



**COAL COMBUSTION RESIDUAL LANDFILL
ANNUAL GROUNDWATER MONITORING REPORT**

Calendar Year 2018

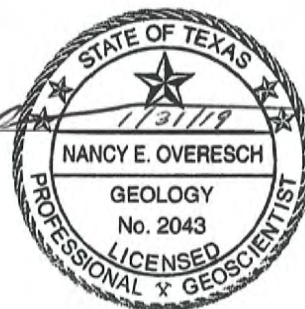
**LOWER COLORADO RIVER AUTHORITY (LCRA)
FAYETTE POWER PROJECT, LA GRANGE, TEXAS
JANUARY 31, 2019**



Prepared by:

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Lower Colorado River Authority
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2018 Groundwater Monitoring Report
Fayette Power Project
La Grange, TX

1.0 BACKGROUND

The LCRA Fayette Power Project (FPP) is a coal-fired power plant located east of La Grange in Fayette County, Texas. Coal Combustion Residuals (CCRs) generated at the facility are disposed of in the Combustion Byproducts Landfill (CBL) located south of the power plant and north of the railroad that borders the FPP site (Figure 1). The existing CBL consists of Cell 1 and Sub-cell 2D. Cell 1 was constructed in 1988 and sub-cell 2 D in 2015, therefore both active cells are considered existing units under the U.S. Environmental Protection Agency's Coal Combustion Residuals (CCR) Rules as codified in Title 40 of the Code of Federal Regulations (CFR), Chapter 257, Subpart D.

2.0 PURPOSE

This report was prepared pursuant to 40 CFR § 257.90(e), which requires the owner or operator of an existing CCR landfill to prepare an annual groundwater monitoring report for the preceding calendar year.

3.0 GROUNDWATER MONITORING SYSTEM

The groundwater monitoring well network for 2018 consisted of six wells as described below and additionally in Table 1:

- Background – CBL-340I

- Down-gradient - CBL-301I, CBL-302I, CBL-306I, CBL-308I and CBL-341I

No groundwater monitoring wells were installed or decommissioned in 2018. The location of the monitoring wells are shown on Figure 1.

In accordance with 40 CFR § 257.93(c), groundwater elevations were measured in each monitor well prior to purging and sampling for each semi-annual sampling event. Consistent with prior CBL potentiometric surface elevation maps, the inferred groundwater flow direction is towards the south-southwest at an approximate rate of 24 feet per year. Detailed information is contained

in the November 5, 2018 Technical Memorandum prepared by Wood Environmental and Infrastructure Solutions, Inc. (Wood), which is included in Appendix A. It should be noted that Wood acquired AMEC Foster Wheeler Environmental and Infrastructure, Inc. (AMEC) in October 2017 with AMEC transitioning to the new name during 2018.

During the 2018 First Quarter sampling event, samples were collected from each of the monitor wells for both total and dissolved constituents to evaluate the effects of turbidity. In accordance with 40 CFR § 257.93(i), only the non-filtered (total) sample results were used in the statistical evaluation.

During the 2018 Third Quarter sampling event, groundwater monitoring well CBP-341I was not sampled due to an oversight by LCRA's Environmental Laboratory Services. Upon discovery of the oversight, the well was sampled approximately 30 days later than the other wells but within the Third Quarter.

4.0 STATUS OF THE GROUNDWATER MONITORING PROGRAM

During calendar year 2018, all groundwater sampling was conducted in accordance with 40 CFR § 257.93 - Groundwater sampling and analysis requirements and § 257.94. - Detection Monitoring. Table 2 summarizes the sampling events. As discussed in Section 5, the CBL will remain in Detection Monitoring for 2019.

5.0 STATISTICAL EVALUATIONS AND ALTERNATE SOURCE DETERMINATION

5.1 Statistical Analysis of 2016 and 2017 Initial Data

In January 2018 AMEC conducted the statistical analysis for the Detection Monitoring Appendix III constituent data collected from the eight initial rounds of monitoring. The results suggested that there was enough preliminary evidence to indicate a Statistically Significant Increase (SSI) over background for two Appendix III constituents (calcium and sulfate) and AMEC recommended conducting an Alternate Source Demonstration (ASD) in accordance with 40 CFR § 257.94(e)(2). Detailed information is contained the January 14, 2018 Technical Memorandum prepared by AMEC which is included in Appendix B.

On April 14, 2018, AMEC completed the ASD. Based on the findings of the ASD, AMEC determined that the natural groundwater geochemistry within the area monitored by the CBL's groundwater monitoring system is of a heterogeneous nature, with at least two different groundwater types identified by analysis of the calculated milliequivalents of the major cations (sodium, potassium, calcium, and magnesium) and major anions (chloride, bicarbonate-carbonate, and sulfate). These major cations and anions are naturally present in soils at the Fayette Power Project facility, commonly in calcium carbonate and sulfide-sulfate minerals. It was also determined that background monitoring well CBL-340I is located in an area of a different groundwater type from the groundwater type below the CBL. Therefore, it cannot be reliably used to characterize the background geochemistry of the groundwater flowing beneath the CBL. Attempts to locate a new upgradient well in the intermediate sand failed. Accordingly, Wood determined that the initial use of prediction limit interwell groundwater analysis was in error and resulted in the incorrect identification of an SSI. As a result, Wood recommended and certified the use of the prediction limit intrawell analysis when making SSI determinations. Existing background monitoring well CBL-340I will no longer be utilized for statistical evaluations but will remain a part of the CBL groundwater monitoring system. Detailed information is contained in: Appendix C - April 13, 2018 Groundwater Monitoring System Certification of Alternate Source Demonstration prepared and sealed by AMEC; Appendix D - April 13, 2018 Technical Memorandum, Groundwater Geotechnical Evaluation at the Lower Colorado River Authority prepared by AMEC; and Appendix E - April 13, 2018 Groundwater Monitoring System Addendum Certification prepared and sealed by AMEC.

5.2 Statistical Analysis of First Quarter 2018 Data

In April 2018 AMEC completed the statistical analysis of the First Quarter Detection Monitoring Appendix III constituent data utilizing the prediction limit intrawell method. The results indicated that there were no SSIs for any constituents in any well. Detailed information is contained the April 13, 2018 Technical Memorandum prepared by AMEC which is included in Appendix F.

5.3 Statistical Analysis Third Quarter 2018 Data

In November 2018 Wood completed the statistical analysis of the Third Quarter Detection Monitoring Appendix III constituent data utilizing the prediction limit intrawell method. The results indicated that there were no SSI for any constituents in any well. Detailed information is contained the November 5, 2018 Technical Memorandum prepared by Wood which is included in Appendix G.

6.0 KEY ACTIONS

Key actions for 2018 are detailed in Section 5. Key actions for 2019 include continued semi-annual detection monitoring with associated statistical analysis and responding in accordance with the CCR rules as new information is developed.

TABLE 1**MONITORING WELL DETAILS**

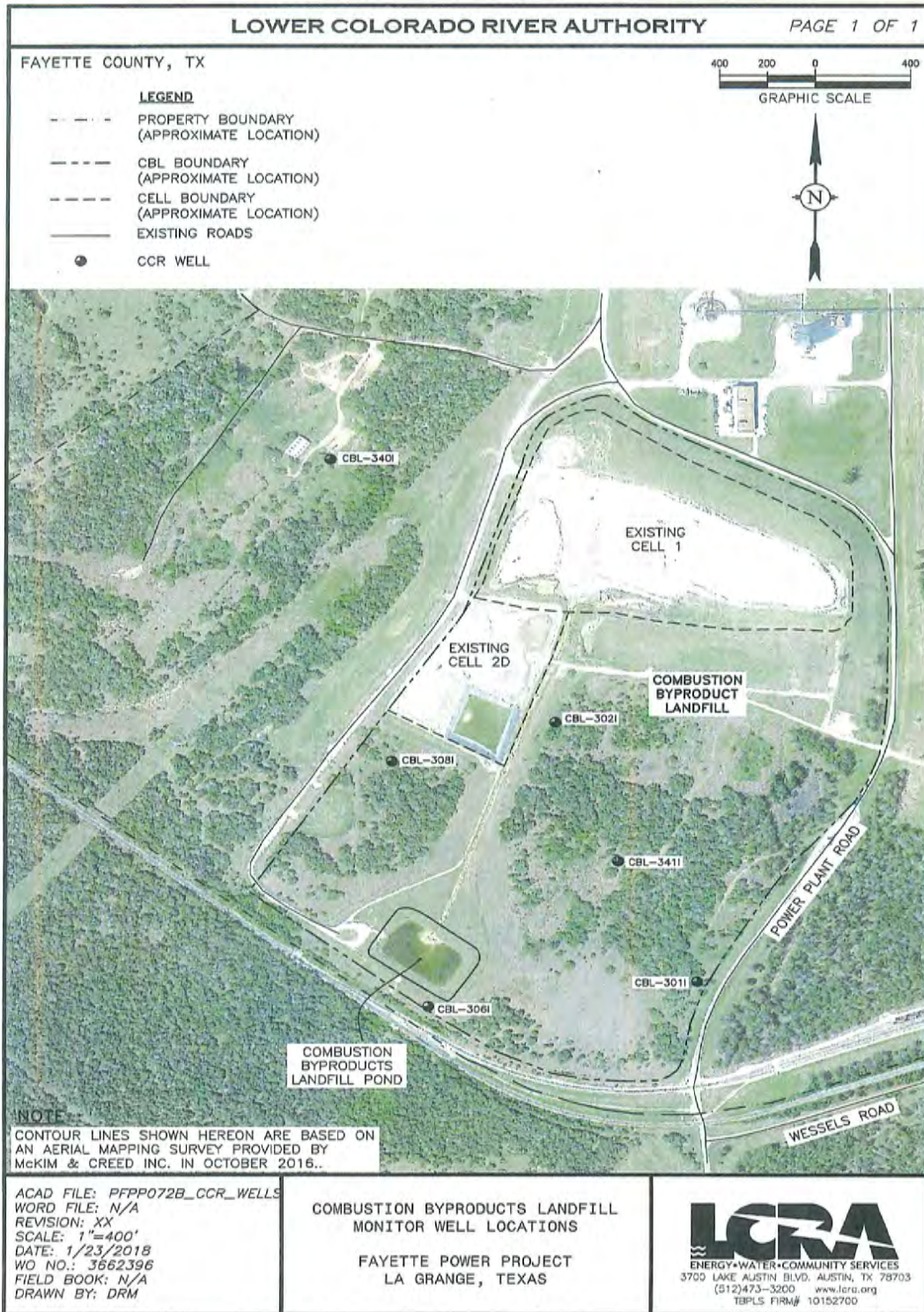
Well ID	CBL-340i (Background Well)	CBL-301i	CBL-302i	CBL-306i	CBL-308i	CBL -341i
Installation Date	12/17/2015	5/23/2011	5/24/2011	6/3/2011	12/20/2011	11/14/2016
Hydrogeologic Unit Monitored	Intermediate Sand	Intermediate Sand	Intermediate Sand	Intermediate Sand	Intermediate Sand	Intermediate Sand
Casing Type	2" PVC	2" PVC	2" PVC	2" PVC	2" PVC	2" PVC
Total Well Depth (ft bgs)	37	51	24	12.5	32	43
Screened Interval (ft bgs)	22-37	41-51	14-24	9-14	22-32	33-43
Ground Surface Elevation (ft MSL)	374.69	369.75	355.99	337.93	364.93	364.03
TOC Elevation (ft MSL)	376.98	372.11	358.99	339.96	368.67	366.65
Northing	9949069.45	9946563.44	9947806.017	9946445.582	9947619.46	9947139.86
Easting	3428311.38	3429862.181	3429260.844	3428730.533	3428574.38	3429525.31
Survey Datum	Horizontal Datum: NAD83/2011- EPOCH 2012 Vertical Datum: NAVD88- GEOIDIZA	Horizontal Datum: NAD83/NSRS 2007 Vertical Datum: NAVD88	Horizontal Datum: NAD83/NSRS 2007 Vertical Datum: NAVD88	Horizontal Datum: NAD83/NSRS 2007 Vertical Datum: NAVD88	Horizontal Datum: NAD83/NSRS 2007 Vertical Datum: NAVD88	Horizontal Datum: NAD83/2011- EPOCH 2012 Vertical Datum: NAVD88-GEOIDIZA

TABLE 2**2018 CCR GROUNDWATER MONITORING EVENTS**

Well #	Date of sample collection	# samples collected for analysis	Monitoring program
CBL 340I	2/7/2018	1	Detection monitoring
	7/27/2018	1	Detection monitoring
CBL 301I	2/7/2018	1	Detection monitoring
	7/25/2018	1	Detection monitoring
CBL 302I	2/7/2018	1	Detection monitoring
	7/27/2018	1	Detection monitoring
CBL 306I	2/7/2018	1	Detection monitoring
	7/27/2018	1	Detection monitoring
CBL 308I	2/6/2018	1	Detection monitoring
	7/25/2018	1	Detection monitoring
CBL 341I	2/6/2018	1	Detection monitoring
	8/24/2018	1	Detection monitoring

FIGURE 1

MONITOR WELL LOCATION MAP



APPENDIX A

CCR Groundwater Detection Monitoring Program
Evaluation of First and Third Quarter 2018 Potentiometric
Surface Data Collected from the CBL, Wood
Environmental and Infrastructure Solutions, Inc.,
November, 5, 2018



Technical Memorandum

To: Nancy Overesch, PG
From: Charlie Macon, PG
Date: November 5, 2018

File No: 6706180078
cc: File

Subject: CCR GROUNDWATER DETECTION MONITORING PROGRAM
EVALUATION OF FIRST AND THIRD QUARTER 2018 POTENTIOMETRIC SURFACE
DATA COLLECTED FROM THE CBL
Fayette Power Project – La Grange, Texas

1.0 INTRODUCTION

This Technical Memorandum (Tech Memo) documents the evaluation of the Intermediate Sand groundwater bearing unit potentiometric surface data obtained during completion of the first quarter and third quarter 2018 groundwater monitoring events. The monitoring is being performed, as part of the Combustion Byproducts Landfill (CBL) Groundwater Monitoring Program (GMP) pursuant to the Coal Combustion Residuals (CCR) regulations as codified in 40 Code of Federal Regulations (CFR) 257.93. The CBL is located at the Lower Colorado River Authority's (LCRA's) Fayette Power Project (FPP) facility near La Grange, Texas. This potentiometric surface evaluation, and subsequent determination of groundwater flow rate and direction, is conducted for each groundwater monitoring event pursuant to the GMP requirements of 40 CFR 257.93(c).

2.0 POTENTIOMETRIC SURFACE DATA COLLECTION AND MAPPING

All groundwater monitoring and sampling activities were performed by an LCRA technician. Prior to conducting well purging and collection of groundwater samples for chemical analysis, the technician used an electronic well probe to determine depth to the Intermediate Sand groundwater surface below the surveyed top of casing elevation. Table 1 presents the summary of groundwater measurements obtained from the CBL Groundwater Monitoring Well network in 2018.

Based on the measured groundwater elevations, potentiometric surface maps were prepared to document the February-First Quarter 2018 monitoring event (Figure 1), and the July-August-Third Quarter 2018 monitoring event (Figure 2). These maps show a relatively consistent groundwater potentiometric surface, and are similar to those presented for the January 2017 and July 2017 monitoring events.

3.0 GROUNDWATER FLOW DIRECTION AND FLOW RATE CALCULATION

Consistent with prior CBL GMP maps, a groundwater flow direction inferred by potentiometric surface elevation, is toward the south-southwest (Figures 1 and 2). The inferred groundwater gradient is slightly less to the west, consistent with past findings.

Groundwater flow rate was estimated along two transects for each event, one along the western area having a lesser gradient, and one along the eastern area. As documented in the CBL Hydrogeology Report (Amec, 2013), a hydraulic conductivity value (K) of 6.3×10^{-4} centimeters per second (cm/sec) has been estimated for the Intermediate Sand, based on rising-head slug test data obtained from monitoring



well CBL-302I. In calculating groundwater flow rate, this hydraulic conductivity value was utilized for the February 2018 and July-August 2018 events, consistent with past evaluations of the Intermediate Sand. In addition, also consistent with past evaluations, an assumed porosity value of 0.30 was utilized.

Groundwater gradients for the February 2018, and July-August 2018 events are estimated as follows:

February 2018 Event

Eastern Transect: 0.0302 feet/foot (ft/ft)

Western Transect: 0.0107 ft/ft

July-August 2018 Event

Eastern Transect: 0.0202 ft/ft

Western Transect: 0.0109 ft/ft

Given the constants $K = 6.3 \times 10^{-4}$ cm/sec, and Porosity = 0.30, the following groundwater flow velocities are calculated:

February 2018 Event

Eastern Transect: 66 feet per year (ft/yr)

Western Transect: 23 ft/yr

July-August 2018 Event

Eastern Tract: 44 ft/yr

Western Transect: 24 ft/yr

4.0 REFERENCES

Amec Environment & Infrastructure, Inc. (Amec), 2013: *Hydrogeologic Evaluation of Combustion Byproducts Landfill (CBL) Area Report, Fayette Power Project*, December 2013.



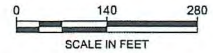
Plot Date: 12/07/18 - 11:51 am, Plotted by: James Johnson
 Drawing Path: S:\projects\180078\180078-1\CAD\dwg\2018\FEB\1 - Potentiometric Map February 2018.dwg



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
	EXISTING VEGETATION / TREE
	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

- 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.



POTENTIOMETRIC SURFACE MAP
FEBRUARY 2018
OF THE INTERMEDIATE SAND
COMBUSTION BYPRODUCTS LANDFILL
FAYETTE POWER PROJECT
LA GRANGE, TEXAS

Project No.: 6706180078
 Date: 12/06/2018
 By: BRJ

FIGURE 1

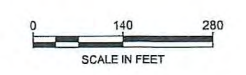
File Date: 12/07/18, 11:48am, Plotted by: bren.johnson
 Drawing Path: \\scc\c\m\p\c\us\OFFICES\Austin\6708\6708 - LCR\6708\2018\1206 - Drawing Name: Figure 2 - Potentiometric Map July-August 2018.dwg



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
	EXISTING VEGETATION / TREE
	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

- 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.



**POTENTIOMETRIC SURFACE MAP
 JULY-AUGUST 2018
 OF THE INTERMEDIATE SAND
 COMBUSTION BYPRODUCTS LANDFILL
 FAYETTE POWER PROJECT
 LA GRANGE, TEXAS**

Project No.: 6706180078
 Date: 12/06/2018
 By: BRJ

FIGURE 2

TABLE 1
Combustion Byproducts Landfill
Groundwater Monitoring Well System
2018 Potentiometric Surface Data
 Fayette Power Project
 La Grange, Texas

Well ID	CBL-340I		CBL-301I		CBL-302I		CBL-306I		CBL-308I		CBL -341I	
Well Top of Casing Elevation	376.98		372.11		358.99		339.96		368.67		366.65	
Date	DTW (ft btoc)	Elevation (ft NGVD)	DTW (ft btoc)	Elevation (ft NGVD)	DTW (ft btoc)	Elevation (ft NGVD)	DTW (ft btoc)	Elevation (ft NGVD)	DTW (ft btoc)	Elevation (ft NGVD)	DTW (ft btoc)	Elevation (ft NGVD)
2/6/2018	NM	NM	NM	NM	NM	NM	NM	NM	24.90	343.77	16.32	350.33
2/7/2018	23.98	353.00	36.48	335.63	11.09	347.90	9.11	330.85	NM	NM	NM	NM
7/25/2018	NM	NM	35.88	336.23	NM	NM	NM	NM	24.87	343.80	NM	NM
7/27/2018	23.79	353.19	NM	NM	11.50	347.49	10.29	329.67	NM	NM	NM	NM
8/24/2018	NM	NM	NM	NM	NM	NM	NM	NM	24.87	343.80	16.47	350.18

Notes: NM = Not Measured
 ft btoc = feet below top of casing
 ft NGVD = feet above National Geodetic Vertical Datum

APPENDIX B

Statistical Analysis of Initial Detection Monitoring
Appendix III Constituent Data, AMEC Foster Wheeler
Environmental and Infrastructure, Inc. – January 14, 2018



amec
foster
wheeler

Technical Memorandum

PRIVILEGED AND CONFIDENTIAL CLIENT/ATTORNEY INFORMATION:

To: Nancy Overesch, P.G. ,
Lower Colorado River Authority

From: Carla Landrum, PhD., Amec Foster Wheeler
C. Charles Macon, P.G., Amec Foster Wheeler

Project: Fayette Power Project, La Grange, Texas

Date: January 14, 2018

Subject: **Statistical Analysis of Initial Detection Monitoring
Appendix III constituent Data
Fayette Power Project – La Grange, Texas**

This Technical Memorandum (Memo) summarizes the methods and findings of a statistical analysis of Detection Monitoring Appendix III constituent data collected during eight initial rounds of sampling conducted by Lower Colorado River Authority (LCRA) at the Combustion Byproducts Landfill (CBL) at their Fayette Power Project (FPP) property. The methods and findings detailed herein were developed in accordance with Coal Combustion Residuals (CCR) groundwater monitoring requirements set forth in 40 Code of Federal Regulation Section 257.93 (40CFR 257.93).

This Memo summarizes the subject analysis for the Fayette CCR unit including data inputs, methods, and results. This Memo also provides recommendations that we have developed based on the results.

DATA INPUTS

There are seven constituents of concern (COCs) listed in Appendix III for Detection Monitoring Assessment: boron, calcium, chloride, fluoride, pH, sulfate and total dissolved solids (TDS). Laboratory reports for each constituent were provided by LCRA in pdf and Excel format. Data were pre-formatted and incorporated into an MS Access database for easy data compilation, merging, formatting, and organization. Samples analyzed using test method "6010" were removed for statistical evaluation. Samples qualified as "filtered" or "blank" were excluded from statistical analysis. Non-detects were identified via a "<" in the data values. If duplicate records were present, the maximum concentration value was retained for statistical evaluation. The minimum requirement of eight samples collected from each monitoring well was met for each constituent.

The FPP CCR groundwater monitoring network consists of one background well (CBL-3401) and

five downgradient wells (CBL-301I, CBL-302I, CBL-306I, CBL-308I and CBL-341I). The sampling frequency set forth in the CCR groundwater sampling plan is semi-annual, however, modifications to this sampling frequency were made to meet the mandatory 8 sample minimum by October 17, 2017. All wells were sampled between January 2016 and September 2017. Five of the six monitoring wells were sampled on an approximate bi-monthly (once every two months) basis. Well CBL-341I transitioned to a monthly sampling frequency in 2017.

METHODS

Exploratory data analysis (EDA) is a data diagnostic step that generates qualitative and quantitative information necessary to select a defensible statistical method for determining if there is a statistical significant increase (SSI) over background levels. Figure 1 generalizes the EDA Detection Monitoring Assessment methods, including assessment of spatial heterogeneity, trend detection, data distribution assessment, and outlier detection. Sample number, monitoring well network configuration, sampling frequency and non-detect frequency determine which EDA methods are most adequate. The final EDA step is selecting an adequate statistical method for determining if an SSI has occurred.

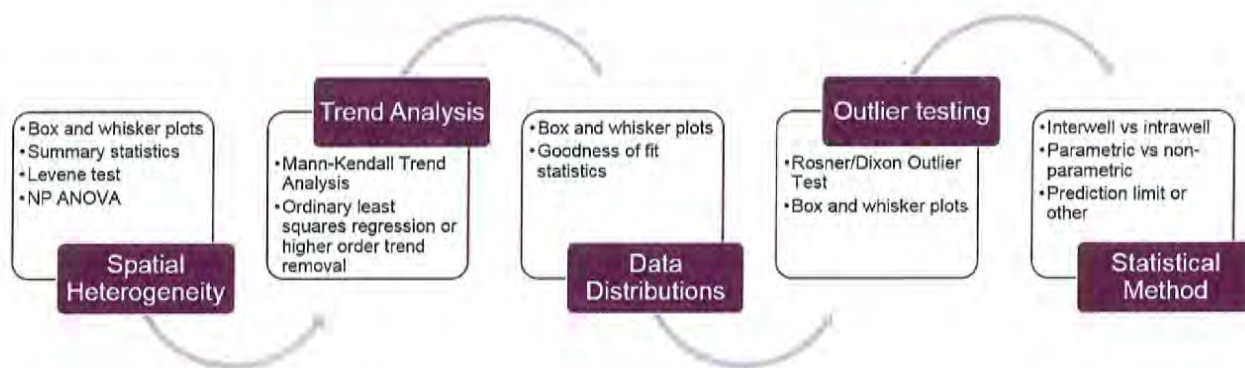


Figure 1. Detection monitoring EDA and statistical method workflow procedures. Each box represent as separate step in the EDA workflow process. The items listed in each box identifies the statistical method(s) applied for each step. Both quantitative and qualitative methods are listed.

The statistical Standard Operating Procedure (SOP) (AMECFW, 2017) outlines using the prediction limit method with possible resampling to confirm if there is an SSI. Figure 2 generalizes the decision process for selecting an appropriate prediction limit method.

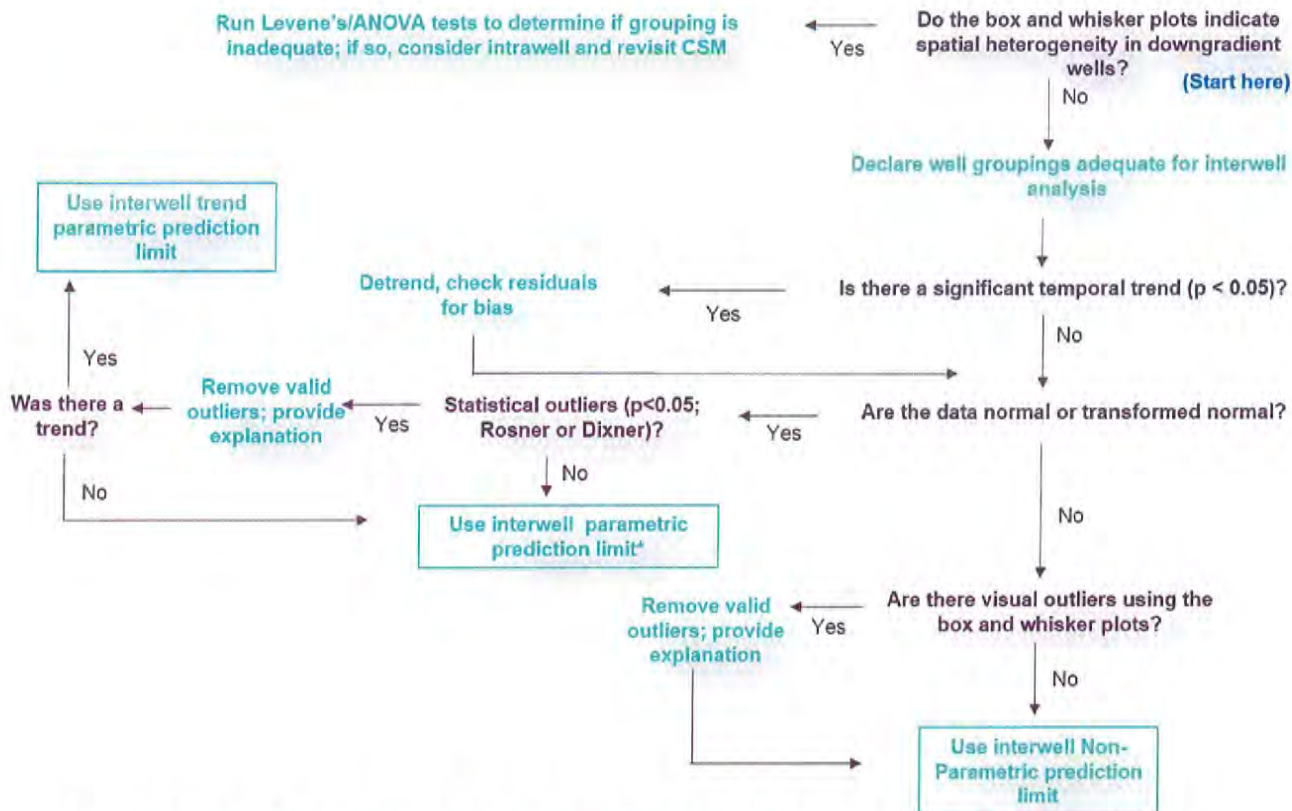


Figure 2. Generalized decision matrix for EDA and statistical prediction limit method selection. Matrix does not include resampling strategies. Any background constituent with a non-detect frequency 50%<ND<100% was automatically qualified for non-parametric prediction limit. Background constituents with a non-detect frequency <50% were processed using the Kaplan-Meier method or regression order statistic. The Double Quantification rule is used for 100% background non-detect frequency.

A resampling strategy is appropriate to reduce the overall false positive occurrences (falsely identifying an SSI) while maintaining adequate statistical power. Resampling strategies depend on several criteria, such as the size of the background dataset, sampling frequency, acceptable site-wide false positive error rate (SWFPR), and number of active monitoring wells, among other considerations. For parametric inter-well prediction limits, a 1 of 2 resampling strategy was selected for two primary reasons. First, this sampling strategy assumes the collection of two statistically independent samples is possible under the current CCR groundwater sampling plan (semi-annual sampling frequency). Second, the 1 of 2 resampling strategy achieves a site-wide false positive rate less than 10% and maintains “good” statistical power, as declared in the U.S. EPA’s Unified Guidance (U.S. EPA, 2009). To clarify, for a 1 of 2 resampling strategy, if an initial exceedance is declared during the analysis documented herein, the collection of a second statistically independent sample is necessary prior to the next regular sampling event and subsequently compared to the relevant background prediction limit. If both the results for the

initial sample and resample are in exceedance of the background prediction limit, then an SSI is declared. If only one of the two samples are in exceedance, then an SSI is not declared.

Resampling strategies are established prior to performing statistical compliance testing. The overall defensibility of a resampling strategy decreases when the sample data are statistically dependent (i.e., sampled so close in time that they are correlated), which is usually the case when sampling at a frequency higher than quarterly. Note: CBL 341I was sampled monthly in 2017 and the other wells were sampled more frequently than quarterly in order to meet the timeline of the regulation. The value of a resampling strategy generally decreases when the observed concentrations in downgradient wells are distinctly higher than concentrations observed in background wells (e.g., all samples are order(s) of magnitude higher); in this case, background might not be representative of groundwater beneath the CCR unit and downgradient wells or a release from the CCR unit has occurred.

Overall, the non-parametric inter-well prediction limit is not as robust as its parametric counterparts. To offset this deficiency, higher sample counts are often necessary to achieve an acceptable SWFPR and statistical power. Several retesting strategies were explored, including 1 of 2, 1 of 3 and 1 of 4 with maximum and second-order maximum values, to determine which strategy could achieve an acceptable SWFPR and acceptable statistical power. No resampling strategy could achieve these criteria with the current dataset. Additional sampling is necessary to achieve these criteria using non-parametric resampling. Resampling is still advised, however. A 1 of 2 resampling strategy is in place for parametric prediction limits and is applied here using the maximum observed concentration to reduce the chance of a false positive SSI for non-parametric prediction limits. A higher order (1 of 3 and 1 of 4) will achieve lower SWFPRs, even though they still exceed the 0.10 SWFPR criterion.

EDA RESULTS

The results of the Detection Monitoring Assessment EDA follow. Reference to the FPP conceptual site model (CSM) is necessary to support interpretation of results.

Appendix A includes ProUCL 5.1 box and whisker plots for all seven constituents. Box and whisker plots are a qualitative tool to screen spatial heterogeneity in the sample data. Inter-well testing assumes that the background well and downgradient wells are observing the same groundwater type. Spatial heterogeneity is an indication that the groundwater monitoring network is sampling more than one groundwater type, thereby violating this assumption. In general, the box and whisker plots do not provide strong evidence of spatial heterogeneity at the FPP. The box and whisker plots do indicate that CBL-306I is suspect for calcium and chloride, however, and this occurrence should be investigated further. If spatial heterogeneity proves relevant, spatial heterogeneity should be more rigidly tested using an appropriate ANOVA-type test. Intra-

well prediction limits are appropriate when spatial heterogeneity is present. For this data evaluation, the monitoring well network is assumed to be sampling the same groundwater type.

Appendix B includes a ProUCL 5.1 printout of summary statistics for the FPP monitoring well network. Statistical parameters of interest include mean, variance, non-detect frequency and sample number.

Appendix C includes ProUCL 5.1 printouts for the Mann-Kendall trend tests. No statistically significant trends ($p < 0.05$) were detected in background. Statistically significant ($p < 0.05$: which translates to >95% confidence) increasing trends were detected in downgradient wells for calcium (CBL 301I and CBL 306I), chloride (CBL 306I) and sulfate (CBL-306I and CBL-302I). A statistically significant ($p < 0.05$) decreasing trend was observed in CBL-340I for fluoride. Trend detection is sensitive to the sample number, detection and collection frequency. Trend behaviors and their significance can change as additional data are sampled over time.

Appendix D includes ProUCL 5.1 printouts for goodness of fit calculations for both raw and natural log transformed constituents. A normal or log transformed normal distribution was identified for boron, calcium, chloride, pH sulfate and TDS in the background sample dataset. No discernable distribution was identified for fluoride in the background sample dataset.

Appendix E includes ProUCL 5.1 printouts of statistical outlier evaluations relevant to normally distributed background constituents; statistically significant ($p < 0.05$) outliers were identified for chloride. Box and whisker plots (Appendix A) were used to assess for outliers in cases where the data distributions were not normal. Potential outliers are visible (as dots below or above the box and whisker diagrams) in the box and whisker plots for fluoride. For background, interpreted outliers were removed and goodness of fit calculations were performed a second time to ensure data distributions did not change in response to outlier removal.

PREDICTION LIMIT METHOD SELECTION AND CALCULATIONS

Based on the FPP EDA results, an inter-well non-parametric prediction limit with 1 of 2 resampling was calculated for fluoride. Inter-well parametric prediction limits with 1 of 2 resampling were calculated for boron, calcium, chloride, pH, sulfate and TDS.

Calculations for the FPP prediction limits and associated k values are included in the attached Practitioner's Notes. The Practitioner's Notes are technical and provide transparency regarding prediction limit calculations and decision matrix workflow outputs (Figure 2). The Practitioner's Notes include a list of wells and constituents that are in initial or potential exceedance of their respective prediction limit(s). Calcium and sulfate exhibit concentrations an order of magnitude above their respective upper predictions limit for at least two downgradient wells. The results

from this evaluation suggest there might be enough evidence to declare an SSI over background for these constituents without the need for resampling. If an SSI is declared for these two constituents, thereby foregoing resampling for calcium and sulfate, an investigation for possible alternative sources for these UPL exceedances, referenced as an Alternate Source Demonstration (ASD) [40CFR 257.94(e)(2)] would be the next step. In addition to non-comparable background water type, other issues to be examined include suspected sample matrix issues (e.g., suspended solids) and additional non-unit sources of calcium and sulfate. If another source proves to be the source of exceedances then an SSI cannot be declared for these constituents.

Boron, chloride, pH and TDS also exhibit initial exceedances and resampling is advocated for these constituents; the resample will consist of collecting one statistically independent sample before the next regularly scheduled sampling event; the next regularly scheduled sampling event should be in accordance with the CCR groundwater sampling plan (e.g. semi-annual sampling frequency). If the resample is in exceedance of the prediction limit, then an SSI is declared because both the initial and second sample are in exceedance. If the second sample is not in exceedance, an SSI is not declared and these constituents can continue with Detection Monitoring Assessment if not precluded by the declaration of an SSI for calcium or sulfate.

Initial exceedances are present for fluoride; however, an initial exceedance cannot be declared with acceptable statistical confidence for this constituent because there is no resampling strategy for non-parametric tests that can achieve the SWFPR <0.01 criterion using the current background data set. Essentially, more sampling is necessary to achieve acceptable statistical confidence.

Outliers are interpreted for some downgradient wells that exhibit initial exceedances; in particular, the sampling event on March 22, 2017 identifies potential outliers for fluoride (several wells) and pH. Outliers in downgradient wells should be investigated to ensure elevated values are not due to sample or laboratory error or result from some other anomaly.

RECOMMENDATIONS AND UPDATES

The results from this evaluation suggest spatial heterogeneity potentially exists between downgradient wells. Results from this work need CSM integration to help explain suspected spatial heterogeneity as it might relate to site geochemistry, hydrogeology, and management operations. Intra-well prediction limits are recommended if spatial heterogeneity proves relevant.

Preliminary results indicate there is enough evidence to declare an SSI for calcium and sulfate without resampling, albeit resampling is put forth according to the Unified Guidance (US EPA, 2009). With this said, it will be prudent to pursue an ASD for calcium and sulfate congruent with

implementing resampling for all seven Appendix III constituents. In addition to non-comparable background water type, other alternative sources needing examination include suspected sample matrix issues (e.g., suspended solids) and additional non-unit sources of calcium and sulfate.

Statistically independent sampling is generally unlikely with a sampling frequency higher than quarterly. This means sample data collected on a bi-monthly or monthly frequency tend to produce data that are dependent and generally fail to provide an adequate representation of constituent concentration variance within the groundwater system. Moreover, data dependence can cause biased prediction limits and increase the chance of a false positive SSI (e.g. falsely declaring an SSI). More consistent and statistically independent sampling is necessary to ensure the sample data are representative of temporal variation intrinsic to the monitored groundwater system.

Statistical method selection and background threshold values should be updated once a consistent sampling frequency is in place, as prescribed in the CCR groundwater sampling plan (e.g. semiannual sampling frequency). A minimum of 8 samples is not deemed adequate to provide a statistically representative background threshold value for groundwater conditions beneath the FPP nor declare an SSI with satisfactory confidence ($SWFPR < 0.10$) in cases where non-parametric calculations are necessary.

CONCLUSIONS

This Memo summarizes methods, findings and recommendations of statistical analysis for Detection Monitoring Appendix III constituent data collected from the eight initial rounds of monitoring. The results from this evaluation suggest:

- Boron, calcium, chloride, sulfate, TDS and pH data exhibit initial exceedances at the FPP CCR Unit and resampling is appropriate.
- There is enough preliminary evidence to indicate an SSI over background for two Appendix III constituents (calcium and sulfate) at the FPP CCR Unit with the current groundwater monitoring system. It is advised that an ASD be conducted concurrently with resampling to determine alternative source(s) for elevated concentrations of calcium and sulfate at the FPP CCR Unit.

Statistical method selection and background threshold values should be updated once a consistent sampling frequency is in place, as prescribed in the CCR groundwater sampling plan (e.g. semiannual sampling frequency).

REFERENCES

Amec Foster Wheeler (AMECFW), Environment and Infrastructure, Inc., 2017. Statistical Data Analysis System of Procedure (SOP). Coal Combustion Residual Rule Groundwater Monitoring System Compliance. Fayette Power Project, La Grange, Texas.

U.S. Environmental Protection Agency (U.S. EPA), 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance. EPA 530/R-09-007. Environmental Protection Agency Office of Resource Conservation and Recovery.

Appendix A

Multiple Box Plots

Ordered Observations

0.50

0.40

0.30

0.20

0.10

Maximum Non-Detect Value 0.05

TotalBoron (cbl - 301i)

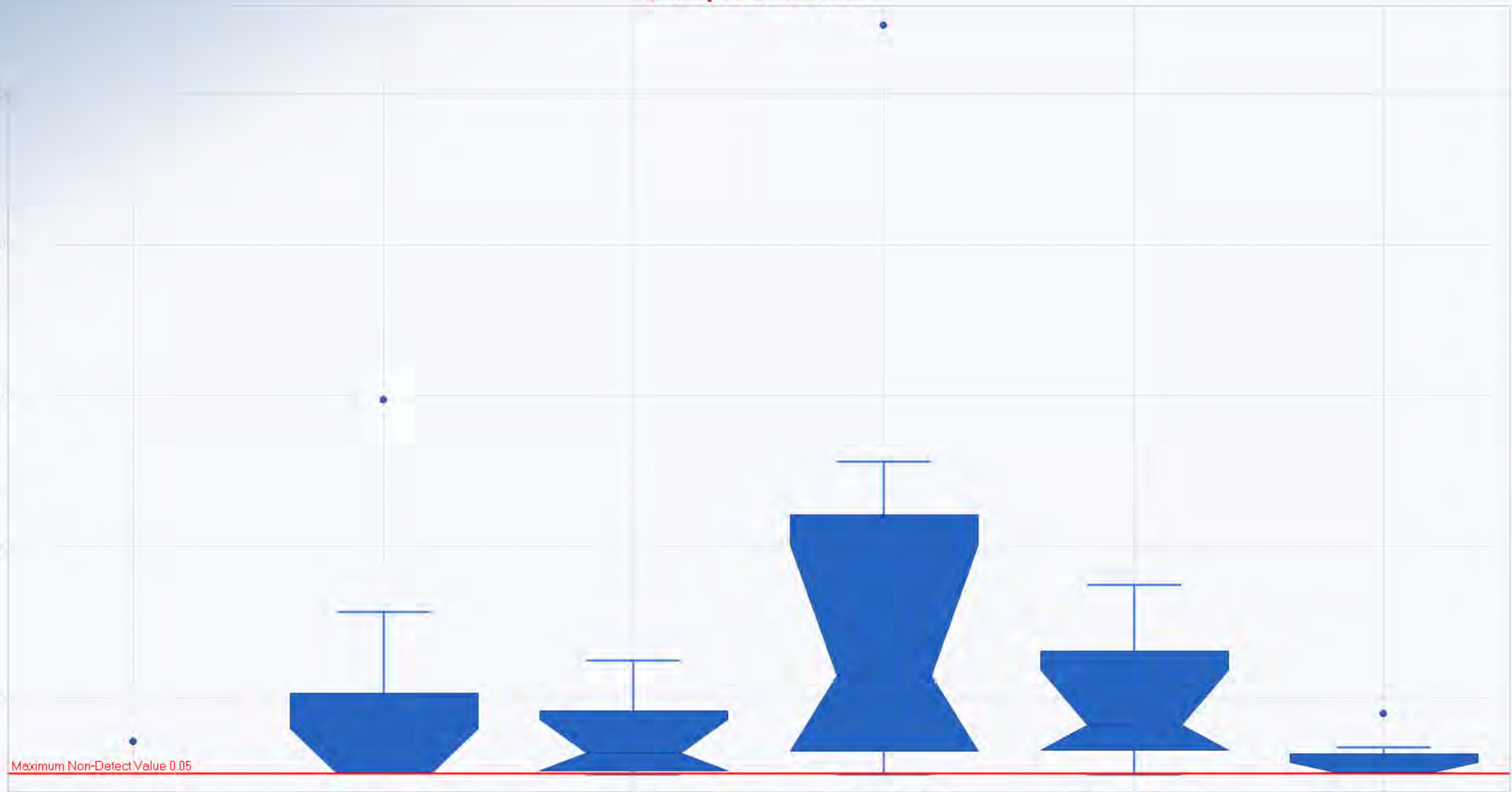
TotalBoron (cbl - 302i)

TotalBoron (cbl - 306i)

TotalBoron (cbl - 308i)

TotalBoron (cbl - 340i)

TotalBoron (cbl - 341i)



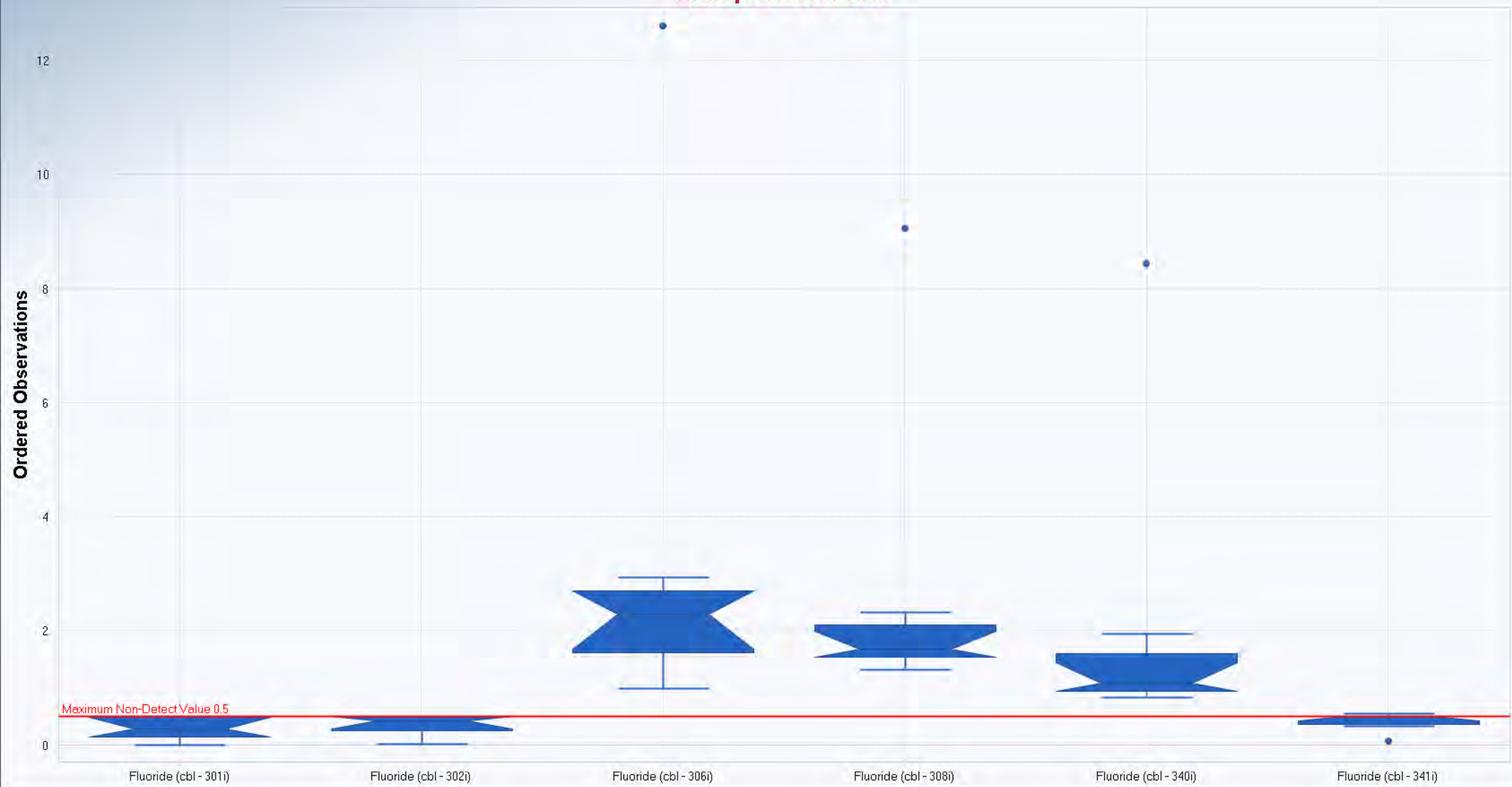
Multiple Box Plots



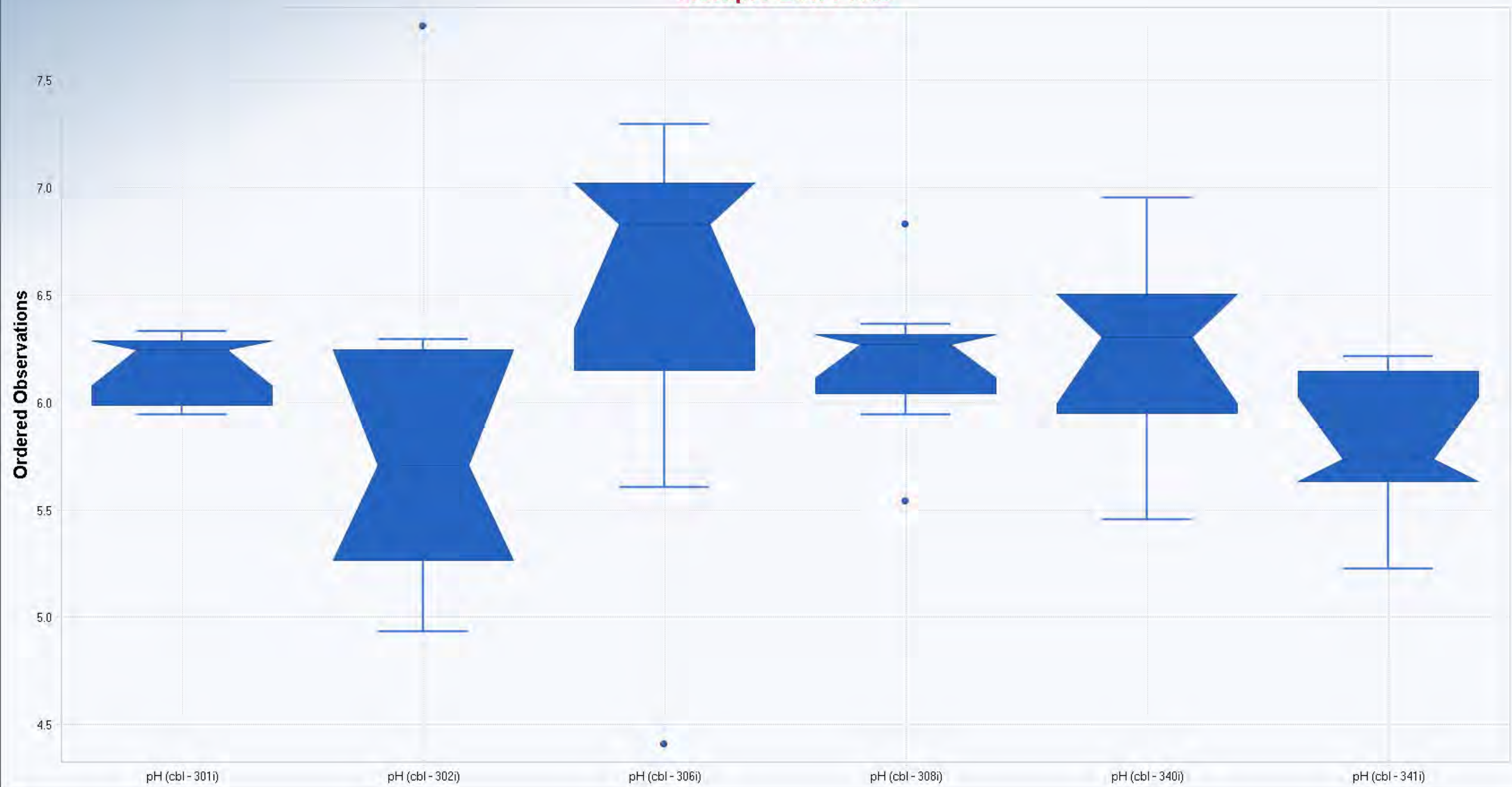
Multiple Box Plots



Multiple Box Plots

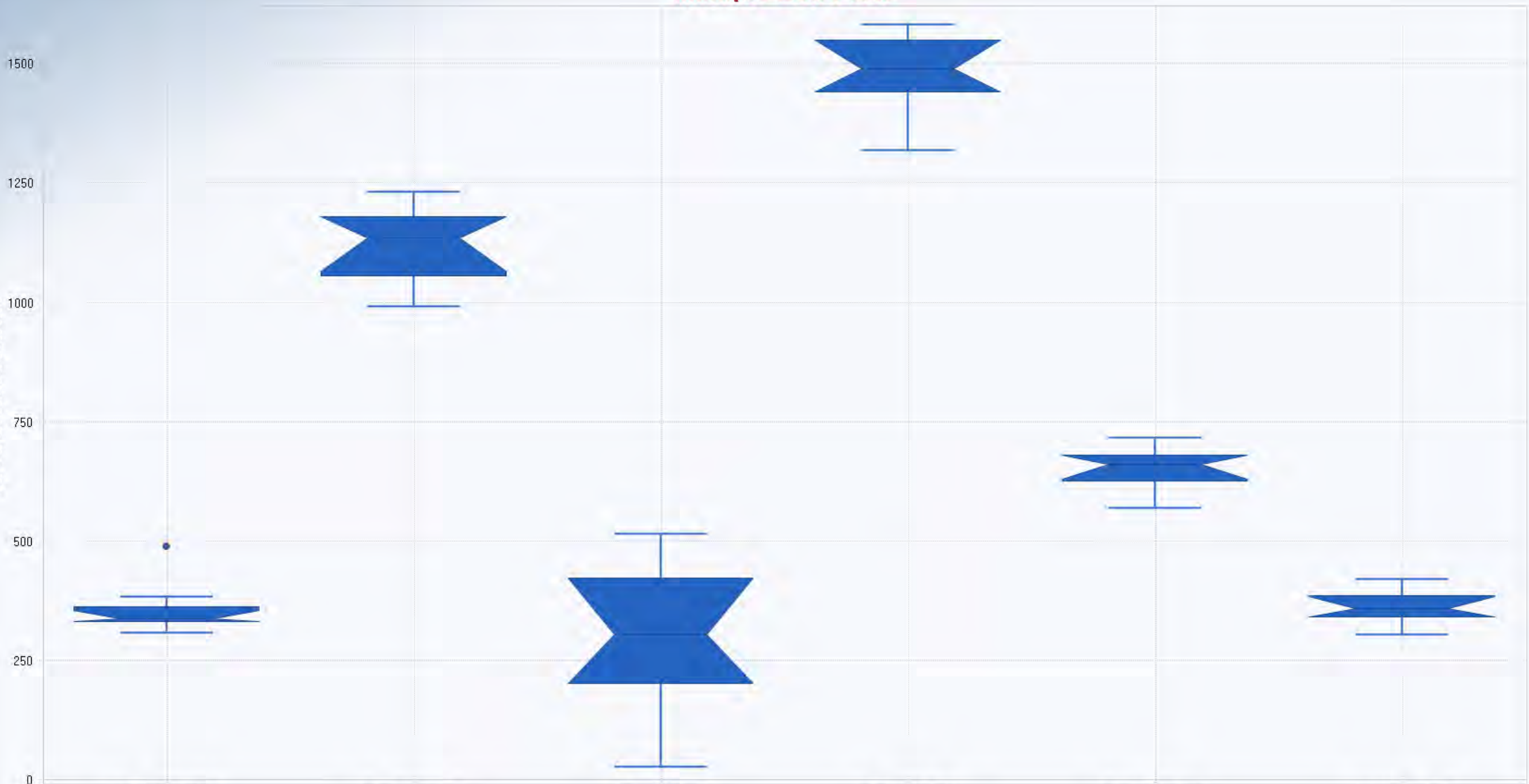


Multiple Box Plots



Multiple Box Plots

Ordered Observations



Appendix B

A	B	C	D	E	F	G	H	I	J	K	L	M
1	General Statistics on Uncensored Data											
2	Date/Time of Computation		ProUCL 5.11/10/2018 9:16:11 PM									
3	User Selected Options											
4	From File		DetectionMonitoring_ProUCLUploadRawData_11272017.xls									
5	Full Precision		OFF									
6												
7	From File: DetectionMonitoring_ProUCLUploadRawData_11272017.xls											
8												
9	General Statistics for Censored Data Set (with NDs) using Kaplan Meier Method											
10												
11	Variable	NumObs	# Missing	Num Ds	NumNDs	% NDs	Min ND	Max ND	KM Mean	KM Var	KM SD	KM CV
12	TotalBoron (cbl - 301i)	8	0	1	7	87.50%	0.05	0.05	0.0526	4.6866E-5	0.00685	0.13
13	TotalBoron (cbl - 302i)	8	0	2	6	75.00%	0.05	0.05	0.0941	0.00708	0.0842	0.894
14	TotalBoron (cbl - 306i)	8	0	6	2	25.00%	0.05	0.05	0.0734	6.4754E-4	0.0254	0.347
15	TotalBoron (cbl - 308i)	8	0	6	2	25.00%	0.05	0.05	0.175	0.0239	0.155	0.885
16	TotalBoron (cbl - 340i)	8	0	6	2	25.00%	0.05	0.05	0.0977	0.00185	0.043	0.44
17	TotalBoron (cbl - 341i)	8	0	4	4	50.00%	0.05	0.05	0.0582	1.7317E-4	0.0132	0.226
18	TotalCalcium (cbl - 301i)	8	0	8	0	0.00%	N/A	N/A	976	2735	52.3	0.0536
19	TotalCalcium (cbl - 302i)	8	0	8	0	0.00%	N/A	N/A	1059	1270	35.63	0.0337
20	TotalCalcium (cbl - 306i)	8	0	8	0	0.00%	N/A	N/A	163	3897	62.43	0.383
21	TotalCalcium (cbl - 308i)	8	0	8	0	0.00%	N/A	N/A	915.1	955.8	30.92	0.0338
22	TotalCalcium (cbl - 340i)	8	0	8	0	0.00%	N/A	N/A	583.6	516	22.72	0.0389
23	TotalCalcium (cbl - 341i)	8	0	8	0	0.00%	N/A	N/A	876.9	1518	38.96	0.0444
24	Chloride (cbl - 301i)	8	0	8	0	0.00%	N/A	N/A	2439	105813	325.3	0.133
25	Chloride (cbl - 302i)	8	0	8	0	0.00%	N/A	N/A	2138	5450	73.82	0.0345
26	Chloride (cbl - 306i)	8	0	8	0	0.00%	N/A	N/A	210.8	12741	112.9	0.536
27	Chloride (cbl - 308i)	8	0	8	0	0.00%	N/A	N/A	2660	26314	162.2	0.061
28	Chloride (cbl - 340i)	8	0	8	0	0.00%	N/A	N/A	2326	16855	129.8	0.0558
29	Chloride (cbl - 341i)	8	0	8	0	0.00%	N/A	N/A	1819	17984	134.1	0.0737
30	Fluoride (cbl - 301i)	8	0	1	7	87.50%	0.01	0.5	0.0704	0.0146	0.121	1.716
31	Fluoride (cbl - 302i)	8	0	1	7	87.50%	0.02	0.5	0.098	0.0183	0.135	1.379
32	Fluoride (cbl - 306i)	8	0	8	0	0.00%	N/A	N/A	3.351	14.35	3.788	1.13
33	Fluoride (cbl - 308i)	8	0	8	0	0.00%	N/A	N/A	2.625	6.825	2.612	0.995
34	Fluoride (cbl - 340i)	8	0	8	0	0.00%	N/A	N/A	2.059	6.766	2.601	1.263
35	Fluoride (cbl - 341i)	8	0	4	4	50.00%	0.5	0.5	0.287	0.0256	0.16	0.558
36	Sulfate (cbl - 301i)	8	0	8	0	0.00%	N/A	N/A	357.1	3189	56.47	0.158
37	Sulfate (cbl - 302i)	8	0	8	0	0.00%	N/A	N/A	1120	6747	82.14	0.0733
38	Sulfate (cbl - 306i)	8	0	8	0	0.00%	N/A	N/A	300.2	25441	159.5	0.531
39	Sulfate (cbl - 308i)	8	0	8	0	0.00%	N/A	N/A	1483	7221	84.98	0.0573
40	Sulfate (cbl - 340i)	8	0	8	0	0.00%	N/A	N/A	652.1	1998	44.7	0.0686
41	Sulfate (cbl - 341i)	8	0	8	0	0.00%	N/A	N/A	362.3	1298	36.02	0.0994
42	pH (cbl - 301i)	8	0	8	0	0.00%	N/A	N/A	6.164	0.0263	0.162	0.0263
43	pH (cbl - 302i)	8	0	8	0	0.00%	N/A	N/A	5.89	0.81	0.9	0.153
44	pH (cbl - 306i)	8	0	8	0	0.00%	N/A	N/A	6.463	0.943	0.971	0.15
45	pH (cbl - 308i)	8	0	8	0	0.00%	N/A	N/A	6.203	0.134	0.366	0.0591
46	pH (cbl - 340i)	8	0	8	0	0.00%	N/A	N/A	6.241	0.217	0.466	0.0747
47	pH (cbl - 341i)	8	0	8	0	0.00%	N/A	N/A	5.808	0.117	0.342	0.0588
48												
49	General Statistics for Raw Data Sets using Detected Data Only											
50												
51	Variable	NumObs	# Missing	Minimum	Maximum	Mean	Median	Var	SD	MAD/0.6745	Skewness	CV
52	TotalBoron (cbl - 301i)	1	0	0.0707	0.0707	0.0707	0.0707	N/A	N/A	0	N/A	N/A
53	TotalBoron (cbl - 302i)	2	0	0.156	0.297	0.227	0.227	0.00994	0.0997	0.105	N/A	0.44
54	TotalBoron (cbl - 306i)	6	0	0.0531	0.124	0.0812	0.0775	7.4340E-4	0.0273	0.0328	0.661	0.336
55	TotalBoron (cbl - 308i)	6	0	0.0799	0.545	0.216	0.154	0.0299	0.173	0.0875	1.793	0.801
56	TotalBoron (cbl - 340i)	6	0	0.081	0.174	0.114	0.0936	0.00174	0.0418	0.0182	0.867	0.368
57	TotalBoron (cbl - 341i)	4	0	0.0507	0.0896	0.0665	0.0628	2.8139E-4	0.0168	0.0119	1.135	0.252
58	TotalCalcium (cbl - 301i)	8	0	905	1060	976	969.5	2735	52.3	55.6	0.333	0.0536
59	TotalCalcium (cbl - 302i)	8	0	1010	1100	1059	1055	1270	35.63	44.48	0.00987	0.0337
60	TotalCalcium (cbl - 306i)	8	0	47.2	234	163	186	3897	62.43	49.67	-0.957	0.383
61	TotalCalcium (cbl - 308i)	8	0	870	954	915.1	915	955.8	30.92	41.51	-0.258	0.0338
62	TotalCalcium (cbl - 340i)	8	0	560	627	583.6	578	516	22.72	15.57	1.153	0.0389
63	TotalCalcium (cbl - 341i)	8	0	829	950	876.9	865	1518	38.96	37.06	0.884	0.0444
64	Chloride (cbl - 301i)	8	0	2160	3200	2439	2345	105813	325.3	126	2.252	0.133
65	Chloride (cbl - 302i)	8	0	2040	2230	2138	2150	5450	73.82	96.37	-0.206	0.0345
66	Chloride (cbl - 306i)	8	0	20	350	210.8	214	12741	112.9	129.7	-0.416	0.536
67	Chloride (cbl - 308i)	8	0	2360	2870	2660	2710	26314	162.2	133.4	-0.8	0.061

A	B	C	D	E	F	G	H	I	J	K	L	M
68	Chloride (cbl - 340i)	8	0	2070	2520	2326	2360	16855	129.8	74.13	-0.83	0.0558
69	Chloride (cbl - 341i)	8	0	1600	2000	1819	1800	17984	134.1	140.8	-0.156	0.0737
70	Fluoride (cbl - 301i)	1	0	0.312	0.312	0.312	0.312	N/A	N/A	0	N/A	N/A
71	Fluoride (cbl - 302i)	1	0	0.332	0.332	0.332	0.332	N/A	N/A	0	N/A	N/A
72	Fluoride (cbl - 306i)	8	0	1	12.6	3.351	2.29	14.35	3.788	0.786	2.677	1.13
73	Fluoride (cbl - 308i)	8	0	1.33	9.05	2.625	1.67	6.825	2.612	0.304	2.76	0.995
74	Fluoride (cbl - 340i)	8	0	0.84	8.44	2.059	1.075	6.766	2.601	0.304	2.735	1.263
75	Fluoride (cbl - 341i)	4	0	0.055	0.53	0.322	0.351	0.0389	0.197	0.145	-0.856	0.613
76	Sulfate (cbl - 301i)	8	0	311	488	357.1	336.5	3189	56.47	11.86	2.218	0.158
77	Sulfate (cbl - 302i)	8	0	993	1230	1120	1135	6747	82.14	66.72	-0.46	0.0733
78	Sulfate (cbl - 306i)	8	0	29.5	513	300.2	305	25441	159.5	173.5	-0.502	0.531
79	Sulfate (cbl - 308i)	8	0	1320	1580	1483	1490	7221	84.98	88.95	-0.972	0.0573
80	Sulfate (cbl - 340i)	8	0	571	715	652.1	660	1998	44.7	37.06	-0.61	0.0686
81	Sulfate (cbl - 341i)	8	0	307	419	362.3	358.5	1298	36.02	25.95	0.262	0.0994
82	pH (cbl - 301i)	8	0	5.95	6.33	6.164	6.245	0.0263	0.162	0.111	-0.568	0.0263
83	pH (cbl - 302i)	8	0	4.94	7.75	5.89	5.705	0.81	0.9	0.764	1.314	0.153
84	pH (cbl - 306i)	8	0	4.41	7.29	6.463	6.83	0.943	0.971	0.297	-1.705	0.15
85	pH (cbl - 308i)	8	0	5.54	6.83	6.203	6.27	0.134	0.366	0.17	-0.214	0.0591
86	pH (cbl - 340i)	8	0	5.46	6.95	6.241	6.305	0.217	0.466	0.297	-0.346	0.0747
87	pH (cbl - 341i)	8	0	5.23	6.21	5.808	5.735	0.117	0.342	0.415	-0.32	0.0588
88												
89	Percentiles using all Detects (Ds) and Non-Detects (NDs)											
90												
91	Variable	NumObs	# Missing	10%ile	20%ile	25%ile(Q1)	50%ile(Q2)	75%ile(Q3)	80%ile	90%ile	95%ile	99%ile
92	TotalBoron (cbl - 301i)	8	0	0.05	0.05	0.05	0.05	0.05	0.05	0.0562	0.0635	0.0693
93	TotalBoron (cbl - 302i)	8	0	0.05	0.05	0.05	0.05	0.0765	0.114	0.198	0.248	0.287
94	TotalBoron (cbl - 306i)	8	0	0.05	0.0512	0.0523	0.0637	0.0874	0.0932	0.107	0.116	0.122
95	TotalBoron (cbl - 308i)	8	0	0.05	0.062	0.0724	0.115	0.204	0.228	0.343	0.444	0.525
96	TotalBoron (cbl - 340i)	8	0	0.05	0.0624	0.0733	0.0824	0.118	0.136	0.163	0.168	0.173
97	TotalBoron (cbl - 341i)	8	0	0.05	0.05	0.05	0.0504	0.0607	0.0636	0.0736	0.0816	0.088
98	TotalCalcium (cbl - 301i)	8	0	919	934.6	943	969.5	1008	1018	1039	1050	1058
99	TotalCalcium (cbl - 302i)	8	0	1024	1030	1030	1055	1093	1096	1100	1100	1100
100	TotalCalcium (cbl - 306i)	8	0	87.66	117.8	129	186	204.3	204.6	213.7	223.9	232
101	TotalCalcium (cbl - 308i)	8	0	875.6	888	896.8	915	941	943.8	949.1	951.6	953.5
102	TotalCalcium (cbl - 340i)	8	0	562.8	566.8	569.3	578	589.8	597.8	613	620	625.6
103	TotalCalcium (cbl - 341i)	8	0	842.3	850.4	852.5	865	900	902.8	919.2	934.6	946.9
104	Chloride (cbl - 301i)	8	0	2223	2266	2280	2345	2440	2468	2710	2955	3151
105	Chloride (cbl - 302i)	8	0	2047	2062	2073	2150	2195	2202	2216	2223	2229
106	Chloride (cbl - 306i)	8	0	85.8	130.4	144.8	214	299.3	313.6	336	343	348.6
107	Chloride (cbl - 308i)	8	0	2479	2550	2568	2710	2760	2760	2793	2832	2862
108	Chloride (cbl - 340i)	8	0	2203	2268	2275	2360	2380	2380	2422	2471	2510
109	Chloride (cbl - 341i)	8	0	1677	1734	1755	1800	1918	1942	1979	1990	1998
110	Fluoride (cbl - 301i)	8	0	0.017	0.112	0.193	0.281	0.5	0.5	0.5	0.5	0.5
111	Fluoride (cbl - 302i)	8	0	0.181	0.25	0.25	0.416	0.5	0.5	0.5	0.5	0.5
112	Fluoride (cbl - 306i)	8	0	1.259	1.562	1.73	2.29	2.603	2.746	5.817	9.208	11.92
113	Fluoride (cbl - 308i)	8	0	1.442	1.53	1.565	1.67	2	2.14	4.325	6.688	8.578
114	Fluoride (cbl - 340i)	8	0	0.847	0.914	0.97	1.075	1.425	1.656	3.876	6.158	7.984
115	Fluoride (cbl - 341i)	8	0	0.251	0.348	0.359	0.5	0.5	0.5	0.509	0.52	0.528
116	Sulfate (cbl - 301i)	8	0	321.5	330	333.5	336.5	351.8	365.4	413.1	450.6	480.5
117	Sulfate (cbl - 302i)	8	0	1012	1048	1073	1135	1180	1180	1195	1213	1227
118	Sulfate (cbl - 306i)	8	0	106.2	189.8	234.3	305	417	424	456.3	484.7	507.3
119	Sulfate (cbl - 308i)	8	0	1383	1434	1455	1490	1550	1550	1559	1570	1578
120	Sulfate (cbl - 340i)	8	0	602.5	623.6	630.3	660	677.5	681	694	704.5	712.9
121	Sulfate (cbl - 341i)	8	0	327.3	340	343.5	358.5	377.8	390	408.5	413.8	418
122	pH (cbl - 301i)	8	0	5.95	5.978	6.003	6.245	6.273	6.29	6.316	6.323	6.329
123	pH (cbl - 302i)	8	0	5.101	5.246	5.313	5.705	6.223	6.254	6.728	7.239	7.648
124	pH (cbl - 306i)	8	0	5.25	6.042	6.42	6.83	6.985	7.034	7.15	7.22	7.276
125	pH (cbl - 308i)	8	0	5.827	6.022	6.085	6.27	6.293	6.324	6.501	6.666	6.797
126	pH (cbl - 340i)	8	0	5.677	5.914	6.04	6.305	6.498	6.508	6.649	6.8	6.92
127	pH (cbl - 341i)	8	0	5.447	5.612	5.675	5.735	6.123	6.154	6.196	6.203	6.209

Appendix C

A	B	C	D	E	F	G	H	I	J	K	L
1	Mann-Kendall Trend Test Analysis										
2	User Selected Options										
3	Date/Time of Computation		ProUCL 5.11/10/2018 9:26:00 PM								
4	From File		DetectionMonitoring_ProUCLUploadRawData_11272017.xls								
5	Full Precision		OFF								
6	Confidence Coefficient		0.95								
7	Level of Significance		0.05								
8											
9	TotalBoron-cbl - 301i										
10											
11	General Statistics										
12	Number of Events Reported (m)		8								
13	Number of Missing Events		0								
14	Number or Reported Events Used		8								
15	Number Values Reported (n)		8								
16	Minimum		0.05								
17	Maximum		0.0707								
18	Mean		0.0526								
19	Geometric Mean		0.0522								
20	Median		0.05								
21	Standard Deviation		0.00732								
22	Coefficient of Variation		0.139								
23											
24	Mann-Kendall Test										
25	M-K Test Value (S)		5								
26	Tabulated p-value		0.36								
27	Standard Deviation of S		4.583								
28	Standardized Value of S		0.873								
29	Approximate p-value		0.191								
30											
31	Insufficient evidence to identify a significant										
32	trend at the specified level of significance.										
33	TotalBoron-cbl - 302i										
34											
35	General Statistics										
36	Number of Events Reported (m)		8								
37	Number of Missing Events		0								
38	Number or Reported Events Used		8								
39	Number Values Reported (n)		8								
40	Minimum		0.05								
41	Maximum		0.297								
42	Mean		0.0941								
43	Geometric Mean		0.072								
44	Median		0.05								
45	Standard Deviation		0.09								
46	Coefficient of Variation		0.956								
47											
48	Mann-Kendall Test										
49	M-K Test Value (S)		3								
50	Tabulated p-value		0.452								
51	Standard Deviation of S		6.083								
52	Standardized Value of S		0.329								
53	Approximate p-value		0.371								
54											
55	Insufficient evidence to identify a significant										
56	trend at the specified level of significance.										
57	TotalBoron-cbl - 306i										
58											
59	General Statistics										
60	Number of Events Reported (m)		8								
61	Number of Missing Events		0								
62	Number or Reported Events Used		8								
63	Number Values Reported (n)		8								
64	Minimum		0.05								

A	B	C	D	E	F	G	H	I	J	K	L
65			Maximum	0.124							
66			Mean	0.0734							
67			Geometric Mean	0.0695							
68			Median	0.0637							
69			Standard Deviation	0.0272							
70			Coefficient of Variation	0.37							
71											
72			Mann-Kendall Test								
73			M-K Test Value (S)	3							
74			Tabulated p-value	0.452							
75			Standard Deviation of S	8.021							
76			Standardized Value of S	0.249							
77			Approximate p-value	0.402							
78											
79			Insufficient evidence to identify a significant trend at the specified level of significance.								
80											
81			TotalBoron-cbl - 308i								
82											
83			General Statistics								
84			Number of Events Reported (m)	8							
85			Number of Missing Events	0							
86			Number or Reported Events Used	8							
87			Number Values Reported (n)	8							
88			Minimum	0.05							
89			Maximum	0.545							
90			Mean	0.175							
91			Geometric Mean	0.127							
92			Median	0.115							
93			Standard Deviation	0.165							
94			Coefficient of Variation	0.946							
95											
96			Mann-Kendall Test								
97			M-K Test Value (S)	3							
98			Tabulated p-value	0.452							
99			Standard Deviation of S	8.021							
100			Standardized Value of S	0.249							
101			Approximate p-value	0.402							
102											
103			Insufficient evidence to identify a significant trend at the specified level of significance.								
104											
105			TotalBoron-cbl - 340i								
106											
107			General Statistics								
108			Number of Events Reported (m)	8							
109			Number of Missing Events	0							
110			Number or Reported Events Used	8							
111			Number Values Reported (n)	8							
112			Minimum	0.05							
113			Maximum	0.174							
114			Mean	0.0977							
115			Geometric Mean	0.089							
116			Median	0.0824							
117			Standard Deviation	0.046							
118			Coefficient of Variation	0.47							
119											
120			Mann-Kendall Test								
121			M-K Test Value (S)	7							
122			Tabulated p-value	0.274							
123			Standard Deviation of S	8.021							
124			Standardized Value of S	0.748							
125			Approximate p-value	0.227							
126											
127			Insufficient evidence to identify a significant trend at the specified level of significance.								
128											

	A	B	C	D	E	F	G	H	I	J	K	L
1	Mann-Kendall Trend Test Analysis											
2	User Selected Options											
3	Date/Time of Computation		ProUCL 5.11/10/2018 9:32:26 PM									
4	From File		DetectionMonitoring_ProUCLUploadRawData_11272017.xls									
5	Full Precision		OFF									
6	Confidence Coefficient		0.95									
7	Level of Significance		0.05									

8

9	TotalCalcium-cbl - 301i											
10												

11	General Statistics											
12	Number of Events Reported (m)		8									
13	Number of Missing Events		0									
14	Number or Reported Events Used		8									
15	Number Values Reported (n)		8									
16	Minimum		905									
17	Maximum		1060									
18	Mean		976									
19	Geometric Mean		974.8									
20	Median		969.5									
21	Standard Deviation		52.3									
22	Coefficient of Variation		0.0536									

23

24	Mann-Kendall Test											
25	M-K Test Value (S)		18									
26	Tabulated p-value		0.016									
27	Standard Deviation of S		8.083									
28	Standardized Value of S		2.103									
29	Approximate p-value		0.0177									

30

31 **Statistically significant evidence of an increasing trend at the specified level of significance.**

32

33	TotalCalcium-cbl - 302i											
34												

35	General Statistics											
36	Number of Events Reported (m)		8									
37	Number of Missing Events		0									
38	Number or Reported Events Used		8									
39	Number Values Reported (n)		8									
40	Minimum		1010									
41	Maximum		1100									
42	Mean		1059									
43	Geometric Mean		1058									
44	Median		1055									
45	Standard Deviation		35.63									
46	Coefficient of Variation		0.0337									

47

48	Mann-Kendall Test											
49	M-K Test Value (S)		14									
50	Tabulated p-value		0.054									
51	Standard Deviation of S		7.958									
52	Standardized Value of S		1.634									
53	Approximate p-value		0.0512									

54

55 **Insufficient evidence to identify a significant trend at the specified level of significance.**

56

57	TotalCalcium-cbl - 306i											
58												

59	General Statistics											
60	Number of Events Reported (m)		8									
61	Number of Missing Events		0									
62	Number or Reported Events Used		8									
63	Number Values Reported (n)		8									
64	Minimum		47.2									

A	B	C	D	E	F	G	H	I	J	K	L
65			Maximum	234							
66			Mean	163							
67			Geometric Mean	147.9							
68			Median	186							
69			Standard Deviation	62.43							
70			Coefficient of Variation	0.383							
71											
72			Mann-Kendall Test								
73			M-K Test Value (S)	22							
74			Tabulated p-value	0.002							
75			Standard Deviation of S	8.083							
76			Standardized Value of S	2.598							
77			Approximate p-value	0.00469							
78											
79			Statistically significant evidence of an increasing trend at the specified level of significance.								
80											
81			TotalCalcium-cbl - 308i								
82											
83			General Statistics								
84			Number of Events Reported (m)	8							
85			Number of Missing Events	0							
86			Number or Reported Events Used	8							
87			Number Values Reported (n)	8							
88			Minimum	870							
89			Maximum	954							
90			Mean	915.1							
91			Geometric Mean	914.7							
92			Median	915							
93			Standard Deviation	30.92							
94			Coefficient of Variation	0.0338							
95											
96			Mann-Kendall Test								
97			M-K Test Value (S)	12							
98			Tabulated p-value	0.089							
99			Standard Deviation of S	8.083							
100			Standardized Value of S	1.361							
101			Approximate p-value	0.0868							
102											
103			Insufficient evidence to identify a significant trend at the specified level of significance.								
104											
105			TotalCalcium-cbl - 340i								
106											
107			General Statistics								
108			Number of Events Reported (m)	8							
109			Number of Missing Events	0							
110			Number or Reported Events Used	8							
111			Number Values Reported (n)	8							
112			Minimum	560							
113			Maximum	627							
114			Mean	583.6							
115			Geometric Mean	583.2							
116			Median	578							
117			Standard Deviation	22.72							
118			Coefficient of Variation	0.0389							
119											
120			Mann-Kendall Test								
121			M-K Test Value (S)	8							
122			Tabulated p-value	0.119							
123			Standard Deviation of S	8.083							
124			Standardized Value of S	0.866							
125			Approximate p-value	0.193							
126											
127			Insufficient evidence to identify a significant trend at the specified level of significance.								
128											

A	B	C	D	E	F	G	H	I	J	K	L
1	Mann-Kendall Trend Test Analysis										
2	User Selected Options										
3	Date/Time of Computation		ProUCL 5.11/10/2018 9:50:31 PM								
4	From File		DetectionMonitoring_ProUCLUploadRawData_11272017.xls								
5	Full Precision		OFF								
6	Confidence Coefficient		0.95								
7	Level of Significance		0.05								
8											
9	Chloride-cbl - 301i										
10											
11	General Statistics										
12	Number of Events Reported (m)		8								
13	Number of Missing Events		0								
14	Number or Reported Events Used		8								
15	Number Values Reported (n)		8								
16	Minimum		2160								
17	Maximum		3200								
18	Mean		2439								
19	Geometric Mean		2422								
20	Median		2345								
21	Standard Deviation		325.3								
22	Coefficient of Variation		0.133								
23											
24	Mann-Kendall Test										
25	M-K Test Value (S)		14								
26	Tabulated p-value		0.054								
27	Standard Deviation of S		8.083								
28	Standardized Value of S		1.608								
29	Approximate p-value		0.0539								
30											
31	Insufficient evidence to identify a significant										
32	trend at the specified level of significance.										
33	Chloride-cbl - 302i										
34											
35	General Statistics										
36	Number of Events Reported (m)		8								
37	Number of Missing Events		0								
38	Number or Reported Events Used		8								
39	Number Values Reported (n)		8								
40	Minimum		2040								
41	Maximum		2230								
42	Mean		2138								
43	Geometric Mean		2136								
44	Median		2150								
45	Standard Deviation		73.82								
46	Coefficient of Variation		0.0345								
47											
48	Mann-Kendall Test										
49	M-K Test Value (S)		-10								
50	Tabulated p-value		0.138								
51	Standard Deviation of S		8.083								
52	Standardized Value of S		-1.113								
53	Approximate p-value		0.133								
54											
55	Insufficient evidence to identify a significant										
56	trend at the specified level of significance.										
57	Chloride-cbl - 306i										
58											
59	General Statistics										
60	Number of Events Reported (m)		8								
61	Number of Missing Events		0								
62	Number or Reported Events Used		8								
63	Number Values Reported (n)		8								
64	Minimum		20								

A	B	C	D	E	F	G	H	I	J	K	L
65			Maximum	350							
66			Mean	210.8							
67			Geometric Mean	164.5							
68			Median	214							
69			Standard Deviation	112.9							
70			Coefficient of Variation	0.536							
71											
72			Mann-Kendall Test								
73			M-K Test Value (S)	18							
74			Tabulated p-value	0.016							
75			Standard Deviation of S	8.083							
76			Standardized Value of S	2.103							
77			Approximate p-value	0.0177							
78											
79			Statistically significant evidence of an increasing trend at the specified level of significance.								
80											
81			Chloride-cbl - 308i								
82											
83			General Statistics								
84			Number of Events Reported (m)	8							
85			Number of Missing Events	0							
86			Number or Reported Events Used	8							
87			Number Values Reported (n)	8							
88			Minimum	2360							
89			Maximum	2870							
90			Mean	2660							
91			Geometric Mean	2656							
92			Median	2710							
93			Standard Deviation	162.2							
94			Coefficient of Variation	0.061							
95											
96			Mann-Kendall Test								
97			M-K Test Value (S)	1							
98			Tabulated p-value	0.548							
99			Standard Deviation of S	8.021							
100			Standardized Value of S	0							
101			Approximate p-value	0.5							
102											
103			Insufficient evidence to identify a significant trend at the specified level of significance.								
104											
105			Chloride-cbl - 340i								
106											
107			General Statistics								
108			Number of Events Reported (m)	8							
109			Number of Missing Events	0							
110			Number or Reported Events Used	8							
111			Number Values Reported (n)	8							
112			Minimum	2070							
113			Maximum	2520							
114			Mean	2326							
115			Geometric Mean	2323							
116			Median	2360							
117			Standard Deviation	129.8							
118			Coefficient of Variation	0.0558							
119											
120			Mann-Kendall Test								
121			M-K Test Value (S)	7							
122			Tabulated p-value	0.274							
123			Standard Deviation of S	8.021							
124			Standardized Value of S	0.748							
125			Approximate p-value	0.227							
126											
127			Insufficient evidence to identify a significant trend at the specified level of significance.								
128											

	A	B	C	D	E	F	G	H	I	J	K	L
1	Mann-Kendall Trend Test Analysis											
2	User Selected Options											
3	Date/Time of Computation		ProUCL 5.11/10/2018 9:52:26 PM									
4	From File		DetectionMonitoring_ProUCLUploadRawData_11272017.xls									
5	Full Precision		OFF									
6	Confidence Coefficient		0.95									
7	Level of Significance		0.05									

8

9 **Fluoride-cbl - 301i**

10

General Statistics												
12	Number of Events Reported (m)		8									
13	Number of Missing Events		0									
14	Number or Reported Events Used		8									
15	Number Values Reported (n)		8									
16	Minimum		0.01									
17	Maximum		0.5									
18	Mean		0.293									
19	Geometric Mean		0.163									
20	Median		0.281									
21	Standard Deviation		0.203									
22	Coefficient of Variation		0.692									

23

Mann-Kendall Test												
25	M-K Test Value (S)		4									
26	Tabulated p-value		0.36									
27	Standard Deviation of S		7.789									
28	Standardized Value of S		0.385									
29	Approximate p-value		0.35									

30

31 **Insufficient evidence to identify a significant trend at the specified level of significance.**

32

33 **Fluoride-cbl - 302i**

34

General Statistics												
36	Number of Events Reported (m)		8									
37	Number of Missing Events		0									
38	Number or Reported Events Used		8									
39	Number Values Reported (n)		8									
40	Minimum		0.02									
41	Maximum		0.5									
42	Mean		0.357									
43	Geometric Mean		0.267									
44	Median		0.416									
45	Standard Deviation		0.177									
46	Coefficient of Variation		0.496									

47

Mann-Kendall Test												
49	M-K Test Value (S)		-1									
50	Tabulated p-value		0.548									
51	Standard Deviation of S		7.461									
52	Standardized Value of S		0									
53	Approximate p-value		0.5									

54

55 **Insufficient evidence to identify a significant trend at the specified level of significance.**

56

57 **Fluoride-cbl - 306i**

58

General Statistics												
60	Number of Events Reported (m)		8									
61	Number of Missing Events		0									
62	Number or Reported Events Used		8									
63	Number Values Reported (n)		8									
64	Minimum		1									

A	B	C	D	E	F	G	H	I	J	K	L
65			Maximum	12.6							
66			Mean	3.351							
67			Geometric Mean	2.43							
68			Median	2.29							
69			Standard Deviation	3.788							
70			Coefficient of Variation	1.13							
71											
72			Mann-Kendall Test								
73			M-K Test Value (S)	10							
74			Tabulated p-value	0.138							
75			Standard Deviation of S	8.083							
76			Standardized Value of S	1.113							
77			Approximate p-value	0.133							
78											
79			Insufficient evidence to identify a significant trend at the specified level of significance.								
80											
81			Fluoride-cbl - 308i								
82											
83			General Statistics								
84			Number of Events Reported (m)	8							
85			Number of Missing Events	0							
86			Number or Reported Events Used	8							
87			Number Values Reported (n)	8							
88			Minimum	1.33							
89			Maximum	9.05							
90			Mean	2.625							
91			Geometric Mean	2.078							
92			Median	1.67							
93			Standard Deviation	2.612							
94			Coefficient of Variation	0.995							
95											
96			Mann-Kendall Test								
97			M-K Test Value (S)	6							
98			Tabulated p-value	0.274							
99			Standard Deviation of S	8.083							
100			Standardized Value of S	0.619							
101			Approximate p-value	0.268							
102											
103			Insufficient evidence to identify a significant trend at the specified level of significance.								
104											
105			Fluoride-cbl - 340i								
106											
107			General Statistics								
108			Number of Events Reported (m)	8							
109			Number of Missing Events	0							
110			Number or Reported Events Used	8							
111			Number Values Reported (n)	8							
112			Minimum	0.84							
113			Maximum	8.44							
114			Mean	2.059							
115			Geometric Mean	1.425							
116			Median	1.075							
117			Standard Deviation	2.601							
118			Coefficient of Variation	1.263							
119											
120			Mann-Kendall Test								
121			M-K Test Value (S)	-8							
122			Tabulated p-value	0.119							
123			Standard Deviation of S	8.083							
124			Standardized Value of S	-0.866							
125			Approximate p-value	0.193							
126											
127			Insufficient evidence to identify a significant trend at the specified level of significance.								
128											

A	B	C	D	E	F	G	H	I	J	K	L
1	Mann-Kendall Trend Test Analysis										
2	User Selected Options										
3	Date/Time of Computation ProUCL 5.11/10/2018 9:53:55 PM										
4	From File DetectionMonitoring_ProUCLUploadRawData_11272017.xls										
5	Full Precision OFF										
6	Confidence Coefficient 0.95										
7	Level of Significance 0.05										
8											
9	Sulfate-cbl - 301i										
10											
11	General Statistics										
12	Number of Events Reported (m) 8										
13	Number of Missing Events 0										
14	Number or Reported Events Used 8										
15	Number Values Reported (n) 8										
16	Minimum 311										
17	Maximum 488										
18	Mean 357.1										
19	Geometric Mean 353.8										
20	Median 336.5										
21	Standard Deviation 56.47										
22	Coefficient of Variation 0.158										
23											
24	Mann-Kendall Test										
25	M-K Test Value (S) 15										
26	Tabulated p-value 0.054										
27	Standard Deviation of S 8.021										
28	Standardized Value of S 1.745										
29	Approximate p-value 0.0405										
30											
31	Insufficient evidence to identify a significant										
32	trend at the specified level of significance.										
33	Sulfate-cbl - 302i										
34											
35	General Statistics										
36	Number of Events Reported (m) 8										
37	Number of Missing Events 0										
38	Number or Reported Events Used 8										
39	Number Values Reported (n) 8										
40	Minimum 993										
41	Maximum 1230										
42	Mean 1120										
43	Geometric Mean 1118										
44	Median 1135										
45	Standard Deviation 82.14										
46	Coefficient of Variation 0.0733										
47											
48	Mann-Kendall Test										
49	M-K Test Value (S) 17										
50	Tabulated p-value 0.031										
51	Standard Deviation of S 8.021										
52	Standardized Value of S 1.995										
53	Approximate p-value 0.023										
54											
55	Statistically significant evidence of an increasing										
56	trend at the specified level of significance.										
57	Sulfate-cbl - 306i										
58											
59	General Statistics										
60	Number of Events Reported (m) 8										
61	Number of Missing Events 0										
62	Number or Reported Events Used 8										
63	Number Values Reported (n) 8										
64	Minimum 29.5										

A	B	C	D	E	F	G	H	I	J	K	L
65			Maximum	513							
66			Mean	300.2							
67			Geometric Mean	234.5							
68			Median	305							
69			Standard Deviation	159.5							
70			Coefficient of Variation	0.531							
71											
72			Mann-Kendall Test								
73			M-K Test Value (S)	18							
74			Tabulated p-value	0.016							
75			Standard Deviation of S	8.083							
76			Standardized Value of S	2.103							
77			Approximate p-value	0.0177							
78											
79			Statistically significant evidence of an increasing								
80			trend at the specified level of significance.								
81			Sulfate-cbl - 308i								
82											
83			General Statistics								
84			Number of Events Reported (m)	8							
85			Number of Missing Events	0							
86			Number or Reported Events Used	8							
87			Number Values Reported (n)	8							
88			Minimum	1320							
89			Maximum	1580							
90			Mean	1483							
91			Geometric Mean	1480							
92			Median	1490							
93			Standard Deviation	84.98							
94			Coefficient of Variation	0.0573							
95											
96			Mann-Kendall Test								
97			M-K Test Value (S)	8							
98			Tabulated p-value	0.119							
99			Standard Deviation of S	7.958							
100			Standardized Value of S	0.88							
101			Approximate p-value	0.19							
102											
103			Insufficient evidence to identify a significant								
104			trend at the specified level of significance.								
105			Sulfate-cbl - 340i								
106											
107			General Statistics								
108			Number of Events Reported (m)	8							
109			Number of Missing Events	0							
110			Number or Reported Events Used	8							
111			Number Values Reported (n)	8							
112			Minimum	571							
113			Maximum	715							
114			Mean	652.1							
115			Geometric Mean	650.8							
116			Median	660							
117			Standard Deviation	44.7							
118			Coefficient of Variation	0.0686							
119											
120			Mann-Kendall Test								
121			M-K Test Value (S)	10							
122			Tabulated p-value	0.138							
123			Standard Deviation of S	8.083							
124			Standardized Value of S	1.113							
125			Approximate p-value	0.133							
126											
127			Insufficient evidence to identify a significant								
128			trend at the specified level of significance.								

A	B	C	D	E	F	G	H	I	J	K	L
1	Mann-Kendall Trend Test Analysis										
2	User Selected Options										
3	Date/Time of Computation		ProUCL 5.11/10/2018 9:55:01 PM								
4	From File		DetectionMonitoring_ProUCLUploadRawData_11272017.xls								
5	Full Precision		OFF								
6	Confidence Coefficient		0.95								
7	Level of Significance		0.05								
8											
9	TotalTDS-cbl - 301i										
10											
11	General Statistics										
12	Number of Events Reported (m)		8								
13	Number of Missing Events		0								
14	Number or Reported Events Used		8								
15	Number Values Reported (n)		8								
16	Minimum		4290								
17	Maximum		6570								
18	Mean		5431								
19	Geometric Mean		5356								
20	Median		5535								
21	Standard Deviation		959								
22	Coefficient of Variation		0.177								
23											
24	Mann-Kendall Test										
25	M-K Test Value (S)		8								
26	Tabulated p-value		0.119								
27	Standard Deviation of S		8.083								
28	Standardized Value of S		0.866								
29	Approximate p-value		0.193								
30											
31	Insufficient evidence to identify a significant										
32	trend at the specified level of significance.										
33	TotalTDS-cbl - 302i										
34											
35	General Statistics										
36	Number of Events Reported (m)		8								
37	Number of Missing Events		0								
38	Number or Reported Events Used		8								
39	Number Values Reported (n)		8								
40	Minimum		4210								
41	Maximum		6850								
42	Mean		5728								
43	Geometric Mean		5668								
44	Median		5680								
45	Standard Deviation		857.3								
46	Coefficient of Variation		0.15								
47											
48	Mann-Kendall Test										
49	M-K Test Value (S)		-2								
50	Tabulated p-value		0.452								
51	Standard Deviation of S		8.083								
52	Standardized Value of S		-0.124								
53	Approximate p-value		0.451								
54											
55	Insufficient evidence to identify a significant										
56	trend at the specified level of significance.										
57	TotalTDS-cbl - 306i										
58											
59	General Statistics										
60	Number of Events Reported (m)		8								
61	Number of Missing Events		0								
62	Number or Reported Events Used		8								
63	Number Values Reported (n)		8								
64	Minimum		431								

A	B	C	D	E	F	G	H	I	J	K	L
65			Maximum	1460							
66			Mean	1144							
67			Geometric Mean	1075							
68			Median	1280							
69			Standard Deviation	356.4							
70			Coefficient of Variation	0.312							
71											
72			Mann-Kendall Test								
73			M-K Test Value (S)	13							
74			Tabulated p-value	0.089							
75			Standard Deviation of S	8.021							
76			Standardized Value of S	1.496							
77			Approximate p-value	0.0673							
78											
79			Insufficient evidence to identify a significant trend at the specified level of significance.								
80											
81			TotalTDS-cbl - 308i								
82											
83			General Statistics								
84			Number of Events Reported (m)	8							
85			Number of Missing Events	0							
86			Number or Reported Events Used	8							
87			Number Values Reported (n)	8							
88			Minimum	6120							
89			Maximum	10200							
90			Mean	7623							
91			Geometric Mean	7501							
92			Median	7040							
93			Standard Deviation	1517							
94			Coefficient of Variation	0.199							
95											
96			Mann-Kendall Test								
97			M-K Test Value (S)	-4							
98			Tabulated p-value	0.36							
99			Standard Deviation of S	8.083							
100			Standardized Value of S	-0.371							
101			Approximate p-value	0.355							
102											
103			Insufficient evidence to identify a significant trend at the specified level of significance.								
104											
105			TotalTDS-cbl - 340i								
106											
107			General Statistics								
108			Number of Events Reported (m)	8							
109			Number of Missing Events	0							
110			Number or Reported Events Used	8							
111			Number Values Reported (n)	8							
112			Minimum	4880							
113			Maximum	6250							
114			Mean	5525							
115			Geometric Mean	5504							
116			Median	5475							
117			Standard Deviation	512.4							
118			Coefficient of Variation	0.0927							
119											
120			Mann-Kendall Test								
121			M-K Test Value (S)	-4							
122			Tabulated p-value	0.36							
123			Standard Deviation of S	8.083							
124			Standardized Value of S	-0.371							
125			Approximate p-value	0.355							
126											
127			Insufficient evidence to identify a significant trend at the specified level of significance.								
128											

Appendix D

A	B	C	D	E	F	G	H	I	J	K	L
1	Goodness-of-Fit Test Statistics for Data Sets with Non-Detects										
2	User Selected Options										
3	Date/Time of Computation	ProUCL 5.112/3/2017 4:27:12 PM									
4	From File	DetectionMonitoring_ProUCLUploadDeTrendResiduals_11272017_a.xls									
5	Full Precision	OFF									
6	Confidence Coefficient	0.95									
7											
8											
9	Chloride (cbl - 301i)										
10											
11	Raw Statistics										
12	Number of Valid Observations	8									
13	Number of Distinct Observations	8									
14	Minimum	2160									
15	Maximum	3200									
16	Mean of Raw Data	2439									
17	Standard Deviation of Raw Data	325.3									
18	Khat	73.05									
19	Theta hat	33.39									
20	Kstar	45.74									
21	Theta star	53.32									
22	Mean of Log Transformed Data	7.792									
23	Standard Deviation of Log Transformed Data	0.121									
24											
25	Normal GOF Test Results										
26											
27	Correlation Coefficient R	0.84									
28	Shapiro Wilk Test Statistic	0.732									
29	Shapiro Wilk Critical (0.05) Value	0.818									
30	Approximate Shapiro Wilk P Value	0.00327									
31	Lilliefors Test Statistic	0.3									
32	Lilliefors Critical (0.05) Value	0.283									
33	Data not Normal at (0.05) Significance Level										
34											
35	Gamma GOF Test Results										
36											
37	Correlation Coefficient R	0.865									
38	A-D Test Statistic	0.865									
39	A-D Critical (0.05) Value	0.715									
40	K-S Test Statistic	0.276									
41	K-S Critical(0.05) Value	0.293									
42	Data follow Appr. Gamma Distribution at (0.05) Significance Le										
43											
44	Lognormal GOF Test Results										
45											
46	Correlation Coefficient R	0.867									
47	Shapiro Wilk Test Statistic	0.777									
48	Shapiro Wilk Critical (0.05) Value	0.818									
49	Approximate Shapiro Wilk P Value	0.01									
50	Lilliefors Test Statistic	0.272									
51	Lilliefors Critical (0.05) Value	0.283									
52	Data appear Approximate_Lognormal at (0.05) Significance Le										
53											
54	Chloride (cbl - 302i)										
55											
56	Raw Statistics										
57	Number of Valid Observations	8									
58	Number of Distinct Observations	8									
59	Minimum	2040									
60	Maximum	2230									
61	Mean of Raw Data	2138									
62	Standard Deviation of Raw Data	73.82									
63	Khat	954.1									
64	Theta hat	2.24									
65	Kstar	596.4									
66	Theta star	3.584									
67	Mean of Log Transformed Data	7.667									

A	B	C	D	E	F	G	H	I	J	K	L
68	Standard Deviation of Log Transformed Data			0.0346							
69											
70	Normal GOF Test Results										
71											
72	Correlation Coefficient R			0.971							
73	Shapiro Wilk Test Statistic			0.917							
74	Shapiro Wilk Critical (0.05) Value			0.818							
75	Approximate Shapiro Wilk P Value			0.619							
76	Lilliefors Test Statistic			0.17							
77	Lilliefors Critical (0.05) Value			0.283							
78	Data appear Normal at (0.05) Significance Level										
79											
80	Gamma GOF Test Results										
81											
82	Correlation Coefficient R			0.968							
83	A-D Test Statistic			0.359							
84	A-D Critical (0.05) Value			0.715							
85	K-S Test Statistic			0.184							
86	K-S Critical(0.05) Value			0.294							
87	Data appear Gamma Distributed at (0.05) Significance Level										
88											
89	Lognormal GOF Test Results										
90											
91	Correlation Coefficient R			0.97							
92	Shapiro Wilk Test Statistic			0.915							
93	Shapiro Wilk Critical (0.05) Value			0.818							
94	Approximate Shapiro Wilk P Value			0.602							
95	Lilliefors Test Statistic			0.174							
96	Lilliefors Critical (0.05) Value			0.283							
97	Data appear Lognormal at (0.05) Significance Level										
98											
99	Chloride (cbl - 306i)										
100											
101	Raw Statistics										
102	Number of Valid Observations			8							
103	Number of Distinct Observations			8							
104	Minimum			-105.2							
105	Maximum			129							
106	Mean of Raw Data			0.00312							
107	Standard Deviation of Raw Data			75.08							
108	Data contains values <= 0										
109	Data not gamma or lognormal										
110											
111	Normal GOF Test Results										
112											
113	Correlation Coefficient R			0.979							
114	Shapiro Wilk Test Statistic			0.961							
115	Shapiro Wilk Critical (0.05) Value			0.818							
116	Approximate Shapiro Wilk P Value			0.806							
117	Lilliefors Test Statistic			0.181							
118	Lilliefors Critical (0.05) Value			0.283							
119	Data appear Normal at (0.05) Significance Level										
120											
121	Chloride (cbl - 308i)										
122											
123	Raw Statistics										
124	Number of Valid Observations			8							
125	Number of Distinct Observations			7							
126	Minimum			2360							
127	Maximum			2870							
128	Mean of Raw Data			2660							
129	Standard Deviation of Raw Data			162.2							
130	Khat			298.9							
131	Theta hat			8.9							
132	Kstar			186.9							
133	Theta star			14.23							
134	Mean of Log Transformed Data			7.884							

A	B	C	D	E	F	G	H	I	J	K	L
135	Standard Deviation of Log Transformed Data			0.0623							
136											
137	Normal GOF Test Results										
138											
139	Correlation Coefficient R			0.967							
140	Shapiro Wilk Test Statistic			0.94							
141	Shapiro Wilk Critical (0.05) Value			0.818							
142	Approximate Shapiro Wilk P Value			0.578							
143	Lilliefors Test Statistic			0.189							
144	Lilliefors Critical (0.05) Value			0.283							
145	Data appear Normal at (0.05) Significance Level										
146											
147	Gamma GOF Test Results										
148											
149	Correlation Coefficient R			0.963							
150	A-D Test Statistic			0.342							
151	A-D Critical (0.05) Value			0.715							
152	K-S Test Statistic			0.203							
153	K-S Critical(0.05) Value			0.294							
154	Data appear Gamma Distributed at (0.05) Significance Level										
155											
156	Lognormal GOF Test Results										
157											
158	Correlation Coefficient R			0.961							
159	Shapiro Wilk Test Statistic			0.93							
160	Shapiro Wilk Critical (0.05) Value			0.818							
161	Approximate Shapiro Wilk P Value			0.475							
162	Lilliefors Test Statistic			0.192							
163	Lilliefors Critical (0.05) Value			0.283							
164	Data appear Lognormal at (0.05) Significance Level										
165											
166	Chloride (cbl - 340i)										
167											
168	Raw Statistics										
169	Number of Valid Observations			7							
170	Number of Missing Observations			1							
171	Number of Distinct Observations			6							
172	Minimum			2260							
173	Maximum			2520							
174	Mean of Raw Data			2363							
175	Standard Deviation of Raw Data			84.6							
176	Khat			922.3							
177	Theta hat			2.562							
178	Kstar			527.1							
179	Theta star			4.482							
180	Mean of Log Transformed Data			7.767							
181	Standard Deviation of Log Transformed Data			0.0355							
182											
183	Normal GOF Test Results										
184											
185	Correlation Coefficient R			0.941							
186	Shapiro Wilk Test Statistic			0.9							
187	Shapiro Wilk Critical (0.05) Value			0.803							
188	Approximate Shapiro Wilk P Value			0.263							
189	Lilliefors Test Statistic			0.277							
190	Lilliefors Critical (0.05) Value			0.304							
191	Data appear Normal at (0.05) Significance Level										
192											
193	Gamma GOF Test Results										
194											
195	Correlation Coefficient R			0.945							
196	A-D Test Statistic			0.424							
197	A-D Critical (0.05) Value			0.708							
198	K-S Test Statistic			0.266							
199	K-S Critical(0.05) Value			0.311							
200	Data appear Gamma Distributed at (0.05) Significance Level										
201											

	A	B	C	D	E	F	G	H	I	J	K	L	
202	Lognormal GOF Test Results												
203													
204	Correlation Coefficient R					0.944							
205	Shapiro Wilk Test Statistic					0.906							
206	Shapiro Wilk Critical (0.05) Value					0.803							
207	Approximate Shapiro Wilk P Value					0.3							
208	Lilliefors Test Statistic					0.27							
209	Lilliefors Critical (0.05) Value					0.304							
210	Data appear Lognormal at (0.05) Significance Level												
211													
212	Chloride (cbl - 341i)												
213													
214	Raw Statistics												
215	Number of Valid Observations					8							
216	Number of Distinct Observations					8							
217	Minimum					1600							
218	Maximum					2000							
219	Mean of Raw Data					1819							
220	Standard Deviation of Raw Data					134.1							
221	Khat					208.1							
222	Theta hat					8.739							
223	Kstar					130.2							
224	Theta star					13.97							
225	Mean of Log Transformed Data					7.504							
226	Standard Deviation of Log Transformed Data					0.0743							
227													
228	Normal GOF Test Results												
229													
230	Correlation Coefficient R					0.988							
231	Shapiro Wilk Test Statistic					0.969							
232	Shapiro Wilk Critical (0.05) Value					0.818							
233	Approximate Shapiro Wilk P Value					0.933							
234	Lilliefors Test Statistic					0.121							
235	Lilliefors Critical (0.05) Value					0.283							
236	Data appear Normal at (0.05) Significance Level												
237													
238	Gamma GOF Test Results												
239													
240	Correlation Coefficient R					0.985							
241	A-D Test Statistic					0.198							
242	A-D Critical (0.05) Value					0.715							
243	K-S Test Statistic					0.133							
244	K-S Critical(0.05) Value					0.294							
245	Data appear Gamma Distributed at (0.05) Significance Level												
246													
247	Lognormal GOF Test Results												
248													
249	Correlation Coefficient R					0.986							
250	Shapiro Wilk Test Statistic					0.967							
251	Shapiro Wilk Critical (0.05) Value					0.818							
252	Approximate Shapiro Wilk P Value					0.912							
253	Lilliefors Test Statistic					0.12							
254	Lilliefors Critical (0.05) Value					0.283							
255	Data appear Lognormal at (0.05) Significance Level												

A	B	C	D	E	F	G	H	I	J	K	L
1	Goodness-of-Fit Test Statistics for Data Sets with Non-Detects										
2	User Selected Options										
3	Date/Time of Computation	ProUCL 5.112/3/2017 7:54:24 PM									
4	From File	DetectionMonitoring_ProUCLUploadDeTrendResiduals_11272017_a.xls									
5	Full Precision	OFF									
6	Confidence Coefficient	0.95									
7											
8											
9	Fluoride (cbl - 301i)										
10											
11		Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs				
12	Raw Statistics	8	0	8	1	7	87.50%				
13											
14	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!										
15	uggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EP										
16											
17	The data set for variable Fluoride (cbl - 301i) was not processed!										
18											
19											
20											
21	Fluoride (cbl - 302i)										
22											
23		Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs				
24	Raw Statistics	8	0	8	1	7	87.50%				
25											
26	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!										
27	uggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EP										
28											
29	The data set for variable Fluoride (cbl - 302i) was not processed!										
30											
31											
32											
33	Fluoride (cbl - 306i)										
34											
35	Raw Statistics										
36	Number of Valid Observations	8									
37	Number of Distinct Observations	8									
38	Minimum	1									
39	Maximum	12.6									
40	Mean of Raw Data	3.351									
41	Standard Deviation of Raw Data	3.788									
42	Khat	1.703									
43	Theta hat	1.967									
44	Kstar	1.148									
45	Theta star	2.919									
46	Mean of Log Transformed Data	0.888									
47	Standard Deviation of Log Transformed Data	0.751									
48											
49	Normal GOF Test Results										
50											
51	Correlation Coefficient R	0.741									
52	Shapiro Wilk Test Statistic	0.58									
53	Shapiro Wilk Critical (0.05) Value	0.818									
54	Approximate Shapiro Wilk P Value	7.5132E-5									
55	Lilliefors Test Statistic	0.421									
56	Lilliefors Critical (0.05) Value	0.283									
57	Data not Normal at (0.05) Significance Level										
58											
59	Gamma GOF Test Results										
60											
61	Correlation Coefficient R	0.883									
62	A-D Test Statistic	0.96									
63	A-D Critical (0.05) Value	0.727									
64	K-S Test Statistic	0.343									
65	K-S Critical(0.05) Value	0.298									
66	Data not Gamma Distributed at (0.05) Significance Level										
67											

A	B	C	D	E	F	G	H	I	J	K	L
68	Lognormal GOF Test Results										
69											
70		Correlation Coefficient R			0.906						
71		Shapiro Wilk Test Statistic			0.848						
72		Shapiro Wilk Critical (0.05) Value			0.818						
73		Approximate Shapiro Wilk P Value			0.054						
74		Lilliefors Test Statistic			0.28						
75		Lilliefors Critical (0.05) Value			0.283						
76	Data appear Lognormal at (0.05) Significance Level										
77											
78	Fluoride (cbl - 308i)										
79											
80	Raw Statistics										
81		Number of Valid Observations			8						
82		Number of Distinct Observations			8						
83		Minimum			1.33						
84		Maximum			9.05						
85		Mean of Raw Data			2.625						
86		Standard Deviation of Raw Data			2.612						
87		Khat			2.292						
88		Theta hat			1.145						
89		Kstar			1.516						
90		Theta star			1.732						
91		Mean of Log Transformed Data			0.731						
92		Standard Deviation of Log Transformed Data			0.617						
93											
94	Normal GOF Test Results										
95											
96		Correlation Coefficient R			0.7						
97		Shapiro Wilk Test Statistic			0.52						
98		Shapiro Wilk Critical (0.05) Value			0.818						
99		Approximate Shapiro Wilk P Value			1.8716E-5						
100		Lilliefors Test Statistic			0.425						
101		Lilliefors Critical (0.05) Value			0.283						
102	Data not Normal at (0.05) Significance Level										
103											
104	Gamma GOF Test Results										
105											
106		Correlation Coefficient R			0.844						
107		A-D Test Statistic			1.525						
108		A-D Critical (0.05) Value			0.723						
109		K-S Test Statistic			0.364						
110		K-S Critical(0.05) Value			0.297						
111	Data not Gamma Distributed at (0.05) Significance Level										
112											
113	Lognormal GOF Test Results										
114											
115		Correlation Coefficient R			0.799						
116		Shapiro Wilk Test Statistic			0.666						
117		Shapiro Wilk Critical (0.05) Value			0.818						
118		Approximate Shapiro Wilk P Value			6.4279E-4						
119		Lilliefors Test Statistic			0.31						
120		Lilliefors Critical (0.05) Value			0.283						
121	Data not Lognormal at (0.05) Significance Level										
122											
123	Non-parametric GOF Test Results										
124											
125	Data do not follow a discernible distribution at (0.05) Level of S										
126											
127	Fluoride (cbl - 340i)										
128											
129	Raw Statistics										
130		Number of Valid Observations			7						
131		Number of Missing Observations			1						
132		Number of Distinct Observations			7						
133		Minimum			0.84						
134		Maximum			1.92						

A	B	C	D	E	F	G	H	I	J	K	L
135	Mean of Raw Data				1.147						
136	Standard Deviation of Raw Data				0.37						
137	Khat				13.63						
138	Theta hat				0.0842						
139	Kstar				7.883						
140	Theta star				0.146						
141	Mean of Log Transformed Data				0.1						
142	Standard Deviation of Log Transformed Data				0.282						
143											
144	Normal GOF Test Results										
145											
146	Correlation Coefficient R				0.883						
147	Shapiro Wilk Test Statistic				0.795						
148	Shapiro Wilk Critical (0.05) Value				0.803						
149	Approximate Shapiro Wilk P Value				0.0261						
150	Lilliefors Test Statistic				0.276						
151	Lilliefors Critical (0.05) Value				0.304						
152	Data appear Approximate Normal at (0.05) Significance Level										
153											
154	Gamma GOF Test Results										
155											
156	Correlation Coefficient R				0.927						
157	A-D Test Statistic				0.518						
158	A-D Critical (0.05) Value				0.708						
159	K-S Test Statistic				0.253						
160	K-S Critical(0.05) Value				0.312						
161	Data appear Gamma Distributed at (0.05) Significance Level										
162											
163	Lognormal GOF Test Results										
164											
165	Correlation Coefficient R				0.93						
166	Shapiro Wilk Test Statistic				0.874						
167	Shapiro Wilk Critical (0.05) Value				0.803						
168	Approximate Shapiro Wilk P Value				0.176						
169	Lilliefors Test Statistic				0.234						
170	Lilliefors Critical (0.05) Value				0.304						
171	Data appear Lognormal at (0.05) Significance Level										
172											
173	Fluoride (cbl - 341i)										
174											
175			Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs			
176	Raw Statistics		8	1	7	3	4	57.14%			
177											
178			Number	Minimum	Maximum	Mean	Median	SD			
179	Statistics (Non-Detects Only)		4	-0.0184	0.0982	0.0403	0.0406	0.0505			
180	Statistics (Non-Detects Only)		3	-0.0325	0.133	0.0278	-0.017	0.0914			
181	Statistics (All: NDs treated as DL value)		7	-0.0325	0.133	0.0349	0.02	0.0641			
182	Statistics (All: NDs treated as DL/2 value)		7	N/A	N/A	N/A	N/A	N/A			
183	Statistics (Normal ROS Imputed Data)		7	-0.055	0.133	-0.00653	-0.0247	0.0627			
184											
185	Normal GOF Test Results										
186											
187			No NDs	NDs = DL	NDs = DL/2	Normal ROS					
188	Correlation Coefficient R		0.905	0.963	0.936	0.772					
189											
190			Test value	Crit. (0.05)	Conclusion with Alpha(0.05)						
191	Shapiro-Wilk (Detects Only)		0.82	0.767	Data Appear Normal						
192	Shapiro-Wilk (NDs = DL)		0.907	0.803	Data Appear Normal						
193	Shapiro-Wilk (NDs = DL/2)		0.886	0.803	Data Appear Normal						
194	Shapiro-Wilk (Normal ROS Estimates)		0.63	0.803	Data Not Normal						
195	Lilliefors (Detects Only)		0.355	0.425	Data Appear Normal						
196	Lilliefors (NDs = DL)		0.22	0.304	Data Appear Normal						
197	Lilliefors (NDs = DL/2)		0.18	0.304	Data Appear Normal						
198	Lilliefors (Normal ROS Estimates)		0.423	0.304	Data Not Normal						
199											
200	Gamma GOF Test Results										
201											

	A	B	C	D	E	F	G	H	I	J	K	L	
202					No NDs	NDs = DL	NDs = DL/2	gamma RO					
203				Correlation Coefficient R	N/A	N/A	N/A	N/A					
204													
205					Test value	Crit. (0.05)	Conclusion with Alpha(0.05)						
206				Anderson-Darling (Detects Only)	N/A	N/A							
207				Kolmogorov-Smirnov (Detects Only)	N/A	N/A							
208				Anderson-Darling (NDs = DL)	N/A	N/A							
209				Kolmogorov-Smirnov (NDs = DL)	N/A	N/A							
210				Anderson-Darling (NDs = DL/2)	N/A	N/A							
211				Kolmogorov-Smirnov (NDs = DL/2)	N/A	N/A							
212				Anderson-Darling (Gamma ROS Estimates)	N/A	N/A							
213				Kolmogorov-Smirnov (Gamma ROS Est.)	N/A	N/A							
214													
215				Note: Substitution methods such as DL or DL/2 are not recommended.									

A	B	C	D	E	F	G	H	I	J
1	Goodness-of-Fit Test Statistics for Data Sets with Non-Detects								
2	User Selected Options								
3	Date/Time of Computation	ProUCL 5.111/27/2017 7:31:11 PM							
4	From File	DetectionMonitoring_ProUCLUpload_11272017_a.xls							
5	Full Precision	OFF							
6	Confidence Coefficient	0.95							
7									
8									
9	TotalBoron (cbl - 301i)								
10									
11		Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs		
12	Raw Statistics	8	0	8	1	7	87.50%		
13									
14	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!								
15	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).								
16									
17	The data set for variable TotalBoron (cbl - 301i) was not processed!								
18									
19									
20									
21	TotalBoron (cbl - 302i)								
22									
23		Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs		
24	Raw Statistics	8	0	8	2	6	75.00%		
25									
26		Number	Minimum	Maximum	Mean	Median	SD		
27	Statistics (Non-Detects Only)	6	0.05	0.05	0.05	0.05	7.601E-18		
28	Statistics (Non-Detects Only)	2	0.156	0.297	0.227	0.227	0.0997		
29	Statistics (All: NDs treated as DL value)	8	0.05	0.297	0.0941	0.05	0.09		
30	Statistics (All: NDs treated as DL/2 value)	8	0.025	0.297	0.0754	0.025	0.101		
31	Statistics (Normal ROS Imputed Data)	8	-0.594	0.297	-0.167	-0.188	0.298		
32	Statistics (Gamma ROS Imputed Data)	8	N/A	N/A	N/A	N/A	N/A		
33	Statistics (Lognormal ROS Imputed Data)	8	0.00509	0.297	0.0766	0.0332	0.101		
34									
35		K hat	K Star	Theta hat	Log Mean	Log Stdv	Log CV		
36	Statistics (Non-Detects Only)	N/A	N/A	N/A	N/A	N/A	N/A		
37	Statistics (NDs = DL)	2.019	1.345	0.0466	-2.631	0.697	-0.265		
38	Statistics (NDs = DL/2)	1.019	0.72	0.074	-3.151	1.011	-0.321		
39	Statistics (Gamma ROS Estimates)	N/A	N/A	N/A	N/A	N/A	N/A		
40	Statistics (Lognormal ROS Estimates)	--	--	--	-3.332	1.361	-0.409		
41									
42	Normal GOF Test Results								
43									
44		No NDs	NDs = DL	NDs = DL/2	Normal ROS				
45	Correlation Coefficient R	1	0.759	0.766	0.995				
46									
47		Test value	Crit. (0.05)	Conclusion with Alpha(0.05)					
48	Shapiro-Wilk (NDs = DL)	0.591	0.818	Data Not Normal					
49	Shapiro-Wilk (NDs = DL/2)	0.599	0.818	Data Not Normal					
50	Shapiro-Wilk (Normal ROS Estimates)	0.983	0.818	Data Appear Normal					
51	Lilliefors (Detects Only)	N/A	N/A						
52	Lilliefors (NDs = DL)	0.438	0.283	Data Not Normal					
53	Lilliefors (NDs = DL/2)	0.442	0.283	Data Not Normal					
54	Lilliefors (Normal ROS Estimates)	0.111	0.283	Data Appear Normal					
55									
56	Gamma GOF Test Results								
57									
58		No NDs	NDs = DL	NDs = DL/2	Gamma ROS				
59	Correlation Coefficient R	N/A	0.904	0.942	0.964				
60									
61		Test value	Crit. (0.05)	Conclusion with Alpha(0.05)					
62	Anderson-Darling (Detects Only)	N/A	N/A						
63	Kolmogorov-Smirnov (Detects Only)	N/A	N/A						
64	Anderson-Darling (NDs = DL)	1.702	0.724						
65	Kolmogorov-Smirnov (NDs = DL)	0.465	0.297	Data Not Gamma Distributed					
66	Anderson-Darling (NDs = DL/2)	1.731	0.735						

A	B	C	D	E	F	G	H	I	J
67	Kolmogorov-Smirnov (NDs = DL/2)		0.472	0.301	Data Not Gamma Distributed				
68	Anderson-Darling (Gamma ROS Estimates)		N/A	0.715					
69	Kolmogorov-Smirnov (Gamma ROS Est.)		N/A	0.294					
70									
71	Lognormal GOF Test Results								
72									
73			No NDs	NDs = DL	NDs = DL/2	Log ROS			
74	Correlation Coefficient R		1	0.776	0.776	N/A			
75									
76			Test value	Crit. (0.05)	Conclusion with Alpha(0.05)				
77	Shapiro-Wilk (NDs = DL)		0.608	0.818	Data Not Lognormal				
78	Shapiro-Wilk (NDs = DL/2)		0.603	0.818	Data Not Lognormal				
79	Shapiro-Wilk (Lognormal ROS Estimates)		0.983	0.818	Data Appear Lognormal				
80	Lilliefors (Detects Only)		N/A	N/A					
81	Lilliefors (NDs = DL)		0.45	0.283	Data Not Lognormal				
82	Lilliefors (NDs = DL/2)		0.453	0.283	Data Not Lognormal				
83	Lilliefors (Lognormal ROS Estimates)		0.111	0.283	Data Appear Lognormal				
84									
85	Note: Substitution methods such as DL or DL/2 are not recommended.								
86									
87	TotalBoron (cbl - 306i)								
88									
89			Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs	
90	Raw Statistics		8	0	8	6	2	25.00%	
91									
92			Number	Minimum	Maximum	Mean	Median	SD	
93	Statistics (Non-Detects Only)		2	0.05	0.05	0.05	0.05	0	
94	Statistics (Non-Detects Only)		6	0.0531	0.124	0.0812	0.0775	0.0273	
95	Statistics (All: NDs treated as DL value)		8	0.05	0.124	0.0734	0.0637	0.0272	
96	Statistics (All: NDs treated as DL/2 value)		8	0.025	0.124	0.0672	0.0637	0.0348	
97	Statistics (Normal ROS Imputed Data)		8	8.3753E-4	0.124	0.0635	0.0637	0.0404	
98	Statistics (Gamma ROS Imputed Data)		8	0.0135	0.124	0.066	0.0637	0.0366	
99	Statistics (Lognormal ROS Imputed Data)		8	0.0292	0.124	0.0692	0.0637	0.0322	
100									
101			K hat	K Star	Theta hat	Log Mean	Log Stdv	Log CV	
102	Statistics (Non-Detects Only)		11.02	5.62	0.00737	-2.556	0.331	-0.13	
103	Statistics (NDs = DL)		9.285	5.887	0.00791	-2.666	0.346	-0.13	
104	Statistics (NDs = DL/2)		3.752	2.428	0.0179	-2.84	0.594	-0.209	
105	Statistics (Gamma ROS Estimates)		2.798	1.832	0.0236	-2.908	0.732	-0.252	
106	Statistics (Lognormal ROS Estimates)		--	--	--	-2.772	0.492	-0.177	
107									
108	Normal GOF Test Results								
109									
110			No NDs	NDs = DL	NDs = DL/2	Normal ROS			
111	Correlation Coefficient R		0.974	0.933	0.982	0.993			
112									
113			Test value	Crit. (0.05)	Conclusion with Alpha(0.05)				
114	Shapiro-Wilk (Detects Only)		0.937	0.788	Data Appear Normal				
115	Shapiro-Wilk (NDs = DL)		0.859	0.818	Data Appear Normal				
116	Shapiro-Wilk (NDs = DL/2)		0.952	0.818	Data Appear Normal				
117	Shapiro-Wilk (Normal ROS Estimates)		0.982	0.818	Data Appear Normal				
118	Lilliefors (Detects Only)		0.16	0.325	Data Appear Normal				
119	Lilliefors (NDs = DL)		0.244	0.283	Data Appear Normal				
120	Lilliefors (NDs = DL/2)		0.137	0.283	Data Appear Normal				
121	Lilliefors (Normal ROS Estimates)		0.148	0.283	Data Appear Normal				
122									
123	Gamma GOF Test Results								
124									
125			No NDs	NDs = DL	NDs = DL/2	Gamma ROS			
126	Correlation Coefficient R		0.991	0.969	0.982	0.973			
127									
128			Test value	Crit. (0.05)	Conclusion with Alpha(0.05)				
129	Anderson-Darling (Detects Only)		0.237	0.698					
130	Kolmogorov-Smirnov (Detects Only)		0.193	0.332	Detected Data Appear Gamma Distributed				
131	Anderson-Darling (NDs = DL)		0.484	0.716					
132	Kolmogorov-Smirnov (NDs = DL)		0.257	0.294	Data Appear Gamma Distributed				
133	Anderson-Darling (NDs = DL/2)		0.291	0.719					

A	B	C	D	E	F	G	H	I	J	
134	Kolmogorov-Smirnov (NDs = DL/2)			0.178	0.296	Data Appear Gamma Distributed				
135	Anderson-Darling (Gamma ROS Estimates)			0.251	0.722					
136	Kolmogorov-Smirnov (Gamma ROS Est.)			0.192	0.297	Data Appear Gamma Distributed				
137										
138	Lognormal GOF Test Results									
139										
140				No NDs	NDs = DL	NDs = DL/2	Log ROS			
141	Correlation Coefficient R			0.984	0.951	0.963	0.992			
142										
143				Test value	Crit. (0.05)	Conclusion with Alpha(0.05)				
144	Shapiro-Wilk (Detects Only)			0.951	0.788	Data Appear Lognormal				
145	Shapiro-Wilk (NDs = DL)			0.884	0.818	Data Appear Lognormal				
146	Shapiro-Wilk (NDs = DL/2)			0.91	0.818	Data Appear Lognormal				
147	Shapiro-Wilk (Lognormal ROS Estimates)			0.975	0.818	Data Appear Lognormal				
148	Lilliefors (Detects Only)			0.176	0.325	Data Appear Lognormal				
149	Lilliefors (NDs = DL)			0.241	0.283	Data Appear Lognormal				
150	Lilliefors (NDs = DL/2)			0.186	0.283	Data Appear Lognormal				
151	Lilliefors (Lognormal ROS Estimates)			0.12	0.283	Data Appear Lognormal				
152										
153	Note: Substitution methods such as DL or DL/2 are not recommended.									
154										
155	TotalBoron (cbl - 308i)									
156										
157				Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs	
158	Raw Statistics			8	0	8	6	2	25.00%	
159										
160				Number	Minimum	Maximum	Mean	Median	SD	
161	Statistics (Non-Detects Only)			2	0.05	0.05	0.05	0.05	0	
162	Statistics (Non-Detects Only)			6	0.0799	0.545	0.216	0.154	0.173	
163	Statistics (All: NDs treated as DL value)			8	0.05	0.545	0.175	0.115	0.165	
164	Statistics (All: NDs treated as DL/2 value)			8	0.025	0.545	0.168	0.115	0.171	
165	Statistics (Normal ROS Imputed Data)			8	-0.257	0.545	0.112	0.115	0.244	
166	Statistics (Gamma ROS Imputed Data)			8	0.01	0.545	0.165	0.115	0.175	
167	Statistics (Lognormal ROS Imputed Data)			8	0.0225	0.545	0.169	0.115	0.17	
168										
169				K hat	K Star	Theta hat	Log Mean	Log Stdv	Log CV	
170	Statistics (Non-Detects Only)			2.433	1.328	0.0888	-1.751	0.695	-0.397	
171	Statistics (NDs = DL)			1.725	1.161	0.101	-2.062	0.823	-0.399	
172	Statistics (NDs = DL/2)			1.242	0.859	0.136	-2.236	1.072	-0.48	
173	Statistics (Gamma ROS Estimates)			0.887	0.638	0.186	-2.465	1.446	-0.587	
174	Statistics (Lognormal ROS Estimates)			--	--	--	-2.201	1.027	-0.467	
175										
176	Normal GOF Test Results									
177										
178				No NDs	NDs = DL	NDs = DL/2	Normal ROS			
179	Correlation Coefficient R			0.888	0.871	0.893	0.971			
180										
181				Test value	Crit. (0.05)	Conclusion with Alpha(0.05)				
182	Shapiro-Wilk (Detects Only)			0.8	0.788	Data Appear Normal				
183	Shapiro-Wilk (NDs = DL)			0.771	0.818	Data Not Normal				
184	Shapiro-Wilk (NDs = DL/2)			0.81	0.818	Data Not Normal				
185	Shapiro-Wilk (Normal ROS Estimates)			0.956	0.818	Data Appear Normal				
186	Lilliefors (Detects Only)			0.242	0.325	Data Appear Normal				
187	Lilliefors (NDs = DL)			0.252	0.283	Data Appear Normal				
188	Lilliefors (NDs = DL/2)			0.234	0.283	Data Appear Normal				
189	Lilliefors (Normal ROS Estimates)			0.198	0.283	Data Appear Normal				
190										
191	Gamma GOF Test Results									
192										
193				No NDs	NDs = DL	NDs = DL/2	Gamma ROS			
194	Correlation Coefficient R			0.976	0.976	0.989	0.992			
195										
196				Test value	Crit. (0.05)	Conclusion with Alpha(0.05)				
197	Anderson-Darling (Detects Only)			0.358	0.703					
198	Kolmogorov-Smirnov (Detects Only)			0.226	0.335	Detected Data Appear Gamma Distributed				
199	Anderson-Darling (NDs = DL)			0.354	0.726					
200	Kolmogorov-Smirnov (NDs = DL)			0.201	0.298	Data Appear Gamma Distributed				

A	B	C	D	E	F	G	H	I	J
201	Anderson-Darling (NDs = DL/2)			0.245	0.732				
202	Kolmogorov-Smirnov (NDs = DL/2)			0.152	0.3	Data Appear Gamma Distributed			
203	Anderson-Darling (Gamma ROS Estimates)			0.293	0.74				
204	Kolmogorov-Smirnov (Gamma ROS Est.)			0.174	0.303	Data Appear Gamma Distributed			
205									
206	Lognormal GOF Test Results								
207									
208		No NDs	NDs = DL	NDs = DL/2	Log ROS				
209	Correlation Coefficient R	0.973	0.977	0.976	0.993				
210									
211		Test value	Crit. (0.05)	Conclusion with Alpha(0.05)					
212	Shapiro-Wilk (Detects Only)	0.947	0.788	Data Appear Lognormal					
213	Shapiro-Wilk (NDs = DL)	0.945	0.818	Data Appear Lognormal					
214	Shapiro-Wilk (NDs = DL/2)	0.943	0.818	Data Appear Lognormal					
215	Shapiro-Wilk (Lognormal ROS Estimates)	0.984	0.818	Data Appear Lognormal					
216	Lilliefors (Detects Only)	0.198	0.325	Data Appear Lognormal					
217	Lilliefors (NDs = DL)	0.149	0.283	Data Appear Lognormal					
218	Lilliefors (NDs = DL/2)	0.162	0.283	Data Appear Lognormal					
219	Lilliefors (Lognormal ROS Estimates)	0.126	0.283	Data Appear Lognormal					
220									
221	Note: Substitution methods such as DL or DL/2 are not recommended.								
222									
223	TotalBoron (cbl - 340i)								
224									
225		Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs		
226	Raw Statistics	8	0	8	6	2	25.00%		
227									
228		Number	Minimum	Maximum	Mean	Median	SD		
229	Statistics (Non-Detects Only)	2	0.05	0.05	0.05	0.05	0		
230	Statistics (Non-Detects Only)	6	0.081	0.174	0.114	0.0936	0.0418		
231	Statistics (All: NDs treated as DL value)	8	0.05	0.174	0.0977	0.0824	0.046		
232	Statistics (All: NDs treated as DL/2 value)	8	0.025	0.174	0.0915	0.0824	0.0541		
233	Statistics (Normal ROS Imputed Data)	8	-0.00248	0.174	0.088	0.0824	0.0595		
234	Statistics (Gamma ROS Imputed Data)	8	0.0163	0.174	0.0917	0.0824	0.0541		
235	Statistics (Lognormal ROS Imputed Data)	8	0.0408	0.174	0.0967	0.0824	0.0472		
236									
237		K hat	K Star	Theta hat	Log Mean	Log Stdv	Log CV		
238	Statistics (Non-Detects Only)	9.709	4.966	0.0117	-2.227	0.347	-0.156		
239	Statistics (NDs = DL)	5.497	3.519	0.0178	-2.419	0.461	-0.191		
240	Statistics (NDs = DL/2)	2.644	1.736	0.0346	-2.593	0.738	-0.284		
241	Statistics (Gamma ROS Estimates)	2.499	1.645	0.0367	-2.603	0.783	-0.301		
242	Statistics (Lognormal ROS Estimates)	--	--	--	-2.441	0.497	-0.204		
243									
244	Normal GOF Test Results								
245									
246		No NDs	NDs = DL	NDs = DL/2	Normal ROS				
247	Correlation Coefficient R	0.902	0.938	0.959	0.974				
248									
249		Test value	Crit. (0.05)	Conclusion with Alpha(0.05)					
250	Shapiro-Wilk (Detects Only)	0.791	0.788	Data Appear Normal					
251	Shapiro-Wilk (NDs = DL)	0.868	0.818	Data Appear Normal					
252	Shapiro-Wilk (NDs = DL/2)	0.907	0.818	Data Appear Normal					
253	Shapiro-Wilk (Normal ROS Estimates)	0.943	0.818	Data Appear Normal					
254	Lilliefors (Detects Only)	0.267	0.325	Data Appear Normal					
255	Lilliefors (NDs = DL)	0.249	0.283	Data Appear Normal					
256	Lilliefors (NDs = DL/2)	0.186	0.283	Data Appear Normal					
257	Lilliefors (Normal ROS Estimates)	0.203	0.283	Data Appear Normal					
258									
259	Gamma GOF Test Results								
260									
261		No NDs	NDs = DL	NDs = DL/2	Gamma ROS				
262	Correlation Coefficient R	0.932	0.964	0.952	0.954				
263									
264		Test value	Crit. (0.05)	Conclusion with Alpha(0.05)					
265	Anderson-Darling (Detects Only)	0.671	0.698						
266	Kolmogorov-Smirnov (Detects Only)	0.292	0.332	Detected Data Appear Gamma Distributed					
267	Anderson-Darling (NDs = DL)	0.425	0.719						

A	B	C	D	E	F	G	H	I	J
268	Kolmogorov-Smirnov (NDs = DL)			0.213	0.295	Data Appear Gamma Distributed			
269	Anderson-Darling (NDs = DL/2)			0.49	0.722				
270	Kolmogorov-Smirnov (NDs = DL/2)			0.256	0.297	Data Appear Gamma Distributed			
271	Anderson-Darling (Gamma ROS Estimates)			0.369	0.723				
272	Kolmogorov-Smirnov (Gamma ROS Est.)			0.259	0.297	Data Appear Gamma Distributed			
273									
274	Lognormal GOF Test Results								
275									
276			No NDs	NDs = DL	NDs = DL/2	Log ROS			
277	Correlation Coefficient R		0.912	0.962	0.932	0.975			
278									
279			Test value	Crit. (0.05)	Conclusion with Alpha(0.05)				
280	Shapiro-Wilk (Detects Only)		0.805	0.788	Data Appear Lognormal				
281	Shapiro-Wilk (NDs = DL)		0.909	0.818	Data Appear Lognormal				
282	Shapiro-Wilk (NDs = DL/2)		0.853	0.818	Data Appear Lognormal				
283	Shapiro-Wilk (Lognormal ROS Estimates)		0.944	0.818	Data Appear Lognormal				
284	Lilliefors (Detects Only)		0.272	0.325	Data Appear Lognormal				
285	Lilliefors (NDs = DL)		0.183	0.283	Data Appear Lognormal				
286	Lilliefors (NDs = DL/2)		0.293	0.283	Data Not Lognormal				
287	Lilliefors (Lognormal ROS Estimates)		0.193	0.283	Data Appear Lognormal				
288									
289	Note: Substitution methods such as DL or DL/2 are not recommended.								
290									
291	TotalBoron (cbl - 341i)								
292									
293			Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs	
294	Raw Statistics		8	0	8	4	4	50.00%	
295									
296			Number	Minimum	Maximum	Mean	Median	SD	
297	Statistics (Non-Detects Only)		4	0.05	0.05	0.05	0.05	0	
298	Statistics (Non-Detects Only)		4	0.0507	0.0896	0.0665	0.0628	0.0168	
299	Statistics (All: NDs treated as DL value)		8	0.05	0.0896	0.0582	0.0504	0.0141	
300	Statistics (All: NDs treated as DL/2 value)		8	0.025	0.0896	0.0457	0.0379	0.0247	
301	Statistics (Normal ROS Imputed Data)		8	-0.00857	0.0896	0.0393	0.0403	0.0328	
302	Statistics (Gamma ROS Imputed Data)		8	0.01	0.0896	0.0431	0.0414	0.028	
303	Statistics (Lognormal ROS Imputed Data)		8	0.0218	0.0896	0.0483	0.0444	0.0228	
304									
305			K hat	K Star	Theta hat	Log Mean	Log Stdv	Log CV	
306	Statistics (Non-Detects Only)		22.3	5.741	0.00298	-2.734	0.242	-0.0886	
307	Statistics (NDs = DL)		23.56	14.81	0.00247	-2.865	0.211	-0.0738	
308	Statistics (NDs = DL/2)		4.119	2.658	0.0111	-3.211	0.535	-0.166	
309	Statistics (Gamma ROS Estimates)		2.284	1.511	0.0189	-3.379	0.786	-0.233	
310	Statistics (Lognormal ROS Estimates)		--	--	--	-3.129	0.478	-0.153	
311									
312	Normal GOF Test Results								
313									
314			No NDs	NDs = DL	NDs = DL/2	Normal ROS			
315	Correlation Coefficient R		0.964	0.822	0.92	0.994			
316									
317			Test value	Crit. (0.05)	Conclusion with Alpha(0.05)				
318	Shapiro-Wilk (Detects Only)		0.935	0.748	Data Appear Normal				
319	Shapiro-Wilk (NDs = DL)		0.686	0.818	Data Not Normal				
320	Shapiro-Wilk (NDs = DL/2)		0.831	0.818	Data Appear Normal				
321	Shapiro-Wilk (Normal ROS Estimates)		0.981	0.818	Data Appear Normal				
322	Lilliefors (Detects Only)		0.242	0.375	Data Appear Normal				
323	Lilliefors (NDs = DL)		0.329	0.283	Data Not Normal				
324	Lilliefors (NDs = DL/2)		0.299	0.283	Data Not Normal				
325	Lilliefors (Normal ROS Estimates)		0.135	0.283	Data Appear Normal				
326									
327	Gamma GOF Test Results								
328									
329			No NDs	NDs = DL	NDs = DL/2	Gamma ROS			
330	Correlation Coefficient R		0.986	0.868	0.961	0.977			
331									
332			Test value	Crit. (0.05)	Conclusion with Alpha(0.05)				
333	Anderson-Darling (Detects Only)		0.263	0.657					
334	Kolmogorov-Smirnov (Detects Only)		0.212	0.394	Detected Data Appear Gamma Distributed				

A	B	C	D	E	F	G	H	I	J
335	Anderson-Darling (NDs = DL)			1.119	0.716				
336	Kolmogorov-Smirnov (NDs = DL)			0.346	0.294	Data Not Gamma Distributed			
337	Anderson-Darling (NDs = DL/2)			0.757	0.719				
338	Kolmogorov-Smirnov (NDs = DL/2)			0.327	0.295	Data Not Gamma Distributed			
339	Anderson-Darling (Gamma ROS Estimates)			0.241	0.723				
340	Kolmogorov-Smirnov (Gamma ROS Est.)			0.181	0.297	Data Appear Gamma Distributed			
341									
342	Lognormal GOF Test Results								
343									
344				No NDs	NDs = DL	NDs = DL/2	Log ROS		
345	Correlation Coefficient R			0.983	0.843	0.913	0.995		
346									
347				Test value	Crit. (0.05)	Conclusion with Alpha(0.05)			
348	Shapiro-Wilk (Detects Only)			0.97	0.748	Data Appear Lognormal			
349	Shapiro-Wilk (NDs = DL)			0.716	0.818	Data Not Lognormal			
350	Shapiro-Wilk (NDs = DL/2)			0.809	0.818	Data Not Lognormal			
351	Shapiro-Wilk (Lognormal ROS Estimates)			0.981	0.818	Data Appear Lognormal			
352	Lilliefors (Detects Only)			0.204	0.375	Data Appear Lognormal			
353	Lilliefors (NDs = DL)			0.335	0.283	Data Not Lognormal			
354	Lilliefors (NDs = DL/2)			0.314	0.283	Data Not Lognormal			
355	Lilliefors (Lognormal ROS Estimates)			0.121	0.283	Data Appear Lognormal			
356									
357	Note: Substitution methods such as DL or DL/2 are not recommended.								
358									
359	TotalCalcium (cbl - 301i)								
360									
361	Raw Statistics								
362	Number of Valid Observations			8					
363	Number of Distinct Observations			8					
364	Minimum			-65.93					
365	Maximum			47					
366	Mean of Raw Data			-8.750E-4					
367	Standard Deviation of Raw Data			35.03					
368	Data contains values <= 0								
369	Data not gamma or lognormal								
370									
371	Normal GOF Test Results								
372									
373	Correlation Coefficient R			0.973					
374	Shapiro Wilk Test Statistic			0.955					
375	Shapiro Wilk Critical (0.05) Value			0.818					
376	Approximate Shapiro Wilk P Value			0.687					
377	Lilliefors Test Statistic			0.2					
378	Lilliefors Critical (0.05) Value			0.283					
379	Data appear Normal at (0.05) Significance Level								
380									
381	TotalCalcium (cbl - 302i)								
382									
383	Raw Statistics								
384	Number of Valid Observations			8					
385	Number of Distinct Observations			6					
386	Minimum			1010					
387	Maximum			1100					
388	Mean of Raw Data			1059					
389	Standard Deviation of Raw Data			35.63					
390	Khat			1009					
391	Theta hat			1.05					
392	Kstar			630.5					
393	Theta star			1.679					
394	Mean of Log Transformed Data			6.964					
395	Standard Deviation of Log Transformed Data			0.0337					
396									
397	Normal GOF Test Results								
398									
399	Correlation Coefficient R			0.955					
400	Shapiro Wilk Test Statistic			0.886					
401	Shapiro Wilk Critical (0.05) Value			0.818					

A	B	C	D	E	F	G	H	I	J
402	Approximate Shapiro Wilk P Value			0.357					
403	Lilliefors Test Statistic			0.201					
404	Lilliefors Critical (0.05) Value			0.283					
405	Data appear Normal at (0.05) Significance Level								
406									
407	Gamma GOF Test Results								
408									
409	Correlation Coefficient R			0.952					
410	A-D Test Statistic			0.485					
411	A-D Critical (0.05) Value			0.715					
412	K-S Test Statistic			0.211					
413	K-S Critical(0.05) Value			0.294					
414	Data appear Gamma Distributed at (0.05) Significance Level								
415									
416	Lognormal GOF Test Results								
417									
418	Correlation Coefficient R			0.956					
419	Shapiro Wilk Test Statistic			0.888					
420	Shapiro Wilk Critical (0.05) Value			0.818					
421	Approximate Shapiro Wilk P Value			0.363					
422	Lilliefors Test Statistic			0.197					
423	Lilliefors Critical (0.05) Value			0.283					
424	Data appear Lognormal at (0.05) Significance Level								
425									
426	TotalCalcium (cbl - 306i)								
427									
428	Raw Statistics								
429	Number of Valid Observations			8					
430	Number of Distinct Observations			8					
431	Minimum			-64.78					
432	Maximum			52.22					
433	Mean of Raw Data			-0.001					
434	Standard Deviation of Raw Data			36.96					
435	Data contains values <= 0								
436	Data not gamma or lognormal								
437									
438	Normal GOF Test Results								
439									
440	Correlation Coefficient R			0.977					
441	Shapiro Wilk Test Statistic			0.96					
442	Shapiro Wilk Critical (0.05) Value			0.818					
443	Approximate Shapiro Wilk P Value			0.765					
444	Lilliefors Test Statistic			0.185					
445	Lilliefors Critical (0.05) Value			0.283					
446	Data appear Normal at (0.05) Significance Level								
447									
448	TotalCalcium (cbl - 308i)								
449									
450	Raw Statistics								
451	Number of Valid Observations			8					
452	Number of Distinct Observations			8					
453	Minimum			870					
454	Maximum			954					
455	Mean of Raw Data			915.1					
456	Standard Deviation of Raw Data			30.92					
457	Khat			996.3					
458	Theta hat			0.919					
459	Kstar			622.7					
460	Theta star			1.47					
461	Mean of Log Transformed Data			6.819					
462	Standard Deviation of Log Transformed Data			0.0339					
463									
464	Normal GOF Test Results								
465									
466	Correlation Coefficient R			0.981					
467	Shapiro Wilk Test Statistic			0.942					
468	Shapiro Wilk Critical (0.05) Value			0.818					

A	B	C	D	E	F	G	H	I	J
469	Approximate Shapiro Wilk P Value			0.811					
470	Lilliefors Test Statistic			0.155					
471	Lilliefors Critical (0.05) Value			0.283					
472	Data appear Normal at (0.05) Significance Level								
473									
474	Gamma GOF Test Results								
475									
476	Correlation Coefficient R			0.978					
477	A-D Test Statistic			0.264					
478	A-D Critical (0.05) Value			0.715					
479	K-S Test Statistic			0.171					
480	K-S Critical(0.05) Value			0.294					
481	Data appear Gamma Distributed at (0.05) Significance Level								
482									
483	Lognormal GOF Test Results								
484									
485	Correlation Coefficient R			0.98					
486	Shapiro Wilk Test Statistic			0.94					
487	Shapiro Wilk Critical (0.05) Value			0.818					
488	Approximate Shapiro Wilk P Value			0.794					
489	Lilliefors Test Statistic			0.156					
490	Lilliefors Critical (0.05) Value			0.283					
491	Data appear Lognormal at (0.05) Significance Level								
492									
493	TotalCalcium (cbl - 340i)								
494									
495	Raw Statistics								
496	Number of Valid Observations			8					
497	Number of Distinct Observations			8					
498	Minimum			560					
499	Maximum			627					
500	Mean of Raw Data			583.6					
501	Standard Deviation of Raw Data			22.72					
502	Khat			770.6					
503	Theta hat			0.757					
504	Kstar			481.7					
505	Theta star			1.212					
506	Mean of Log Transformed Data			6.369					
507	Standard Deviation of Log Transformed Data			0.0383					
508									
509	Normal GOF Test Results								
510									
511	Correlation Coefficient R			0.945					
512	Shapiro Wilk Test Statistic			0.892					
513	Shapiro Wilk Critical (0.05) Value			0.818					
514	Approximate Shapiro Wilk P Value			0.254					
515	Lilliefors Test Statistic			0.243					
516	Lilliefors Critical (0.05) Value			0.283					
517	Data appear Normal at (0.05) Significance Level								
518									
519	Gamma GOF Test Results								
520									
521	Correlation Coefficient R			0.95					
522	A-D Test Statistic			0.434					
523	A-D Critical (0.05) Value			0.715					
524	K-S Test Statistic			0.238					
525	K-S Critical(0.05) Value			0.294					
526	Data appear Gamma Distributed at (0.05) Significance Level								
527									
528	Lognormal GOF Test Results								
529									
530	Correlation Coefficient R			0.949					
531	Shapiro Wilk Test Statistic			0.9					
532	Shapiro Wilk Critical (0.05) Value			0.818					
533	Approximate Shapiro Wilk P Value			0.302					
534	Lilliefors Test Statistic			0.237					
535	Lilliefors Critical (0.05) Value			0.283					

	A	B	C	D	E	F	G	H	I	J
536	Data appear Lognormal at (0.05) Significance Level									
537										
538	TotalCalcium (cbl - 341i)									
539										
540	Raw Statistics									
541	Number of Valid Observations				8					
542	Number of Distinct Observations				8					
543	Minimum				829					
544	Maximum				950					
545	Mean of Raw Data				876.9					
546	Standard Deviation of Raw Data				38.96					
547	Khat				589.6					
548	Theta hat				1.487					
549	Kstar				368.6					
550	Theta star				2.379					
551	Mean of Log Transformed Data				6.776					
552	Standard Deviation of Log Transformed Data				0.0438					
553										
554	Normal GOF Test Results									
555										
556	Correlation Coefficient R				0.967					
557	Shapiro Wilk Test Statistic				0.938					
558	Shapiro Wilk Critical (0.05) Value				0.818					
559	Approximate Shapiro Wilk P Value				0.571					
560	Lilliefors Test Statistic				0.195					
561	Lilliefors Critical (0.05) Value				0.283					
562	Data appear Normal at (0.05) Significance Level									
563										
564	Gamma GOF Test Results									
565										
566	Correlation Coefficient R				0.971					
567	A-D Test Statistic				0.298					
568	A-D Critical (0.05) Value				0.715					
569	K-S Test Statistic				0.195					
570	K-S Critical(0.05) Value				0.294					
571	Data appear Gamma Distributed at (0.05) Significance Level									
572										
573	Lognormal GOF Test Results									
574										
575	Correlation Coefficient R				0.971					
576	Shapiro Wilk Test Statistic				0.945					
577	Shapiro Wilk Critical (0.05) Value				0.818					
578	Approximate Shapiro Wilk P Value				0.651					
579	Lilliefors Test Statistic				0.189					
580	Lilliefors Critical (0.05) Value				0.283					
581	Data appear Lognormal at (0.05) Significance Level									
582										
583	Chloride (cbl - 301i)									
584										
585	Raw Statistics									
586	Number of Valid Observations				8					
587	Number of Distinct Observations				8					
588	Minimum				2160					
589	Maximum				3200					
590	Mean of Raw Data				2439					
591	Standard Deviation of Raw Data				325.3					
592	Khat				73.05					
593	Theta hat				33.39					
594	Kstar				45.74					
595	Theta star				53.32					
596	Mean of Log Transformed Data				7.792					
597	Standard Deviation of Log Transformed Data				0.121					
598										
599	Normal GOF Test Results									
600										
601	Correlation Coefficient R				0.84					
602	Shapiro Wilk Test Statistic				0.732					

A	B	C	D	E	F	G	H	I	J
603				Shapiro Wilk Critical (0.05) Value	0.818				
604				Approximate Shapiro Wilk P Value	0.00327				
605				Lilliefors Test Statistic	0.3				
606				Lilliefors Critical (0.05) Value	0.283				
607	Data not Normal at (0.05) Significance Level								
608									
609	Gamma GOF Test Results								
610									
611				Correlation Coefficient R	0.865				
612				A-D Test Statistic	0.865				
613				A-D Critical (0.05) Value	0.715				
614				K-S Test Statistic	0.276				
615				K-S Critical(0.05) Value	0.293				
616	Data follow Appr. Gamma Distribution at (0.05) Significance Level								
617									
618	Lognormal GOF Test Results								
619									
620				Correlation Coefficient R	0.867				
621				Shapiro Wilk Test Statistic	0.777				
622				Shapiro Wilk Critical (0.05) Value	0.818				
623				Approximate Shapiro Wilk P Value	0.01				
624				Lilliefors Test Statistic	0.272				
625				Lilliefors Critical (0.05) Value	0.283				
626	Data appear Approximate_Lognormal at (0.05) Significance Level								
627									
628	Chloride (cbl - 302i)								
629									
630	Raw Statistics								
631				Number of Valid Observations	8				
632				Number of Distinct Observations	8				
633				Minimum	2040				
634				Maximum	2230				
635				Mean of Raw Data	2138				
636				Standard Deviation of Raw Data	73.82				
637				Khat	954.1				
638				Theta hat	2.24				
639				Kstar	596.4				
640				Theta star	3.584				
641				Mean of Log Transformed Data	7.667				
642				Standard Deviation of Log Transformed Data	0.0346				
643									
644	Normal GOF Test Results								
645									
646				Correlation Coefficient R	0.971				
647				Shapiro Wilk Test Statistic	0.917				
648				Shapiro Wilk Critical (0.05) Value	0.818				
649				Approximate Shapiro Wilk P Value	0.619				
650				Lilliefors Test Statistic	0.17				
651				Lilliefors Critical (0.05) Value	0.283				
652	Data appear Normal at (0.05) Significance Level								
653									
654	Gamma GOF Test Results								
655									
656				Correlation Coefficient R	0.968				
657				A-D Test Statistic	0.359				
658				A-D Critical (0.05) Value	0.715				
659				K-S Test Statistic	0.184				
660				K-S Critical(0.05) Value	0.294				
661	Data appear Gamma Distributed at (0.05) Significance Level								
662									
663	Lognormal GOF Test Results								
664									
665				Correlation Coefficient R	0.97				
666				Shapiro Wilk Test Statistic	0.915				
667				Shapiro Wilk Critical (0.05) Value	0.818				
668				Approximate Shapiro Wilk P Value	0.602				
669				Lilliefors Test Statistic	0.174				

	A	B	C	D	E	F	G	H	I	J
670					Lilliefors Critical (0.05) Value	0.283				
671	Data appear Lognormal at (0.05) Significance Level									
672										
673	Chloride (cbl - 306i)									
674										
675	Raw Statistics									
676					Number of Valid Observations	8				
677					Number of Distinct Observations	8				
678					Minimum	-105.2				
679					Maximum	129				
680					Mean of Raw Data	0.00312				
681					Standard Deviation of Raw Data	75.08				
682	Data contains values <= 0									
683	Data not gamma or lognormal									
684										
685	Normal GOF Test Results									
686										
687					Correlation Coefficient R	0.979				
688					Shapiro Wilk Test Statistic	0.961				
689					Shapiro Wilk Critical (0.05) Value	0.818				
690					Approximate Shapiro Wilk P Value	0.806				
691					Lilliefors Test Statistic	0.181				
692					Lilliefors Critical (0.05) Value	0.283				
693	Data appear Normal at (0.05) Significance Level									
694										
695	Chloride (cbl - 308i)									
696										
697	Raw Statistics									
698					Number of Valid Observations	8				
699					Number of Distinct Observations	7				
700					Minimum	2360				
701					Maximum	2870				
702					Mean of Raw Data	2660				
703					Standard Deviation of Raw Data	162.2				
704					Khat	298.9				
705					Theta hat	8.9				
706					Kstar	186.9				
707					Theta star	14.23				
708					Mean of Log Transformed Data	7.884				
709					Standard Deviation of Log Transformed Data	0.0623				
710										
711	Normal GOF Test Results									
712										
713					Correlation Coefficient R	0.967				
714					Shapiro Wilk Test Statistic	0.94				
715					Shapiro Wilk Critical (0.05) Value	0.818				
716					Approximate Shapiro Wilk P Value	0.578				
717					Lilliefors Test Statistic	0.189				
718					Lilliefors Critical (0.05) Value	0.283				
719	Data appear Normal at (0.05) Significance Level									
720										
721	Gamma GOF Test Results									
722										
723					Correlation Coefficient R	0.963				
724					A-D Test Statistic	0.342				
725					A-D Critical (0.05) Value	0.715				
726					K-S Test Statistic	0.203				
727					K-S Critical(0.05) Value	0.294				
728	Data appear Gamma Distributed at (0.05) Significance Level									
729										
730	Lognormal GOF Test Results									
731										
732					Correlation Coefficient R	0.961				
733					Shapiro Wilk Test Statistic	0.93				
734					Shapiro Wilk Critical (0.05) Value	0.818				
735					Approximate Shapiro Wilk P Value	0.475				
736					Lilliefors Test Statistic	0.192				

A	B	C	D	E	F	G	H	I	J
737	Lilliefors Critical (0.05) Value			0.283					
738	Data appear Lognormal at (0.05) Significance Level								
739									
740	Chloride (cbl - 340i)								
741									
742	Raw Statistics								
743	Number of Valid Observations			8					
744	Number of Distinct Observations			7					
745	Minimum			2070					
746	Maximum			2520					
747	Mean of Raw Data			2326					
748	Standard Deviation of Raw Data			129.8					
749	Khat			357.1					
750	Theta hat			6.514					
751	Kstar			223.3					
752	Theta star			10.42					
753	Mean of Log Transformed Data			7.751					
754	Standard Deviation of Log Transformed Data			0.057					
755									
756	Normal GOF Test Results								
757									
758	Correlation Coefficient R			0.944					
759	Shapiro Wilk Test Statistic			0.917					
760	Shapiro Wilk Critical (0.05) Value			0.818					
761	Approximate Shapiro Wilk P Value			0.259					
762	Lilliefors Test Statistic			0.214					
763	Lilliefors Critical (0.05) Value			0.283					
764	Data appear Normal at (0.05) Significance Level								
765									
766	Gamma GOF Test Results								
767									
768	Correlation Coefficient R			0.943					
769	A-D Test Statistic			0.457					
770	A-D Critical (0.05) Value			0.715					
771	K-S Test Statistic			0.208					
772	K-S Critical(0.05) Value			0.294					
773	Data appear Gamma Distributed at (0.05) Significance Level								
774									
775	Lognormal GOF Test Results								
776									
777	Correlation Coefficient R			0.937					
778	Shapiro Wilk Test Statistic			0.904					
779	Shapiro Wilk Critical (0.05) Value			0.818					
780	Approximate Shapiro Wilk P Value			0.197					
781	Lilliefors Test Statistic			0.21					
782	Lilliefors Critical (0.05) Value			0.283					
783	Data appear Lognormal at (0.05) Significance Level								
784									
785	Chloride (cbl - 341i)								
786									
787	Raw Statistics								
788	Number of Valid Observations			8					
789	Number of Distinct Observations			8					
790	Minimum			1600					
791	Maximum			2000					
792	Mean of Raw Data			1819					
793	Standard Deviation of Raw Data			134.1					
794	Khat			208.1					
795	Theta hat			8.739					
796	Kstar			130.2					
797	Theta star			13.97					
798	Mean of Log Transformed Data			7.504					
799	Standard Deviation of Log Transformed Data			0.0743					
800									
801	Normal GOF Test Results								
802									
803	Correlation Coefficient R			0.988					

A	B	C	D	E	F	G	H	I	J
804	Shapiro Wilk Test Statistic			0.969					
805	Shapiro Wilk Critical (0.05) Value			0.818					
806	Approximate Shapiro Wilk P Value			0.933					
807	Lilliefors Test Statistic			0.121					
808	Lilliefors Critical (0.05) Value			0.283					
809	Data appear Normal at (0.05) Significance Level								
810									
811	Gamma GOF Test Results								
812									
813	Correlation Coefficient R			0.985					
814	A-D Test Statistic			0.198					
815	A-D Critical (0.05) Value			0.715					
816	K-S Test Statistic			0.133					
817	K-S Critical(0.05) Value			0.294					
818	Data appear Gamma Distributed at (0.05) Significance Level								
819									
820	Lognormal GOF Test Results								
821									
822	Correlation Coefficient R			0.986					
823	Shapiro Wilk Test Statistic			0.967					
824	Shapiro Wilk Critical (0.05) Value			0.818					
825	Approximate Shapiro Wilk P Value			0.912					
826	Lilliefors Test Statistic			0.12					
827	Lilliefors Critical (0.05) Value			0.283					
828	Data appear Lognormal at (0.05) Significance Level								
829									
830	Fluoride (cbl - 301i)								
831									
832		Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs		
833	Raw Statistics	8	0	8	1	7	87.50%		
834									
835	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!								
836	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).								
837									
838	The data set for variable Fluoride (cbl - 301i) was not processed!								
839									
840									
841									
842	Fluoride (cbl - 302i)								
843									
844		Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs		
845	Raw Statistics	8	0	8	1	7	87.50%		
846									
847	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!								
848	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).								
849									
850	The data set for variable Fluoride (cbl - 302i) was not processed!								
851									
852									
853									
854	Fluoride (cbl - 306i)								
855									
856	Raw Statistics								
857	Number of Valid Observations			8					
858	Number of Distinct Observations			8					
859	Minimum			1					
860	Maximum			12.6					
861	Mean of Raw Data			3.351					
862	Standard Deviation of Raw Data			3.788					
863	Khat			1.703					
864	Theta hat			1.967					
865	Kstar			1.148					
866	Theta star			2.919					
867	Mean of Log Transformed Data			0.888					
868	Standard Deviation of Log Transformed Data			0.751					

	A	B	C	D	E	F	G	H	I	J	
936					Correlation Coefficient R	0.799					
937					Shapiro Wilk Test Statistic	0.666					
938					Shapiro Wilk Critical (0.05) Value	0.818					
939					Approximate Shapiro Wilk P Value	6.4279E-4					
940					Lilliefors Test Statistic	0.31					
941					Lilliefors Critical (0.05) Value	0.283					
942	Data not Lognormal at (0.05) Significance Level										
943											
944	Non-parametric GOF Test Results										
945											
946	Data do not follow a discernible distribution at (0.05) Level of Significance										
947											
948	Fluoride (cbl - 340i)										
949											
950	Raw Statistics										
951					Number of Valid Observations	8					
952					Number of Distinct Observations	8					
953					Minimum	0.84					
954					Maximum	8.44					
955					Mean of Raw Data	2.059					
956					Standard Deviation of Raw Data	2.601					
957					Khat	1.504					
958					Theta hat	1.369					
959					Kstar	1.023					
960					Theta star	2.012					
961					Mean of Log Transformed Data	0.354					
962					Standard Deviation of Log Transformed Data	0.765					
963											
964	Normal GOF Test Results										
965											
966					Correlation Coefficient R	0.704					
967					Shapiro Wilk Test Statistic	0.524					
968					Shapiro Wilk Critical (0.05) Value	0.818					
969					Approximate Shapiro Wilk P Value	2.1286E-5					
970					Lilliefors Test Statistic	0.396					
971					Lilliefors Critical (0.05) Value	0.283					
972	Data not Normal at (0.05) Significance Level										
973											
974	Gamma GOF Test Results										
975											
976					Correlation Coefficient R	0.876					
977					A-D Test Statistic	1.416					
978					A-D Critical (0.05) Value	0.728					
979					K-S Test Statistic	0.358					
980					K-S Critical(0.05) Value	0.299					
981	Data not Gamma Distributed at (0.05) Significance Level										
982											
983	Lognormal GOF Test Results										
984											
985					Correlation Coefficient R	0.826					
986					Shapiro Wilk Test Statistic	0.701					
987					Shapiro Wilk Critical (0.05) Value	0.818					
988					Approximate Shapiro Wilk P Value	0.00179					
989					Lilliefors Test Statistic	0.314					
990					Lilliefors Critical (0.05) Value	0.283					
991	Data not Lognormal at (0.05) Significance Level										
992											
993	Non-parametric GOF Test Results										
994											
995	Data do not follow a discernible distribution at (0.05) Level of Significance										
996											
997	Fluoride (cbl - 341i)										
998											
999					Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs	
1000					Raw Statistics	8	0	8	4	4	50.00%
1001											
1002					Number	Minimum	Maximum	Mean	Median	SD	

A	B	C	D	E	F	G	H	I	J	
1003	Statistics (Non-Detects Only)			4	-0.0184	0.0982	0.0403	0.0406	0.0505	
1004	Statistics (Non-Detects Only)			4	-0.244	0.133	-0.0401	-0.0248	0.155	
1005	Statistics (All: NDs treated as DL value)			8	-0.244	0.133	6.2500E-5	0.0015	0.115	
1006	Statistics (All: NDs treated as DL/2 value)			8	N/A	N/A	N/A	N/A	N/A	
1007	Statistics (Normal ROS Imputed Data)			8	-0.244	0.133	-0.0803	-0.11	0.111	
1008										
1009	Normal GOF Test Results									
1010										
1011				No NDs	NDs = DL	NDs = DL/2	Normal ROS			
1012	Correlation Coefficient R			0.966	0.928	0.906	0.957			
1013										
1014				Test value	Crit. (0.05)	Conclusion with Alpha(0.05)				
1015	Shapiro-Wilk (Detects Only)			0.949	0.748	Data Appear Normal				
1016	Shapiro-Wilk (NDs = DL)			0.879	0.818	Data Appear Normal				
1017	Shapiro-Wilk (NDs = DL/2)			0.853	0.818	Data Appear Normal				
1018	Shapiro-Wilk (Normal ROS Estimates)			0.936	0.818	Data Appear Normal				
1019	Lilliefors (Detects Only)			0.27	0.375	Data Appear Normal				
1020	Lilliefors (NDs = DL)			0.264	0.283	Data Appear Normal				
1021	Lilliefors (NDs = DL/2)			0.292	0.283	Data Not Normal				
1022	Lilliefors (Normal ROS Estimates)			0.231	0.283	Data Appear Normal				
1023										
1024	Gamma GOF Test Results									
1025										
1026				No NDs	NDs = DL	NDs = DL/2	Gamma ROS			
1027	Correlation Coefficient R			N/A	N/A	N/A	N/A			
1028										
1029				Test value	Crit. (0.05)	Conclusion with Alpha(0.05)				
1030	Anderson-Darling (Detects Only)			N/A	N/A					
1031	Kolmogorov-Smirnov (Detects Only)			N/A	N/A					
1032	Anderson-Darling (NDs = DL)			N/A	N/A					
1033	Kolmogorov-Smirnov (NDs = DL)			N/A	N/A					
1034	Anderson-Darling (NDs = DL/2)			N/A	N/A					
1035	Kolmogorov-Smirnov (NDs = DL/2)			N/A	N/A					
1036	Anderson-Darling (Gamma ROS Estimates)			N/A	N/A					
1037	Kolmogorov-Smirnov (Gamma ROS Est.)			N/A	N/A					
1038										
1039	Note: Substitution methods such as DL or DL/2 are not recommended.									
1040										
1041	Sulfate (cbl - 301i)									
1042										
1043	Raw Statistics									
1044	Number of Valid Observations			8						
1045	Number of Distinct Observations			7						
1046	Minimum			311						
1047	Maximum			488						
1048	Mean of Raw Data			357.1						
1049	Standard Deviation of Raw Data			56.47						
1050	Khat			52.96						
1051	Theta hat			6.743						
1052	Kstar			33.18						
1053	Theta star			10.76						
1054	Mean of Log Transformed Data			5.869						
1055	Standard Deviation of Log Transformed Data			0.142						
1056										
1057	Normal GOF Test Results									
1058										
1059	Correlation Coefficient R			0.826						
1060	Shapiro Wilk Test Statistic			0.707						
1061	Shapiro Wilk Critical (0.05) Value			0.818						
1062	Approximate Shapiro Wilk P Value			0.00182						
1063	Lilliefors Test Statistic			0.356						
1064	Lilliefors Critical (0.05) Value			0.283						
1065	Data not Normal at (0.05) Significance Level									
1066										
1067	Gamma GOF Test Results									
1068										
1069	Correlation Coefficient R			0.856						

A	B	C	D	E	F	G	H	I	J
1070				A-D Test Statistic	1.036				
1071				A-D Critical (0.05) Value	0.715				
1072				K-S Test Statistic	0.355				
1073				K-S Critical(0.05) Value	0.293				
1074	Data not Gamma Distributed at (0.05) Significance Level								
1075									
1076	Lognormal GOF Test Results								
1077									
1078				Correlation Coefficient R	0.852				
1079				Shapiro Wilk Test Statistic	0.75				
1080				Shapiro Wilk Critical (0.05) Value	0.818				
1081				Approximate Shapiro Wilk P Value	0.00533				
1082				Lilliefors Test Statistic	0.344				
1083				Lilliefors Critical (0.05) Value	0.283				
1084	Data not Lognormal at (0.05) Significance Level								
1085									
1086	Non-parametric GOF Test Results								
1087									
1088	Data do not follow a discernible distribution at (0.05) Level of Significance								
1089									
1090	Sulfate (cbl - 302i)								
1091									
1092	Raw Statistics								
1093				Number of Valid Observations	8				
1094				Number of Distinct Observations	8				
1095				Minimum	-56.17				
1096				Maximum	67.9				
1097				Mean of Raw Data	2.5000E-4				
1098				Standard Deviation of Raw Data	43.21				
1099	Data contains values <= 0								
1100	Data not gamma or lognormal								
1101									
1102	Normal GOF Test Results								
1103									
1104				Correlation Coefficient R	0.978				
1105				Shapiro Wilk Test Statistic	0.946				
1106				Shapiro Wilk Critical (0.05) Value	0.818				
1107				Approximate Shapiro Wilk P Value	0.776				
1108				Lilliefors Test Statistic	0.169				
1109				Lilliefors Critical (0.05) Value	0.283				
1110	Data appear Normal at (0.05) Significance Level								
1111									
1112	Sulfate (cbl - 306i)								
1113									
1114	Raw Statistics								
1115				Number of Valid Observations	8				
1116				Number of Distinct Observations	8				
1117				Minimum	-153.3				
1118				Maximum	145.8				
1119				Mean of Raw Data	-0.004				
1120				Standard Deviation of Raw Data	109.8				
1121	Data contains values <= 0								
1122	Data not gamma or lognormal								
1123									
1124	Normal GOF Test Results								
1125									
1126				Correlation Coefficient R	0.978				
1127				Shapiro Wilk Test Statistic	0.938				
1128				Shapiro Wilk Critical (0.05) Value	0.818				
1129				Approximate Shapiro Wilk P Value	0.764				
1130				Lilliefors Test Statistic	0.157				
1131				Lilliefors Critical (0.05) Value	0.283				
1132	Data appear Normal at (0.05) Significance Level								
1133									
1134	Sulfate (cbl - 308i)								
1135									
1136	Raw Statistics								

A	B	C	D	E	F	G	H	I	J
1137				Number of Valid Observations	8				
1138				Number of Distinct Observations	6				
1139				Minimum	1320				
1140				Maximum	1580				
1141				Mean of Raw Data	1483				
1142				Standard Deviation of Raw Data	84.98				
1143				Khat	337.2				
1144				Theta hat	4.396				
1145				Kstar	210.8				
1146				Theta star	7.031				
1147				Mean of Log Transformed Data	7.3				
1148				Standard Deviation of Log Transformed Data	0.0587				
1149									
1150				Normal GOF Test Results					
1151									
1152				Correlation Coefficient R	0.958				
1153				Shapiro Wilk Test Statistic	0.919				
1154				Shapiro Wilk Critical (0.05) Value	0.818				
1155				Approximate Shapiro Wilk P Value	0.416				
1156				Lilliefors Test Statistic	0.192				
1157				Lilliefors Critical (0.05) Value	0.283				
1158				Data appear Normal at (0.05) Significance Level					
1159									
1160				Gamma GOF Test Results					
1161									
1162				Correlation Coefficient R	0.952				
1163				A-D Test Statistic	0.379				
1164				A-D Critical (0.05) Value	0.715				
1165				K-S Test Statistic	0.195				
1166				K-S Critical(0.05) Value	0.294				
1167				Data appear Gamma Distributed at (0.05) Significance Level					
1168									
1169				Lognormal GOF Test Results					
1170									
1171				Correlation Coefficient R	0.951				
1172				Shapiro Wilk Test Statistic	0.908				
1173				Shapiro Wilk Critical (0.05) Value	0.818				
1174				Approximate Shapiro Wilk P Value	0.326				
1175				Lilliefors Test Statistic	0.203				
1176				Lilliefors Critical (0.05) Value	0.283				
1177				Data appear Lognormal at (0.05) Significance Level					
1178									
1179				Sulfate (cbl - 340i)					
1180									
1181				Raw Statistics					
1182				Number of Valid Observations	8				
1183				Number of Distinct Observations	8				
1184				Minimum	571				
1185				Maximum	715				
1186				Mean of Raw Data	652.1				
1187				Standard Deviation of Raw Data	44.7				
1188				Khat	237.1				
1189				Theta hat	2.75				
1190				Kstar	148.3				
1191				Theta star	4.398				
1192				Mean of Log Transformed Data	6.478				
1193				Standard Deviation of Log Transformed Data	0.0699				
1194									
1195				Normal GOF Test Results					
1196									
1197				Correlation Coefficient R	0.985				
1198				Shapiro Wilk Test Statistic	0.976				
1199				Shapiro Wilk Critical (0.05) Value	0.818				
1200				Approximate Shapiro Wilk P Value	0.9				
1201				Lilliefors Test Statistic	0.139				
1202				Lilliefors Critical (0.05) Value	0.283				
1203				Data appear Normal at (0.05) Significance Level					

A	B	C	D	E	F	G	H	I	J
1271	Raw Statistics								
1272	Number of Valid Observations			8					
1273	Number of Distinct Observations			6					
1274	Minimum			5.95					
1275	Maximum			6.33					
1276	Mean of Raw Data			6.164					
1277	Standard Deviation of Raw Data			0.162					
1278	Khat			1639					
1279	Theta hat			0.00376					
1280	Kstar			1025					
1281	Theta star			0.00602					
1282	Mean of Log Transformed Data			1.818					
1283	Standard Deviation of Log Transformed Data			0.0265					
1284									
1285	Normal GOF Test Results								
1286									
1287	Correlation Coefficient R			0.919					
1288	Shapiro Wilk Test Statistic			0.816					
1289	Shapiro Wilk Critical (0.05) Value			0.818					
1290	Approximate Shapiro Wilk P Value			0.0783					
1291	Lilliefors Test Statistic			0.284					
1292	Lilliefors Critical (0.05) Value			0.283					
1293	Data not Normal at (0.05) Significance Level								
1294									
1295	Gamma GOF Test Results								
1296									
1297	Correlation Coefficient R			0.914					
1298	A-D Test Statistic			0.778					
1299	A-D Critical (0.05) Value			0.715					
1300	K-S Test Statistic			0.296					
1301	K-S Critical(0.05) Value			0.294					
1302	Data not Gamma Distributed at (0.05) Significance Level								
1303									
1304	Lognormal GOF Test Results								
1305									
1306	Correlation Coefficient R			0.917					
1307	Shapiro Wilk Test Statistic			0.814					
1308	Shapiro Wilk Critical (0.05) Value			0.818					
1309	Approximate Shapiro Wilk P Value			0.0744					
1310	Lilliefors Test Statistic			0.286					
1311	Lilliefors Critical (0.05) Value			0.283					
1312	Data not Lognormal at (0.05) Significance Level								
1313									
1314	Non-parametric GOF Test Results								
1315									
1316	Data do not follow a discernible distribution at (0.05) Level of Significance								
1317									
1318	pH (cbl - 302i)								
1319									
1320	Raw Statistics								
1321	Number of Valid Observations			8					
1322	Number of Distinct Observations			8					
1323	Minimum			4.94					
1324	Maximum			7.75					
1325	Mean of Raw Data			5.89					
1326	Standard Deviation of Raw Data			0.9					
1327	Khat			52.92					
1328	Theta hat			0.111					
1329	Kstar			33.16					
1330	Theta star			0.178					
1331	Mean of Log Transformed Data			1.764					
1332	Standard Deviation of Log Transformed Data			0.145					
1333									
1334	Normal GOF Test Results								
1335									
1336	Correlation Coefficient R			0.934					
1337	Shapiro Wilk Test Statistic			0.881					

A	B	C	D	E	F	G	H	I	J
1338				Shapiro Wilk Critical (0.05) Value	0.818				
1339				Approximate Shapiro Wilk P Value	0.166				
1340				Lilliefors Test Statistic	0.207				
1341				Lilliefors Critical (0.05) Value	0.283				
1342	Data appear Normal at (0.05) Significance Level								
1343									
1344	Gamma GOF Test Results								
1345									
1346				Correlation Coefficient R	0.951				
1347				A-D Test Statistic	0.39				
1348				A-D Critical (0.05) Value	0.715				
1349				K-S Test Statistic	0.218				
1350				K-S Critical(0.05) Value	0.293				
1351	Data appear Gamma Distributed at (0.05) Significance Level								
1352									
1353	Lognormal GOF Test Results								
1354									
1355				Correlation Coefficient R	0.954				
1356				Shapiro Wilk Test Statistic	0.915				
1357				Shapiro Wilk Critical (0.05) Value	0.818				
1358				Approximate Shapiro Wilk P Value	0.364				
1359				Lilliefors Test Statistic	0.204				
1360				Lilliefors Critical (0.05) Value	0.283				
1361	Data appear Lognormal at (0.05) Significance Level								
1362									
1363	pH (cbl - 306i)								
1364									
1365	Raw Statistics								
1366				Number of Valid Observations	8				
1367				Number of Distinct Observations	8				
1368				Minimum	4.41				
1369				Maximum	7.29				
1370				Mean of Raw Data	6.463				
1371				Standard Deviation of Raw Data	0.971				
1372				Khat	43.28				
1373				Theta hat	0.149				
1374				Kstar	27.14				
1375				Theta star	0.238				
1376				Mean of Log Transformed Data	1.854				
1377				Standard Deviation of Log Transformed Data	0.17				
1378									
1379	Normal GOF Test Results								
1380									
1381				Correlation Coefficient R	0.877				
1382				Shapiro Wilk Test Statistic	0.78				
1383				Shapiro Wilk Critical (0.05) Value	0.818				
1384				Approximate Shapiro Wilk P Value	0.0148				
1385				Lilliefors Test Statistic	0.343				
1386				Lilliefors Critical (0.05) Value	0.283				
1387	Data not Normal at (0.05) Significance Level								
1388									
1389	Gamma GOF Test Results								
1390									
1391				Correlation Coefficient R	0.85				
1392				A-D Test Statistic	0.967				
1393				A-D Critical (0.05) Value	0.715				
1394				K-S Test Statistic	0.36				
1395				K-S Critical(0.05) Value	0.294				
1396	Data not Gamma Distributed at (0.05) Significance Level								
1397									
1398	Lognormal GOF Test Results								
1399									
1400				Correlation Coefficient R	0.854				
1401				Shapiro Wilk Test Statistic	0.743				
1402				Shapiro Wilk Critical (0.05) Value	0.818				
1403				Approximate Shapiro Wilk P Value	0.00569				
1404				Lilliefors Test Statistic	0.357				

A	B	C	D	E	F	G	H	I	J
1405	Lilliefors Critical (0.05) Value			0.283					
1406	Data not Lognormal at (0.05) Significance Level								
1407									
1408	Non-parametric GOF Test Results								
1409									
1410	Data do not follow a discernible distribution at (0.05) Level of Significance								
1411									
1412	pH (cbl - 308i)								
1413									
1414	Raw Statistics								
1415	Number of Valid Observations			8					
1416	Number of Distinct Observations			6					
1417	Minimum			5.54					
1418	Maximum			6.83					
1419	Mean of Raw Data			6.203					
1420	Standard Deviation of Raw Data			0.366					
1421	Khat			323.9					
1422	Theta hat			0.0192					
1423	Kstar			202.5					
1424	Theta star			0.0306					
1425	Mean of Log Transformed Data			1.823					
1426	Standard Deviation of Log Transformed Data			0.0596					
1427									
1428	Normal GOF Test Results								
1429									
1430	Correlation Coefficient R			0.949					
1431	Shapiro Wilk Test Statistic			0.93					
1432	Shapiro Wilk Critical (0.05) Value			0.818					
1433	Approximate Shapiro Wilk P Value			0.323					
1434	Lilliefors Test Statistic			0.209					
1435	Lilliefors Critical (0.05) Value			0.283					
1436	Data appear Normal at (0.05) Significance Level								
1437									
1438	Gamma GOF Test Results								
1439									
1440	Correlation Coefficient R			0.951					
1441	A-D Test Statistic			0.436					
1442	A-D Critical (0.05) Value			0.715					
1443	K-S Test Statistic			0.21					
1444	K-S Critical(0.05) Value			0.294					
1445	Data appear Gamma Distributed at (0.05) Significance Level								
1446									
1447	Lognormal GOF Test Results								
1448									
1449	Correlation Coefficient R			0.947					
1450	Shapiro Wilk Test Statistic			0.925					
1451	Shapiro Wilk Critical (0.05) Value			0.818					
1452	Approximate Shapiro Wilk P Value			0.297					
1453	Lilliefors Test Statistic			0.207					
1454	Lilliefors Critical (0.05) Value			0.283					
1455	Data appear Lognormal at (0.05) Significance Level								
1456									
1457	pH (cbl - 340i)								
1458									
1459	Raw Statistics								
1460	Number of Valid Observations			8					
1461	Number of Distinct Observations			8					
1462	Minimum			5.46					
1463	Maximum			6.95					
1464	Mean of Raw Data			6.241					
1465	Standard Deviation of Raw Data			0.466					
1466	Khat			201.2					
1467	Theta hat			0.031					
1468	Kstar			125.8					
1469	Theta star			0.0496					
1470	Mean of Log Transformed Data			1.829					
1471	Standard Deviation of Log Transformed Data			0.0758					

	A	B	C	D	E	F	G	H	I	J
1539					Correlation Coefficient R	0.96				
1540					Shapiro Wilk Test Statistic	0.915				
1541					Shapiro Wilk Critical (0.05) Value	0.818				
1542					Approximate Shapiro Wilk P Value	0.451				
1543					Lilliefors Test Statistic	0.193				
1544					Lilliefors Critical (0.05) Value	0.283				
1545	Data appear Lognormal at (0.05) Significance Level									

A	B	C	D	E	F	G	H	I	J	K	L
1	Goodness-of-Fit Test Statistics for Data Sets with Non-Detects										
2	User Selected Options										
3	Date/Time of Computation	ProUCL 5.112/2/2017 9:07:28 PM									
4	From File	DetectionMonitoring_ProUCLUploadDeTrendResiduals_11272017_a.xls									
5	Full Precision	OFF									
6	Confidence Coefficient	0.95									
7											
8											
9	LnB (cbl - 301i)										
10											
11		Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs				
12	Raw Statistics	8	0	8	1	7	87.50%				
13											
14	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!										
15	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).										
16											
17	The data set for variable LnB (cbl - 301i) was not processed!										
18											
19											
20											
21	LnB (cbl - 302i)										
22											
23		Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs				
24	Raw Statistics	8	0	8	2	6	75.00%				
25											
26		Number	Minimum	Maximum	Mean	Median	SD				
27	Statistics (Non-Detects Only)	6	-2.996	-2.996	-2.996	-2.996	0				
28	Statistics (Non-Detects Only)	2	-1.858	-1.214	-1.536	-1.536	0.455				
29	Statistics (All: NDs treated as DL value)	8	-2.996	-1.214	-2.631	-2.996	0.697				
30	Statistics (All: NDs treated as DL/2 value)	8	N/A	N/A	N/A	N/A	N/A				
31	Statistics (Normal ROS Imputed Data)	8	-5.281	-1.214	-3.332	-3.427	1.361				
32											
33	Normal GOF Test Results										
34											
35		No NDs	NDs = DL	NDs = DL/2	Normal ROS						
36	Correlation Coefficient R	1	0.776	0.82	0.995						
37											
38		Test value	Crit. (0.05)	Conclusion with Alpha(0.05)							
39	Shapiro-Wilk (NDs = DL)	0.608	0.818	Data Not Normal							
40	Shapiro-Wilk (NDs = DL/2)	0.725	0.818	Data Not Normal							
41	Shapiro-Wilk (Normal ROS Estimates)	0.983	0.818	Data Appear Normal							
42	Lilliefors (Detects Only)	N/A	N/A								
43	Lilliefors (NDs = DL)	0.45	0.283	Data Not Normal							
44	Lilliefors (NDs = DL/2)	0.397	0.283	Data Not Normal							
45	Lilliefors (Normal ROS Estimates)	0.111	0.283	Data Appear Normal							
46											
47	Gamma GOF Test Results										
48											
49		No NDs	NDs = DL	NDs = DL/2	Gamma ROS						
50	Correlation Coefficient R	N/A	N/A	N/A	N/A						
51											
52		Test value	Crit. (0.05)	Conclusion with Alpha(0.05)							
53	Anderson-Darling (Detects Only)	N/A	N/A								
54	Kolmogorov-Smirnov (Detects Only)	N/A	N/A								
55	Anderson-Darling (NDs = DL)	N/A	N/A								
56	Kolmogorov-Smirnov (NDs = DL)	N/A	N/A								
57	Anderson-Darling (NDs = DL/2)	N/A	N/A								
58	Kolmogorov-Smirnov (NDs = DL/2)	N/A	N/A								
59	Anderson-Darling (Gamma ROS Estimates)	N/A	N/A								
60	Kolmogorov-Smirnov (Gamma ROS Est.)	N/A	N/A								
61											
62	Note: Substitution methods such as DL or DL/2 are not recommended.										
63											
64	LnB (cbl - 306i)										
65											

A	B	C	D	E	F	G	H	I	J	K	L
66				Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs		
67	Raw Statistics			8	0	8	6	2	25.00%		
68											
69				Number	Minimum	Maximum	Mean	Median	SD		
70	Statistics (Non-Detects Only)			2	-2.996	-2.996	-2.996	-2.996	0		
71	Statistics (Non-Detects Only)			6	-2.936	-2.087	-2.556	-2.561	0.331		
72	Statistics (All: NDs treated as DL value)			8	-2.996	-2.087	-2.666	-2.762	0.346		
73	Statistics (All: NDs treated as DL/2 value)			8	N/A	N/A	N/A	N/A	N/A		
74	Statistics (Normal ROS Imputed Data)			8	-3.535	-2.087	-2.772	-2.762	0.492		
75											
76	Normal GOF Test Results										
77											
78				No NDs	NDs = DL	NDs = DL/2	Normal ROS				
79	Correlation Coefficient R			0.984	0.951	0.962	0.992				
80											
81				Test value	Crit. (0.05)	Conclusion with Alpha(0.05)					
82	Shapiro-Wilk (Detects Only)			0.951	0.788	Data Appear Normal					
83	Shapiro-Wilk (NDs = DL)			0.884	0.818	Data Appear Normal					
84	Shapiro-Wilk (NDs = DL/2)			0.899	0.818	Data Appear Normal					
85	Shapiro-Wilk (Normal ROS Estimates)			0.975	0.818	Data Appear Normal					
86	Lilliefors (Detects Only)			0.176	0.325	Data Appear Normal					
87	Lilliefors (NDs = DL)			0.241	0.283	Data Appear Normal					
88	Lilliefors (NDs = DL/2)			0.17	0.283	Data Appear Normal					
89	Lilliefors (Normal ROS Estimates)			0.12	0.283	Data Appear Normal					
90											
91	Gamma GOF Test Results										
92											
93				No NDs	NDs = DL	NDs = DL/2	Gamma ROS				
94	Correlation Coefficient R			N/A	N/A	N/A	N/A				
95											
96				Test value	Crit. (0.05)	Conclusion with Alpha(0.05)					
97	Anderson-Darling (Detects Only)			N/A	N/A						
98	Kolmogorov-Smirnov (Detects Only)			N/A	N/A						
99	Anderson-Darling (NDs = DL)			N/A	N/A						
100	Kolmogorov-Smirnov (NDs = DL)			N/A	N/A						
101	Anderson-Darling (NDs = DL/2)			N/A	N/A						
102	Kolmogorov-Smirnov (NDs = DL/2)			N/A	N/A						
103	Anderson-Darling (Gamma ROS Estimates)			N/A	N/A						
104	Kolmogorov-Smirnov (Gamma ROS Est.)			N/A	N/A						
105											
106	Note: Substitution methods such as DL or DL/2 are not recommended.										
107											
108	LnB (cbl - 308i)										
109											
110				Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs		
111	Raw Statistics			8	0	8	6	2	25.00%		
112											
113				Number	Minimum	Maximum	Mean	Median	SD		
114	Statistics (Non-Detects Only)			2	-2.996	-2.996	-2.996	-2.996	0		
115	Statistics (Non-Detects Only)			6	-2.527	-0.607	-1.751	-1.897	0.695		
116	Statistics (All: NDs treated as DL value)			8	-2.996	-0.607	-2.062	-2.164	0.823		
117	Statistics (All: NDs treated as DL/2 value)			8	N/A	N/A	N/A	N/A	N/A		
118	Statistics (Normal ROS Imputed Data)			8	-3.793	-0.607	-2.201	-2.164	1.027		
119											
120	Normal GOF Test Results										
121											
122				No NDs	NDs = DL	NDs = DL/2	Normal ROS				
123	Correlation Coefficient R			0.973	0.977	0.974	0.993				
124											
125				Test value	Crit. (0.05)	Conclusion with Alpha(0.05)					
126	Shapiro-Wilk (Detects Only)			0.947	0.788	Data Appear Normal					
127	Shapiro-Wilk (NDs = DL)			0.945	0.818	Data Appear Normal					
128	Shapiro-Wilk (NDs = DL/2)			0.957	0.818	Data Appear Normal					
129	Shapiro-Wilk (Normal ROS Estimates)			0.984	0.818	Data Appear Normal					
130	Lilliefors (Detects Only)			0.198	0.325	Data Appear Normal					
131	Lilliefors (NDs = DL)			0.149	0.283	Data Appear Normal					
132	Lilliefors (NDs = DL/2)			0.168	0.283	Data Appear Normal					

A	B	C	D	E	F	G	H	I	J	K	L
133	Lilliefors (Normal ROS Estimates)			0.126	0.283	Data Appear Normal					
134											
135	Gamma GOF Test Results										
136											
137		No NDs	NDs = DL	NDs = DL/2	Gamma ROS						
138	Correlation Coefficient R		N/A	N/A	N/A	N/A					
139											
140		Test value	Crit. (0.05)		Conclusion with Alpha(0.05)						
141	Anderson-Darling (Detects Only)		N/A	N/A							
142	Kolmogorov-Smirnov (Detects Only)		N/A	N/A							
143	Anderson-Darling (NDs = DL)		N/A	N/A							
144	Kolmogorov-Smirnov (NDs = DL)		N/A	N/A							
145	Anderson-Darling (NDs = DL/2)		N/A	N/A							
146	Kolmogorov-Smirnov (NDs = DL/2)		N/A	N/A							
147	Anderson-Darling (Gamma ROS Estimates)		N/A	N/A							
148	Kolmogorov-Smirnov (Gamma ROS Est.)		N/A	N/A							
149											
150	Note: Substitution methods such as DL or DL/2 are not recommended.										
151											
152	LnB (cbl - 340i)										
153											
154		Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs				
155	Raw Statistics		8	0	8	6	2	25.00%			
156											
157		Number	Minimum	Maximum	Mean	Median	SD				
158	Statistics (Non-Detects Only)		2	-2.996	-2.996	-2.996	-2.996	0			
159	Statistics (Non-Detects Only)		6	-2.513	-1.749	-2.227	-2.375	0.347			
160	Statistics (All: NDs treated as DL value)		8	-2.996	-1.749	-2.419	-2.496	0.461			
161	Statistics (All: NDs treated as DL/2 value)		8	N/A	N/A	N/A	N/A	N/A			
162	Statistics (Normal ROS Imputed Data)		8	-3.2	-1.749	-2.441	-2.496	0.497			
163											
164	Normal GOF Test Results										
165											
166		No NDs	NDs = DL	NDs = DL/2	Normal ROS						
167	Correlation Coefficient R		0.912	0.962	0.936	0.975					
168											
169		Test value	Crit. (0.05)		Conclusion with Alpha(0.05)						
170	Shapiro-Wilk (Detects Only)		0.805	0.788	Data Appear Normal						
171	Shapiro-Wilk (NDs = DL)		0.909	0.818	Data Appear Normal						
172	Shapiro-Wilk (NDs = DL/2)		0.841	0.818	Data Appear Normal						
173	Shapiro-Wilk (Normal ROS Estimates)		0.944	0.818	Data Appear Normal						
174	Lilliefors (Detects Only)		0.272	0.325	Data Appear Normal						
175	Lilliefors (NDs = DL)		0.183	0.283	Data Appear Normal						
176	Lilliefors (NDs = DL/2)		0.213	0.283	Data Appear Normal						
177	Lilliefors (Normal ROS Estimates)		0.193	0.283	Data Appear Normal						
178											
179	Gamma GOF Test Results										
180											
181		No NDs	NDs = DL	NDs = DL/2	Gamma ROS						
182	Correlation Coefficient R		N/A	N/A	N/A	N/A					
183											
184		Test value	Crit. (0.05)		Conclusion with Alpha(0.05)						
185	Anderson-Darling (Detects Only)		N/A	N/A							
186	Kolmogorov-Smirnov (Detects Only)		N/A	N/A							
187	Anderson-Darling (NDs = DL)		N/A	N/A							
188	Kolmogorov-Smirnov (NDs = DL)		N/A	N/A							
189	Anderson-Darling (NDs = DL/2)		N/A	N/A							
190	Kolmogorov-Smirnov (NDs = DL/2)		N/A	N/A							
191	Anderson-Darling (Gamma ROS Estimates)		N/A	N/A							
192	Kolmogorov-Smirnov (Gamma ROS Est.)		N/A	N/A							
193											
194	Note: Substitution methods such as DL or DL/2 are not recommended.										
195											
196	LnB (cbl - 341i)										
197											
198		Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs				
199	Raw Statistics		8	0	8	4	4	50.00%			

A	B	C	D	E	F	G	H	I	J	K	L
329		Correlation Coefficient R		0.98							
330		Shapiro Wilk Test Statistic		0.94							
331		Shapiro Wilk Critical (0.05) Value		0.818							
332		Approximate Shapiro Wilk P Value		0.794							
333		Lilliefors Test Statistic		0.156							
334		Lilliefors Critical (0.05) Value		0.283							
335	Data appear Normal at (0.05) Significance Level										
336											
337	Gamma GOF Test Results										
338											
339		Correlation Coefficient R		0.978							
340		A-D Test Statistic		0.932							
341		A-D Critical (0.05) Value		0.715							
342		K-S Test Statistic		0.326							
343		K-S Critical(0.05) Value		0.294							
344	Data not Gamma Distributed at (0.05) Significance Level										
345											
346	Lognormal GOF Test Results										
347											
348		Correlation Coefficient R		0.98							
349		Shapiro Wilk Test Statistic		0.94							
350		Shapiro Wilk Critical (0.05) Value		0.818							
351		Approximate Shapiro Wilk P Value		0.791							
352		Lilliefors Test Statistic		0.156							
353		Lilliefors Critical (0.05) Value		0.283							
354	Data appear Lognormal at (0.05) Significance Level										
355											
356	LnCa (cbl - 340i)										
357											
358	Raw Statistics										
359		Number of Valid Observations		8							
360		Number of Distinct Observations		8							
361		Minimum		6.328							
362		Maximum		6.441							
363		Mean of Raw Data		6.369							
364		Standard Deviation of Raw Data		0.0383							
365		Khat		31679							
366		Theta hat		2.0103E-4							
367		Kstar		19800							
368		Theta star		3.2165E-4							
369		Mean of Log Transformed Data		1.851							
370		Standard Deviation of Log Transformed Data		0.006							
371											
372	Normal GOF Test Results										
373											
374		Correlation Coefficient R		0.949							
375		Shapiro Wilk Test Statistic		0.9							
376		Shapiro Wilk Critical (0.05) Value		0.818							
377		Approximate Shapiro Wilk P Value		0.302							
378		Lilliefors Test Statistic		0.237							
379		Lilliefors Critical (0.05) Value		0.283							
380	Data appear Normal at (0.05) Significance Level										
381											
382	Gamma GOF Test Results										
383											
384		Correlation Coefficient R		0.95							
385		A-D Test Statistic		1.469							
386		A-D Critical (0.05) Value		0.715							
387		K-S Test Statistic		0.418							
388		K-S Critical(0.05) Value		0.294							
389	Data not Gamma Distributed at (0.05) Significance Level										
390											
391	Lognormal GOF Test Results										
392											
393		Correlation Coefficient R		0.95							
394		Shapiro Wilk Test Statistic		0.901							

A	B	C	D	E	F	G	H	I	J	K	L
395	Shapiro Wilk Critical (0.05) Value			0.818							
396	Approximate Shapiro Wilk P Value			0.311							
397	Lilliefors Test Statistic			0.235							
398	Lilliefors Critical (0.05) Value			0.283							
399	Data appear Lognormal at (0.05) Significance Level										
400											
401	LnCa (cbl - 341i)										
402											
403	Raw Statistics										
404	Number of Valid Observations			8							
405	Number of Distinct Observations			8							
406	Minimum			6.72							
407	Maximum			6.856							
408	Mean of Raw Data			6.776							
409	Standard Deviation of Raw Data			0.0438							
410	Khat			27364							
411	Theta hat			2.4761E-4							
412	Kstar			17103							
413	Theta star			3.9617E-4							
414	Mean of Log Transformed Data			1.913							
415	Standard Deviation of Log Transformed Data			0.00646							
416											
417	Normal GOF Test Results										
418											
419	Correlation Coefficient R			0.971							
420	Shapiro Wilk Test Statistic			0.945							
421	Shapiro Wilk Critical (0.05) Value			0.818							
422	Approximate Shapiro Wilk P Value			0.651							
423	Lilliefors Test Statistic			0.189							
424	Lilliefors Critical (0.05) Value			0.283							
425	Data appear Normal at (0.05) Significance Level										
426											
427	Gamma GOF Test Results										
428											
429	Correlation Coefficient R			0.972							
430	A-D Test Statistic			1.233							
431	A-D Critical (0.05) Value			0.715							
432	K-S Test Statistic			0.41							
433	K-S Critical(0.05) Value			0.294							
434	Data not Gamma Distributed at (0.05) Significance Level										
435											
436	Lognormal GOF Test Results										
437											
438	Correlation Coefficient R			0.972							
439	Shapiro Wilk Test Statistic			0.947							
440	Shapiro Wilk Critical (0.05) Value			0.818							
441	Approximate Shapiro Wilk P Value			0.662							
442	Lilliefors Test Statistic			0.188							
443	Lilliefors Critical (0.05) Value			0.283							
444	Data appear Lognormal at (0.05) Significance Level										
445											
446	LnCl (cbl - 301i)										
447											
448	Raw Statistics										
449	Number of Valid Observations			8							
450	Number of Distinct Observations			8							
451	Minimum			7.678							
452	Maximum			8.071							
453	Mean of Raw Data			7.792							
454	Standard Deviation of Raw Data			0.121							
455	Khat			4786							
456	Theta hat			0.00163							
457	Kstar			2991							
458	Theta star			0.00261							
459	Mean of Log Transformed Data			2.053							
460	Standard Deviation of Log Transformed Data			0.0154							
461											

A	B	C	D	E	F	G	H	I	J	K	L
462	Normal GOF Test Results										
463											
464	Correlation Coefficient R		0.867								
465	Shapiro Wilk Test Statistic		0.777								
466	Shapiro Wilk Critical (0.05) Value		0.818								
467	Approximate Shapiro Wilk P Value		0.01								
468	Lilliefors Test Statistic		0.272								
469	Lilliefors Critical (0.05) Value		0.283								
470	Data appear Approximate Normal at (0.05) Significance Level										
471											
472	Gamma GOF Test Results										
473											
474	Correlation Coefficient R		0.873								
475	A-D Test Statistic		1.01								
476	A-D Critical (0.05) Value		0.715								
477	K-S Test Statistic		0.324								
478	K-S Critical(0.05) Value		0.294								
479	Data not Gamma Distributed at (0.05) Significance Level										
480											
481	Lognormal GOF Test Results										
482											
483	Correlation Coefficient R		0.87								
484	Shapiro Wilk Test Statistic		0.782								
485	Shapiro Wilk Critical (0.05) Value		0.818								
486	Approximate Shapiro Wilk P Value		0.0116								
487	Lilliefors Test Statistic		0.268								
488	Lilliefors Critical (0.05) Value		0.283								
489	Data appear Approximate_Lognormal at (0.05) Significance Level										
490											
491	LnCl (cbl - 302i)										
492											
493	Raw Statistics										
494	Number of Valid Observations		8								
495	Number of Distinct Observations		8								
496	Minimum		7.621								
497	Maximum		7.71								
498	Mean of Raw Data		7.667								
499	Standard Deviation of Raw Data		0.0346								
500	Khat		55923								
501	Theta hat		1.3710E-4								
502	Kstar		34952								
503	Theta star		2.1935E-4								
504	Mean of Log Transformed Data		2.037								
505	Standard Deviation of Log Transformed Data		0.00452								
506											
507	Normal GOF Test Results										
508											
509	Correlation Coefficient R		0.97								
510	Shapiro Wilk Test Statistic		0.915								
511	Shapiro Wilk Critical (0.05) Value		0.818								
512	Approximate Shapiro Wilk P Value		0.602								
513	Lilliefors Test Statistic		0.174								
514	Lilliefors Critical (0.05) Value		0.283								
515	Data appear Normal at (0.05) Significance Level										
516											
517	Gamma GOF Test Results										
518											
519	Correlation Coefficient R		0.967								
520	A-D Test Statistic		1.203								
521	A-D Critical (0.05) Value		0.715								
522	K-S Test Statistic		0.338								
523	K-S Critical(0.05) Value		0.294								
524	Data not Gamma Distributed at (0.05) Significance Level										
525											
526	Lognormal GOF Test Results										
527											
528	Correlation Coefficient R		0.97								

A	B	C	D	E	F	G	H	I	J	K	L
529	Shapiro Wilk Test Statistic			0.915							
530	Shapiro Wilk Critical (0.05) Value			0.818							
531	Approximate Shapiro Wilk P Value			0.6							
532	Lilliefors Test Statistic			0.174							
533	Lilliefors Critical (0.05) Value			0.283							
534	Data appear Lognormal at (0.05) Significance Level										
535											
536	LnCl (cbl - 306i)										
537											
538		Raw Statistics	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs			
539			8	0	8	0	8	100.00%			
540											
541	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!										
542	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!										
543	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).										
544											
545	The data set for variable LnCl (cbl - 306i) was not processed!										
546											
547											
548											
549	LnCl (cbl - 308i)										
550											
551	Raw Statistics										
552	Number of Valid Observations			8							
553	Number of Distinct Observations			7							
554	Minimum			7.766							
555	Maximum			7.962							
556	Mean of Raw Data			7.884							
557	Standard Deviation of Raw Data			0.0623							
558	Khat			18235							
559	Theta hat			4.3238E-4							
560	Kstar			11397							
561	Theta star			6.9180E-4							
562	Mean of Log Transformed Data			2.065							
563	Standard Deviation of Log Transformed Data			0.00792							
564											
565	Normal GOF Test Results										
566											
567	Correlation Coefficient R			0.961							
568	Shapiro Wilk Test Statistic			0.93							
569	Shapiro Wilk Critical (0.05) Value			0.818							
570	Approximate Shapiro Wilk P Value			0.475							
571	Lilliefors Test Statistic			0.192							
572	Lilliefors Critical (0.05) Value			0.283							
573	Data appear Normal at (0.05) Significance Level										
574											
575	Gamma GOF Test Results										
576											
577	Correlation Coefficient R			0.961							
578	A-D Test Statistic			0.443							
579	A-D Critical (0.05) Value			0.715							
580	K-S Test Statistic			0.205							
581	K-S Critical(0.05) Value			0.294							
582	Data appear Gamma Distributed at (0.05) Significance Level										
583											
584	Lognormal GOF Test Results										
585											
586	Correlation Coefficient R			0.96							
587	Shapiro Wilk Test Statistic			0.928							
588	Shapiro Wilk Critical (0.05) Value			0.818							
589	Approximate Shapiro Wilk P Value			0.462							
590	Lilliefors Test Statistic			0.193							
591	Lilliefors Critical (0.05) Value			0.283							
592	Data appear Lognormal at (0.05) Significance Level										
593											

A	B	C	D	E	F	G	H	I	J	K	L
594	LnCl (cbl - 340i)										
595											
596	Raw Statistics										
597	Number of Valid Observations		8								
598	Number of Distinct Observations		7								
599	Minimum		7.635								
600	Maximum		7.832								
601	Mean of Raw Data		7.751								
602	Standard Deviation of Raw Data		0.057								
603	Khat		21056								
604	Theta hat		3.6810E-4								
605	Kstar		13160								
606	Theta star		5.8895E-4								
607	Mean of Log Transformed Data		2.048								
608	Standard Deviation of Log Transformed Data		0.00737								
609											
610	Normal GOF Test Results										
611											
612	Correlation Coefficient R		0.937								
613	Shapiro Wilk Test Statistic		0.904								
614	Shapiro Wilk Critical (0.05) Value		0.818								
615	Approximate Shapiro Wilk P Value		0.197								
616	Lilliefors Test Statistic		0.21								
617	Lilliefors Critical (0.05) Value		0.283								
618	Data appear Normal at (0.05) Significance Level										
619											
620	Gamma GOF Test Results										
621											
622	Correlation Coefficient R		0.94								
623	A-D Test Statistic		0.456								
624	A-D Critical (0.05) Value		0.715								
625	K-S Test Statistic		0.212								
626	K-S Critical(0.05) Value		0.294								
627	Data appear Gamma Distributed at (0.05) Significance Level										
628											
629	Lognormal GOF Test Results										
630											
631	Correlation Coefficient R		0.936								
632	Shapiro Wilk Test Statistic		0.902								
633	Shapiro Wilk Critical (0.05) Value		0.818								
634	Approximate Shapiro Wilk P Value		0.19								
635	Lilliefors Test Statistic		0.21								
636	Lilliefors Critical (0.05) Value		0.283								
637	Data appear Lognormal at (0.05) Significance Level										
638											
639	LnCl (cbl - 341i)										
640											
641	Raw Statistics										
642	Number of Valid Observations		8								
643	Number of Distinct Observations		8								
644	Minimum		7.378								
645	Maximum		7.601								
646	Mean of Raw Data		7.504								
647	Standard Deviation of Raw Data		0.0743								
648	Khat		11622								
649	Theta hat		6.4562E-4								
650	Kstar		7264								
651	Theta star		0.00103								
652	Mean of Log Transformed Data		2.015								
653	Standard Deviation of Log Transformed Data		0.00992								
654											
655	Normal GOF Test Results										
656											
657	Correlation Coefficient R		0.986								
658	Shapiro Wilk Test Statistic		0.967								
659	Shapiro Wilk Critical (0.05) Value		0.818								
660	Approximate Shapiro Wilk P Value		0.912								

A	B	C	D	E	F	G	H	I	J	K	L
661			Lilliefors Test Statistic	0.12							
662			Lilliefors Critical (0.05) Value	0.283							
663	Data appear Normal at (0.05) Significance Level										
664											
665	Gamma GOF Test Results										
666											
667			Correlation Coefficient R	0.986							
668			A-D Test Statistic	0.316							
669			A-D Critical (0.05) Value	0.715							
670			K-S Test Statistic	0.221							
671			K-S Critical(0.05) Value	0.294							
672	Data appear Gamma Distributed at (0.05) Significance Level										
673											
674	Lognormal GOF Test Results										
675											
676			Correlation Coefficient R	0.986							
677			Shapiro Wilk Test Statistic	0.966							
678			Shapiro Wilk Critical (0.05) Value	0.818							
679			Approximate Shapiro Wilk P Value	0.908							
680			Lilliefors Test Statistic	0.121							
681			Lilliefors Critical (0.05) Value	0.283							
682	Data appear Lognormal at (0.05) Significance Level										
683											
684	LnF (cbl - 301i)										
685											
686			Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs			
687			Raw Statistics	8	0	8	1	7	87.50%		
688	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!										
689	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).										
690											
691											
692	The data set for variable LnF (cbl - 301i) was not processed!										
693											
694											
695											
696	LnF (cbl - 302i)										
697											
698			Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs			
699			Raw Statistics	8	0	8	1	7	87.50%		
700	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!										
701	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).										
702											
703											
704	The data set for variable LnF (cbl - 302i) was not processed!										
705											
706											
707											
708	LnF (cbl - 306i)										
709											
710	Raw Statistics										
711			Number of Valid Observations	8							
712			Number of Distinct Observations	8							
713			Minimum	0							
714			Maximum	2.534							
715			Mean of Raw Data	0.888							
716			Standard Deviation of Raw Data	0.751							
717	Data contains values <= 0										
718	Data not gamma or lognormal										
719											
720	Normal GOF Test Results										
721											
722			Correlation Coefficient R	0.906							
723			Shapiro Wilk Test Statistic	0.848							

A	B	C	D	E	F	G	H	I	J	K	L
724	Shapiro Wilk Critical (0.05) Value			0.818							
725	Approximate Shapiro Wilk P Value			0.054							
726	Lilliefors Test Statistic			0.28							
727	Lilliefors Critical (0.05) Value			0.283							
728	Data appear Normal at (0.05) Significance Level										
729											
730	LnF (cbl - 308i)										
731											
732	Raw Statistics										
733	Number of Valid Observations			8							
734	Number of Distinct Observations			8							
735	Minimum			0.285							
736	Maximum			2.203							
737	Mean of Raw Data			0.731							
738	Standard Deviation of Raw Data			0.617							
739	Khat			2.634							
740	Theta hat			0.278							
741	Kstar			1.73							
742	Theta star			0.423							
743	Mean of Log Transformed Data			-0.515							
744	Standard Deviation of Log Transformed Data			0.614							
745											
746	Normal GOF Test Results										
747											
748	Correlation Coefficient R			0.799							
749	Shapiro Wilk Test Statistic			0.666							
750	Shapiro Wilk Critical (0.05) Value			0.818							
751	Approximate Shapiro Wilk P Value			6.4279E-4							
752	Lilliefors Test Statistic			0.31							
753	Lilliefors Critical (0.05) Value			0.283							
754	Data not Normal at (0.05) Significance Level										
755											
756	Gamma GOF Test Results										
757											
758	Correlation Coefficient R			0.91							
759	A-D Test Statistic			0.717							
760	A-D Critical (0.05) Value			0.722							
761	K-S Test Statistic			0.249							
762	K-S Critical(0.05) Value			0.297							
763	Data appear Gamma Distributed at (0.05) Significance Level										
764											
765	Lognormal GOF Test Results										
766											
767	Correlation Coefficient R			0.931							
768	Shapiro Wilk Test Statistic			0.887							
769	Shapiro Wilk Critical (0.05) Value			0.818							
770	Approximate Shapiro Wilk P Value			0.15							
771	Lilliefors Test Statistic			0.204							
772	Lilliefors Critical (0.05) Value			0.283							
773	Data appear Lognormal at (0.05) Significance Level										
774											
775	LnF (cbl - 340i)										
776											
777	Raw Statistics										
778	Number of Valid Observations			8							
779	Number of Distinct Observations			8							
780	Minimum			-0.174							
781	Maximum			2.133							
782	Mean of Raw Data			0.354							
783	Standard Deviation of Raw Data			0.765							
784	Data contains values <= 0										
785	Data not gamma or lognormal										
786											
787	Normal GOF Test Results										
788											
789	Correlation Coefficient R			0.826							
790	Shapiro Wilk Test Statistic			0.701							

A	B	C	D	E	F	G	H	I	J	K	L
791	Shapiro Wilk Critical (0.05) Value			0.818							
792	Approximate Shapiro Wilk P Value			0.00179							
793	Lilliefors Test Statistic			0.314							
794	Lilliefors Critical (0.05) Value			0.283							
795	Data not Normal at (0.05) Significance Level										
796											
797	Non-parametric GOF Test Results										
798											
799	Data do not follow a discernible distribution at (0.05) Level of Significance										
800											
801	LnF (cbl - 341i)										
802											
803		Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs				
804	Raw Statistics	8	0	8	0	8	100.00%				
805											
806	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!										
807	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!										
808	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).										
809											
810	The data set for variable LnF (cbl - 341i) was not processed!										
811											
812											
813											
814	LnS (cbl - 301i)										
815											
816	Raw Statistics										
817	Number of Valid Observations			8							
818	Number of Distinct Observations			7							
819	Minimum			5.74							
820	Maximum			6.19							
821	Mean of Raw Data			5.869							
822	Standard Deviation of Raw Data			0.142							
823	Khat			2000							
824	Theta hat			0.00293							
825	Kstar			1250							
826	Theta star			0.00469							
827	Mean of Log Transformed Data			1.769							
828	Standard Deviation of Log Transformed Data			0.0238							
829											
830	Normal GOF Test Results										
831											
832	Correlation Coefficient R			0.852							
833	Shapiro Wilk Test Statistic			0.75							
834	Shapiro Wilk Critical (0.05) Value			0.818							
835	Approximate Shapiro Wilk P Value			0.00533							
836	Lilliefors Test Statistic			0.344							
837	Lilliefors Critical (0.05) Value			0.283							
838	Data not Normal at (0.05) Significance Level										
839											
840	Gamma GOF Test Results										
841											
842	Correlation Coefficient R			0.86							
843	A-D Test Statistic			0.992							
844	A-D Critical (0.05) Value			0.715							
845	K-S Test Statistic			0.355							
846	K-S Critical(0.05) Value			0.294							
847	Data not Gamma Distributed at (0.05) Significance Level										
848											
849	Lognormal GOF Test Results										
850											
851	Correlation Coefficient R			0.856							
852	Shapiro Wilk Test Statistic			0.757							
853	Shapiro Wilk Critical (0.05) Value			0.818							
854	Approximate Shapiro Wilk P Value			0.00638							
855	Lilliefors Test Statistic			0.342							

A	B	C	D	E	F	G	H	I	J	K	L
856	Lilliefors Critical (0.05) Value				0.283						
857	Data not Lognormal at (0.05) Significance Level										
858											
859	Non-parametric GOF Test Results										
860											
861	Data do not follow a discernible distribution at (0.05) Level of Significance										
862											
863	LnS (cbl - 302i)										
864											
865		Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs				
866	Raw Statistics	8	0	8	0	8	100.00%				
867											
868	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!										
869	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!										
870	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).										
871											
872	The data set for variable LnS (cbl - 302i) was not processed!										
873											
874											
875											
876	LnS (cbl - 306i)										
877											
878		Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs				
879	Raw Statistics	8	0	8	0	8	100.00%				
880											
881	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!										
882	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!										
883	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).										
884											
885	The data set for variable LnS (cbl - 306i) was not processed!										
886											
887											
888											
889	LnS (cbl - 308i)										
890											
891	Raw Statistics										
892	Number of Valid Observations	8									
893	Number of Distinct Observations	6									
894	Minimum	7.185									
895	Maximum	7.365									
896	Mean of Raw Data	7.3									
897	Standard Deviation of Raw Data	0.0587									
898	Khat	17597									
899	Theta hat	4.1484E-4									
900	Kstar	10998									
901	Theta star	6.6373E-4									
902	Mean of Log Transformed Data	1.988									
903	Standard Deviation of Log Transformed Data	0.00807									
904											
905	Normal GOF Test Results										
906											
907	Correlation Coefficient R	0.951									
908	Shapiro Wilk Test Statistic	0.908									
909	Shapiro Wilk Critical (0.05) Value	0.818									
910	Approximate Shapiro Wilk P Value	0.326									
911	Lilliefors Test Statistic	0.203									
912	Lilliefors Critical (0.05) Value	0.283									
913	Data appear Normal at (0.05) Significance Level										
914											
915	Gamma GOF Test Results										
916											
917	Correlation Coefficient R	0.951									
918	A-D Test Statistic	0.356									

A	B	C	D	E	F	G	H	I	J	K	L
919			A-D Critical (0.05) Value	0.715							
920			K-S Test Statistic	0.174							
921			K-S Critical(0.05) Value	0.294							
922	Data appear Gamma Distributed at (0.05) Significance Level										
923											
924	Lognormal GOF Test Results										
925											
926			Correlation Coefficient R	0.95							
927			Shapiro Wilk Test Statistic	0.906							
928			Shapiro Wilk Critical (0.05) Value	0.818							
929			Approximate Shapiro Wilk P Value	0.314							
930			Lilliefors Test Statistic	0.204							
931			Lilliefors Critical (0.05) Value	0.283							
932	Data appear Lognormal at (0.05) Significance Level										
933											
934	LnS (cbl - 340i)										
935											
936	Raw Statistics										
937			Number of Valid Observations	8							
938			Number of Distinct Observations	8							
939			Minimum	6.347							
940			Maximum	6.572							
941			Mean of Raw Data	6.478							
942			Standard Deviation of Raw Data	0.0699							
943			Khat	9767							
944			Theta hat	6.6325E-4							
945			Kstar	6105							
946			Theta star	0.00106							
947			Mean of Log Transformed Data	1.868							
948			Standard Deviation of Log Transformed Data	0.0108							
949											
950	Normal GOF Test Results										
951											
952			Correlation Coefficient R	0.978							
953			Shapiro Wilk Test Statistic	0.965							
954			Shapiro Wilk Critical (0.05) Value	0.818							
955			Approximate Shapiro Wilk P Value	0.796							
956			Lilliefors Test Statistic	0.146							
957			Lilliefors Critical (0.05) Value	0.283							
958	Data appear Normal at (0.05) Significance Level										
959											
960	Gamma GOF Test Results										
961											
962			Correlation Coefficient R	0.979							
963			A-D Test Statistic	0.226							
964			A-D Critical (0.05) Value	0.715							
965			K-S Test Statistic	0.156							
966			K-S Critical(0.05) Value	0.294							
967	Data appear Gamma Distributed at (0.05) Significance Level										
968											
969	Lognormal GOF Test Results										
970											
971			Correlation Coefficient R	0.977							
972			Shapiro Wilk Test Statistic	0.963							
973			Shapiro Wilk Critical (0.05) Value	0.818							
974			Approximate Shapiro Wilk P Value	0.776							
975			Lilliefors Test Statistic	0.147							
976			Lilliefors Critical (0.05) Value	0.283							
977	Data appear Lognormal at (0.05) Significance Level										
978											
979	LnS (cbl - 341i)										
980											
981	Raw Statistics										
982			Number of Valid Observations	8							
983			Number of Distinct Observations	8							
984			Minimum	5.727							
985			Maximum	6.038							

A	B	C	D	E	F	G	H	I	J	K	L
986			Mean of Raw Data	5.888							
987			Standard Deviation of Raw Data	0.0993							
988			Khat	4022							
989			Theta hat	0.00146							
990			Kstar	2514							
991			Theta star	0.00234							
992			Mean of Log Transformed Data	1.773							
993			Standard Deviation of Log Transformed Data	0.0169							
994											
995			Normal GOF Test Results								
996											
997			Correlation Coefficient R	0.986							
998			Shapiro Wilk Test Statistic	0.974							
999			Shapiro Wilk Critical (0.05) Value	0.818							
1000			Approximate Shapiro Wilk P Value	0.916							
1001			Lilliefors Test Statistic	0.159							
1002			Lilliefors Critical (0.05) Value	0.283							
1003			Data appear Normal at (0.05) Significance Level								
1004											
1005			Gamma GOF Test Results								
1006											
1007			Correlation Coefficient R	0.987							
1008			A-D Test Statistic	0.208							
1009			A-D Critical (0.05) Value	0.715							
1010			K-S Test Statistic	0.151							
1011			K-S Critical(0.05) Value	0.294							
1012			Data appear Gamma Distributed at (0.05) Significance Level								
1013											
1014			Lognormal GOF Test Results								
1015											
1016			Correlation Coefficient R	0.986							
1017			Shapiro Wilk Test Statistic	0.974							
1018			Shapiro Wilk Critical (0.05) Value	0.818							
1019			Approximate Shapiro Wilk P Value	0.917							
1020			Lilliefors Test Statistic	0.157							
1021			Lilliefors Critical (0.05) Value	0.283							
1022			Data appear Lognormal at (0.05) Significance Level								
1023											
1024			LnTDS (cbl - 301i)								
1025											
1026			Raw Statistics								
1027			Number of Valid Observations	8							
1028			Number of Distinct Observations	8							
1029			Minimum	8.364							
1030			Maximum	8.79							
1031			Mean of Raw Data	8.586							
1032			Standard Deviation of Raw Data	0.18							
1033			Khat	2607							
1034			Theta hat	0.00329							
1035			Kstar	1629							
1036			Theta star	0.00527							
1037			Mean of Log Transformed Data	2.15							
1038			Standard Deviation of Log Transformed Data	0.0209							
1039											
1040			Normal GOF Test Results								
1041											
1042			Correlation Coefficient R	0.945							
1043			Shapiro Wilk Test Statistic	0.86							
1044			Shapiro Wilk Critical (0.05) Value	0.818							
1045			Approximate Shapiro Wilk P Value	0.231							
1046			Lilliefors Test Statistic	0.242							
1047			Lilliefors Critical (0.05) Value	0.283							
1048			Data appear Normal at (0.05) Significance Level								
1049											
1050			Gamma GOF Test Results								
1051											
1052			Correlation Coefficient R	0.94							

A	B	C	D	E	F	G	H	I	J	K	L
1053			A-D Test Statistic	0.586							
1054			A-D Critical (0.05) Value	0.715							
1055			K-S Test Statistic	0.258							
1056			K-S Critical(0.05) Value	0.294							
1057	Data appear Gamma Distributed at (0.05) Significance Level										
1058											
1059	Lognormal GOF Test Results										
1060											
1061			Correlation Coefficient R	0.944							
1062			Shapiro Wilk Test Statistic	0.86							
1063			Shapiro Wilk Critical (0.05) Value	0.818							
1064			Approximate Shapiro Wilk P Value	0.229							
1065			Lilliefors Test Statistic	0.244							
1066			Lilliefors Critical (0.05) Value	0.283							
1067	Data appear Lognormal at (0.05) Significance Level										
1068											
1069	LnTDS (cbl - 302i)										
1070											
1071	Raw Statistics										
1072			Number of Valid Observations	8							
1073			Number of Distinct Observations	8							
1074			Minimum	8.345							
1075			Maximum	8.832							
1076			Mean of Raw Data	8.643							
1077			Standard Deviation of Raw Data	0.157							
1078			Khat	3443							
1079			Theta hat	0.00251							
1080			Kstar	2152							
1081			Theta star	0.00402							
1082			Mean of Log Transformed Data	2.157							
1083			Standard Deviation of Log Transformed Data	0.0183							
1084											
1085	Normal GOF Test Results										
1086											
1087			Correlation Coefficient R	0.968							
1088			Shapiro Wilk Test Statistic	0.941							
1089			Shapiro Wilk Critical (0.05) Value	0.818							
1090			Approximate Shapiro Wilk P Value	0.602							
1091			Lilliefors Test Statistic	0.164							
1092			Lilliefors Critical (0.05) Value	0.283							
1093	Data appear Normal at (0.05) Significance Level										
1094											
1095	Gamma GOF Test Results										
1096											
1097			Correlation Coefficient R	0.968							
1098			A-D Test Statistic	0.274							
1099			A-D Critical (0.05) Value	0.715							
1100			K-S Test Statistic	0.179							
1101			K-S Critical(0.05) Value	0.294							
1102	Data appear Gamma Distributed at (0.05) Significance Level										
1103											
1104	Lognormal GOF Test Results										
1105											
1106			Correlation Coefficient R	0.967							
1107			Shapiro Wilk Test Statistic	0.938							
1108			Shapiro Wilk Critical (0.05) Value	0.818							
1109			Approximate Shapiro Wilk P Value	0.569							
1110			Lilliefors Test Statistic	0.164							
1111			Lilliefors Critical (0.05) Value	0.283							
1112	Data appear Lognormal at (0.05) Significance Level										
1113											
1114	LnTDS (cbl - 306i)										
1115											
1116	Raw Statistics										
1117			Number of Valid Observations	8							
1118			Number of Distinct Observations	7							
1119			Minimum	6.066							

A	B	C	D	E	F	G	H	I	J	K	L
1120				Maximum	7.286						
1121				Mean of Raw Data	6.98						
1122				Standard Deviation of Raw Data	0.417						
1123				Khat	301.4						
1124				Theta hat	0.0232						
1125				Kstar	188.4						
1126				Theta star	0.037						
1127				Mean of Log Transformed Data	1.941						
1128				Standard Deviation of Log Transformed Data	0.0626						
1129											
1130				Normal GOF Test Results							
1131											
1132				Correlation Coefficient R	0.857						
1133				Shapiro Wilk Test Statistic	0.745						
1134				Shapiro Wilk Critical (0.05) Value	0.818						
1135				Approximate Shapiro Wilk P Value	0.00624						
1136				Lilliefors Test Statistic	0.314						
1137				Lilliefors Critical (0.05) Value	0.283						
1138				Data not Normal at (0.05) Significance Level							
1139											
1140				Gamma GOF Test Results							
1141											
1142				Correlation Coefficient R	0.847						
1143				A-D Test Statistic	1.003						
1144				A-D Critical (0.05) Value	0.715						
1145				K-S Test Statistic	0.324						
1146				K-S Critical(0.05) Value	0.294						
1147				Data not Gamma Distributed at (0.05) Significance Level							
1148											
1149				Lognormal GOF Test Results							
1150											
1151				Correlation Coefficient R	0.848						
1152				Shapiro Wilk Test Statistic	0.732						
1153				Shapiro Wilk Critical (0.05) Value	0.818						
1154				Approximate Shapiro Wilk P Value	0.00433						
1155				Lilliefors Test Statistic	0.322						
1156				Lilliefors Critical (0.05) Value	0.283						
1157				Data not Lognormal at (0.05) Significance Level							
1158											
1159				Non-parametric GOF Test Results							
1160											
1161				Data do not follow a discernible distribution at (0.05) Level of Significance							
1162											
1163				LnTDS (cbl - 308i)							
1164											
1165				Raw Statistics							
1166				Number of Valid Observations	8						
1167				Number of Distinct Observations	8						
1168				Minimum	8.719						
1169				Maximum	9.23						
1170				Mean of Raw Data	8.923						
1171				Standard Deviation of Raw Data	0.188						
1172				Khat	2584						
1173				Theta hat	0.00345						
1174				Kstar	1615						
1175				Theta star	0.00552						
1176				Mean of Log Transformed Data	2.188						
1177				Standard Deviation of Log Transformed Data	0.021						
1178											
1179				Normal GOF Test Results							
1180											
1181				Correlation Coefficient R	0.948						
1182				Shapiro Wilk Test Statistic	0.885						
1183				Shapiro Wilk Critical (0.05) Value	0.818						
1184				Approximate Shapiro Wilk P Value	0.281						
1185				Lilliefors Test Statistic	0.194						

A	B	C	D	E	F	G	H	I	J	K	L
1253	LnTDS (cbl - 341i)										
1254											
1255	Raw Statistics										
1256	Number of Valid Observations		8								
1257	Number of Distinct Observations		8								
1258	Minimum		8.331								
1259	Maximum		8.689								
1260	Mean of Raw Data		8.477								
1261	Standard Deviation of Raw Data		0.114								
1262	Khat		6315								
1263	Theta hat		0.00134								
1264	Kstar		3947								
1265	Theta star		0.00215								
1266	Mean of Log Transformed Data		2.137								
1267	Standard Deviation of Log Transformed Data		0.0134								
1268											
1269	Normal GOF Test Results										
1270											
1271	Correlation Coefficient R		0.97								
1272	Shapiro Wilk Test Statistic		0.945								
1273	Shapiro Wilk Critical (0.05) Value		0.818								
1274	Approximate Shapiro Wilk P Value		0.629								
1275	Lilliefors Test Statistic		0.17								
1276	Lilliefors Critical (0.05) Value		0.283								
1277	Data appear Normal at (0.05) Significance Level										
1278											
1279	Gamma GOF Test Results										
1280											
1281	Correlation Coefficient R		0.971								
1282	A-D Test Statistic		0.295								
1283	A-D Critical (0.05) Value		0.715								
1284	K-S Test Statistic		0.156								
1285	K-S Critical(0.05) Value		0.294								
1286	Data appear Gamma Distributed at (0.05) Significance Level										
1287											
1288	Lognormal GOF Test Results										
1289											
1290	Correlation Coefficient R		0.971								
1291	Shapiro Wilk Test Statistic		0.947								
1292	Shapiro Wilk Critical (0.05) Value		0.818								
1293	Approximate Shapiro Wilk P Value		0.648								
1294	Lilliefors Test Statistic		0.168								
1295	Lilliefors Critical (0.05) Value		0.283								
1296	Data appear Lognormal at (0.05) Significance Level										
1297											
1298	LnPH (cbl - 301i)										
1299											
1300	Raw Statistics										
1301	Number of Valid Observations		8								
1302	Number of Distinct Observations		6								
1303	Minimum		1.783								
1304	Maximum		1.845								
1305	Mean of Raw Data		1.818								
1306	Standard Deviation of Raw Data		0.0265								
1307	Khat		5375								
1308	Theta hat		3.3830E-4								
1309	Kstar		3359								
1310	Theta star		5.4127E-4								
1311	Mean of Log Transformed Data		0.598								
1312	Standard Deviation of Log Transformed Data		0.0146								
1313											
1314	Normal GOF Test Results										
1315											
1316	Correlation Coefficient R		0.917								
1317	Shapiro Wilk Test Statistic		0.814								
1318	Shapiro Wilk Critical (0.05) Value		0.818								
1319	Approximate Shapiro Wilk P Value		0.0744								

A	B	C	D	E	F	G	H	I	J	K	L
1320			Lilliefors Test Statistic	0.286							
1321			Lilliefors Critical (0.05) Value	0.283							
1322	Data not Normal at (0.05) Significance Level										
1323											
1324	Gamma GOF Test Results										
1325											
1326			Correlation Coefficient R	0.913							
1327			A-D Test Statistic	0.811							
1328			A-D Critical (0.05) Value	0.715							
1329			K-S Test Statistic	0.298							
1330			K-S Critical(0.05) Value	0.294							
1331	Data not Gamma Distributed at (0.05) Significance Level										
1332											
1333	Lognormal GOF Test Results										
1334											
1335			Correlation Coefficient R	0.917							
1336			Shapiro Wilk Test Statistic	0.812							
1337			Shapiro Wilk Critical (0.05) Value	0.818							
1338			Approximate Shapiro Wilk P Value	0.0723							
1339			Lilliefors Test Statistic	0.288							
1340			Lilliefors Critical (0.05) Value	0.283							
1341	Data not Lognormal at (0.05) Significance Level										
1342											
1343	Non-parametric GOF Test Results										
1344											
	Data do not follow a discernible distribution at (0.05) Level of Significance										
1345											
1346											
1347	LnPH (cbl - 302i)										
1348											
1349	Raw Statistics										
1350			Number of Valid Observations	8							
1351			Number of Distinct Observations	8							
1352			Minimum	1.597							
1353			Maximum	2.048							
1354			Mean of Raw Data	1.764							
1355			Standard Deviation of Raw Data	0.145							
1356			Khat	176.2							
1357			Theta hat	0.01							
1358			Kstar	110.2							
1359			Theta star	0.016							
1360			Mean of Log Transformed Data	0.565							
1361			Standard Deviation of Log Transformed Data	0.0799							
1362											
1363	Normal GOF Test Results										
1364											
1365			Correlation Coefficient R	0.954							
1366			Shapiro Wilk Test Statistic	0.915							
1367			Shapiro Wilk Critical (0.05) Value	0.818							
1368			Approximate Shapiro Wilk P Value	0.364							
1369			Lilliefors Test Statistic	0.204							
1370			Lilliefors Critical (0.05) Value	0.283							
1371	Data appear Normal at (0.05) Significance Level										
1372											
1373	Gamma GOF Test Results										
1374											
1375			Correlation Coefficient R	0.962							
1376			A-D Test Statistic	0.337							
1377			A-D Critical (0.05) Value	0.715							
1378			K-S Test Statistic	0.214							
1379			K-S Critical(0.05) Value	0.294							
1380	Data appear Gamma Distributed at (0.05) Significance Level										
1381											
1382	Lognormal GOF Test Results										
1383											
1384			Correlation Coefficient R	0.963							
1385			Shapiro Wilk Test Statistic	0.931							

A	B	C	D	E	F	G	H	I	J	K	L
1386	Shapiro Wilk Critical (0.05) Value			0.818							
1387	Approximate Shapiro Wilk P Value			0.5							
1388	Lilliefors Test Statistic			0.201							
1389	Lilliefors Critical (0.05) Value			0.283							
1390	Data appear Lognormal at (0.05) Significance Level										
1391											
1392	LnPH (cbl - 306i)										
1393											
1394	Raw Statistics										
1395	Number of Valid Observations			8							
1396	Number of Distinct Observations			8							
1397	Minimum			1.484							
1398	Maximum			1.987							
1399	Mean of Raw Data			1.854							
1400	Standard Deviation of Raw Data			0.17							
1401	Khat			124.2							
1402	Theta hat			0.0149							
1403	Kstar			77.68							
1404	Theta star			0.0239							
1405	Mean of Log Transformed Data			0.614							
1406	Standard Deviation of Log Transformed Data			0.0984							
1407											
1408	Normal GOF Test Results										
1409											
1410	Correlation Coefficient R			0.854							
1411	Shapiro Wilk Test Statistic			0.743							
1412	Shapiro Wilk Critical (0.05) Value			0.818							
1413	Approximate Shapiro Wilk P Value			0.00569							
1414	Lilliefors Test Statistic			0.357							
1415	Lilliefors Critical (0.05) Value			0.283							
1416	Data not Normal at (0.05) Significance Level										
1417											
1418	Gamma GOF Test Results										
1419											
1420	Correlation Coefficient R			0.838							
1421	A-D Test Statistic			1.057							
1422	A-D Critical (0.05) Value			0.715							
1423	K-S Test Statistic			0.37							
1424	K-S Critical(0.05) Value			0.294							
1425	Data not Gamma Distributed at (0.05) Significance Level										
1426											
1427	Lognormal GOF Test Results										
1428											
1429	Correlation Coefficient R			0.841							
1430	Shapiro Wilk Test Statistic			0.722							
1431	Shapiro Wilk Critical (0.05) Value			0.818							
1432	Approximate Shapiro Wilk P Value			0.00325							
1433	Lilliefors Test Statistic			0.364							
1434	Lilliefors Critical (0.05) Value			0.283							
1435	Data not Lognormal at (0.05) Significance Level										
1436											
1437	Non-parametric GOF Test Results										
1438											
1439	Data do not follow a discernible distribution at (0.05) Level of Significance										
1440											
1441	LnPH (cbl - 308i)										
1442											
1443	Raw Statistics										
1444	Number of Valid Observations			8							
1445	Number of Distinct Observations			6							
1446	Minimum			1.712							
1447	Maximum			1.921							
1448	Mean of Raw Data			1.823							
1449	Standard Deviation of Raw Data			0.0596							
1450	Khat			1060							
1451	Theta hat			0.00172							

A	B	C	D	E	F	G	H	I	J	K	L
1452				Kstar	662.8						
1453				Theta star	0.00275						
1454				Mean of Log Transformed Data	0.6						
1455				Standard Deviation of Log Transformed Data	0.0329						
1456											
1457				Normal GOF Test Results							
1458											
1459				Correlation Coefficient R	0.947						
1460				Shapiro Wilk Test Statistic	0.925						
1461				Shapiro Wilk Critical (0.05) Value	0.818						
1462				Approximate Shapiro Wilk P Value	0.297						
1463				Lilliefors Test Statistic	0.207						
1464				Lilliefors Critical (0.05) Value	0.283						
1465				Data appear Normal at (0.05) Significance Level							
1466											
1467				Gamma GOF Test Results							
1468											
1469				Correlation Coefficient R	0.949						
1470				A-D Test Statistic	0.448						
1471				A-D Critical (0.05) Value	0.715						
1472				K-S Test Statistic	0.216						
1473				K-S Critical(0.05) Value	0.294						
1474				Data appear Gamma Distributed at (0.05) Significance Level							
1475											
1476				Lognormal GOF Test Results							
1477											
1478				Correlation Coefficient R	0.945						
1479				Shapiro Wilk Test Statistic	0.921						
1480				Shapiro Wilk Critical (0.05) Value	0.818						
1481				Approximate Shapiro Wilk P Value	0.275						
1482				Lilliefors Test Statistic	0.212						
1483				Lilliefors Critical (0.05) Value	0.283						
1484				Data appear Lognormal at (0.05) Significance Level							
1485											
1486				LnPH (cbl - 340i)							
1487											
1488				Raw Statistics							
1489				Number of Valid Observations	8						
1490				Number of Distinct Observations	8						
1491				Minimum	1.697						
1492				Maximum	1.939						
1493				Mean of Raw Data	1.829						
1494				Standard Deviation of Raw Data	0.0758						
1495				Khat	657.6						
1496				Theta hat	0.00278						
1497				Kstar	411.1						
1498				Theta star	0.00445						
1499				Mean of Log Transformed Data	0.603						
1500				Standard Deviation of Log Transformed Data	0.0418						
1501											
1502				Normal GOF Test Results							
1503											
1504				Correlation Coefficient R	0.978						
1505				Shapiro Wilk Test Statistic	0.963						
1506				Shapiro Wilk Critical (0.05) Value	0.818						
1507				Approximate Shapiro Wilk P Value	0.79						
1508				Lilliefors Test Statistic	0.169						
1509				Lilliefors Critical (0.05) Value	0.283						
1510				Data appear Normal at (0.05) Significance Level							
1511											
1512				Gamma GOF Test Results							
1513											
1514				Correlation Coefficient R	0.977						
1515				A-D Test Statistic	0.269						
1516				A-D Critical (0.05) Value	0.715						
1517				K-S Test Statistic	0.171						
1518				K-S Critical(0.05) Value	0.294						

	A	B	C	D	E	F	G	H	I	J	K	L
1519	Data appear Gamma Distributed at (0.05) Significance Level											
1520												
1521	Lognormal GOF Test Results											
1522												
1523	Correlation Coefficient R		0.975									
1524	Shapiro Wilk Test Statistic		0.957									
1525	Shapiro Wilk Critical (0.05) Value		0.818									
1526	Approximate Shapiro Wilk P Value		0.738									
1527	Lilliefors Test Statistic		0.176									
1528	Lilliefors Critical (0.05) Value		0.283									
1529	Data appear Lognormal at (0.05) Significance Level											
1530												
1531	LnPH (cbl - 341i)											
1532												
1533	Raw Statistics											
1534	Number of Valid Observations		8									
1535	Number of Distinct Observations		8									
1536	Minimum		1.654									
1537	Maximum		1.826									
1538	Mean of Raw Data		1.758									
1539	Standard Deviation of Raw Data		0.0594									
1540	Khat		992.6									
1541	Theta hat		0.00177									
1542	Kstar		620.5									
1543	Theta star		0.00283									
1544	Mean of Log Transformed Data		0.563									
1545	Standard Deviation of Log Transformed Data		0.034									
1546												
1547	Normal GOF Test Results											
1548												
1549	Correlation Coefficient R		0.96									
1550	Shapiro Wilk Test Statistic		0.915									
1551	Shapiro Wilk Critical (0.05) Value		0.818									
1552	Approximate Shapiro Wilk P Value		0.451									
1553	Lilliefors Test Statistic		0.193									
1554	Lilliefors Critical (0.05) Value		0.283									
1555	Data appear Normal at (0.05) Significance Level											
1556												
1557	Gamma GOF Test Results											
1558												
1559	Correlation Coefficient R		0.958									
1560	A-D Test Statistic		0.393									
1561	A-D Critical (0.05) Value		0.715									
1562	K-S Test Statistic		0.194									
1563	K-S Critical(0.05) Value		0.294									
1564	Data appear Gamma Distributed at (0.05) Significance Level											
1565												
1566	Lognormal GOF Test Results											
1567												
1568	Correlation Coefficient R		0.959									
1569	Shapiro Wilk Test Statistic		0.914									
1570	Shapiro Wilk Critical (0.05) Value		0.818									
1571	Approximate Shapiro Wilk P Value		0.432									
1572	Lilliefors Test Statistic		0.187									
1573	Lilliefors Critical (0.05) Value		0.283									
1574	Data appear Lognormal at (0.05) Significance Level											

A	B	C	D	E	F	G	H	I
1			Goodness-of-Fit Test Statistics for Data Sets with Non-Detects					
2	User Selected Options							
3	Date/Time of Computation	ProUCL 5.112/2/2017 11:09:53 AM						
4	From File	DetectionMonitoring_ProUCLUpload_11272017_a.xls						
5	Full Precision	OFF						
6	Confidence Coefficient	0.95						
7								
8								
9	TotalTDS (cbl - 301i)							
10								
11	Raw Statistics							
12	Number of Valid Observations		8					
13	Number of Distinct Observations		8					
14	Minimum		4290					
15	Maximum		6570					
16	Mean of Raw Data		5431					
17	Standard Deviation of Raw Data		959					
18	Khat		35.97					
19	Theta hat		151					
20	Kstar		22.56					
21	Theta star		240.7					
22	Mean of Log Transformed Data		8.586					
23	Standard Deviation of Log Transformed Data		0.18					
24								
25	Normal GOF Test Results							
26								
27	Correlation Coefficient R		0.946					
28	Shapiro Wilk Test Statistic		0.863					
29	Shapiro Wilk Critical (0.05) Value		0.818					
30	Approximate Shapiro Wilk P Value		0.243					
31	Lilliefors Test Statistic		0.23					
32	Lilliefors Critical (0.05) Value		0.283					
33	Data appear Normal at (0.05) Significance Level							
34								
35	Gamma GOF Test Results							
36								
37	Correlation Coefficient R		0.939					
38	A-D Test Statistic		0.571					
39	A-D Critical (0.05) Value		0.715					
40	K-S Test Statistic		0.253					
41	K-S Critical(0.05) Value		0.294					
42	Data appear Gamma Distributed at (0.05) Significance Level							
43								
44	Lognormal GOF Test Results							
45								
46	Correlation Coefficient R		0.945					
47	Shapiro Wilk Test Statistic		0.86					
48	Shapiro Wilk Critical (0.05) Value		0.818					
49	Approximate Shapiro Wilk P Value		0.231					
50	Lilliefors Test Statistic		0.242					
51	Lilliefors Critical (0.05) Value		0.283					
52	Data appear Lognormal at (0.05) Significance Level							
53								
54	TotalTDS (cbl - 302i)							
55								
56	Raw Statistics							
57	Number of Valid Observations		8					
58	Number of Distinct Observations		8					
59	Minimum		4210					
60	Maximum		6850					
61	Mean of Raw Data		5728					
62	Standard Deviation of Raw Data		857.3					
63	Khat		48.17					
64	Theta hat		118.9					
65	Kstar		30.19					
66	Theta star		189.7					
67	Mean of Log Transformed Data		8.643					

A	B	C	D	E	F	G	H	I
68		Standard Deviation of Log Transformed Data			0.157			
69								
70		Normal GOF Test Results						
71								
72		Correlation Coefficient R			0.98			
73		Shapiro Wilk Test Statistic			0.961			
74		Shapiro Wilk Critical (0.05) Value			0.818			
75		Approximate Shapiro Wilk P Value			0.825			
76		Lilliefors Test Statistic			0.169			
77		Lilliefors Critical (0.05) Value			0.283			
78		Data appear Normal at (0.05) Significance Level						
79								
80		Gamma GOF Test Results						
81								
82		Correlation Coefficient R			0.971			
83		A-D Test Statistic			0.257			
84		A-D Critical (0.05) Value			0.715			
85		K-S Test Statistic			0.182			
86		K-S Critical(0.05) Value			0.293			
87		Data appear Gamma Distributed at (0.05) Significance Level						
88								
89		Lognormal GOF Test Results						
90								
91		Correlation Coefficient R			0.968			
92		Shapiro Wilk Test Statistic			0.941			
93		Shapiro Wilk Critical (0.05) Value			0.818			
94		Approximate Shapiro Wilk P Value			0.602			
95		Lilliefors Test Statistic			0.164			
96		Lilliefors Critical (0.05) Value			0.283			
97		Data appear Lognormal at (0.05) Significance Level						
98								
99		TotalTDS (cbl - 306i)						
100								
101		Raw Statistics						
102		Number of Valid Observations			8			
103		Number of Distinct Observations			7			
104		Minimum			431			
105		Maximum			1460			
106		Mean of Raw Data			1144			
107		Standard Deviation of Raw Data			356.4			
108		Khat			8.186			
109		Theta hat			139.7			
110		Kstar			5.2			
111		Theta star			220			
112		Mean of Log Transformed Data			6.98			
113		Standard Deviation of Log Transformed Data			0.417			
114								
115		Normal GOF Test Results						
116								
117		Correlation Coefficient R			0.909			
118		Shapiro Wilk Test Statistic			0.828			
119		Shapiro Wilk Critical (0.05) Value			0.818			
120		Approximate Shapiro Wilk P Value			0.0567			
121		Lilliefors Test Statistic			0.274			
122		Lilliefors Critical (0.05) Value			0.283			
123		Data appear Normal at (0.05) Significance Level						
124								
125		Gamma GOF Test Results						
126								
127		Correlation Coefficient R			0.845			
128		A-D Test Statistic			0.877			
129		A-D Critical (0.05) Value			0.716			
130		K-S Test Statistic			0.303			
131		K-S Critical(0.05) Value			0.295			
132		Data not Gamma Distributed at (0.05) Significance Level						
133								
134		Lognormal GOF Test Results						

A	B	C	D	E	F	G	H	I
135								
136			Correlation Coefficient R		0.857			
137			Shapiro Wilk Test Statistic		0.745			
138			Shapiro Wilk Critical (0.05) Value		0.818			
139			Approximate Shapiro Wilk P Value		0.00624			
140			Lilliefors Test Statistic		0.314			
141			Lilliefors Critical (0.05) Value		0.283			
142	Data not Lognormal at (0.05) Significance Level							
143								
144	TotalTDS (cbl - 308i)							
145								
146			Raw Statistics					
147			Number of Valid Observations		8			
148			Number of Distinct Observations		8			
149			Minimum		6120			
150			Maximum		10200			
151			Mean of Raw Data		7623			
152			Standard Deviation of Raw Data		1517			
153			Khat		31.19			
154			Theta hat		244.4			
155			Kstar		19.58			
156			Theta star		389.4			
157			Mean of Log Transformed Data		8.923			
158			Standard Deviation of Log Transformed Data		0.188			
159								
160			Normal GOF Test Results					
161								
162			Correlation Coefficient R		0.932			
163			Shapiro Wilk Test Statistic		0.856			
164			Shapiro Wilk Critical (0.05) Value		0.818			
165			Approximate Shapiro Wilk P Value		0.146			
166			Lilliefors Test Statistic		0.219			
167			Lilliefors Critical (0.05) Value		0.283			
168	Data appear Normal at (0.05) Significance Level							
169								
170			Gamma GOF Test Results					
171								
172			Correlation Coefficient R		0.95			
173			A-D Test Statistic		0.525			
174			A-D Critical (0.05) Value		0.716			
175			K-S Test Statistic		0.209			
176			K-S Critical(0.05) Value		0.294			
177	Data appear Gamma Distributed at (0.05) Significance Level							
178								
179			Lognormal GOF Test Results					
180								
181			Correlation Coefficient R		0.948			
182			Shapiro Wilk Test Statistic		0.885			
183			Shapiro Wilk Critical (0.05) Value		0.818			
184			Approximate Shapiro Wilk P Value		0.281			
185			Lilliefors Test Statistic		0.194			
186			Lilliefors Critical (0.05) Value		0.283			
187	Data appear Lognormal at (0.05) Significance Level							
188								
189	TotalTDS (cbl - 340i)							
190								
191			Raw Statistics					
192			Number of Valid Observations		8			
193			Number of Distinct Observations		8			
194			Minimum		4880			
195			Maximum		6250			
196			Mean of Raw Data		5525			
197			Standard Deviation of Raw Data		512.4			
198			Khat		134.7			
199			Theta hat		41.03			
200			Kstar		84.24			
201			Theta star		65.59			

	A	B	C	D	E	F	G	H	I
269	Lognormal GOF Test Results								
270									
271				Correlation Coefficient R	0.97				
272				Shapiro Wilk Test Statistic	0.945				
273				Shapiro Wilk Critical (0.05) Value	0.818				
274				Approximate Shapiro Wilk P Value	0.629				
275				Lilliefors Test Statistic	0.17				
276				Lilliefors Critical (0.05) Value	0.283				
277	Data appear Lognormal at (0.05) Significance Level								

Appendix E

	A	B	C	D	E	F	G	H	I	J	K	L
1					Outlier Tests for Selected Uncensored Variables							
2	User Selected Options											
3	Date/Time of Computation		ProUCL 5.112/2/2017 11:16:25 PM									
4			From File		DetectionMonitoring_ProUCLUploadDeTrendResiduals_11272017_a.xls							
5			Full Precision		OFF							
6												
7												
8	Dixon's Outlier Test for LnB (cbl - 301i)											
9												
10	Number of Observations = 8											
11	10% critical value: 0.479											
12	5% critical value: 0.554											
13	1% critical value: 0.683											
14												
15	1. Observation Value -2.64930970607961 is a Potential Outlier (Upper)											
16												
17	Test Statistic: 1.000											
18												
19	For 10% significance level, -2.64930970607961 is an outlier.											
20	For 5% significance level, -2.64930970607961 is an outlier.											
21	For 1% significance level, -2.64930970607961 is an outlier.											
22												
23	2. Observation Value -2.99573227355399 is a Potential Outlier (Lower)											
24												
25	Test Statistic: NaN											
26												
27	For 10% significance level, -2.99573227355399 is an outlier.											
28	For 5% significance level, -2.99573227355399 is an outlier.											
29	For 1% significance level, -2.99573227355399 is an outlier.											
30												
31												
32	Dixon's Outlier Test for LnB (cbl - 302i)											
33												
34	Number of Observations = 8											
35	10% critical value: 0.479											
36	5% critical value: 0.554											
37	1% critical value: 0.683											
38												
39	1. Observation Value -1.21402314017944 is a Potential Outlier (Upper)											
40												
41	Test Statistic: 0.361											
42												
43	For 10% significance level, -1.21402314017944 is not an outlier.											
44	For 5% significance level, -1.21402314017944 is not an outlier.											
45	For 1% significance level, -1.21402314017944 is not an outlier.											
46												
47	2. Observation Value -2.99573227355399 is a Potential Outlier (Lower)											
48												
49	Test Statistic: 0.000											
50												
51	For 10% significance level, -2.99573227355399 is not an outlier.											
52	For 5% significance level, -2.99573227355399 is not an outlier.											
53	For 1% significance level, -2.99573227355399 is not an outlier.											
54												
55												
56	Dixon's Outlier Test for LnB (cbl - 306i)											
57												
58	Number of Observations = 8											
59	10% critical value: 0.479											
60	5% critical value: 0.554											
61	1% critical value: 0.683											
62												
63	1. Observation Value -2.0874737133771 is a Potential Outlier (Upper)											
64												

	A	B	C	D	E	F	G	H	I	J	K	L
257	Test Statistic: 0.306											
258												
259	For 10% significance level, 6.44094654063292 is not an outlier.											
260	For 5% significance level, 6.44094654063292 is not an outlier.											
261	For 1% significance level, 6.44094654063292 is not an outlier.											
262												
263	2. Observation Value 6.32793678372919 is a Potential Outlier (Low											
264												
265	Test Statistic: 0.088											
266												
267	For 10% significance level, 6.32793678372919 is not an outlier.											
268	For 5% significance level, 6.32793678372919 is not an outlier.											
269	For 1% significance level, 6.32793678372919 is not an outlier.											
270												
271												
272	Dixon's Outlier Test for LnCa (cbl - 341i)											
273												
274	Number of Observations = 8											
275	10% critical value: 0.479											
276	5% critical value: 0.554											
277	1% critical value: 0.683											
278												
279	1. Observation Value 6.85646198459459 is a Potential Outlier (Up											
280												
281	Test Statistic: 0.418											
282												
283	For 10% significance level, 6.85646198459459 is not an outlier.											
284	For 5% significance level, 6.85646198459459 is not an outlier.											
285	For 1% significance level, 6.85646198459459 is not an outlier.											
286												
287	2. Observation Value 6.7202201551353 is a Potential Outlier (Low											
288												
289	Test Statistic: 0.255											
290												
291	For 10% significance level, 6.7202201551353 is not an outlier.											
292	For 5% significance level, 6.7202201551353 is not an outlier.											
293	For 1% significance level, 6.7202201551353 is not an outlier.											
294												
295												
296	Dixon's Outlier Test for LnCl (cbl - 301i)											
297												
298	Number of Observations = 8											
299	10% critical value: 0.479											
300	5% critical value: 0.554											
301	1% critical value: 0.683											
302												
303	1. Observation Value 8.07090608878782 is a Potential Outlier (Up											
304												
305	Test Statistic: 0.701											
306												
307	For 10% significance level, 8.07090608878782 is an outlier.											
308	For 5% significance level, 8.07090608878782 is an outlier.											
309	For 1% significance level, 8.07090608878782 is an outlier.											
310												
311	2. Observation Value 7.67786350067821 is a Potential Outlier (Low											
312												
313	Test Statistic: 0.279											
314												
315	For 10% significance level, 7.67786350067821 is not an outlier.											
316	For 5% significance level, 7.67786350067821 is not an outlier.											
317	For 1% significance level, 7.67786350067821 is not an outlier.											
318												
319												
320	Dixon's Outlier Test for LnCl (cbl - 302i)											

	A	B	C	D	E	F	G	H	I	J	K	L
449	Test Statistic: 0.000											
450												
451	For 10% significance level, -0.693147180559945 is not an outlier.											
452	For 5% significance level, -0.693147180559945 is not an outlier.											
453	For 1% significance level, -0.693147180559945 is not an outlier.											
454												
455	2. Observation Value -4.60517018598809 is a Potential Outlier (Low)											
456												
457	Test Statistic: 0.177											
458												
459	For 10% significance level, -4.60517018598809 is not an outlier.											
460	For 5% significance level, -4.60517018598809 is not an outlier.											
461	For 1% significance level, -4.60517018598809 is not an outlier.											
462												
463												
464	Dixon's Outlier Test for LnF (cbl - 302i)											
465												
466	Number of Observations = 8											
467	10% critical value: 0.479											
468	5% critical value: 0.554											
469	1% critical value: 0.683											
470												
471	1. Observation Value -0.693147180559945 is a Potential Outlier (Upper)											
472												
473	Test Statistic: 0.000											
474												
475	For 10% significance level, -0.693147180559945 is not an outlier.											
476	For 5% significance level, -0.693147180559945 is not an outlier.											
477	For 1% significance level, -0.693147180559945 is not an outlier.											
478												
479	2. Observation Value -3.91202300542815 is a Potential Outlier (Low)											
480												
481	Test Statistic: 0.785											
482												
483	For 10% significance level, -3.91202300542815 is an outlier.											
484	For 5% significance level, -3.91202300542815 is an outlier.											
485	For 1% significance level, -3.91202300542815 is an outlier.											
486												
487												
488	Dixon's Outlier Test for LnF (cbl - 306i)											
489												
490	Number of Observations = 8											
491	10% critical value: 0.479											
492	5% critical value: 0.554											
493	1% critical value: 0.683											
494												
495	1. Observation Value 2.53369681395743 is a Potential Outlier (Upper)											
496												
497	Test Statistic: 0.660											
498												
499	For 10% significance level, 2.53369681395743 is an outlier.											
500	For 5% significance level, 2.53369681395743 is an outlier.											
501	For 1% significance level, 2.53369681395743 is not an outlier.											
502												
503	2. Observation Value 0 is a Potential Outlier (Lower Tail)?											
504												
505	Test Statistic: 0.295											
506												
507	For 10% significance level, 0 is not an outlier.											
508	For 5% significance level, 0 is not an outlier.											
509	For 1% significance level, 0 is not an outlier.											
510												
511												
512	Dixon's Outlier Test for LnF (cbl - 308i)											

A	B	C	D	E	F	G	H	I	J	K	L
1				Outlier Tests for Selected Uncensored Variables							
2	User Selected Options										
3	Date/Time of Computation		ProUCL 5.112/3/2017 2:25:04 PM								
4			From File	DetectionMonitoring_ProUCLUploadDeTrendResiduals_11272017_a.xls							
5			Full Precision	OFF							
6											
7											
8	Dixon's Outlier Test for LnB (cbl - 301i)										
9											
10	Number of Observations = 8										
11	10% critical value: 0.479										
12	5% critical value: 0.554										
13	1% critical value: 0.683										
14											
15	1. Observation Value -2.64930970607961 is a Pot										
16											
17	Test Statistic: 1.000										
18											
19	For 10% significance level, -2.64930970607961 is an										
20	For 5% significance level, -2.64930970607961 is an c										
21	For 1% significance level, -2.64930970607961 is an c										
22											
23	2. Observation Value -2.99573227355399 is a Pot										
24											
25	Test Statistic: NaN										
26											
27	For 10% significance level, -2.99573227355399 is an										
28	For 5% significance level, -2.99573227355399 is an c										
29	For 1% significance level, -2.99573227355399 is an c										
30											
31											
32	Dixon's Outlier Test for LnB (cbl - 302i)										
33											
34	Number of Observations = 8										
35	10% critical value: 0.479										
36	5% critical value: 0.554										
37	1% critical value: 0.683										
38											
39	1. Observation Value -1.21402314017944 is a Pot										
40											
41	Test Statistic: 0.361										
42											
43	For 10% significance level, -1.21402314017944 is no										
44	For 5% significance level, -1.21402314017944 is not										
45	For 1% significance level, -1.21402314017944 is not										
46											
47	2. Observation Value -2.99573227355399 is a Pot										
48											
49	Test Statistic: 0.000										
50											
51	For 10% significance level, -2.99573227355399 is no										
52	For 5% significance level, -2.99573227355399 is not										
53	For 1% significance level, -2.99573227355399 is not										
54											
55											
56	Dixon's Outlier Test for LnB (cbl - 306i)										
57											
58	Number of Observations = 8										
59	10% critical value: 0.479										
60	5% critical value: 0.554										
61	1% critical value: 0.683										
62											
63	1. Observation Value -2.0874737133771 is a Pot										
64											

	A	B	C	D	E	F	G	H	I	J	K	L
65	Test Statistic: 0.239											
66												
67	For 10% significance level, -2.0874737133771 is not											
68	For 5% significance level, -2.0874737133771 is not a											
69	For 1% significance level, -2.0874737133771 is not a											
70												
71	2. Observation Value -2.99573227355399 is a Pote											
72												
73	Test Statistic: 0.000											
74												
75	For 10% significance level, -2.99573227355399 is no											
76	For 5% significance level, -2.99573227355399 is not											
77	For 1% significance level, -2.99573227355399 is not											
78												
79												
80	Dixon's Outlier Test for LnB (cbl - 308i)											
81												
82	Number of Observations = 8											
83	10% critical value: 0.479											
84	5% critical value: 0.554											
85	1% critical value: 0.683											
86												
87	1. Observation Value -0.606969484318893 is a Po											
88												
89	Test Statistic: 0.316											
90												
91	For 10% significance level, -0.606969484318893 is n											
92	For 5% significance level, -0.606969484318893 is no											
93	For 1% significance level, -0.606969484318893 is no											
94												
95	2. Observation Value -2.99573227355399 is a Pote											
96												
97	Test Statistic: 0.000											
98												
99	For 10% significance level, -2.99573227355399 is no											
100	For 5% significance level, -2.99573227355399 is not											
101	For 1% significance level, -2.99573227355399 is not											
102												
103												
104	Dixon's Outlier Test for LnB (cbl - 340i)											
105												
106	Number of Observations = 8											
107	10% critical value: 0.479											
108	5% critical value: 0.554											
109	1% critical value: 0.683											
110												
111	1. Observation Value -1.74869997976761 is a Pote											
112												
113	Test Statistic: 0.077											
114												
115	For 10% significance level, -1.74869997976761 is no											
116	For 5% significance level, -1.74869997976761 is not											
117	For 1% significance level, -1.74869997976761 is not											
118												
119	2. Observation Value -2.99573227355399 is a Pote											
120												
121	Test Statistic: 0.000											
122												
123	For 10% significance level, -2.99573227355399 is no											
124	For 5% significance level, -2.99573227355399 is not											
125	For 1% significance level, -2.99573227355399 is not											
126												
127												
128	Dixon's Outlier Test for LnB (cbl - 341i)											

	A	B	C	D	E	F	G	H	I	J	K	L
193	Test Statistic: 0.230											
194												
195	For 10% significance level, 6.9177056098353 is not a											
196	For 5% significance level, 6.9177056098353 is not a											
197	For 1% significance level, 6.9177056098353 is not a											
198												
199												
200	Dixon's Outlier Test for LnCa (cbl - 306i)											
201												
202	Number of Observations = 8											
203	10% critical value: 0.479											
204	5% critical value: 0.554											
205	1% critical value: 0.683											
206												
207	1. Observation Value 0 is a Potential Outlier (Upper)											
208												
209	Test Statistic: NaN											
210												
211	For 10% significance level, 0 is an outlier.											
212	For 5% significance level, 0 is an outlier.											
213	For 1% significance level, 0 is an outlier.											
214												
215	2. Observation Value 0 is a Potential Outlier (Lower)											
216												
217	Test Statistic: NaN											
218												
219	For 10% significance level, 0 is an outlier.											
220	For 5% significance level, 0 is an outlier.											
221	For 1% significance level, 0 is an outlier.											
222												
223												
224	Dixon's Outlier Test for LnCa (cbl - 308i)											
225												
226	Number of Observations = 8											
227	10% critical value: 0.479											
228	5% critical value: 0.554											
229	1% critical value: 0.683											
230												
231	1. Observation Value 6.86066367144829 is a Potential Outlier (Upper)											
232												
233	Test Statistic: 0.089											
234												
235	For 10% significance level, 6.86066367144829 is not a											
236	For 5% significance level, 6.86066367144829 is not a											
237	For 1% significance level, 6.86066367144829 is not a											
238												
239	2. Observation Value 6.76849321164863 is a Potential Outlier (Lower)											
240												
241	Test Statistic: 0.108											
242												
243	For 10% significance level, 6.76849321164863 is not a											
244	For 5% significance level, 6.76849321164863 is not a											
245	For 1% significance level, 6.76849321164863 is not a											
246												
247												
248	Dixon's Outlier Test for LnCa (cbl - 340i)											
249												
250	Number of Observations = 8											
251	10% critical value: 0.479											
252	5% critical value: 0.554											
253	1% critical value: 0.683											
254												
255	1. Observation Value 6.44094654063292 is a Potential Outlier (Upper)											
256												

	A	B	C	D	E	F	G	H	I	J	K	L
257	Test Statistic: 0.306											
258												
259	For 10% significance level, 6.44094654063292 is not a											
260	For 5% significance level, 6.44094654063292 is not a											
261	For 1% significance level, 6.44094654063292 is not a											
262												
263	2. Observation Value 6.32793678372919 is a Poter											
264												
265	Test Statistic: 0.088											
266												
267	For 10% significance level, 6.32793678372919 is not a											
268	For 5% significance level, 6.32793678372919 is not a											
269	For 1% significance level, 6.32793678372919 is not a											
270												
271												
272	Dixon's Outlier Test for LnCa (cbl - 341i)											
273												
274	Number of Observations = 8											
275	10% critical value: 0.479											
276	5% critical value: 0.554											
277	1% critical value: 0.683											
278												
279	1. Observation Value 6.85646198459459 is a Pote											
280												
281	Test Statistic: 0.418											
282												
283	For 10% significance level, 6.85646198459459 is not a											
284	For 5% significance level, 6.85646198459459 is not a											
285	For 1% significance level, 6.85646198459459 is not a											
286												
287	2. Observation Value 6.7202201551353 is a Potent											
288												
289	Test Statistic: 0.255											
290												
291	For 10% significance level, 6.7202201551353 is not a											
292	For 5% significance level, 6.7202201551353 is not ar											
293	For 1% significance level, 6.7202201551353 is not ar											
294												
295												
296	Dixon's Outlier Test for LnCl (cbl - 301i)											
297												
298	Number of Observations = 7											
299	10% critical value: 0.434											
300	5% critical value: 0.507											
301	1% critical value: 0.637											
302												
303	1. Observation Value 7.82404601085629 is a Pote											
304												
305	Test Statistic: 0.222											
306												
307	For 10% significance level, 7.82404601085629 is not a											
308	For 5% significance level, 7.82404601085629 is not a											
309	For 1% significance level, 7.82404601085629 is not a											
310												
311	2. Observation Value 7.67786350067821 is a Poter											
312												
313	Test Statistic: 0.279											
314												
315	For 10% significance level, 7.67786350067821 is not a											
316	For 5% significance level, 7.67786350067821 is not a											
317	For 1% significance level, 7.67786350067821 is not a											
318												
319												
320	Dixon's Outlier Test for LnCl (cbl - 302i)											

	A	B	C	D	E	F	G	H	I	J	K	L
385	Test Statistic: 0.444											
386												
387	For 10% significance level, 7.76641689801966 is not a											
388	For 5% significance level, 7.76641689801966 is not a											
389	For 1% significance level, 7.76641689801966 is not a											
390												
391												
392	Dixon's Outlier Test for LnCl (cbl - 340i)											
393												
394	Number of Observations = 8											
395	10% critical value: 0.479											
396	5% critical value: 0.554											
397	1% critical value: 0.683											
398												
399	1. Observation Value 7.83201418050547 is a Pote											
400												
401	Test Statistic: 0.525											
402												
403	For 10% significance level, 7.83201418050547 is an											
404	For 5% significance level, 7.83201418050547 is not a											
405	For 1% significance level, 7.83201418050547 is not a											
406												
407	2. Observation Value 7.63530388625941 is a Pote											
408												
409	Test Statistic: 0.629											
410												
411	For 10% significance level, 7.63530388625941 is an											
412	For 5% significance level, 7.63530388625941 is an o											
413	For 1% significance level, 7.63530388625941 is not a											
414												
415												
416	Dixon's Outlier Test for LnCl (cbl - 341i)											
417												
418	Number of Observations = 8											
419	10% critical value: 0.479											
420	5% critical value: 0.554											
421	1% critical value: 0.683											
422												
423	1. Observation Value 7.60090245954208 is a Pote											
424												
425	Test Statistic: 0.096											
426												
427	For 10% significance level, 7.60090245954208 is not											
428	For 5% significance level, 7.60090245954208 is not a											
429	For 1% significance level, 7.60090245954208 is not a											
430												
431	2. Observation Value 7.37775890822787 is a Pote											
432												
433	Test Statistic: 0.320											
434												
435	For 10% significance level, 7.37775890822787 is not											
436	For 5% significance level, 7.37775890822787 is not a											
437	For 1% significance level, 7.37775890822787 is not a											
438												
439												
440	Dixon's Outlier Test for LnF (cbl - 301i)											
441												
442	Number of Observations = 8											
443	10% critical value: 0.479											
444	5% critical value: 0.554											
445	1% critical value: 0.683											
446												
447	1. Observation Value -0.693147180559945 is a Po											
448												

	A	B	C	D	E	F	G	H	I	J	K	L
449	Test Statistic: 0.000											
450												
451	For 10% significance level, -0.693147180559945 is n											
452	For 5% significance level, -0.693147180559945 is no											
453	For 1% significance level, -0.693147180559945 is no											
454												
455	2. Observation Value -4.60517018598809 is a Pote											
456												
457	Test Statistic: 0.177											
458												
459	For 10% significance level, -4.60517018598809 is no											
460	For 5% significance level, -4.60517018598809 is not											
461	For 1% significance level, -4.60517018598809 is not											
462												
463												
464	Dixon's Outlier Test for LnF (cbl - 302i)											
465												
466	Number of Observations = 8											
467	10% critical value: 0.479											
468	5% critical value: 0.554											
469	1% critical value: 0.683											
470												
471	1. Observation Value -0.693147180559945 is a Po											
472												
473	Test Statistic: 0.000											
474												
475	For 10% significance level, -0.693147180559945 is n											
476	For 5% significance level, -0.693147180559945 is no											
477	For 1% significance level, -0.693147180559945 is no											
478												
479	2. Observation Value -3.91202300542815 is a Pote											
480												
481	Test Statistic: 0.785											
482												
483	For 10% significance level, -3.91202300542815 is an											
484	For 5% significance level, -3.91202300542815 is an c											
485	For 1% significance level, -3.91202300542815 is an c											
486												
487												
488	Dixon's Outlier Test for LnF (cbl - 306i)											
489												
490	Number of Observations = 7											
491	10% critical value: 0.434											
492	5% critical value: 0.507											
493	1% critical value: 0.637											
494												
495	1. Observation Value 1.0681530811834 is a Potent											
496												
497	Test Statistic: 0.142											
498												
499	For 10% significance level, 1.0681530811834 is not a											
500	For 5% significance level, 1.0681530811834 is not ar											
501	For 1% significance level, 1.0681530811834 is not ar											
502												
503	2. Observation Value 0 is a Potential Outlier (Lower											
504												
505	Test Statistic: 0.295											
506												
507	For 10% significance level, 0 is not an outlier.											
508	For 5% significance level, 0 is not an outlier.											
509	For 1% significance level, 0 is not an outlier.											
510												
511												
512	Dixon's Outlier Test for LnF (cbl - 308i)											

	A	B	C	D	E	F	G	H	I	J	K	L
577	Test Statistic: NaN											
578												
579	For 10% significance level, 0 is an outlier.											
580	For 5% significance level, 0 is an outlier.											
581	For 1% significance level, 0 is an outlier.											
582												
583												
584	Dixon's Outlier Test for LnS (cbl - 301i)											
585												
586	Number of Observations = 8											
587	10% critical value: 0.479											
588	5% critical value: 0.554											
589	1% critical value: 0.683											
590												
591	1. Observation Value 6.19031540585315 is a Pote											
592												
593	Test Statistic: 0.614											
594												
595	For 10% significance level, 6.19031540585315 is an											
596	For 5% significance level, 6.19031540585315 is an o											
597	For 1% significance level, 6.19031540585315 is not a											
598												
599	2. Observation Value 5.73979291217923 is a Poter											
600												
601	Test Statistic: 0.232											
602												
603	For 10% significance level, 5.73979291217923 is not											
604	For 5% significance level, 5.73979291217923 is not a											
605	For 1% significance level, 5.73979291217923 is not a											
606												
607												
608	Dixon's Outlier Test for LnS (cbl - 302i)											
609												
610	Number of Observations = 8											
611	10% critical value: 0.479											
612	5% critical value: 0.554											
613	1% critical value: 0.683											
614												
615	1. Observation Value 0 is a Potential Outlier (Uppe											
616												
617	Test Statistic: NaN											
618												
619	For 10% significance level, 0 is an outlier.											
620	For 5% significance level, 0 is an outlier.											
621	For 1% significance level, 0 is an outlier.											
622												
623	2. Observation Value 0 is a Potential Outlier (Lower											
624												
625	Test Statistic: NaN											
626												
627	For 10% significance level, 0 is an outlier.											
628	For 5% significance level, 0 is an outlier.											
629	For 1% significance level, 0 is an outlier.											
630												
631												
632	Dixon's Outlier Test for LnS (cbl - 306i)											
633												
634	Number of Observations = 8											
635	10% critical value: 0.479											
636	5% critical value: 0.554											
637	1% critical value: 0.683											
638												
639	1. Observation Value 0 is a Potential Outlier (Uppe											
640												

	A	B	C	D	E	F	G	H	I	J	K	L
641	Test Statistic: NaN											
642												
643	For 10% significance level, 0 is an outlier.											
644	For 5% significance level, 0 is an outlier.											
645	For 1% significance level, 0 is an outlier.											
646												
647	2. Observation Value 0 is a Potential Outlier (Lower											
648												
649	Test Statistic: NaN											
650												
651	For 10% significance level, 0 is an outlier.											
652	For 5% significance level, 0 is an outlier.											
653	For 1% significance level, 0 is an outlier.											
654												
655												
656	Dixon's Outlier Test for LnS (cbl - 308i)											
657												
658	Number of Observations = 8											
659	10% critical value: 0.479											
660	5% critical value: 0.554											
661	1% critical value: 0.683											
662												
663	1. Observation Value 7.36518012602101 is a Pote											
664												
665	Test Statistic: 0.168											
666												
667	For 10% significance level, 7.36518012602101 is not											
668	For 5% significance level, 7.36518012602101 is not a											
669	For 1% significance level, 7.36518012602101 is not a											
670												
671	2. Observation Value 7.18538701558042 is a Pote											
672												
673	Test Statistic: 0.411											
674												
675	For 10% significance level, 7.18538701558042 is not											
676	For 5% significance level, 7.18538701558042 is not a											
677	For 1% significance level, 7.18538701558042 is not a											
678												
679												
680	Dixon's Outlier Test for LnS (cbl - 340i)											
681												
682	Number of Observations = 8											
683	10% critical value: 0.479											
684	5% critical value: 0.554											
685	1% critical value: 0.683											
686												
687	1. Observation Value 6.57228254269401 is a Pote											
688												
689	Test Statistic: 0.288											
690												
691	For 10% significance level, 6.57228254269401 is not											
692	For 5% significance level, 6.57228254269401 is not a											
693	For 1% significance level, 6.57228254269401 is not a											
694												
695	2. Observation Value 6.34738920965601 is a Pote											
696												
697	Test Statistic: 0.417											
698												
699	For 10% significance level, 6.34738920965601 is not											
700	For 5% significance level, 6.34738920965601 is not a											
701	For 1% significance level, 6.34738920965601 is not a											
702												
703												
704	Dixon's Outlier Test for LnS (cbl - 341i)											

	A	B	C	D	E	F	G	H	I	J	K	L
769	Test Statistic: 0.457											
770												
771	For 10% significance level, 8.34521792667643 is not a											
772	For 5% significance level, 8.34521792667643 is not a											
773	For 1% significance level, 8.34521792667643 is not a											
774												
775												
776	Dixon's Outlier Test for LnTDS (cbl - 306i)											
777												
778	Number of Observations = 8											
779	10% critical value: 0.479											
780	5% critical value: 0.554											
781	1% critical value: 0.683											
782												
783	1. Observation Value 7.28619171470238 is a Pote											
784												
785	Test Statistic: 0.022											
786												
787	For 10% significance level, 7.28619171470238 is not a											
788	For 5% significance level, 7.28619171470238 is not a											
789	For 1% significance level, 7.28619171470238 is not a											
790												
791	2. Observation Value 6.06610809010375 is a Poter											
792												
793	Test Statistic: 0.502											
794												
795	For 10% significance level, 6.06610809010375 is an											
796	For 5% significance level, 6.06610809010375 is not a											
797	For 1% significance level, 6.06610809010375 is not a											
798												
799												
800	Dixon's Outlier Test for LnTDS (cbl - 308i)											
801												
802	Number of Observations = 8											
803	10% critical value: 0.479											
804	5% critical value: 0.554											
805	1% critical value: 0.683											
806												
807	1. Observation Value 9.23014299927236 is a Pote											
808												
809	Test Statistic: 0.129											
810												
811	For 10% significance level, 9.23014299927236 is not a											
812	For 5% significance level, 9.23014299927236 is not a											
813	For 1% significance level, 9.23014299927236 is not a											
814												
815	2. Observation Value 8.71931737550637 is a Poter											
816												
817	Test Statistic: 0.126											
818												
819	For 10% significance level, 8.71931737550637 is not a											
820	For 5% significance level, 8.71931737550637 is not a											
821	For 1% significance level, 8.71931737550637 is not a											
822												
823												
824	Dixon's Outlier Test for LnTDS (cbl - 340i)											
825												
826	Number of Observations = 8											
827	10% critical value: 0.479											
828	5% critical value: 0.554											
829	1% critical value: 0.683											
830												
831	1. Observation Value 8.74033674273045 is a Pote											
832												

	A	B	C	D	E	F	G	H	I	J	K	L
833	Test Statistic: 0.014											
834												
835	For 10% significance level, 8.74033674273045 is not a significant value											
836	For 5% significance level, 8.74033674273045 is not a significant value											
837	For 1% significance level, 8.74033674273045 is not a significant value											
838												
839	2. Observation Value 8.49290049884719 is a Potential Outlier											
840												
841	Test Statistic: 0.091											
842												
843	For 10% significance level, 8.49290049884719 is not a significant value											
844	For 5% significance level, 8.49290049884719 is not a significant value											
845	For 1% significance level, 8.49290049884719 is not a significant value											
846												
847												
848	Dixon's Outlier Test for LnTDS (cbl - 341i)											
849												
850	Number of Observations = 8											
851	10% critical value: 0.479											
852	5% critical value: 0.554											
853	1% critical value: 0.683											
854												
855	1. Observation Value 8.68946441235669 is a Potential Outlier											
856												
857	Test Statistic: 0.446											
858												
859	For 10% significance level, 8.68946441235669 is not a significant value											
860	For 5% significance level, 8.68946441235669 is not a significant value											
861	For 1% significance level, 8.68946441235669 is not a significant value											
862												
863	2. Observation Value 8.33086361322474 is a Potential Outlier											
864												
865	Test Statistic: 0.103											
866												
867	For 10% significance level, 8.33086361322474 is not a significant value											
868	For 5% significance level, 8.33086361322474 is not a significant value											
869	For 1% significance level, 8.33086361322474 is not a significant value											
870												
871												
872	Dixon's Outlier Test for Ln pH (cbl - 301i)											
873												
874	Number of Observations = 8											
875	10% critical value: 0.479											
876	5% critical value: 0.554											
877	1% critical value: 0.683											
878												
879	1. Observation Value 1.84530023615608 is a Potential Outlier											
880												
881	Test Statistic: 0.051											
882												
883	For 10% significance level, 1.84530023615608 is not a significant value											
884	For 5% significance level, 1.84530023615608 is not a significant value											
885	For 1% significance level, 1.84530023615608 is not a significant value											
886												
887	2. Observation Value 1.78339121955754 is a Potential Outlier											
888												
889	Test Statistic: 0.000											
890												
891	For 10% significance level, 1.78339121955754 is not a significant value											
892	For 5% significance level, 1.78339121955754 is not a significant value											
893	For 1% significance level, 1.78339121955754 is not a significant value											
894												
895												
896	Dixon's Outlier Test for Ln pH (cbl - 302i)											

	A	B	C	D	E	F	G	H	I	J	K	L
961	Test Statistic: 0.517											
962												
963	For 10% significance level, 1.71199450075919 is an											
964	For 5% significance level, 1.71199450075919 is not a											
965	For 1% significance level, 1.71199450075919 is not a											
966												
967												
968	Dixon's Outlier Test for LnpH (cbl - 340i)											
969												
970	Number of Observations = 8											
971	10% critical value: 0.479											
972	5% critical value: 0.554											
973	1% critical value: 0.683											
974												
975	1. Observation Value 1.9387416595767 is a Poten											
976												
977	Test Statistic: 0.343											
978												
979	For 10% significance level, 1.9387416595767 is not a											
980	For 5% significance level, 1.9387416595767 is not ar											
981	For 1% significance level, 1.9387416595767 is not ar											
982												
983	2. Observation Value 1.69744878975681 is a Poter											
984												
985	Test Statistic: 0.311											
986												
987	For 10% significance level, 1.69744878975681 is not											
988	For 5% significance level, 1.69744878975681 is not a											
989	For 1% significance level, 1.69744878975681 is not a											
990												
991												
992	Dixon's Outlier Test for LnpH (cbl - 341i)											
993												
994	Number of Observations = 8											
995	10% critical value: 0.479											
996	5% critical value: 0.554											
997	1% critical value: 0.683											
998												
999	1. Observation Value 1.82616089594539 is a Pote											
1000												
1001	Test Statistic: 0.028											
1002												
1003	For 10% significance level, 1.82616089594539 is not											
1004	For 5% significance level, 1.82616089594539 is not a											
1005	For 1% significance level, 1.82616089594539 is not a											
1006												
1007	2. Observation Value 1.65441127807683 is a Poter											
1008												
1009	Test Statistic: 0.342											
1010												
1011	For 10% significance level, 1.65441127807683 is not											
1012	For 5% significance level, 1.65441127807683 is not a											
1013	For 1% significance level, 1.65441127807683 is not a											
1014												

	A	B	C	D	E	F	G	H	I	J	K	L
1					Outlier Tests for Selected Uncensored Variables							
2	User Selected Options											
3	Date/Time of Computation		ProUCL 5.112/2/2017 10:44:18 PM									
4			From File		DetectionMonitoring_ProUCLUploadDeTrendResiduals_11272017_a.xls							
5			Full Precision		OFF							
6												
7												
8	Dixon's Outlier Test for TotalBoron (cbl - 301i)											
9												
10	Number of Observations = 8											
11	10% critical value: 0.479											
12	5% critical value: 0.554											
13	1% critical value: 0.683											
14												
15	1. Observation Value 0.0707 is a Potential Outlier (L)											
16												
17	Test Statistic: 1.000											
18												
19	For 10% significance level, 0.0707 is an outlier.											
20	For 5% significance level, 0.0707 is an outlier.											
21	For 1% significance level, 0.0707 is an outlier.											
22												
23	2. Observation Value 0.05 is a Potential Outlier (Lo)											
24												
25	Test Statistic: NaN											
26												
27	For 10% significance level, 0.05 is an outlier.											
28	For 5% significance level, 0.05 is an outlier.											
29	For 1% significance level, 0.05 is an outlier.											
30												
31												
32	Dixon's Outlier Test for TotalBoron (cbl - 302i)											
33												
34	Number of Observations = 8											
35	10% critical value: 0.479											
36	5% critical value: 0.554											
37	1% critical value: 0.683											
38												
39	1. Observation Value 0.297 is a Potential Outlier (L)											
40												
41	Test Statistic: 0.571											
42												
43	For 10% significance level, 0.297 is an outlier.											
44	For 5% significance level, 0.297 is an outlier.											
45	For 1% significance level, 0.297 is not an outlier.											
46												
47	2. Observation Value 0.05 is a Potential Outlier (Lo)											
48												
49	Test Statistic: 0.000											
50												
51	For 10% significance level, 0.05 is not an outlier.											
52	For 5% significance level, 0.05 is not an outlier.											
53	For 1% significance level, 0.05 is not an outlier.											
54												
55												
56	Dixon's Outlier Test for TotalBoron (cbl - 306i)											
57												
58	Number of Observations = 8											
59	10% critical value: 0.479											
60	5% critical value: 0.554											
61	1% critical value: 0.683											
62												
63	1. Observation Value 0.124 is a Potential Outlier (L)											
64												

	A	B	C	D	E	F	G	H	I	J	K	L
65	Test Statistic: 0.327											
66												
67	For 10% significance level, 0.124 is not an outlier.											
68	For 5% significance level, 0.124 is not an outlier.											
69	For 1% significance level, 0.124 is not an outlier.											
70												
71	2. Observation Value 0.05 is a Potential Outlier (Low)											
72												
73	Test Statistic: 0.000											
74												
75	For 10% significance level, 0.05 is not an outlier.											
76	For 5% significance level, 0.05 is not an outlier.											
77	For 1% significance level, 0.05 is not an outlier.											
78												
79												
80	Dixon's Outlier Test for TotalBoron (cbl - 308i)											
81												
82	Number of Observations = 8											
83	10% critical value: 0.479											
84	5% critical value: 0.554											
85	1% critical value: 0.683											
86												
87	1. Observation Value 0.545 is a Potential Outlier (Low)											
88												
89	Test Statistic: 0.584											
90												
91	For 10% significance level, 0.545 is an outlier.											
92	For 5% significance level, 0.545 is an outlier.											
93	For 1% significance level, 0.545 is not an outlier.											
94												
95	2. Observation Value 0.05 is a Potential Outlier (Low)											
96												
97	Test Statistic: 0.000											
98												
99	For 10% significance level, 0.05 is not an outlier.											
100	For 5% significance level, 0.05 is not an outlier.											
101	For 1% significance level, 0.05 is not an outlier.											
102												
103												
104	Dixon's Outlier Test for TotalBoron (cbl - 340i)											
105												
106	Number of Observations = 8											
107	10% critical value: 0.479											
108	5% critical value: 0.554											
109	1% critical value: 0.683											
110												
111	1. Observation Value 0.174 is a Potential Outlier (Low)											
112												
113	Test Statistic: 0.129											
114												
115	For 10% significance level, 0.174 is not an outlier.											
116	For 5% significance level, 0.174 is not an outlier.											
117	For 1% significance level, 0.174 is not an outlier.											
118												
119	2. Observation Value 0.05 is a Potential Outlier (Low)											
120												
121	Test Statistic: 0.000											
122												
123	For 10% significance level, 0.05 is not an outlier.											
124	For 5% significance level, 0.05 is not an outlier.											
125	For 1% significance level, 0.05 is not an outlier.											
126												
127												
128	Dixon's Outlier Test for TotalBoron (cbl - 341i)											

	A	B	C	D	E	F	G	H	I	J	K	L
193	Test Statistic: 0.222											
194												
195	For 10% significance level, 1010 is not an outlier.											
196	For 5% significance level, 1010 is not an outlier.											
197	For 1% significance level, 1010 is not an outlier.											
198												
199												
200	Dixon's Outlier Test for TotalCalcium (cbl - 306i)											
201												
202	Number of Observations = 8											
203	10% critical value: 0.479											
204	5% critical value: 0.554											
205	1% critical value: 0.683											
206												
207	1. Observation Value 52.22 is a Potential Outlier (L											
208												
209	Test Statistic: 0.141											
210												
211	For 10% significance level, 52.22 is not an outlier.											
212	For 5% significance level, 52.22 is not an outlier.											
213	For 1% significance level, 52.22 is not an outlier.											
214												
215	2. Observation Value -64.78 is a Potential Outlier (L											
216												
217	Test Statistic: 0.342											
218												
219	For 10% significance level, -64.78 is not an outlier.											
220	For 5% significance level, -64.78 is not an outlier.											
221	For 1% significance level, -64.78 is not an outlier.											
222												
223												
224	Dixon's Outlier Test for TotalCalcium (cbl - 308i)											
225												
226	Number of Observations = 8											
227	10% critical value: 0.479											
228	5% critical value: 0.554											
229	1% critical value: 0.683											
230												
231	1. Observation Value 954 is a Potential Outlier (Up											
232												
233	Test Statistic: 0.092											
234												
235	For 10% significance level, 954 is not an outlier.											
236	For 5% significance level, 954 is not an outlier.											
237	For 1% significance level, 954 is not an outlier.											
238												
239	2. Observation Value 870 is a Potential Outlier (Low											
240												
241	Test Statistic: 0.104											
242												
243	For 10% significance level, 870 is not an outlier.											
244	For 5% significance level, 870 is not an outlier.											
245	For 1% significance level, 870 is not an outlier.											
246												
247												
248	Dixon's Outlier Test for TotalCalcium (cbl - 340i)											
249												
250	Number of Observations = 8											
251	10% critical value: 0.479											
252	5% critical value: 0.554											
253	1% critical value: 0.683											
254												
255	1. Observation Value 627 is a Potential Outlier (Up											
256												

	A	B	C	D	E	F	G	H	I	J	K	L
257	Test Statistic: 0.317											
258												
259	For 10% significance level, 627 is not an outlier.											
260	For 5% significance level, 627 is not an outlier.											
261	For 1% significance level, 627 is not an outlier.											
262												
263	2. Observation Value 560 is a Potential Outlier (Low)											
264												
265	Test Statistic: 0.085											
266												
267	For 10% significance level, 560 is not an outlier.											
268	For 5% significance level, 560 is not an outlier.											
269	For 1% significance level, 560 is not an outlier.											
270												
271												
272	Dixon's Outlier Test for TotalCalcium (cbl - 341i)											
273												
274	Number of Observations = 8											
275	10% critical value: 0.479											
276	5% critical value: 0.554											
277	1% critical value: 0.683											
278												
279	1. Observation Value 950 is a Potential Outlier (Upper)											
280												
281	Test Statistic: 0.431											
282												
283	For 10% significance level, 950 is not an outlier.											
284	For 5% significance level, 950 is not an outlier.											
285	For 1% significance level, 950 is not an outlier.											
286												
287	2. Observation Value 829 is a Potential Outlier (Low)											
288												
289	Test Statistic: 0.247											
290												
291	For 10% significance level, 829 is not an outlier.											
292	For 5% significance level, 829 is not an outlier.											
293	For 1% significance level, 829 is not an outlier.											
294												
295												
296	Dixon's Outlier Test for Chloride (cbl - 301i)											
297												
298	Number of Observations = 8											
299	10% critical value: 0.479											
300	5% critical value: 0.554											
301	1% critical value: 0.683											
302												
303	1. Observation Value 3200 is a Potential Outlier (Upper)											
304												
305	Test Statistic: 0.737											
306												
307	For 10% significance level, 3200 is an outlier.											
308	For 5% significance level, 3200 is an outlier.											
309	For 1% significance level, 3200 is an outlier.											
310												
311	2. Observation Value 2160 is a Potential Outlier (Low)											
312												
313	Test Statistic: 0.265											
314												
315	For 10% significance level, 2160 is not an outlier.											
316	For 5% significance level, 2160 is not an outlier.											
317	For 1% significance level, 2160 is not an outlier.											
318												
319												
320	Dixon's Outlier Test for Chloride (cbl - 302i)											

	A	B	C	D	E	F	G	H	I	J	K	L
385	Test Statistic: 0.425											
386												
387	For 10% significance level, 2360 is not an outlier.											
388	For 5% significance level, 2360 is not an outlier.											
389	For 1% significance level, 2360 is not an outlier.											
390												
391												
392	Dixon's Outlier Test for Chloride (cbl - 340i)											
393												
394	Number of Observations = 8											
395	10% critical value: 0.479											
396	5% critical value: 0.554											
397	1% critical value: 0.683											
398												
399	1. Observation Value 2520 is a Potential Outlier (U											
400												
401	Test Statistic: 0.538											
402												
403	For 10% significance level, 2520 is an outlier.											
404	For 5% significance level, 2520 is not an outlier.											
405	For 1% significance level, 2520 is not an outlier.											
406												
407	2. Observation Value 2070 is a Potential Outlier (Lo											
408												
409	Test Statistic: 0.613											
410												
411	For 10% significance level, 2070 is an outlier.											
412	For 5% significance level, 2070 is an outlier.											
413	For 1% significance level, 2070 is not an outlier.											
414												
415												
416	Dixon's Outlier Test for Chloride (cbl - 341i)											
417												
418	Number of Observations = 8											
419	10% critical value: 0.479											
420	5% critical value: 0.554											
421	1% critical value: 0.683											
422												
423	1. Observation Value 2000 is a Potential Outlier (U											
424												
425	Test Statistic: 0.103											
426												
427	For 10% significance level, 2000 is not an outlier.											
428	For 5% significance level, 2000 is not an outlier.											
429	For 1% significance level, 2000 is not an outlier.											
430												
431	2. Observation Value 1600 is a Potential Outlier (Lo											
432												
433	Test Statistic: 0.297											
434												
435	For 10% significance level, 1600 is not an outlier.											
436	For 5% significance level, 1600 is not an outlier.											
437	For 1% significance level, 1600 is not an outlier.											
438												
439												
440	Dixon's Outlier Test for Fluoride (cbl - 301i)											
441												
442	Number of Observations = 8											
443	10% critical value: 0.479											
444	5% critical value: 0.554											
445	1% critical value: 0.683											
446												
447	1. Observation Value 0.5 is a Potential Outlier (Upp											
448												

	A	B	C	D	E	F	G	H	I	J	K	L
449	Test Statistic: 0.000											
450												
451	For 10% significance level, 0.5 is not an outlier.											
452	For 5% significance level, 0.5 is not an outlier.											
453	For 1% significance level, 0.5 is not an outlier.											
454												
455	2. Observation Value 0.01 is a Potential Outlier (Low)											
456												
457	Test Statistic: 0.020											
458												
459	For 10% significance level, 0.01 is not an outlier.											
460	For 5% significance level, 0.01 is not an outlier.											
461	For 1% significance level, 0.01 is not an outlier.											
462												
463												
464	Dixon's Outlier Test for Fluoride (cbl - 302i)											
465												
466	Number of Observations = 8											
467	10% critical value: 0.479											
468	5% critical value: 0.554											
469	1% critical value: 0.683											
470												
471	1. Observation Value 0.5 is a Potential Outlier (Upper)											
472												
473	Test Statistic: 0.000											
474												
475	For 10% significance level, 0.5 is not an outlier.											
476	For 5% significance level, 0.5 is not an outlier.											
477	For 1% significance level, 0.5 is not an outlier.											
478												
479	2. Observation Value 0.02 is a Potential Outlier (Low)											
480												
481	Test Statistic: 0.479											
482												
483	For 10% significance level, 0.02 is an outlier.											
484	For 5% significance level, 0.02 is not an outlier.											
485	For 1% significance level, 0.02 is not an outlier.											
486												
487												
488	Dixon's Outlier Test for Fluoride (cbl - 306i)											
489												
490	Number of Observations = 8											
491	10% critical value: 0.479											
492	5% critical value: 0.554											
493	1% critical value: 0.683											
494												
495	1. Observation Value 12.6 is a Potential Outlier (Upper)											
496												
497	Test Statistic: 0.863											
498												
499	For 10% significance level, 12.6 is an outlier.											
500	For 5% significance level, 12.6 is an outlier.											
501	For 1% significance level, 12.6 is an outlier.											
502												
503	2. Observation Value 1 is a Potential Outlier (Lower)											
504												
505	Test Statistic: 0.194											
506												
507	For 10% significance level, 1 is not an outlier.											
508	For 5% significance level, 1 is not an outlier.											
509	For 1% significance level, 1 is not an outlier.											
510												
511												
512	Dixon's Outlier Test for Fluoride (cbl - 308i)											

A	B	C	D	E	F	G	H	I	J	K	L
577	Test Statistic: 0.618										
578											
579	For 10% significance level, -0.244 is an outlier.										
580	For 5% significance level, -0.244 is an outlier.										
581	For 1% significance level, -0.244 is not an outlier.										
582											
583											
584	Dixon's Outlier Test for Sulfate (cbl - 301i)										
585											
586	Number of Observations = 8										
587	10% critical value: 0.479										
588	5% critical value: 0.554										
589	1% critical value: 0.683										
590											
591	1. Observation Value 488 is a Potential Outlier (Up										
592											
593	Test Statistic: 0.660										
594											
595	For 10% significance level, 488 is an outlier.										
596	For 5% significance level, 488 is an outlier.										
597	For 1% significance level, 488 is not an outlier.										
598											
599	2. Observation Value 311 is a Potential Outlier (Low										
600											
601	Test Statistic: 0.214										
602											
603	For 10% significance level, 311 is not an outlier.										
604	For 5% significance level, 311 is not an outlier.										
605	For 1% significance level, 311 is not an outlier.										
606											
607											
608	Dixon's Outlier Test for Sulfate (cbl - 302i)										
609											
610	Number of Observations = 8										
611	10% critical value: 0.479										
612	5% critical value: 0.554										
613	1% critical value: 0.683										
614											
615	1. Observation Value 67.9 is a Potential Outlier (Up										
616											
617	Test Statistic: 0.212										
618											
619	For 10% significance level, 67.9 is not an outlier.										
620	For 5% significance level, 67.9 is not an outlier.										
621	For 1% significance level, 67.9 is not an outlier.										
622											
623	2. Observation Value -56.17 is a Potential Outlier (Low										
624											
625	Test Statistic: 0.099										
626											
627	For 10% significance level, -56.17 is not an outlier.										
628	For 5% significance level, -56.17 is not an outlier.										
629	For 1% significance level, -56.17 is not an outlier.										
630											
631											
632	Dixon's Outlier Test for Sulfate (cbl - 306i)										
633											
634	Number of Observations = 8										
635	10% critical value: 0.479										
636	5% critical value: 0.554										
637	1% critical value: 0.683										
638											
639	1. Observation Value 145.8 is a Potential Outlier (Low										
640											

	A	B	C	D	E	F	G	H	I	J	K	L
641	Test Statistic: 0.003											
642												
643	For 10% significance level, 145.8 is not an outlier.											
644	For 5% significance level, 145.8 is not an outlier.											
645	For 1% significance level, 145.8 is not an outlier.											
646												
647	2. Observation Value -153.3 is a Potential Outlier (L											
648												
649	Test Statistic: 0.200											
650												
651	For 10% significance level, -153.3 is not an outlier.											
652	For 5% significance level, -153.3 is not an outlier.											
653	For 1% significance level, -153.3 is not an outlier.											
654												
655												
656	Dixon's Outlier Test for Sulfate (cbl - 308i)											
657												
658	Number of Observations = 8											
659	10% critical value: 0.479											
660	5% critical value: 0.554											
661	1% critical value: 0.683											
662												
663	1. Observation Value 1580 is a Potential Outlier (U											
664												
665	Test Statistic: 0.176											
666												
667	For 10% significance level, 1580 is not an outlier.											
668	For 5% significance level, 1580 is not an outlier.											
669	For 1% significance level, 1580 is not an outlier.											
670												
671	2. Observation Value 1320 is a Potential Outlier (Lo											
672												
673	Test Statistic: 0.391											
674												
675	For 10% significance level, 1320 is not an outlier.											
676	For 5% significance level, 1320 is not an outlier.											
677	For 1% significance level, 1320 is not an outlier.											
678												
679												
680	Dixon's Outlier Test for Sulfate (cbl - 340i)											
681												
682	Number of Observations = 8											
683	10% critical value: 0.479											
684	5% critical value: 0.554											
685	1% critical value: 0.683											
686												
687	1. Observation Value 715 is a Potential Outlier (Up											
688												
689	Test Statistic: 0.303											
690												
691	For 10% significance level, 715 is not an outlier.											
692	For 5% significance level, 715 is not an outlier.											
693	For 1% significance level, 715 is not an outlier.											
694												
695	2. Observation Value 571 is a Potential Outlier (Low											
696												
697	Test Statistic: 0.395											
698												
699	For 10% significance level, 571 is not an outlier.											
700	For 5% significance level, 571 is not an outlier.											
701	For 1% significance level, 571 is not an outlier.											
702												
703												
704	Dixon's Outlier Test for Sulfate (cbl - 341i)											

	A	B	C	D	E	F	G	H	I	J	K	L
769	Test Statistic: 0.404											
770												
771	For 10% significance level, 4210 is not an outlier.											
772	For 5% significance level, 4210 is not an outlier.											
773	For 1% significance level, 4210 is not an outlier.											
774												
775												
776	Dixon's Outlier Test for TotalTDS (cbl - 306i)											
777												
778	Number of Observations = 8											
779	10% critical value: 0.479											
780	5% critical value: 0.554											
781	1% critical value: 0.683											
782												
783	1. Observation Value 1460 is a Potential Outlier (U											
784												
785	Test Statistic: 0.030											
786												
787	For 10% significance level, 1460 is not an outlier.											
788	For 5% significance level, 1460 is not an outlier.											
789	For 1% significance level, 1460 is not an outlier.											
790												
791	2. Observation Value 431 is a Potential Outlier (Low											
792												
793	Test Statistic: 0.356											
794												
795	For 10% significance level, 431 is not an outlier.											
796	For 5% significance level, 431 is not an outlier.											
797	For 1% significance level, 431 is not an outlier.											
798												
799												
800	Dixon's Outlier Test for TotalTDS (cbl - 308i)											
801												
802	Number of Observations = 8											
803	10% critical value: 0.479											
804	5% critical value: 0.554											
805	1% critical value: 0.683											
806												
807	1. Observation Value 10200 is a Potential Outlier (High											
808												
809	Test Statistic: 0.156											
810												
811	For 10% significance level, 10200 is not an outlier.											
812	For 5% significance level, 10200 is not an outlier.											
813	For 1% significance level, 10200 is not an outlier.											
814												
815	2. Observation Value 6120 is a Potential Outlier (Low											
816												
817	Test Statistic: 0.103											
818												
819	For 10% significance level, 6120 is not an outlier.											
820	For 5% significance level, 6120 is not an outlier.											
821	For 1% significance level, 6120 is not an outlier.											
822												
823												
824	Dixon's Outlier Test for TotalTDS (cbl - 340i)											
825												
826	Number of Observations = 8											
827	10% critical value: 0.479											
828	5% critical value: 0.554											
829	1% critical value: 0.683											
830												
831	1. Observation Value 6250 is a Potential Outlier (U											
832												

	A	B	C	D	E	F	G	H	I	J	K	L
833	Test Statistic: 0.016											
834												
835	For 10% significance level, 6250 is not an outlier.											
836	For 5% significance level, 6250 is not an outlier.											
837	For 1% significance level, 6250 is not an outlier.											
838												
839	2. Observation Value 4880 is a Potential Outlier (Lo											
840												
841	Test Statistic: 0.081											
842												
843	For 10% significance level, 4880 is not an outlier.											
844	For 5% significance level, 4880 is not an outlier.											
845	For 1% significance level, 4880 is not an outlier.											
846												
847												
848	Dixon's Outlier Test for TotalTDS (cbl - 341i)											
849												
850	Number of Observations = 8											
851	10% critical value: 0.479											
852	5% critical value: 0.554											
853	1% critical value: 0.683											
854												
855	1. Observation Value 5940 is a Potential Outlier (U											
856												
857	Test Statistic: 0.488											
858												
859	For 10% significance level, 5940 is an outlier.											
860	For 5% significance level, 5940 is not an outlier.											
861	For 1% significance level, 5940 is not an outlier.											
862												
863	2. Observation Value 4150 is a Potential Outlier (Lo											
864												
865	Test Statistic: 0.094											
866												
867	For 10% significance level, 4150 is not an outlier.											
868	For 5% significance level, 4150 is not an outlier.											
869	For 1% significance level, 4150 is not an outlier.											
870												
871												
872	Dixon's Outlier Test for pH (cbl - 301i)											
873												
874	Number of Observations = 8											
875	10% critical value: 0.479											
876	5% critical value: 0.554											
877	1% critical value: 0.683											
878												
879	1. Observation Value 6.33 is a Potential Outlier (Up											
880												
881	Test Statistic: 0.053											
882												
883	For 10% significance level, 6.33 is not an outlier.											
884	For 5% significance level, 6.33 is not an outlier.											
885	For 1% significance level, 6.33 is not an outlier.											
886												
887	2. Observation Value 5.95 is a Potential Outlier (Lo											
888												
889	Test Statistic: 0.000											
890												
891	For 10% significance level, 5.95 is not an outlier.											
892	For 5% significance level, 5.95 is not an outlier.											
893	For 1% significance level, 5.95 is not an outlier.											
894												
895												
896	Dixon's Outlier Test for pH (cbl - 302i)											

	A	B	C	D	E	F	G	H	I	J	K	L
961	Test Statistic: 0.500											
962												
963	For 10% significance level, 5.54 is an outlier.											
964	For 5% significance level, 5.54 is not an outlier.											
965	For 1% significance level, 5.54 is not an outlier.											
966												
967												
968	Dixon's Outlier Test for pH (cbl - 340i)											
969												
970	Number of Observations = 8											
971	10% critical value: 0.479											
972	5% critical value: 0.554											
973	1% critical value: 0.683											
974												
975	1. Observation Value 6.95 is a Potential Outlier (Upper)											
976												
977	Test Statistic: 0.364											
978												
979	For 10% significance level, 6.95 is not an outlier.											
980	For 5% significance level, 6.95 is not an outlier.											
981	For 1% significance level, 6.95 is not an outlier.											
982												
983	2. Observation Value 5.46 is a Potential Outlier (Lower)											
984												
985	Test Statistic: 0.292											
986												
987	For 10% significance level, 5.46 is not an outlier.											
988	For 5% significance level, 5.46 is not an outlier.											
989	For 1% significance level, 5.46 is not an outlier.											
990												
991												
992	Dixon's Outlier Test for pH (cbl - 341i)											
993												
994	Number of Observations = 8											
995	10% critical value: 0.479											
996	5% critical value: 0.554											
997	1% critical value: 0.683											
998												
999	1. Observation Value 6.21 is a Potential Outlier (Upper)											
1000												
1001	Test Statistic: 0.030											
1002												
1003	For 10% significance level, 6.21 is not an outlier.											
1004	For 5% significance level, 6.21 is not an outlier.											
1005	For 1% significance level, 6.21 is not an outlier.											
1006												
1007	2. Observation Value 5.23 is a Potential Outlier (Lower)											
1008												
1009	Test Statistic: 0.323											
1010												
1011	For 10% significance level, 5.23 is not an outlier.											
1012	For 5% significance level, 5.23 is not an outlier.											
1013	For 1% significance level, 5.23 is not an outlier.											
1014												

A	B	C	D	E	F	G	H	I	J	K	L
1				Outlier Tests for Selected Uncensored Variables							
2	User Selected Options										
3	Date/Time of Computation	ProUCL 5.112/3/2017 2:20:41 PM									
4		From File	DetectionMonitoring_ProUCLUploadDeTrendResiduals_11272017_a.xls								
5		Full Precision	OFF								
6											
7											
8	Dixon's Outlier Test for TotalBoron (cbl - 301i)										
9											
10	Number of Observations = 8										
11	10% critical value: 0.479										
12	5% critical value: 0.554										
13	1% critical value: 0.683										
14											
15	1. Observation Value 0.0707 is a Potential Outlier (L										
16											
17	Test Statistic: 1.000										
18											
19	For 10% significance level, 0.0707 is an outlier.										
20	For 5% significance level, 0.0707 is an outlier.										
21	For 1% significance level, 0.0707 is an outlier.										
22											
23	2. Observation Value 0.05 is a Potential Outlier (Lo										
24											
25	Test Statistic: NaN										
26											
27	For 10% significance level, 0.05 is an outlier.										
28	For 5% significance level, 0.05 is an outlier.										
29	For 1% significance level, 0.05 is an outlier.										
30											
31											
32	Dixon's Outlier Test for TotalBoron (cbl - 302i)										
33											
34	Number of Observations = 8										
35	10% critical value: 0.479										
36	5% critical value: 0.554										
37	1% critical value: 0.683										
38											
39	1. Observation Value 0.297 is a Potential Outlier (L										
40											
41	Test Statistic: 0.571										
42											
43	For 10% significance level, 0.297 is an outlier.										
44	For 5% significance level, 0.297 is an outlier.										
45	For 1% significance level, 0.297 is not an outlier.										
46											
47	2. Observation Value 0.05 is a Potential Outlier (Lo										
48											
49	Test Statistic: 0.000										
50											
51	For 10% significance level, 0.05 is not an outlier.										
52	For 5% significance level, 0.05 is not an outlier.										
53	For 1% significance level, 0.05 is not an outlier.										
54											
55											
56	Dixon's Outlier Test for TotalBoron (cbl - 306i)										
57											
58	Number of Observations = 8										
59	10% critical value: 0.479										
60	5% critical value: 0.554										
61	1% critical value: 0.683										
62											
63	1. Observation Value 0.124 is a Potential Outlier (L										
64											

	A	B	C	D	E	F	G	H	I	J	K	L
65	Test Statistic: 0.327											
66												
67	For 10% significance level, 0.124 is not an outlier.											
68	For 5% significance level, 0.124 is not an outlier.											
69	For 1% significance level, 0.124 is not an outlier.											
70												
71	2. Observation Value 0.05 is a Potential Outlier (Lo											
72												
73	Test Statistic: 0.000											
74												
75	For 10% significance level, 0.05 is not an outlier.											
76	For 5% significance level, 0.05 is not an outlier.											
77	For 1% significance level, 0.05 is not an outlier.											
78												
79												
80	Dixon's Outlier Test for TotalBoron (cbl - 308i)											
81												
82	Number of Observations = 8											
83	10% critical value: 0.479											
84	5% critical value: 0.554											
85	1% critical value: 0.683											
86												
87	1. Observation Value 0.545 is a Potential Outlier (L											
88												
89	Test Statistic: 0.584											
90												
91	For 10% significance level, 0.545 is an outlier.											
92	For 5% significance level, 0.545 is an outlier.											
93	For 1% significance level, 0.545 is not an outlier.											
94												
95	2. Observation Value 0.05 is a Potential Outlier (Lo											
96												
97	Test Statistic: 0.000											
98												
99	For 10% significance level, 0.05 is not an outlier.											
100	For 5% significance level, 0.05 is not an outlier.											
101	For 1% significance level, 0.05 is not an outlier.											
102												
103												
104	Dixon's Outlier Test for TotalBoron (cbl - 340i)											
105												
106	Number of Observations = 8											
107	10% critical value: 0.479											
108	5% critical value: 0.554											
109	1% critical value: 0.683											
110												
111	1. Observation Value 0.174 is a Potential Outlier (L											
112												
113	Test Statistic: 0.129											
114												
115	For 10% significance level, 0.174 is not an outlier.											
116	For 5% significance level, 0.174 is not an outlier.											
117	For 1% significance level, 0.174 is not an outlier.											
118												
119	2. Observation Value 0.05 is a Potential Outlier (Lo											
120												
121	Test Statistic: 0.000											
122												
123	For 10% significance level, 0.05 is not an outlier.											
124	For 5% significance level, 0.05 is not an outlier.											
125	For 1% significance level, 0.05 is not an outlier.											
126												
127												
128	Dixon's Outlier Test for TotalBoron (cbl - 341i)											

	A	B	C	D	E	F	G	H	I	J	K	L
193	Test Statistic: 0.222											
194												
195	For 10% significance level, 1010 is not an outlier.											
196	For 5% significance level, 1010 is not an outlier.											
197	For 1% significance level, 1010 is not an outlier.											
198												
199												
200	Dixon's Outlier Test for TotalCalcium (cbl - 306i)											
201												
202	Number of Observations = 8											
203	10% critical value: 0.479											
204	5% critical value: 0.554											
205	1% critical value: 0.683											
206												
207	1. Observation Value 52.22 is a Potential Outlier (L											
208												
209	Test Statistic: 0.141											
210												
211	For 10% significance level, 52.22 is not an outlier.											
212	For 5% significance level, 52.22 is not an outlier.											
213	For 1% significance level, 52.22 is not an outlier.											
214												
215	2. Observation Value -64.78 is a Potential Outlier (L											
216												
217	Test Statistic: 0.342											
218												
219	For 10% significance level, -64.78 is not an outlier.											
220	For 5% significance level, -64.78 is not an outlier.											
221	For 1% significance level, -64.78 is not an outlier.											
222												
223												
224	Dixon's Outlier Test for TotalCalcium (cbl - 308i)											
225												
226	Number of Observations = 8											
227	10% critical value: 0.479											
228	5% critical value: 0.554											
229	1% critical value: 0.683											
230												
231	1. Observation Value 954 is a Potential Outlier (Up											
232												
233	Test Statistic: 0.092											
234												
235	For 10% significance level, 954 is not an outlier.											
236	For 5% significance level, 954 is not an outlier.											
237	For 1% significance level, 954 is not an outlier.											
238												
239	2. Observation Value 870 is a Potential Outlier (Low											
240												
241	Test Statistic: 0.104											
242												
243	For 10% significance level, 870 is not an outlier.											
244	For 5% significance level, 870 is not an outlier.											
245	For 1% significance level, 870 is not an outlier.											
246												
247												
248	Dixon's Outlier Test for TotalCalcium (cbl - 340i)											
249												
250	Number of Observations = 8											
251	10% critical value: 0.479											
252	5% critical value: 0.554											
253	1% critical value: 0.683											
254												
255	1. Observation Value 627 is a Potential Outlier (Up											
256												

	A	B	C	D	E	F	G	H	I	J	K	L
257	Test Statistic: 0.317											
258												
259	For 10% significance level, 627 is not an outlier.											
260	For 5% significance level, 627 is not an outlier.											
261	For 1% significance level, 627 is not an outlier.											
262												
263	2. Observation Value 560 is a Potential Outlier (Low)											
264												
265	Test Statistic: 0.085											
266												
267	For 10% significance level, 560 is not an outlier.											
268	For 5% significance level, 560 is not an outlier.											
269	For 1% significance level, 560 is not an outlier.											
270												
271												
272	Dixon's Outlier Test for TotalCalcium (cbl - 341i)											
273												
274	Number of Observations = 8											
275	10% critical value: 0.479											
276	5% critical value: 0.554											
277	1% critical value: 0.683											
278												
279	1. Observation Value 950 is a Potential Outlier (Upper)											
280												
281	Test Statistic: 0.431											
282												
283	For 10% significance level, 950 is not an outlier.											
284	For 5% significance level, 950 is not an outlier.											
285	For 1% significance level, 950 is not an outlier.											
286												
287	2. Observation Value 829 is a Potential Outlier (Low)											
288												
289	Test Statistic: 0.247											
290												
291	For 10% significance level, 829 is not an outlier.											
292	For 5% significance level, 829 is not an outlier.											
293	For 1% significance level, 829 is not an outlier.											
294												
295												
296	Dixon's Outlier Test for Chloride (cbl - 301i)											
297												
298	Number of Observations = 8											
299	10% critical value: 0.479											
300	5% critical value: 0.554											
301	1% critical value: 0.683											
302												
303	1. Observation Value 3200 is a Potential Outlier (Upper)											
304												
305	Test Statistic: 0.737											
306												
307	For 10% significance level, 3200 is an outlier.											
308	For 5% significance level, 3200 is an outlier.											
309	For 1% significance level, 3200 is an outlier.											
310												
311	2. Observation Value 2160 is a Potential Outlier (Low)											
312												
313	Test Statistic: 0.265											
314												
315	For 10% significance level, 2160 is not an outlier.											
316	For 5% significance level, 2160 is not an outlier.											
317	For 1% significance level, 2160 is not an outlier.											
318												
319												
320	Dixon's Outlier Test for Chloride (cbl - 302i)											

	A	B	C	D	E	F	G	H	I	J	K	L
385	Test Statistic: 0.425											
386												
387	For 10% significance level, 2360 is not an outlier.											
388	For 5% significance level, 2360 is not an outlier.											
389	For 1% significance level, 2360 is not an outlier.											
390												
391												
392	Dixon's Outlier Test for Chloride (cbl - 340i)											
393												
394	Number of Observations = 7											
395	10% critical value: 0.434											
396	5% critical value: 0.507											
397	1% critical value: 0.637											
398												
399	1. Observation Value 2520 is a Potential Outlier (U											
400												
401	Test Statistic: 0.538											
402												
403	For 10% significance level, 2520 is an outlier.											
404	For 5% significance level, 2520 is an outlier.											
405	For 1% significance level, 2520 is not an outlier.											
406												
407	2. Observation Value 2260 is a Potential Outlier (Lo											
408												
409	Test Statistic: 0.077											
410												
411	For 10% significance level, 2260 is not an outlier.											
412	For 5% significance level, 2260 is not an outlier.											
413	For 1% significance level, 2260 is not an outlier.											
414												
415												
416	Dixon's Outlier Test for Chloride (cbl - 341i)											
417												
418	Number of Observations = 8											
419	10% critical value: 0.479											
420	5% critical value: 0.554											
421	1% critical value: 0.683											
422												
423	1. Observation Value 2000 is a Potential Outlier (U											
424												
425	Test Statistic: 0.103											
426												
427	For 10% significance level, 2000 is not an outlier.											
428	For 5% significance level, 2000 is not an outlier.											
429	For 1% significance level, 2000 is not an outlier.											
430												
431	2. Observation Value 1600 is a Potential Outlier (Lo											
432												
433	Test Statistic: 0.297											
434												
435	For 10% significance level, 1600 is not an outlier.											
436	For 5% significance level, 1600 is not an outlier.											
437	For 1% significance level, 1600 is not an outlier.											
438												
439												
440	Dixon's Outlier Test for Fluoride (cbl - 301i)											
441												
442	Number of Observations = 8											
443	10% critical value: 0.479											
444	5% critical value: 0.554											
445	1% critical value: 0.683											
446												
447	1. Observation Value 0.5 is a Potential Outlier (Upp											
448												

	A	B	C	D	E	F	G	H	I	J	K	L
449	Test Statistic: 0.000											
450												
451	For 10% significance level, 0.5 is not an outlier.											
452	For 5% significance level, 0.5 is not an outlier.											
453	For 1% significance level, 0.5 is not an outlier.											
454												
455	2. Observation Value 0.01 is a Potential Outlier (Low)											
456												
457	Test Statistic: 0.020											
458												
459	For 10% significance level, 0.01 is not an outlier.											
460	For 5% significance level, 0.01 is not an outlier.											
461	For 1% significance level, 0.01 is not an outlier.											
462												
463												
464	Dixon's Outlier Test for Fluoride (cbl - 302i)											
465												
466	Number of Observations = 8											
467	10% critical value: 0.479											
468	5% critical value: 0.554											
469	1% critical value: 0.683											
470												
471	1. Observation Value 0.5 is a Potential Outlier (Upper)											
472												
473	Test Statistic: 0.000											
474												
475	For 10% significance level, 0.5 is not an outlier.											
476	For 5% significance level, 0.5 is not an outlier.											
477	For 1% significance level, 0.5 is not an outlier.											
478												
479	2. Observation Value 0.02 is a Potential Outlier (Low)											
480												
481	Test Statistic: 0.479											
482												
483	For 10% significance level, 0.02 is an outlier.											
484	For 5% significance level, 0.02 is not an outlier.											
485	For 1% significance level, 0.02 is not an outlier.											
486												
487												
488	Dixon's Outlier Test for Fluoride (cbl - 306i)											
489												
490	Number of Observations = 8											
491	10% critical value: 0.479											
492	5% critical value: 0.554											
493	1% critical value: 0.683											
494												
495	1. Observation Value 12.6 is a Potential Outlier (Upper)											
496												
497	Test Statistic: 0.863											
498												
499	For 10% significance level, 12.6 is an outlier.											
500	For 5% significance level, 12.6 is an outlier.											
501	For 1% significance level, 12.6 is an outlier.											
502												
503	2. Observation Value 1 is a Potential Outlier (Lower)											
504												
505	Test Statistic: 0.194											
506												
507	For 10% significance level, 1 is not an outlier.											
508	For 5% significance level, 1 is not an outlier.											
509	For 1% significance level, 1 is not an outlier.											
510												
511												
512	Dixon's Outlier Test for Fluoride (cbl - 308i)											

	A	B	C	D	E	F	G	H	I	J	K	L
577	Test Statistic: 0.085											
578												
579	For 10% significance level, -0.0325 is not an outlier.											
580	For 5% significance level, -0.0325 is not an outlier.											
581	For 1% significance level, -0.0325 is not an outlier.											
582												
583												
584	Dixon's Outlier Test for Sulfate (cbl - 301i)											
585												
586	Number of Observations = 7											
587	10% critical value: 0.434											
588	5% critical value: 0.507											
589	1% critical value: 0.637											
590												
591	1. Observation Value 381 is a Potential Outlier (Up											
592												
593	Test Statistic: 0.557											
594												
595	For 10% significance level, 381 is an outlier.											
596	For 5% significance level, 381 is an outlier.											
597	For 1% significance level, 381 is not an outlier.											
598												
599	2. Observation Value 311 is a Potential Outlier (Low											
600												
601	Test Statistic: 0.214											
602												
603	For 10% significance level, 311 is not an outlier.											
604	For 5% significance level, 311 is not an outlier.											
605	For 1% significance level, 311 is not an outlier.											
606												
607												
608	Dixon's Outlier Test for Sulfate (cbl - 302i)											
609												
610	Number of Observations = 8											
611	10% critical value: 0.479											
612	5% critical value: 0.554											
613	1% critical value: 0.683											
614												
615	1. Observation Value 67.9 is a Potential Outlier (Up											
616												
617	Test Statistic: 0.212											
618												
619	For 10% significance level, 67.9 is not an outlier.											
620	For 5% significance level, 67.9 is not an outlier.											
621	For 1% significance level, 67.9 is not an outlier.											
622												
623	2. Observation Value -56.17 is a Potential Outlier (Low											
624												
625	Test Statistic: 0.099											
626												
627	For 10% significance level, -56.17 is not an outlier.											
628	For 5% significance level, -56.17 is not an outlier.											
629	For 1% significance level, -56.17 is not an outlier.											
630												
631												
632	Dixon's Outlier Test for Sulfate (cbl - 306i)											
633												
634	Number of Observations = 8											
635	10% critical value: 0.479											
636	5% critical value: 0.554											
637	1% critical value: 0.683											
638												
639	1. Observation Value 145.8 is a Potential Outlier (Low											
640												

	A	B	C	D	E	F	G	H	I	J	K	L
641	Test Statistic: 0.003											
642												
643	For 10% significance level, 145.8 is not an outlier.											
644	For 5% significance level, 145.8 is not an outlier.											
645	For 1% significance level, 145.8 is not an outlier.											
646												
647	2. Observation Value -153.3 is a Potential Outlier (L											
648												
649	Test Statistic: 0.200											
650												
651	For 10% significance level, -153.3 is not an outlier.											
652	For 5% significance level, -153.3 is not an outlier.											
653	For 1% significance level, -153.3 is not an outlier.											
654												
655												
656	Dixon's Outlier Test for Sulfate (cbl - 308i)											
657												
658	Number of Observations = 8											
659	10% critical value: 0.479											
660	5% critical value: 0.554											
661	1% critical value: 0.683											
662												
663	1. Observation Value 1580 is a Potential Outlier (U											
664												
665	Test Statistic: 0.176											
666												
667	For 10% significance level, 1580 is not an outlier.											
668	For 5% significance level, 1580 is not an outlier.											
669	For 1% significance level, 1580 is not an outlier.											
670												
671	2. Observation Value 1320 is a Potential Outlier (Lo											
672												
673	Test Statistic: 0.391											
674												
675	For 10% significance level, 1320 is not an outlier.											
676	For 5% significance level, 1320 is not an outlier.											
677	For 1% significance level, 1320 is not an outlier.											
678												
679												
680	Dixon's Outlier Test for Sulfate (cbl - 340i)											
681												
682	Number of Observations = 8											
683	10% critical value: 0.479											
684	5% critical value: 0.554											
685	1% critical value: 0.683											
686												
687	1. Observation Value 715 is a Potential Outlier (Up											
688												
689	Test Statistic: 0.303											
690												
691	For 10% significance level, 715 is not an outlier.											
692	For 5% significance level, 715 is not an outlier.											
693	For 1% significance level, 715 is not an outlier.											
694												
695	2. Observation Value 571 is a Potential Outlier (Low											
696												
697	Test Statistic: 0.395											
698												
699	For 10% significance level, 571 is not an outlier.											
700	For 5% significance level, 571 is not an outlier.											
701	For 1% significance level, 571 is not an outlier.											
702												
703												
704	Dixon's Outlier Test for Sulfate (cbl - 341i)											

	A	B	C	D	E	F	G	H	I	J	K	L
769	Test Statistic: 0.404											
770												
771	For 10% significance level, 4210 is not an outlier.											
772	For 5% significance level, 4210 is not an outlier.											
773	For 1% significance level, 4210 is not an outlier.											
774												
775												
776	Dixon's Outlier Test for TotalTDS (cbl - 306i)											
777												
778	Number of Observations = 8											
779	10% critical value: 0.479											
780	5% critical value: 0.554											
781	1% critical value: 0.683											
782												
783	1. Observation Value 1460 is a Potential Outlier (U											
784												
785	Test Statistic: 0.030											
786												
787	For 10% significance level, 1460 is not an outlier.											
788	For 5% significance level, 1460 is not an outlier.											
789	For 1% significance level, 1460 is not an outlier.											
790												
791	2. Observation Value 431 is a Potential Outlier (Low											
792												
793	Test Statistic: 0.356											
794												
795	For 10% significance level, 431 is not an outlier.											
796	For 5% significance level, 431 is not an outlier.											
797	For 1% significance level, 431 is not an outlier.											
798												
799												
800	Dixon's Outlier Test for TotalTDS (cbl - 308i)											
801												
802	Number of Observations = 8											
803	10% critical value: 0.479											
804	5% critical value: 0.554											
805	1% critical value: 0.683											
806												
807	1. Observation Value 10200 is a Potential Outlier (High											
808												
809	Test Statistic: 0.156											
810												
811	For 10% significance level, 10200 is not an outlier.											
812	For 5% significance level, 10200 is not an outlier.											
813	For 1% significance level, 10200 is not an outlier.											
814												
815	2. Observation Value 6120 is a Potential Outlier (Low											
816												
817	Test Statistic: 0.103											
818												
819	For 10% significance level, 6120 is not an outlier.											
820	For 5% significance level, 6120 is not an outlier.											
821	For 1% significance level, 6120 is not an outlier.											
822												
823												
824	Dixon's Outlier Test for TotalTDS (cbl - 340i)											
825												
826	Number of Observations = 8											
827	10% critical value: 0.479											
828	5% critical value: 0.554											
829	1% critical value: 0.683											
830												
831	1. Observation Value 6250 is a Potential Outlier (U											
832												

	A	B	C	D	E	F	G	H	I	J	K	L
833	Test Statistic: 0.016											
834												
835	For 10% significance level, 6250 is not an outlier.											
836	For 5% significance level, 6250 is not an outlier.											
837	For 1% significance level, 6250 is not an outlier.											
838												
839	2. Observation Value 4880 is a Potential Outlier (Lo											
840												
841	Test Statistic: 0.081											
842												
843	For 10% significance level, 4880 is not an outlier.											
844	For 5% significance level, 4880 is not an outlier.											
845	For 1% significance level, 4880 is not an outlier.											
846												
847												
848	Dixon's Outlier Test for TotalTDS (cbl - 341i)											
849												
850	Number of Observations = 8											
851	10% critical value: 0.479											
852	5% critical value: 0.554											
853	1% critical value: 0.683											
854												
855	1. Observation Value 5940 is a Potential Outlier (U											
856												
857	Test Statistic: 0.488											
858												
859	For 10% significance level, 5940 is an outlier.											
860	For 5% significance level, 5940 is not an outlier.											
861	For 1% significance level, 5940 is not an outlier.											
862												
863	2. Observation Value 4150 is a Potential Outlier (Lo											
864												
865	Test Statistic: 0.094											
866												
867	For 10% significance level, 4150 is not an outlier.											
868	For 5% significance level, 4150 is not an outlier.											
869	For 1% significance level, 4150 is not an outlier.											
870												
871												
872	Dixon's Outlier Test for pH (cbl - 301i)											
873												
874	Number of Observations = 8											
875	10% critical value: 0.479											
876	5% critical value: 0.554											
877	1% critical value: 0.683											
878												
879	1. Observation Value 6.33 is a Potential Outlier (Up											
880												
881	Test Statistic: 0.053											
882												
883	For 10% significance level, 6.33 is not an outlier.											
884	For 5% significance level, 6.33 is not an outlier.											
885	For 1% significance level, 6.33 is not an outlier.											
886												
887	2. Observation Value 5.95 is a Potential Outlier (Lo											
888												
889	Test Statistic: 0.000											
890												
891	For 10% significance level, 5.95 is not an outlier.											
892	For 5% significance level, 5.95 is not an outlier.											
893	For 1% significance level, 5.95 is not an outlier.											
894												
895												
896	Dixon's Outlier Test for pH (cbl - 302i)											

	A	B	C	D	E	F	G	H	I	J	K	L
961	Test Statistic: 0.500											
962												
963	For 10% significance level, 5.54 is an outlier.											
964	For 5% significance level, 5.54 is not an outlier.											
965	For 1% significance level, 5.54 is not an outlier.											
966												
967												
968	Dixon's Outlier Test for pH (cbl - 340i)											
969												
970	Number of Observations = 8											
971	10% critical value: 0.479											
972	5% critical value: 0.554											
973	1% critical value: 0.683											
974												
975	1. Observation Value 6.95 is a Potential Outlier (Upper)											
976												
977	Test Statistic: 0.364											
978												
979	For 10% significance level, 6.95 is not an outlier.											
980	For 5% significance level, 6.95 is not an outlier.											
981	For 1% significance level, 6.95 is not an outlier.											
982												
983	2. Observation Value 5.46 is a Potential Outlier (Lower)											
984												
985	Test Statistic: 0.292											
986												
987	For 10% significance level, 5.46 is not an outlier.											
988	For 5% significance level, 5.46 is not an outlier.											
989	For 1% significance level, 5.46 is not an outlier.											
990												
991												
992	Dixon's Outlier Test for pH (cbl - 341i)											
993												
994	Number of Observations = 8											
995	10% critical value: 0.479											
996	5% critical value: 0.554											
997	1% critical value: 0.683											
998												
999	1. Observation Value 6.21 is a Potential Outlier (Upper)											
1000												
1001	Test Statistic: 0.030											
1002												
1003	For 10% significance level, 6.21 is not an outlier.											
1004	For 5% significance level, 6.21 is not an outlier.											
1005	For 1% significance level, 6.21 is not an outlier.											
1006												
1007	2. Observation Value 5.23 is a Potential Outlier (Lower)											
1008												
1009	Test Statistic: 0.323											
1010												
1011	For 10% significance level, 5.23 is not an outlier.											
1012	For 5% significance level, 5.23 is not an outlier.											
1013	For 1% significance level, 5.23 is not an outlier.											
1014												

APPENDIX C

Groundwater Monitoring System Certification of
Alternate Source Demonstration, AMEC Foster Wheeler
Environmental and Infrastructure, Inc. – April 13, 2018

**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 (Consultant) was retained by the Lower Colorado River Authority (LCRA) to perform an alternate source demonstration (ASD) in response to the January 2018 identification of a statistically significant increase (SSI) in certain constituents detected in the groundwater monitoring system for the Combustion Byproducts Landfill, a coal combustion residuals (CCR) unit, at the Fayette Power Project in La Grange, Texas. The ASD was performed in accordance with 40 C.F.R. § 257.94(e)(2). The ASD indicates that, based on major anion-cation concentrations in the monitored groundwater unit, the Intermediate Sand, a minimum of two groundwater types (hydro-geochemical facies) are monitored by the wells in the groundwater monitoring system for the CCR unit. Additional discussion regarding the findings of the ASD, and the Professional Engineer's (P.E.'s) certification verifying the accuracy of the information used in making the ASD, are provided herein.

1.0 BACKGROUND

Groundwater monitoring data from eight (8) detection monitoring sampling events were evaluated using the tolerance or prediction limit statistical methodology as certified by the P.E. in October 2017. Preliminary analysis of the groundwater data in January 2018 identified an SSI for certain of the constituents listed in Appendix III to 40 C.F.R. Part 257. The SSI triggered the implementation of the ASD.

In the process of conducting the ASD, existing geochemical data were evaluated; a statistical method-allowed resampling event of each well in the CCR unit's groundwater monitoring system was conducted; additional samples were collected for broader geochemical characterization; and other potential sources were considered. In addition, a new well was installed in an attempt to locate an upgradient Intermediate Sand well, however a saturated Intermediate Sand was not encountered. Furthermore, an upgradient well installed in 2011 was evaluated as a potential upgradient Intermediate Sand well but was determined to be unusable.

Based on the findings of the ASD, it was determined that natural groundwater geochemistry within the area monitored by the CCR unit's groundwater monitoring system is of a heterogeneous nature, with at least two different groundwater types identified by analysis of the calculated milliequivalents of the major cations (sodium, potassium, calcium, and magnesium) and major anions (chloride, bicarbonate-carbonate, and sulfate). These groundwater types, referred to as hydro-geochemical facies, are (1) sodium chloride-type groundwater (for background monitoring well CBL-340I, and monitoring wells CBL-308I, and CBL-306I), and (2) calcium chloride-type groundwater (for monitoring wells CBL-301I, CBL-302I, and CBL-341I). These major cations and anions are naturally present in soils at the Fayette Power Project facility, commonly in calcium carbonate and sulfide-sulfate minerals. Given the heterogeneity of the groundwater beneath, and lateral to, the CCR unit, the SSI identified using interwell analysis was determined to be invalid (i.e., the SSI resulted from an inappropriate analysis and/or statistical evaluation on account of natural spatial variation present in groundwater quality). Accordingly, going forward, the facility will use prediction limit intrawell analysis when making SSI determinations. The intrawell analysis will utilize data from the ninth groundwater sampling event (the resampling event described above) in comparison to each monitoring well's prediction limits developed utilizing the initial eight samples. Existing background monitoring well CBL-340I will no longer be a part of the unit's groundwater monitoring system for geochemical comparisons, as it does not appear to be representative of background groundwater quality for all groundwater flowing beneath the CCR unit.

Based on the above findings regarding aquifer heterogeneity, the SSI identified in January 2018 using interwell analysis is determined to have been invalid, and the prediction limit intrawell analysis discussed above will be used for SSI determinations going forward.

2.0 LIMITATIONS

The Consultant's signature on this document represents that, to the best of the Consultant's knowledge, information, and professional judgment, the aforementioned information is accurate as of the signature date. The Consultant's opinions and decisions are made on the basis of the Consultant's experience, qualifications, and professional judgment, and are not to be construed as warranties or guaranties. In addition, opinions relating to environmental, geologic, and geotechnical conditions (or other estimates) are based on available data, and actual conditions may vary from those encountered at the times and locations where data are obtained, despite the use of due care.

3.0 CERTIFICATION

I, Seth Green, being a Registered P.E. with the State of Texas, do hereby certify to the best of my knowledge, information, and belief, that the information used in the ASD is accurate, and that the SSI identified in the January 2018 analysis may not be a result of a release from the monitored unit, but instead may be a result of natural variability of groundwater present in the uppermost aquifer beneath the unit. As such, per 40 C.F.R. § 257.94(e)(2), the Detection Monitoring Program shall continue, utilizing the prediction limit intrawell analysis for identification of an SSI.



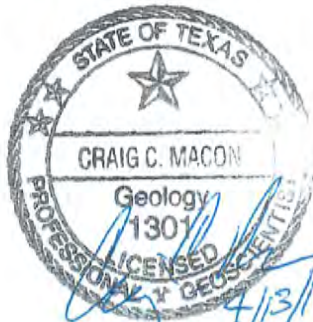
SIGNATURE

[Handwritten signature of Seth Green]
4/13/18

DATE

4/13/18

I, Craig C. Macon, being a Professional Geoscientist the State of Texas, do hereby certify to the best of my knowledge, information, and belief, that information used in the ASD is accurate, and that the SSI identified in the January 2018 analysis may not be a result of a release from the monitored unit, but instead may be a result of natural variability of groundwater present in the uppermost aquifer beneath the unit. As such, per 40 C.F.R. § 257.94(e)(2), the Detection Monitoring Program shall continue, utilizing the prediction limit intrawell analysis for identification of an SSI.



SIGNATURE

[Handwritten signature of Craig C. Macon]
4/13/18

DATE

4/13/18

APPENDIX D

Groundwater Geotechnical Evaluation at the
Lower Colorado River Authority, AMEC Foster Wheeler
Environmental and Infrastructure, Inc. – April 13, 2018

Technical Memorandum



To: Craig C. Macon, P.G.
From: Bruce Wielinga, PhD
Project: 6706180017
Date: April 13, 2018
Subject: Groundwater Geochemical Evaluation at the Lower Colorado River Authority, Fayette Power Project, - La Grange, Texas

INTRODUCTION

On April 17, 2015, the U.S. Environmental Protection Agency (EPA) published its final rule governing the disposal of coal combustion residuals (CCR) from electric utilities, as codified in 40 CFR Parts 257 and 261 [80 Fed. Reg. 21,301 (April 17, 2015)] (the "CCR Rule"). The CCR Rule established nationally applicable minimum criteria for the safe disposal of CCR in landfills and surface impoundments.

The Fayette Power Project (FPP) is a coal-fired power plant located east of La Grange in Fayette County, Texas. CCR generated at the facility are disposed in the Combustion Byproducts Landfill (CBL) located south of the power plant and north of the railroad that borders the FPP site. The existing CBL consists of Cell 1 and Sub-Cell 2D (Figure 1, attached). At final buildout, the CBL may consist of up to three cells, Cells 1 to 3 (Figure 1). Cell 1 was constructed in 1988 and Sub-Cell 2D was constructed in 2015; therefore, both active landfill cells are considered existing units under the CCR Rule. The northern slope of Cell 1 was closed with a final cover system in 1992.

As codified in 40 CFR § 257.91(a), a CCR landfill groundwater monitoring system must consist of a sufficient number of wells, installed at appropriate locations and depths, to yield groundwater samples from the uppermost aquifer beneath the CCR unit that:

- accurately represent the quality of background groundwater, unaffected by leakage from a CCR unit; and
- accurately represent the quality of groundwater passing the waste boundary of the CCR unit.

The CCR Rule also specifies a minimum of one well upgradient of the CCR unit, and three wells downgradient of the CCR unit. See 40 CFR § 257.91(c)(1). The rule allows for variances; for example, an alternative "background" location may be utilized if site conditions do not permit a well to be placed hydrologically upgradient of the CCR unit. See 40 CFR § 257.91(a)(1)(i).

The current system consists of the following monitoring wells (as shown on Figure 1):

- **CBL-340I** – As a saturated intermediate sand groundwater bearing unit is not present north (upgradient) of the CBL, CBL-340I (west of the CBL) was intended to serve as the background well for the CBL. This well is used to evaluate groundwater geochemical conditions at a location unaffected by CBL operations. Although CBL-340I can technically be considered “side-gradient” to Cell 1 of the CBL, it is located 750 feet west of Cell 1, and intermediate sand potentiometric surface data indicates groundwater flow in the area of Cell 1 is due south.
- **CBL-308I** – CBL-308I is within the disposal footprint of the CBL and is positioned to evaluate groundwater conditions immediately downgradient of Sub-Cell 2D (west of the naturally occurring clay partition that splits the Intermediate Sand). This well will eventually be replaced as the waste placement progresses south.
- **CBL-302I** – CBL-302I is within the disposal footprint of the CBL and is positioned to evaluate groundwater conditions downgradient of CBL Cell 1 and Sub-Cell 2A. This well will eventually be replaced as the waste placement progresses south.
- **CBL-341I** – CBL-341I is within the disposal footprint of the CBL and is positioned to evaluate groundwater conditions downgradient of CBL Cell 1 and Sub-Cell 2C. This well will eventually be replaced as the waste placement progresses south.
- **CBL-306I** – CBL-306I is positioned to evaluate groundwater conditions downgradient of the entire CBL, including the permitted stormwater run-off management pond for the CBL.
- **CBL-301I** – CBL-301I is also positioned to evaluate groundwater conditions downgradient of the entire CBL.

In summary, the CBL groundwater monitoring well system meets the requirements of the CCR Rule regarding placement of groundwater monitoring wells and was certified on October 16, 2017, in accordance with the CCR Rule. Specifically, the system is designed to accurately represent the quality of groundwater unaffected by leakage from the CBL, as well as groundwater passing the waste boundary. The design conservatively incorporates the planned southernly expansion of the CBL, with three monitoring wells currently installed inside the landfill's disposal footprint.

GROUNDWATER GEOCHEMISTRY

The above-referenced CBL groundwater monitoring wells were sampled in February 2018 to evaluate the geochemistry of the monitored groundwater. The groundwater samples were sent to an analytical laboratory for analysis of major ion chemistry, alkalinity, calcium (Ca), chloride (Cl), magnesium (Mg), potassium (K), nitrite and nitrate, sodium (Na), and sulfate.

Initial chemical analyses focused on the major ion chemistry, consisting of major cations Ca, K, Mg, and Na, and major anions Cl, bicarbonate and carbonate (HCO_3 and CO_3), and sulfate (SO_4). These major ions can make up more than 90% of the total dissolved solids in a groundwater sample. As groundwater flows through an aquifer it develops a diagnostic chemical signature as a result of interaction with the lithological framework. The term hydro-geochemical facies is used to describe the groundwater types in an aquifer that differ in chemical composition. Several graphical techniques can be used to compare differences or similarities in groundwater types at sites using the major ion chemistry, including Stiff diagrams, and Piper and Durov diagrams.

Stiff diagrams are a visual way of identifying different groundwater types across the site. Stiff diagrams plot the milliequivalent concentrations of four cations (generally Mg, Ca, Na, and K) and three anions (generally $\text{HCO}_3 + \text{CO}_3$, SO_4 , and Cl) about a central vertical axis as shown in **Figure 2**. The points are connected to form a figure, and the shape of the figure quickly highlights the dominant cation and anion combinations.

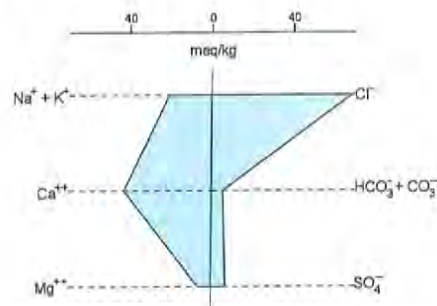


Figure 2. Example of a Stiff Diagram to illustrate major ion chemistry.

Piper (1944) diagrams are another commonly used graphical tool to evaluate the composition of groundwater with respect to major ion chemistry. The Piper diagram employs two trilinear plots that show the percentage composition of three ions or groups of ions relative to one another. By grouping Na and K together, the major cations can be grouped on one trilinear diagram, and likewise grouping HCO_3 and CO_3 together allows the major anions to be grouped on a second trilinear diagram. The diamond shape between them can be used to make a tentative conclusion as to the origin of the water represented by the analysis and to characterize different water types. An example Piper diagram is shown on **Figure 3**. On **Figure 3**, this groundwater sample plots toward the lower left portion of the trilinear plot for the cations (e.g., the Ca corner)

and toward the lower right portion of the trilinear plot for the anions (e.g., the Cl corner) and would be classified as a calcium-chloride type water (Ca-Cl).

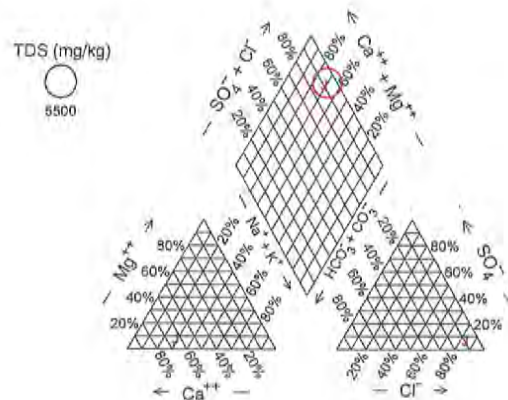


Figure 3. Example of a Piper Diagram

Durov (1948) introduced another graphical method that provides more information on the hydro-geochemical facies by helping to identify the water types. The Durov diagram can display some possible geochemical processes that could help in understanding and evaluating groundwater quality. The Durov diagram is a composite plot consisting of two trilinear plots like the Piper diagram. The cations of interest are plotted versus the anions of interest, and the sides form a binary plot of total cation versus total anion concentrations. The Durov diagram expands on the Piper diagram by including two rectangles for total dissolved solids (TDS) and pH as shown on **Figure 4**.

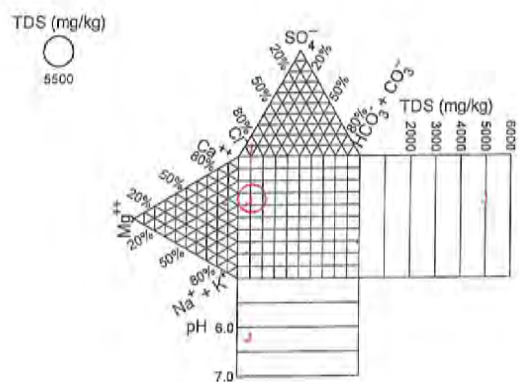


Figure 4. Example of a Durov Diagram

The initial evaluation of groundwater samples collected at FPP in February 2018 focused on the major ion chemistry and identification of major hydrogeochemical facies. Data was entered into the geochemical modeling software Geochemist's Workbench[®] version 11, from Aqueous Solutions, LLC. **Figure 5** shows the 2018 FPP data plotted on a Piper diagram.

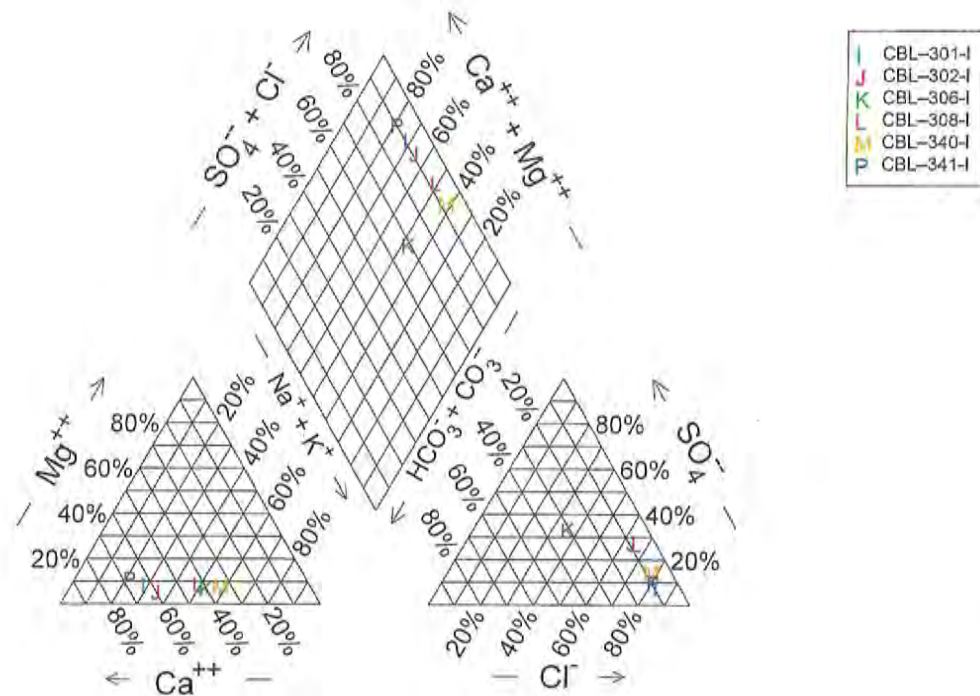


Figure 5. Major Ion Chemistry for Groundwater Samples Collected at FPP CBL in February 2018 Shown on a Piper Diagram.

The cations in groundwater from wells CBL-301I, CBL-302I, and CBL-341I are grouped and plot toward the calcium portion of the left trilinear plot, while groundwater from wells CBL-306I, CBL-308I, and CBL-340I are grouped toward the sodium-potassium portion of the trilinear plot. On the anion trilinear plot, groundwater from all wells except CBL-306I plot toward the chloride portion of the plot, while water from CBL-306I plots near the center of the plot. Geochemist's Workbench[®] calculates the water type for each sample. Groundwater from wells CBL-301I, CBL-302I, and CBL-341I are classified as Ca-Cl type water, and groundwater from wells CBL-306I, CBL-308I, and CBL-340I are classified as Na-Cl type water.

The groundwater data were also plotted on a Durov diagram as shown on **Figure 6**. As discussed above, the Durov diagram adds the dimensions of pH and TDS in rectangles at the bottom and right sides, respectively. The pH of the groundwater at all wells except CBL-306I ranges from pH 6.0 to 6.5, while the pH at well CBL-306I is greater than 6.5.

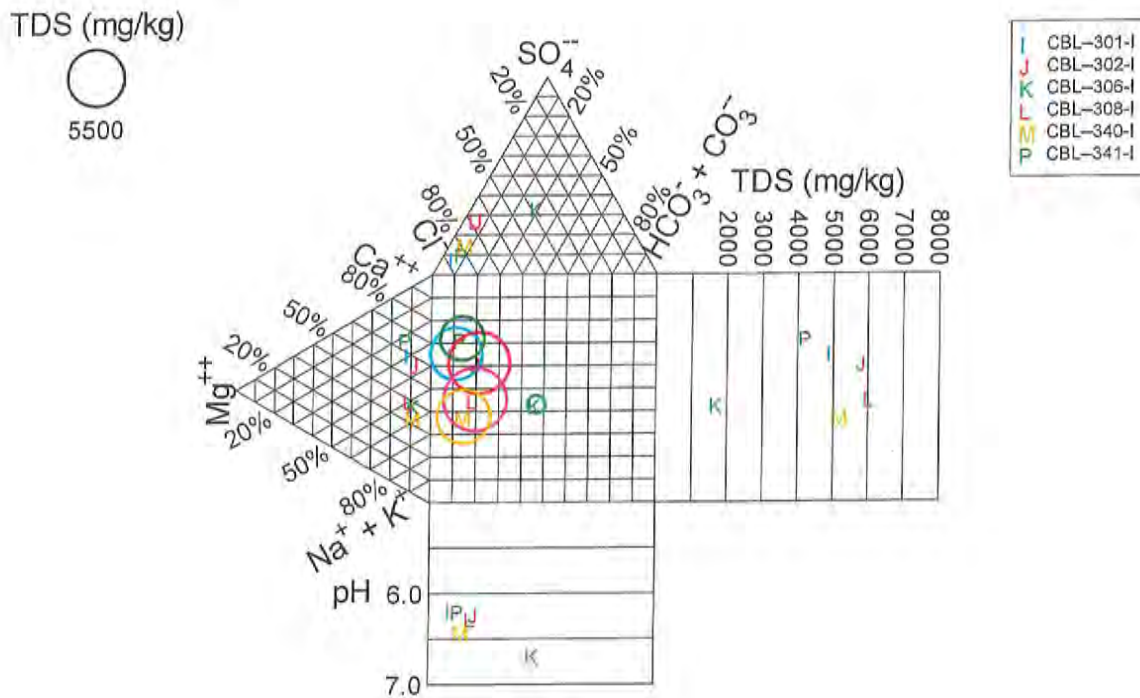


Figure 6. Major Ion Chemistry for Groundwater Samples Collected at FPP CBL in February 2018 Shown on a Durov Diagram.

Groundwater at CBL-306I also has the lowest TDS (<2,000 mg/L), while TDS at the other wells ranges from around 4,000 mg/L to slightly greater than 6,000 mg/L, with wells CBL-302I and CBL-308I having the highest TDS.

Figure 7 shows the major ion chemistry plotted on a Stiff diagram. Looking at the shapes of the plots for these data, the dominance of the chloride ion at all wells except CBL-306I is apparent. The similarity in water chemistry between CBL-301I, CBL-302I, and CBL-341I is also apparent, with the greater TDS observed at CBL-302I being primarily a function of the greater sulfate contribution as seen in the Stiff diagram (**Figure 7**). The similarity in water chemistry between CBL-308I and CBL-340I is also apparent, with greater concentrations of sulfate and calcium contributing to the higher TDS observed at CBL-308I. CBL-306I appears to be somewhat of an outlier, with much lower TDS, showing much lower concentrations of all major ions. The depth of CBL-306I is shallow compared to the other wells, and the intermediate sand is shallower at

this location; therefore, chemical dilution resulting from infiltrating meteoric water might possibly explain the lower concentrations of all major ions observed at this location.

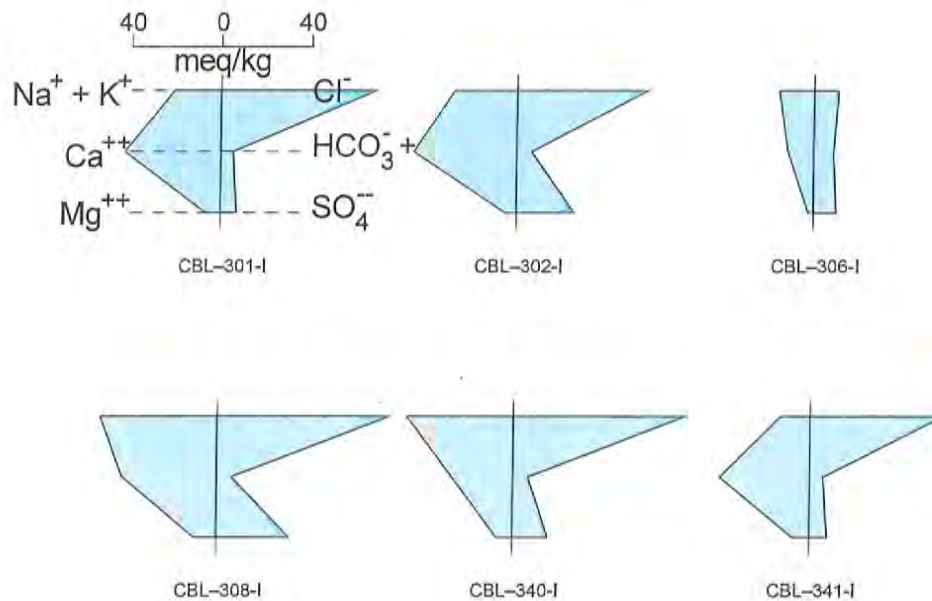


Figure 7. Major Ion Chemistry for Groundwater Samples Collected at FPP CBL in February 2018 Shown on a Stiff Diagrams.

DISCUSSION

Analysis of groundwater geochemical data collected from monitoring wells at FPP in February of 2018 indicate the presence of potentially two groundwater populations. One population with groundwater derived from CBL-306I, CBL-308I, and CBL-340I wells represents a Na-Cl hydrogeochemical facies, and the other with water derived from wells CBL-301I, CBL-302I and CBL-341I represents a Ca-Cl hydrogeochemical facies.

Groundwater at all locations, except CBL-306I, have a prominent chloride signature, with chloride concentrations ranging from 2,080 mg/L at CBL-302I to 2,750 mg/l at CBL-308I. The source of the chloride is unknown, but could be related to past oilfield activities at locations west and north of the CBL area with potential ponds and an injection well upgradient of the CBL area.

The concentration of chloride at CBL-340I (2,730 mg/L), a well cross-gradient to Cell 1 of the CBL, provides evidence that the elevated chloride observed in the wells is not sourced from CBL operations.

The concentrations of sodium appear elevated in wells CBL-308I and CBL-340I compared with the other site wells. Concentrations in CBL-308I and CBL-340I are 1,210 mg/L and 1,100 mg/L, respectively. Elevated concentrations observed at the cross-gradient well CBL-340I suggest that the elevated concentrations observed at these wells is also unrelated to CBL operations and represents natural variability in localized sodium concentrations. Evaporative concentration of soil pore water, which can lead to elevated concentrations of soluble salts, such as NaCl, could also help to explain the current observations.

The geology and geochemistry of this area has been previously described by others (Radian Corporation, 1995; Roy F. Weston, Inc., 2000). These investigators reported the presence of pyrite (FeS_2), calcite (CaCO_3), and gypsum (CaSO_4) present in the near-surface geologic material at the FPP site and surrounding areas. The oxidation of pyrite produces dissolved iron, sulfate, and proton acidity (H^+) that is released to the soil pore-water and groundwater. Proton acidity produced by pyrite oxidation would be consumed by the dissolution of CaCO_3 with the release of HCO_3^- and Ca^{2+} . In addition, the dissolution of gypsum is also expected to contribute Ca^{2+} and SO_4^{2-} to soil pore water and groundwater.

Groundwater at wells CBL-301I, CBL-302I, and CBL-341I represents a Ca-Cl type water. As discussed above, reactions occurring in native geologic material at the site could result in the elevated concentrations of Ca and SO_4 observed at these locations and the elevated Cl possibly from past oilfield activities as discussed above. These same constituents are also commonly associated with coal combustion byproducts, making delineation of the source of these constituents challenging. The variability in groundwater chemistry as demonstrated by the major ion chemistry, due to potential anthropogenic inputs non-related to CCR management, and weathering of near-surface geologic material, precludes identification of a representative background well location.

REFERENCES

- Durov, S. A. (1948), "Klassifikacija prirodnykh vod i grafices-koje izobrazenie ich sostava." Doklady Ak. Nauk SSSR 59(1): 87-90.
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APPENDIX E

Groundwater Monitoring System Addendum
Certification, AMEC Foster Wheeler Environmental and
Infrastructure, Inc. – April 13, 2018

GROUNDWATER MONITORING SYSTEM ADDENDUM CERTIFICATION
LOWER COLORADO RIVER AUTHORITY
COAL COMBUSTION RESIDUALS UNIT: COMBUSTION BYPRODUCTS LANDFILL
FAYETTE POWER PROJECT
La Grange, Texas

AMEC FOSTER WHEELER (Consultant) was retained by the Lower Colorado River Authority (LCRA) to perform an alternate source demonstration (ASD) in response to the January 2018 identification of a statistically significant increase (SSI) in certain constituents detected in the groundwater monitoring system for the Combustion Byproducts Landfill, a coal combustion residuals (CCR) unit, at the Fayette Power Project in La Grange, Texas. The ASD was performed in accordance with 40 C.F.R. § 257.94(e)(2). The ASD indicates that, based on major anion-cation concentrations in the monitored groundwater, a minimum of two groundwater types (hydro-geochemical facies) are monitored by the wells in the groundwater monitoring system for the CCR unit. Accordingly, the existing groundwater monitoring system for the CCR unit, and the interwell statistical methodology originally utilized for groundwater analysis, must be modified due to significantly heterogeneous natural groundwater geochemistry present in the monitored groundwater bearing unit, the Intermediate Sand. Additional information regarding the modified groundwater monitoring system, the statistical methodology to be used going forward, and the Professional Engineer's (P.E.'s) certification of the modified system, is provided herein.

1.0 BACKGROUND

Groundwater monitoring data from eight (8) detection monitoring sampling events were evaluated using the tolerance or prediction limit statistical methodology as certified by the P.E. in October 2017. Preliminary analysis of the groundwater data in January 2018 identified an SSI for certain of the constituents listed in Appendix III to 40 C.F.R. Part 257. The SSI triggered implementation of the ASD.

In the process of conducting the ASD, existing geochemical data were evaluated; a statistical method-allowed resampling event of each well in the CCR unit's groundwater monitoring system was conducted; additional samples were collected for broader geochemical characterization; and other potential sources were considered. In addition, a new well was installed in an attempt to locate an upgradient Intermediate Sand well, however a saturated Intermediate Sand was not encountered. Furthermore, an upgradient well installed in 2011 was evaluated as a potential upgradient Intermediate Sand well but was determined to be unusable.

Based on the findings of the ASD, it was determined that natural groundwater geochemistry within the area monitored by the CCR unit's groundwater monitoring system is of a heterogeneous nature, with at least two different groundwater types identified. Consequently, it was also determined that the monitoring well CBL-340I, identified as the background well in the existing groundwater monitoring system, cannot be reliably used to characterize the background geochemistry of the groundwater flowing beneath the CCR unit. Furthermore, attempts to locate a new upgradient well failed. Accordingly, interwell analysis (i.e., comparing groundwater data from monitoring wells downgradient of the CCR unit to data from the existing background well) will no longer be utilized. Instead, intrawell analysis will be utilized, which negates the need to use groundwater data from monitoring well CBL-340I. Well CBL-340I will remain in the groundwater monitoring system for the CCR unit, but data from the well will not be included in the intrawell analysis that will be used going forward.

2.0 LIMITATIONS

The Consultant's signature on this document represents that to the best of the Consultant's knowledge, information, and professional judgment, the aforementioned information is accurate as of the signature date. The Consultant's opinions and decisions are made on the basis of the Consultant's experience, qualifications, and professional judgment and are not to be construed as warranties or guaranties. In addition, opinions relating to environmental, geologic, and geotechnical conditions (or other estimates) are based on available data, and actual conditions may vary from those encountered at the times and locations where data are obtained, despite the use of due care.

3.0 CERTIFICATION

I, **Seth Green**, being a Registered P.E. with the State of Texas, do hereby certify to the best of my knowledge, information, and belief, that the groundwater monitoring system for the CCR unit (Combustion Byproducts Landfill), as herein revised, has been designed and constructed to meet the requirements of 40 C.F.R. § 257.91, in accordance with recognized and generally accepted good engineering and scientific practices.

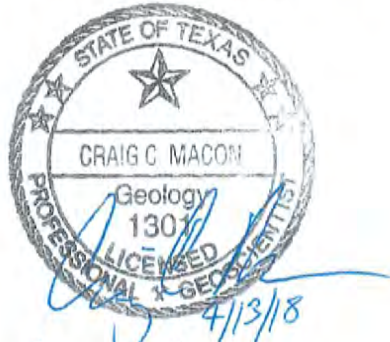


SIGNATURE _____

DATE _____

4/13/18

I, **Craig C. Macon**, being a Professional Geoscientist in the State of Texas, do hereby certify to the best of my knowledge, information, and belief, that the Groundwater Monitoring System for the CCR Unit: Combustion Byproducts Landfill, herein revised, has been designed and constructed to meet the requirements of 40 C.F.R. § 257.91 in accordance with recognized and generally accepted good scientific practices.



SIGNATURE _____

DATE _____

4/13/18

APPENDIX F

Statistical Analysis Updates of Detection Monitoring
Appendix III Constituent Data, AMEC Foster Wheeler
Environmental and Infrastructure, Inc. – April 13, 2018



amec
foster
wheeler

Technical Memorandum

To: Craig C. Macon, P.G.
From: Carla Landrum, PhD
Tel: 916-717-6552 Project: 6706170053
Date: April 13, 2018

**Subject: STATISTICAL ANALYSIS UPDATES OF DETECTION MONITORING
APPENDIX III CONSTITUENT DATA
Fayette Power Project – La Grange, Texas**

This Technical Memorandum (Memo) summarizes the methods and findings of an updated statistical analysis of groundwater constituent data, conducted by Lower Colorado River Authority (LCRA) for the Combustion Byproducts Landfill (CBL) at LCRA's Fayette Power Project (FPP) facility. This updated analysis followed from the findings of an alternative source demonstration (ASD), which substantiated natural spatial heterogeneity in groundwater quality at the CBL. The ASD supports the determination that an observed statistically significant increase (SSI) over background identified in a January 14, 2018 Technical Memorandum (AMECFW, 2018) was invalid because the background well used to perform this interwell prediction limit statistical analysis is non-representative of the spatial variation in groundwater quality beneath and downgradient of the CBL.

This Memo summarizes the results of an intrawell statistical analysis of the groundwater constituent data using the initial eight groundwater samples collected prior to October 2017, and using the subsequent ninth groundwater sample collected in February 2018 to reassess detection monitoring compliance. Sample data collected in five downgradient CBL wells (CBL-301I, CBL-302I, CBL-306I, CBL-308I, and CBL-341I) were used for this intrawell statistical analysis.

This Memo details salient points related to the updated statistical analysis. Additional information regarding data inputs, sampling frequencies, exploratory data analysis (EDA) procedures, and streamlined statistical workflow are provided in the January 14, 2018 Memo. The methods and findings detailed herein are in accordance with 40 CFR § 257.93.

METHODS

Intrawell prediction limit statistical methods are appropriate when natural spatial variation in groundwater conditions prevents a representative background well designation or designations for groundwater conditions downgradient of the site. Intrawell analysis establishes background

concentrations at a downgradient groundwater well location using a subset of sample data that reflects a baseline groundwater condition; in this specific case, samples collected between January 2016 and September 2017. Future sample data collected from the groundwater well are then compared to its respective baseline groundwater condition to assess if there is an SSI at that location.

Intrawell statistical evaluations assume that: (1) current groundwater conditions (e.g., baseline conditions) at the site are void of constituents leaking from a CCR unit and (2) baseline conditions are representative of natural temporal variations in groundwater quality. At this time, there is no substantial geologic, site operation, or hydro-geologic evidence to suggest these assumptions are invalid with respect to FPP. However, two years of sampling are likely inadequate to reliably characterize natural seasonal variations and regional temporal trends in groundwater quality. As such, baseline conditions will need updating as sufficient data become available.

Intrawell baseline conditions were established using the eight initial groundwater samples from each downgradient monitoring well for each constituent in 40 CFR Part 257, Appendix III. Figure 1 summarizes the prediction limit statistical methods and their basic data-driven selection criteria.

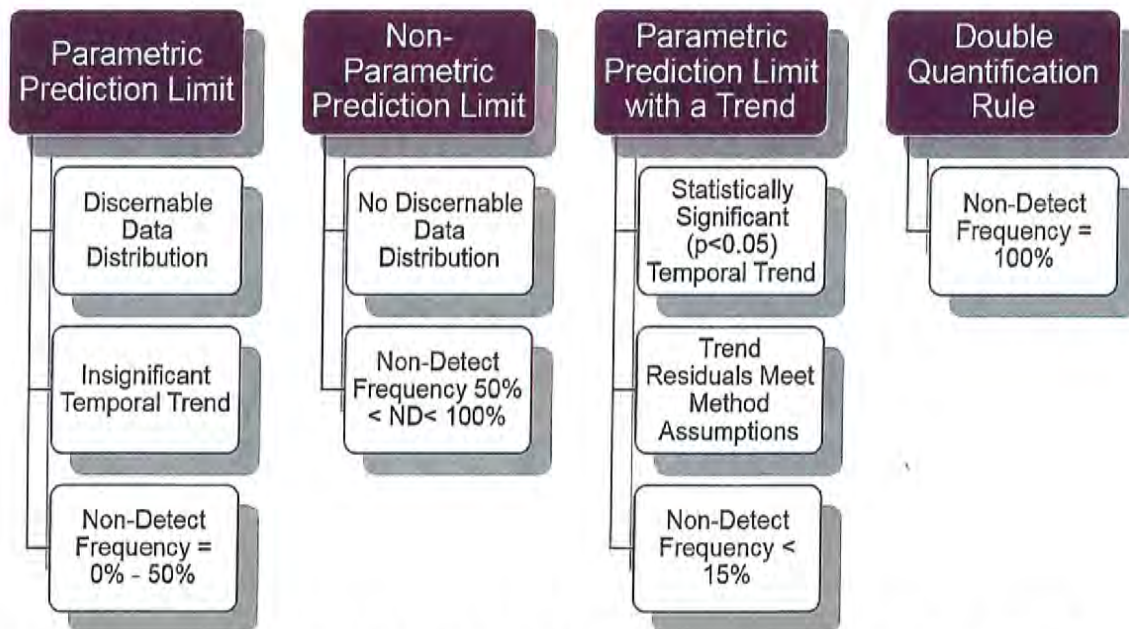


Figure 1: Basic prediction limit method selection criteria. Censored estimation techniques were applied for datasets with <50% non-detect frequency.

Prediction limits were calculated with a declared site-wide false positive rate (α) equal to 0.1. A 1 of 2 resampling strategy is in place to reduce the overall false positive occurrence (falsely identifying an SSI) while maintaining adequate statistical power. However, there are too few sample data ($n=8$) to establish adequate statistical power for non-parametric methods for this evaluation. Please refer to the January 14, 2018 Technical Memorandum for further details regarding the prediction limit resampling strategy.

Parametric intrawell prediction limit calculations (without a trend) follow Equation 19.13 in the Unified Guidance (U.S. EPA, 2009). Table 19-10 within the Unified Guidance (U.S. EPA, 2009) was used to establish a k-multiplier with "good" or "adequate" statistical power. The value of the k-multiplier for each constituent in each well are shown in the accompanying Practitioner's Notes. If the dataset exhibited a statistically significant trend, the prediction limits were calculated around the trend using Equation 10-13 in the ProUCL Technical Guide (U.S. EPA, 2013). Non-parametric prediction limits consist of the maximum ordered detectable sample value.

Prediction limit methods are inadequate for baseline datasets containing 100% non-detectable concentrations; in such case the Double Quantification Rule is applicable. Pursuant to the Unified Guidance, the Double Quantification Rule states that a confirmed exceedance is registered if the compliance sample dataset exhibits quantified measurements at or above the reporting limit for two consecutive future observations.

The February 2018 sample, constituting the ninth sample in each respective constituent-well sample dataset, was compared to its respective prediction limit to assess detection monitoring compliance.

RESULTS & CONCLUSIONS

The results from this statistical evaluation indicate the February 2018 sample concentrations are within their respective predicted baseline limits, meaning there are no initial exceedances to declare at this time, as detailed below:

- Prediction limits were established for each Appendix III constituent in each well using the initial eight samples collected; prediction limit calculations reflect a 1 of 2 resampling strategy to minimize false positive SSIs.
- The ninth sample for each Appendix III constituent within each well was compared to the well's respective prediction limit to assess detection monitoring compliance.
- No initial exceedances, which would trigger the resampling strategy, are present in the February 2018 sample dataset.
- Trend significance ($p<0.05$) shifted for some Appendix III constituents in some wells when incorporating the ninth sample. In general, this is expected since the trends are

characterized by relatively few samples. Trend definition and significance will improve as sample datasets build over time.

Based on these findings, it is recommended that trend testing transpire at least annually to determine if the prediction limit calculations herein maintain relevance. If the trend significance shifts over time, the prediction limits will need recalculation to better honor the sample data. In cases where the prediction limit was calculated around the trend and the future compliance sample does not exceed the calculated prediction limit, it is recommended to incorporate the compliance sample into the baseline prediction limit calculation to help ensure the temporal trend is honored when comparing the next future sample; in this specific case, the tenth future sample. This will require that the trend prediction limits be recalculated iteratively for each statistical comparison, assuming the temporal trend remains statistically significant over time and the dataset meet the method assumptions.

REFERENCES

AMECFW, 2018. Technical Memorandum – Client Copy. Statistical Analysis of Initial Detection Monitoring Appendix III Constituent Data. Fayette Power Project – La Grange, Texas.

U.S. Environmental Protection Agency (U.S. EPA), 2013. ProUCL (Version 5.0.00) User Guide, Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations. EPA/600/R-07/041. Washington D.C. September.

U.S. Environmental Protection Agency (U.S. EPA), 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance. EPA 530/R-09-007. Environmental Protection Agency Office of Resource Conservation and Recovery.

APPENDIX G

CCR Groundwater Detection Monitoring Evaluation of
Third Quarter 2018 Data Collected from the CBL, Wood
Environmental and Infrastructure Solutions, Inc.,
November, 5, 2018



Technical Memorandum

To: Nancy Overesch, PG
From: Carla Landrum, PhD and Charlie Macon, PG
Date: November 5, 2018
File No: 6706180078
cc: File

**Subject: CCR GROUNDWATER DETECTION MONITORING
EVALUATION OF THIRD QUARTER 2018 DATA COLLECTED FROM THE CBL
Fayette Power Project – La Grange, Texas**

1.0 INTRODUCTION

This Technical Memorandum (Tech Memo) documents an evaluation of detection monitoring data collected in the third quarter of 2018 (3Q 2018) from the Combustion Byproducts Landfill (CBL) located at the Lower Colorado River Authority's (LRCA) Fayette Power Project (FPP) facility. The evaluation consists of comparing CBL compliance (i.e., downgradient) sample data to Appendix III baseline threshold values (BTVs) using the intrawell prediction limit statistical method declared in the *Statistical Analysis Updates of Detection Monitoring Appendix III Constituent Data* (2018 Tech Memo) (AMECFW, 2018b). The 2018 Tech Memo is in support of the initial detection monitoring assessment results documented for the CBL (AMECFW, 2008a). This Tech Memo as well as the 2018 Tech Memo were prepared pursuant to 40 CFR § 257.93. For the reasons discussed in this Tech Memo, there is insufficient evidence at this time to declare that a statistically significant increase for any Appendix 3 constituent in any monitoring well has occurred in accordance with 40 CFR 357.93.

2.0 EVALUATION

Table 1 presents the sample concentrations of Appendix III constituents collected from CBL compliance monitoring wells 301I, 302I, 306I and 308I on July 27, 2018 and monitoring well 341I on August 24, 2018. The 3Q 2018 sampling event constitutes the tenth sampling round for the detection monitoring program for the CBL. Applicable BTVs are presented in Table 1 for this third quarter 2018 statistical comparison.

2.1 Updates to Temporal Trends and Background Threshold Values

The BTVs presented in Table 1 reflect those previously declared in the 2018 Tech Memo for the CBL with the following exceptions: calcium for monitoring well 306I; chloride for monitoring well 306I; and sulfate for monitoring wells 302I and 306I. Pursuant to the 2018 Tech Memo, the prediction limits calculated around a statistically significant trend were updated to include the ninth sampling event, which constitutes the first quarter 2018 (1Q 2018) detection monitoring sampling event (AMECFW, 2018b), on the basis these events were below their respective BTVs. A discussion of updates to temporal trend significance and BTVs (by constituent) follows.

To provide context regarding the consistency of temporal trends over time, the initial detection monitoring trends (AMECFW, 2018a) and 1Q 2018 temporal trends are referenced below.



Temporal Trends. The premise of intrawell comparisons is to evaluate if constituent concentrations at a geographic location downgradient of the CBL are, in part, changing over time relative to a baseline concentration calculated for that specific geographic location. On this basis, intrawell statistical comparisons should consider the presence of statistically significant ($p < 0.05$) temporal trends to interpret if there is a release from the CBL, particularly if the trend is: 1) increasing, 2) incongruent with the conceptual site model as it relates to alternative source demonstration(s) and/or 3) inconsistent with past trend analyses. The most recent sampling event (3Q 2018) introduces the presence of statistically significant ($p < 0.05$) temporal trends in the following monitoring wells (constituent/trend direction/trend significance): 302I (chloride/decreasing/ $p=0.030$) and 306I (fluoride/increasing/ $p=0.037$; TDS/increasing/ $p=0.012$). Recommendations follow to help manage changes in trend significance over time. Reference to the conceptual site model and professional judgement/interpretation are necessary to confirm if the temporal trends in the downgradient monitoring wells indicate there is a release from the CBL.

The most recent sampling event (3Q 2018) maintains the presence of existing statistically significant ($p < 0.05$) temporal trends for the following constituents:

Calcium. Monitoring well 306I exhibits an increasing trend ($p < 0.05$) for calcium. The trend significance and direction maintain consistency during the 1Q 2018 and the 3Q 2018 sampling events. The approximate p-values for the Mann-Kendall trend test, range among 0.0047, 0.0024 and 0.00060 (all well below $p < 0.05$) for the initial 8 detection monitoring sampling events and subsequent inclusion of the 1Q 2018 and 3Q 2018 detection monitoring sampling events, respectively. The upper prediction limit in Table 1 for calcium in monitoring well 306I reflects the trend for the ninth sampling event (Table 1). The tenth sampling event is subsequently compared to this time-dependent upper prediction limit to complete this statistical evaluation. The UPL calculation honors a 1 of 2 resampling strategy and Equation 10-13 in the ProUCL Technical Guide (U.S. EPA, 2013).

Chloride. Monitoring well 306I exhibits an increasing trend ($p < 0.05$) for chloride. The trend significance and direction maintain consistency for the 1Q 2018 and 3Q 2018 sampling events. The approximate p-values for the Mann-Kendall trend test range among 0.018, 0.0046 and 0.010 (all below $p < 0.05$) for the initial 8 detection monitoring sampling events and subsequent inclusion of the 1Q 2018 and 3Q 2018 detection monitoring sampling events, respectively. The upper prediction limit in Table 1 for chloride in monitoring well 306I reflects the trend for the ninth sampling event (Table 1). The tenth sampling event is subsequently compared to this time-dependent upper prediction limit to complete this statistical evaluation. The UPL calculation honors a 1 of 2 resampling strategy and Equation 10-13 in the ProUCL Technical Guide (U.S. EPA, 2013).

Sulfate. Monitoring wells 302I and 306I exhibit increasing trends for sulfate. The trend significance and direction maintain consistency for the 1Q 2018 and 3Q 2018 sampling events. For monitoring well 302I, the approximate p-values for the Mann-Kendall trend test range among 0.023, 0.0059 and 0.0015 (all below $p < 0.05$) for the initial eight detection monitoring sampling events and subsequent inclusion of the 1Q 2018 and 3Q 2018 detection monitoring sampling events, respectively. For monitoring well 306I, the approximate p-values for the Mann-Kendall trend test, range among 0.018, 0.0082 and 0.016 for the initial 8 detection monitoring sampling events and subsequent inclusion of the 1Q 2018 and 3Q 2018 detection monitoring sampling events, respectively. The upper prediction limit in Table 1 for chloride in monitoring wells 302I and 306I reflect the trend for the ninth sampling event. The tenth sampling event is for each well subsequently compared to its respective time-dependent upper prediction limit to complete this statistical evaluation. The UPL calculation honors a 1 of 2 resampling strategy and Equation 10-13 in the ProUCL Technical Guide (U.S. EPA, 2013).

Fluoride. Monitoring well 341I exhibits a statistically significant ($p < 0.05$) decreasing trend for fluoride. The trend significance and direction maintain consistency for the 1Q 2018 and 3Q 2018 sampling events. The fluoride prediction limit for monitoring well 341I is not calculated around this decreasing trend because the data distribution is identified as non-parametric. Therefore, the BTV in Table 1 reflects the non-parametric upper prediction limit.

2.2 Exceedance Assessment

As indicated in Table 1, there is insufficient evidence at this time to declare an initial exceedance for boron, calcium, chloride, fluoride, pH, sulfate, or total dissolved solids because the 3Q 2018 sample concentrations are less than their respective BTVs.

3.0 RECOMMENDATIONS

For the majority of monitoring well/constituent pairs, the initial detection monitoring sample events (AMECFW, 2018b) represent non-trending (i.e. stationary) BTVs that remain constant for each subsequent statistical comparison test. A sample size equal to eight is relatively small and likely underrepresents long-term temporal variability in constituent concentrations beneath the CBL. Wood recommends updating the intrawell BTVs in Table 1 for the 3Q 2019 sampling event, which will incorporate sampling events between 1Q 2018 and 1Q 2019 into the intrawell BTV calculations. This recommendation is conditional upon the absence of initial exceedances in constituent concentrations above their respective BTVs. Updating BTVs to reflect larger sample sizes over time will improve the overall power of future statistical tests.

For a few monitoring well/constituent pairs the temporal trend is inconsistent over time. In general, this is expected since the trends are characterized by relatively few samples and a few of the trends border on the threshold of being statistically significant. Trend definition and significance will improve as sample datasets build over time. Wood recommends testing the significance of temporal trends after each sampling event (e.g. semiannually).

Certain constituent/monitoring well pairs show statistically significant trends for recent sampling events (e.g. 1Q 2018 and/or 3Q 2018), but did not show a significant temporal trend during the initial detection monitoring statistical evaluation (AMECFW, 2018a). If the trends continue, further evaluation with respect to the conceptual site model may be warranted to determine if the trends indicate a potential release from the CBL. If the trends remain consistent and are justifiable through the conceptual site model, then the recommended prediction limit updates in 3Q 2019 should account for these temporal trends.

Wood maintains the recommendation put forth in the 2018 Tech Memo declaring the reiterative calculation of the prediction limit around a temporal trend for each statistical evaluation, assuming the temporal trend remains statistically significant over time and the dataset meet the method assumptions (AMECFW, 2018b).

4.0 REFERENCES

Amec Foster Wheeler (AMECFW), 2018a. Technical Memorandum – Client Draft. Statistical Analysis of Initial Detection Monitoring Appendix III Constituent Data. Fayette Power Project – La Grange, Texas. Technical Memorandum dated January 14, 2018.

Amec Foster Wheeler (AMECFW), 2018b. Technical Memorandum – Client Draft. Statistical Analysis Updates of Detection Monitoring Appendix III Constituent Data. Fayette Power Project – La Grange, Texas. Technical Memorandum dated April 13, 2018.

U.S. Environmental Protection Agency (U.S. EPA), 2013. ProUCL (Version 5.0.00) User Guide, Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations. EPA/600/R-07/041. Washington D.C. September.

U.S. Environmental Protection Agency (U.S. EPA), 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance. EPA 530/R-09-007. Environmental Protection Agency Office of Resource Conservation and Recovery.

TABLE 1
Statistical Results Summary - LCRA Combustion Byproducts Landfill
Appendix III Statistical Comparison

301I							
Appendix III Constituent	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	pH (S.U.)*	Sulfate (mg/L)	TDS (mg/L)
Intrawell Statistical Test	NP-UPL	P-UPLT	P-UPL	NP-UPL	NP-UPL/NP-LPL	P-UPLT	P-UPL
BTV	0.07	1135	2676	0.3	6.33/5.95	410	7905
Third Quarter 2018 Compliance Sample Value	<0.0500	993	1330	<0.2	6.04	196 ^a	5390
302I							
Appendix III Constituent	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	pH (S.U.)	Sulfate (mg/L)	TDS (mg/L)
Intrawell Statistical Test	NP-UPL	P-UPL	P-UPL	P-UPL	P-UPL/P-LPL	P-UPLT	P-UPL
BTV	0.3	1154	2328	0.3	8.21/3.57	1487	7940
Third Quarter 2018 Compliance Sample Value	<0.0500	995	1980	<0.2 ^a	5.77	1390	5510
306I							
Appendix III Constituent	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	pH (S.U.)	Sulfate (mg/L)	TDS (mg/L)
Intrawell Statistical Test	P-UPL	P-UPLT	P-UPLT	P-UPL	P-UPL/P-LPL	P-UPLT	P-UPL
BTV	0.2	454	774	4	7.29/4.41	1093	2064
Third Quarter 2018 Compliance Sample Value	<0.0500	275	283	2.95	6.86	406	1450
308I							
Appendix III Constituent	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	pH (S.U.)	Sulfate (mg/L)	TDS (mg/L)
Intrawell Statistical Test	P-UCL	P-UPL	P-UPL	P-UPL	P-UPL/P-LPL	P-UPL	P-UPL
BTV	0.7	995	3079	3	7.15/5.26	1702	12186
Third Quarter 2018 Compliance Sample Value	<0.0500	863	2680	2.1	6.07	1540	6320
341I							
Appendix III Constituent	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	pH (S.U.)	Sulfate (mg/L)	TDS (mg/L)
Intrawell Statistical Test	P-UPL	P-UPL	P-UPL	NP-UPL	P-UPL/N-LPL	P-UPL	P-UPL
BTV	0.09	981	2661	0.53	6.69/4.93	466	6295
Third Quarter 2018 Compliance Sample Value	<0.0500	824	1910	0.114	5.82	376	4800

Footnotes:

^aThe reporting limit for fluoride is in exceedance of the prediction limit, however, it has been confirmed the fluoride concentration is below the Method Detection Limit of 0.2 mg/L.

Legend

- NP-LPL: Non-Parametric Lower Prediction Limit
- NP-UPL: Non-Parametric Upper Prediction Limit
- P-UPL: Parametric Upper Prediction Limit
- P-LPL: Parametric Lower Prediction Limit
- P-UPLT: Parametric Upper Prediction Limit with a Trend

APPENDIX H

Analytical Data for Calendar Year 2018



LCRA Environmental Laboratory Services
3505 Montopolis Drive
Austin, TX 78744
Phone: (512)356-6022
Fax: (512)356-6021

February 16, 2018

BECKIE LOEVE
FAYETTE POWER PLANT
6549 POWER PLANT RD
MAIL STOP FPP
LA GRANGE, TX 78945

RE: Final Analytical Report
ELS Workorder Q1804933

Attn: BECKIE LOEVE

Enclosed are the analytical results for sample(s) received by LCRA Environmental Laboratory Services. Results reported herein conform to the most current NELAP standards, where applicable, unless otherwise narrated in the body of the report. This final report provides results related only to the sample(s) as received for the above referenced work order.

Thank you for selecting ELS for your analytical needs. If you have any questions regarding this report, please contact us at (512) 356-6022. We look forward to assisting you again.

Authorized for release by:

Ariana Dean
Project Manager
ariana.dean@lcra.org



Enclosures

Report ID: 314499 - 5223905

Page 1 of 34

SAMPLE SUMMARY

Workorder: Q1804933

Lab ID	Sample ID	Matrix	Date Collected	Date Received
Q1804933001	CBL-340I	Aqueous	2/7/2018 15:40	2/8/2018 07:45
Q1804933002	CBL-340I - 0.45 micron filter	Aqueous	2/7/2018 15:40	2/8/2018 07:45
Q1804933003	CBL-301I	Aqueous	2/7/2018 10:52	2/8/2018 07:45
Q1804933004	CBL-301I - 0.45 micron filter	Aqueous	2/7/2018 10:52	2/8/2018 07:45
Q1804933005	CBL-302I	Aqueous	2/7/2018 12:32	2/8/2018 07:45
Q1804933006	CBL-302I - 0.45 micron filter	Aqueous	2/7/2018 12:32	2/8/2018 07:45
Q1804933007	CBL-306I	Aqueous	2/7/2018 14:16	2/8/2018 07:45
Q1804933008	CBL-306I - 0.45 micron filter	Aqueous	2/7/2018 14:16	2/8/2018 07:45
Q1804933009	CBL-308I	Aqueous	2/6/2018 14:52	2/8/2018 07:45
Q1804933010	CBL-308I - 0.45 micron filter	Aqueous	2/6/2018 14:52	2/8/2018 07:45
Q1804933011	CBL-341I	Aqueous	2/6/2018 13:00	2/8/2018 07:45
Q1804933012	CBL-341I - 0.45 micron filter	Aqueous	2/6/2018 13:00	2/8/2018 07:45
Q1804933013	CBL-641I	Aqueous	2/6/2018 13:00	2/8/2018 07:45
Q1804933014	CBL-641I - 0.45 micron filter	Aqueous	2/6/2018 13:00	2/8/2018 07:45
Q1804933015	Field Blank 1	Aqueous	2/6/2018 14:52	2/8/2018 07:45
Q1804933016	Field Blank 2	Aqueous	2/7/2018 15:40	2/8/2018 07:45
Q1804933017	EQB Pump	Aqueous	2/7/2018 11:30	2/8/2018 07:45
Q1804933018	EQB - 0.45 micron filter	Aqueous	2/7/2018 16:00	2/8/2018 07:45

Report Definitions

LOD	Limit of Detection
LOQ	Limit of Quantitation
ML	Maximum Limit - Client Specified
DF	Dilution Factor
Qual	Qualifiers



ANALYTICAL RESULTS

Workorder: Q1804933

Lab ID: Q1804933001 Date Received: 2/8/2018 07:45 Matrix: Aqueous
 Sample ID: CBL-340I Date Collected: 2/7/2018 15:40 Sample Type: SAMPLE
 Project ID: FPP GWMP CCR

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
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INORGANICS

Analysis Desc: E300.0, Anions Preparation Method: E300.0, Anions
 Analytical Method: E300.0, Anions

Chloride	2730 mg/L	50.0	20.0	50	02/09/18 01:21	ML	02/09/18 01:21	ML		
Fluoride	1.00 mg/L	0.500	0.200	50	02/09/18 01:21	ML	02/09/18 01:21	ML		
Nitrite (as N)	<0.100 mg/L	0.100	0.0400	10	02/09/18 01:39	ML	02/09/18 01:39	ML		
Nitrate (as N)	6.39 mg/L	0.100	0.0400	10	02/09/18 01:39	ML	02/09/18 01:39	ML		
Sulfate	752 mg/L	50.0	20.0	50	02/09/18 01:21	ML	02/09/18 01:21	ML		

ALKALINITY

Analysis Desc: SM2320B, Alkalinity Preparation Method: SM2320B, Alkalinity
 Analytical Method: SM2320B, Alkalinity

Bicarbonate Alkalinity	334 mg/L	0.00	0.00	1	02/14/18	ADG	02/14/18	ADG	N	
Carbonate Alkalinity	0.00 mg/L	0.00	0.00	1	02/14/18	ADG	02/14/18	ADG	N	
Total Alkalinity (CaCO3)	334 mg/L	20.0	20.0	1	02/14/18	ADG	02/14/18	ADG		

INORGANICS

Analysis Desc: SW6010B ICP-AES Preparation Method: SW3010A, Metals Prep
 Analytical Method: SW6010B ICP-AES

Calcium Total	555 mg/L	2.00	0.700	10	02/14/18 18:02	BS	02/15/18 19:02	FO		
Magnesium Total	87.5 mg/L	0.200	0.0700	1	02/14/18 18:02	BS	02/15/18 18:56	FO		
Potassium Total	3.96 mg/L	0.200	0.0700	1	02/14/18 18:02	BS	02/15/18 18:56	FO		
Sodium Total	1100 mg/L	3.00	1.00	10	02/14/18 18:02	BS	02/15/18 19:02	FO		

ANALYTICAL RESULTS

Workorder: Q1804933

Lab ID: Q1804933002	Date Received: 2/8/2018 07:45	Matrix: Aqueous
Sample ID: CBL-340I - 0.45 micron filter	Date Collected: 2/7/2018 15:40	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
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INORGANICS

Analysis Desc: E300.0, Anions	Preparation Method: E300.0, Anions								
	Analytical Method: E300.0, Anions								
Chloride	2620 mg/L	50.0	20.0	50		02/09/18 01:57	ML	02/09/18 01:57	ML
Fluoride	1.08 mg/L	0.500	0.200	50		02/09/18 01:57	ML	02/09/18 01:57	ML
Nitrite (as N)	<0.100 mg/L	0.100	0.0400	10		02/09/18 02:16	ML	02/09/18 02:16	ML
Nitrate (as N)	6.24 mg/L	0.100	0.0400	10		02/09/18 02:16	ML	02/09/18 02:16	ML
Sulfate	724 mg/L	50.0	20.0	50		02/09/18 01:57	ML	02/09/18 01:57	ML

ALKALINITY

Analysis Desc: SM2320B, Alkalinity	Preparation Method: SM2320B, Alkalinity									
	Analytical Method: SM2320B, Alkalinity									
Bicarbonate Alkalinity	335 mg/L	0.00	0.00	1		02/14/18	ADG	02/14/18	ADG	N
Carbonate Alkalinity	0.00 mg/L	0.00	0.00	1		02/14/18	ADG	02/14/18	ADG	N
Total Alkalinity (CaCO3)	335 mg/L	20.0	20.0	1		02/14/18	ADG	02/14/18	ADG	

INORGANICS

Analysis Desc: SW6010B ICP-AES	Preparation Method: SW6010B ICP-AES								
	Analytical Method: SW6010B ICP-AES								
Calcium Dissolved	547 mg/L	1.00		10		02/12/18 15:20	FO	02/15/18 20:33	FO
Magnesium Dissolved	86.4 mg/L	0.100	0.0400	1		02/12/18 15:20	FO	02/15/18 20:27	FO
Potassium Dissolved	6.01 mg/L	0.100	0.0400	1		02/12/18 15:20	FO	02/15/18 20:27	FO
Sodium Dissolved	1060 mg/L	1.00		10		02/12/18 15:20	FO	02/15/18 20:33	FO

ANALYTICAL RESULTS

Workorder: Q1804933

Lab ID:	Q1804933003	Date Received:	2/8/2018 07:45	Matrix:	Aqueous
Sample ID:	CBL-301I	Date Collected:	2/7/2018 10:52	Sample Type:	SAMPLE
Project ID:	FPP GWMP CCR				

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	2480 mg/L	50.0	20.0	50		02/08/18 16:17	ML	02/08/18 16:17	ML	
Fluoride	<0.100 mg/L	0.100	0.0400	10		02/08/18 16:35	ML	02/08/18 16:35	ML	
Nitrite (as N)	<0.100 mg/L	0.100	0.0400	10		02/08/18 16:35	ML	02/08/18 16:35	ML	
Nitrate (as N)	0.283 mg/L	0.100	0.0400	10		02/08/18 16:35	ML	02/08/18 16:35	ML	
Sulfate	344 mg/L	50.0	20.0	50		02/08/18 16:17	ML	02/08/18 16:17	ML	

ALKALINITY

Analysis Desc: SM2320B, Alkalinity	Preparation Method: SM2320B, Alkalinity
	Analytical Method: SM2320B, Alkalinity

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
Bicarbonate Alkalinity	274 mg/L	0.00	0.00	1		02/14/18	ADG	02/14/18	ADG	N
Carbonate Alkalinity	0.00 mg/L	0.00	0.00	1		02/14/18	ADG	02/14/18	ADG	N
Total Alkalinity (CaCO3)	274 mg/L	20.0	20.0	1		02/14/18	ADG	02/14/18	ADG	

INORGANICS

Analysis Desc: SW6010B ICP-AES	Preparation Method: SW3010A, Metals Prep
	Analytical Method: SW6010B ICP-AES

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
Calcium Total	873 mg/L	2.00	0.700	10		02/14/18 18:02	BS	02/15/18 19:13	FO	
Magnesium Total	82.7 mg/L	0.200	0.0700	1		02/14/18 18:02	BS	02/15/18 19:07	FO	
Potassium Total	30.5 mg/L	0.200	0.0700	1		02/14/18 18:02	BS	02/15/18 19:07	FO	
Sodium Total	473 mg/L	3.00	1.00	10		02/14/18 18:02	BS	02/15/18 19:13	FO	

ANALYTICAL RESULTS

Workorder: Q1804933

Lab ID:	Q1804933004	Date Received:	2/8/2018 07:45	Matrix:	Aqueous
Sample ID:	CBL-301I - 0.45 micron filter	Date Collected:	2/7/2018 10:52	Sample Type:	SAMPLE
Project ID:	FPP GWMP CCR				

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
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INORGANICS

Analysis Desc: E300.0, Anions	Preparation Method: E300.0, Anions								
	Analytical Method: E300.0, Anions								
Chloride	2560 mg/L	50.0	20.0	50		02/08/18 16:53	ML	02/08/18 16:53	ML
Fluoride	<0.100 mg/L	0.100	0.0400	10		02/08/18 17:11	ML	02/08/18 17:11	ML
Nitrite (as N)	<0.100 mg/L	0.100	0.0400	10		02/08/18 17:11	ML	02/08/18 17:11	ML
Nitrate (as N)	0.294 mg/L	0.100	0.0400	10		02/08/18 17:11	ML	02/08/18 17:11	ML
Sulfate	359 mg/L	50.0	20.0	50		02/08/18 16:53	ML	02/08/18 16:53	ML

ALKALINITY

Analysis Desc: SM2320B, Alkalinity	Preparation Method: SM2320B, Alkalinity									
	Analytical Method: SM2320B, Alkalinity									
Bicarbonate Alkalinity	281 mg/L	0.00	0.00	1		02/14/18	ADG	02/14/18	ADG	N
Carbonate Alkalinity	0.00 mg/L	0.00	0.00	1		02/14/18	ADG	02/14/18	ADG	N
Total Alkalinity (CaCO3)	281 mg/L	20.0	20.0	1		02/14/18	ADG	02/14/18	ADG	

INORGANICS

Analysis Desc: SW6010B ICP-AES	Preparation Method: SW6010B ICP-AES								
	Analytical Method: SW6010B ICP-AES								
Calcium Dissolved	917 mg/L	1.00		10		02/12/18 15:20	FO	02/15/18 20:44	FO
Magnesium Dissolved	99.5 mg/L	0.100	0.0400	1		02/12/18 15:20	FO	02/15/18 20:38	FO
Potassium Dissolved	9.90 mg/L	0.100	0.0400	1		02/12/18 15:20	FO	02/15/18 20:38	FO
Sodium Dissolved	428 mg/L	1.00		10		02/12/18 15:20	FO	02/15/18 20:44	FO

ANALYTICAL RESULTS

Workorder: Q1804933

Lab ID: Q1804933005 Date Received: 2/8/2018 07:45 Matrix: Aqueous
Sample ID: CBL-302I Date Collected: 2/7/2018 12:32 Sample Type: SAMPLE
Project ID: FPP GWMP CCR

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	2080 mg/L	50.0	20.0	50		02/08/18 20:13	ML	02/08/18 20:13	ML	
Fluoride	0.112 mg/L	0.100	0.0400	10		02/08/18 20:31	ML	02/08/18 20:31	ML	
Nitrite (as N)	<0.100 mg/L	0.100	0.0400	10		02/08/18 20:31	ML	02/08/18 20:31	ML	
Nitrate (as N)	<0.100 mg/L	0.100	0.0400	10		02/08/18 20:31	ML	02/08/18 20:31	ML	
Sulfate	1240 mg/L	50.0	20.0	50		02/08/18 20:13	ML	02/08/18 20:13	ML	

ALKALINITY

Analysis Desc: SM2320B, Alkalinity		Preparation Method: SM2320B, Alkalinity								
		Analytical Method: SM2320B, Alkalinity								
Bicarbonate Alkalinity	319 mg/L	0.00	0.00	1		02/14/18	ADG	02/14/18	ADG	N
Carbonate Alkalinity	0.00 mg/L	0.00	0.00	1		02/14/18	ADG	02/14/18	ADG	N
Total Alkalinity (CaCO3)	319 mg/L	20.0	20.0	1		02/14/18	ADG	02/14/18	ADG	

INORGANICS

Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Calcium Total	934 mg/L	2.00	0.700	10		02/14/18 18:02	BS	02/15/18 19:24	FO	
Magnesium Total	62.7 mg/L	0.200	0.0700	1		02/14/18 18:02	BS	02/15/18 19:18	FO	
Potassium Total	2.23 mg/L	0.200	0.0700	1		02/14/18 18:02	BS	02/15/18 19:18	FO	
Sodium Total	652 mg/L	3.00	1.00	10		02/14/18 18:02	BS	02/15/18 19:24	FO	

ANALYTICAL RESULTS

Workorder: Q1804933

Lab ID: Q1804933006 Date Received: 2/8/2018 07:45 Matrix: Aqueous
Sample ID: CBL-302I - 0.45 micron filter Date Collected: 2/7/2018 12:32 Sample Type: SAMPLE
Project ID: FPP GWMP CCR

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	1980 mg/L	50.0	20.0	50		02/08/18 20:49	ML	02/08/18 20:49	ML	
Fluoride	0.103 mg/L	0.100	0.0400	10		02/08/18 21:07	ML	02/08/18 21:07	ML	
Nitrite (as N)	<0.100 mg/L	0.100	0.0400	10		02/08/18 21:07	ML	02/08/18 21:07	ML	
Nitrate (as N)	<0.100 mg/L	0.100	0.0400	10		02/08/18 21:07	ML	02/08/18 21:07	ML	
Sulfate	1180 mg/L	50.0	20.0	50		02/08/18 20:49	ML	02/08/18 20:49	ML	
ALKALINITY										
Analysis Desc: SM2320B, Alkalinity		Preparation Method: SM2320B, Alkalinity								
		Analytical Method: SM2320B, Alkalinity								
Bicarbonate Alkalinity	319 mg/L	0.00	0.00	1		02/14/18	ADG	02/14/18	ADG	N
Carbonate Alkalinity	0.00 mg/L	0.00	0.00	1		02/14/18	ADG	02/14/18	ADG	N
Total Alkalinity (CaCO3)	319 mg/L	20.0	20.0	1		02/14/18	ADG	02/14/18	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW6010B ICP-AES								
		Analytical Method: SW6010B ICP-AES								
Calcium Dissolved	924 mg/L	1.00		10		02/12/18 15:20	FO	02/15/18 20:56	FO	
Magnesium Dissolved	63.2 mg/L	0.100	0.0400	1		02/12/18 15:20	FO	02/15/18 20:50	FO	
Potassium Dissolved	1.82 mg/L	0.100	0.0400	1		02/12/18 15:20	FO	02/13/18 16:31	FO	
Sodium Dissolved	637 mg/L	1.00		10		02/12/18 15:20	FO	02/15/18 20:56	FO	

ANALYTICAL RESULTS

Workorder: Q1804933

Lab ID: Q1804933007	Date Received: 2/8/2018 07:45	Matrix: Aqueous
Sample ID: CBL-306I	Date Collected: 2/7/2018 14:16	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	385 mg/L	25.0	10.0	25		02/09/18 00:09	ML	02/09/18 00:09	ML	
Fluoride	2.81 mg/L	0.250	0.100	25		02/09/18 00:09	ML	02/09/18 00:09	ML	
Nitrite (as N)	<0.250 mg/L	0.250	0.100	25		02/09/18 00:09	ML	02/09/18 00:09	ML	
Nitrate (as N)	<0.250 mg/L	0.250	0.100	25		02/09/18 00:09	ML	02/09/18 00:09	ML	
Sulfate	493 mg/L	25.0	10.0	25		02/09/18 00:09	ML	02/09/18 00:09	ML	

ALKALINITY

Analysis Desc: SM2320B, Alkalinity		Preparation Method: SM2320B, Alkalinity								
		Analytical Method: SM2320B, Alkalinity								
Bicarbonate Alkalinity	439 mg/L	0.00	0.00	1		02/14/18	ADG	02/14/18	ADG	N
Carbonate Alkalinity	0.00 mg/L	0.00	0.00	1		02/14/18	ADG	02/14/18	ADG	N
Total Alkalinity (CaCO3)	439 mg/L	20.0	20.0	1		02/14/18	ADG	02/14/18	ADG	

INORGANICS

Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Calcium Total	230 mg/L	0.200	0.0700	1		02/14/18 18:02	BS	02/15/18 19:30	FO	
Magnesium Total	28.0 mg/L	0.200	0.0700	1		02/14/18 18:02	BS	02/15/18 19:30	FO	
Potassium Total	1.09 mg/L	0.200	0.0700	1		02/14/18 18:02	BS	02/15/18 19:30	FO	
Sodium Total	357 mg/L	0.300	0.100	1		02/14/18 18:02	BS	02/15/18 19:30	FO	

ANALYTICAL RESULTS

Workorder: Q1804933

Lab ID: Q1804933008	Date Received: 2/8/2018 07:45	Matrix: Aqueous
Sample ID: CBL-3061 - 0.45 micron filter	Date Collected: 2/7/2018 14:16	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
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INORGANICS

Analysis Desc: E300.0, Anions	Preparation Method: E300.0, Anions									
	Analytical Method: E300.0, Anions									
Chloride	398 mg/L	25.0	10.0	25		02/09/18 00:27	ML	02/09/18 00:27	ML	
Fluoride	2.88 mg/L	0.250	0.100	25		02/09/18 00:27	ML	02/09/18 00:27	ML	
Nitrite (as N)	<0.250 mg/L	0.250	0.100	25		02/09/18 00:27	ML	02/09/18 00:27	ML	
Nitrate (as N)	<0.250 mg/L	0.250	0.100	25		02/09/18 00:27	ML	02/09/18 00:27	ML	
Sulfate	518 mg/L	25.0	10.0	25		02/09/18 00:27	ML	02/09/18 00:27	ML	

ALKALINITY

Analysis Desc: SM2320B, Alkalinity	Preparation Method: SM2320B, Alkalinity									
	Analytical Method: SM2320B, Alkalinity									
Bicarbonate Alkalinity	432 mg/L	0.00	0.00	1		02/14/18	ADG	02/14/18	ADG	N
Carbonate Alkalinity	0.00 mg/L	0.00	0.00	1		02/14/18	ADG	02/14/18	ADG	N
Total Alkalinity (CaCO3)	432 mg/L	20.0	20.0	1		02/14/18	ADG	02/14/18	ADG	

INORGANICS

Analysis Desc: SW6010B ICP-AES	Preparation Method: SW6010B ICP-AES									
	Analytical Method: SW6010B ICP-AES									
Calcium Dissolved	229 mg/L	0.100		1		02/12/18 15:20	FO	02/15/18 21:12	FO	
Magnesium Dissolved	29.1 mg/L	0.100	0.0400	1		02/12/18 15:20	FO	02/15/18 21:12	FO	
Potassium Dissolved	1.05 mg/L	0.100	0.0400	1		02/12/18 15:20	FO	02/15/18 21:12	FO	
Sodium Dissolved	364 mg/L	0.100		1		02/12/18 15:20	FO	02/15/18 21:12	FO	

ANALYTICAL RESULTS

Workorder: Q1804933

Lab ID: Q1804933009	Date Received: 2/8/2018 07:45	Matrix: Aqueous
Sample ID: CBL-308I	Date Collected: 2/6/2018 14:52	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
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INORGANICS

Analysis Desc: E300.0, Anions

Preparation Method: E300.0, Anions

Analytical Method: E300.0, Anions

Chloride	2750 mg/L	50.0	20.0	50		02/08/18 13:21	ML	02/08/18 13:21	ML	
Fluoride	1.76 mg/L	0.500	0.200	50		02/08/18 13:21	ML	02/08/18 13:21	ML	
Nitrite (as N)	<0.500 mg/L	0.500	0.200	50		02/08/18 13:21	ML	02/08/18 13:21	ML	
Nitrate (as N)	0.835 mg/L	0.500	0.200	50		02/08/18 13:21	ML	02/08/18 13:21	ML	
Sulfate	1570 mg/L	50.0	20.0	50		02/08/18 13:21	ML	02/08/18 13:21	ML	

ALKALINITY

Analysis Desc: SM2320B, Alkalinity

Preparation Method: SM2320B, Alkalinity

Analytical Method: SM2320B, Alkalinity

Bicarbonate Alkalinity	327 mg/L	0.00	0.00	1		02/14/18	ADG	02/14/18	ADG	N
Carbonate Alkalinity	0.00 mg/L	0.00	0.00	1		02/14/18	ADG	02/14/18	ADG	N
Total Alkalinity (CaCO3)	327 mg/L	20.0	20.0	1		02/14/18	ADG	02/14/18	ADG	

INORGANICS

Analysis Desc: SW6010B ICP-AES

Preparation Method: SW3010A, Metals Prep

Analytical Method: SW6010B ICP-AES

Calcium Total	859 mg/L	2.00	0.700	10		02/14/18 18:02	BS	02/15/18 19:47	FO	
Magnesium Total	123 mg/L	0.200	0.0700	1		02/14/18 18:02	BS	02/15/18 19:41	FO	
Potassium Total	6.63 mg/L	0.200	0.0700	1		02/14/18 18:02	BS	02/15/18 19:41	FO	
Sodium Total	1210 mg/L	3.00	1.00	10		02/14/18 18:02	BS	02/15/18 19:47	FO	

ANALYTICAL RESULTS

Workorder: Q1804933

Lab ID:	Q1804933010	Date Received:	2/8/2018 07:45	Matrix:	Aqueous
Sample ID:	CBL-3081 - 0.45 micron filter	Date Collected:	2/6/2018 14:52	Sample Type:	SAMPLE
Project ID:	FPP GWMP CCR				

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	3110 mg/L	50.0	20.0	50		02/08/18 13:07	ML	02/08/18 13:07	ML	
Fluoride	1.81 mg/L	0.500	0.200	50		02/08/18 13:07	ML	02/08/18 13:07	ML	
Nitrite (as N)	<0.500 mg/L	0.500	0.200	50		02/08/18 13:07	ML	02/08/18 13:07	ML	
Nitrate (as N)	0.940 mg/L	0.500	0.200	50		02/08/18 13:07	ML	02/08/18 13:07	ML	
Sulfate	1800 mg/L	50.0	20.0	50		02/08/18 13:07	ML	02/08/18 13:07	ML	
ALKALINITY										
Analysis Desc: SM2320B, Alkalinity		Preparation Method: SM2320B, Alkalinity								
		Analytical Method: SM2320B, Alkalinity								
Bicarbonate Alkalinity	326 mg/L	0.00	0.00	1		02/14/18	ADG	02/14/18	ADG	N
Carbonate Alkalinity	0.00 mg/L	0.00	0.00	1		02/14/18	ADG	02/14/18	ADG	N
Total Alkalinity (CaCO3)	326 mg/L	20.0	20.0	1		02/14/18	ADG	02/14/18	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW6010B ICP-AES								
		Analytical Method: SW6010B ICP-AES								
Calcium Dissolved	818 mg/L	1.00		10		02/12/18 15:22	FO	02/15/18 21:29	FO	
Magnesium Dissolved	121 mg/L	0.100	0.0400	1		02/12/18 15:22	FO	02/15/18 21:23	FO	
Potassium Dissolved	6.67 mg/L	0.100	0.0400	1		02/12/18 15:22	FO	02/15/18 21:23	FO	
Sodium Dissolved	1140 mg/L	1.00		10		02/12/18 15:22	FO	02/15/18 21:29	FO	

ANALYTICAL RESULTS

Workorder: Q1804933

Lab ID:	Q1804933011	Date Received:	2/8/2018 07:45	Matrix:	Aqueous
Sample ID:	CBL-341I	Date Collected:	2/6/2018 13:00	Sample Type:	SAMPLE
Project ID:	FPP GWMP CCR				

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	2110 mg/L	50.0	20.0	50		02/08/18 13:03	ML	02/08/18 13:03	ML	
Fluoride	0.106 mg/L	0.100	0.0400	10		02/08/18 12:26	ML	02/08/18 12:26	ML	
Nitrite (as N)	<0.100 mg/L	0.100	0.0400	10		02/08/18 12:26	ML	02/08/18 12:26	ML	
Nitrate (as N)	0.173 mg/L	0.100	0.0400	10		02/08/18 12:26	ML	02/08/18 12:26	ML	
Sulfate	383 mg/L	10.0	4.00	10		02/08/18 12:26	ML	02/08/18 12:26	ML	

ALKALINITY

Analysis Desc: SM2320B, Alkalinity		Preparation Method: SM2320B, Alkalinity								
		Analytical Method: SM2320B, Alkalinity								
Bicarbonate Alkalinity	297 mg/L	0.00	0.00	1		02/14/18	ADG	02/14/18	ADG	N
Carbonate Alkalinity	0.00 mg/L	0.00	0.00	1		02/14/18	ADG	02/14/18	ADG	N
Total Alkalinity (CaCO3)	297 mg/L	20.0	20.0	1		02/14/18	ADG	02/14/18	ADG	

INORGANICS

Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Calcium Total	810 mg/L	2.00	0.700	10		02/14/18 18:02	BS	02/15/18 20:10	FO	
Magnesium Total	90.8 mg/L	0.200	0.0700	1		02/14/18 18:02	BS	02/15/18 20:04	FO	
Potassium Total	5.80 mg/L	0.200	0.0700	1		02/14/18 18:02	BS	02/15/18 20:04	FO	
Sodium Total	302 mg/L	0.300	0.100	1		02/14/18 18:02	BS	02/15/18 20:04	FO	

ANALYTICAL RESULTS

Workorder: Q1804933

Lab ID: Q1804933012	Date Received: 2/8/2018 07:45	Matrix: Aqueous
Sample ID: CBL-3411 - 0.45 micron filter	Date Collected: 2/6/2018 13:00	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
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INORGANICS

Analysis Desc: E300.0, Anions Preparation Method: E300.0, Anions

Analytical Method: E300.0, Anions

Chloride	1880 mg/L	50.0	20.0	50	02/08/18 12:15	ML	02/08/18 12:15	ML		
Fluoride	<0.100 mg/L	0.100	0.0400	10	02/08/18 12:51	ML	02/08/18 12:51	ML		
Nitrite (as N)	<0.100 mg/L	0.100	0.0400	10	02/08/18 12:51	ML	02/08/18 12:51	ML		
Nitrate (as N)	0.158 mg/L	0.100	0.0400	10	02/08/18 12:51	ML	02/08/18 12:51	ML		
Sulfate	360 mg/L	50.0	20.0	50	02/08/18 12:15	ML	02/08/18 12:15	ML		

ALKALINITY

Analysis Desc: SM2320B, Alkalinity Preparation Method: SM2320B, Alkalinity

Analytical Method: SM2320B, Alkalinity

Bicarbonate Alkalinity	300 mg/L	0.00	0.00	1	02/14/18	ADG	02/14/18	ADG	N	
Carbonate Alkalinity	0.00 mg/L	0.00	0.00	1	02/14/18	ADG	02/14/18	ADG	N	
Total Alkalinity (CaCO3)	300 mg/L	20.0	20.0	1	02/14/18	ADG	02/14/18	ADG		

INORGANICS

Analysis Desc: SW6010B ICP-AES Preparation Method: SW6010B ICP-AES

Analytical Method: SW6010B ICP-AES

Calcium Dissolved	788 mg/L	1.00		10	02/12/18 15:22	FO	02/15/18 21:41	FO		
Magnesium Dissolved	89.1 mg/L	0.100	0.0400	1	02/12/18 15:22	FO	02/15/18 21:34	FO		
Potassium Dissolved	5.84 mg/L	0.100	0.0400	1	02/12/18 15:22	FO	02/15/18 21:34	FO		
Sodium Dissolved	288 mg/L	0.100		1	02/12/18 15:22	FO	02/15/18 21:34	FO		

ANALYTICAL RESULTS

Workorder: Q1804933

Lab ID: **Q1804933013**
Sample ID: **CBL-641I**
Project ID: **FPP GWMP CCR**

Date Received: 2/8/2018 07:45 Matrix: Aqueous
Date Collected: 2/6/2018 13:00 Sample Type: SAMPLE

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
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INORGANICS

Analysis Desc: E300.0, Anions

Preparation Method: E300.0, Anions

Analytical Method: E300.0, Anions

Chloride	1710 mg/L	50.0	20.0	50		02/08/18 11:57	ML	02/08/18 11:57	ML	
Fluoride	<0.100 mg/L	0.100	0.0400	10		02/08/18 12:34	ML	02/08/18 12:34	ML	
Nitrite (as N)	<0.100 mg/L	0.100	0.0400	10		02/08/18 12:34	ML	02/08/18 12:34	ML	
Nitrate (as N)	0.180 mg/L	0.100	0.0400	10		02/08/18 12:34	ML	02/08/18 12:34	ML	
Sulfate	409 mg/L	50.0	20.0	50		02/08/18 11:57	ML	02/08/18 11:57	ML	

ALKALINITY

Analysis Desc: SM2320B, Alkalinity

Preparation Method: SM2320B, Alkalinity

Analytical Method: SM2320B, Alkalinity

Bicarbonate Alkalinity	298 mg/L	0.00	0.00	1		02/14/18	ADG	02/14/18	ADG	N
Carbonate Alkalinity	0.00 mg/L	0.00	0.00	1		02/14/18	ADG	02/14/18	ADG	N
Total Alkalinity (CaCO3)	298 mg/L	20.0	20.0	1		02/14/18	ADG	02/14/18	ADG	

INORGANICS

Analysis Desc: SW6010B ICP-AES

Preparation Method: SW3010A, Metals Prep

Analytical Method: SW6010B ICP-AES

Calcium Total	806 mg/L	2.00	0.700	10		02/14/18 18:02	BS	02/15/18 20:21	FO	
Magnesium Total	90.8 mg/L	0.200	0.0700	1		02/14/18 18:02	BS	02/15/18 20:15	FO	
Potassium Total	5.96 mg/L	0.200	0.0700	1		02/14/18 18:02	BS	02/15/18 20:15	FO	
Sodium Total	301 mg/L	0.300	0.100	1		02/14/18 18:02	BS	02/15/18 20:15	FO	

ANALYTICAL RESULTS

Workorder: Q1804933

Lab ID: **Q1804933014** Date Received: 2/8/2018 07:45 Matrix: Aqueous
Sample ID: **CBL-641I - 0.45 micron filter** Date Collected: 2/6/2018 13:00 Sample Type: SAMPLE
Project ID: **FPP GWMP CCR**

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	1720 mg/L	50.0	20.0	50		02/08/18 11:53	ML	02/08/18 11:53	ML	
Fluoride	0.116 mg/L	0.100	0.0400	10		02/08/18 12:30	ML	02/08/18 12:30	ML	
Nitrite (as N)	<0.100 mg/L	0.100	0.0400	10		02/08/18 12:30	ML	02/08/18 12:30	ML	
Nitrate (as N)	0.156 mg/L	0.100	0.0400	10		02/08/18 12:30	ML	02/08/18 12:30	ML	
Sulfate	333 mg/L	50.0	20.0	50		02/08/18 11:53	ML	02/08/18 11:53	ML	
ALKALINITY										
Analysis Desc: SM2320B, Alkalinity		Preparation Method: SM2320B, Alkalinity								
		Analytical Method: SM2320B, Alkalinity								
Bicarbonate Alkalinity	302 mg/L	0.00	0.00	1		02/14/18	ADG	02/14/18	ADG	N
Carbonate Alkalinity	0.00 mg/L	0.00	0.00	1		02/14/18	ADG	02/14/18	ADG	N
Total Alkalinity (CaCO3)	302 mg/L	20.0	20.0	1		02/14/18	ADG	02/14/18	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW6010B ICP-AES								
		Analytical Method: SW6010B ICP-AES								
Calcium Dissolved	767 mg/L	1.00		10		02/12/18 15:22	FO	02/15/18 21:52	FO	
Magnesium Dissolved	87.3 mg/L	0.100	0.0400	1		02/12/18 15:22	FO	02/15/18 21:46	FO	
Potassium Dissolved	5.69 mg/L	0.100	0.0400	1		02/12/18 15:22	FO	02/15/18 21:46	FO	
Sodium Dissolved	289 mg/L	0.100		1		02/12/18 15:22	FO	02/15/18 21:46	FO	



ANALYTICAL RESULTS

Workorder: Q1804933

Lab ID: Q1804933015 Date Received: 2/8/2018 07:45 Matrix: Aqueous
 Sample ID: Field Blank 1 Date Collected: 2/6/2018 14:52 Sample Type: SAMPLE
 Project ID: FPP GWMP CCR

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Calcium Total	<0.200 mg/L	0.200	0.0700	1		02/14/18 18:02	BS	02/14/18 19:39	FO	
Magnesium Total	<0.200 mg/L	0.200	0.0700	1		02/14/18 18:02	BS	02/14/18 19:39	FO	
Potassium Total	<0.200 mg/L	0.200	0.0700	1		02/14/18 18:02	BS	02/14/18 19:39	FO	
Sodium Total	<0.300 mg/L	0.300	0.100	1		02/14/18 18:02	BS	02/14/18 19:39	FO	



ANALYTICAL RESULTS

Workorder: Q1804933

Lab ID: Q1804933016	Date Received: 2/8/2018 07:45	Matrix: Aqueous
Sample ID: Field Blank 2	Date Collected: 2/7/2018 15:40	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
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INORGANICS

Analysis Desc: SW6010B ICP-AES Preparation Method: SW3010A, Metals Prep
 Analytical Method: SW6010B ICP-AES

Calcium Total	<0.200 mg/L	0.200	0.0700	1		02/14/18 18:02	BS	02/14/18 19:46	FO
Magnesium Total	<0.200 mg/L	0.200	0.0700	1		02/14/18 18:02	BS	02/14/18 19:46	FO
Potassium Total	<0.200 mg/L	0.200	0.0700	1		02/14/18 18:02	BS	02/14/18 19:46	FO
Sodium Total	<0.300 mg/L	0.300	0.100	1		02/14/18 18:02	BS	02/14/18 19:46	FO



ANALYTICAL RESULTS

Workorder: Q1804933

Lab ID: Q1804933017	Date Received: 2/8/2018 07:45	Matrix: Aqueous
Sample ID: EQB Pump	Date Collected: 2/7/2018 11:30	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: SW6010B ICP-AES				Preparation Method: SW3010A, Metals Prep						
Analytical Method: SW6010B ICP-AES										
Calcium Total	<0.200 mg/L	0.200	0.0700		1	02/14/18 18:02	BS	02/14/18 19:52		FO
Magnesium Total	<0.200 mg/L	0.200	0.0700		1	02/14/18 18:02	BS	02/14/18 19:52		FO
Potassium Total	<0.200 mg/L	0.200	0.0700		1	02/14/18 18:02	BS	02/14/18 19:52		FO
Sodium Total	<0.300 mg/L	0.300	0.100		1	02/14/18 18:02	BS	02/14/18 19:52		FO



ANALYTICAL RESULTS

Workorder: Q1804933

Lab ID: **Q1804933018** Date Received: 2/8/2018 07:45 Matrix: Aqueous
 Sample ID: **EQB - 0.45 micron filter** Date Collected: 2/7/2018 16:00 Sample Type: SAMPLE
 Project ID: **FPP GWMP CCR**

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: SW6010B ICP-AES					Preparation Method: SW6010B ICP-AES					
Analytical Method: SW6010B ICP-AES										
Calcium Dissolved	<0.100 mg/L	0.100			1	02/12/18 15:22	FO	02/13/18 20:45	FO	
Magnesium Dissolved	<0.100 mg/L	0.100	0.0400		1	02/12/18 15:22	FO	02/13/18 20:45	FO	
Potassium Dissolved	<0.100 mg/L	0.100	0.0400		1	02/12/18 15:22	FO	02/13/18 20:45	FO	
Sodium Dissolved	<0.100 mg/L	0.100			1	02/12/18 15:22	FO	02/13/18 20:45	FO	



ANALYTICAL RESULTS QUALIFIERS

Workorder: Q1804933

PARAMETER QUALIFIERS

Lab ID: Q1804933001
N Not Accredited

Lab ID: Q1804933002
N Not Accredited

Lab ID: Q1804933003
N Not Accredited

Lab ID: Q1804933004
N Not Accredited

Lab ID: Q1804933005
N Not Accredited

Lab ID: Q1804933006
N Not Accredited

Lab ID: Q1804933009
N Not Accredited

Lab ID: Q1804933010
N Not Accredited

Lab ID: Q1804933011
N Not Accredited

Lab ID: Q1804933012
N Not Accredited

Lab ID: Q1804933013
N Not Accredited

Lab ID: Q1804933014
N Not Accredited



QUALITY CONTROL DATA

Workorder: Q1804933

SAMPLE DUPLICATE: 1018110 ORIGINAL: Q1803992007

Parameter	Units	Original Result	DUP Result	% Rec	% Rec Limit	RPD	Max Qual
Nitrate (as N)	mg/L	10.7	10.7			0	

Qualifiers

S - Spike Recovery Outside Recovery Limits

R - RPD Outside Recovery Limits

B - Analyte Detected in Method Blank

QUALITY CONTROL DATA

Workorder: Q1804933

QC Batch: WET/16586 Analysis Method: E300.0, Anions

QC Batch Method: E300.0, Anions

Associated Lab Samples: Q1804933010, Q1804933012, Q1804933013

METHOD BLANK: 1018319

Parameter	Units	Blank Result	Reporting Limit	Qual
Chloride	mg/L	<1.00	1.00	
Fluoride	mg/L	<0.0100	0.0100	
Nitrate (as N)	mg/L	<0.0100	0.0100	
Nitrite (as N)	mg/L	<0.0100	0.0100	
Sulfate	mg/L	<1.00	1.00	

LABORATORY CONTROL SAMPLE: 1018322

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Chloride	mg/L	30	28.5	95.1	90 - 110	
Fluoride	mg/L	1	1	100	90 - 110	
Nitrate (as N)	mg/L	1	.99	98.9	90 - 110	
Nitrite (as N)	mg/L	1	.99	99	90 - 110	
Sulfate	mg/L	30	28.6	95.5	90 - 110	

MATRIX SPIKE: 1018324 DUPLICATE: 1018325 ORIGINAL: Q1804911025

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Chloride	mg/L	1710	1000	2810	2760	110	104	80 - 120	1.8	20	
Fluoride	mg/L	.05	50	52.3	51.2	105	102	80 - 120	2.13	20	
Nitrate (as N)	mg/L	.19	50	52.2	50.8	104	102	80 - 120	2.72	20	
Nitrite (as N)	mg/L	0	50	52.7	51	105	102	80 - 120	3.28	20	
Sulfate	mg/L	409	1000	1510	1470	110	106	80 - 120	2.68	20	

Qualifiers

S - Spike Recovery Outside Recovery Limits

R - RPD Outside Recovery Limits

B - Analyte Detected in Method Blank

QUALITY CONTROL DATA

Workorder: Q1804933

QC Batch: WET/16588 Analysis Method: E300.0, Anions

QC Batch Method: E300.0, Anions

Associated Lab Samples: Q1804933001, Q1804933002, Q1804933003, Q1804933004, Q1804933005, Q1804933006, Q1804933007, Q1804933008, Q1804933009, Q1804933011

METHOD BLANK: 1018432

Parameter	Units	Blank Result	Reporting Limit	Qual
Chloride	mg/L	<1.00	1.00	
Fluoride	mg/L	<0.0100	0.0100	
Nitrate (as N)	mg/L	<0.0100	0.0100	
Nitrite (as N)	mg/L	<0.0100	0.0100	
Sulfate	mg/L	<1.00	1.00	

LABORATORY CONTROL SAMPLE: 1018435

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Chloride	mg/L	30	29.6	98.5	90 - 110	
Fluoride	mg/L	1	.98	97.9	90 - 110	
Nitrate (as N)	mg/L	1	.96	95.8	90 - 110	
Nitrite (as N)	mg/L	1	.92	92.1	90 - 110	
Sulfate	mg/L	30	27.3	91	90 - 110	

MATRIX SPIKE: 1018437 DUPLICATE: 1018438 ORIGINAL: Q1804911024

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Chloride	mg/L	1820	1000	2700	2700	87.4	87.2	80 - 120	0	20	
Fluoride	mg/L	.13	50	48.5	48.4	96.7	96.6	80 - 120	.206	20	
Nitrate (as N)	mg/L	.22	50	47.8	47.8	95.6	95.5	80 - 120	0	20	
Nitrite (as N)	mg/L	0	50	49.2	49.2	98.4	98.5	80 - 120	0	20	
Sulfate	mg/L	344	1000	1290	1290	94.9	94.9	80 - 120	0	20	

Qualifiers

S - Spike Recovery Outside Recovery Limits

R - RPD Outside Recovery Limits

B - Analyte Detected in Method Blank

QUALITY CONTROL DATA

Workorder: Q1804933

METHOD BLANK: 1018442

Parameter	Units	Blank Result	Reporting Limit	Qual
Chloride	mg/L	<1.00	1.00	
Fluoride	mg/L	<0.0100	0.0100	
Nitrate (as N)	mg/L	<0.0100	0.0100	
Nitrite (as N)	mg/L	<0.0100	0.0100	
Sulfate	mg/L	<1.00	1.00	

LABORATORY CONTROL SAMPLE: 1018443

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Chloride	mg/L	30	32.1	107	90 - 110	
Fluoride	mg/L	1	1.03	103	90 - 110	
Nitrate (as N)	mg/L	1	1	100	90 - 110	
Nitrite (as N)	mg/L	1	.98	98.4	90 - 110	
Sulfate	mg/L	30	27.5	91.8	90 - 110	

MATRIX SPIKE: 1018439 DUPLICATE: 1018440 ORIGINAL: Q1804911007

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
<i>Chloride</i>	mg/L	2620	200	1780	1790	-424	-419	80 - 120	.56	20	S
Fluoride	mg/L	.08	10	9.54	9.64	95.4	96.4	80 - 120	1.04	20	
Nitrate (as N)	mg/L	.27	10	9.94	10	96.7	97.4	80 - 120	.602	20	
Nitrite (as N)	mg/L	0	10	11.1	11.2	111	112	80 - 120	.897	20	
Sulfate	mg/L	370	200	540	533	84.6	81.4	80 - 120	1.3	20	

MATRIX SPIKE: 1018444 DUPLICATE: 1018445 ORIGINAL: Q1804911012

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
<i>Chloride</i>	mg/L	2030	200	1580	1620	-227	-209	80 - 120	2.5	20	S
Fluoride	mg/L	.13	10	9.43	9.74	93.1	96.2	80 - 120	3.23	20	
Nitrate (as N)	mg/L	.02	10	9.4	9.73	94	97.3	80 - 120	3.45	20	

Qualifiers

S - Spike Recovery Outside Recovery Limits

R - RPD Outside Recovery Limits

B - Analyte Detected in Method Blank

QUALITY CONTROL DATA

Workorder: Q1804933

MATRIX SPIKE: 1018444 DUPLICATE: 1018445 ORIGINAL: Q1804911012

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Nitrite (as N)	mg/L	0	10	10.5	10.8	105	108	80 - 120	2.82	20	
Sulfate	mg/L	1240	200	1220	1240	-11.4	-1.65	80 - 120	1.63	20	S

METHOD BLANK: 1018447

Parameter	Units	Blank Result	Reporting Limit	Qual
Chloride	mg/L	<1.00	1.00	
Fluoride	mg/L	<0.0100	0.0100	
Nitrate (as N)	mg/L	<0.0100	0.0100	
Nitrite (as N)	mg/L	<0.0100	0.0100	
Sulfate	mg/L	<1.00	1.00	

LABORATORY CONTROL SAMPLE: 1018448

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Chloride	mg/L	30	29.6	98.5	90 - 110	
Fluoride	mg/L	1	.98	98	90 - 110	
Nitrate (as N)	mg/L	1	.97	97.2	90 - 110	
Nitrite (as N)	mg/L	1	.92	92.2	90 - 110	
Sulfate	mg/L	30	27	90.1	90 - 110	

Qualifiers

- S - Spike Recovery Outside Recovery Limits
- R - RPD Outside Recovery Limits
- B - Analyte Detected in Method Blank

QUALITY CONTROL DATA

Workorder: Q1804933

QC Batch: MEP/7991 Analysis Method: SW6010B ICP-AES
QC Batch Method: SW6010B ICP-AES
Associated Lab Samples: Q1804933002, Q1804933004, Q1804933006, Q1804933008, Q1804933012

METHOD BLANK: 1019542

Parameter	Units	Blank Result	Reporting Limit	Qual
Calcium Dissolved	mg/L	<0.100	0.100	
Magnesium Dissolved	mg/L	<0.100	0.100	
Potassium Dissolved	mg/L	<0.100	0.100	
Sodium Dissolved	mg/L	<0.100	0.100	

LABORATORY CONTROL SAMPLE: 1019543

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max	Qual
Calcium Dissolved	mg/L	10	10.2	10.2	102	102	80 - 120	0	20	
Magnesium Dissolved	mg/L	10	10.1	10	101	100	80 - 120	.995	20	
Potassium Dissolved	mg/L	10	9.85	9.72	98.5	97.2	80 - 120	1.33	20	
Sodium Dissolved	mg/L	10	10	9.98	100	99.8	80 - 120	.2	20	

MATRIX SPIKE: 1019547 DUPLICATE: 1019548 ORIGINAL: Q1804911023

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Calcium Dissolved	mg/L	854	10	808	796	-463	-580	75 - 125	1.5	20	S
Magnesium Dissolved	mg/L	89.6	10	100	99.2	104	95.5	75 - 125	.803	20	
Potassium Dissolved	mg/L	6.36	10	17.8	17.5	115	112	75 - 125	1.7	20	
Sodium Dissolved	mg/L	307	10	319	316	126	94.3	75 - 125	.945	20	S

Qualifiers

- S - Spike Recovery Outside Recovery Limits
- R - RPD Outside Recovery Limits
- B - Analyte Detected in Method Blank

QUALITY CONTROL DATA

Workorder: Q1804933

QC Batch: MEP/7992 Analysis Method: SW6010B ICP-AES
QC Batch Method: SW6010B ICP-AES
Associated Lab Samples: Q1804933010, Q1804933014, Q1804933018

METHOD BLANK: 1019549

Parameter	Units	Blank Result	Reporting Limit	Qual
Calcium Dissolved	mg/L	<0.100	0.100	
Magnesium Dissolved	mg/L	<0.100	0.100	
Potassium Dissolved	mg/L	<0.100	0.100	
Sodium Dissolved	mg/L	<0.100	0.100	

LABORATORY CONTROL SAMPLE: 1019550

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max	Qual
Calcium Dissolved	mg/L	10	9.9	10	99	100	80 - 120	1.01	20	
Magnesium Dissolved	mg/L	10	9.62	9.76	96.2	97.6	80 - 120	1.44	20	
Potassium Dissolved	mg/L	10	9.65	9.7	96.5	97	80 - 120	.517	20	
Sodium Dissolved	mg/L	10	9.9	10	99	100	80 - 120	1.01	20	

MATRIX SPIKE: 1019552 DUPLICATE: 1019553 ORIGINAL: Q1804933010

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Calcium Dissolved	mg/L	818	10	796	804	-220	-144	75 - 125	1	20	S
Magnesium Dissolved	mg/L	121	10	127	128	60.7	69.6	75 - 125	.784	20	S
Potassium Dissolved	mg/L	6.67	10	17	17.3	103	106	75 - 125	1.75	20	

MATRIX SPIKE: 1019554 DUPLICATE: 1019555 ORIGINAL: Q1805209015

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Calcium Dissolved	mg/L	0	10	10.2	9.96	102	99.6	75 - 125	2.38	20	
Magnesium Dissolved	mg/L	0	10	9.93	9.72	99.3	97.2	75 - 125	2.14	20	

Qualifiers

- S - Spike Recovery Outside Recovery Limits
- R - RPD Outside Recovery Limits
- B - Analyte Detected in Method Blank

QUALITY CONTROL DATA

Workorder: Q1804933

MATRIX SPIKE: 1019554 DUPLICATE: 1019555 ORIGINAL: Q1805209015

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD Qual
Potassium Dissolved	mg/L	0	10	10.1	9.79	101	97.9	75 - 125	3.12	20
Sodium Dissolved	mg/L	0	10	10.3	9.95	103	99.5	75 - 125	3.46	20

Qualifiers

S - Spike Recovery Outside Recovery Limits

R - RPD Outside Recovery Limits

B - Analyte Detected in Method Blank

QUALITY CONTROL DATA

Workorder: Q1804933

QC Batch: MEP/8006 Analysis Method: SW6010B ICP-AES

QC Batch Method: SW3010A, Metals Prep

Associated Lab Samples: Q1804933001, Q1804933003, Q1804933005, Q1804933007, Q1804933009, Q1804933011, Q1804933013, Q1804933015, Q1804933016, Q1804933017

LABORATORY CONTROL SAMPLE: 1021152

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max	Qual
Calcium Total	mg/L	10	10.4	10.4	104	104	80 - 120	0	20	
Magnesium Total	mg/L	10	9.84	9.89	98.4	98.9	80 - 120	.507	20	
Potassium Total	mg/L	10	9.5	9.65	95	96.5	80 - 120	1.57	20	
Sodium Total	mg/L	10	10	10.2	100	102	80 - 120	1.98	20	

METHOD BLANK: 1021154

Parameter	Units	Blank Result	Reporting Limit	Qual
Calcium Total	mg/L	<0.200	0.200	
Magnesium Total	mg/L	<0.200	0.200	
Potassium Total	mg/L	<0.200	0.200	
Sodium Total	mg/L	<0.300	0.300	

MATRIX SPIKE: 1021157 DUPLICATE: 1021158 ORIGINAL: Q1804933001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Calcium Total	mg/L	555	10	541	551	-134	-35.1	75 - 125	1.83	20	S
Magnesium Total	mg/L	87.5	10	92.4	94.2	48.5	66.8	75 - 125	1.93	20	S
Potassium Total	mg/L	3.96	10	15.1	15.3	111	113	75 - 125	1.32	20	

Qualifiers

- S - Spike Recovery Outside Recovery Limits
- R - RPD Outside Recovery Limits
- B - Analyte Detected in Method Blank

QUALITY CONTROL DATA

Workorder: Q1804933

QC Batch: WET/16639 Analysis Method: SM2320B, Alkalinity

QC Batch Method: SM2320B, Alkalinity

Associated Lab Samples: Q1804933001, Q1804933002, Q1804933003, Q1804933004, Q1804933005, Q1804933006, Q1804933007, Q1804933008, Q1804933009, Q1804933010, Q1804933011, Q1804933012, Q1804933013, Q1804933014

SAMPLE DUPLICATE: 1021559 ORIGINAL: Q1804933001

Parameter	Units	Original Result	DUP Result	% Rec	% Rec Limit	RPD	Max Qual
Total Alkalinity (CaCO ₃)	mg/L	334	333			.3	20

MATRIX SPIKE SAMPLE: 1021560 ORIGINAL: Q1804933001

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Limit	Qual
Total Alkalinity (CaCO ₃)	mg/L	334	100	398	64.5	70 - 130	S

LABORATORY CONTROL SAMPLE: 1021561

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Total Alkalinity (CaCO ₃)	mg/L	100	98.4	98.4	90 - 110	

METHOD BLANK: 1021562

Parameter	Units	Blank Result	Reporting Limit	Qual
Total Alkalinity (CaCO ₃)	mg/L	<20.0	20.0	

Qualifiers

- S - Spike Recovery Outside Recovery Limits
- R - RPD Outside Recovery Limits
- B - Analyte Detected in Method Blank

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: Q1804933

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
Q1804933014	CBL-641I - 0.45 micron filter			E300.0, Anions	WET/16576
Q1804933010	CBL-308I - 0.45 micron filter			E300.0, Anions	WET/16586
Q1804933012	CBL-341I - 0.45 micron filter			E300.0, Anions	WET/16586
Q1804933013	CBL-641I			E300.0, Anions	WET/16586
Q1804933001	CBL-340I			E300.0, Anions	WET/16588
Q1804933002	CBL-340I - 0.45 micron filter			E300.0, Anions	WET/16588
Q1804933003	CBL-301I			E300.0, Anions	WET/16588
Q1804933004	CBL-301I - 0.45 micron filter			E300.0, Anions	WET/16588
Q1804933005	CBL-302I			E300.0, Anions	WET/16588
Q1804933006	CBL-302I - 0.45 micron filter			E300.0, Anions	WET/16588
Q1804933009	CBL-308I			E300.0, Anions	WET/16588
Q1804933011	CBL-341I			E300.0, Anions	WET/16588
Q1804933006	CBL-302I - 0.45 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6191
Q1804933002	CBL-340I - 0.45 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6207
Q1804933004	CBL-301I - 0.45 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6207
Q1804933006	CBL-302I - 0.45 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6207
Q1804933012	CBL-341I - 0.45 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6207
Q1804933018	EQB - 0.45 micron filter	SW6010B ICP-AES	MEP/7992	SW6010B ICP-AES	MET/6191
Q1804933010	CBL-308I - 0.45 micron filter	SW6010B ICP-AES	MEP/7992	SW6010B ICP-AES	MET/6207
Q1804933014	CBL-641I - 0.45 micron filter	SW6010B ICP-AES	MEP/7992	SW6010B ICP-AES	MET/6207
Q1804933015	Field Blank 1	SW3010A, Metals Prep	MEP/8006	SW6010B ICP-AES	MET/6200
Q1804933016	Field Blank 2	SW3010A, Metals Prep	MEP/8006	SW6010B ICP-AES	MET/6200
Q1804933017	EQB Pump	SW3010A, Metals Prep	MEP/8006	SW6010B ICP-AES	MET/6200
Q1804933001	CBL-340I	SW3010A, Metals Prep	MEP/8006	SW6010B ICP-AES	MET/6207
Q1804933003	CBL-301I	SW3010A, Metals Prep	MEP/8006	SW6010B ICP-AES	MET/6207
Q1804933005	CBL-302I	SW3010A, Metals Prep	MEP/8006	SW6010B ICP-AES	MET/6207
Q1804933009	CBL-308I	SW3010A, Metals Prep	MEP/8006	SW6010B ICP-AES	MET/6207
Q1804933011	CBL-341I	SW3010A, Metals Prep	MEP/8006	SW6010B ICP-AES	MET/6207

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: Q1804933

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
Q1804933013	CBL-641I	SW3010A, Metals Prep	MEP/8006	SW6010B ICP-AES	MET/6207
Q1804933001	CBL-340I			SM2320B, Alkalinity	WET/16639
Q1804933002	CBL-340I - 0.45 micron filter			SM2320B, Alkalinity	WET/16639
Q1804933003	CBL-301I			SM2320B, Alkalinity	WET/16639
Q1804933004	CBL-301I - 0.45 micron filter			SM2320B, Alkalinity	WET/16639
Q1804933005	CBL-302I			SM2320B, Alkalinity	WET/16639
Q1804933006	CBL-302I - 0.45 micron filter			SM2320B, Alkalinity	WET/16639
Q1804933009	CBL-308I			SM2320B, Alkalinity	WET/16639
Q1804933010	CBL-308I - 0.45 micron filter			SM2320B, Alkalinity	WET/16639
Q1804933011	CBL-341I			SM2320B, Alkalinity	WET/16639
Q1804933012	CBL-341I - 0.45 micron filter			SM2320B, Alkalinity	WET/16639
Q1804933013	CBL-641I			SM2320B, Alkalinity	WET/16639
Q1804933014	CBL-641I - 0.45 micron filter			SM2320B, Alkalinity	WET/16639



LCRA Environmental Laboratory Services
Request for Analysis Chain-of-Custody Record

01804933

LCRA - Environmental Lab
3505 Montopolis Dr.
Austin, TX 78744

Phone: (512) 356-6022 or 1-800-776-5272
Fax: (512) 356-6021
https://els.lcra.org

Project:	FPP - CCR Wells - Ionic Species	Client:	LCRA
Collector:	Jason Woods	Contact:	
Event#:	1393475 / 5420	Phone:	

Report To: BECKIE LOEVE
FAYETTE POWER PLANT
6549 POWER PLANT RD
MAIL STOP FPP
LA GRANGE, TX 78945

Lab ID#:	
Client PO:	
Invoice To:	BECKIE LOEVE FAYETTE POWER PLANT 6549 POWER PLANT RD MAIL STOP FPP LA GRANGE, TX 78945

LAB USE ONLY	Sample ID *	Collected *		Matrix* AQ = Aqueous S = Solid T = Tissue DW = Drinking Water	Container(s) Type/Preservative/Number *						Requested Analysis *							
		Date*	Time * HH:MM		COMPOSITE Y/N	FILTERED Y/N	1LPU	250PHNO3							300.0AM-48	6010-AM	2320-AM	6010-AMF
1	CBL-340I	2/7/18	1540	AQ	N	N	1	1							X	X	X	
2	CBL-340I - 0.45 micron filter	2/7/18	1540	AQ	N	Y	1	1							X		X	X
3	CBL-301I	2/7/18	1052	AQ	N	N	1	1							X	X	X	
4	CBL-301I - 0.45 micron filter	2/7/18	1052	AQ	N	Y	1	1							X		X	X
5	CBL-302I	2/7/18	1232	AQ	N	N	1	1							X	X	X	
6	CBL-302I - 0.45 micron filter	2/7/18	1232	AQ	N	Y	1	1							X		X	X
7	CBL-306I	2/7/18	1416	AQ	N	N	1	1							X	X	X	
8	CBL-306I - 0.45 micron filter	2/7/18	1416	AQ	N	Y	1	1							X		X	X
9	CBL-308I	2/6/18	1452	AQ	N	N	1	1							X	X	X	
10	CBL-308I - 0.45 micron filter	2/6/18	1452	AQ	N	Y	1	1							X		X	X

Transfers	Relinquished By	Date/Time	Received By	Date/Time	Cooler Temp:			
1	<i>Jason Woods</i>	2/8/18 745	<i>D-2</i>	2/8/18 745	#	T#	Obs.	Corr.
2					1	6	0.7°C	0.7°C
3					2			

Client Special Instructions:

Note: Relinquishing sample(s) and signing the COC, client agrees to accept and is bound by the ELS Standard Terms and Conditions. All fields with an asterisk (*) are required to be completed.

Lab Use Only:



01804933 314499



LCRA Environmental Laboratory Services Request for Analysis Chain-of-Custody Record

LCRA - Environmental Lab
3505 Montopolis Dr.
Austin, TX 78744

Phone: (512) 356-6022 or 1-800-776-5272
Fax: (512) 356-6021
https://els.lcra.org

Project:	FPP - CCR Wells - Ionic Species	Client:	LCRA
Collector:	<i>Jasen Woods</i>	Contact:	
Event#:	1393475 / 5420	Phone:	

Report To: BECKIE LOEVE
FAYETTE POWER PLANT
6549 POWER PLANT RD
MAIL STOP FPP
LA GRANGE, TX 78945

Lab ID#:	
Client PO:	
Invoice To:	BECKIE LOEVE FAYETTE POWER PLANT 6549 POWER PLANT RD MAIL STOP FPP LA GRANGE, TX 78945

LAB USE ONLY	Sample ID *	Collected *		Matrix*	Container(s) Type/Preservative/Number *								Requested Analysis *						
					COMPOSITE Y/N	FILTERED Y/N	1LPU	250PHNO3											
																			300.0AM-48
Date*	Time * HH:MM	AQ = Aqueous S = Solid T = Tissue DW = Drinking Water																	
11	CBL-3411	<i>2/6/18</i>	<i>1300</i>	AQ			1	1					X	X	X				
12	CBL-3411 - 0.45 micron filter	<i>2/6/18</i>	<i>1300</i>	AQ			1	1					X		X	X			
13	CBL-6411	<i>2/6/18</i>	<i>1300</i>	AQ			1	1					X	X	X				
14	CBL-6411 - 0.45 micron filter	<i>2/6/18</i>	<i>1300</i>	AQ			1	1					X		X	X			
15	Field Blank 1	<i>2/6/18</i>	<i>1452</i>	AQ	<i>N</i>	<i>N</i>		1							X				
16	Field Blank 2	<i>2/7/18</i>	<i>1540</i>	AQ				1							X				
17	EQB Pump	<i>2/7/18</i>	<i>1130</i>	AQ	<i>N</i>	<i>N</i>		1							X				
18	EQB - 0.45 micron filter	<i>2/7/18</i>	<i>1600</i>	AQ				1									X		

Transfers	Relinquished By	Date/Time	Received By	Date/Time	Cooler Temp:				Client Special Instructions:
					#	T#	Obs.	Corr.	
1	<i>Jasen Woods</i>	<i>2/8/18 745</i>	<i>J-L</i>	<i>2/8/18 745</i>					
2					1	6	0.7°C	0.7°C	
3					2				

Note: Relinquishing sample(s) and signing the COC, client agrees to accept and is bound by the ELS Standard Terms and Conditions. All fields with an asterisk (*) are required to be completed.



LCRA Environmental Laboratory Services
3505 Montopolis Drive
Austin, TX 78744
Phone: (512)356-6022
Fax: (512)356-6021

February 21, 2018

BECKIE LOEVE
FAYETTE POWER PLANT
6549 POWER PLANT RD
MAIL STOP FPP
LA GRANGE, TX 78945

RE: Final Analytical Report
ELS Workorder Q1804911

Attn: BECKIE LOEVE

Enclosed are the analytical results for sample(s) received by LCRA Environmental Laboratory Services. Results reported herein conform to the most current NELAP standards, where applicable, unless otherwise narrated in the body of the report. This final report provides results related only to the sample(s) as received for the above referenced work order.

Thank you for selecting ELS for your analytical needs. If you have any questions regarding this report, please contact us at (512) 356-6022. We look forward to assisting you again.

Authorized for release by:

Jason Woods
Project Manager
jason.woods@lcra.org



Enclosures

Report ID: 314477 - 5240680

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SAMPLE SUMMARY

Workorder: Q1804911

Lab ID	Sample ID	Matrix	Date Collected	Date Received
Q1804911001	CBL-340I	Aqueous	2/7/2018 15:40	2/8/2018 07:45
Q1804911002	CBL-340I - 0.45 micron filter	Aqueous	2/7/2018 15:40	2/8/2018 07:45
Q1804911003	CBL-340I - 10 micron filter	Aqueous	2/7/2018 15:40	2/8/2018 07:45
Q1804911004	CBL-340I settled	Aqueous	2/7/2018 15:40	2/8/2018 07:45
Q1804911005	CBL-301I	Aqueous	2/7/2018 10:52	2/8/2018 07:45
Q1804911006	CBL-301I - 0.45 micron filter	Aqueous	2/7/2018 10:52	2/8/2018 07:45
Q1804911007	CBL-301I - 10 micron filter	Aqueous	2/7/2018 10:52	2/8/2018 07:45
Q1804911008	CBL-301I settled	Aqueous	2/7/2018 10:52	2/8/2018 07:45
Q1804911009	CBL-302I	Aqueous	2/7/2018 12:32	2/8/2018 07:45
Q1804911010	CBL-302I - 0.45 micron filter	Aqueous	2/7/2018 12:32	2/8/2018 07:45
Q1804911011	CBL-302I - 10 micron filter	Aqueous	2/7/2018 12:32	2/8/2018 07:45
Q1804911012	CBL-302I settled	Aqueous	2/7/2018 12:32	2/8/2018 07:45
Q1804911013	CBL-306I	Aqueous	2/7/2018 14:16	2/8/2018 07:45
Q1804911014	CBL-306I - 0.45 micron filter	Aqueous	2/7/2018 14:16	2/8/2018 07:45
Q1804911015	CBL-306I - 10 micron filter	Aqueous	2/7/2018 14:16	2/8/2018 07:45
Q1804911016	CBL-306I settled	Aqueous	2/7/2018 14:16	2/8/2018 07:45
Q1804911017	CBL-308I	Aqueous	2/6/2018 14:52	2/8/2018 07:45
Q1804911018	CBL-308I - 0.45 micron filter	Aqueous	2/6/2018 14:52	2/8/2018 07:45
Q1804911019	CBL-308I - 10 micron filter	Aqueous	2/6/2018 14:52	2/8/2018 07:45
Q1804911020	CBL-308I settled	Aqueous	2/6/2018 14:52	2/8/2018 07:45
Q1804911021	CBL-341I	Aqueous	2/6/2018 13:00	2/8/2018 07:45
Q1804911022	CBL-341I - 0.45 micron filter	Aqueous	2/6/2018 13:00	2/8/2018 07:45
Q1804911023	CBL-341I - 10 micron filter	Aqueous	2/6/2018 13:00	2/8/2018 07:45
Q1804911024	CBL-341I settled	Aqueous	2/6/2018 13:00	2/8/2018 07:45
Q1804911025	CBL-641I	Aqueous	2/6/2018 13:00	2/8/2018 07:45
Q1804911026	CBL-641I - 0.45 micron filter	Aqueous	2/6/2018 13:00	2/8/2018 07:45
Q1804911027	CBL-641I - 10 micron filter	Aqueous	2/6/2018 13:00	2/8/2018 07:45
Q1804911028	CBL-641I settled	Aqueous	2/6/2018 13:00	2/8/2018 07:45
Q1804911029	Field Blank 1	Aqueous	2/6/2018 14:52	2/8/2018 07:45
Q1804911030	Field Blank 2	Aqueous	2/7/2018 15:40	2/8/2018 07:45
Q1804911031	EQB Pump	Aqueous	2/7/2018 11:30	2/8/2018 07:45
Q1804911032	EQB - 0.45 micron filter	Aqueous	2/7/2018 16:00	2/8/2018 07:45
Q1804911033	EQB - 10 micron filter	Aqueous	2/7/2018 16:10	2/8/2018 07:45



SAMPLE SUMMARY

Workorder: Q1804911

Lab ID	Sample ID	Matrix	Date Collected	Date Received
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Report Definitions

- LOD Limit of Detection
- LOQ Limit of Quantitation
- ML Maximum Limit - Client Specified
- DF Dilution Factor
- Qual Qualifiers

PROJECT SUMMARY

Workorder: Q1804911

Workorder Comments

The settled samples were collected in a four liter cubitainer at the monitoring well. The sample was placed on ice and allowed to settled overnight in the laboratory refridgerator. The samples were carefully transfered to individual sample containers the following morning for analysis without mixing the sample in the cubitainer.

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: Q1804911001 Date Received: 2/8/2018 07:45 Matrix: Aqueous
Sample ID: CBL-340I Date Collected: 2/7/2018 15:40 Sample Type: SAMPLE
Project ID: FPP GWMP CCR

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	2730 mg/L	50.0	20.0	50		02/09/18 01:21	ML	02/09/18 01:21	ML	
Fluoride	1.00 mg/L	0.500	0.200	50		02/09/18 01:21	ML	02/09/18 01:21	ML	
Sulfate	752 mg/L	50.0	20.0	50		02/09/18 01:21	ML	02/09/18 01:21	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	5290 mg/L	250	250	100		02/13/18 12:12	ADG	02/13/18 12:12	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	0.0638 mg/L	0.0500	0.0200	1		02/14/18 18:02	BS	02/14/18 18:32	FO	
Calcium Total	555 mg/L	2.00	0.700	10		02/14/18 18:02	BS	02/15/18 19:02	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
Temperature	21.61 c			1		02/07/18 15:40	JBW	02/07/18 15:40	JBW	N
pH	6.41 pH			1		02/07/18 15:40	JBW	02/07/18 15:40	JBW	N



ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: Q1804911002 Date Received: 2/8/2018 07:45 Matrix: Aqueous
 Sample ID: CBL-340I - 0.45 micron filter Date Collected: 2/7/2018 15:40 Sample Type: SAMPLE
 Project ID: FPP GWMP CCR

Parameters	Results	Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS											
Analysis Desc: E300.0, Anions			Preparation Method: E300.0, Anions								
			Analytical Method: E300.0, Anions								
Chloride	2620	mg/L	50.0	20.0	50		02/09/18 01:57	ML	02/09/18 01:57	ML	
Fluoride	1.08	mg/L	0.500	0.200	50		02/09/18 01:57	ML	02/09/18 01:57	ML	
Sulfate	724	mg/L	50.0	20.0	50		02/09/18 01:57	ML	02/09/18 01:57	ML	
TOTAL DISSOLVED SOLIDS											
Analysis Desc: SM2540C, TDS			Preparation Method: SM2540C, TDS								
			Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	5490	mg/L	250	250	100		02/13/18 12:17	ADG	02/13/18 12:17	ADG	
INORGANICS											
Analysis Desc: SW6010B ICP-AES			Preparation Method: SW6010B ICP-AES								
			Analytical Method: SW6010B ICP-AES								
Boron Dissolved	0.0886	mg/L	0.0500	0.0200	1		02/12/18 15:20	FO	02/13/18 15:46	FO	
Calcium Dissolved	547	mg/L	1.00		10		02/12/18 15:20	FO	02/15/18 20:33	FO	
Field Parameters											
Analysis Desc: TCEQ SOP V1			Preparation Method: TCEQ SOP V1								
			Analytical Method: TCEQ SOP V1								
Temperature	18.26	C			1		02/07/18 15:40	JBW	02/07/18 15:40	JBW	N
pH	6.68	pH			1		02/07/18 15:40	JBW	02/07/18 15:40	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: Q1804911003	Date Received: 2/8/2018 07:45	Matrix: Aqueous
Sample ID: CBL-340I - 10 micron filter	Date Collected: 2/7/2018 15:40	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	2520 mg/L	50.0	20.0	50		02/09/18 02:34	ML	02/09/18 02:34	ML	
Fluoride	1.10 mg/L	0.500	0.200	50		02/09/18 02:34	ML	02/09/18 02:34	ML	
Sulfate	690 mg/L	50.0	20.0	50		02/09/18 02:34	ML	02/09/18 02:34	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	5270 mg/L	250	250	100		02/13/18 12:17	ADG	02/13/18 12:17	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW6010B ICP-AES								
		Analytical Method: SW6010B ICP-AES								
Boron Dissolved	0.0950 mg/L	0.0500	0.0200	1		02/12/18 15:20	FO	02/13/18 16:08	FO	
Calcium Dissolved	549 mg/L	1.00		10		02/12/18 15:20	FO	02/14/18 12:24	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
Temperature	18.10 c			1		02/07/18 15:40	JBW	02/07/18 15:40	JBW	N
pH	6.54 pH			1		02/07/18 15:40	JBW	02/07/18 15:40	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: Q1804911004 Date Received: 2/8/2018 07:45 Matrix: Aqueous
Sample ID: CBL-340I settled Date Collected: 2/7/2018 15:40 Sample Type: SAMPLE
Project ID: FPP GWMP CCR

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	2530 mg/L	50.0	20.0	50		02/09/18 03:02	ML	02/09/18 03:02	ML	
Fluoride	0.960 mg/L	0.500	0.200	50		02/09/18 03:02	ML	02/09/18 03:02	ML	
Sulfate	724 mg/L	50.0	20.0	50		02/09/18 03:02	ML	02/09/18 03:02	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	5220 mg/L	250	250	100		02/13/18 12:17	ADG	02/13/18 12:17	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	0.0583 mg/L	0.0500	0.0200	1		02/14/18 18:03	BS	02/14/18 20:32	FO	
Calcium Total	554 mg/L	2.00	0.700	10		02/14/18 18:03	BS	02/15/18 01:03	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
pH	6.56 pH			1		02/07/18 15:40	JBW	02/07/18 15:40	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: Q1804911005	Date Received: 2/8/2018 07:45	Matrix: Aqueous
Sample ID: CBL-301I	Date Collected: 2/7/2018 10:52	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	2480 mg/L	50.0	20.0	50		02/08/18 16:17	ML	02/08/18 16:17	ML	
Fluoride	<0.100 mg/L	0.100	0.0400	10		02/08/18 16:35	ML	02/08/18 16:35	ML	
Sulfate	344 mg/L	50.0	20.0	50		02/08/18 16:17	ML	02/08/18 16:17	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	5120 mg/L	250	250	100		02/13/18 12:17	ADG	02/13/18 12:17	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200	1		02/14/18 18:02	BS	02/14/18 18:54	FO	
Calcium Total	873 mg/L	2.00	0.700	10		02/14/18 18:02	BS	02/15/18 19:13	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
Temperature	23.37 c			1		02/07/18 10:52	JBW	02/07/18 10:52	JBW	N
pH	6.17 pH			1		02/07/18 10:52	JBW	02/07/18 10:52	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: Q1804911006	Date Received: 2/8/2018 07:45	Matrix: Aqueous
Sample ID: CBL-301I - 0.45 micron filter	Date Collected: 2/7/2018 10:52	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	2560 mg/L	50.0	20.0	50		02/08/18 16:53	ML	02/08/18 16:53	ML	
Fluoride	<0.100 mg/L	0.100	0.0400	10		02/08/18 17:11	ML	02/08/18 17:11	ML	
Sulfate	359 mg/L	50.0	20.0	50		02/08/18 16:53	ML	02/08/18 16:53	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	4730 mg/L	250	250	100		02/13/18 12:17	ADG	02/13/18 12:17	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW6010B ICP-AES								
		Analytical Method: SW6010B ICP-AES								
Boron Dissolved	<0.0500 mg/L	0.0500	0.0200	1		02/12/18 15:20	FO	02/13/18 16:15	FO	
Calcium Dissolved	917 mg/L	1.00		10		02/12/18 15:20	FO	02/15/18 20:44	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
Temperature	20.40 c			1		02/07/18 10:52	JBW	02/07/18 10:52	JBW	N
pH	6.26 pH			1		02/07/18 10:52	JBW	02/07/18 10:52	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID:	Q1804911007	Date Received:	2/8/2018 07:45	Matrix:	Aqueous
Sample ID:	CBL-301I - 10 micron filter	Date Collected:	2/7/2018 10:52	Sample Type:	SAMPLE
Project ID:	FPP GWMP CCR				

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	2620 mg/L	50.0	20.0	50		02/08/18 17:29	ML	02/08/18 17:29	ML	
Fluoride	<0.100 mg/L	0.100	0.0400	10		02/08/18 19:18	ML	02/08/18 19:18	ML	
Sulfate	370 mg/L	10.0	4.00	10		02/08/18 19:18	ML	02/08/18 19:18	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	4570 mg/L	250	250	100		02/13/18 12:17	ADG	02/13/18 12:17	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW6010B ICP-AES								
		Analytical Method: SW6010B ICP-AES								
Boron Dissolved	<0.0500 mg/L	0.0500	0.0200	1		02/12/18 15:20	FO	02/13/18 16:23	FO	
Calcium Dissolved	937 mg/L	1.00		10		02/12/18 15:20	FO	02/14/18 12:37	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
Temperature	20.08 c			1		02/07/18 10:52	JBW	02/07/18 10:52	JBW	N
pH	6.28 pH			1		02/07/18 10:52	JBW	02/07/18 10:52	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID:	Q1804911008	Date Received:	2/8/2018 07:45	Matrix:	Aqueous
Sample ID:	CBL-301I settled	Date Collected:	2/7/2018 10:52	Sample Type:	SAMPLE
Project ID:	FPP GWMP CCR				

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	2390 mg/L	50.0	20.0	50		02/08/18 19:36	ML	02/08/18 19:36	ML	
Fluoride	<0.100 mg/L	0.100	0.0400	10		02/08/18 19:54	ML	02/08/18 19:54	ML	
Sulfate	330 mg/L	50.0	20.0	50		02/08/18 19:36	ML	02/08/18 19:36	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	5590 mg/L	250	250	100		02/13/18 12:17	ADG	02/13/18 12:17	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200	1		02/14/18 18:03	BS	02/14/18 20:54	FO	
Calcium Total	923 mg/L	2.00	0.700	10		02/14/18 18:03	BS	02/15/18 01:10	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
pH	6.33 pH			1		02/07/18 10:52	JBW	02/07/18 10:52	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: Q1804911009	Date Received: 2/8/2018 07:45	Matrix: Aqueous
Sample ID: CBL-302I	Date Collected: 2/7/2018 12:32	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	2080 mg/L	50.0	20.0	50		02/08/18 20:13	ML	02/08/18 20:13	ML	
Fluoride	0.112 mg/L	0.100	0.0400	10		02/08/18 20:31	ML	02/08/18 20:31	ML	
Sulfate	1240 mg/L	50.0	20.0	50		02/08/18 20:13	ML	02/08/18 20:13	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	6010 mg/L	250	250	100		02/13/18 14:19	ADG	02/13/18 14:19	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200	1		02/14/18 18:02	BS	02/14/18 19:02	FO	
Calcium Total	934 mg/L	2.00	0.700	10		02/14/18 18:02	BS	02/15/18 19:24	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
Temperature	20.47 c			1		02/07/18 12:32	JBW	02/07/18 12:32	JBW	N
pH	6.21 pH			1		02/07/18 12:32	JBW	02/07/18 12:32	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: **Q1804911010** Date Received: 2/8/2018 07:45 Matrix: Aqueous
Sample ID: **CBL-302I - 0.45 micron filter** Date Collected: 2/7/2018 12:32 Sample Type: SAMPLE
Project ID: **FPP GWMP CCR**

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	1980 mg/L	50.0	20.0	50		02/08/18 20:49	ML	02/08/18 20:49	ML	
Fluoride	0.103 mg/L	0.100	0.0400	10		02/08/18 21:07	ML	02/08/18 21:07	ML	
Sulfate	1180 mg/L	50.0	20.0	50		02/08/18 20:49	ML	02/08/18 20:49	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	5780 mg/L	250	250	100		02/13/18 14:19	ADG	02/13/18 14:19	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW6010B ICP-AES								
		Analytical Method: SW6010B ICP-AES								
Boron Dissolved	<0.0500 mg/L	0.0500	0.0200	1		02/12/18 15:20	FO	02/13/18 16:31	FO	
Calcium Dissolved	924 mg/L	1.00		10		02/12/18 15:20	FO	02/15/18 20:56	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
Temperature	17.26 c			1		02/07/18 12:32	JBW	02/07/18 12:32	JBW	N
pH	6.37 pH			1		02/07/18 12:32	JBW	02/07/18 12:32	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: Q1804911011	Date Received: 2/8/2018 07:45	Matrix: Aqueous
Sample ID: CBL-302I - 10 micron filter	Date Collected: 2/7/2018 12:32	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	2040 mg/L	50.0	20.0	50		02/08/18 21:25	ML	02/08/18 21:25	ML	
Fluoride	0.131 mg/L	0.100	0.0400	10		02/08/18 21:43	ML	02/08/18 21:43	ML	
Sulfate	1220 mg/L	50.0	20.0	50		02/08/18 21:25	ML	02/08/18 21:25	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	6050 mg/L	250	250	100		02/13/18 14:19	ADG	02/13/18 14:19	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW6010B ICP-AES								
		Analytical Method: SW6010B ICP-AES								
Boron Dissolved	<0.0500 mg/L	0.0500	0.0200	1		02/12/18 15:20	FO	02/13/18 16:38	FO	
Calcium Dissolved	957 mg/L	1.00		10		02/12/18 15:20	FO	02/14/18 12:50	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
Temperature	17.41 c			1		02/07/18 12:32	JBW	02/07/18 12:32	JBW	N
pH	6.40 pH			1		02/07/18 12:32	JBW	02/07/18 12:32	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: **Q1804911012** Date Received: 2/8/2018 07:45 Matrix: Aqueous
Sample ID: **CBL-302I settled** Date Collected: 2/7/2018 12:32 Sample Type: SAMPLE
Project ID: **FPP GWMP CCR**

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	2030 mg/L	50.0	20.0	50		02/08/18 22:01	ML	02/08/18 22:01	ML	
Fluoride	0.125 mg/L	0.100	0.0400	10		02/08/18 23:50	ML	02/08/18 23:50	ML	
Sulfate	1240 mg/L	50.0	20.0	50		02/08/18 22:01	ML	02/08/18 22:01	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	6070 mg/L	250	250	100		02/13/18 14:19	ADG	02/13/18 14:19	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200	1		02/14/18 18:03	BS	02/14/18 21:02	FO	
Calcium Total	969 mg/L	2.00	0.700	10		02/14/18 18:03	BS	02/15/18 01:16	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
pH	6.24 pH				1	02/07/18 12:32	JBW	02/07/18 12:32	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: Q1804911013	Date Received: 2/8/2018 07:45	Matrix: Aqueous
Sample ID: CBL-306I	Date Collected: 2/7/2018 14:16	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	385 mg/L	25.0	10.0	25		02/09/18 00:09	ML	02/09/18 00:09	ML	
Fluoride	2.81 mg/L	0.250	0.100	25		02/09/18 00:09	ML	02/09/18 00:09	ML	
Sulfate	493 mg/L	25.0	10.0	25		02/09/18 00:09	ML	02/09/18 00:09	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	1760 mg/L	125	125	50		02/13/18 14:19	ADG	02/13/18 14:19	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200	1		02/14/18 18:02	BS	02/14/18 19:09	FO	
Calcium Total	230 mg/L	0.200	0.0700	1		02/14/18 18:02	BS	02/15/18 19:30	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
Temperature	19.32 c			1		02/07/18 14:16	JBW	02/07/18 14:16	JBW	N
pH	6.67 pH			1		02/07/18 14:16	JBW	02/07/18 14:16	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: Q1804911014 Date Received: 2/8/2018 07:45 Matrix: Aqueous
Sample ID: CBL-3061 - 0.45 micron filter Date Collected: 2/7/2018 14:16 Sample Type: SAMPLE
Project ID: FPP GWMP CCR

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	398 mg/L	25.0	10.0	25		02/09/18 00:27	ML	02/09/18 00:27	ML	
Fluoride	2.88 mg/L	0.250	0.100	25		02/09/18 00:27	ML	02/09/18 00:27	ML	
Sulfate	518 mg/L	25.0	10.0	25		02/09/18 00:27	ML	02/09/18 00:27	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	1740 mg/L	125	125	50		02/13/18 14:19	ADG	02/13/18 14:19	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW6010B ICP-AES								
		Analytical Method: SW6010B ICP-AES								
Boron Dissolved	<0.0500 mg/L	0.0500	0.0200	1		02/12/18 15:20	FO	02/13/18 16:46	FO	
Calcium Dissolved	229 mg/L	0.100		1		02/12/18 15:20	FO	02/15/18 21:12	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
Temperature	14.88 C			1		02/07/18 14:16	JBW	02/07/18 14:16	JBW	N
pH	7.01 pH			1		02/07/18 14:16	JBW	02/07/18 14:16	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: Q1804911015	Date Received: 2/8/2018 07:45	Matrix: Aqueous
Sample ID: CBL-306I - 10 micron filter	Date Collected: 2/7/2018 14:16	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	384 mg/L	25.0	10.0	25		02/09/18 00:45	ML	02/09/18 00:45	ML	
Fluoride	2.85 mg/L	0.250	0.100	25		02/09/18 00:45	ML	02/09/18 00:45	ML	
Sulfate	488 mg/L	25.0	10.0	25		02/09/18 00:45	ML	02/09/18 00:45	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	1640 mg/L	125	125	50		02/13/18 14:19	ADG	02/13/18 14:19	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW6010B ICP-AES								
		Analytical Method: SW6010B ICP-AES								
Boron Dissolved	<0.0500 mg/L	0.0500	0.0200	1		02/12/18 15:20	FO	02/13/18 16:53	FO	
Calcium Dissolved	221 mg/L	0.100		1		02/12/18 15:20	FO	02/13/18 16:53	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
Temperature	15.53 c			1		02/07/18 14:16	JBW	02/07/18 14:16	JBW	N
pH	7.03 pH			1		02/07/18 14:16	JBW	02/07/18 14:16	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: **Q1804911016** Date Received: 2/8/2018 07:45 Matrix: Aqueous
Sample ID: **CBL-306I settled** Date Collected: 2/7/2018 14:16 Sample Type: SAMPLE
Project ID: **FPP GWMP CCR**

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	380 mg/L	25.0	10.0	25		02/09/18 01:03	ML	02/09/18 01:03	ML	
Fluoride	3.13 mg/L	0.250	0.100	25		02/09/18 01:03	ML	02/09/18 01:03	ML	
Sulfate	483 mg/L	25.0	10.0	25		02/09/18 01:03	ML	02/09/18 01:03	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	1610 mg/L	125	125	50		02/13/18 14:19	ADG	02/13/18 14:19	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200	1		02/14/18 18:03	BS	02/14/18 21:09	FO	
Calcium Total	227 mg/L	0.200	0.0700	1		02/14/18 18:03	BS	02/14/18 21:09	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
pH	6.79 pH				1	02/07/18 14:16	JBW	02/07/18 14:16	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: Q1804911017	Date Received: 2/8/2018 07:45	Matrix: Aqueous
Sample ID: CBL-308I	Date Collected: 2/6/2018 14:52	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	2750 mg/L	50.0	20.0	50		02/08/18 13:21	ML	02/08/18 13:21	ML	
Fluoride	1.76 mg/L	0.500	0.200	50		02/08/18 13:21	ML	02/08/18 13:21	ML	
Sulfate	1570 mg/L	50.0	20.0	50		02/08/18 13:21	ML	02/08/18 13:21	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	6200 mg/L	500	500	200		02/12/18 16:39	ADG	02/12/18 16:39	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200	1		02/14/18 18:02	BS	02/14/18 19:16	FO	
Calcium Total	859 mg/L	2.00	0.700	10		02/14/18 18:02	BS	02/15/18 19:47	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
Temperature	21.73 c			1		02/06/18 14:52	JBW	02/06/18 14:52	JBW	N
pH	6.26 pH			1		02/06/18 14:52	JBW	02/06/18 14:52	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID:	Q1804911018	Date Received:	2/8/2018 07:45	Matrix:	Aqueous
Sample ID:	CBL-308I - 0.45 micron filter	Date Collected:	2/6/2018 14:52	Sample Type:	SAMPLE
Project ID:	FPP GWMP CCR				

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	3110 mg/L	50.0	20.0	50		02/08/18 13:07	ML	02/08/18 13:07	ML	
Fluoride	1.81 mg/L	0.500	0.200	50		02/08/18 13:07	ML	02/08/18 13:07	ML	
Sulfate	1800 mg/L	50.0	20.0	50		02/08/18 13:07	ML	02/08/18 13:07	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	6720 mg/L	500	500	200		02/12/18 16:39	ADG	02/12/18 16:39	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW6010B ICP-AES								
		Analytical Method: SW6010B ICP-AES								
Boron Dissolved	0.0629 mg/L	0.0500	0.0200	1		02/12/18 15:20	FO	02/13/18 18:38	FO	
Calcium Dissolved	818 mg/L	1.00		10		02/12/18 15:20	FO	02/15/18 21:29	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
Temperature	21.42 c			1		02/06/18 14:52	JBW	02/06/18 14:52	JBW	N
pH	6.38 pH			1		02/06/18 14:52	JBW	02/06/18 14:52	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: Q1804911019	Date Received: 2/8/2018 07:45	Matrix: Aqueous
Sample ID: CBL-308I - 10 micron filter	Date Collected: 2/6/2018 14:52	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	2740 mg/L	50.0	20.0	50		02/08/18 13:06	ML	02/08/18 13:06	ML	
Fluoride	1.72 mg/L	0.500	0.200	50		02/08/18 13:06	ML	02/08/18 13:06	ML	
Sulfate	1600 mg/L	50.0	20.0	50		02/08/18 13:06	ML	02/08/18 13:06	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	6460 mg/L	250	250	100		02/12/18 16:39	ADG	02/12/18 16:39	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW6010B ICP-AES								
		Analytical Method: SW6010B ICP-AES								
Boron Dissolved	0.0616 mg/L	0.0500	0.0200	1		02/12/18 15:20	FO	02/13/18 17:00	FO	
Calcium Dissolved	539 mg/L	1.00		10		02/12/18 15:20	FO	02/14/18 12:57	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
Temperature	21.01 c			1		02/06/18 14:52	JBW	02/06/18 14:52	JBW	N
pH	6.38 pH			1		02/06/18 14:52	JBW	02/06/18 14:52	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: Q1804911020	Date Received: 2/8/2018 07:45	Matrix: Aqueous
Sample ID: CBL-3081 settled	Date Collected: 2/6/2018 14:52	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	2800 mg/L	50.0	20.0	50		02/08/18 13:04	ML	02/08/18 13:04	ML	
Fluoride	1.96 mg/L	0.500	0.200	50		02/08/18 13:04	ML	02/08/18 13:04	ML	
Sulfate	1600 mg/L	50.0	20.0	50		02/08/18 13:04	ML	02/08/18 13:04	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	6680 mg/L	500	500	200		02/12/18 16:39	ADG	02/12/18 16:39	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200	1		02/14/18 18:03	BS	02/14/18 21:16	FO	
Calcium Total	892 mg/L	2.00	0.700	10		02/14/18 18:03	BS	02/15/18 01:30	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
pH	6.26 pH			1		02/06/18 14:52	JBW	02/06/18 14:52	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: Q1804911021 Date Received: 2/8/2018 07:45 Matrix: Aqueous
Sample ID: CBL-341I Date Collected: 2/6/2018 13:00 Sample Type: SAMPLE
Project ID: FPP GWMP CCR

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	2110 mg/L	50.0	20.0	50		02/08/18 13:03	ML	02/08/18 13:03	ML	
Fluoride	0.106 mg/L	0.100	0.0400	10		02/08/18 12:26	ML	02/08/18 12:26	ML	
Sulfate	383 mg/L	10.0	4.00	10		02/08/18 12:26	ML	02/08/18 12:26	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	4320 mg/L	250	250	100		02/13/18 11:53	ADG	02/13/18 11:53	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200	1		02/14/18 18:02	BS	02/14/18 19:24	FO	
Calcium Total	810 mg/L	2.00	0.700	10		02/14/18 18:02	BS	02/15/18 20:10	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
Temperature	21.52 c			1		02/06/18 13:00	JBW	02/06/18 13:00	JBW	N
pH	6.18 pH			1		02/06/18 13:00	JBW	02/06/18 13:00	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: Q1804911022	Date Received: 2/8/2018 07:45	Matrix: Aqueous
Sample ID: CBL-3411 - 0.45 micron filter	Date Collected: 2/6/2018 13:00	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	1880 mg/L	50.0	20.0	50		02/08/18 12:15	ML	02/08/18 12:15	ML	
Fluoride	<0.100 mg/L	0.100	0.0400	10		02/08/18 12:51	ML	02/08/18 12:51	ML	
Sulfate	360 mg/L	50.0	20.0	50		02/08/18 12:15	ML	02/08/18 12:15	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	3810 mg/L	250	250	100		02/13/18 11:53	ADG	02/13/18 11:53	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW6010B ICP-AES								
		Analytical Method: SW6010B ICP-AES								
Boron Dissolved	<0.0500 mg/L	0.0500	0.0200	1		02/12/18 15:20	FO	02/13/18 17:21	FO	
Calcium Dissolved	788 mg/L	1.00		10		02/12/18 15:20	FO	02/15/18 21:41	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
Temperature	20.21 c			1		02/06/18 13:00	JBW	02/06/18 13:00	JBW	N
pH	6.29 pH			1		02/06/18 13:00	JBW	02/06/18 13:00	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: Q1804911023	Date Received: 2/8/2018 07:45	Matrix: Aqueous
Sample ID: CBL-341I - 10 micron filter	Date Collected: 2/6/2018 13:00	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	2040 mg/L	50.0	20.0	50		02/08/18 12:12	ML	02/08/18 12:12	ML	
Fluoride	0.160 mg/L	0.100	0.0400	10		02/08/18 12:49	ML	02/08/18 12:49	ML	
Sulfate	397 mg/L	50.0	20.0	50		02/08/18 12:12	ML	02/08/18 12:12	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	4800 mg/L	250	250	100		02/13/18 11:53	ADG	02/13/18 11:53	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW6010B ICP-AES								
		Analytical Method: SW6010B ICP-AES								
Boron Dissolved	0.0627 mg/L	0.0500	0.0200	1		02/12/18 15:20	FO	02/13/18 17:43	FO	
Calcium Dissolved	854 mg/L	1.00		10		02/12/18 15:20	FO	02/14/18 13:03	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
Temperature	20.36 c			1		02/06/18 13:00	JBW	02/06/18 13:00	JBW	N
pH	6.37 pH			1		02/06/18 13:00	JBW	02/06/18 13:00	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: Q1804911024	Date Received: 2/8/2018 07:45	Matrix: Aqueous
Sample ID: CBL-341I settled	Date Collected: 2/6/2018 13:00	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	1820 mg/L	50.0	20.0	50		02/08/18 12:03	ML	02/08/18 12:03	ML	
Fluoride	0.134 mg/L	0.100	0.0400	10		02/08/18 12:45	ML	02/08/18 12:45	ML	
Sulfate	344 mg/L	50.0	20.0	50		02/08/18 12:03	ML	02/08/18 12:03	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	4400 mg/L	250	250	100		02/13/18 11:53	ADG	02/13/18 11:53	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200	1		02/14/18 18:03	BS	02/14/18 21:24	FO	
Calcium Total	842 mg/L	2.00	0.700	10		02/14/18 18:03	BS	02/15/18 01:36	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
pH	6.27 pH				1	02/06/18 13:00	JBW	02/06/18 13:00	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: Q1804911025	Date Received: 2/8/2018 07:45	Matrix: Aqueous
Sample ID: CBL-641I	Date Collected: 2/6/2018 13:00	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	1710 mg/L	50.0	20.0	50		02/08/18 11:57	ML	02/08/18 11:57	ML	
Fluoride	<0.100 mg/L	0.100	0.0400	10		02/08/18 12:34	ML	02/08/18 12:34	ML	
Sulfate	409 mg/L	50.0	20.0	50		02/08/18 11:57	ML	02/08/18 11:57	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	4070 mg/L	250	250	100		02/13/18 11:53	ADG	02/13/18 11:53	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200	1		02/14/18 18:02	BS	02/14/18 19:31	FO	
Calcium Total	806 mg/L	2.00	0.700	10		02/14/18 18:02	BS	02/15/18 20:21	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
Temperature	21.52 c			1		02/06/18 13:00	JBW	02/06/18 13:00	JBW	N
pH	6.18 pH			1		02/06/18 13:00	JBW	02/06/18 13:00	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: Q1804911026	Date Received: 2/8/2018 07:45	Matrix: Aqueous
Sample ID: CBL-641I - 0.45 micron filter	Date Collected: 2/6/2018 13:00	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	1720 mg/L	50.0	20.0	50		02/08/18 11:53	ML	02/08/18 11:53	ML	
Fluoride	0.116 mg/L	0.100	0.0400	10		02/08/18 12:30	ML	02/08/18 12:30	ML	
Sulfate	333 mg/L	50.0	20.0	50		02/08/18 11:53	ML	02/08/18 11:53	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	4730 mg/L	250	250	100		02/13/18 11:53	ADG	02/13/18 11:53	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW6010B ICP-AES								
		Analytical Method: SW6010B ICP-AES								
Boron Dissolved	0.0644 mg/L	0.0500	0.0200	1		02/12/18 15:20	FO	02/13/18 20:37	FO	
Calcium Dissolved	767 mg/L	1.00		10		02/12/18 15:20	FO	02/15/18 21:52	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
Temperature	20.21 c			1		02/06/18 13:00	JBW	02/06/18 13:00	JBW	N
pH	6.29 pH			1		02/06/18 13:00	JBW	02/06/18 13:00	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: Q1804911027	Date Received: 2/8/2018 07:45	Matrix: Aqueous
Sample ID: CBL-641I - 10 micron filter	Date Collected: 2/6/2018 13:00	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	2000 mg/L	50.0	20.0	50		02/08/18 15:29	ML	02/08/18 15:29	ML	
Fluoride	0.261 mg/L	0.100	0.0400	10		02/08/18 12:23	ML	02/08/18 12:23	ML	
Sulfate	380 mg/L	10.0	4.00	10		02/08/18 12:23	ML	02/08/18 12:23	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	4540 mg/L	250	250	100		02/13/18 11:53	ADG	02/13/18 11:53	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW6010B ICP-AES								
		Analytical Method: SW6010B ICP-AES								
Boron Dissolved	0.0644 mg/L	0.0500	0.0200	1		02/12/18 15:20	FO	02/13/18 17:51	FO	
Calcium Dissolved	823 mg/L	1.00		10		02/12/18 15:20	FO	02/14/18 13:10	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
Temperature	20.36 c			1		02/06/18 13:00	JBW	02/06/18 13:00	JBW	N
pH	6.37 pH			1		02/06/18 13:00	JBW	02/06/18 13:00	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: **Q1804911028** Date Received: 2/8/2018 07:45 Matrix: Aqueous
Sample ID: **CBL-6411 settled** Date Collected: 2/6/2018 13:00 Sample Type: SAMPLE
Project ID: **FPP GWMP CCR**

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	1890 mg/L	50.0	20.0	50		02/08/18 12:02	ML	02/08/18 12:02	ML	
Fluoride	0.290 mg/L	0.100	0.0400	10		02/08/18 12:42	ML	02/08/18 12:42	ML	
Sulfate	352 mg/L	50.0	20.0	50		02/08/18 12:02	ML	02/08/18 12:02	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	4120 mg/L	250	250	100		02/13/18 11:53	ADG	02/13/18 11:53	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200	1		02/14/18 18:03	BS	02/14/18 21:32	FO	
Calcium Total	823 mg/L	2.00	0.700	10		02/14/18 18:03	BS	02/15/18 01:43	FO	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
pH	6.27 pH				1	02/06/18 13:00	JBW	02/06/18 13:00	JBW	N

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: Q1804911029	Date Received: 2/8/2018 07:45	Matrix: Aqueous
Sample ID: Field Blank 1	Date Collected: 2/6/2018 14:52	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
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INORGANICS

Analysis Desc: SW6010B ICP-AES Preparation Method: SW3010A, Metals Prep
Analytical Method: SW6010B ICP-AES

Boron Total	<0.0500 mg/L	0.0500	0.0200	1		02/14/18 18:02	BS	02/14/18 19:39	FO	
Calcium Total	<0.200 mg/L	0.200	0.0700	1		02/14/18 18:02	BS	02/14/18 19:39	FO	

ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: Q1804911030	Date Received: 2/8/2018 07:45	Matrix: Aqueous
Sample ID: Field Blank 2	Date Collected: 2/7/2018 15:40	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
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INORGANICS

Analysis Desc: SW6010B ICP-AES	Preparation Method: SW3010A, Metals Prep
	Analytical Method: SW6010B ICP-AES

Boron Total	<0.0500 mg/L	0.0500	0.0200		1	02/14/18 18:02	BS	02/14/18 19:46		FO
Calcium Total	<0.200 mg/L	0.200	0.0700		1	02/14/18 18:02	BS	02/14/18 19:46		FO



ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: Q1804911031	Date Received: 2/8/2018 07:45	Matrix: Aqueous
Sample ID: EQB Pump	Date Collected: 2/7/2018 11:30	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200		1	02/14/18 18:02	BS	02/14/18 19:52		FO
Calcium Total	<0.200 mg/L	0.200	0.0700		1	02/14/18 18:02	BS	02/14/18 19:52		FO



ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID:	Q1804911032	Date Received:	2/8/2018 07:45	Matrix:	Aqueous
Sample ID:	EQB - 0.45 micron filter	Date Collected:	2/7/2018 16:00	Sample Type:	SAMPLE
Project ID:	FPP GWMP CCR				

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
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INORGANICS

Analysis Desc: SW6010B ICP-AES	Preparation Method: SW6010B ICP-AES
	Analytical Method: SW6010B ICP-AES

Boron Dissolved	<0.0500 mg/L	0.0500	0.0200	1	02/12/18 15:20	FO	02/13/18 20:45	FO
Calcium Dissolved	<0.100 mg/L	0.100		1	02/12/18 15:20	FO	02/13/18 20:45	FO



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ANALYTICAL RESULTS

Workorder: Q1804911

Lab ID: Q1804911033 Date Received: 2/8/2018 07:45 Matrix: Aqueous
 Sample ID: EQB - 10 micron filter Date Collected: 2/7/2018 16:10 Sample Type: SAMPLE
 Project ID: FPP GWMP CCR

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW6010B ICP-AES								
		Analytical Method: SW6010B ICP-AES								
Boron Dissolved	<0.0500 mg/L	0.0500	0.0200		1	02/12/18 15:20	FO	02/13/18 17:59		FO
Calcium Dissolved	<0.100 mg/L	0.100			1	02/12/18 15:20	FO	02/13/18 17:59		FO

ANALYTICAL RESULTS QUALIFIERS

Workorder: Q1804911

PARAMETER QUALIFIERS

Lab ID: Q1804911001
N Not Accredited

Lab ID: Q1804911002
N Not Accredited

Lab ID: Q1804911003
N Not Accredited

Lab ID: Q1804911004
N Not Accredited

Lab ID: Q1804911005
N Not Accredited

Lab ID: Q1804911006
N Not Accredited

Lab ID: Q1804911007
N Not Accredited

Lab ID: Q1804911008
N Not Accredited

Lab ID: Q1804911009
N Not Accredited

Lab ID: Q1804911010
N Not Accredited

Lab ID: Q1804911011
N Not Accredited

Lab ID: Q1804911012
N Not Accredited

Lab ID: Q1804911013
N Not Accredited

Lab ID: Q1804911014
N Not Accredited

Lab ID: Q1804911015
N Not Accredited

Lab ID: Q1804911016

ANALYTICAL RESULTS QUALIFIERS

Workorder: Q1804911

N	Not Accredited
Lab ID: Q1804911017	
N	Not Accredited
Lab ID: Q1804911018	
N	Not Accredited
Lab ID: Q1804911019	
N	Not Accredited
Lab ID: Q1804911020	
N	Not Accredited
Lab ID: Q1804911021	
N	Not Accredited
Lab ID: Q1804911022	
N	Not Accredited
Lab ID: Q1804911023	
N	Not Accredited
Lab ID: Q1804911024	
N	Not Accredited
Lab ID: Q1804911025	
N	Not Accredited
Lab ID: Q1804911026	
N	Not Accredited
Lab ID: Q1804911027	
N	Not Accredited
Lab ID: Q1804911028	
N	Not Accredited

QUALITY CONTROL DATA

Workorder: Q1804911

QC Batch: WET/16576 Analysis Method: E300.0, Anions
QC Batch Method: E300.0, Anions
Associated Lab Samples: Q1804911004, Q1804911019, Q1804911023, Q1804911026

METHOD BLANK: 1017900

Parameter	Units	Blank Result	Reporting Limit	Qual
Chloride	mg/L	<1.00	1.00	
Fluoride	mg/L	<0.0100	0.0100	
Sulfate	mg/L	<1.00	1.00	

LABORATORY CONTROL SAMPLE: 1017903

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Chloride	mg/L	30	28.5	95	90 - 110	
Fluoride	mg/L	1	.99	99	90 - 110	
Sulfate	mg/L	30	28.5	95.1	90 - 110	

MATRIX SPIKE: 1017905 DUPLICATE: 1017906 ORIGINAL: Q1804911026

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Chloride	mg/L	1720	1000	2690	2690	97.3	97.2	80 - 120	0	20	
Fluoride	mg/L	.12	50	48.8	48.8	97.4	97.3	80 - 120	0	20	
Sulfate	mg/L	333	1000	1330	1330	99.9	100	80 - 120	0	20	

METHOD BLANK: 1018119

Parameter	Units	Blank Result	Reporting Limit	Qual
Chloride	mg/L	<1.00	1.00	
Fluoride	mg/L	<0.0100	0.0100	
Sulfate	mg/L	<1.00	1.00	

Qualifiers

S - Spike Recovery Outside Recovery Limits

R - RPD Outside Recovery Limits

B - Analyte Detected in Method Blank

QUALITY CONTROL DATA

Workorder: Q1804911

LABORATORY CONTROL SAMPLE: 1018120

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Chloride	mg/L	30	28.6	95.4	90 - 110	
Fluoride	mg/L	1	1.06	106	90 - 110	
Sulfate	mg/L	30	28.6	95.3	90 - 110	

MATRIX SPIKE: 1018121 DUPLICATE: 1018122 ORIGINAL: Q180500002

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Chloride	mg/L	5.4	20	25.9	26	103	103	80 - 120	.385	20	
Fluoride	mg/L	.34	1	1.25	1.25	90.5	90.2	80 - 120	0	20	
Sulfate	mg/L	19.1	20	39.7	39.6	103	102	80 - 120	.252	20	

Qualifiers

S - Spike Recovery Outside Recovery Limits

R - RPD Outside Recovery Limits

B - Analyte Detected in Method Blank

QUALITY CONTROL DATA

Workorder: Q1804911

QC Batch: WET/16585 **Analysis Method:** E300.0, Anions

QC Batch Method: E300.0, Anions

Associated Lab Samples: Q1804911020, Q1804911027, Q1804911028

METHOD BLANK: 1018305

Parameter	Units	Blank Result	Reporting Limit	Qual
Chloride	mg/L	<1.00	1.00	
Fluoride	mg/L	<0.0100	0.0100	
Sulfate	mg/L	<1.00	1.00	

LABORATORY CONTROL SAMPLE: 1018308

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Chloride	mg/L	30	31	103	90 - 110	
Fluoride	mg/L	1	1.05	105	90 - 110	
Sulfate	mg/L	30	30.5	102	90 - 110	

MATRIX SPIKE: 1018310 DUPLICATE: 1018311 ORIGINAL: Q1804911028

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Chloride	mg/L	1890	1000	2850	2840	96.4	95.1	80 - 120	.351	20	
Fluoride	mg/L	.29	50	50.3	50.2	100	99.9	80 - 120	.199	20	
Sulfate	mg/L	352	1000	1390	1390	104	103	80 - 120	0	20	

Qualifiers

- S - Spike Recovery Outside Recovery Limits
- R - RPD Outside Recovery Limits
- B - Analyte Detected in Method Blank

QUALITY CONTROL DATA

Workorder: Q1804911

QC Batch: WET/16586 Analysis Method: E300.0, Anions
QC Batch Method: E300.0, Anions
Associated Lab Samples: Q1804911018, Q1804911022, Q1804911025

METHOD BLANK: 1018319

Parameter	Units	Blank Result	Reporting Limit	Qual
Chloride	mg/L	<1.00	1.00	
Fluoride	mg/L	<0.0100	0.0100	
Sulfate	mg/L	<1.00	1.00	

LABORATORY CONTROL SAMPLE: 1018322

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Chloride	mg/L	30	28.5	95.1	90 - 110	
Fluoride	mg/L	1	1	100	90 - 110	
Sulfate	mg/L	30	28.6	95.5	90 - 110	

MATRIX SPIKE: 1018324 DUPLICATE: 1018325 ORIGINAL: Q1804911025

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Chloride	mg/L	1710	1000	2810	2760	110	104	80 - 120	1.8	20	
Fluoride	mg/L	.05	50	52.3	51.2	105	102	80 - 120	2.13	20	
Sulfate	mg/L	409	1000	1510	1470	110	106	80 - 120	2.68	20	

Qualifiers

- S - Spike Recovery Outside Recovery Limits
- R - RPD Outside Recovery Limits
- B - Analyte Detected in Method Blank

QUALITY CONTROL DATA

Workorder: Q1804911

QC Batch: WET/16588 Analysis Method: E300.0, Anions

QC Batch Method: E300.0, Anions

Associated Lab Samples: Q1804911001, Q1804911002, Q1804911003, Q1804911005, Q1804911006, Q1804911007, Q1804911008, Q1804911009, Q1804911010, Q1804911011, Q1804911012, Q1804911013, Q1804911014, Q1804911015, Q1804911016, Q1804911017, Q1804911021, Q1804911024

METHOD BLANK: 1018432

Parameter	Units	Blank Result	Reporting Limit	Qual
Chloride	mg/L	<1.00	1.00	
Fluoride	mg/L	<0.0100	0.0100	
Sulfate	mg/L	<1.00	1.00	

LABORATORY CONTROL SAMPLE: 1018435

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Chloride	mg/L	30	29.6	98.5	90 - 110	
Fluoride	mg/L	1	.98	97.9	90 - 110	
Sulfate	mg/L	30	27.3	91	90 - 110	

MATRIX SPIKE: 1018437 DUPLICATE: 1018438 ORIGINAL: Q1804911024

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Chloride	mg/L	1820	1000	2700	2700	87.4	87.2	80 - 120	0	20	
Fluoride	mg/L	.13	50	48.5	48.4	96.7	96.6	80 - 120	.206	20	
Sulfate	mg/L	344	1000	1290	1290	94.9	94.9	80 - 120	0	20	

METHOD BLANK: 1018442

Parameter	Units	Blank Result	Reporting Limit	Qual
Chloride	mg/L	<1.00	1.00	
Fluoride	mg/L	<0.0100	0.0100	
Sulfate	mg/L	<1.00	1.00	

Qualifiers

S - Spike Recovery Outside Recovery Limits

R - RPD Outside Recovery Limits

B - Analyte Detected in Method Blank

QUALITY CONTROL DATA

Workorder: Q1804911

LABORATORY CONTROL SAMPLE: 1018443

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Chloride	mg/L	30	32.1	107	90 - 110	
Fluoride	mg/L	1	1.03	103	90 - 110	
Sulfate	mg/L	30	27.5	91.8	90 - 110	

MATRIX SPIKE: 1018439 DUPLICATE: 1018440 ORIGINAL: Q1804911007

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Chloride	mg/L	2620	200	1780	1790	-424	-419	80 - 120	.56	20	S
Fluoride	mg/L	.08	10	9.54	9.64	95.4	96.4	80 - 120	1.04	20	
Sulfate	mg/L	370	200	540	533	84.6	81.4	80 - 120	1.3	20	

MATRIX SPIKE: 1018444 DUPLICATE: 1018445 ORIGINAL: Q1804911012

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Chloride	mg/L	2030	200	1580	1620	-227	-209	80 - 120	2.5	20	S
Fluoride	mg/L	.13	10	9.43	9.74	93.1	96.2	80 - 120	3.23	20	
Sulfate	mg/L	1240	200	1220	1240	-11.4	-1.65	80 - 120	1.63	20	S

METHOD BLANK: 1018447

Parameter	Units	Blank Result	Reporting Limit	Qual
Chloride	mg/L	<1.00	1.00	
Fluoride	mg/L	<0.0100	0.0100	
Sulfate	mg/L	<1.00	1.00	

Qualifiers

S - Spike Recovery Outside Recovery Limits

R - RPD Outside Recovery Limits

B - Analyte Detected in Method Blank

QUALITY CONTROL DATA

Workorder: Q1804911

LABORATORY CONTROL SAMPLE: 1018448

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Chloride	mg/L	30	29.6	98.5	90 - 110	
Fluoride	mg/L	1	.98	98	90 - 110	
Sulfate	mg/L	30	27	90.1	90 - 110	

Qualifiers

S - Spike Recovery Outside Recovery Limits

R - RPD Outside Recovery Limits

B - Analyte Detected in Method Blank

QUALITY CONTROL DATA

Workorder: Q1804911

QC Batch: MEP/7991 Analysis Method: SW6010B ICP-AES

QC Batch Method: SW6010B ICP-AES

Associated Lab Samples: Q1804911002, Q1804911003, Q1804911006, Q1804911007, Q1804911010, Q1804911011, Q1804911014, Q1804911015, Q1804911019, Q1804911022, Q1804911023, Q1804911027, Q1804911033

METHOD BLANK: 1019542

Parameter	Units	Blank Result	Reporting Limit	Qual
Boron Dissolved	mg/L	<0.0500	0.0500	
Calcium Dissolved	mg/L	<0.100	0.100	

LABORATORY CONTROL SAMPLE: 1019543

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max	Qual
Boron Dissolved	mg/L	1	1.01	1.02	101	102	80 - 120	.985	20	
Calcium Dissolved	mg/L	10	10.2	10.2	102	102	80 - 120	0	20	

MATRIX SPIKE: 1019545 DUPLICATE: 1019546 ORIGINAL: Q1804911002

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Boron Dissolved	mg/L	.09	1	.99	1.02	89.9	93.1	75 - 125	3.29	20	
Calcium Dissolved	mg/L	547	10	560	561	129	140	75 - 125	.178	20	S

MATRIX SPIKE: 1019547 DUPLICATE: 1019548 ORIGINAL: Q1804911023

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Boron Dissolved	mg/L	.06	1	1.06	1.04	100	98.1	75 - 125	1.9	20	
Calcium Dissolved	mg/L	854	10	808	796	-463	-580	75 - 125	1.5	20	S

Qualifiers

S - Spike Recovery Outside Recovery Limits

R - RPD Outside Recovery Limits

B - Analyte Detected in Method Blank

QUALITY CONTROL DATA

Workorder: Q1804911

QC Batch: WET/16608 Analysis Method: SM2540C, TDS
QC Batch Method: SM2540C, TDS
Associated Lab Samples: Q1804911017, Q1804911018, Q1804911019, Q1804911020

METHOD BLANK: 1019622

Parameter	Units	Blank Result	Reporting Limit	Qual
Total Dissolved Solids(TDS)	mg/L	<25.0	25.0	

LABORATORY CONTROL SAMPLE: 1019623

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Total Dissolved Solids(TDS)	mg/L	400	364	91	80 - 120	

SAMPLE DUPLICATE: 1019624 ORIGINAL: Q1804749001

Parameter	Units	Original Result	DUP Result	% Rec	% Rec Limit	RPD	Max Qual
Total Dissolved Solids(TDS)	mg/L	512	503			1.77	20

MATRIX SPIKE SAMPLE: 1019625 ORIGINAL: Q1804749001

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Limit	Qual
Total Dissolved Solids(TDS)	mg/L	512	400	894	95.5	70 - 130	

Qualifiers

- S - Spike Recovery Outside Recovery Limits
- R - RPD Outside Recovery Limits
- B - Analyte Detected in Method Blank

QUALITY CONTROL DATA

Workorder: Q1804911

QC Batch: WET/16611 Analysis Method: SM2540C, TDS

QC Batch Method: SM2540C, TDS

Associated Lab Samples: Q1804911021, Q1804911022, Q1804911023, Q1804911024, Q1804911025, Q1804911026, Q1804911027, Q1804911028

METHOD BLANK: 1019776

Parameter	Units	Blank Result	Reporting Limit	Qual
Total Dissolved Solids(TDS)	mg/L	<25.0	25.0	

LABORATORY CONTROL SAMPLE: 1019777

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Total Dissolved Solids(TDS)	mg/L	400	354	88.5	80 - 120	

SAMPLE DUPLICATE: 1019778 ORIGINAL: Q1804973011

Parameter	Units	Original Result	DUP Result	% Rec	% Rec Limit	RPD	Max Qual
Total Dissolved Solids(TDS)	mg/L	620	616			.647	20

MATRIX SPIKE SAMPLE: 1019779 ORIGINAL: Q1804973011

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Limit	Qual
Total Dissolved Solids(TDS)	mg/L	620	400	962	85.5	70 - 130	

Qualifiers

S - Spike Recovery Outside Recovery Limits

R - RPD Outside Recovery Limits

B - Analyte Detected in Method Blank

QUALITY CONTROL DATA

Workorder: Q1804911

QC Batch: WET/16612 Analysis Method: SM2540C, TDS

QC Batch Method: SM2540C, TDS

Associated Lab Samples: Q1804911001, Q1804911002, Q1804911003, Q1804911004, Q1804911005, Q1804911006, Q1804911007, Q1804911008

METHOD BLANK: 1019780

Parameter	Units	Blank Result	Reporting Limit	Qual
Total Dissolved Solids(TDS)	mg/L	<25.0	25.0	

LABORATORY CONTROL SAMPLE: 1019781

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Total Dissolved Solids(TDS)	mg/L	400	427	107	80 - 120	

SAMPLE DUPLICATE: 1019782 ORIGINAL: Q1805508002

Parameter	Units	Original Result	DUP Result	% Rec	% Rec Limit	RPD	Max Qual
Total Dissolved Solids(TDS)	mg/L	82	90			9.3	20

MATRIX SPIKE SAMPLE: 1019783 ORIGINAL: Q1805508002

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Limit	Qual
Total Dissolved Solids(TDS)	mg/L	82	400	450	92	70 - 130	

Qualifiers

S - Spike Recovery Outside Recovery Limits

R - RPD Outside Recovery Limits

B - Analyte Detected in Method Blank

QUALITY CONTROL DATA

Workorder: Q1804911

QC Batch: WET/16618 Analysis Method: SM2540C, TDS

QC Batch Method: SM2540C, TDS

Associated Lab Samples: Q1804911009, Q1804911010, Q1804911011, Q1804911012, Q1804911013, Q1804911014, Q1804911015, Q1804911016

METHOD BLANK: 1020157

Parameter	Units	Blank Result	Reporting Limit	Qual
Total Dissolved Solids(TDS)	mg/L	<25.0	25.0	

LABORATORY CONTROL SAMPLE: 1020158

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Total Dissolved Solids(TDS)	mg/L	400	376	94	80 - 120	

SAMPLE DUPLICATE: 1020159 ORIGINAL: Q1804997002

Parameter	Units	Original Result	DUP Result	% Rec	% Rec Limit	RPD	Max Qual
Total Dissolved Solids(TDS)	mg/L	436	471			7.72	20

MATRIX SPIKE SAMPLE: 1020160 ORIGINAL: Q1804997002

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Limit	Qual
Total Dissolved Solids(TDS)	mg/L	436	400	888	113	70 - 130	

Qualifiers

S - Spike Recovery Outside Recovery Limits

R - RPD Outside Recovery Limits

B - Analyte Detected in Method Blank

QUALITY CONTROL DATA

Workorder: Q1804911

QC Batch: MEP/8006 Analysis Method: SW6010B ICP-AES

QC Batch Method: SW3010A, Metals Prep

Associated Lab Samples: Q1804911001, Q1804911005, Q1804911009, Q1804911013, Q1804911017, Q1804911021, Q1804911025, Q1804911029, Q1804911030, Q1804911031

LABORATORY CONTROL SAMPLE: 1021152

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max	Qual
Boron Total	mg/L	1	.94	.97	94.4	96.5	80 - 120	2.2	20	
Calcium Total	mg/L	10	10.4	10.4	104	104	80 - 120	0	20	

METHOD BLANK: 1021154

Parameter	Units	Blank Result	Reporting Limit	Qual
Boron Total	mg/L	<0.0500	0.0500	
Calcium Total	mg/L	<0.200	0.200	

MATRIX SPIKE: 1021155 DUPLICATE: 1021156 ORIGINAL: Q1804911001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Boron Total	mg/L	.06	1	.94	.98	88	91.3	75 - 125	3.44	20	
Calcium Total	mg/L	555	10	541	551	-134	-35.1	75 - 125	1.83	20	S

Qualifiers

S - Spike Recovery Outside Recovery Limits

R - RPD Outside Recovery Limits

B - Analyte Detected in Method Blank

QUALITY CONTROL DATA

Workorder: Q1804911

QC Batch: MEP/8007 Analysis Method: SW6010B ICP-AES
QC Batch Method: SW3010A, Metals Prep
Associated Lab Samples: Q1804911004, Q1804911008, Q1804911012, Q1804911016, Q1804911020, Q1804911024, Q1804911028

LABORATORY CONTROL SAMPLE: 1021159

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max	Qual
Boron Total	mg/L	1	.97	1	96.7	99.7	80 - 120	3.05	20	
Calcium Total	mg/L	10	10.2	10.4	102	104	80 - 120	1.94	20	

METHOD BLANK: 1021161

Parameter	Units	Blank Result	Reporting Limit	Qual
Boron Total	mg/L	<0.0500	0.0500	
Calcium Total	mg/L	<0.200	0.200	

MATRIX SPIKE: 1021162 DUPLICATE: 1021163 ORIGINAL: Q1804911004

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Boron Total	mg/L	.06	1	.97	.99	91.6	93.5	75 - 125	1.93	20	
Calcium Total	mg/L	554	10	543	558	-106	41.3	75 - 125	2.72	20	S

Qualifiers

- S - Spike Recovery Outside Recovery Limits
- R - RPD Outside Recovery Limits
- B - Analyte Detected in Method Blank

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: Q1804911

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
Q1804911004	CBL-340I settled			E300.0, Anions	WET/16576
Q1804911019	CBL-308I - 10 micron filter			E300.0, Anions	WET/16576
Q1804911023	CBL-341I - 10 micron filter			E300.0, Anions	WET/16576
Q1804911026	CBL-641I - 0.45 micron filter			E300.0, Anions	WET/16576
Q1804911020	CBL-308I settled			E300.0, Anions	WET/16585
Q1804911027	CBL-641I - 10 micron filter			E300.0, Anions	WET/16585
Q1804911028	CBL-641I settled			E300.0, Anions	WET/16585
Q1804911018	CBL-308I - 0.45 micron filter			E300.0, Anions	WET/16586
Q1804911022	CBL-341I - 0.45 micron filter			E300.0, Anions	WET/16586
Q1804911025	CBL-641I			E300.0, Anions	WET/16586
Q1804911001	CBL-340I			E300.0, Anions	WET/16588
Q1804911002	CBL-340I - 0.45 micron filter			E300.0, Anions	WET/16588
Q1804911003	CBL-340I - 10 micron filter			E300.0, Anions	WET/16588
Q1804911005	CBL-301I			E300.0, Anions	WET/16588
Q1804911006	CBL-301I - 0.45 micron filter			E300.0, Anions	WET/16588
Q1804911007	CBL-301I - 10 micron filter			E300.0, Anions	WET/16588
Q1804911008	CBL-301I settled			E300.0, Anions	WET/16588
Q1804911009	CBL-302I			E300.0, Anions	WET/16588
Q1804911010	CBL-302I - 0.45 micron filter			E300.0, Anions	WET/16588
Q1804911011	CBL-302I - 10 micron filter			E300.0, Anions	WET/16588
Q1804911012	CBL-302I settled			E300.0, Anions	WET/16588
Q1804911013	CBL-306I			E300.0, Anions	WET/16588
Q1804911014	CBL-306I - 0.45 micron filter			E300.0, Anions	WET/16588
Q1804911015	CBL-306I - 10 micron filter			E300.0, Anions	WET/16588
Q1804911016	CBL-306I settled			E300.0, Anions	WET/16588
Q1804911017	CBL-308I			E300.0, Anions	WET/16588
Q1804911021	CBL-341I			E300.0, Anions	WET/16588
Q1804911024	CBL-341I settled			E300.0, Anions	WET/16588
Q1804911002	CBL-340I - 0.45 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6191

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: Q1804911

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
Q1804911003	CBL-340I - 10 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6191
Q1804911006	CBL-301I - 0.45 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6191
Q1804911007	CBL-301I - 10 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6191
Q1804911010	CBL-302I - 0.45 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6191
Q1804911011	CBL-302I - 10 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6191
Q1804911014	CBL-306I - 0.45 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6191
Q1804911015	CBL-306I - 10 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6191
Q1804911019	CBL-308I - 10 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6191
Q1804911022	CBL-341I - 0.45 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6191
Q1804911023	CBL-341I - 10 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6191
Q1804911027	CBL-641I - 10 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6191
Q1804911033	EQB - 10 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6191
Q1804911003	CBL-340I - 10 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6197
Q1804911007	CBL-301I - 10 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6197
Q1804911011	CBL-302I - 10 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6197
Q1804911019	CBL-308I - 10 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6197
Q1804911023	CBL-341I - 10 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6197
Q1804911027	CBL-641I - 10 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6197
Q1804911002	CBL-340I - 0.45 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6207
Q1804911006	CBL-301I - 0.45 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6207
Q1804911010	CBL-302I - 0.45 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6207
Q1804911014	CBL-306I - 0.45 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6207
Q1804911022	CBL-341I - 0.45 micron filter	SW6010B ICP-AES	MEP/7991	SW6010B ICP-AES	MET/6207
Q1804911018	CBL-308I - 0.45 micron filter	SW6010B ICP-AES	MEP/7992	SW6010B ICP-AES	MET/6191
Q1804911026	CBL-641I - 0.45 micron filter	SW6010B ICP-AES	MEP/7992	SW6010B ICP-AES	MET/6191
Q1804911032	EQB - 0.45 micron filter	SW6010B ICP-AES	MEP/7992	SW6010B ICP-AES	MET/6191
Q1804911018	CBL-308I - 0.45 micron filter	SW6010B ICP-AES	MEP/7992	SW6010B ICP-AES	MET/6207
Q1804911026	CBL-641I - 0.45 micron filter	SW6010B ICP-AES	MEP/7992	SW6010B ICP-AES	MET/6207
Q1804911017	CBL-308I			SM2540C, TDS	WET/16608
Q1804911018	CBL-308I - 0.45 micron filter			SM2540C, TDS	WET/16608
Q1804911019	CBL-308I - 10 micron filter			SM2540C, TDS	WET/16608
Q1804911020	CBL-308I settled			SM2540C, TDS	WET/16608

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: Q1804911

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
Q1804911021	CBL-341I			SM2540C, TDS	WET/16611
Q1804911022	CBL-341I - 0.45 micron filter			SM2540C, TDS	WET/16611
Q1804911023	CBL-341I - 10 micron filter			SM2540C, TDS	WET/16611
Q1804911024	CBL-341I settled			SM2540C, TDS	WET/16611
Q1804911025	CBL-641I			SM2540C, TDS	WET/16611
Q1804911026	CBL-641I - 0.45 micron filter			SM2540C, TDS	WET/16611
Q1804911027	CBL-641I - 10 micron filter			SM2540C, TDS	WET/16611
Q1804911028	CBL-641I settled			SM2540C, TDS	WET/16611
Q1804911001	CBL-340I			SM2540C, TDS	WET/16612
Q1804911002	CBL-340I - 0.45 micron filter			SM2540C, TDS	WET/16612
Q1804911003	CBL-340I - 10 micron filter			SM2540C, TDS	WET/16612
Q1804911004	CBL-340I settled			SM2540C, TDS	WET/16612
Q1804911005	CBL-301I			SM2540C, TDS	WET/16612
Q1804911006	CBL-301I - 0.45 micron filter			SM2540C, TDS	WET/16612
Q1804911007	CBL-301I - 10 micron filter			SM2540C, TDS	WET/16612
Q1804911008	CBL-301I settled			SM2540C, TDS	WET/16612
Q1804911009	CBL-302I			SM2540C, TDS	WET/16618
Q1804911010	CBL-302I - 0.45 micron filter			SM2540C, TDS	WET/16618
Q1804911011	CBL-302I - 10 micron filter			SM2540C, TDS	WET/16618
Q1804911012	CBL-302I settled			SM2540C, TDS	WET/16618
Q1804911013	CBL-306I			SM2540C, TDS	WET/16618
Q1804911014	CBL-306I - 0.45 micron filter			SM2540C, TDS	WET/16618
Q1804911015	CBL-306I - 10 micron filter			SM2540C, TDS	WET/16618
Q1804911016	CBL-306I settled			SM2540C, TDS	WET/16618
Q1804911001	CBL-340I	SW3010A, Metals Prep	MEP/8006	SW6010B ICP-AES	MET/6200
Q1804911005	CBL-301I	SW3010A, Metals Prep	MEP/8006	SW6010B ICP-AES	MET/6200
Q1804911009	CBL-302I	SW3010A, Metals Prep	MEP/8006	SW6010B ICP-AES	MET/6200
Q1804911013	CBL-306I	SW3010A, Metals Prep	MEP/8006	SW6010B ICP-AES	MET/6200
Q1804911017	CBL-308I	SW3010A, Metals Prep	MEP/8006	SW6010B ICP-AES	MET/6200
Q1804911021	CBL-341I	SW3010A, Metals Prep	MEP/8006	SW6010B ICP-AES	MET/6200
Q1804911025	CBL-641I	SW3010A, Metals Prep	MEP/8006	SW6010B ICP-AES	MET/6200

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: Q1804911

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
Q1804911029	Field Blank 1	SW3010A, Metals Prep	MEP/8006	SW6010B ICP-AES	MET/6200
Q1804911030	Field Blank 2	SW3010A, Metals Prep	MEP/8006	SW6010B ICP-AES	MET/6200
Q1804911031	EQB Pump	SW3010A, Metals Prep	MEP/8006	SW6010B ICP-AES	MET/6200
Q1804911001	CBL-340I	SW3010A, Metals Prep	MEP/8006	SW6010B ICP-AES	MET/6207
Q1804911005	CBL-301I	SW3010A, Metals Prep	MEP/8006	SW6010B ICP-AES	MET/6207
Q1804911009	CBL-302I	SW3010A, Metals Prep	MEP/8006	SW6010B ICP-AES	MET/6207
Q1804911013	CBL-306I	SW3010A, Metals Prep	MEP/8006	SW6010B ICP-AES	MET/6207
Q1804911017	CBL-308I	SW3010A, Metals Prep	MEP/8006	SW6010B ICP-AES	MET/6207
Q1804911021	CBL-341I	SW3010A, Metals Prep	MEP/8006	SW6010B ICP-AES	MET/6207
Q1804911025	CBL-641I	SW3010A, Metals Prep	MEP/8006	SW6010B ICP-AES	MET/6207
Q1804911004	CBL-340I settled	SW3010A, Metals Prep	MEP/8007	SW6010B ICP-AES	MET/6200
Q1804911008	CBL-301I settled	SW3010A, Metals Prep	MEP/8007	SW6010B ICP-AES	MET/6200
Q1804911012	CBL-302I settled	SW3010A, Metals Prep	MEP/8007	SW6010B ICP-AES	MET/6200
Q1804911016	CBL-306I settled	SW3010A, Metals Prep	MEP/8007	SW6010B ICP-AES	MET/6200
Q1804911020	CBL-308I settled	SW3010A, Metals Prep	MEP/8007	SW6010B ICP-AES	MET/6200
Q1804911024	CBL-341I settled	SW3010A, Metals Prep	MEP/8007	SW6010B ICP-AES	MET/6200
Q1804911028	CBL-641I settled	SW3010A, Metals Prep	MEP/8007	SW6010B ICP-AES	MET/6200



LCRA - Environmental Lab
 3505 Montopolis Dr.
 Austin, TX 78744

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 Fax: (512) 356-6021
 https://els.lcra.org

LCRA Environmental Laboratory Services Request for Analysis Chain-of-Custody Record

Q1804911

Project:	FPP - CCR Wells - Appendix 3	Client:	LCRA
Collector:	<i>Jason Woods</i>	Contact:	
Event#:	1393474 / 5422	Phone:	

Report To: BECKIE LOEVE
 FAYETTE POWER PLANT
 6549 POWER PLANT RD
 MAIL STOP FPP
 LA GRANGE, TX 78945

Lab ID#:	
Client PO:	
Invoice To:	BECKIE LOEVE FAYETTE POWER PLANT 6549 POWER PLANT RD MAIL STOP FPP LA GRANGE, TX 78945

LAB USE ONLY	Sample ID *	Collected *		Matrix* AQ = Aqueous S = Solid T = Tissue DW = Drinking Water	Container(s) Type/Preservative/Number *										Requested Analysis *											
					COMPOSITE Y/N	FILTERED Y/N	1LPU	250PHNO3							6010-AM	Fid_FP	2540-AMTDS	300.0AM-48	6010-AMF							
		Date*	Time * HH:MM																							
01	1	CBL-340I	<i>2/7/18</i>	<i>1540</i>	AQ	<i>N</i>	<i>N</i>	<i>1</i>	<i>1</i>									<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>					
02	2	CBL-340I - 0.45 micron filter	<i>2/7/18</i>	<i>1540</i>	AQ	<i>N</i>	<i>Y</i>	<i>1</i>	<i>1</i>										<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>				
03	3	CBL-340I - 10 micron filter	<i>2/7/18</i>	<i>1540</i>	AQ	<i>N</i>	<i>Y</i>	<i>1</i>	<i>1</i>										<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>				
04	4	CBL-340I settled	<i>2/7/18</i>	<i>1540</i>	AQ	<i>N</i>	<i>N</i>	<i>1</i>	<i>1</i>									<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>					
05	5	CBL-301I	<i>2/7/18</i>	<i>1052</i>	AQ	<i>N</i>	<i>N</i>	<i>1</i>	<i>1</i>									<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>					
06	6	CBL-301I - 0.45 micron filter	<i>2/7/18</i>	<i>1052</i>	AQ	<i>N</i>	<i>Y</i>	<i>1</i>	<i>1</i>										<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>				
07	7	CBL-301I - 10 micron filter	<i>2/7/18</i>	<i>1052</i>	AQ	<i>N</i>	<i>Y</i>	<i>1</i>	<i>1</i>										<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>				
08	8	CBL-301I settled	<i>2/7/18</i>	<i>1052</i>	AQ	<i>N</i>	<i>N</i>	<i>1</i>	<i>1</i>									<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>					
09	9	CBL-302I	<i>2/7/18</i>	<i>1232</i>	AQ	<i>N</i>	<i>N</i>	<i>1</i>	<i>1</i>									<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>					
10	10	CBL-302I - 0.45 micron filter	<i>2/7/18</i>	<i>1232</i>	AQ	<i>N</i>	<i>Y</i>	<i>1</i>	<i>1</i>										<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>				

Transfers	Relinquished By	Date/Time	Received By	Date/Time	Cooler Temp:				Client Special Instructions:
					#	T#	Obs.	Corr.	
1	<i>Jason Woods</i>	<i>2/8/18 745</i>	<i>[Signature]</i>	<i>2/8/18 245</i>					
2					1	6	0.7	0.7	
3					2				

Note: Relinquishing sample(s) and signing the COC, client agrees to accept and is bound by the ELS Standard Terms and Conditions. All fields with an asterisk (*) are required to be completed.

Lab Use



Q1804911 314477



LCRA Environmental Laboratory Services
Request for Analysis Chain-of-Custody Record

LCRA - Environmental Lab
3505 Montopolis Dr.
Austin, TX 78744

Phone: (512) 356-6022 or 1-800-776-5272
Fax: (512) 356-6021
https://els.lcra.org

Project:	FPP - CCR Wells - Appendix 3	Client:	LCRA
Collector:	Jason Woods	Contact:	
Event#:	1393474 / 5422	Phone:	

Report To: BECKIE LOEVE
FAYETTE POWER PLANT
6549 POWER PLANT RD
MAIL STOP FPP
LA GRANGE, TX 78945

Lab ID#:	
Client PO:	
Invoice To:	BECKIE LOEVE FAYETTE POWER PLANT 6549 POWER PLANT RD MAIL STOP FPP LA GRANGE, TX 78945

LAB USE ONLY	Sample ID *	Collected *		Matrix* AQ = Aqueous S = Solid T = Tissue DW = Drinking Water	Container(s) Type/Preservative/Number *							Requested Analysis *							
		Date*	Time * HH:MM		COMPOSITE Y/N	FILTERED Y/N	1LPU	250PHNO3							6010-AM	Fid_FP	2540-AMTDS	300.0AM-48	6010-AMF
11	CBL-302I - 10 micron filter	2/7/18	1232	AQ	N	Y	1	1								X	X	X	X
12	CBL-302I settled	2/7/18	1232	AQ	N	N	1	1							X	X	X	X	
13	CBL-306I	2/7/18	1416	AQ	N	N	1	1						X	X	X	X		
14	CBL-306I - 0.45 micron filter	2/7/18	1416	AQ	N	Y	1	1							X	X	X	X	
15	CBL-306I - 10 micron filter	2/7/18	1416	AQ	N	Y	1	1							X	X	X	X	
16	CBL-306I settled	2/7/18	1416	AQ	N	N	1	1						X	X	X	X		
17	CBL-308I	2/6/18	1452	AQ	N	N	1	1						X	X	X	X		
18	CBL-308I - 0.45 micron filter	2/6/18	1452	AQ	N	Y	1	1							X	X	X	X	
19	CBL-308I - 10 micron filter	2/6/18	1452	AQ	N	Y	1	1							X	X	X	X	
20	CBL-308I settled	2/6/18	1452	AQ	N	N	1	1						X	X	X	X		

Transfers	Relinquished By	Date/Time	Received By	Date/Time	Cooler Temp:				Client Special Instructions:
					#	T#	Obs.	Corr.	
1	<i>Jason Woods</i>	2/8/18 745	<i>D-Z</i>	2/8/18 745					
2					1	6	0.71	0.7°C	
3					2				

Note: Relinquishing sample(s) and signing the COC, client agrees to accept and is bound by the ELS Standard Terms and Conditions. All fields with an asterisk (*) are required to be completed.



LCRA Environmental Laboratory Services Request for Analysis Chain-of-Custody Record

LCRA - Environmental Lab Phone: (512) 356-6022 or 1-800-776-5272
 3505 Montopolis Dr. Fax: (512) 356-6021
 Austin, TX 78744 https://els.lcra.org

Project:	FPP - CCR Wells - Appendix 3	Client:	LCRA
Collector:	<i>Jason Woods</i>	Contact:	
Event#:	1393474 / 5422	Phone:	

Report To: BECKIE LOEVE
 FAYETTE POWER PLANT
 6549 POWER PLANT RD
 MAIL STOP FPP
 LA GRANGE, TX 78945

Lab ID#:	
Client PO:	
Invoice To:	BECKIE LOEVE FAYETTE POWER PLANT 6549 POWER PLANT RD MAIL STOP FPP LA GRANGE, TX 78945

LAB USE ONLY	Sample ID *	Collected *		Matrix* <small>AQ = Aqueous S = Solid T = Tissue DW = Drinking Water</small>	Container(s) Type/Preservative/Number *							Requested Analysis *											
		Date*	Time * HH:MM		COMPOSITE Y/N	FILTERED Y/N	1LPU	250PHNO3						6010-AM	Fid_FP	2540-AMTDS	300.0AM-48	6010-AMF					
21	CBL-3411	2/6/18	1300	AQ	N	N	1	1						X	X	X	X						
22	CBL-3411 - 0.45 micron filter	2/6/18	1300	AQ	N	Y	1	1							X	X	X	X					
23	CBL-3411 - 10 micron filter	2/6/18	1300	AQ	N	Y	1	1							X	X	X	X					
24	CBL-3411 settled	2/6/18	1300	AQ	N	N	1	1						X	X	X	X						
25	CBL-6411	2/6/18	1300	AQ	N	N	1	1						X	X	X	X						
26	CBL-6411 - 0.45 micron filter	2/6/18	1300	AQ	N	Y	1	1							X	X	X	X					
27	CBL-6411 - 10 micron filter	2/6/18	1300	AQ	N	Y	1	1							X	X	X	X					
28	CBL-6411 settled	2/6/18	1300	AQ	N	N	1	1						X	X	X	X						
29	Field Blank 1	2/6/18	1452	AQ	N	N		1						X									
30	Field Blank 2	2/7/18	1540	AQ	N	N		1						X									

Transfers	Relinquished By	Date/Time	Received By	Date/Time	Cooler Temp:				Client Special Instructions:
					#	T#	Obs.	Corr.	
1	<i>Jan Wood</i>	2/8/18 745	<i>J-Z</i>	2/8/18 745					
2					1	6	0.7°C	0.7°C	
3					2				

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Project:	FPP - CCR Wells - Appendix 3	Client:	LCRA
Collector:	<i>Jason Woods</i>	Contact:	
Event#:	1393474 / 5422	Phone:	

Report To: BECKIE LOEVE
FAYETTE POWER PLANT
6549 POWER PLANT RD
MAIL STOP FPP
LA GRANGE, TX 78945

Lab ID#:
Client PO:
Invoice To: BECKIE LOEVE FAYETTE POWER PLANT 6549 POWER PLANT RD MAIL STOP FPP LA GRANGE, TX 78945

LAB USE ONLY	Sample ID *	Collected *		Matrix* AQ = Aqueous S = Solid T = Tissue DW = Drinking Water	Container(s) Type/Preservative/Number *						Requested Analysis *															
		Date*	Time * HH:MM		COMPOSITE Y/N	FILTERED Y/N	1LPU	250PHNO3					6010-AM	Fid_FP	2540-AMTDS	300.0AM-48	6010-AMF									
31	EQB Pump	2/7/18	1130	AQ	N	N		1						X												
32	EQB - 0.45 micron filter	2/7/18	1600	AQ	N	Y		1																	X	
33	EQB - 10 micron filter	2/7/18	1610	AQ	N	Y		1																	X	

Transfers	Relinquished By	Date/Time	Received By	Date/Time	Cooler Temp:				Client Special Instructions:
					#	T#	Obs.	Corr.	
1	<i>Jim W...</i>	2/8/18 745	<i>D-Z</i>	2/8/18 745	1	6	0.71	0.72	
2									
3					2				

Note: Relinquishing sample(s) and signing the COC, client agrees to accept and is bound by the ELS Standard Terms and Conditions. All fields with an asterisk (*) are required to be completed.

FPP - Groundwater - CCR Wells - February 2018

Date M/D/Y	Time HH:MM:SS	Temp C	DO mg/L	DOsat %	pH	SpCond uS	Orp mV	Monitoring Well
2/6/2018	12:13:08	21.21	10.86	124.6	6.86	5970	250.5	CBL-341I
2/6/2018	12:13:25	21.40	4.41	50.8	6.79	5969	251.9	CBL-341I
2/6/2018	12:13:53	21.59	3.84	44.4	6.70	5976	253.8	CBL-341I
2/6/2018	12:16:53	21.87	2.92	34.0	6.47	6016	261.1	CBL-341I
2/6/2018	12:19:53	21.83	2.92	33.9	6.38	6011	263.5	CBL-341I
2/6/2018	12:22:53	21.76	2.75	31.9	6.34	6004	266.2	CBL-341I
2/6/2018	12:25:53	21.70	2.71	31.4	6.30	6004	267.4	CBL-341I
2/6/2018	12:28:53	21.65	2.78	32.2	6.28	6003	269.7	CBL-341I
2/6/2018	12:31:53	21.61	2.85	32.9	6.25	6045	272.1	CBL-341I
2/6/2018	12:34:53	21.58	2.95	34.1	6.23	6070	274.0	CBL-341I
2/6/2018	12:37:53	21.58	3.00	34.7	6.22	6087	275.5	CBL-341I
2/6/2018	12:40:53	21.56	3.11	36.0	6.21	6094	276.7	CBL-341I
2/6/2018	12:43:53	21.56	3.16	36.5	6.20	6103	277.7	CBL-341I
2/6/2018	12:46:53	21.57	3.25	37.6	6.20	6107	278.8	CBL-341I
2/6/2018	12:49:53	21.55	3.12	36.1	6.19	6106	280.0	CBL-341I
2/6/2018	12:52:53	21.55	3.15	36.4	6.19	6105	281.2	CBL-341I
2/6/2018	12:55:53	21.53	3.14	36.3	6.18	6099	282.3	CBL-341I
2/6/2018	12:58:53	21.52	3.21	37.1	6.18	6096	283.6	CBL-341I
2/6/2018	13:01:53	21.53	3.25	37.6	6.18	6095	284.3	CBL-341I
2/6/2018	13:04:53	21.52	3.29	38.0	6.18	6096	284.8	CBL-341I
2/6/2018	14:17:15	19.99	4.09	46.4	6.48	9594	280.3	CBL-308I
2/6/2018	14:17:25	20.28	3.88	44.3	6.47	9590	280.0	CBL-308I
2/6/2018	14:17:41	20.54	3.52	40.4	6.46	9609	279.9	CBL-308I
2/6/2018	14:18:01	20.62	3.16	36.3	6.45	9646	279.7	CBL-308I
2/6/2018	14:21:01	21.56	2.52	29.6	6.39	9756	280.0	CBL-308I
2/6/2018	14:24:01	21.75	2.47	29.0	6.35	9771	281.4	CBL-308I
2/6/2018	14:27:01	21.75	2.65	31.1	6.33	9736	280.9	CBL-308I
2/6/2018	14:30:01	21.74	2.57	30.2	6.31	9703	278.8	CBL-308I
2/6/2018	14:33:01	21.80	2.34	27.5	6.30	9688	279.8	CBL-308I
2/6/2018	14:36:01	21.77	2.47	29.0	6.29	9656	280.8	CBL-308I
2/6/2018	14:39:01	21.78	2.45	28.8	6.28	9660	281.4	CBL-308I
2/6/2018	14:42:01	21.71	2.40	28.1	6.27	9633	281.6	CBL-308I
2/6/2018	14:46:38	21.76	2.35	27.6	6.26	9601	282.3	CBL-308I
2/6/2018	14:49:38	21.76	2.44	28.6	6.26	9589	282.0	CBL-308I
2/6/2018	14:52:38	21.73	2.45	28.8	6.26	9577	281.7	CBL-308I
2/7/2018	10:28:09	18.78	5.62	61.7	6.26	7103	247.1	CBL - 301I
2/7/2018	10:28:30	20.60	3.10	35.4	6.10	7365	224.2	CBL - 301I
2/7/2018	10:28:59	21.02	1.66	19.1	6.03	7374	210.5	CBL - 301I
2/7/2018	10:31:59	20.80	0.84	9.6	6.08	7421	156.6	CBL - 301I
2/7/2018	10:34:59	22.29	0.98	11.5	6.11	7413	115.8	CBL - 301I

2/7/2018	10:37:59	22.99	0.77	9.2	6.14	7448	115.2	CBL - 301I
2/7/2018	10:40:59	23.20	0.75	9.0	6.15	7445	117.0	CBL - 301I
2/7/2018	10:43:59	23.29	0.66	7.9	6.16	7448	121.8	CBL - 301I
2/7/2018	10:46:18	23.34	0.64	7.7	6.17	7438	123.6	CBL - 301I
2/7/2018	10:49:02	23.34	0.65	7.9	6.17	7433	124.0	CBL - 301I
2/7/2018	10:52:02	23.37	0.64	7.7	6.17	7436	122.0	CBL - 301I
2/7/2018	11:52:28	16.78	4.41	46.5	6.36	7529	281.4	CBL-302I
2/7/2018	11:52:37	17.22	4.12	43.9	6.36	7485	292.0	CBL-302I
2/7/2018	11:52:45	17.57	3.97	42.6	6.36	7458	305.9	CBL-302I
2/7/2018	11:53:24	18.13	3.35	36.3	6.34	7474	354.1	CBL-302I
2/7/2018	11:56:24	19.12	2.51	27.8	6.30	7483	509.4	CBL-302I
2/7/2018	11:59:24	19.49	2.18	24.4	6.29	7478	538.8	CBL-302I
2/7/2018	12:02:24	19.51	2.04	22.7	6.27	7475	544.5	CBL-302I
2/7/2018	12:05:24	19.36	1.96	21.8	6.26	7489	541.9	CBL-302I
2/7/2018	12:08:24	19.26	1.97	21.9	6.25	7477	543.5	CBL-302I
2/7/2018	12:11:24	19.08	1.96	21.7	6.24	7490	540.2	CBL-302I
2/7/2018	12:14:24	18.57	2.04	22.4	6.23	7503	537.3	CBL-302I
2/7/2018	12:17:24	18.05	2.12	23.0	6.23	7495	533.9	CBL-302I
2/7/2018	12:20:24	19.28	1.81	20.1	6.22	7409	535.4	CBL-302I
2/7/2018	12:23:24	20.12	1.35	15.2	6.22	7459	536.3	CBL-302I
2/7/2018	12:26:24	20.31	1.21	13.8	6.22	7477	532.6	CBL-302I
2/7/2018	12:29:24	20.45	1.12	12.8	6.22	7472	527.5	CBL-302I
2/7/2018	12:32:24	20.47	1.09	12.4	6.21	7477	522.5	CBL-302I
2/7/2018	13:57:54	17.62	6.64	70.2	6.77	2716	317.6	CBL-306I
2/7/2018	13:57:59	17.61	6.45	68.2	6.77	2720	317.5	CBL-306I
2/7/2018	13:58:03	17.66	6.49	68.6	6.78	2721	317.5	CBL-306I
2/7/2018	13:58:24	18.05	6.14	65.5	6.78	2708	318.6	CBL-306I
2/7/2018	14:01:24	18.80	5.82	63.1	6.79	2729	342.8	CBL-306I
2/7/2018	14:04:24	18.83	5.57	60.4	6.77	2662	354.3	CBL-306I
2/7/2018	14:07:24	18.82	4.85	52.5	6.72	2551	361.0	CBL-306I
2/7/2018	14:10:24	18.92	3.19	34.6	6.68	2528	375.3	CBL-306I
2/7/2018	14:13:24	19.13	2.76	30.0	6.67	2595	373.3	CBL-306I
2/7/2018	14:16:24	19.32	3.02	33.1	6.67	2672	369.9	CBL-306I
2/7/2018	15:09:44	19.35	5.02	55.8	6.82	7332	234.1	CBL-340I
2/7/2018	15:10:02	19.88	4.97	55.9	6.77	7342	234.0	CBL-340I
2/7/2018	15:10:24	20.40	4.39	49.9	6.74	7493	234.8	CBL-340I
2/7/2018	15:11:03	20.67	4.18	47.8	6.69	7546	238.1	CBL-340I
2/7/2018	15:14:03	21.32	3.59	41.6	6.58	8057	245.5	CBL-340I
2/7/2018	15:17:03	21.47	3.31	38.5	6.53	8136	250.1	CBL-340I
2/7/2018	15:20:03	21.53	3.19	37.1	6.49	8186	253.7	CBL-340I
2/7/2018	15:23:03	21.52	3.11	36.2	6.47	8220	257.0	CBL-340I
2/7/2018	15:26:03	21.54	3.05	35.6	6.45	8254	259.0	CBL-340I
2/7/2018	15:29:03	21.54	2.98	34.7	6.44	8270	260.5	CBL-340I
2/7/2018	15:32:03	21.59	2.96	34.4	6.43	8279	261.1	CBL-340I

2/7/2018	15:35:03	21.57	2.92	34.1	6.42	8283	261.2	CBL-340I
2/7/2018	15:38:03	21.53	2.92	34.0	6.41	8306	262.1	CBL-340I
2/7/2018	15:41:03	21.61	2.90	33.9	6.41	8303	262.5	CBL-340I



Sample Date: 2/6/2018 C
 Sample Time: 1300
 Sample ID: CBL3411

Field Information Form

PURGING INFORMATION

180206 PURGE DATE (YY MM DD) START PURGE (2400 Hr. Clock) 4.9 WATER VOL IN CASING (Gallons) 14.7 3 X WELL VOL. IN (Gallons) 8 ACTUAL VOLUME PURGED (Gallons)

PURGING AND SAMPLING EQUIPMENT

Purging Equipment Dedicated IN I Sampling Equipment Dedicated IN I

Purging Device	<input checked="" type="checkbox"/> B	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X-	_____
Sampling Device	<input checked="" type="checkbox"/> B	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X-	Purging Other (Specify)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	X-	Sampling Other (Specify)
Purging Material	<input checked="" type="checkbox"/> F	A-Teflon	C-Polypropylene	E-Polyethylene	X-	_____
Sampling Material	<input checked="" type="checkbox"/> F	B-Stainless Steel	D-PVC		X-	Purging Other (Specify)
					X-	Sampling Other (Specify)
Tubing-Purging	<input checked="" type="checkbox"/> F	A-Teflon	D-Polypropylene	F-Silicon	X-	_____
Tubing-Sampling	<input checked="" type="checkbox"/> F	B-Tygon	E-Polyethylene	G-Combination	X-	Purging Other (Specify)
				teflon/Polypropylene	X-	Sampling Other (Specify)
		C-Rope X-	<u>NA</u>			(Specify)

FIELD MEASUREMENTS

Well Elevation (ft/msl) Land Surface Elevation (ft/msl)
 Depth to water From top of well casing = D_w 16.32 (ft) Depth to water From land surface (ft)
 Groundwater Elevation (ft/msl) Groundwater Elevation (ft/msl)
 Well Depth = D 46.40 (ft) Pump Placement 25 (ft)
6.18 (STD) PH 6096 uS/cm Specific Conductivity Sample Temp. 21.52 (°C)

Bottle			Analysis	Field Filt. Y/N
Type	Size	Preservative		
P	250ml	HNO ₃	Total Metals	No
P	2x 250ml	HNO ₃	Dissolved metals - 0.45 and 10 micron filter	Yes
P	1L	ICE	Anions + TDS - collected anions w/out filtering and w/ 0.45 micron and	
P	4L	ICE	collected a 4 liter cube and allowed to settle for overnight. 10 micron	
P	1L	ICE	settled turbidity = 0.26ntu Sample = 0.56ntu 10 micron filter	

Sample Appearance: clear Odor: none Color: clear Turbidity: 10 micron = 0.24ntu
0.45 micron = 0.19ntu
 Weather Conditions: Cloudy, Overcast, Calm
 Other: Purge water is clear w/ no odor, collected samples after field parameters stabilized
collected a duplicate sample for total and dissolved metals - Sample ID# 6411

WELL VOLUME CALCULATION

V=(D-D_w) (A) (7.48 gal/ft³) where
 V= volume of standing water in well
 D= depth to bottom of well below measuring point
 D_w=depth to water below measuring point
 A= cross sectional area
 2" dia. A= 0.0218 4" dia. A = 0.0872

Well Appearance Normal: Yes No _____
 If No, Explain _____

Procedure: ELS-Groundwater SOP 5-7D

Date: 2/6/2018
 Sampler: Jason Woods
 Employer: LCRA

0.45 micron filter Lot #85092C
10 micron filter Lot #88711A



Field Information Form

Sample Date: 2/6/2018 (3)
 Sample Time: 1452
 Sample ID: CB13081

PURGING INFORMATION

180206 PURGE DATE (YY MM DD)
 START PURGE (2400 Hr. Clock)
 V= 117 WATER VOL IN CASING (Gallons)
5 3 X WELL VOL. IN (Gallons)
5 ACTUAL VOLUME PURGED (Gallons)

Purging Equipment Y Dedicated Y / N / I / N / I
 Sampling Equipment Y Dedicated Y / N / I / N / I

Purging Device B A-Submersible Pump D-Gas Lift Pump G-Bailer
 Sampling Device B B-Peristaltic Pump E-Venturi Pump H-Scoop/Shovel X-
 C-Bladder Pump F-Dipper/Bottle I-Piston Pump X- Purging Other (Specify)
 Purging Material F A-Teflon C-Polypropylene E-Polyethylene X-
 Sampling Material F B-Stainless Steel D-PVC X- Purging Other (Specify)
 Tubing-Purging F A-Teflon D-Polypropylene F-Silicon X-
 Tubing-Sampling F B-Tygon E-Polyethylene G-Combination X-
 C-Rope X- NA teflon/Polypropylene X-
 (Specify)

FIELD MEASUREMENTS

Well Elevation (ft/msl) Land Surface Elevation (ft/msl)
 Depth to water From top of well casing = D_w 24.90 (ft)
 Depth to water From land surface (ft)
 Groundwater Elevation (ft/msl)
 Well Depth = D 35.25 (ft)
 Pump Placement 28 (ft)
6.26 (STD) PH 19577 uS/cm Specific Conductivity Sample Temp. 21.73 (°C)

Bottle			Analysis	Field Filt. Y/N
Type	Size	Preservative		
P	250ml	HNO ₃	Total Metals	NO
P	2x250ml	HNO ₃	Dissolved Metals - Field Filtered - 0.45 +	Yes
P	1L	ICE	Anions + TDS - Collected nonfiltered and filtered	Y/N
P	250ml	HNO ₃	Field blank collected at 1452 Sample w/ 0.45 + 10 micron filter	

Sample Appearance: Clear Odor: none Color: Clear Turbidity: Sample = 0.21ntu
 Weather Conditions: Overcast, Cloudy, Calm 10 micron = 0.29
 Other: Purge water is clear w/ no odor, collected samples after field parameters stabilized. 0.45 micron = 0.20 nt
settled = 0.26 nt

WELL VOLUME CALCULATION

= (D-D_w) (A) (7.48 gal/ft³) where
 = volume of standing water in well
 = depth to bottom of well below measuring point
 = depth to water below measuring point
 cross sectional area

1. A = 0.0218 4" dia. A = 0.0872

Well Appearance Normal: Yes X No
 If No, Explain

Procedure: EL5-Groundwater SOP 5-70

Date: 2/6/18
 Sampler: Jasen Woods
 Employer: LCRA

0.45 micron filter Lot # 85092C
10 micron filter Lot # 88711A



Field Information Form

Sample Date: 2/7/2018 (4)
 Sample Time: 1232
 Sample ID: CIBL31021

PURGING INFORMATION

180207 PURGE DATE (YY MM DD) START PURGE (2400 Hr. Clock) V= 26 WATER VOL IN CASING (Gallons) 7.8 3 X WELL VOL. IN (Gallons) 5 ACTUAL VOLUME PURGED (Gallons)

PURGING AND SAMPLING EQUIPMENT

Purging Equipment Dedicated Y N I Sampling Equipment Dedicated Y N I

Purging Device	<input type="checkbox"/> A-Submersible Pump	<input type="checkbox"/> D-Gas Lift Pump	<input type="checkbox"/> G-Bailer	X-	_____ Purging Other (Specify)
Sampling Device	<input checked="" type="checkbox"/> B-Peristaltic Pump	<input type="checkbox"/> E-Venturi Pump	<input type="checkbox"/> H-Scoop/Shovel	X-	_____ Sampling Other (Specify)
	<input type="checkbox"/> C-Bladder Pump	<input type="checkbox"/> F-Dipper/Bottle	<input type="checkbox"/> I-Piston Pump		
Purging Material	<input checked="" type="checkbox"/> A-Teflon	<input type="checkbox"/> C-Polypropylene	<input type="checkbox"/> E-Polyethylene	X-	_____ Purging Other (Specify)
Sampling Material	<input checked="" type="checkbox"/> B-Stainless Steel	<input type="checkbox"/> D-PVC		X-	_____ Sampling Other (Specify)
Tubing-Purging	<input checked="" type="checkbox"/> A-Teflon	<input type="checkbox"/> D-Polypropylene	<input type="checkbox"/> F-Silicon	X-	_____ Purging Other (Specify)
Tubing-Sampling	<input checked="" type="checkbox"/> B-Tygon	<input type="checkbox"/> E-Polyethylene	<input type="checkbox"/> G-Combination teflon/Polypropylene	X-	_____ Sampling Other (Specify)
	C-Rope X- _____	(Specify)			

FIELD MEASUREMENTS

Well Elevation (ft/msl) Land Surface Elevation (ft/msl)
 Depth to water From top of well casing = D_w 116.09 (ft) Depth to water From land surface (ft)
 Groundwater Elevation (ft/msl) Groundwater Elevation (ft/msl)
 Well Depth = D 276.11 (ft) Pump Placement 20 (ft)
6.21 (STD) PH 747.7 uS/cm Specific Conductivity Sample Temp. 20.47 (°C)

Bottle			Analysis	Field Filt. Y/N
Type	Size	Preservative		
P	250ml	HNO ₃	Metals	No
P	2x250	HNO ₃	Dissolved Metals - 0.45 + 10 micron filter/Field	Yes
P	3x1L	ICE	Anions + TDS - collected unfiltered and 0.45 + 10 micron	Y/N
P	4L	Cube/ice	collected a few liter cube and allowed to settle. Fatty	N

Sample Appearance: clear Odor: none Color: clear Turbidity: 10 micron = 0.135 ntu
0.45 micron = 0.29 ntu
settled = 0.48 ntu
 Weather Conditions: Overcast, 15 mph N wind 40"
 Other: Purge water is clear w/ no odor, collected samples after field parameters stabilized.

WELL VOLUME CALCULATION

V=(D-D_w) (A) (7.48 gal/ft³) where
 V= volume of standing water in well
 D= depth to bottom of well below measuring point
 D_w=depth to water below measuring point
 A= cross sectional area

2" dia. A = 0.0218 4" dia. A = 0.0872

0.45 micron filter lot #85092C
10 micron filter lot #88711A

Well Appearance Normal: Yes No _____
 If No, Explain _____

Procedure: ELS - Groundwater SOP 5-7D
 Date: 2/7/2018
 Sampler: Jason Woods
 Employer: LCRA



Field Information Form

Sample Date: 2/7/2018 6
 Sample Time: 1540
 Sample ID: CBL3401

PURGING INFORMATION

180207 PURGE DATE (YY MM DD) START PURGE (2400 Hr. Clock) 2.6 V= WATER VOL IN CASING (Gallons) 7.9 3 X WELL VOL. IN (Gallons) 5 ACTUAL VOLUME PURGED (Gallons)

PURGING AND SAMPLING EQUIPMENT

Purging Equipment Dedicated (Y)INI Sampling Equipment Dedicated (Y)INI

Purging Device	<u>B</u> A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X-	Purging Other (Specify)
Sampling Device	<u>B</u> B-Peristaltic Pump C-Bladder Pump	E-Venturi Pump F-Dipper/Bottle	H-Scoop/Shovel I-Piston Pump	X-	Sampling Other (Specify)
Purging Material	<u>F</u> A-Teflon	C-Polypropylene	E-Polyethylene	X-	Purging Other (Specify)
Sampling Material	<u>F</u> B-Stainless Steel	D-PVC		X-	Sampling Other (Specify)
Tubing-Purging	<u>F</u> A-Teflon	D-Polypropylene	F-Silicon	X-	Purging Other (Specify)
Tubing-Sampling	<u>F</u> B-Tygon	E-Polyethylene	G-Combination teflon/Polypropylene	X-	Sampling Other (Specify)
	C-Rope X- <u>NA</u> (Specify)				

FIELD MEASUREMENTS

Well Elevation (ft/msl) Land Surface Elevation (ft/msl)
 Depth to water From top of well casing = D_w 23.98 (ft) Depth to water From land surface (ft)
 Groundwater Elevation (ft/msl) Groundwater Elevation (ft/msl)
 Well Depth = D 40.14 (ft) Pump Placement 28 (ft)
6.41 (STD) PH 8303 uS/cm Specific Conductivity Sample Temp. 21.66 (°C)

Bottle			Analysis	Field Filt. Y/N
Type	Size	Preservative		
P	250ml	HNO ₃	Metals	NO
P	2x250ml	HNO ₃	Dissolved metals - Field Filtered 0.45 + 10 micron	YES
P	3x1L ml	ICE	Anions + TDS - Unfiltered, 0.45 + 10 micron Filtered	NO/ YES
P	4L	ICE	Collected a 4 liter cube and allowed to settle.	
P	250ml	HNO ₃	Field Blank 2 collected @ 1540	

Sample Appearance: clear Odor: none Color: clear Turbidity: Sample = 1.24 ntu
0.45 micron = 0.22 n
10 micron = 0.52 ntu
Settled = 0.52 ntu
 Weather Conditions: Overcast, 10mph N wind, 40°
 Other: Purge water is clear w/ no odor, collected samples after field permits started EQB on the 0.45 micron filter and tubing collected @ 1600 EQB on 10 micron filter on tubing collected @ 1610
 WELL VOLUME CALCULATION Well Appearance Normal: Yes X No

V=(D-D_w) (A) (7.48 galft³) where
 V= volume of standing water in well
 D= depth to bottom of well below measuring point
 D_w=depth to water below measuring point
 A= cross-sectional area

2" dia. A = 0.0218 4" dia. A = 0.0872

Procedure: ELS - Groundwater SOP 5-7D
 Date: 2/7/2018
 Sampler: Jason Woods
 Employer: LCRA

0.45 micron filter lot # 85092C
 10 micron filter lot # 88711A



LCRA Environmental Laboratory Services
3505 Montopolis Drive
Austin, TX 78744
Phone: (512)730-6022
Fax: (512)730-6021

August 17, 2018

BECKIE LOEVE
FAYETTE POWER PLANT
6549 POWER PLANT RD
MAIL STOP FPP
La Grange, TX 78945

RE: Final Analytical Report
ELS Workorder Q1829938

Attn: BECKIE LOEVE

Enclosed are the analytical results for sample(s) received by LCRA Environmental Laboratory Services. Results reported herein conform to the most current NELAP standards, where applicable, unless otherwise narrated in the body of the report. This final report provides results related only to the sample(s) as received for the above referenced work order.

Thank you for selecting ELS for your analytical needs. If you have any questions regarding this report, please contact us at (512) 356-6022. We look forward to assisting you again.

Authorized for release by:

Jason Woods
Project Manager
jason.woods@lcra.org



Enclosures

Report ID: 339504 - 6120631

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SAMPLE SUMMARY

Workorder: Q1829938

Lab ID	Sample ID	Matrix	Date Collected	Date Received
Q1829938001	CBL - 301I	Aqueous	7/25/2018 13:05	7/27/2018 14:50
Q1829938002	CBL - 301I DISS	Aqueous	7/25/2018 13:05	7/27/2018 14:50
Q1829938003	CBL - 302I	Aqueous	7/27/2018 13:13	7/27/2018 14:50
Q1829938004	CBL - 306I	Aqueous	7/27/2018 10:13	7/27/2018 14:50
Q1829938005	CBL - 308I	Aqueous	7/25/2018 12:06	7/27/2018 14:50
Q1829938006	CBL - 340I	Aqueous	7/27/2018 11:41	7/27/2018 14:50
Q1829938007	CBL - 602I	Aqueous	7/27/2018 13:13	7/27/2018 14:50
Q1829938008	Field Blank	Aqueous	7/25/2018 13:00	7/27/2018 14:50
Q1829938009	EQ Blank	Aqueous	7/27/2018 11:45	7/27/2018 14:50

Report Definitions

LOD	Limit of Detection
LOQ	Limit of Quantitation
ML	Maximum Limit - Client Specified
DF	Dilution Factor
Qual	Qualifiers



ANALYTICAL RESULTS

Workorder: Q1829938

Lab ID: **Q1829938001** Date Received: 7/27/2018 14:50 Matrix: Aqueous
 Sample ID: **CBL - 3011** Date Collected: 7/25/2018 13:05 Sample Type: SAMPLE
 Project ID: **FPP GWMP CCR**

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	1330 mg/L	50.0	20.0	50		07/28/18 01:29	ML	07/28/18 01:29	ML	
Fluoride	<0.500 mg/L	0.500	0.200	50		07/28/18 01:29	ML	07/28/18 01:29	ML	
Sulfate	196 mg/L	50.0	20.0	50		07/28/18 01:29	ML	07/28/18 01:29	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	5390 mg/L	250	250	100		07/30/18 11:30	ADG	07/30/18 11:30	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200	1		08/13/18 08:35	MM	08/15/18 10:27	FM	
Calcium Total	993 mg/L	1.00	0.350	5		08/13/18 08:35	MM	08/15/18 11:53	FM	
Lithium Total	0.0971 mg/L	0.0100	0.00400	1		08/13/18 08:35	MM	08/15/18 10:27	FM	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
Temperature	24.46 c			1		07/25/18 13:05	CCP	07/25/18 13:05	CCP	N
pH	6.04 pH			1		07/25/18 13:05	CCP	07/25/18 13:05	CCP	N
Specific Conductance	7446 us/cm			1		07/25/18 13:05	CCP	07/25/18 13:05	CCP	N



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ANALYTICAL RESULTS

Workorder: Q1829938

Lab ID: **Q1829938002** Date Received: 7/27/2018 14:50 Matrix: Aqueous
 Sample ID: **CBL - 301I DISS** Date Collected: 7/25/2018 13:05 Sample Type: **SAMPLE**
 Project ID: **FPP GWMP CCR**

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
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INORGANICS

Analysis Desc: SW6010B ICP-AES Preparation Method: SW6010B ICP-AES
 Analytical Method: SW6010B ICP-AES

Boron Dissolved	<0.0500 mg/L	0.0500	0.0200	1		08/09/18 15:34	MM	08/13/18 10:01	FM	
Calcium Dissolved	929 mg/L	0.500				08/09/18 15:34	MM	08/13/18 10:06	FM	
Lithium Dissolved	0.0926 mg/L	0.0100	0.00400	1		08/09/18 15:34	MM	08/13/18 10:01	FM	



ANALYTICAL RESULTS

Workorder: Q1829938

Lab ID: Q1829938003 Date Received: 7/27/2018 14:50 Matrix: Aqueous
 Sample ID: CBL - 302I Date Collected: 7/27/2018 13:13 Sample Type: SAMPLE
 Project ID: FPP GWMP CCR

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	1980 mg/L	50.0	20.0	50		07/28/18 00:22	ML	07/28/18 00:22	ML	
Fluoride	<0.500 mg/L	0.500	0.200	50		07/28/18 00:22	ML	07/28/18 00:22	ML	
Sulfate	1390 mg/L	50.0	20.0	50		07/28/18 00:22	ML	07/28/18 00:22	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	5510 mg/L	250	250	100		08/01/18 13:58	ADG	08/01/18 13:58	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200	1		08/13/18 08:35	MM	08/15/18 10:34	FM	
Calcium Total	995 mg/L	1.00	0.350	5		08/13/18 08:35	MM	08/15/18 12:00	FM	
Lithium Total	0.0489 mg/L	0.0100	0.00400	1		08/13/18 08:35	MM	08/15/18 10:34	FM	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
Temperature	22.20 c			1		07/27/18 13:13	CCP	07/27/18 13:13	CCP	N
pH	5.77 pH			1		07/27/18 13:13	CCP	07/27/18 13:13	CCP	N
Specific Conductance	7259 us/cm			1		07/27/18 13:13	CCP	07/27/18 13:13	CCP	N



ANALYTICAL RESULTS

Workorder: Q1829938

Lab ID: **Q1829938004** Date Received: 7/27/2018 14:50 Matrix: Aqueous
 Sample ID: **CBL - 306I** Date Collected: 7/27/2018 10:13 Sample Type: SAMPLE
 Project ID: **FPP GWMP CCR**

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	283 mg/L	10.0	4.00	10		07/28/18 00:56	ML	07/28/18 00:56	ML	
Fluoride	2.95 mg/L	0.100	0.0400	10		07/28/18 00:56	ML	07/28/18 00:56	ML	
Sulfate	406 mg/L	10.0	4.00	10		07/28/18 00:56	ML	07/28/18 00:56	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	1450 mg/L	25.0	25.0	10		08/01/18 13:58	ADG	08/01/18 13:58	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200	1		08/13/18 08:35	MM	08/15/18 10:42	FM	
Calcium Total	275 mg/L	0.200	0.0700	1		08/13/18 08:35	MM	08/15/18 10:42	FM	
Lithium Total	0.0298 mg/L	0.0100	0.00400	1		08/13/18 08:35	MM	08/15/18 10:42	FM	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
Temperature	24.05 C			1		07/27/18 10:13	CCP	07/27/18 10:13	CCP	N
pH	6.86 pH			1		07/27/18 10:13	CCP	07/27/18 10:13	CCP	N
Specific Conductance	1996 us/cm			1		07/27/18 10:13	CCP	07/27/18 10:13	CCP	N

ANALYTICAL RESULTS

Workorder: Q1829938

Lab ID: **Q1829938005** Date Received: 7/27/2018 14:50 Matrix: Aqueous
Sample ID: **CBL - 308I** Date Collected: 7/25/2018 12:06 Sample Type: SAMPLE
Project ID: **FPP GWMP CCR**

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	2680 mg/L	50.0	20.0	50		07/28/18 01:12	ML	07/28/18 01:12	ML	
Fluoride	2.10 mg/L	0.500	0.200	50		07/28/18 01:12	ML	07/28/18 01:12	ML	
Sulfate	1540 mg/L	50.0	20.0	50		07/28/18 01:12	ML	07/28/18 01:12	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	6320 mg/L	500	500	200		07/30/18 11:30	ADG	07/30/18 11:30	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200	1		08/13/18 08:35	MM	08/15/18 10:49	FM	
Calcium Total	863 mg/L	1.00	0.350	5		08/13/18 08:35	MM	08/15/18 12:06	FM	
Lithium Total	0.109 mg/L	0.0100	0.00400	1		08/13/18 08:35	MM	08/15/18 10:49	FM	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
Temperature	23.43 C			1		07/25/18 12:06	CCP	07/25/18 12:06	CCP	N
pH	6.07 pH			1		07/25/18 12:06	CCP	07/25/18 12:06	CCP	N
Specific Conductance	9313 us/cm			1		07/25/18 12:06	CCP	07/25/18 12:06	CCP	N



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ANALYTICAL RESULTS

Workorder: Q1829938

Lab ID: Q1829938006	Date Received: 7/27/2018 14:50	Matrix: Aqueous
Sample ID: CBL - 340I	Date Collected: 7/27/2018 11:41	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	2450 mg/L	50.0	20.0	50		07/28/18 00:39	ML	07/28/18 00:39	ML	
Fluoride	1.30 mg/L	0.500	0.200	50		07/28/18 00:39	ML	07/28/18 00:39	ML	
Sulfate	711 mg/L	50.0	20.0	50		07/28/18 00:39	ML	07/28/18 00:39	ML	
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	5100 mg/L	250	250	100		08/01/18 13:58	ADG	08/01/18 13:58	ADG	
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200	1		08/13/18 08:35	MM	08/15/18 10:56	FM	
Calcium Total	544 mg/L	0.400	0.140	2		08/13/18 08:35	MM	08/15/18 12:14	FM	
Lithium Total	0.0968 mg/L	0.0100	0.00400	1		08/13/18 08:35	MM	08/15/18 10:56	FM	
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
Temperature	23.20 C			1		07/27/18 11:41	CCP	07/27/18 11:41	CCP	N
pH	6.25 pH			1		07/27/18 11:41	CCP	07/27/18 11:41	CCP	N
Specific Conductance	8131 us/cm			1		07/27/18 11:41	CCP	07/27/18 11:41	CCP	N



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ANALYTICAL RESULTS

Workorder: Q1829938

Lab ID: **Q1829938007** Date Received: 7/27/2018 14:50 Matrix: Aqueous
 Sample ID: **CBL - 602I** Date Collected: 7/27/2018 13:13 Sample Type: SAMPLE
 Project ID: **FPP GWMP CCR**

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200	1		08/13/18 08:35	MM	08/15/18 11:03	FM	
Calcium Total	958 mg/L	1.00	0.350	5		08/13/18 08:35	MM	08/15/18 12:21	FM	
Lithium Total	0.0526 mg/L	0.0100	0.00400	1		08/13/18 08:35	MM	08/15/18 11:03	FM	



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ANALYTICAL RESULTS

Workorder: Q1829938

Lab ID: **Q1829938008** Date Received: 7/27/2018 14:50 Matrix: Aqueous
 Sample ID: **Field Blank** Date Collected: 7/25/2018 13:00 Sample Type: **SAMPLE**
 Project ID: **FPP GWMP CCR**

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200	1		08/13/18 08:35	MM	08/15/18 11:10	FM	
Calcium Total	<0.200 mg/L	0.200	0.0700	1		08/13/18 08:35	MM	08/15/18 11:10	FM	
Lithium Total	<0.0100 mg/L	0.0100	0.00400	1		08/13/18 08:35	MM	08/15/18 11:10	FM	



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ANALYTICAL RESULTS

Workorder: Q1829938

Lab ID: **Q1829938009** Date Received: 7/27/2018 14:50 Matrix: Aqueous
 Sample ID: **EQ Blank** Date Collected: 7/27/2018 11:45 Sample Type: **SAMPLE**
 Project ID: **FPP GWMP CCR**

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200		1	08/13/18 08:35	MM	08/15/18 11:16	FM	
Calcium Total	<0.200 mg/L	0.200	0.0700		1	08/13/18 08:35	MM	08/15/18 11:16	FM	
Lithium Total	<0.0100 mg/L	0.0100	0.00400		1	08/13/18 08:35	MM	08/15/18 11:16	FM	



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ANALYTICAL RESULTS QUALIFIERS

Workorder: Q1829938

PARAMETER QUALIFIERS

Lab ID: Q1829938001
N Not Accredited

Lab ID: Q1829938003
N Not Accredited

Lab ID: Q1829938004
N Not Accredited

Lab ID: Q1829938005
N Not Accredited

Lab ID: Q1829938006
N Not Accredited



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QUALITY CONTROL DATA

Workorder: Q1829938

QC Batch: WET/17963 **Analysis Method:** E300.0, Anions
QC Batch Method: E300.0, Anions
Associated Lab Samples: Q1829938001, Q1829938003, Q1829938004, Q1829938005, Q1829938006

METHOD BLANK: 1103776

Parameter	Units	Blank Result	Reporting Limit	Qual
Chloride	mg/L	<1.00	1.00	
Fluoride	mg/L	<0.0100	0.0100	
Sulfate	mg/L	<1.00	1.00	

LABORATORY CONTROL SAMPLE: 1103777

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Chloride	mg/L	30	30.3	101	90 - 110	
Fluoride	mg/L	1	1.02	102	90 - 110	
Sulfate	mg/L	30	30.7	102	90 - 110	

MATRIX SPIKE: 1103778 DUPLICATE: 1103779 ORIGINAL: Q1829938004

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Chloride	mg/L	283	200	470	470	94	94	80 - 120	0	20	
Fluoride	mg/L	2.95	10	12.8	12.8	98.4	98.2	80 - 120	0	20	
Sulfate	mg/L	406	200	584	584	88.8	88.9	80 - 120	0	20	

Qualifiers

S - Spike Recovery Outside Recovery Limits

R - RPD Outside Recovery Limits

B - Analyte Detected in Method Blank



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QUALITY CONTROL DATA

Workorder: Q1829938

QC Batch: WET/17966 Analysis Method: SM2540C, TDS
 QC Batch Method: SM2540C, TDS
 Associated Lab Samples: Q1829938001, Q1829938005

METHOD BLANK: 1103840

Parameter	Units	Blank Result	Reporting Limit	Qual
Total Dissolved Solids(TDS)	mg/L	<25.0	25.0	

LABORATORY CONTROL SAMPLE: 1103841

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Total Dissolved Solids(TDS)	mg/L	400	368	92	80 - 120	

SAMPLE DUPLICATE: 1103842 ORIGINAL: Q1829894002

Parameter	Units	Original Result	DUP Result	% Rec	% Rec Limit	RPD	Max Qual
Total Dissolved Solids(TDS)	mg/L	579	604			4.23	20

MATRIX SPIKE SAMPLE: 1103843 ORIGINAL: Q1829894002

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Limit	Qual
Total Dissolved Solids(TDS)	mg/L	579	400	978	99.8	70 - 130	

Qualifiers

- S - Spike Recovery Outside Recovery Limits
- R - RPD Outside Recovery Limits
- B - Analyte Detected in Method Blank

QUALITY CONTROL DATA

Workorder: Q1829938

QC Batch: WET/17985 **Analysis Method:** SM2540C, TDS
QC Batch Method: SM2540C, TDS
Associated Lab Samples: Q1829938003, Q1829938004, Q1829938006

METHOD BLANK: 1105031

Parameter	Units	Blank Result	Reporting Limit	Qual
Total Dissolved Solids(TDS)	mg/L	<25.0	25.0	

LABORATORY CONTROL SAMPLE: 1105032

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Total Dissolved Solids(TDS)	mg/L	400	387	96.8	80 - 120	

SAMPLE DUPLICATE: 1105033 ORIGINAL: Q1829974002

Parameter	Units	Original Result	DUP Result	% Rec	% Rec Limit	RPD	Max Qual
Total Dissolved Solids(TDS)	mg/L	616	620			.647	20

MATRIX SPIKE SAMPLE: 1105034 ORIGINAL: Q1829974002

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Limit	Qual
Total Dissolved Solids(TDS)	mg/L	616	400	1050	108	70 - 130	

Qualifiers

- S - Spike Recovery Outside Recovery Limits
- R - RPD Outside Recovery Limits
- B - Analyte Detected in Method Blank



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QUALITY CONTROL DATA

Workorder: Q1829938

QC Batch: MEP/8535 **Analysis Method:** SW6010B ICP-AES

QC Batch Method: SW3010A, Metals Prep

Associated Lab Samples: Q1829938001, Q1829938003, Q1829938004, Q1829938005, Q1829938006, Q1829938007, Q1829938008, Q1829938009

LABORATORY CONTROL SAMPLE: 1110156

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max	Qual
Boron Total	mg/L	1	1.15	1.15	115	115	80 - 120	0	20	
Calcium Total	mg/L	10	10.8	10.8	108	108	80 - 120	0	20	
Lithium Total	mg/L	1	1.13	1.15	113	115	80 - 120	1.75	20	

METHOD BLANK: 1110158

Parameter	Units	Blank Result	Reporting Limit	Qual
Boron Total	mg/L	<0.0500	0.0500	
Calcium Total	mg/L	<0.200	0.200	
Lithium Total	mg/L	<0.0100	0.0100	

MATRIX SPIKE: 1110170 DUPLICATE: 1110171 ORIGINAL: Q1829938001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Boron Total	mg/L	.02	1	1.26	1.26	126	126	75 - 125	0	20	S
Calcium Total	mg/L	993	10	980	990	-130	-35.4	75 - 125	1.02	20	S
Lithium Total	mg/L	.1	1	1.37	1.35	128	125	75 - 125	1.47	20	S

Qualifiers

- S - Spike Recovery Outside Recovery Limits
- R - RPD Outside Recovery Limits
- B - Analyte Detected in Method Blank



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QUALITY CONTROL DATA

Workorder: Q1829938

QC Batch: MEP/8536 **Analysis Method:** SW6010B ICP-AES
QC Batch Method: SW6010B ICP-AES
Associated Lab Samples: Q1829938002

METHOD BLANK: 1110181

Parameter	Units	Blank Result	Reporting Limit	Qual
Boron Dissolved	mg/L	<0.0500	0.0500	
Calcium Dissolved	mg/L	<0.100	0.100	
Lithium Dissolved	mg/L	<0.0100	0.0100	

LABORATORY CONTROL SAMPLE: 1110182

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max	Qual
Boron Dissolved	mg/L	1	.87	.88	86.5	88.2	80 - 120	1.95	20	
Calcium Dissolved	mg/L	10	9.84	9.79	98.4	97.9	80 - 120	.509	20	
Lithium Dissolved	mg/L	1	.99	.98	99.4	98.2	80 - 120	1.21	20	

MATRIX SPIKE: 1110184 DUPLICATE: 1110185 ORIGINAL: Q1829938002

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Boron Dissolved	mg/L	0	1	.14	.15	13.5	14.7	75 - 125	8.51	20	S
Calcium Dissolved	mg/L	929	10	992	1040	630	1130	75 - 125	4.72	20	S
Lithium Dissolved	mg/L	.09	1	1.21	1.16	112	106	75 - 125	4.22	20	

Qualifiers

- S - Spike Recovery Outside Recovery Limits**
- R - RPD Outside Recovery Limits**
- B - Analyte Detected in Method Blank**



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: Q1829938

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
Q1829938001	CBL - 301I			E300.0, Anions	WET/17963
Q1829938003	CBL - 302I			E300.0, Anions	WET/17963
Q1829938004	CBL - 306I			E300.0, Anions	WET/17963
Q1829938005	CBL - 308I			E300.0, Anions	WET/17963
Q1829938006	CBL - 340I			E300.0, Anions	WET/17963
Q1829938001	CBL - 301I			SM2540C, TDS	WET/17966
Q1829938005	CBL - 308I			SM2540C, TDS	WET/17966
Q1829938003	CBL - 302I			SM2540C, TDS	WET/17985
Q1829938004	CBL - 306I			SM2540C, TDS	WET/17985
Q1829938006	CBL - 340I			SM2540C, TDS	WET/17985
Q1829938001	CBL - 301I	SW3010A, Metals Prep	MEP/8535	SW6010B ICP-AES	MET/6611
Q1829938003	CBL - 302I	SW3010A, Metals Prep	MEP/8535	SW6010B ICP-AES	MET/6611
Q1829938004	CBL - 306I	SW3010A, Metals Prep	MEP/8535	SW6010B ICP-AES	MET/6611
Q1829938005	CBL - 308I	SW3010A, Metals Prep	MEP/8535	SW6010B ICP-AES	MET/6611
Q1829938006	CBL - 340I	SW3010A, Metals Prep	MEP/8535	SW6010B ICP-AES	MET/6611
Q1829938007	CBL - 602I	SW3010A, Metals Prep	MEP/8535	SW6010B ICP-AES	MET/6611
Q1829938008	Field Blank	SW3010A, Metals Prep	MEP/8535	SW6010B ICP-AES	MET/6611
Q1829938009	EQ Blank	SW3010A, Metals Prep	MEP/8535	SW6010B ICP-AES	MET/6611
Q1829938002	CBL - 301I DISS	SW6010B ICP-AES	MEP/8536	SW6010B ICP-AES	MET/6610



LCRA - Environmental Lab
3505 Montopolis Dr.
Austin, TX 78744

Phone: (512) 356-6022 or 1-800-776-5272
Fax: (512) 356-6021
https://els.lcra.org

Q1829938

LCRA Environmental Laboratory Services Request for Analysis Chain-of-Custody Record

Project:	FPP - GCR Wells	Client:	LCRA
Collector:	<i>Coffey</i>	Contact:	
Event#:	1412479 / 6633	Phone:	

Report To: BECKIE LOEVE
FAYETTE POWER PLANT
6549 POWER PLANT RD
MAIL STOP FPP
La Grange, TX 78945

Lab ID#:	
Client PO:	
Invoice To:	BECKIE LOEVE FAYETTE POWER PLANT 6549 POWER PLANT RD MAIL STOP FPP La Grange, TX 78945

LAB USE ONLY	Sample ID *	Collected *		Matrix* AQ = Aqueous S = Solid T = Tissue DW = Drinking Water	Container(s) Type/Preservative/Number *						Requested Analysis *							
		Date*	Time * HH:MM		COMPOSITE Y/N	FILTERED Y/N	500PU	250PHNO3	250PHNO3	250PHNO3	2540-AMTDS	6010-AM	300.0AM-48	Fid_FP	plus Metals			
201 002	1 CBL - 3011	7/25/18	1305	AQ	N	N	1	1	1					X	X	X	X	
003	2 CBL - 3021	7/27/18	1313	AQ			1	1						X	X	X	X	
004	3 CBL - 3061	7/27/18	1013	AQ			1	1						X	X	X	X	
005	4 CBL - 3081	7/25/18	1206	AQ			1	1						X	X	X	X	
006	5 CBL - 3401	7/27/18	1141	AQ			1	1						X	X	X	X	
007	6 CBL - 3401 6021 08 7/27/18	7/27/18	1313	AQ					1						X			
008	7 Field Blank	7/25/18	1300	AQ					1						X			
009	8 EQ Blank	7/25/18	1145	AQ					1						X			

Transfers	Relinquished By	Date/Time	Received By	Date/Time	Cooler Temp:				Client Special Instructions:
					#	T#	Obs.	Corr.	
1	<i>Coffey</i>	7/27/18 1450	<i>P-Z</i>	7/27/18 1450	1	6	4.6°C	4.6°C	
2									
3					2				

Note: Relinquishing sample(s) and signing the COC, client agrees to accept and is bound by the ELS Standard Terms and Conditions. All fields with an asterisk (*) are required to be completed.



Q1829938 339504

FPP - Groundwater Purge Data - CCR Wells - July 2018

Date M/D/Y	Time HH:MM:SS	Temp C	DO mg/L	DOsat %	pH	SpCond uS	Orp mV	Monitoring Well
7/25/2018	10:45:26	26.00	9.36	116.1	7.15	2349	145.6	CBL 306I
7/25/2018	10:48:26	23.68	3.80	45.0	6.59	1253	170.7	CBL 306I
7/25/2018	10:51:26	23.41	3.42	40.3	6.49	1278	193.5	CBL 306I
7/25/2018	10:54:26	23.19	3.40	40.0	6.40	1583	216.2	CBL 306I
7/25/2018	10:57:26	22.87	3.44	40.2	6.30	2054	242.2	CBL 306I
7/25/2018	11:00:26	23.63	6.66	79.2	6.38	2649	173.8	CBL 306I
7/25/2018	11:03:26	22.65	2.86	33.4	6.27	2847	160.6	CBL 306I
7/25/2018	11:36:15	29.23	6.24	83.9	6.90	9571	272.6	CBL 308I
7/25/2018	11:39:15	23.95	3.88	47.5	6.24	9809	258.7	CBL 308I
7/25/2018	11:42:15	23.42	3.84	46.6	6.11	9790	248.1	CBL 308I
7/25/2018	11:45:15	23.37	4.44	53.8	6.05	9714	248.2	CBL 308I
7/25/2018	11:48:15	23.56	5.41	65.8	6.01	9612	252.7	CBL 308I
7/25/2018	11:51:15	23.62	2.24	27.3	6.02	9585	283.9	CBL 308I
7/25/2018	11:54:15	23.59	3.60	43.8	6.05	9509	296.9	CBL 308I
7/25/2018	11:57:17	23.47	3.72	45.1	6.05	9490	254.0	CBL 308I
7/25/2018	12:00:17	23.44	3.57	43.2	6.04	9455	271.4	CBL 308I
7/25/2018	12:03:17	23.37	4.17	50.5	6.04	9447	277.8	CBL 308I
7/25/2018	12:06:16	23.43	3.25	39.4	6.07	9313	265.4	CBL 308I
7/25/2018	12:29:42	26.50	4.65	59.2	6.44	7415	172.0	CBL 301I
7/25/2018	12:32:42	23.87	0.93	11.3	6.05	7494	113.7	CBL 301I
7/25/2018	12:35:42	23.66	0.83	10.0	5.97	7463	127.8	CBL 301I
7/25/2018	12:38:42	23.72	0.77	9.3	5.93	7465	152.5	CBL 301I
7/25/2018	12:41:42	23.91	0.71	8.6	5.95	7459	159.7	CBL 301I
7/25/2018	12:44:42	23.99	0.63	7.7	5.99	7466	150.7	CBL 301I
7/25/2018	12:47:42	24.06	0.60	7.4	6.02	7465	157.4	CBL 301I
7/25/2018	12:50:42	24.36	0.62	7.6	6.02	7466	162.7	CBL 301I
7/25/2018	12:53:42	24.38	0.64	7.8	6.02	7448	168.1	CBL 301I
7/25/2018	12:56:42	24.55	0.59	7.2	6.03	7452	169.6	CBL 301I
7/25/2018	12:59:49	24.58	0.63	7.7	6.03	7440	169.7	CBL 301I
7/25/2018	13:02:49	24.45	0.59	7.3	6.03	7443	169.9	CBL 301I
7/25/2018	13:05:49	24.46	0.57	6.9	6.04	7446	169.3	CBL 301I
7/27/2018	10:35:31	25.37	6.22	77.8	6.73	8470	292.6	CBL 340I
7/27/2018	10:38:31	23.27	4.41	53.1	6.50	8390	320.1	CBL 340I
7/27/2018	10:41:31	23.05	3.80	45.5	6.44	8376	334.9	CBL 340I
7/27/2018	10:44:31	23.01	3.55	42.4	6.42	7681	345.6	CBL 340I
7/27/2018	10:47:31	22.98	3.33	39.9	6.39	8375	354.6	CBL 340I
7/27/2018	10:50:31	23.04	3.22	38.6	6.39	8355	362.4	CBL 340I
7/27/2018	10:53:31	23.06	3.16	37.8	6.36	7673	369.1	CBL 340I
7/27/2018	10:56:31	23.07	3.12	37.3	6.35	7687	375.0	CBL 340I

7/27/2018	10:59:31	23.02	3.09	37.0	6.34	8318	380.3	CBL 340I
7/27/2018	11:02:31	23.09	3.07	36.7	6.34	7667	385.4	CBL 340I
7/27/2018	11:05:31	23.08	3.05	36.6	6.33	8293	389.7	CBL 340I
7/27/2018	11:08:31	23.08	3.00	36.0	6.33	8288	393.7	CBL 340I
7/27/2018	11:11:31	23.02	3.00	35.9	6.33	8282	397.5	CBL 340I
7/27/2018	11:14:31	23.14	3.01	36.0	6.32	7701	400.9	CBL 340I
7/27/2018	11:17:31	23.15	2.93	35.2	6.32	8244	404.1	CBL 340I
7/27/2018	11:20:31	23.10	2.96	35.5	6.31	8226	407.1	CBL 340I
7/27/2018	11:23:31	23.13	2.95	35.4	6.30	7761	409.7	CBL 340I
7/27/2018	11:26:31	23.06	2.96	35.4	6.30	7715	412.7	CBL 340I
7/27/2018	11:29:31	23.12	3.00	35.9	6.31	8190	357.3	CBL 340I
7/27/2018	11:32:31	23.13	2.94	35.2	6.29	8184	382.0	CBL 340I
7/27/2018	11:35:31	23.21	2.91	34.9	6.27	8168	394.7	CBL 340I
7/27/2018	11:38:31	23.21	2.93	35.2	6.26	8141	404.4	CBL 340I
7/27/2018	11:41:31	23.20	2.92	35.1	6.25	8131	412.3	CBL 340I
7/27/2018	12:45:23	22.15	1.05	12.3	5.96	7254	425.5	CBL 302I
7/27/2018	12:45:59	22.17	1.01	11.8	5.96	7250	426.1	CBL 302I
7/27/2018	12:48:59	22.17	1.03	12.1	5.94	7259	429.8	CBL 302I
7/27/2018	12:51:59	22.17	1.01	11.9	5.92	7252	433.1	CBL 302I
7/27/2018	12:54:59	22.18	1.00	11.8	5.90	7249	436.0	CBL 302I
7/27/2018	12:57:59	22.17	1.03	12.1	5.89	7133	438.9	CBL 302I
7/27/2018	13:00:59	22.19	1.07	12.6	5.88	7262	441.3	CBL 302I
7/27/2018	13:03:59	22.20	1.00	11.8	5.86	7253	443.9	CBL 302I
7/27/2018	13:06:59	22.20	1.03	12.2	5.83	7248	446.8	CBL 302I
7/27/2018	13:09:59	22.18	1.07	12.6	5.81	7256	449.2	CBL 302I
7/27/2018	13:12:59	22.20	1.03	12.1	5.77	7259	452.3	CBL 302I



Field Information Form

Sample Date: 7/27/18 ⁽³⁾
 Sample Time: 1313
 Sample ID: CB4302I

PURGING INFORMATION

PURGE DATE (YY MM DD) 11807217
 START PURGE (2400 Hr. Clock) 11205
 WATER VOL IN CASING (Gallons) V= 25
 3 X WELL VOL. IN (Gallons) 7.6
 ACTUAL VOLUME PURGED (Gallons) 18

PURGING AND SAMPLING EQUIPMENT

Purging Equipment Dedicated INI
 Sampling Equipment Dedicated INI

Purging Device B A-Submersible Pump D-Gas Lift Pump G-Bailer
 Sampling Device B B-Peristaltic Pump E-Venturi Pump H-Scoop/Shovel X-
 C-Bladder Pump F-Dipper/Bottle I-Piston Pump X- Purging Other (Specify)
 Purging Material F A-Teflon C-Polypropylene E-Polyethylene X-
 Sampling Material F B-Stainless Steel D-PVC X- Sampling Other (Specify)
 Tubing-Purging F A-Teflon D-Polypropylene F-Silicon X-
 Tubing-Sampling F B-Tygon E-Polyethylene G-Combination X-
 C-Rope X- teflon/Polypropylene X- Purging Other (Specify)
 Sampling Other (Specify)

FIELD MEASUREMENTS

Well Elevation (ft/msl)
 Land Surface Elevation (ft/msl)
 Depth to water From top of well casing = D_w 11150 (ft)
 Depth to water From land surface (ft)
 Groundwater Elevation (ft/msl)
 Groundwater Elevation (ft/msl)
 Well Depth = D 127111 (ft)
 Pump Placement (ft)
 PH 5.77 (STD)
 Specific Conductivity 7229 uS/cm
 Sample Temp. 22.20 (°C)

Bottle			Analysis		Field Filtr. Y/N
Type	Size	Preservative			
D	250ml	Metals	H ₂ O ₂		
P	250ml	Metals	H ₂ O ₂		N
P	500ml	ICE	Anions		N

Sample Appearance: clear Odor: none Color: clear Turbidity: 3.37
 Weather Conditions: clear calm 95°
 Other: Purge water is clear with no odor.

WELL VOLUME CALCULATION

V = (D-D_w) (A) (7.48 gal/ft³) where
 V = volume of standing water in well
 D = depth to bottom of well below measuring point
 D_w = depth to water below measuring point
 A = cross-sectional area
 dia. A = 0.0218 4" dia. A = 0.0872

Well Appearance Normal: Yes No
 If No, Explain _____

Procedure: ELS Ground water SOP 5-70

Date: 7/27/18
 Sampler: CP
 Employer: LCRA



Field Information Form

Sample Date: 7/27/18
 Sample Time: 1141
 Sample ID: CBK1314101

PURGING INFORMATION

18 | 07 | 27 16 | 33 V = | | | 2.7 | | | 8 | | | 17
 PURGE DATE (YY MM DD) START PURGE (2400 Hr. Clock) WATER VOL IN CASING (Gallons) 3 X WELL VOL. IN (Gallons) ACTUAL VOLUME PURGED (Gallons)

PURGING AND SAMPLING EQUIPMENT

Purging Equipment Dedicated Y N I NI Sampling Equipment Dedicated Y N I NI

Purging Device	<input checked="" type="checkbox"/> B	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	
Sampling Device	<input checked="" type="checkbox"/> B	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X-
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	X-
					Purging Other (Specify) _____
					Sampling Other (Specify) _____
Purging Material	<input checked="" type="checkbox"/> F	A-Teflon	C-Polypropylene	E-Polyethylene	X-
Sampling Material	<input checked="" type="checkbox"/> F	B-Stainless Steel	D-PVC		
					Purging Other (Specify) _____
					Sampling Other (Specify) _____
Tubing-Purging	<input checked="" type="checkbox"/> F	A-Teflon	D-Polypropylene	F-Silicon	X-
Tubing-Sampling	<input checked="" type="checkbox"/> F	B-Tygon	E-Polyethylene	G-Combination	X-
				teflon/Polypropylene	X-
					Purging Other (Specify) _____
					Sampling Other (Specify) _____
					C-Rope X- _____ (Specify)

FIELD MEASUREMENTS

Well Elevation | | | | | (ft/msl) Land Surface Elevation | | | | | (ft/msl)
 Depth to water From top of well casing = D_w | | | | | (ft) Depth to water From land surface | | | | | (ft)
 Groundwater Elevation | | | | | (ft/msl) Groundwater Elevation | | | | | (ft/msl)
 Well Depth = D | | | | | (ft) Pump Placement | | | | | (ft)
 PH | | | | | (STD) Specific Conductivity | | | | | uS/cm Sample Temp. | | | | | (°C)

Bottle			Analysis	Field Filtr. Y/N
Type	Size	Preservative		
P	250ml	HClO ₂	Metals	N
P	500ml	ICE	Anions	N
P	250ml	HClO ₂	Metals EQ Blank	N

Sample Appearance: clear Odor: none Color: clear Turbidity: 168
 Weather Conditions: clear calm 85°
 Other: Purge water is clear with no odor

WELL VOLUME CALCULATION

V=(D-D_w) (A) (7.48 gal/ft³) where
 V= volume of standing water in well
 D= depth to bottom of well below measuring point
 D_w=depth to water below measuring point
 A= cross-sectional area

2" dia. A= 0.0218 4" dia. A = 0.0872

Well Appearance Normal: Yes X No _____
 If No, Explain _____

Procedure: ELS Groundwater SOP 5-7D

Date: 7/27/18
 Sampler: CP
 Employer: LCRA



Field Information Form

Sample Date: 7/25/18

Sample Time: 7305

Sample ID: CIBL3011T

PURGING INFORMATION

180725

PURGE DATE
(YY MM DD)

1230

START PURGE
(2400 Hr. Clock)

V= 3

WATER VOL. IN CASING
(Gallons)

 9

3 X WELL VOL. IN
(Gallons)

 18

ACTUAL VOLUME PURGED
(Gallons)

PURGING AND SAMPLING EQUIPMENT

Purging Equipment Dedicated Y I I N

Sampling Equipment Dedicated Y I I N

Purging Device	<input checked="" type="checkbox"/> A	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	
Sampling Device	<input checked="" type="checkbox"/> A	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X- Purging Other (Specify)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	X- Sampling Other (Specify)
Purging Material	<input checked="" type="checkbox"/> F	A-Teflon	C-Polypropylene	E-Polyethylene	X- Purging Other (Specify)
Sampling Material	<input checked="" type="checkbox"/> E	B-Stainless Steel	D-PVC		X- Sampling Other (Specify)
Tubing-Purging	<input checked="" type="checkbox"/> E	A-Teflon	D-Polypropylene	F-Silicon	X- Purging Other (Specify)
Tubing-Sampling	<input checked="" type="checkbox"/> E	B-Tygon	E-Polyethylene	G-Combination	X- Sampling Other (Specify)
		C-Rope		teflon/Polypropylene	X- Sampling Other (Specify)

FIELD MEASUREMENTS

Well Elevation (ft/msl)

Land Surface Elevation (ft/msl)

Depth to water
From top of well casing = D_w 3 5 8 8 (ft)

Depth to water
From land surface (ft)

Groundwater Elevation

Groundwater Elevation (ft/msl)

Well Depth = D 15 4 1 0 (ft)

Pump Placement 4 9 (ft)

16.04 (STD)
PH

174.46 uS/cm
Specific Conductivity

Sample Temp. 24.46 (°C)

Bottle			Analysis	Field Filt. Y/N
Type	Size	Preservative		
P	250ml	H ₂ O ₂	Metals	
P	250ml	H ₂ O ₂	Metals	N
P	250ml	ICE	Anions	N
P	500ml	ICE	Anions	N
P	250ml	H ₂ O ₂	Dissolved metals	
P	250ml	H ₂ O ₂	Field Blank	

Sample Appearance: Clear Odor: none Color: Clear Turbidity: 6.50 dissolved 2.06

Weather Conditions: Partly Cloudy south wind 5mph 100°

Other: Purge water is cloudy milky white to gray

WELL VOLUME CALCULATION

V=(D-D_w) (A) (7.48 galft³) where
 V= volume of standing water in well
 D= depth to bottom of well below measuring point
 D_w=depth to water below measuring point
 A= cross sectional area

dia. A= 0.0218 4" dia. A = -0.0872

Well Appearance Normal: Yes X No _____
 If No, Explain _____

Procedure: ELS Groundwater SOP 5-7D

Date: 7/25/18
 Sampler: CP/ES
 Employer: LCRA



Field Information Form

Sample Date: 7/25/18
 Sample Time: 1206
 Sample ID: CBL308I

PURGING INFORMATION

18
07/07/25 PURGE DATE (YY MM DD)
11/10 START PURGE (2400 Hr. Clock)
117 WATER VOL IN CASING (Gallons)
511 3 X WELL VOL. IN (Gallons)
17 ACTUAL VOLUME PURGED (Gallons)

PURGING AND SAMPLING EQUIPMENT

Purging Equipment Dedicated I NI
 Sampling Equipment Dedicated I NI

Purging Device	<input checked="" type="checkbox"/> B	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X-	
Sampling Device	<input checked="" type="checkbox"/> B	B-Peristaltic Pump C-Bladder Pump	E-Venturi Pump F-Dipper/Bottle	H-Scoop/Shovel I-Piston Pump	X-	Purging Other (Specify)
Purging Material	<input checked="" type="checkbox"/> F	A-Teflon	C-Polypropylene	E-Polyethylene	X-	Sampling Other (Specify)
Sampling Material	<input checked="" type="checkbox"/> F	B-Stainless Steel	D-PVC		X-	Purging Other (Specify)
Tubing-Purging	<input checked="" type="checkbox"/> F	A-Teflon	D-Polypropylene	F-Silicon	X-	Sampling Other (Specify)
Tubing-Sampling	<input checked="" type="checkbox"/> F	B-Tygon	E-Polyethylene	G-Combination teflon/Polypropylene	X-	Purging Other (Specify)
		C-Rope X-			X-	Sampling Other (Specify)

FIELD MEASUREMENTS

Well Elevation (ft/msl)
 Land Surface Elevation (ft/msl)
 Depth to water (ft)
 From top of well casing = D_w
 From land surface (ft)
 Groundwater Elevation (ft/msl)
 Well Depth = D (ft)
 Pump Placement (ft)
6.07 (STD) PH
19313 uS/cm Specific Conductivity
 Sample Temp. 23.43 (°C)

Bottle			Analysis	Field Filt. Y/N
Type	Size	Preservative		
P	250ml	HNO ₃	Metals	
P	250ml	HNO ₃	Metals	N
P	250ml	ICE	Amion	N
P	500ml	ICE	Amion	N

Sample Appearance: Clear Odor: none Color: clear Turbidity: 21.8
 Weather Conditions: clear calm 98°
 Other: Purge water is clear with no odor

WELL VOLUME CALCULATION

V=(D-D_w) (A) (7.48 gal/ft³) where
 V= volume of standing water in well
 D= depth to bottom of well below measuring point
 D_w=depth to water below measuring point
 A=cross sectional area
 " dia. A= 0.0218 4" dia. A= -0.0872

Well Appearance Normal: Yes No
 If No, Explain _____

Procedure: ELS Ground water SOP 5-7D

Date: 7/25/18
 Sampler: CP/ES
 Employer: LCRA



Field Information Form

Sample Date: 7/27/18

Sample Time: 1013

Sample ID: CB4306I

8

PURGING INFORMATION

PURGE DATE (YY MM DD) 18 07 25

START PURGE (2400 Hr. Clock) 1045

WATER VOL IN CASING (Gallons) 0.17

3 X WELL VOL. IN (Gallons) 2.2

ACTUAL VOLUME PURGED (Gallons) 11

PURGING AND SAMPLING EQUIPMENT

Purging Equipment Dedicated Y N I N I

Sampling Equipment Dedicated Y N I N I

Purging Device	<input checked="" type="checkbox"/> B	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	
Sampling Device	<input checked="" type="checkbox"/> B	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X-
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	X-
					Purging Other (Specify)
Purging Material	<input checked="" type="checkbox"/> F	A-Teflon	C-Polypropylene	E-Polyethylene	X-
Sampling Material	<input checked="" type="checkbox"/> F	B-Stainless Steel	D-PVC		X-
					Purging Other (Specify)
Tubing-Purging	<input checked="" type="checkbox"/> F	A-Teflon	D-Polypropylene	F-Silicon	X-
Tubing-Sampling	<input checked="" type="checkbox"/> F	B-Tygon	E-Polyethylene	G-Combination	X-
				teflon/Polypropylene	X-
		C-Rope X-			X-
		(Specify)			Sampling Other (Specify)

FIELD MEASUREMENTS

Well Elevation (ft/msl)

Land Surface Elevation (ft/msl)

Depth to water From top of well casing = D_w 10.29 (ft)

Depth to water From land surface (ft)

Groundwater Elevation

Groundwater Elevation (ft/msl)

Well Depth = D 14.80 (ft)

Pump Placement (ft)

6.86 (STD) PH

11996 uS/cm Specific Conductivity

Sample Temp. 24.05 (°C)

Bottle			Analysis	Field Filt. Y/N
Type	Size	Preservative		
P	250ml	HNO3	Metals	N
P	250ml	HNO3	Metals	N
P	250ml	ICE	Anions	N
P	500ml	ICE	Anions ^c	N

Sample Appearance: Clear Odor: none Color: Clear Turbidity: 2.77
 Weather Conditions: Clear Calm 90°
 Other: Large water is clear with no odor well went dry after 1 gallon

WELL VOLUME CALCULATION

V=(D-D_w) (A) (7.48 gal/ft³) where
 V= volume of standing water in well
 D= depth to bottom of well below measuring point
 D_w=depth to water below measuring point
 A=cross sectional area
 2" dia. A= 0.0218 4" dia. A= 0.0872

Well Appearance Normal: Yes No
 If No, Explain _____

Procedure: ELS Groundwater SOP 5-7D

Date: 7/25/18
 Sampler: CP/ES
 Employer: LCRA



LCRA Environmental Laboratory Services
3505 Montopolis Drive
Austin, TX 78744
Phone: (512)730-6022
Fax: (512)730-6021

September 7, 2018

BECKIE LOEVE
FAYETTE POWER PLANT
6549 POWER PLANT RD
MAIL STOP FPP
La Grange, TX 78945

RE: Final Analytical Report
ELS Workorder Q1834079

Attn: BECKIE LOEVE

Enclosed are the analytical results for sample(s) received by LCRA Environmental Laboratory Services. Results reported herein conform to the most current NELAP standards, where applicable, unless otherwise narrated in the body of the report. This final report provides results related only to the sample(s) as received for the above referenced work order.

Thank you for selecting ELS for your analytical needs. If you have any questions regarding this report, please contact us at (512) 356-6022. We look forward to assisting you again.

Authorized for release by:

Jason Woods
Project Manager
jason.woods@lcra.org



Enclosures

Report ID: 343645 - 6222665

Page 1 of 13

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SAMPLE SUMMARY

Workorder: Q1834079

Lab ID	Sample ID	Matrix	Date Collected	Date Received
Q1834079001	CBL - 341I	Aqueous	8/24/2018 13:45	8/24/2018 15:20
Q1834079002	CBL - 308I	Aqueous	8/24/2018 12:22	8/24/2018 15:20
Q1834079003	CBL - 308I Dissolved 0.45	Aqueous	8/24/2018 12:22	8/24/2018 15:20
Q1834079004	Field Blank	Aqueous	8/24/2018 13:43	8/24/2018 15:20

Report Definitions

LOD Limit of Detection
LOQ Limit of Quantitation
ML Maximum Limit - Client Specified
DF Dilution Factor
Qual Qualifiers

Report ID: 343645 - 6222665

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PROJECT SUMMARY

Workorder: Q1834079

Workorder Comments

WORKORDER COMMENTS: CBL-341I was sampled on August 24th, 2018 due to a scheduling error by the ELS field staff. The remaining CCR groundwater monitoring wells were scheduled and collected on a semi-annual frequency July 25th - July 27th, 2018.



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ANALYTICAL RESULTS

Workorder: Q1834079

Lab ID: **Q1834079001** Date Received: 8/24/2018 15:20 Matrix: Aqueous
 Sample ID: **CBL - 341I** Date Collected: 8/24/2018 13:45 Sample Type: SAMPLE
 Project ID: **FPP GWMP CCR**

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Chloride	1910 mg/L	50.0	20.0	50		08/24/18 23:25	ML	08/24/18 23:25		ML
Fluoride	0.114 mg/L	0.100	0.0400	10		08/27/18 12:50	ML	08/27/18 12:50		ML
Sulfate	376 mg/L	50.0	20.0	50		08/24/18 23:25	ML	08/24/18 23:25		ML
TOTAL DISSOLVED SOLIDS										
Analysis Desc: SM2540C, TDS		Preparation Method: SM2540C, TDS								
		Analytical Method: SM2540C, TDS								
Total Dissolved Solids(TDS)	4800 mg/L	250	250	100		08/29/18 15:29	ADG	08/29/18 15:29		ADG
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200	1		09/05/18 16:54	MM	09/06/18 13:37		FM
Calcium Total	824 mg/L	1.00	0.350	5		09/05/18 16:54	MM	09/06/18 13:47		FM
Field Parameters										
Analysis Desc: TCEQ SOP V1		Preparation Method: TCEQ SOP V1								
		Analytical Method: TCEQ SOP V1								
Temperature	23.85 C				1	08/24/18 13:45	CCP	08/24/18 13:45	CCP	N
pH	5.82 pH				1	08/24/18 13:45	CCP	08/24/18 13:45	CCP	N
Specific Conductance	6076 us/cm				1	08/24/18 13:45	CCP	08/24/18 13:45	CCP	N



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ANALYTICAL RESULTS

Workorder: Q1834079

Lab ID: Q1834079002	Date Received: 8/24/2018 15:20	Matrix: Aqueous
Sample ID: CBL - 308I	Date Collected: 8/24/2018 12:22	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: E300.0, Anions		Preparation Method: E300.0, Anions								
		Analytical Method: E300.0, Anions								
Fluoride	2.33 mg/L	0.500	0.200	50		08/24/18 23:42	ML	08/24/18 23:42	ML	



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ANALYTICAL RESULTS

Workorder: Q1834079

Lab ID: Q1834079003 Date Received: 8/24/2018 15:20 Matrix: Aqueous
 Sample ID: CBL - 308I Dissolved 0.45 Date Collected: 8/24/2018 12:22 Sample Type: SAMPLE
 Project ID: FPP GWMP CCR

Parameters	Results	Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
------------	---------	-------	-----	-----	----	----	----------	----	----------	----	------

INORGANICS

Analysis Desc: E300.0, Anions Preparation Method: E300.0, Anions
 Analytical Method: E300.0, Anions

Fluoride Dissolved	1.83	mg/L	0.500	0.200	50		08/25/18	ML	08/25/18	ML	
--------------------	------	------	-------	-------	----	--	----------	----	----------	----	--



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ANALYTICAL RESULTS

Workorder: Q1834079

Lab ID: Q1834079004	Date Received: 8/24/2018 15:20	Matrix: Aqueous
Sample ID: Field Blank	Date Collected: 8/24/2018 13:43	Sample Type: SAMPLE
Project ID: FPP GWMP CCR		

Parameters	Results Units	LOQ	LOD	ML	DF	Prepared	By	Analyzed	By	Qual
INORGANICS										
Analysis Desc: SW6010B ICP-AES		Preparation Method: SW3010A, Metals Prep								
		Analytical Method: SW6010B ICP-AES								
Boron Total	<0.0500 mg/L	0.0500	0.0200		1	09/05/18 16:54	MM	09/06/18 13:43	FM	
Calcium Total	0.220 mg/L	0.200	0.0700		1	09/05/18 16:54	MM	09/06/18 13:43	FM	



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ANALYTICAL RESULTS QUALIFIERS

Workorder: Q1834079

PARAMETER QUALIFIERS

Lab ID: Q1834079001

N Not Accredited



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QUALITY CONTROL DATA

Workorder: Q1834079

QC Batch: WET/18133 **Analysis Method:** E300.0, Anions
QC Batch Method: E300.0, Anions
Associated Lab Samples: Q1834079001, Q1834079002, Q1834079003

METHOD BLANK: 1118266

Parameter	Units	Blank Result	Reporting Limit	Qual
Chloride	mg/L	<1.00	1.00	
Fluoride	mg/L	<0.0100	0.0100	
Fluoride Dissolved	mg/L	<0.0100	0.0100	
Sulfate	mg/L	<1.00	1.00	

LABORATORY CONTROL SAMPLE: 1118267

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Qual
Chloride	mg/L	30	30.1	100	90 - 110	
Fluoride	mg/L	1	1	99.8	90 - 110	
Fluoride Dissolved	mg/L	1	1	99.8	90 - 110	
Sulfate	mg/L	30	30	100	90 - 110	

MATRIX SPIKE: 1118268 DUPLICATE: 1118269 ORIGINAL: Q1833961001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Chloride	mg/L	9.84	20	29.3	29.3	97.3	97.4	80 - 120	0	20	
Fluoride	mg/L	.2	1	1.11	1.13	91.7	93.3	80 - 120	1.79	20	
Fluoride Dissolved	mg/L	.2	1	1.11	1.13	91.7	93.3	80 - 120	1.79	20	
Sulfate	mg/L	25.6	20	46	45.8	102	101	80 - 120	.436	20	

Qualifiers

- S - Spike Recovery Outside Recovery Limits
- R - RPD Outside Recovery Limits
- B - Analyte Detected in Method Blank



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QUALITY CONTROL DATA

Workorder: Q1834079

QC Batch: MEP/8614 Analysis Method: SW6010B ICP-AES
 QC Batch Method: SW3010A, Metals Prep
 Associated Lab Samples: Q1834079001, Q1834079004

LABORATORY CONTROL SAMPLE: 1123338

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max	Qual
Boron Total	mg/L	1	.89	.91	88.8	90.5	80 - 120	1.9	20	
Calcium Total	mg/L	10	9.17	9.29	91.7	92.9	80 - 120	1.3	20	

METHOD BLANK: 1123340

Parameter	Units	Blank Result	Reporting Limit	Qual
Boron Total	mg/L	<0.0500	0.0500	
Calcium Total	mg/L	<0.200	0.200	

MATRIX SPIKE: 1123341 DUPLICATE: 1123342 ORIGINAL: Q1834079001

Parameter	Units	Original Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qual
Boron Total	mg/L	.01	1	1.29	1.36	129	136	75 - 125	5.28	20	S
Calcium Total	mg/L	824	10	765	802	-593	-219	75 - 125	4.72	20	S

Qualifiers

- S - Spike Recovery Outside Recovery Limits
- R - RPD Outside Recovery Limits
- B - Analyte Detected in Method Blank



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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: Q1834079

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
Q1834079001	CBL - 341I			E300.0, Anions	WET/18133
Q1834079002	CBL - 308I			E300.0, Anions	WET/18133
Q1834079003	CBL - 308I Dissolved 0.45			E300.0, Anions	WET/18133
Q1834079001	CBL - 341I			E300.0, Anions	WET/18143
Q1834079001	CBL - 341I			SM2540C, TDS	WET/18163
Q1834079001	CBL - 341I	SW3010A, Metals Prep	MEP/8614	SW6010B ICP-AES	MET/6667
Q1834079004	Field Blank	SW3010A, Metals Prep	MEP/8614	SW6010B ICP-AES	MET/6667



LCRA - Environmental Lab
3505 Montopolis Dr.
Austin, TX 78744

Phone: (512) 356-6022 or 1-800-776-5272
Fax: (512) 356-6021
https://els.lcra.org

LCRA Environmental Laboratory Services
Request for Analysis Chain-of-Custody Record

Q1834079

Project:	FPP CCR Wells	Client:	LCRA
Collector:	<i>Calderon</i>	Contact:	
Event#:	1415326 / 6848	Phone:	

Report To: BECKIE LOEVE
FAYETTE POWER PLANT
6549 POWER PLANT RD
MAIL STOP FPP
La Grange, TX 78945

Lab ID#:	
Client PO:	
Invoice To:	BECKIE LOEVE FAYETTE POWER PLANT 6549 POWER PLANT RD MAIL STOP FPP La Grange, TX 78945

LAB USE ONLY	Sample ID *	Collected *		Matrix* AQ = Aqueous S = Solid T = Tissue DW = Drinking Water	Container(s) Type/Preservative/Number *					Requested Analysis *					
		Date*	Time * HH:MM		COMPOSITE Y/N	FILTERED Y/N	250PHNO3	500PU	250PU	2540-AMTDS	6010-AM	Fid_FP	300.0AM-28		
001 002 003 004	1 CBL - 341I	8/24/18	1345	AQ	✓	N	1	1				X	X	X	X
	2 CBL - 308I	8/24/18	1222	AQ	✓	N			1						X
	3 CBL - 308I - Dissolved 0.45	8/24/18	1222	AQ	N	Y			1						X
	4 Field Blank	8/24/18	1343	AQ	✓	✓	1					X			
	5														
	6														
	7														

Transfers	Relinquished By	Date/Time	Received By	Date/Time	Cooler Temp:				Client Special Instructions:
					#	T#	Obs	Corr.	
1	<i>Calderon</i>	8/24/18 1520	<i>J-L</i>	8/24/18 1530					
2					1	8	2.12	2.12	
3					2				

Note: Relinquishing sample(s) and signing the COC, client agrees to accept and is bound by the ELS Standard Terms and Conditions. All fields with an asterisk (*) are required to be completed.



Q1834079 343645

FPP - Groundwater - CCR Wells - Purge Data

Date	Time	Temp	DO	DOsat	pH	SpCond	Orp	Monitoring
M/D/Y	HH:MM:SS	C	mg/L	%		uS	mV	Well
8/24/2018	11:31:31	25.62	5.53	69.9	6.48	10229	231.7	CBL 308I
8/24/2018	11:34:31	23.87	5.28	64.7	6.34	10308	244.3	CBL 308I
8/24/2018	11:37:31	23.36	5.18	62.8	6.25	10307	273.1	CBL 308I
8/24/2018	11:40:31	23.32	5.10	61.9	6.18	10223	300.8	CBL 308I
8/24/2018	11:43:31	23.18	5.03	60.8	6.12	10179	330.4	CBL 308I
8/24/2018	11:46:31	23.18	4.81	58.1	6.10	10101	352.7	CBL 308I
8/24/2018	11:49:31	23.27	4.75	57.5	6.07	9994	368.2	CBL 308I
8/24/2018	11:52:31	23.29	4.55	55.1	6.02	9905	384.1	CBL 308I
8/24/2018	11:55:31	23.38	4.43	53.7	5.96	9847	399.4	CBL 308I
8/24/2018	11:58:31	23.35	4.45	53.9	5.92	9824	412.0	CBL 308I
8/24/2018	12:01:31	23.33	4.27	51.7	5.87	9784	420.5	CBL 308I
8/24/2018	12:04:31	23.34	4.13	50.0	5.83	9744	428.9	CBL 308I
8/24/2018	12:07:31	23.47	4.05	49.2	5.84	9707	434.7	CBL 308I
8/24/2018	12:10:31	23.41	4.09	49.6	5.81	9695	439.0	CBL 308I
8/24/2018	12:13:31	23.49	3.99	48.4	5.78	9683	444.2	CBL 308I
8/24/2018	12:16:31	23.53	3.94	47.9	5.76	9675	448.4	CBL 308I
8/24/2018	12:19:31	23.47	3.86	46.8	5.76	9685	452.0	CBL 308I
8/24/2018	12:22:31	23.49	3.82	46.4	5.77	9655	454.4	CBL 308I
8/24/2018	12:49:27	28.79	8.83	116.7	6.66	6617	266.7	CBL 341I
8/24/2018	12:52:27	23.84	5.05	60.9	6.13	6155	340.1	CBL 341I
8/24/2018	12:55:27	23.53	4.10	49.2	5.99	6088	378.7	CBL 341I
8/24/2018	12:58:27	23.54	3.86	46.3	5.96	6056	406.2	CBL 341I
8/24/2018	13:01:27	23.52	4.21	50.5	5.95	6053	424.4	CBL 341I
8/24/2018	13:04:27	23.57	4.11	49.4	5.92	6041	437.5	CBL 341I
8/24/2018	13:07:27	23.57	4.09	49.1	5.90	6049	446.2	CBL 341I
8/24/2018	13:10:27	23.71	3.96	47.7	5.88	6048	452.6	CBL 341I
8/24/2018	13:13:27	23.78	3.97	47.9	5.86	6055	456.8	CBL 341I
8/24/2018	13:16:27	23.79	3.89	46.9	5.85	6057	460.5	CBL 341I
8/24/2018	13:19:27	23.65	3.95	47.5	5.84	6073	464.0	CBL 341I
8/24/2018	13:22:27	23.79	3.81	46.0	5.81	6060	467.8	CBL 341I
8/24/2018	13:25:27	23.80	3.85	46.4	5.80	6064	470.8	CBL 341I
8/24/2018	13:28:27	23.82	3.82	46.1	5.80	6066	472.8	CBL 341I
8/24/2018	13:31:27	23.83	3.81	46.0	5.82	6071	473.0	CBL 341I
8/24/2018	13:34:27	23.87	3.79	45.8	5.84	6068	472.5	CBL 341I
8/24/2018	13:36:02	23.86	3.82	46.1	5.88	6064	388.8	CBL 341I
8/24/2018	13:39:02	23.86	3.79	45.8	5.84	6072	447.2	CBL 341I
8/24/2018	13:42:02	23.87	3.65	44.1	5.82	6070	463.4	CBL 341I
8/24/2018	13:45:29	23.85	3.64	43.9	5.82	6076	398.5	CBL 341I



Field Information Form

Sample Date: 8/24/18
 Sample Time: 1345
 Sample ID: E18L3411

PURGING INFORMATION

PURGE DATE (YY MM DD) 1|8|08|24 START PURGE (2400 Hr. Clock) 1|2|5|3 V= 4|9 WATER VOL. IN CASING (Gallons) 1|4|7 ACTUAL VOLUME PURGED (Gallons) 8

PURGING AND SAMPLING EQUIPMENT

Purging Equipment Dedicated I N I Sampling Equipment Dedicated I N I

Purging Device	<input checked="" type="checkbox"/> B	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	X-	
Sampling Device	<input checked="" type="checkbox"/> B	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X-	Purging Other (Specify)
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	X-	Sampling Other (Specify)
Purging Material	<input checked="" type="checkbox"/> F	A-Teflon	C-Polypropylene	E-Polyethylene	X-	Purging Other (Specify)
Sampling Material	<input checked="" type="checkbox"/> F	B-Stainless Steel	D-PVC		X-	Sampling Other (Specify)
Tubing-Purging	<input checked="" type="checkbox"/> F	A-Teflon	D-Polypropylene	F-Silicon	X-	Purging Other (Specify)
Tubing-Sampling	<input checked="" type="checkbox"/> F	B-Tygon	E-Polyethylene	G-Combination teflon/Polypropylene	X-	Purging Other (Specify)
		C-Rope X-			X-	Sampling Other (Specify)

(Specify)

FIELD MEASUREMENTS

Well Elevation (ft/msl) Land Surface Elevation (ft/msl)
 Depth to water From top of well casing = D_w 1|6|4|7 (ft) Depth to water From land surface (ft)
 Groundwater Elevation (ft/msl) Groundwater Elevation (ft/msl)
 Well Depth = D 4|6|4|3 (ft) Pump Placement 3|9 (ft)
 PH 5|8|2 (STD) Specific Conductivity 60|7|6 uS/cm Sample Temp. 23|8|5 (°C)

Bottle			Analysis	Field Fil. Y/N
Type	Size	Preservative		
P	250ml	H ₂ O ₂	Metals	N
P	500ml	ICE	Anions	N
P	250ml	H ₂ O ₂	Metals Field Blank	N

Sample Appearance: Clear Odor: none Color: clear Turbidity: 4.54
 Weather Conditions: Clear Calm 103°
 Other: Purge water is clear with no odor. Small amount of air bubbles in tubing while purging well.

WELL VOLUME CALCULATION

V=(D-D_w) (A) (7.48 gal/ft³) where
 V= volume of standing water in well
 D= depth to bottom of well below measuring point
 D_w=depth to water below measuring point
 A= cross sectional area

2" dia. A = 0.0218 4" dia. A = 0.0872

Well Appearance Normal: Yes No
 If No, Explain _____

Procedure: ELS Groundwater SOPS-7D

Date: 8/24/18
 Sampler: CP
 Employer: LCRA



Field Information Form

Sample Date: 8/24/18
 Sample Time: 1222
 Sample ID: CBL308T

PURGING INFORMATION

PURGE DATE (YY MM DD): 180824 START PURGE (2400 Hr. Clock): 1138 V= 117 3 X WELL VOL. IN (Gallons): 511 ACTUAL VOLUME PURGED (Gallons): 6

PURGING AND SAMPLING EQUIPMENT

Purging Equipment Dedicated Y N Sampling Equipment Dedicated Y N

Purging Device	<input checked="" type="checkbox"/> B	A-Submersible Pump	D-Gas Lift Pump	G-Bailer	
Sampling Device	<input checked="" type="checkbox"/> B	B-Peristaltic Pump	E-Venturi Pump	H-Scoop/Shovel	X-
		C-Bladder Pump	F-Dipper/Bottle	I-Piston Pump	X-
					Purging Other (Specify)
Purging Material	<input checked="" type="checkbox"/> E	A-Teflon	C-Polypropylene	E-Polyethylene	X-
Sampling Material	<input checked="" type="checkbox"/> F	B-Stainless Steel	D-PVC		X-
					Purging Other (Specify)
Tubing-Purging	<input checked="" type="checkbox"/> F	A-Teflon	D-Polypropylene	F-Silicon	X-
Tubing-Sampling	<input checked="" type="checkbox"/> F	B-Tygon	E-Polyethylene	G-Combination	X-
				teflon/Polypropylene	X-
					Purging Other (Specify)
					Sampling Other (Specify)

C-Rope X- _____ (Specify)

FIELD MEASUREMENTS

Well Elevation: _____ (ft/msl) Land Surface Elevation: _____ (ft/msl)
 Depth to water From top of well casing = D_w: 124.87 (ft) Depth to water From land surface: _____ (ft)
 Groundwater Elevation: _____ (ft/msl) Groundwater Elevation: _____ (ft/msl)
 Well Depth = D: 35.25 (ft) Pump Placement: 30 (ft)
 PH: 5.77 (STD) Specific Conductivity: 9655 us/cm Sample Temp.: 23.49 (°C)

Bottle			Analysis	Field Filt. Y/N
Type	Size	Preservative		
P	250	ICE	Anion S	N
P	250	ICE	Anion S .45 micron Filters	Y

Sample Appearance: clear Odor: none Color: clear Turbidity: 0.78 Filtered = 0.52
 Weather Conditions: clear, calm 101°
 Other: Purge water is clear with no odor, large amount of air pumping up in Tubing

WELL VOLUME CALCULATION

V=(D-D_w) (A) (7.48 gal/ft³) where
 V= volume of standing water in well
 D= depth to bottom of well below measuring point
 D_w=depth to water below measuring point
 A= cross sectional area

2" dia. A = 0.0218 4" dia. A = 0.0872

Well Appearance Normal: Yes No _____
 If No, Explain _____

Procedure: ELC Groundwater SOP 5-7A

Date: 8/24/18
 Sampler: CP
 Employer: LCRA