	5.0		03/26/2024	1
		Barium (Total)	5.4	ug/L	3.0		03/26/2024	1
		Beryllium (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Cadmium (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Chromium (Total)	<3.0	ug/L	3.0		03/26/2024	1
		Lead (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Molybdenum (Total)	11	ug/L	2.0		03/26/2024	1
		Selenium (Total)	7.8	ug/L	5.0		03/26/2024	1
		Thallium (Total)	<1.0	ug/L	1.0		03/26/2024	1

LIMS #: 496712

Sample Date: 3/19/2024 12:00:43 AM

Sample Point: FIELD_DUP

Sample Point Description: Field Duplicate sample

Collection Comments:

Sample Type: GRAB

Sampler Initials: JDC

Flag	Method	Analyte	Result	Units	RL	Data Qualifiers	Analyzed On	Dilution Factor
	SM_2540_C	Total Dissolved Solids	13500	mg/L	10			1
	SM_4500_FC	Fluoride (Total)	0.88	mg/L	0.10	T	03/29/2024	1
	EPA_200_7	Boron (Total Recoverable)	4420	ug/L	20.0		03/25/2024	1
		Calcium (Total Recoverable)	373000	ug/L	1000	T1/D	03/25/2024	10
		Cobalt (Total Recoverable)	<5.00	ug/L	5.00		03/25/2024	1
		Lithium (Total Recoverable)	455	ug/L	300	D	03/25/2024	10
	EPA_1631	Mercury (Total)	0.004	ug/L	0.002		04/01/2024	1
*	EPA_6020_B	Antimony (Total)	<2.0	ug/L	2.0		03/26/2024	1
		Arsenic (Total)	<5.0	ug/L	5.0		03/26/2024	1
		Barium (Total)	6.2	ug/L	3.0		03/26/2024	1
		Beryllium (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Cadmium (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Chromium (Total)	<3.0	ug/L	3.0		03/26/2024	1
		Lead (Total)	<1.0	ug/L	1.0		03/26/2024	1
		Molybdenum (Total)	4.6	ug/L	2.0		03/26/2024	1
		Selenium (Total)	13	ug/L	5.0		03/26/2024	1
		Thallium (Total)	<1.0	ug/L	1.0		03/26/2024	1
	EPA_300_0	Chloride	341	mg/L	25.0	D	03/26/2024	50
		Sulfate	8060	mg/L	250	D	03/26/2024	500

Flags

*	Analysis performed by an external contract laboratory.
+	Analysis performed in the field.

Data Qualifiers

D - Value reported is multiplied by a dilution factor.
T- MS recovery outside the established range. The recovery is matrix related, not method related.
T1 - The analyte concentration is disproportionate to the spike level and is outside the established range.

Glossary

DQ - Data Qualifer
RL – Reporting Limit
MDL – Method Detection Limit
Dil Fac – Dilution Factor

Case Narrative

Colorado Springs Utilities

Colorado Springs Utilities
Laboratory Services
Grab Samples

CCR Landfill Groundwater Assessment Upgradient Wells

Sample Date: 3/18/2024

QC Report Needed

Sampler: J SUSLOW
A Holmberg

LOCATION	# Bottles	LIMS #	Sample Time	pH, Field (su) SM 4500 H	Temperature, Field (°C) SM 2550 B	Conductivity, Field (umhos/cm) SM 2510 B	Oxidation Reduction Potential, Field (mV)	Dissolved Oxygen (mg/L)	Turbidity, Field (NTU), SM 2130 B	Depth to Water (feet)	Check which sample should have MS/MSD performed on it	Fluoride, SM 4500 F C	Total Dissolved Solids, SM 2540 C	Chloride, Sulfate EPA 300.0	EPA 200.7 (B, Ca, Co & Li - Total Recoverable)	EPA 6020 B (Sb, As, Ba, Be, Cd, Cr, Pb, Mo, Se & Tl - Total Recoverable) Sent to Eurofins TA Denver	Mercury, EPA 1631	Total Radium 226 & Radium 228 (Sent to Test America St. Louis)	Comments
	Please mark boxes that apply										✓								
CC_1	7	496701	15:16	6.90	12.2	28579	157.1	0.12	8.94	13.46	✓	x	x	x	x	x	x	x	
FC_1	7	496702	10:25	7.08	13.2	21876	241.9	0.25	9.78	16.52		x	x	x	x	x	x	x	
FC_2	7	496703	11:30	7.27	12.3	9739	188.8	0.15	4.83	13.94		x	x	x	x	x	x	x	
FC_3A	7	496704	13:58	7.42	12.6	8933	107.1	0.35	3.87	18.71		x	x	x	x	x	x	x	
FC_3B	7	496705	13:16	7.20	12.8	8792	98.5	0.27	10.98	18.06		x	x	x	x	x	x	x	
EQUIP_BLK		~~496706~~										x	x	x	x	x	x	x	
Total # of Bottles	35											1-500 mL GP	1-250 mL GP	1-500 mL New Certified plastic	1-250 mL bottles provided by external lab (pre-preserved with HNO3)	1-250 mL glass acid-rinsed	2-1000 mL plastic		

Signature/Print last name

Relinquished by: J SUSLOW — 3/18/24 @ 1822 *

Received by: Kelly Nelson — 3/19/24 @ 0711

Additional Comments / Sample Rejections/ Actions

Workflow: CCR_LANDFILL
Project ID: CCR_LAND
Test Schedule: CCR_LAND

Samples are NOT filtered in the field.

* Samples left in SK walk-in cooler overnight KAN 3/19/24

Colorado Springs Utilities
Laboratory Services
Grab Samples

CCR Landfill Groundwater Assessment Upgradient Wells
Sample Date: 3/19/24
QC Report Needed

Sampler: J Suslow
A Holmberg

LOCATION	# Bottles	LIMS #	Sample Time	Please mark boxes that apply. pH, Field (su) SM 4500 H	Temperature, F SM 2550 B	Conductivity, Field (umhos/cm) SM 2510 B	Oxidation Reduction Potential, Field (mV)	Dissolved Oxygen (mg/L)	Turbidity, Field (NTU) SM 2130 B	Depth to Water (feet)	Check which sample should have MS/MSD performed on it	Fluoride, SM 4500 F C	Total Dissolved Solids, SM 2540 C	Chloride, Sulfate EPA 300.0	EPA 200.7 (B, Ca, Co & Li - Total Recoverable)	EPA 6020 B (Sb, As, Ba, Be, Cd, Cr, Pb, Mo, Se & Tl - Total Recoverable) Sent to Eurofins TA Denver	Mercury, EPA 1631	Total Radium 226 & Radium 228 (Sent to Test America St. Louis)	Comments
CC_1												X	X	X	X	X	X	X	
FC_1												X	X	X	X	X	X	X	
FC_2												X	X	X	X	X	X	X	
FC_3A												X	X	X	X	X	X	X	
FC_3B												X	X	X	X	X	X	X	
EQUIP_BLK	7	496706	16:40									X	X	X	X	X	X	X	
Total # of Bottles	7											1-500 mL GP		1-250 mL GP	1-500 mL New Certified plastic	1-250 mL bottles provided by external lab (pre-preserved with HNO3)	1-250 mL glass acid-rinsed	2-1000 mL plastic	

Signature/Print last name

Relinquished by: J Suslow @ 18:50 Date/Time 3/14/24

Received by: Kelly Nelson @ 0704 3/20/24 *

Additional Comments / Sample Rejections/ Actions

Workflow: CCR_LANDFILL
Project ID: CCR_LAND
Test Schedule: CCR_LAND

Samples are NOT filtered in the field.

* Samples left in Sample Receiving walk-in cooler overnight. KAN 3/21/24

Colorado Springs Utilities

Colorado Springs Utilities
Laboratory Services
Grab Samples

CCR Landfill Groundwater Assessment Downgradient and Cross Gradient Wells

Sample Date: 3/19/2024

QC Report Needed

Sampler: J. Suslow
A. Holmberg

LOCATION	# Bottles	LIMS #	Sample Time	pH, Field (su) SM 4500 H	Temperature, Field (°C) SM 2550 B	Conductivity, Field (umhos/cm) SM 2510 B	Oxidation Reduction Potential, Field (mV)	Dissolved Oxygen (mg/L)	Turbidity, Field (NTU), SM 2130 B	Depth to Water (feet)	Check which sample should have MS/MSD performed on it	Fluoride, SM 4500 F C	Total Dissolved Solids, SM 2540 C	Chloride, Sulfate EPA 300.0	EPA 200.7 (B, Ca, Co & Li - Total Recoverable)	EPA 6020 B (Sb, As, Ba, Be, Cd, Cr, Pb, Mo, Se & Tl - Total Recoverable) Sent to Eurofins TA Denver	Mercury, EPA 1631	Total Radium 226 & Radium 228 (Sent to Test America St. Louis)	Comments
				Please mark boxes that apply.								1-500 mL GP	1-250 mL GP	1-500 mL New Certified plastic	1-250 mL bottles provided by external lab (pre-preserved with HNO3)		1-250 mL glass acid-rinsed	2-1000 mL plastic	
SC_10	7	496707	16:05	7.25	14.2	17494	167.9	0.12	26.92	13.78	X	x	x	x	x	x	x	x	Turbid
SC_11	7	496708	14:41	7.23	14.3	18632	202.8	0.12	21.86	10.80		x	x	x	x	x	x	x	
SC_12	7	496709	13:25	7.26	14.2	13166	487.7	0.25	3.50	10.83		x	x	x	x	x	x	x	
SC_13	7	496710	12:25	7.28	12.1	10709	179.6	0.17	7.28	10.88		x	x	x	x	x	x	x	
SC_14	7	496711	10:33	7.25	11.5	10709	206.2	0.18	3.55	10.90		x	x	x	x	x	x	x	
FIELD_DUP	7	496712	00:00									x	x	x	x	x	x	x	
Total # of Bottles	42																		

Relinquished by — Signature/Print last name: J. Suslow — Date/Time: 18:50 @ 3/19/24

Received by — Nelson — 3/20/24 @ 0704 *

Additional Comments / Sample Rejections/ Actions

Workflow: CCR_LANDFILL
Project ID: CCR_LAND
Test Schedule: CCR_LAND

Samples are NOT filtered in the field.

* Samples left in Sample Receiving walk-in cooler overnight. KAN 3/20/24

Colorado Springs Utilities

It's how we're all connected

Laboratory Services Section
QC Report

CCR Landfill Wells
March 2024

Quality Assurance Approval: Lesley Susic Date: 4/22/2024

This report is for sample numbers 496701 – 496712.

Total Dissolved Solids by Standard Methods 2540 C

There are no anomalies to report for this analysis.

Fluoride by Standard Methods 4500 F C

The matrix spike recoveries are outside the established range. The recoveries are matrix related, not method related. Associated data are T qualified.

Anions by EPA Method 300.0

There are no anomalies to report for this analysis.

Mercury by EPA 1631 E

There are no anomalies to report for this analysis.

EPA 200.7

The calcium concentrations are disproportionate to the spike level and are outside the established range. Associated data are T1 qualified.

Method: Total Dissolved Solids by Standard Methods 2540 C
Batch Analysis date: 3/20/24
Sampled date: 3/18/24 for samples 496701 - 496705
Sampled date: 3/19/24 for samples 496706 - 496712

Matrix QC performed on samples 496701 and 496707

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
QCS	Total Dissolved Solids	93	91 - 118		
Duplicate	Total Dissolved Solids (496701)			<1	<10
Duplicate	Total Dissolved Solids (496707)			1	<10

QC Type	Analyte	Concentration	Limit
LRB	Total Dissolved Solids	<10 mg/L	10 mg/L

Method: Fluoride by Standard Methods 4500 F C
Batch Analysis date: 3/29/24
Sampled date: 3/18/24 for samples 496701 - 496705
Sampled date: 3/19/24 for samples 496706 - 496712

Matrix QC performed on samples 496701 and 496707

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Fluoride (Total)	99	90 - 110		
QCS	Fluoride (Total)	97	90 - 110		
MS	Fluoride (Total) (496701)	***39**	80 - 120		
MSD	Fluoride (Total) (496701)			1	<20
MS	Fluoride (Total) (496707)	***63**	80 - 120		
MSD	Fluoride (Total) (496707)			1	<20

QC Type	Analyte	Concentration	Limit
LRB	Fluoride (Total)	<0.05 mg/L	0.05 mg/L

***See Narrative**

Method: Anions by EPA Method 300.0
Batch Number: ANIONS000039
Batch Analysis date: 3/29/24
Sampled date: 3/18/24 for samples 496701 - 496705
Sampled date: 3/19/24 for sample 496706

Matrix QC performed on sample 496701

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Chloride	114	50-150		
LFB	Chloride	97	90-110	2	<20
LD	Chloride			1	<20
MS	Chloride	117	80-120		
MRL	Sulfate	122	50-150		
LFB	Sulfate	94	90-110	2	<20
LD	Sulfate			1	<20
MS	Sulfate	112	80-120		

QC Type	Analyte	Concentration	Limit
LRB	Chloride	<0.17 mg/L	0.17 mg/L
LRB	Sulfate	<0.17 mg/L	0.17 mg/L

Method: Anions by EPA Method 300.0
Batch Number: ANIONS000038
Batch Analysis date: 3/26/24
Sampled date: 3/19/24 for samples 496707 - 496712

Matrix QC performed on sample 496707

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Chloride	115	50-150		
LFB	Chloride	99	90-110	0	<20
LD	Chloride			2	<20
MS	Chloride	102	80-120		
MRL	Sulfate	124	50-150		
LFB	Sulfate	97	90-110	0	<20
LD	Sulfate			3	<20
MS	Sulfate	112	80-120		

QC Type	Analyte	Concentration	Limit
LRB	Chloride	<0.17 mg/L	0.17 mg/L
LRB	Sulfate	<0.17 mg/L	0.17 mg/L

Method: Mercury by EPA 1631 E
Batch Number: HG_PSA000007
Batch Analysis date: 4/1/24
Sampled date: 3/18/24 for samples 496701 - 496705
Sampled date: 3/19/24 for samples 496706 - 496712

Matrix QC performed on samples 496701 and 496707

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Mercury (Total)	97	60-140		
QCS	Mercury (Total)	102	77-123		
MS	Mercury (Total) (496701)	102	71-125		
MSD	Mercury (Total) (496701)			2	<24
MS	Mercury (Total) (496707)	106	71-125		
MSD	Mercury (Total) (496707)			2	<24

QC Type	Analyte	Concentration	Limit
LRB	Mercury (Total)	<0.5 ng/L	0.5 ng/L

Method: EPA 200.7
Batch Analysis date: 3/25/24
Digestion date: 3/21/24
Sampled date: 3/18/24 for samples 496701 - 496705
Sampled date: 3/19/24 for samples 496706 - 496712

Matrix QC performed on samples 496701 and 496707

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Boron (Total Recoverable)	109	50-150		
LFB	Boron (Total Recoverable)	102	85-115		
MS	Boron (Total Recoverable) (496701)	93	70-130		
MSD	Boron (Total Recoverable) (496701)			1	<20
MS	Boron (Total Recoverable) (496707)	103	70-130		
MSD	Boron (Total Recoverable) (496707)			0	<20
MRL	Calcium (Total Recoverable)	115	50-150		
LFB	Calcium (Total Recoverable)	103	85-115		
MS	Calcium (Total Recoverable) (496701)	***-41**	70-130		
MSD	Calcium (Total Recoverable) (496701)			3	<20
MS	Calcium (Total Recoverable) (496707)	***241**	70-130		
MSD	Calcium (Total Recoverable) (496707)			0	<20
MRL	Cobalt (Total Recoverable)	106	50-150		
LFB	Cobalt (Total Recoverable)	102	85-115		
MS	Cobalt (Total Recoverable) (496701)	77	70-130		
MSD	Cobalt (Total Recoverable) (496701)			4	<20
MS	Cobalt (Total Recoverable) (496707)	84	70-130		
MSD	Cobalt (Total Recoverable) (496707)			2	<20

MRL	Lithium (Total Recoverable)	98	50-150		
LFB	Lithium (Total Recoverable)	103	85-115		
MS	Lithium (Total Recoverable) (496701)	95	70-130		
MSD	Lithium (Total Recoverable) (496701)			3	<20
MS	Lithium (Total Recoverable) (496707)	119	70-130		
MSD	Lithium (Total Recoverable) (496707)			3	<20

QC Type	Analyte	Concentration	Limit
LRB	Boron (Total Recoverable)	<15.4 ug/L	15.4 ug/L
LRB	Calcium (Total Recoverable)	<36.1 ug/L	36.1 ug/L
LRB	Cobalt (Total Recoverable)	<1.71 ug/L	1.71 ug/L
LRB	Lithium (Total Recoverable)	<30.0 ug/L	30.0 ug/L

***See Narrative**

LD – Field Duplicate
LFB – Laboratory Fortified Blank
LRB – Laboratory Reagent Blank (Method Blank)
QCS – Quality Control Sample
MRL – Minimum Reporting Limit (Verification)
MS – Matrix Spike
MSD – Matrix Spike Duplicate
Underline – Data was outside the limit

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Wendy Asay
Colorado Springs Utilities
Laboratory Services Section
701 E. Las Vegas St., MC 1465
Colorado Springs, Colorado 80903

Generated 4/3/2024 10:44:21 AM

JOB DESCRIPTION

CCR Landfill

JOB NUMBER

280-189073-1

Eurofins Denver
4955 Yarrow Street
Arvada CO 80002

See page two for job notes and contact information.

myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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Authorization

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Authorized for release by
Shelby McCabe, Project Manager I
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(303)736-0165

Table of Contents

Job Narrative
280-189073-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 3/21/2024 9:20 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 11.2°C. It can be noted that thermal preservation is not required for 6020B Metals.

Method 6020B - Metals (ICP/MS)
Samples 496701 CC_1 (280-189073-1), 496701 CC_1 (280-189073-1MS), 496701 CC_1 (280-189073-1MSD), 496702 FC_1 (280-189073-2), 496703 FC_2 (280-189073-3), 496704 FC_3A (280-189073-4), 496705 FC_3B (280-189073-5), 496706 EQUIP_BLK (280-189073-6), 496707 SC_10 (280-189073-7), 496707 SC_10 (280-189073-7MS), 496707 SC_10 (280-189073-7MSD), 496708 SC_11 (280-189073-8), 496709 SC_12 (280-189073-9), 496710 SC_13 (280-189073-10), 496711 SC_14 (280-189073-11) and 496712 FIELD_DUP (280-189073-12) were analyzed for Metals (ICP/MS). The samples were prepared on 3/25/2024 and 4/1/2024 and analyzed on 3/26/2024 and 4/1/2024.

The following sample was improperly preserved in the field: 496702 FC_1 (280-189073-2). 2.5 mL of preservative was added by the laboratory to achieve the desired pH.

The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount.

Definitions/Glossary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-189073-1

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.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
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

Detection Summary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-189073-1

Client Sample ID: 496701 CC_1 — Lab Sample ID: 280-189073-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	5.7		3.0		ug/L	1		6020B	Total/NA
Selenium	170		5.0		ug/L	1		6020B	Total/NA

Client Sample ID: 496702 FC_1 — Lab Sample ID: 280-189073-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	8.6		3.0		ug/L	1		6020B	Total/NA
Molybdenum	2.1		2.0		ug/L	1		6020B	Total/NA

Client Sample ID: 496703 FC_2 — Lab Sample ID: 280-189073-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	6.2		3.0		ug/L	1		6020B	Total/NA
Molybdenum	2.8		2.0		ug/L	1		6020B	Total/NA
Selenium	39		5.0		ug/L	1		6020B	Total/NA

Client Sample ID: 496704 FC_3A — Lab Sample ID: 280-189073-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	11		3.0		ug/L	1		6020B	Total/NA
Molybdenum	6.9		2.0		ug/L	1		6020B	Total/NA
Selenium	55		5.0		ug/L	1		6020B	Total/NA

Client Sample ID: 496705 FC_3B — Lab Sample ID: 280-189073-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	11		3.0		ug/L	1		6020B	Total/NA
Molybdenum	11		2.0		ug/L	1		6020B	Total/NA

Client Sample ID: 496706 EQUIP_BLK — Lab Sample ID: 280-189073-6

No Detections.

Client Sample ID: 496707 SC_10 — Lab Sample ID: 280-189073-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	12		3.0		ug/L	1		6020B	Total/NA
Molybdenum	4.6		2.0		ug/L	1		6020B	Total/NA
Selenium	200		5.0		ug/L	1		6020B	Total/NA

Client Sample ID: 496708 SC_11 — Lab Sample ID: 280-189073-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	12		3.0		ug/L	1		6020B	Total/NA
Molybdenum	2.9		2.0		ug/L	1		6020B	Total/NA
Selenium	330		5.0		ug/L	1		6020B	Total/NA

Client Sample ID: 496709 SC_12 — Lab Sample ID: 280-189073-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	6.4		3.0		ug/L	1		6020B	Total/NA
Molybdenum	4.3		2.0		ug/L	1		6020B	Total/NA
Selenium	12		5.0		ug/L	1		6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-189073-1

Client Sample ID: 496710 SC_13 — Lab Sample ID: 280-189073-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	7.1		3.0		ug/L	1		6020B	Total/NA
Molybdenum	3.6		2.0		ug/L	1		6020B	Total/NA
Selenium	31		5.0		ug/L	1		6020B	Total/NA

Client Sample ID: 496711 SC_14 — Lab Sample ID: 280-189073-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	5.4		3.0		ug/L	1		6020B	Total/NA
Molybdenum	11		2.0		ug/L	1		6020B	Total/NA
Selenium	7.8		5.0		ug/L	1		6020B	Total/NA

Client Sample ID: 496712 FIELD_DUP — Lab Sample ID: 280-189073-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	6.2		3.0		ug/L	1		6020B	Total/NA
Molybdenum	4.6		2.0		ug/L	1		6020B	Total/NA
Selenium	13		5.0		ug/L	1		6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-189073-1

Method	Method Description	Protocol	Laboratory
6020B	Metals (ICP/MS)	SW846	EET DEN
3020A	Preparation, Total Metals	SW846	EET DEN

Protocol References:

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

Laboratory References:

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

Sample Summary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-189073-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-189073-1	496701 CC_1	Water	03/18/24 15:16	03/21/24 09:20
280-189073-2	496702 FC_1	Water	03/18/24 10:25	03/21/24 09:20
280-189073-3	496703 FC_2	Water	03/18/24 11:30	03/21/24 09:20
280-189073-4	496704 FC_3A	Water	03/18/24 13:58	03/21/24 09:20
280-189073-5	496705 FC_3B	Water	03/18/24 13:16	03/21/24 09:20
280-189073-6	496706 EQUIP_BLK	Water	03/19/24 16:40	03/21/24 09:20
280-189073-7	496707 SC_10	Water	03/19/24 16:05	03/21/24 09:20
280-189073-8	496708 SC_11	Water	03/19/24 14:41	03/21/24 09:20
280-189073-9	496709 SC_12	Water	03/19/24 13:25	03/21/24 09:20
280-189073-10	496710 SC_13	Water	03/19/24 12:25	03/21/24 09:20
280-189073-11	496711 SC_14	Water	03/19/24 10:33	03/21/24 09:20
280-189073-12	496712 FIELD_DUP	Water	03/19/24 00:00	03/21/24 09:20

Client Sample Results

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-189073-1

Client Sample ID: 496701 CC_1

Date Collected: 03/18/24 15:16
Date Received: 03/21/24 09:20

Lab Sample ID: 280-189073-1

Matrix: Water

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0		ug/L		04/01/24 09:20	04/01/24 18:48	1
Arsenic	ND		5.0		ug/L		04/01/24 09:20	04/01/24 18:48	1
Barium	**5.7**		3.0		ug/L		04/01/24 09:20	04/01/24 18:48	1
Beryllium	ND		1.0		ug/L		04/01/24 09:20	04/01/24 18:48	1
Cadmium	ND		1.0		ug/L		04/01/24 09:20	04/01/24 18:48	1
Chromium	ND		3.0		ug/L		04/01/24 09:20	04/01/24 18:48	1
Lead	ND		1.0		ug/L		04/01/24 09:20	04/01/24 18:48	1
Molybdenum	ND		2.0		ug/L		04/01/24 09:20	04/01/24 18:48	1
Selenium	**170**		5.0		ug/L		04/01/24 09:20	04/01/24 18:48	1
Thallium	ND		1.0		ug/L		04/01/24 09:20	04/01/24 18:48	1

Client Sample Results

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-189073-1

Client Sample ID: 496702 FC_1

Date Collected: 03/18/24 10:25
Date Received: 03/21/24 09:20

Lab Sample ID: 280-189073-2

Matrix: Water

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0		ug/L		03/25/24 18:13	03/26/24 10:14	1
Arsenic	ND		5.0		ug/L		03/25/24 18:13	03/26/24 10:14	1
Barium	**8.6**		3.0		ug/L		03/25/24 18:13	03/26/24 10:14	1
Beryllium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:14	1
Cadmium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:14	1
Chromium	ND		3.0		ug/L		03/25/24 18:13	03/26/24 10:14	1
Lead	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:14	1
Molybdenum	**2.1**		2.0		ug/L		03/25/24 18:13	03/26/24 10:14	1
Selenium	ND		5.0		ug/L		03/25/24 18:13	03/26/24 10:14	1
Thallium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:14	1

Client Sample Results

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-189073-1

Client Sample ID: 496703 FC_2

Date Collected: 03/18/24 11:30
Date Received: 03/21/24 09:20

Lab Sample ID: 280-189073-3

Matrix: Water

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0		ug/L		03/25/24 18:13	03/26/24 10:16	1
Arsenic	ND		5.0		ug/L		03/25/24 18:13	03/26/24 10:16	1
Barium	**6.2**		3.0		ug/L		03/25/24 18:13	03/26/24 10:16	1
Beryllium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:16	1
Cadmium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:16	1
Chromium	ND		3.0		ug/L		03/25/24 18:13	03/26/24 10:16	1
Lead	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:16	1
Molybdenum	**2.8**		2.0		ug/L		03/25/24 18:13	03/26/24 10:16	1
Selenium	**39**		5.0		ug/L		03/25/24 18:13	03/26/24 10:16	1
Thallium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:16	1

Client Sample Results

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-189073-1

Client Sample ID: 496704 FC_3A

Date Collected: 03/18/24 13:58
Date Received: 03/21/24 09:20

Lab Sample ID: 280-189073-4

Matrix: Water

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0		ug/L		03/25/24 18:13	03/26/24 10:18	1
Arsenic	ND		5.0		ug/L		03/25/24 18:13	03/26/24 10:18	1
Barium	**11**		3.0		ug/L		03/25/24 18:13	03/26/24 10:18	1
Beryllium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:18	1
Cadmium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:18	1
Chromium	ND		3.0		ug/L		03/25/24 18:13	03/26/24 10:18	1
Lead	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:18	1
Molybdenum	**6.9**		2.0		ug/L		03/25/24 18:13	03/26/24 10:18	1
Selenium	**55**		5.0		ug/L		03/25/24 18:13	03/26/24 10:18	1
Thallium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:18	1

Client Sample Results

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-189073-1

Client Sample ID: 496705 FC_3B

Date Collected: 03/18/24 13:16
Date Received: 03/21/24 09:20

Lab Sample ID: 280-189073-5

Matrix: Water

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0		ug/L		03/25/24 18:13	03/26/24 10:21	1
Arsenic	ND		5.0		ug/L		03/25/24 18:13	03/26/24 10:21	1
Barium	**11**		3.0		ug/L		03/25/24 18:13	03/26/24 10:21	1
Beryllium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:21	1
Cadmium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:21	1
Chromium	ND		3.0		ug/L		03/25/24 18:13	03/26/24 10:21	1
Lead	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:21	1
Molybdenum	**11**		2.0		ug/L		03/25/24 18:13	03/26/24 10:21	1
Selenium	ND		5.0		ug/L		03/25/24 18:13	03/26/24 10:21	1
Thallium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:21	1

Client: Colorado Springs Utilities
Job ID: 280-189073-1
Project/Site: CCR Landfill

Client Sample ID: 496706 EQUIP_BLK
Lab Sample ID: 280-189073-6
Date Collected: 03/19/24 16:40
Matrix: Water
Date Received: 03/21/24 09:20

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0		ug/L		03/25/24 18:13	03/26/24 10:23	1
Arsenic	ND		5.0		ug/L		03/25/24 18:13	03/26/24 10:23	1
Barium	ND		3.0		ug/L		03/25/24 18:13	03/26/24 10:23	1
Beryllium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:23	1
Cadmium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:23	1
Chromium	ND		3.0		ug/L		03/25/24 18:13	03/26/24 10:23	1
Lead	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:23	1
Molybdenum	ND		2.0		ug/L		03/25/24 18:13	03/26/24 10:23	1
Selenium	ND		5.0		ug/L		03/25/24 18:13	03/26/24 10:23	1
Thallium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:23	1

Client Sample Results

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-189073-1

Client Sample ID: 496707 SC_10

Date Collected: 03/19/24 16:05
Date Received: 03/21/24 09:20

Lab Sample ID: 280-189073-7

Matrix: Water

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0		ug/L		04/01/24 09:20	04/01/24 19:09	1
Arsenic	ND		5.0		ug/L		04/01/24 09:20	04/01/24 19:09	1
Barium	**12**		3.0		ug/L		04/01/24 09:20	04/01/24 19:09	1
Beryllium	ND		1.0		ug/L		04/01/24 09:20	04/01/24 19:09	1
Cadmium	ND		1.0		ug/L		04/01/24 09:20	04/01/24 19:09	1
Chromium	ND		3.0		ug/L		04/01/24 09:20	04/01/24 19:09	1
Lead	ND		1.0		ug/L		04/01/24 09:20	04/01/24 19:09	1
Molybdenum	**4.6**		2.0		ug/L		04/01/24 09:20	04/01/24 19:09	1
Selenium	**200**		5.0		ug/L		04/01/24 09:20	04/01/24 19:09	1
Thallium	ND		1.0		ug/L		04/01/24 09:20	04/01/24 19:09	1

Client Sample Results

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-189073-1

Client Sample ID: 496708 SC_11

Date Collected: 03/19/24 14:41
Date Received: 03/21/24 09:20

Lab Sample ID: 280-189073-8

Matrix: Water

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0		ug/L		03/25/24 18:13	03/26/24 10:27	1
Arsenic	ND		5.0		ug/L		03/25/24 18:13	03/26/24 10:27	1
Barium	**12**		3.0		ug/L		03/25/24 18:13	03/26/24 10:27	1
Beryllium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:27	1
Cadmium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:27	1
Chromium	ND		3.0		ug/L		03/25/24 18:13	03/26/24 10:27	1
Lead	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:27	1
Molybdenum	**2.9**		2.0		ug/L		03/25/24 18:13	03/26/24 10:27	1
Selenium	**330**		5.0		ug/L		03/25/24 18:13	03/26/24 10:27	1
Thallium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:27	1

Client Sample Results

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-189073-1

Client Sample ID: 496709 SC_12

Date Collected: 03/19/24 13:25
Date Received: 03/21/24 09:20

Lab Sample ID: 280-189073-9

Matrix: Water

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0		ug/L		03/25/24 18:13	03/26/24 10:34	1
Arsenic	ND		5.0		ug/L		03/25/24 18:13	03/26/24 10:34	1
Barium	**6.4**		3.0		ug/L		03/25/24 18:13	03/26/24 10:34	1
Beryllium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:34	1
Cadmium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:34	1
Chromium	ND		3.0		ug/L		03/25/24 18:13	03/26/24 10:34	1
Lead	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:34	1
Molybdenum	**4.3**		2.0		ug/L		03/25/24 18:13	03/26/24 10:34	1
Selenium	**12**		5.0		ug/L		03/25/24 18:13	03/26/24 10:34	1
Thallium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:34	1

Client Sample Results

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-189073-1

Client Sample ID: 496710 SC_13

Date Collected: 03/19/24 12:25
Date Received: 03/21/24 09:20

Lab Sample ID: 280-189073-10

Matrix: Water

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0		ug/L		03/25/24 18:13	03/26/24 10:36	1
Arsenic	ND		5.0		ug/L		03/25/24 18:13	03/26/24 10:36	1
Barium	**7.1**		3.0		ug/L		03/25/24 18:13	03/26/24 10:36	1
Beryllium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:36	1
Cadmium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:36	1
Chromium	ND		3.0		ug/L		03/25/24 18:13	03/26/24 10:36	1
Lead	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:36	1
Molybdenum	**3.6**		2.0		ug/L		03/25/24 18:13	03/26/24 10:36	1
Selenium	**31**		5.0		ug/L		03/25/24 18:13	03/26/24 10:36	1
Thallium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:36	1

Client Sample Results

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-189073-1

Client Sample ID: 496711 SC_14

Date Collected: 03/19/24 10:33
Date Received: 03/21/24 09:20

Lab Sample ID: 280-189073-11

Matrix: Water

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0		ug/L		03/25/24 18:13	03/26/24 10:39	1
Arsenic	ND		5.0		ug/L		03/25/24 18:13	03/26/24 10:39	1
Barium	**5.4**		3.0		ug/L		03/25/24 18:13	03/26/24 10:39	1
Beryllium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:39	1
Cadmium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:39	1
Chromium	ND		3.0		ug/L		03/25/24 18:13	03/26/24 10:39	1
Lead	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:39	1
Molybdenum	**11**		2.0		ug/L		03/25/24 18:13	03/26/24 10:39	1
Selenium	**7.8**		5.0		ug/L		03/25/24 18:13	03/26/24 10:39	1
Thallium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:39	1

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-189073-1

Client Sample ID: 496712 FIELD_DUP
Date Collected: 03/19/24 00:00
Date Received: 03/21/24 09:20

Lab Sample ID: 280-189073-12
Matrix: Water

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0		ug/L		03/25/24 18:13	03/26/24 10:41	1
Arsenic	ND		5.0		ug/L		03/25/24 18:13	03/26/24 10:41	1
Barium	**6.2**		3.0		ug/L		03/25/24 18:13	03/26/24 10:41	1
Beryllium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:41	1
Cadmium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:41	1
Chromium	ND		3.0		ug/L		03/25/24 18:13	03/26/24 10:41	1
Lead	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:41	1
Molybdenum	**4.6**		2.0		ug/L		03/25/24 18:13	03/26/24 10:41	1
Selenium	**13**		5.0		ug/L		03/25/24 18:13	03/26/24 10:41	1
Thallium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:41	1

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 280-647001/1-A
Matrix: Water
Analysis Batch: 647181

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 647001

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0		ug/L		03/25/24 18:13	03/26/24 10:07	1
Arsenic	ND		5.0		ug/L		03/25/24 18:13	03/26/24 10:07	1
Barium	ND		3.0		ug/L		03/25/24 18:13	03/26/24 10:07	1
Beryllium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:07	1
Cadmium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:07	1
Chromium	ND		3.0		ug/L		03/25/24 18:13	03/26/24 10:07	1
Lead	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:07	1
Molybdenum	ND		2.0		ug/L		03/25/24 18:13	03/26/24 10:07	1
Selenium	ND		5.0		ug/L		03/25/24 18:13	03/26/24 10:07	1
Thallium	ND		1.0		ug/L		03/25/24 18:13	03/26/24 10:07	1

Lab Sample ID: LCS 280-647001/2-A
Matrix: Water
Analysis Batch: 647181

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 647001

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	40.0	41.9		ug/L		105	85 - 115
Arsenic	40.0	41.5		ug/L		104	85 - 117
Barium	40.0	40.6		ug/L		102	85 - 118
Beryllium	40.0	43.2		ug/L		108	80 - 125
Cadmium	40.0	40.8		ug/L		102	85 - 115
Chromium	40.0	39.9		ug/L		100	84 - 121
Lead	40.0	40.7		ug/L		102	85 - 118
Molybdenum	40.0	39.2		ug/L		98	85 - 119
Selenium	40.0	42.0		ug/L		105	77 - 122
Thallium	40.0	39.7		ug/L		99	85 - 118

Lab Sample ID: 280-188987-A-1-B MS
Matrix: Water
Analysis Batch: 647181

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 647001

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	ND		40.0	40.7		ug/L		102	80 - 111
Arsenic	ND		40.0	42.2		ug/L		103	92 - 112
Barium	98		40.0	137		ug/L		98	92 - 117
Beryllium	ND		40.0	42.2		ug/L		105	87 - 118
Cadmium	ND		40.0	40.1		ug/L		100	91 - 114
Chromium	ND		40.0	39.9		ug/L		100	91 - 114
Lead	ND		40.0	40.3		ug/L		101	95 - 116
Molybdenum	ND		40.0	41.4		ug/L		101	84 - 117
Selenium	ND		40.0	43.6		ug/L		109	90 - 115
Thallium	ND		40.0	39.6		ug/L		99	94 - 115

Lab Sample ID: 280-188987-A-1-C MSD
Matrix: Water
Analysis Batch: 647181

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 647001

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	ND		40.0	40.6		ug/L		102	80 - 111	0	20

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

Lab Sample ID: 280-188987-A-1-C MSD
Matrix: Water
Analysis Batch: 647181

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 647001

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	ND		40.0	42.3		ug/L		104	92 - 112	0	20
Barium	98		40.0	135		ug/L		93	92 - 117	1	20
Beryllium	ND		40.0	41.8		ug/L		105	87 - 118	1	20
Cadmium	ND		40.0	39.1		ug/L		98	91 - 114	3	20
Chromium	ND		40.0	40.5		ug/L		101	91 - 114	2	20
Lead	ND		40.0	41.6		ug/L		104	95 - 116	3	20
Molybdenum	ND		40.0	40.4		ug/L		98	84 - 117	2	20
Selenium	ND		40.0	42.7		ug/L		107	90 - 115	2	20
Thallium	ND		40.0	40.5		ug/L		101	94 - 115	2	20

Lab Sample ID: MB 280-647628/1-A
Matrix: Water
Analysis Batch: 647894

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 647628

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0		ug/L		04/01/24 09:20	04/01/24 18:41	1
Arsenic	ND		5.0		ug/L		04/01/24 09:20	04/01/24 18:41	1
Barium	ND		3.0		ug/L		04/01/24 09:20	04/01/24 18:41	1
Beryllium	ND		1.0		ug/L		04/01/24 09:20	04/01/24 18:41	1
Cadmium	ND		1.0		ug/L		04/01/24 09:20	04/01/24 18:41	1
Chromium	ND		3.0		ug/L		04/01/24 09:20	04/01/24 18:41	1
Lead	ND		1.0		ug/L		04/01/24 09:20	04/01/24 18:41	1
Molybdenum	ND		2.0		ug/L		04/01/24 09:20	04/01/24 18:41	1
Selenium	ND		5.0		ug/L		04/01/24 09:20	04/01/24 18:41	1
Thallium	ND		1.0		ug/L		04/01/24 09:20	04/01/24 18:41	1

Lab Sample ID: LCS 280-647628/2-A
Matrix: Water
Analysis Batch: 647894

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 647628

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	40.0	39.7		ug/L		99	85 - 115
Arsenic	40.0	42.3		ug/L		106	85 - 117
Barium	40.0	41.3		ug/L		103	85 - 118
Beryllium	40.0	38.6		ug/L		97	80 - 125
Cadmium	40.0	39.5		ug/L		99	85 - 115
Chromium	40.0	40.5		ug/L		101	84 - 121
Lead	40.0	39.9		ug/L		100	85 - 118
Molybdenum	40.0	39.2		ug/L		98	85 - 119
Selenium	40.0	40.0		ug/L		100	77 - 122
Thallium	40.0	38.8		ug/L		97	85 - 118

Lab Sample ID: LCSD 280-647628/3-A
Matrix: Water
Analysis Batch: 647894

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 647628

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	40.0	42.1		ug/L		105	85 - 115	6	9
Arsenic	40.0	42.1		ug/L		105	85 - 117	0	10

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

Lab Sample ID: LCSD 280-647628/3-A
Matrix: Water
Analysis Batch: 647894

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 647628

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Barium			40.0	41.5		ug/L		104	85 - 118	0	11
Beryllium			40.0	40.3		ug/L		101	80 - 125	4	22
Cadmium			40.0	40.3		ug/L		101	85 - 115	2	7
Chromium			40.0	41.1		ug/L		103	84 - 121	1	8
Lead			40.0	41.0		ug/L		102	85 - 118	3	7
Molybdenum			40.0	39.5		ug/L		99	85 - 119	1	8
Selenium			40.0	40.4		ug/L		101	77 - 122	1	9
Thallium			40.0	40.1		ug/L		100	85 - 118	3	5

Lab Sample ID: 280-189073-1 MS
Matrix: Water
Analysis Batch: 647894

Client Sample ID: 496701 CC_1
Prep Type: Total/NA
Prep Batch: 647628

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Antimony	ND		40.0	42.3		ug/L		106	80 - 111		
Arsenic	ND		40.0	42.1		ug/L		105	92 - 112		
Barium	5.7		40.0	47.2		ug/L		104	92 - 117		
Beryllium	ND		40.0	41.4		ug/L		103	87 - 118		
Cadmium	ND		40.0	37.5		ug/L		93	91 - 114		
Chromium	ND		40.0	39.7		ug/L		99	91 - 114		
Lead	ND		40.0	40.5		ug/L		100	95 - 116		
Molybdenum	ND		40.0	41.0		ug/L		100	84 - 117		
Selenium	170		40.0	209	4	ug/L		94	90 - 115		
Thallium	ND		40.0	40.1		ug/L		99	94 - 115		

Lab Sample ID: 280-189073-1 MSD
Matrix: Water
Analysis Batch: 647894

Client Sample ID: 496701 CC_1
Prep Type: Total/NA
Prep Batch: 647628

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	ND		40.0	41.3		ug/L		103	80 - 111	2	20
Arsenic	ND		40.0	40.8		ug/L		102	92 - 112	3	20
Barium	5.7		40.0	48.5		ug/L		107	92 - 117	3	20
Beryllium	ND		40.0	43.2		ug/L		108	87 - 118	4	20
Cadmium	ND		40.0	36.6		ug/L		91	91 - 114	3	20
Chromium	ND		40.0	40.5		ug/L		101	91 - 114	2	20
Lead	ND		40.0	42.2		ug/L		105	95 - 116	4	20
Molybdenum	ND		40.0	41.1		ug/L		101	84 - 117	0	20
Selenium	170		40.0	206	4	ug/L		88	90 - 115	1	20
Thallium	ND		40.0	40.5		ug/L		100	94 - 115	1	20

Lab Sample ID: 280-189073-7 MS
Matrix: Water
Analysis Batch: 647894

Client Sample ID: 496707 SC_10
Prep Type: Total/NA
Prep Batch: 647628

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Antimony	ND		40.0	41.5		ug/L		104	80 - 111		
Arsenic	ND		40.0	41.3		ug/L		101	92 - 112		
Barium	12		40.0	53.8		ug/L		104	92 - 117		

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

Lab Sample ID: 280-189073-7 MS
Matrix: Water
Analysis Batch: 647894

Client Sample ID: 496707 SC_10
Prep Type: Total/NA
Prep Batch: 647628

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Beryllium	ND		40.0	40.3		ug/L		101	87 - 118
Cadmium	ND		40.0	37.0		ug/L		93	91 - 114
Chromium	ND		40.0	39.4		ug/L		96	91 - 114
Lead	ND		40.0	40.7		ug/L		100	95 - 116
Molybdenum	4.6		40.0	44.2		ug/L		99	84 - 117
Selenium	200		40.0	235	4	ug/L		99	90 - 115
Thallium	ND		40.0	40.0		ug/L		100	94 - 115

Lab Sample ID: 280-189073-7 MSD
Matrix: Water
Analysis Batch: 647894

Client Sample ID: 496707 SC_10
Prep Type: Total/NA
Prep Batch: 647628

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	ND		40.0	41.3		ug/L		103	80 - 111	1	20
Arsenic	ND		40.0	43.5		ug/L		107	92 - 112	5	20
Barium	12		40.0	52.3		ug/L		100	92 - 117	3	20
Beryllium	ND		40.0	42.1		ug/L		105	87 - 118	4	20
Cadmium	ND		40.0	37.0		ug/L		92	91 - 114	0	20
Chromium	ND		40.0	38.9		ug/L		95	91 - 114	1	20
Lead	ND		40.0	40.4		ug/L		100	95 - 116	1	20
Molybdenum	4.6		40.0	43.7		ug/L		98	84 - 117	1	20
Selenium	200		40.0	230	4	ug/L		87	90 - 115	2	20
Thallium	ND		40.0	39.6		ug/L		99	94 - 115	1	20

Metals

Prep Batch: 647001

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-189073-2	496702 FC_1	Total/NA	Water	3020A	
280-189073-3	496703 FC_2	Total/NA	Water	3020A	
280-189073-4	496704 FC_3A	Total/NA	Water	3020A	
280-189073-5	496705 FC_3B	Total/NA	Water	3020A	
280-189073-6	496706 EQUIP_BLK	Total/NA	Water	3020A	
280-189073-8	496708 SC_11	Total/NA	Water	3020A	
280-189073-9	496709 SC_12	Total/NA	Water	3020A	
280-189073-10	496710 SC_13	Total/NA	Water	3020A	
280-189073-11	496711 SC_14	Total/NA	Water	3020A	
280-189073-12	496712 FIELD_DUP	Total/NA	Water	3020A	
MB 280-647001/1-A	Method Blank	Total/NA	Water	3020A	
LCS 280-647001/2-A	Lab Control Sample	Total/NA	Water	3020A	
280-188987-A-1-B MS	Matrix Spike	Total/NA	Water	3020A	
280-188987-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	3020A	

Analysis Batch: 647181

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-189073-2	496702 FC_1	Total/NA	Water	6020B	647001
280-189073-3	496703 FC_2	Total/NA	Water	6020B	647001
280-189073-4	496704 FC_3A	Total/NA	Water	6020B	647001
280-189073-5	496705 FC_3B	Total/NA	Water	6020B	647001
280-189073-6	496706 EQUIP_BLK	Total/NA	Water	6020B	647001
280-189073-8	496708 SC_11	Total/NA	Water	6020B	647001
280-189073-9	496709 SC_12	Total/NA	Water	6020B	647001
280-189073-10	496710 SC_13	Total/NA	Water	6020B	647001
280-189073-11	496711 SC_14	Total/NA	Water	6020B	647001
280-189073-12	496712 FIELD_DUP	Total/NA	Water	6020B	647001
MB 280-647001/1-A	Method Blank	Total/NA	Water	6020B	647001
LCS 280-647001/2-A	Lab Control Sample	Total/NA	Water	6020B	647001
280-188987-A-1-B MS	Matrix Spike	Total/NA	Water	6020B	647001
280-188987-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	6020B	647001

Prep Batch: 647628

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-189073-1	496701 CC_1	Total/NA	Water	3020A	
280-189073-7	496707 SC_10	Total/NA	Water	3020A	
MB 280-647628/1-A	Method Blank	Total/NA	Water	3020A	
LCS 280-647628/2-A	Lab Control Sample	Total/NA	Water	3020A	
LCSD 280-647628/3-A	Lab Control Sample Dup	Total/NA	Water	3020A	
280-189073-1 MS	496701 CC_1	Total/NA	Water	3020A	
280-189073-1 MSD	496701 CC_1	Total/NA	Water	3020A	
280-189073-7 MS	496707 SC_10	Total/NA	Water	3020A	
280-189073-7 MSD	496707 SC_10	Total/NA	Water	3020A	

Analysis Batch: 647894

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-189073-1	496701 CC_1	Total/NA	Water	6020B	647628
280-189073-7	496707 SC_10	Total/NA	Water	6020B	647628
MB 280-647628/1-A	Method Blank	Total/NA	Water	6020B	647628
LCS 280-647628/2-A	Lab Control Sample	Total/NA	Water	6020B	647628
LCSD 280-647628/3-A	Lab Control Sample Dup	Total/NA	Water	6020B	647628

Metals (Continued)

Analysis Batch: 647894 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-189073-1 MS	496701 CC_1	Total/NA	Water	6020B	647628
280-189073-1 MSD	496701 CC_1	Total/NA	Water	6020B	647628
280-189073-7 MS	496707 SC_10	Total/NA	Water	6020B	647628
280-189073-7 MSD	496707 SC_10	Total/NA	Water	6020B	647628

Lab Chronicle

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-189073-1

Client Sample ID: 496701 CC_1
Lab Sample ID: 280-189073-1
Date Collected: 03/18/24 15:16
Matrix: Water
Date Received: 03/21/24 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3020A			50 mL	50 mL	647628	04/01/24 09:20	AES	EET DEN
Total/NA	Analysis	6020B		1			647894	04/01/24 18:48	LMT	EET DEN

Client Sample ID: 496702 FC_1
Lab Sample ID: 280-189073-2
Date Collected: 03/18/24 10:25
Matrix: Water
Date Received: 03/21/24 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3020A			50 mL	50 mL	647001	03/25/24 18:13	AES	EET DEN
Total/NA	Analysis	6020B		1			647181	03/26/24 10:14	LMT	EET DEN

Client Sample ID: 496703 FC_2
Lab Sample ID: 280-189073-3
Date Collected: 03/18/24 11:30
Matrix: Water
Date Received: 03/21/24 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3020A			50 mL	50 mL	647001	03/25/24 18:13	AES	EET DEN
Total/NA	Analysis	6020B		1			647181	03/26/24 10:16	LMT	EET DEN

Client Sample ID: 496704 FC_3A
Lab Sample ID: 280-189073-4
Date Collected: 03/18/24 13:58
Matrix: Water
Date Received: 03/21/24 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3020A			50 mL	50 mL	647001	03/25/24 18:13	AES	EET DEN
Total/NA	Analysis	6020B		1			647181	03/26/24 10:18	LMT	EET DEN

Client Sample ID: 496705 FC_3B
Lab Sample ID: 280-189073-5
Date Collected: 03/18/24 13:16
Matrix: Water
Date Received: 03/21/24 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3020A			50 mL	50 mL	647001	03/25/24 18:13	AES	EET DEN
Total/NA	Analysis	6020B		1			647181	03/26/24 10:21	LMT	EET DEN

Client Sample ID: 496706 EQUIP_BLK
Lab Sample ID: 280-189073-6
Date Collected: 03/19/24 16:40
Matrix: Water
Date Received: 03/21/24 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3020A			50 mL	50 mL	647001	03/25/24 18:13	AES	EET DEN
Total/NA	Analysis	6020B		1			647181	03/26/24 10:23	LMT	EET DEN

Lab Chronicle

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-189073-1

Client Sample ID: 496707 SC_10

Lab Sample ID: 280-189073-7

Date Collected: 03/19/24 16:05

Matrix: Water

Date Received: 03/21/24 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3020A			50 mL	50 mL	647628	04/01/24 09:20	AES	EET DEN
Total/NA	Analysis	6020B		1			647894	04/01/24 19:09	LMT	EET DEN

Client Sample ID: 496708 SC_11

Lab Sample ID: 280-189073-8

Date Collected: 03/19/24 14:41

Matrix: Water

Date Received: 03/21/24 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3020A			50 mL	50 mL	647001	03/25/24 18:13	AES	EET DEN
Total/NA	Analysis	6020B		1			647181	03/26/24 10:27	LMT	EET DEN

Client Sample ID: 496709 SC_12

Lab Sample ID: 280-189073-9

Date Collected: 03/19/24 13:25

Matrix: Water

Date Received: 03/21/24 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3020A			50 mL	50 mL	647001	03/25/24 18:13	AES	EET DEN
Total/NA	Analysis	6020B		1			647181	03/26/24 10:34	LMT	EET DEN

Client Sample ID: 496710 SC_13

Lab Sample ID: 280-189073-10

Date Collected: 03/19/24 12:25

Matrix: Water

Date Received: 03/21/24 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3020A			50 mL	50 mL	647001	03/25/24 18:13	AES	EET DEN
Total/NA	Analysis	6020B		1			647181	03/26/24 10:36	LMT	EET DEN

Client Sample ID: 496711 SC_14

Lab Sample ID: 280-189073-11

Date Collected: 03/19/24 10:33

Matrix: Water

Date Received: 03/21/24 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3020A			50 mL	50 mL	647001	03/25/24 18:13	AES	EET DEN
Total/NA	Analysis	6020B		1			647181	03/26/24 10:39	LMT	EET DEN

Client Sample ID: 496712 FIELD_DUP

Lab Sample ID: 280-189073-12

Date Collected: 03/19/24 00:00

Matrix: Water

Date Received: 03/21/24 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3020A			50 mL	50 mL	647001	03/25/24 18:13	AES	EET DEN
Total/NA	Analysis	6020B		1			647181	03/26/24 10:41	LMT	EET DEN

Laboratory References:

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

Login Sample Receipt Checklist

Client: Colorado Springs Utilities

Job Number: 280-189073-1

Login Number: 189073
List Number: 1
Creator: Swegle, Jarod M

List Source: Eurofins Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	Thermal preservation not required for 6020B.
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.	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 <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Eurofins Denver
4955 Yarrow Street

Arvada, CO 80002-4517
phone 303.736.0100 fax 303.431.7171

Chain of Custody Record

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Regulatory Program: ☑ DW ☑ NPDES ☐ RCRA ☐ Other:

Eurofins Environment Testing America

Client Contact	**Project Manager: Wendy Asay**		COC No:
Colorado Springs Utilities	Email: wasay@csu.org	**Site Contact: Wendy Asay**	**Date:**	_____ of _____ COCs
701 E. Las Vegas St.	**Tel/Fax: 719-668-4603**	**Lab Contact: Shelby Turner**	**Carrier:**	TALS Project #:
Colorado Springs, CO 80903	**Analysis Turnaround Time**			Sampler:
719-668-4603	☐ CALENDAR DAYS ☑ WORKING DAYS			**For Lab Use Only:**
(xxx) xxx-xxxx FAX	TAT if different from Below _____			Walk-in Client:
Project Name: CCR Landfill	☑ 2 weeks			Lab Sampling:
Site:	☐ 1 week			
P O #	☐ 2 days			Job / SDG No.:
	☐ 1 day			

280-189073 Chain of Custody

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	6020B Total Recoverable (Sb, As, Ba, Be, Cd, Cr, Pb, Mo, Se and Tl)	Sample Specific Notes:
496701 CC_1	3/18/2024	15:16	G	GW	1	N	Y	X	Preserved with HNO3
496702 FC_1	3/18/2024	10:25	G	GW	1	N		X	Preserved with HNO3
496703 FC_2	3/18/2024	11:30	G	GW	1	N		X	Preserved with HNO3
496704 FC_3A	3/18/2024	13:58	G	GW	1	N		X	Preserved with HNO3
496705 FC_3B	3/18/2024	13:16	G	GW	1	N		X	Preserved with HNO3
496706 EQUIP_BLK	3/19/2024	16:40	G	GW	1	N		X	Preserved with HNO3
496707 SC_10	3/19/2024	16:05	G	GW	1	N	Y	X	Preserved with HNO3
496708 SC_11	3/19/2024	14:41	G	GW	1	N		X	Preserved with HNO3
496709 SC_12	3/19/2024	13:25	G	GW	1	N		X	Preserved with HNO3
496710 SC_13	3/19/2024	12:25	G	GW	1	N		X	Preserved with HNO3
496711 SC_14	3/19/2024	10:33	G	GW	1	N		X	Preserved with HNO3
496712 FIELD_DUP	3/19/2024	00:00	G	GW	1	N		X	Preserved with HNO3

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

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

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

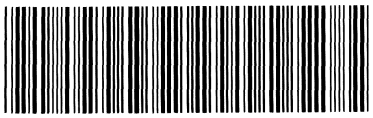
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments: Use lowest dilution possible if dilution is needed. RL reporting only.

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: 11.1	Corr'd: 11.2	Therm ID No.: 14
Relinquished by: Libby Milton	Company: Colorado Springs Utilities	Date/Time: 3/20/24 16:45	Received by:	Company: FEDEX	Date/Time: 3/21/24 0920
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

4/3/2024



280-189073 Waybill

:COSA (719) 668-4560
LSON
JO SPRINGS UTILITIES
701 E. LAS VEGAS

COLORADO SPRINGS, CO 80903
UNITED STATES US

SHIP DATE: 20MAR24
ACTWGT: 18.00 LB
CAD: 8737763/INET4535

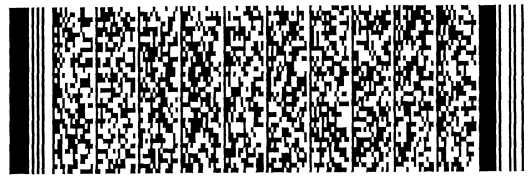
BILL SENDER

TO **TEST AMERICA DENVER**
TEST AMERICA DENVER
4955 YARROW ST

ARVADA CO 80002
(303) 736-0100

REF: CCR LANDFILL 6020B METALS
INV:
PO: DEPT:

583J/2/8538/9AE3



FedEx Express

J24102401100 1uv

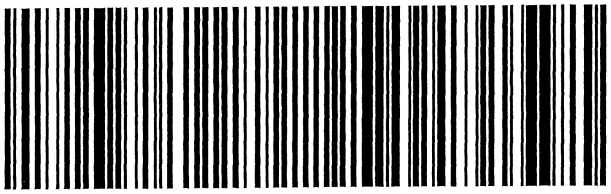
THU - 21 MAR 5:00P
STANDARD OVERNIGHT

TRK# 0201 7756 1941 3194

80002

72 LAAA

CO-US DEN



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2472199

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1 2 3 4 5 6 7 8 9 10 11 12

ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Wendy Asay
Colorado Springs Utilities
Laboratory Services Section
701 E. Las Vegas St., MC 1465
Colorado Springs, Colorado 80903

Generated 4/18/2024 4:01:21 PM

JOB DESCRIPTION

CCR Landfill

JOB NUMBER

160-53538-1

Eurofins St. Louis
13715 Rider Trail North
Earth City MO 63045

See page two for job notes and contact information.

myEOL

Eurofins St. Louis

Job Notes

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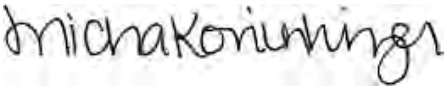
The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins TestAmerica Project Manager.

Authorization



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Authorized for release by
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Table of Contents

Job ID: 160-53538-1 — Eurofins St. Louis

CASE NARRATIVE

Client: Colorado Springs Utilities

Project: Radiochemistry Analysis

Report Number: 160-53538-1

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.

Eurofins Environment Testing attests to the validity of the laboratory data generated by Eurofins facilities reported herein. All analyses performed by Eurofins Environment Testing facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins Environment Testing's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report.

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

Proper preservation was noted for the methods performed on these samples, unless otherwise detailed below.

All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client.

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

The matrix for the Method Blank and LCS/LCSD is as close to the samples as can be reasonably achieved. Detailed information can be found in the most current revision of the associated SOP.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.

Reference the chain of custody and receipt report for any variations on receipt conditions.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

Receipt
The samples were received on 3/21/2024 8:30 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved. The temperatures of the 2 coolers at receipt time were 9.5°C and 10.8°C.

Receipt Exceptions
The sampler name was not listed on the COC.

Method 903.0 - Radium-226 (GFPC)
Samples 496707 SC_10 (160-53538-1), 496708 SC_11 (160-53538-2), 496709 SC_12 (160-53538-3), 496710 SC_13 (160-53538-4), 496711 SC_14 (160-53538-5) and 496712 FIELD_DUP (160-53538-6) were analyzed for Radium-226 (GFPC). The samples were prepared on 3/25/2024 and analyzed on 4/18/2024.

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

Method 904.0 - Radium-228 (GFPC)
Samples 496707 SC_10 (160-53538-1), 496708 SC_11 (160-53538-2), 496709 SC_12 (160-53538-3), 496710 SC_13 (160-53538-4), 496711 SC_14 (160-53538-5) and 496712 FIELD_DUP (160-53538-6) were analyzed for Radium-228 (GFPC).

Job ID: 160-53538-1 (Continued) Eurofins St. Louis

The samples were prepared on 3/25/2024 and analyzed on 4/17/2024.

The detection goal was not met for the following samples in batch 160-653868 due to the reduced aliquot attributed to the presence of matrix interferences noted during prep: 496707 SC_10 (160-53538-1), 496708 SC_11 (160-53538-2) and (240-201469-D-2-B). In addition, the samples had lower, but still passing, barium carrier recoveries. Analytical results are reported with the detection limit achieved.

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

Method Ra226_Ra228 - Combined Radium-226 and Radium-228
Samples 496707 SC_10 (160-53538-1), 496708 SC_11 (160-53538-2), 496709 SC_12 (160-53538-3), 496710 SC_13 (160-53538-4), 496711 SC_14 (160-53538-5) and 496712 FIELD_DUP (160-53538-6) were analyzed for Combined Radium-226 and Radium-228. The samples were analyzed on 4/18/2024.

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

TestAmerica St. Louis
13715 Rider Trail North

Earth City, MO 63045-1205
phone 314.298.8566 fax 314.298.8757

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☑ Other: **Coal Combustion Rule**

Client Contact	**Project Manager: Wendy Asay**	**Site Contact:**	**Date:**	COC No:
Colorado Springs Utilities	**Tel/Fax: 719-668-4603**	**Lab Contact: Rhonda Ridenhower**	**Carrier:**	_____ of _____ COCs
701 E. Las Vegas St.	**Analysis Turnaround Time**			Sampler:
Colorado Springs, CO 80903	☑ CALENDAR DAYS ☐ WORKING DAYS			**For Lab Use Only:**
(719) 668-4603 Phone	TAT if different from Below _____			Walk-in Client:
(xxx) xxx-xxxx FAX	☑ 2 weeks			Lab Sampling:
Project Name: CCR Landfill	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Total Radium 226, EPA 903.0	Total Radium 228, EPA 904.0	Combined Ra 226 and Ra 228	Sample Specific Notes:
496707 SC_10	3/19/24	16:05	G	GW	2	N	Y	X	X	X	
496708 SC_11	3/19/24	14:41	G	GW	2	N		X	X	X	
496709 SC_12	3/19/24	13:25	G	GW	2	N		X	X	X	
496710 SC_13	3/19/24	12:25	G	GW	2	N		X	X	X	
496711 SC_14	3/19/24	10:33	G	GW	2	N		X	X	X	
496712 FIELD_DUP	3/19/24	00:00	G	GW	2	N		X	X	X	

160-53538 Chain of Custody

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

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

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments: Please be sure to use the listed method numbers.

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd:_____ Corr'd:_____		Therm ID No.:_____
Relinquished by: Kelly Nelson	Company: Colorado Springs Utilities	Date/Time: 3/20/24 10:35	Received by: Sarah Worthington	Company: STLR	Date/Time: 3/21/24 0830
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.18, dated 9/5/2018

4/18/2024

Login Sample Receipt Checklist

Client: Colorado Springs Utilities

Job Number: 160-53538-1

Login Number: 53538
List Number: 1
Creator: Worthington, Sierra M

List Source: Eurofins St. Louis

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

Definitions/Glossary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 160-53538-1

Qualifiers

Rad

Qualifier	Qualifier Description
G	The Sample MDC is greater than the requested RL.
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
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

Method Summary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 160-53538-1

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

Protocol References:

EPA = US Environmental Protection Agency

None = None

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

Laboratory References:

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

Sample Summary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 160-53538-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-53538-1	496707 SC_10	Water	03/19/24 16:05	03/21/24 08:30
160-53538-2	496708 SC_11	Water	03/19/24 14:41	03/21/24 08:30
160-53538-3	496709 SC_12	Water	03/19/24 13:25	03/21/24 08:30
160-53538-4	496710 SC_13	Water	03/19/24 12:25	03/21/24 08:30
160-53538-5	496711 SC_14	Water	03/19/24 10:33	03/21/24 08:30
160-53538-6	496712 FIELD_DUP	Water	03/19/24 00:00	03/21/24 08:30

Client Sample ID: 496707 SC_10

Lab Sample ID: 160-53538-1

Date Collected: 03/19/24 16:05

Matrix: Water

Date Received: 03/21/24 08:30

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.413	U	0.353	0.355	1.00	0.522	pCi/L	03/25/24 09:33	04/18/24 07:33	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*51.3*		*30 - 110*	*03/25/24 09:33*	*04/18/24 07:33*	*1*

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0948	U G	0.706	0.706	1.00	1.30	pCi/L	03/25/24 09:47	04/17/24 11:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*51.3*		*30 - 110*	*03/25/24 09:47*	*04/17/24 11:56*	*1*
Y Carrier	*82.2*		*30 - 110*	*03/25/24 09:47*	*04/17/24 11:56*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.508	U	0.789	0.790	5.00	1.30	pCi/L		04/18/24 15:06	1

Client Sample ID: 496708 SC_11

Lab Sample ID: 160-53538-2

Date Collected: 03/19/24 14:41

Matrix: Water

Date Received: 03/21/24 08:30

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.598	U	0.482	0.485	1.00	0.725	pCi/L	03/25/24 09:33	04/18/24 07:33	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*51.0*		*30 - 110*	*03/25/24 09:33*	*04/18/24 07:33*	*1*

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.280	U G	0.647	0.648	1.00	1.15	pCi/L	03/25/24 09:47	04/17/24 11:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*51.0*		*30 - 110*	*03/25/24 09:47*	*04/17/24 11:56*	*1*
Y Carrier	*80.7*		*30 - 110*	*03/25/24 09:47*	*04/17/24 11:56*	*1*

Client Sample ID: 496708 SC_11
Lab Sample ID: 160-53538-2
Date Collected: 03/19/24 14:41
Matrix: Water
Date Received: 03/21/24 08:30

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.878	U	0.807	0.809	5.00	1.15	pCi/L		04/18/24 15:26	1

Client Sample ID: 496709 SC_12
Lab Sample ID: 160-53538-3
Date Collected: 03/19/24 13:25
Matrix: Water
Date Received: 03/21/24 08:30

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.104	U	0.125	0.125	1.00	0.203	pCi/L	03/25/24 09:33	04/18/24 07:33	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*103*		*30 - 110*	*03/25/24 09:33*	*04/18/24 07:33*	*1*

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.225	U	0.343	0.343	1.00	0.579	pCi/L	03/25/24 09:47	04/17/24 11:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*103*		*30 - 110*	*03/25/24 09:47*	*04/17/24 11:56*	*1*
Y Carrier	*80.7*		*30 - 110*	*03/25/24 09:47*	*04/17/24 11:56*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.329	U	0.365	0.365	5.00	0.579	pCi/L		04/18/24 15:26	1

Client Sample ID: 496710 SC_13
Lab Sample ID: 160-53538-4
Date Collected: 03/19/24 12:25
Matrix: Water
Date Received: 03/21/24 08:30

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.283	U	0.223	0.225	1.00	0.325	pCi/L	03/25/24 09:33	04/18/24 07:33	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*69.5*		*30 - 110*	*03/25/24 09:33*	*04/18/24 07:33*	*1*

Client Sample ID: 496710 SC_13
Lab Sample ID: 160-53538-4
Date Collected: 03/19/24 12:25
Matrix: Water
Date Received: 03/21/24 08:30

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.401	U	0.462	0.464	1.00	0.759	pCi/L	03/25/24 09:47	04/17/24 11:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*69.5*		*30 - 110*	*03/25/24 09:47*	*04/17/24 11:56*	*1*
Y Carrier	*82.2*		*30 - 110*	*03/25/24 09:47*	*04/17/24 11:56*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.684	U	0.513	0.516	5.00	0.759	pCi/L		04/18/24 15:26	1

Client Sample ID: 496711 SC_14
Lab Sample ID: 160-53538-5
Date Collected: 03/19/24 10:33
Matrix: Water
Date Received: 03/21/24 08:30

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.145	U	0.190	0.191	1.00	0.318	pCi/L	03/25/24 09:33	04/18/24 07:33	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*105*		*30 - 110*	*03/25/24 09:33*	*04/18/24 07:33*	*1*

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.535**		0.333	0.337	1.00	0.489	pCi/L	03/25/24 09:47	04/17/24 11:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*105*		*30 - 110*	*03/25/24 09:47*	*04/17/24 11:56*	*1*
Y Carrier	*81.9*		*30 - 110*	*03/25/24 09:47*	*04/17/24 11:56*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.680**		0.383	0.387	5.00	0.489	pCi/L		04/18/24 15:26	1

Client Sample ID: 496712 FIELD_DUP
Lab Sample ID: 160-53538-6
Date Collected: 03/19/24 00:00
Matrix: Water
Date Received: 03/21/24 08:30

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.335**		0.219	0.222	1.00	0.311	pCi/L	03/25/24 09:33	04/18/24 07:34	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*30 - 110*	*03/25/24 09:33*	*04/18/24 07:34*	*1*

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.400	U	0.317	0.319	1.00	0.491	pCi/L	03/25/24 09:47	04/17/24 11:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*30 - 110*	*03/25/24 09:47*	*04/17/24 11:56*	*1*
Y Carrier	*84.1*		*30 - 110*	*03/25/24 09:47*	*04/17/24 11:56*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.734**		0.385	0.389	5.00	0.491	pCi/L		04/18/24 15:26	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-653867/1-A
Matrix: Water
Analysis Batch: 657471

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 653867

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.09025	U	0.117	0.118	1.00	0.195	pCi/L	03/25/24 09:33	04/18/24 07:17	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*30 - 110*	*03/25/24 09:33*	*04/18/24 07:17*	*1*

Lab Sample ID: LCS 160-653867/2-A
Matrix: Water
Analysis Batch: 657471

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 653867

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits		
Radium-226			11.3	10.48		1.25	1.00	0.180	pCi/L	93	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*99.5*		*30 - 110*

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-653868/1-A
Matrix: Water
Analysis Batch: 657398

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 653868

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.2013	U	0.290	0.291	1.00	0.489	pCi/L	03/25/24 09:47	04/17/24 11:39	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*30 - 110*	*03/25/24 09:47*	*04/17/24 11:39*	*1*
Y Carrier	*83.0*		*30 - 110*	*03/25/24 09:47*	*04/17/24 11:39*	*1*

Lab Sample ID: LCS 160-653868/2-A
Matrix: Water
Analysis Batch: 657398

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 653868

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits		
Radium-228			9.02	8.831		1.19	1.00	0.436	pCi/L	98	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*99.5*		*30 - 110*
Y Carrier	*82.2*		*30 - 110*

QC Association Summary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 160-53538-1

Rad

Prep Batch: 653867

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-53538-1	496707 SC_10	Total/NA	Water	PrecSep-21	
160-53538-2	496708 SC_11	Total/NA	Water	PrecSep-21	
160-53538-3	496709 SC_12	Total/NA	Water	PrecSep-21	
160-53538-4	496710 SC_13	Total/NA	Water	PrecSep-21	
160-53538-5	496711 SC_14	Total/NA	Water	PrecSep-21	
160-53538-6	496712 FIELD_DUP	Total/NA	Water	PrecSep-21	
MB 160-653867/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-653867/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 653868

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-53538-1	496707 SC_10	Total/NA	Water	PrecSep_0	
160-53538-2	496708 SC_11	Total/NA	Water	PrecSep_0	
160-53538-3	496709 SC_12	Total/NA	Water	PrecSep_0	
160-53538-4	496710 SC_13	Total/NA	Water	PrecSep_0	
160-53538-5	496711 SC_14	Total/NA	Water	PrecSep_0	
160-53538-6	496712 FIELD_DUP	Total/NA	Water	PrecSep_0	
MB 160-653868/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-653868/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Tracer/Carrier Summary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 160-53538-1

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba (30-110)
160-53538-1	496707 SC_10	51.3
160-53538-2	496708 SC_11	51.0
160-53538-3	496709 SC_12	103
160-53538-4	496710 SC_13	69.5
160-53538-5	496711 SC_14	105
160-53538-6	496712 FIELD_DUP	101
LCS 160-653867/2-A	Lab Control Sample	99.5
MB 160-653867/1-A	Method Blank	101

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (30-110)	Y (30-110)
160-53538-1	496707 SC_10	51.3	82.2
160-53538-2	496708 SC_11	51.0	80.7
160-53538-3	496709 SC_12	103	80.7
160-53538-4	496710 SC_13	69.5	82.2
160-53538-5	496711 SC_14	105	81.9
160-53538-6	496712 FIELD_DUP	101	84.1
LCS 160-653868/2-A	Lab Control Sample	99.5	82.2
MB 160-653868/1-A	Method Blank	101	83.0

Tracer/Carrier Legend

Ba = Ba Carrier
Y = Y Carrier

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1 2 3 4 5 6 7 8 9 10 11 12

ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Wendy Asay
Colorado Springs Utilities
Laboratory Services Section
701 E. Las Vegas St., MC 1465
Colorado Springs, Colorado 80903

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JOB DESCRIPTION

CCR Landfill

JOB NUMBER

160-53539-1

Eurofins St. Louis
13715 Rider Trail North
Earth City MO 63045

See page two for job notes and contact information.

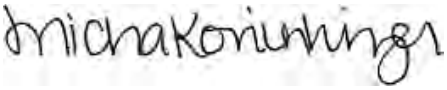
myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins TestAmerica Project Manager.

Authorization



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Authorized for release by
Micha Korrinhizer, Project Manager
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(314)298-8566

Table of Contents

CASE NARRATIVE

Client: Colorado Springs Utilities

Project: Radiochemistry Analysis

Report Number: 160-53539-1

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.

Eurofins Environment Testing attests to the validity of the laboratory data generated by Eurofins facilities reported herein. All analyses performed by Eurofins Environment Testing facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins Environment Testing's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report.

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

Proper preservation was noted for the methods performed on these samples, unless otherwise detailed below.

All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client.

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

The matrix for the Method Blank and LCS/LCSD is as close to the samples as can be reasonably achieved. Detailed information can be found in the most current revision of the associated SOP.

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.

Reference the chain of custody and receipt report for any variations on receipt conditions.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

Receipt
The samples were received on 3/21/2024 8:30 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 9.5°C and 10.8°C.

Receipt Exceptions
The sampler name is not listed on the COC.

The reference method requires samples to have a pH of less than 2 SU. The following sample was received with a pH of 7 SU: 496705 FC_3B (160-53539-5). The sample was adjusted to the appropriate pH in the laboratory.

Method 903.0 - Radium-226 (GFPC)
Samples 496701 CC__1 (160-53539-1), 496702 FC_1 (160-53539-2), 496703 FC_2 (160-53539-3), 496704 FC_3A (160-53539-4), 496705 FC_3B (160-53539-5) and 496706 EQUIP_BLK (160-53539-6) were analyzed for Radium-226 (GFPC). The samples were prepared on 3/25/2024 and analyzed on 4/18/2024.

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

Method 904.0 - Radium-228 (GFPC)
Samples 496701 CC__1 (160-53539-1), 496702 FC_1 (160-53539-2), 496703 FC_2 (160-53539-3), 496704 FC_3A (160-53539-4), 496705 FC_3B (160-53539-5) and 496706 EQUIP_BLK (160-53539-6) were analyzed for Radium-228 (GFPC). The samples were prepared on 3/25/2024 and analyzed on 4/15/2024.

The Laboratory Control Sample (LCS 160-653870/2-A) associated with batch 160-653870 recovered at (136%). The limits in our LIMS system at 75-125 reflect the requirements of a regulatory agency that represents a large amount of our work. However the samples associated with this LCS are not from this agency and are therefore held to our in-house statistical limits of (69-145%) per method requirements. The LCS passes, no further action is required

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

Method Ra226_Ra228 - Combined Radium-226 and Radium-228
Samples 496701 CC__1 (160-53539-1), 496702 FC_1 (160-53539-2), 496703 FC_2 (160-53539-3), 496704 FC_3A (160-53539-4), 496705 FC_3B (160-53539-5) and 496706 EQUIP_BLK (160-53539-6) were analyzed for Combined Radium-226 and Radium-228. The samples were analyzed on 4/19/2024.

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

TestAmerica St. Louis
13715 Rider Trail North

Earth City, MO 63045-1205
phone 314.298.8566 fax 314.298.8757

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☑ Other: **Coal Combustion Rule**

Client Contact	**Project Manager: Wendy Asay**	**Site Contact:**	**Date:**	COC No:
Colorado Springs Utilities	**Tel/Fax: 719-668-4603**	**Lab Contact: Rhonda Ridenhower**	**Carrier:**	____ of ____ COCs
701 E. Las Vegas St.	**Analysis Turnaround Time**			Sampler:
Colorado Springs, CO 80903	☑ CALENDAR DAYS ☐ WORKING DAYS			**For Lab Use Only:**
(719) 668-4603 Phone	TAT if different from Below ____			Walk-in Client:
(xxx) xxx-xxxx FAX	☑ 2 weeks			Lab Sampling:
Project Name: CCR Landfill	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Total Radium 226, EPA 903.0	Total Radium 228, EPA 904.0	Combined Ra 226 and Ra 228	Sample Specific Notes:
496701 CC_1	3/18/24	15:16	G	GW	2	N	Y	X	X	X	
496702 FC_1	3/18/24	10:25	G	GW	2	N		X	X	X	
496703 FC_2	3/18/24	11:30	G	GW	2	N		X	X	X	
496704 FC_3A	3/18/24	13:58	G	GW	2	N		X	X	X	
496705 FC_3B	3/18/24	13:16	G	GW	2	N		X	X	X	
496706 EQUIP_BLK	3/19/24	16:40	G	GW	2	N		X	X	X	

160-53539 Chain of Custody

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

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

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

☐ Return to Client ☐ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments: Please be sure to use the listed method numbers.

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

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Kelly Nelson	Colorado Springs Utilities	3/20/24 10:30	Sina Wolfgram	GMSR	3/21/24 0830
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.18, dated 9/5/2018

4/19/2024

Login Sample Receipt Checklist

Client: Colorado Springs Utilities

Job Number: 160-53539-1

Login Number: 53539
List Number: 1
Creator: Worthington, Sierra M

List Source: Eurofins St. Louis

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

Definitions/Glossary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 160-53539-1

Qualifiers

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.
¤	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

Method Summary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 160-53539-1

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

Protocol References:

EPA = US Environmental Protection Agency

None = None

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

Laboratory References:

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

Sample Summary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 160-53539-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-53539-1	496701 CC_1	Water	03/18/24 15:16	03/21/24 08:30
160-53539-2	496702 FC_1	Water	03/18/24 10:25	03/21/24 08:30
160-53539-3	496703 FC_2	Water	03/18/24 11:30	03/21/24 08:30
160-53539-4	496704 FC_3A	Water	03/18/24 13:58	03/21/24 08:30
160-53539-5	496705 FC_3B	Water	03/18/24 13:16	03/21/24 08:30
160-53539-6	496706 EQUIP_BLK	Water	03/19/24 16:40	03/21/24 08:30

Client Sample ID: 496701 CC_1

Date Collected: 03/18/24 15:16
Date Received: 03/21/24 08:30

Lab Sample ID: 160-53539-1
Matrix: Water

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.362		0.185	0.188	1.00	0.236	pCi/L	03/25/24 09:49	04/18/24 09:13	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	95.8		30 - 110	03/25/24 09:49	04/18/24 09:13	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.84		0.555	0.580	1.00	0.600	pCi/L	03/25/24 09:54	04/15/24 12:02	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	95.8		30 - 110	03/25/24 09:54	04/15/24 12:02	1
Y Carrier	82.6		30 - 110	03/25/24 09:54	04/15/24 12:02	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	2.20		0.585	0.610	5.00	0.600	pCi/L		04/19/24 08:46	1

Client Sample ID: 496702 FC_1

Date Collected: 03/18/24 10:25
Date Received: 03/21/24 08:30

Lab Sample ID: 160-53539-2
Matrix: Water

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.555		0.209	0.215	1.00	0.223	pCi/L	03/25/24 09:49	04/18/24 09:13	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	95.8		30 - 110	03/25/24 09:49	04/18/24 09:13	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	3.62		0.738	0.810	1.00	0.682	pCi/L	03/25/24 09:54	04/15/24 12:02	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	95.8		30 - 110	03/25/24 09:54	04/15/24 12:02	1
Y Carrier	83.0		30 - 110	03/25/24 09:54	04/15/24 12:02	1

Client Sample ID: 496702 FC_1

Lab Sample ID: 160-53539-2

Date Collected: 03/18/24 10:25

Matrix: Water

Date Received: 03/21/24 08:30

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	4.18		0.767	0.838	5.00	0.682	pCi/L		04/19/24 08:46	1

Client Sample ID: 496703 FC_2

Lab Sample ID: 160-53539-3

Date Collected: 03/18/24 11:30

Matrix: Water

Date Received: 03/21/24 08:30

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.111	U	0.144	0.145	1.00	0.241	pCi/L	03/25/24 09:49	04/18/24 09:13	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.0*		*30 - 110*	*03/25/24 09:49*	*04/18/24 09:13*	*1*

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	2.06		0.667	0.694	1.00	0.803	pCi/L	03/25/24 09:54	04/15/24 12:02	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.0*		*30 - 110*	*03/25/24 09:54*	*04/15/24 12:02*	*1*
Y Carrier	*81.1*		*30 - 110*	*03/25/24 09:54*	*04/15/24 12:02*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	2.17		0.682	0.709	5.00	0.803	pCi/L		04/19/24 09:56	1

Client Sample ID: 496704 FC_3A

Lab Sample ID: 160-53539-4

Date Collected: 03/18/24 13:58

Matrix: Water

Date Received: 03/21/24 08:30

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0611	U	0.113	0.113	1.00	0.200	pCi/L	03/25/24 09:49	04/18/24 09:13	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*72.5*		*30 - 110*	*03/25/24 09:49*	*04/18/24 09:13*	*1*

Client Sample ID: 496704 FC_3A

Lab Sample ID: 160-53539-4

Date Collected: 03/18/24 13:58

Matrix: Water

Date Received: 03/21/24 08:30

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.540	U	0.421	0.424	1.00	0.641	pCi/L	03/25/24 09:54	04/15/24 12:01	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*72.5*		*30 - 110*	*03/25/24 09:54*	*04/15/24 12:01*	*1*
Y Carrier	*78.5*		*30 - 110*	*03/25/24 09:54*	*04/15/24 12:01*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.601	U	0.436	0.439	5.00	0.641	pCi/L		04/19/24 09:56	1

Client Sample ID: 496705 FC_3B

Lab Sample ID: 160-53539-5

Date Collected: 03/18/24 13:16

Matrix: Water

Date Received: 03/21/24 08:30

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.147	U	0.138	0.139	1.00	0.213	pCi/L	03/25/24 09:49	04/18/24 09:14	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.5*		*30 - 110*	*03/25/24 09:49*	*04/18/24 09:14*	*1*

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**1.02**		0.501	0.509	1.00	0.678	pCi/L	03/25/24 09:54	04/15/24 12:01	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.5*		*30 - 110*	*03/25/24 09:54*	*04/15/24 12:01*	*1*
Y Carrier	*81.9*		*30 - 110*	*03/25/24 09:54*	*04/15/24 12:01*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**1.16**		0.520	0.528	5.00	0.678	pCi/L		04/19/24 09:56	1

Client Sample ID: 496706 EQUIP_BLK

Date Collected: 03/19/24 16:40
Date Received: 03/21/24 08:30

Lab Sample ID: 160-53539-6

Matrix: Water

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0217	U	0.0814	0.0814	1.00	0.157	pCi/L	03/25/24 09:49	04/18/24 09:14	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.5*		*30 - 110*	*03/25/24 09:49*	*04/18/24 09:14*	*1*

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.634**		0.379	0.384	1.00	0.553	pCi/L	03/25/24 09:54	04/15/24 12:01	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.5*		*30 - 110*	*03/25/24 09:54*	*04/15/24 12:01*	*1*
Y Carrier	*82.2*		*30 - 110*	*03/25/24 09:54*	*04/15/24 12:01*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.656**		0.388	0.393	5.00	0.553	pCi/L		04/19/24 09:56	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-653869/1-A
Matrix: Water
Analysis Batch: 657226

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 653869

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.05918	U	0.0867	0.0869	1.00	0.225	pCi/L	03/25/24 09:49	04/16/24 09:55	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.8*		*30 - 110*	*03/25/24 09:49*	*04/16/24 09:55*	*1*

Lab Sample ID: LCS 160-653869/2-A
Matrix: Water
Analysis Batch: 657226

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 653869

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits		
Radium-226			11.3	9.127		1.17	1.00	0.281	pCi/L	81	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*92.3*		*30 - 110*

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-653870/1-A
Matrix: Water
Analysis Batch: 656849

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 653870

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.04036	U	0.335	0.335	1.00	0.642	pCi/L	03/25/24 09:54	04/15/24 13:23	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.8*		*30 - 110*	*03/25/24 09:54*	*04/15/24 13:23*	*1*
Y Carrier	*81.5*		*30 - 110*	*03/25/24 09:54*	*04/15/24 13:23*	*1*

Lab Sample ID: LCS 160-653870/2-A
Matrix: Water
Analysis Batch: 657002

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 653870

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits		
Radium-228			9.03	12.32		1.58	1.00	0.560	pCi/L	136	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*92.3*		*30 - 110*
Y Carrier	*81.5*		*30 - 110*

QC Association Summary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 160-53539-1

Rad

Prep Batch: 653869

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-53539-1	496701 CC_1	Total/NA	Water	PrecSep-21	
160-53539-2	496702 FC_1	Total/NA	Water	PrecSep-21	
160-53539-3	496703 FC_2	Total/NA	Water	PrecSep-21	
160-53539-4	496704 FC_3A	Total/NA	Water	PrecSep-21	
160-53539-5	496705 FC_3B	Total/NA	Water	PrecSep-21	
160-53539-6	496706 EQUIP_BLK	Total/NA	Water	PrecSep-21	
MB 160-653869/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-653869/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 653870

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-53539-1	496701 CC_1	Total/NA	Water	PrecSep_0	
160-53539-2	496702 FC_1	Total/NA	Water	PrecSep_0	
160-53539-3	496703 FC_2	Total/NA	Water	PrecSep_0	
160-53539-4	496704 FC_3A	Total/NA	Water	PrecSep_0	
160-53539-5	496705 FC_3B	Total/NA	Water	PrecSep_0	
160-53539-6	496706 EQUIP_BLK	Total/NA	Water	PrecSep_0	
MB 160-653870/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-653870/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Tracer/Carrier Summary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 160-53539-1

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba (30-110)
160-53539-1	496701 CC_1	95.8
160-53539-2	496702 FC_1	95.8
160-53539-3	496703 FC_2	92.0
160-53539-4	496704 FC_3A	72.5
160-53539-5	496705 FC_3B	95.5
160-53539-6	496706 EQUIP_BLK	95.5
LCS 160-653869/2-A	Lab Control Sample	92.3
MB 160-653869/1-A	Method Blank	93.8

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (30-110)	Y (30-110)
160-53539-1	496701 CC_1	95.8	82.6
160-53539-2	496702 FC_1	95.8	83.0
160-53539-3	496703 FC_2	92.0	81.1
160-53539-4	496704 FC_3A	72.5	78.5
160-53539-5	496705 FC_3B	95.5	81.9
160-53539-6	496706 EQUIP_BLK	95.5	82.2
LCS 160-653870/2-A	Lab Control Sample	92.3	81.5
MB 160-653870/1-A	Method Blank	93.8	81.5

Tracer/Carrier Legend

Ba = Ba Carrier
Y = Y Carrier

Colorado Springs Utilities

It's how we're all connected

Laboratory Report For:

Coal Combustion Residuals - Landfill

Colorado Springs Utilities Environmental Services

Report Authorized by: Wendy M Asay

Title: Environmental Specialist

Report Date: November 15, 2024

Report generated by: Wendy M. Asay

Colorado Springs Utilities Laboratory Services Section certifies that the test results meet all approved method and Laboratory Quality Assurance Plan requirements unless otherwise noted

Samples

507188	17-Sep-2024 13:52	Crooked Canyon Well #1
507189	17-Sep-2024 09:32	Fort Carson Well #1
507190	17-Sep-2024 10:35	Fort Carson Well #2
507191	18-Sep-2024 08:20	Fort Carson Well #3A
507192	18-Sep-2024 09:28	Fort Carson Well #3B
507193	18-Sep-2024 09:56	Equipment Blank
507194	18-Sep-2024 16:50	Sand Canyon Well #10
507195	18-Sep-2024 15:30	Sand Canyon Well #11
507196	18-Sep-2024 14:20	Sand Canyon Well #12
507197	18-Sep-2024 13:08	Sand Canyon Well #13
507198	18-Sep-2024 11:45	Sand Canyon Well #14
507199	18-Sep-2024 00:00	Field Duplicate sample

LIMS #: 507188

Sample Date: 9/17/2024 1:52:33 PM

Sample Point: CC_1

Sample Point Description: Crooked Canyon Well #1

Collection Comments: High turbidity. Perform matrix QC

Sample Type: GRAB

Sampler Initials: JDC

Flag	Method	Analyte	Result	Units	RL	Data Qualifiers	Analyzed On	Dilution Factor
	EPA_200_7	Lithium (Total)	702	ug/L	100	D	10/01/2024	10
+	SM_4500HB	pH	6.9	SU	2.0			1
+	SM_2550_B	Temperature Centigrade (Field)	14.8	degrees C	0.000			1
+	SM_2510_B	Conductivity	29200	umhos/cm	1			1
+	SM_2580_B	Oxidation-Reduction Potential	217	mV	0			1
+	SM_4500_OG	Dissolved Oxygen	<1.0	mg/L	1.0			1
+	SM_2130_B	Turbidity	13	NTU	0.05			1
	NA	Depth to Water	12.80	ft.	0.000			1
	SM_2540_C	Total Dissolved Solids	35200	mg/L	10			1
	SM_4500_FC	Fluoride (Total)	0.21	mg/L	0.10	T	09/30/2024	1
	EPA_300_0	Chloride	1690	mg/L	25.0	D	09/26/2024	50
		Sulfate	21700	mg/L	250	D	09/26/2024	500
*	EPA_6020_B	Antimony (Total)	<2.0	ug/L	2.0		09/24/2024	1
		Arsenic (Total)	<5.0	ug/L	5.0		09/24/2024	1
		Barium (Total)	5.8	ug/L	3.0		09/24/2024	1
		Beryllium (Total)	<1.0	ug/L	1.0		09/24/2024	1
		Cadmium (Total)	<1.0	ug/L	1.0	T	09/24/2024	1
		Chromium (Total)	<3.0	ug/L	3.0		09/24/2024	1
		Lead (Total)	1.1	ug/L	1.0	T	09/24/2024	1
		Molybdenum (Total)	<2.0	ug/L	2.0		09/24/2024	1
		Selenium (Total)	180	ug/L	5.0	T1	09/24/2024	1
		Thallium (Total)	<1.0	ug/L	1.0		09/24/2024	1
	EPA_200_7	Boron (Total)	1120	ug/L	80.0	D		10
		Calcium (Total)	416000	ug/L	500	D/T1	09/24/2024	10
		Cobalt (Total)	2.38	ug/L	2.00	F	09/24/2024	1
*	EPA_1631	Mercury (Total)	0.005	ug/L	0.001		10/14/2024	1

LIMS #: 507189

Sample Date: 9/17/2024 9:32:33 AM

Sample Point: FC_1

Sample Point Description: Fort Carson Well #1

Collection Comments:

Sample Type: GRAB

Sampler Initials: JDC

Flag	Method	Analyte	Result	Units	RL	Data Qualifiers	Analyzed On	Dilution Factor
	EPA_200_7	Lithium (Total)	923	ug/L	100	D	10/01/2024	10
+	SM_4500HB	pH	7.1	SU	2.0			1
+	SM_2550_B	Temperature Centigrade (Field)	13.9	degrees C	0.000			1
+	SM_2510_B	Conductivity	21800	umhos/cm	1			1
+	SM_2580_B	Oxidation-Reduction Potential	245	mV	0			1
+	SM_4500_OG	Dissolved Oxygen	<1.0	mg/L	1.0			1
+	SM_2130_B	Turbidity	2.1	NTU	0.05			1
	NA	Depth to Water	16.49	ft.	0.000			1
	SM_2540_C	Total Dissolved Solids	21700	mg/L	10			1
	SM_4500_FC	Fluoride (Total)	0.12	mg/L	0.10	T	09/30/2024	1
	EPA_300_0	Chloride	802	mg/L	25.0	D	09/26/2024	50
		Sulfate	13500	mg/L	250	D	09/26/2024	500
*	EPA_6020_B	Antimony (Total)	<2.0	ug/L	2.0		09/24/2024	1
		Arsenic (Total)	<5.0	ug/L	5.0		09/24/2024	1
		Barium (Total)	9.0	ug/L	3.0		09/24/2024	1
		Beryllium (Total)	<1.0	ug/L	1.0		09/24/2024	1
		Cadmium (Total)	<1.0	ug/L	1.0	T	09/24/2024	1
		Chromium (Total)	<3.0	ug/L	3.0		09/24/2024	1
		Lead (Total)	<1.0	ug/L	1.0	T	09/24/2024	1
		Molybdenum (Total)	2.2	ug/L	2.0		09/24/2024	1
		Selenium (Total)	<5.0	ug/L	5.0	T1	09/24/2024	1
		Thallium (Total)	<1.0	ug/L	1.0		09/24/2024	1
	EPA_200_7	Boron (Total)	1040	ug/L	80.0	D		10
		Calcium (Total)	390000	ug/L	500	D/T1	09/24/2024	10
		Cobalt (Total)	<2.00	ug/L	2.00	F	09/24/2024	1
*	EPA_1631	Mercury (Total)	0.002	ug/L	0.001		10/14/2024	1

LIMS #: 507190

Sample Date: 9/17/2024 10:35:33 AM

Sample Point: FC_2

Sample Point Description: Fort Carson Well #2

Collection Comments:

Sample Type: GRAB

Sampler Initials: JDC

Flag	Method	Analyte	Result	Units	RL	Data Qualifiers	Analyzed On	Dilution Factor
	EPA_200_7	Lithium (Total)	276	ug/L	100	D	10/01/2024	10
+	SM_4500HB	pH	7.3	SU	2.0			1
+	SM_2550_B	Temperature Centigrade (Field)	13.8	degrees C	0.000			1
+	SM_2510_B	Conductivity	9750	umhos/cm	1			1
+	SM_2580_B	Oxidation-Reduction Potential	296	mV	0			1
+	SM_4500_OG	Dissolved Oxygen	<1.0	mg/L	1.0			1
+	SM_2130_B	Turbidity	5.3	NTU	0.05			1
	NA	Depth to Water	14.41	ft.	0.000			1
	SM_2540_C	Total Dissolved Solids	10100	mg/L	10			1
	SM_4500_FC	Fluoride (Total)	0.50	mg/L	0.10	T	09/30/2024	1
	EPA_300_0	Chloride	115	mg/L	25.0	D	09/26/2024	50
		Sulfate	6330	mg/L	250	D	09/26/2024	500
*	EPA_6020_B	Antimony (Total)	<2.0	ug/L	2.0		09/24/2024	1
		Arsenic (Total)	<5.0	ug/L	5.0		09/24/2024	1
		Barium (Total)	6.4	ug/L	3.0		09/24/2024	1
		Beryllium (Total)	<1.0	ug/L	1.0		09/24/2024	1
		Cadmium (Total)	<1.0	ug/L	1.0	T	09/24/2024	1
		Chromium (Total)	<3.0	ug/L	3.0		09/24/2024	1
		Lead (Total)	<1.0	ug/L	1.0	T	09/24/2024	1
		Molybdenum (Total)	2.8	ug/L	2.0		09/24/2024	1
		Selenium (Total)	37	ug/L	5.0	T1	09/24/2024	1
		Thallium (Total)	<1.0	ug/L	1.0		09/24/2024	1
	EPA_200_7	Boron (Total)	999	ug/L	80.0	D		10
		Calcium (Total)	397000	ug/L	500	D/T1	09/24/2024	10
		Cobalt (Total)	<2.00	ug/L	2.00	F	09/24/2024	1
*	EPA_1631	Mercury (Total)	0.002	ug/L	0.001		10/14/2024	1

LIMS #: 507191

Sample Date: 9/18/2024 8:20:53 AM

Sample Point: FC_3A

Sample Point Description: Fort Carson Well #3A

Collection Comments: Perform matrix QC

Sample Type: GRAB

Sampler Initials: JDC

Flag	Method	Analyte	Result	Units	RL	Data Qualifiers	Analyzed On	Dilution Factor
+	SM_4500HB	pH	7.4	SU	2.0			1
+	SM_2550_B	Temperature Centigrade (Field)	13.2	degrees C	0.000			1
+	SM_2510_B	Conductivity	8850	umhos/cm	1			1
+	SM_2580_B	Oxidation-Reduction Potential	239	mV	0			1
+	SM_4500_OG	Dissolved Oxygen	<1.0	mg/L	1.0			1
+	SM_2130_B	Turbidity	8.8	NTU	0.05			1
	NA	Depth to Water	18.90	ft.	0.000			1
	SM_2540_C	Total Dissolved Solids	9000	mg/L	10			1
	SM_4500_FC	Fluoride (Total)	0.46	mg/L	0.10	T	09/30/2024	1
	EPA_300_0	Chloride	148	mg/L	25.0	D	09/26/2024	50
		Sulfate	5610	mg/L	250	D	09/26/2024	500
*	EPA_6020_B	Antimony (Total)	<2.0	ug/L	2.0		09/24/2024	1
		Arsenic (Total)	<5.0	ug/L	5.0		09/24/2024	1
		Barium (Total)	11	ug/L	3.0		09/24/2024	1
		Beryllium (Total)	<1.0	ug/L	1.0		09/24/2024	1
		Cadmium (Total)	<1.0	ug/L	1.0	T	09/24/2024	1
		Chromium (Total)	<3.0	ug/L	3.0		09/24/2024	1
		Lead (Total)	<1.0	ug/L	1.0		09/24/2024	1
		Molybdenum (Total)	7.9	ug/L	2.0		09/24/2024	1
		Selenium (Total)	46	ug/L	5.0		09/24/2024	1
		Thallium (Total)	<1.0	ug/L	1.0		09/24/2024	1
	EPA_200_7	Boron (Total)	1000	ug/L	160	D		20
		Calcium (Total)	408000	ug/L	1000	D	09/28/2024	20
		Cobalt (Total)	<2.00	ug/L	2.00	F	09/28/2024	1
		Lithium (Total)	253	ug/L	200	D	09/28/2024	20
*	EPA_1631	Mercury (Total)	0.002	ug/L	0.001		10/14/2024	1

LIMS #: 507192

Sample Date: 9/18/2024 9:28:53 AM

Sample Point: FC_3B

Sample Point Description: Fort Carson Well #3B

Collection Comments: High turbidity

Sample Type: GRAB

Sampler Initials: JDC

Flag	Method	Analyte	Result	Units	RL	Data Qualifiers	Analyzed On	Dilution Factor
+	SM_4500HB	pH	7.3	SU	2.0			1
+	SM_2550_B	Temperature Centigrade (Field)	13.7	degrees C	0.000			1
+	SM_2510_B	Conductivity	8640	umhos/cm	1			1
+	SM_2580_B	Oxidation-Reduction Potential	-42	mV	0			1
+	SM_4500_OG	Dissolved Oxygen	<1.0	mg/L	1.0			1
+	SM_2130_B	Turbidity	28	NTU	0.05			1
	NA	Depth to Water	18.02	ft.	0.000			1
	SM_2540_C	Total Dissolved Solids	7320	mg/L	10			1
	SM_4500_FC	Fluoride (Total)	0.64	mg/L	0.10	T	09/30/2024	1
	EPA_300_0	Chloride	212	mg/L	25.0	D	09/26/2024	50
		Sulfate	4320	mg/L	250	D	09/26/2024	500
*	EPA_6020_B	Antimony (Total)	<2.0	ug/L	2.0		09/24/2024	1
		Arsenic (Total)	<5.0	ug/L	5.0		09/24/2024	1
		Barium (Total)	11	ug/L	3.0		09/24/2024	1
		Beryllium (Total)	<1.0	ug/L	1.0		09/24/2024	1
		Cadmium (Total)	<1.0	ug/L	1.0	T	09/24/2024	1
		Chromium (Total)	<3.0	ug/L	3.0		09/24/2024	1
		Lead (Total)	<1.0	ug/L	1.0		09/24/2024	1
		Molybdenum (Total)	8.2	ug/L	2.0		09/24/2024	1
		Selenium (Total)	<5.0	ug/L	5.0		09/24/2024	1
		Thallium (Total)	<1.0	ug/L	1.0		09/24/2024	1
	EPA_200_7	Boron (Total)	1190	ug/L	160	D		20
		Calcium (Total)	253000	ug/L	1000	D	09/28/2024	20
		Cobalt (Total)	<2.00	ug/L	2.00	F	09/28/2024	1
		Lithium (Total)	232	ug/L	200	D	09/28/2024	20
*	EPA_1631	Mercury (Total)	0.006	ug/L	0.001		10/14/2024	1

LIMS #: 507193

Sample Date: 9/18/2024 9:56:53 AM

Sample Point: EQUIP_BLK

Sample Point Description: Equipment Blank

Collection Comments:

Sample Type: GRAB

Sampler Initials: JDC

Flag	Method	Analyte	Result	Units	RL	Data Qualifiers	Analyzed On	Dilution Factor
	SM_2540_C	Total Dissolved Solids	<10	mg/L	10			1
	SM_4500_FC	Fluoride (Total)	<0.10	mg/L	0.10			1
	EPA_300_0	Chloride	<0.50	mg/L	0.50		09/25/2024	1
		Sulfate	<0.50	mg/L	0.50		09/25/2024	1
*	EPA_6020_B	Antimony (Total)	<2.0	ug/L	2.0		09/24/2024	1
		Arsenic (Total)	<5.0	ug/L	5.0		09/24/2024	1
		Barium (Total)	<3.0	ug/L	3.0		09/24/2024	1
		Beryllium (Total)	<1.0	ug/L	1.0		09/24/2024	1
		Cadmium (Total)	<1.0	ug/L	1.0	T	09/24/2024	1
		Chromium (Total)	<3.0	ug/L	3.0		09/24/2024	1
		Lead (Total)	<1.0	ug/L	1.0		09/24/2024	1
		Molybdenum (Total)	<2.0	ug/L	2.0		09/24/2024	1
		Selenium (Total)	<5.0	ug/L	5.0		09/24/2024	1
		Thallium (Total)	<1.0	ug/L	1.0		09/24/2024	1
	EPA_200_7	Boron (Total)	<8.00	ug/L	8.00		09/28/2024	1
		Calcium (Total)	<50.0	ug/L	50.0		09/28/2024	1
		Cobalt (Total)	<2.00	ug/L	2.00		09/28/2024	1
		Lithium (Total)	<10.0	ug/L	10.0		09/28/2024	1
*	EPA_1631	Mercury (Total)	<0.001	ug/L	0.001		10/14/2024	1

LIMS #: 507194

Sample Date: 9/18/2024 4:50:53 PM

Sample Point: SC_10

Sample Point Description: Sand Canyon Well #10

Collection Comments:

Sample Type: GRAB

Sampler Initials: JDC

Flag	Method	Analyte	Result	Units	RL	Data Qualifiers	Analyzed On	Dilution Factor
+	SM_4500HB	pH	7.3	SU	2.0			1
+	SM_2550_B	Temperature Centigrade (Field)	14.8	degrees C	0.000			1
+	SM_2510_B	Conductivity	17500	umhos/cm	1			1
+	SM_2580_B	Oxidation-Reduction Potential	284	mV	0			1
+	SM_4500_OG	Dissolved Oxygen	<1.0	mg/L	1.0			1
+	SM_2130_B	Turbidity	8.4	NTU	0.05			1
	NA	Depth to Water	13.38	ft.	0.000			1
	SM_2540_C	Total Dissolved Solids	16500	mg/L	10			1
	SM_4500_FC	Fluoride (Total)	0.50	mg/L	0.10	T	09/30/2024	1
	EPA_300_0	Chloride	998	mg/L	25.0	D	09/26/2024	50
		Sulfate	9800	mg/L	250	D	09/26/2024	500
*	EPA_6020_B	Antimony (Total)	<2.0	ug/L	2.0		09/24/2024	1
		Arsenic (Total)	<5.0	ug/L	5.0		09/24/2024	1
		Barium (Total)	9.7	ug/L	3.0		09/24/2024	1
		Beryllium (Total)	<1.0	ug/L	1.0		09/24/2024	1
		Cadmium (Total)	<1.0	ug/L	1.0	T	09/24/2024	1
		Chromium (Total)	<3.0	ug/L	3.0		09/24/2024	1
		Lead (Total)	<1.0	ug/L	1.0		09/24/2024	1
		Molybdenum (Total)	4.8	ug/L	2.0		09/24/2024	1
		Selenium (Total)	200	ug/L	5.0		09/24/2024	1
		Thallium (Total)	<1.0	ug/L	1.0		09/24/2024	1
	EPA_200_7	Boron (Total)	1270	ug/L	160	D		20
		Calcium (Total)	419000	ug/L	1000	D	09/28/2024	20
		Cobalt (Total)	<2.00	ug/L	2.00	F	09/28/2024	1
		Lithium (Total)	633	ug/L	200	D	09/28/2024	20
*	EPA_1631	Mercury (Total)	0.006	ug/L	0.001		10/14/2024	1

LIMS #: 507195

Sample Date: 9/18/2024 3:30:53 PM

Sample Point: SC_11

Sample Point Description: Sand Canyon Well #11

Collection Comments:

Sample Type: GRAB

Sampler Initials: JDC

Flag	Method	Analyte	Result	Units	RL	Data Qualifiers	Analyzed On	Dilution Factor
+	SM_4500HB	pH	7.2	SU	2.0			1
+	SM_2550_B	Temperature Centigrade (Field)	16.0	degrees C	0.000			1
+	SM_2510_B	Conductivity	16800	umhos/cm	1			1
+	SM_2580_B	Oxidation-Reduction Potential	294	mV	0			1
+	SM_4500_OG	Dissolved Oxygen	<1.0	mg/L	1.0			1
+	SM_2130_B	Turbidity	7.5	NTU	0.05			1
	NA	Depth to Water	10.39	ft.	0.000			1
	SM_2540_C	Total Dissolved Solids	15600	mg/L	10			1
	SM_4500_FC	Fluoride (Total)	0.58	mg/L	0.10	T	09/30/2024	1
	EPA_300_0	Chloride	1270	mg/L	25.0	D	09/26/2024	50
		Sulfate	8580	mg/L	250	D	09/26/2024	500
*	EPA_6020_B	Antimony (Total)	<2.0	ug/L	2.0		09/24/2024	1
		Arsenic (Total)	<5.0	ug/L	5.0		09/24/2024	1
		Barium (Total)	8.2	ug/L	3.0		09/24/2024	1
		Beryllium (Total)	<1.0	ug/L	1.0		09/24/2024	1
		Cadmium (Total)	<1.0	ug/L	1.0	T	09/24/2024	1
		Chromium (Total)	<3.0	ug/L	3.0		09/24/2024	1
		Lead (Total)	<1.0	ug/L	1.0		09/24/2024	1
		Molybdenum (Total)	3.5	ug/L	2.0		09/24/2024	1
		Selenium (Total)	330	ug/L	5.0		09/24/2024	1
		Thallium (Total)	<1.0	ug/L	1.0		09/24/2024	1
	EPA_200_7	Boron (Total)	2710	ug/L	160	D		20
		Calcium (Total)	467000	ug/L	1000	D	09/28/2024	20
		Cobalt (Total)	<2.00	ug/L	2.00	F	09/28/2024	1
		Lithium (Total)	534	ug/L	200	D	09/28/2024	20
*	EPA_1631	Mercury (Total)	0.006	ug/L	0.001		10/14/2024	1

LIMS #: 507196

Sample Date: 9/18/2024 2:20:53 PM

Sample Point: SC_12

Sample Point Description: Sand Canyon Well #12

Collection Comments:

Sample Type: GRAB

Sampler Initials: JDC

Flag	Method	Analyte	Result	Units	RL	Data Qualifiers	Analyzed On	Dilution Factor
+	SM_4500HB	pH	7.2	SU	2.0			1
+	SM_2550_B	Temperature Centigrade (Field)	16.7	degrees C	0.000			1
+	SM_2510_B	Conductivity	13100	umhos/cm	1			1
+	SM_2580_B	Oxidation-Reduction Potential	327	mV	0			1
+	SM_4500_OG	Dissolved Oxygen	<1.0	mg/L	1.0			1
+	SM_2130_B	Turbidity	1.1	NTU	0.05			1
	NA	Depth to Water	11.22	ft.	0.000			1
	SM_2540_C	Total Dissolved Solids	13200	mg/L	10			1
	SM_4500_FC	Fluoride (Total)	0.88	mg/L	0.10	T	09/30/2024	1
	EPA_300_0	Chloride	353	mg/L	25.0	D	09/26/2024	50
		Sulfate	8300	mg/L	250	D	09/26/2024	500
*	EPA_6020_B	Antimony (Total)	<2.0	ug/L	2.0		09/24/2024	1
		Arsenic (Total)	<5.0	ug/L	5.0		09/24/2024	1
		Barium (Total)	5.8	ug/L	3.0		09/24/2024	1
		Beryllium (Total)	<1.0	ug/L	1.0		09/24/2024	1
		Cadmium (Total)	<1.0	ug/L	1.0	T	09/24/2024	1
		Chromium (Total)	<3.0	ug/L	3.0		09/24/2024	1
		Lead (Total)	<1.0	ug/L	1.0		09/24/2024	1
		Molybdenum (Total)	5.2	ug/L	2.0		09/24/2024	1
		Selenium (Total)	12	ug/L	5.0		09/24/2024	1
		Thallium (Total)	<1.0	ug/L	1.0		09/24/2024	1
	EPA_200_7	Boron (Total)	4600	ug/L	160	D		20
		Calcium (Total)	398000	ug/L	1000	D	09/28/2024	20
		Cobalt (Total)	<2.00	ug/L	2.00	F	09/28/2024	1
		Lithium (Total)	374	ug/L	200	D	09/28/2024	20
*	EPA_1631	Mercury (Total)	0.002	ug/L	0.001		10/14/2024	1

LIMS #: 507197

Sample Date: 9/18/2024 1:08:53 PM

Sample Point: SC_13

Sample Point Description: Sand Canyon Well #13

Collection Comments:

Sample Type: GRAB

Sampler Initials: JDC

Flag	Method	Analyte	Result	Units	RL	Data Qualifiers	Analyzed On	Dilution Factor
+	SM_4500HB	pH	7.3	SU	2.0			1
+	SM_2550_B	Temperature Centigrade (Field)	13.5	degrees C	0.000			1
+	SM_2510_B	Conductivity	11300	umhos/cm	1			1
+	SM_2580_B	Oxidation-Reduction Potential	235	mV	0			1
+	SM_4500_OG	Dissolved Oxygen	<1.0	mg/L	1.0			1
+	SM_2130_B	Turbidity	4.6	NTU	0.05			1
	NA	Depth to Water	11.77	ft.	0.000			1
	SM_2540_C	Total Dissolved Solids	11900	mg/L	10			1
	SM_4500_FC	Fluoride (Total)	0.71	mg/L	0.10	T	09/30/2024	1
	EPA_300_0	Chloride	180	mg/L	25.0	D	09/26/2024	50
		Sulfate	7570	mg/L	250	D	09/26/2024	500
*	EPA_6020_B	Antimony (Total)	<2.0	ug/L	2.0		09/24/2024	1
		Arsenic (Total)	<5.0	ug/L	5.0		09/24/2024	1
		Barium (Total)	5.8	ug/L	3.0		09/24/2024	1
		Beryllium (Total)	<1.0	ug/L	1.0		09/24/2024	1
		Cadmium (Total)	<1.0	ug/L	1.0	T	09/24/2024	1
		Chromium (Total)	<3.0	ug/L	3.0		09/24/2024	1
		Lead (Total)	<1.0	ug/L	1.0		09/24/2024	1
		Molybdenum (Total)	3.5	ug/L	2.0		09/24/2024	1
		Selenium (Total)	27	ug/L	5.0		09/24/2024	1
		Thallium (Total)	<1.0	ug/L	1.0		09/24/2024	1
	EPA_200_7	Boron (Total)	1560	ug/L	160	D		20
		Calcium (Total)	406000	ug/L	1000	D	09/28/2024	20
		Cobalt (Total)	<2.00	ug/L	2.00	F	09/28/2024	1
		Lithium (Total)	288	ug/L	200	D	09/28/2024	20
*	EPA_1631	Mercury (Total)	0.002	ug/L	0.001		10/14/2024	1

LIMS #: 507198

Sample Date: 9/18/2024 11:45:53 AM

Sample Point: SC_14

Sample Point Description: Sand Canyon Well #14

Collection Comments:

Sample Type: GRAB

Sampler Initials: JDC

Flag	Method	Analyte	Result	Units	RL	Data Qualifiers	Analyzed On	Dilution Factor
+	SM_4500HB	pH	7.3	SU	2.0			1
+	SM_2550_B	Temperature Centigrade (Field)	12.6	degrees C	0.000			1
+	SM_2510_B	Conductivity	10600	umhos/cm	1			1
+	SM_2580_B	Oxidation-Reduction Potential	271	mV	0			1
+	SM_4500_OG	Dissolved Oxygen	<1.0	mg/L	1.0			1
+	SM_2130_B	Turbidity	0.54	NTU	0.05			1
	NA	Depth to Water	12.04	ft.	0.000			1
	SM_2540_C	Total Dissolved Solids	10700	mg/L	10			1
	SM_4500_FC	Fluoride (Total)	0.70	mg/L	0.10	T	09/30/2024	1
	EPA_300_0	Chloride	160	mg/L	25.0	D	09/26/2024	50
		Sulfate	7100	mg/L	250	D	09/26/2024	500
*	EPA_6020_B	Antimony (Total)	<2.0	ug/L	2.0		09/24/2024	1
		Arsenic (Total)	<5.0	ug/L	5.0		09/24/2024	1
		Barium (Total)	5.2	ug/L	3.0		09/24/2024	1
		Beryllium (Total)	<1.0	ug/L	1.0		09/24/2024	1
		Cadmium (Total)	<1.0	ug/L	1.0	T	09/24/2024	1
		Chromium (Total)	<3.0	ug/L	3.0		09/24/2024	1
		Lead (Total)	<1.0	ug/L	1.0		09/24/2024	1
		Molybdenum (Total)	11	ug/L	2.0		09/24/2024	1
		Selenium (Total)	7.0	ug/L	5.0		09/24/2024	1
		Thallium (Total)	<1.0	ug/L	1.0		09/24/2024	1
	EPA_200_7	Boron (Total)	1460	ug/L	160	D		20
		Calcium (Total)	398000	ug/L	1000	D	09/28/2024	20
		Cobalt (Total)	<2.00	ug/L	2.00	F	09/28/2024	1
		Lithium (Total)	246	ug/L	200	D	09/28/2024	20
*	EPA_1631	Mercury (Total)	0.001	ug/L	0.001		10/14/2024	1

LIMS #: 507199

Sample Date: 9/18/2024 12:00:53 AM

Sample Point: FIELD_DUP

Sample Point Description: Field Duplicate sample

Collection Comments:

Sample Type: GRAB

Sampler Initials: JDC

Flag	Method	Analyte	Result	Units	RL	Data Qualifiers	Analyzed On	Dilution Factor
	SM_2540_C	Total Dissolved Solids	11900	mg/L	10			1
	SM_4500_FC	Fluoride (Total)	0.72	mg/L	0.10	T	09/30/2024	1
	EPA_300_0	Chloride	176	mg/L	025.0	D	09/26/2024	50
		Sulfate	7400	mg/L	250	D	09/26/2024	500
*	EPA_6020_B	Antimony (Total)	<2.0	ug/L	2.0		09/24/2024	1
		Arsenic (Total)	<5.0	ug/L	5.0		09/24/2024	1
		Barium (Total)	5.1	ug/L	3.0		09/24/2024	1
		Beryllium (Total)	<1.0	ug/L	1.0		09/24/2024	1
		Cadmium (Total)	<1.0	ug/L	1.0	T	09/24/2024	1
		Chromium (Total)	<3.0	ug/L	3.0		09/24/2024	1
		Lead (Total)	<1.0	ug/L	1.0		09/24/2024	1
		Molybdenum (Total)	3.7	ug/L	2.0		09/24/2024	1
		Selenium (Total)	29	ug/L	5.0		09/24/2024	1
		Thallium (Total)	<1.0	ug/L	1.0		09/24/2024	1
	EPA_200_7	Boron (Total)	1600	ug/L	160	D	09/28/2024	20
		Calcium (Total)	479000	ug/L	1000	D	09/28/2024	20
		Cobalt (Total)	<2.00	ug/L	2.00	F	09/28/2024	1
		Lithium (Total)	278	ug/L	200	D	09/28/2024	20
*	EPA_1631	Mercury (Total)	0.002	ug/L	0.001		10/14/2024	1

Flags

*	Analysis performed by an external contract laboratory.
+	Analysis performed in the field.

Data Qualifiers

D - Value reported is multiplied by a dilution factor.
F- Customer/Project data quality requirements met. There are deviations from the reference method or the SOP.
T- MS recovery outside the established range. The recovery is matrix related, not method related.
T1 - The analyte concentration is disproportionate to the spike level and is outside the established range.

Glossary

DQ - Data Qualifer
RL – Reporting Limit
MDL – Method Detection Limit
Dil Fac – Dilution Factor

Case Narrative

Colorado Springs Utilities

Colorado Springs Utilities
Laboratory Services
Grab Samples

CCR Landfill Groundwater Assessment Upgradient Wells

Sample Date: 9/17/2024

QC Report Needed

Sampler: J. SUSLOW

LOCATION	# Bottles	LIMS #	Sample Time	pH, Field (su) SM 4500 H	Temperature, Field (°C) SM 2550 B	Conductivity, Field (umhos/cm) SM 2510 B	Oxidation Reduction Potential, Field (mV)	Dissolved Oxygen (mg/L)	Turbidity, Field (NTU), SM 2130 B	Depth to Water (feet)	Check which sample should have MS/MSD performed on it	Fluoride, SM 4500 F C	Total Dissolved Solids, SM 2540 C	Chloride, Sulfate EPA 300.0	EPA 200.7 (B, Ca, Co & Li - Total Recoverable)	EPA 6020 B (Sb, As, Ba, Be, Cd, Cr, Pb, Mo, Se & Tl - Total) Sent to Eurofins TA Denver	Mercury, EPA 1631	Total Radium 226 & Radium 228 (Sent to Test America St. Louis)	Comments
				Please mark boxes that apply.								1-500 mL GP	1-250 mL GP	1-500 mL New Certified plastic	1-250 mL bottles provided by external lab (pre-preserved with HNO3)	1-250 mL glass acid-rinsed	2-1000 mL plastic	
CC_1	7	507188	13:52	6.92	14.8	29187	216.9	0.23	12.6	12.80	X	x	x	x	x	x	x	x	High TDS
FC_1	7	507189	9:32	7.10	13.9	21840	244.9	0.31	2.10	16.49		x	x	x	x	x	x	x	
FC_2	7	507190	10:35	7.26	13.8	9753	296.1	0.13	5.34	14.41		x	x	x	x	x	x	x	
FC_3A		~~507191~~										x	x	x	x	x	x	x	
FC_3B		507192										x	x	x	x	x	x	x	
EQUIP_BLK		507193										x	x	x	x	x	x	x	
Total # of Bottles	21																		

Signature/Print last name

Relinquished by: J SUSLOW 9-17-24 Date/Time @ 15:53

Received by: Kelly Nelson 9/18/24 @ 0731

Additional Comments / Sample Rejections/ Actions

Workflow: CCR_LANDFILL
Project ID: CCR_LAND
Test Schedule: CCR_LAND

Samples are NOT filtered in the field.

Temp blank: 1.3°C
9/18/24 KAN

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Colorado Springs Utilities
Laboratory Services
Grab Samples

CCR Landfill Groundwater Assessment Upgradient Wells

Sample Date: 9-18-24

QC Report Needed

Sampler: J Sutton

LOCATION	# Bottles	LIMS #	Sample Time	pH, Field (su) SM 4500 H	Temperature, Field (°C) SM 2550 B	Conductivity, Field (umhos/cm) SM 2510 B	Oxidation Reduction Potential, Field (mV)	Dissolved Oxygen (mg/L)	Turbidity, Field (NTU), SM 2130 B	Depth to Water (feet)	Check which sample should have MS/MSD performed on it	Fluoride, SM 4500 F C	Total Dissolved Solids, SM 2540 C	Chloride, Sulfate EPA 300.0	EPA 200.7 (B, Ca, Co & Li - Total Recoverable)	EPA 6020 B (Sb, As, Ba, Be, Cd, Cr, Pb, Mo, Se & Tl - Total) Sent to Eurofins TA Denver	Mercury, EPA 1631	Total Radium 226 & Radium 228 (Sent to Test America St. Louis)	Comments
				Please mark boxes that apply.								1-500 mL GP	1-250 mL GP	1-500 mL New Certified plastic	1-250 mL bottles provided by external lab (pre-preserved with HNO3)	1-250 mL glass acid-rinsed	2-1000 mL plastic	
CC_1												x	x	x	x	x	x	x	
FC_1												x	x	x	x	x	x	x	
FC_2												x	x	x	x	x	x	x	
FC_3A	7	507191	820	7.39	13.2	8852	239.0	0.33	8.85	18.90	X	x	x	x	x	x	x	x	
FC_3B	7	507192	928	7.29	13.7	8640	-42.2	0.14	28.4	1802		x	x	x	x	x	x	x	High Turb
EQUIP_BLK	7	507193	956									x	x	x	x	x	x	x	
Total # of Bottles	21																		

Signature/Print last name

Relinquished by: 9-18-24 Date/Time @ 1840

Received by: Kelly Nelson 9/19/24 @ 0726

Temp blank: 0.8°C
KAN 9/19/24

Additional Comments / Sample Rejections/ Actions

Workflow: CCR_LANDFILL
Project ID: CCR_LAND
Test Schedule: CCR_LAND

Samples are NOT filtered in the field.

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Colorado Springs Utilities
Laboratory Services
Grab Samples

CCR Landfill Groundwater Assessment Downgradient and Cross Gradient Wells

Sample Date: 9/18/2024

QC Report Needed

Sampler: J Suslow

LOCATION	# Bottles	LIMS #	Sample Time	pH, Field (su) SM 4500 H	Temperature, Field (°C) SM 2550 B	Conductivity, Field (umhos/cm) SM 2510 B	Oxidation Reduction Potential, Field (mV)	Dissolved Oxygen (mg/L)	Turbidity, Field (NTU), SM 2130 B	Depth to Water (feet)	Check which sample should have MS/MSD performed on it	Fluoride, SM 4500 F C	Total Dissolved Solids, SM 2540 C	Chloride, Sulfate EPA 300.0	EPA 200.7 (B, Ca, Co & Li - Total Recoverable)	EPA 6020 B (Sb, As, Ba, Be, Cd, Cr, Pb, Mo, Se & Tl - Total) Sent to Eurofins TA Denver	Mercury, EPA 1631	Total Radium 226 & Radium 228 (Sent to Test America St. Louis)	Comments
				Please mark boxes that apply.															
SC_10	7	507194	15:50	7.26	14.8	17483	284.4	0.11	8.44	13.38		x	x	x	x	x	x	x	
SC_11	7	507195	15:30	7.23	16.0	16775	294.2	0.14	7.46	10.39		x	x	x	x	x	x	x	
SC_12	7	507196	14:20	7.25	16.7	13062	327.0	0.23	1.11	11.22		x	x	x	x	x	x	x	
SC_13	7	507197	13:08	7.27	13.5	11271	235.1	0.18	4.63	11.77		x	x	x	x	x	x	x	
SC_14	7	507198	11:45	7.28	12.6	10612	271.0	0.30	0.54	12.04		x	x	x	x	x	x	x	
FIELD_DUP	7	507199	0:00									x	x	x	x	x	x	x	
Total # of Bottles	42											1-500 mL GP		1-250 mL GP	1-500 mL New Certified plastic	1-250 mL bottles provided by external lab (pre-preserved with HNO3)	1-250 mL glass acid-rinsed	2-1000 mL plastic	

Relinquished by — Signature/Print last name: [signature] — Date/Time: 9-18-24 @ 1840

Received by — Kelly Nelson — 9/19/24 @ 0726

☑ Samples left in walk-in overnight?

Additional Comments / Sample Rejections/ Actions

Workflow: CCR_LANDFILL
Project ID: CCR_LAND
Test Schedule: CCR_LAND

Samples are NOT filtered in the field.

Temp blank: 0.8°C
9/19/24 KAN

Colorado Springs Utilities

It's how we're all connected

Laboratory Services Section
QC Report

CCR Landfill Wells
September 2024

Quality Assurance Approval: Lesley Pearce Date: 11/14/2024

This report is for sample numbers 507188 – 507189.

Total Dissolved Solids by Standard Methods 2540 C

There are no anomalies to report for this analysis.

Fluoride by Standard Methods 4500 F C

The matrix spike recoveries are outside the established range. The recoveries are matrix related, not method related. Associated data are T qualified.

Anions by EPA Method 300.0

There are no anomalies to report for this analysis.

EPA 200.7

The calcium concentrations are disproportionate to the spike level and are outside the established range for three samples. Associated data are T1 qualified.

Method: Total Dissolved Solids by Standard Methods 2540 C
Batch Analysis date: 9/20/24
Sampled date: 9/17/24 for samples 507188 - 507190
Sampled date: 9/18/24 for samples 507191 - 507199

Matrix QC performed on samples 507188 and 507191

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
QCS	Total Dissolved Solids	109	80 - 120		
Duplicate	Total Dissolved Solids (507188)			<1	<10
Duplicate	Total Dissolved Solids (507191)			1	<10

QC Type	Analyte	Concentration	Limit
LRB	Total Dissolved Solids	<10 mg/L	10 mg/L

Method: Fluoride by Standard Methods 4500 F C
Batch Analysis date: 9/30/24
Sampled date: 9/17/24 for samples 507188 - 507190
Sampled date: 9/18/24 for samples 507191 - 507199

Matrix QC performed on samples 507188 and 507191

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Fluoride (Total)	101	90 - 110		
QCS	Fluoride (Total)	98	90 - 110		
MS	Fluoride (Total) (507188)	***38**	80 - 120		
MSD	Fluoride (Total) (507188)			1	<20
MS	Fluoride (Total) (507191)	***73**	80 - 120		
MSD	Fluoride (Total) (507191)			1	<20

QC Type	Analyte	Concentration	Limit
LRB	Fluoride (Total)	<0.05 mg/L	0.05 mg/L

***See Narrative**

Method: Anions by EPA Method 300.0
Batch Number: ANIONS_NOX000007
Batch Analysis date: 9/25/24 and 9/26/24
Sampled date: 9/17/24 for samples 507188 - 507190
Sampled date: 9/18/24 for samples 507191 - 507199

Matrix QC performed on samples 507170 and 507191

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Chloride	125	50-150		
LFB	Chloride	100	90-110	0	<20
LD	Chloride (507170)			0	<20
MS	Chloride (507170)	102	80-120		
LD	Chloride (507191)			0	<20
MS	Chloride (507191)	105	80-120		
MRL	Sulfate	93	50-150		
LFB	Sulfate	100	90-110	0	<20
LD	Sulfate (507170)			1	<20
MS	Sulfate (507170)	107	80-120		
LD	Sulfate (507191)			1	<20
MS	Sulfate (507191)	108	80-120		

QC Type	Analyte	Concentration	Limit
LRB	Chloride	<0.17 mg/L	0.17 mg/L
LRB	Sulfate	<0.17 mg/L	0.17 mg/L

Method: EPA 200.7
Batch Number: OES_TOT000018
Batch Analysis date: 9/24/24 for B, Ca and Co
Digestion date: 9/20/24
Sampled date: 9/17/24 for samples 507188 - 507190

Matrix QC performed on sample 507166

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Boron (Total)	103	50-150		
LFB	Boron (Total)	103	85-115		
MS	Boron (Total)	91	70-130		
MSD	Boron (Total)			1	<20
MRL	Calcium (Total)	99	50-150		
LFB	Calcium (Total)	101	85-115		
MS	Calcium (Total)	***14**	70-130		
MSD	Calcium (Total)			1	<20
MRL	Cobalt (Total)	91	50-150		
LFB	Cobalt (Total)	103	85-115		
MS	Cobalt (Total)	89	70-130		
MSD	Cobalt (Total)			1	<20

QC Type	Analyte	Concentration	Limit
LRB	Boron (Total)	<8.00 ug/L	8.00 ug/L
LRB	Calcium (Total)	<49.3 ug/L	49.3 ug/L
LRB	Cobalt (Total)	<0.744 ug/L	0.744 ug/L

***See Narrative**

Method: EPA 200.7
Batch Number: OES_TOT000021
Batch Analysis date: 10/1/24 for Li
Digestion date: 9/20/24
Sampled date: 9/17/24 for samples 507188 - 507190

Matrix QC performed on sample 507166

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Lithium (Total)	103	50-150		
LFB	Lithium (Total)	107	85-115		
MS	Lithium (Total)	103	70-130		
MSD	Lithium (Total)			0	<20

QC Type	Analyte	Concentration	Limit
LRB	Lithium (Total)	<10.0 ug/L	10.0 ug/L

Method: EPA 200.7
Batch Number: OES_TOT000020
Batch Analysis date: 9/28/24
Digestion date: 9/26/24
Sampled date: 9/18/24 for samples 507191 - 507199

Matrix QC performed on sample 507191

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Boron (Total)	100	50-150		
LFB	Boron (Total)	101	85-115		
MS	Boron (Total)	108	70-130		
MSD	Boron (Total)			2	<20
MRL	Calcium (Total)	100	50-150		
LFB	Calcium (Total)	99	85-115		
MS	Calcium (Total)	130	70-130		
MSD	Calcium (Total)			2	<20
MRL	Cobalt (Total)	106	50-150		
LFB	Cobalt (Total)	101	85-115		
MS	Cobalt (Total)	99	70-130		
MSD	Cobalt (Total)			0	<20
MRL	Lithium (Total)	103	50-150		
LFB	Lithium (Total)	102	85-115		
MS	Lithium (Total)	111	70-130		
MSD	Lithium (Total)			1	<20

QC Type	Analyte	Concentration	Limit
LRB	Boron (Total)	<8.00 ug/L	8.00 ug/L
LRB	Calcium (Total)	<49.3 ug/L	49.3 ug/L
LRB	Cobalt (Total)	<0.744 ug/L	0.744 ug/L
LRB	Lithium (Total)	<10.0 ug/L	10.0 ug/L

LD – Field Duplicate
LFB – Laboratory Fortified Blank
LRB – Laboratory Reagent Blank (Method Blank)
QCS – Quality Control Sample
MRL – Minimum Reporting Limit (Verification)
MS – Matrix Spike
MSD – Matrix Spike Duplicate
Underline – Data was outside the limit

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Wendy Asay
Colorado Springs Utilities
Laboratory Services Section
701 E. Las Vegas St., MC 1465
Colorado Springs, Colorado 80903

Generated 9/30/2024 9:29:01 AM

JOB DESCRIPTION

CCR Landfill

JOB NUMBER

280-196994-1

Eurofins Denver
4955 Yarrow Street
Arvada CO 80002

See page two for job notes and contact information.

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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Authorization

Generated
9/30/2024 9:29:01 AM

Authorized for release by
Shelby McCabe, Project Manager I
Shelby.McCabe@et.eurofinsus.com
(303)736-0165

Table of Contents

Job Narrative
280-196994-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 9/20/2024 9:10 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 18.6°C. It can be noted that thermal preservation is not required for 6020B Metals.

Method 6020B - Metals (ICP/MS) - Total Recoverable
Samples 507188 CC_1 (280-196994-1), 507188 CC_1 (280-196994-1MS), 507188 CC_1 (280-196994-1MSD), 507189 FC_1 (280-196994-2), 507190 FC_2 (280-196994-3), 507191 FC_3A (280-196994-4), 507191 FC_3A (280-196994-4MS), 507191 FC_3A (280-196994-4MSD), 507192 FC_3B (280-196994-5), 507193 EQUIP_BLK (280-196994-6), 507194 SC_10 (280-196994-7), 507195 SC_11 (280-196994-8), 507196 SC_12 (280-196994-9), 507197 SC_13 (280-196994-10), 507198 SC_14 (280-196994-11) and 507199 FIELD_DUP (280-196994-12) were analyzed for Metals (ICP/MS) - Total Recoverable. The samples were prepared on 9/23/2024 and analyzed on 9/24/2024.

The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 280-668282 and analytical batch 280-668581 were outside control limits for one or more analytes. See QC Sample Results for detail. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount.

Definitions/Glossary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-196994-1

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.
F1	MS and/or MSD recovery exceeds control limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
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

Detection Summary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-196994-1

Client Sample ID: 507188 CC_1 — Lab Sample ID: 280-196994-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	5.8		3.0		ug/L	1		6020B	Total Recoverable
Lead	1.1	F1	1.0		ug/L	1		6020B	Total Recoverable
Selenium	180		5.0		ug/L	1		6020B	Total Recoverable

Client Sample ID: 507189 FC_1 — Lab Sample ID: 280-196994-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	9.0		3.0		ug/L	1		6020B	Total Recoverable
Molybdenum	2.2		2.0		ug/L	1		6020B	Total Recoverable

Client Sample ID: 507190 FC_2 — Lab Sample ID: 280-196994-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	6.4		3.0		ug/L	1		6020B	Total Recoverable
Molybdenum	2.8		2.0		ug/L	1		6020B	Total Recoverable
Selenium	37		5.0		ug/L	1		6020B	Total Recoverable

Client Sample ID: 507191 FC_3A — Lab Sample ID: 280-196994-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	11		3.0		ug/L	1		6020B	Total Recoverable
Molybdenum	7.9		2.0		ug/L	1		6020B	Total Recoverable
Selenium	46		5.0		ug/L	1		6020B	Total Recoverable

Client Sample ID: 507192 FC_3B — Lab Sample ID: 280-196994-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	11		3.0		ug/L	1		6020B	Total Recoverable
Molybdenum	8.2		2.0		ug/L	1		6020B	Total Recoverable

Client Sample ID: 507193 EQUIP_BLK — Lab Sample ID: 280-196994-6

No Detections.

Client Sample ID: 507194 SC_10 — Lab Sample ID: 280-196994-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	9.7		3.0		ug/L	1		6020B	Total Recoverable
Molybdenum	4.8		2.0		ug/L	1		6020B	Total Recoverable
Selenium	200		5.0		ug/L	1		6020B	Total Recoverable

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-196994-1

Client Sample ID: 507195 SC_11 — Lab Sample ID: 280-196994-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	8.2		3.0		ug/L	1		6020B	Total Recoverable
Molybdenum	3.5		2.0		ug/L	1		6020B	Total Recoverable
Selenium	330		5.0		ug/L	1		6020B	Total Recoverable

Client Sample ID: 507196 SC_12 — Lab Sample ID: 280-196994-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	5.8		3.0		ug/L	1		6020B	Total Recoverable
Molybdenum	5.2		2.0		ug/L	1		6020B	Total Recoverable
Selenium	12		5.0		ug/L	1		6020B	Total Recoverable

Client Sample ID: 507197 SC_13 — Lab Sample ID: 280-196994-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	5.8		3.0		ug/L	1		6020B	Total Recoverable
Molybdenum	3.5		2.0		ug/L	1		6020B	Total Recoverable
Selenium	27		5.0		ug/L	1		6020B	Total Recoverable

Client Sample ID: 507198 SC_14 — Lab Sample ID: 280-196994-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	5.2		3.0		ug/L	1		6020B	Total Recoverable
Molybdenum	11		2.0		ug/L	1		6020B	Total Recoverable
Selenium	7.0		5.0		ug/L	1		6020B	Total Recoverable

Client Sample ID: 507199 FIELD_DUP — Lab Sample ID: 280-196994-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	5.1		3.0		ug/L	1		6020B	Total Recoverable
Molybdenum	3.7		2.0		ug/L	1		6020B	Total Recoverable
Selenium	29		5.0		ug/L	1		6020B	Total Recoverable

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-196994-1

Method	Method Description	Protocol	Laboratory
6020B	Metals (ICP/MS)	SW846	EET DEN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	EET DEN

Protocol References:

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

Laboratory References:

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

Sample Summary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-196994-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-196994-1	507188 CC_1	Water	09/17/24 13:52	09/20/24 09:10
280-196994-2	507189 FC_1	Water	09/17/24 09:32	09/20/24 09:10
280-196994-3	507190 FC_2	Water	09/17/24 10:35	09/20/24 09:10
280-196994-4	507191 FC_3A	Water	09/18/24 08:20	09/20/24 09:10
280-196994-5	507192 FC_3B	Water	09/18/24 09:28	09/20/24 09:10
280-196994-6	507193 EQUIP_BLK	Water	09/18/24 09:56	09/20/24 09:10
280-196994-7	507194 SC_10	Water	09/18/24 16:50	09/20/24 09:10
280-196994-8	507195 SC_11	Water	09/18/24 15:30	09/20/24 09:10
280-196994-9	507196 SC_12	Water	09/18/24 14:20	09/20/24 09:10
280-196994-10	507197 SC_13	Water	09/18/24 13:08	09/20/24 09:10
280-196994-11	507198 SC_14	Water	09/18/24 11:45	09/20/24 09:10
280-196994-12	507199 FIELD_DUP	Water	09/18/24 00:00	09/20/24 09:10

Client Sample Results

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-196994-1

Client Sample ID: 507188 CC_1
Date Collected: 09/17/24 13:52
Date Received: 09/20/24 09:10

Lab Sample ID: 280-196994-1
Matrix: Water

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		5.0		ug/L		09/23/24 15:06	09/24/24 21:08	1
Barium	**5.8**		3.0		ug/L		09/23/24 15:06	09/24/24 21:08	1
Beryllium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:08	1
Cadmium	ND	F1	1.0		ug/L		09/23/24 15:06	09/24/24 21:08	1
Chromium	ND		3.0		ug/L		09/23/24 15:06	09/24/24 21:08	1
Molybdenum	ND		2.0		ug/L		09/23/24 15:06	09/24/24 21:08	1
Lead	**1.1**	**F1**	1.0		ug/L		09/23/24 15:06	09/24/24 21:08	1
Antimony	ND		2.0		ug/L		09/23/24 15:06	09/24/24 21:08	1
Selenium	**180**		5.0		ug/L		09/23/24 15:06	09/24/24 21:08	1
Thallium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:08	1

Client Sample Results

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-196994-1

Client Sample ID: 507189 FC_1
Date Collected: 09/17/24 09:32
Date Received: 09/20/24 09:10

Lab Sample ID: 280-196994-2
Matrix: Water

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		5.0		ug/L		09/23/24 15:06	09/24/24 21:19	1
Barium	**9.0**		3.0		ug/L		09/23/24 15:06	09/24/24 21:19	1
Beryllium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:19	1
Cadmium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:19	1
Chromium	ND		3.0		ug/L		09/23/24 15:06	09/24/24 21:19	1
Molybdenum	**2.2**		2.0		ug/L		09/23/24 15:06	09/24/24 21:19	1
Lead	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:19	1
Antimony	ND		2.0		ug/L		09/23/24 15:06	09/24/24 21:19	1
Selenium	ND		5.0		ug/L		09/23/24 15:06	09/24/24 21:19	1
Thallium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:19	1

Client Sample Results

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-196994-1

Client Sample ID: 507190 FC_2

Date Collected: 09/17/24 10:35
Date Received: 09/20/24 09:10

Lab Sample ID: 280-196994-3

Matrix: Water

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		5.0		ug/L		09/23/24 15:06	09/24/24 21:22	1
Barium	**6.4**		3.0		ug/L		09/23/24 15:06	09/24/24 21:22	1
Beryllium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:22	1
Cadmium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:22	1
Chromium	ND		3.0		ug/L		09/23/24 15:06	09/24/24 21:22	1
Molybdenum	**2.8**		2.0		ug/L		09/23/24 15:06	09/24/24 21:22	1
Lead	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:22	1
Antimony	ND		2.0		ug/L		09/23/24 15:06	09/24/24 21:22	1
Selenium	**37**		5.0		ug/L		09/23/24 15:06	09/24/24 21:22	1
Thallium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:22	1

Client Sample Results

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-196994-1

Client Sample ID: 507191 FC_3A

Date Collected: 09/18/24 08:20
Date Received: 09/20/24 09:10

Lab Sample ID: 280-196994-4

Matrix: Water

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		5.0		ug/L		09/23/24 15:06	09/24/24 21:24	1
Barium	**11**		3.0		ug/L		09/23/24 15:06	09/24/24 21:24	1
Beryllium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:24	1
Cadmium	ND	F1	1.0		ug/L		09/23/24 15:06	09/24/24 21:24	1
Chromium	ND		3.0		ug/L		09/23/24 15:06	09/24/24 21:24	1
Molybdenum	**7.9**		2.0		ug/L		09/23/24 15:06	09/24/24 21:24	1
Lead	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:24	1
Antimony	ND		2.0		ug/L		09/23/24 15:06	09/24/24 21:24	1
Selenium	**46**		5.0		ug/L		09/23/24 15:06	09/24/24 21:24	1
Thallium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:24	1

Client Sample Results

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-196994-1

Client Sample ID: 507192 FC_3B

Date Collected: 09/18/24 09:28
Date Received: 09/20/24 09:10

Lab Sample ID: 280-196994-5

Matrix: Water

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		5.0		ug/L		09/23/24 15:06	09/24/24 21:35	1
Barium	**11**		3.0		ug/L		09/23/24 15:06	09/24/24 21:35	1
Beryllium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:35	1
Cadmium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:35	1
Chromium	ND		3.0		ug/L		09/23/24 15:06	09/24/24 21:35	1
Molybdenum	**8.2**		2.0		ug/L		09/23/24 15:06	09/24/24 21:35	1
Lead	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:35	1
Antimony	ND		2.0		ug/L		09/23/24 15:06	09/24/24 21:35	1
Selenium	ND		5.0		ug/L		09/23/24 15:06	09/24/24 21:35	1
Thallium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:35	1

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-196994-1

Client Sample ID: 507193 EQUIP_BLK
Date Collected: 09/18/24 09:56
Date Received: 09/20/24 09:10

Lab Sample ID: 280-196994-6
Matrix: Water

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		5.0		ug/L		09/23/24 15:06	09/24/24 21:38	1
Barium	ND		3.0		ug/L		09/23/24 15:06	09/24/24 21:38	1
Beryllium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:38	1
Cadmium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:38	1
Chromium	ND		3.0		ug/L		09/23/24 15:06	09/24/24 21:38	1
Molybdenum	ND		2.0		ug/L		09/23/24 15:06	09/24/24 21:38	1
Lead	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:38	1
Antimony	ND		2.0		ug/L		09/23/24 15:06	09/24/24 21:38	1
Selenium	ND		5.0		ug/L		09/23/24 15:06	09/24/24 21:38	1
Thallium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:38	1

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-196994-1

Client Sample ID: 507194 SC_10
Date Collected: 09/18/24 16:50
Date Received: 09/20/24 09:10

Lab Sample ID: 280-196994-7
Matrix: Water

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		5.0		ug/L		09/23/24 15:06	09/24/24 21:40	1
Barium	**9.7**		3.0		ug/L		09/23/24 15:06	09/24/24 21:40	1
Beryllium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:40	1
Cadmium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:40	1
Chromium	ND		3.0		ug/L		09/23/24 15:06	09/24/24 21:40	1
Molybdenum	**4.8**		2.0		ug/L		09/23/24 15:06	09/24/24 21:40	1
Lead	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:40	1
Antimony	ND		2.0		ug/L		09/23/24 15:06	09/24/24 21:40	1
Selenium	**200**		5.0		ug/L		09/23/24 15:06	09/24/24 21:40	1
Thallium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:40	1

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-196994-1

Client Sample ID: 507195 SC_11
Date Collected: 09/18/24 15:30
Date Received: 09/20/24 09:10

Lab Sample ID: 280-196994-8
Matrix: Water

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		5.0		ug/L		09/23/24 15:06	09/24/24 21:42	1
Barium	**8.2**		3.0		ug/L		09/23/24 15:06	09/24/24 21:42	1
Beryllium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:42	1
Cadmium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:42	1
Chromium	ND		3.0		ug/L		09/23/24 15:06	09/24/24 21:42	1
Molybdenum	**3.5**		2.0		ug/L		09/23/24 15:06	09/24/24 21:42	1
Lead	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:42	1
Antimony	ND		2.0		ug/L		09/23/24 15:06	09/24/24 21:42	1
Selenium	**330**		5.0		ug/L		09/23/24 15:06	09/24/24 21:42	1
Thallium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:42	1

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-196994-1

Client Sample ID: 507196 SC_12
Date Collected: 09/18/24 14:20
Date Received: 09/20/24 09:10

Lab Sample ID: 280-196994-9
Matrix: Water

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		5.0		ug/L		09/23/24 15:06	09/24/24 21:45	1
Barium	**5.8**		3.0		ug/L		09/23/24 15:06	09/24/24 21:45	1
Beryllium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:45	1
Cadmium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:45	1
Chromium	ND		3.0		ug/L		09/23/24 15:06	09/24/24 21:45	1
Molybdenum	**5.2**		2.0		ug/L		09/23/24 15:06	09/24/24 21:45	1
Lead	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:45	1
Antimony	ND		2.0		ug/L		09/23/24 15:06	09/24/24 21:45	1
Selenium	**12**		5.0		ug/L		09/23/24 15:06	09/24/24 21:45	1
Thallium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:45	1

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-196994-1

Client Sample ID: 507197 SC_13
Date Collected: 09/18/24 13:08
Date Received: 09/20/24 09:10

Lab Sample ID: 280-196994-10
Matrix: Water

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		5.0		ug/L		09/23/24 15:06	09/24/24 21:47	1
Barium	**5.8**		3.0		ug/L		09/23/24 15:06	09/24/24 21:47	1
Beryllium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:47	1
Cadmium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:47	1
Chromium	ND		3.0		ug/L		09/23/24 15:06	09/24/24 21:47	1
Molybdenum	**3.5**		2.0		ug/L		09/23/24 15:06	09/24/24 21:47	1
Lead	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:47	1
Antimony	ND		2.0		ug/L		09/23/24 15:06	09/24/24 21:47	1
Selenium	**27**		5.0		ug/L		09/23/24 15:06	09/24/24 21:47	1
Thallium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:47	1

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-196994-1

Client Sample ID: 507198 SC_14
Date Collected: 09/18/24 11:45
Date Received: 09/20/24 09:10

Lab Sample ID: 280-196994-11
Matrix: Water

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		5.0		ug/L		09/23/24 15:06	09/24/24 21:49	1
Barium	**5.2**		3.0		ug/L		09/23/24 15:06	09/24/24 21:49	1
Beryllium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:49	1
Cadmium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:49	1
Chromium	ND		3.0		ug/L		09/23/24 15:06	09/24/24 21:49	1
Molybdenum	**11**		2.0		ug/L		09/23/24 15:06	09/24/24 21:49	1
Lead	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:49	1
Antimony	ND		2.0		ug/L		09/23/24 15:06	09/24/24 21:49	1
Selenium	**7.0**		5.0		ug/L		09/23/24 15:06	09/24/24 21:49	1
Thallium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:49	1

Client Sample Results

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-196994-1

Client Sample ID: 507199 FIELD_DUP

Date Collected: 09/18/24 00:00
Date Received: 09/20/24 09:10

Lab Sample ID: 280-196994-12

Matrix: Water

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		5.0		ug/L		09/23/24 15:06	09/24/24 21:51	1
Barium	**5.1**		3.0		ug/L		09/23/24 15:06	09/24/24 21:51	1
Beryllium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:51	1
Cadmium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:51	1
Chromium	ND		3.0		ug/L		09/23/24 15:06	09/24/24 21:51	1
Molybdenum	**3.7**		2.0		ug/L		09/23/24 15:06	09/24/24 21:51	1
Lead	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:51	1
Antimony	ND		2.0		ug/L		09/23/24 15:06	09/24/24 21:51	1
Selenium	**29**		5.0		ug/L		09/23/24 15:06	09/24/24 21:51	1
Thallium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 21:51	1

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 280-668282/1-A
Matrix: Water
Analysis Batch: 668581

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 668282

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		5.0		ug/L		09/23/24 15:06	09/24/24 20:43	1
Barium	ND		3.0		ug/L		09/23/24 15:06	09/24/24 20:43	1
Beryllium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 20:43	1
Cadmium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 20:43	1
Chromium	ND		3.0		ug/L		09/23/24 15:06	09/24/24 20:43	1
Molybdenum	ND		2.0		ug/L		09/23/24 15:06	09/24/24 20:43	1
Lead	ND		1.0		ug/L		09/23/24 15:06	09/24/24 20:43	1
Antimony	ND		2.0		ug/L		09/23/24 15:06	09/24/24 20:43	1
Selenium	ND		5.0		ug/L		09/23/24 15:06	09/24/24 20:43	1
Thallium	ND		1.0		ug/L		09/23/24 15:06	09/24/24 20:43	1

Lab Sample ID: LCS 280-668282/2-A
Matrix: Water
Analysis Batch: 668581

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 668282

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	40.0	39.3		ug/L		98	85 - 117
Barium	40.0	38.1		ug/L		95	85 - 118
Beryllium	40.0	38.5		ug/L		96	80 - 125
Cadmium	40.0	38.8		ug/L		97	85 - 115
Chromium	40.0	39.1		ug/L		98	84 - 121
Molybdenum	40.0	39.5		ug/L		99	85 - 119
Lead	40.0	39.2		ug/L		98	85 - 118
Antimony	40.0	39.6		ug/L		99	85 - 115
Selenium	40.0	39.5		ug/L		99	77 - 122
Thallium	40.0	39.8		ug/L		99	85 - 118

Lab Sample ID: 280-196994-1 MS
Matrix: Water
Analysis Batch: 668581

Client Sample ID: 507188 CC_1
Prep Type: Total Recoverable
Prep Batch: 668282

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	ND		40.0	37.1		ug/L		93	92 - 112
Barium	5.8		40.0	45.9		ug/L		100	92 - 117
Beryllium	ND		40.0	39.9		ug/L		100	87 - 118
Cadmium	ND	F1	40.0	36.5		ug/L		91	91 - 114
Chromium	ND		40.0	39.0		ug/L		97	91 - 114
Molybdenum	ND		40.0	41.8		ug/L		102	84 - 117
Lead	1.1	F1	40.0	40.4		ug/L		98	95 - 116
Antimony	ND		40.0	39.1		ug/L		98	80 - 111
Selenium	180		40.0	221	4	ug/L		107	90 - 115
Thallium	ND		40.0	39.7		ug/L		98	94 - 115

Lab Sample ID: 280-196994-1 MSD
Matrix: Water
Analysis Batch: 668581

Client Sample ID: 507188 CC_1
Prep Type: Total Recoverable
Prep Batch: 668282

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	ND		40.0	37.1		ug/L		93	92 - 112	0	20

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

Lab Sample ID: 280-196994-1 MSD
Matrix: Water
Analysis Batch: 668581

Client Sample ID: 507188 CC_1
Prep Type: Total Recoverable
Prep Batch: 668282

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Barium	5.8		40.0	44.5		ug/L		97	92 - 117	3	20
Beryllium	ND		40.0	38.0		ug/L		95	87 - 118	5	20
Cadmium	ND	F1	40.0	35.3	F1	ug/L		88	91 - 114	3	20
Chromium	ND		40.0	36.4		ug/L		91	91 - 114	7	20
Molybdenum	ND		40.0	40.6		ug/L		99	84 - 117	3	20
Lead	1.1	F1	40.0	38.8	F1	ug/L		94	95 - 116	4	20
Antimony	ND		40.0	38.6		ug/L		97	80 - 111	1	20
Selenium	180		40.0	207	4	ug/L		73	90 - 115	6	20
Thallium	ND		40.0	38.5		ug/L		95	94 - 115	3	20

Lab Sample ID: 280-196994-4 MS
Matrix: Water
Analysis Batch: 668581

Client Sample ID: 507191 FC_3A
Prep Type: Total Recoverable
Prep Batch: 668282

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	ND		40.0	38.5		ug/L		96	92 - 112
Barium	11		40.0	48.2		ug/L		94	92 - 117
Beryllium	ND		40.0	38.0		ug/L		95	87 - 118
Cadmium	ND	F1	40.0	37.5		ug/L		94	91 - 114
Chromium	ND		40.0	38.9		ug/L		95	91 - 114
Molybdenum	7.9		40.0	47.6		ug/L		99	84 - 117
Lead	ND		40.0	38.6		ug/L		95	95 - 116
Antimony	ND		40.0	39.2		ug/L		98	80 - 111
Selenium	46		40.0	85.2		ug/L		98	90 - 115
Thallium	ND		40.0	38.8		ug/L		97	94 - 115

Lab Sample ID: 280-196994-4 MSD
Matrix: Water
Analysis Batch: 668581

Client Sample ID: 507191 FC_3A
Prep Type: Total Recoverable
Prep Batch: 668282

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	ND		40.0	38.1		ug/L		95	92 - 112	1	20
Barium	11		40.0	48.5		ug/L		95	92 - 117	1	20
Beryllium	ND		40.0	38.7		ug/L		97	87 - 118	2	20
Cadmium	ND	F1	40.0	35.9	F1	ug/L		90	91 - 114	4	20
Chromium	ND		40.0	38.9		ug/L		95	91 - 114	0	20
Molybdenum	7.9		40.0	48.8		ug/L		102	84 - 117	2	20
Lead	ND		40.0	39.7		ug/L		98	95 - 116	3	20
Antimony	ND		40.0	39.5		ug/L		99	80 - 111	1	20
Selenium	46		40.0	85.0		ug/L		97	90 - 115	0	20
Thallium	ND		40.0	39.4		ug/L		99	94 - 115	2	20

QC Association Summary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-196994-1

Metals

Prep Batch: 668282

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-196994-1	507188 CC_1	Total Recoverable	Water	3005A	
280-196994-2	507189 FC_1	Total Recoverable	Water	3005A	
280-196994-3	507190 FC_2	Total Recoverable	Water	3005A	
280-196994-4	507191 FC_3A	Total Recoverable	Water	3005A	
280-196994-5	507192 FC_3B	Total Recoverable	Water	3005A	
280-196994-6	507193 EQUIP_BLK	Total Recoverable	Water	3005A	
280-196994-7	507194 SC_10	Total Recoverable	Water	3005A	
280-196994-8	507195 SC_11	Total Recoverable	Water	3005A	
280-196994-9	507196 SC_12	Total Recoverable	Water	3005A	
280-196994-10	507197 SC_13	Total Recoverable	Water	3005A	
280-196994-11	507198 SC_14	Total Recoverable	Water	3005A	
280-196994-12	507199 FIELD_DUP	Total Recoverable	Water	3005A	
MB 280-668282/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 280-668282/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
280-196994-1 MS	507188 CC_1	Total Recoverable	Water	3005A	
280-196994-1 MSD	507188 CC_1	Total Recoverable	Water	3005A	
280-196994-4 MS	507191 FC_3A	Total Recoverable	Water	3005A	
280-196994-4 MSD	507191 FC_3A	Total Recoverable	Water	3005A	

Analysis Batch: 668581

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-196994-1	507188 CC_1	Total Recoverable	Water	6020B	668282
280-196994-2	507189 FC_1	Total Recoverable	Water	6020B	668282
280-196994-3	507190 FC_2	Total Recoverable	Water	6020B	668282
280-196994-4	507191 FC_3A	Total Recoverable	Water	6020B	668282
280-196994-5	507192 FC_3B	Total Recoverable	Water	6020B	668282
280-196994-6	507193 EQUIP_BLK	Total Recoverable	Water	6020B	668282
280-196994-7	507194 SC_10	Total Recoverable	Water	6020B	668282
280-196994-8	507195 SC_11	Total Recoverable	Water	6020B	668282
280-196994-9	507196 SC_12	Total Recoverable	Water	6020B	668282
280-196994-10	507197 SC_13	Total Recoverable	Water	6020B	668282
280-196994-11	507198 SC_14	Total Recoverable	Water	6020B	668282
280-196994-12	507199 FIELD_DUP	Total Recoverable	Water	6020B	668282
MB 280-668282/1-A	Method Blank	Total Recoverable	Water	6020B	668282
LCS 280-668282/2-A	Lab Control Sample	Total Recoverable	Water	6020B	668282
280-196994-1 MS	507188 CC_1	Total Recoverable	Water	6020B	668282
280-196994-1 MSD	507188 CC_1	Total Recoverable	Water	6020B	668282
280-196994-4 MS	507191 FC_3A	Total Recoverable	Water	6020B	668282
280-196994-4 MSD	507191 FC_3A	Total Recoverable	Water	6020B	668282

Lab Chronicle

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-196994-1

Client Sample ID: 507188 CC_1
Lab Sample ID: 280-196994-1
Date Collected: 09/17/24 13:52
Matrix: Water
Date Received: 09/20/24 09:10

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	668282	09/23/24 15:06	KLG	EET DEN
Total Recoverable	Analysis	6020B		1			668581	09/24/24 21:08	LMT	EET DEN

Client Sample ID: 507189 FC_1
Lab Sample ID: 280-196994-2
Date Collected: 09/17/24 09:32
Matrix: Water
Date Received: 09/20/24 09:10

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	668282	09/23/24 15:06	KLG	EET DEN
Total Recoverable	Analysis	6020B		1			668581	09/24/24 21:19	LMT	EET DEN

Client Sample ID: 507190 FC_2
Lab Sample ID: 280-196994-3
Date Collected: 09/17/24 10:35
Matrix: Water
Date Received: 09/20/24 09:10

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	668282	09/23/24 15:06	KLG	EET DEN
Total Recoverable	Analysis	6020B		1			668581	09/24/24 21:22	LMT	EET DEN

Client Sample ID: 507191 FC_3A
Lab Sample ID: 280-196994-4
Date Collected: 09/18/24 08:20
Matrix: Water
Date Received: 09/20/24 09:10

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	668282	09/23/24 15:06	KLG	EET DEN
Total Recoverable	Analysis	6020B		1			668581	09/24/24 21:24	LMT	EET DEN

Client Sample ID: 507192 FC_3B
Lab Sample ID: 280-196994-5
Date Collected: 09/18/24 09:28
Matrix: Water
Date Received: 09/20/24 09:10

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	668282	09/23/24 15:06	KLG	EET DEN
Total Recoverable	Analysis	6020B		1			668581	09/24/24 21:35	LMT	EET DEN

Client Sample ID: 507193 EQUIP_BLK
Lab Sample ID: 280-196994-6
Date Collected: 09/18/24 09:56
Matrix: Water
Date Received: 09/20/24 09:10

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	668282	09/23/24 15:06	KLG	EET DEN
Total Recoverable	Analysis	6020B		1			668581	09/24/24 21:38	LMT	EET DEN

Lab Chronicle

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 280-196994-1

Client Sample ID: 507194 SC_10

Lab Sample ID: 280-196994-7
Date Collected: 09/18/24 16:50
Matrix: Water
Date Received: 09/20/24 09:10

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	668282	09/23/24 15:06	KLG	EET DEN
Total Recoverable	Analysis	6020B		1			668581	09/24/24 21:40	LMT	EET DEN

Client Sample ID: 507195 SC_11

Lab Sample ID: 280-196994-8
Date Collected: 09/18/24 15:30
Matrix: Water
Date Received: 09/20/24 09:10

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	668282	09/23/24 15:06	KLG	EET DEN
Total Recoverable	Analysis	6020B		1			668581	09/24/24 21:42	LMT	EET DEN

Client Sample ID: 507196 SC_12

Lab Sample ID: 280-196994-9
Date Collected: 09/18/24 14:20
Matrix: Water
Date Received: 09/20/24 09:10

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	668282	09/23/24 15:06	KLG	EET DEN
Total Recoverable	Analysis	6020B		1			668581	09/24/24 21:45	LMT	EET DEN

Client Sample ID: 507197 SC_13

Lab Sample ID: 280-196994-10
Date Collected: 09/18/24 13:08
Matrix: Water
Date Received: 09/20/24 09:10

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	668282	09/23/24 15:06	KLG	EET DEN
Total Recoverable	Analysis	6020B		1			668581	09/24/24 21:47	LMT	EET DEN

Client Sample ID: 507198 SC_14

Lab Sample ID: 280-196994-11
Date Collected: 09/18/24 11:45
Matrix: Water
Date Received: 09/20/24 09:10

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	668282	09/23/24 15:06	KLG	EET DEN
Total Recoverable	Analysis	6020B		1			668581	09/24/24 21:49	LMT	EET DEN

Client Sample ID: 507199 FIELD_DUP

Lab Sample ID: 280-196994-12
Date Collected: 09/18/24 00:00
Matrix: Water
Date Received: 09/20/24 09:10

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	668282	09/23/24 15:06	KLG	EET DEN
Total Recoverable	Analysis	6020B		1			668581	09/24/24 21:51	LMT	EET DEN

Laboratory References:
EET DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Login Sample Receipt Checklist

Client: Colorado Springs Utilities

Job Number: 280-196994-1

Login Number: 196994
List Number: 1
Creator: Naylis, Patrick J

List Source: Eurofins Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	Thermal preservation not required.
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.	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 <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Eurofins Denver
4955 Yarrow Street

Arvada, CO 80002-4517
phone 303.736.0100 fax 303.431.7171

Chain of Custody Record

eurofins | Environment Testing America

Regulatory Program: ☑ DW ☑ NPDES ☐ RCRA ☐ Other:

Eurofins Environment Testing America

Client Contact	**Project Manager: Wendy Asay**		COC No:
	Email: wasay@csu.org	**Site Contact: Wendy Asay**	**Date:** _____ of _____ COCs
Colorado Springs Utilities	**Tel/Fax: 719-668-4603**	**Lab Contact: Shelby Turner**	**Carrier:** TALS Project #:
701 E. Las Vegas St.	**Analysis Turnaround Time**		Sampler:
Colorado Springs, CO 80903	☐ CALENDAR DAYS ☑ WORKING DAYS		**For Lab Use Only:**
719-668-4603	TAT if different from Below _____		Walk-in Client:
(xxx) xxx-xxxx FAX	☑ 2 weeks		Lab Sampling:
Project Name: CCR Landfill	☐ 1 week		
Site:	☐ 2 days		Job / SDG No.:
P O #	☐ 1 day		

280-196994 Chain of Custody

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	6020B Total (Sb, As, Ba, Be, Cd, Cr, Pb, Mo, Se and Tl)	Sample Specific Notes:
507188 CC_1	9/17/24	13:52	G	GW	1	N	Y	X	Preserved with HNO3
507189 FC_1	9/17/24	09:32	G	GW	1	N		X	Preserved with HNO3
507190 FC_2	9/17/24	10:35	G	GW	1	N		X	Preserved with HNO3
507191 FC_3A	9/18/24	08:20	G	GW	1	N	Y	X	Preserved with HNO3
507192 FC_3B	9/18/24	09:28	G	GW	1	N		X	Preserved with HNO3
507193 EQUIP_BLK	9/18/24	09:56	G	GW	1	N		X	Preserved with HNO3
507194 SC_10	9/18/24	16:50	G	GW	1	N		X	Preserved with HNO3
507195 SC_11	9/18/24	15:30	G	GW	1	N		X	Preserved with HNO3
507196 SC_12	9/18/24	14:20	G	GW	1	N		X	Preserved with HNO3
507197 SC_13	9/18/24	13:08	G	GW	1	N		X	Preserved with HNO3
507198 SC_14	9/18/24	11:45	G	GW	1	N		X	Preserved with HNO3
507199 FIELD_DUP	9/18/24	00:00	G	GW	1	N		X	Preserved with HNO3

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

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

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments: Use lowest dilution possible if dilution is needed. RL reporting only

18.5 Tw (70.1

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____	Corr'd: _____	Therm ID No.: _____
Relinquished by: Kelly Nelson	Company: Colorado Springs Utilities	Date/Time: 9/19/24 1:35	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company: EFJ Den	Date/Time: 9/20/24 0910
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

October 16, 2024

Report to:
Wendy Asay
Colorado Springs Utilities
701 E. Las Vegas
Colorado Springs, CO 80903

Bill to:
Wendy Asay
Colorado Springs Utilities
701 E. Las Vegas
Colorado Springs, CO 80903

Project ID:
ACZ Project ID: L90679

Wendy Asay:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 05, 2024. This project has been assigned to ACZ's project number, L90679. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L90679. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after November 15, 2024. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Madeleine Murray
Madeleine Murray has reviewed and approved this report.

Colorado Springs Utilities
Project ID:
Sample ID: 507191 FC_3A

ACZ Sample ID: ***L90679-01***
Date Sampled: *09/18/24 08:20*
Date Received: *10/05/24*
Sample Matrix: *Waste Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Mercury, total	EPA 1631E	1	1.60			ng/L	0.3	1	10/14/24 13:29	scp

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Colorado Springs Utilities
Project ID:
Sample ID: 507192 FC_3B

ACZ Sample ID: ***L90679-02***
Date Sampled: *09/18/24 09:28*
Date Received: *10/05/24*
Sample Matrix: *Waste Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Mercury, total	EPA 1631E	1	6.51			ng/L	0.3	1	10/14/24 13:42	scp

Colorado Springs Utilities
Project ID:
Sample ID: 507193 EQUIP_BLK

ACZ Sample ID: ***L90679-03***
Date Sampled: *09/18/24 09:56*
Date Received: *10/05/24*
Sample Matrix: *Waste Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Mercury, total	EPA 1631E	1	<0.3	U		ng/L	0.3	1	10/14/24 13:47	scp

Colorado Springs Utilities
Project ID:
Sample ID: 507194 SC_10

ACZ Sample ID: ***L90679-04***
Date Sampled: *09/18/24 16:50*
Date Received: *10/05/24*
Sample Matrix: *Waste Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Mercury, total	EPA 1631E	1	5.88			ng/L	0.3	1	10/14/24 13:51	scp

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Colorado Springs Utilities
Project ID:
Sample ID: 507195 SC_11

ACZ Sample ID: ***L90679-05***
Date Sampled: *09/18/24 15:30*
Date Received: *10/05/24*
Sample Matrix: *Waste Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Mercury, total	EPA 1631E	1	6.19			ng/L	0.3	1	10/14/24 13:56	scp

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Colorado Springs Utilities
Project ID:
Sample ID: 507196 SC_12

ACZ Sample ID: ***L90679-06***
Date Sampled: *09/18/24 14:20*
Date Received: *10/05/24*
Sample Matrix: *Waste Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Mercury, total	EPA 1631E	1	2.35			ng/L	0.3	1	10/14/24 14:00	scp

Colorado Springs Utilities
Project ID:
Sample ID: 507197 SC_13

ACZ Sample ID: ***L90679-07***
Date Sampled: *09/18/24 13:08*
Date Received: *10/05/24*
Sample Matrix: *Waste Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Mercury, total	EPA 1631E	1	1.55			ng/L	0.3	1	10/14/24 14:14	scp

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Colorado Springs Utilities
Project ID:
Sample ID: 507198 SC_14

ACZ Sample ID: ***L90679-08***
Date Sampled: *09/18/24 11:45*
Date Received: *10/05/24*
Sample Matrix: *Waste Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Mercury, total	EPA 1631E	1	1.07			ng/L	0.3	1	10/14/24 14:18	scp

Colorado Springs Utilities
Project ID:
Sample ID: 507199 FIELD_DUP

ACZ Sample ID: ***L90679-09***
Date Sampled: *09/18/24 00:00*
Date Received: *10/05/24*
Sample Matrix: *Waste Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Mercury, total	EPA 1631E	1	1.53			ng/L	0.3	1	10/14/24 14:22	scp

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:
https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

REP001.03.15.02

COSPGUTL

ACZ Project ID: ***L90679***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Mercury, total EPA 1631E

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG597988													
WG597988ICV	ICV	09/24/24 12:38	HG240905-4	10		11.3	ng/L	113	79	121			
WG597988ICB	ICB	09/24/24 12:43				U	ng/L		-0.501	0.501			
WG599192													
WG599192CCV1	CCV	10/14/24 12:17	HG240905-4	10		10.1	ng/L	101	76.5	123.4			
WG599192CCB1	CCB	10/14/24 12:22				U	ng/L		-0.501	0.501			
WG599192PQV	PQV	10/14/24 12:26	HG240905-6	1		.86	ng/L	86	70	130			
WG599192LFB1	LFB	10/14/24 12:31	HG240905-5	2		1.91	ng/L	96	71	125			
WG599192CCV2	CCV	10/14/24 13:11	HG240905-4	10		9.54	ng/L	95	76.5	123.4			
WG599192CCB2	CCB	10/14/24 13:15				U	ng/L		-0.501	0.501			
L90679-01MS	MS	10/14/24 13:33	HG240905-5	2	1.6	3.03	ng/L	72	71	125			
L90679-01MSD	MSD	10/14/24 13:38	HG240905-5	2	1.6	3.24	ng/L	82	71	125	7	24	
WG599192CCV3	CCV	10/14/24 14:05	HG240905-4	10		9.75	ng/L	98	76.5	123.4			
WG599192CCB3	CCB	10/14/24 14:09				U	ng/L		-0.501	0.501			
L90680-01MS	MS	10/14/24 14:31	HG240905-5	2	4.9	6.48	ng/L	79	71	125			
L90680-01MSD	MSD	10/14/24 14:36	HG240905-5	2	4.9	6.4	ng/L	75	71	125	1	24	
WG599192LFB2	LFB	10/14/24 14:40	HG240905-5	2		1.9	ng/L	95	71	125			
WG599192CCV4	CCV	10/14/24 14:58	HG240905-4	10		9.88	ng/L	99	76.5	123.4			
WG599192CCB4	CCB	10/14/24 15:03				U	ng/L		-0.501	0.501			
WG599192CCV5	CCV	10/14/24 15:52	HG240905-4	10		10.1	ng/L	101	76.5	123.4			
WG599192CCB5	CCB	10/14/24 15:56				U	ng/L		-0.501	0.501			
WG599192CCV6	CCV	10/14/24 16:45	HG240905-4	10		9.71	ng/L	97	76.5	123.4			
WG599192CCB6	CCB	10/14/24 16:50				U	ng/L		-0.501	0.501			
WG599192CCV7	CCV	10/15/24 11:14	HG240905-4	10		8.13	ng/L	81	76.5	123.4			
WG599192CCB7	CCB	10/15/24 11:18				U	ng/L		-0.501	0.501			
WG599192CCV8	CCV	10/15/24 12:07	HG240905-4	10		9.31	ng/L	93	76.5	123.4			
WG599192CCB8	CCB	10/15/24 12:12				U	ng/L		-0.501	0.501			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Colorado Springs Utilities

ACZ Project ID: ***L90679***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

Certification Qualifiers

Colorado Springs Utilities

ACZ Project ID: ***L90679***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Colorado Springs Utilities

ACZ Project ID: L90679
Date Received: 10/05/2024 09:54
Received By:
Date Printed: 10/8/2024

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? [1]			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?		X	
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
NA43124	18.9	NA	15	Yes

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Colorado Springs Utilities

ACZ Project ID:	L90679
Date Received:	10/05/2024 09:54
Received By:	
Date Printed:	10/8/2024

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ LABORATORIES | Accredited Environmental Testing | 2773 Downhill Drive Steamboat Springs, CO 80487 (970) 879-6590 | L 90679

CHAIN of CUSTODY

Report to:

Name: Wendy Asay	Address: 701 E. Las Vegas St.
Company: Colorado Springs Utilities	Colorado Springs, CO 80903
E-mail: wasay@csu.org	Telephone: 719-668-4603

Copy of Report to:

Name: Wendy Asay	E-mail: wasay@csu.org
Company: Colorado Springs Utilities	Telephone: 719-668-4603

Invoice to:

Name: Wendy Asay	Address: 701 E. Las Vegas St.
Company: Colorado Springs Utilities	Colorado Springs, CO 80903
E-mail: wasay@csu.org	Telephone: 719-668-4603

Copy of Invoice to:

Name: Wendy Asay	Address: 701 E. Las Vegas St.
Company: Colorado Springs Utilities	Colorado Springs, CO 80903
E-mail: wasay@csu.org	Telephone: 719-668-4603

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ✓ NO

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes ☐ No ✓

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: _____ **Sampler's Site Information** **State** CO **Zip code** _____ **Time Zone** _____

***Sampler's Signature:** _____

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #:

PO#:

Reporting state for compliance testing:

Check box if samples include NRC licensed material? ☐

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Mercury (EPA 1631)							
507191 FC_3A	9/18/2024 08:20	GW	1	✓							
507192 FC_3B	9/18/2024 09:28	GW	1	✓							
507193 EQUIP_BLK	9/18/2024 09:56	GW	1	✓							
507194 SC_10	9/18/2024 16:50	GW	1	✓							
507195 SC_11	9/18/2024 15:30	GW	1	✓							
507196 SC_12	9/18/2024 14:20	GW	1	✓							
507197 SC_13	9/18/2024 13:08	GW	1	✓							
507198 SC_14	9/18/2024 11:45	GW	1	✓							
507199 FIELD_DUP	9/18/2024 00:00	GW	1	✓							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Past data on most sites between ND and 20ng/L.

Perform MS/MSD on sample 507191 FC_3A.

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
[signature]	10/3/24 11:00	[signature]	10/3/24 11:57

Qualtrax ID: 1984 Revision #: 2 White - Return with sample. Yellow - Retain for your records.

L90679 Chain of Custo

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

October 16, 2024

Report to:
Wendy Asay
Colorado Springs Utilities
701 E. Las Vegas
Colorado Springs, CO 80903

Bill to:
Wendy Asay
Colorado Springs Utilities
701 E. Las Vegas
Colorado Springs, CO 80903

Project ID:
ACZ Project ID: L90680

Wendy Asay:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 05, 2024. This project has been assigned to ACZ's project number, L90680. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L90680. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after November 15, 2024. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Madeleine Murray
Madeleine Murray has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Colorado Springs Utilities
Project ID:
Sample ID: 507188 CC_1

ACZ Sample ID: ***L90680-01***
Date Sampled: *09/17/24 13:52*
Date Received: *10/05/24*
Sample Matrix: *Waste Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Mercury, total	EPA 1631E	1	4.90			ng/L	0.3	1	10/14/24 14:27	scp

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Colorado Springs Utilities
Project ID:
Sample ID: 507189 FC_1

ACZ Sample ID: ***L90680-02***
Date Sampled: *09/17/24 09:32*
Date Received: *10/05/24*
Sample Matrix: *Waste Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Mercury, total	EPA 1631E	1	1.84			ng/L	0.3	1	10/14/24 14:45	scp

Colorado Springs Utilities
Project ID:
Sample ID: 507190 FC_2

ACZ Sample ID: ***L90680-03***
Date Sampled: *09/17/24 10:35*
Date Received: *10/05/24*
Sample Matrix: *Waste Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Mercury, total	EPA 1631E	1	2.18			ng/L	0.3	1	10/14/24 14:49	scp

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:
https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

REP001.03.15.02

COSPGUTL

ACZ Project ID: ***L90680***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Mercury, total EPA 1631E

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG597988													
WG597988ICV	ICV	09/24/24 12:38	HG240905-4	10		11.3	ng/L	113	79	121			
WG597988ICB	ICB	09/24/24 12:43				U	ng/L		-0.501	0.501			
WG599192													
WG599192CCV1	CCV	10/14/24 12:17	HG240905-4	10		10.1	ng/L	101	76.5	123.4			
WG599192CCB1	CCB	10/14/24 12:22				U	ng/L		-0.501	0.501			
WG599192PQV	PQV	10/14/24 12:26	HG240905-6	1		.86	ng/L	86	70	130			
WG599192LFB1	LFB	10/14/24 12:31	HG240905-5	2		1.91	ng/L	96	71	125			
WG599192CCV2	CCV	10/14/24 13:11	HG240905-4	10		9.54	ng/L	95	76.5	123.4			
WG599192CCB2	CCB	10/14/24 13:15				U	ng/L		-0.501	0.501			
WG599192CCV3	CCV	10/14/24 14:05	HG240905-4	10		9.75	ng/L	98	76.5	123.4			
WG599192CCB3	CCB	10/14/24 14:09				U	ng/L		-0.501	0.501			
L90680-01MS	MS	10/14/24 14:31	HG240905-5	2	4.9	6.48	ng/L	79	71	125			
L90680-01MSD	MSD	10/14/24 14:36	HG240905-5	2	4.9	6.4	ng/L	75	71	125	1	24	
WG599192LFB2	LFB	10/14/24 14:40	HG240905-5	2		1.9	ng/L	95	71	125			
WG599192CCV4	CCV	10/14/24 14:58	HG240905-4	10		9.88	ng/L	99	76.5	123.4			
WG599192CCB4	CCB	10/14/24 15:03				U	ng/L		-0.501	0.501			
L90698-06MS	MS	10/14/24 15:16	HG240905-5	2	.59	2.41	ng/L	91	71	125			
L90698-06MSD	MSD	10/14/24 15:21	HG240905-5	2	.59	2.33	ng/L	87	71	125	3	24	
WG599192CCV5	CCV	10/14/24 15:52	HG240905-4	10		10.1	ng/L	101	76.5	123.4			
WG599192CCB5	CCB	10/14/24 15:56				U	ng/L		-0.501	0.501			
WG599192CCV6	CCV	10/14/24 16:45	HG240905-4	10		9.71	ng/L	97	76.5	123.4			
WG599192CCB6	CCB	10/14/24 16:50				U	ng/L		-0.501	0.501			
WG599192CCV7	CCV	10/15/24 11:14	HG240905-4	10		8.13	ng/L	81	76.5	123.4			
WG599192CCB7	CCB	10/15/24 11:18				U	ng/L		-0.501	0.501			
WG599192CCV8	CCV	10/15/24 12:07	HG240905-4	10		9.31	ng/L	93	76.5	123.4			
WG599192CCB8	CCB	10/15/24 12:12				U	ng/L		-0.501	0.501			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Colorado Springs Utilities

ACZ Project ID: ***L90680***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

Certification Qualifiers

Colorado Springs Utilities

ACZ Project ID: ***L90680***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Colorado Springs Utilities

ACZ Project ID: L90680
Date Received: 10/05/2024 09:54
Received By:
Date Printed: 10/8/2024

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? [1]			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?		X	
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
NA43124	18.9	NA	15	Yes

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Colorado Springs Utilities

ACZ Project ID:	L90680
Date Received:	10/05/2024 09:54
Received By:	
Date Printed:	10/8/2024

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ LABORATORIES | Accredited Environmental Testing | 2773 Downhill Drive, Steamboat Springs, CO 80487, (970) 879-6590 | L90680

CHAIN of CUSTODY

Report to:

Name: Wendy Asay	Address: 701 E. Las Vegas St.
Company: Colorado Springs Utilities	Colorado Springs, CO 80903
E-mail: wasay@csu.org	Telephone: 719-668-4603

Copy of Report to:

Name: Wendy Asay	E-mail: wasay@csu.org
Company: Colorado Springs Utilities	Telephone: 719-668-4603

Invoice to:

Name: Wendy Asay	Address: 701 E. Las Vegas St.
Company: Colorado Springs Utilities	Colorado Springs, CO 80903
E-mail: wasay@csu.org	Telephone: 719-668-4603

Copy of Invoice to:

Name: Wendy Asay	Address: 701 E. Las Vegas St.
Company: Colorado Springs Utilities	Colorado Springs, CO 80903
E-mail: wasay@csu.org	Telephone: 719-668-4603

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ✓ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes ☐ No ✓
If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: ______ **Sampler's Site Information** State CO ______ Zip code______ Time Zone______

***Sampler's Signature:** ______ *I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION — ANALYSES REQUESTED (attach list or use quote number)

Quote #:
PO#:
Reporting state for compliance testing:
Check box if samples include NRC licensed material? ☐

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Mercury (EPA 1631)							
507188 CC_1	9/17/2024 13:52	GW	1	✓							
507189 FC_1	9/17/2024 09:32	GW	1	✓							
507190 FC_2	9/17/2024 10:35	GW	1	✓							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Past data on most sites between ND and 20ng/L.

Perform MS/MSD on sample 507188 CC_1.

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Kelly [signature]	10/3/24 11:00	[signature]	10/3/24 0955

Qualtrax ID: 1984 Revision #: 2 White - Return with sample. Yellow - Retain for your records.

L90680 Chain of Custody

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Wendy Asay
Colorado Springs Utilities
Laboratory Services Section
701 E. Las Vegas St., MC 1465
Colorado Springs, Colorado 80903

Generated 10/16/2024 8:44:29 PM

JOB DESCRIPTION

CCR Landfill

JOB NUMBER

160-55532-1

Eurofins St. Louis
13715 Rider Trail North
Earth City MO 63045

See page two for job notes and contact information.

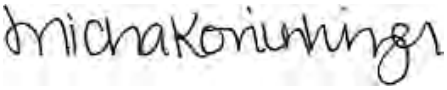
myEOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins TestAmerica Project Manager.

Authorization



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10/16/2024 8:44:29 PM

Authorized for release by
Micha Korrinhizer, Project Manager
Micha.Korrinhizer@et.eurofinsus.com
(314)298-8566

Table of Contents

Job ID: 160-55532-1 — Eurofins St. Louis

CASE NARRATIVE

Client: Colorado Springs Utilities

Project: Radiochemistry Analysis

Report Number: 160-55532-1

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.

Eurofins Environment Testing attests to the validity of the laboratory data generated by Eurofins facilities reported herein. All analyses performed by Eurofins Environment Testing facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins Environment Testing's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report.

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

Proper preservation was noted for the methods performed on these samples, unless otherwise detailed below.

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

The matrix for the Method Blank and LCS/LCSD is as close to the samples as can be reasonably achieved. Detailed information can be found in the most current revision of the associated SOP.

The method blank (MB) z-score is within limits, unless stated otherwise below, and is stored in the level IV raw data.

This laboratory report is confidential and is intended for the sole use of Eurofins Environment Testing and its client.

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

Receipt
The samples were received on 9/20/2024 8:50 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved. The temperatures of the 2 coolers at receipt time were 15.1°C and 17.7°C.

Method 903.0 - Radium-226 (GFPC)
Samples 507197 SC_13 (160-55532-1), 507198 SC_14 (160-55532-2) and 507199 FIELD_DUP (160-55532-3) were analyzed for Radium-226 (GFPC). The samples were prepared on 9/23/2024 and analyzed on 10/15/2024.

Method 904.0 - Radium-228 (GFPC)
Samples 507197 SC_13 (160-55532-1), 507198 SC_14 (160-55532-2) and 507199 FIELD_DUP (160-55532-3) were analyzed for Radium-228 (GFPC). The samples were prepared on 9/23/2024 and analyzed on 10/11/2024.

Method Ra226_Ra228 - Combined Radium-226 and Radium-228
Samples 507197 SC_13 (160-55532-1), 507198 SC_14 (160-55532-2) and 507199 FIELD_DUP (160-55532-3) were analyzed for Combined Radium-226 and Radium-228. The samples were analyzed on 10/16/2024.

TestAmerica St. Louis
13715 Rider Trail North

Earth City, MO 63045-1205
phone 314.298.8566 fax 314.298.8757

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☑ Other: **Coal Combustion Rule**

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Wendy Asay	Site Contact:	Date:	COC No:
Colorado Springs Utilities	Tel/Fax: 719-668-4603	Lab Contact: Rhonda Ridenhower	Carrier:	_____ of _____ COCs
701 E. Las Vegas St.	Analysis Turnaround Time			Sampler:
Colorado Springs, CO 80903	☑ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(719) 668-4603 Phone	TAT if different from Below _____			Walk-in Client:
(xxx) xxx-xxxx FAX	☑ 2 weeks			Lab Sampling:
Project Name: CCR Landfill	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Total Radium 226, EPA 903.0	Total Radium 228, EPA 904.0	Combined Ra 226 and Ra 228	Sample Specific Notes:
507197 SC_13	9/18/24	13:08	G	GW	2	N		X	X	X	
507198 SC_14	9/18/24	11:45	G	GW	2	N		X	X	X	
507199 FIELD_DUP	9/18/24	00:00	G	GW	2	N		X	X	X	

160-55532 Chain of Custody

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

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

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments: Please be sure to use the listed method numbers.

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

Relinquished by: Kelly Nelson	Company: Colorado Springs Utilities	Date/Time: 9/19/24 11:50	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by: M. Pinette	Company: ETASTL	Date/Time: SEP 20 2024 0850
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.18, dated 9/5/2018

10/16/2024

Login Sample Receipt Checklist

Client: Colorado Springs Utilities

Job Number: 160-55532-1

Login Number: 55532
List Number: 1
Creator: Pinette, Meadow L

List Source: Eurofins St. Louis

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

Definitions/Glossary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 160-55532-1

Qualifiers

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.
☼	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

Method Summary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 160-55532-1

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

Protocol References:

EPA = US Environmental Protection Agency

None = None

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

Laboratory References:

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

Sample Summary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 160-55532-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-55532-1	507197 SC_13	Water	09/18/24 13:08	09/20/24 08:50
160-55532-2	507198 SC_14	Water	09/18/24 11:45	09/20/24 08:50
160-55532-3	507199 FIELD_DUP	Water	09/18/24 00:00	09/20/24 08:50

Client Sample ID: 507197 SC_13

Lab Sample ID: 160-55532-1

Date Collected: 09/18/24 13:08

Matrix: Water

Date Received: 09/20/24 08:50

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0406	U	0.0894	0.0895	1.00	0.162	pCi/L	09/23/24 08:35	10/15/24 09:21	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.6*		*30 - 110*	*09/23/24 08:35*	*10/15/24 09:21*	*1*

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.332	U	0.392	0.393	1.00	0.818	pCi/L	09/23/24 08:40	10/11/24 14:07	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.6*		*30 - 110*	*09/23/24 08:40*	*10/11/24 14:07*	*1*
Y Carrier	*78.9*		*30 - 110*	*09/23/24 08:40*	*10/11/24 14:07*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.291	U	0.402	0.403	5.00	0.818	pCi/L		10/16/24 13:17	1

Client Sample ID: 507198 SC_14

Lab Sample ID: 160-55532-2

Date Collected: 09/18/24 11:45

Matrix: Water

Date Received: 09/20/24 08:50

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0443	U	0.0874	0.0875	1.00	0.157	pCi/L	09/23/24 08:35	10/15/24 09:21	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.6*		*30 - 110*	*09/23/24 08:35*	*10/15/24 09:21*	*1*

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.191	U	0.450	0.451	1.00	0.790	pCi/L	09/23/24 08:40	10/11/24 14:07	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.6*		*30 - 110*	*09/23/24 08:40*	*10/11/24 14:07*	*1*
Y Carrier	*80.4*		*30 - 110*	*09/23/24 08:40*	*10/11/24 14:07*	*1*

Client Sample ID: 507198 SC_14
Lab Sample ID: 160-55532-2
Date Collected: 09/18/24 11:45
Matrix: Water
Date Received: 09/20/24 08:50

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.235	U	0.458	0.459	5.00	0.790	pCi/L		10/16/24 13:17	1

Client Sample ID: 507199 FIELD_DUP
Lab Sample ID: 160-55532-3
Date Collected: 09/18/24 00:00
Matrix: Water
Date Received: 09/20/24 08:50

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0492	U	0.0921	0.0922	1.00	0.163	pCi/L	09/23/24 08:35	10/15/24 09:21	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*85.4*		*30 - 110*	*09/23/24 08:35*	*10/15/24 09:21*	*1*

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.123	U	0.412	0.412	1.00	0.738	pCi/L	09/23/24 08:40	10/11/24 14:07	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*85.4*		*30 - 110*	*09/23/24 08:40*	*10/11/24 14:07*	*1*
Y Carrier	*82.6*		*30 - 110*	*09/23/24 08:40*	*10/11/24 14:07*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.172	U	0.422	0.422	5.00	0.738	pCi/L		10/16/24 13:17	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-680562/1-A
Matrix: Water
Analysis Batch: 683563

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 680562

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.04758	U	0.0626	0.0628	1.00	0.154	pCi/L	09/23/24 08:35	10/15/24 09:20	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.0*		*30 - 110*	*09/23/24 08:35*	*10/15/24 09:20*	*1*

Lab Sample ID: LCS 160-680562/2-A
Matrix: Water
Analysis Batch: 683563

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 680562

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits		
Radium-226			9.58	9.265		1.04	1.00	0.168	pCi/L	97	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*89.8*		*30 - 110*

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-680563/1-A
Matrix: Water
Analysis Batch: 683232

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 680563

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.2115	U	0.247	0.247	1.00	0.531	pCi/L	09/23/24 08:40	10/11/24 12:06	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.0*		*30 - 110*	*09/23/24 08:40*	*10/11/24 12:06*	*1*
Y Carrier	*80.4*		*30 - 110*	*09/23/24 08:40*	*10/11/24 12:06*	*1*

Lab Sample ID: LCS 160-680563/2-A
Matrix: Water
Analysis Batch: 683232

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 680563

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits		
Radium-228			8.44	8.707		1.25	1.00	0.609	pCi/L	103	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*89.8*		*30 - 110*
Y Carrier	*81.1*		*30 - 110*

QC Association Summary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 160-55532-1

Rad

Prep Batch: 680562

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-55532-1	507197 SC_13	Total/NA	Water	PrecSep-21	
160-55532-2	507198 SC_14	Total/NA	Water	PrecSep-21	
160-55532-3	507199 FIELD_DUP	Total/NA	Water	PrecSep-21	
MB 160-680562/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-680562/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 680563

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-55532-1	507197 SC_13	Total/NA	Water	PrecSep_0	
160-55532-2	507198 SC_14	Total/NA	Water	PrecSep_0	
160-55532-3	507199 FIELD_DUP	Total/NA	Water	PrecSep_0	
MB 160-680563/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-680563/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Tracer/Carrier Summary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 160-55532-1

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba (30-110)
160-55532-1	507197 SC_13	88.6
160-55532-2	507198 SC_14	84.6
160-55532-3	507199 FIELD_DUP	85.4
LCS 160-680562/2-A	Lab Control Sample	89.8
MB 160-680562/1-A	Method Blank	97.0

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (30-110)	Y (30-110)
160-55532-1	507197 SC_13	88.6	78.9
160-55532-2	507198 SC_14	84.6	80.4
160-55532-3	507199 FIELD_DUP	85.4	82.6
LCS 160-680563/2-A	Lab Control Sample	89.8	81.1
MB 160-680563/1-A	Method Blank	97.0	80.4

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

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ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Wendy Asay
Colorado Springs Utilities
Laboratory Services Section
701 E. Las Vegas St., MC 1465
Colorado Springs, Colorado 80903

Generated 10/17/2024 6:06:02 PM

JOB DESCRIPTION

CCR Landfill

JOB NUMBER

160-55533-1

Eurofins St. Louis
13715 Rider Trail North
Earth City MO 63045

See page two for job notes and contact information.

myEOL

Eurofins St. Louis

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins TestAmerica Project Manager.

Authorization

Generated
10/17/2024 6:06:02 PM

Authorized for release by
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Table of Contents

CASE NARRATIVE

Client: Colorado Springs Utilities

Project: Radiochemistry Analysis

Report Number: 160-55533-1

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.

Eurofins Environment Testing attests to the validity of the laboratory data generated by Eurofins facilities reported herein. All analyses performed by Eurofins Environment Testing facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins Environment Testing's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report.

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

Proper preservation was noted for the methods performed on these samples, unless otherwise detailed below.

All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client.

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and receipt report for any variations on receipt conditions.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

Receipt
The samples were received on 9/20/2024 8:50 AM. Unless otherwise noted below, the samples arrived in good condition and properly preserved. The temperatures of the 2 coolers at receipt time were 15.1°C and 17.7°C.

Receipt Exceptions
Samplers name is not on the COC: 507188 CC_1 (160-55533-1), 507189 FC_1 (160-55533-2), 507190 FC_2 (160-55533-3), 507191 FC_3A (160-55533-4), 507192 FC_3B (160-55533-5), 507193 EQUIP_BLK (160-55533-6), 507194 SC_10 (160-55533-7), 507195 SC_11 (160-55533-8) and 507196 SC_12 (160-55533-9)

Method 903.0 - Radium-226 (GFPC)
Samples 507188 CC_1 (160-55533-1), 507189 FC_1 (160-55533-2), 507190 FC_2 (160-55533-3), 507191 FC_3A (160-55533-4), 507192 FC_3B (160-55533-5), 507193 EQUIP_BLK (160-55533-6), 507194 SC_10 (160-55533-7), 507195 SC_11 (160-55533-8) and 507196 SC_12 (160-55533-9) were analyzed for Radium-226 (GFPC). The samples were prepared on 9/23/2024 and 9/24/2024 and analyzed on 10/15/2024 and 10/16/2024.

Method 904.0 - Radium-228 (GFPC)
Samples 507188 CC_1 (160-55533-1), 507189 FC_1 (160-55533-2), 507190 FC_2 (160-55533-3), 507191 FC_3A (160-55533-4), 507192 FC_3B (160-55533-5), 507193 EQUIP_BLK (160-55533-6), 507194 SC_10 (160-55533-7), 507195 SC_11 (160-55533-8) and 507196 SC_12 (160-55533-9) were analyzed for Radium-228 (GFPC). The samples were prepared on 9/23/2024 and 9/24/2024 and analyzed on 10/10/2024 and 10/11/2024.

Radium 228 Batch 680769

The Radium-228 laboratory control sample (LCS) associated with the following samples recovered at 127%: 507191 FC_3A (160-55533-4), 507192 FC_3B (160-55533-5), 507193 EQUIP_BLK (160-55533-6), 507194 SC_10 (160-55533-7), 507195 SC_11 (160-55533-8), 507196 SC_12 (160-55533-9), (LCS 160-680769/2-A), (MB 160-680769/1-A), (310-291015-D-5-C), (310-291015-D-5-D MS) and (310-291015-E-5-B MSD). The limits in our LIMS system at 75%-125% reflect the requirements of a regulatory agency that represents a large amount of our work. However the samples associated with this LCS are not from this agency and are therefore held to our in-house statistical limits of 69%-145%. The LCS is within criteria and no further action is required.

Radium-228 batch 680563
The detection goal was not met for the sample duplicate. However the purpose of the DUP is to demonstrate batch precision. The precision was within control limits demonstrating no adverse effect from the discrepancy. (160-55533-A-1-B DU)

Radium-228 batch 680563
Although the sample was prepped at full volume, the detection goal was not met for the following samples. 507189 FC_1 (160-55533-2). However the activity in the sample is above the detection limit achieved. No further action is required. Original results will be reported

Method Ra226_Ra228 - Combined Radium-226 and Radium-228
Samples 507188 CC_1 (160-55533-1), 507189 FC_1 (160-55533-2), 507190 FC_2 (160-55533-3), 507191 FC_3A (160-55533-4), 507192 FC_3B (160-55533-5), 507193 EQUIP_BLK (160-55533-6), 507194 SC_10 (160-55533-7), 507195 SC_11 (160-55533-8) and 507196 SC_12 (160-55533-9) were analyzed for Combined Radium-226 and Radium-228. The samples were analyzed on 10/17/2024.

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

TestAmerica St. Louis
13715 Rider Trail North

Earth City, MO 63045-1205
phone 314.298.8566 fax 314.298.8757

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☑ Other: **Coal Combustion Rule**

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Wendy Asay	Site Contact:	Date:	COC No:
Colorado Springs Utilities	Tel/Fax: 719-668-4603	Lab Contact: Rhonda Ridenhower	Carrier:	_____ of _____ COCs
701 E. Las Vegas St.	Analysis Turnaround Time			Sampler:
Colorado Springs, CO 80903	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(719) 668-4603 Phone	TAT if different from Below _____			Walk-in Client:
(xxx) xxx-xxxx FAX	☑ 2 weeks			Lab Sampling:
Project Name: CCR Landfill	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Total Radium 226, EPA 903.0	Total Radium 228, EPA 904.0	Combined Ra 226 and Ra 228	Sample Specific Notes:
507188 CC_1	9/17/24	13:52	G	GW	2	N	Y	X	X	X	
507189 FC_1	9/17/24	09:32	G	GW	2	N		X	X	X	
507190 FC_2	9/17/24	10:35	G	GW	2	N		X	X	X	
507191 FC_3A	9/18/24	08:20	G	GW	2	N	Y	X	X	X	
507192 FC_3B	9/18/24	09:28	G	GW	2	N		X	X	X	
507193 EQUIP_BLK	9/18/24	09:56	G	GW	2	N		X	X	X	
507194 SC_10	9/18/24	16:50	G	GW	2	N		X	X	X	
507195 SC_11	9/18/24	15:30	G	GW	2	N		X	X	X	
507196 SC_12	9/18/24	14:20	G	GW	2	N		X	X	X	

160-55533 Chain of Custody

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

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

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

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

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments: Please be sure to use the listed method numbers.

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

	Company:	Date/Time:		Company:	Date/Time:
Relinquished by: Kelly Nelson	Colorado Springs Utilities	9/19/24 11:45	Received by:		
Relinquished by:	Company:	Date/Time:	Received by: M. Pinette	Company: ETAST	Date/Time: SEP 20 2024 0850
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.18, dated 9/5/2018

10/17/2024

Login Sample Receipt Checklist

Client: Colorado Springs Utilities

Job Number: 160-55533-1

Login Number: 55533
List Number: 1
Creator: Pinette, Meadow L

List Source: Eurofins St. Louis

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

Definitions/Glossary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 160-55533-1

Qualifiers

Rad

Qualifier	Qualifier Description
G	The Sample MDC is greater than the requested RL.
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
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

Method Summary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 160-55533-1

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

Protocol References:

EPA = US Environmental Protection Agency

None = None

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

Laboratory References:

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

Sample Summary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 160-55533-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-55533-1	507188 CC_1	Water	09/17/24 13:52	09/20/24 08:50
160-55533-2	507189 FC_1	Water	09/17/24 09:32	09/20/24 08:50
160-55533-3	507190 FC_2	Water	09/17/24 10:35	09/20/24 08:50
160-55533-4	507191 FC_3A	Water	09/18/24 08:20	09/20/24 08:50
160-55533-5	507192 FC_3B	Water	09/18/24 09:28	09/20/24 08:50
160-55533-6	507193 EQUIP_BLK	Water	09/18/24 09:56	09/20/24 08:50
160-55533-7	507194 SC_10	Water	09/18/24 16:50	09/20/24 08:50
160-55533-8	507195 SC_11	Water	09/18/24 15:30	09/20/24 08:50
160-55533-9	507196 SC_12	Water	09/18/24 14:20	09/20/24 08:50

Client Sample ID: 507188 CC_1

Date Collected: 09/17/24 13:52
Date Received: 09/20/24 08:50

Lab Sample ID: 160-55533-1

Matrix: Water

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.546		0.199	0.205	1.00	0.210	pCi/L	09/23/24 08:35	10/15/24 09:21	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	91.3		30 - 110	09/23/24 08:35	10/15/24 09:21	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.49		0.699	0.712	1.00	0.951	pCi/L	09/23/24 08:40	10/11/24 14:07	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	91.3		30 - 110	09/23/24 08:40	10/11/24 14:07	1
Y Carrier	83.0		30 - 110	09/23/24 08:40	10/11/24 14:07	1

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	2.04		0.727	0.741	5.00	0.951	pCi/L		10/17/24 15:06	1

Client Sample ID: 507189 FC_1

Date Collected: 09/17/24 09:32
Date Received: 09/20/24 08:50

Lab Sample ID: 160-55533-2

Matrix: Water

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.286		0.177	0.178	1.00	0.245	pCi/L	09/23/24 08:35	10/15/24 09:21	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	88.6		30 - 110	09/23/24 08:35	10/15/24 09:21	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.73	G	0.779	0.795	1.00	1.03	pCi/L	09/23/24 08:40	10/11/24 14:07	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	88.6		30 - 110	09/23/24 08:40	10/11/24 14:07	1
Y Carrier	72.9		30 - 110	09/23/24 08:40	10/11/24 14:07	1

Client Sample ID: 507189 FC_1
Lab Sample ID: 160-55533-2
Date Collected: 09/17/24 09:32
Matrix: Water
Date Received: 09/20/24 08:50

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	2.02		0.799	0.815	5.00	1.03	pCi/L		10/17/24 15:06	1

Client Sample ID: 507190 FC_2
Lab Sample ID: 160-55533-3
Date Collected: 09/17/24 10:35
Matrix: Water
Date Received: 09/20/24 08:50

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0558	U	0.101	0.102	1.00	0.178	pCi/L	09/23/24 08:35	10/15/24 09:21	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*81.9*		*30 - 110*	*09/23/24 08:35*	*10/15/24 09:21*	*1*

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.321	U	0.435	0.436	1.00	0.729	pCi/L	09/23/24 08:40	10/11/24 14:07	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*81.9*		*30 - 110*	*09/23/24 08:40*	*10/11/24 14:07*	*1*
Y Carrier	*80.7*		*30 - 110*	*09/23/24 08:40*	*10/11/24 14:07*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.377	U	0.447	0.448	5.00	0.729	pCi/L		10/17/24 15:06	1

Client Sample ID: 507191 FC_3A
Lab Sample ID: 160-55533-4
Date Collected: 09/18/24 08:20
Matrix: Water
Date Received: 09/20/24 08:50

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.143	U	0.103	0.104	1.00	0.152	pCi/L	09/24/24 08:30	10/16/24 23:19	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*98.0*		*30 - 110*	*09/24/24 08:30*	*10/16/24 23:19*	*1*

Client Sample ID: 507191 FC_3A

Lab Sample ID: 160-55533-4

Date Collected: 09/18/24 08:20

Matrix: Water

Date Received: 09/20/24 08:50

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.00258	U	0.334	0.334	1.00	0.626	pCi/L	09/24/24 08:33	10/10/24 15:20	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*98.0*		*30 - 110*	*09/24/24 08:33*	*10/10/24 15:20*	*1*
Y Carrier	*77.0*		*30 - 110*	*09/24/24 08:33*	*10/10/24 15:20*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.146	U	0.350	0.350	5.00	0.626	pCi/L		10/17/24 15:03	1

Client Sample ID: 507192 FC_3B

Lab Sample ID: 160-55533-5

Date Collected: 09/18/24 09:28

Matrix: Water

Date Received: 09/20/24 08:50

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.267**		0.117	0.119	1.00	0.138	pCi/L	09/24/24 08:30	10/16/24 23:19	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.1*		*30 - 110*	*09/24/24 08:30*	*10/16/24 23:19*	*1*

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0329	U	0.350	0.350	1.00	0.674	pCi/L	09/24/24 08:33	10/10/24 15:20	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*88.1*		*30 - 110*	*09/24/24 08:33*	*10/10/24 15:20*	*1*
Y Carrier	*75.5*		*30 - 110*	*09/24/24 08:33*	*10/10/24 15:20*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.234	U	0.369	0.370	5.00	0.674	pCi/L		10/17/24 15:03	1

Client Sample ID: 507193 EQUIP_BLK

Lab Sample ID: 160-55533-6

Date Collected: 09/18/24 09:56

Matrix: Water

Date Received: 09/20/24 08:50

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0567	U	0.0347	0.0350	1.00	0.119	pCi/L	09/24/24 08:30	10/16/24 23:21	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*82.9*		*30 - 110*	*09/24/24 08:30*	*10/16/24 23:21*	*1*

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.708	U	0.561	0.565	1.00	0.874	pCi/L	09/24/24 08:33	10/10/24 15:20	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*82.9*		*30 - 110*	*09/24/24 08:33*	*10/10/24 15:20*	*1*
Y Carrier	*73.6*		*30 - 110*	*09/24/24 08:33*	*10/10/24 15:20*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.652	U	0.562	0.566	5.00	0.874	pCi/L		10/17/24 15:03	1

Client Sample ID: 507194 SC_10

Lab Sample ID: 160-55533-7

Date Collected: 09/18/24 16:50

Matrix: Water

Date Received: 09/20/24 08:50

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.116	U	0.0994	0.0999	1.00	0.147	pCi/L	09/24/24 08:30	10/16/24 23:21	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*90.3*		*30 - 110*	*09/24/24 08:30*	*10/16/24 23:21*	*1*

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.233	U	0.551	0.551	1.00	0.962	pCi/L	09/24/24 08:33	10/10/24 15:20	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*90.3*		*30 - 110*	*09/24/24 08:33*	*10/10/24 15:20*	*1*
Y Carrier	*80.4*		*30 - 110*	*09/24/24 08:33*	*10/10/24 15:20*	*1*

Client Sample ID: 507194 SC_10

Lab Sample ID: 160-55533-7
Date Collected: 09/18/24 16:50
Matrix: Water
Date Received: 09/20/24 08:50

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.350	U	0.560	0.560	5.00	0.962	pCi/L		10/17/24 15:03	1

Client Sample ID: 507195 SC_11

Lab Sample ID: 160-55533-8
Date Collected: 09/18/24 15:30
Matrix: Water
Date Received: 09/20/24 08:50

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0162	U	0.0675	0.0675	1.00	0.131	pCi/L	09/24/24 08:30	10/16/24 23:21	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*81.9*		*30 - 110*	*09/24/24 08:30*	*10/16/24 23:21*	*1*

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.328	U	0.459	0.460	1.00	0.772	pCi/L	09/24/24 08:33	10/10/24 15:20	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*81.9*		*30 - 110*	*09/24/24 08:33*	*10/10/24 15:20*	*1*
Y Carrier	*81.9*		*30 - 110*	*09/24/24 08:33*	*10/10/24 15:20*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.344	U	0.464	0.465	5.00	0.772	pCi/L		10/17/24 15:03	1

Client Sample ID: 507196 SC_12

Lab Sample ID: 160-55533-9
Date Collected: 09/18/24 14:20
Matrix: Water
Date Received: 09/20/24 08:50

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0837	U	0.0744	0.0748	1.00	0.112	pCi/L	09/24/24 08:30	10/16/24 23:21	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.5*		*30 - 110*	*09/24/24 08:30*	*10/16/24 23:21*	*1*

Client Sample ID: 507196 SC_12

Date Collected: 09/18/24 14:20
Date Received: 09/20/24 08:50

Lab Sample ID: 160-55533-9

Matrix: Water

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.184	U	0.325	0.325	1.00	0.662	pCi/L	09/24/24 08:33	10/10/24 15:21	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.5*		*30 - 110*	*09/24/24 08:33*	*10/10/24 15:21*	*1*
Y Carrier	*79.3*		*30 - 110*	*09/24/24 08:33*	*10/10/24 15:21*	*1*

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

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.100	U	0.333	0.333	5.00	0.662	pCi/L		10/17/24 15:03	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-680562/1-A
Matrix: Water
Analysis Batch: 683563

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 680562

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.04758	U	0.0626	0.0628	1.00	0.154	pCi/L	09/23/24 08:35	10/15/24 09:20	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.0*		*30 - 110*	*09/23/24 08:35*	*10/15/24 09:20*	*1*

Lab Sample ID: LCS 160-680562/2-A
Matrix: Water
Analysis Batch: 683563

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 680562

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits		
Radium-226			9.58	9.265		1.04	1.00	0.168	pCi/L	97	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*89.8*		*30 - 110*

Lab Sample ID: 160-55533-1 DU
Matrix: Water
Analysis Batch: 683564

Client Sample ID: 507188 CC_1
Prep Type: Total/NA
Prep Batch: 680562

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Radium-226	0.546			0.5916		0.223	1.00	0.224	pCi/L			0.11	1

Carrier	*DU %Yield*	*DU Qualifier*	*Limits*
Ba Carrier	*77.7*		*30 - 110*

Lab Sample ID: MB 160-680768/1-A
Matrix: Water
Analysis Batch: 683842

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 680768

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.005139	U	0.0649	0.0649	1.00	0.135	pCi/L	09/24/24 08:30	10/16/24 10:16	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.8*		*30 - 110*	*09/24/24 08:30*	*10/16/24 10:16*	*1*

Lab Sample ID: LCS 160-680768/2-A
Matrix: Water
Analysis Batch: 683842

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 680768

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits		
Radium-226			9.58	9.392		1.04	1.00	0.145	pCi/L	98	75 - 125		

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-680768/2-A
Matrix: Water
Analysis Batch: 683842

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 680768

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	78.9		30 - 110

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-680563/1-A
Matrix: Water
Analysis Batch: 683232

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 680563

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.2115	U	0.247	0.247	1.00	0.531	pCi/L	09/23/24 08:40	10/11/24 12:06	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	97.0		30 - 110	09/23/24 08:40	10/11/24 12:06	1
Y Carrier	80.4		30 - 110	09/23/24 08:40	10/11/24 12:06	1

Lab Sample ID: LCS 160-680563/2-A
Matrix: Water
Analysis Batch: 683232

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 680563

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits		
Radium-228			8.44	8.707		1.25	1.00	0.609	pCi/L	103	75 - 125		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	89.8		30 - 110
Y Carrier	81.1		30 - 110

Lab Sample ID: 160-55533-1 DU
Matrix: Water
Analysis Batch: 683231

Client Sample ID: 507188 CC_1
Prep Type: Total/NA
Prep Batch: 680563

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Radium-228	1.49			2.662	G	0.974	1.00	1.16	pCi/L			0.70	1

Carrier	DU %Yield	DU Qualifier	Limits
Ba Carrier	77.7		30 - 110
Y Carrier	79.3		30 - 110

Lab Sample ID: MB 160-680769/1-A
Matrix: Water
Analysis Batch: 682913

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 680769

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1846	U	0.316	0.317	1.00	0.542	pCi/L	09/24/24 08:33	10/10/24 13:56	1

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: MB 160-680769/1-A
Matrix: Water
Analysis Batch: 682913

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 680769

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	94.8		30 - 110	09/24/24 08:33	10/10/24 13:56	1
Y Carrier	80.7		30 - 110	09/24/24 08:33	10/10/24 13:56	1

Lab Sample ID: LCS 160-680769/2-A
Matrix: Water
Analysis Batch: 682913

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 680769

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits		
Radium-228			8.44	10.70		1.53	1.00	0.723	pCi/L	127	75 - 125		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	78.9		30 - 110
Y Carrier	75.5		30 - 110

QC Association Summary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 160-55533-1

Rad

Prep Batch: 680562

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-55533-1	507188 CC_1	Total/NA	Water	PrecSep-21	
160-55533-2	507189 FC_1	Total/NA	Water	PrecSep-21	
160-55533-3	507190 FC_2	Total/NA	Water	PrecSep-21	
MB 160-680562/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-680562/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
160-55533-1 DU	507188 CC_1	Total/NA	Water	PrecSep-21	

Prep Batch: 680563

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-55533-1	507188 CC_1	Total/NA	Water	PrecSep_0	
160-55533-2	507189 FC_1	Total/NA	Water	PrecSep_0	
160-55533-3	507190 FC_2	Total/NA	Water	PrecSep_0	
MB 160-680563/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-680563/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
160-55533-1 DU	507188 CC_1	Total/NA	Water	PrecSep_0	

Prep Batch: 680768

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-55533-4	507191 FC_3A	Total/NA	Water	PrecSep-21	
160-55533-5	507192 FC_3B	Total/NA	Water	PrecSep-21	
160-55533-6	507193 EQUIP_BLK	Total/NA	Water	PrecSep-21	
160-55533-7	507194 SC_10	Total/NA	Water	PrecSep-21	
160-55533-8	507195 SC_11	Total/NA	Water	PrecSep-21	
160-55533-9	507196 SC_12	Total/NA	Water	PrecSep-21	
MB 160-680768/1-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-680768/2-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 680769

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-55533-4	507191 FC_3A	Total/NA	Water	PrecSep_0	
160-55533-5	507192 FC_3B	Total/NA	Water	PrecSep_0	
160-55533-6	507193 EQUIP_BLK	Total/NA	Water	PrecSep_0	
160-55533-7	507194 SC_10	Total/NA	Water	PrecSep_0	
160-55533-8	507195 SC_11	Total/NA	Water	PrecSep_0	
160-55533-9	507196 SC_12	Total/NA	Water	PrecSep_0	
MB 160-680769/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-680769/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Tracer/Carrier Summary

Client: Colorado Springs Utilities
Project/Site: CCR Landfill

Job ID: 160-55533-1

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba (30-110)
160-55533-1	507188 CC_1	91.3
160-55533-1 DU	507188 CC_1	77.7
160-55533-2	507189 FC_1	88.6
160-55533-3	507190 FC_2	81.9
160-55533-4	507191 FC_3A	98.0
160-55533-5	507192 FC_3B	88.1
160-55533-6	507193 EQUIP_BLK	82.9
160-55533-7	507194 SC_10	90.3
160-55533-8	507195 SC_11	81.9
160-55533-9	507196 SC_12	93.5
LCS 160-680562/2-A	Lab Control Sample	89.8
LCS 160-680768/2-A	Lab Control Sample	78.9
MB 160-680562/1-A	Method Blank	97.0
MB 160-680768/1-A	Method Blank	94.8

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (30-110)	Y (30-110)
160-55533-1	507188 CC_1	91.3	83.0
160-55533-1 DU	507188 CC_1	77.7	79.3
160-55533-2	507189 FC_1	88.6	72.9
160-55533-3	507190 FC_2	81.9	80.7
160-55533-4	507191 FC_3A	98.0	77.0
160-55533-5	507192 FC_3B	88.1	75.5
160-55533-6	507193 EQUIP_BLK	82.9	73.6
160-55533-7	507194 SC_10	90.3	80.4
160-55533-8	507195 SC_11	81.9	81.9
160-55533-9	507196 SC_12	93.5	79.3
LCS 160-680563/2-A	Lab Control Sample	89.8	81.1
LCS 160-680769/2-A	Lab Control Sample	78.9	75.5
MB 160-680563/1-A	Method Blank	97.0	80.4
MB 160-680769/1-A	Method Blank	94.8	80.7

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

APPENDIX D

Statistical Analysis Report

Statistical Analysis Report for CSU Clear Spring Ranch

2024 CCR Program, Annual Update, Ash Landfill Network

Kirk Cameron, PhD, MacStat Consulting, Ltd

2025-01-13

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Table 1: CCR Rule Monitoring Network

Background	Downgradient
CC-1	SC-10
FC-1	SC-11
FC-2	SC-12
FC-3A	SC-13
FC-3B	SC-14

1 Introduction

This report summarizes the statistical analysis performed on groundwater quality constituents monitored during 2024 of the Coal Combustion Residuals (CCR) Rule's groundwater monitoring program at the Colorado Springs Utilities (CSU) Clear Spring Ranch Ash Landfill (CSR).

The Clear Spring Ranch Ash Landfill CCR unit is currently in Assessment Monitoring, necessitating monitoring of both the Appendix III and IV constituents listed in **Table 2**. As part of this year's efforts (i.e., 2024), the baseline data sets collected since the first year of the CCR-Rule Program were evaluated in order to establish updated groundwater protection standards (GWPS) on upgradient background data representing Appendix IV constituents, and then to compare 2024 compliance measurements against these statistical limits to assess any statistically significant increases (SSI) above the GWPS. The analysis also established updated prediction limits on upgradient background data for Appendix III constituents, and compared 2024 compliance measurements against these statistical limits to assess any SSIs above background. Summaries of all the statistical test results are provided in subsequent sections of this report.

At the Clear Spring Ranch Ash Landfill network, the sampling results used to compute the background statistics and to identify potential SSIs were obtained from a set of designated background wells (CC-1, FC-1, FC-2, FC-3A, FC-3B) using data collected from June 2016 until September 2024.

As required by the USEPA's Coal Combustion Residuals (CCR) Rule section describing the Assessment Monitoring Program (§257.95), test results for the 2024 Appendix IV Assessment Monitoring events were compared to the GWPS for determination of any exceedances. Also, test results for the Appendix III parameters were compared against the updated background prediction limits.

Included in this report are 'Traffic Light' matrices to facilitate an at-a-glance identification of any statistically significant exceedances and to promote intra-company follow-up assessments of the possible causes and to plan for mitigation actions, whenever warranted. Sample analytical results of CCR-Rule Appendix III and Appendix IV constituents obtained from each of the monitoring wells and events were used to perform the statistical analysis and generate the graphs shown in this report. The current CCR Rule groundwater monitoring network, as Certified by a Professional Engineer, is presented in **Table 1**.

The 'R' Statistical Analysis package (www.r-project.org) in conjunction with R-Studio (www.rstudio.com), both popular public domain software products, were used in the production of the statistical values and graphs. Data dumps from CSU's Database were used to populate the R-based statistical analyses.

For this year's efforts, the baseline datasets of the CCR-Rule groundwater monitoring program were augmented with routine monitoring samples in order to update the background data set. The background data were then utilized to develop both updated prediction limits and statistically-derived GWPS in those cases where site-specific background levels naturally exceed published regulatory limits. Finally, data from the compliance wells were statistically compared either to prediction limits for Appendix III parameters or to the GWPS for Appendix IV parameters to determine whether any statistical limits or standards were exceeded.

At the Clear Spring Ranch Ash Landfill CCR network, the sampling results used to compute the background statistics were obtained only from designated background wells using historical data that were first screened for possible trends or shifts in concentration levels over time. Any early data exhibiting a substantially different pattern or average concentration level than more recent data were excluded from the calculations. The cutoff date used for selecting background data was determined on a constituent by constituent basis, but was designed to include as much data as possible reflecting current groundwater conditions (see **Table 2**).

As summarized in **Attachment A**, this screening process was applied both to the background and downgradient data. Visual checks of the time series plots were made for possible seasonality. In addition, possible trends were also tested using weighted linear regression. Cases with statistically significant slopes (i.e., 'Up' or 'Down') are listed in **Attachment A**. Note that the presence of a statistically significant trend does not always indicate that the data need to be truncated. In some instances, the slope may be significant but of small magnitude, thus suggesting modest change over time. Also, with multiple background wells, the grouped background data may not be trending as a whole or in the same direction, even when individual background wells are trending.

Groundwater samples were analyzed for 21 distinct constituents as required under Appendix III and Appendix IV of the CCR Rule (listed in **Table 2**). Fluoride is monitored under both Appendices. Descriptive graphical summaries of all the data are presented in **Appendix A**. Time series plots of each well-constituent pair display the individual measurement results, while side-by-side boxplots, colored by gradient, allow visual comparisons between upgradient or background wells versus downgradient locations. In addition, 'stacked' time series plots, with all network wells graphed on the same set of axes for each constituent, offer another visual summary of the same data.

USEPA's Unified Guidance document on the statistical analysis of groundwater monitoring data (USEPA, 2009) discusses recommended strategies for statistical evaluations during Detection and Assessment Monitoring. Of note, it is a 'best-practice' when using prediction limits to always implement some form of retesting, in order to avoid potential false positive results and to confirm real changes in groundwater quality. Under this framework, a statistically significant increase (SSI) is identified only when both the routine observation and any resamples exceed the prediction limit.

In Assessment Monitoring, confidence-interval (CI) bands are a recommended technique for performing statistical comparisons to GWPS. In particular, trends at downgradient wells in analytical concentrations of required parameters can be plotted and used to estimate CI bands, which in turn can be compared against their respective GWPS. A statistically significant increase (SSI) is found if and only if the lower limit of the CI band exceeds the GWPS for the most recent Assessment Monitoring sampling event.

Table 2: CCR Rule Monitored Constituents

Constituent	Begin Date	End Date	Appendix
Antimony	2016-06-22	2024-09-18	IV
Arsenic	2016-06-22	2024-09-18	IV
Barium	2016-06-22	2024-09-18	IV
Beryllium	2016-06-22	2024-09-18	IV
Boron	2016-06-22	2024-09-18	III
Cadmium	2016-06-22	2024-09-18	IV
Calcium	2016-06-22	2024-09-18	III
Chloride	2016-06-22	2024-09-18	III
Chromium	2016-06-22	2024-09-18	IV
Cobalt	2016-06-22	2024-09-18	IV
Fluoride	2016-06-22	2024-09-18	III, IV
Lead	2016-06-22	2024-09-18	IV
Lithium	2016-06-22	2024-09-18	IV
Mercury	2016-06-22	2024-09-18	IV
Molybdenum	2016-06-22	2024-09-18	IV
pH	2016-06-22	2024-09-18	III
Rad226+228	2016-06-22	2024-09-18	IV
Selenium	2016-06-22	2024-09-18	IV
Sulfate	2016-06-22	2024-09-18	III
TDS	2016-06-22	2024-09-18	III
Thallium	2016-06-22	2024-09-18	IV

2 Statistical Analysis Approach: Appendix III Parameters

CSU has established a statistical testing approach within its CCR detection monitoring program using the following decision logic:

1. For each Appendix III parameter and compliance well location, a comparison is made between each routinely collected sample and a site-specific upper prediction limit (UPL) computed from upgradient background data (or for pH, against a site-specific prediction interval).
2. If the routine observation exceeds the upper prediction limit (or for pH, is lower than the lower prediction limit), a potential SSI is identified. If the routine observation is within the bounds of the UPL or prediction interval, the test passes.
3. In the event of a potential SSI, one resample is compared against the UPL or prediction interval. If the resample falls within the bounds of prediction limit/interval, the test passes. If instead the resample exceeds the bounds of the limit/interval, an SSI is confirmed for that well and constituent.

2.1 Background Statistical Models and Prediction Limits

When computing each prediction limit (UPL) or prediction interval, the following steps were conducted:

1. All baseline data from designated upgradient or background wells collected through September 2024 were grouped and initially screened for possible outliers. This outlier screening was performed visually on time series plots of the data, as well as systematically via the following procedure:

Probable outliers were flagged by first fitting a broad, non-linear, spline trend to each COC-well pair (Cameron, 2024). By taking the standard error (SE) from each trend, computed from the mean square of the residuals:

$$s_e^2 = \sum_{i=1}^{n} e_i^2/(n-2) = \sum_{i=1}^{n} (y_i - \hat{y}_i)^2/(n-2)$$

the internally studentized residual (Draper & Smith, 1998) distance (i.e., gap) between each reported value and its trend estimate was computed with the formula:

$$t_i = (y_i - \hat{y})/s_e(1 - h_{ii})^{1/2}$$

where h_{ii} is the ith diagonal element of the 'hat' matrix H in regression theory. The studentized residuals t_i thus account for the typical variation exhibited by the observed data as well as the leverage (i.e., x-position) of the point being estimated.

These studentized residuals follow a standard scale similar to a standard logistic distribution (see Cameron, 2024). As a consequence, any studentized residual larger than 4 may be deemed a probable outlier, and residuals larger than 8 may be deemed extreme outliers (relative to the local trend).

Any flagged outliers were then *down-weighted* using a tri-cube weighting function, such that the further the point from its trend estimate, the smaller its statistical weight (w_i). Outlier residuals furthest from the trend thus received the smallest weights, while those closer to the trend were given larger weights. Further, any observations not classified as residual outliers were given the maximum weight of 1.

Handling outliers in this manner is beneficial, especially since flagging outliers always involves a mixture of art (i.e., professional judgment) and statistical science. In some cases, disputes can arise among stakeholders as to whether specific values ought to be treated as outliers and/or eliminated from statistical analysis. This can especially be true when there is no known physical cause of the apparent outliers (e.g., laboratory or sampling error). Down-weighting in this manner is consistent, non-subjective, and does not exclude any data; yet minimizes the impact of true outliers on subsequent UPL estimates.

At the Clear Spring Ranch Ash Landfill network, 6 extreme outliers were flagged in the background data, along with 48 probable outliers. Further, 11 extreme outliers were were flagged at downgradient wells, along with 34 probable outliers.

Any extreme background outliers are listed in **Table 3** below. These values were down-weighted using the values shown in the Weight column. Note that non-outliers have weights equal to 1. Extreme downgradient outliers are listed in **Table 4**.

Table 3: Down-Weighted Extreme Background Outliers

COC	Well	Result	ND.Flag	Date	Outlier	Weight
Antimony	CC-1	15	1	2023-09-25	OUT	0.0236
Antimony	FC-1	15	1	2023-09-25	OUT	0.0237
Antimony	FC-3B	15	1	2023-09-25	OUT	0.00302
Calcium	FC-3A	711000	0	2020-04-06	OUT	0.0166
Selenium	FC-2	1	1	2016-10-12	OUT	0.0202
Sulfate	CC-1	29000	0	2023-09-25	OUT	0.00709

Table 4: Down-Weighted Extreme Downgradient Outliers

COC	Well	Result	ND.Flag	Date	Outlier	Weight
Antimony	SC-10	15	1	2023-09-26	OUT	0.0229
Antimony	SC-11	15	1	2023-09-26	OUT	0.0227
Antimony	SC-12	15	1	2023-09-26	OUT	0.0227
Antimony	SC-13	15	1	2023-09-26	OUT	0.016
Barium	SC-11	40.5	0	2022-09-26	OUT	0.0202
Barium	SC-14	79.8	0	2022-09-26	OUT	0.00389
Chloride	SC-10	790	0	2023-09-26	OUT	0.0256
Mercury	SC-10	0.036	0	2016-06-22	OUT	0.0235
Mercury	SC-11	0.067	0	2016-06-22	OUT	0.0221
TDS	SC-13	6040	0	2018-02-15	OUT	0.0126
TDS	SC-14	26700	0	2016-11-16	OUT	0.00379

2. The grouped baseline data were analyzed to determine whether they could be fit to a known statistical model. If so, a quasi-parametric bootstrap-t prediction limit/interval was computed; if not, a nonparametric prediction limit/interval was constructed.

Any possible outliers, as described above, were down-weighted. Any observations not classified as outliers were given the maximum weight of 1. These weights (w_i) were subsequently utilized in computing each prediction limit/interval (or tolerance limit below).

To account for non-normal data, a range of possible mathematical transformations was applied to each background dataset, in order to identify the statistical model that maximized the weighted correlation between the observed values and normal z-scores on a probability plot. The final statistical model for each parameter was used to compute a bootstrap-t background prediction limit, if appropriate.

3. The best-fitting statistical model for each COC was used to compute a prediction limit or interval.

When a parametric model is appropriate, on the normalized scale, a prediction interval is computed using the standard normal theory equation:

$$PL = \bar{x} \pm \kappa s$$

where $\bar{x}$ and s represent the mean and standard deviation of the (transformed) observations, and κ is a prediction limit multiplier. If the data have been transformed, the final prediction limit/interval is derived by back-transforming the scaled limit/interval. The prediction limit multiplier is computed as function of several inputs, including the background sample size, the targeted site-wide false positive risk (SWFPR), the configuration of the monitoring network (i.e., number of wells and number of COIs per well), and the retesting strategy implemented at the site (e.g., 1-of-2, etc.).

To account for possible outliers and the statistical weighting described above, a slightly different strategy was implemented to compute an estimate of the prediction limit multiplier, $\hat{\kappa}$. Specifically, a large number of *bootstrap* samples were drawn from the observed data (each bootstrap sample representing a random resampling of the original data, with each sample element being selected *with replacement*). For each bootstrap sample, the weighted mean and weighted standard deviation of the resample were computed to form the following ratio:

$$\left(\frac{x_i - \bar{x}_w}{s_w} \right)$$

where x_i is a random value drawn from the background data. Ultimately, an upper percentile of these ratios gave an estimate of the appropriate prediction limit multiplier, $\hat{\kappa}$, and the bootstrap-t prediction interval was computed as:

$$PL = \bar{x}_w \pm \hat{\kappa} s_w$$

The PLs computed under this methodology utilize all the data, including any possible extreme values, are reasonably robust (i.e., minimally impacted) in the presence of actual outliers, but are *quasi-parametric* — instead of nonparametric — despite the use of the bootstrap technique. This last characteristic implies that the bootstrap-t will result in an accurate PL only when the bulk of the background data can be closely fit to a known statistical model. In cases where a good model fit cannot be identified, a nonparametric PL must be computed instead.

Table 5: Clear Spring Ranch Ash Landfill Interwell Prediction Limits

COI	N	ND.Pct	Model	1-of-m	FPR	Units	LPL	UPL
Boron	115	0	NP	2	0.0145	ug/L	NA	1690
Calcium	102	0	NP	2	0.0117	ug/L	NA	479879
Chloride	110	0	NP	2	0.0099	mg/L	NA	1690
Fluoride	115	0	NP	2	0.0091	mg/L	NA	0.748
pH	115	0	NP	2	0.0089	SU	6.8	7.74
Sulfate	105	0	NP	2	0.0111	mg/L	NA	20696
TDS	110	0	NP	2	0.0101	mg/L	NA	35095

The probability plot correlations mentioned earlier were utilized in testing this method on a large series of datasets to derive an empirical cutoff value of 0.95 for deciding when the bootstrap-t could be applied. Further, the bootstrap-t does not work very well when the dataset is *multi-modal* (i.e., it has multiple peaks or 'humps'), for instance when multiple background wells are grouped together but have substantially different average concentration levels (perhaps due to a heterogenous aquifer). If a test for unimodality (i.e., single peak like the normal distribution) passed, then correlations of 0.95 and above led to use of the bootstrap-t, while multi-modality or correlations below this cutoff led to calculation of a nonparametric prediction limit/interval. For nonparametric models, the prediction limit was selected as a weighted interpolation of the largest sample values.

For the Clear Spring Ranch Ash Landfill CCR network, **Table 5** lists the calculated UPLs (and LPL for pH) established for this particular Unit.

2.2 Comparing Compliance Data Against Prediction Limits

To assess whether any SSIs occurred during 2024 Detection Monitoring at the Clear Spring Ranch Ash Landfill CCR site, the first routine sampling event from each parameter-well pair was compared against its respective prediction limit. Under a 1-of-2 retesting strategy, the next consecutive sampling round was reserved as a possible resample. This enabled sufficient lag time between any of the routine and resample measurements to assume approximate statistical independence.

If the routine observation exceeded the upper prediction limit (UPL), or for pH, was outside the bounds of the prediction interval on either side, a potential SSI was flagged. Then the reserved resample associated with the routine event was compared against the same limit or interval (when available). Only if the routine observation and its associated resample both were outside the bounds of the prediction limit/interval was a confirmed SSI identified.

Table 6 summarizes any confirmed or potential SSIs that occurred at the Clear Spring Ranch Ash Landfill CCR unit in 2024. Plots of the 2024 sampling data overlaid with the constituent-specific prediction limits are shown in **Appendix B**. In these figures, any confirmed SSIs are shown by coloring the routine measurement exceedance in orange and the resample confirmatory exceedance in purple. Potential SSIs (i.e., initial exceedances without an associated resample) are shown by coloring the routine measurement in yellow.

Table 6: 2024 Confirmed or Potential Prediction Limit SSIs at Clear Spring Ranch Ash Landfill CCR Site

COC	Well	Date	Result	Units	Stage	LPL	UPL	SSI
Boron	SC-11	2024-03-19	2570	ug/L	Sample	NA	1690	YES
Boron	SC-11	2024-09-18	2710	ug/L	Resample	NA	1690	YES
Boron	SC-12	2024-03-19	4400	ug/L	Sample	NA	1690	YES
Boron	SC-12	2024-09-18	4600	ug/L	Resample	NA	1690	YES
Fluoride	SC-12	2024-03-19	0.88	mg/L	Sample	NA	0.748	YES
Fluoride	SC-12	2024-09-18	0.88	mg/L	Resample	NA	0.748	YES

2.3 Summary of Appendix III Statistical Analysis

To facilitate an 'at-a-glance' summary of the prediction limit statistical comparison results, **Table 7** is a 'traffic light' matrix, showing a compact representation of each well location matched against each constituent in Appendix III. This summary is useful in planning for mitigation actions. Green cells indicate that no SSI was observed in 2024. Red cells indicate the opposite: an SSI was flagged during 2024. Yellow cells indicate *potential* SSIs, pending confirmatory resamples.

At the Clear Spring Ranch Ash Landfill CCR network in 2024, a total of 3 confirmed Appendix III SSIs were identified at Program network wells, along with 0 *potential* Appendix III SSIs.

Table 7: Appendix III Traffic Light Matrix for Clear Spring Ranch Ash Landfill CCR Site

	Well Locations				
COC	**SC-10**	**SC-11**	**SC-12**	**SC-13**	**SC-14**
Boron	**GRN**	**RED**	**RED**	**GRN**	**GRN**
Calcium	**GRN**	**GRN**	**GRN**	**GRN**	**GRN**
Chloride	**GRN**	**GRN**	**GRN**	**GRN**	**GRN**
Fluoride	**GRN**	**GRN**	**RED**	**GRN**	**GRN**
pH	**GRN**	**GRN**	**GRN**	**GRN**	**GRN**
Sulfate	**GRN**	**GRN**	**GRN**	**GRN**	**GRN**
TDS	**GRN**	**GRN**	**GRN**	**GRN**	**GRN**

Color-Coding Key:
RED = Results outside prediction limit bounds;
GRN = Results within prediction limit bounds;
YLW = Initial results outside bounds (potential SSI)

3 Statistical Analysis Approach: Appendix IV Parameters

The basic steps in the Assessment Monitoring analysis included the following:

1. Developing groundwater protection standards (GWPS) for each Appendix IV constituent, using published MCLs and/or water quality limits, along with baseline data from upgradient and background well locations at each CCR site;
2. Computing trends and associated confidence interval (CI) bands for each well location and Appendix IV constituent (i.e., for each well-constituent pair); and
3. Comparing each CI band against its respective GWPS to assess whether or not a statistically significant level (SSL) occurred.

To accomplish these steps, the background data were first summarized and modeled, as described in **Section 2**.

3.1 Developing and Computing Groundwater Protection Standards (GWPS)

USEPA has published maximum contaminant limits (MCL) or alternate regulatory limits for each of the Appendix IV constituents. Consequently, in most cases the Groundwater Protection Standard (GWPS) is equal to the MCL. However, there may be cases where background levels of a constituent exceed the MCL. In these instances, an alternate GWPS must be derived from on-site background levels.

CSU has established GWPS across its CCR program using the following decision logic:

- For each Appendix IV parameter where a GWPS must be established, a comparison is made between the promulgated regulatory limit and a site-specific limit computed from background data.
- If the background-based limit is larger than the promulgated limit, the GWPS is set to the background limit. If the promulgated limit is larger, the GWPS is set to the published value.

In cases where a background limit must be computed, USEPA's Unified Guidance recommends different strategies for computing a background-based GWPS (USEPA, 2009, sec. 7.5). One of these strategies — a 95% confidence, 95% coverage upper tolerance limit (UTL) on background — was selected and used to compute the UTL on site-specific background data for each Appendix IV parameter. Then these UTLs were compared against the promulgated regulatory limits to determine the site-specific GWPS.

Each tolerance limit (UTL) was computed in the following manner, using steps similar to those applied in computating the prediction limits for Appendix III parameters:

1. All baseline data from designated upgradient or background wells collected through September 2024 were grouped and initially screened for possible outliers. This outlier screening was performed as described in **Section 2.1**. Apparent outliers were not formally tested or removed from the data analysis, but instead were *down-weighted* in the statistical calculations, in order to minimize the impact of such values on the UTL estimates.

2. The grouped baseline data were analyzed to determine whether they could be fit to a known statistical model. If so, a quasi-parametric bootstrap-t UTL was computed; if not, a non-parametric UTL was constructed. Datasets which could not be sufficiently normalized were therefore analyzed by nonparametric means.

To account for non-normal data, a range of possible mathematical transformations was applied to each background dataset, in order to identify the statistical model that maximized the weighted correlation between pairs on the probability plot. The statistical weights described earlier were utilized to not only fit the best models, but also to compute the UTLs.

3. The best-fitting statistical model for each COI was used to compute an upper tolerance limit (UTL) with 95% coverage and 95% confidence.

When a parametric model is appropriate, on the normalized scale, a UTL is computed using the standard normal theory equation:

$$UTL = \bar{x} + \kappa s$$

where $\bar{x}$ and s represent the mean and standard deviation of the (transformed) observations, and κ is a tolerance limit multiplier. If the data have been transformed, the final UTL is derived by back-transforming the scaled UTL. The tolerance limit multiplier (or *tolerance factor*) is drawn from a standard table of such values.

To account for possible outliers and the statistical weighting described above, a different strategy was implemented to compute an estimate of the tolerance factor, $\hat{\kappa}$. Specifically, a large number of *bootstrap* samples were drawn from the observed data (each bootstrap sample representing a random resampling of the original data, with each sample element being selected at random *with replacement*). For each bootstrap sample, a weighted mean and weighted standard deviation were computed to form the following ratio:

$$\left(\frac{x_i - \bar{x}_w}{s_w} \right)$$

where x_i is a random value drawn from the background data. Ultimately, an upper percentile of these ratios gave an estimate of the appropriate tolerance factor, $\hat{\kappa}$, and the bootstrap-t upper tolerance limit was computed as:

$$UTL = \bar{x}_w + \hat{\kappa} s_w$$

The UTLs computed under this methodology utilize all the data, including any possible extreme values, are reasonably robust (i.e., minimally impacted) in the presence of actual outliers, but are *quasi-parametric* — instead of nonparametric — despite the use of the bootstrap technique. This last characteristic implies that the bootstrap-t will result in an accurate UTL only when the bulk of the background data can be closely fit to a known statistical model. In cases where an adequate statistical model could not be identified, a weighted nonparametric UTL was computed instead, similar to the nonparametric prediction limits described earlier.

For the Clear Spring Ranch Ash Landfill CCR unit, **Table 8** lists the calculated GWPS limits established for this monitoring network.

Table 8: 2024 Clear Spring Ranch Ash Landfill CCR Unit GWPS Limits

COI	Model	N	Coverage	Confidence	UTL	RegLimit	GWPS	Units
Antimony	NP	115	0.95	0.976	4.13	6	6	ug/L
Arsenic	TBOOT-Cube Root	115	0.95	0.95	11	10	11	ug/L
Barium	TBOOT-Log	115	0.95	0.95	27.6	2000	2000	ug/L
Beryllium	NP	115	0.95	0.981	2	4	4	ug/L
Cadmium	NP	115	0.95	0.981	5	5	5	ug/L
Chromium	NP	115	0.95	0.95	10	100	100	ug/L
Cobalt	NP	115	0.95	0.981	11.8	6	11.8	ug/L
Fluoride	NP	115	0.95	0.979	0.837	4	4	mg/L
Lead	TBOOT-Fourth Root	115	0.95	0.95	5.2	15	15	ug/L
Lithium	NP	115	0.95	0.981	1166	40	1166	ug/L
Mercury	NP	115	0.95	0.98	0.009	2	2	ug/L
Molybdenum	TBOOT-Seventh Root	115	0.95	0.95	11	100	100	ug/L
Rad226+228	NP	115	0.95	0.98	4.8	5	5	pCi/L
Selenium	NP	115	0.95	0.979	224	50	224	ug/L
Thallium	TBOOT-Log	115	0.95	0.95	4.18	2	4.18	ug/L

3.2 Computing Trend Lines and Confidence Interval Bands

USEPA's *Unified Guidance* recommends comparing some type of confidence interval (CI) against a groundwater protection standard (GWPS) in order to assess whether or not the limit has been exceeded with statistical significance. If the entire interval exceeds the GWPS, a statistically significant level (SSL) is identified. If none of the interval, or only part, exceeds the GWPS, no SSL is recorded.

Since groundwater data are collected over time, and not all at once, some or most of the variation in the measurements may be due to a trend. To better account for this possibility, USEPA also recommends a variation on the confidence interval method known as a confidence interval band around a trend line. In this case, a (linear) trend line is first fit to the data, then a confidence band is constructed around the trend line. The confidence interval band can be compared against a GWPS in much the same fashion as a confidence interval, only now a comparison can be made at different points in time by comparing the 'cross-section' of the band for a given sampling date. If the interval represented by the confidence band cross-section fully exceeds the GWPS, an SSL is identified for that sampling event.

At the CSU CCR site, CI bands were constructed for each well-constituent pair using the weighted sample data. Cross-sections of each band were then compared to the GWPS for the most recent Assessment Monitoring event for the purpose of identifying any SSLs.

3.2.1 Trend Lines Using Linear Regression

Unless there are extreme outliers and/or curvature in the data, linear regression provides a standard and well-tested method for estimating the linear portion of a trend. The slope of the regression line points to the magnitude and direction of the trend. There is also a standard method for computing a confidence band around a linear regression trend line. For instance, equations [21.24] and [21.25] of Section 21.3 in the *Unified Guidance* can be compactly written as

$$CB_{1-\alpha} = \hat{x}_0 \pm \sqrt{2 s_e^2 F_{1-\alpha,n-2} \left[\frac{1}{n} + \frac{(t_0 - \bar{t})^2}{(n-1)s_t^2} \right]}$$

where CB = confidence band, $\hat{x}_0$ is the regression line estimate at time t_0, s_e^2 is the mean squared error of the regression line, F is a quantile from the F-distribution with 2 and $n-2$ degrees of freedom, and $\bar{t}$ and s_t^2 represent the mean and standard deviation of the sampling dates.

For well-constituent pairs with no non-detects, linear regression and the formula above were used to construct each confidence band with 98% overall confidence, corresponding to a lower confidence limit with 99% confidence. For pairs with any non-detects, Monte Carlo imputation was used to substitute a random value between 0 and the reporting limit (RL) for each non-detect prior to computing the linear regression and confidence band. Then this process was repeated many times and the results averaged to determine the final regression and confidence band estimates.

3.3 Comparing Confidence Interval Bands Against GWPS

To assess whether any SSLs have occurred during the 2024 Assessment Monitoring at the CSU CCR site, the confidence interval (CI) bands described in **Section 3.2** were compared against the constituent-specific groundwater protection standards (GWPS) described in **Section 3.1**. Of note, an SSL was identified if and only if the CI band fully exceeded the GWPS at the most recent sampling event.

Plots of the CI band comparisons for each well-constituent pair are presented in **Appendix B**.

3.4 Summary of Appendix IV Statistical Analysis

To facilitate an 'at-a-glance' summary of the statistical comparison results, **Table 9** is a 'traffic light' matrix, showing a compact representation of each well location matched against each constituent in Appendix IV. This summary is useful in planning for mitigation actions. Green cells indicate that no SSL was observed. Red cells indicate the opposite: an SSL was flagged at the most recent sampling event. Yellow cells are warnings which indicate that a well-constituent pair should be watched. These cases have a CI band whose lower limit is at least two-thirds of the GWPS, or the CI band cross-section straddles the GWPS.

At the Clear Spring Ranch Ash Landfill CCR unit, a total of 0 SSL(s) were identified during the 2024 annual Assessment Monitoring analysis.

Table 9: Appendix IV Traffic Light Matrix for Clear Spring Ranch Ash Landfill CCR Unit

	Well Locations				
COC	**SC-10**	**SC-11**	**SC-12**	**SC-13**	**SC-14**
Antimony	GRN	GRN	GRN	GRN	GRN
Arsenic	GRN	GRN	GRN	GRN	GRN
Barium	GRN	GRN	GRN	GRN	GRN
Beryllium	GRN	GRN	GRN	GRN	GRN
Cadmium	GRN	GRN	GRN	GRN	GRN
Chromium	GRN	GRN	GRN	GRN	GRN
Cobalt	GRN	GRN	GRN	GRN	GRN
Fluoride	GRN	GRN	GRN	GRN	GRN
Lead	GRN	GRN	GRN	GRN	GRN
Lithium	GRN	GRN	GRN	GRN	GRN
Mercury	GRN	GRN	GRN	GRN	GRN
Molybdenum	GRN	GRN	GRN	GRN	GRN
Rad226+228	GRN	GRN	GRN	GRN	GRN
Selenium	YLW	YLW	GRN	GRN	GRN
Thallium	GRN	GRN	GRN	GRN	GRN

Color-Coding Key:
RED = CI Band above GWPS;
GRN = CI Band below GWPS;
YLW = CI Straddles GWPS or Lower Bound at least 2/3 of GWPS

4 References

Cameron, K. (2024). Outlier accommodation in censored time series. *2024 JSM Proceedings*. https://doi.org/https://doi.org/10.5281/zenodo.13994247

Draper, N. R., & Smith, H. (1998). *Applied regression analysis, 3rd edition*. Wiley: NY.

USEPA. (2009). *Statistical analysis of groundwater monitoring data at RCRA facilities: Unified guidance*. USEPA: Office of Resource Conservation & Recovery, EPA 530-R-09-007.

Appendix A: Exploratory Plots

1. Time Series Plots of Each Parameter
2. Box Plots of Each Parameter

Time Series Plots

Figure 1: Time Series Plots

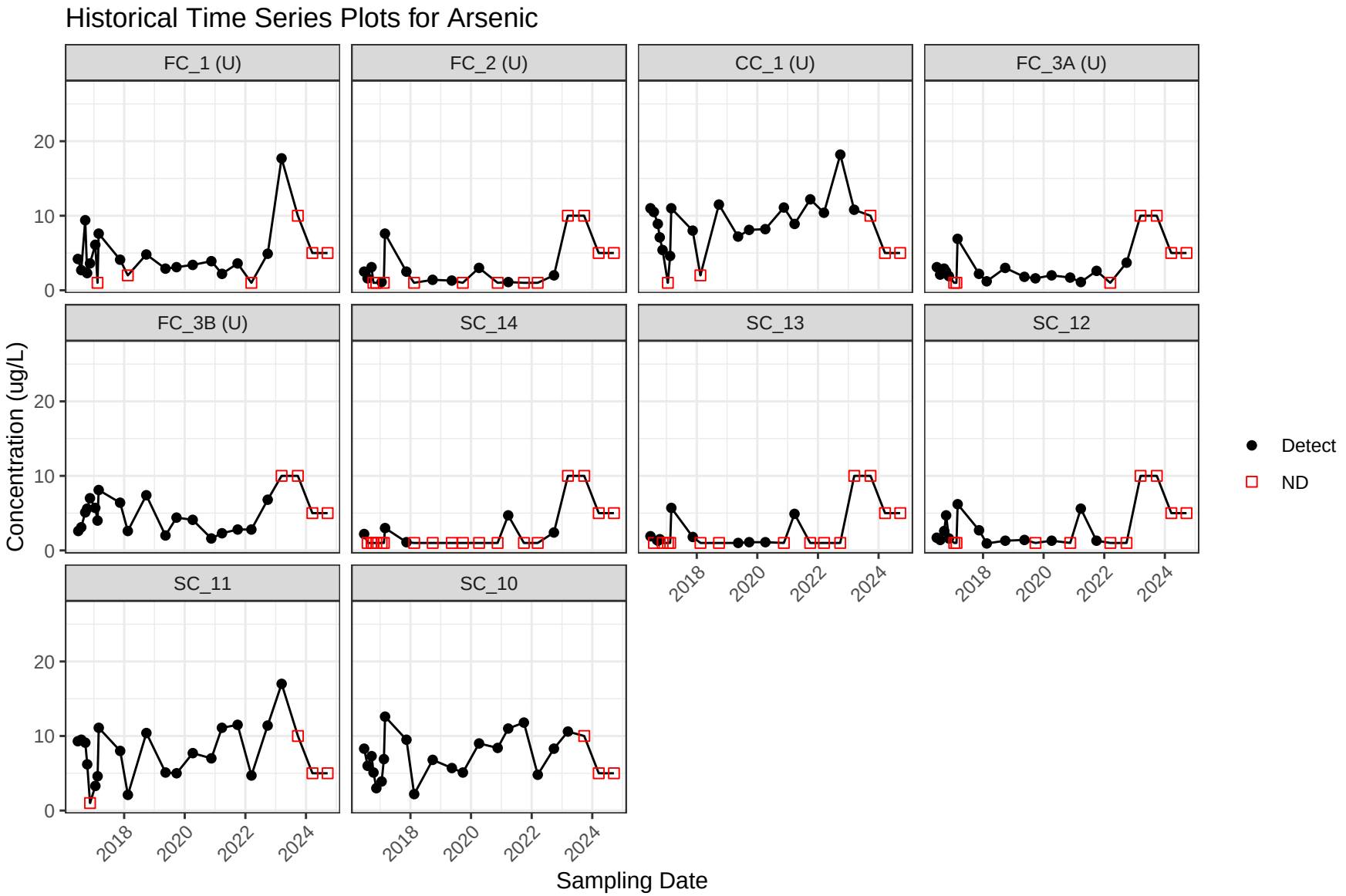


Figure 2: Time Series Plots

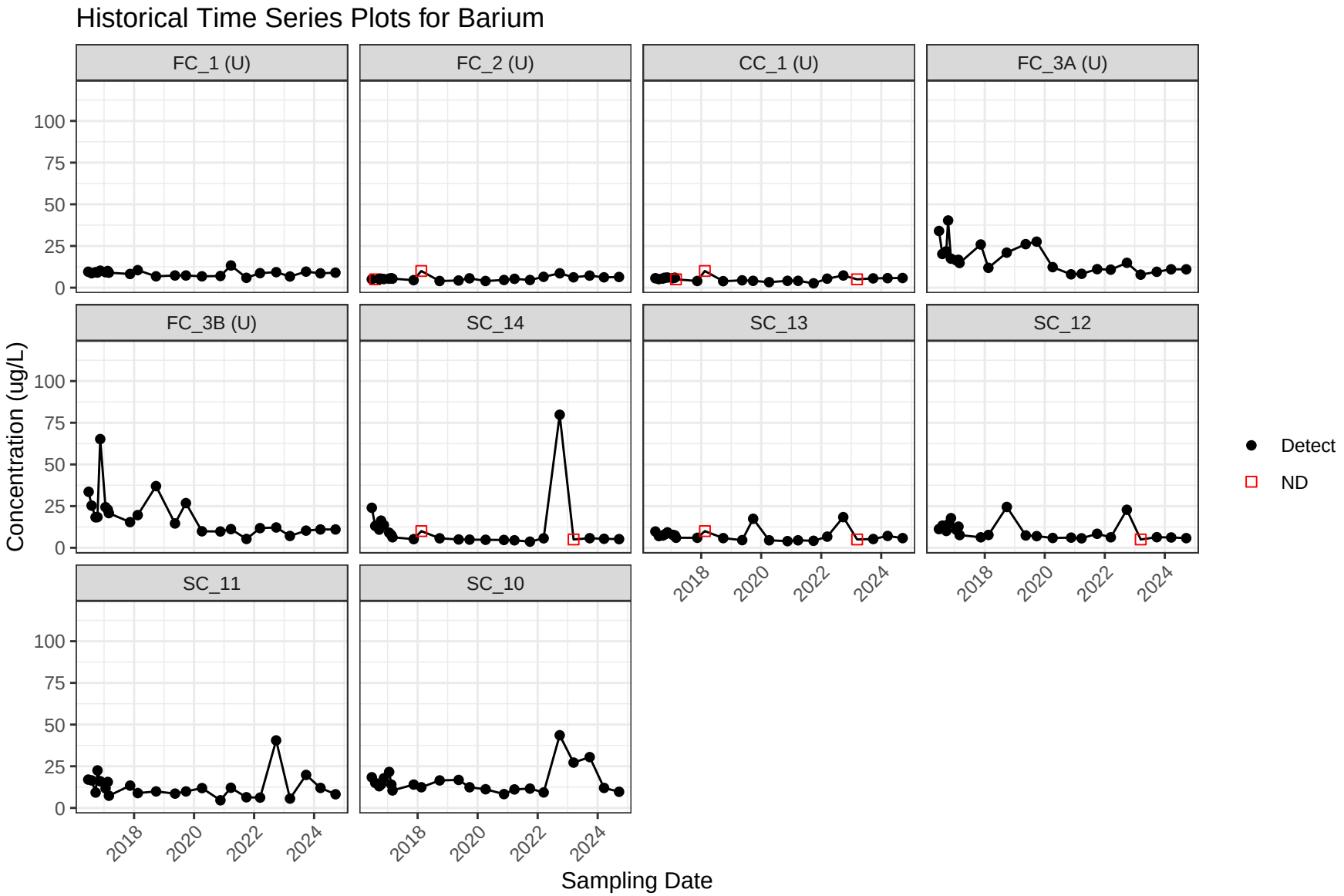


Figure 3: Time Series Plots

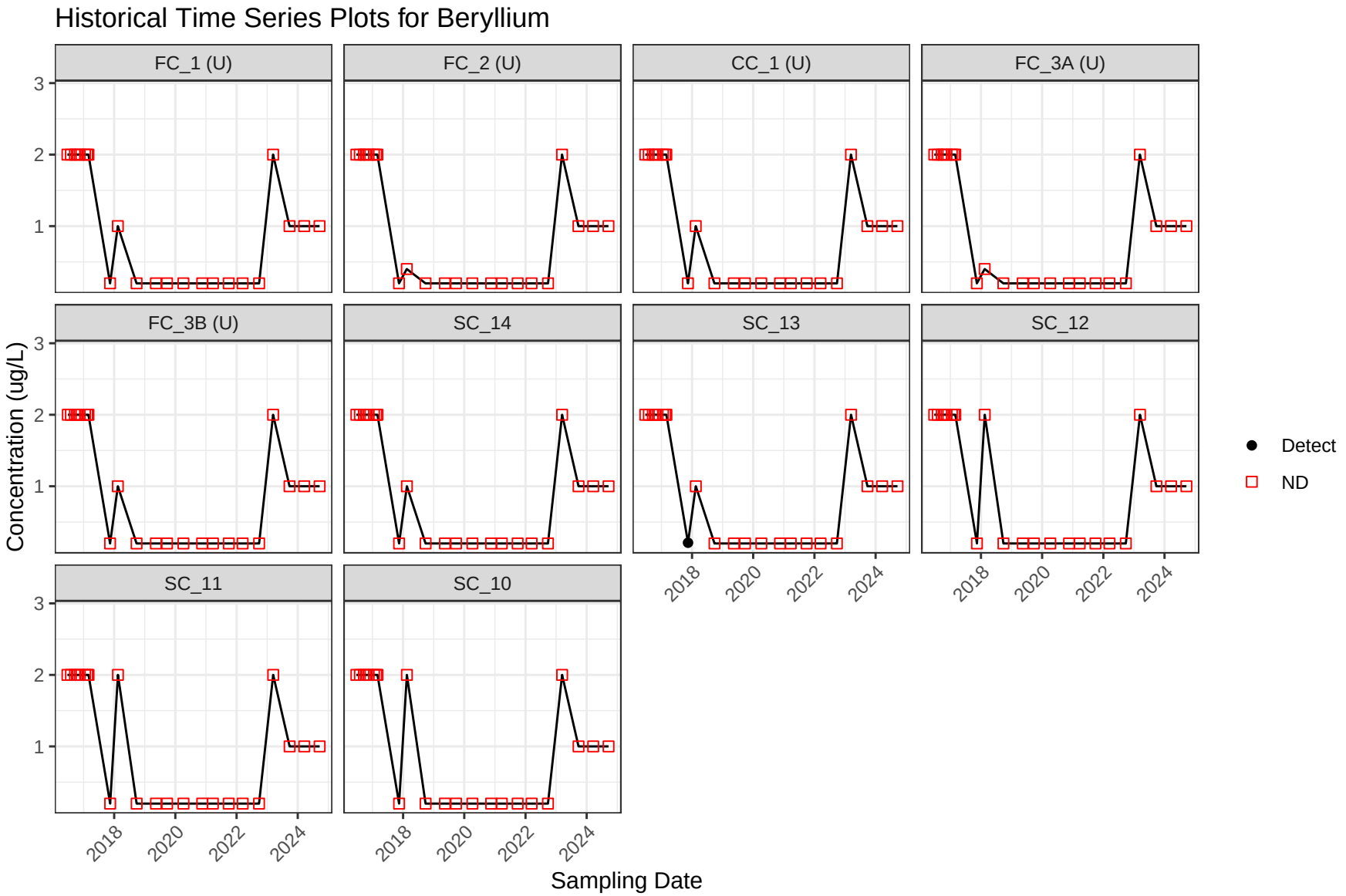


Figure 4: Time Series Plots

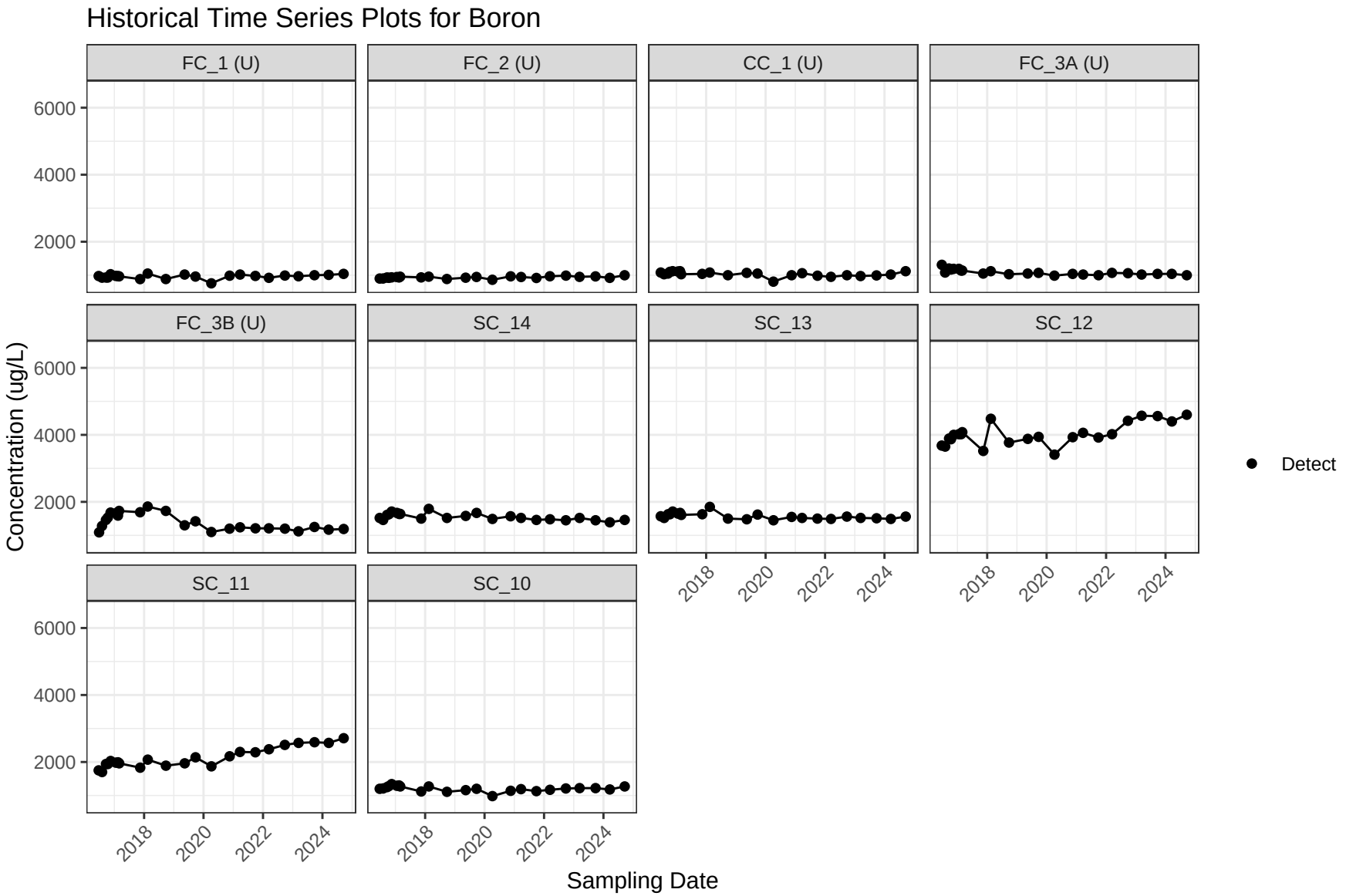


Figure 5: Time Series Plots

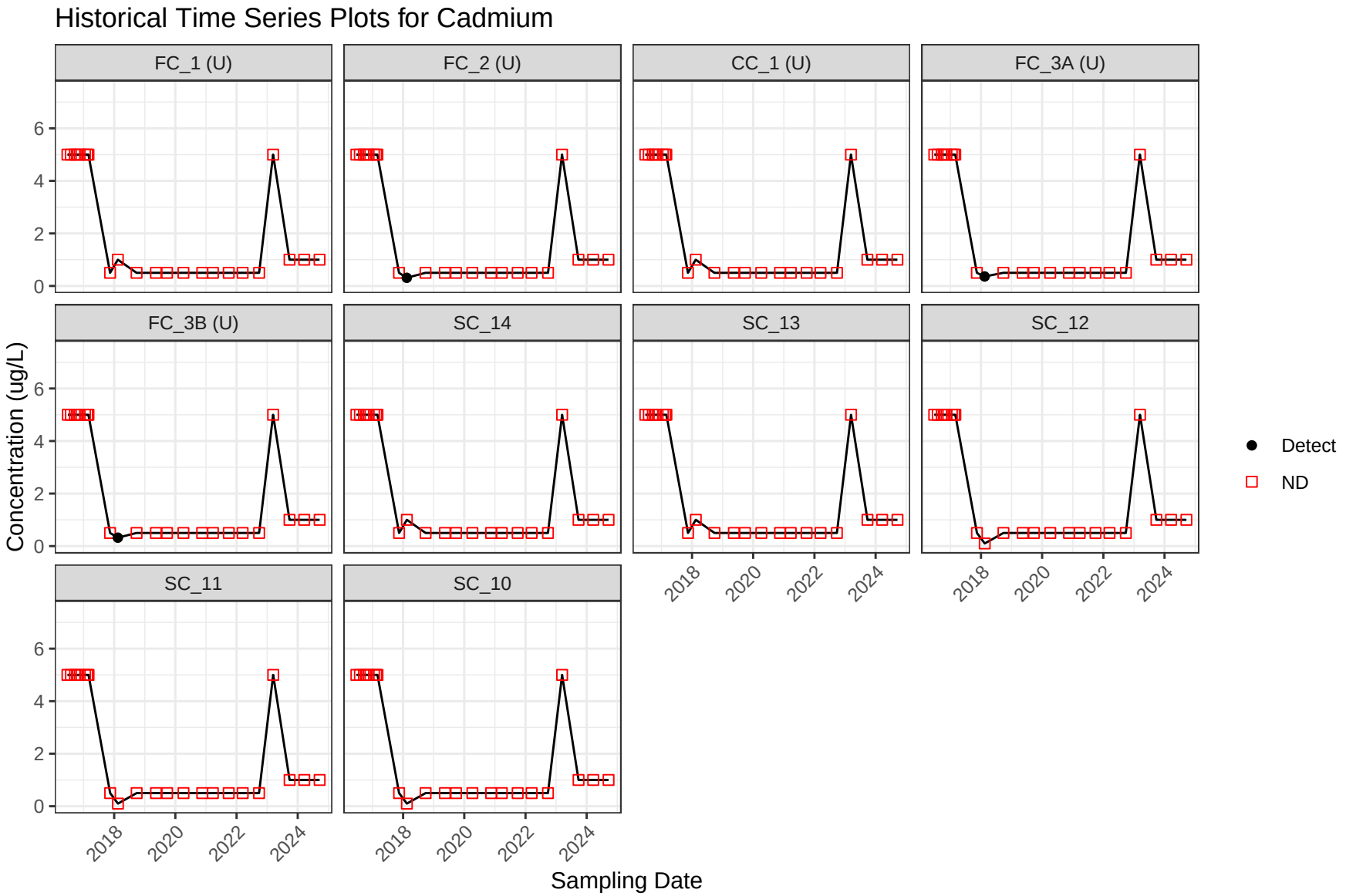


Figure 6: Time Series Plots

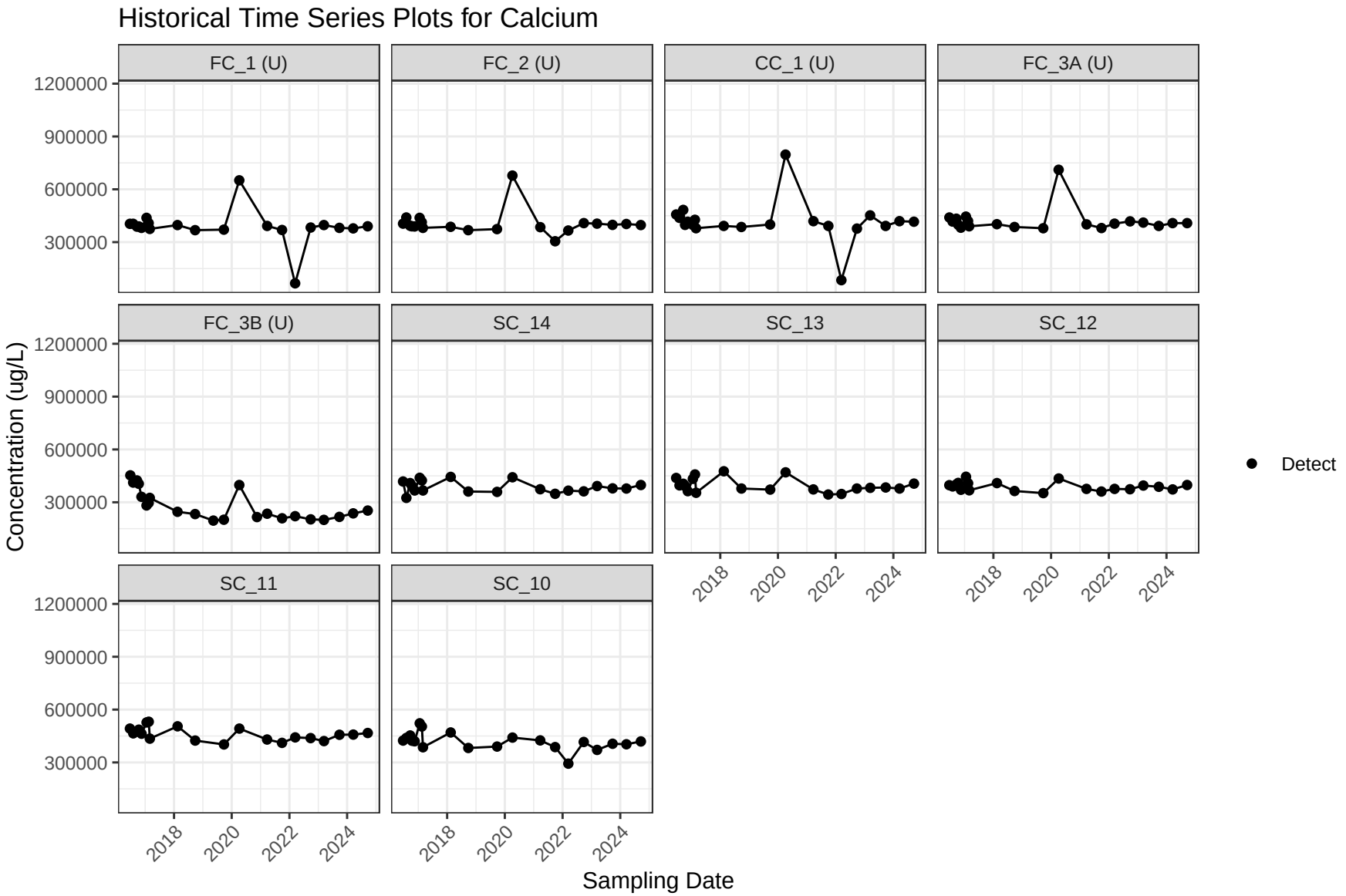


Figure 7: Time Series Plots

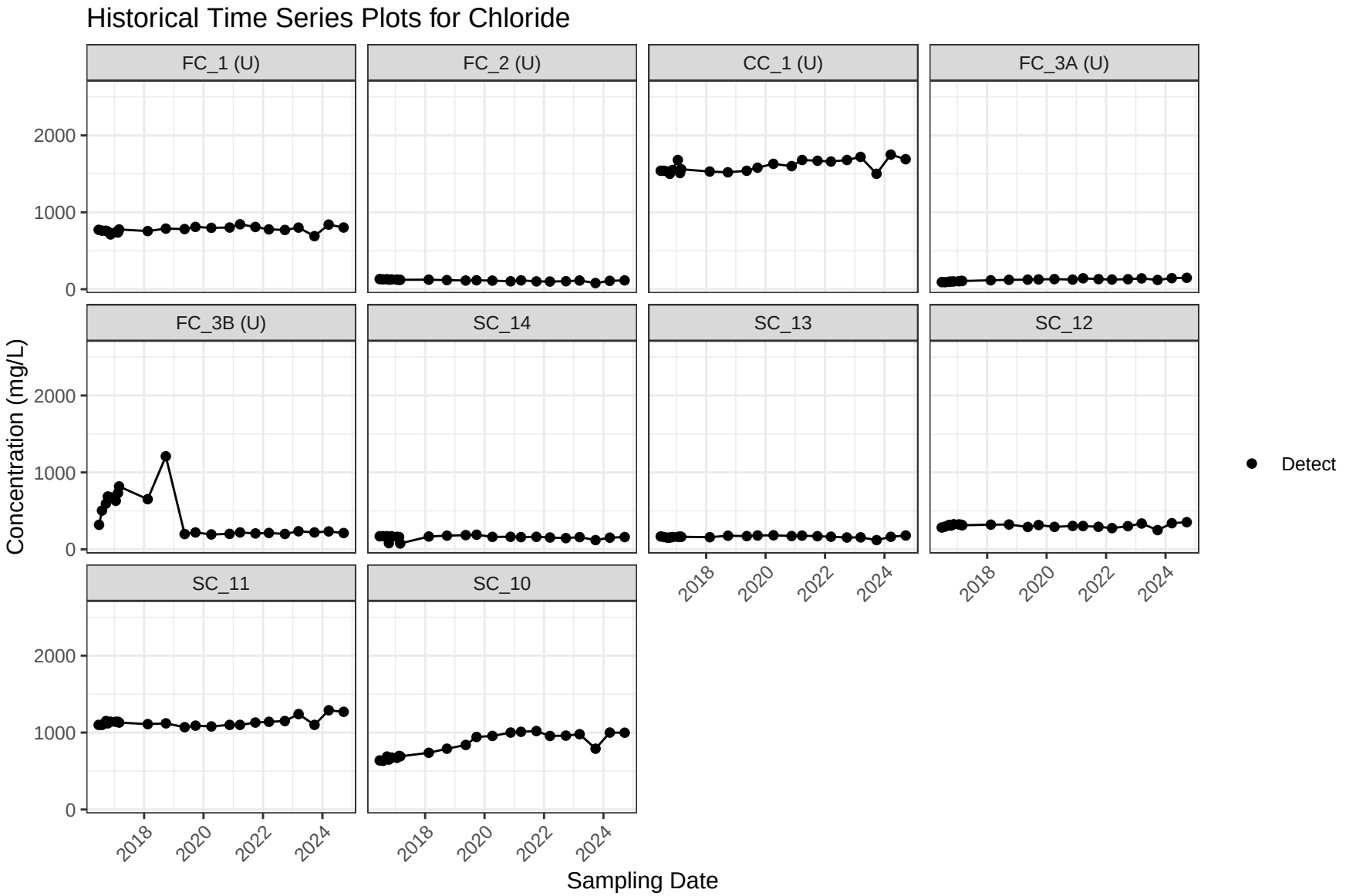


Figure 8: Time Series Plots

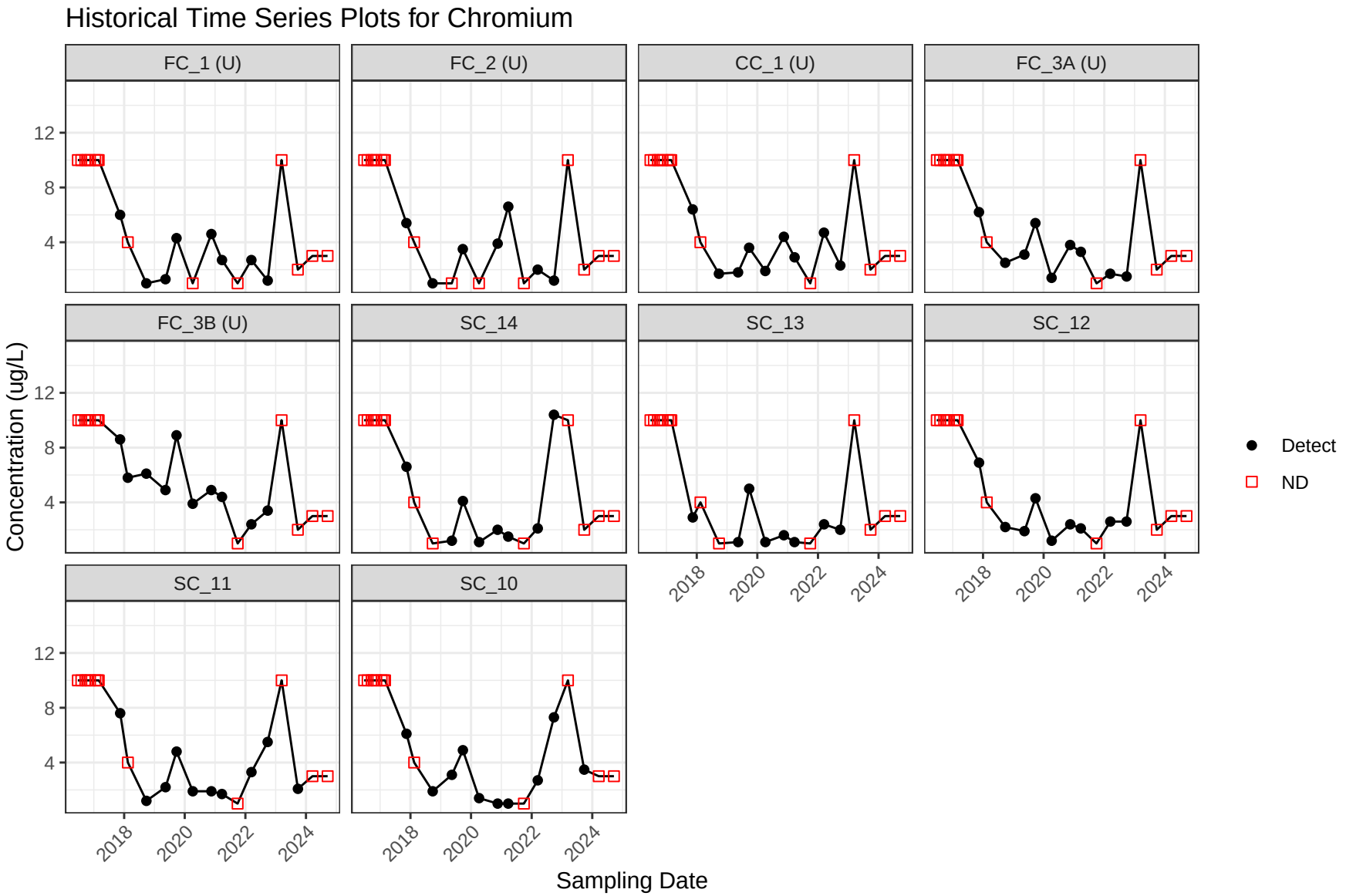


Figure 9: Time Series Plots

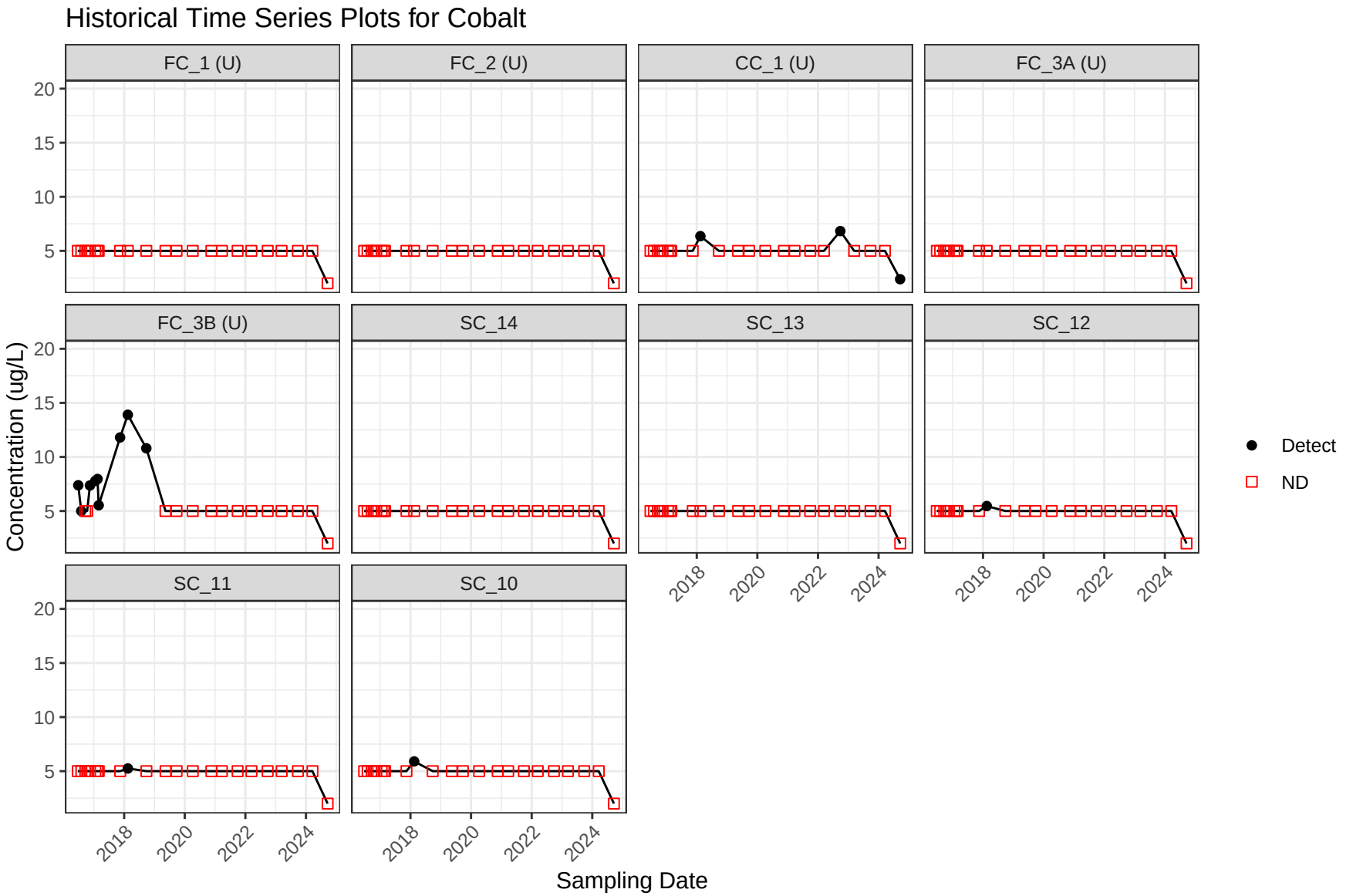


Figure 10: Time Series Plots

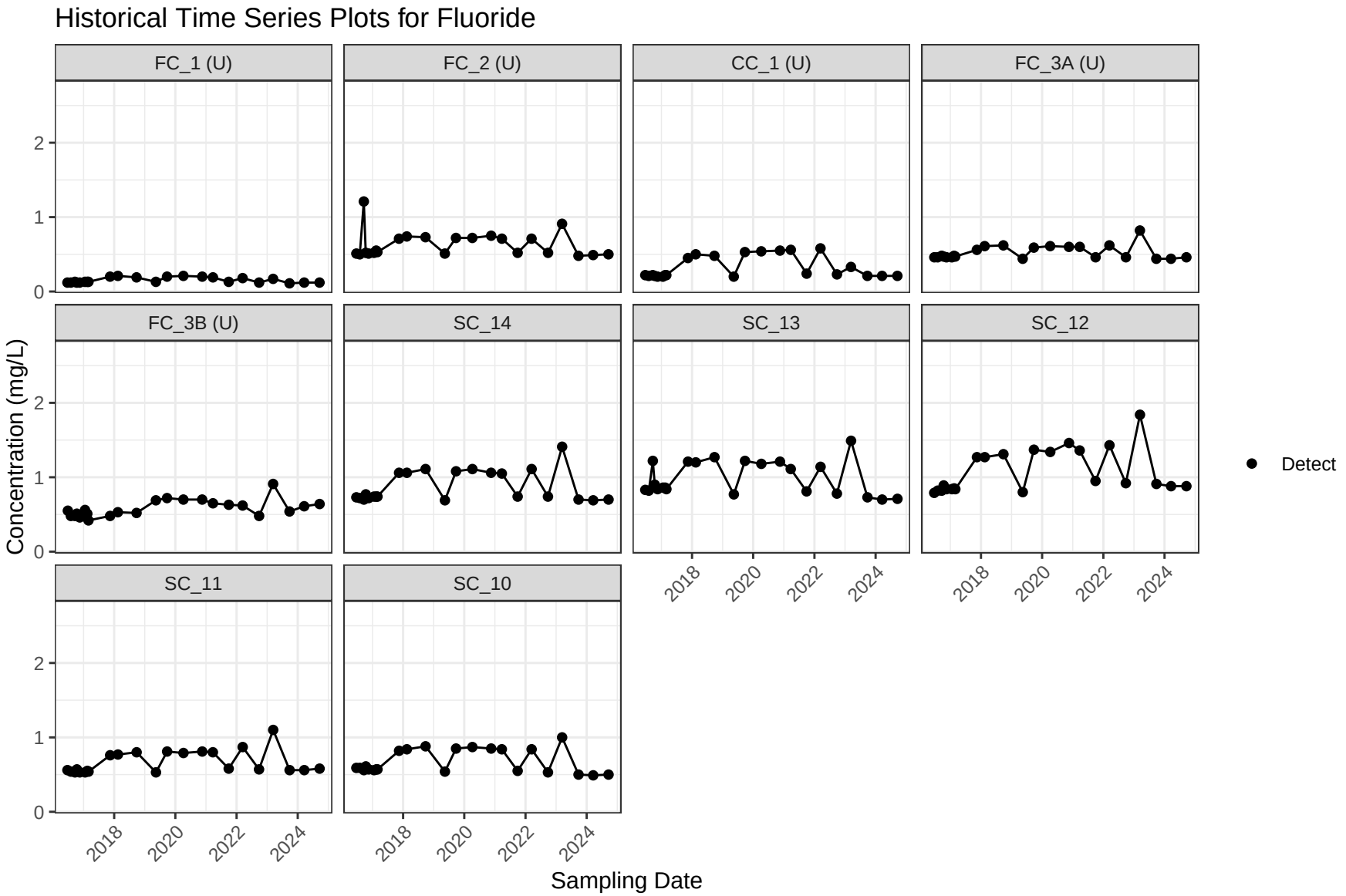


Figure 11: Time Series Plots

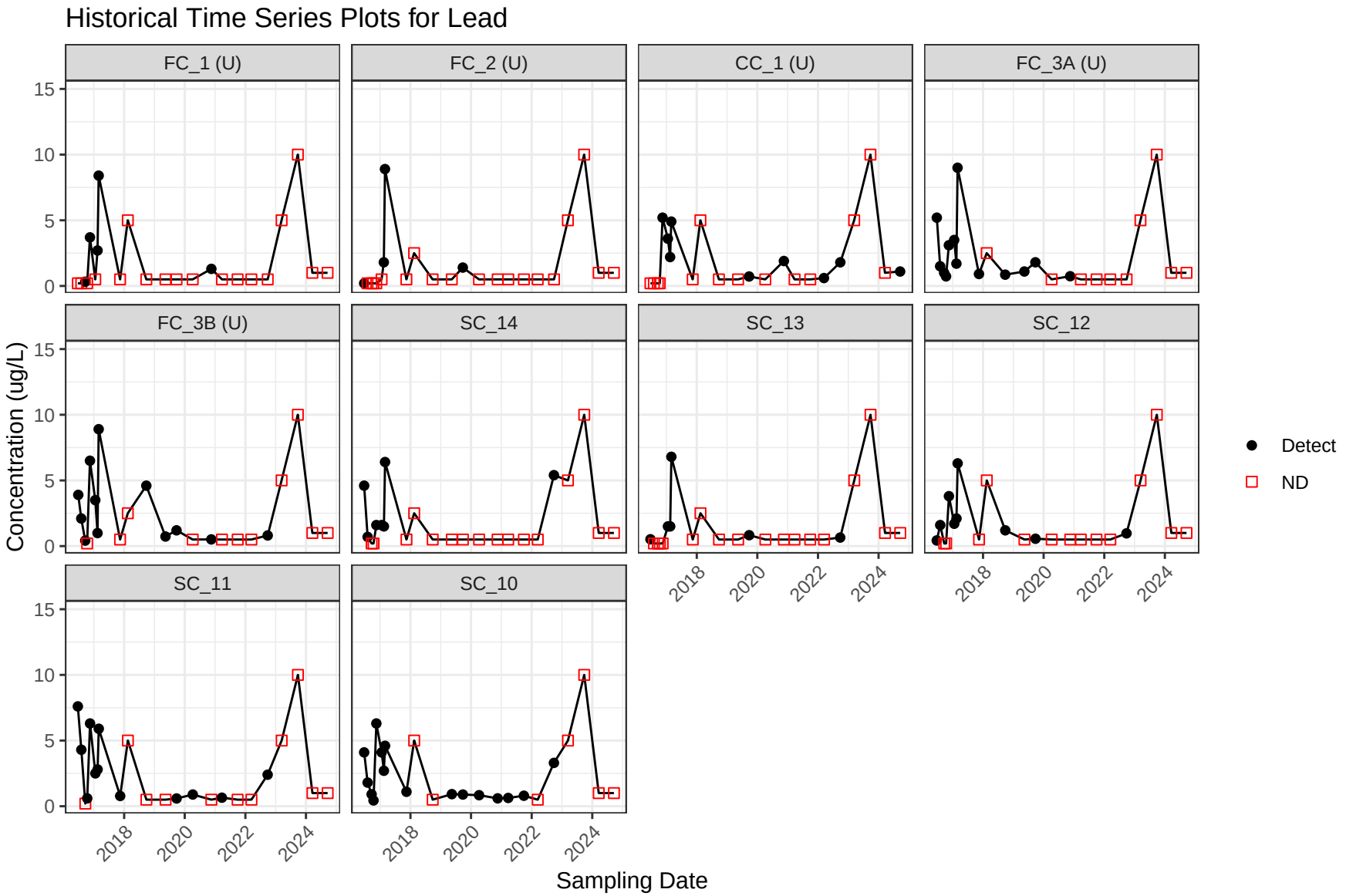


Figure 12: Time Series Plots

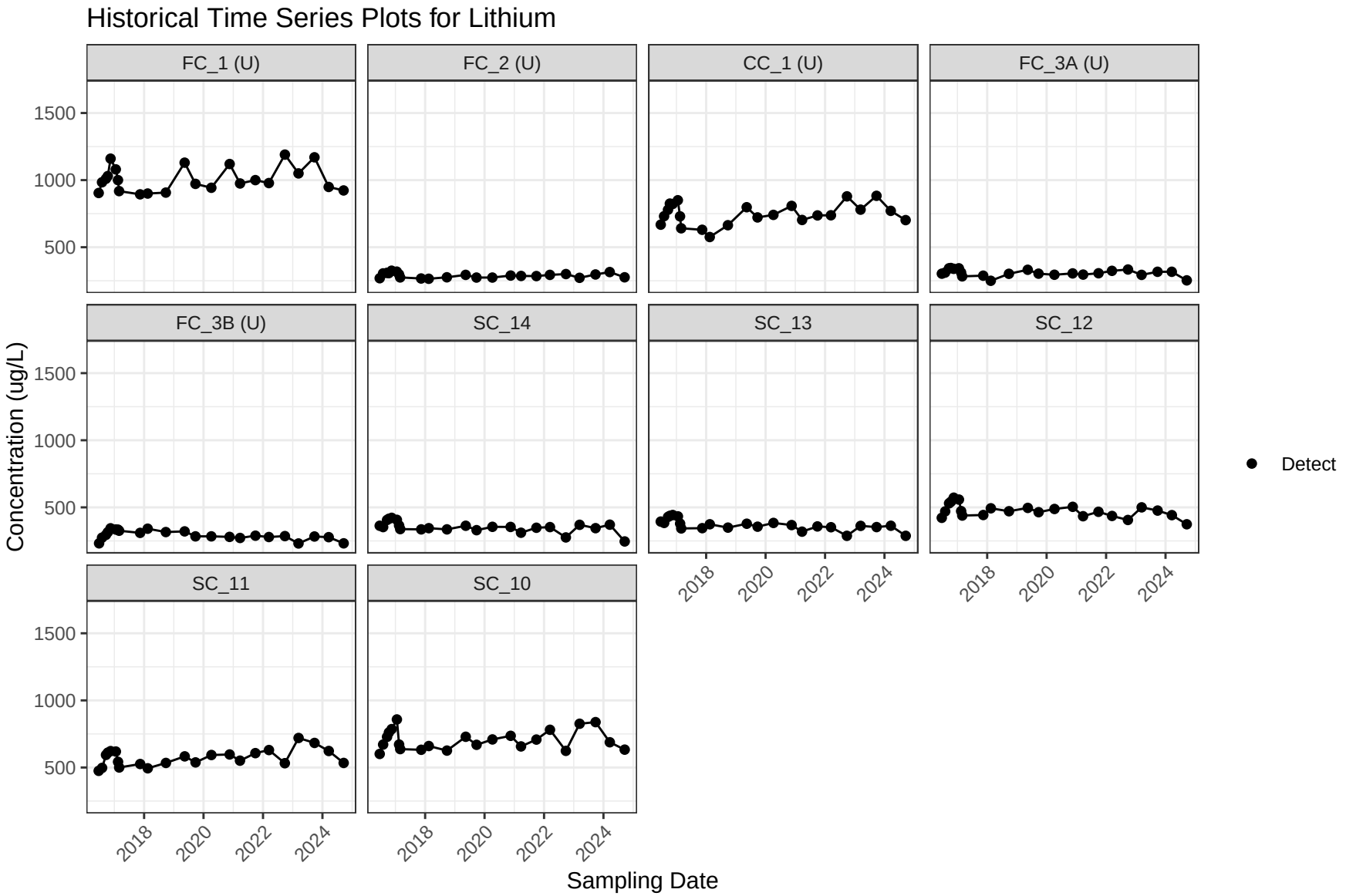


Figure 13: Time Series Plots

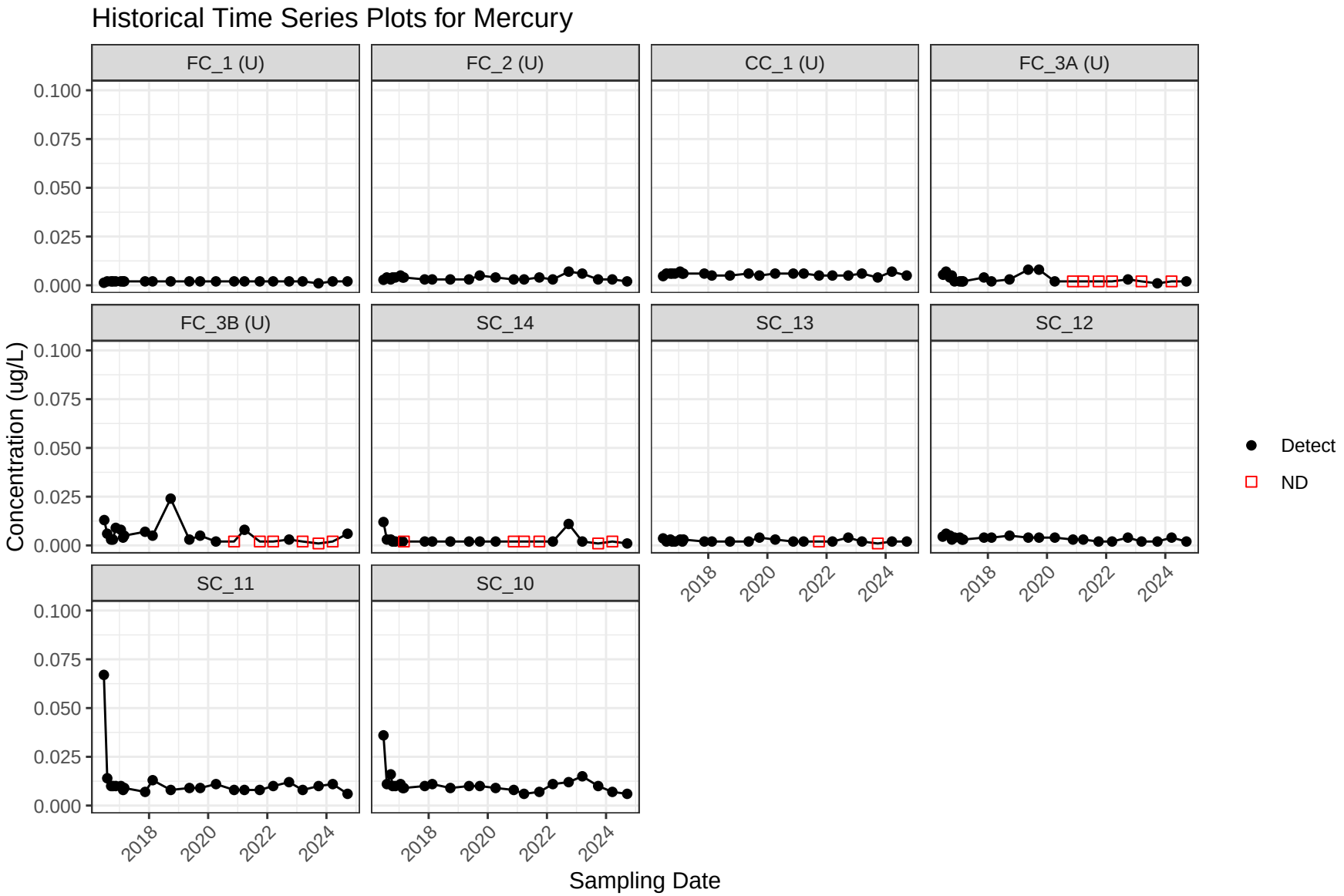


Figure 14: Time Series Plots

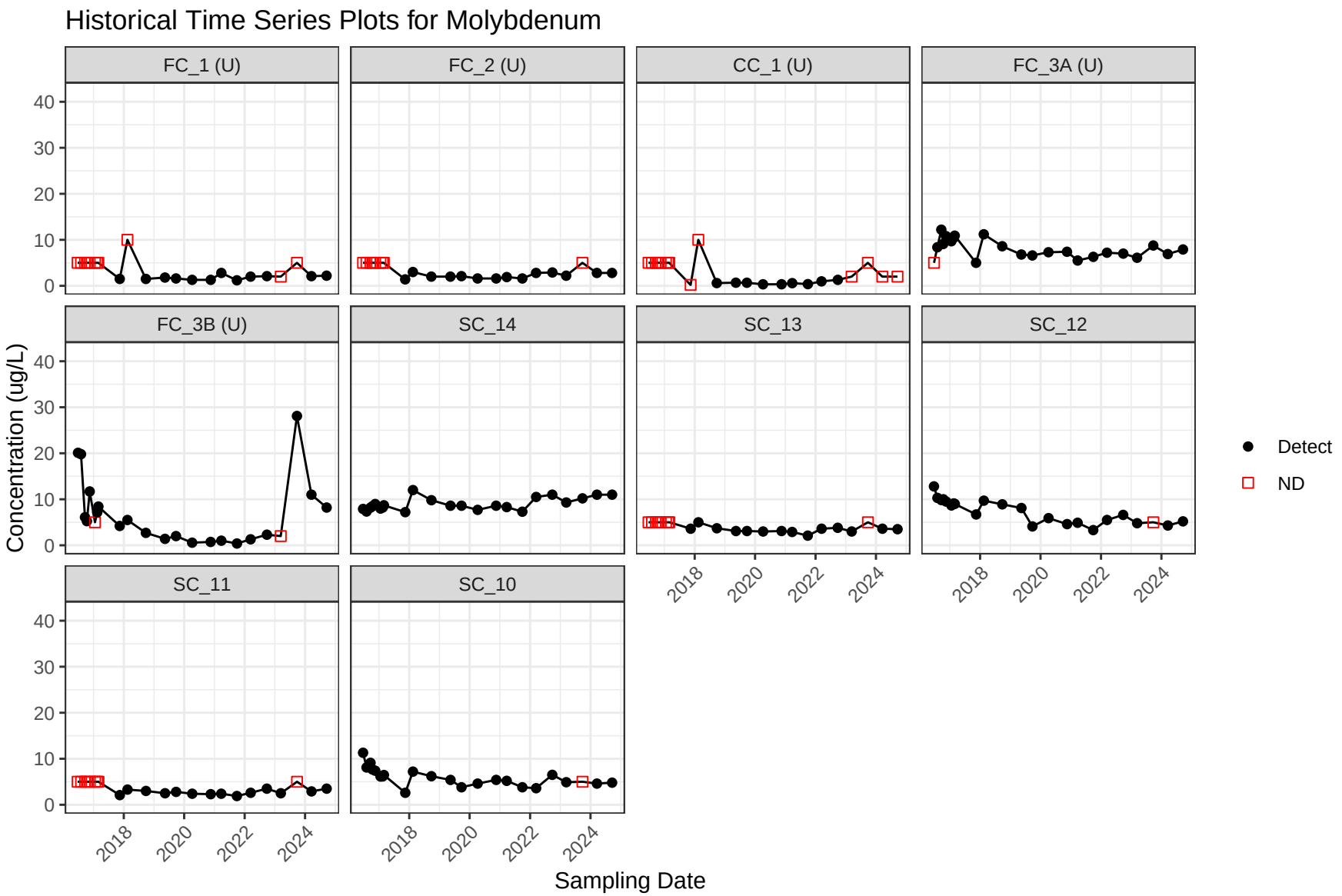


Figure 15: Time Series Plots

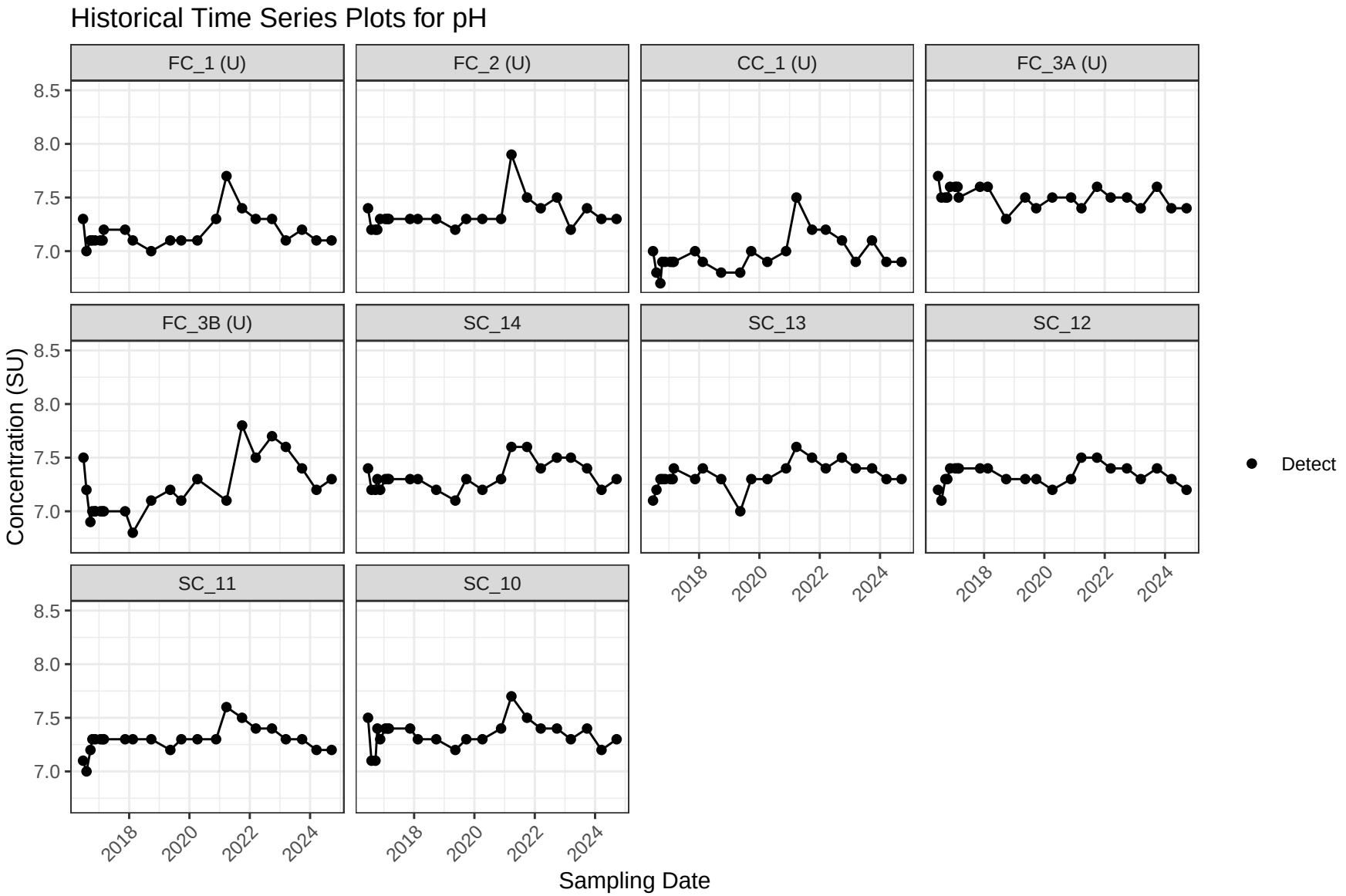


Figure 16: Time Series Plots

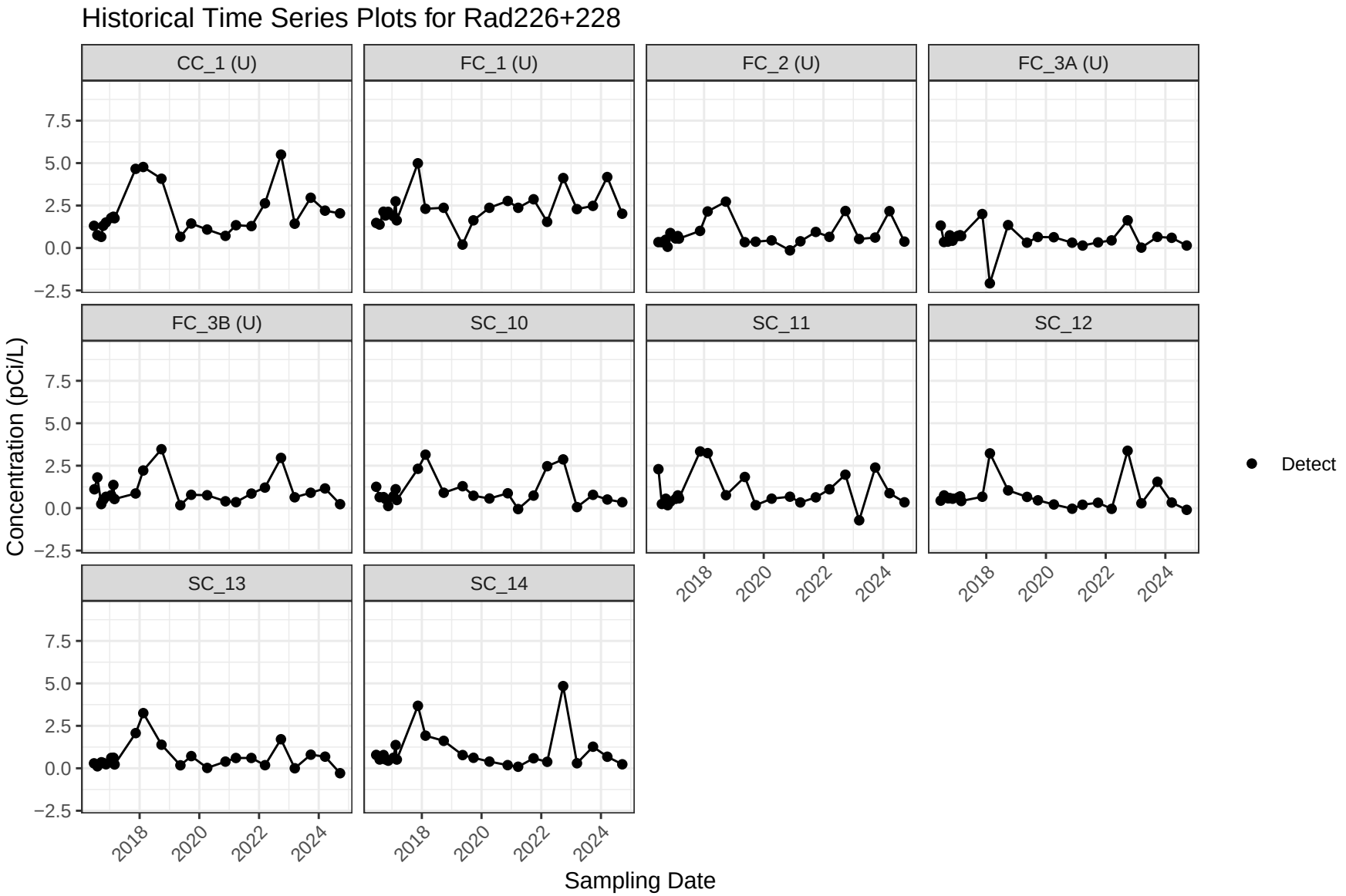


Figure 17: Time Series Plots

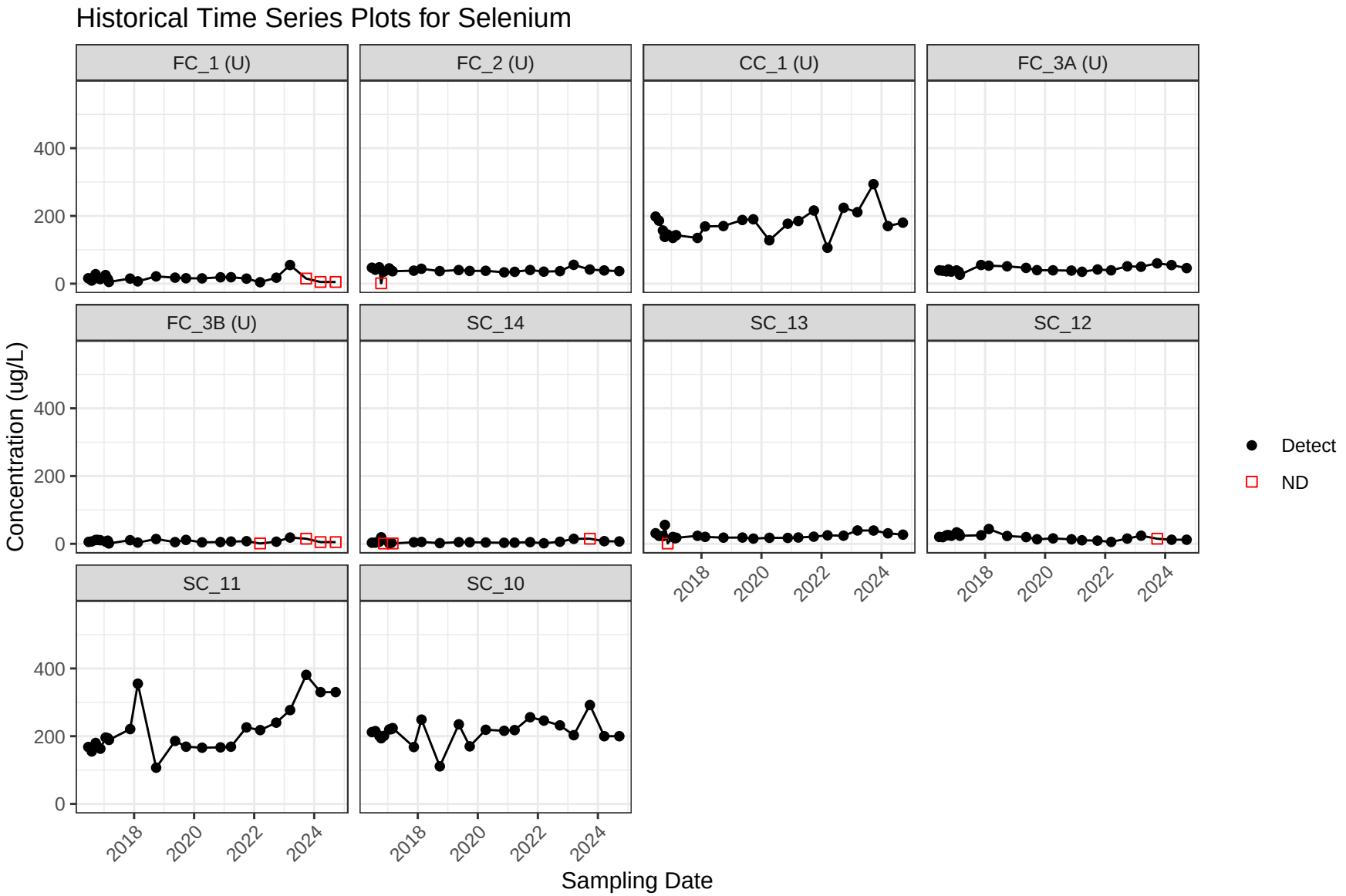


Figure 18: Time Series Plots

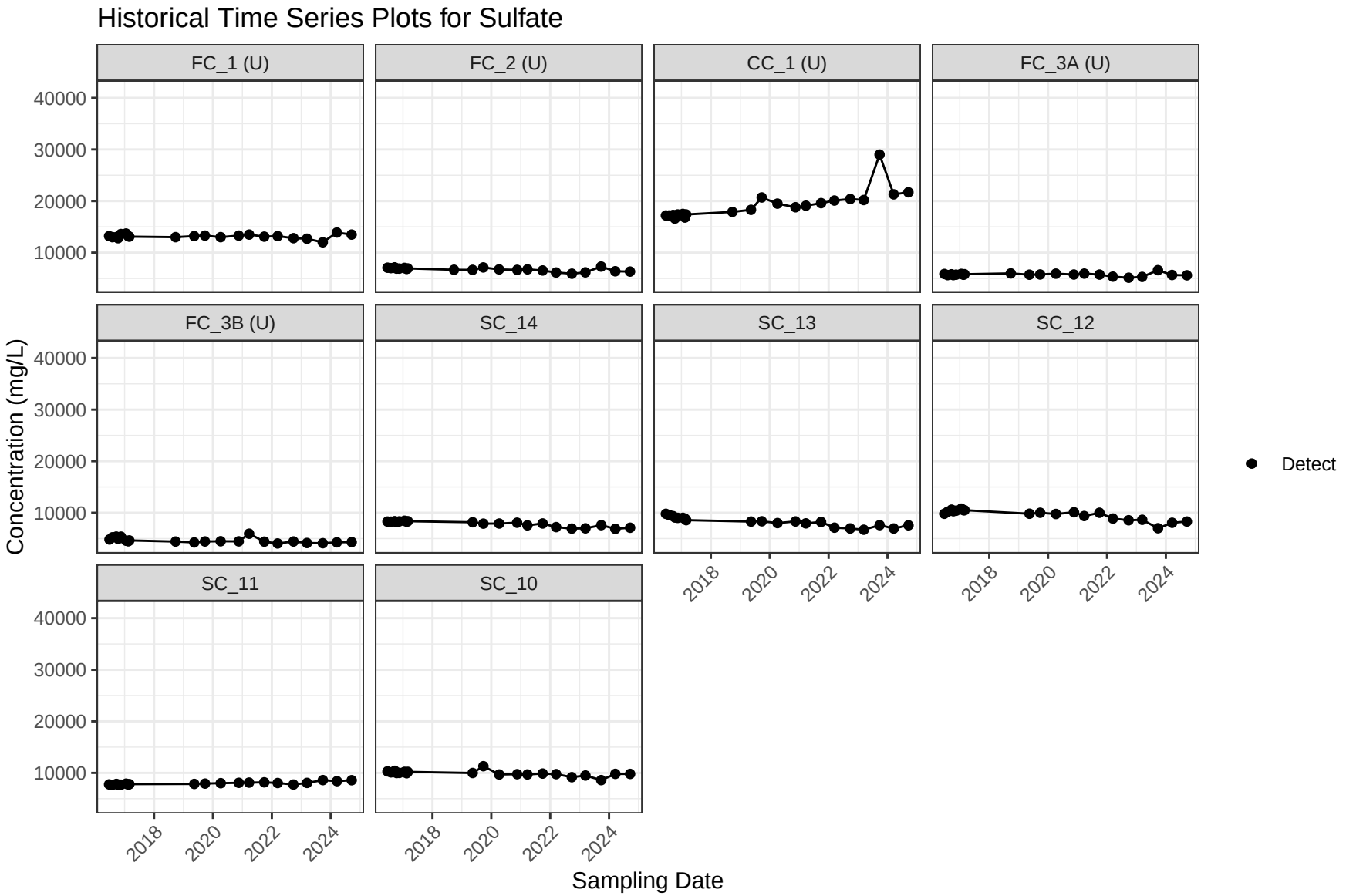


Figure 19: Time Series Plots

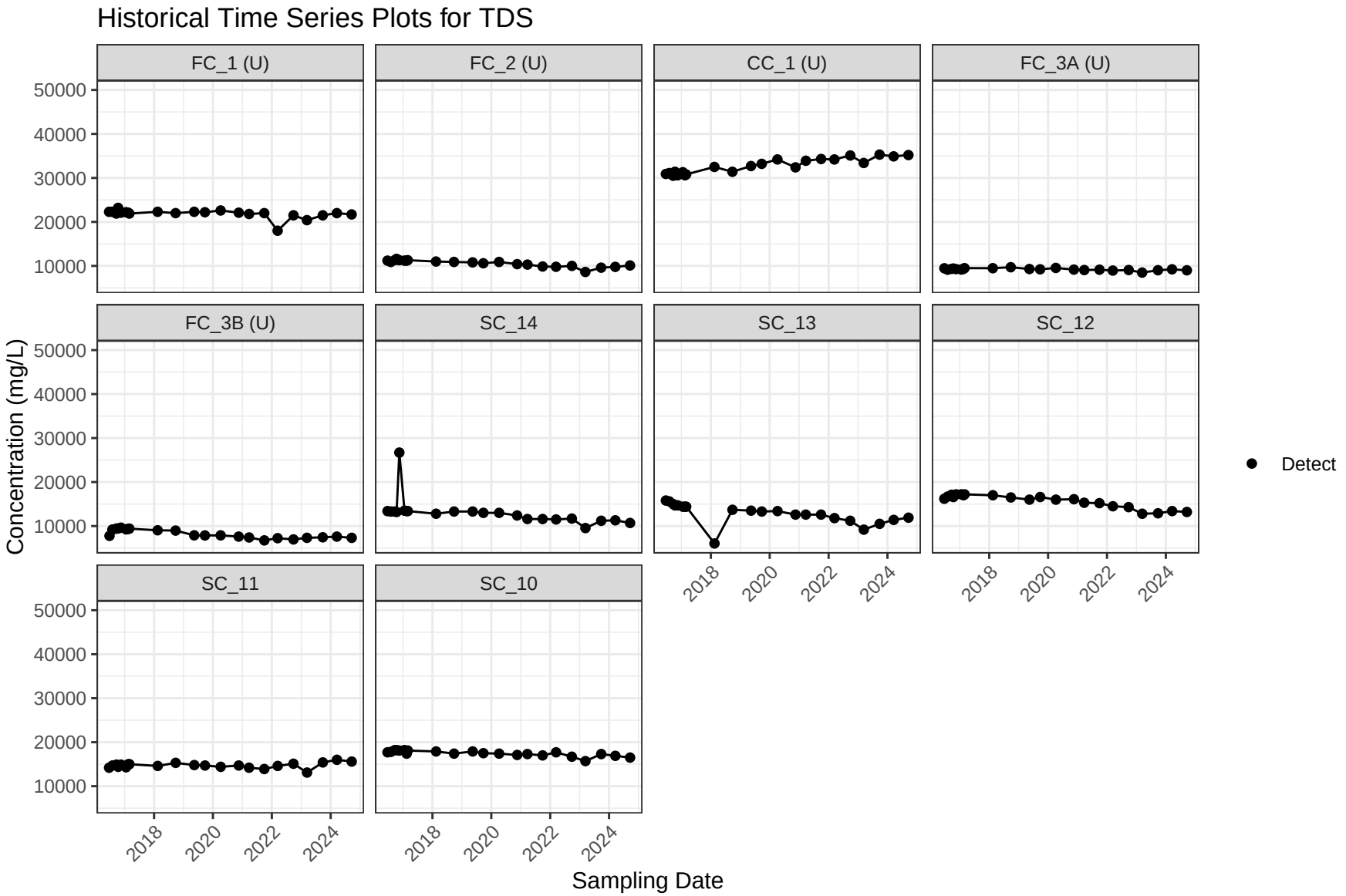


Figure 20: Time Series Plots

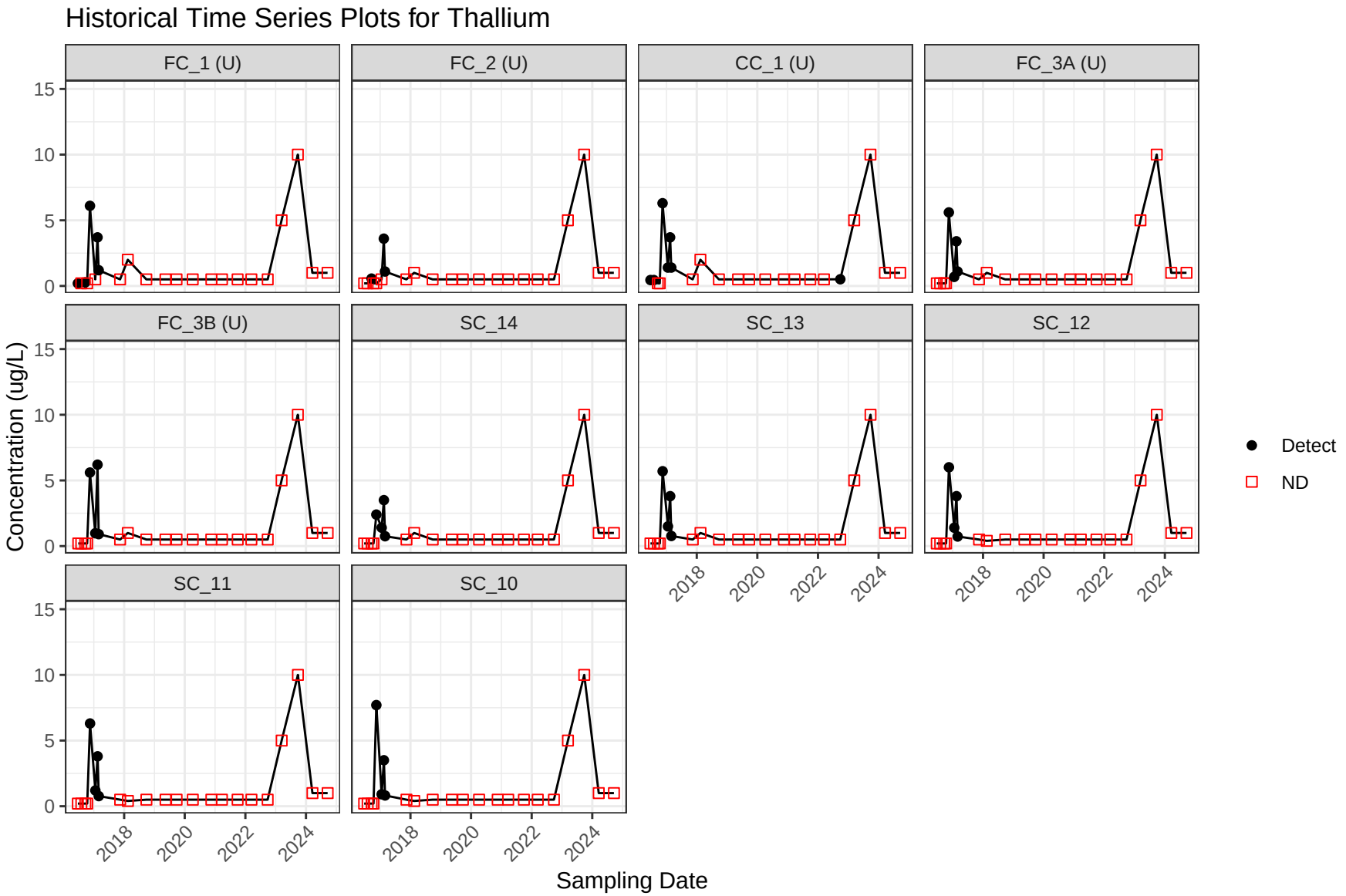


Figure 21: Time Series Plots

Box Plots

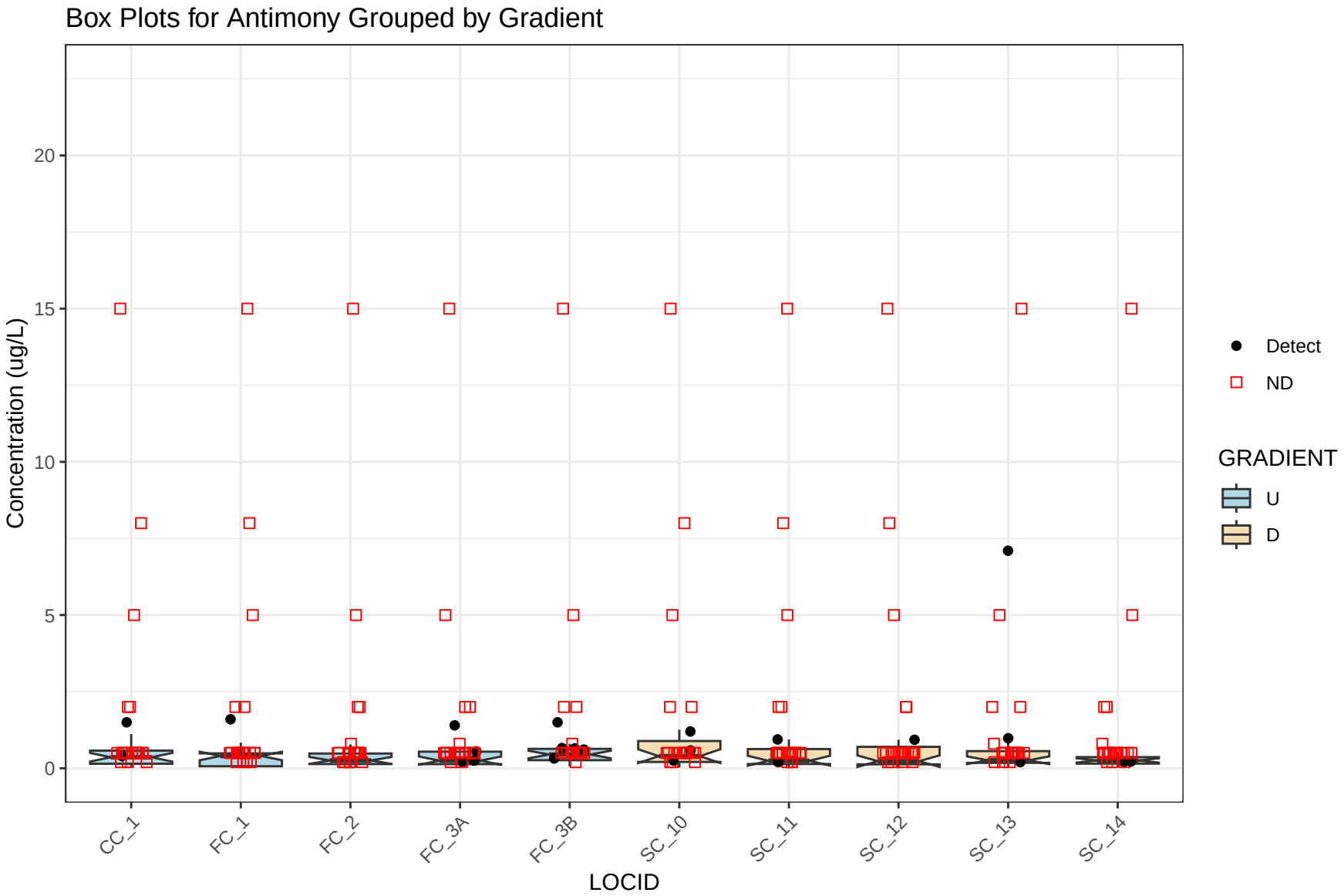


Figure 22: Box Plots

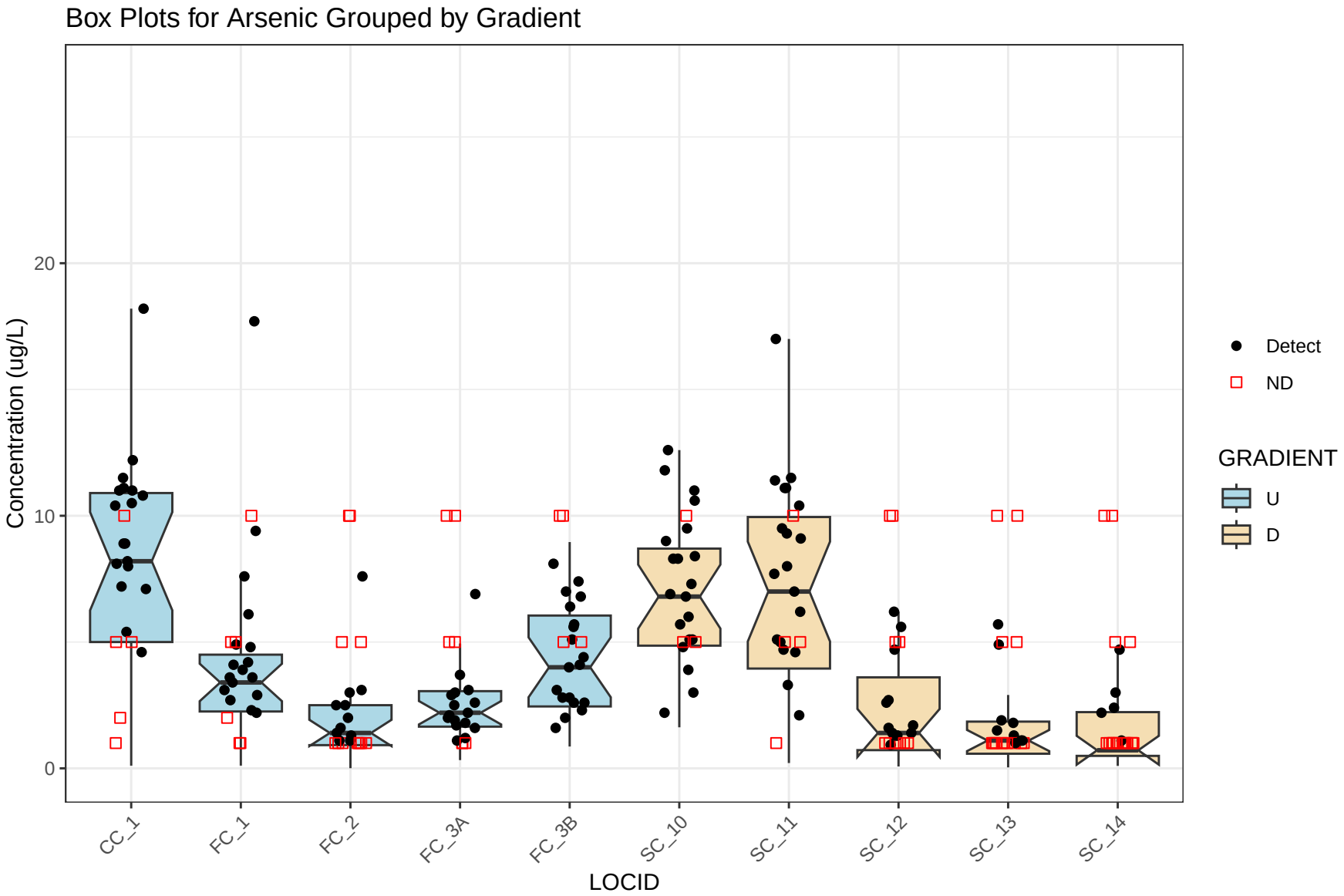


Figure 23: Box Plots

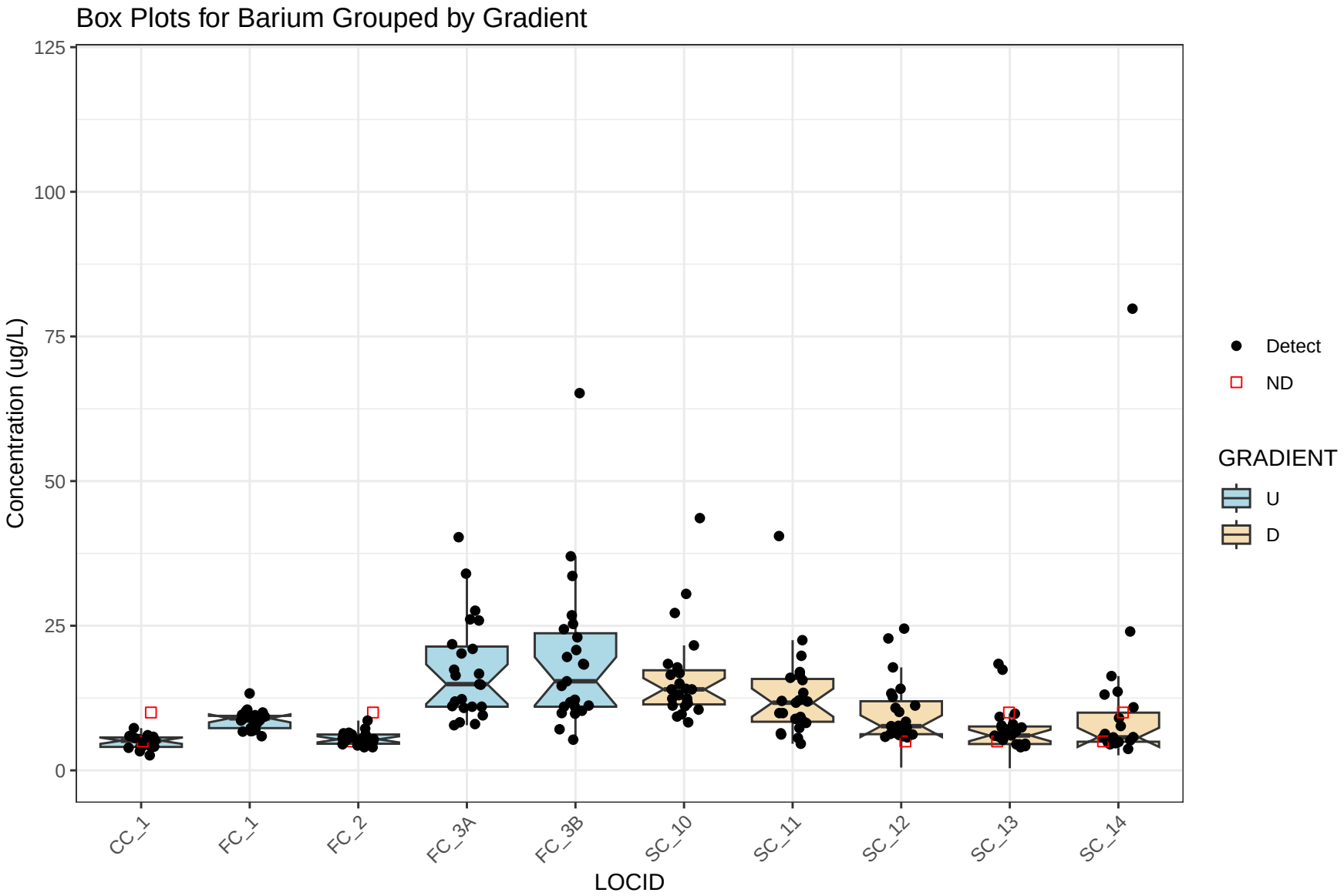


Figure 24: Box Plots

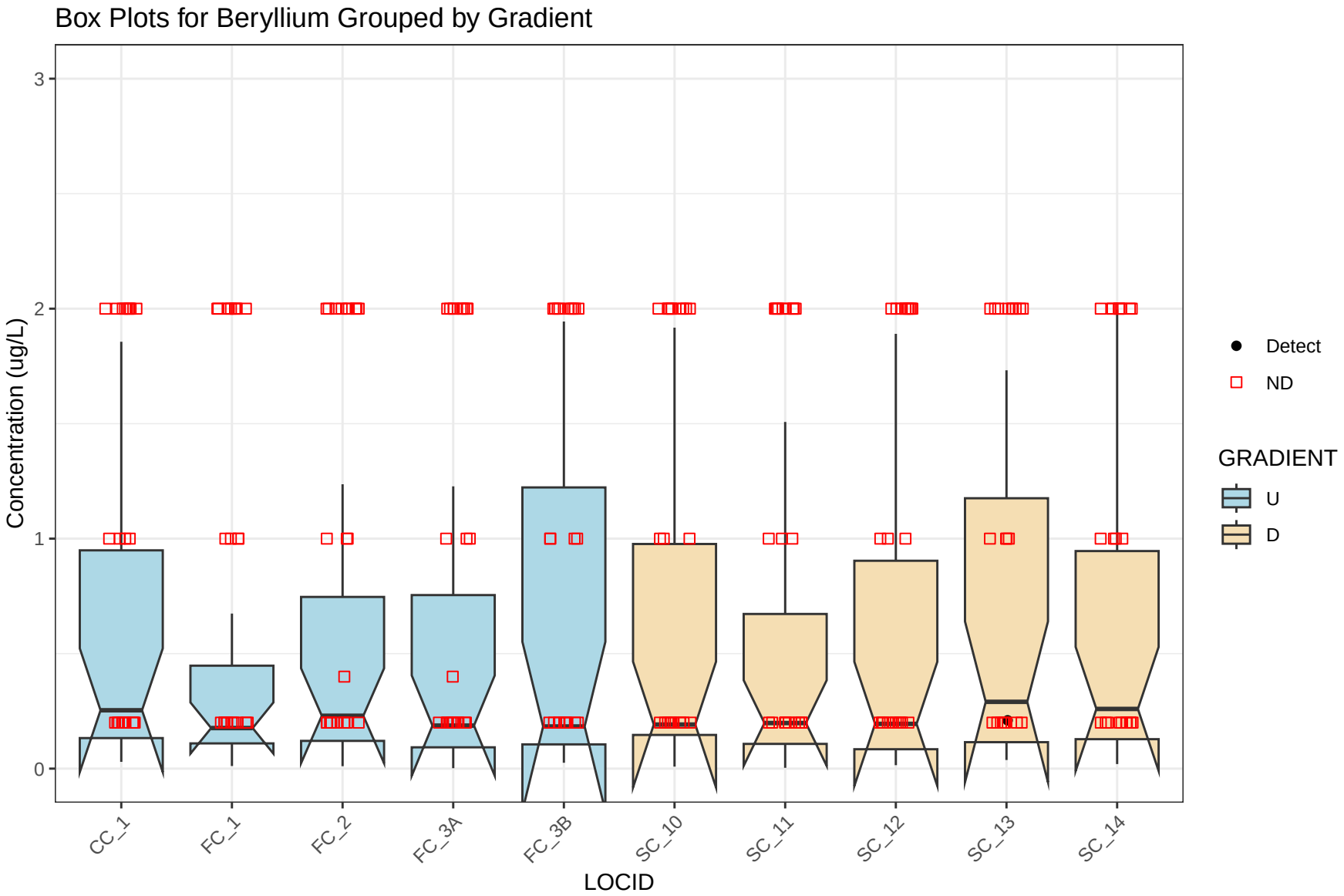


Figure 25: Box Plots

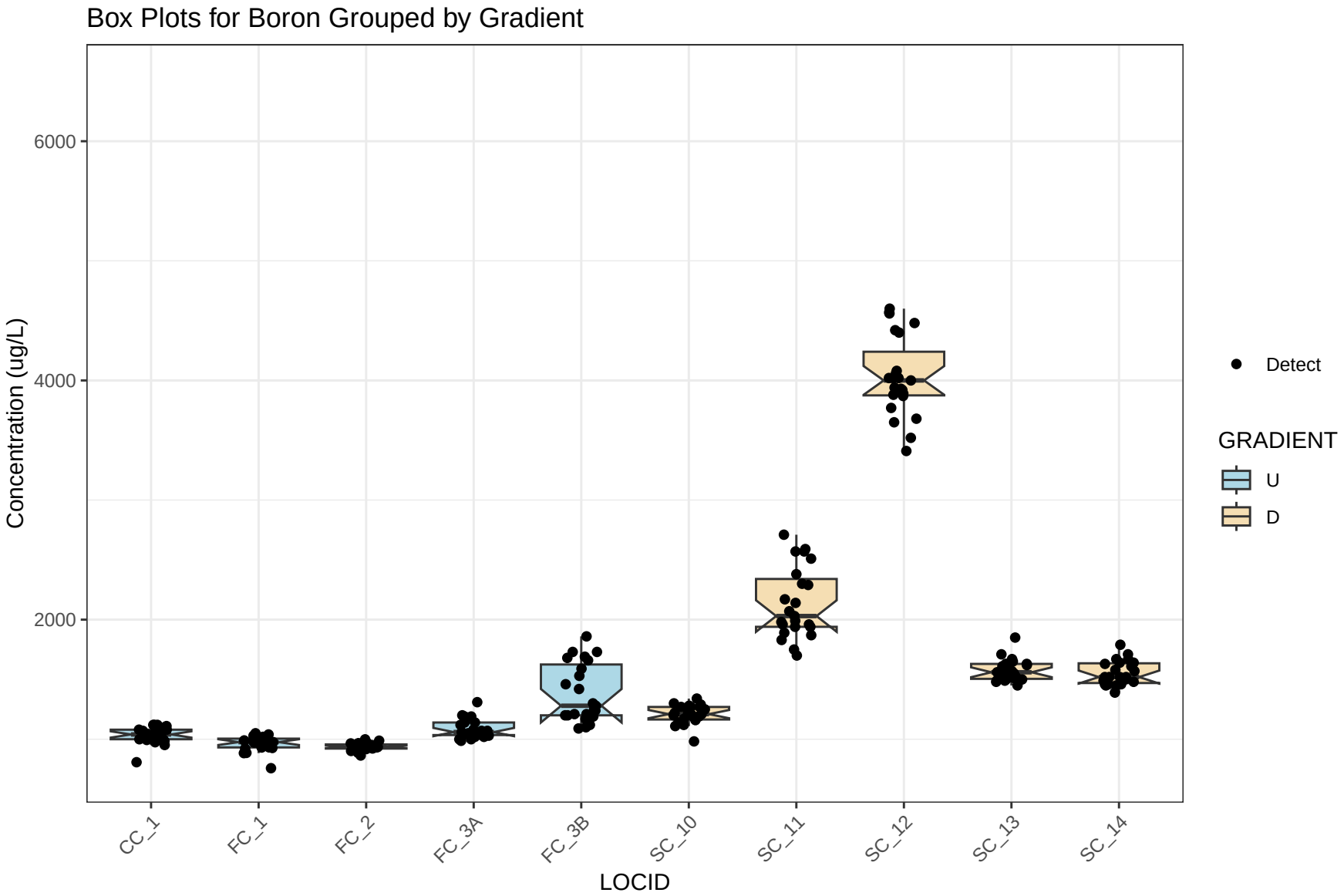


Figure 26: Box Plots

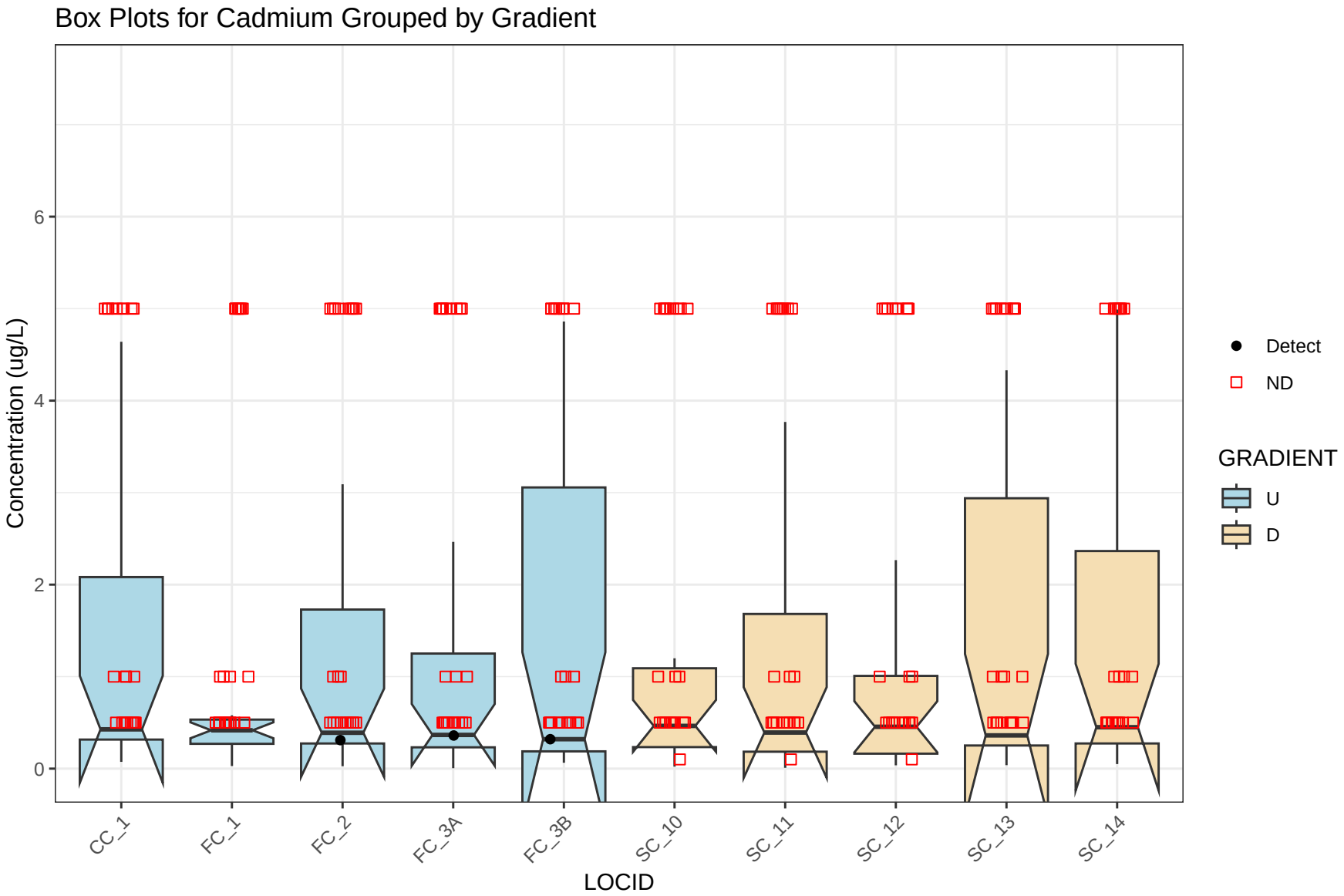


Figure 27: Box Plots

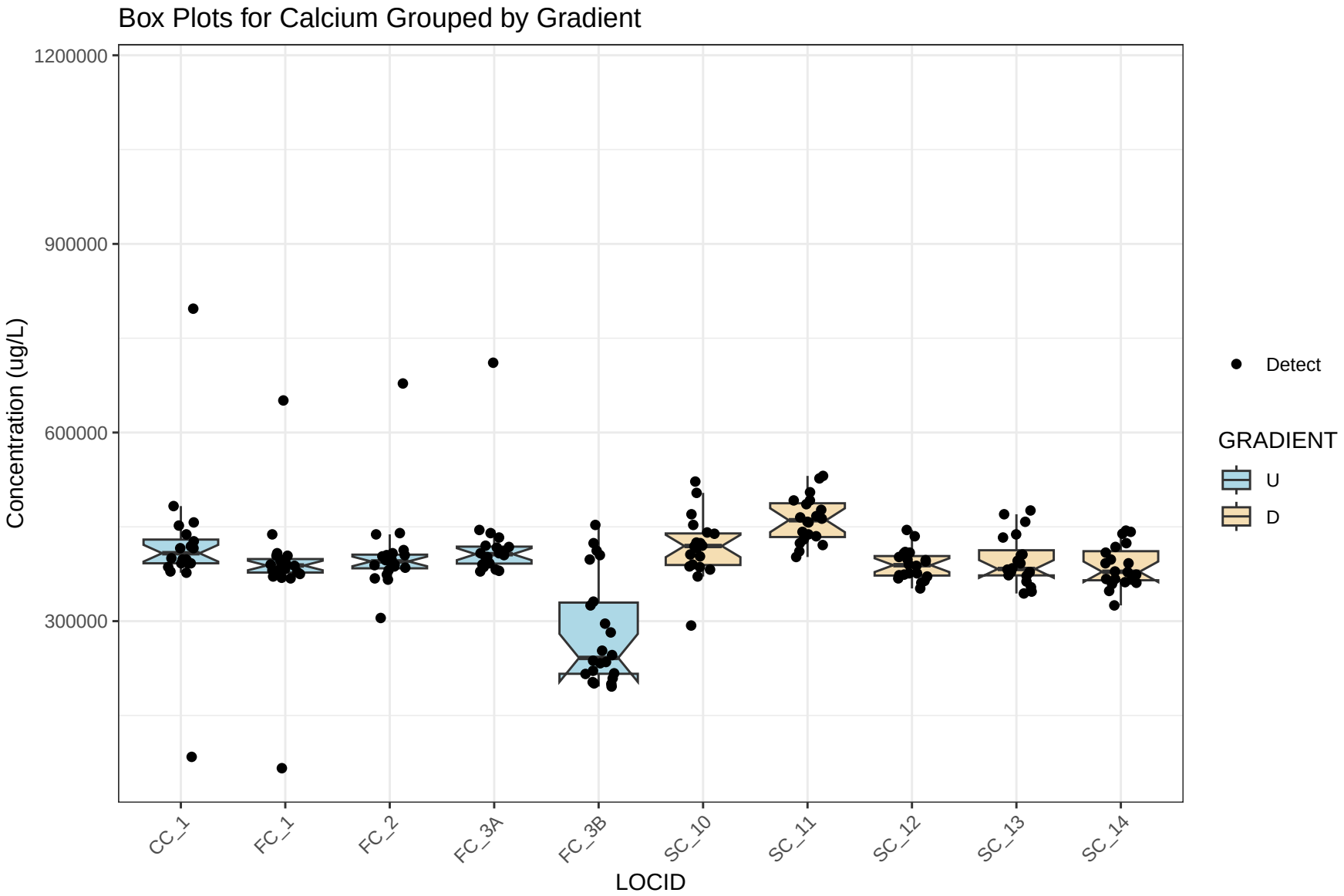


Figure 28: Box Plots

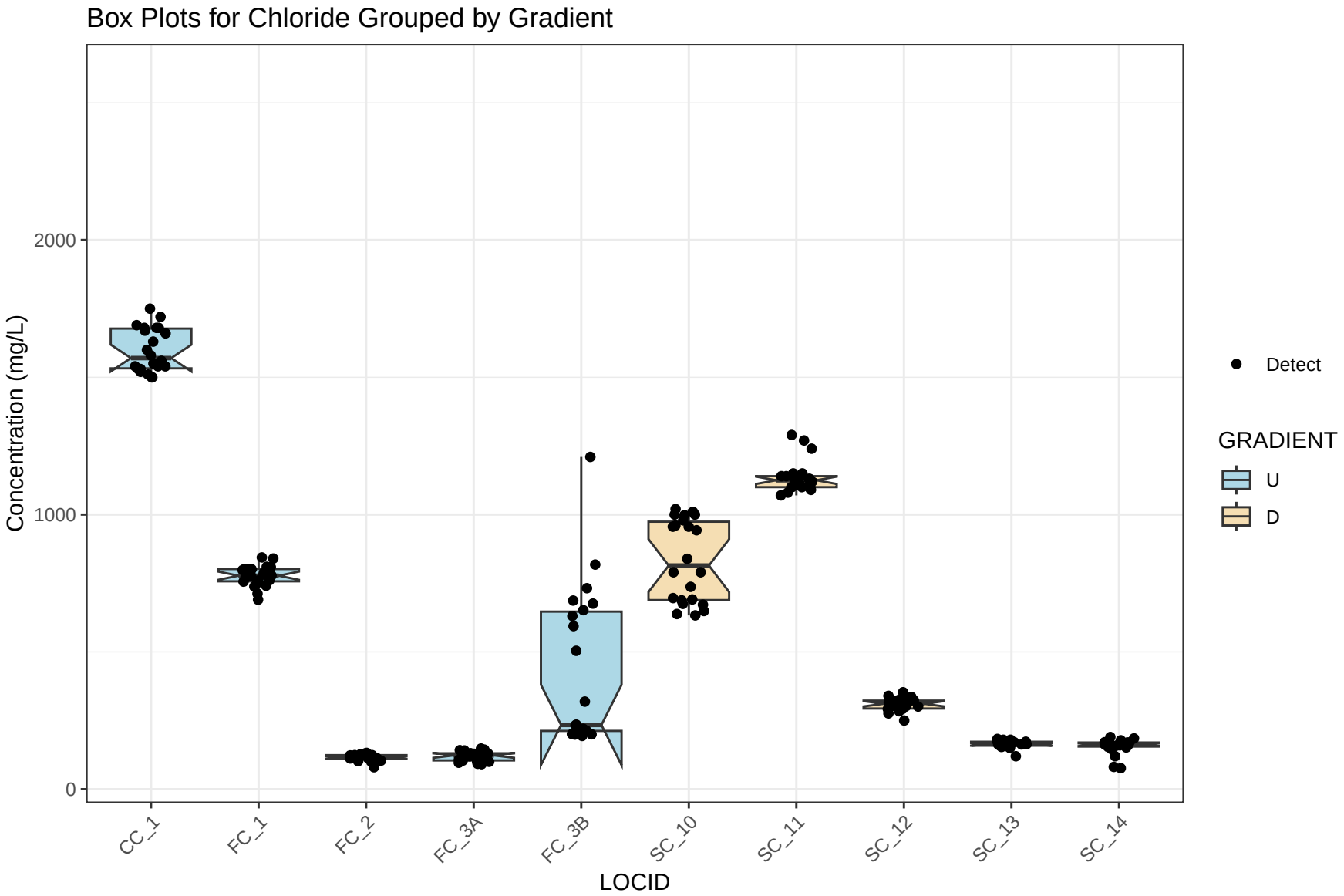


Figure 29: Box Plots

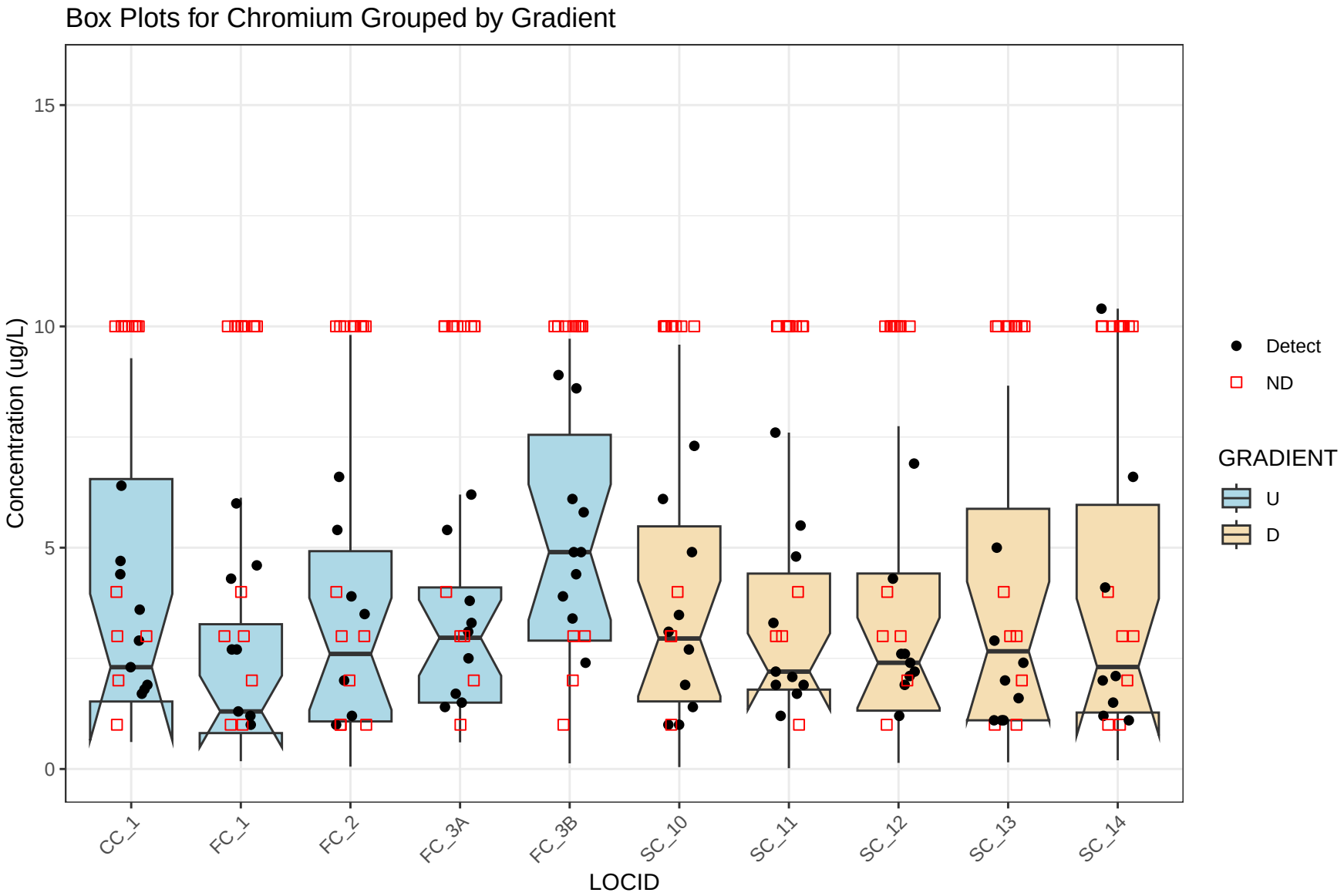


Figure 30: Box Plots

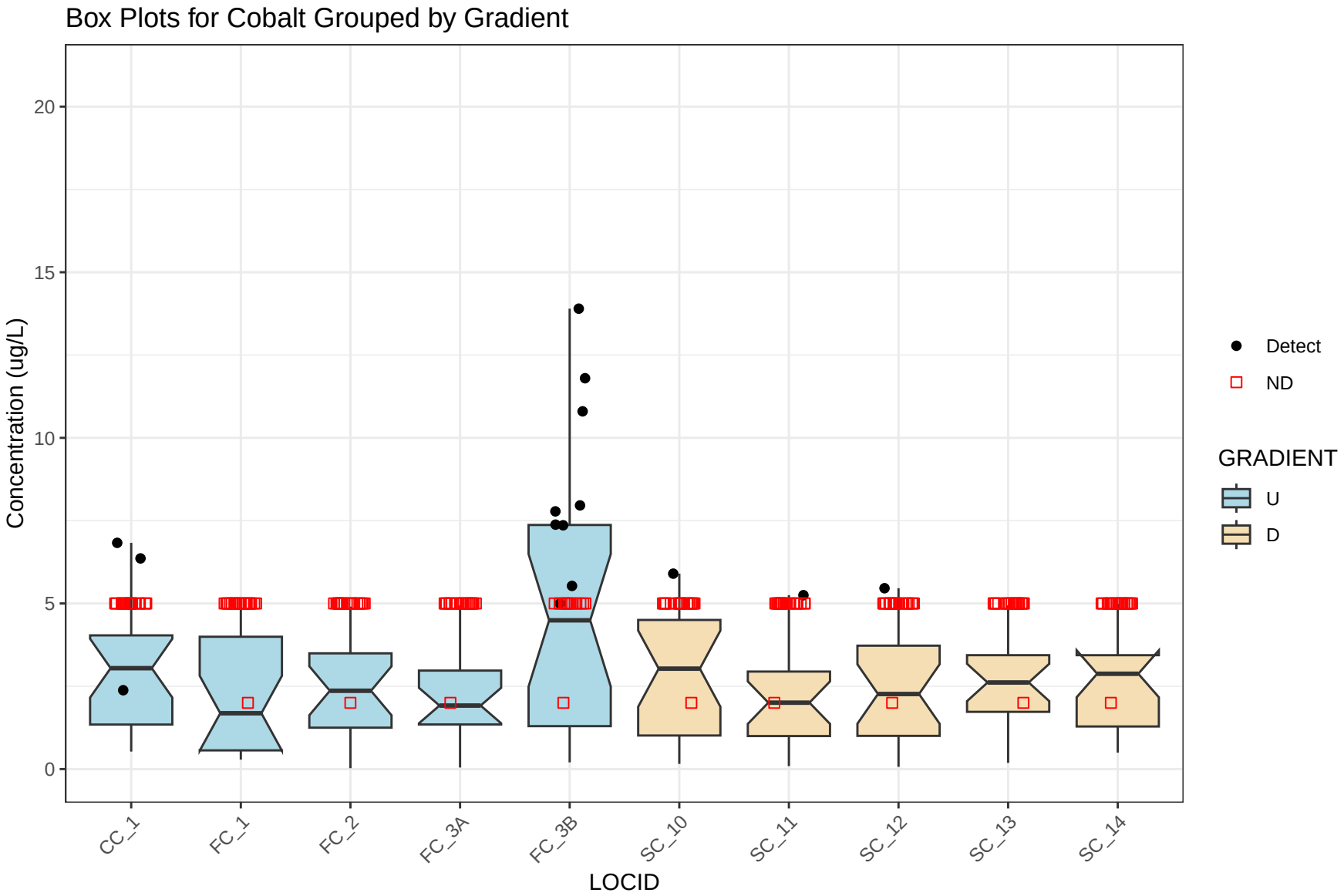


Figure 31: Box Plots

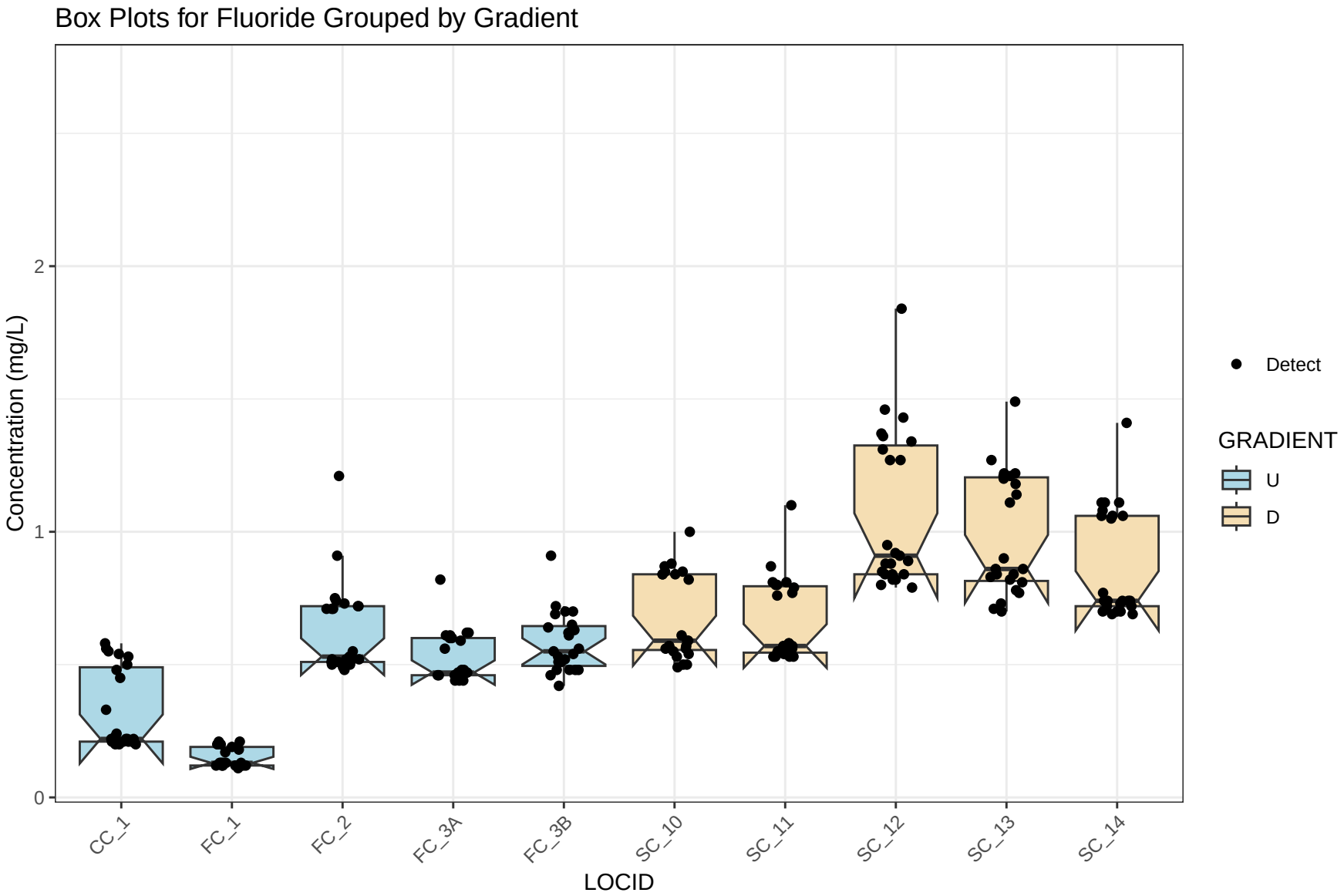


Figure 32: Box Plots

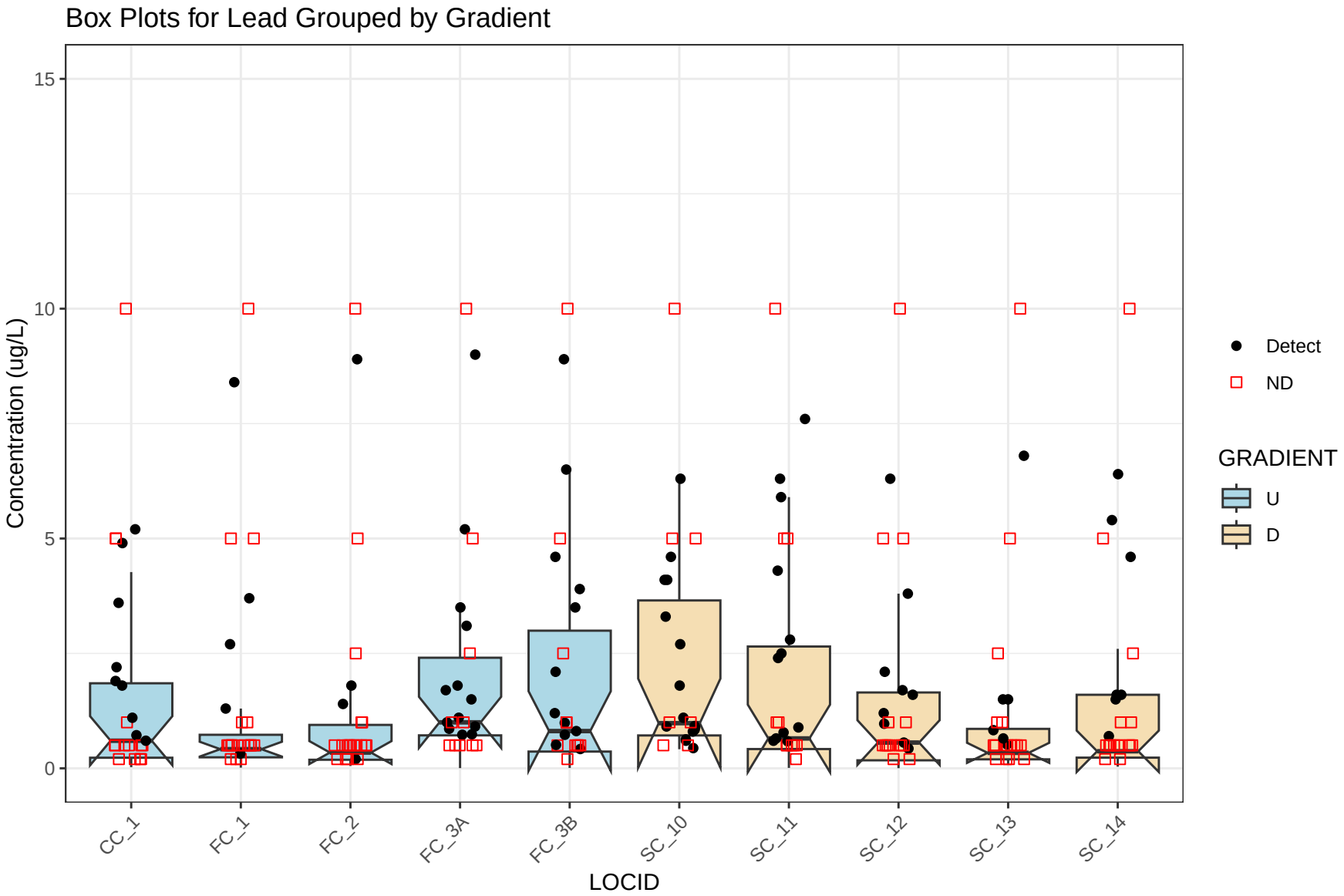


Figure 33: Box Plots

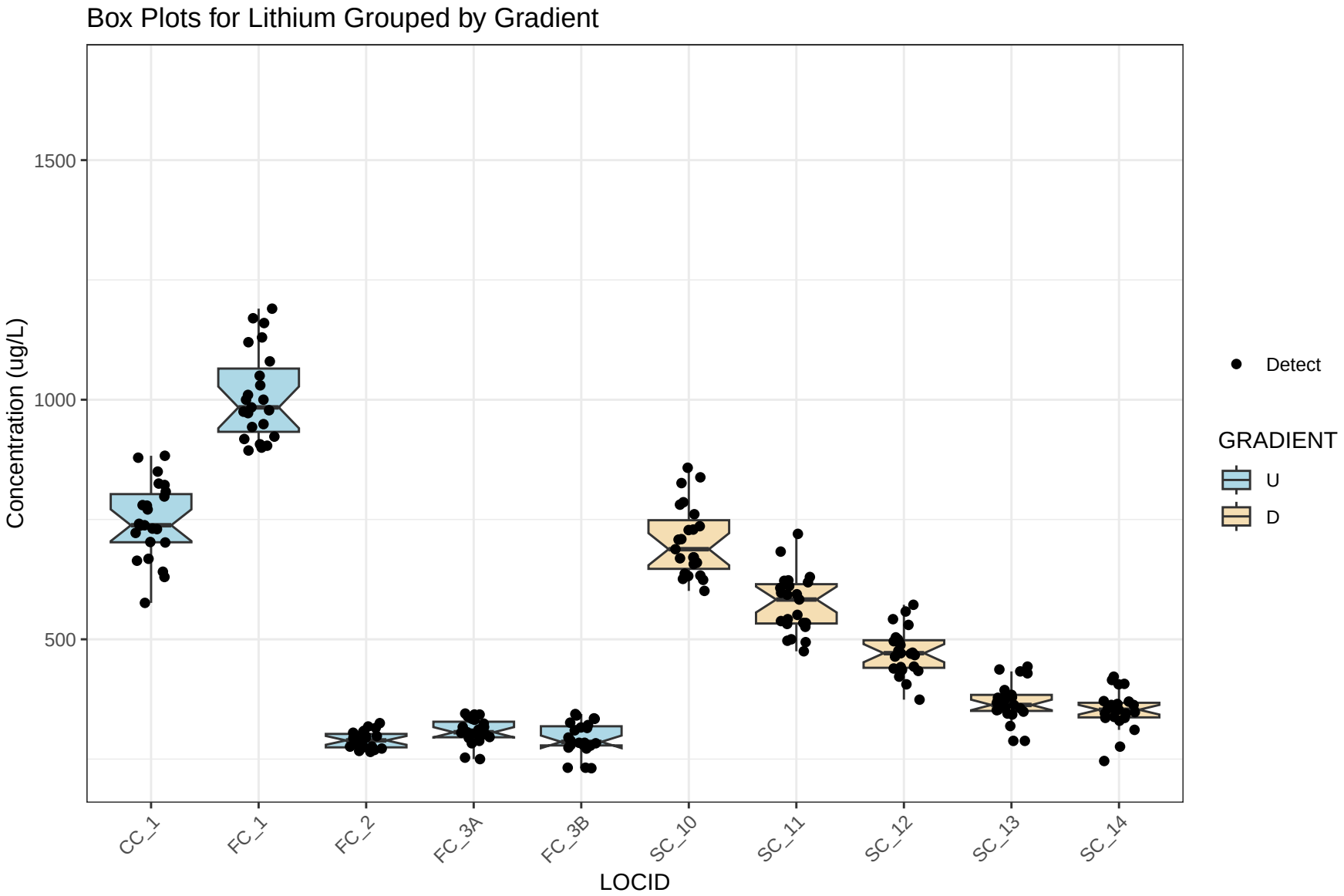


Figure 34: Box Plots

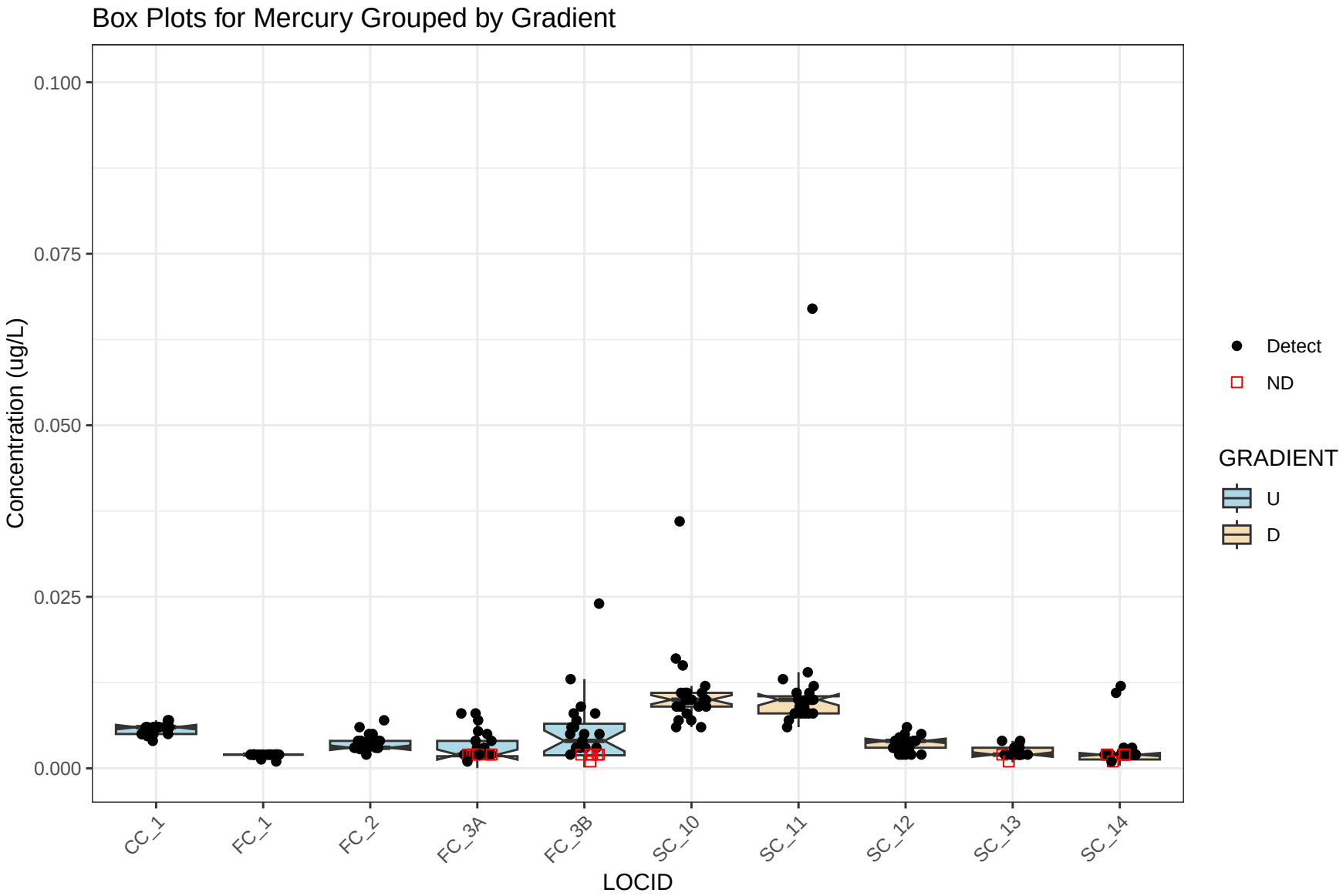


Figure 35: Box Plots

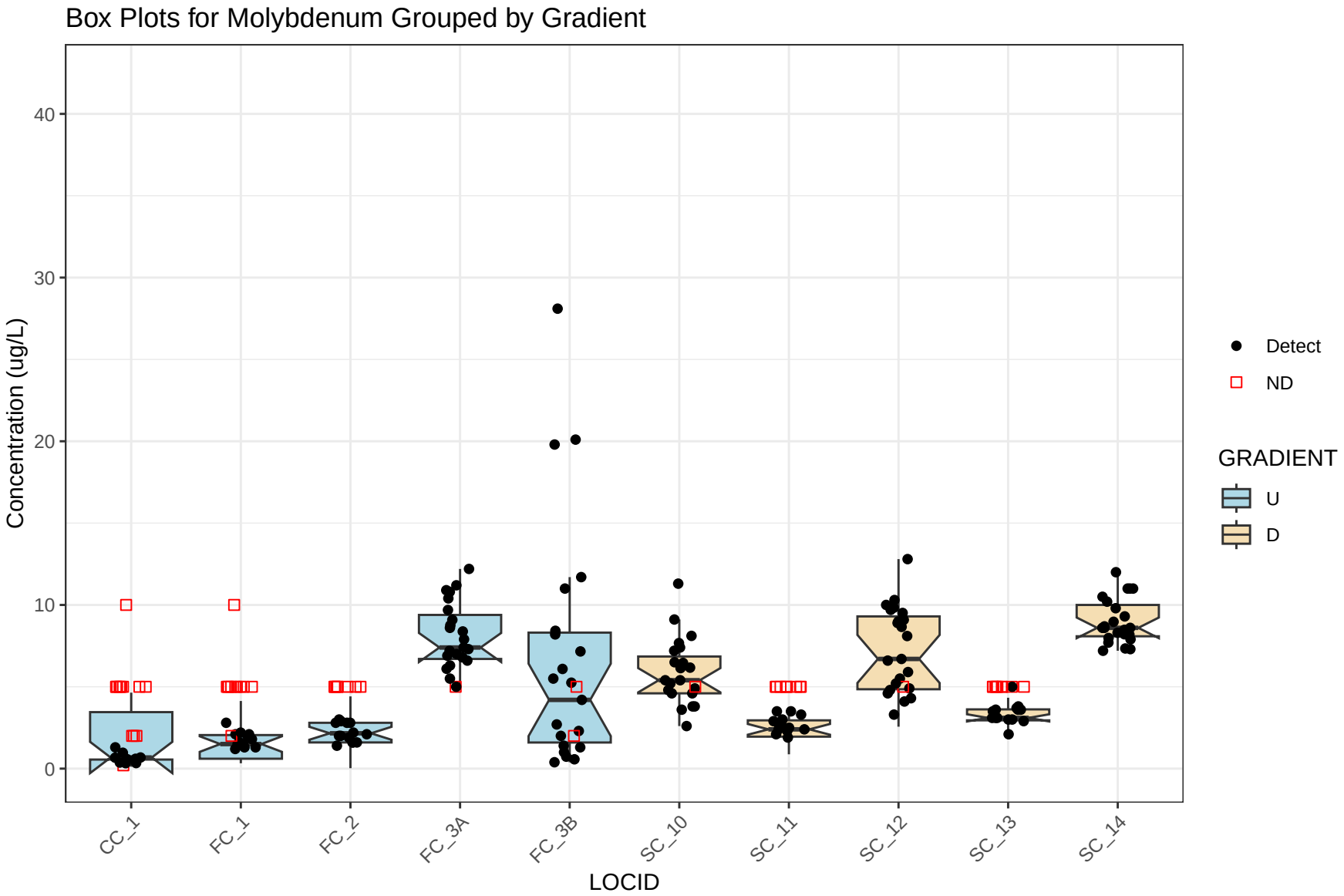


Figure 36: Box Plots

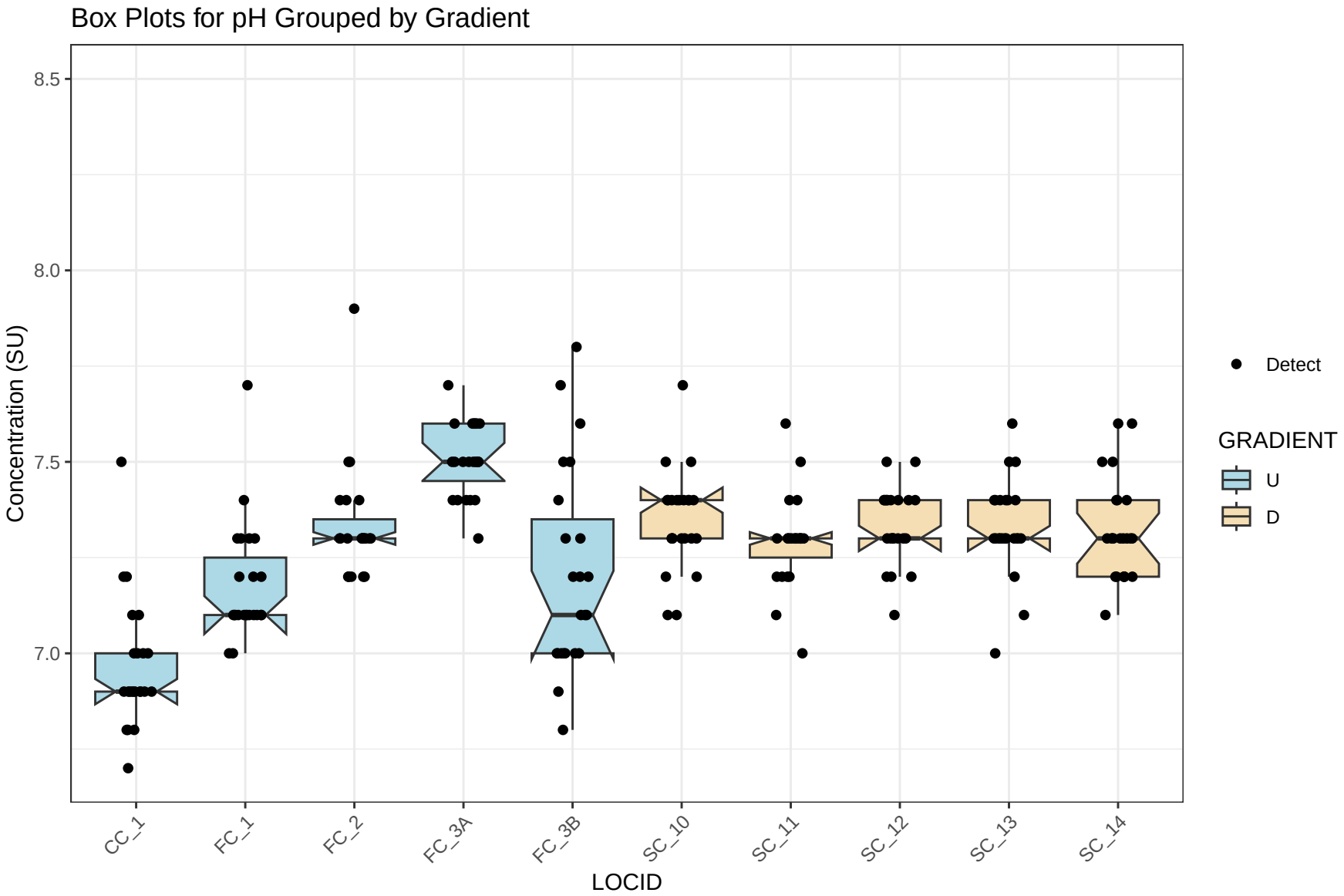


Figure 37: Box Plots

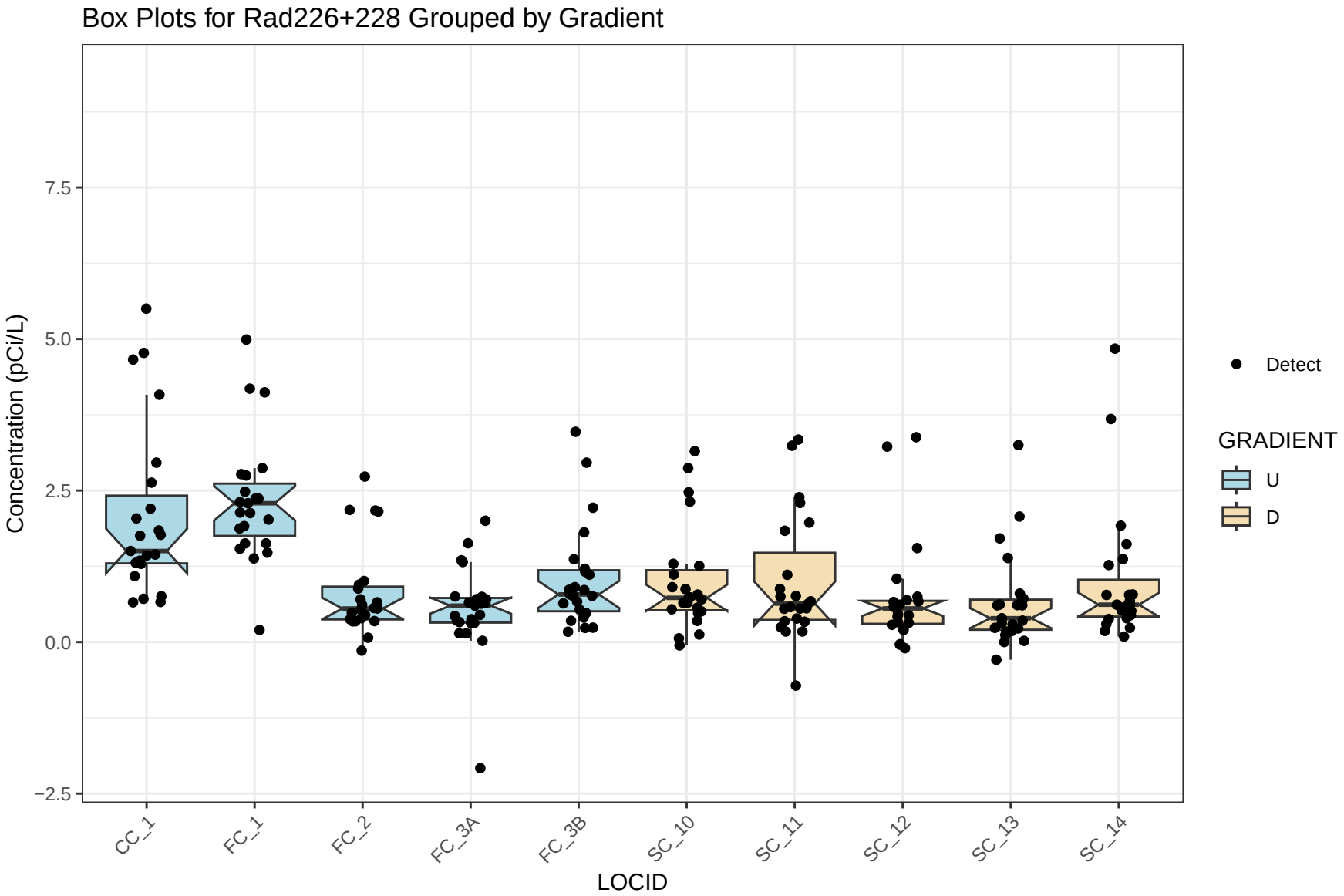


Figure 38: Box Plots

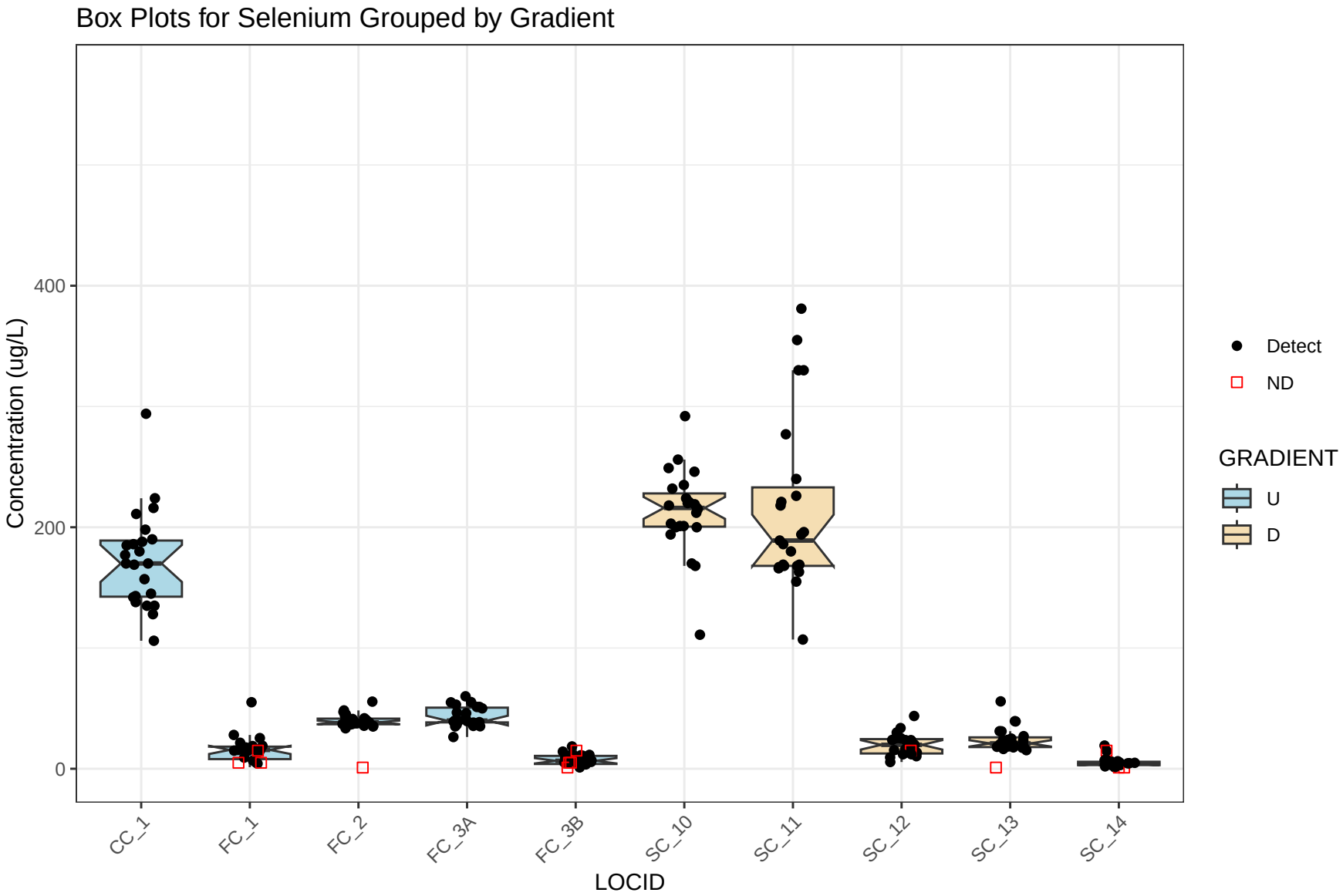


Figure 39: Box Plots

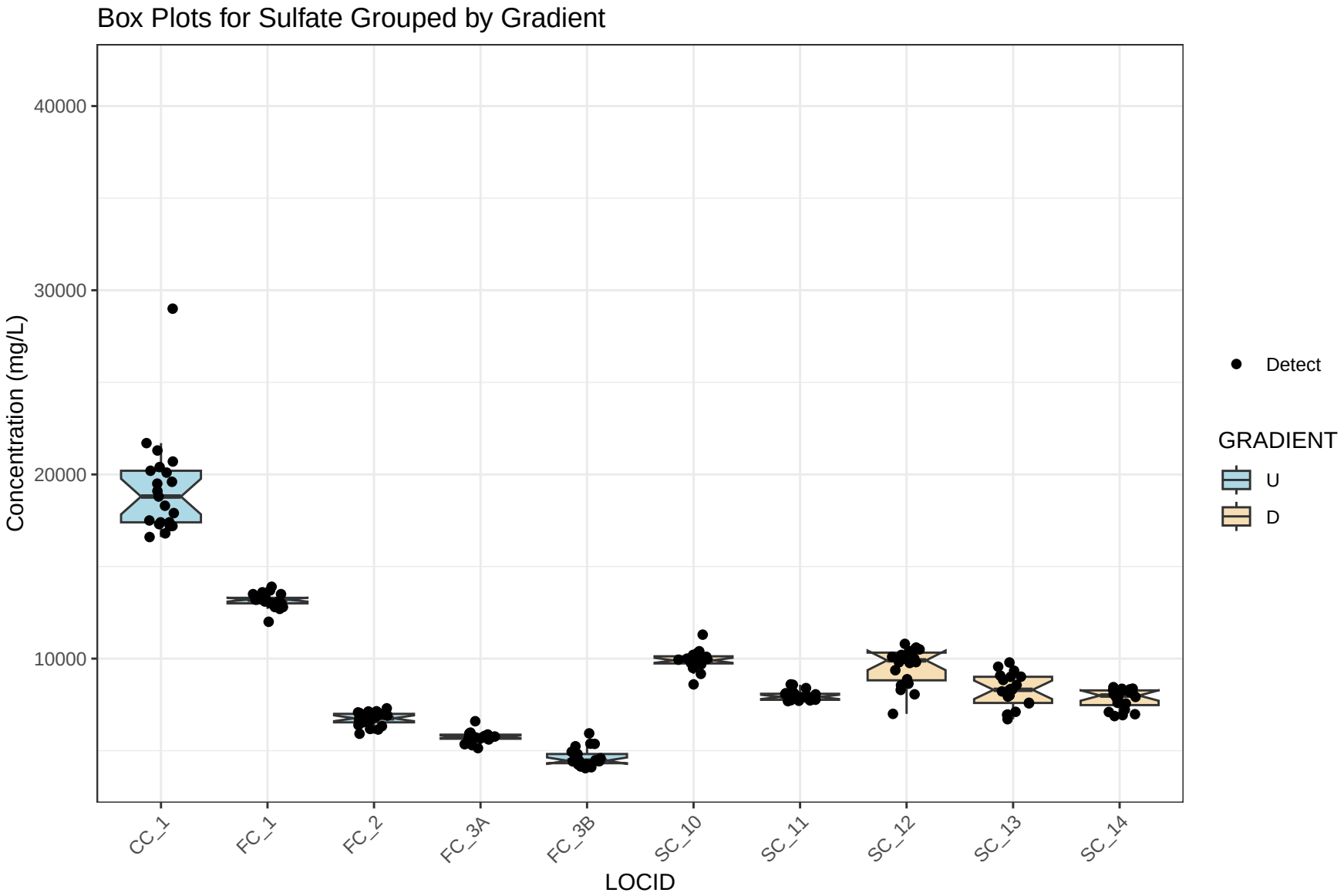


Figure 40: Box Plots

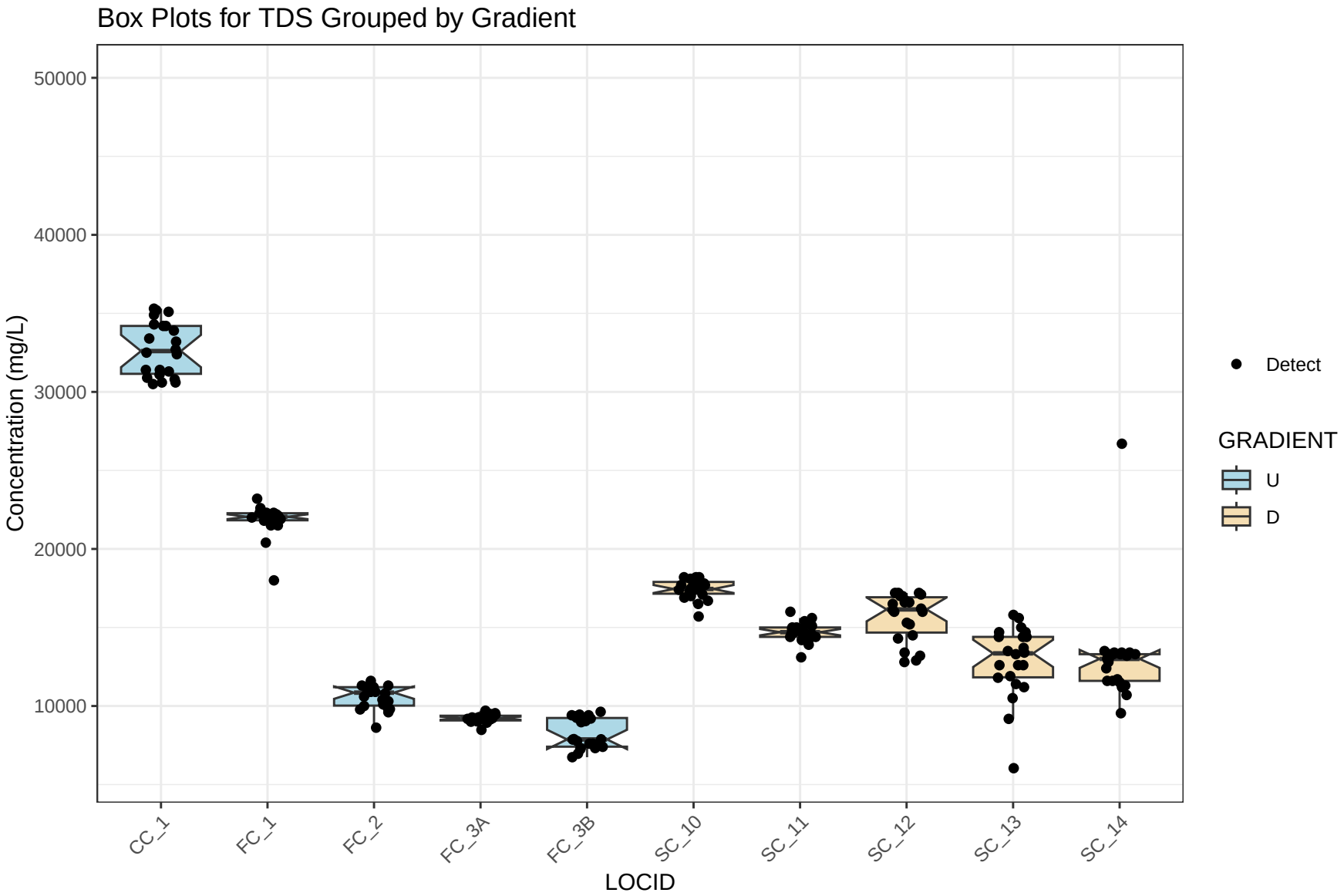


Figure 41: Box Plots

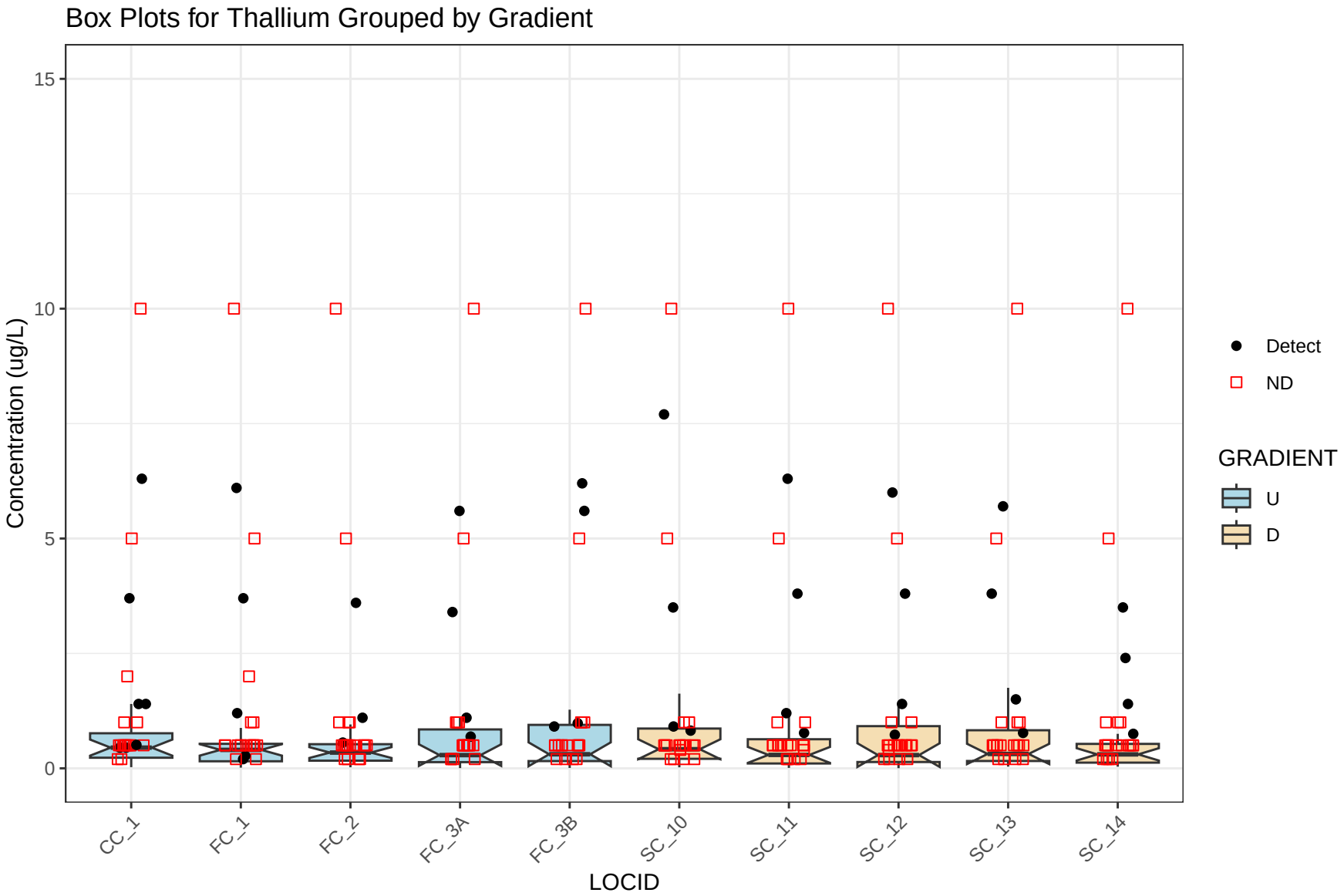


Figure 42: Box Plots

Stacked Time Series Plots

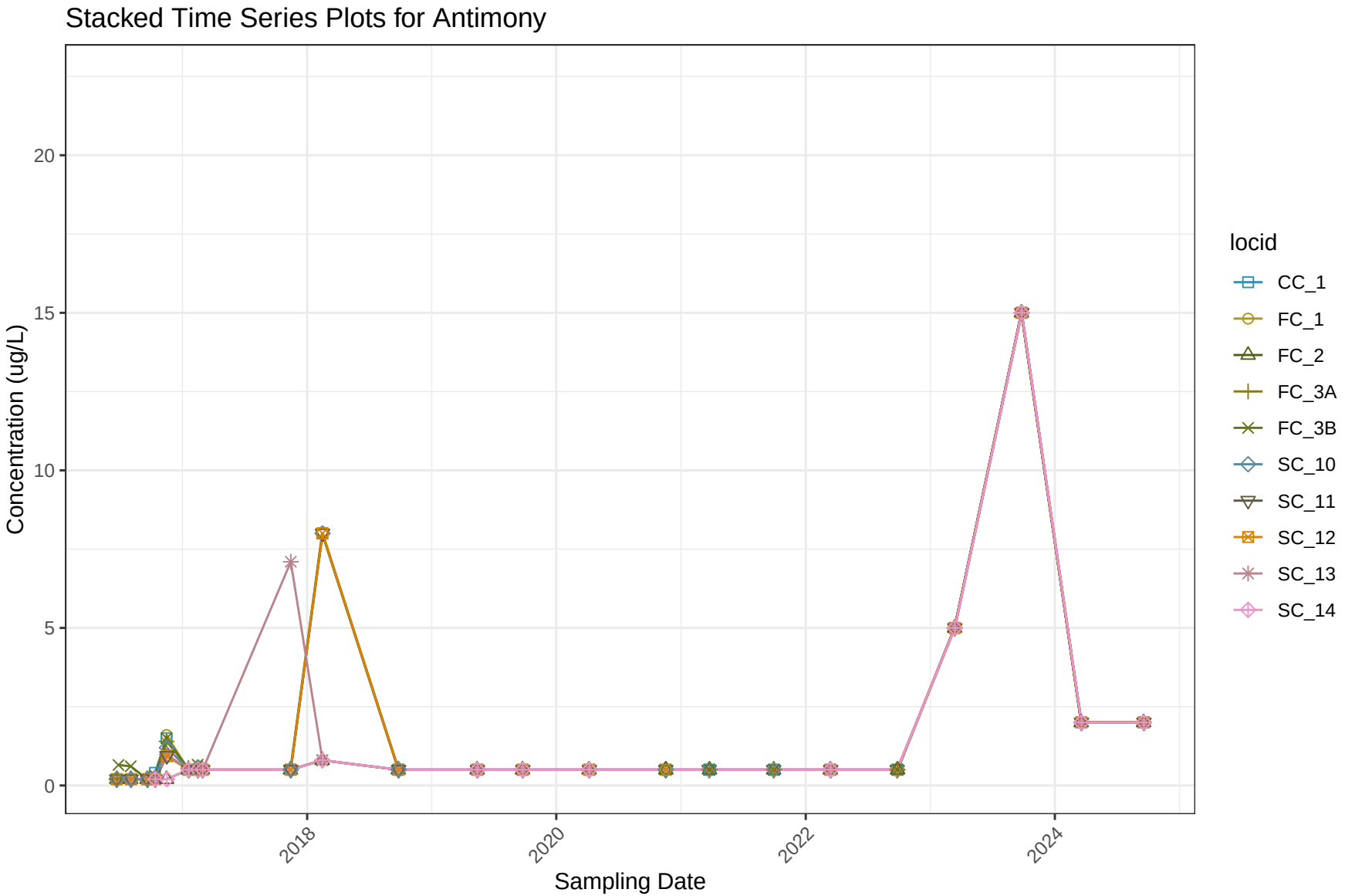


Figure 43: Stacked Time Series Plots

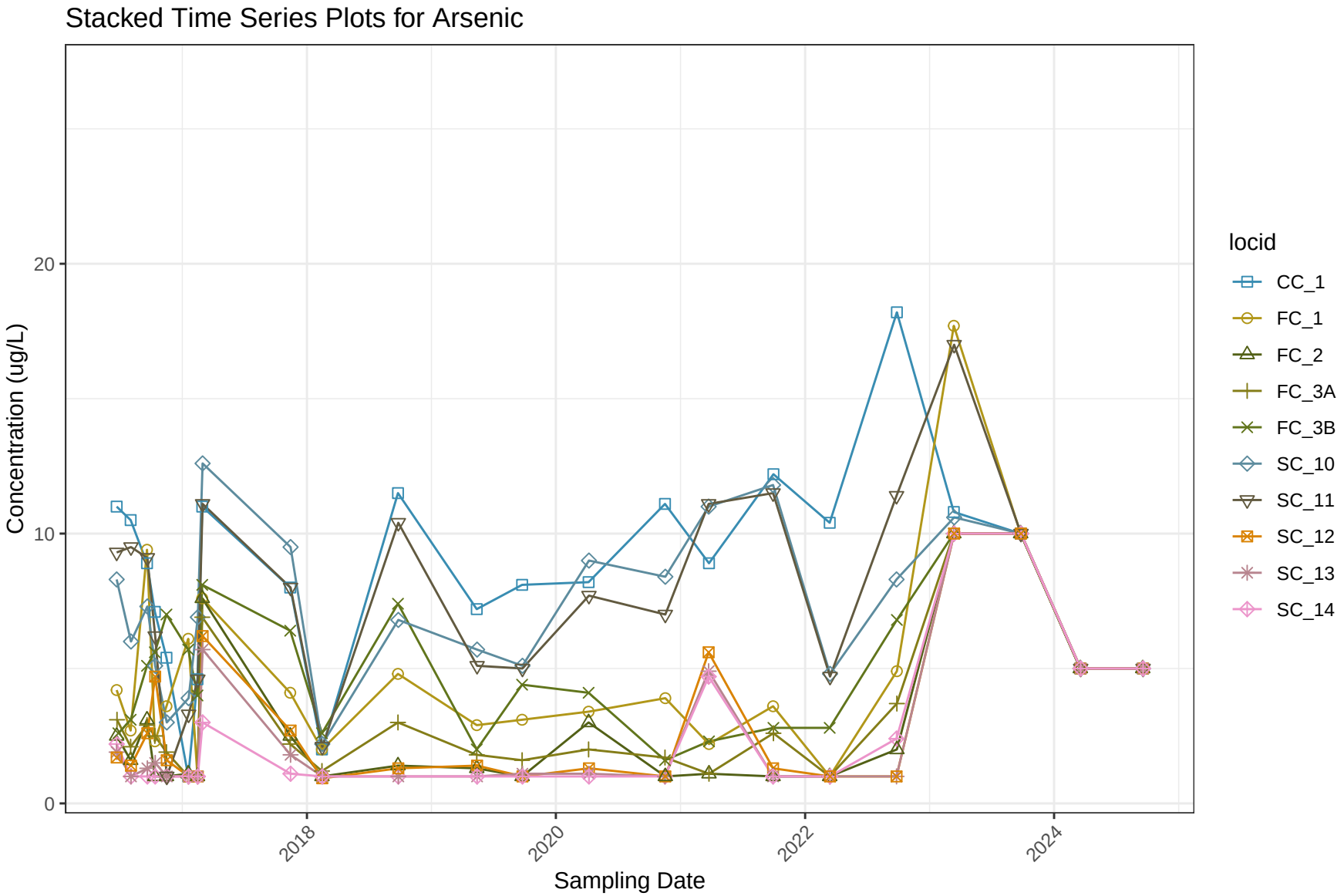


Figure 44: Stacked Time Series Plots

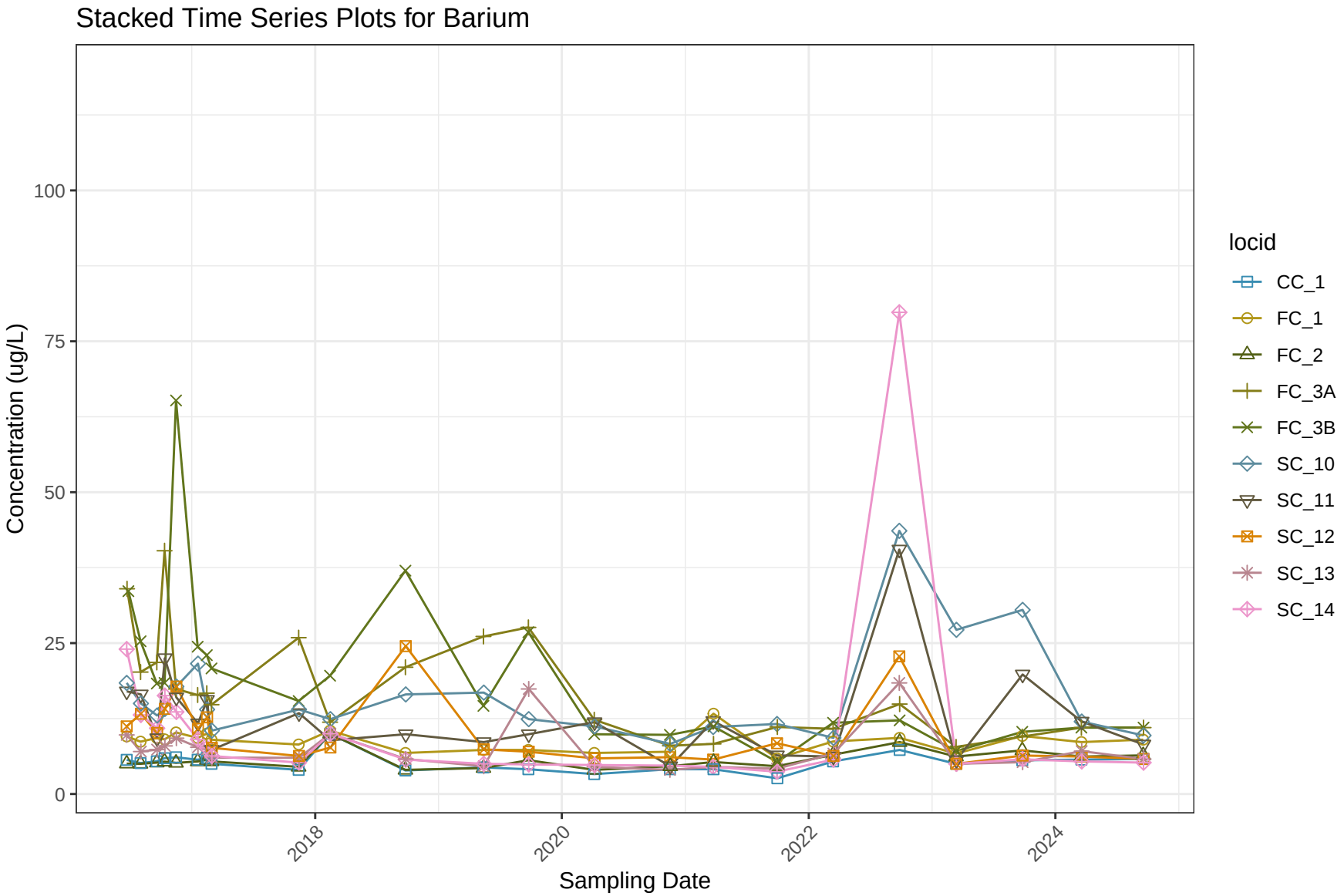


Figure 45: Stacked Time Series Plots

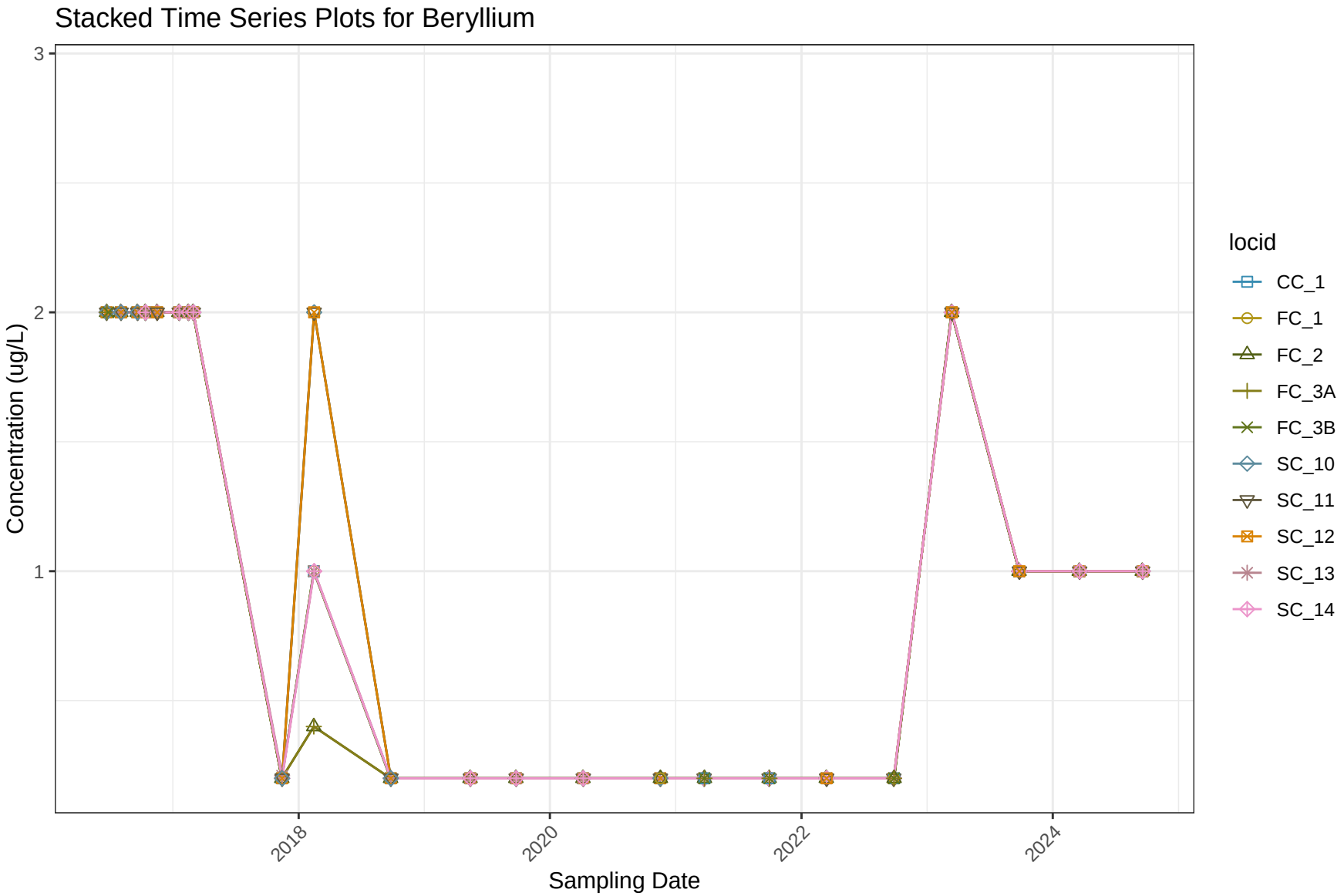


Figure 46: Stacked Time Series Plots

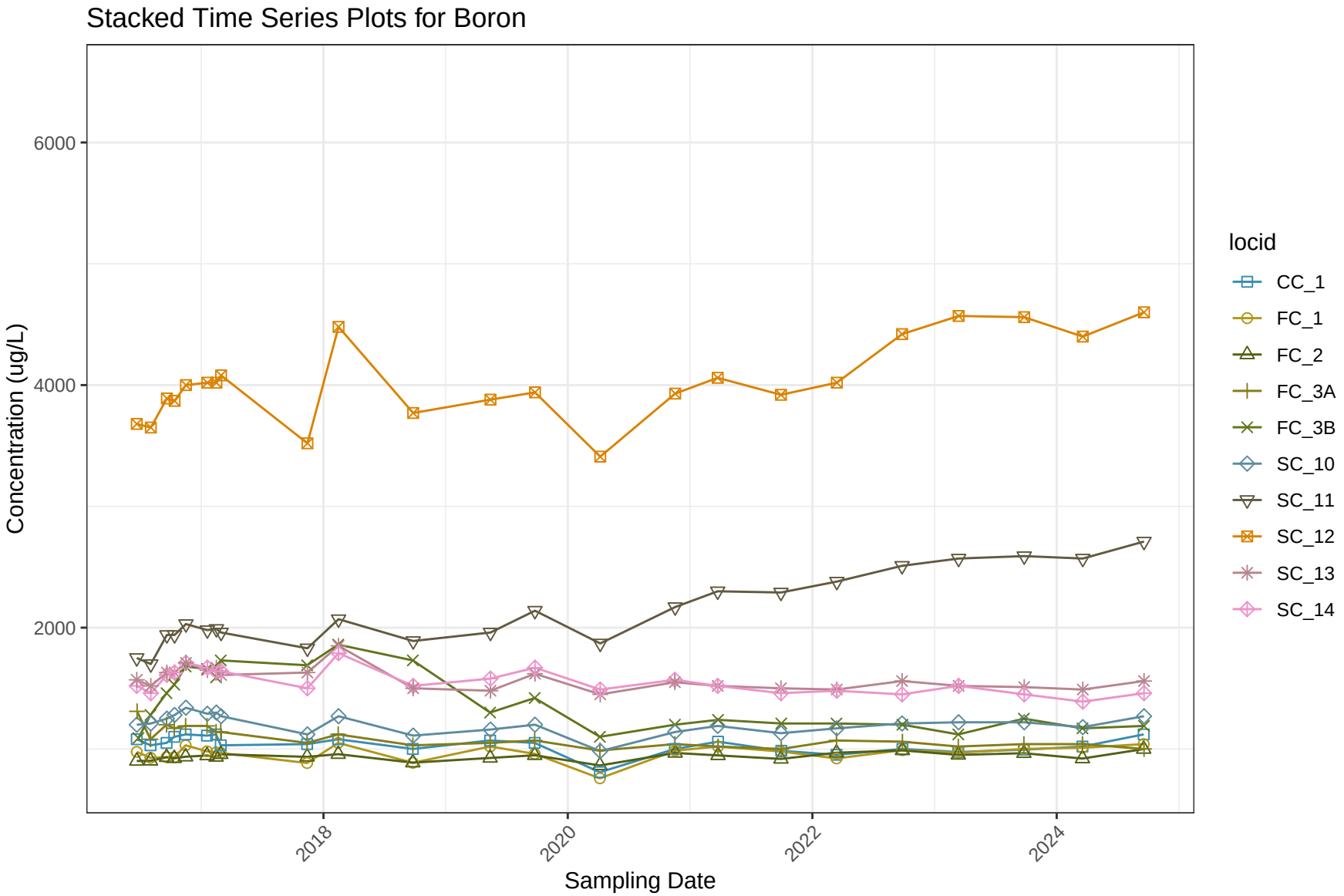


Figure 47: Stacked Time Series Plots

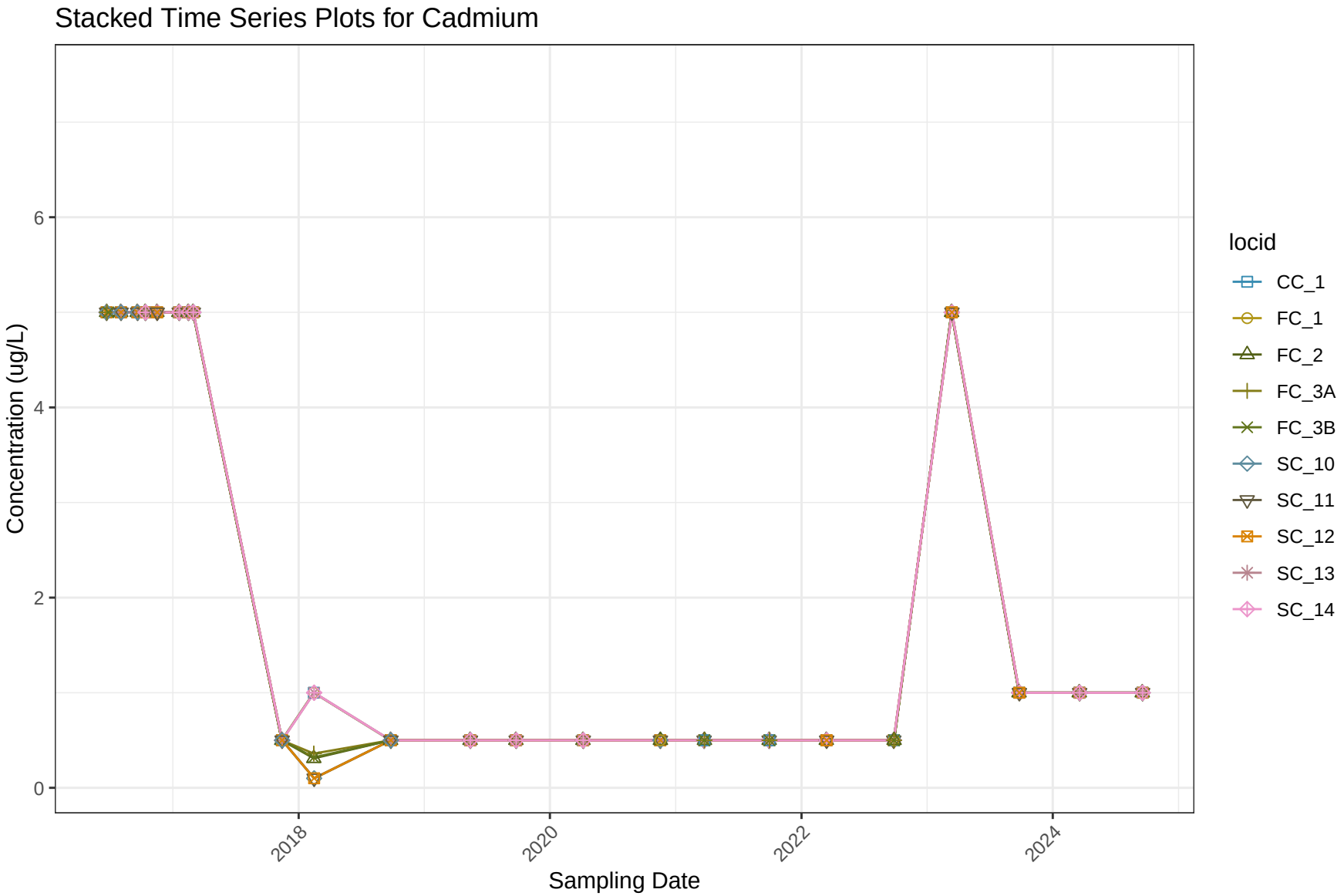


Figure 48: Stacked Time Series Plots

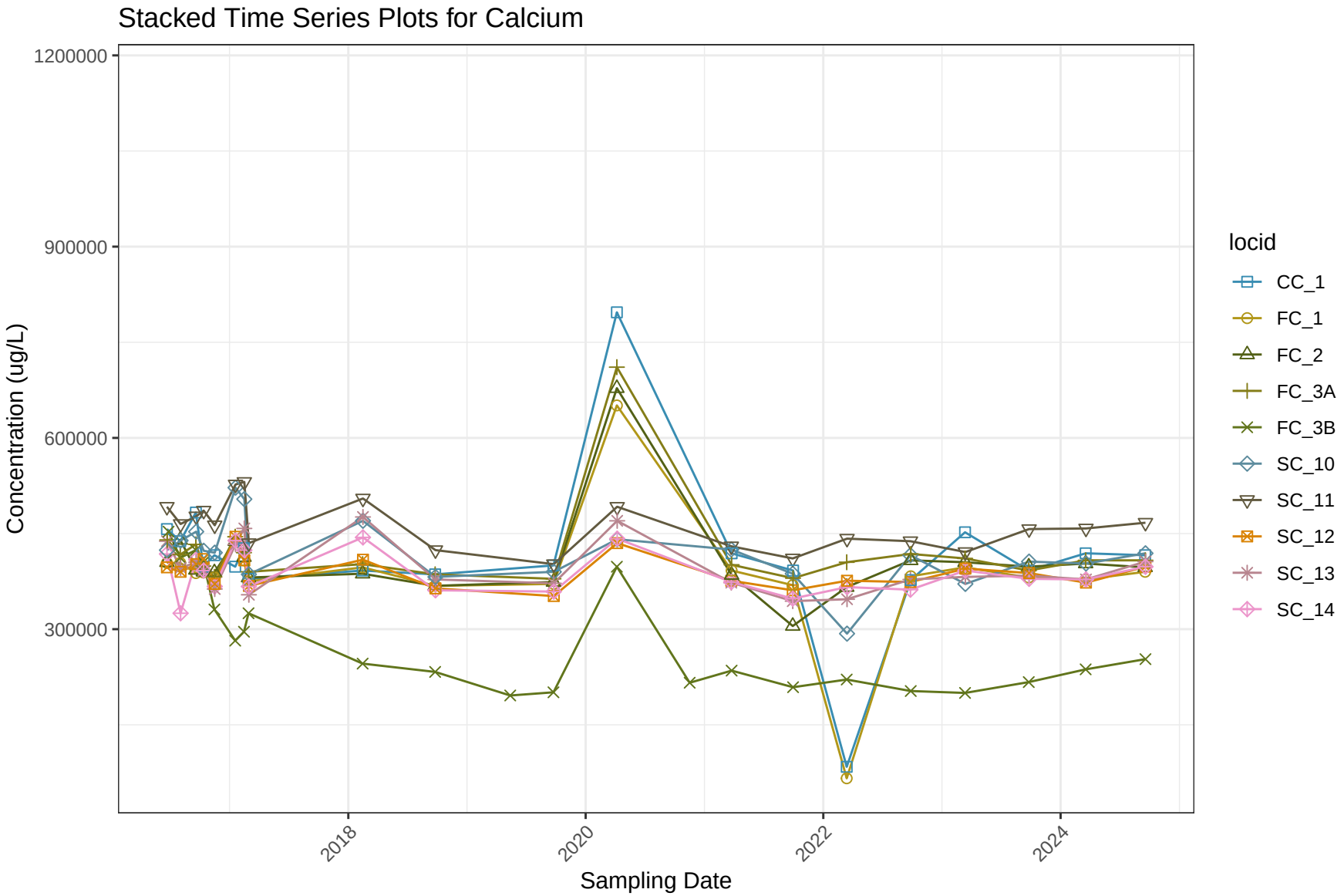


Figure 49: Stacked Time Series Plots

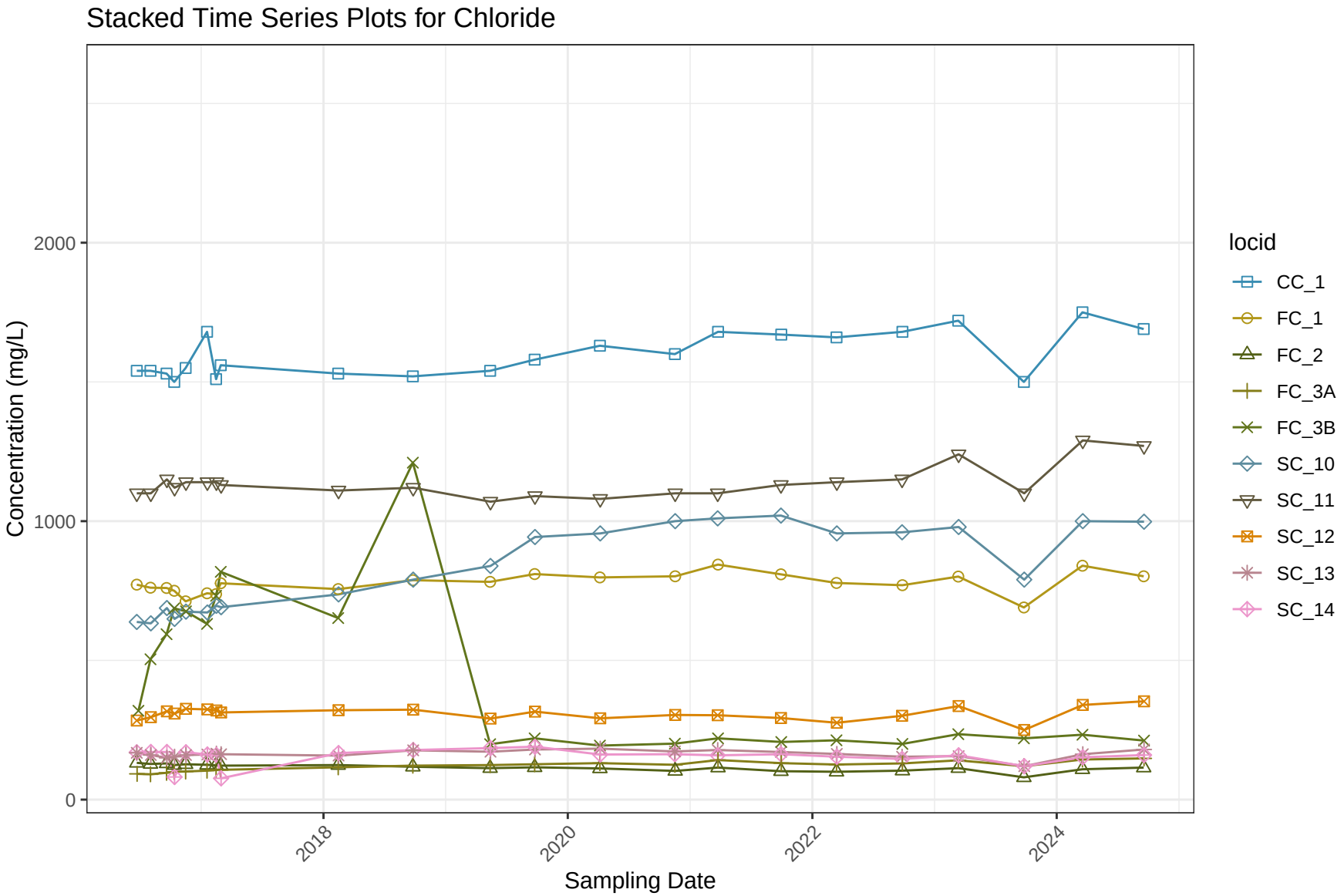


Figure 50: Stacked Time Series Plots

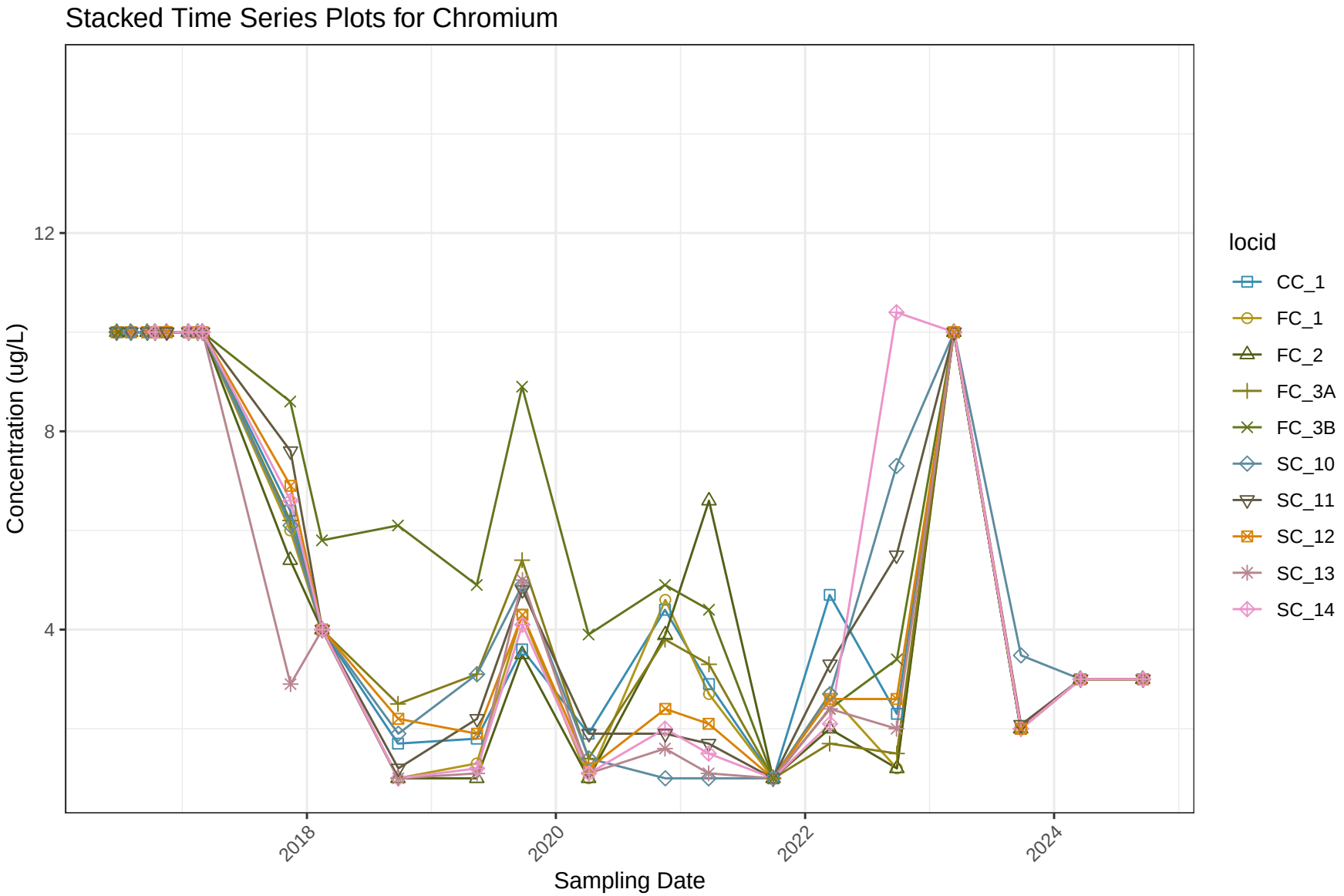


Figure 51: Stacked Time Series Plots

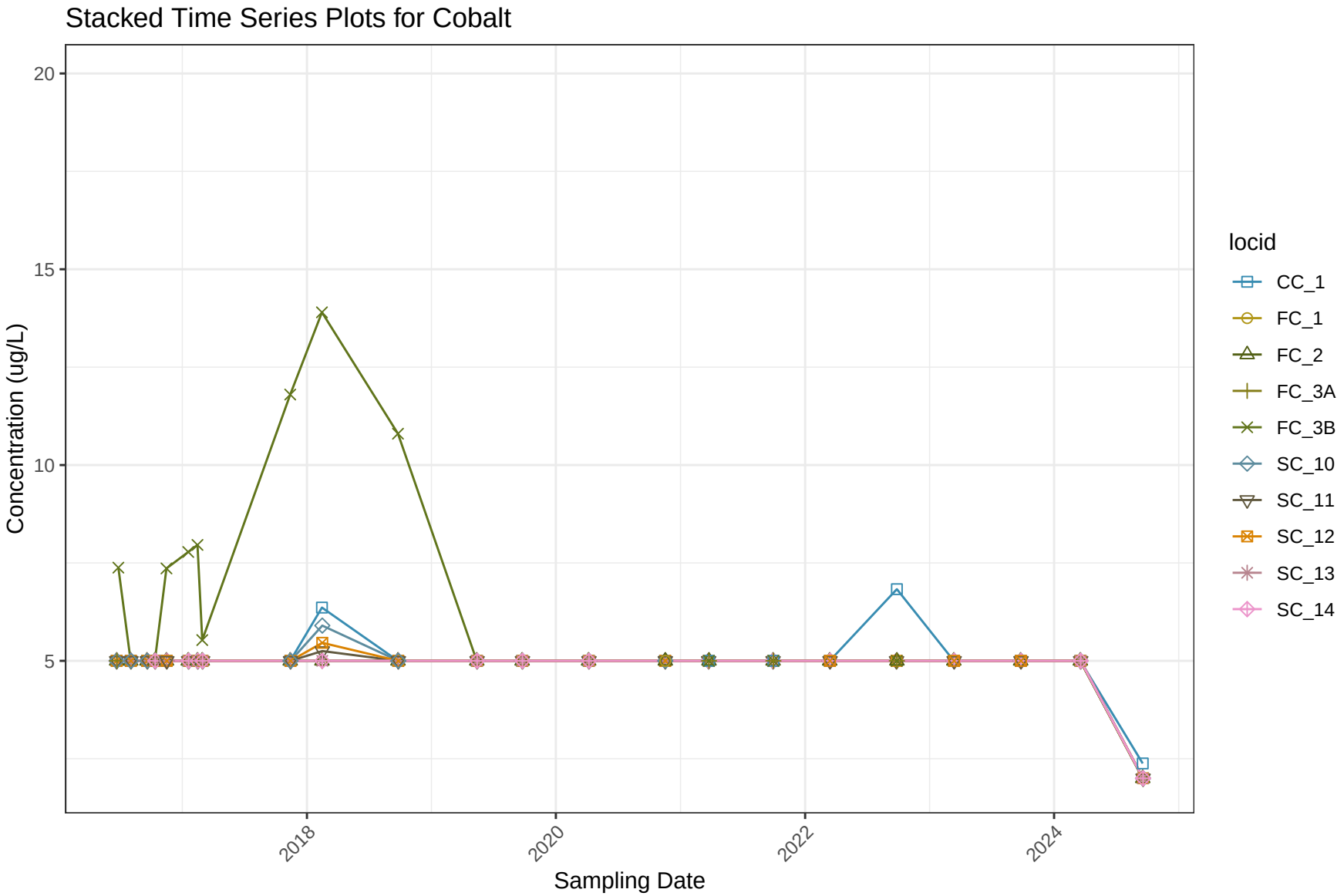


Figure 52: Stacked Time Series Plots

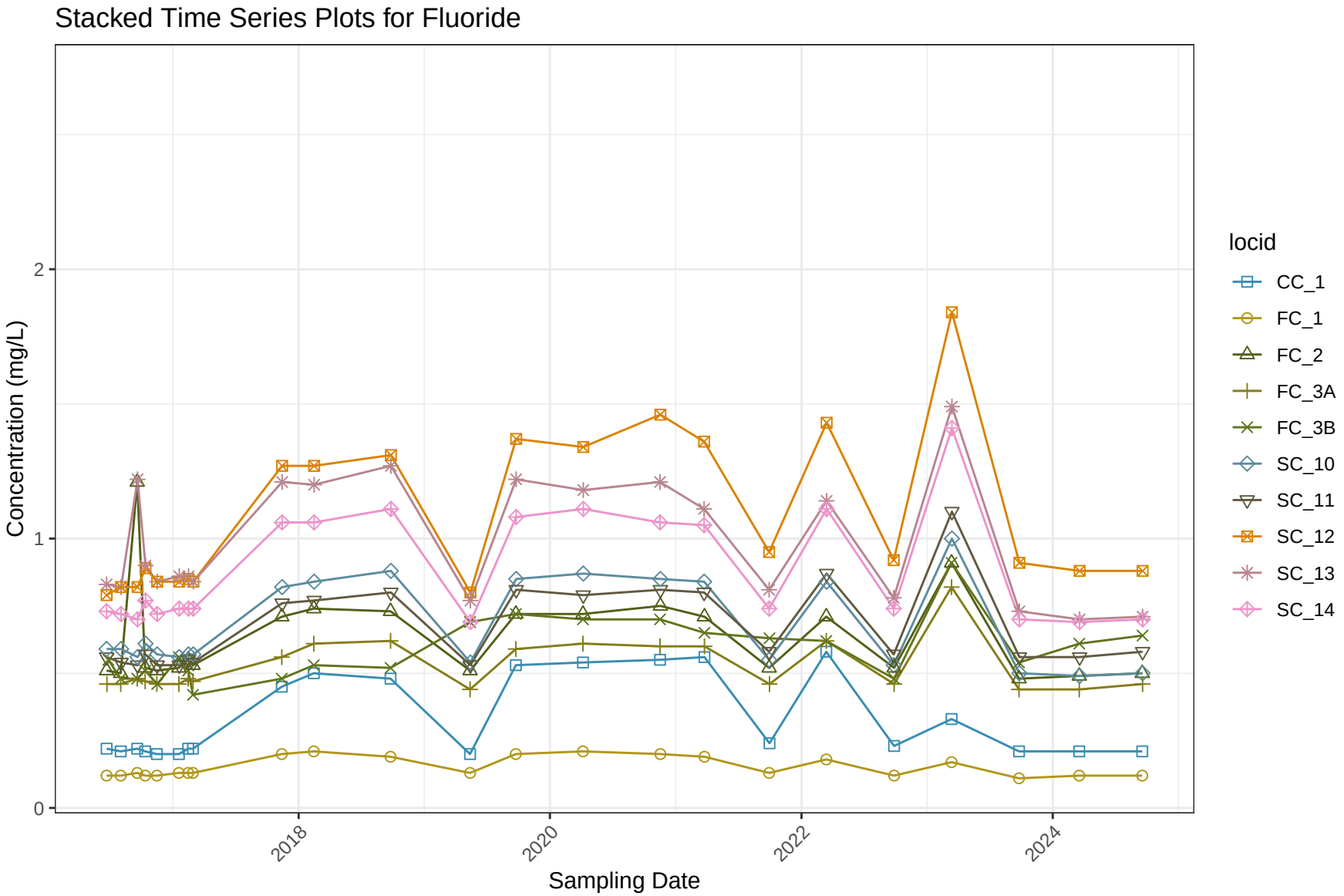


Figure 53: Stacked Time Series Plots

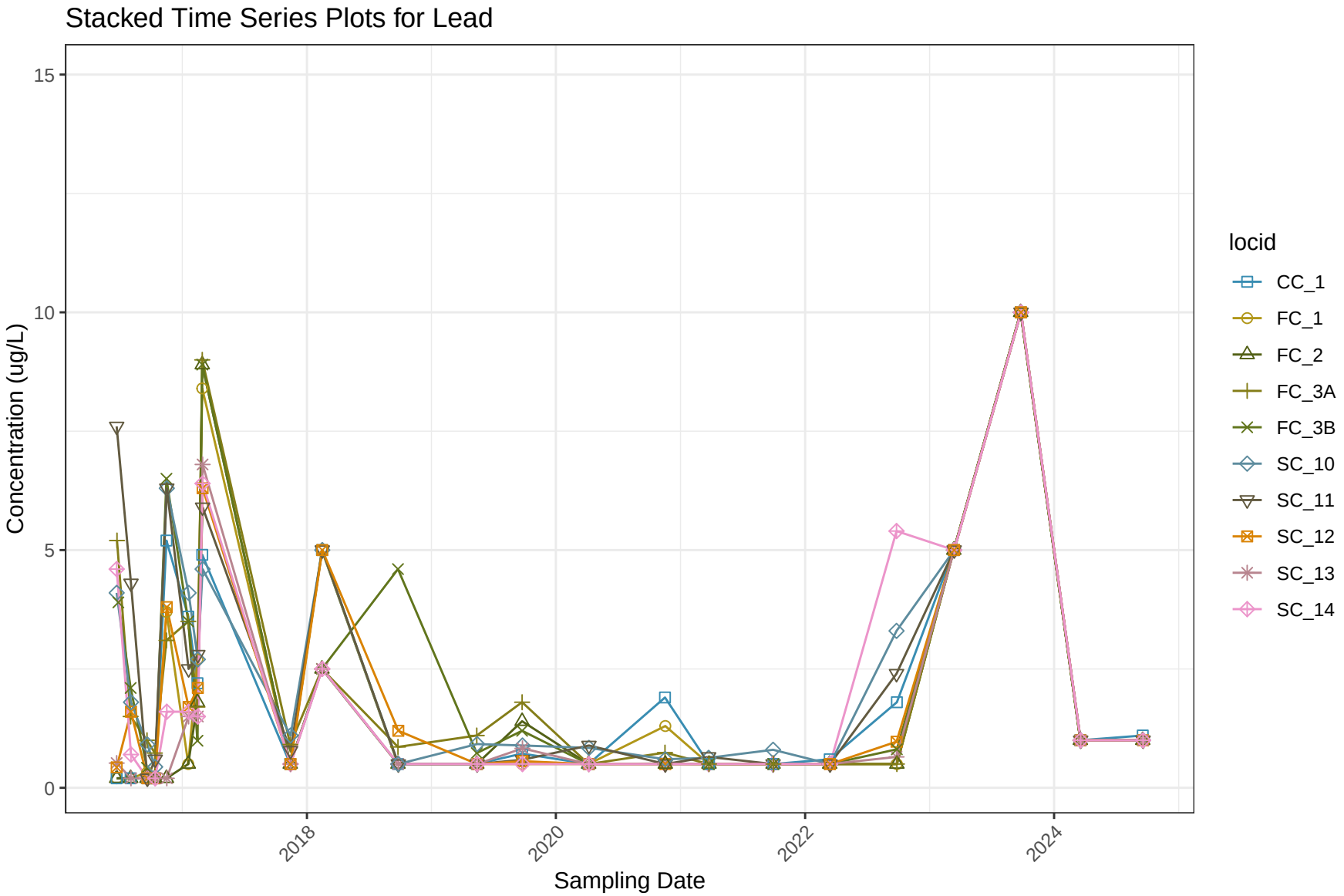


Figure 54: Stacked Time Series Plots

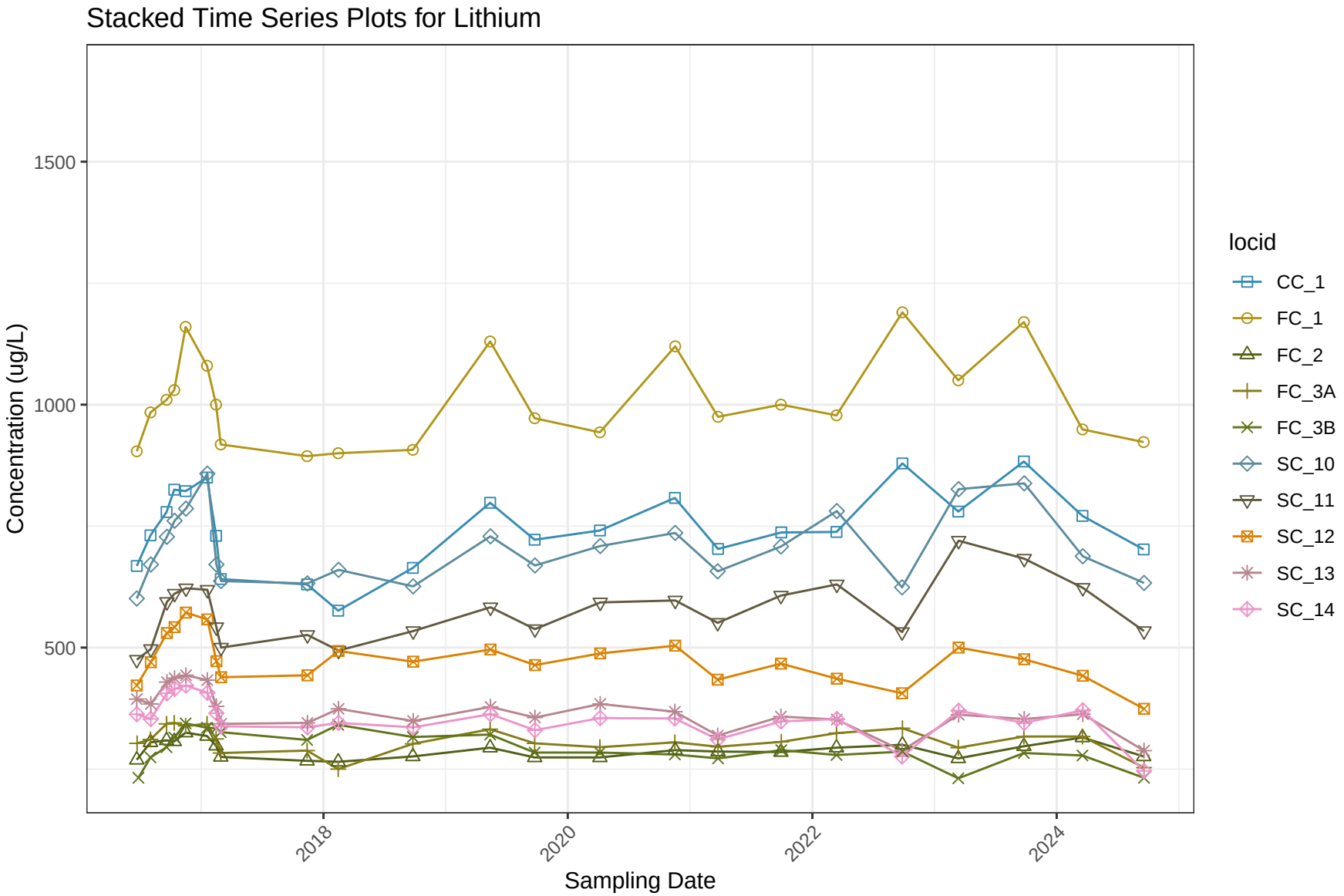


Figure 55: Stacked Time Series Plots

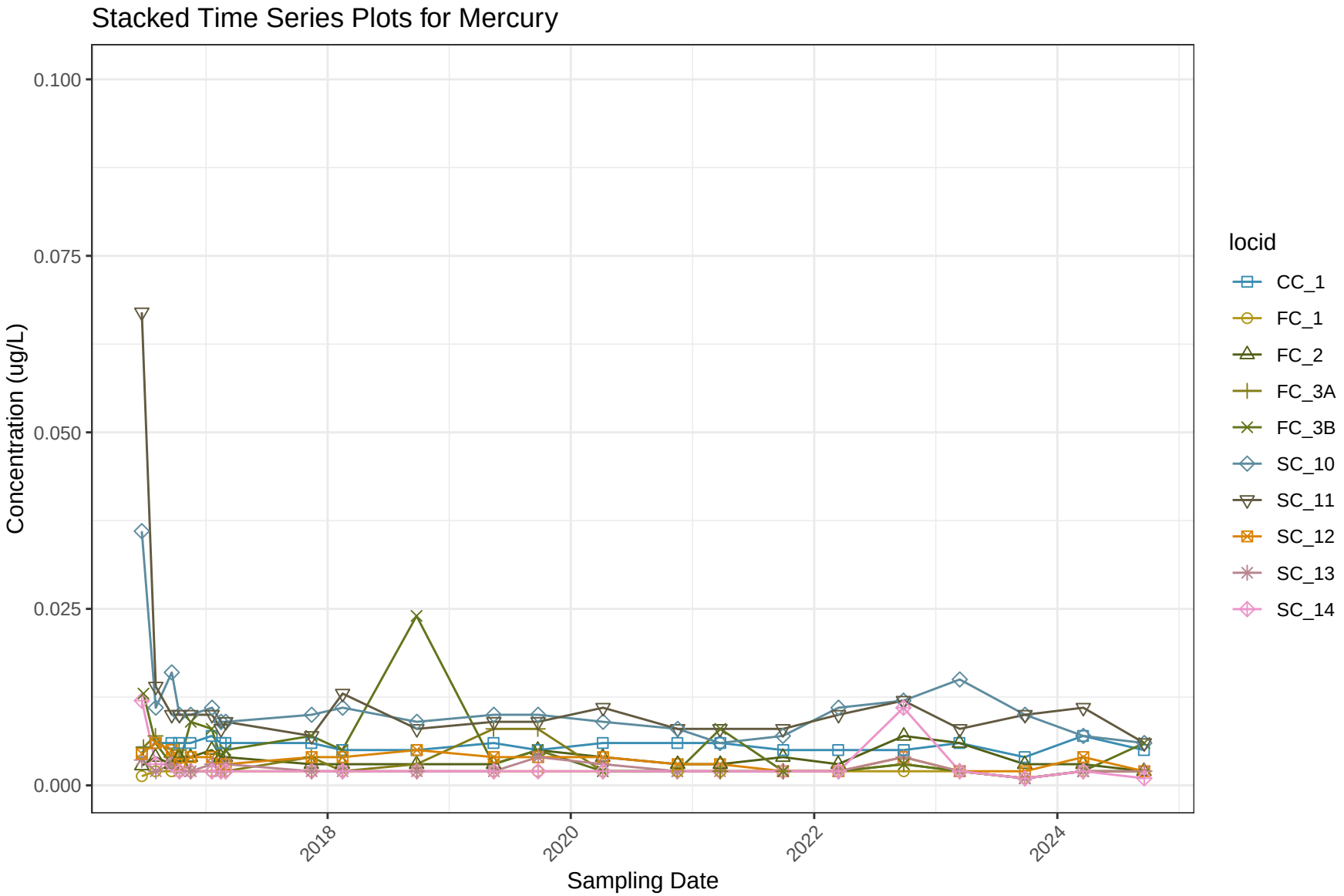


Figure 56: Stacked Time Series Plots

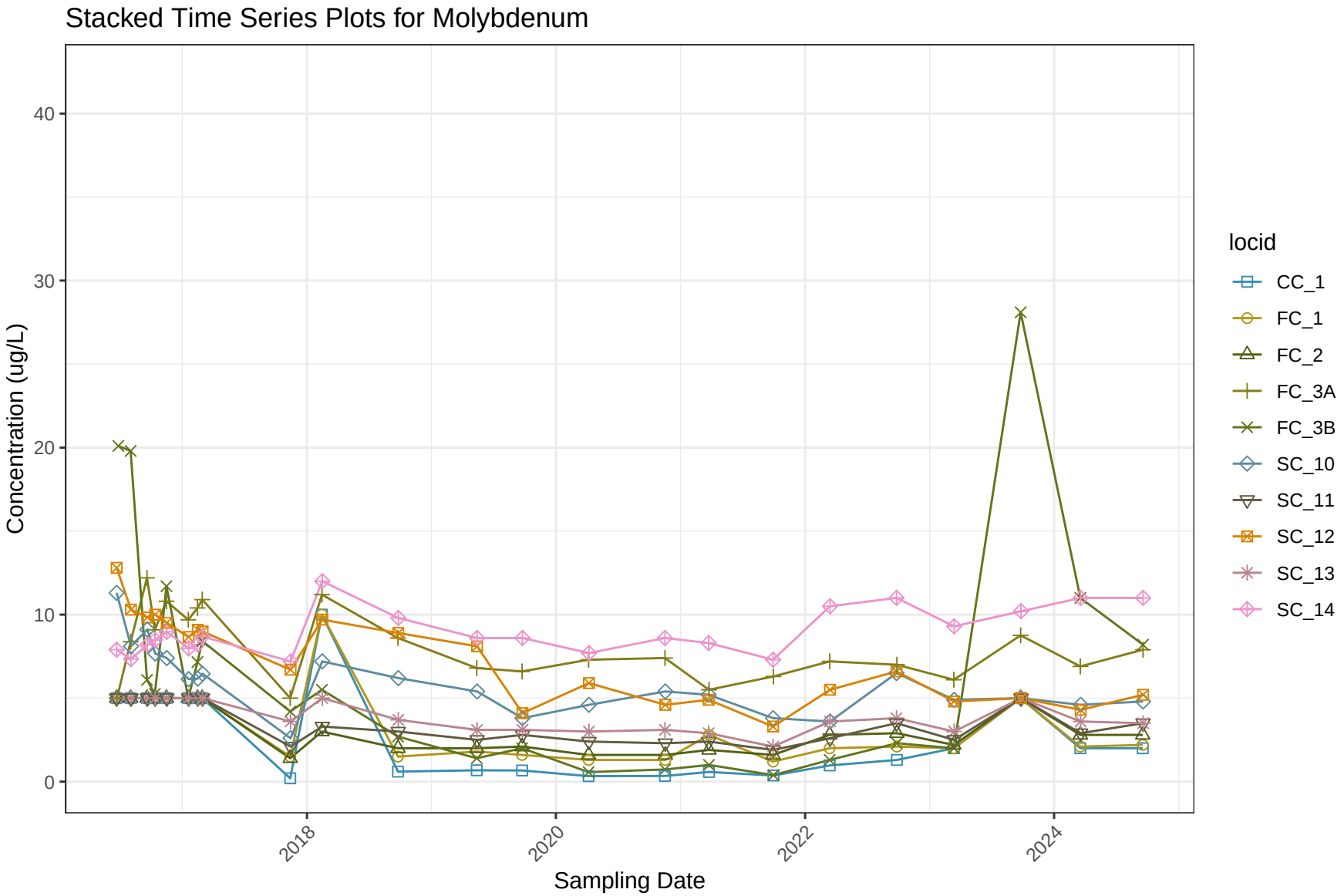


Figure 57: Stacked Time Series Plots

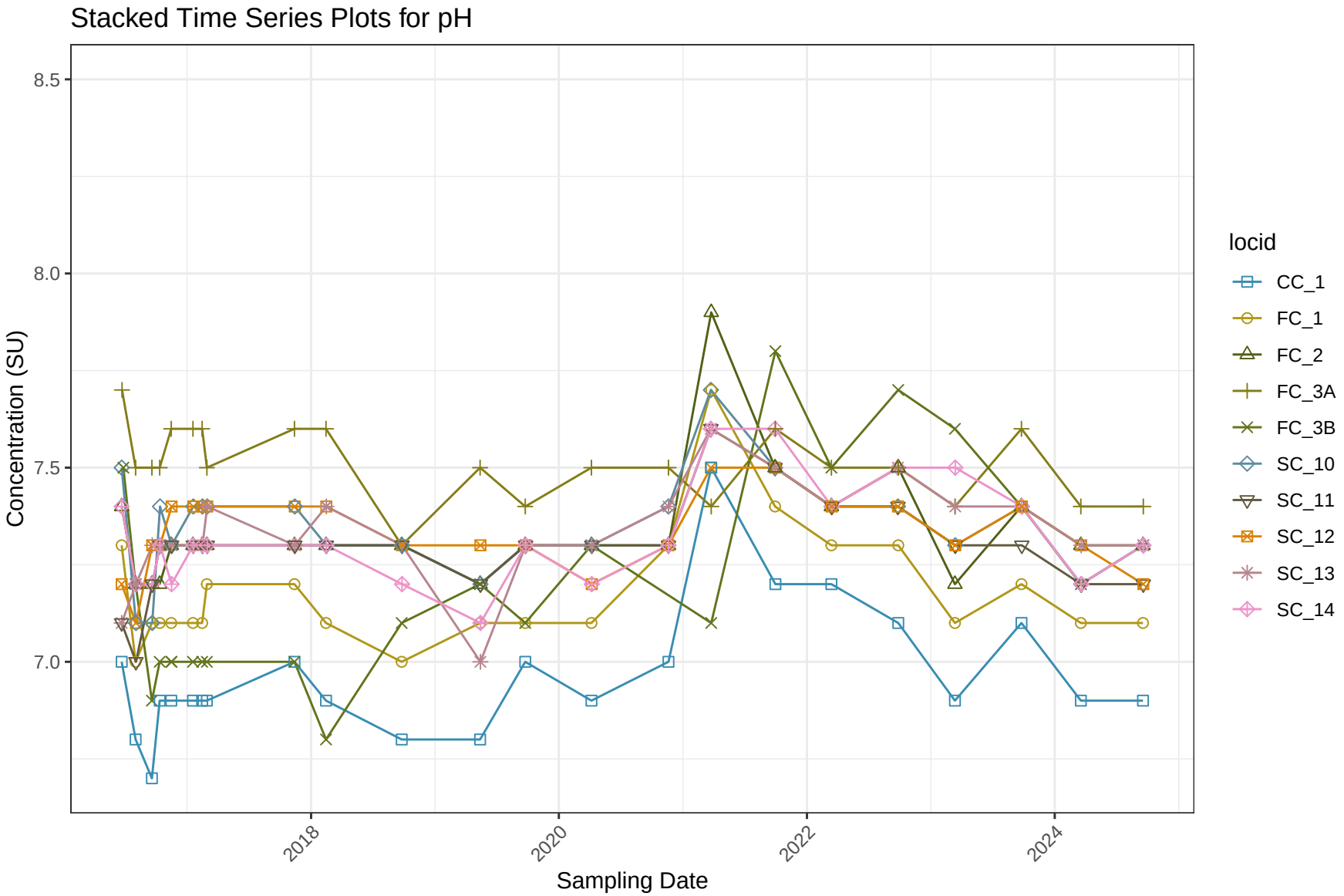


Figure 58: Stacked Time Series Plots

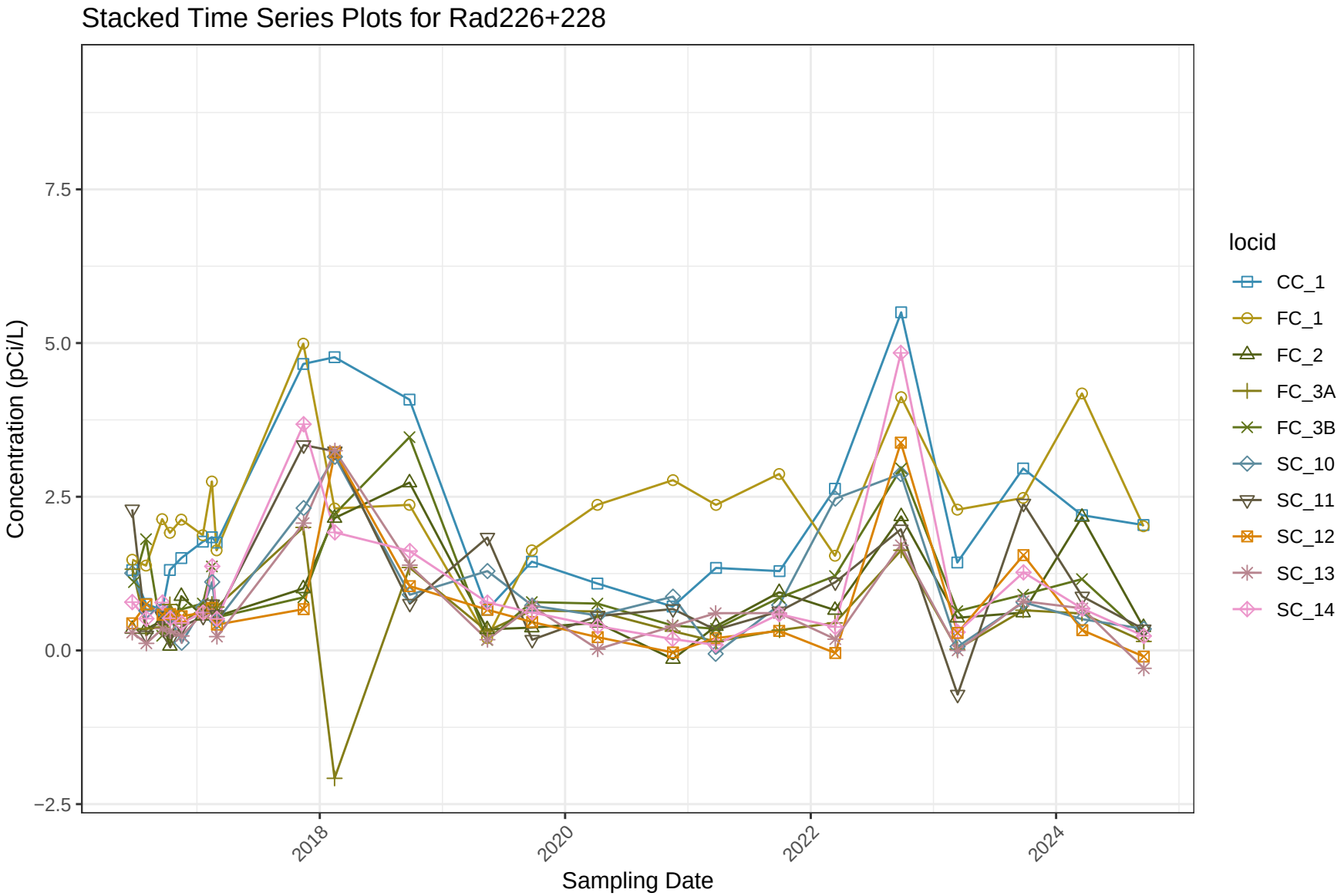


Figure 59: Stacked Time Series Plots

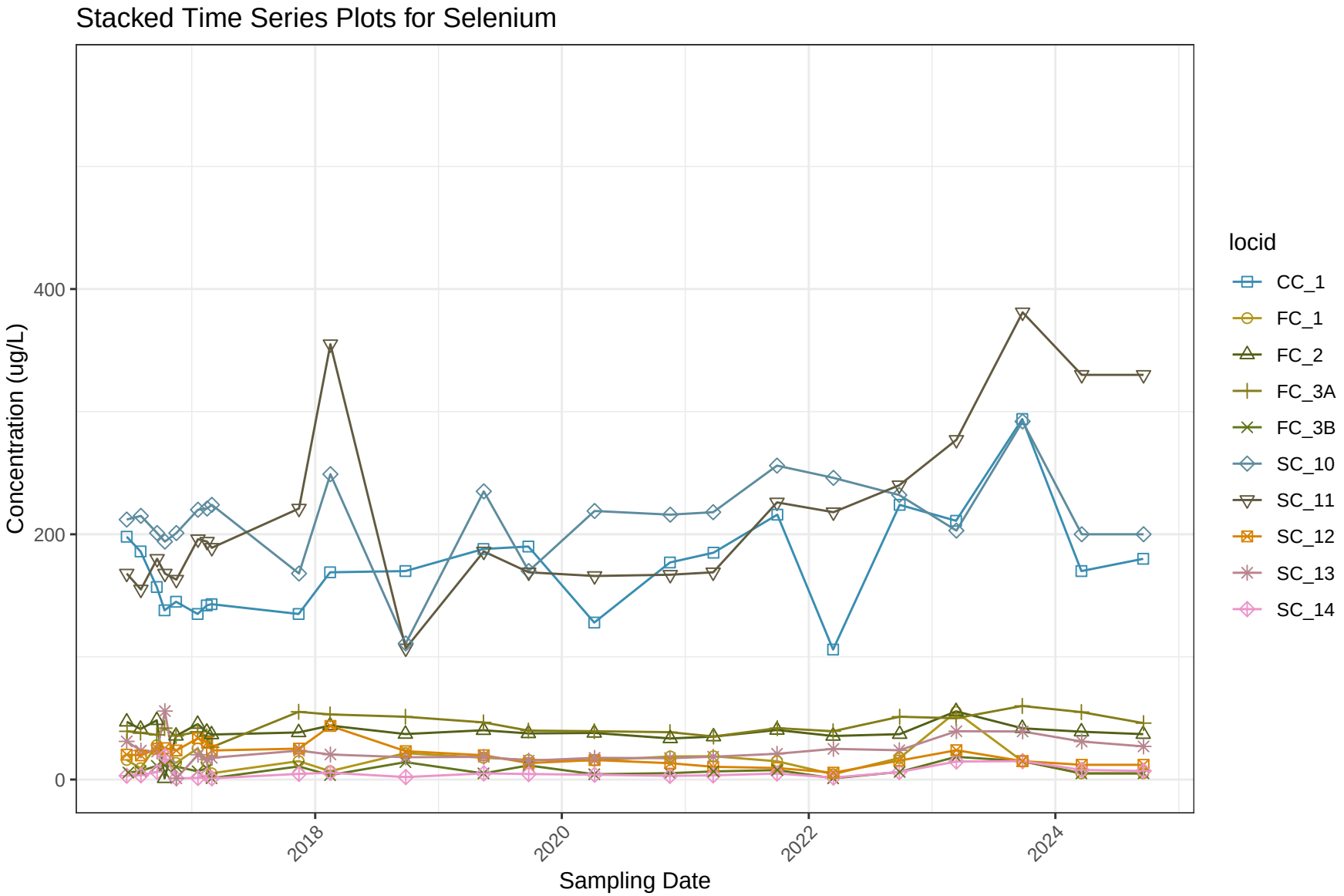


Figure 60: Stacked Time Series Plots

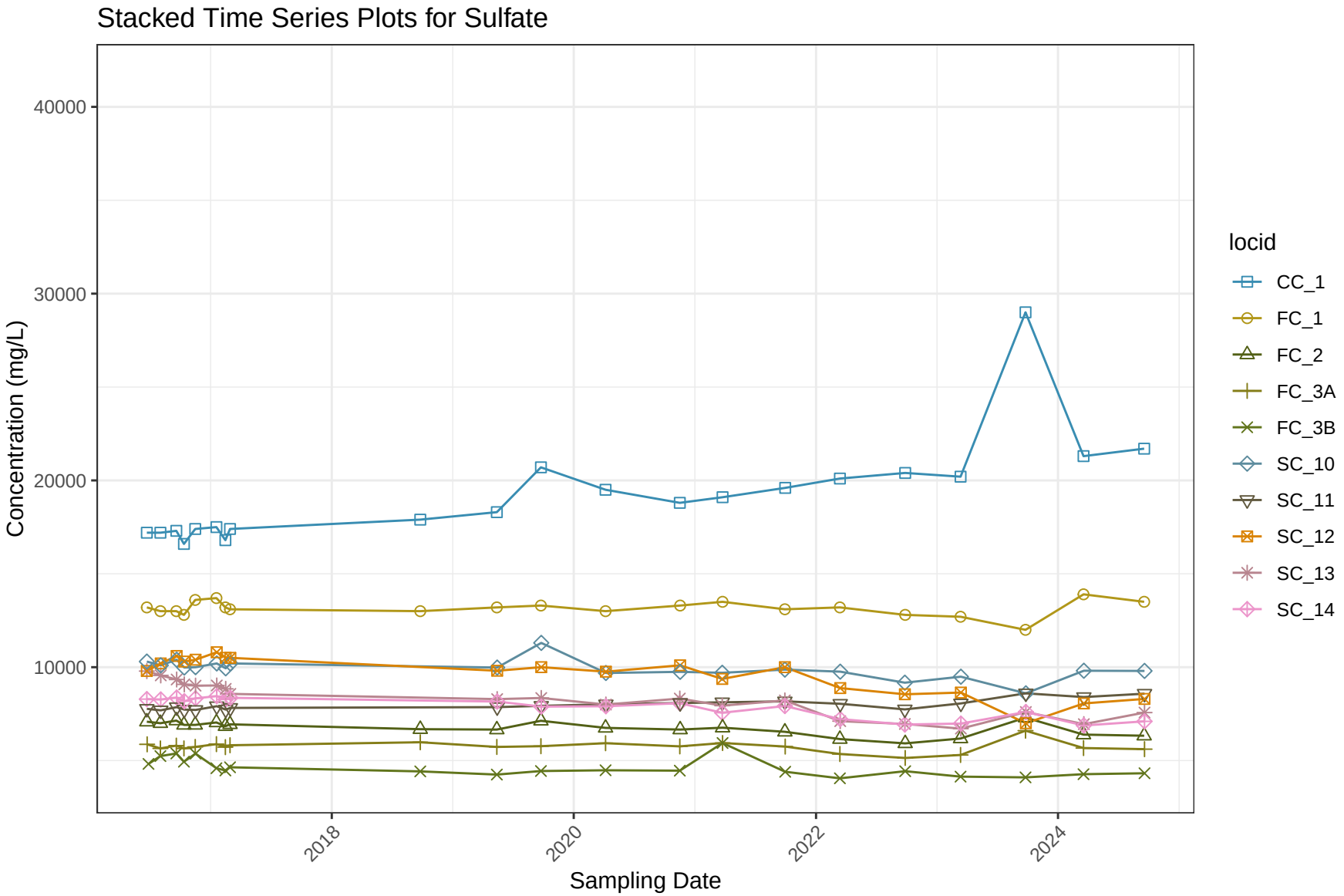


Figure 61: Stacked Time Series Plots

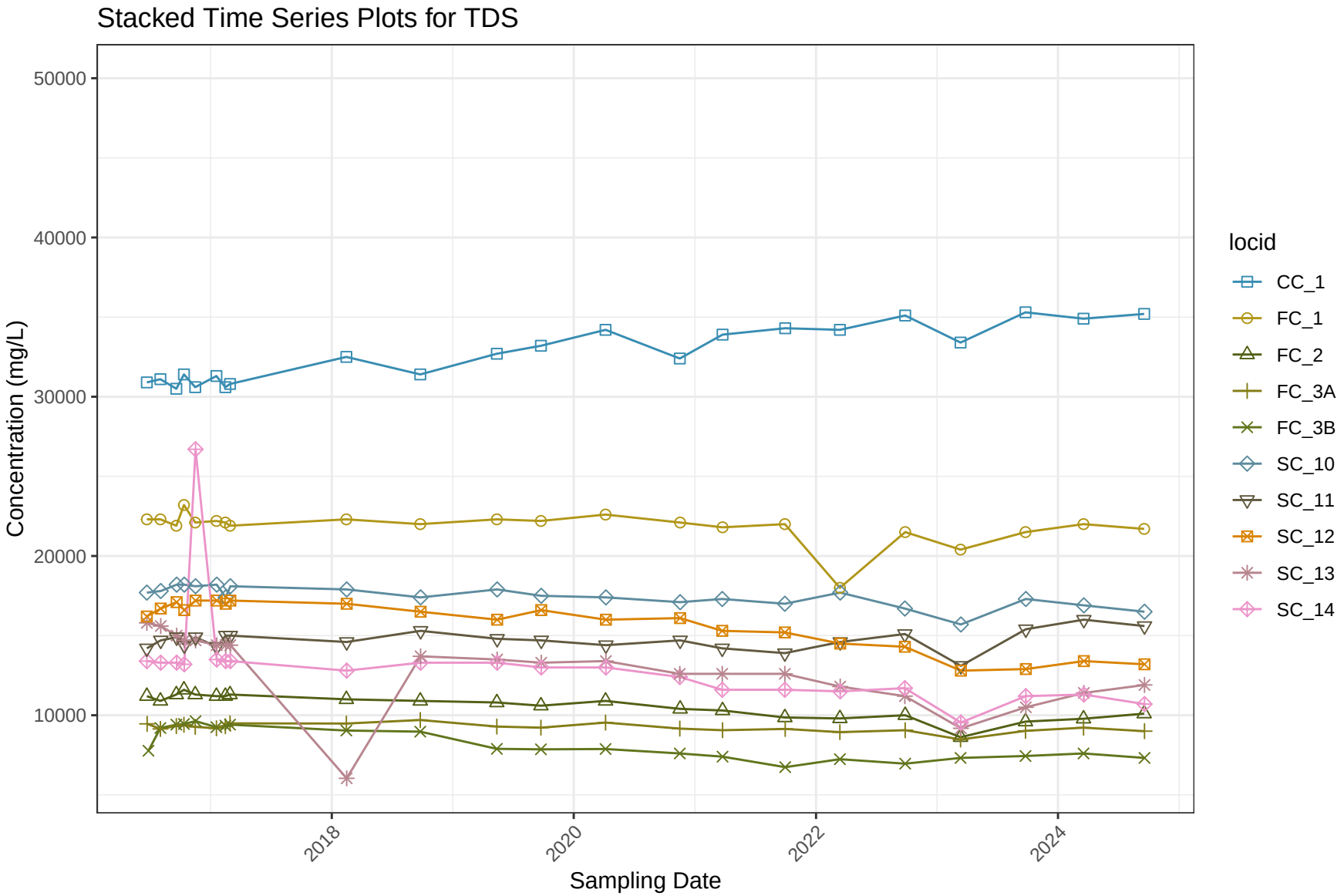


Figure 62: Stacked Time Series Plots

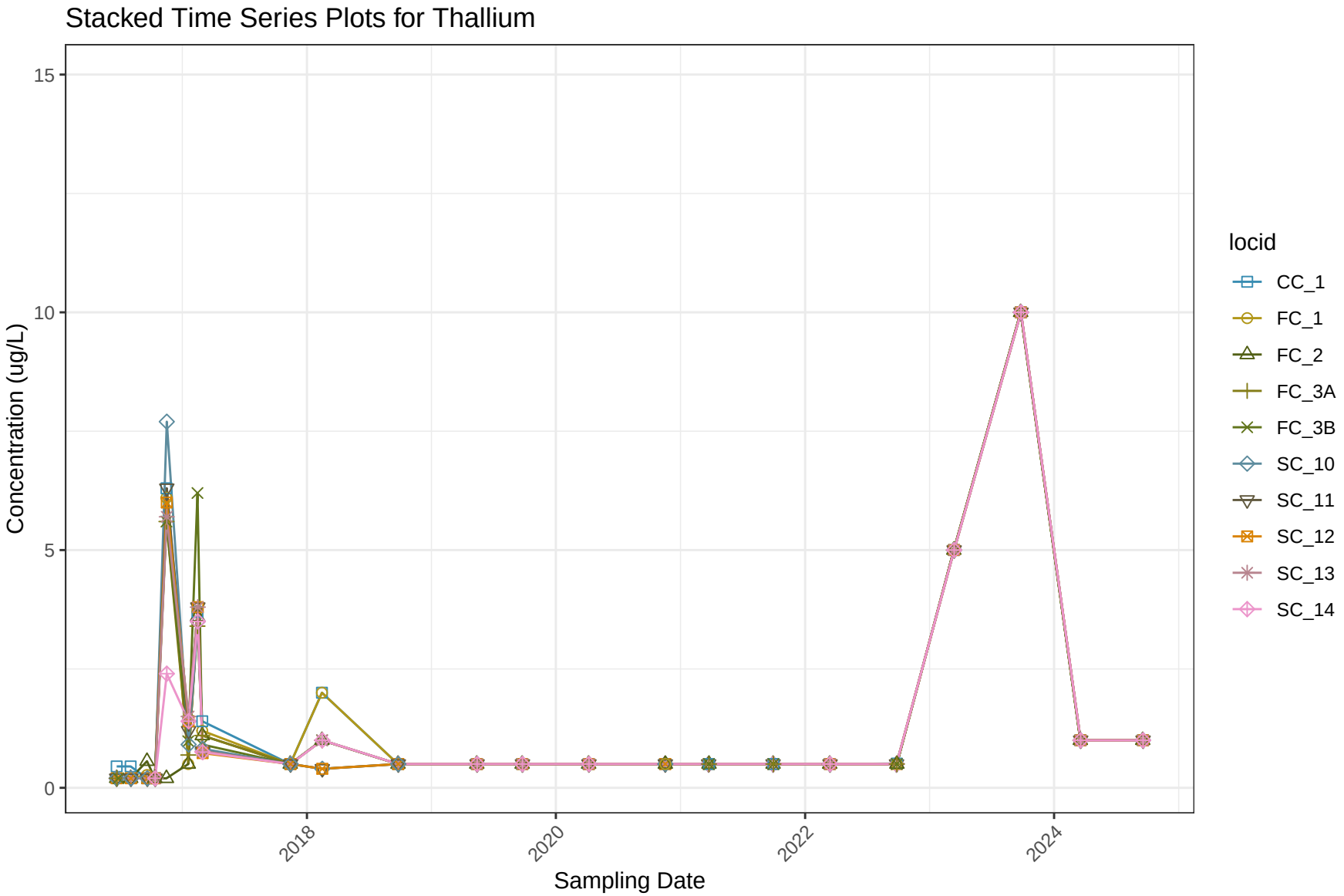


Figure 63: Stacked Time Series Plots

Appendix B: Supporting Graphics

1. Appendix III Prediction Limit Outcome Plots
2. Confidence Interval Band Plots for Appendix IV Parameters

Prediction Limit Outcome Plots, Appendix III Parameters

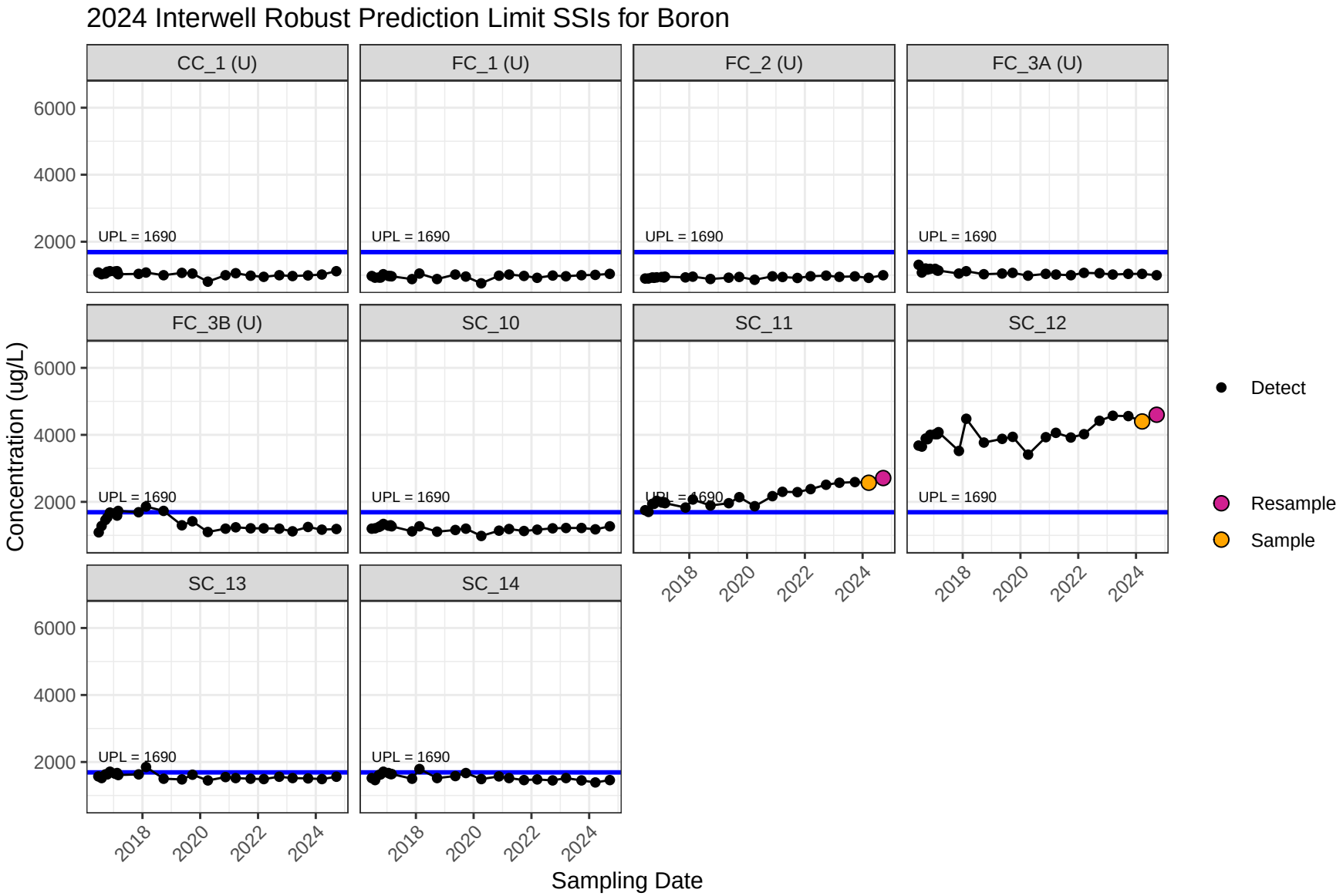


Figure 64: Prediction Limit Outcome Plots

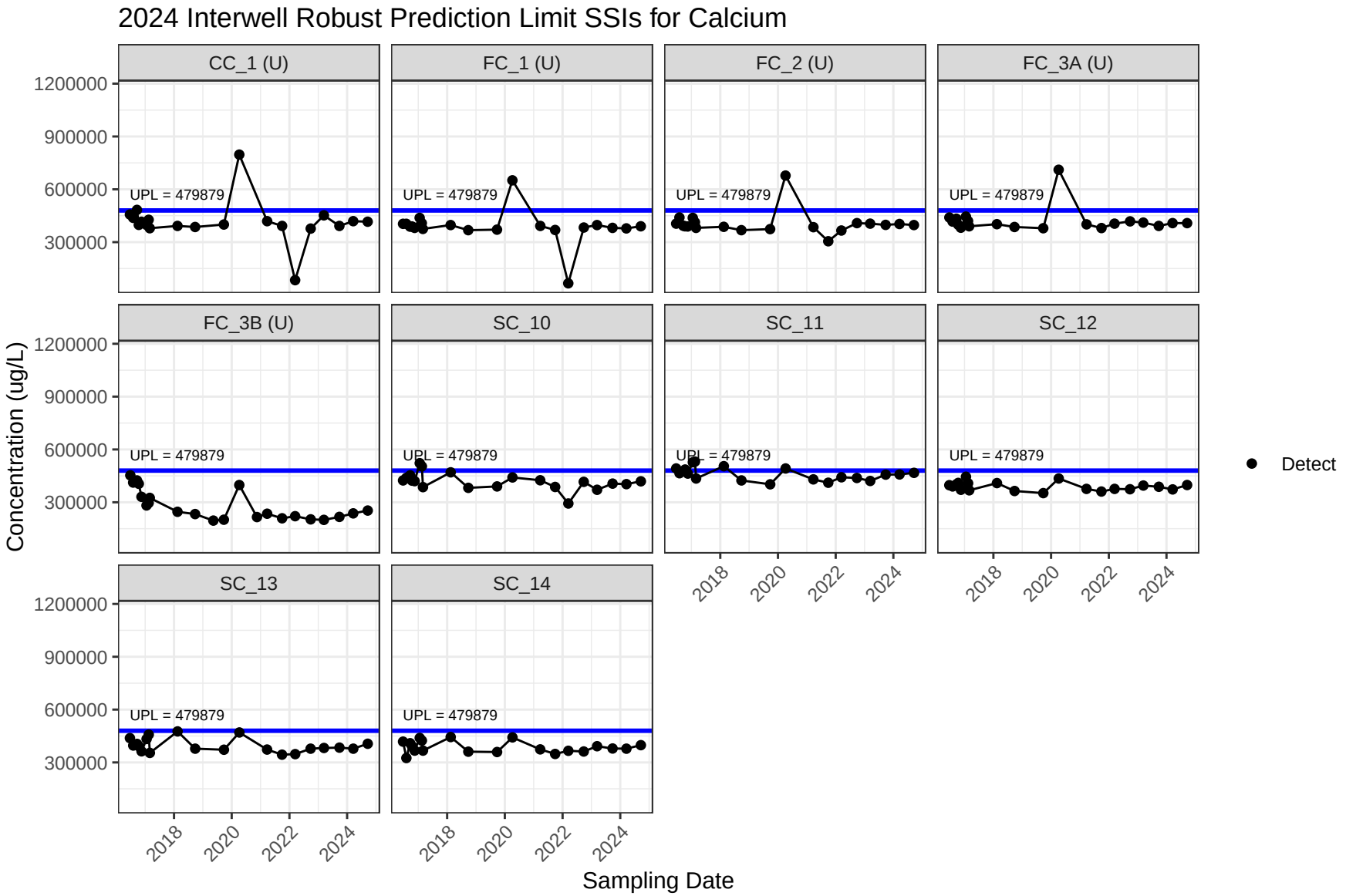


Figure 65: Prediction Limit Outcome Plots

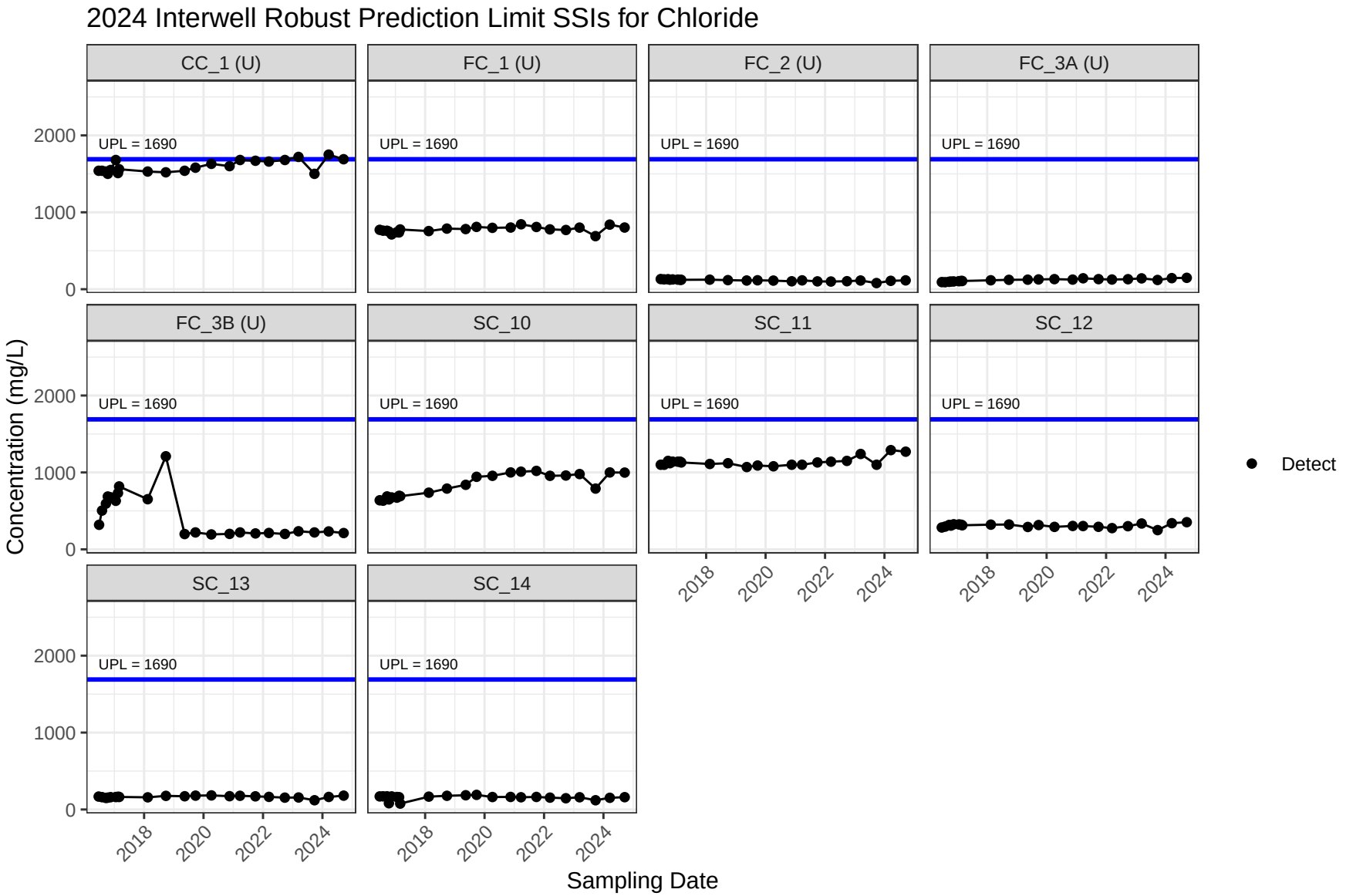


Figure 66: Prediction Limit Outcome Plots

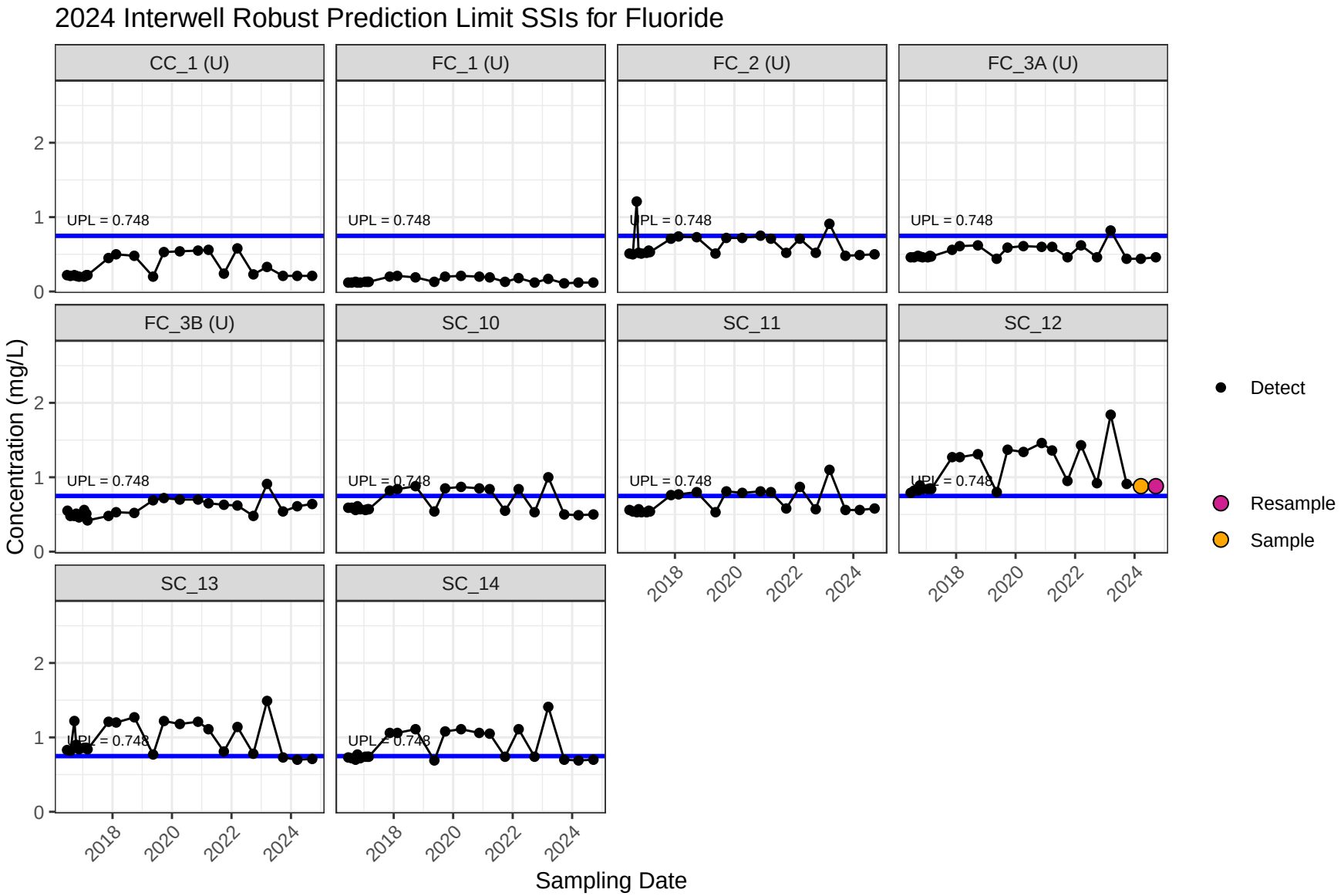


Figure 67: Prediction Limit Outcome Plots

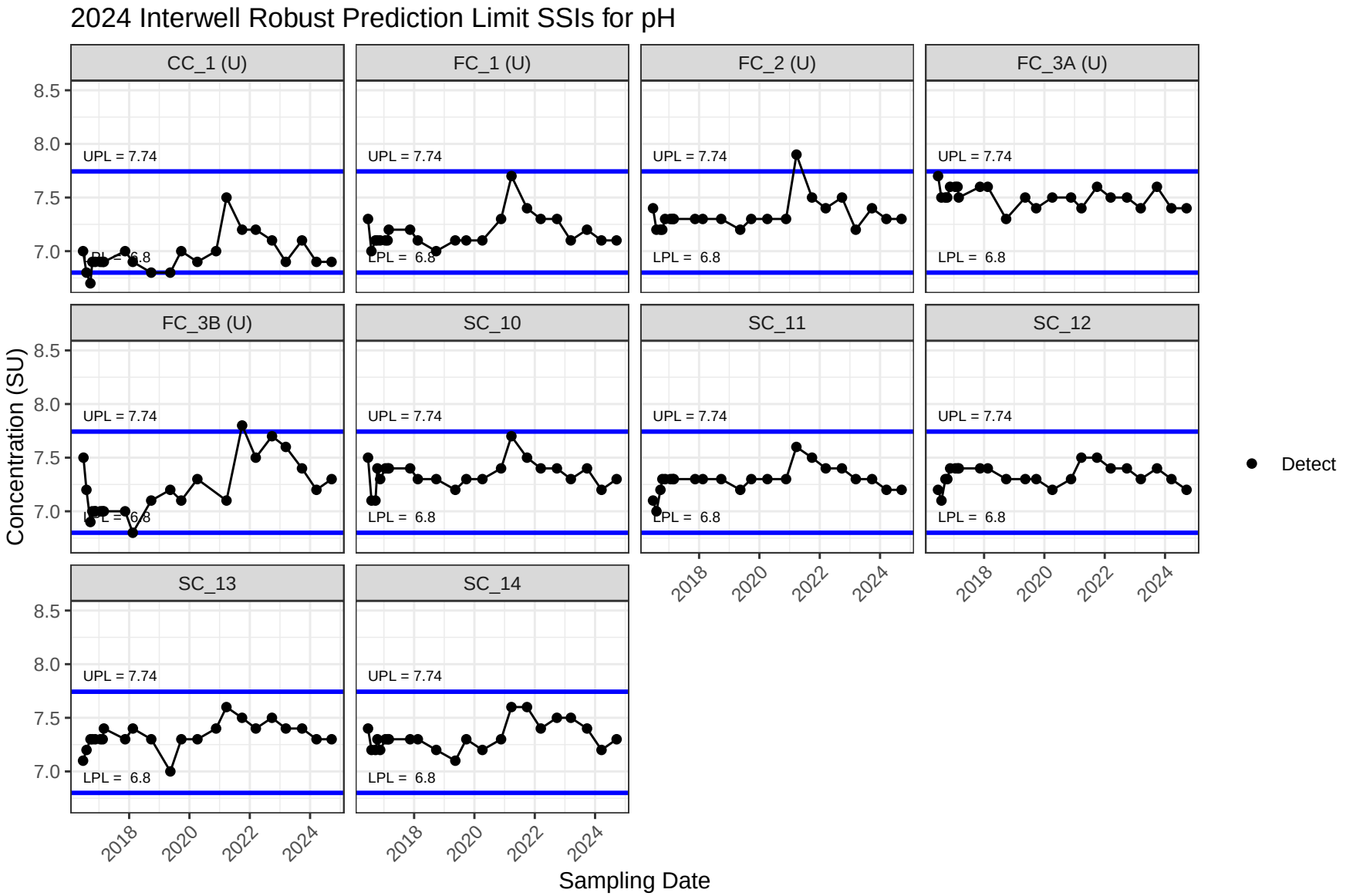


Figure 68: Prediction Limit Outcome Plots

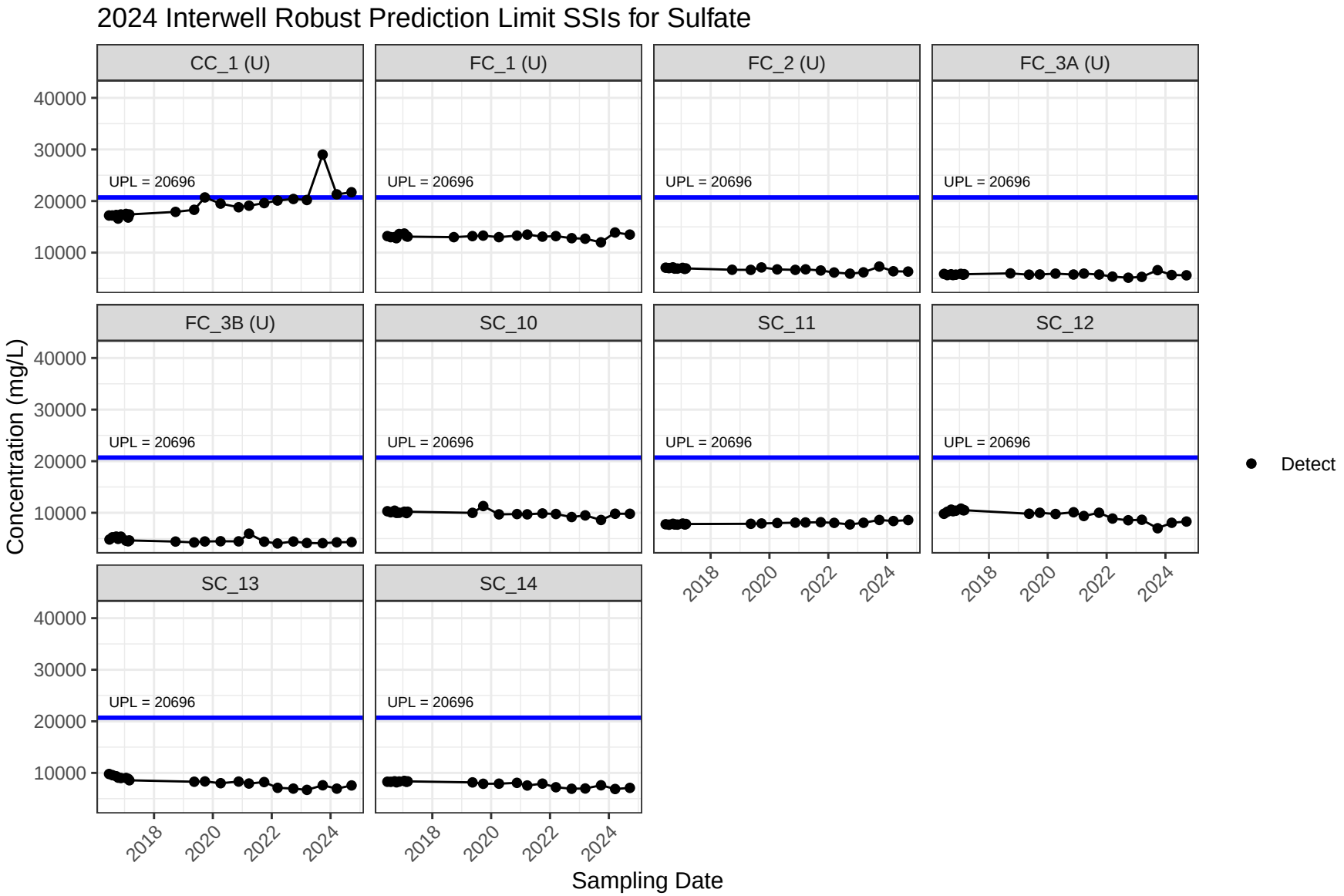


Figure 69: Prediction Limit Outcome Plots

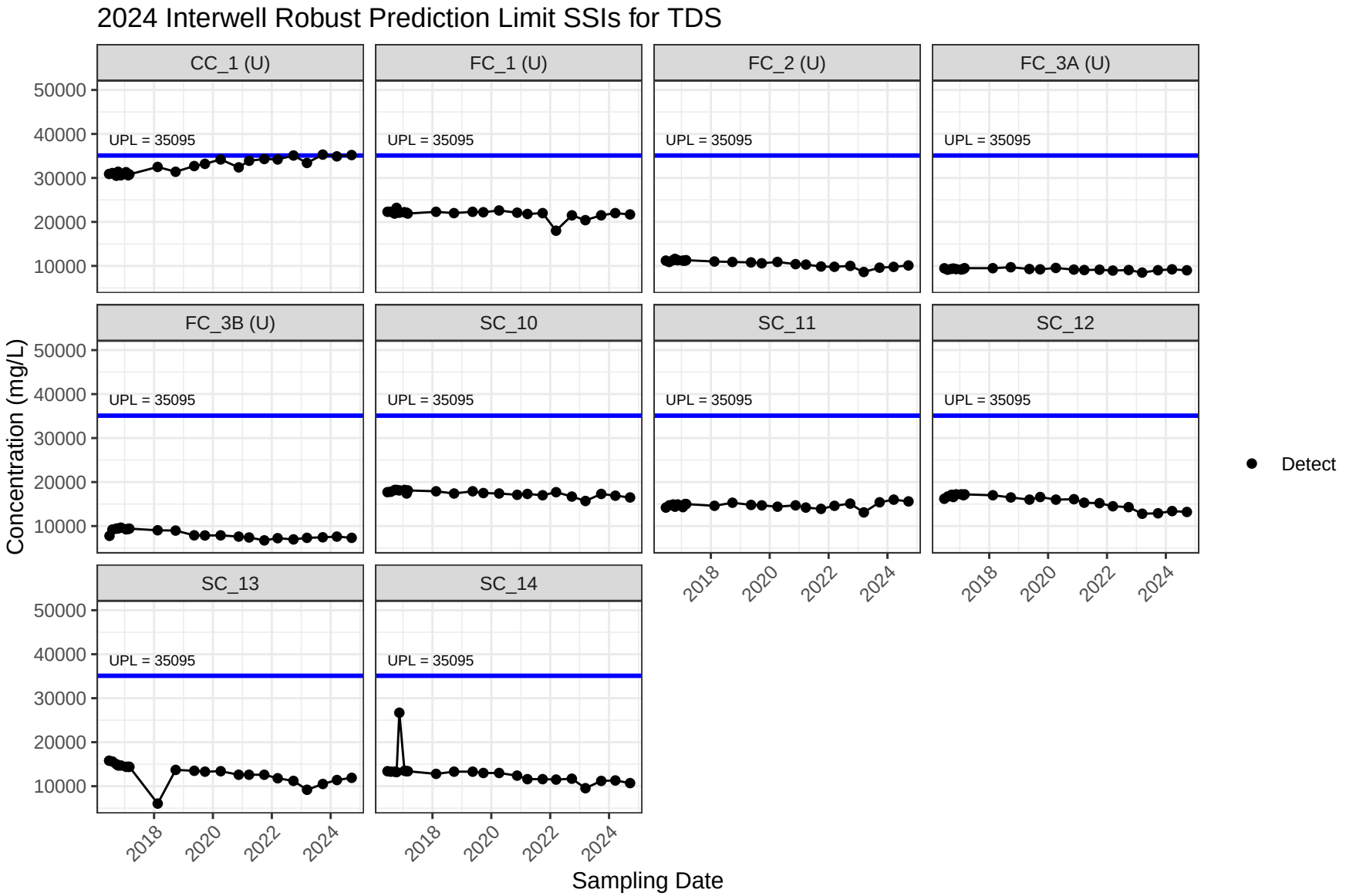


Figure 70: Prediction Limit Outcome Plots

Confidence Interval Band Plots, Appendix IV Parameters

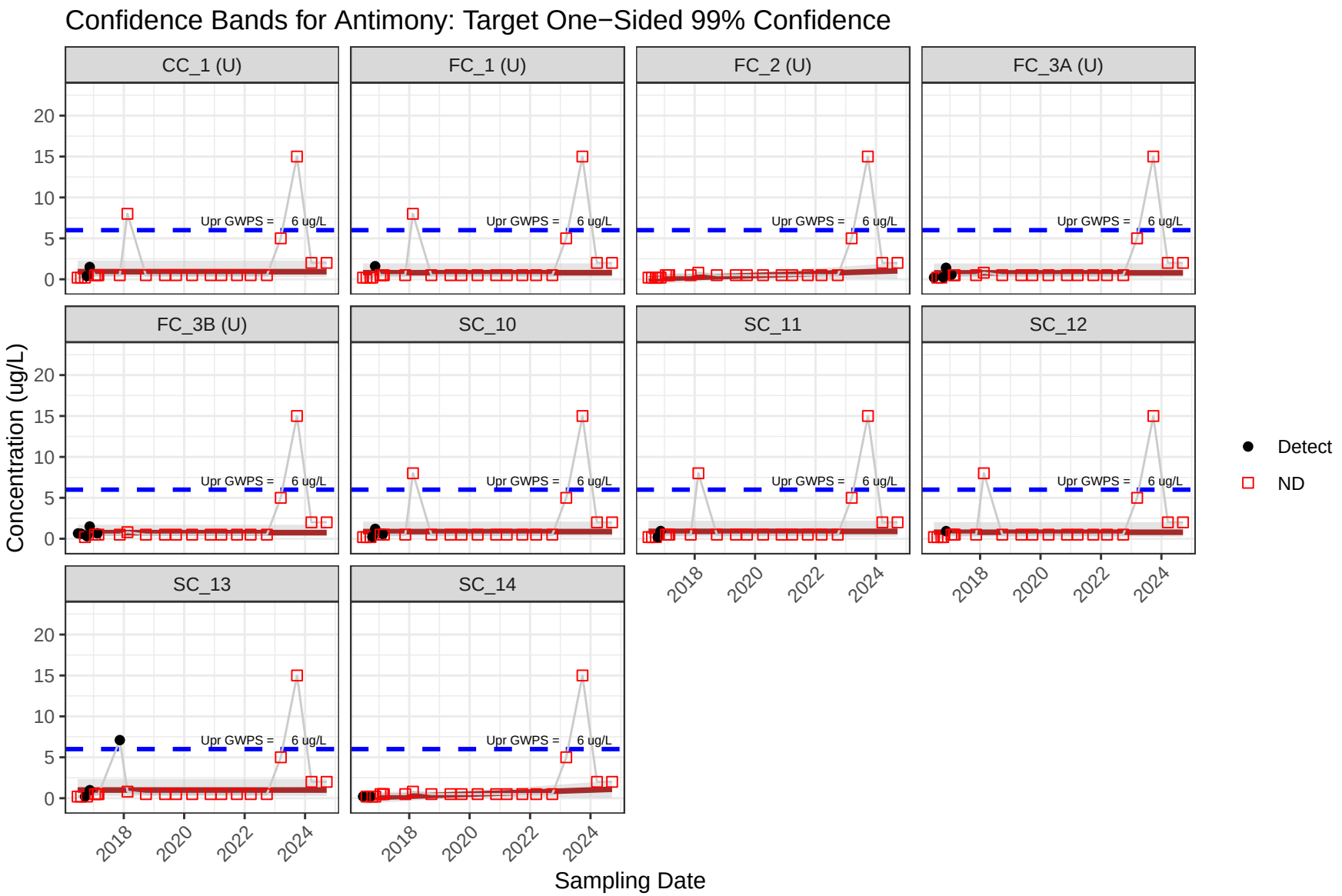


Figure 71: Confidence Band Plots

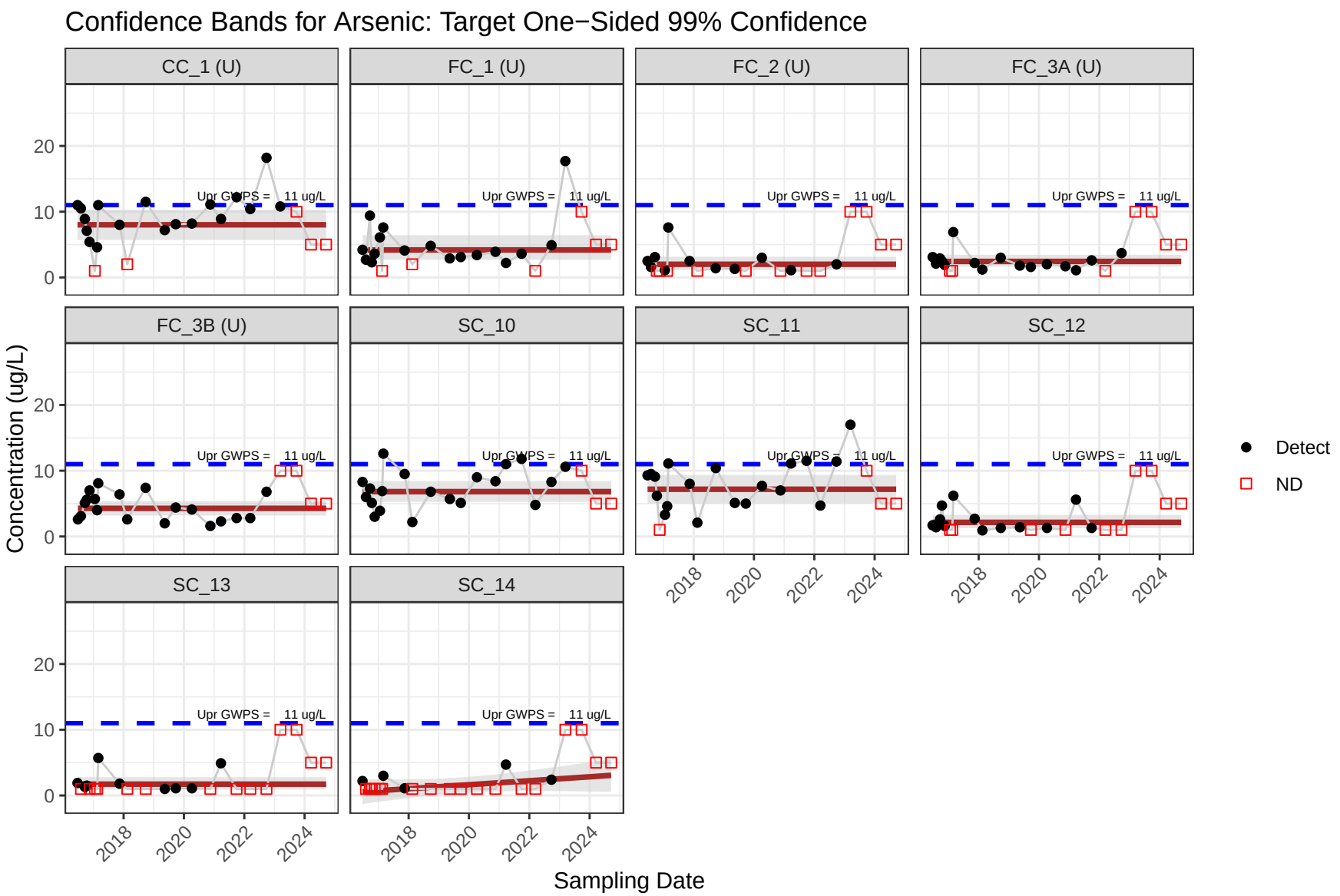


Figure 72: Confidence Band Plots

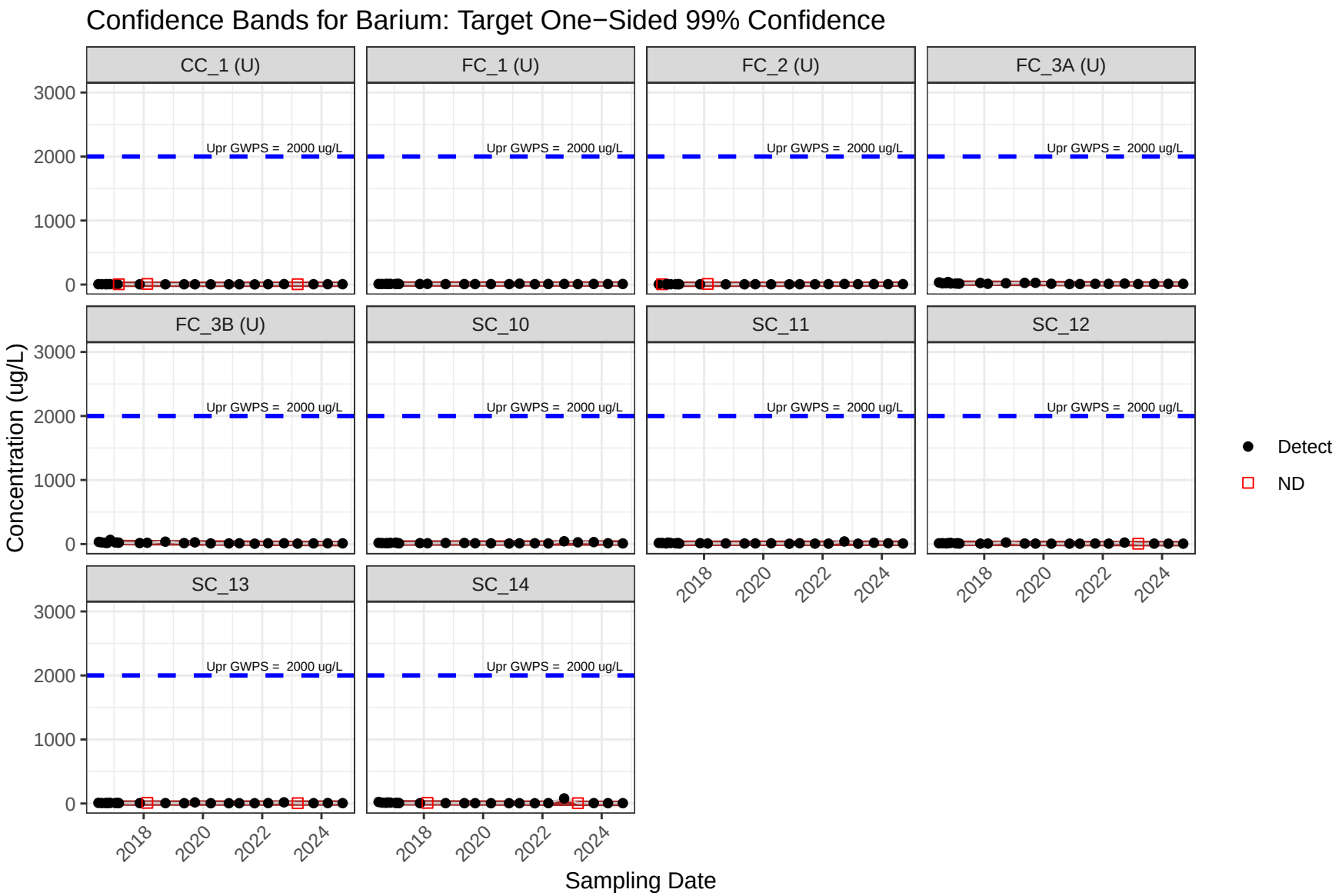


Figure 73: Confidence Band Plots

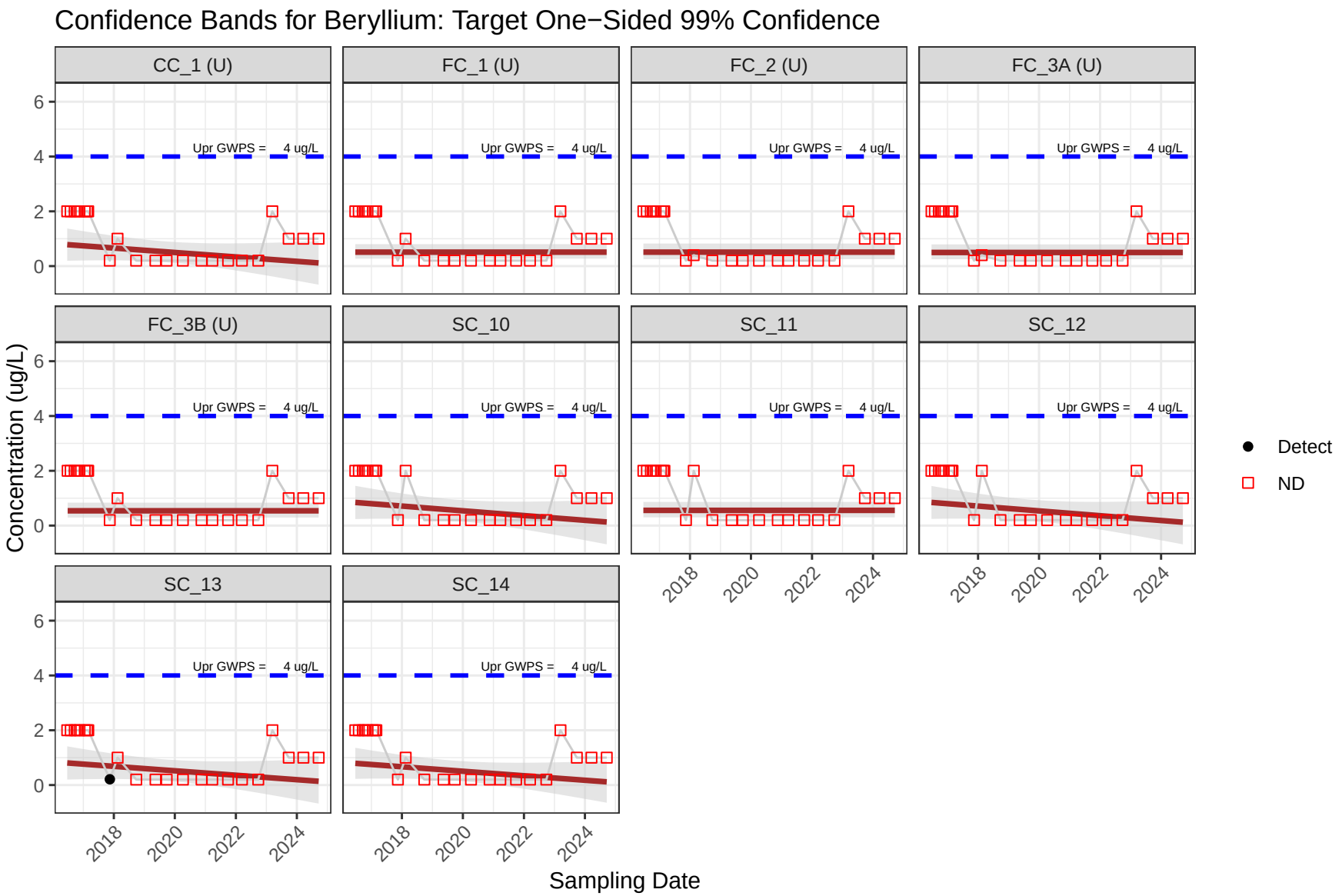


Figure 74: Confidence Band Plots

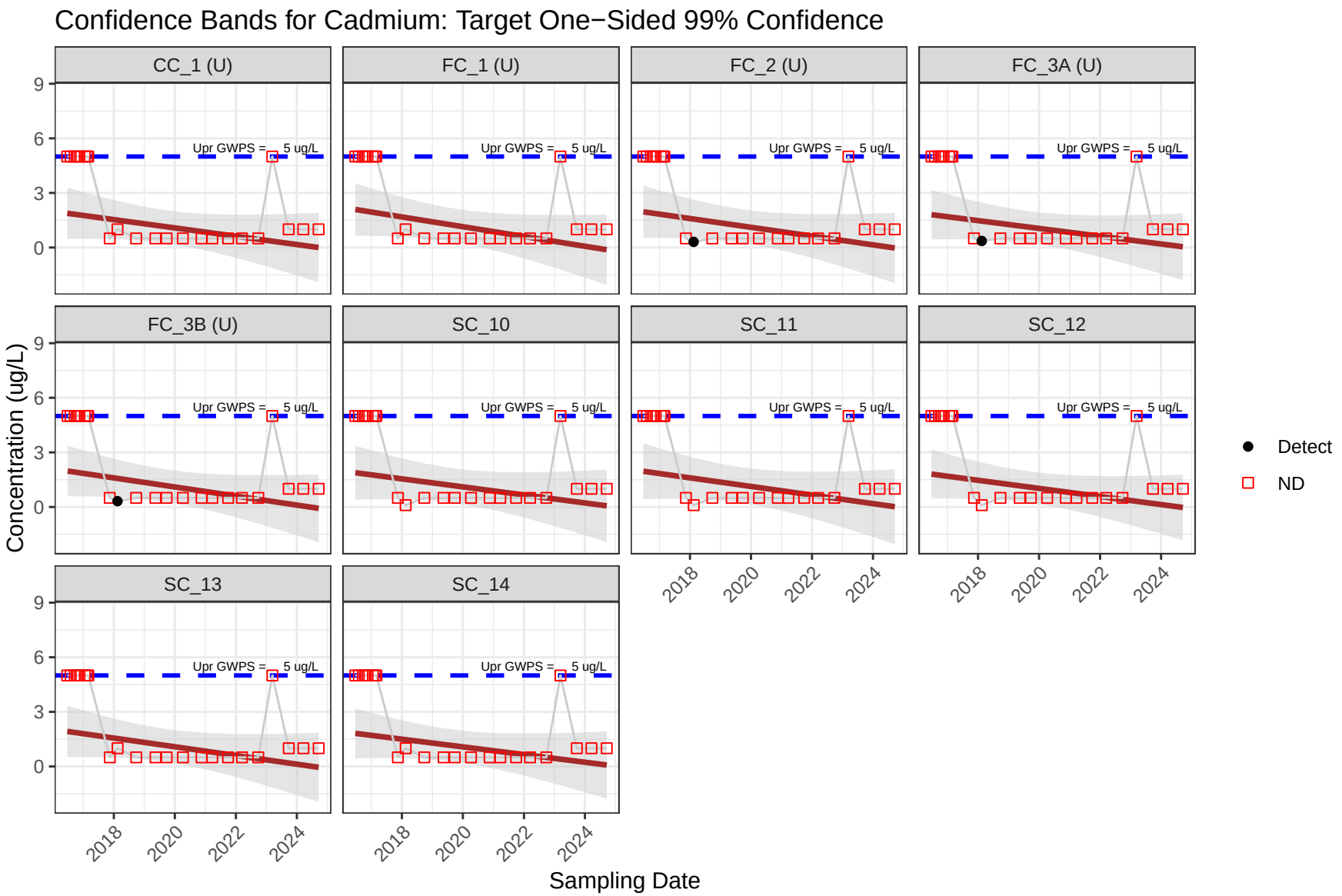


Figure 75: Confidence Band Plots

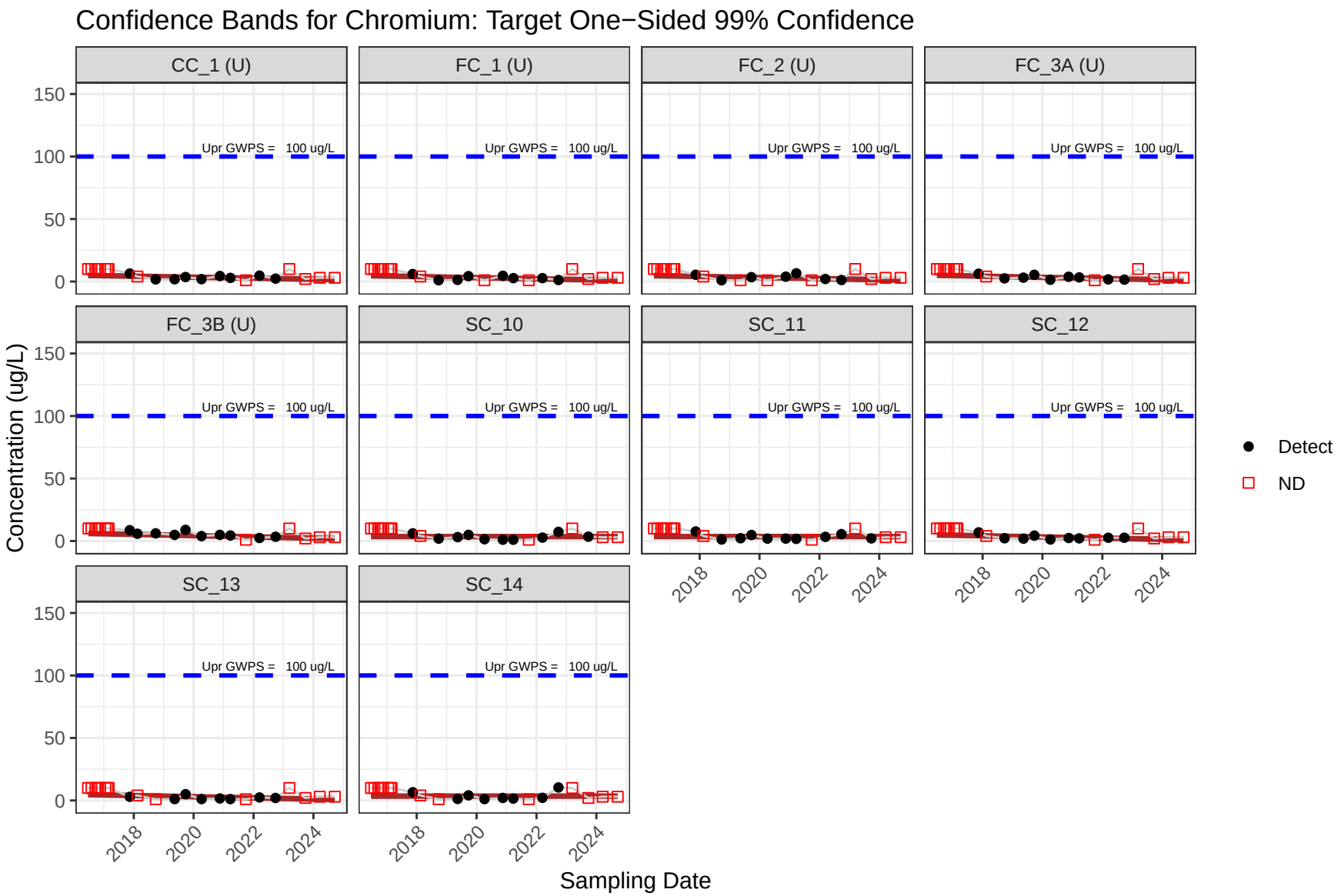


Figure 76: Confidence Band Plots

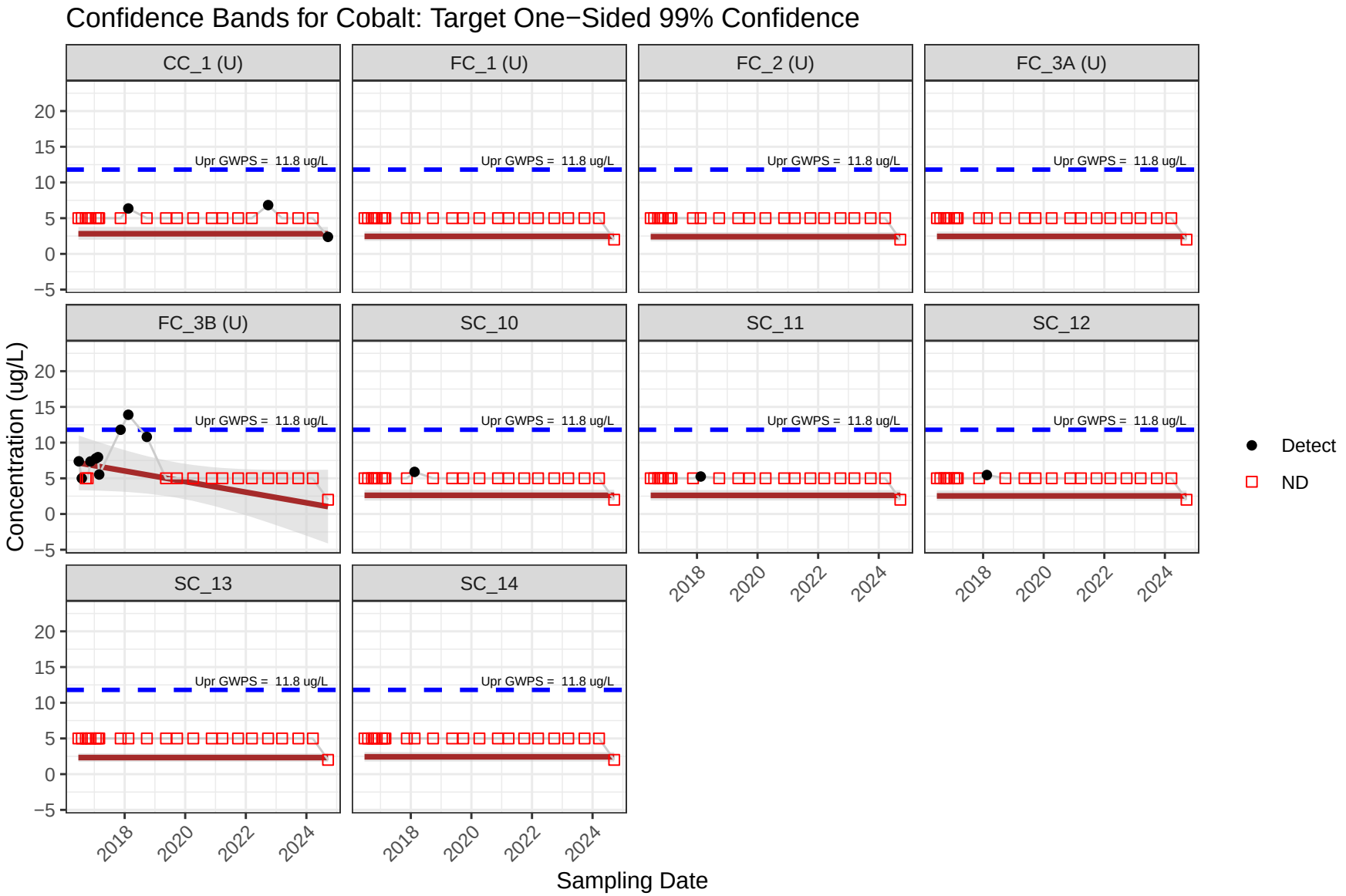


Figure 77: Confidence Band Plots

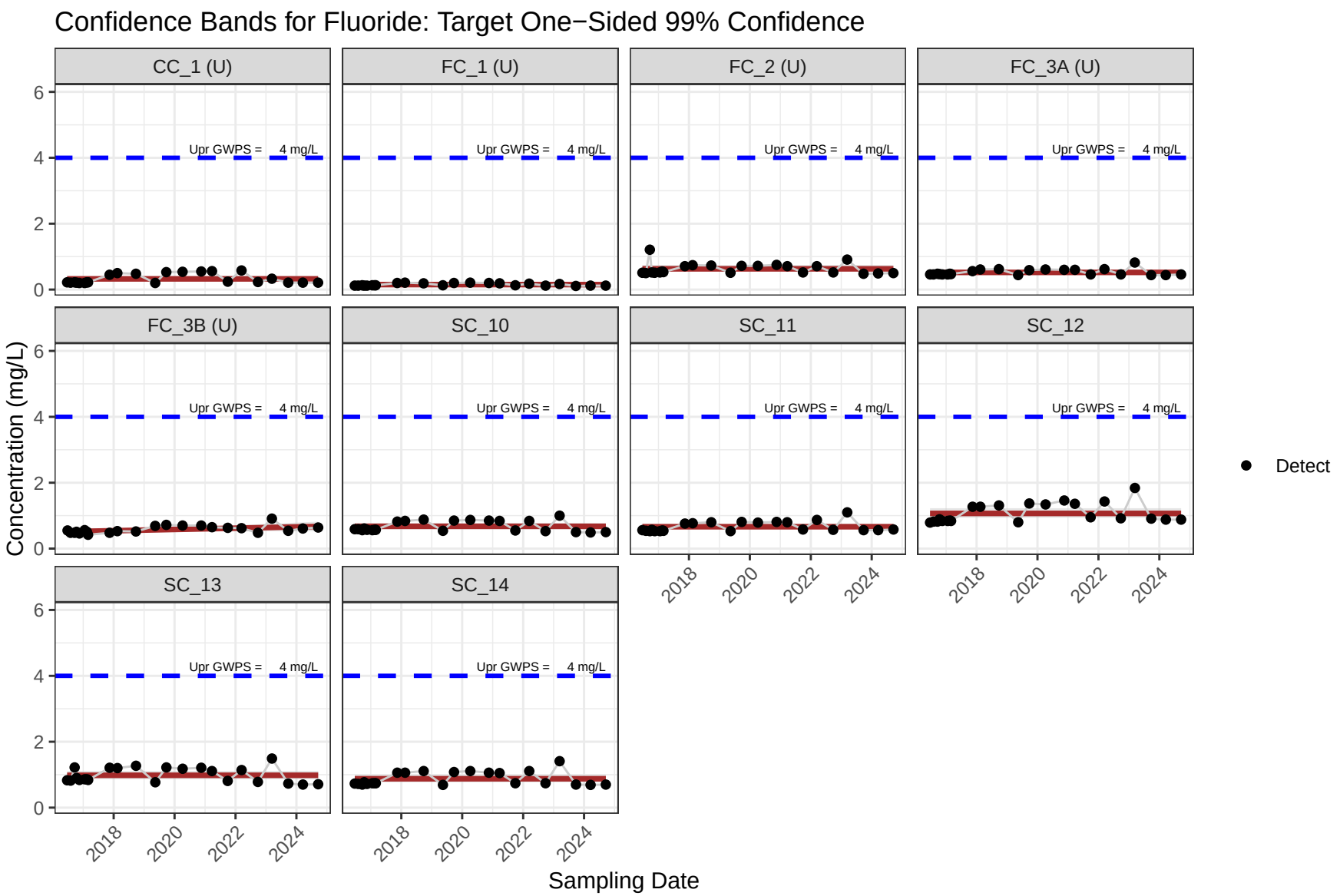


Figure 78: Confidence Band Plots

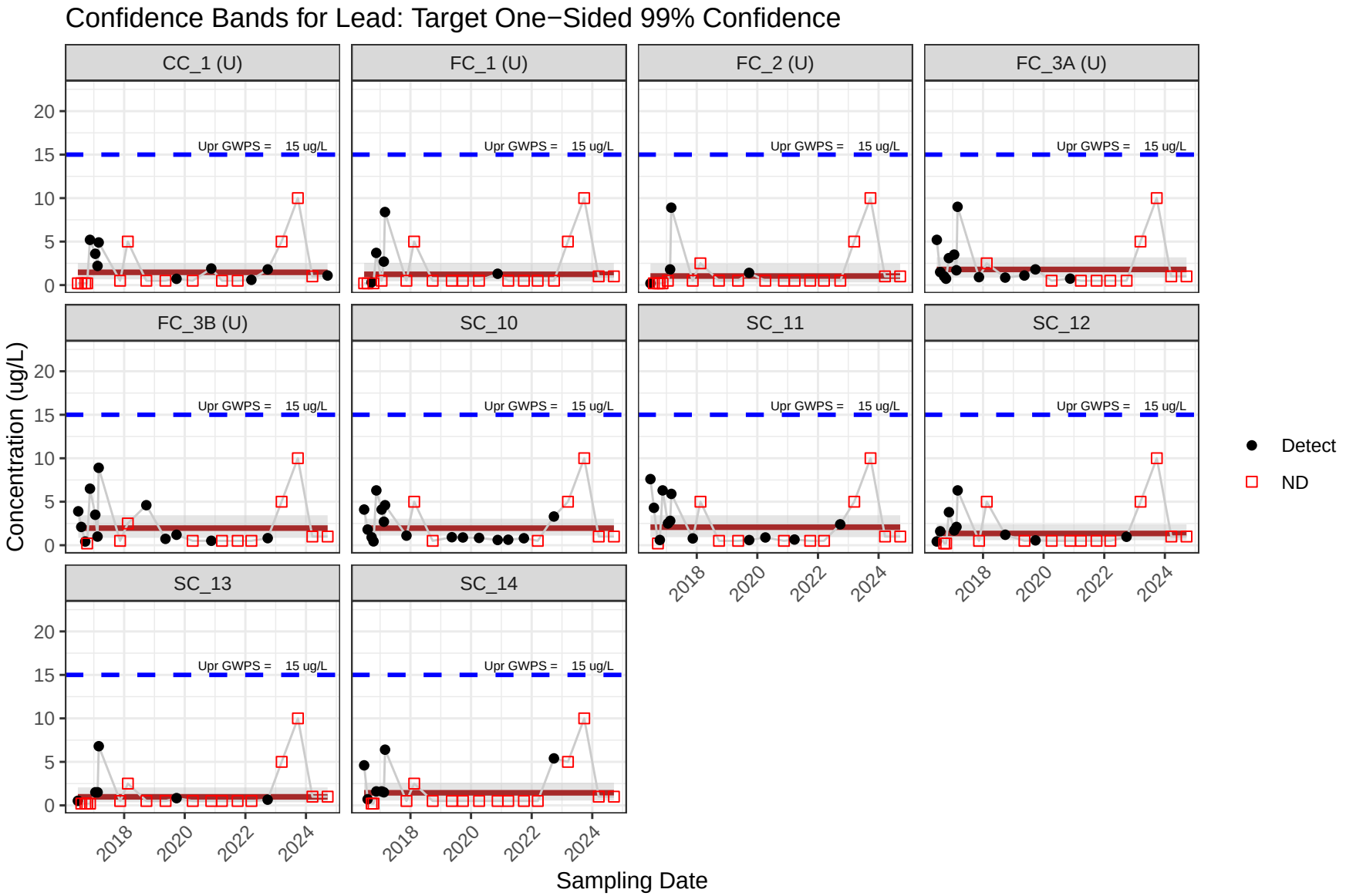


Figure 79: Confidence Band Plots

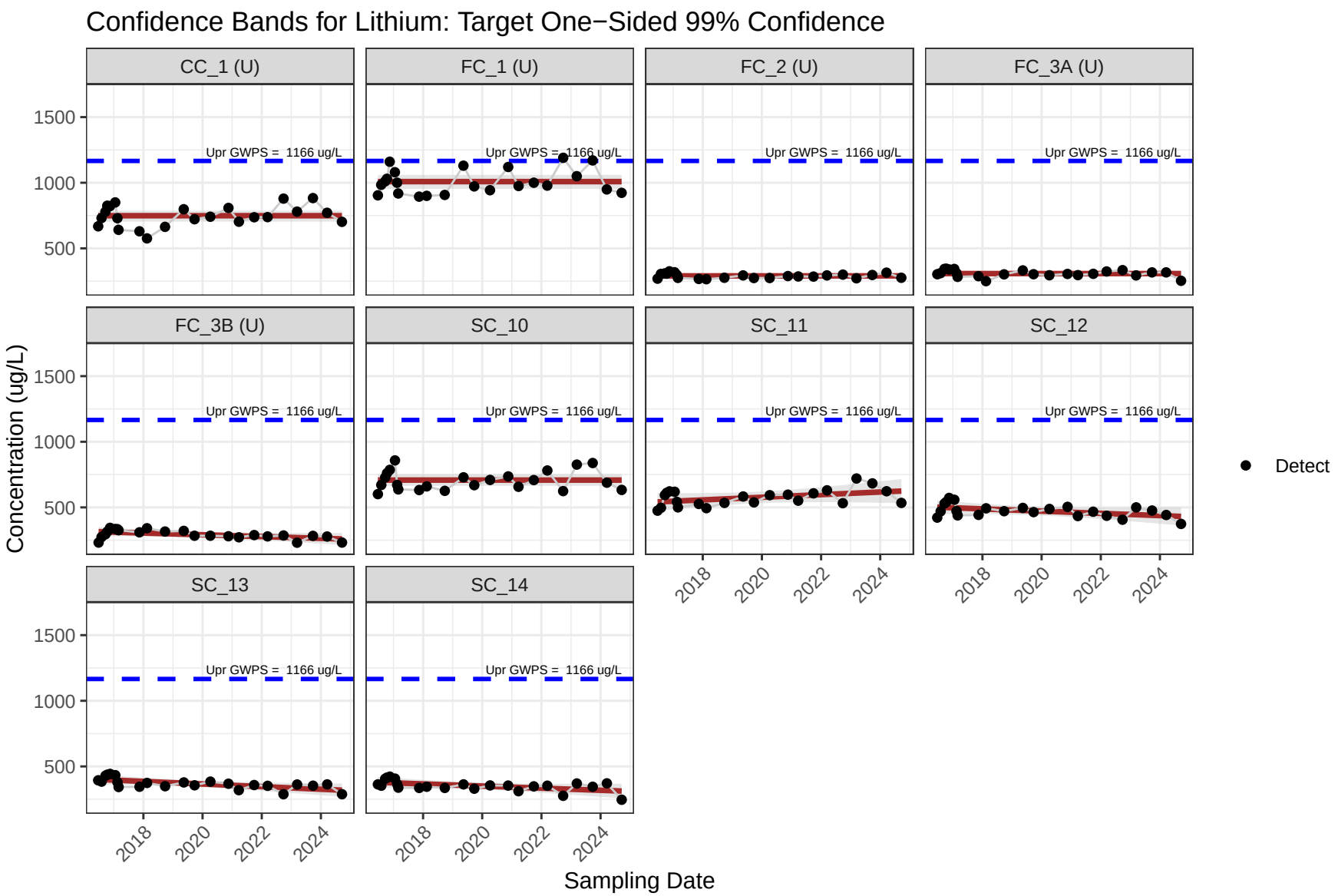


Figure 80: Confidence Band Plots

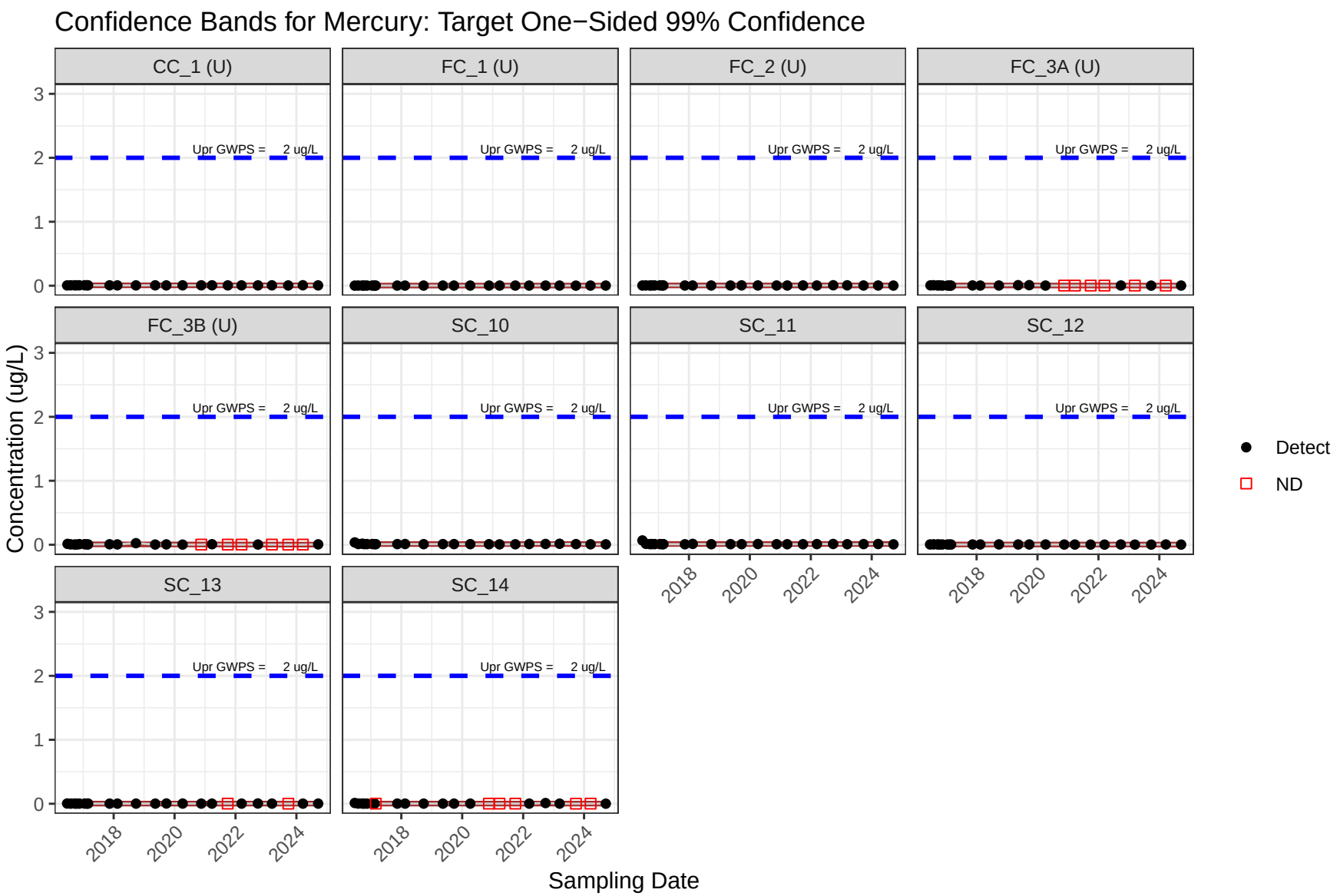


Figure 81: Confidence Band Plots

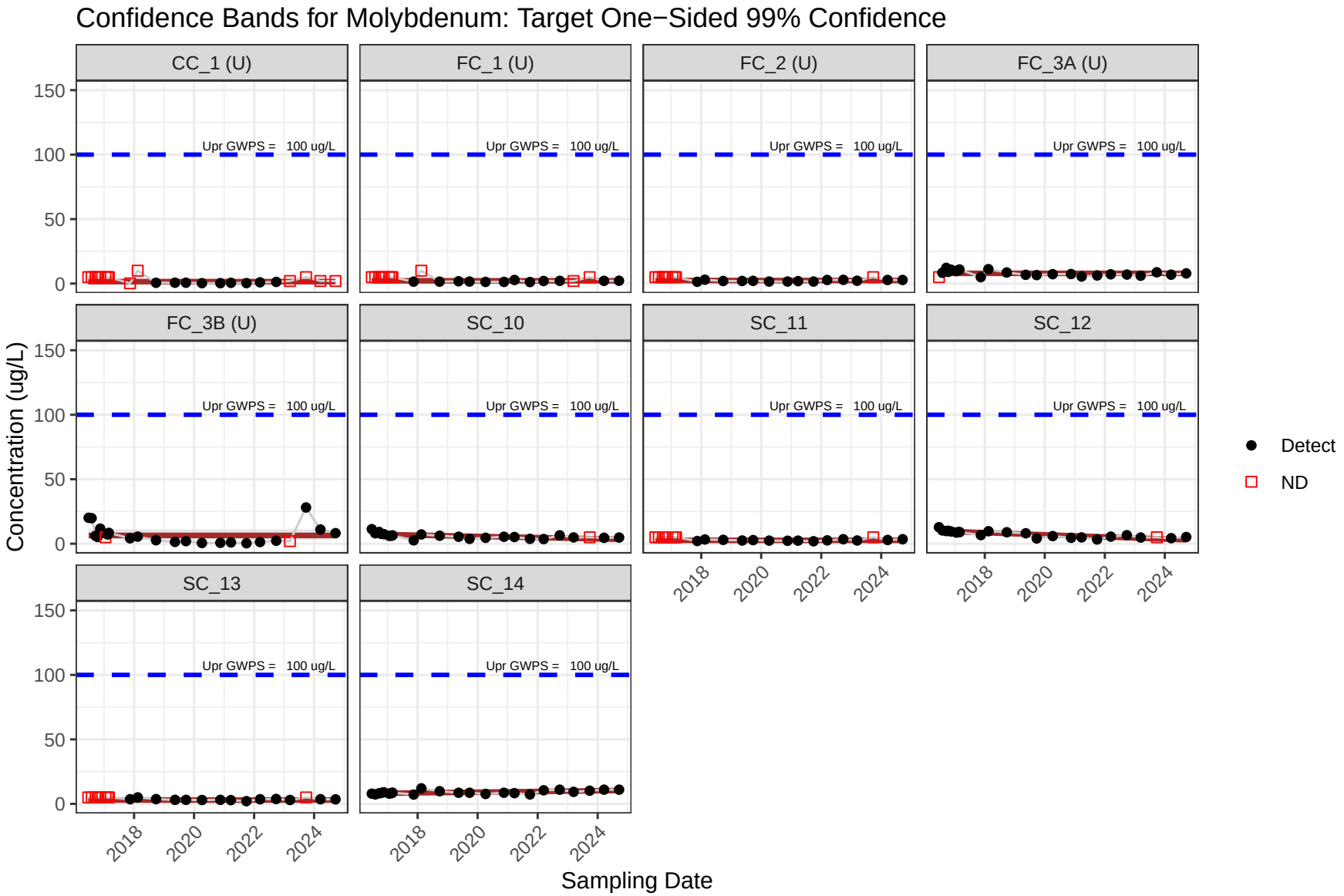


Figure 82: Confidence Band Plots

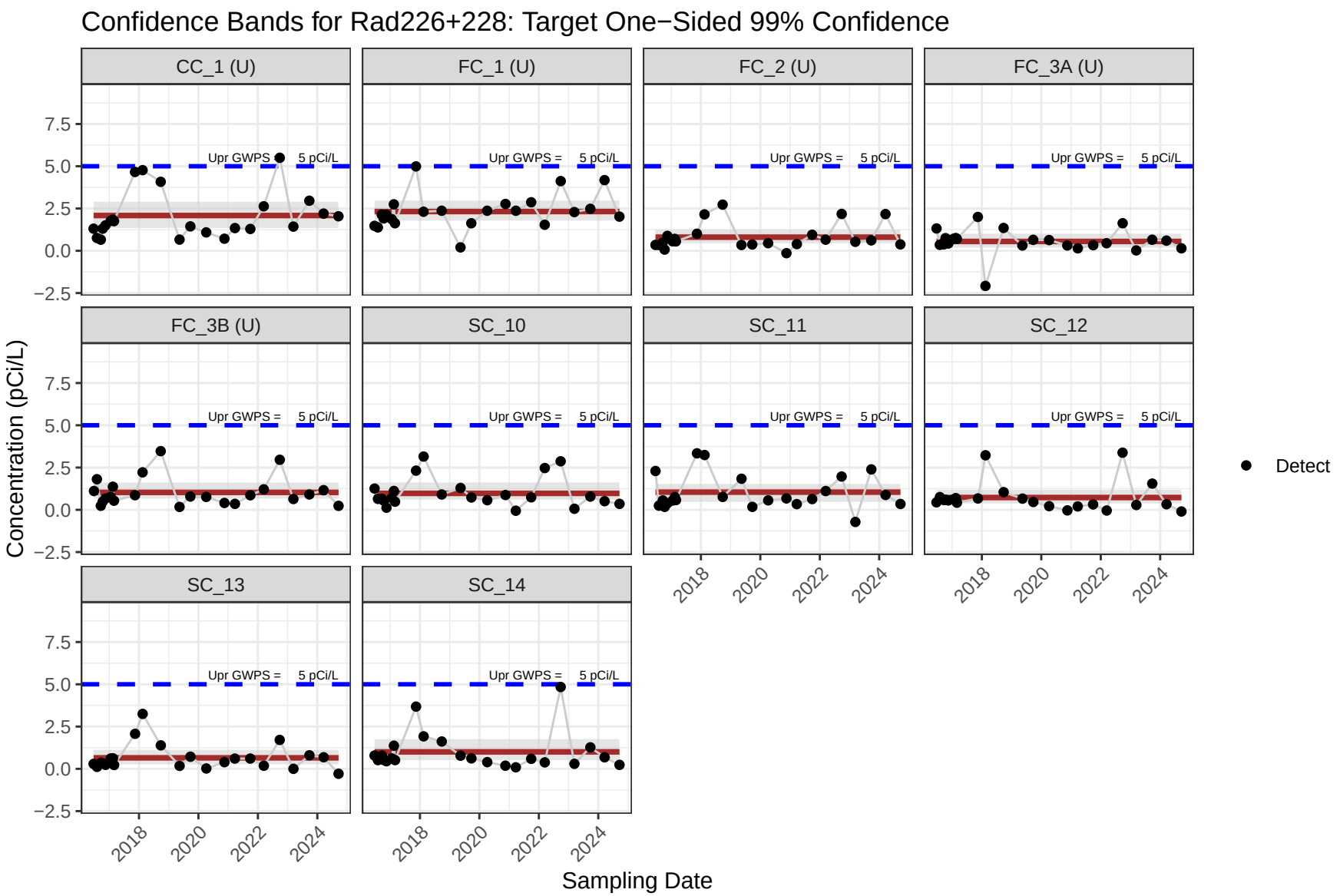


Figure 83: Confidence Band Plots

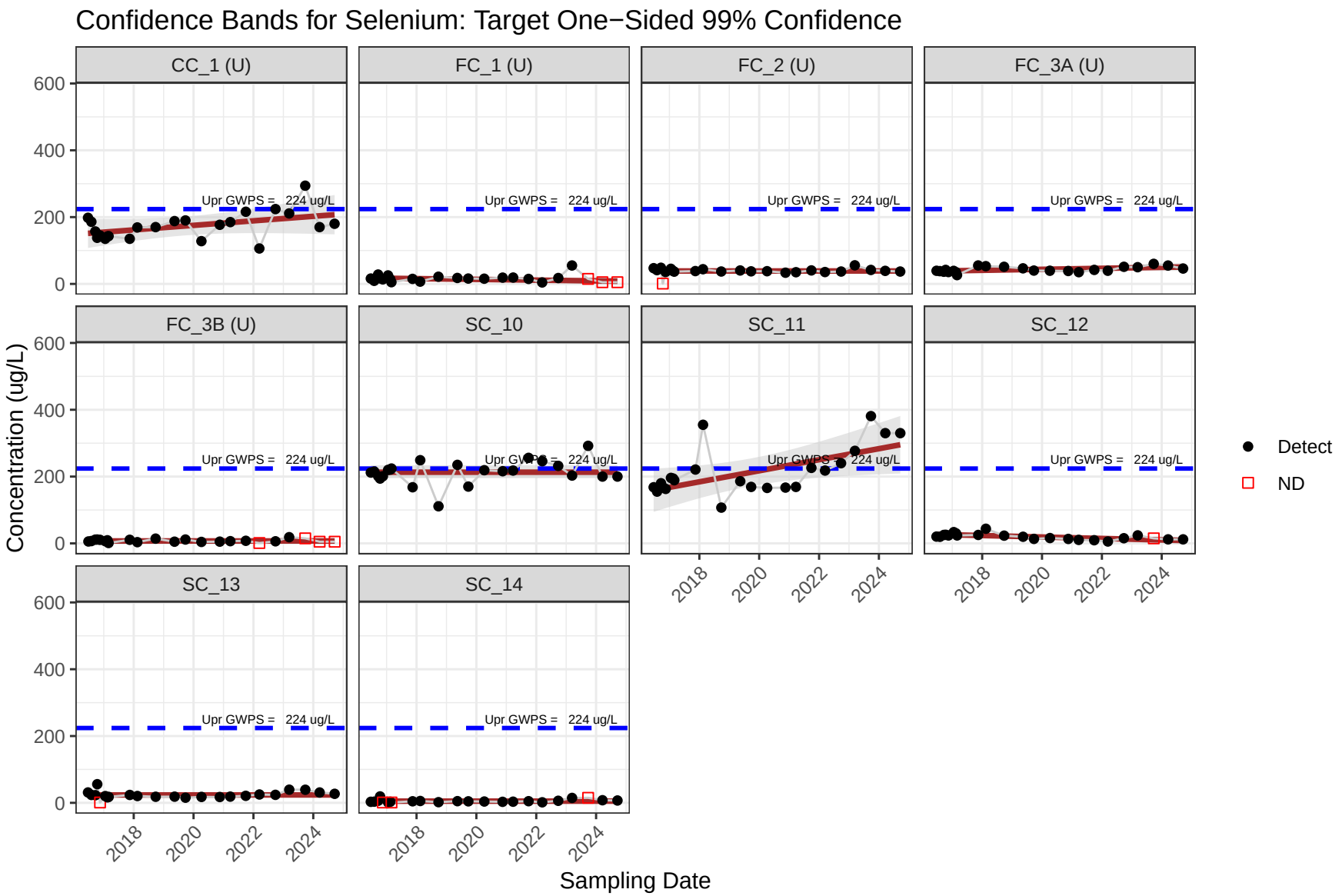


Figure 84: Confidence Band Plots

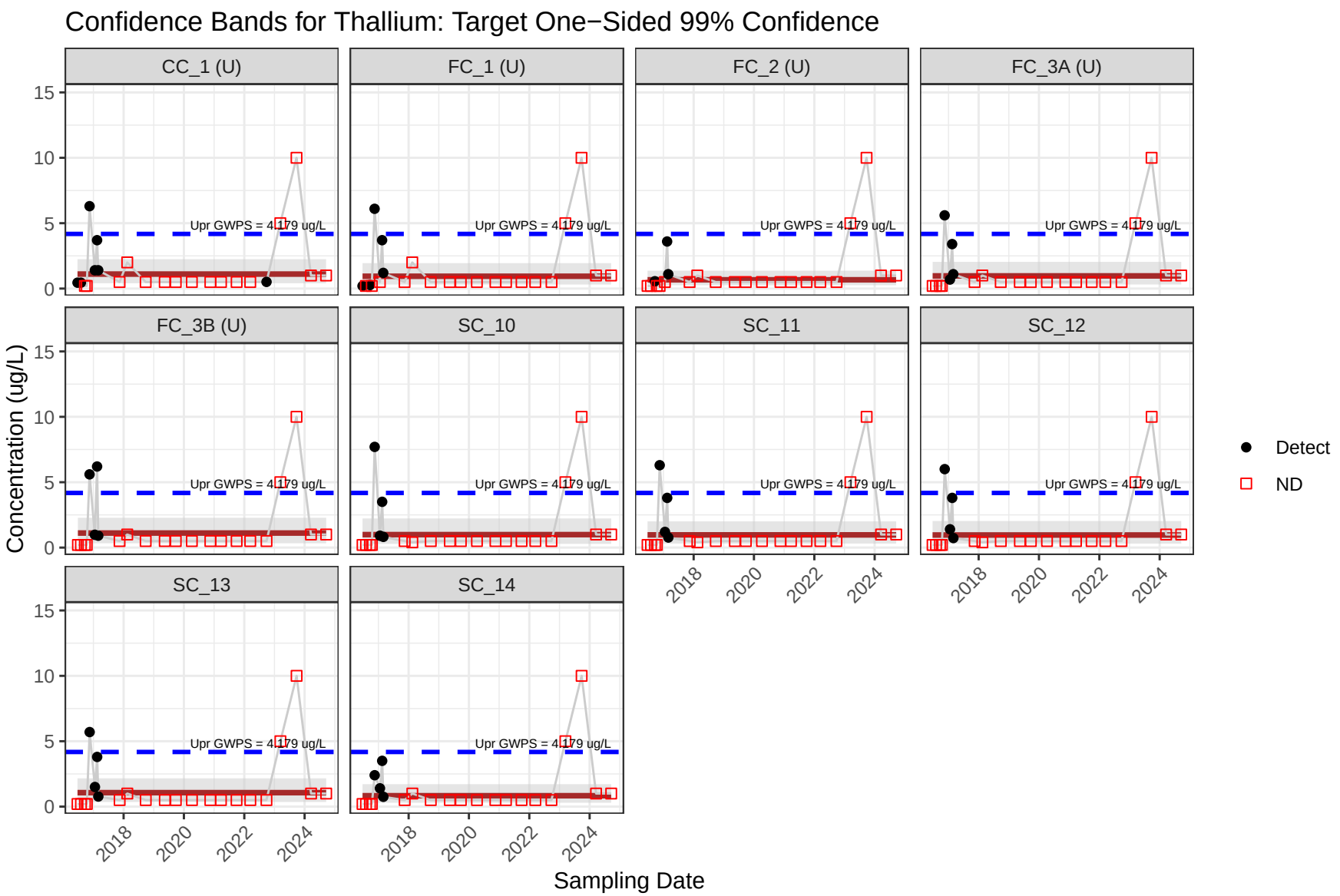


Figure 85: Confidence Band Plots

Attachment A: Statistical Summary

Attachment A - 2024 Year-End CCR Ash Landfill Statistical Summary

	Background Wells					Downgradient Wells				
Statistical Method/Test	**CC_1**	**FC_1**	**FC_2**	**FC_3A**	**FC_3B**	**SC_10**	**SC_11**	**SC_12**	**SC_13**	**SC_14**
Down-weighted Extreme Outliers	2	1	1	1	1	3	3	1	2	2
Seasonality	None	None	None	None	None	None	None	None	None	None
Trends/Time Series - Appendix III	Chloride - U; pH - U; Sulfate - U; TDS - U	Chloride - U; TDS - D	Boron - U; Chloride - D; Sulfate - D; TDS - D	Boron - D; Chloride - U; pH - D; TDS - D	Boron - D; Calcium - D; Chloride - D; Fluoride - U; pH - U; Sulfate - D; TDS - D	Calcium - D; Chloride - U; Sulfate - D; TDS - D	Boron - U; Chloride - U; Calcium - D; Sulfate - U	Boron - U; Sulfate - D; TDS - D	Boron - D; pH - U; Sulfate - D; TDS - D	Boron - D; Sulfate - D; TDS - D
Trends/Time Series - Appendix IV	Selenium - U		Barium - U	Barium - D; Mercury - D; Selenium - U	Barium - D; Cobalt - D; Fluoride - U; Lithium - D; Mercury - D; Molybdenum - D	Molybdenum - D	Lithium - U; Selenium - U	Cadmium - D; Chromium - D; Lithium - D; Mercury - D; Molybdenum - D; Selenium - D	Cadium - D; Chromium - D; Lithium - D	Antimony - U; Arsenic - U; Barium - D; Lithium - D; Molybdenum - U
Prediction Limit Apx III SSIs	NA	NA	NA	NA	NA	0	1	2	0	0
Confidence Band Apx IV SSLs	NA	NA	NA	NA	NA	0	0	0	0	0

Note: U = increasing; D = decreasing

APPENDIX E

August 23, 2023, *Groundwater Monitoring Network Modification* Letter

From:	Lawrence - CDPHE, Ashley
To:	Amber Holmberg
Cc:	Jill Parisi (JILL.PARISI@STATE.CO.US); Heather Barbare; Brock Foster; Mike Brady
Subject:	Re: Colorado Springs Utilities CSR Groundwater Monitoring Network Modifications Memo
Date:	Friday, August 25, 2023 9:33:03 AM

Hi Amber,

Thank you for sending the AECOM memo about the Groundwater Monitoring Network Modifications at Clear Spring Ranch for the Coal Combustions Residuals Landfill. The revisions look good and I don't have any additional questions or concerns at the moment.

Best,

Ashley
--

Ashley Lawrence
Environmental Protection Specialist II
Solid Waste Permitting Unit
Solid Waste and Materials Management Program
C 720.213.8028
P 630.442.9756
222 South 6th Street Grand Junction, CO
ashley.lawrence@state.co.us | www.colorado.gov/cdphe

On Wed, Aug 23, 2023 at 9:36 AM Amber Holmberg <aholmberg@csu.org> wrote:

> Hello Ashley and Jill,
>
> Attached, you will find an AECOM memo about the Groundwater Monitoring Network Modifications at Clear Spring Ranch for the Coal Combustions Residuals Landfill.
>
> Let me know if you need any additional information or have any questions.
>
> Thanks,

Amber

Amber Holmberg | Environmental Engineer I
Colorado Springs Utilities |EVS Technical Services
121 S. Tejon Street, 4th Fl. | MC: 940 | Colorado Springs, CO 80903
O (719) 668-1822 | M (719) 318-8459

AECOM
1601 Prospect Parkway
Fort Collins, CO 80525
tel: (970) 493-8878

August 23, 2023

Ms. Amber Holmberg
Colorado Springs Utilities
121 S. Tejon Street, 4th Floor
Colorado Springs, CO 80947

Subject: Groundwater Monitoring Network Modification
Coal Combustions Residuals Landfill
Colorado Springs Utilities, Clear Spring Ranch
El Paso County, Colorado

Dear Ms. Holmberg,

In response to the downgradient detection of selenium at concentrations representing a statistically significant level (SSL) above the groundwater protection standard (GWPS) at the Colorado Springs Utilities (UTILITIES) Clear Spring Ranch facility coal combustion residuals (CCR) landfill (Landfill), UTILITIES contracted AECOM Technical Services, Inc. (AECOM) to conduct an alternative source demonstration (ASD) to evaluate whether the selenium concentrations were due to the presence or operation of the CCR Landfill or to an alternative source. The ASD report dated April 2022 and Additional Information letter dated August 9, 2022 identified background conditions to the north of the CCR Landfill as an alternative source for the selenium.

To further evaluate the nature and location of the background conditions north of the CCR Landfill responsible for the selenium, three new monitoring wells (SC-15, SC-16, and SC-17) were installed and tested at the locations illustrated on **Figure 1**.

This purpose of this memorandum is to summarize AECOMs evaluation of the groundwater quality data collected from these wells during the November 2022 and March 2023 CCR groundwater monitoring events and to compare concentrations of constituents at each well to determine which of the three newly installed monitoring wells are representative of groundwater conditions upgradient of the CCR Landfill. This letter summarizes this evaluation and current conditions and provides a proposed path forward and recommended changes to the groundwater monitoring network.

Data Evaluation

Groundwater from the three new monitoring wells was sampled during the CCR Landfill's semiannual Assessment Monitoring events in November 2022 and March 2023. The data from these events are presented in **Table 1**.

Concentrations of selenium and nitrate at all three new wells in November 2022 were much lower than concentrations detected in the March 2023 samples (taking into account the different nitrate analyses performed in November versus March). This suggests the newly installed wells had not reached equilibrium with the groundwater environment. Data collected for the newly installed upgradient wells in March 2023 was utilized during this evaluation as it was deemed more representative of site conditions.

The data were evaluated with attention to representing groundwater quality upgradient of the north boundary of the CCR Landfill. Lines of evidence and findings from the ASD report included the following:

- Groundwater flow within the Piney Creek Alluvium Hydrostratigraphic Unit (PCA HSU) beneath the CCR Landfill is present within hydraulically separated buried paleo-alluvial valley drainages, two of which are separated by a bedrock high located beneath the landfill.

- Groundwater chemistry is significantly different in the North Paleo-Alluvial Valley as compared to the South Paleo-Alluvial Valley, but the current background data set for statistical evaluation is based only on wells located within the South Paleo-Alluvial Valley.

- Nitrate concentrations in groundwater samples from upgradient monitoring wells located in the North Paleo-Alluvial Valley are significantly higher than samples obtained from upgradient monitoring wells located in the South Paleo-Alluvial Valley. Concentrations of selenium are correspondingly significantly higher in upgradient monitoring wells located in the North Paleo-Alluvial Valley than upgradient monitoring wells located in the South Paleo-Alluvial Valley.

- Elevated concentrations of nitrate in groundwater can mobilize and transport selenium from naturally occurring geologic sources such as the Pierre Shale bedrock and alluvial sediments derived from the Pierre Shale in the Clear Spring Ranch region.

- Concentrations of boron in downgradient monitoring wells SC-11 and SC-12 triggered the transition from Detection to Assessment monitoring, but the concentration of boron in the selenium-affected northern well (SC-10) does not suggest impact from the Landfill.

The March 2023 data from the new upgradient monitoring wells installed north of the CCR Landfill confirm the groundwater flow direction and flow paths presented in the ASD and the presence of elevated concentrations of both selenium and nitrate in groundwater to the north of the CCR Landfill.

- Water levels measured in the new wells indicate higher groundwater elevations to the north of the CCR Landfill, indicating that groundwater flow direction is from northwest to southeast, following the downstream trend of the North Paleo-Alluvial Valley (**Figure 1**).
- Each Paleo-Alluvial Valley, has unique geochemistry attributes. The March 2023 data, shown in **Table 1**, indicate that there is additional variability within the North Paleo-Alluvial Valley that will be investigated as part of the recommended activities outlined below (Recommendations).
- One element of geochemical variability in the North Paleo-Alluvial Valley upgradient groundwater is the concentrations of nitrate and selenium.
- For the upgradient monitoring wells of the North Paleo-Alluvial Valley, concentrations of selenium are highest in wells SC-9 and SC-16 (0.578 and 0.56 mg/L, respectively), and lowest in wells SC-15 and SC-17 (0.0382 and 0.135 mg/L, respectively).
- In these same monitoring well pairs, concentrations of nitrate are elevated in well SC-9 and well SC-16 (340 and 460 mg/L, respectively), and lowest in wells SC-15 and SC-17 (110 and 130 mg/L, respectively). The highest nitrate concentration was detected in well SC-8 (740 mg/L).
- Groundwater chemistry in each of the new wells (SC-15, SC-16, and SC-17) is consistent with nearby wells in the North Paleo-Alluvial Valley. For example, groundwater chemistry at well SC-16 is very similar to groundwater collected at well SC-8, while SC-15 is similar to nearby WW-3A and SC-17 is similar to nearby SC-9.

The March 2023 data support the hydraulic separation of the North and South Paleo-Alluvial Valleys and support the interpretation that the selenium concentrations observed in downgradient monitoring wells SC-10 and SC-11 are affected by groundwater conditions originating upgradient to the northwest within the North Paleo-Alluvial Valley alignment.

Groundwater chemistry in the new wells supports the association of elevated selenium with elevated nitrate concentrations.

Status and Path Forward

The ASD lines of evidence are supported by data collected from three newly installed wells (SC-15, SC-16, and SC-17), suggesting two parallel paths for action moving forward.

- Modification of the groundwater monitoring program to account for the full diversity of background geochemical conditions of the North and South Paleo-Alluvial Valleys.

- Installation of additional wells as needed to more fully represent the effect of North Paleo-Alluvial Valley geochemistry on nitrate and selenium concentrations.

Recommendations

The recommended sequential steps to achieve the path forward for the Landfill groundwater monitoring program are as follows:

- Installation and testing of two additional monitoring wells (SC-18 and SC-19) at the locations designated on **Figure 2** to further define groundwater flow conditions in the North Paleo-Alluvial Valley HSU and to provide additional upgradient groundwater monitoring points for potential inclusion in the groundwater monitoring program. A brief work plan describing the planned monitoring well installation activities is included as **Attachment 1**.

- Performance of eight (8) bimonthly (every other month) monitoring events for the proposed background evaluation wells (shown in Table 2) to characterize background conditions and establish additional potential baseline conditions.

- Completion of one full round of groundwater monitoring to include 25 monitoring wells during one of the bimonthly monitoring event (Table 3). Groundwater elevations and water quality from this event will be utilized to update the potentiometric surface map and groundwater geochemistry for the CCR Landfill and surrounding area.

- Continue semi-annual groundwater monitoring of the 10 CCR program wells located upgradient and downgradient of the CCR Landfill as described in the current version of the Groundwater Monitoring Plan.

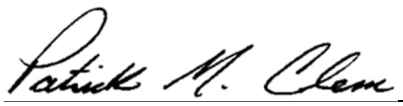
- Modification of the Groundwater Monitoring Plan to include new background monitoring wells for the Landfill. Background monitoring well selection will be based on the baseline sampling program outlined above and in **Tables 2** through **4**.

- Adjustment of the GWPS as appropriate based on the inclusion of additional background (upgradient) groundwater monitoring wells.

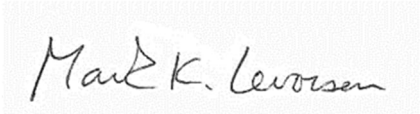
- Submittal of the modified Groundwater Monitoring Plan for CDPHE review / approval.

- Continuation of Assessment Monitoring for the CCR Landfill.

Sincerely,



Patrick Clem, PE
Project Manager



Mark Levorsen, PG
Principal Hydrogeologist

Table 1

Well ID	Sample Date	Boron (Total Recoverable) mg/L	Calcium (Total Recoverable) mg/L	Chloride mg/L	Fluoride (Total) mg/L	Iron (Total Recoverable) mg/L	Nitrite+Nitrate as Nitrogen* mg/L	Selenium (Total Recoverable) mg/L	Sodium (Total Recoverable) mg/L	Sulfate mg/L	Total Dissolved Solids mg/L
SC-15	3/15/2023	1.18	362	407	0.37	0.0363	110	0.038	3,410	11,200	16,000
SC-16	3/16/2023	2.01	501	1,260	0.70	0.0422	460	0.56	2,170	4,800	11,200
SC-17	3/16/2023	1.01	334	510	0.94	0.192	130	0.135	2,600	7,300	12,600
SC-8	3/16/2023	1.03	572	1,380	0.74	0.304	740	0.145	1,860	3,620	11,800
SC-9	3/16/2023	1.27	322	1,430	0.98	7.7	340	0.578	4,230	11,600	18,200
SC-15	11/30/2022	1.21	424	386	0.39	6.92	111.9	0.0026	4,110	11,300	17,400
SC-16	11/30/2022	2.13	340	1,270	0.56	5.38	99.6	0.499	2,570	4,640	11,900
SC-17	11/30/2022	0.985	424	505	0.72	7.54	37.09	0.111	2,820	7,580	11,500
SC-8	11/28/2022	1.17	569	1,410	0.68	0.512	800.36	0.0578	1,820	3,340	11,900
SC-9	11/28/2022	1.37	478	1,530	0.96	134	350.88	0.528	4,430	12,000	20,600

Note*: March 2023 results are for Nitrite+Nitrate as Nitrogen from Method EPA 353.2 and
the November 2022 results shown are the sum of results for Nitrate as Nitrogen and Nitrite as Nitrogen using Method EPA 353.2.

Table 2 - Proposed "Background Evaluation" CCR Lanfill Upgradient Wells - Bi-Monthly Monitoring (8X)

Well ID	HSU	CCR Monitoring Well	Location Relative to CCR Landfill	Appendix III Analytes	Appendix IV Analytes
SC-15	PCA-NPAV	Background Evaluation	Upgradient (North)	X	X
SC-16	PCA-NPAV	Background Evaluation	Upgradient (North)	X	X
SC-17	PCA-NPAV	Background Evaluation	Upgradient (North)	X	X
SC-18 (New Well Install)	PCA-SPAV	Background Evaluation	Upgradient (North)	X	X
SC-19 (New Well Install)	PCA-NPAV	Background Evaluation	Upgradient (North)	X	X
SC-8	PCA-NPAV	Background Evaluation	Upgradient (North)	X	X
SC-9	PCA-NPAV	Background Evaluation	Upgradient (North)	X	X

Notes:

HSU = Hydrostratigraphic Unit

PCA-NPAV = Piney Creek Alluvium-North Paleo-Alluvial Valley

PCA-NSAV = Piney Creek Alluvium-South Paleo-Alluvial Valley

Appendix III Analytes = Boron, Calcium, Chloride, Fluoride, Sulfate, pH, TDS

Appendix IV Analytes = Antimony, Arsenic, Barium, Berylium, Cadmium, Chromium, Cobalt, Fluoride, Lead, Lithium, Mercury, Molybdenum, Rad226+228, Selenium, Thallium

Table 3 - List of Wells and Analytes for One-Time Monitoring Event (Water Levels and Water Chemistry)

Well ID	HSU	CCR Monitoring Well	Location Relative to CCR Landfill	Appendix III Analytes	Appendix IV Analytes	Additional Analytes (AA Below)
SC-15	PCA-NPAV	Background Evaluation	Upgradient (North)	X	X	AA
SC-16	PCA-NPAV	Background Evaluation	Upgradient (North)	X	X	AA
SC-17	PCA-NPAV	Background Evaluation	Upgradient (North)	X	X	AA
SC-18 (New Well Install)	PCA-NPAV	Background Evaluation	Upgradient (North)	X	X	AA
SC-19 (New Well Install)	PCA-NPAV	Background Evaluation	Upgradient (North)	X	X	AA
SC-8	PCA-NPAV	Background Evaluation	Upgradient (North)	X	X	AA
SC-9	PCA-NPAV	Background Evaluation	Upgradient (North)	X	X	AA
FC-1A	PCA-SPAV	No	Upgradient (Southwest)	X	X	AA
FC-2A	PCA-SPAV	No	Upgradient (Southwest)	X	X	AA
SC-2	PCA-SPAV	No	Downgradient	X	X	AA
SC-3	PCA-SPAV	No	Downgradient	X	X	AA
SC-7	PCA-NPAV	No	Downgradient	X	X	AA
WW-3A	Kp-NPAV	No	Upgradient (North)	X	X	AA
WW-5A	Kp-NEPAV	No	Cross-gradient	X	X	AA
WW-6A	Kp-NEPAV	No	Cross-gradient	X	X	AA
CC-1	PCA-SPAV	Current Background	Upgradient (Southwest)	X	X	AA
FC-1	PCA-SPAV	Current Background	Upgradient (Southwest)	X	X	AA
FC-2	PCA-SPAV	Current Background	Upgradient (Southwest)	X	X	AA
FC-3A	PCA-SPAV	Current Background	Upgradient (Southwest)	X	X	AA
FC-3B	Kp-SPAV	Current Background	Upgradient (Southwest)	X	X	AA
SC-10	PCA-NPAV	Current Downgradient	Downgradient (Northeast)	X	X	AA
SC-11	PCA-NPAV	Current Downgradient	Downgradient (Northeast)	X	X	AA
SC-12	PCA-SPAV	Current Downgradient	Downgradient (Southeast)	X	X	AA
SC-13	PCA-SPAV	Current Downgradient	Downgradient (Southeast)	X	X	AA
SC-14	PCA-SPAV	Current Downgradient	Downgradient (Southeast)	X	X	AA

Notes:

HSU = Hydrostratigraphic Unit

PCA-NPAV = Piney Creek Alluvium-North Paleo-Alluvial Valley

PCA-NSAV = Piney Creek Alluvium-South Paleo-Alluvial Valley

Kp-NPCA = Pierre Shale-North Paleo-Alluvial Valley

Kp-NEPCA = Pierre Shale-Northeast Paleo-Alluvial Valley

Kp-SPCA = Pierre Shale-Sorth Paleo-Alluvial Valley

Appendix III Analytes = Boron, Calcium, Chloride, Fluoride, Sulfate, pH, TDS

Appendix IV Analytes = Antimony, Arsenic, Barium, Berylium, Cadmium, Chromium, Cobalt, Fluoride, Lead, Lithium, Mercury, Molybdenum, Rad226+228, Selenium, Thallium

AA - Additional Analytes = Sodium, Potassium, Magnesium, Manganese, Iron, Total Alkalinity, Bicarbonate Alkalinity, Ammonia, and Nitrate+Nitrite

Table 4 - Current CCR Rule Monitoring Well Network - Semi-Annual Monitoring

Well ID	HSU	CCR Monitoring Well	Location Relative to CCR Landfill	Appendix III Analytes	Appendix IV Analytes
CC-1	PCA-SPAV	Current Background	Upgradient (West)	X	X
FC-1	PCA-SPAV	Current Background	Upgradient (West)	X	X
FC-2	PCA-SPAV	Current Background	Upgradient (West)	X	X
FC-3A	PCA-SPAV	Current Background	Upgradient (West)	X	X
FC-3B	Kp-SPAV	Current Background	Upgradient (West)	X	X
SC-10	PCA-NPAV	Current Downgradient	Downgradient (Northeast)	X	X
SC-11	PCA-NPAV	Current Downgradient	Downgradient (Northeast)	X	X
SC-12	PCA-SPAV	Current Downgradient	Downgradient (Southeast)	X	X
SC-13	PCA-SPAV	Current Downgradient	Downgradient (Southeast)	X	X
SC-14	PCA-SPAV	Current Downgradient	Downgradient (Southeast)	X	X

Project Manager Initials:SW Designer:MKL Checked:CRG Approved:CRG ANSI 11" x 17"

SC-15 5457.02
SC-16 5456.72
SC-8 5457.22
SC-17 5440.49
SC-9 5441.15
SC-10 5433.22
SC-11 5433.14
SC-7 5431.12
SC-12 5432.09
SC-13 5433.23

Legend

Groundwater Elevation Nov 2022

- PCA Well November 2022

Groundwater Elevation

- Potentiometric Surface Contour (5-ft interval)
- Dashed Where Inferred
- 5432.5 Contour (half-interval)
- Groundwater Flow Line
- Boundary - Piney Creek Alluvium HSU Approximate
- Boundary Certificate of Designation
- Boundary CCR Landfill

Note: Groundwater elevations for November 2022 were obtained for 11 monitoring wells. This data was used to modify potentiometric contours from the February 2022 monitoring event where 20 wells were monitored.

N

1 inch = 500 feet

0 250 500 1,000

Feet

Note: Groundwater elevations at monitoring wells completed predominantly in the Kp HSU used as general guidance for construction of PCA HSU elevation contours from February 2022

AECOM

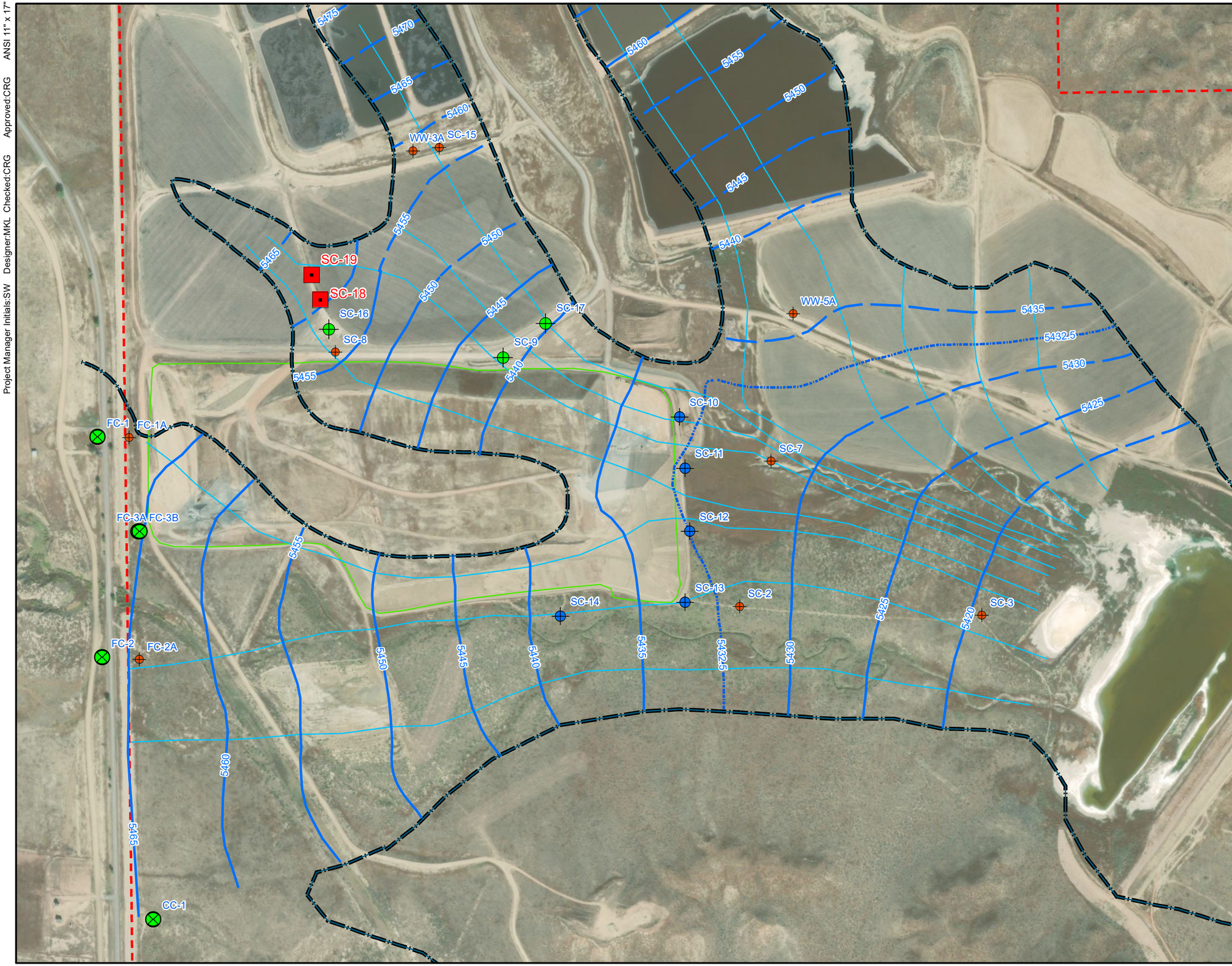
Title: **Groundwater Potentiometric Surface Contours with Flow Lines November 2022 Sampling Event Combined with February 2022 Data Depth to Water Measured November 2022 and February 2022**

Project: Revisions to the Groundwater Monitoring Plan - CCR Landfill

Location: Clear Spring Ranch, El Paso County, CO

Project No.:	Date:	Figure:
60712294	7/28/2023	1

Project Manager Initials:SW Designer:MKL Checked:CRG Approved:CRG ANSI 11" x 17"



Legend

CCR_Status

- Background - NPAV
- Background - SPAV
- Downgradient Compliance
- Other Monitoring Wells

Proposed Well Installations

- SC-18
- SC-19
- Boundary_PCA_HSU

Groundwater Elevation

- Potentiometric Surface Contour (5-ft interval)
- Dashed Where Inferred
- 5432.5 Contour (half-interval)
- Groundwater Flow Line
- Boundary Certificate of Designation
- Boundary CCR Landfill
- Boundary - Piney Creek Alluvium HSU Approximate

1 inch = 500 feet

0 250 500 1,000

Feet

N

AECOM

Title:

Locations of Existing Wells and Proposed Background Monitoring Wells

Project: Revisions to the Groundwater Monitoring Plan CCR Landfill

Location:
Clear Spring Ranch
El Paso County, CO

Project No.:	Date:	Figure:
60712294	7/28/2023	2

Attachment 1 - Monitoring Well Installation Work Plan

This plan describes the activities that will take place at the Colorado Springs Utilities (UTILITIES) Clear Spring Ranch facility for installation of two new groundwater monitoring wells located north of the CCR Landfill to support revision of the Groundwater Monitoring Plan. The groundwater monitoring well installation activities will include the following.

Utility Locating / Clearance

The Utility Notification Center of Colorado ("UNCC") will be notified at least five business days prior to any excavation or earthwork activities to ensure proper location and clearance of utilities.

Monitoring Well Notifications

Monitoring well permit notifications will be prepared and submitted to the Colorado State Engineer's Office in accordance with Rule 6.3 of the Water Well Construction Rules (2 CCR 402-2). The Notice of Intent will be provided before drilling any groundwater monitoring well. Notice is accomplished by submitting Form GWS-51 (Monitoring and Observation Holes) to the Division of Water Resources at least three (3) days and no more than ninety (90) days prior to well construction.

Monitoring Well Installation

Monitoring wells will be drilled and installed by a Colorado licensed Water Well Construction Contractor. A hydrogeologist or geologist will oversee the field activities performed by the drilling subcontractor. The proposed monitoring wells will be drilled and boreholes will be advanced using continuous sampling with hollow stem augers. Monitoring wells will be constructed using 2-inch diameter flush-joint Schedule 40 PVC. Well screens will be fifteen (15) feet in length with 0.010-inch slot size (10-slot). The bottom of the screen interval will be set at or close to the bedrock-alluvium contact. Graded filtered silica sand (20-40 gradation) will extend from the bottom of the borehole to approximately two feet above the top of the well screen. Bentonite chips will be placed above the filter pack material up to approximately two feet below ground surface. The top portion of the hole will be sealed with cement. The wells will be completed at ground surface with above grade protective well covers / stick-ups in 2 foot x 2 foot x 4 inch concrete well pads. The wells will be equipped with a locking J-plug well cap, or equivalent. Monitoring well locations will be surveyed by UTILITIES to determine the horizontal and vertical coordinates for the top of PVC casing and ground surface at the well head following well installation.

Monitoring Well Development

The monitoring wells will be developed to remove solids or other particulates that may have been deposited on the boring wall during drilling. Development will occur no sooner than 24 hours after well installation. Well development will be accomplished using methods commonly accepted by environmental professionals and approved will include one of more of the following - bailing, surging, and/or pumping. Temperature, pH, conductivity and turbidity will be monitored during well development. The well-development will continue until the groundwater's temperature, pH, turbidity (target <5 NTU) and conductivity have stabilized within 10% between successive readings, *or* a maximum of 10 borehole volumes of water has been removed from the well and at least three surging and bailing/pumping events have been performed. If the well goes dry during development and does not readily recharge, development will be deemed complete after a minimum of 3 well casing volumes have been removed and one surging event. Typically, a well is considered developed when free of visible sediment; however, previous well installations in this area have shown that turbidity doesn't readily clear up.

Field Documentation

Field personnel will document the field activities in a logbook and/or field logs. A daily field log will be kept documenting the timing of field activities and the content of any pertinent project communications. Each daily field log will be dated and signed by field personnel. Photographs will be taken to record the soil core samples and any other relevant field activities. The field geologist logging the soil cores will classify per the Unified Soil Classification System.

Monitoring Well Permits

Monitoring well permit applications will be submitted to the State Engineer's Office upon completion of the well installations. A Monitoring and Observation Well Permit Application (Form GWS-46) and Well Construction and Yield Estimate Report (Form GWS-31) will signed by the well driller to register the monitoring wells with the State Engineer's Office.