From:	Daniela Ortiz De Montellano
To:	Kate McCarthy
Cc:	Charly Fritz; Danielle Lesikar; Martin Torres; Colin Donovan; Patti Hershey; Earl Lott
Subject:	FW: ASD response - Lower Colorado River Authority - Registration No. CCR101 - ID Nos. 272140088 and 29948707
Date:	Thursday, August 15, 2024 12:21:59 PM

Acceptance of Alternative Source Demonstration (ASD)
Lower Colorado River Authority (LCRA) – La Grange, Fayette County
Coal Combustion Residuals (CCR) Registration No. CCR101
Industrial Solid Waste Registration No. 31575
EPA Identification No. TXD083566547
Communication ID Nos. 272140088 and 29948707; RN100226844/CN600253637

Dear Ms. McCarthy:

The Industrial and Hazardous Waste Permits Section of the Texas Commission on Environmental Quality (TCEQ) reviewed the ASD dated July 17, 2024, prepared in response to a Statistically Significant Increase for boron at the Combustion Byproducts Landfill (CBL), groundwater monitoring well CBL-302I, at Fayette Power Project that was initially reported to the TCEQ on April 30, 2024.

Based on the information provided in the ASD report and in the meeting held on July 31, 2024, the TCEQ determined that the ASD justification is satisfactory. LCRA will provide an addendum to the September 14, 2023, notice of deficiency response to update the Background Evaluation Report and Statisical Analysis Plan (SAP) to document the updated Dixon test analysis. Additionally, include the ASD as an attachment to the SAP, see 30 TAC 352.281(b) under registration application contents, and provide additional information as discussed in the July 31, 2024, meeting.

If you have any questions, please contact me at (512) 239-2210 or by email.

Sincerely,

Daniela Ortiz de Montellano, Work Leader
Industrial and Hazardous Waste Permits Section
Waste Permits Division
TCEQ

July 17, 2024

Daniela Ortiz de Montellano, Project Manager
Industrial and Hazardous Waste Permits Section
Waste Permits Division
Texas Commission on Environmental Quality

RE: Alternate Source Demonstration – First Semi-Annual Monitoring Event 2024
Lower Colorado River Authority Fayette Power Project – La Grange, Fayette County Coal Combustion Residuals (CCR) Registration No. CCR101
Industrial Solid Waste Registration No. 31575
RN100226844/CN600253637

Dear Ms. Ortiz de Montellano,

Please find attached an Alternate Source Demonstration (ASD) prepared in response to what was initially thought to be a Statistically Significant Increase (SSI) for boron at the Fayette Power Project (FPP) located in La Grange, Fayette County, Texas. In accordance with the requirements of 30 TAC §352.941(b), the Lower Colorado River Authority (LCRA), the operator and part owner of the Combustion Byproducts Landfill (CBL) at FPP, provided notice of the SSI of an Appendix III constituent to the Texas Commission on Environmental Quality (TCEQ) in a letter dated April 30, 2024.

The attached ASD documents that the CBL was not the source of a SSI of boron in monitoring well CBL-302I during the First Semi-Annual 2024 Coal Combustion Residual (CCR) Detection Monitoring Program groundwater sampling event.

LCRA would like to meet with the TCEQ to discuss the statistical methodology and conclusions presented in the ASD. At your earliest convenience, please contact me to arrange a mutually agreeable day and time.

We look forward to discussing this with you further.

Sincerely,

Kate McCarthy

Kate McCarthy, P.G.
Senior Environmental Coordinator

Enclosures: Correspondence Cover Sheet
Alternate Source Demonstration - First Semiannual Monitoring Event 2024

Texas Commission on Environmental Quality

Waste Permits Division Correspondence Cover Sheet

Date: 7/172024
Facility Name: Fayette Power Project
Permit or Registration No.: 31575

Nature of Correspondence:
☒ Initial/New
☐ Response/Revision to TCEQ Tracking No.: _____ (from subject line of TCEQ letter regarding initial submission)

Affix this cover sheet to the front of your submission to the Waste Permits Division. Check appropriate box for type of correspondence. Contact WPD at (512) 239-2335 if you have questions regarding this form.

Table 1 - Municipal Solid Waste Correspondence

Applications	Reports and Notifications
☐ New Notice of Intent	☐ Alternative Daily Cover Report
☐ Notice of Intent Revision	☐ Closure Report
☐ New Permit (including Subchapter T)	☐ Compost Report
☐ New Registration (including Subchapter T)	☐ Groundwater Alternate Source Demonstration
☐ Major Amendment	☐ Groundwater Corrective Action
☐ Minor Amendment	☐ Groundwater Monitoring Report
☐ Limited Scope Major Amendment	☐ Groundwater Background Evaluation
☐ Notice Modification	☐ Landfill Gas Corrective Action
☐ Non-Notice Modification	☐ Landfill Gas Monitoring
☐ Transfer/Name Change Modification	☐ Liner Evaluation Report
☐ Temporary Authorization	☐ Soil Boring Plan
☐ Voluntary Revocation	☐ Special Waste Request
☐ Subchapter T Disturbance Non-Enclosed Structure	☐ Other:
☐ Other:	

Table 2 - Industrial & Hazardous Waste Correspondence

Applications	Reports and Responses
☒ New	☐ Annual/Biennial Site Activity Report
☐ Renewal	☐ CPT Plan/Result
☐ Post-Closure Order	☐ Closure Certification/Report
☐ Major Amendment	☐ Construction Certification/Report
☐ Minor Amendment	☐ CPT Plan/Result
☐ CCR Registration	☐ Extension Request
☐ CCR Registration Major Amendment	☐ Groundwater Monitoring Report
☐ CCR Registration Minor Amendment	☐ Interim Status Change
☐ Class 3 Modification	☐ Interim Status Closure Plan
☐ Class 2 Modification	☐ Soil Core Monitoring Report
☐ Class 1 ED Modification	☐ Treatability Study
☐ Class 1 Modification	☐ Trial Burn Plan/Result
☐ Endorsement	☐ Unsaturated Zone Monitoring Report
☐ Temporary Authorization	☐ Waste Minimization Report
☐ Voluntary Revocation	☒ Other: A**lternate Source Demonstration**
☐ 335.6 Notification	
☐ Other:	

Bullock, Bennett & Associates, LLC

www.bbaengineering.com

165 N. Lampasas St. • Bertram, Texas 78605 • (512) 355-9198

July 17, 2024

Sent Via email

Ms. Daniela Ortiz De Montellano
Project Manager
Texas Commission on Environmental Quality (TCEQ)
Industrial & Hazardous Waste Permits, MC-130
P.O. Box 13087, Austin, TX 78711-3087

Re: Alternate Source Demonstration–First Semiannual Monitoring Event 2024
LCRA Fayette Power Project – Combustion Byproducts Landfill (CCR-101)
Fayette County, Texas

1.0 INTRODUCTION

This Alternate Source Demonstration (ASD) documents that the Combustion Byproducts Landfill (CBL) was not the source of an initial statistically significant increase (SSI) of boron in monitoring well CBL-302I during the First Semi-Annual 2024 Coal Combustion Residual (CCR) Detection Monitoring Program groundwater sampling event. The Groundwater Monitoring Program (GWMP) is being implemented by LCRA as required by 40 CFR §257.94(e)(2) of the federal CCR Rule. The Texas Commission on Environmental Quality (TCEQ) has adopted portions of the federal CCR Rule under 30 Texas Administrative Code (TAC) Chapter 352 (Texas CCR Rule), which became effective on July 28, 2021. 30 TAC §352.941 of the Texas CCR Rule incorporates by reference the federal CCR program requirements under 40 CFR §257.94. Pursuant to 30 TAC §352.941(c)(1), a notification was submitted to the Executive Director on April 30, 2024, indicating an intent to pursue an ASD for this initial SSI. This ASD is being submitted to the Executive Director pursuant to 30 TAC §352.941(c)(2) and will be included as an attachment to the 2024 Annual Groundwater Monitoring and Corrective Action Report for the CBL.

2.0 CBL CCR MONITORING WELL NETWORK

The CBL and its CCR groundwater monitoring well network is shown on Figure 1. The CBL currently consists of two active cells, Cell 1 and Cell 2D. The CBL monitoring well network consists of five wells, each screened in the uppermost groundwater-bearing unit (GWBU), also referred to as the Intermediate Sand GWBU. The five wells are all located hydraulically downgradient of active CBL cells, and are listed, as follows:

- CBL-301I
- CBL-302I
- CBL-306I
- CBL-308I

- CBL-341I

Since implementation of the CCR rules beginning in 2017, the CBL GWMP has been evaluated under the Detection Monitoring Program, which involves gauging depth to groundwater and collection of groundwater samples for laboratory analyses, on a semi-annual basis. Per the CCR Rules, the groundwater samples are analyzed for the following "Appendix III" constituents:

- Boron
- Calcium
- Chloride
- Fluoride
- pH
- Sulfate
- Total Dissolved Solids (TDS)

To statistically evaluate each Appendix III constituent for evidence of an SSI, in each of the five monitoring wells, the laboratory results are compared semi-annually using Intrawell Control Limits (ICLs). The ICLs are developed for each constituent, within each well, using the statistical analytical program DUMPStat, (DUMPStat, 2003). The most recent Background Evaluation Report (BER) (LCRA, 2023a) and Statistical Analysis Plan (SAP) (LCRA, 2023b) have been provided as attachments to the TCEQ CCR Facility Application.

3.0 CBL CCR MONITORING RESULTS – FIRST SEMI-ANNUAL EVENT 2024

LCRA completed the first semi-annual groundwater monitoring event for 2024 on January 29-31, 2024. Figure 2 provides a potentiometric surface map, developed from the groundwater gauging conducted during the January 2024 monitoring event. Groundwater gradients and flow direction are consistent with the historic potentiometric surface maps for the Intermediate Sand in the CBL area.

As shown on the tables and data plots presented in Appendix A, the analytical results from the January 2024 sampling event showed all Appendix III constituents in the five wells to be below their respective GWMP ICLs, with the exception of boron in monitoring well CBL-302I. In this well, boron was detected at a concentration of 0.160 milligrams per liter (mg/L) versus its established ICL of 0.0743 mg/L. Based on these results, CBL-302I was resampled under the GWMP on April 5, 2024. The resample analytical results indicated a boron concentration of 0.163 mg/L, similar to the January 2024 sampling result.

Review of the January and April 2024 sampling results led to the identification of an initial SSI, based entirely on an exceedance of the currently utilized ICL for boron in CBL-302I of 0.0743 mg/L. However, as discussed in Section 4.0 below, the appropriate ICL for boron is actually

0.2970 mg/L (the ICL used prior to September 2023) and, with the use of 0.2970 mg/l, there is no SSI.

4.0 2023 REVISION OF THE ICL FOR BORON

In the process of finalizing the CBL's CCR Registration Application in 2023, a TCEQ Technical Notice of Deficiency (NOD) letter dated June 16, 2023, review comment 16(f)(i)(b), requested LCRA to provide an explanation for Dixon's Test not identifying two early background study CBL-302I boron detections (noting the detections of 0.1560 mg/L and 0.2970 mg/L from the 2016-2017 time period) as "outliers." As described in LCRA's response to the TCEQ NOD (LCRA, 2023c), the DUMPStat program's default approach for data sets with less than 25 datapoints is to first run Dixon's Test. If the results are flagged as potential outliers, then the suspect outlier results are compared to three times the median value. As the two early background study CBL-302I boron detections were flagged by Dixon's Test, and exceeded the three-times median value, the results were subsequently qualified as outliers. Consequently, a new boron ICL of 0.0743 mg/L was calculated (LCRA, 2023c). Notably, the data set on which the Dixon's Test was run in the 2023 TCEQ NOD Response had only three detections out of 16 data points. Dixon's Test may inappropriately identify relatively higher concentration detections as outliers when there are so few detections in the data set.

After further review of the data and the *USEPA document Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance (EPA, 2009)*, herein referenced as the "*Unified Guidance*" by our statistician, Dixon's Test should not have been used to identify potential outliers for boron at CBL-302I. The primary reason is that boron at CBL-302I has more than 50% non-detect observations. Dixon's Test assumes "the data without the suspect observation(s) are normally distributed" and "data are quantified," and the normality assumption "should be checked prior to running Dixon's test" (Unified Guidance 6.3.3 and 12.3). For boron at CBL-302I, a "low detection frequency makes it difficult to implement parametric statistical tests, since it may not be possible to determine if the underlying population is normal or can be normalized" (*Unified Guidance* 6.3.3). The *Unified Guidance* also states, "test performance can suffer when more than 50% of the data are non-detects" and "the guidance generally recommends non-parametric options when non-detect data exceed 50%" (*Unified Guidance* Section 15.6).

Prior to LCRA's September 14, 2023 NOD Response, the two boron data points at CBL-302I had not been considered outliers under the initial Interwell Prediction Limit Method, the revised Intrawell Prediction Limit Method, or the subsequent Intrawell Control Chart Method, based on the expectation that the sporadic detections of boron were within the realm of what can be observed in background studies. This is also discussed in the *Unified Guidance*. Several key points are made in the *Unified Guidance* regarding identification of outliers, and the potential for revisiting their status as outliers after additional data are gathered over time, including:

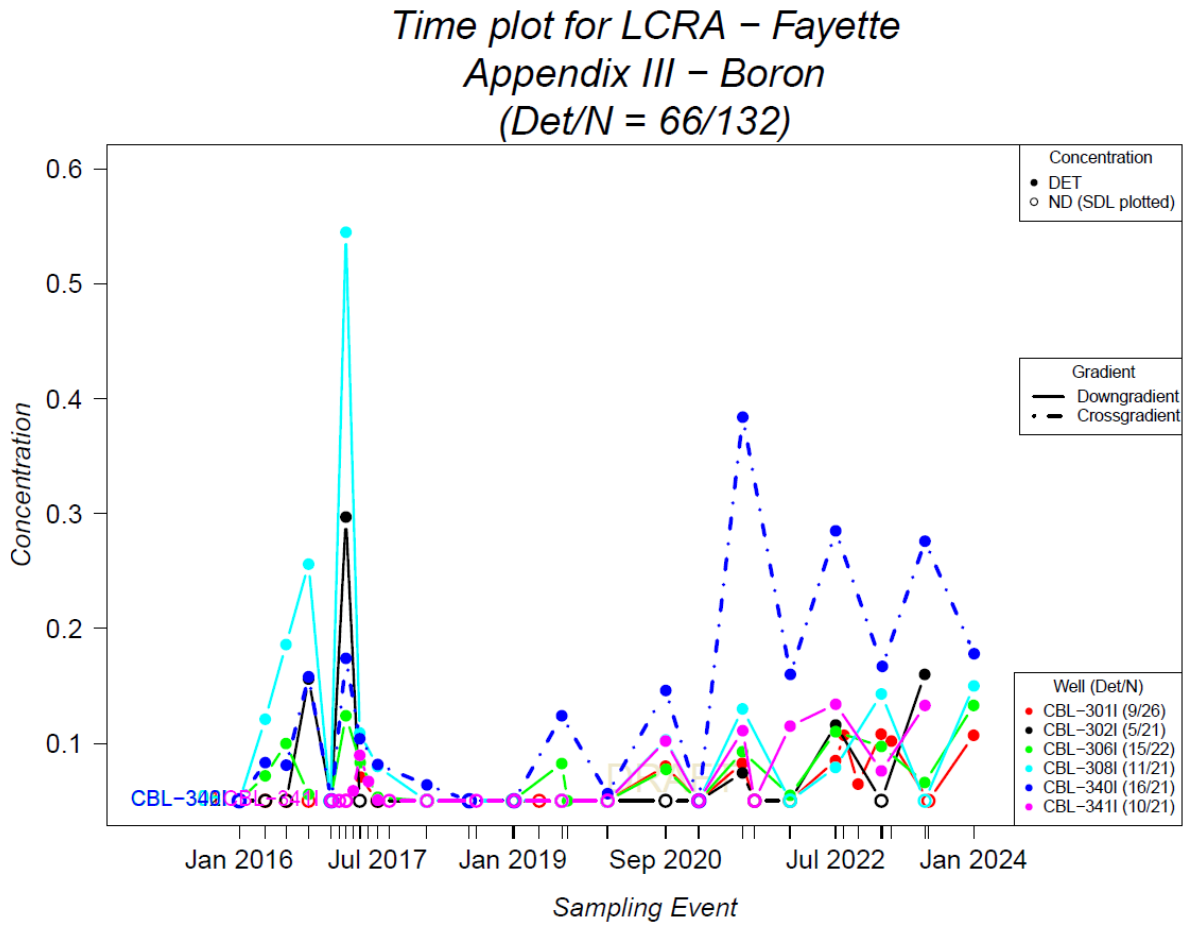
- The *Unified Guidance* does not recommend that outliers be removed solely on a statistical basis (*Unified Guidance* Chapter 12).
- The *Unified Guidance* recommends that testing for outliers be performed on background data, but does not recommend their removal from the data set unless some basis for a likely error or discrepancy can be identified. (*Unified Guidance* 5.2.3)
- The *Unified Guidance* recommends that "[i]f no error in the value can be documented, it should be assumed that the observation is a true but extreme value. In this case, it should not be altered or removed. However, it may be helpful to obtain another observation in order to verify or confirm the initial measurement." (*Unified Guidance* 6.3.3)
- "[T]here is some merit in saving and revisiting apparent 'outliers' in future investigations, even if removed from present databases." (*Unified Guidance* 5.2.3)
- Even when conditions have not changed, an apparently extreme measurement may represent nothing more than a portion of the background distribution that has yet to be observed. This is particularly true if the background data set contains fewer than 20 samples. (*Unified Guidance* 5.2.3)
- "Ideally, removal of one or more statistically identified outliers should be based on other technical information or knowledge which can support that decision." (*Unified Guidance* 5.2.3).

The *Unified Guidance* allows for consideration of several factors in making a decision on identification and use of outliers. Section 5.0 below presents a summary of relevant findings regarding CBL Intermediate Sand boron data for use in consideration of both the identification of outliers and their use in the CBL GWMP.

Comparing boron concentrations from CBL-302I with the side-gradient well CBL-340I using time plots, the concentrations at CBL-302I appear comparable to side-gradient concentrations. The CBL-302I value of 0.297 mg/L falls within the range of side-gradient concentrations and does not appear to be an outlier. Given a lack of any other indication of a release, as discussed in Section 5.0, it is reasonable to conclude the 2016-2017 datapoints are valid "background" results, and, therefore, should be utilized in the GWMP statistical evaluations.

5.0 CBL GWMP BORON DATA OBSERVATIONS

In consideration of the decision to use the two boron data points from 2016-2017 (called out in 2023 as outliers) for CBL-302I, the boron data have been compared to data observed in the other CBL GWMP monitoring wells, in addition to side-gradient well CBL-340I (which is unaffected by the CBL).



Based on the information presented in the time plot above, and the historic boron results and trend plots presented in Attachment A, the following observations are noted:

- Recent boron concentrations in CBL-302I are below those observed in CBL-340I, the monitoring well unaffected by an upgradient CCR source.

- Current and historic boron concentrations observed in CBL-302I are well within the general range of boron results observed at each of the other CCR GWMP wells, in addition to CBL-340I. This is another indication that there is no “likely error or discrepancy” in the detections observed in CBL-302I.

- The CBL-302I boron ICL of 0.0743 mg/L is by far the lowest ICL for boron among the wells in the CBL monitoring well network.

Additionally, as observed in the time plot presented in the graph above and in the time series data included in Attachment A:

- In comparison to all of the other boron data plots for the GWMP wells, CBL-302I boron concentrations, including the two 2016-2017 outlier results, fall well within the general range of concentrations observed across the GWMP.

- Consistent with boron results observed in each of the wells, boron detections have been generally sporadic in nature (i.e., analyte detections in one event, followed by non-detection in a subsequent event).

- As shown in the CBL-302I Appendix III constituent time series data charts (Attachment A), there are no observed upwards trends in any of the Appendix III constituents in CBL-302I over time.

In the absence of any other data suggesting there may have been a release from the CBL, the two boron detections that were previously considered outliers and that were removed in response to TCEQ comments (LCRA, 2023c) should be returned to the background dataset as being representative of the general background conditions present in the Intermediate Sand GWBU. This is consistent with observations of boron data from the other four downgradient CCR GWMP wells, as well as side-gradient well CBL-340I.

6.0 CONCLUSION

An initial SSI was flagged in the first semi-annual event sample in monitoring well CBL-302I for boron during the January 2024 Detection Monitoring Program event at the CBL. Upon further review of the data by our statistician, it was determined that the data for CBL 302I have too few detections to test whether the dataset is not normally or lognormally distributed. Accordingly, the use of the Dixon Test to determine outliers was not in accordance with EPA's *Unified Guidance*. Therefore, two previously identified outliers have been reinstated in the background dataset resulting in an ICL for boron of 0.2970 mg/L. Both the January and April 2024 sampling data results are below the re-established ICL of 0.2970 mg/L. Based on these findings, the initially identified SSI is no longer applicable and there is no evidence of a release from the CBL. LCRA will prepare addenda to the September 14, 2023 NOD No. 3, the BER, and the Statistical Analysis Plan to document this updated approach.

In accordance with 30 TAC § 352.941(d), the owner has submitted this ASD for TCEQ review within 90 days of the initial SSI determination and, based on the findings as described herein,

will continue with the Detection Monitoring Program. Initiation of an Assessment Monitoring Program is not required at this time.

7.0 REFERENCES

Amec Foster Wheeler (October 2017): Groundwater Sampling and Analysis Program, Selection of Statistical Method Certification, Lower Colorado River Authority, Coal Combustion Residuals Unit, Combustion Byproducts Landfill, Fayette Power Project, La Grange, Texas.

Amec Foster Wheeler (April 2018a): *Groundwater Geochemical Evaluation at the Lower Colorado River Authority, Fayette Power Project, La Grange, Texas.*

Amec Foster Wheeler (April 2018b): *Groundwater Monitoring System, Certification of Alternate Source Demonstration, Lower Colorado River Authority, Coal Combustion Residuals Unit: Combustion Byproducts Landfill, Fayette Power Project, La Grange, Texas.*

Amec Foster Wheeler (April 2018c): *Groundwater Monitoring System Addendum Certification, Lower Colorado River Authority, Coal Combustion Residuals Unit, Combustion Byproducts Landfill, Fayette Power Project, La Grange, Texas.*

Bullock, Bennett & Associates (May 2021): *Groundwater Monitoring System Addendum Certification, Lower Colorado River Authority, Coal Combustion Residuals Unit, Combustion Byproducts Landfill, Fayette Power Project, La Grange, Texas.*

DUMPStat (2003) DUMPStat Statistical Guide, version 2.1.8., by Robert D. Gibbons Ltd., with accompanying DUMPStat 2.3 Release Notes.

EPA (2009): *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (EPA 530/R-09-007).

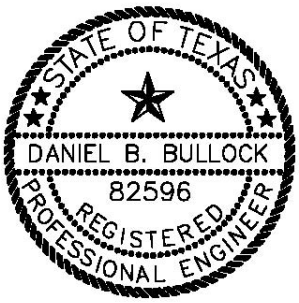
LCRA (2023a): Technical NOD Response – Background Evaluation Report, Combustion Byproducts Landfill, Fayette Power Project, La Grange, Texas (September 14, 2023).

LCRA (2023b): Technical NOD Response – Statistical Analysis Plan, Combustion Byproducts Landfill, Fayette Power Project, La Grange, Texas (September 14, 2023).

LCRA (2023c): Technical NOD Response – Request for Clarification, Lower Colorado River Authority, La Grange, Fayette County (September 14, 2023).

8.0 PROFESSIONAL CERTIFICATION

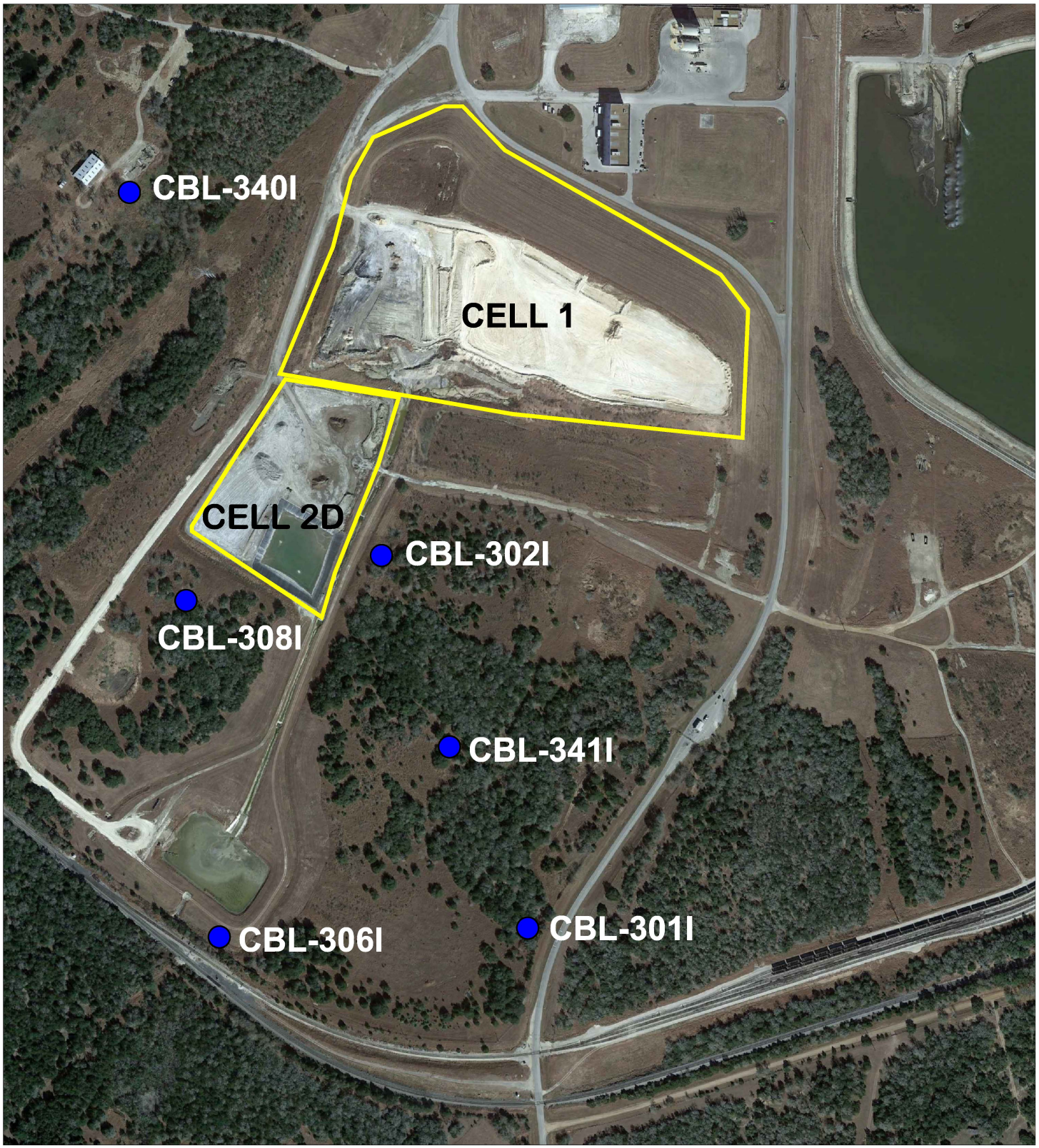
This document and all attachments were prepared by Bullock, Bennett & Associates, LLC under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I hereby certify that the Alternative Source Demonstration at the referenced facility meets the detection monitoring requirements of the Federal CCR Program at 40 C.F.R. § 257.94 and the State CCR Program at 30 T.A.C. § 352.941.



7/17/2024

Dan Bullock, P.E.
Principal Engineer
Bullock, Bennett & Associates, LLC

FIGURES



N

0 500

Approximate Scale in Feet

LOWER COLORADO RIVER AUTHORITY

FIGURE 1
Groundwater Monitoring Well Locations
Combustion Byproucts Landfill
Fayette Power Plant

PROJECT: 21450	BY: SLB	DATE: 06/20/2024	CHECKED: CM

Bullock, Bennett & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

C:\BBA Engineering\Jobs\LCRA\21400 LCRA Statistics 2021, Fayette Power\First Semi-Annual Event 2021\Hydrogeology Memo\Figures

CBL-340I
349.90

CBL-308I
343.37

CBL-302I
346.91

CBL-306I
329.45

CBL-341I
348.91

CBL-301I
334.96

CBL-303I
347.25

N 9947000
N 9948000
N 9949000
E 3428000
E 3429000

340
344
348
336
332

BYPRODUCTS ROAD
SUBCELL 2D CONTACT WATER RETENTION POND
SUBCELL 3C
SUBCELL 2D (WASTE STORAGE / PRODUCT PREPARATION AREA
APPROXIMATE LOCATION OF CELL 1 FINAL COVER LIMITS
EXISTING FINAL COVER
EXISTING CELL 1
EXISTING RUNOFF RETENTION POND
APPROXIMATE LOCATION OF CELL 1 LIMITS
SUBCELL 3B
SUBCELL 3A
SUBCELL 2C
SUBCELL 2A
AUSTIN LOOP
POWER PLANT ROAD

LEGEND

- CBL UNIT BOUNDARY
- EXISTING GROUND ELEVATION (FT,MSL) (NOTES 1,2)
- EXISTING TOP OF CLAY LINER ELEVATION (FT,MSL) (NOTE 2)
- EXISTING ROAD
- EXISTING BUILDING
- EXISTING RAILROAD
- COORDINATE GRID (NOTE 2)
- EXISTING FENCE
- PROPOSED PHASE BOUNDARY
- PROPOSED LIMIT OF WASTE
- POWER LINE
- WELLS
- CBL GROUNDWATER MONITORING WELL WITH POTENTIOMETRIC SURFACE ELEVATION INDICATED IN FEET ABOVE NAVD 1988.
- POTENTIOMETRIC SURFACE CONTOUR LINE
- INFERRED GROUNDWATER FLOW DIRECTION

NOTES:

1. THE EXISTING CONTOUR BASE MAP SHOWN ON THIS DRAWING WAS COMPILED USING AN AERIAL SURVEY BASED ON PHOTOGRAPHY PERFORMED ON 23 OCTOBER 2013 BY SURDEX CORPORATION AND LIDAR DATA PUBLISHED DECEMBER 2008 AND PROVIDED BY LCRA SURVEYING, MAPPING, AND GIS.
2. ELEVATIONS ARE IN FEET (FT) AS DEFINED BY THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988. STATE PLANE COORDINATE GRID CORRESPONDS TO TEXAS STATE PLANE COORDINATE SYSTEM, TEXAS CENTRAL ZONE (4203), NORTH AMERICAN DATUM 83 (NAD-83) 1983.

STATE OF TEXAS
CRAIG C. MACON
GEOLOGY
1301
LICENSED
PROFESSIONAL GEOSCIENTIST

7-17-2024

N

0 140 280
SCALE IN FEET

LOWER COLORADO RIVER AUTHORITY

Figure 2
Potentiometric Surface Map of the Intermediate Sand January 2024

PROJECT: 22482-23	BY: SLB	REVISIONS
DATE: 6/19/2024	CHECKED: CCM	

Bullock, Bennet & Associates, LLC
Engineering and Geoscience
Texas Registrations: Engineering F-8542, Geoscience 50127

APPENDIX A

Cumulative CCR Groundwater Monitoring Analytical Data Summaries (all wells)

Cumulative CCR Groundwater Monitoring Appendix III Plots (CBL-302I)

Table 1

Analytical Data Summary for CBL-301I

Constituents	Units	1/21/2016	5/4/2016	7/27/2016	10/24/2016	1/23/2017	3/22/2017	5/18/2017	7/26/2017	2/8/2018	7/25/2018	1/17/2019	5/2/2019	7/31/2019
Boron, Total	mg/L	<.0500	<.0500	<.0500	<.0500	<.0500	<.0500	.0707	<.0500	<.0500	<.0500	<.0500	<.0500	<.0500
Calcium, Total	mg/L	905	949	925	978	1000	1030	1060	961	873	993	156	762	783
Chloride	mg/L	2300	2160	2290	2250	3200	2390	2420	2500	2480	1330	619	1910	2240
Fluoride	mg/L	<.250	<.500	<.500	<.250	.312	<.500	<.500	<.500	<.500	<.500	.219	.112	.051
pH	S.U.	6.33	6.26	5.95	6.23	6.26	6.31	5.95	6.02	6.17	6.04	7.16	6.14	6.19
Sulfate	mg/L	336	311	336	326	488	337	342	381	344	196	104	398	332
Total Dissolved Solids	mg/L	4380	5050	6020	4570	6140	6570	6430	4290	5120	5390	1460	5650	6040

* - The displayed value is the arithmetic mean of multiple database matches.

Table 1

Analytical Data Summary for CBL-301I

Constituents	1/28/2020	9/17/2020	1/26/2021	7/20/2021	9/7/2021	1/26/2022	7/27/2022	8/30/2022	10/25/2022	1/25/2023	3/7/2023	8/2/2023	1/29/2024
Boron, Total	<.0500	.0801	<.0500	.0826	<.0500	<.0500	.0850	.1070	.0645	.1080	.1020	<.0500	.1070
Calcium, Total	851	1060	1130	1100		999	1010			977		1260	1050
Chloride	2360	2270	2420	2590		2440	1840			1960		2220	2270
Fluoride	.130	<.250	<.500	2.680	<.500	<.050	.156			1.720	<.050	.054	<.100
pH	6.26	6.13	6.06	6.13	6.14	6.27	6.08	6.14	6.21	6.34		6.21	
Sulfate	349	350	374	419		406	285			1370	207	383	475
Total Dissolved Solids	4790	6340	6060	5870		4700	4590			5160		5360	4820

* - The displayed value is the arithmetic mean of multiple database matches.

Table 2

Analytical Data Summary for CBL-302I

Constituents	Units	1/22/2016	5/4/2016	7/27/2016	10/24/2016	1/23/2017	3/22/2017	5/16/2017	7/27/2017	2/8/2018	7/27/2018	1/22/2019	7/31/2019	1/30/2020
Boron, Total	mg/L	<.0500	<.0500	<.0500	.1560	<.0500	.2970	<.0500	<.0500	<.0500	<.0500	<.0500	<.0500	<.0500
Calcium, Total	mg/L	1030	1010	1030	1070	1100	1090	1100	1040	934	995	855	914	838
Chloride	mg/L	2190	2130	2210	2170	2080	2050	2230	2040	2080	1980	1960	1540	1540
Fluoride	mg/L	<.2500	<.5000	<.5000	<.2500	.3320	<.5000	<.5000	<.5000	.1120	<.5000	.0402	.0605	.1930
pH	S.U.	6.29	6.01	5.17	7.75	5.36	5.40	4.94	6.20	6.21	5.77	6.44	6.15	6.34
Sulfate	mg/L	1020	993	1090	1180	1150	1120	1230	1180	1240	1390	1250	1260	1350
Total Dissolved Solids	mg/L	5500	5390	6850	4210	6430	6460	5860	5120	6010	5510	5060	4190	4790

* - The displayed value is the arithmetic mean of multiple database matches.

Table 2

Analytical Data Summary for CBL-302I

Constituents	9/17/2020	1/28/2021	7/21/2021	9/7/2021	1/27/2022	7/28/2022	1/26/2023	7/18/2023	1/29/2024	4/5/2024
Boron, Total	<.0500	<.0500	.0743		<.0500	<.0500	.1160	<.0500	.1600	.1630
Calcium, Total	853	1020	844		754	750	889	981	937	
Chloride	1410	1370	1380		1310	1300	1460	1330	1440	
Fluoride	<.2500	<.5000	2.2500	<.2500	<.0500	.1650	<.5000	1.7600	<.1000	
pH	6.20	6.21	6.06	6.28	6.32	6.21	6.33	6.20		
Sulfate	1280	1290	1350		1340	1300	1390	1230	1330	
Total Dissolved Solids	4990	4800	4810		4510	5120	4930	5150	4950	

* - The displayed value is the arithmetic mean of multiple database matches.

Table 3

Analytical Data Summary for CBL-306I

Constituents	Units	1/21/2016	5/4/2016	7/26/2016	10/24/2016	1/19/2017	3/22/2017	5/18/2017	7/27/2017	2/8/2018	7/27/2018	1/16/2019	7/31/2019	8/23/2019
Boron, Total	mg/L	<.0500	.0717	.0998	.0556	<.0500	.1240	.0832	.0531	<.0500	<.0500	<.0500	.0824	.0500
Calcium, Total	mg/L	137.0	47.2	105.0	198.0	174.0	204.0	205.0	234.0	230.0	275.0	180.0	106.0	226.0
Chloride	mg/L	155	20	114	330	197	231	289	350	385	283	215	538	318
Fluoride	mg/L	2.50	1.00	1.37	2.38	1.85	12.60	2.20	2.91	2.81	2.95	1.98	9.26	2.66
pH	S.U.	7.09	6.69	6.95	6.72	7.29	4.41	5.61	6.94	6.67	6.86	6.78	6.92	6.83
Sulfate	mg/L	266.0	29.5	139.0	432.0	270.0	340.0	412.0	513.0	493.0	406.0	292.0	816.0	387.0
Total Dissolved Solids	mg/L	1280	431	790	1150	1320	1460	1440	1280	1760	1450	1220	676	1710

* - The displayed value is the arithmetic mean of multiple database matches.

Table 3

Analytical Data Summary for CBL-306I

Constituents	1/29/2020	9/19/2020	1/28/2021	7/21/2021	1/27/2022	7/28/2022	1/26/2023	7/18/2023	1/29/2024
Boron, Total	<.0500	.0773	<.0500	.0927	.0548	.1100	.0973	.0659	.1330
Calcium, Total	247.0	260.0	257.0	216.0	212.0	182.0	149.0	260.0	186.0
Chloride	445	420	292	255	384	261	148	336	153
Fluoride	2.83	2.72	2.90	2.42	2.99	2.26	1.92	2.66	1.49
pH	6.70	7.16	6.84	6.55	6.87	6.70	7.30	6.49	
Sulfate	561.0	506.0	388.0	336.0	510.0	348.0	205.0	454.0	266.0
Total Dissolved Solids	1830	1730	1420	1320	1730	1540	1000	1910	1170

* - The displayed value is the arithmetic mean of multiple database matches.

Table 4

Analytical Data Summary for CBL-308I

Constituents	Units	1/22/2016	5/4/2016	7/26/2016	10/24/2016	1/19/2017	3/22/2017	5/16/2017	7/26/2017	2/6/2018	7/25/2018	1/18/2019	7/31/2019	1/29/2020
Boron, Total	mg/L	<.0500	.1210	.1860	.2560	<.0500	.5450	.1090	.0799	<.0500	<.0500	<.0500	<.0500	<.0500
Calcium, Total	mg/L	903	870	911	939	919	947	954	878	859	863	760	840	745
Chloride	mg/L	2760	2580	2680	2870	2360	2530	2740	2760	2750	2680	2240	2290	2110
Fluoride	mg/L	1.49	2.30	1.64	1.59	1.33	9.05	1.70	1.90	1.76	2.10	1.68	1.62	1.60
pH	S.U.	6.36	6.13	5.95	6.27	6.83	6.27	5.54	6.27	6.26	6.07	6.39	6.25	6.37
Sulfate	mg/L	1490	1410	1490	1550	1320	1470	1580	1550	1570	1540	1520	1420	1340
Total Dissolved Solids	mg/L	6820	6120	7890	10200	9620	7260	6590	6480	6200	6320	4760	5820	5980

* - The displayed value is the arithmetic mean of multiple database matches.

Table 4

Analytical Data Summary for CBL-308I

Constituents	9/18/2020	1/28/2021	7/21/2021	1/27/2022	7/27/2022	1/26/2023	7/18/2023	1/30/2024
Boron, Total	.1030	<.0500	.1300	<.0500	.0790	.1430	<.0500	.1500
Calcium, Total	838	830	684	974	736	732	642	714
Chloride	2410	2200	1780	2020	2470	2570	1840	1790
Fluoride	1.33	1.44	1.74	1.75	1.43	<.50	1.86	1.26
pH	6.22	6.26	6.16	6.36	6.23	6.41	6.26	
Sulfate	1310	1340	1240	1310	1190	445	1290	1360
Total Dissolved Solids	6860	6190	5270	5320	6840	5810	5680	5410

* - The displayed value is the arithmetic mean of multiple database matches.

Table 5

Analytical Data Summary for CBL-340I

Constituents	Units	1/21/2016	5/4/2016	7/27/2016	10/24/2016	1/23/2017	3/22/2017	5/16/2017	7/27/2017	2/8/2018	7/27/2018	1/22/2019	7/31/2019	1/30/2020
Boron, Total	mg/L	<.0500	.0832	.0810	.1580	<.0500	.1740	.1040	.0816	.0638	<.0500	<.0500	.1240	.0562
Calcium, Total	mg/L	564	560	575	607	627	581	584	571	555	544	518	518	539
Chloride	mg/L	2370	2260	2350	2380	2070	2280	2520	2380	2730	2450	2250	2280	2240
Fluoride	mg/L	1.090	1.920	1.060	1.260	.840	8.440	1.010	.850	1.000	1.300	.830	.880	.870
pH	S.U.	6.52	6.13	6.95	6.19	5.46	6.49	5.77	6.42	6.41	6.25	6.59	6.45	6.49
Sulfate	mg/L	652	616	668	675	571	635	715	685	752	711	639	684	637
Total Dissolved Solids	mg/L	4990	5230	6250	5670	6230	5480	5470	4880	5290	5100	4720	5560	5080

* - The displayed value is the arithmetic mean of multiple database matches.

Table 5

Analytical Data Summary for CBL-340I

Constituents	9/18/2020	1/28/2021	7/22/2021	1/28/2022	7/28/2022	1/30/2023	7/19/2023	1/31/2024
Boron, Total	.1460	<.0500	.3840	.1600	.2850	.1670	.2760	.1780
Calcium, Total	547	607	532	597	538	635	631	607
Chloride	2130	2260	2200	2200	2160	2230	2130	2210
Fluoride	.725	.835	.865	1.060	.865	.850	1.070	.605
pH	6.32	6.32	6.24	6.42	6.35	6.37	6.41	
Sulfate	608	634	618	619	614	643	599	705
Total Dissolved Solids	5430	5520	4990	4870	5490	5010	5290	5090

* - The displayed value is the arithmetic mean of multiple database matches.

Table 6

Analytical Data Summary for CBL-341I

Constituents	Units	1/23/2017	2/23/2017	3/22/2017	4/20/2017	5/16/2017	6/20/2017	7/27/2017	9/11/2017	2/8/2018	8/24/2018	1/22/2019	7/31/2019	1/30/2020
Boron, Total	mg/L	<.0500	<.0500	<.0500	.0587	.0896	.0668	.0507	<.0500	<.0500	<.0500	<.0500	<.0500	<.0500
Calcium, Total	mg/L	854	870	906	898	860	950	829	848	810	824	782	714	767
Chloride	mg/L	1600	2000	1780	1770	1900	1820	1970	1710	2110	1910	1790	1650	1780
Fluoride	mg/L	.5300	<.5000	<.5000	<.5000	<.5000	.3350	.0550	.3670	.1060	.1140	.0546	.1000	.1530
pH	S.U.	5.74	5.23	5.72	5.73	5.54	6.19	6.21	6.10	6.18	5.82	6.38	6.23	6.27
Sulfate	mg/L	307	404	346	336	369	363	419	354	383	376	358	329	351
Total Dissolved Solids	mg/L	5000	4520	5110	4240	4840	5940	4150	4860	4320	4800	3870	5370	4900

* - The displayed value is the arithmetic mean of multiple database matches.

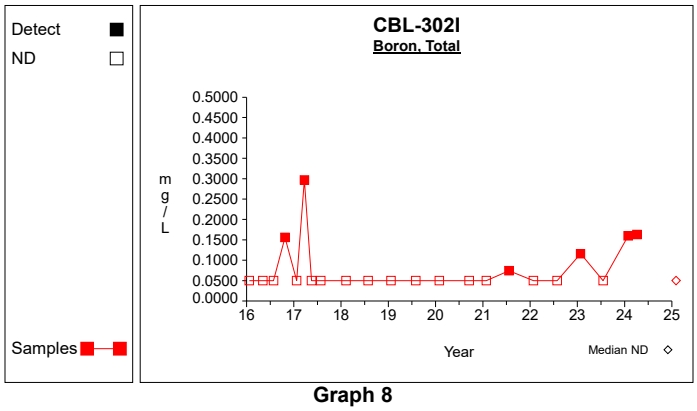
Table 6

Analytical Data Summary for CBL-341I

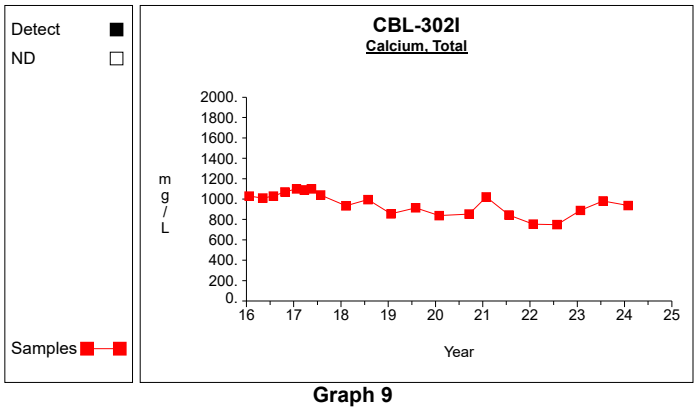
Constituents	9/17/2020	1/27/2021	7/22/2021	9/7/2021	1/27/2022	7/28/2022	1/26/2023	7/19/2023	1/29/2024
Boron, Total	.1020	<.0500	.1110		<.0500	.1150	.1340	.0760	.1330
Calcium, Total	814	874	852		1040	704	797	710	875
Chloride	1700	1800	1750		1810	1690	1660	1530	1700
Fluoride	<.2500	<.5000	1.1600	<.2500	<.0500	.1410	<.2500	1.1200	<.1000
pH	6.14	6.06	5.98	6.18	6.26	6.16	6.28	6.22	
Sulfate	336	324	316		320	296	309	259	346
Total Dissolved Solids	4930	3940	4520		3800	4910	4390	4190	3990

* - The displayed value is the arithmetic mean of multiple database matches.

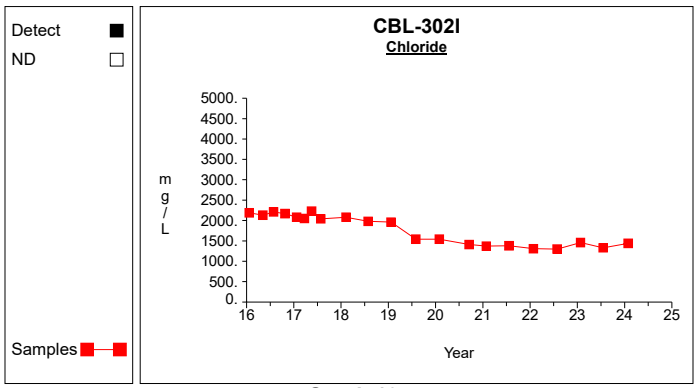
Time Series



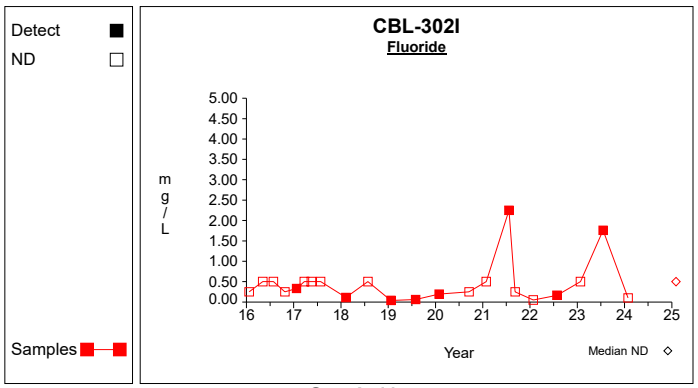
Graph 8



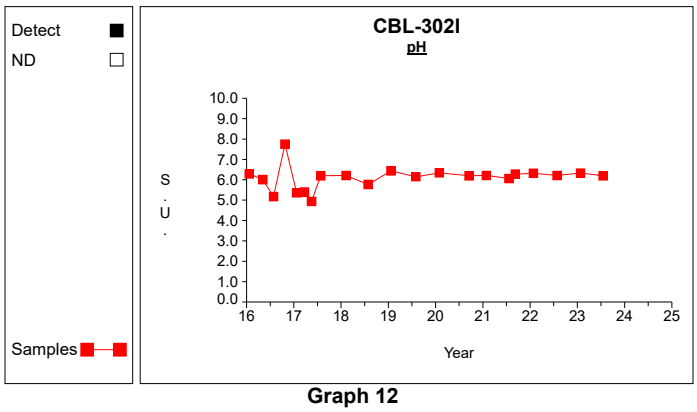
Graph 9



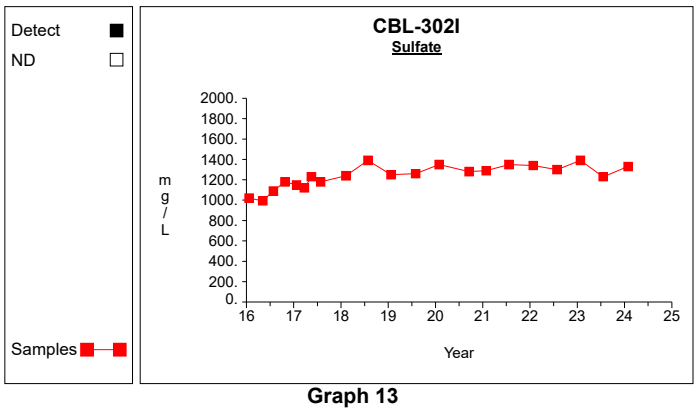
Graph 10



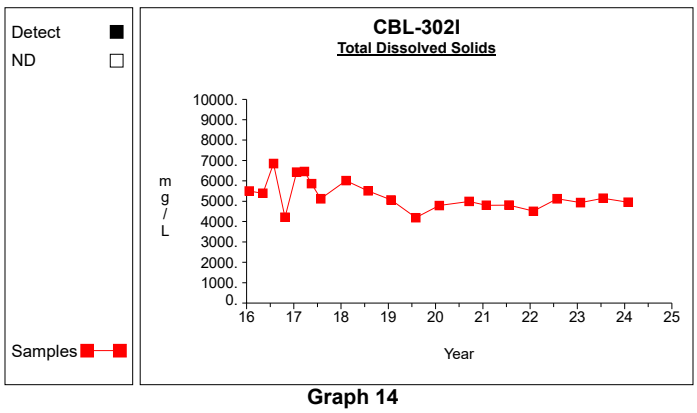
Graph 11



Graph 12



Graph 13



Graph 14

Prepared by: Otter Creek Environmental