

ANNUAL GROUNDWATER MONITORING REPORT FOR 2018

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

January 31, 2019

Prepared For:

40 CFR Part 257.90(e)

and

Colorado Department of Public Health & Environment
Hazardous Materials & Waste Management Division
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1.0 INTRODUCTION

This annual report summarizes the groundwater monitoring activities performed during 2018 in association with the Coal Combustion Residuals (CCR) Landfill at Colorado Springs Utilities' (Utilities') Clear Spring Ranch (CSR), located west-southwest of the intersection of Interstate 25 and Ray Nixon Road (Exit 125) in El Paso County, Colorado.

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

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

The groundwater monitoring activities were conducted in general accordance with the Professional Engineer certified and CDPHE approved¹ Coal Combustion Residuals Landfill Groundwater Detection Monitoring Plan.²

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

1.1 Groundwater Classification and Management

From its inception in the late 1970's, the CCR Landfill has been designed and operated to protect the Fountain Creek Alluvial Aquifer, which is located ~0.5 mile downgradient of the CSR Retention Dam. The Fountain Creek Alluvial Aquifer is the closest aquifer to the CCR Landfill that could be used for drinking water purposes. There are no drinking water wells located within the CSR CD Area, in which the CCR Landfill is located, and no reasonable potential for future domestic or agricultural uses of groundwater within the CD Area, as this area is owned and controlled by Utilities.

Previously evaluated groundwater quality data indicates that groundwater upgradient of and underlying the CSR CD Area, in which the CCR Landfill is located, has a total dissolved solids (TDS) concentration exceeding 10,000 mg/l. The EPA, in their Guidelines for Groundwater Classification Under the EPA Groundwater Protection Strategy³ (Guidelines), classifies groundwater with TDS concentrations greater than or equal to 10,000 mg/l as Class III drinking water. Class III is defined as "groundwater not a potential source of drinking water and/or limited beneficial use."

To protect the Fountain Creek Alluvial Aquifer, groundwater associated with the CCR Landfill is managed via a retention dam and pump back system. The Retention Dam was constructed downgradient of the CCR Landfill in 1978 to prevent the off-site migration of surface water and groundwater. The dam has a bentonite core and is keyed into the underlying Pierre Shale bedrock. To improve the dam's performance, in the

¹ E-Mail from Jill Parisi / CDPHE to Patti Zietlow / Colorado Springs Utilities Re: Clear Spring Ranch CCR Landfill Groundwater Detection Monitoring Plan. November 14, 2017.

² AECOM. Coal Combustion Residuals Landfill Groundwater Detection Monitoring Plan, Clear Spring Ranch, El Paso County, Colorado. Revision 0. October 2017.

³ U.S. EPA. Guidelines for Groundwater Classification Under the EPA Groundwater Protection Strategy. Office of Groundwater Protection. June 1988.

1990s, Utilities installed a bentonite barrier wall along the upgradient toe of the dam, and a french drain & pump back system downgradient of the dam. The french drain captures water seepage through the dam. The drain extends for ~525 feet along the southern portion of the dam. The french drain's collection trench is gravel filled and slopes towards a sump located at the northern end of the trench. An extraction well and pump remove water collected in the sump and pump it back to the upgradient retention dam pond. The dam is registered with and inspected by the Office of the State Engineer - Division of Water Resources - Dam Safety Branch (Dam I.D. #100401). A site plan is presented in Appendix A.

2.0 GROUNDWATER FLOW ANALYSIS & GEOLOGIC PROFILE

The CCR Landfill is located within a small, west-east trending topographic depression that is underlain with, and bounded to the north and south, by Pierre Shale. A 1993 Brown & Caldwell investigation of CSR involving laboratory hydraulic conductivity tests on cores of un-weathered Pierre Shale indicated that the Pierre Shale is essentially impermeable⁴. The surficial geology consists of ~4 to ~50 feet of alluvial sediments⁵ deposited on top of the Pierre Shale.

A figure of the site showing the potentiometric groundwater surface, interpolated elevations of the underlying Pierre Shale bedrock, and the estimated boundary of the Fountain Creek Alluvial Aquifer is presented in Appendix A.

The groundwater surface was prepared using February 2018 groundwater elevation measurements. The bedrock elevations were obtained from historical on-site exploratory and monitoring well boring logs. To aid in the *visualization* of the aquifer boundary, wherever a groundwater contour intersects a bedrock contour at the same elevation, the groundwater contour was cut at that theoretical intersection. For example, where the groundwater contour with an elevation of 5,400 feet intersects the bedrock contour with the same elevation, the water level generally would not be higher on the ridge than 5,400 feet.

The groundwater surface data suggest that groundwater beneath the CCR Landfill generally flows in a southeasterly direction towards the Retention Dam.

3.0 GROUNDWATER QUALITY SAMPLING & ANALYSIS

As detailed in the CCR Landfill Groundwater Detection Monitoring Plan, the current groundwater quality monitoring well network for the CCR Landfill is comprised of five background wells (CC-1, FC-1, FC-2, FC-3A, & FC-3B), four downgradient wells (SC-10, SC-11, SC-12, & SC-13) along the eastern edge of the landfill, and one crossgradient well (SC-14) on the south side of the landfill. The locations of the monitoring wells are depicted on the figure presented in Appendix A.

Utilities' CCR Landfill entered Assessment Monitoring in 2017, as the following constituents were measured at concentrations estimated as being statistically significantly higher than background:

- ▼ Boron within monitoring wells SC-11 and SC-12.
- ▼ Calcium within monitoring well SC-11.

Both Detection Monitoring and Assessment Monitoring continued during 2018.

⁴ Haley and Aldrich. Hannah Ranch Dam Seepage Analysis Preliminary Engineering Report. April 1994.

⁵ Layne Western. Ash Disposal Site, R.D. Nixon Power Plant. Carl Nuzman, Bruce Maxwell and Carl Larson. August 1977.

3.1 Detection Monitoring

During 2018, Utilities collected groundwater samples semi-annually from the monitoring wells referenced above, and analyzed the samples using EPA and/or industry accepted methods for the detection monitoring constituents listed in Appendix III of the CCR Rule (boron, calcium, chloride, fluoride, pH, sulfate, & total dissolved solids). However, laboratory data for detection monitoring parameter sulfate was inadvertently not obtained in 2018. The lack of 2018 sulfate data did not affect the CCR Landfill's groundwater monitoring status. The CCR Landfill entered assessment monitoring during 2017 and remains in assessment monitoring. Procedures have been put in place to ensure that laboratory data for all detection and assessment monitoring parameters is obtained for subsequent sampling events.

The laboratory analytical results and sampling dates are summarized in the table presented in Appendix C. Copies of the analytical reports and chain of custody documentation are presented in Appendix D. The analytical reports specify the analytical method used for each analyte.

3.2 Assessment Monitoring

During 2018, Utilities collected groundwater samples semi-annually from the monitoring wells referenced above, and analyzed the samples using EPA and/or industry accepted methods for the assessment monitoring constituents listed in Appendix IV of the CCR Rule (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, fluoride, lead, lithium, mercury, molybdenum, radium 226, radium 228, selenium, and thallium).

The laboratory analytical results and sampling dates are summarized in the table presented in Appendix C. Copies of the analytical reports and chain of custody documentation are presented in Appendix D. The analytical reports specify the analytical method used for each analyte.

3.3 Quality Assurance / Quality Control

Quality assurance and quality control (QA / QC) measures were implemented to ensure the reliability and validity of field and analytical data. Appendix D contains copies of the laboratory analytical reports along with QA / QC data. The QA / QC data includes duplicate samples (identified as Well ID_Dup), equipment / decontamination blanks (identified by Equip-Blk), method blanks (identified as LRB – Lab Reagent Blank) and laboratory control sample results. The sample duplicates show consistency in the lab work performed. No significant anomalies were reported within the laboratory's QA / QC reports.

3.4 Monitoring Well Installation, Repair and Abandonment

No CCR Landfill groundwater monitoring wells were installed or decommissioned during 2018. In September 2018, repairs were made to monitoring well SC-12, which sustained damage when it was backed over by a loader.

4.0 STATISTICAL ANALYSIS RESULTS SUMMARY

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

The statistical analysis suggests that boron continues to be present in downgradient wells SC-11 and SC-12 at statistically significantly higher concentrations than background. In addition, the 2018 groundwater sampling results suggest that fluoride is present in downgradient monitoring wells SC-12, SC-13 and SC-14 at statistically significantly higher concentrations than background. During 2018, calcium was no longer found to be present at statistically significantly higher concentrations than background. Because of these findings, Assessment Monitoring will continue during 2019.

5.0 GROUNDWATER PROTECTION STANDARDS

Groundwater protection standards (GWPS) were generated in accordance with §257.95(d)(2)⁶ of the CCR Rule. The Rule states in §257.95(h) that the groundwater protection standards shall be:

- (1) *For constituents for which a maximum contaminant level (MCL) has been established under §141.62 and §141.66 of this title, the MCL for that constituent;*
- (2) *For the following constituents:*
 - (i) *Cobalt 6 micrograms per liter (ug/l);*
 - (ii) *Lead 15 ug/l;*
 - (iii) *Lithium 40 ug/l;*
 - (iv) *Molybdenum 100 ug/l.*
- (3) *For constituents for which the background level is higher than the levels identified under paragraphs (h)(1) and (h)(2) of this section, the background concentration.*

To create the GWPS, an upper tolerance limit (UTL) was calculated for each federal CCR Rule Appendix IV parameter to establish the background concentration for that constituent. The UTL was then compared to the MCL or federal CCR Rule standard. If the UTL was greater than the standard, then the UTL was used as the groundwater protection standard.

GWPS were calculated in August 2018 after the first 2018 semi-annual sampling event, and again in January 2019 after the second 2018 semi-annual sampling event. The GWPS resulting from the January 2019 calculation are presented in yellow highlight in the table below:

⁶ 40 CFR § 257.95(d)(2) states that facilities must “establish groundwater protection standards for all constituents detected pursuant to paragraph (b) or (d) of this section.”

Groundwater Protection Standards

Appendix IV Constituent	MCL (mg/l)	Federal CCR Rule Standard (mg/l)	Background Higher than Standard *	Upper Tolerance Limit
Antimony	0.006	-	Yes	0.008
Arsenic	0.01	-	Yes	0.01238
Barium	2	-	Yes	2.833
Beryllium	0.004	-	No	0.0002
Cadmium	0.005	-	No	0.005
Chromium	0.1	-	No	0.01
Cobalt	-	0.006	Yes	0.0139
Fluoride	4	-	No	0.985
Lead	-	0.015	No	0.009
Lithium	-	0.040	Yes	1.16
Mercury	0.002	-	No	0.0.000024
Molybdenum	-	0.100	No	0.0201
Selenium	0.05	-	Yes	0.2024
Thallium	0.002	-	Yes	0.0063
Radium 226 & 228 Combined	5 pCi/l	-	No	3.361

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

Once GWPS have been calculated, §257.95(g)(3)⁷ requires that the owner / operator determine if any of the Appendix IV constituents are present at a statistically significant level exceeding the GWPS. To determine if any of the Appendix IV constituents are present at a statistically significant level exceeding the GWPS, a confidence interval was calculated for each constituent and compared to the GWPS. The confidence interval calculations are provided in Appendix B for both the August 2018 and January 2019 statistical tests, and indicate that the GWPS have not been exceeded.

6.0 SUMMARY OF FINDINGS

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

Statistical analysis suggests that boron concentrations at downgradient groundwater monitoring wells SC-11 and SC-12 and fluoride concentrations at downgradient ground monitoring wells SC-12, SC-13 and SC-14 exhibit a statistically significant increase over background concentrations; therefore, the CCR Landfill continues in Assessment Monitoring.

Statistical analysis suggests that no GWPS have been exceeded.

⁷ 40 CFR § 257.95(g)(3) Within 90 days of finding that any of the constituents listed in appendix IV to this part have been detected at a statistically significant level exceeding the groundwater protection standards, the owner or operator must either..."

6.1 **Risk**

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

- ▼ Groundwater underlying the CSR CD Area (which includes the CCR Landfill) is not used for domestic or agricultural purposes. There are no drinking water or agricultural wells within the CD Area and no reasonable potential for future domestic or agricultural uses of groundwater within this area, since it is owned and controlled by Utilities. The high TDS of groundwater upgradient of and beneath the CD Area also discourages its use for domestic or agricultural purposes.
- ▼ The CSR Retention Dam inhibits the off-site migration of groundwater associated with the CCR Landfill; therefore, limiting the potential for exposure. In general, the Retention Dam largely hydrologically disconnects the CCR Landfill associated groundwater from the downgradient Fountain Creek Alluvial Aquifer (i.e., the closest drinking water source).
- ▼ Statistical analysis suggests that no GWPS have been exceeded.

6.2 **Activities for 2019**

The CCR Landfill groundwater monitoring program was reviewed in its entirety, and in consideration of the complex geology and other constraints, Utilities believes that the program is appropriate for the site and compliant with the EPA's CCR Rule. For 2019, Utilities plans to continue with Detection Monitoring and Assessment Monitoring.



Report Distribution List:

- ▼ Jill Parisi / Colorado Department of Public Health & Environment
- ▼ Mark Gebhart / El Paso County Planning Department
- ▼ Bill Maher / Colorado Springs Utilities - Nixon Power Plant
- ▼ Utilities CCR Landfill Website
- ▼ EVS File: 550-688-7

APPENDIX A

Site Plan & Groundwater Elevation Contours



Colorado Springs Utilities

It's how we're all connected

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

Orientation:



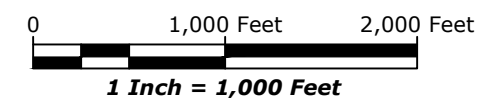
Legend:

- Coal Combustion Residuals (CCR) Landfill
- Retention Dam
- Boundary - Clear Spring Ranch Property
- Boundary - Certificate of Designation
- Boundary - Fountain Creek Alluvial Aquifer
- Boundary - Ground Water Zone Interpolation
- Boundary - Surficial Geologic Mapping **
 - Kp - Pierre Shale Bedrock
 - Qp - Piney Creek Alluvium
 - Qs - Slocum Alluvium
 - Qv - Verdos Alluvium
- Contour - Ground Water Surface Elevation * (dashed portions are estimated)
- Contour - Bedrock Surface ***
- Contour - Elevation - Feet
- Ground Water Monitoring Well Location
- Ground Water Monitoring Well ID

Notes:

- * Ground Water Elevation Measurements Collected From Wells CC-1, FC-1, FC-2, FC-3A, SC-10 - SC-14, SCBD-2, SCBD-4, SCBD-5, SCBD-6, SCBD-8, HRMW-01 - HRMW-08 During February 2018.
- ** USGS Geologic Map of the Pueblo Quadrangle by Scott, Taylor, Epis, & Wobus, 1976.
- *** Interpolation Based Upon On-Site Exploratory Borehole Measurements.

Scale:



SITE PLAN & GROUND WATER ELEVATION CONTOURS 2018

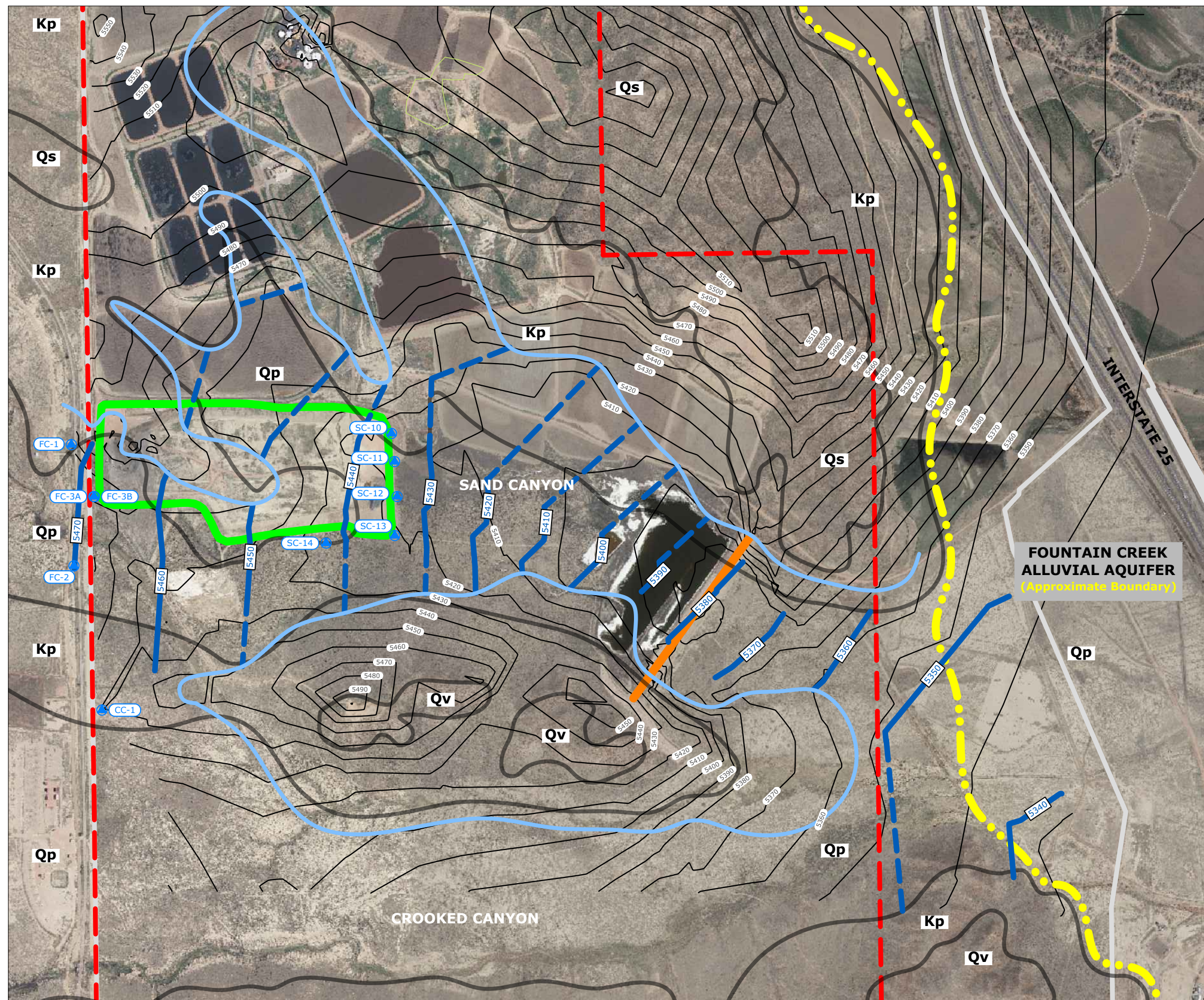
Clear Spring Ranch
Coal Combustion Residuals Landfill
El Paso County

Project No: 550-504-7

Prepared By: Environmental Services

Date: January 30, 2019

Figure
Number
1



APPENDIX B

Statistical Analysis Reports

CCR Landfill Statistical Evaluation

Groundwater Protection Standards

Prepared By:
Dr. Kirk Cameron
Mac Stat Consulting LTD
Colorado Springs, CO
August 2018

1.1 REGULATORY GUIDANCE

Regulatory guidance provided in 40 CFR 257.90 and 6 CCR 1007-2 Part 1 Appendix B §B3(G) specifies that a CCR groundwater monitoring program include selection of the statistical procedures to be used for evaluating groundwater quality data as required by 40 CFR 257.93. Groundwater quality monitoring data collected under the detection monitoring program outlined in this plan included collection and analysis of a minimum of eight independent samples for the background and downgradient compliance wells as required by 40 CFR 257.94(b). The samples were analyzed for the constituents listed in 40 CFR 257 Appendices III and IV.

After the eight sets of groundwater samples were collected and analyzed, these data were statistically evaluated to determine if there were any statistically significant increases over background concentrations for the Appendix III and IV constituents. In determining whether a statistically significant increase (SSI) occurred, Utilities compared the constituent concentrations at the compliance and the background wells using one or more of the statistical methods discussed below.

40 CFR 257.93(f) outlines the statistical methods available to evaluate groundwater monitoring data. The statistical test(s) chosen shall be conducted separately for each constituent in each monitoring well and will be appropriate for the constituent data and their distribution. The available statistical methods include:

A parametric analysis of variance (ANOVA) followed by multiple comparison procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's mean and the background mean levels for each constituent;

- An analysis of variance (ANOVA) based on ranks followed by multiple comparison procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well's median and the background median levels for each constituent;
- A tolerance or prediction interval procedure, in which an interval for each constituent is established from the distribution of the background data and the level of each constituent in each compliance well is compared to the upper tolerance or prediction limit;
- A control chart approach that gives control limits for each constituent; or
- Another statistical test method that meets the performance standards of 40 CFR 257.94(g) outlined in the paragraph below.

Any of the statistical methods chosen shall comply with the following performance standards, as appropriate, based on the statistical test method used. The performance standards include:

- The statistical method used to evaluate groundwater monitoring data shall be appropriate for the constituent distribution (i.e., parametric or nonparametric);
- If an individual well comparison procedure is used to compare an individual compliance well constituent concentration with background constituent concentrations or a groundwater protection standard (GWPS), the test shall be done at a Type I error level no less than 0.01 or 0.05, depending on the method chosen. This performance standard does not apply to tolerance intervals, prediction intervals, or control charts;
- If a control chart approach is used to evaluate groundwater monitoring data, the specific type of control chart and its associated parameter values shall be such that this approach is at least as effective as any of the other statistical analysis approaches specified above;
- If a tolerance interval or a prediction interval is used to evaluate groundwater monitoring data, the levels of confidence and, for tolerance intervals, the percentage of the population that the interval must contain, shall be such that this approach is at least as effective as any of the other statistical analysis approaches specified above;
- The statistical method must account for data below the limit of detection with one or more statistical procedures that shall be at least as effective as any of the other statistical analysis approaches specified above; and
- If necessary, the statistical method must include procedures to control or correct for seasonal and spatial variability as well as temporal correlation in the data.

A qualified professional engineer must certify that the selected statistical method(s) is appropriate for evaluating the groundwater monitoring data for the CCR management area. The certification must include a narrative description of the statistical method(s) selected to evaluate the groundwater monitoring data.

Per 40 CFR 257.93(h)(2), statistical analysis of all eight rounds of baseline data must be completed within 90 days after completing groundwater sampling and analysis to determine whether there has been a statistically significant increase over background for any Appendix III constituent at each monitoring well.

Assessment monitoring is required per 40 CFR 257.95 whenever a statistically significant increase over background concentrations has been detected for one or more of the constituents listed in 40 CFR 257 Appendix III. An assessment monitoring program also includes annual groundwater sampling and analysis for the constituents listed in 40 CFR 257 Appendix IV. The purpose of assessment monitoring is to determine if releases of CCR constituents have occurred.

If the assessment monitoring demonstrates an exceedance of a GWPS for any of the CCR constituents specified in 40 CFR 257 Appendices III and IV, groundwater corrective action must be initiated. If assessment monitoring demonstrates that a statistically significant increase over background has not occurred for three consecutive sampling events, the facility can return to detection monitoring.

1.2 ASSESSMENT MONITORING STATISTICAL ANALYSIS

In Assessment Monitoring, EPA guidance recommends confidence intervals at the single general statistical approach for testing monitoring well compliance with regulatory limits. A confidence interval typically computes an estimate of the central tendency of a groundwater population, properly accounting for data variability and sample size, resulting in a concentration range designed to bound the population center (e.g., mean, median, etc.) with a specified degree of statistical confidence (e.g., 95%). Once constructed, a confidence interval can be directly compared to a fixed regulatory limit (e.g., GWPS) to determine whether the groundwater population is in or out of compliance with the limit at that point in time. Because background conditions vary from site to site, depending on geologic and hydrogeologic environments, the CCR Rule allows for alternate GWPS to be computed using site-specific background in cases where the background constituent concentrations exceed the published regulatory limit.

If the confidence interval for a given monitoring well fully exceeds the regulatory limit, that well is deemed out of compliance since it is highly probable that the groundwater population average also exceeds the limit. If the confidence interval is fully below the limit, the well is deemed to be in compliance. If the confidence interval straddles the limit, the test is considered inconclusive, and thus, in compliance until such time as more data has been collected and evaluated and the test repeated. Consequently, the key statistic in Assessment Monitoring is the lower confidence limit (LCL), since it, in particular, drives the compliance test outcome.

Under the CCR Rule, fifteen Appendix IV parameters (arsenic, barium, beryllium, cadmium, cobalt, chromium, fluoride, mercury, lithium, molybdenum, lead, combined radium 226 + 228, antimony, selenium, and thallium) must be tested in this manner periodically at each compliance well. This memo details the results for the first two rounds of Assessment Monitoring testing using a confidence interval approach.

Data collected from the set of wells located west and upgradient of the CCR landfill, CC-1, FC-1, FC-2, FC-3A, and FC-3B, were used to represent groundwater quality upgradient or lateral to the CCR landfill. Compliance monitoring data were also collected at monitoring wells SC-10, SC-11, SC-12, SC-13, and SC-14 located downgradient of the CCR landfill. Data at these compliance wells were used to determine if any groundwater regulatory limit was exceeded during the first two Assessment Monitoring events.

Using the most current and complete set of sampling data from the CCR landfill monitoring network, statistical analysis was conducted to initially evaluate the constituent data for usability. Steps in this analysis included: (1) visualization of the data via time series plots and box plots; (2) performing QA/QC checks on the data to identify any data anomalies, input errors, etc.; (3) computing the percentage of non-detects and considering the pattern of non-detects and their reporting limits over time; and (4) flagging and testing any outliers that might distort or invalidate the statistical results.

Visual summaries of the data are provided in Appendix A (time series plots for each constituent-well pair) and Appendix B (box plots of each constituent-well pair). Note that detected values and non-detects (NDs) on the time series plots are displayed with different colors and symbols to help distinguish them, and that the box plots are color-coded by groundwater gradient.

Outlier testing was conducted with a combination of techniques. First, Tukey's box plot procedure was used to initially flag potentially extreme outliers. Each potential outlier was

identified and visually confirmed on time series plots and then formally assessed, if necessary, using Rosner's outlier test. Any confirmed statistical outliers were flagged in the database and removed from subsequent statistical analysis.

To account for non-detect (ND) measurements when testing outliers, special adjustments were made to both Tukey's box plot method as well as Rosner's test. For the box plots, each ND was temporarily replaced by a random value between zero and its reporting limit prior to constructing each box plot. This adjustment better approximates the true variability associated with datasets containing NDs, and prevents the flagging of potential outliers due to underestimating the width of the box plot (and thus the data variance). With Rosner's test, NDs can cause both the standard critical points of the test as well as the test statistics to be in error or biased (Cameron, 2016). Instead, all NDs were first imputed to fit the underlying model of the remaining data and accurate critical points were constructed using Monte Carlo simulation, prior to running Rosner's test.

Evaluation of outliers was performed on two different groupings of the data. First, the combined background data were assessed, since any confirmed outliers in background might bias estimates of the alternate regulatory limits (i.e., GWPS). Plots of the combined background data are provided in Appendix C. Neither visual examination or the Tukey boxplot screening identified any obvious outlier candidates in the background data.

The second grouping considered each constituent-well pair individually. In this case, the Tukey boxplot screening flagged 35 potential outliers, a table of which is provided in Appendix D. Visual examination of these cases showed that almost all of the values were similar to and within the range of measurements at other wells in the network or were NDs. The only notable exceptions were antimony at SC-13 and selenium at SC-11.

In the first of these two cases, the antimony measurement at SC-13 was immediately preceded and followed by ND samples, possibly signaling a temporary constituent spike or 'slug.' However, it more likely represents a laboratory issue, since the most recent samples collected from CC-1 and FC-1 were non-detects with reporting limits even higher than the flagged detection at SC-13.

The second case cannot yet be fully assessed, since the flagged selenium value represents an uptick during the latest sampling round at SC-11. A similar but less pronounced uptick also was observed at SC-10. Whether these values are outliers or represent the onset of an increasing trend cannot be ascertained without additional rounds of sampling. In any event, no data points were removed as confirmed outliers.

Both groups of data were also modeled to determine the most appropriate statistical distribution for each background monitoring parameter or each constituent-well pair using goodness-of-fit graphics and tests. A series of possible data transformations was considered to determine if each dataset could be adequately normalized (i.e., testing as normal on the transformed scale). Normalized data can be evaluated via parametric tests and confidence intervals, while non-normalized data must be handled via nonparametric methods.

For each possible transformation, probability plots were constructed of the transformed values and Filliben's probability plot correlation coefficient test run to formally check normality. Datasets were subsequently analyzed via parametric methods if they could be normalized, or nonparametric methods if not. Goodness-of-fit and probability plots for the combined

background data are provided in Appendix E, while similar plots for the individual constituent-well pairs are provided in Appendix F.

1.3 COMPUTATION OF GROUNDWATER PROTECTION STANDARDS (GWPS)

Consistent with current EPA guidance and the CCR Rule and its subsequent amendment (Federal Register v. 83, no. 146, pp. 36435-36456), the combined (upgradient) background data were used to compute alternate GWPS for any Appendix IV constituent where background concentrations were greater than its GWPS. To do this, a 95% coverage, 95% confidence level upper tolerance limit (95/95 UTL) was constructed for each constituent. The UTL is designed to estimate a reasonable upper bound on the (background) groundwater population, so that estimates exceeding the UTL likely represent groundwater that exceeds background concentrations.

Computation of the UTLs varied by parameter, depending on the results of the statistical modeling discussed in Section 1.2. Parametric UTLs were constructed for constituents that could be normalized, while nonparametric UTLs were computed for parameters that could not be normalized. For normalized data, the general equation for a parametric upper tolerance limit has the form:

$$UTL = \bar{x} + \kappa s$$

where the kappa (κ) multiplier in this formula depends on (1) the background sample size, (2) the desired confidence level/false positive rate, and (3) the desired coverage of the statistical limit. (Note that the coverage represents the portion of the background population estimated to not exceed the UTL.)

When a mathematical transformation is needed to normalize the background data, the equation above is applied to the transformed data, and then the inverse of that transformation is applied to the result. This ensures the UTL always has the same units as the original measurements and is statistically valid.

To compute nonparametric UTLs, a different strategy is used. In particular, the observed background values are sorted and one of the largest, often the maximum value is designated as the tolerance limit. This allows for a UTL to be computed even when the observed data do not follow a known statistical model, but it may limit the level of statistical confidence that can be associated with the estimate.

A table of the UTLs computed for the CCR landfill is provided in Appendix G, including the statistical model and/or transformation used to construct each estimate, and the coverage and confidence levels for each case. Each UTL was compared to the existing, published GWPS. If the estimated UTL was larger than the regulatory limit, the GWPS was set to the UTL. Otherwise, the GWPS was set to the regulatory limit. The final set of GWPS developed for the CCR landfill are also found in the table in Appendix G.

In this table, five of the 15 Appendix IV parameters have GWPS set to the background UTLs, including arsenic, cobalt, lithium, selenium, and thallium, because the site-specific background levels are higher than the published GWPS.

Note that as monitoring continues, and additional background data are collected, the combined background will need to be periodically re-evaluated and the UTLs and GWPS recomputed.

Current EPA guidance recommends that background be updated no sooner than every four new rounds of sampling.

1.4 CONFIDENCE INTERVAL TESTS

As discussed in Section 1.2, confidence intervals were computed for each individual constituent-well pair and used to compare against the GWPS to assess compliance with the regulatory standards. A table of these confidence bounds (both the LCL and the upper confidence limit [UCL]) is provided in Appendix H. The overall targeted confidence level was set to 98% in each case, in order to ensure that the target confidence level for each LCL was 99% (consistent with EPA guidance).

Computation of the confidence intervals varied by parameter and well location due to the differing observed data distributions and appropriate statistical models. For normalized data, the general equation for a parametric confidence interval has the form:

$$CI = \bar{x} \pm t_{1-\alpha, n-1} s / \sqrt{n}$$

where the width of the interval depends on the sample size (n), the amount of variation (s), and the confidence level as expressed through the t -multiplier. For normally-distributed data, the above equation will estimate the level of the groundwater population mean

When a transformation must be applied to normalize the data, and the above formula applied to the transformed values, the inverse transformation leads to an interval estimating the *median* of the groundwater population rather than the *mean*. In many cases, the mean and median may be similar, but in highly skewed populations the population mean will tend to be larger than the median, so that the confidence interval based on the median may be lower than expected.

A similar situation arises when the data cannot be normalized and a nonparametric confidence interval is constructed. In that case, the data are sorted and a value is selected from each ‘end’ or ‘tail’ of the sorted list to represent the lower and upper confidence bounds. In this case, it is again the median of the population and not necessarily the mean that is bounded by the confidence limits.

The table of confidence limits in Appendix H lists both the statistical model that was used in each case, as well as the population statistic that could be estimated. The vast majority were medians.

With the confidence limits in hand, each LCL was compared against the GWPS for that constituent. If the LCL exceeded the GWPS, a statistically significant increase (SSI) was recorded. If the LCL did not exceed, no SSI was flagged. For the first two rounds of Assessment Monitoring results, none of the LCLs for any of the Appendix IV parameters exceeded their respective GWPS.

These results were further visualized by plotting the confidence intervals against the GWPS in a side-by-side comparison in the graphs of Appendix I. It will be noted that not only was every LCL below the GWPS, but also every UCL. Thus there is no evidence that the CCR landfill is out of compliance for any of the Appendix IV parameters at this time.

1.5 BOOTSTRAP COMPARISONS

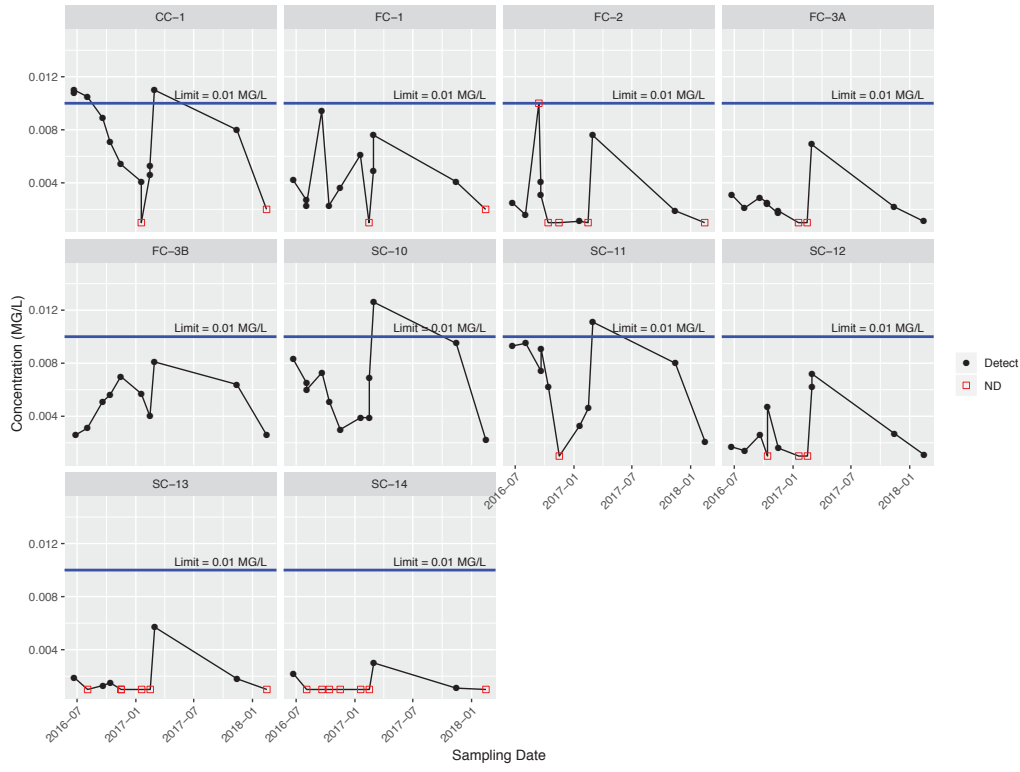
To ensure that the confidence interval test results are statistically robust and not sensitive to the type of confidence interval or UTL computed, and because the vast majority of the confidence intervals estimated the median instead of the mean population concentration, a parallel procedure was also run to compute what are known as bootstrap UTLs and bootstrap confidence intervals. The bootstrap is a well-known and well-studied statistical resampling algorithm that offers an alternative way to estimate statistical quantities. It is computer intensive rather than formula-based and has many variants. The percentile method, the simplest bootstrap variant, is nonparametric and so does not require any data modeling or goodness-of-fit testing.

The alternative bootstrap confidence interval test results are tabled in Appendices J and K and visualized in Appendix L. An important note about the bootstrap is that unless there is an overwhelming percentage of non-detects, it is always possible to estimate the population mean when constructing a bootstrap confidence interval. It must also be noted that the bootstrap approach was not used to formally test for statistically significant increases (SSI), but rather to confirm the basic validity of the parametric and nonparametric confidence interval tests in Appendix H.

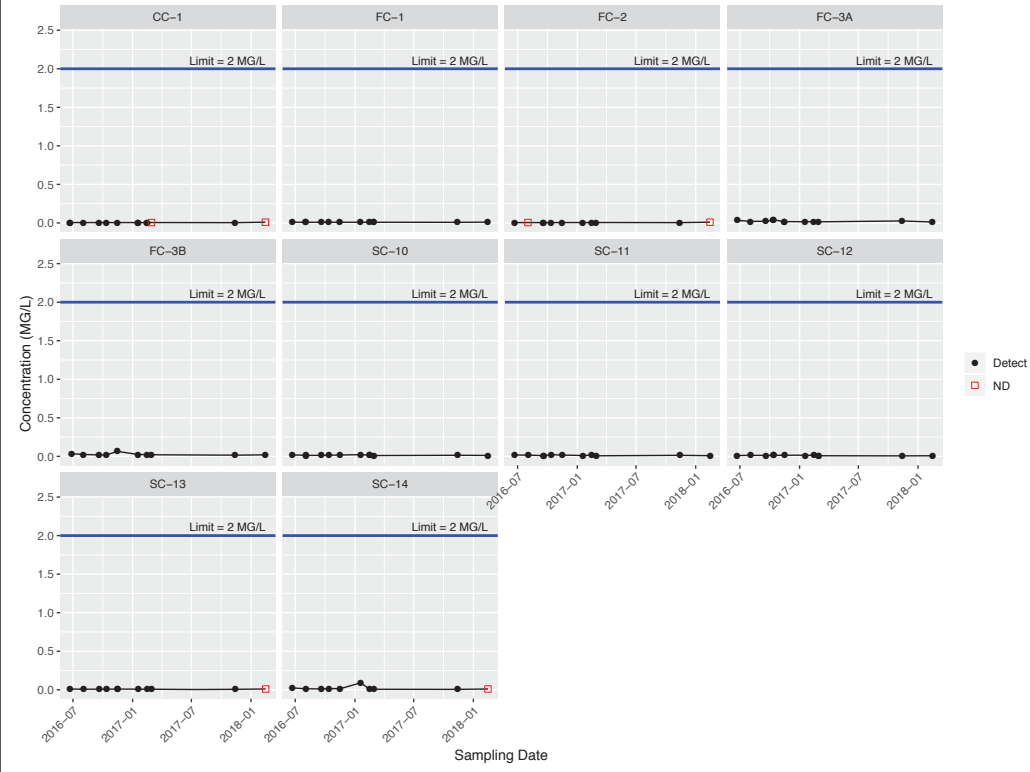
To this end, the pattern of results using the bootstrap approach is very similar to that using a more traditional framework. None of the bootstrap LCLs exceed their respective bootstrap GWPS. However, in a few cases, the bootstrap UCLs exceed the bootstrap GWPS, and for selenium at SC-10, the bootstrap LCL comes close to exceeding the GWPS. This is primarily due to the bootstrap GWPS being lower than the traditionally-estimated GWPS for selenium. The bootstrap confidence intervals are nearly the same for both methods.

APPENDIX A

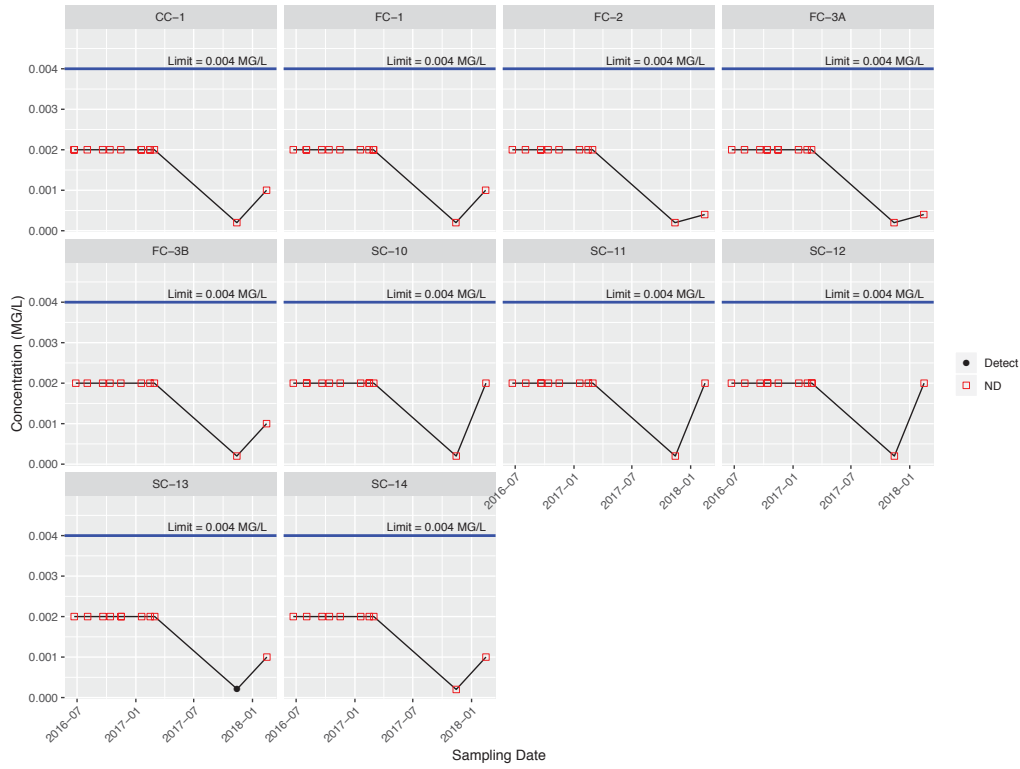
Time Series Plots by Well Location for AS



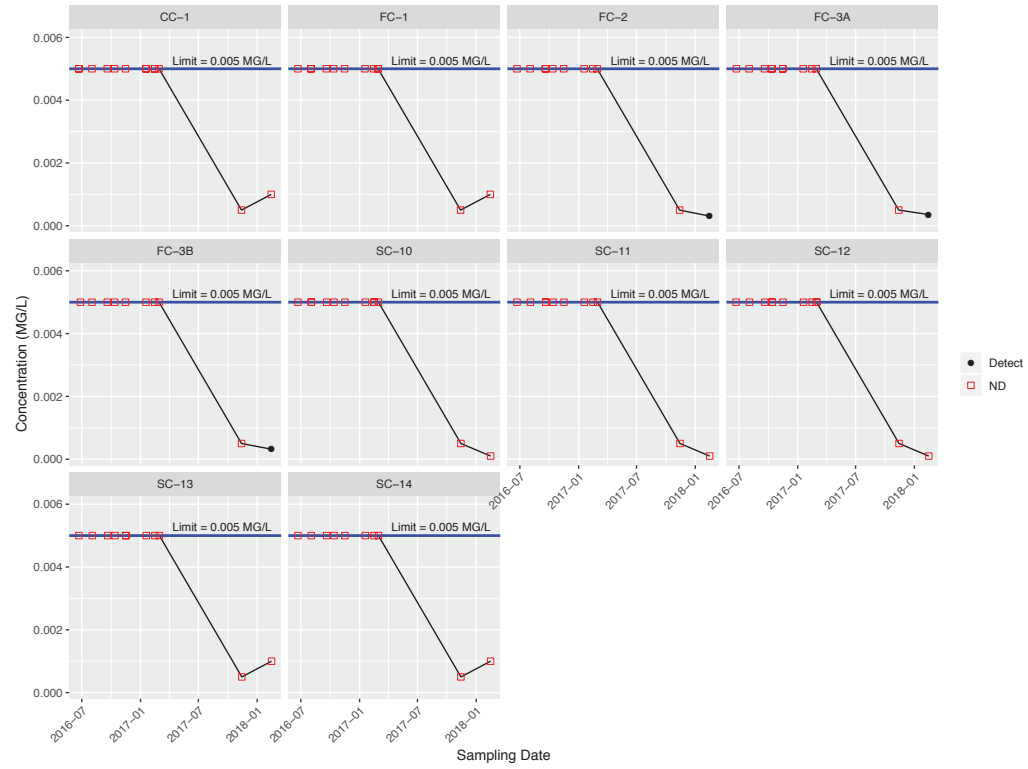
Time Series Plots by Well Location for BA



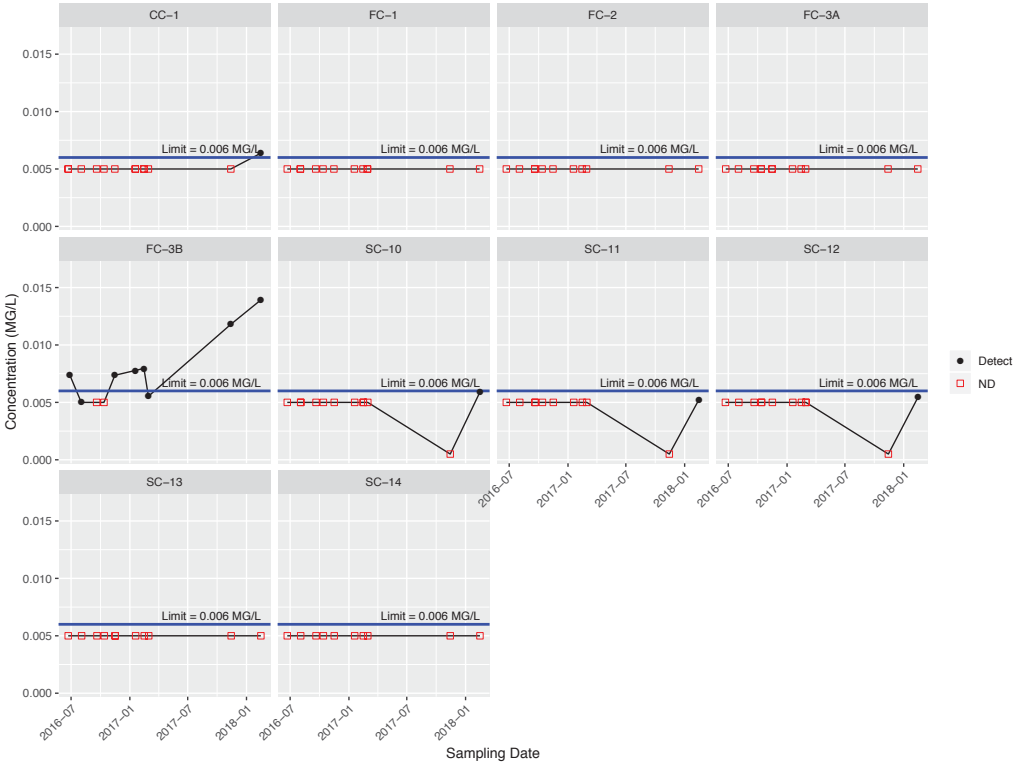
Time Series Plots by Well Location for BE



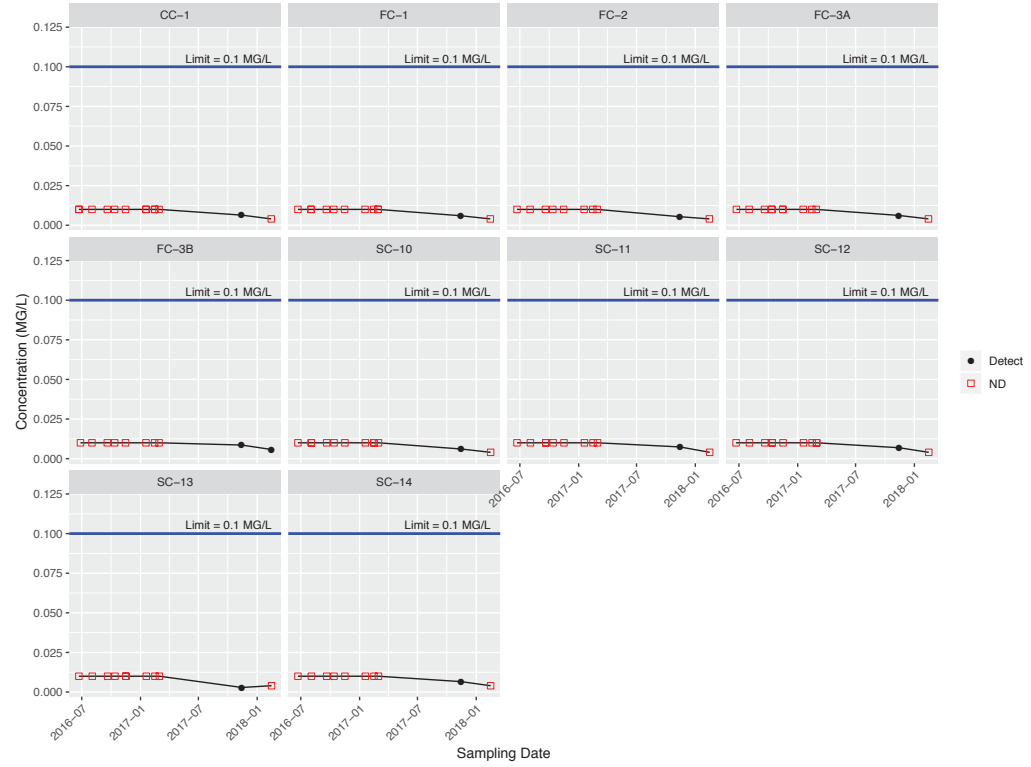
Time Series Plots by Well Location for CD



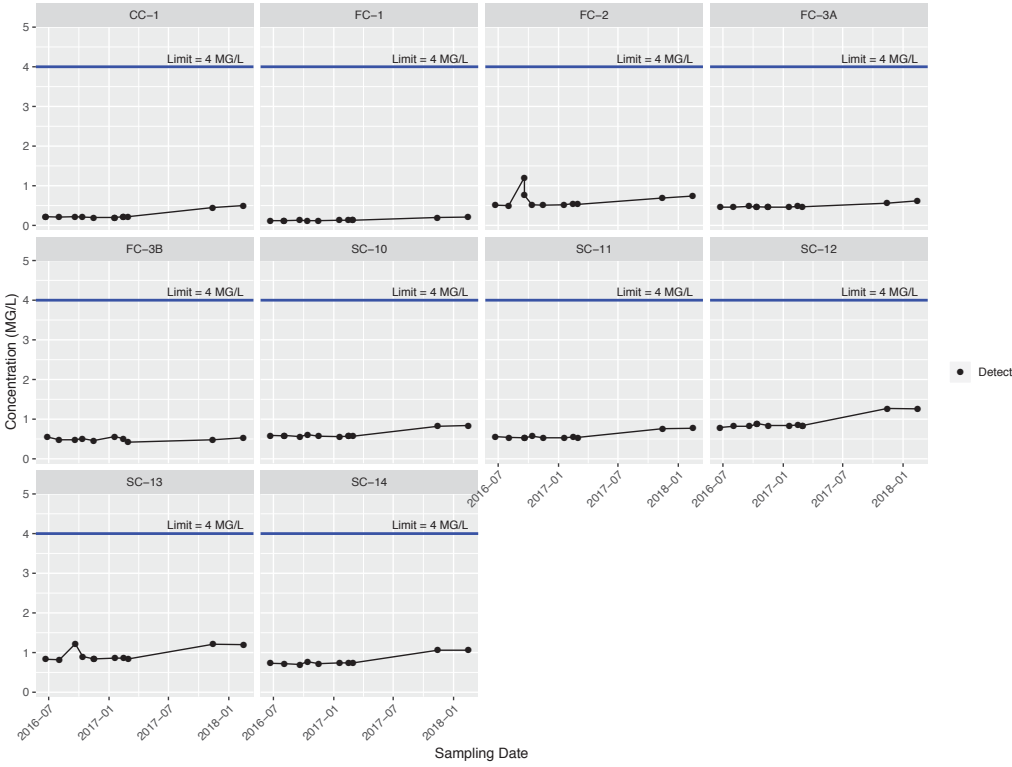
Time Series Plots by Well Location for CO



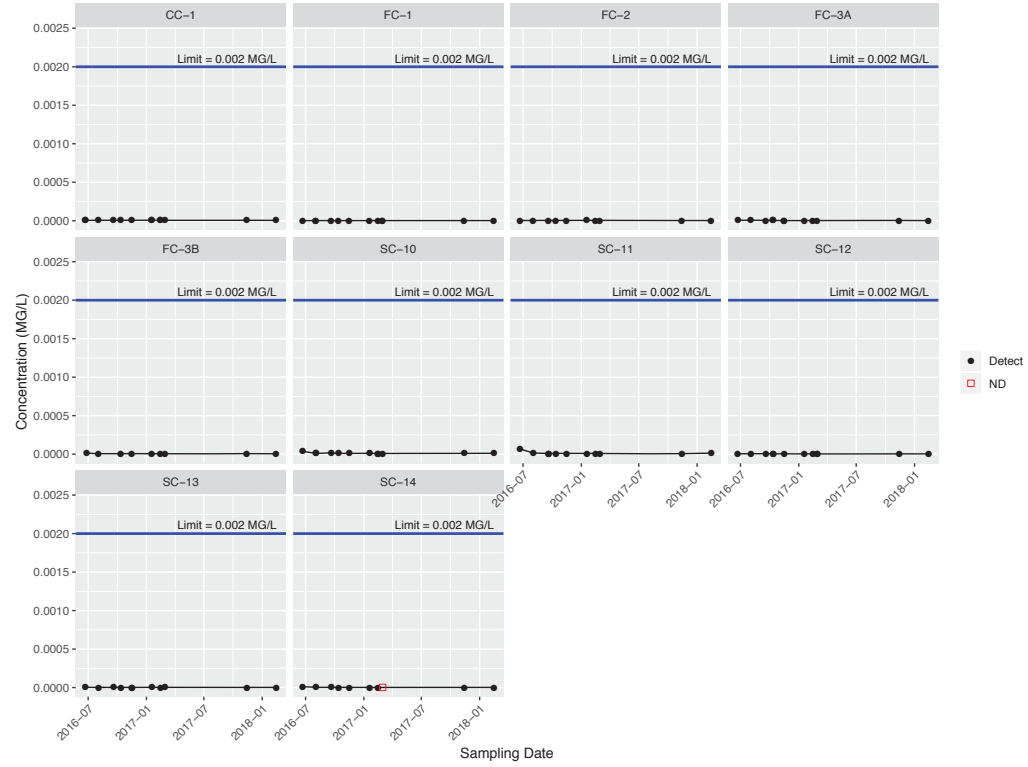
Time Series Plots by Well Location for CR



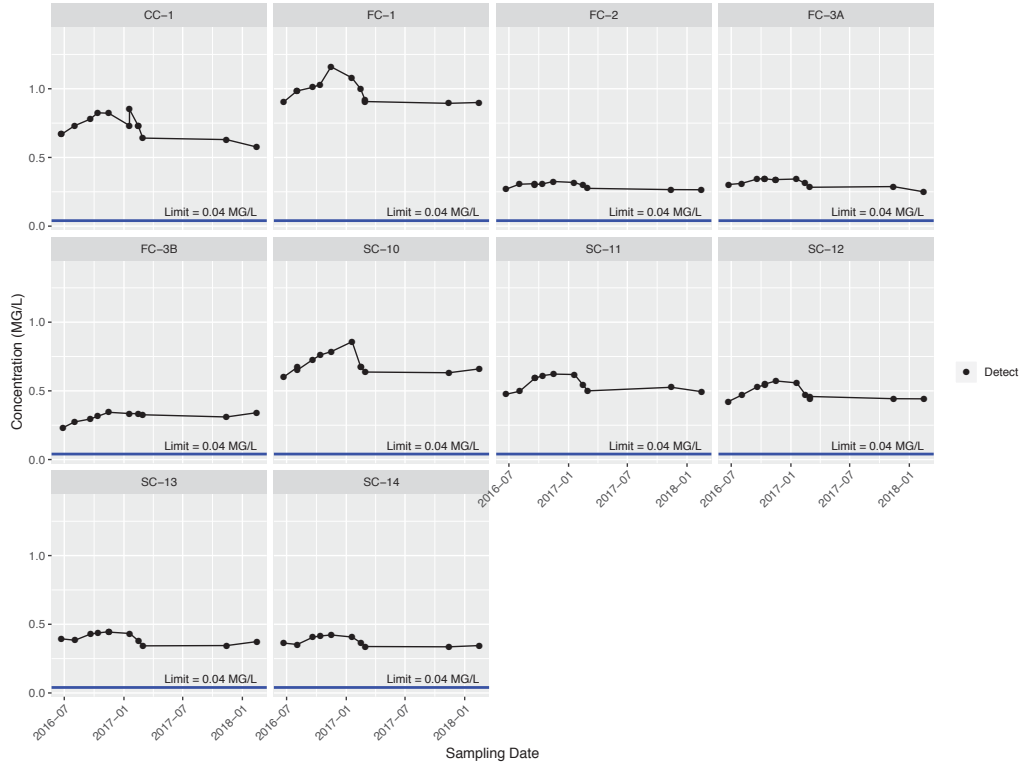
Time Series Plots by Well Location for F



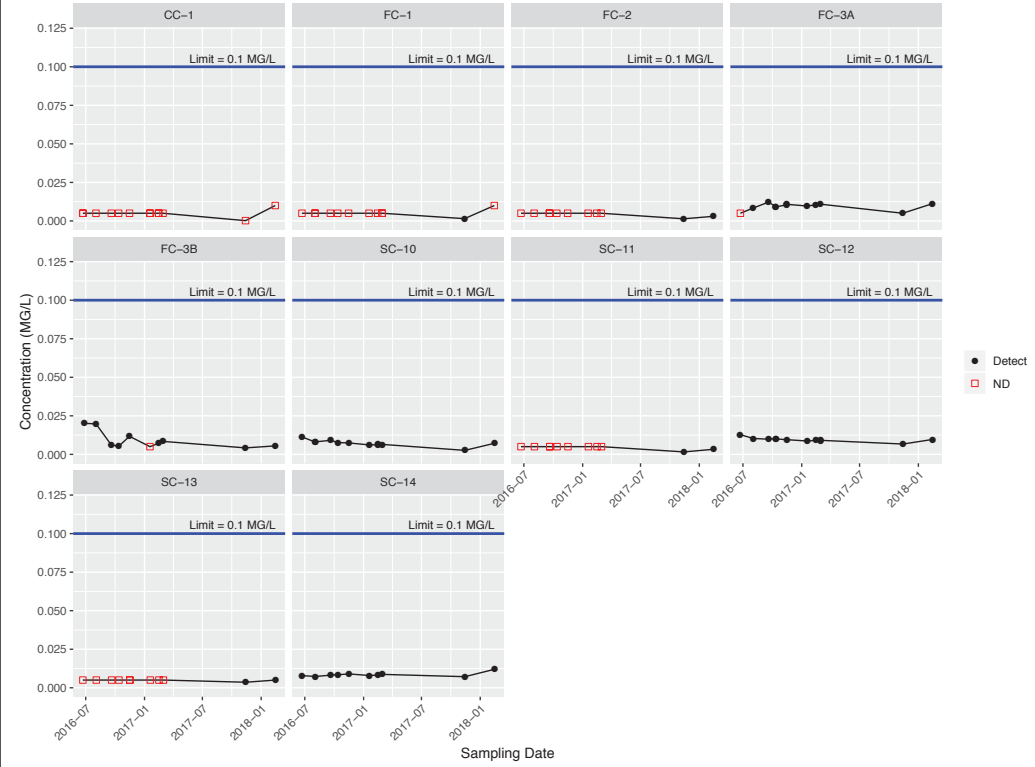
Time Series Plots by Well Location for HG



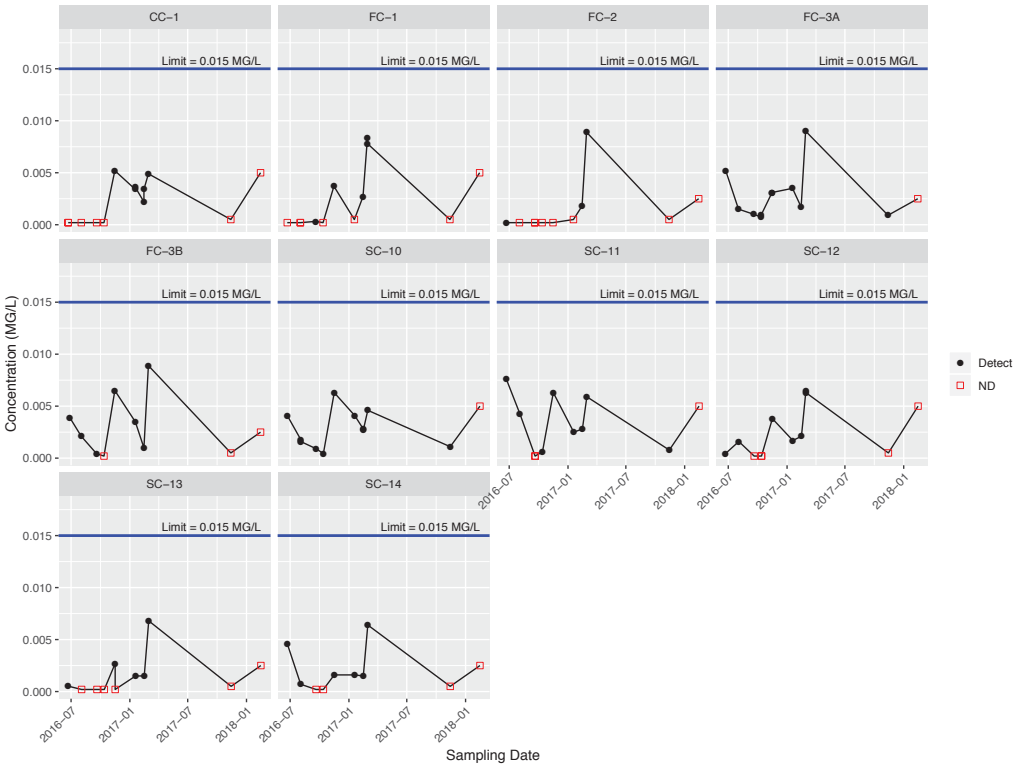
Time Series Plots by Well Location for LI



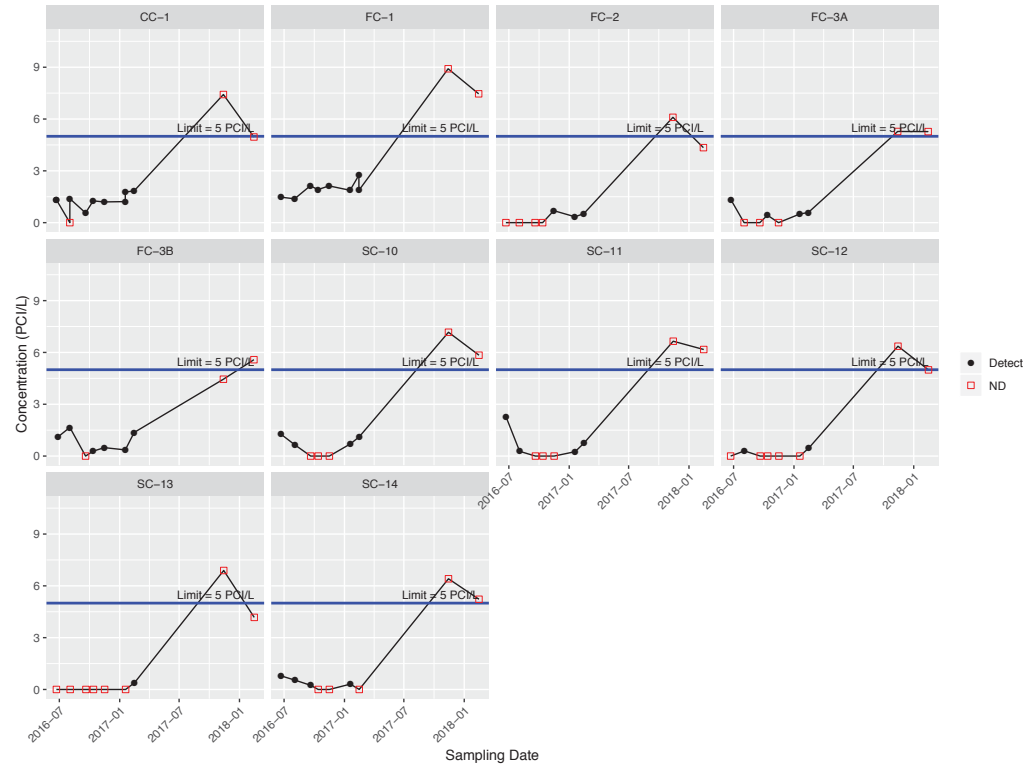
Time Series Plots by Well Location for MO



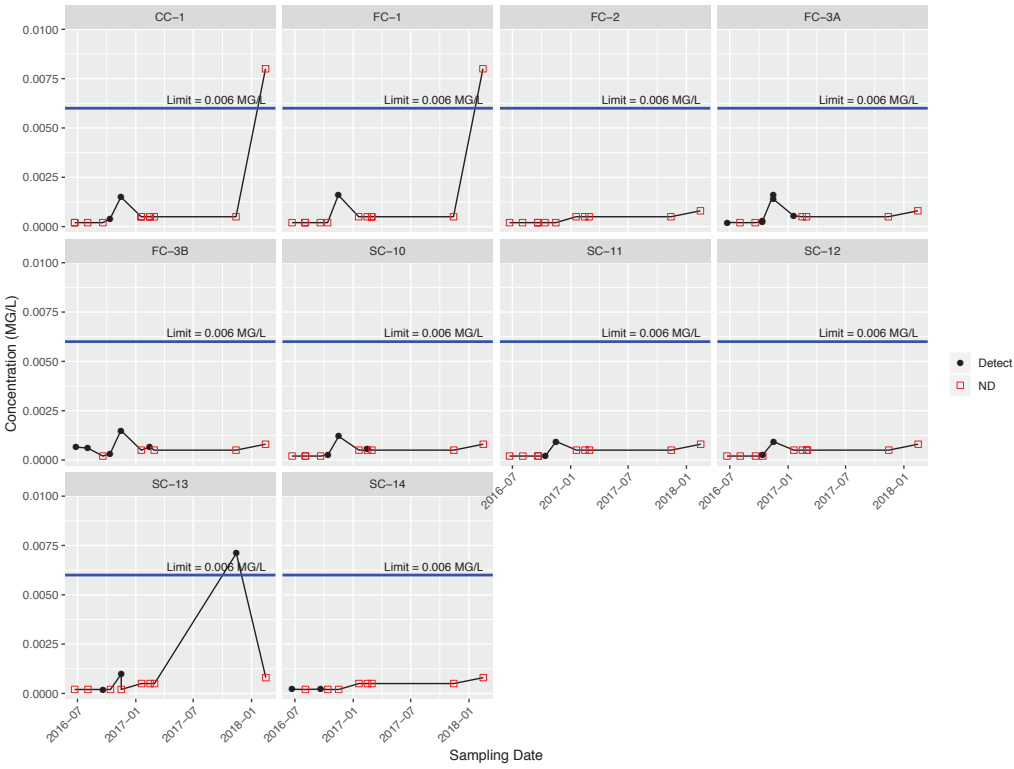
Time Series Plots by Well Location for PB



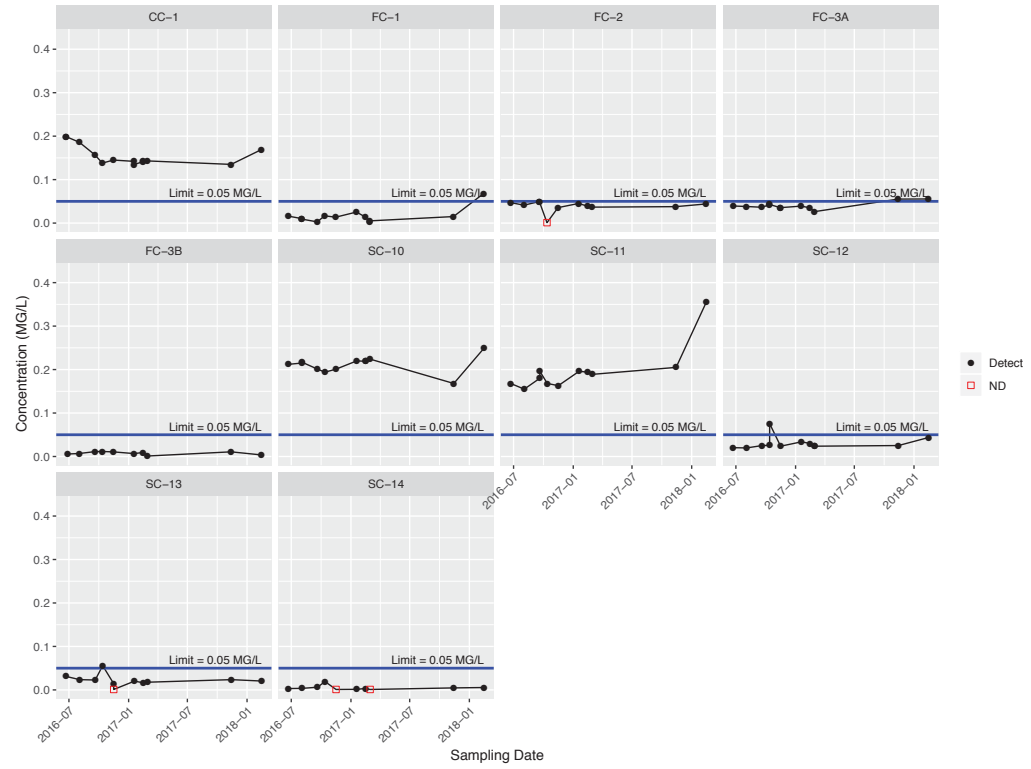
Time Series Plots by Well Location for Rad226+228



Time Series Plots by Well Location for SB

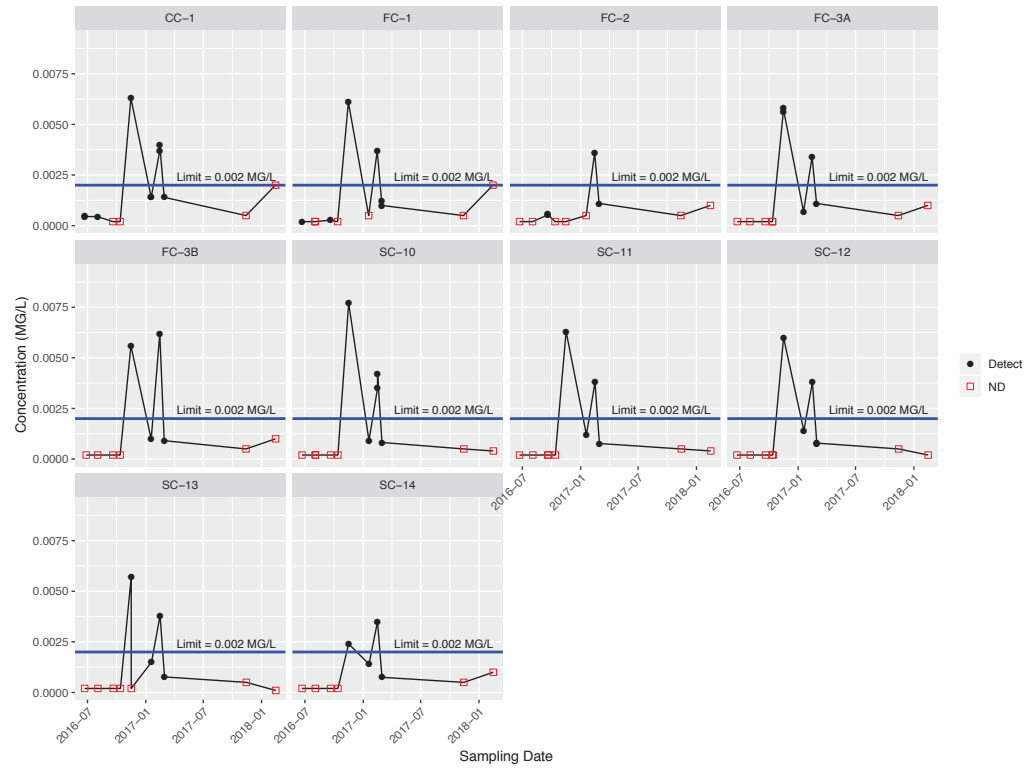


Time Series Plots by Well Location for SE

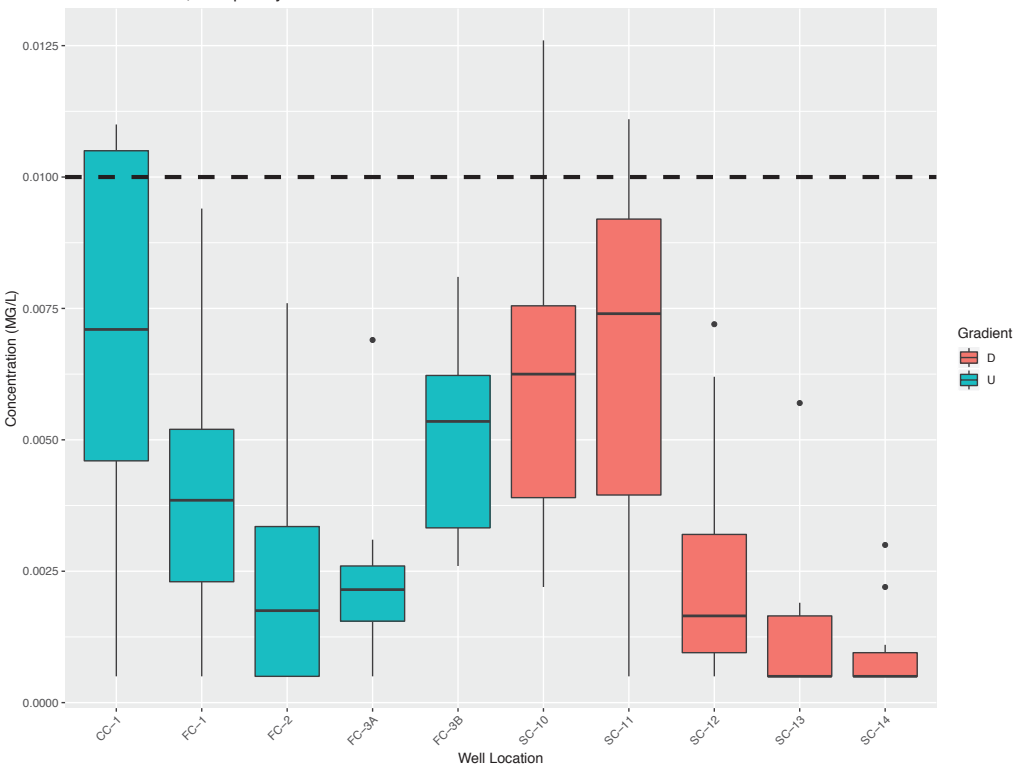


APPENDIX B

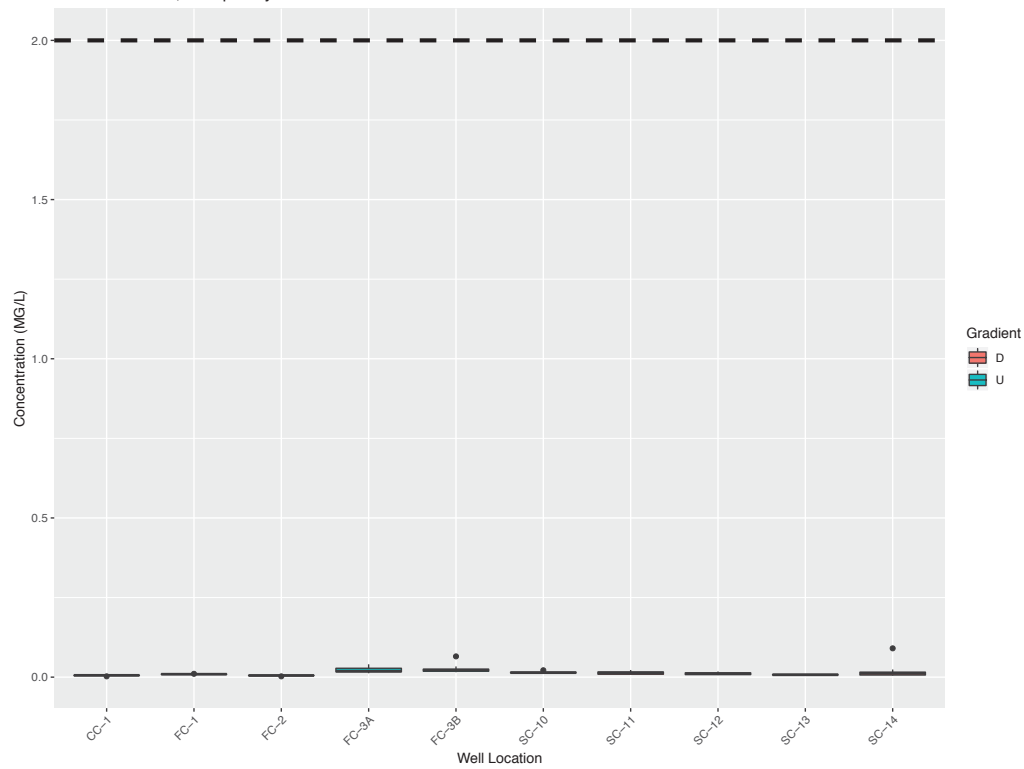
Time Series Plots by Well Location for TL



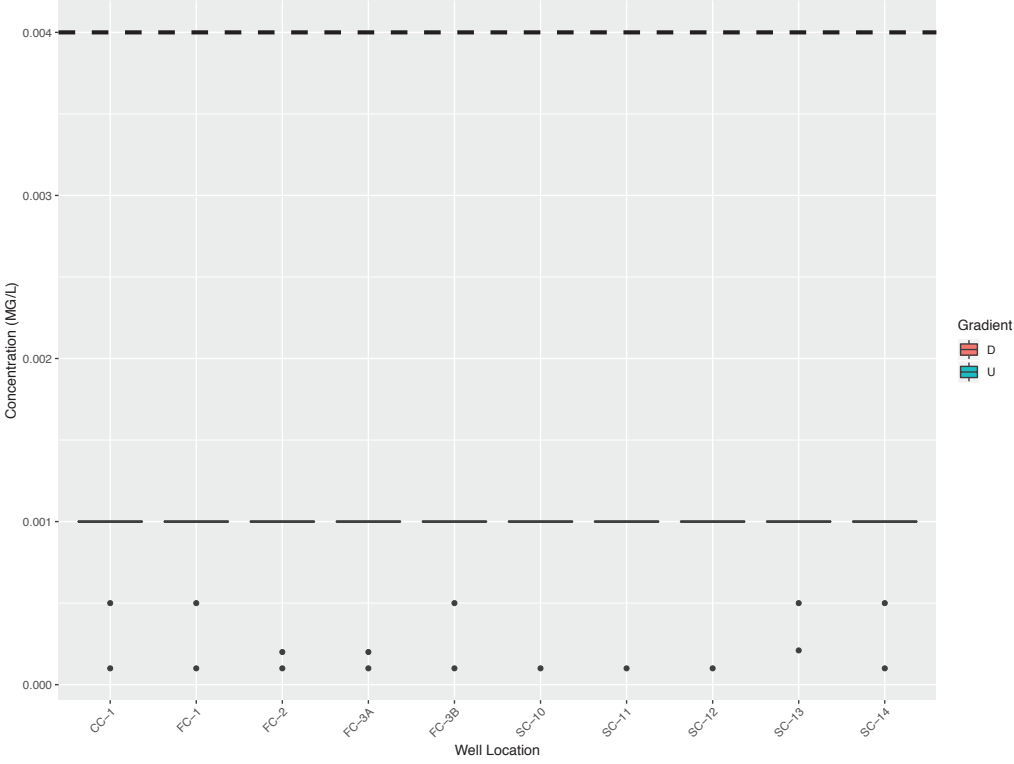
Box Plots for AS, Grouped by Gradient



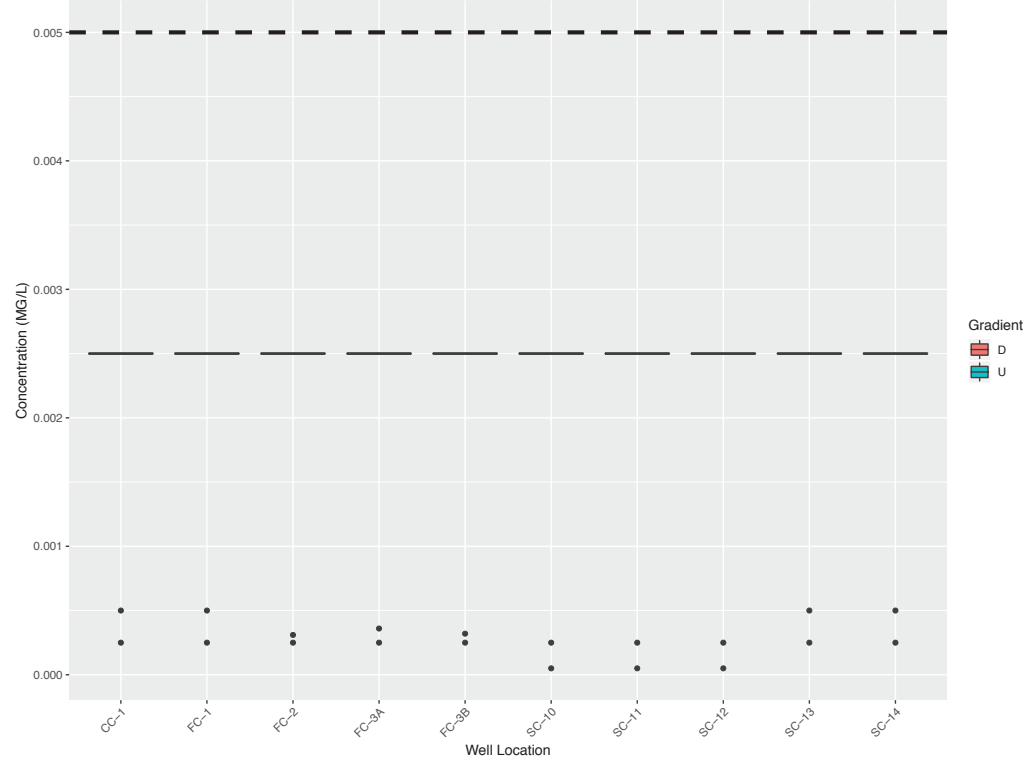
Box Plots for BA, Grouped by Gradient



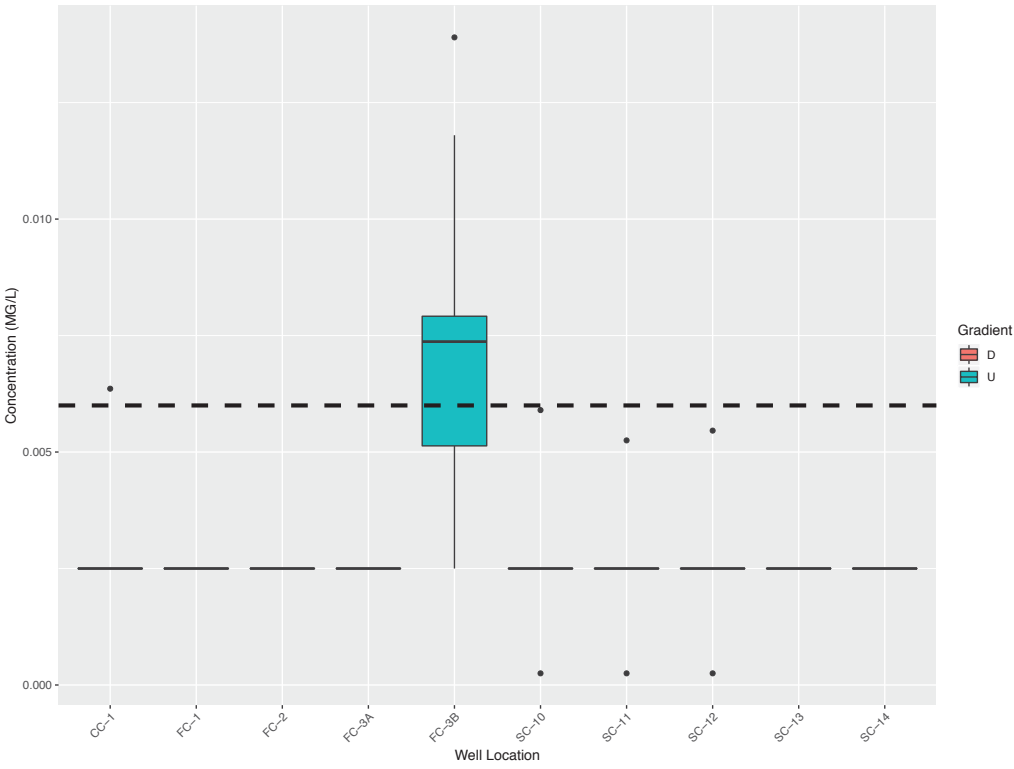
Box Plots for BE, Grouped by Gradient



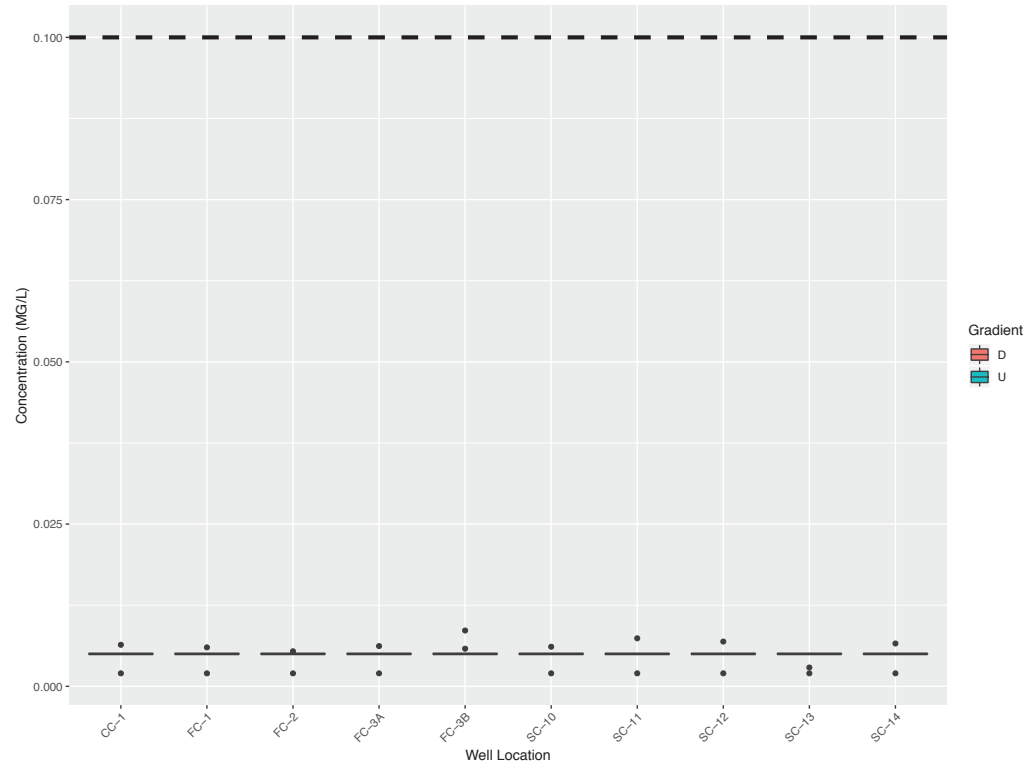
Box Plots for CD, Grouped by Gradient



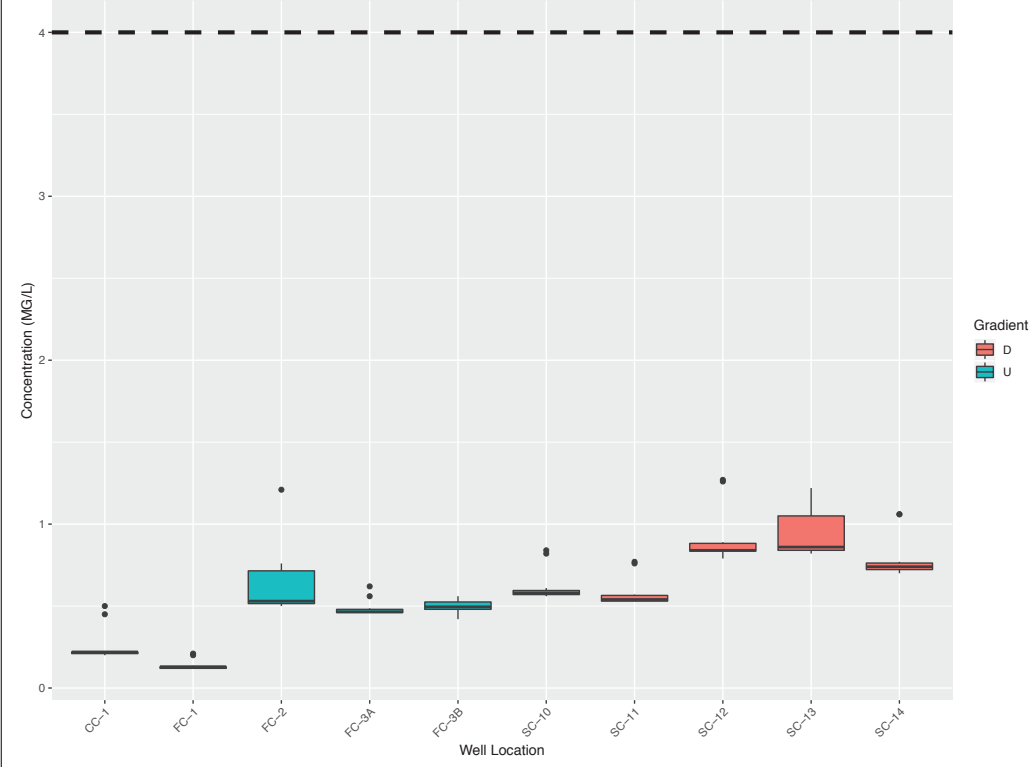
Box Plots for CO, Grouped by Gradient



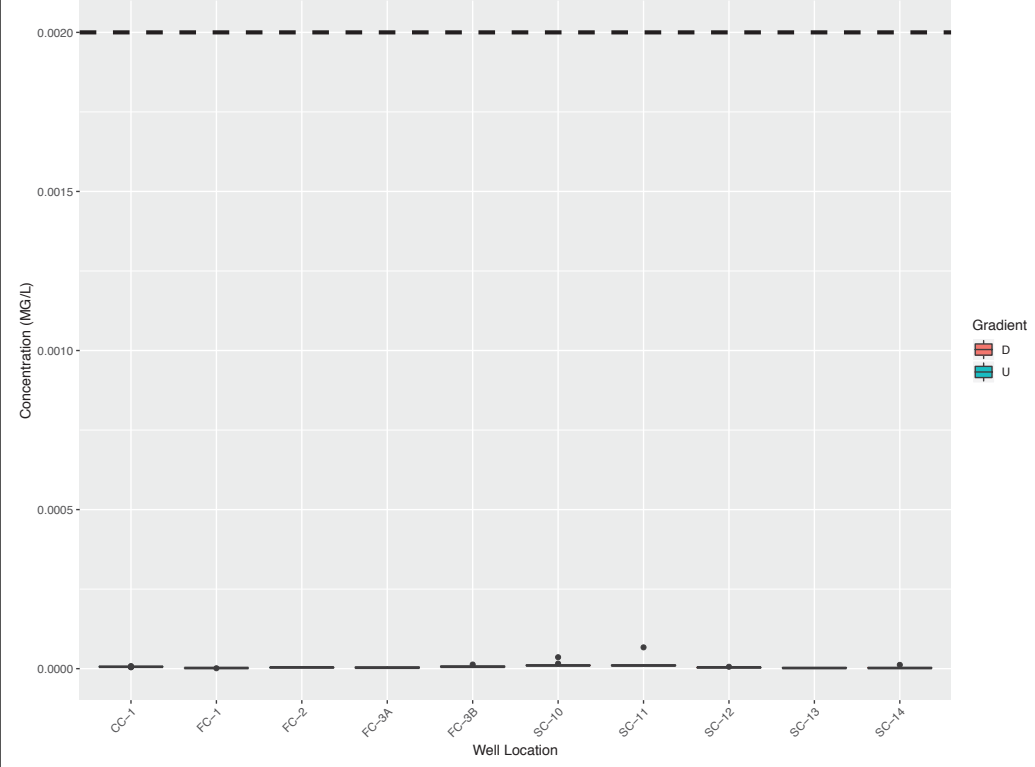
Box Plots for CR, Grouped by Gradient



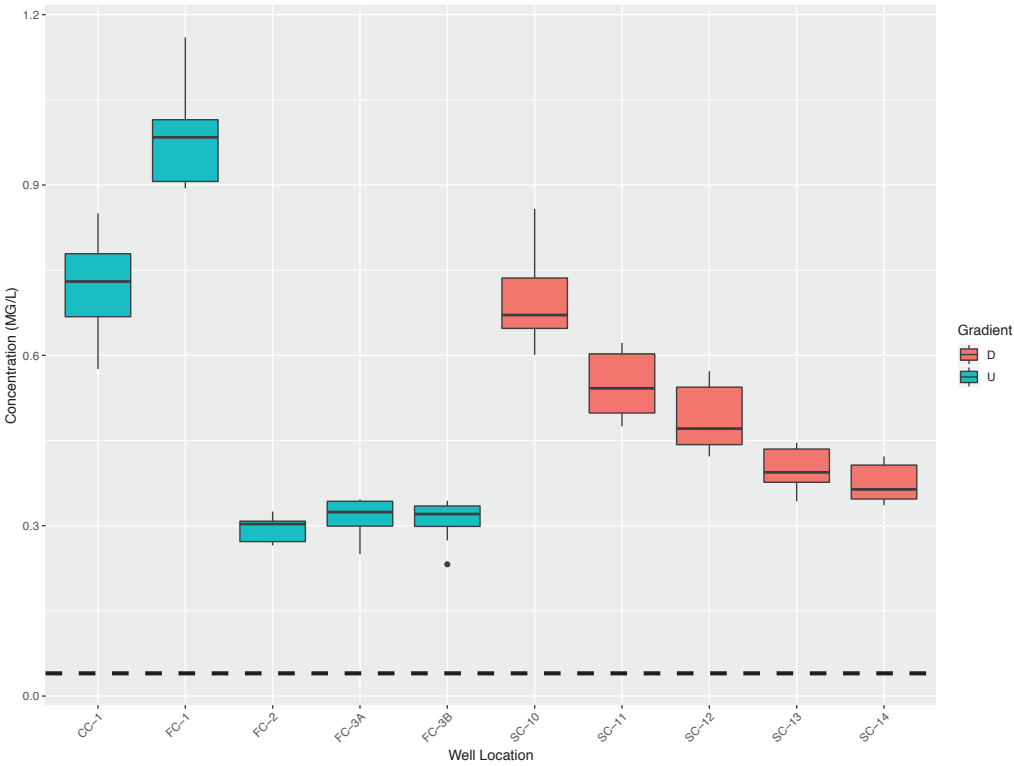
Box Plots for F, Grouped by Gradient



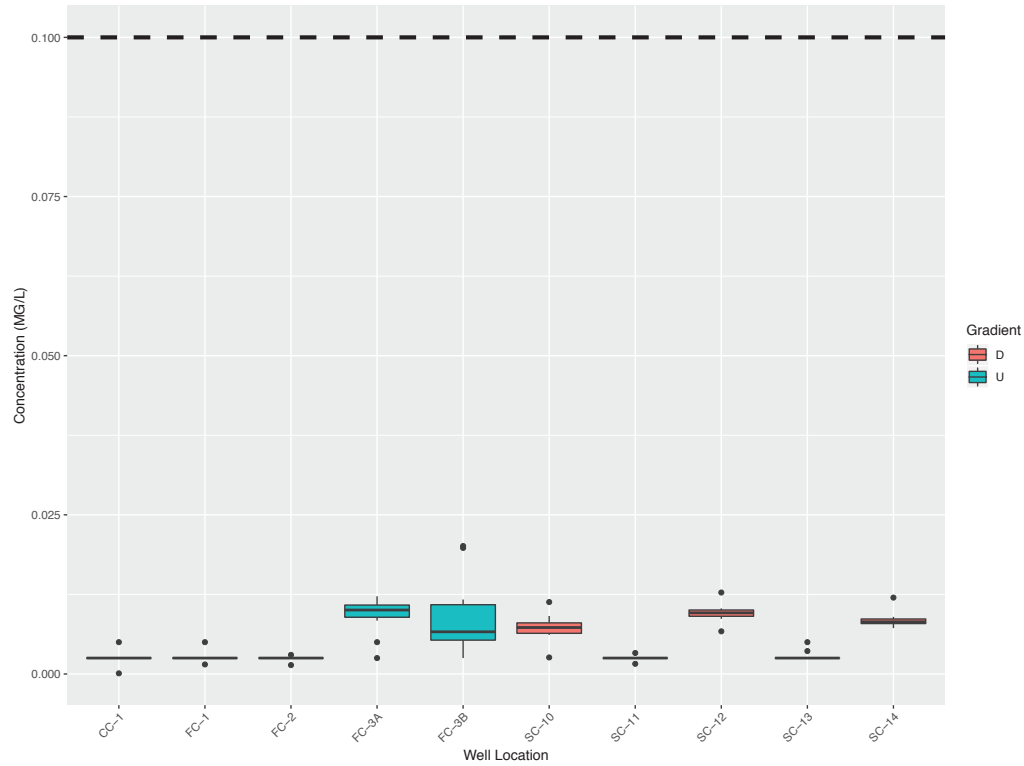
Box Plots for HG, Grouped by Gradient



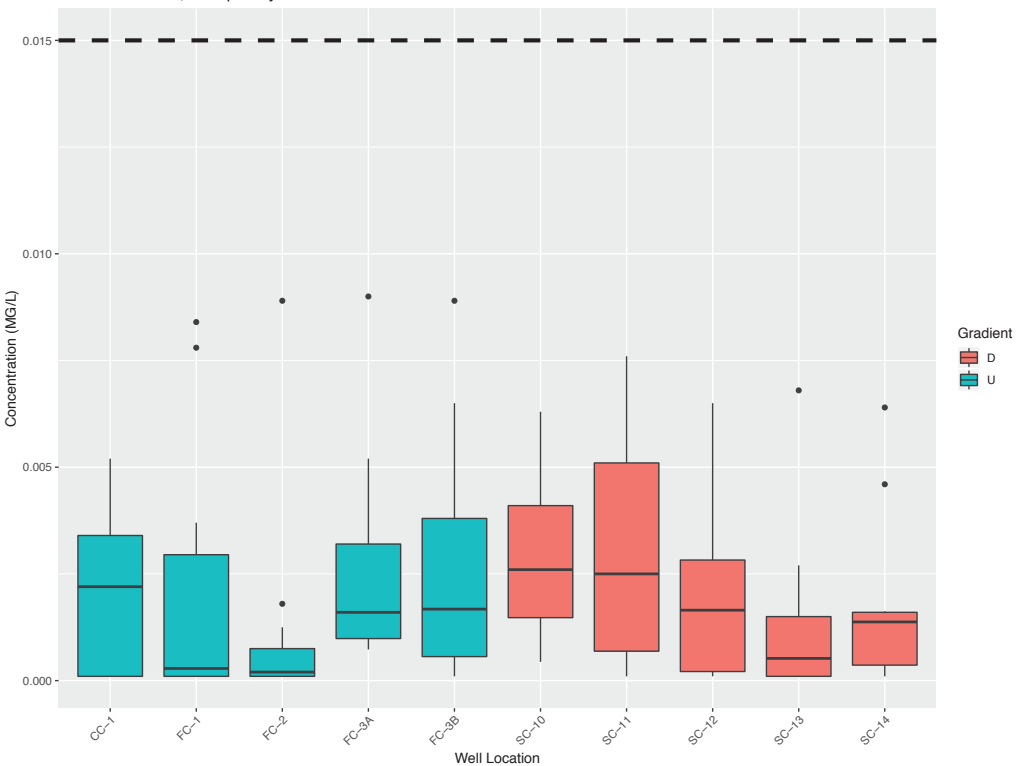
Box Plots for LI, Grouped by Gradient



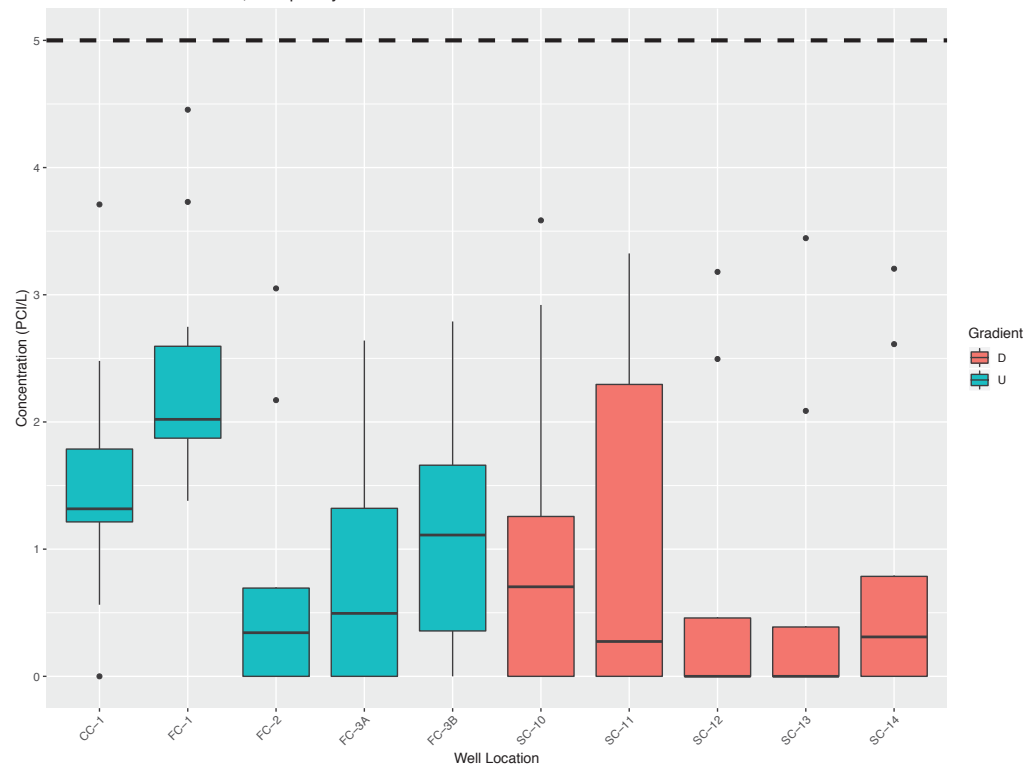
Box Plots for MO, Grouped by Gradient



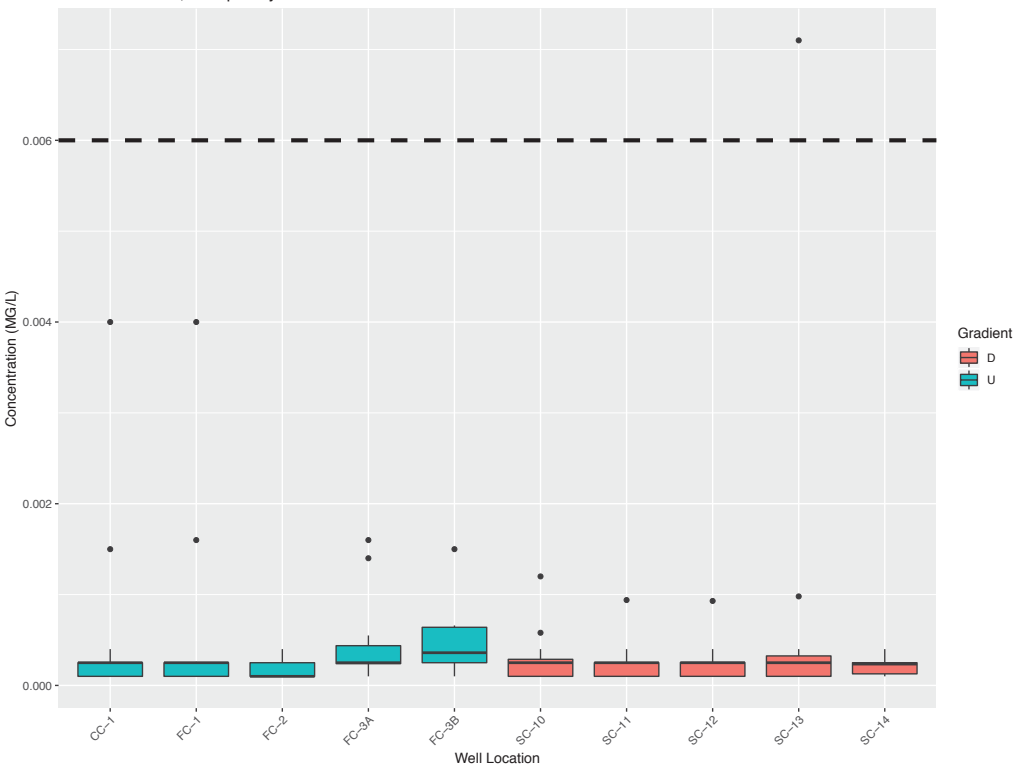
Box Plots for PB, Grouped by Gradient



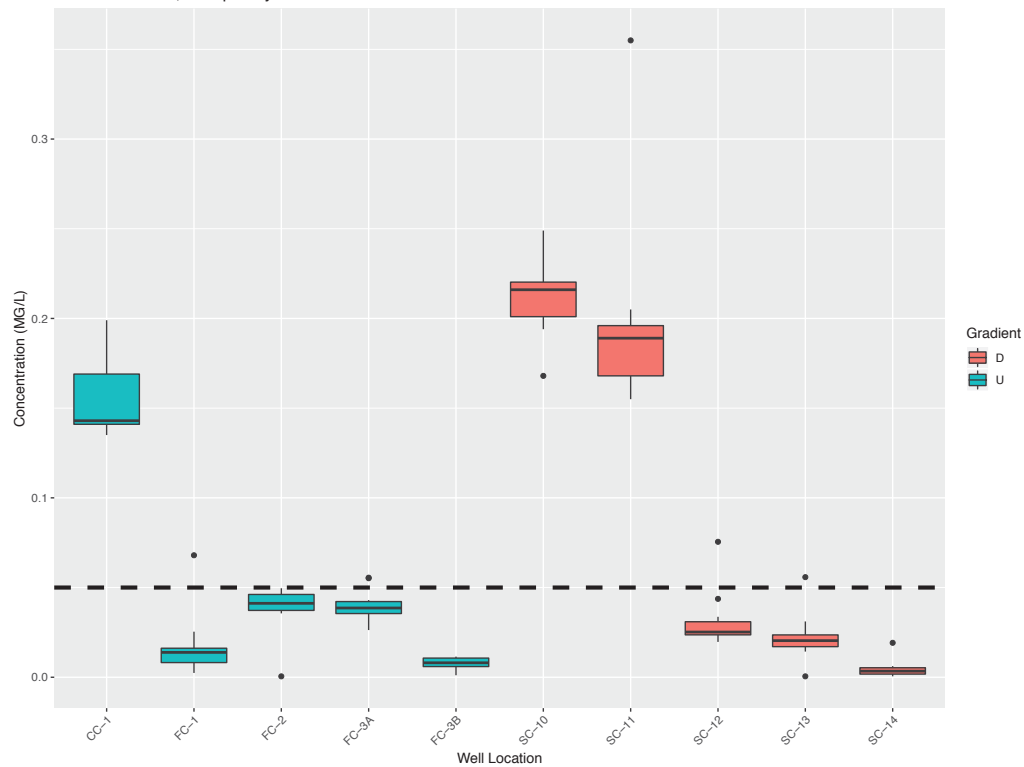
Box Plots for Rad226+228, Grouped by Gradient



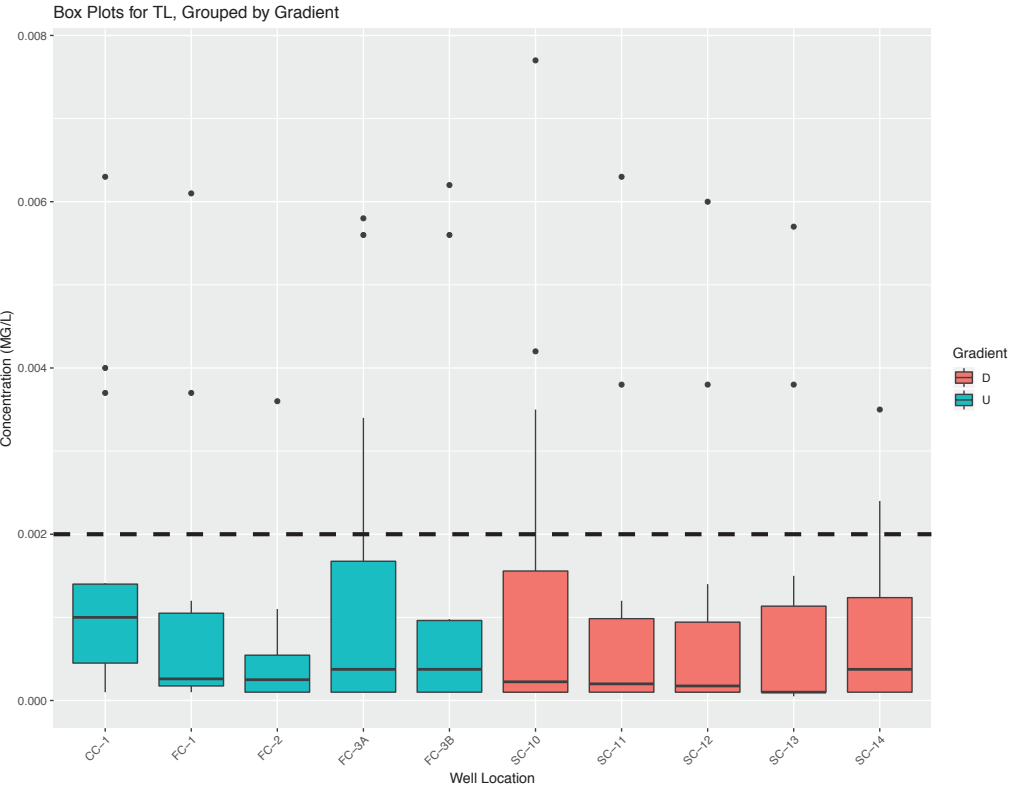
Box Plots for SB, Grouped by Gradient



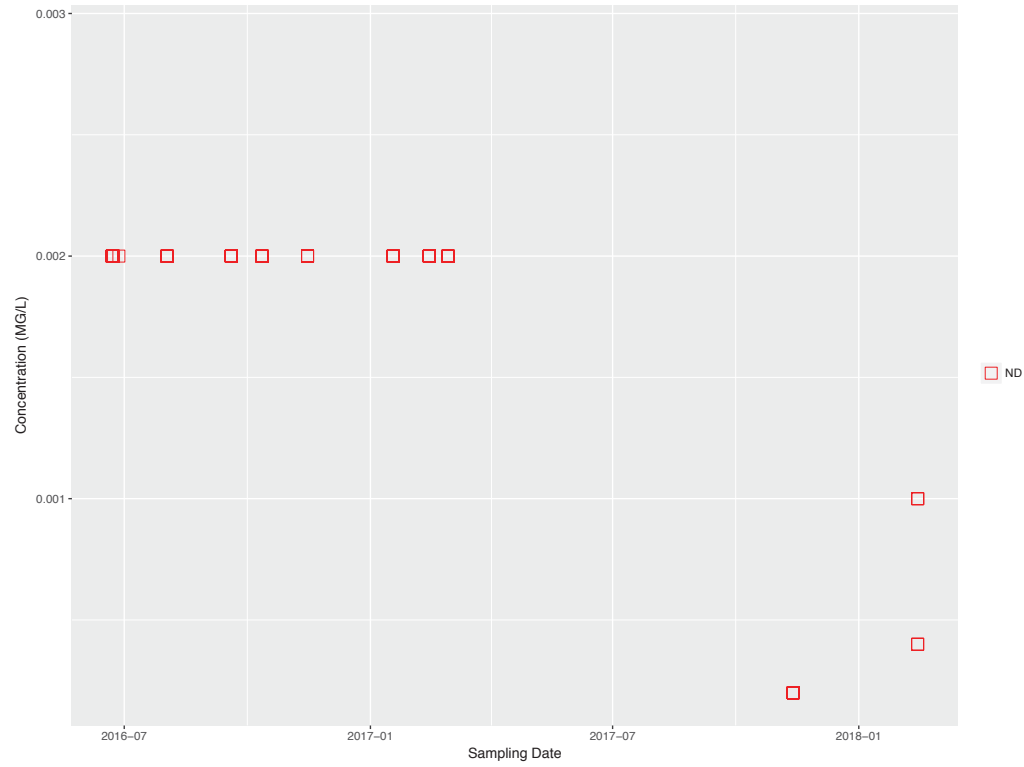
Box Plots for SE, Grouped by Gradient



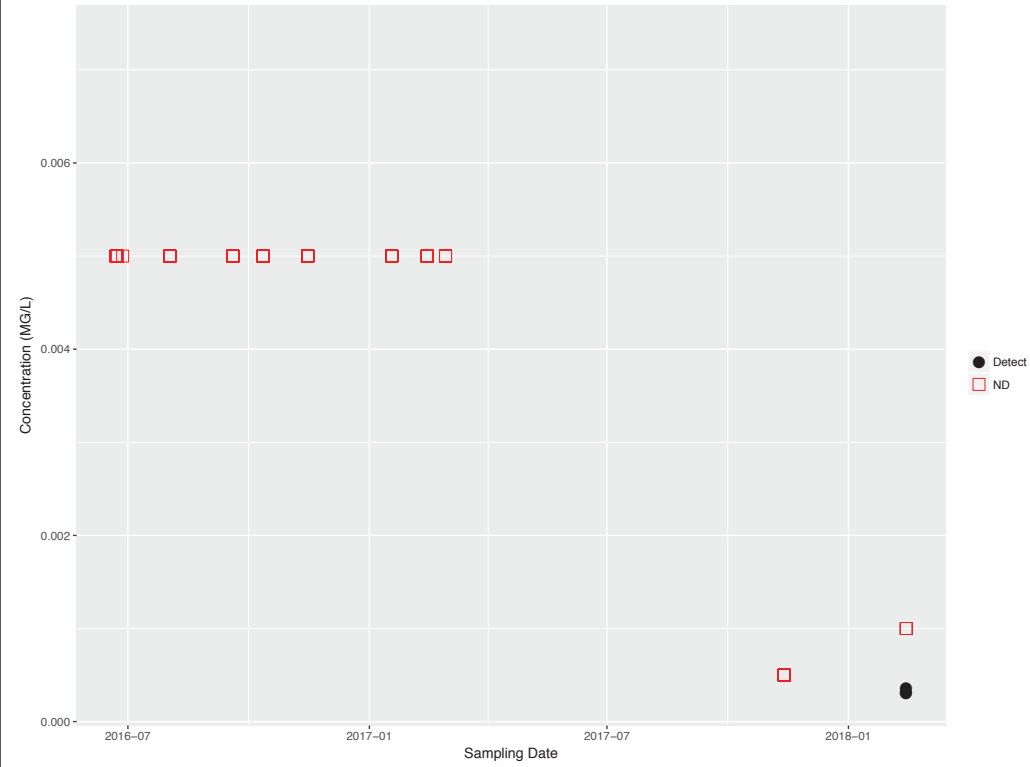
APPENDIX C



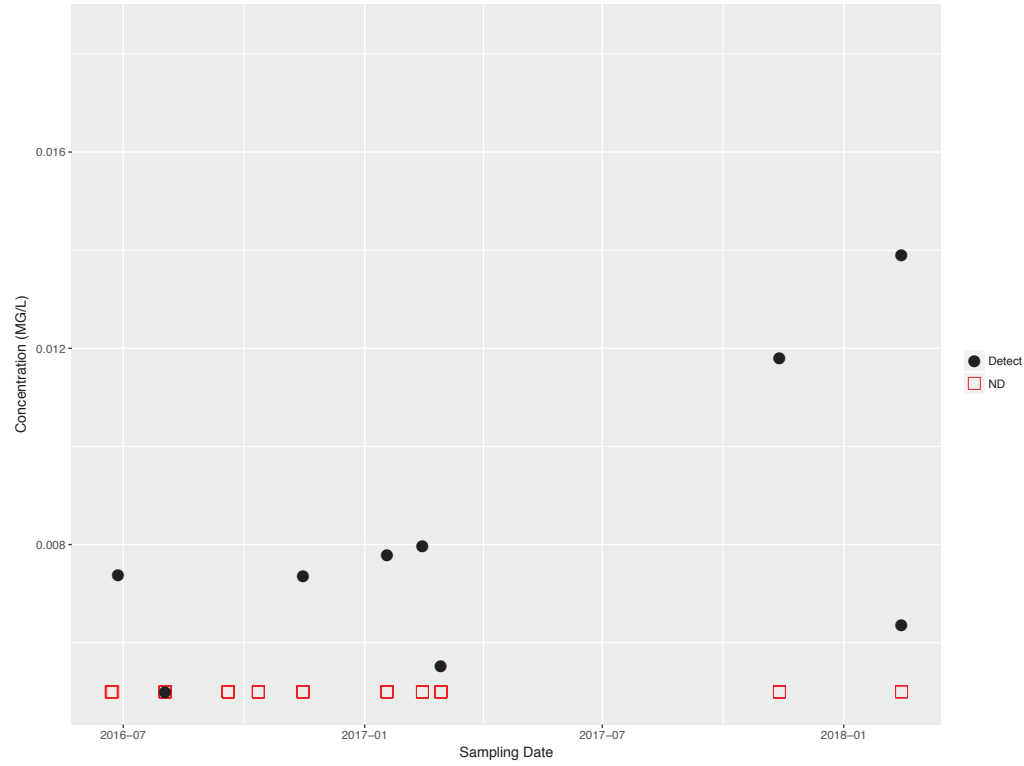
Grouped Upgradient BG (CC-1 FC-1 FC-2 FC-3A FC-3B) for BE



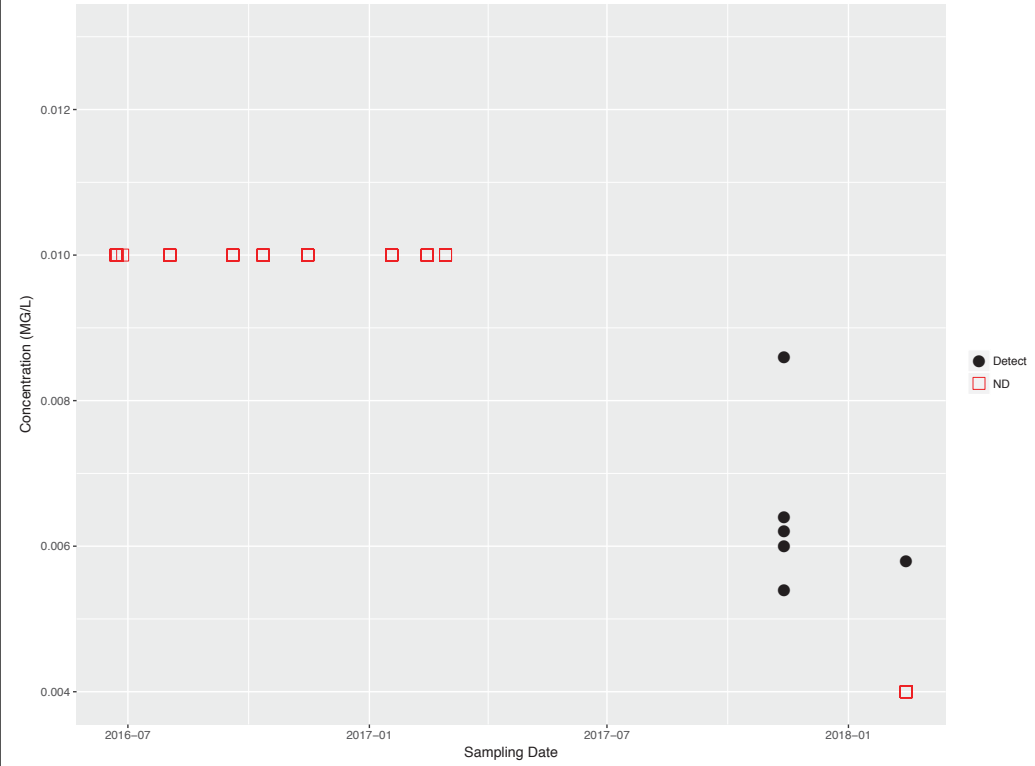
Grouped Upgradient BG (CC-1 FC-1 FC-2 FC-3A FC-3B) for CD



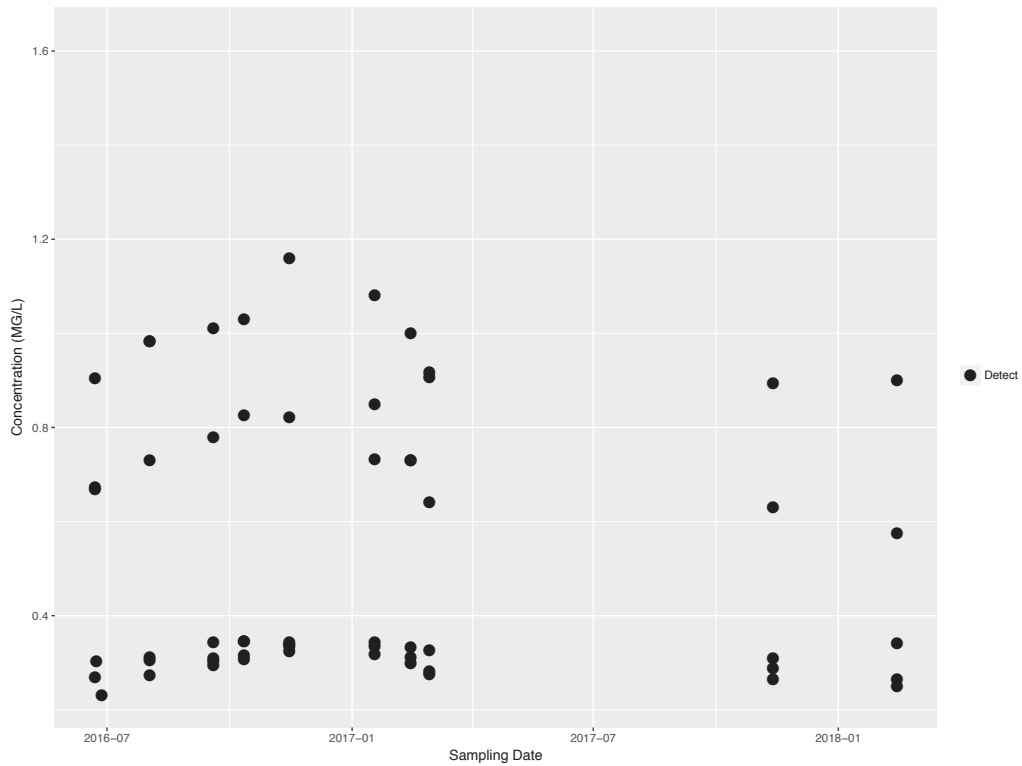
Grouped Upgradient BG (CC-1 FC-1 FC-2 FC-3A FC-3B) for CO



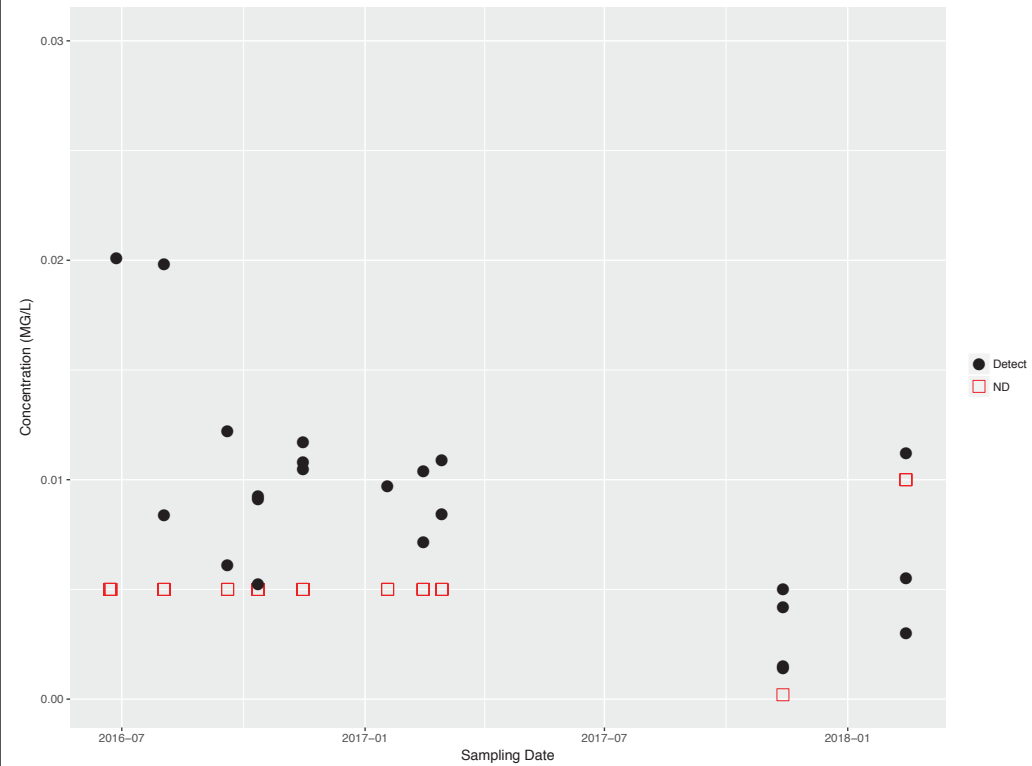
Grouped Upgradient BG (CC-1 FC-1 FC-2 FC-3A FC-3B) for CR



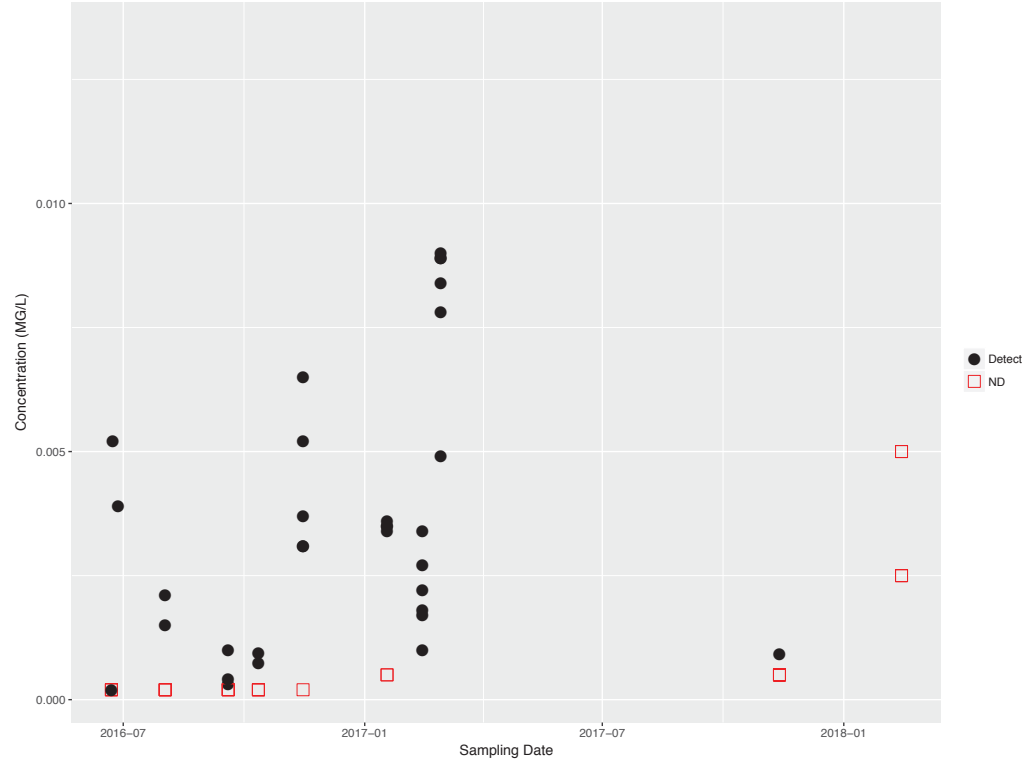
Grouped Upgradient BG (CC-1 FC-1 FC-2 FC-3A FC-3B) for LI



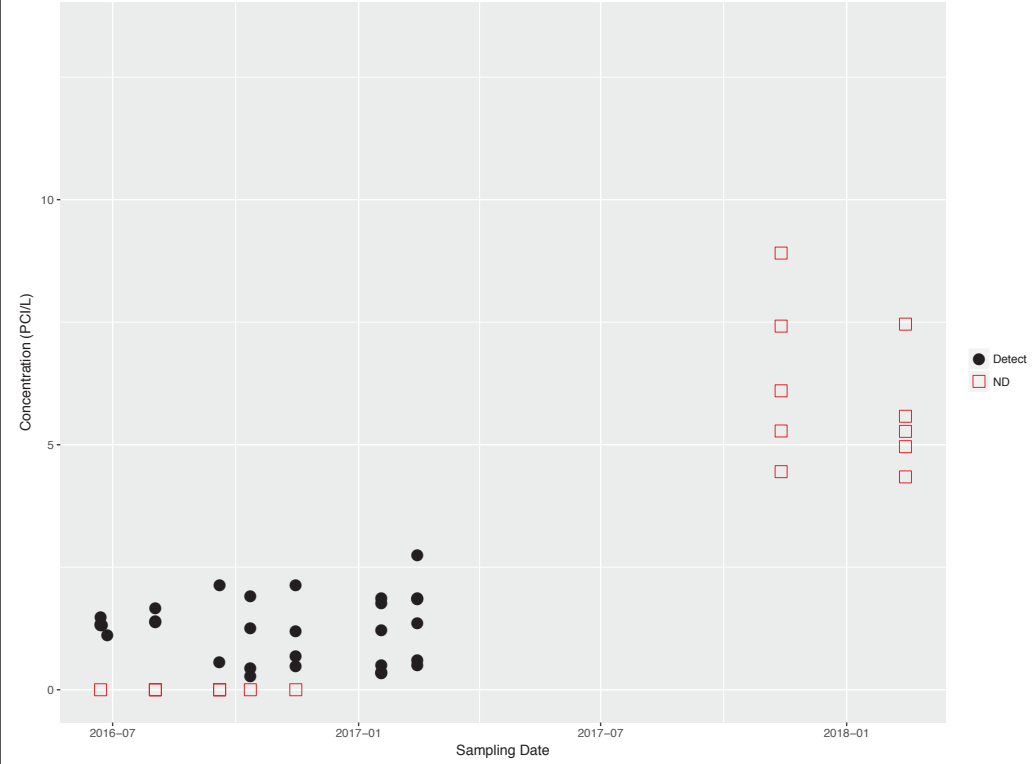
Grouped Upgradient BG (CC-1 FC-1 FC-2 FC-3A FC-3B) for MO



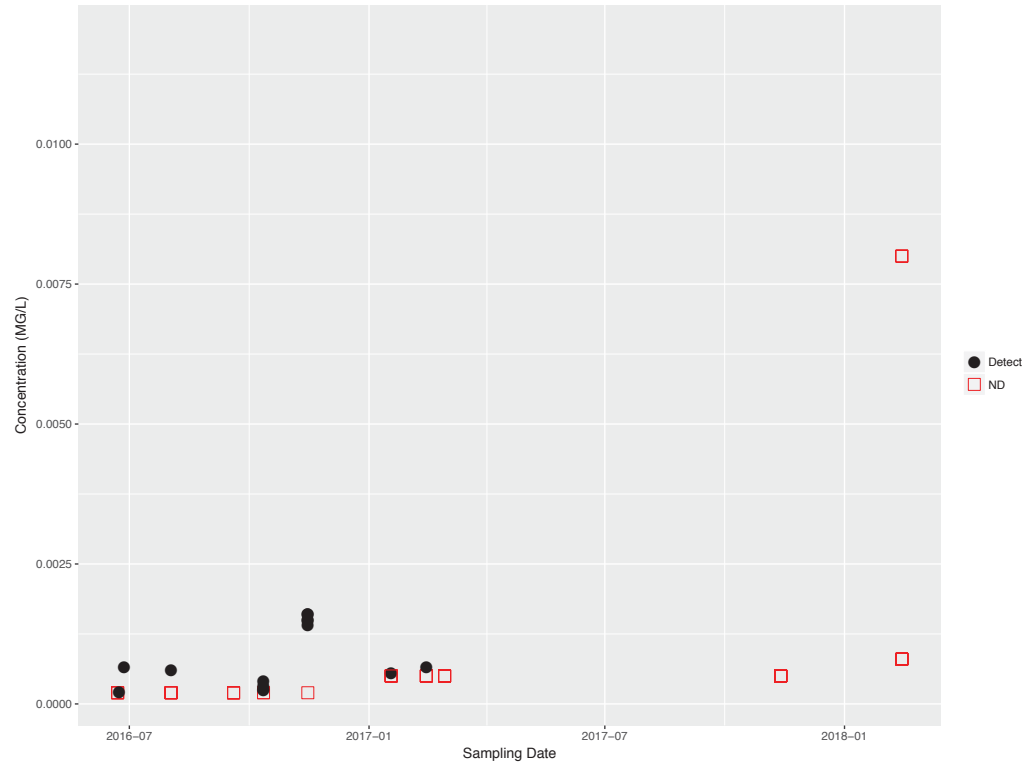
Grouped Upgradient BG (CC-1 FC-1 FC-2 FC-3A FC-3B) for PB



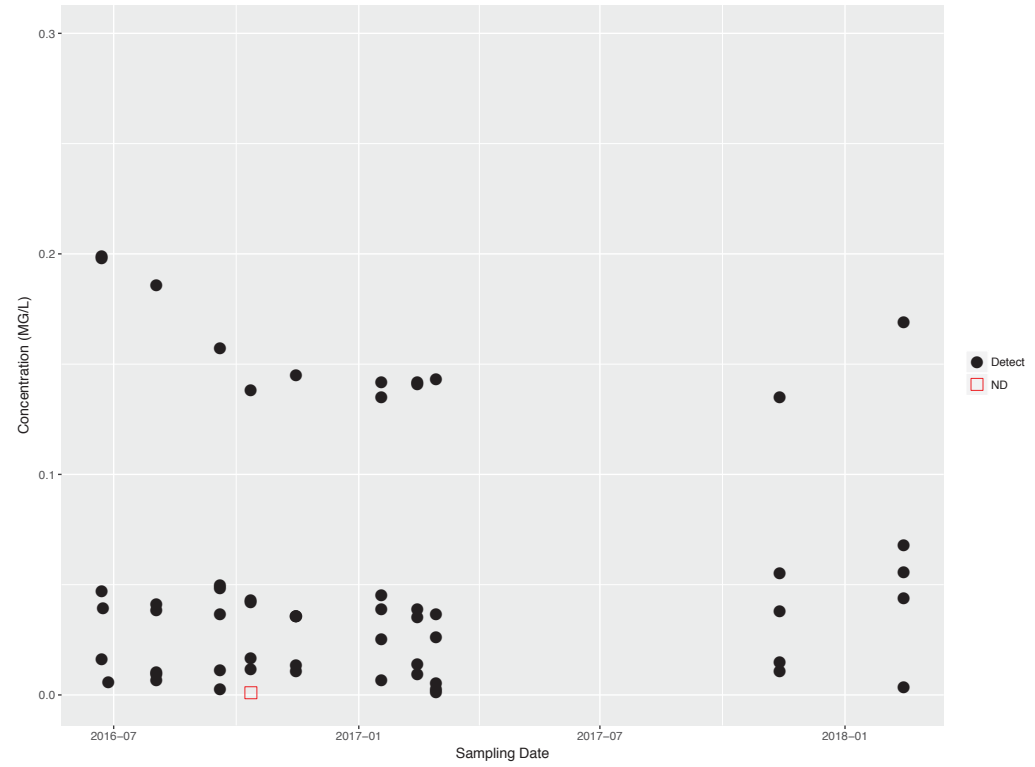
Grouped Upgradient BG (CC-1 FC-1 FC-2 FC-3A FC-3B) for Rad226+228



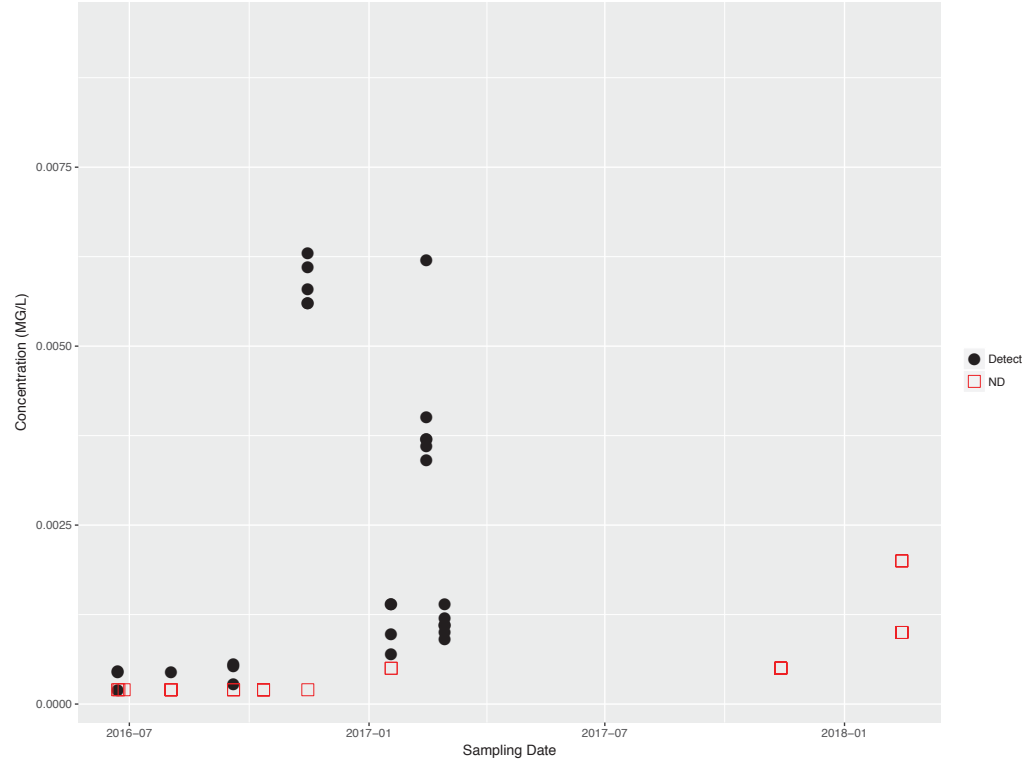
Grouped Upgradient BG (CC-1 FC-1 FC-2 FC-3A FC-3B) for SB



Grouped Upgradient BG (CC-1 FC-1 FC-2 FC-3A FC-3B) for SE



Grouped Upgradient BG (CC-1 FC-1 FC-2 FC-3A FC-3B) for TL

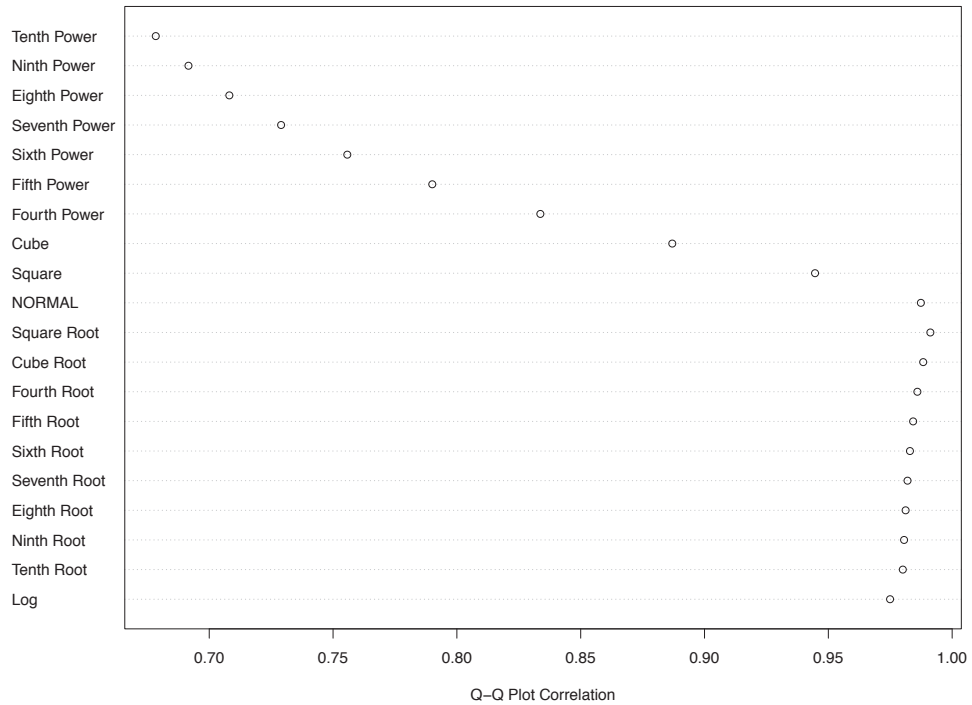


APPENDIX D

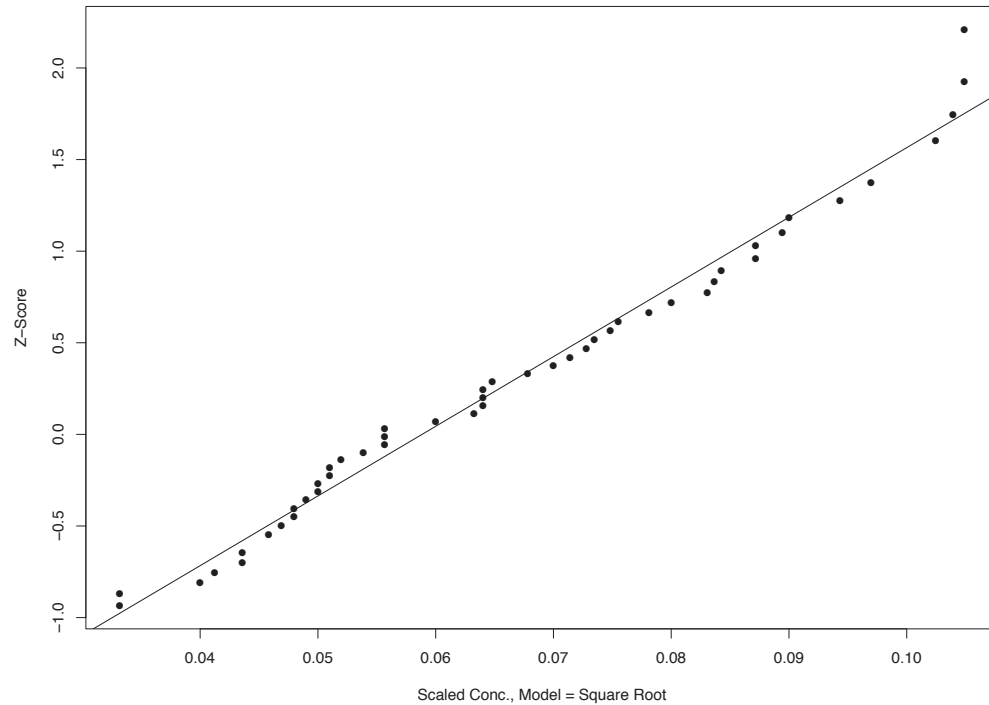
APPENDIX E

locid	gradient	date	dtw	analyte	result	units	coc.long	nd	conc	coc.alt	reglim	conc.half	coc	N	conc.r	conc.impute	out.nom	out.log	out	k
CC-1	U	2/28/2017	13.71	Barium Total (mg/l)	0.005	MG/L	BariumTotal	1	0.005	Total BA	2	0.0025	BA	2441	4.93E-04	0.00138984	TRUE	TRUE	TRUE	1
FC-2	U	8/22/2016	13.67	Barium Total (mg/l)	0.005	MG/L	BariumTotal	1	0.005	Total BA	2	0.0025	BA	2441	0.00455771	6.75E-04	TRUE	TRUE	TRUE	2
FC-2	U	2/14/2018	12.91	Barium Total	0.01	MG/L	BariumTotal	1	0.01	Total BA	2	0.005	BA	2441	0.00729795	0.00877056	TRUE	TRUE	TRUE	2
FC-3B	U	11/15/2016	43.01	Barium Total (mg/l)	0.0652	MG/L	BariumTotal	0	0.0652	Total BA	2	0.0652	BA	2441	0.0652	0.0652	TRUE	TRUE	TRUE	1
CC-1	U	2/14/2018	13.26	Fluoride Total	0.5	MG/L	FluorideTotal	0	0.5	Total F	4	0.5	F	2441	0.5	0.5	TRUE	TRUE	TRUE	2
CC-1	U	11/13/2017	13.16	Fluoride Total	0.45	MG/L	FluorideTotal	0	0.45	Total F	4	0.45	F	2441	0.45	0.45	TRUE	TRUE	TRUE	2
FC-1	U	2/14/2018	14.69	Fluoride Total	0.21	MG/L	FluorideTotal	0	0.21	Total F	4	0.21	F	2441	0.21	0.21	TRUE	TRUE	TRUE	2
FC-1	U	11/13/2017	14.78	Fluoride Total	0.2	MG/L	FluorideTotal	0	0.2	Total F	4	0.2	F	2441	0.2	0.2	TRUE	TRUE	TRUE	2
FC-3A	U	2/14/2018	17.23	Fluoride Total	0.62	MG/L	FluorideTotal	0	0.62	Total F	4	0.62	F	2441	0.62	0.62	TRUE	TRUE	TRUE	2
FC-3A	U	11/13/2017	17.28	Fluoride Total	0.56	MG/L	FluorideTotal	0	0.56	Total F	4	0.56	F	2441	0.56	0.56	TRUE	TRUE	TRUE	2
SC-10	D	2/15/2018	11.15	Fluoride Total	0.84	MG/L	FluorideTotal	0	0.84	Total F	4	0.84	F	2441	0.84	0.84	TRUE	TRUE	TRUE	2
SC-10	D	11/14/2017	10.82	Fluoride Total	0.82	MG/L	FluorideTotal	0	0.82	Total F	4	0.82	F	2441	0.82	0.82	TRUE	TRUE	TRUE	2
SC-11	D	2/15/2018	8.13	Fluoride Total	0.77	MG/L	FluorideTotal	0	0.77	Total F	4	0.77	F	2441	0.77	0.77	TRUE	TRUE	TRUE	2
SC-11	D	11/14/2017	7.85	Fluoride Total	0.76	MG/L	FluorideTotal	0	0.76	Total F	4	0.76	F	2441	0.76	0.76	TRUE	TRUE	TRUE	2
SC-12	D	2/15/2018	9.04	Fluoride Total	1.26	MG/L	FluorideTotal	0	1.26	Total F	4	1.26	F	2441	1.26	1.26	TRUE	TRUE	TRUE	2
SC-12	D	11/14/2017	9.05	Fluoride Total	1.27	MG/L	FluorideTotal	0	1.27	Total F	4	1.27	F	2441	1.27	1.27	TRUE	TRUE	TRUE	2
SC-14	D	2/15/2018	8.94	Fluoride Total	1.06	MG/L	FluorideTotal	0	1.06	Total F	4	1.06	F	2441	1.06	1.06	TRUE	TRUE	TRUE	2
SC-14	D	11/14/2017	9.32	Fluoride Total	1.06	MG/L	FluorideTotal	0	1.06	Total F	4	1.06	F	2441	1.06	1.06	TRUE	TRUE	TRUE	2
CC-1	U	6/22/2016	14.07	Mercury Total (mg/l)	4.70E-06	MG/L	MercuryTotal	0	4.70E-06	Total HG	0.002	4.70E-06	HG	2441	4.70E-06	4.70E-06	TRUE	TRUE	TRUE	5
CC-1	U	6/22/2016	NA	Mercury Total (mg/l)	4.70E-06	MG/L	MercuryTotal	0	4.70E-06	Total HG	0.002	4.70E-06	HG	2441	4.70E-06	4.70E-06	TRUE	TRUE	TRUE	5
CC-1	U	1/18/2017	13.35	Mercury Total (mg/l)	7.00E-06	MG/L	MercuryTotal	0	7.00E-06	Total HG	0.002	7.00E-06	HG	2441	7.00E-06	7.00E-06	TRUE	TRUE	TRUE	5
CC-1	U	1/18/2017	NA	Mercury Total (mg/l)	8.00E-06	MG/L	MercuryTotal	0	8.00E-06	Total HG	0.002	8.00E-06	HG	2441	8.00E-06	8.00E-06	TRUE	TRUE	TRUE	5
CC-1	U	2/14/2018	13.26	Mercury Total	5.00E-06	MG/L	MercuryTotal	0	5.00E-06	Total HG	0.002	5.00E-06	HG	2441	5.00E-06	5.00E-06	TRUE	TRUE	TRUE	5
FC-1	U	6/22/2016	15.53	Mercury Total (mg/l)	1.30E-06	MG/L	MercuryTotal	0	1.30E-06	Total HG	0.002	1.30E-06	HG	2441	1.30E-06	1.30E-06	TRUE	TRUE	TRUE	1
SC-10	D	6/22/2016	11.43	Mercury Total (mg/l)	3.60E-05	MG/L	MercuryTotal	0	3.60E-05	Total HG	0.002	3.60E-05	HG	2441	3.60E-05	3.60E-05	TRUE	TRUE	TRUE	2
SC-10	D	9/20/2016	11.28	Mercury Total (mg/l)	1.60E-05	MG/L	MercuryTotal	0	1.60E-05	Total HG	0.002	1.60E-05	HG	2441	1.60E-05	1.60E-05	TRUE	TRUE	TRUE	2
SC-11	D	6/22/2016	8.4	Mercury Total (mg/l)	6.70E-05	MG/L	MercuryTotal	0	6.70E-05	Total HG	0.002	6.70E-05	HG	2441	6.70E-05	6.70E-05	TRUE	TRUE	TRUE	1
SC-14	D	6/22/2016	9.94	Mercury Total (mg/l)	1.20E-05	MG/L	MercuryTotal	0	1.20E-05	Total HG	0.002	1.20E-05	HG	2441	1.20E-05	1.20E-05	TRUE	TRUE	TRUE	1
FC-3A	U	6/23/2016	17.91	Molybdenum Total (mg/l)	0.005	MG/L	Molybdenum	1	0.005	Total MO	NA	0.0025	MO	2441	0.00425585	0.0010679	TRUE	TRUE	TRUE	1
SC-14	D	2/15/2018	8.94	Molybdenum Total	0.012	MG/L	Molybdenum	0	0.012	Total MO	NA	0.012	MO	2441	0.012	0.012	TRUE	TRUE	TRUE	1
FC-2	U	2/28/2017	13.06	Lead Total (mg/l)	0.0089	MG/L	LeadTotal	0	0.0089	Total PB	0.015	0.0089	PB	2441	0.0089	0.0089	TRUE	TRUE	TRUE	1
SC-13	D	11/14/2017	9.54	Antimony Total	0.0071	MG/L	AntimonyTotal	0	0.0071	Total SB	0.006	0.0071	SB	2441	0.0071	0.0071	TRUE	TRUE	TRUE	1
FC-2	U	10/12/2016	13.49	Selenium Total (mg/l)	0.001	MG/L	SeleniumTotal	1	0.001	Total SE	0.05	0.0004	SE	2441	5.90E-04	9.45E-04	TRUE	TRUE	TRUE	1
SC-11	D	2/15/2018	8.13	Selenium Total	0.355	MG/L	SeleniumTotal	0	0.355	Total SE	0.05	0.355	SE	2441	0.355	0.355	TRUE	TRUE	TRUE	1
SC-12	D	10/13/2016	NA	Selenium Total (mg/l)	0.0755	MG/L	SeleniumTotal	0	0.0755	Total SE	0.05	0.0755	SE	2441	0.0755	0.0755	TRUE	TRUE	TRUE	1

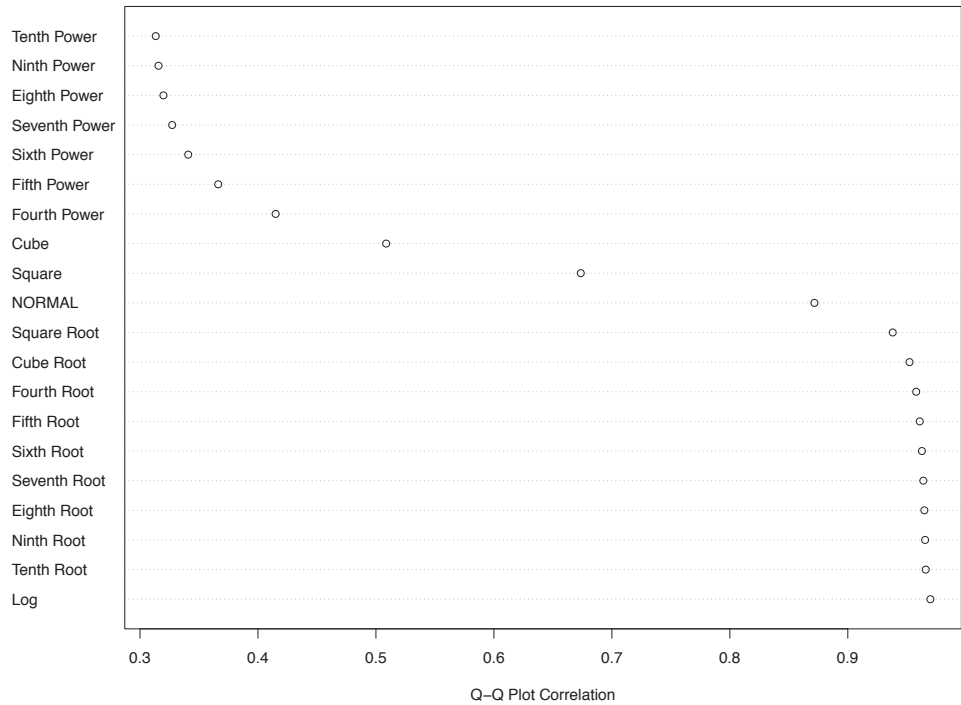
Fit Corr. by Model for Grouped BG for AS



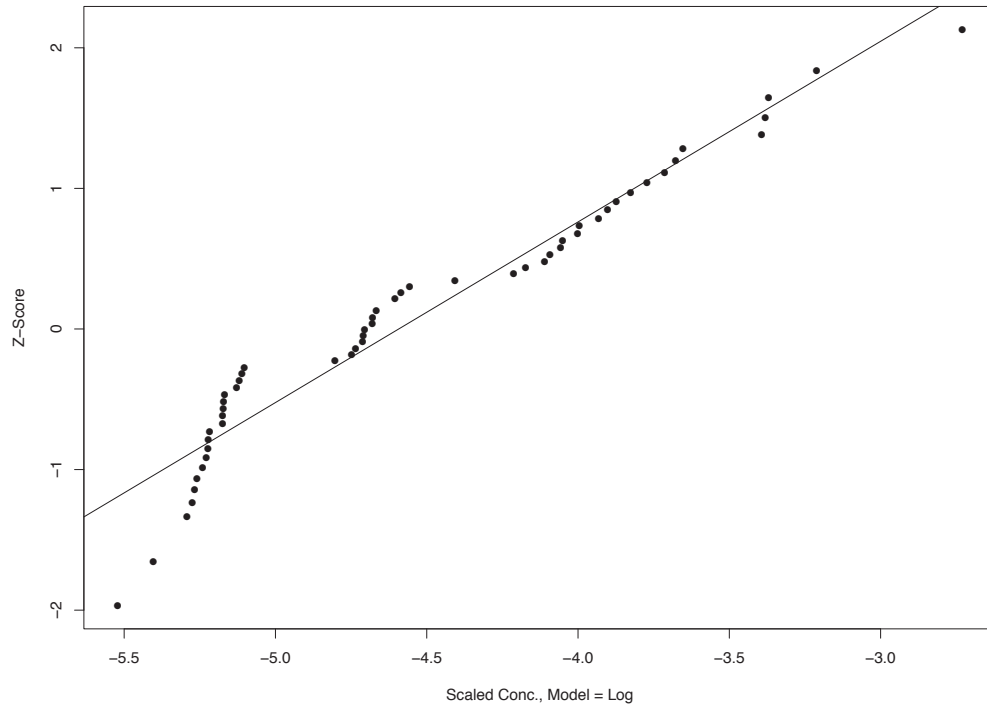
Censored Q-Q Plot for Grouped BG for AS



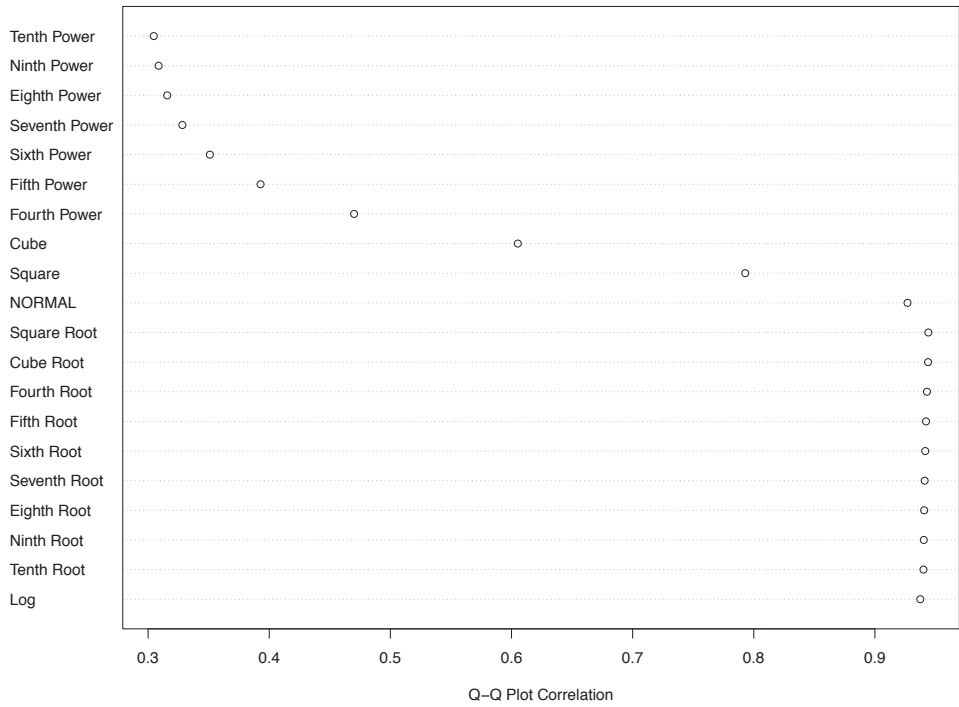
Fit Corr. by Model for Grouped BG for BA



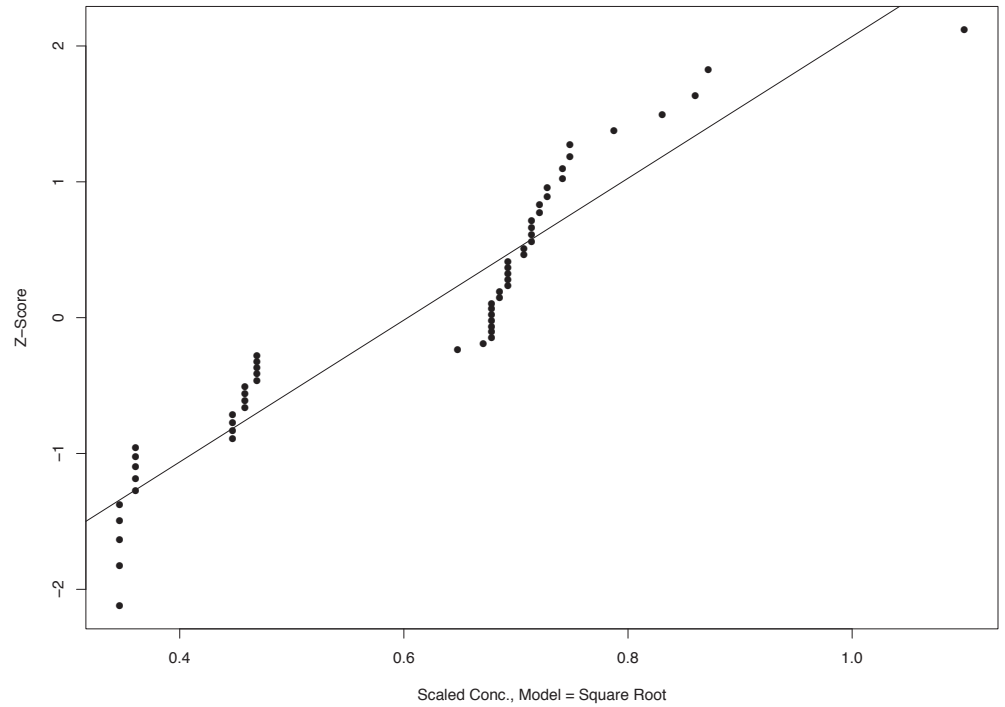
Censored Q-Q Plot for Grouped BG for BA



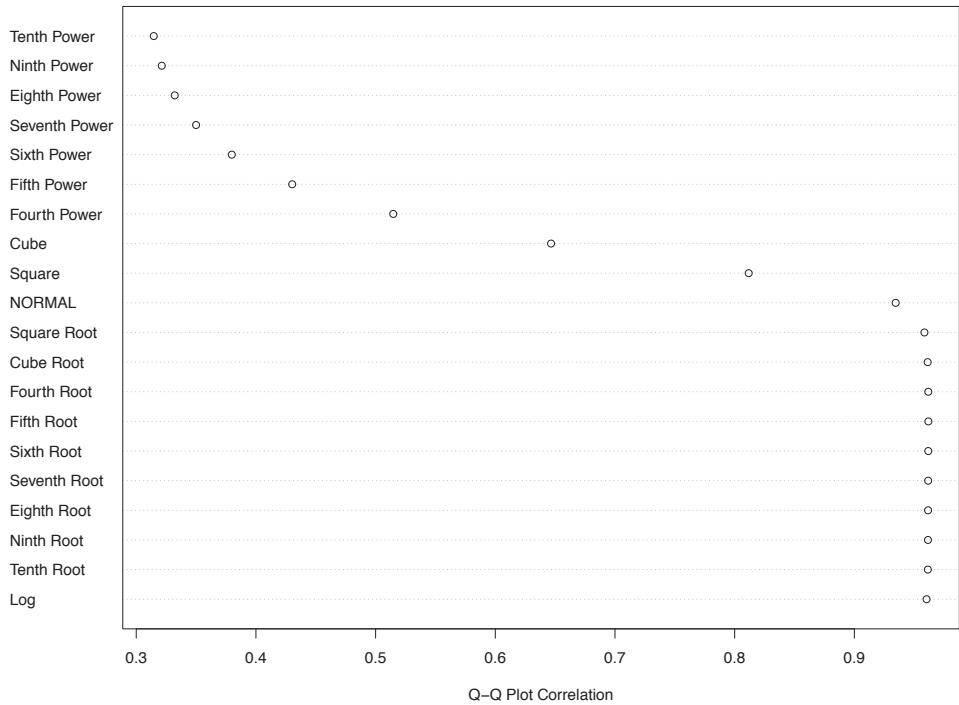
Fit Corr. by Model for Grouped BG for F



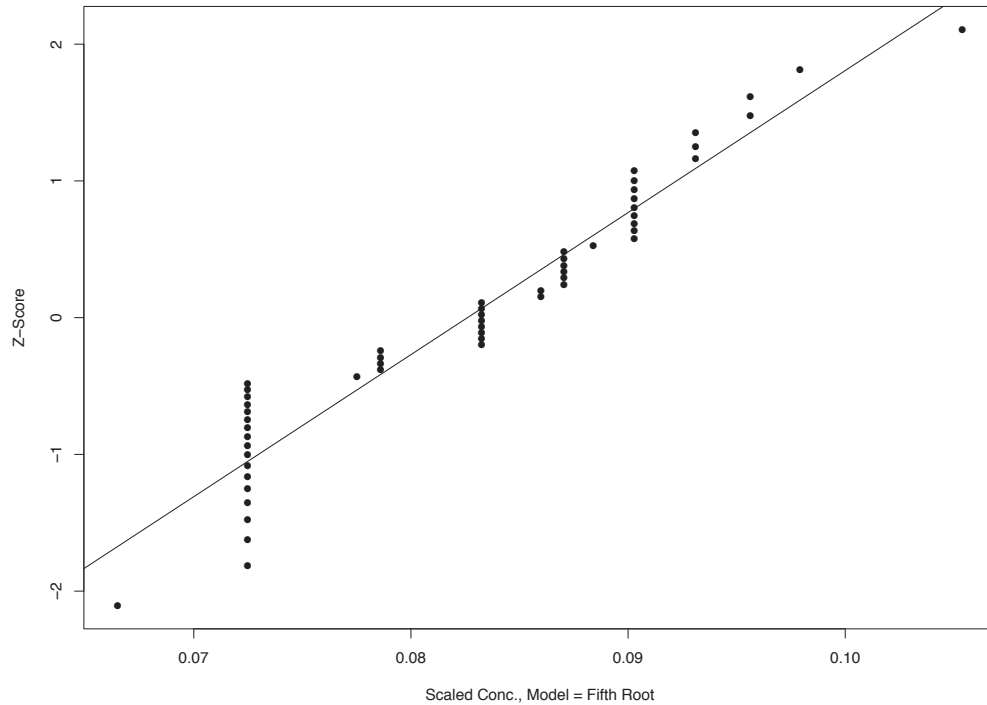
Censored Q-Q Plot for Grouped BG for F



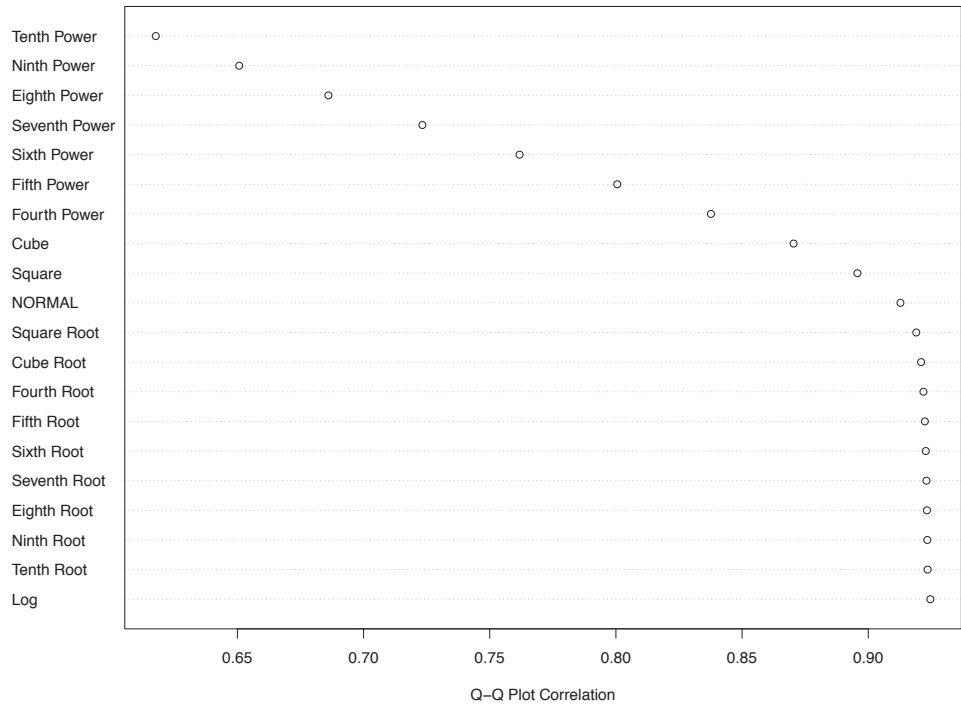
Fit Corr. by Model for Grouped BG for HG



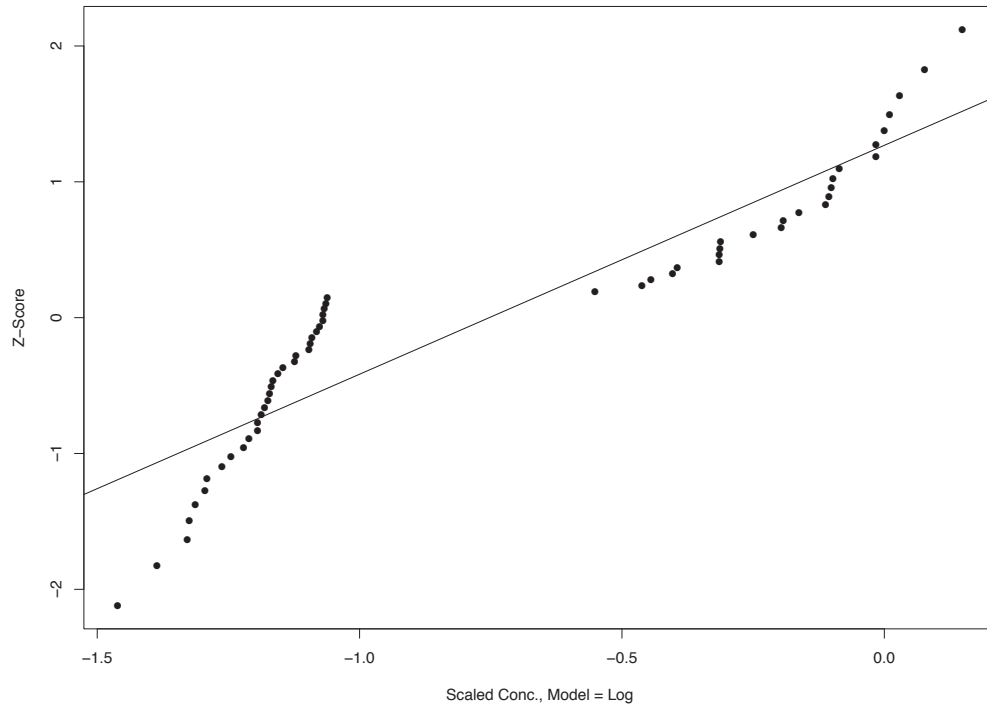
Censored Q-Q Plot for Grouped BG for HG



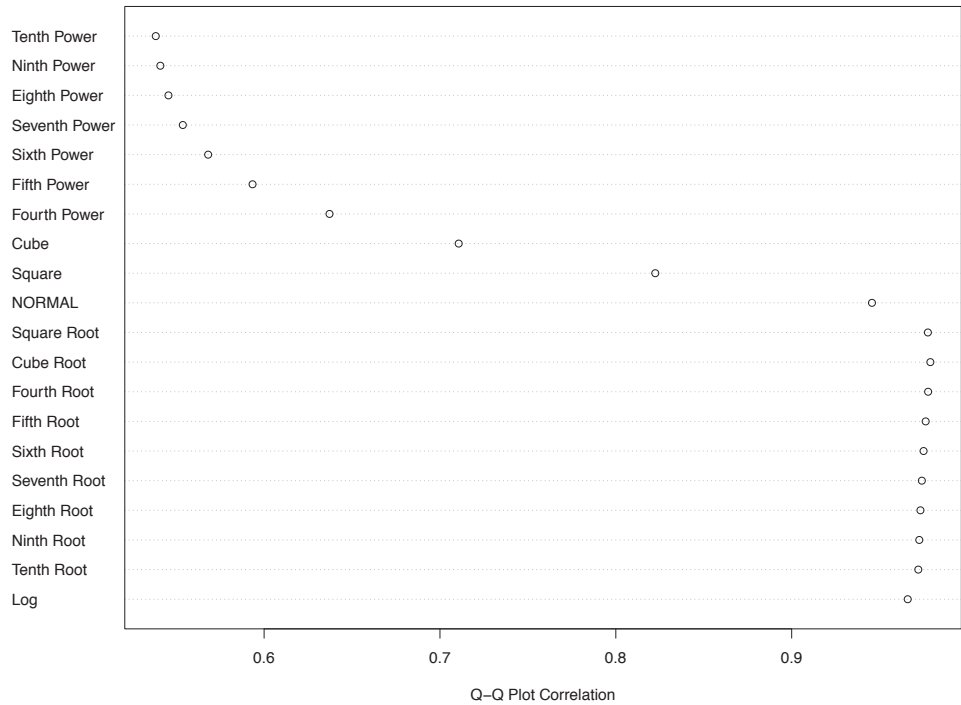
Fit Corr. by Model for Grouped BG for LI



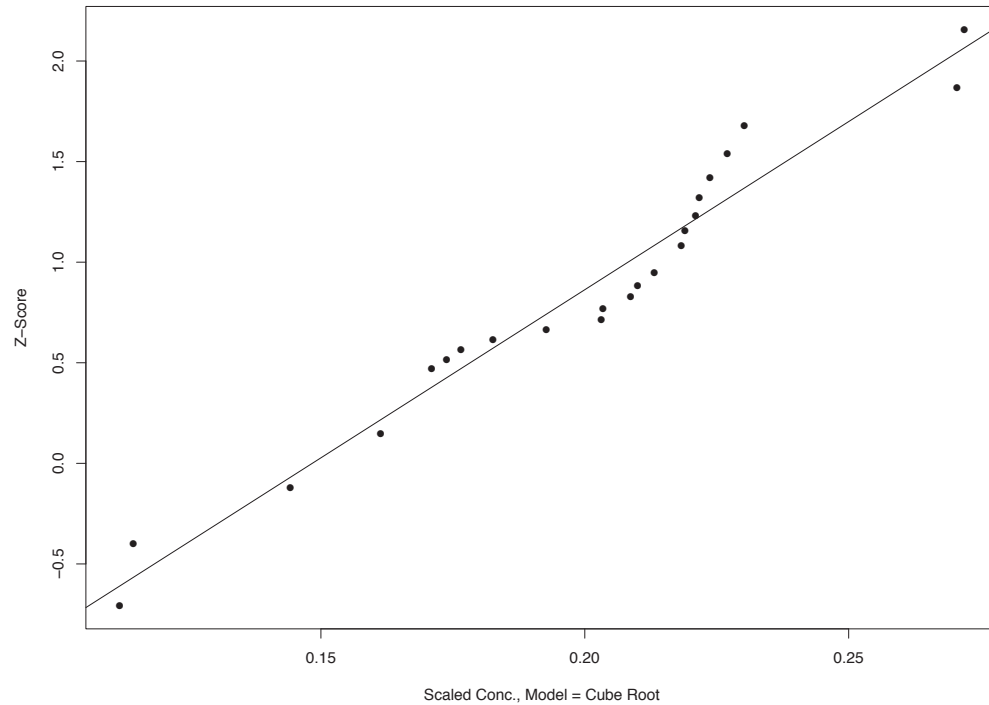
Censored Q-Q Plot for Grouped BG for LI



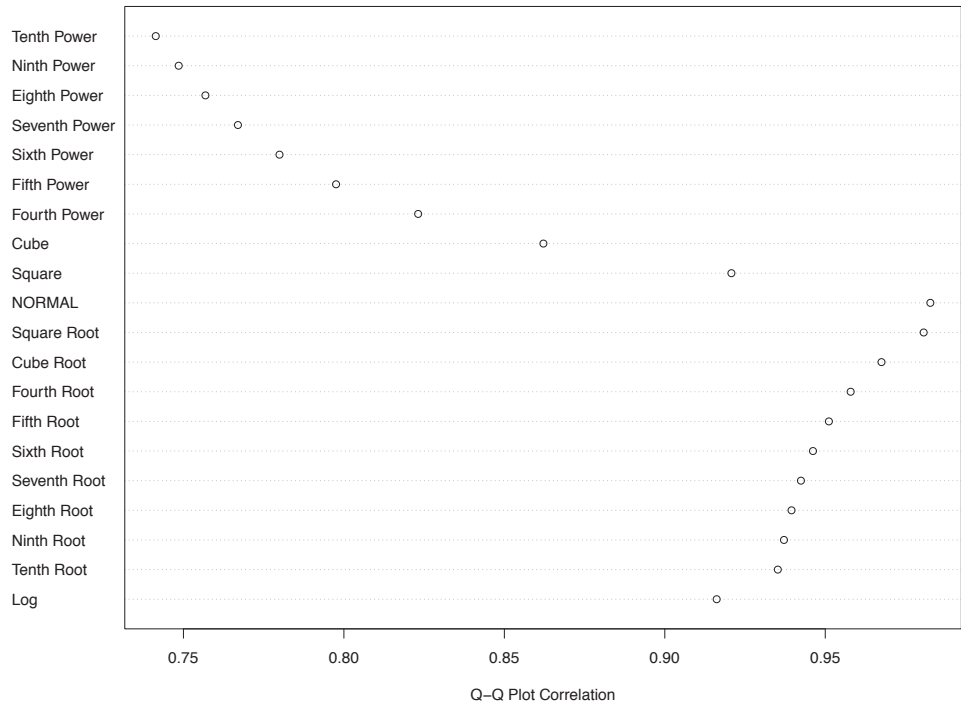
Fit Corr. by Model for Grouped BG for MO



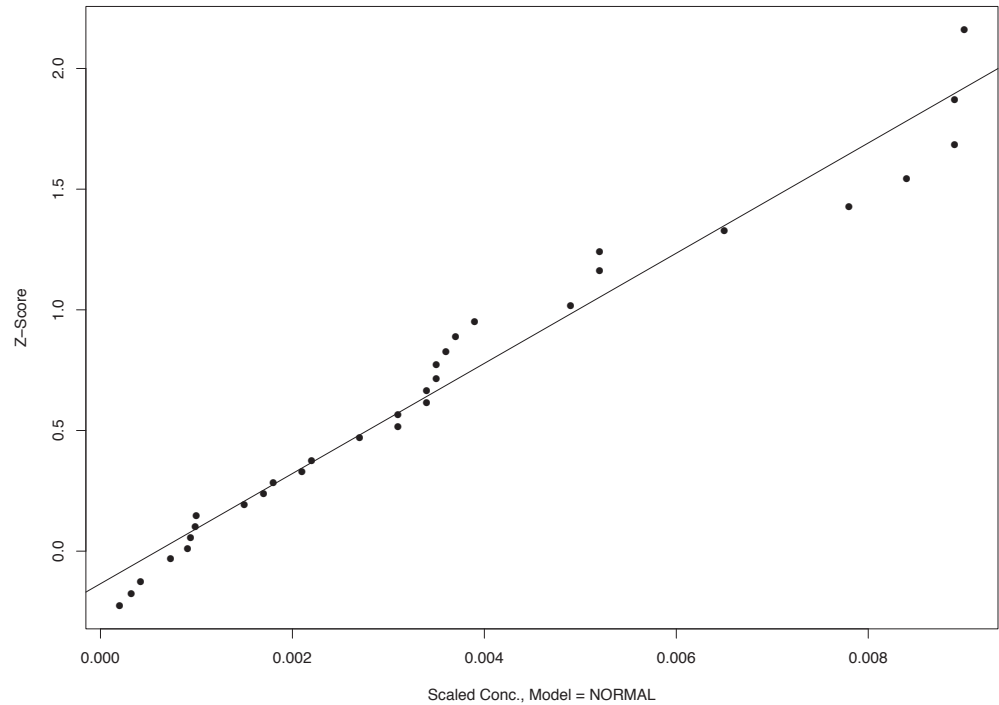
Censored Q-Q Plot for Grouped BG for MO



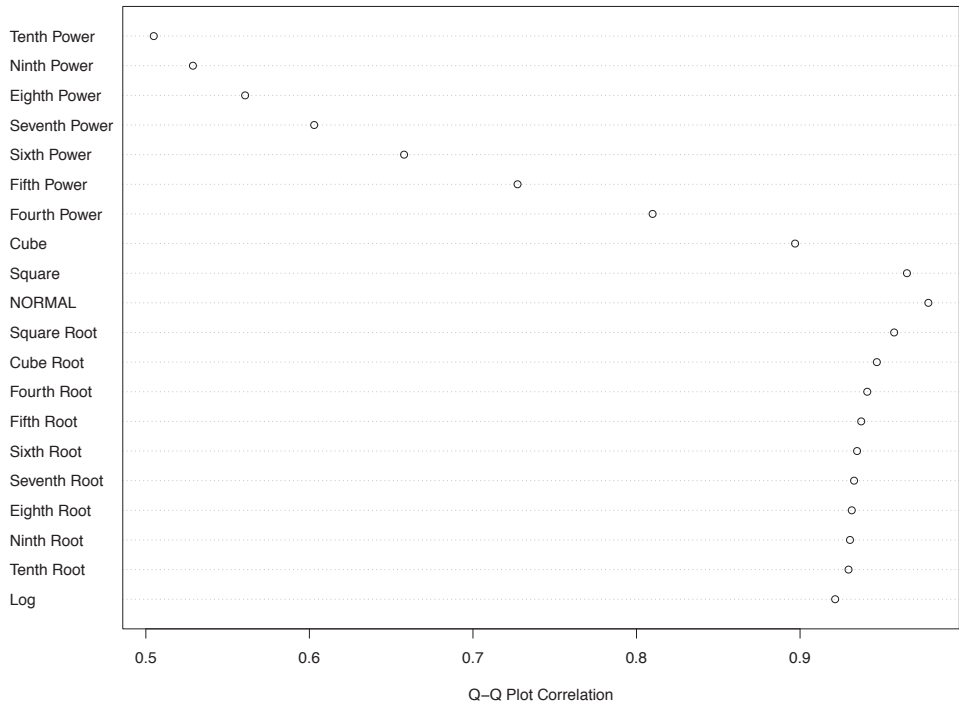
Fit Corr. by Model for Grouped BG for PB



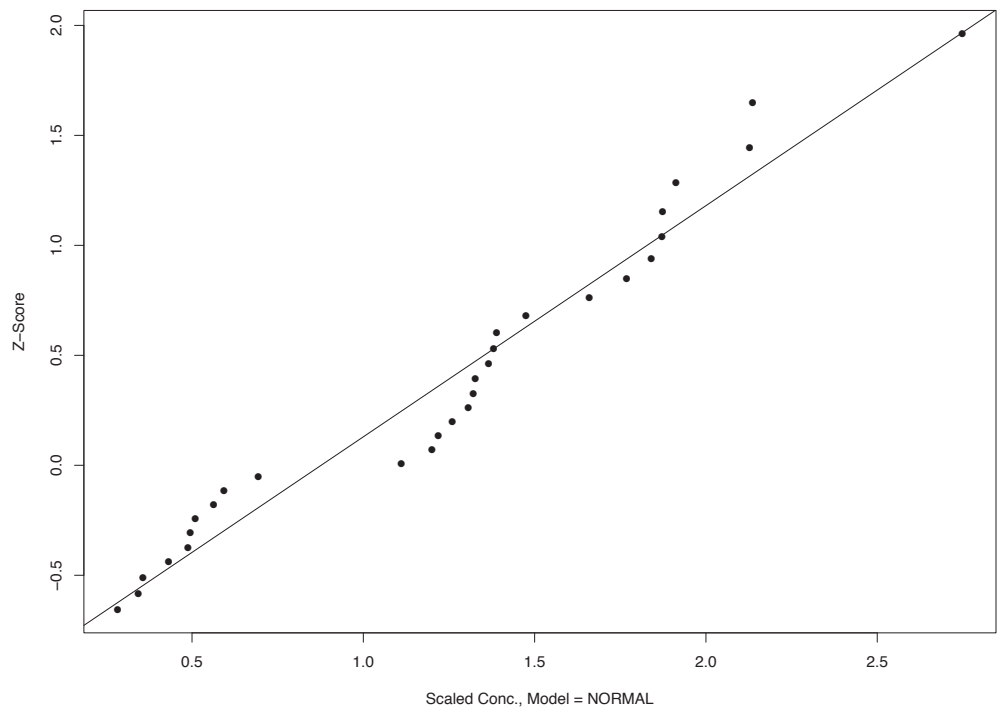
Censored Q-Q Plot for Grouped BG for PB



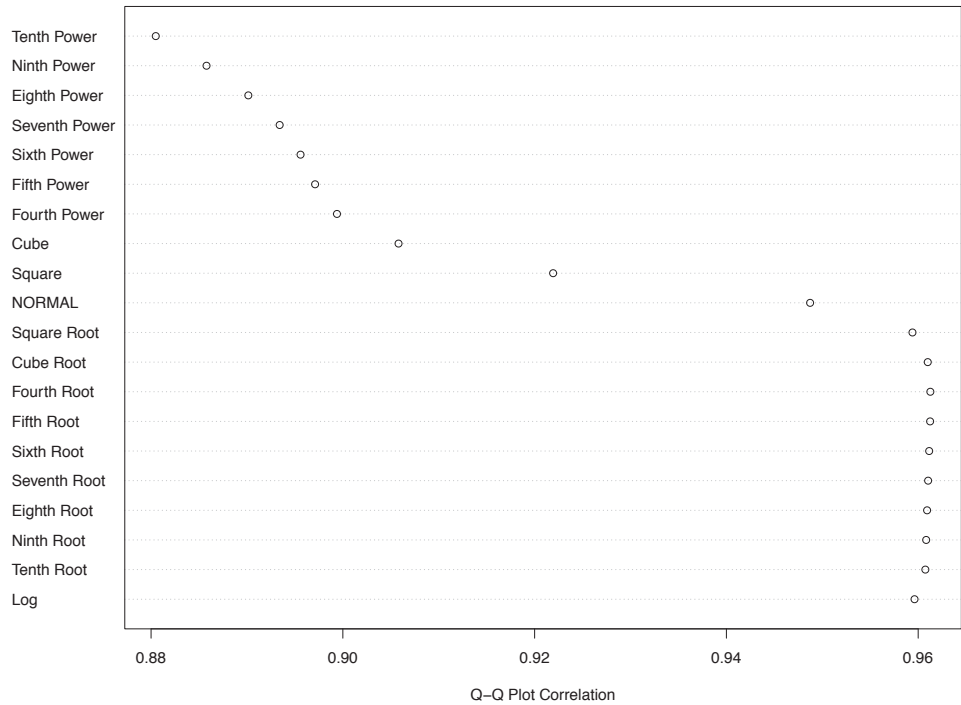
Fit Corr. by Model for Grouped BG for Rad226+228



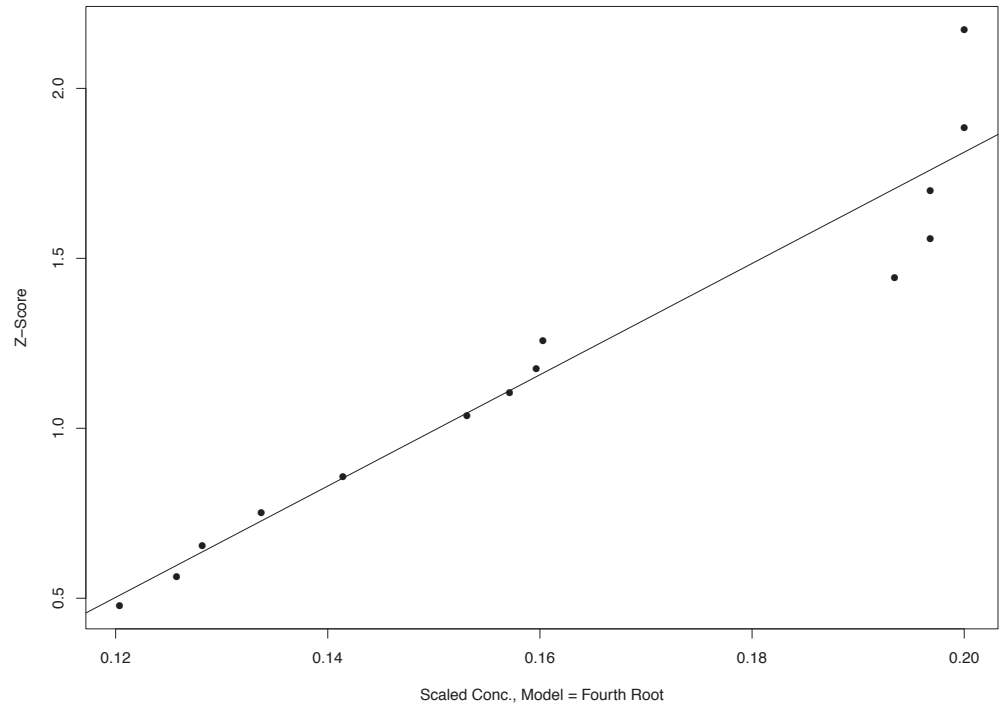
Censored Q-Q Plot for Grouped BG for Rad226+228



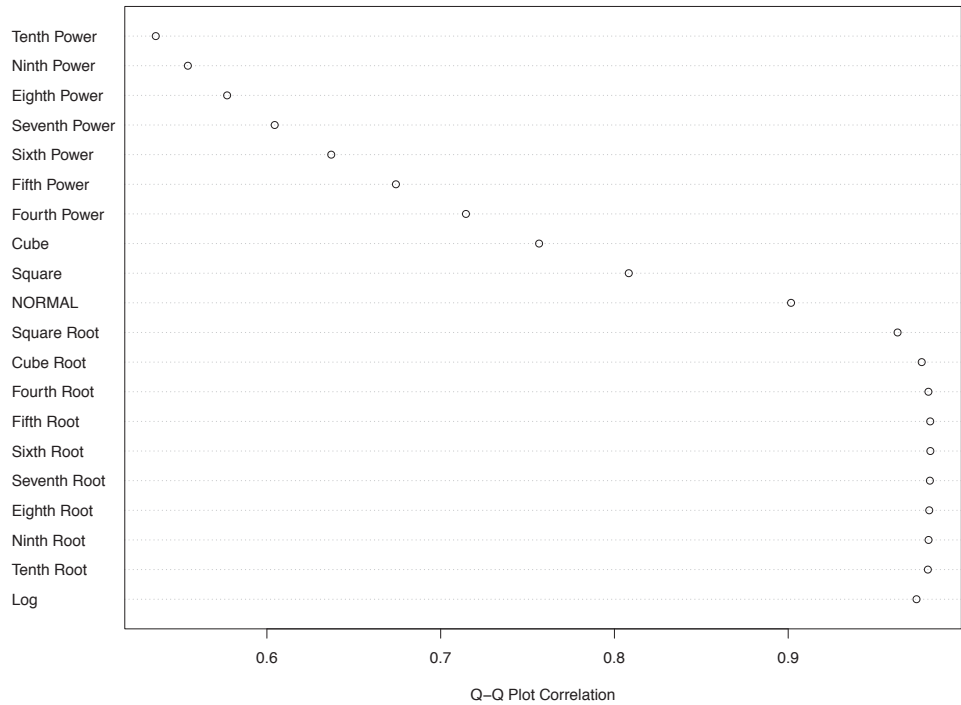
Fit Corr. by Model for Grouped BG for SB



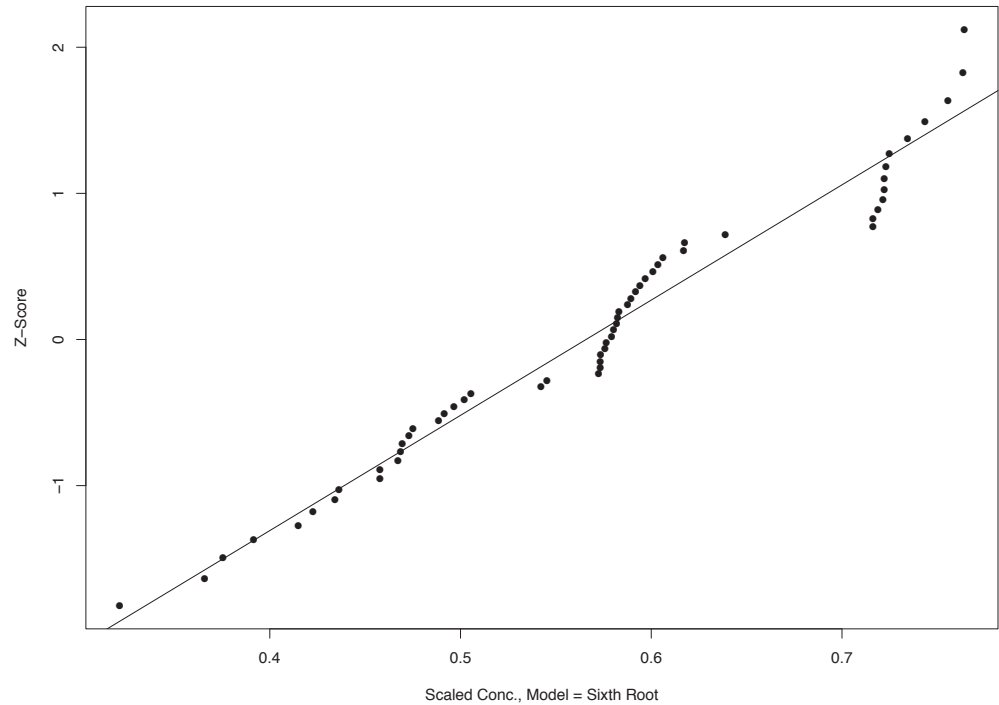
Censored Q-Q Plot for Grouped BG for SB



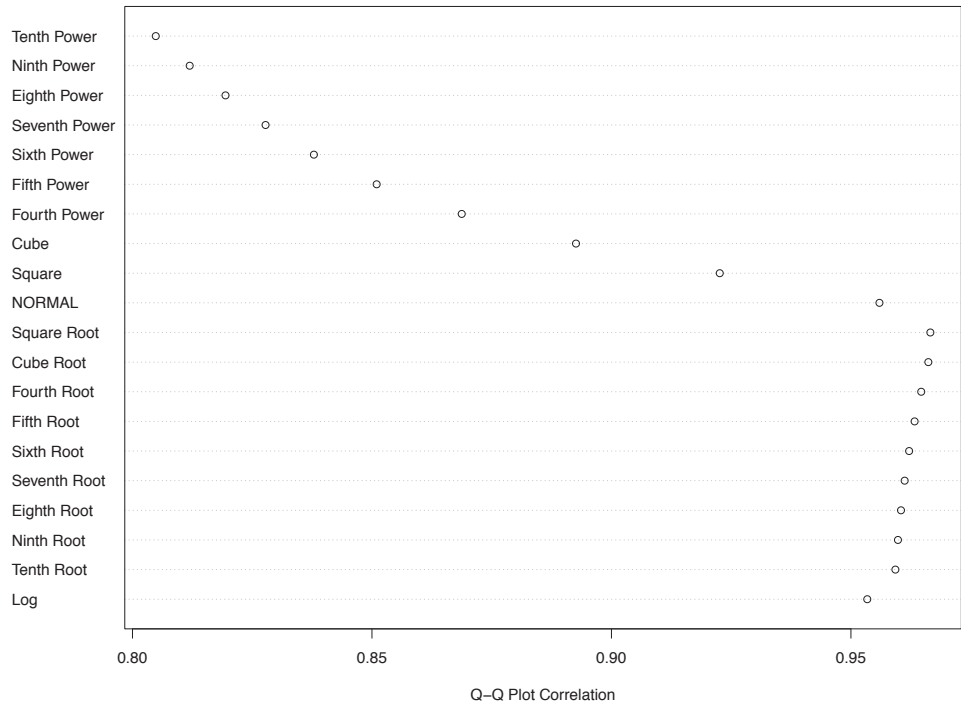
Fit Corr. by Model for Grouped BG for SE



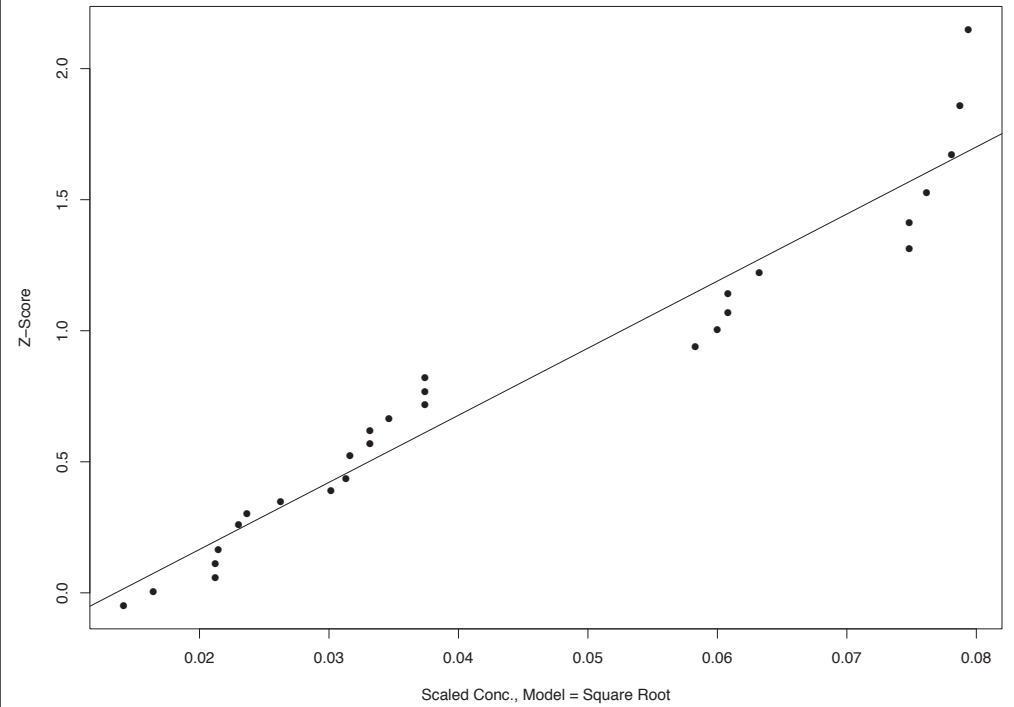
Censored Q-Q Plot for Grouped BG for SE



Fit Corr. by Model for Grouped BG for TL

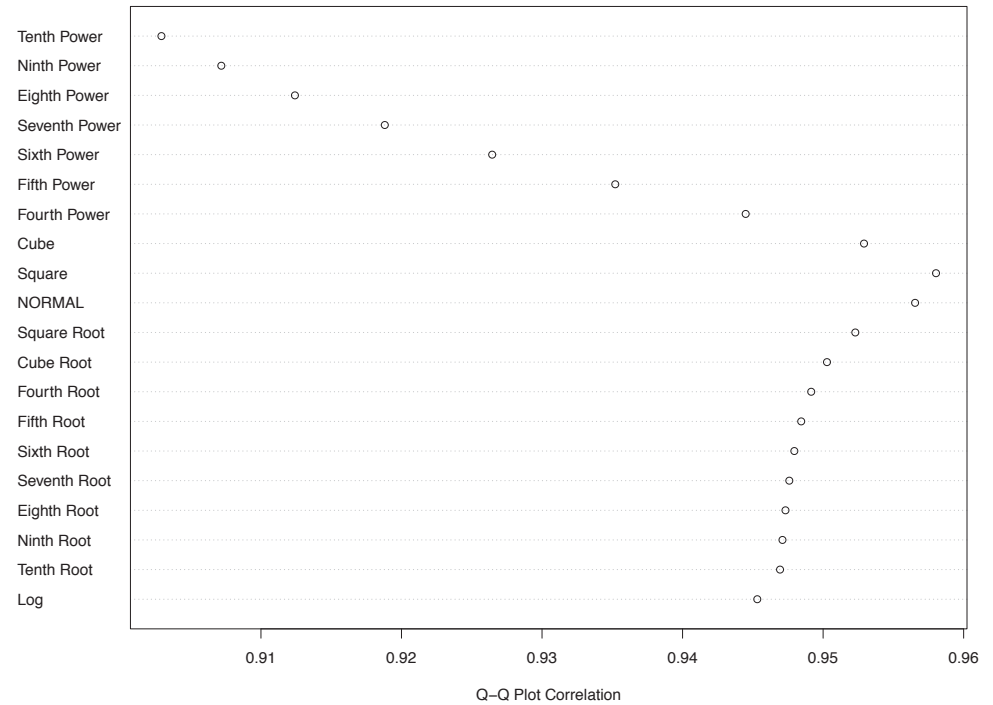


Censored Q-Q Plot for Grouped BG for TL

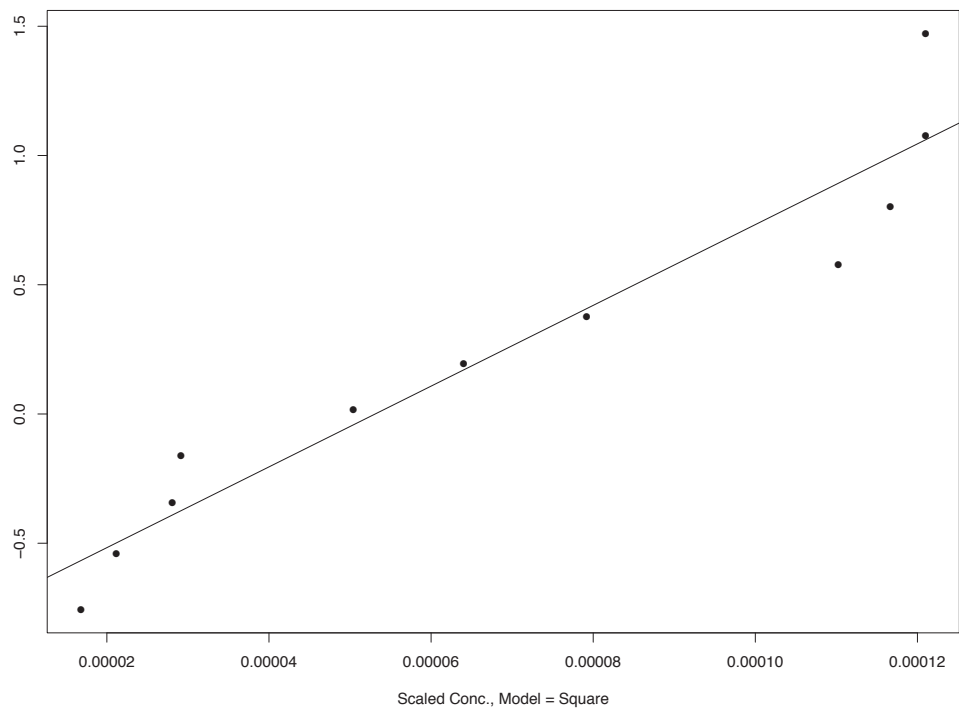


APPENDIX F

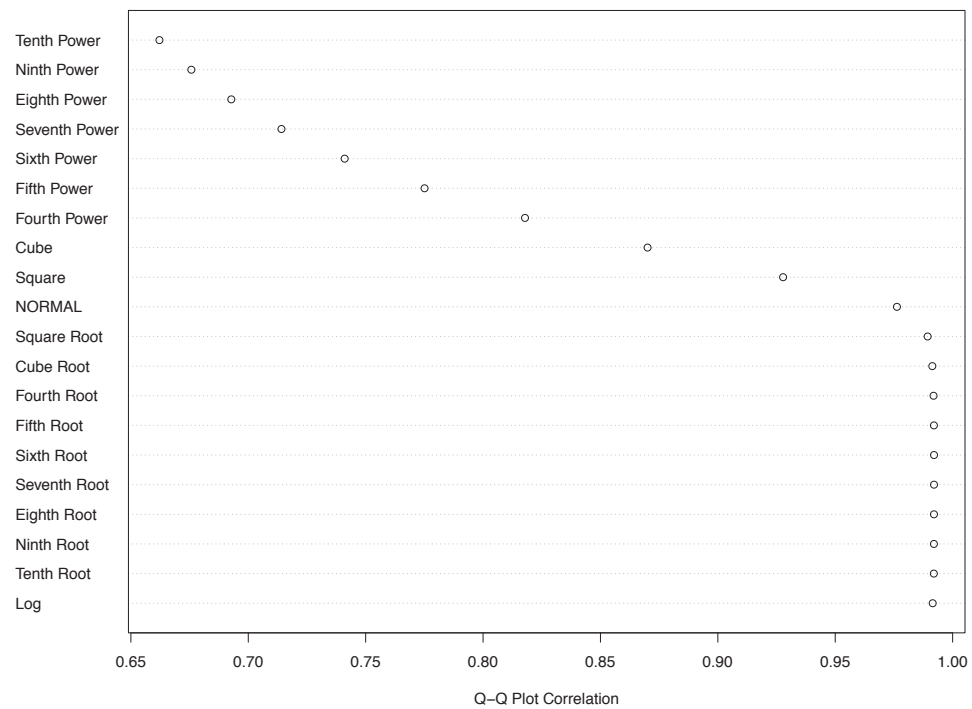
Fit Corr. by Model for AS at Location CC-1



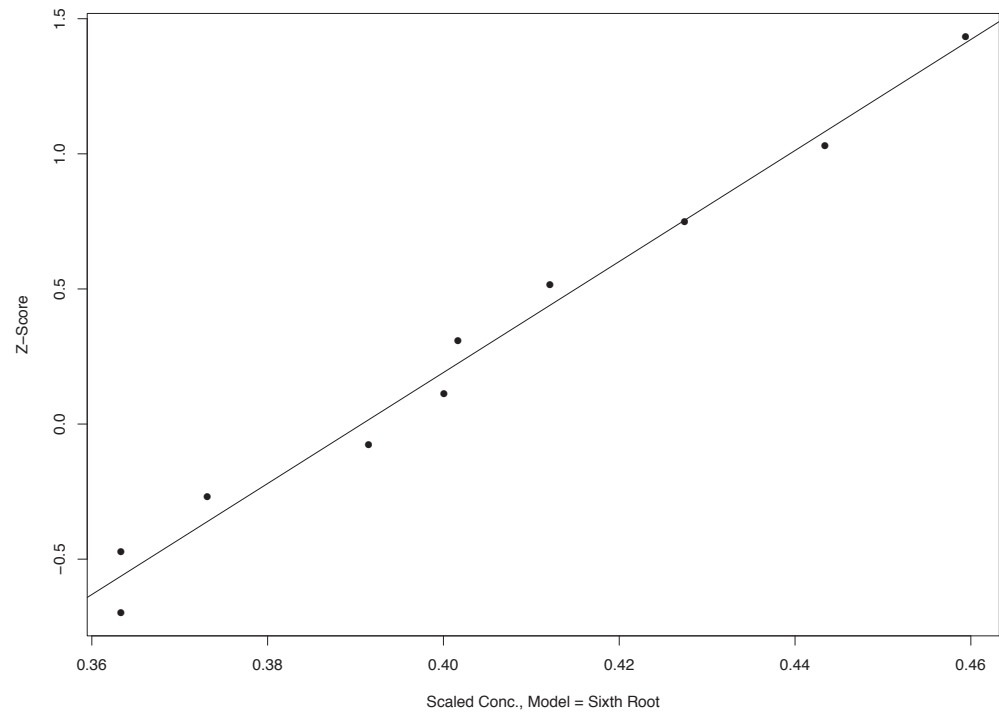
Censored Q-Q Plot for AS at Location CC-1



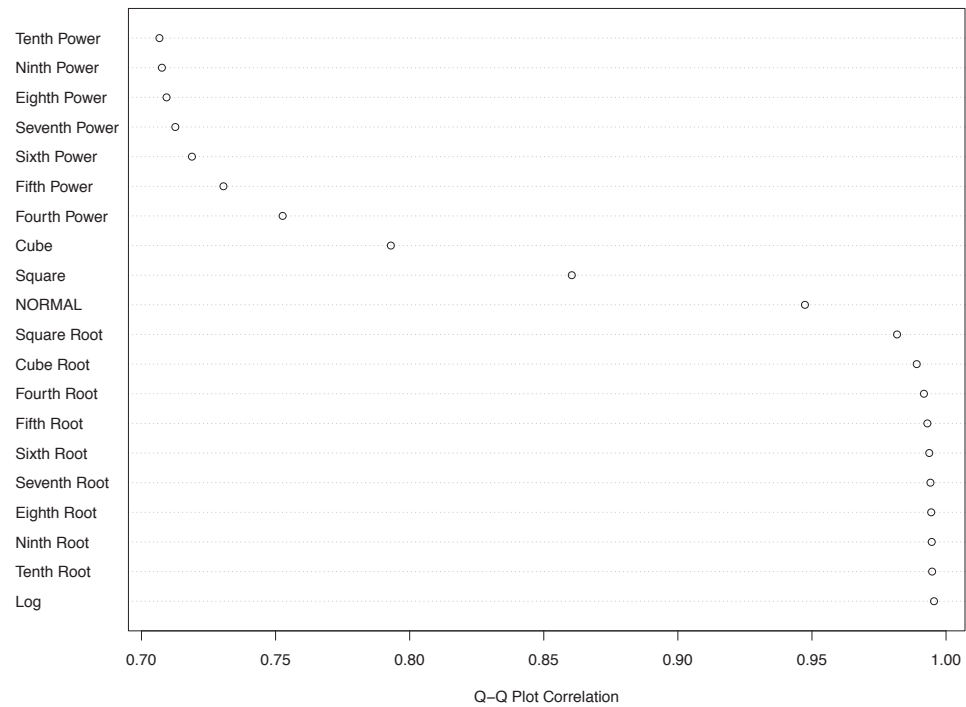
Fit Corr. by Model for AS at Location FC-1



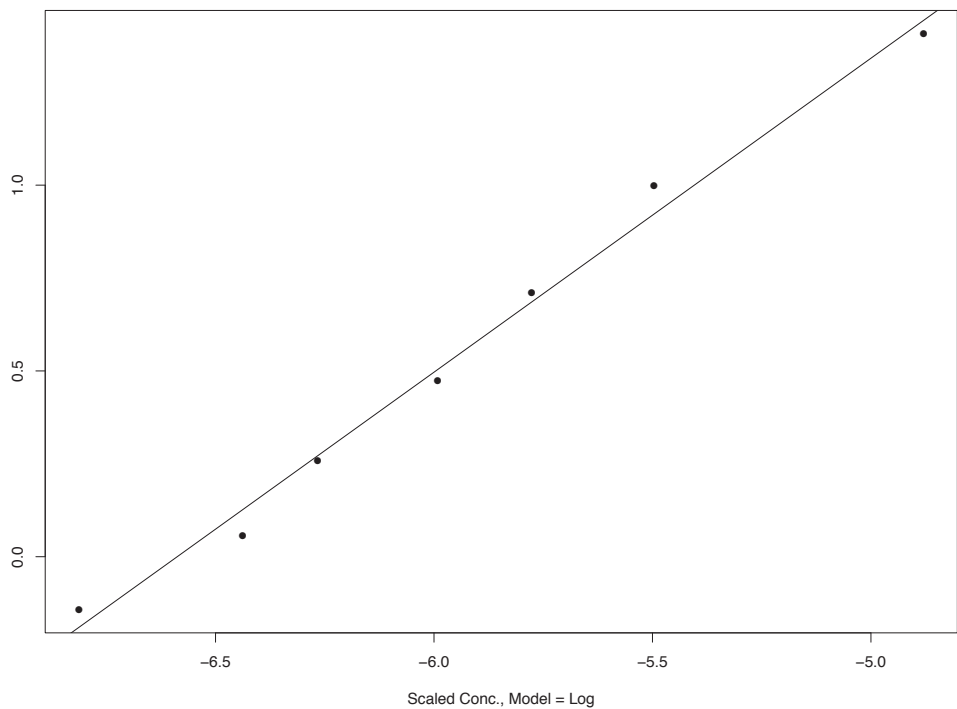
Censored Q-Q Plot for AS at Location FC-1



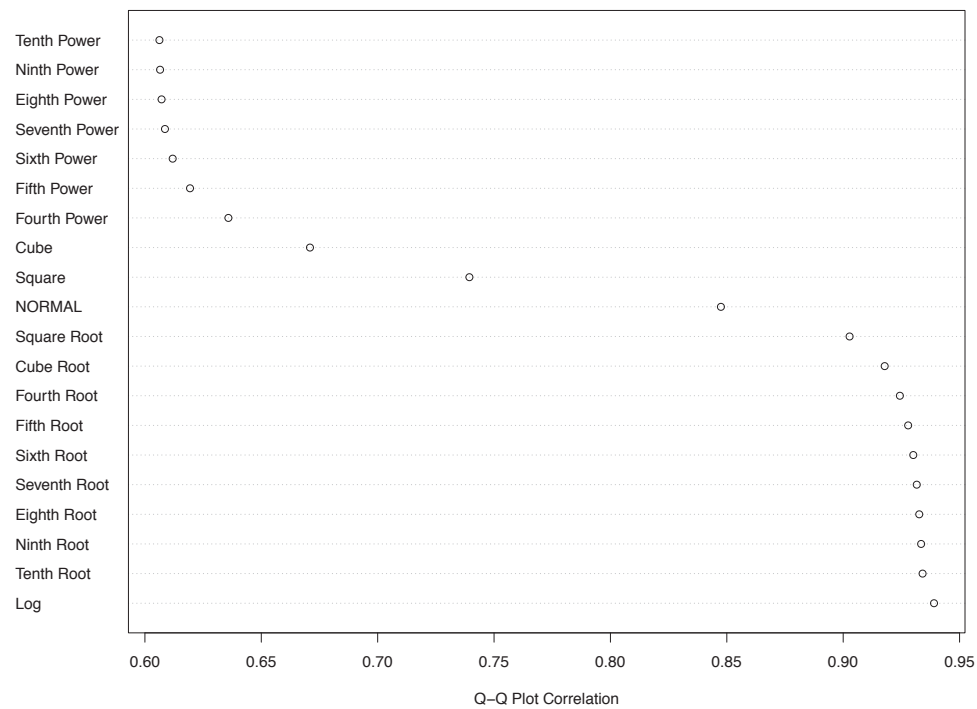
Fit Corr. by Model for AS at Location FC-2



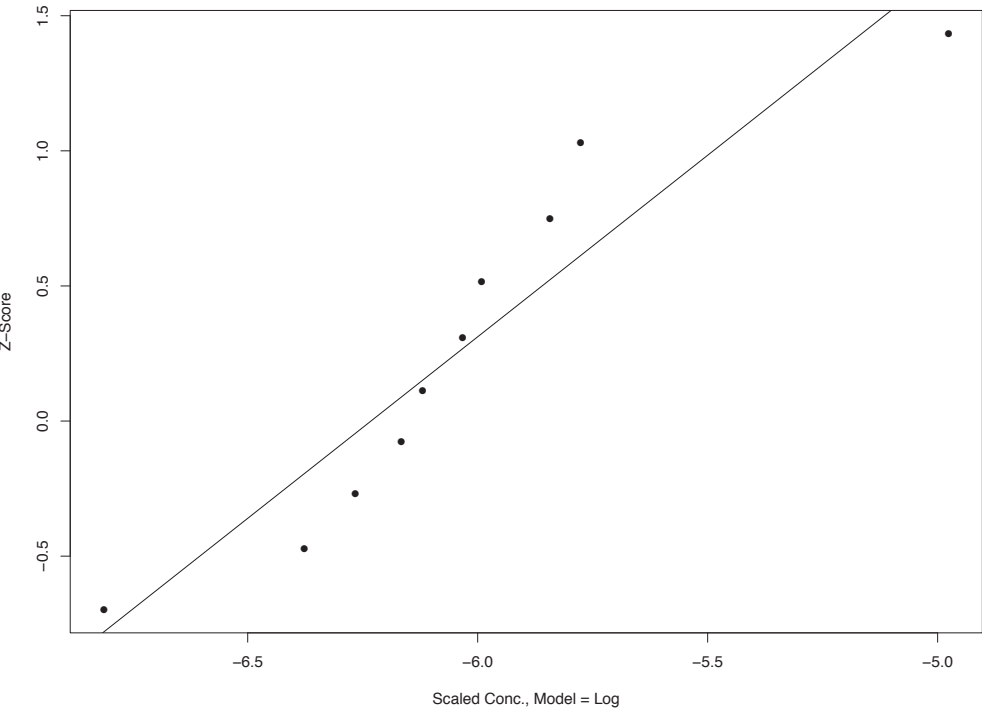
Censored Q-Q Plot for AS at Location FC-2



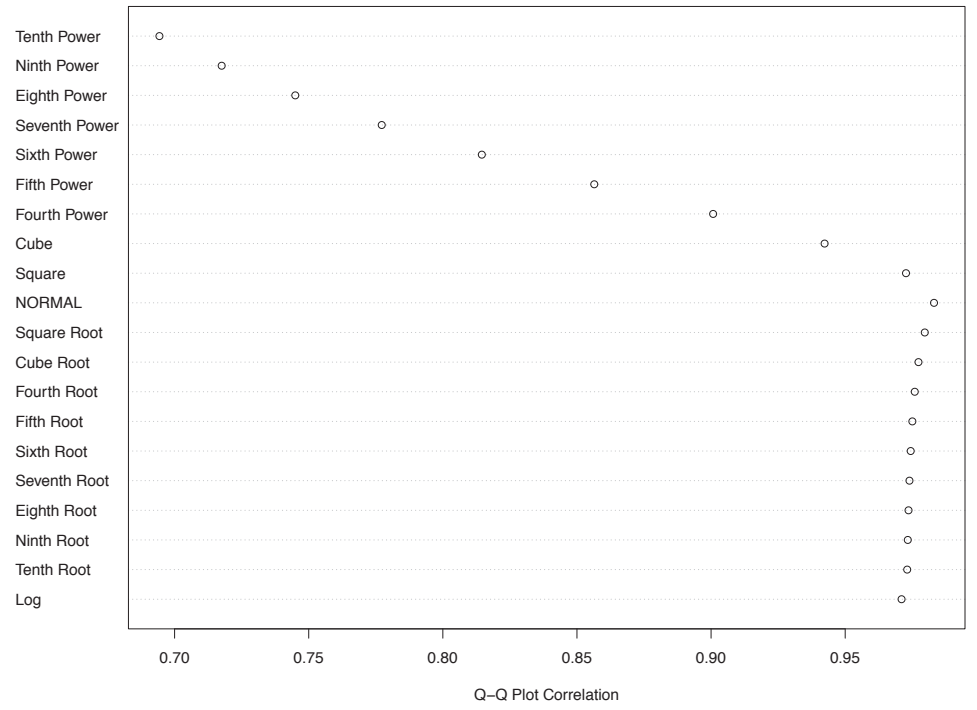
Fit Corr. by Model for AS at Location FC-3A



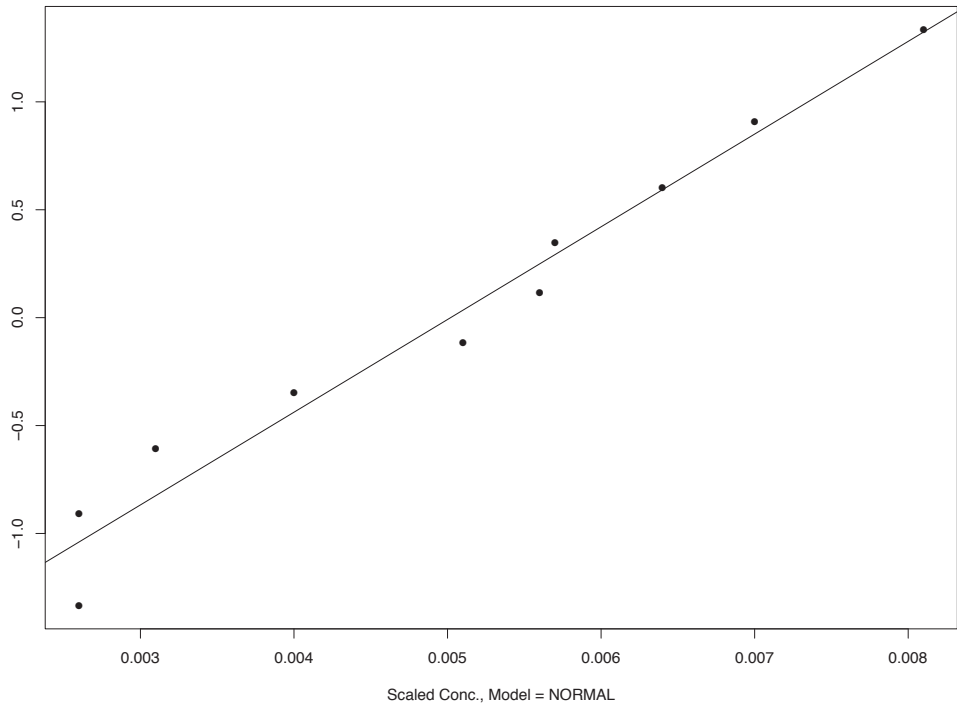
Censored Q-Q Plot for AS at Location FC-3A



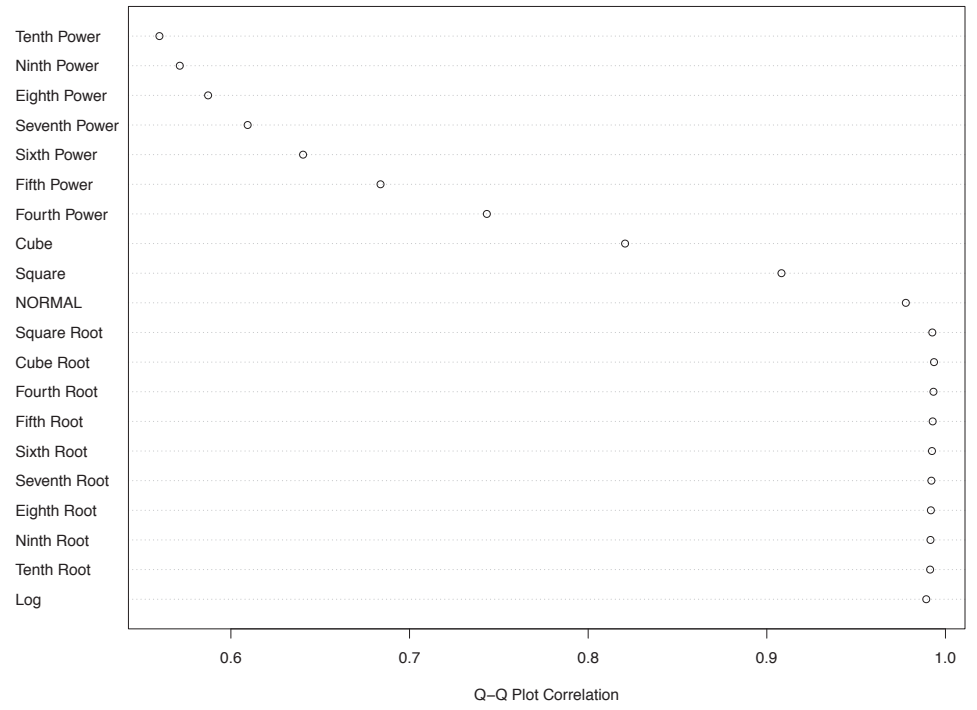
Fit Corr. by Model for AS at Location FC-3B



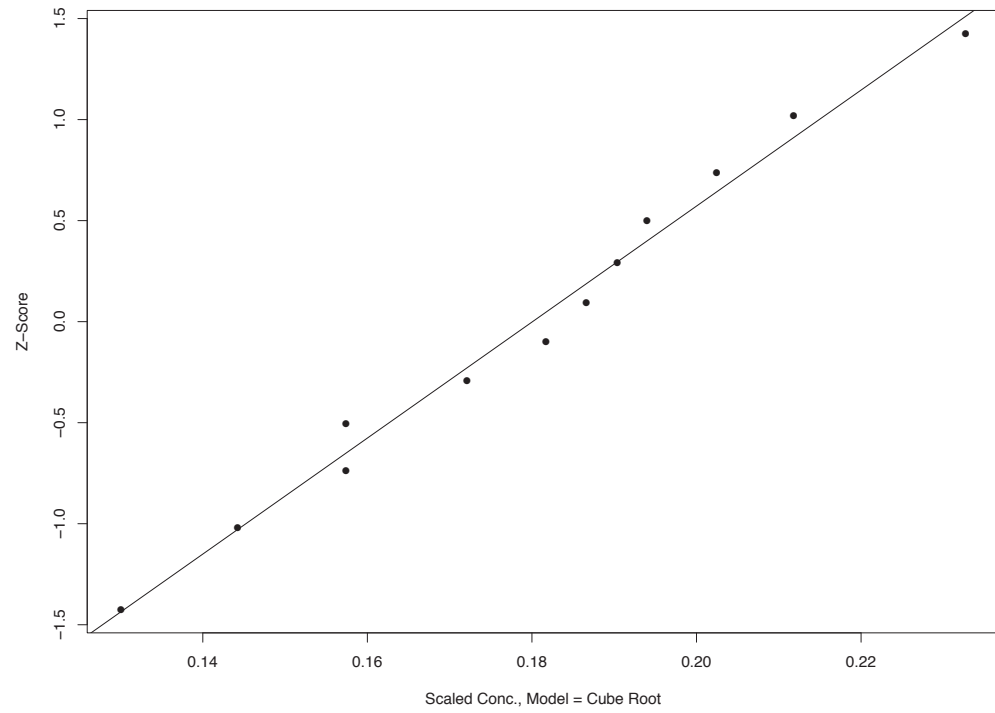
Censored Q-Q Plot for AS at Location FC-3B



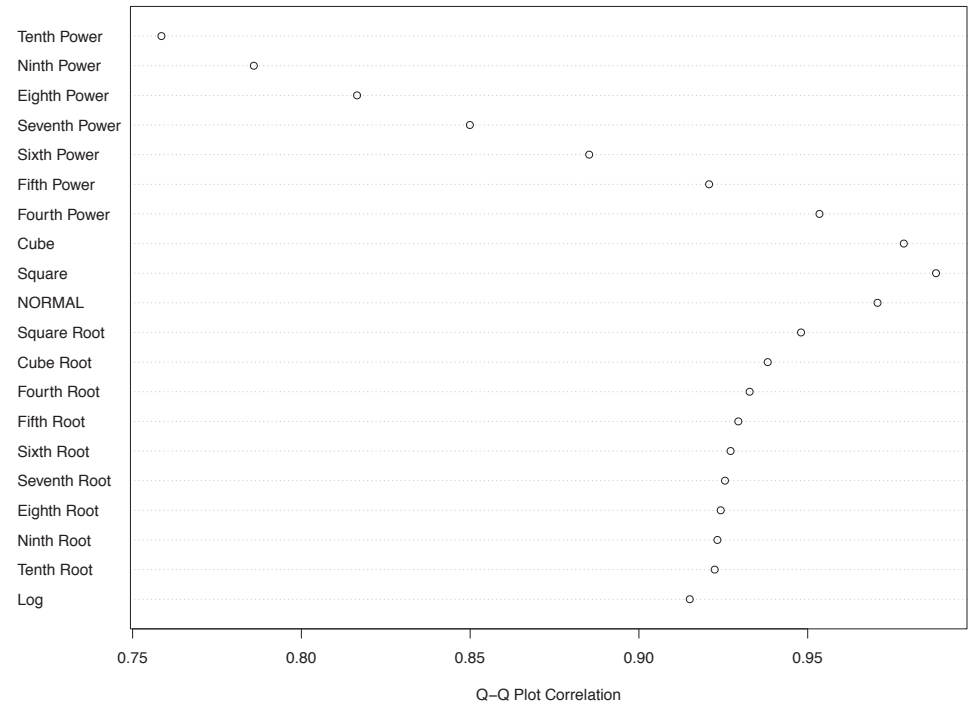
Fit Corr. by Model for AS at Location SC-10



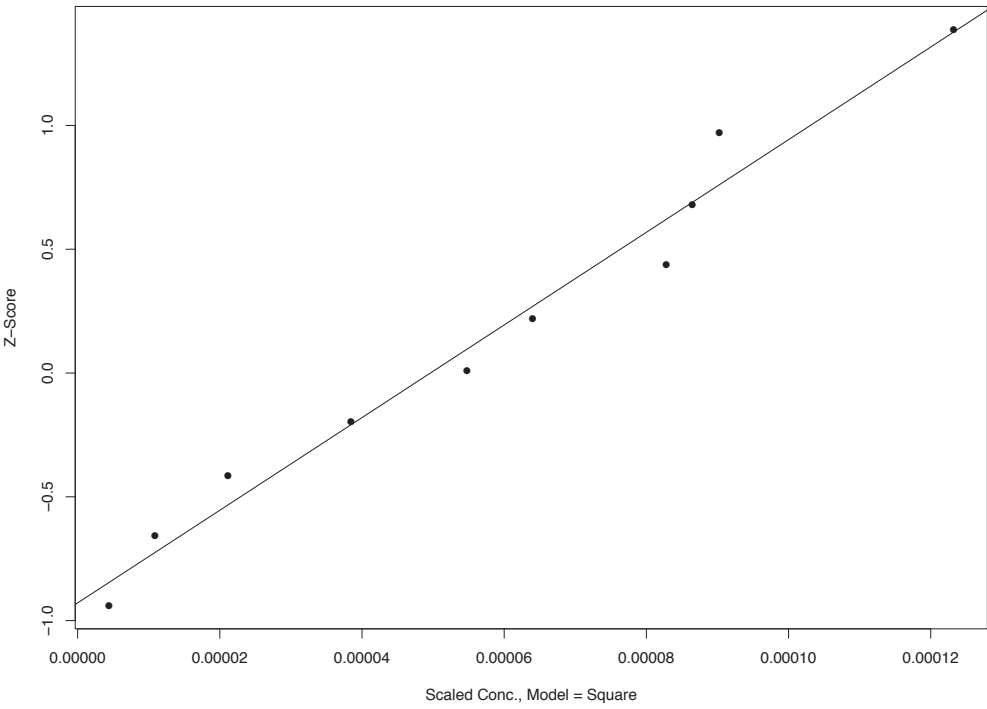
Censored Q-Q Plot for AS at Location SC-10



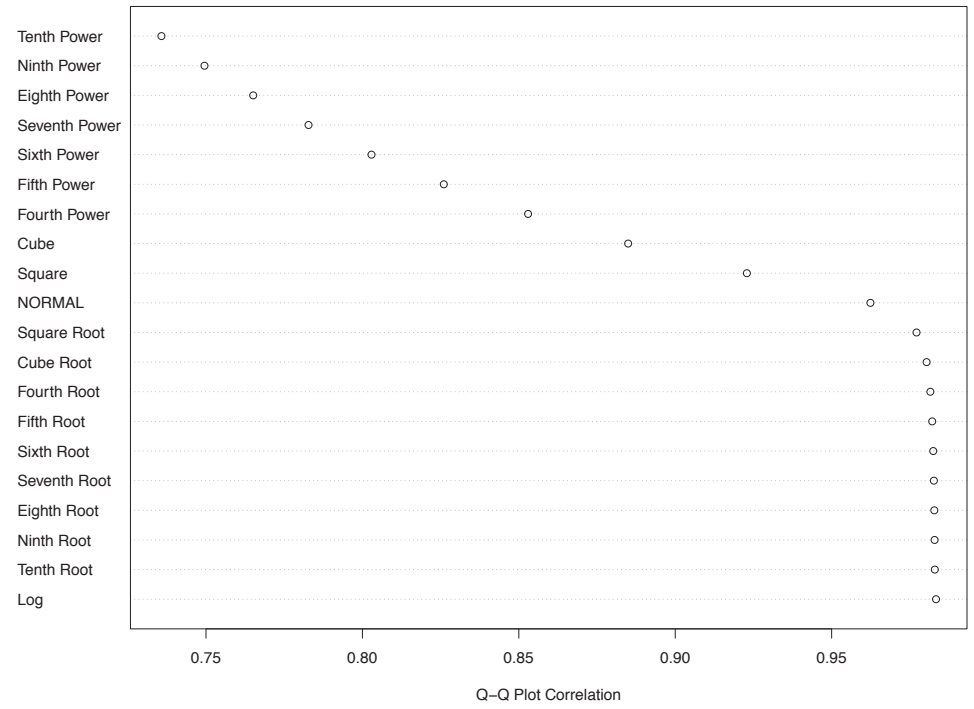
Fit Corr. by Model for AS at Location SC-11



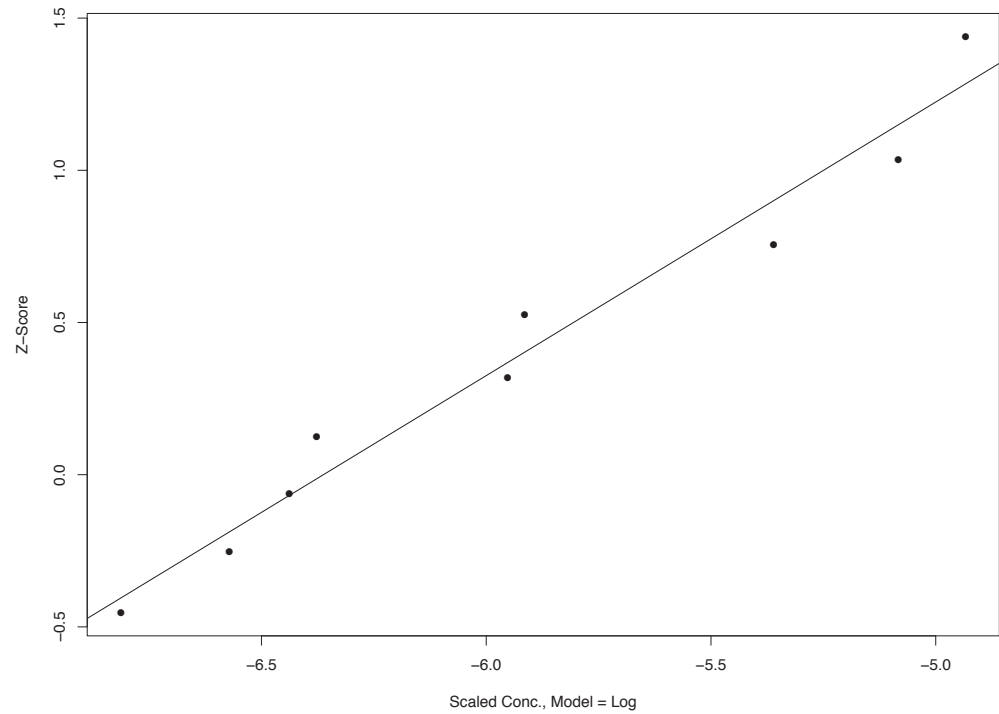
Censored Q-Q Plot for AS at Location SC-11



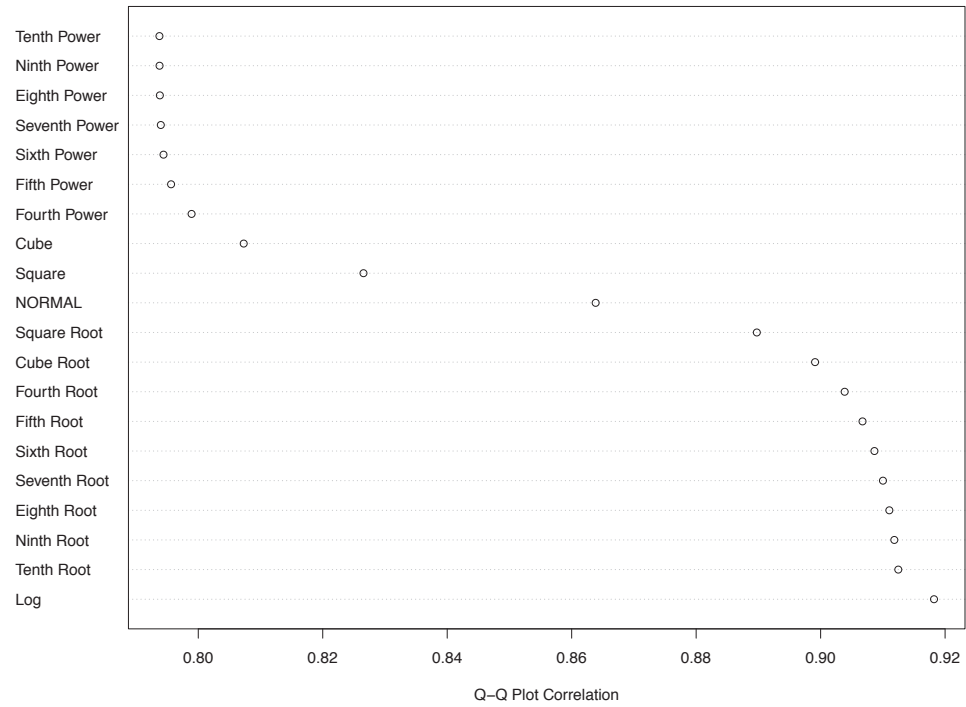
Fit Corr. by Model for AS at Location SC-12



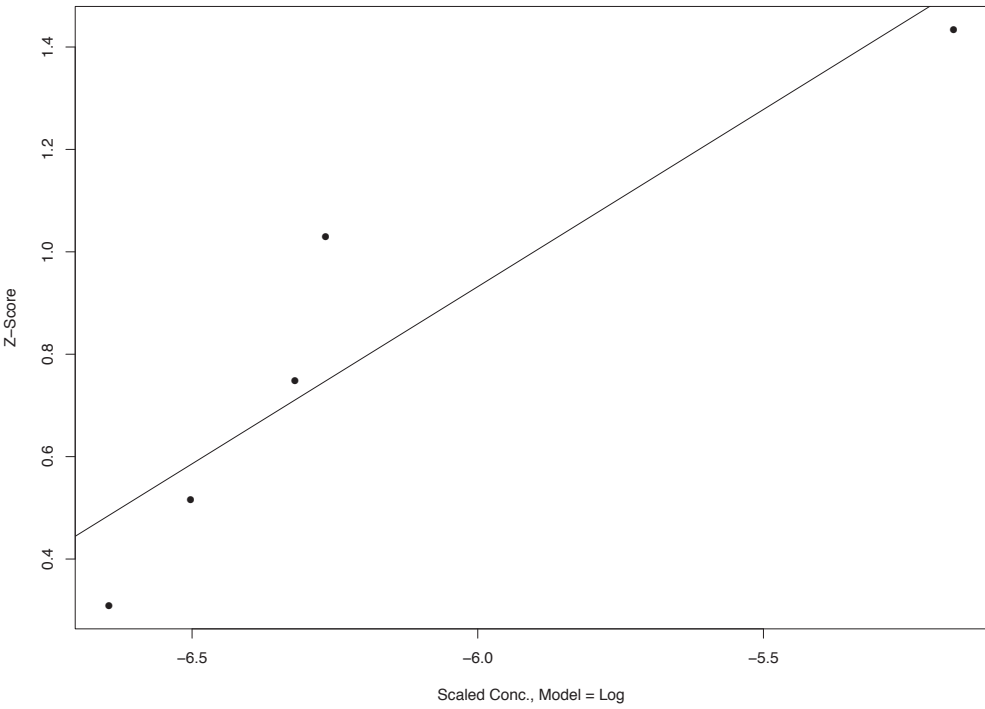
Censored Q-Q Plot for AS at Location SC-12



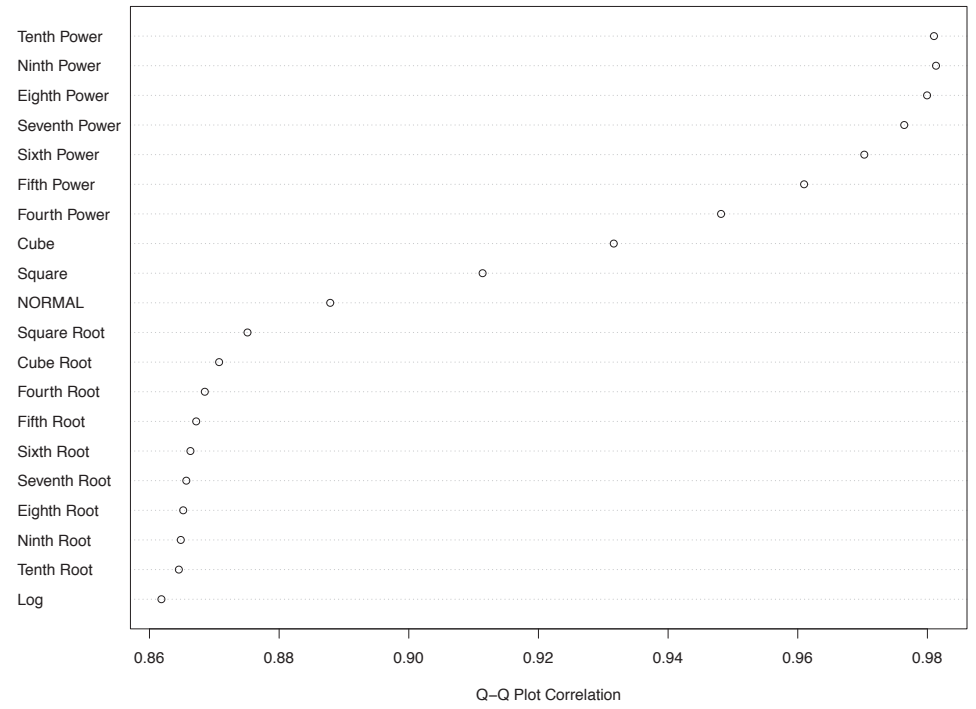
Fit Corr. by Model for AS at Location SC-13



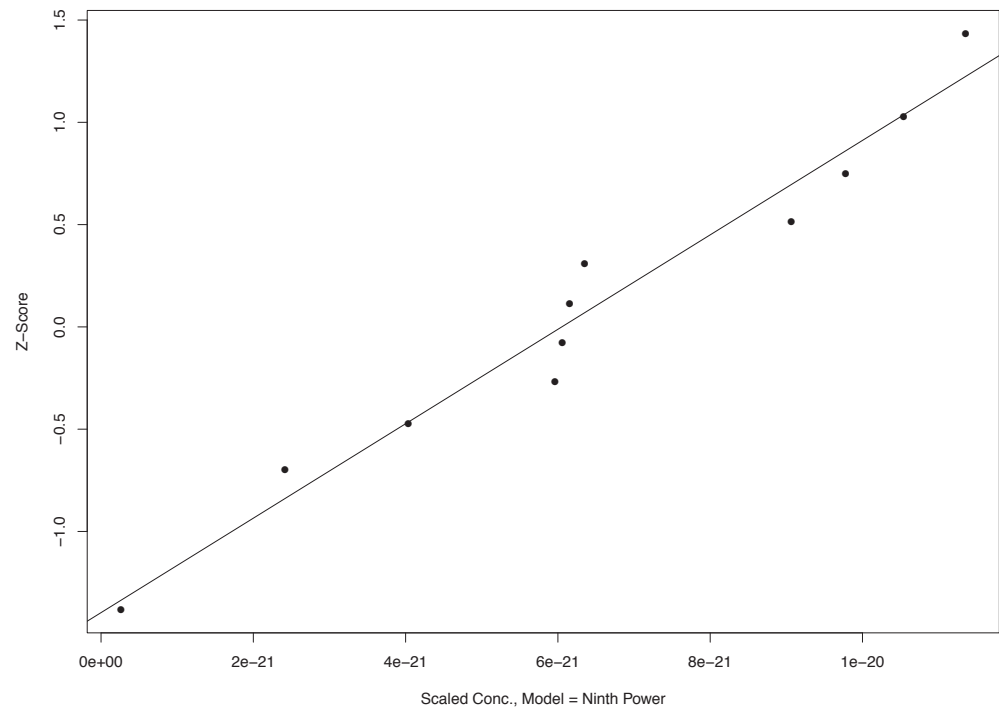
Censored Q-Q Plot for AS at Location SC-13



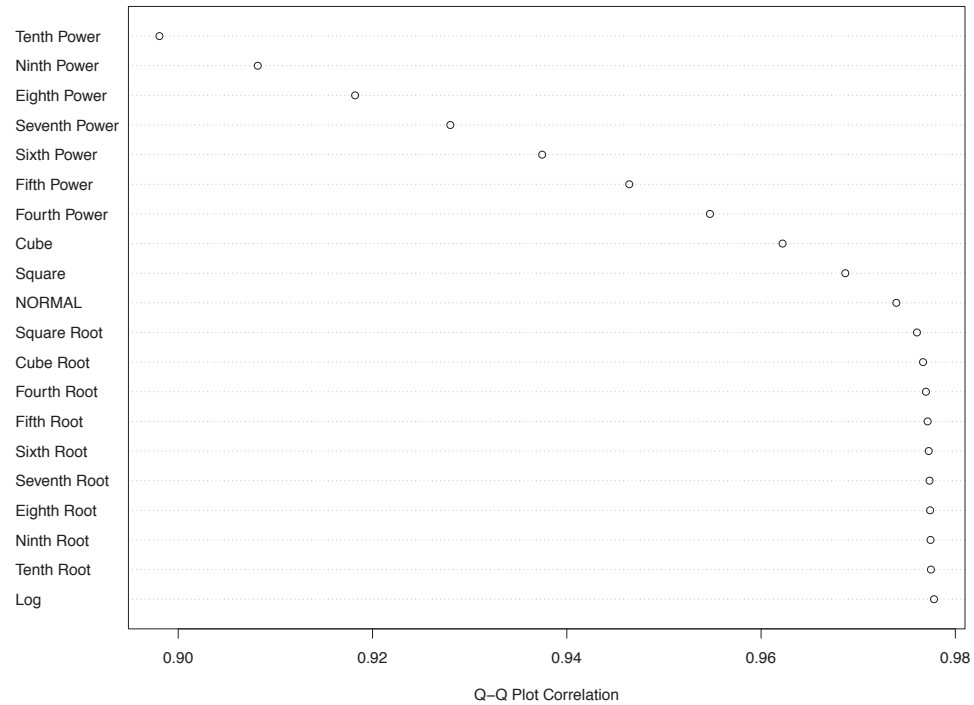
Fit Corr. by Model for BA at Location CC-1



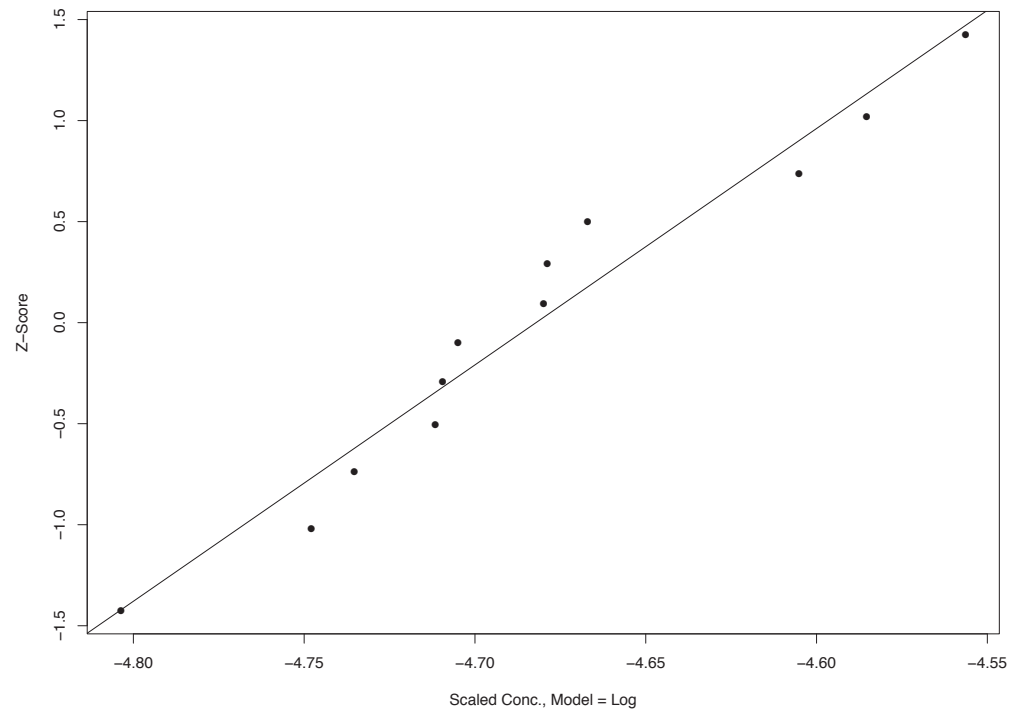
Censored Q-Q Plot for BA at Location CC-1



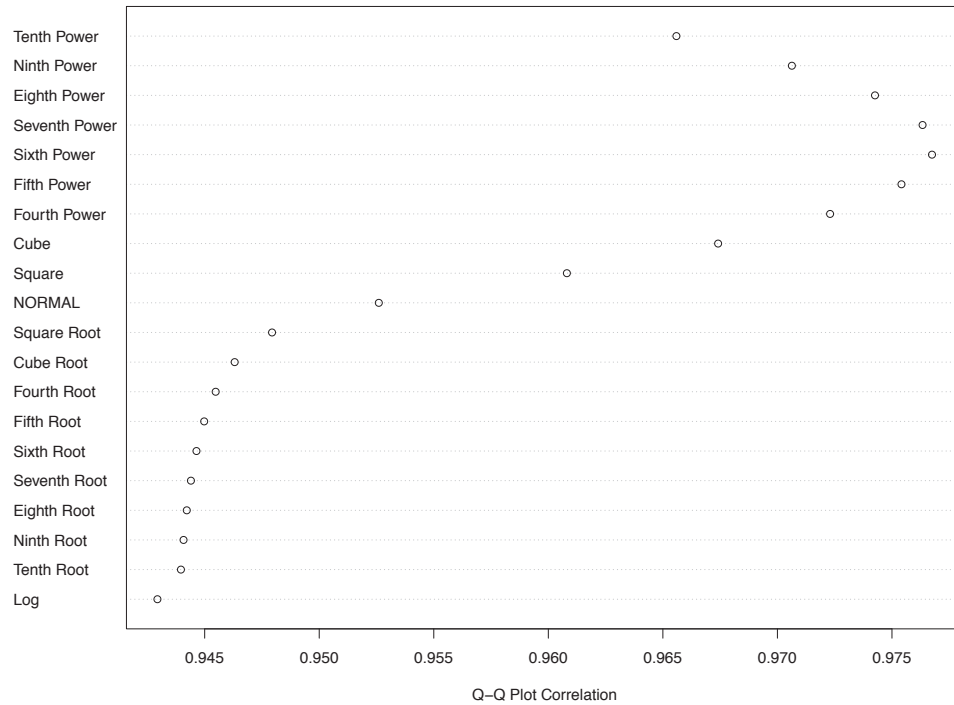
Fit Corr. by Model for BA at Location FC-1



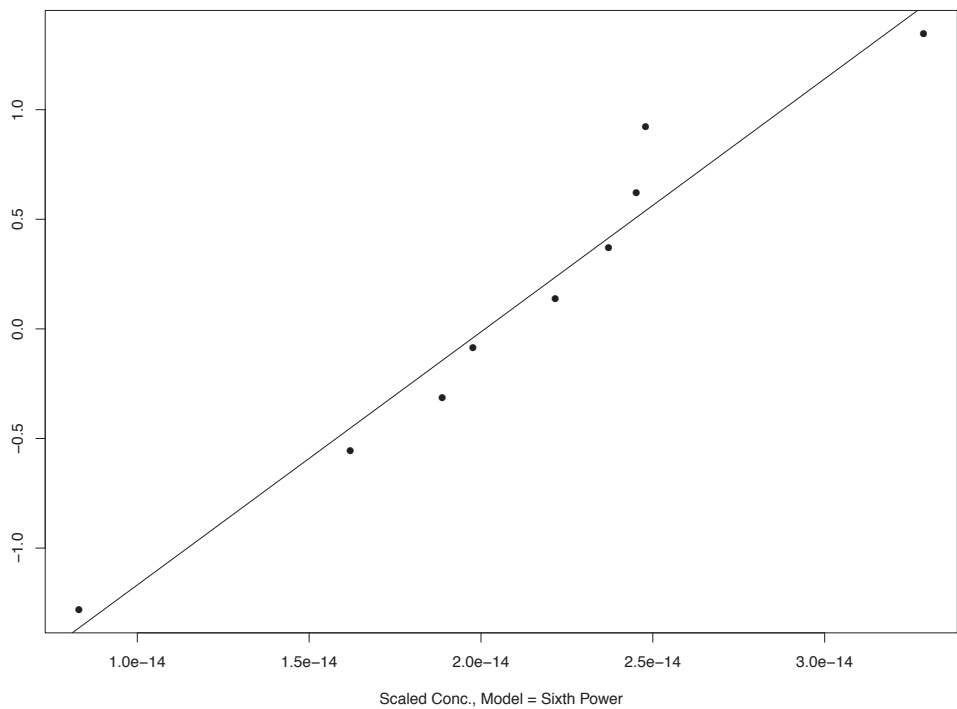
Censored Q-Q Plot for BA at Location FC-1



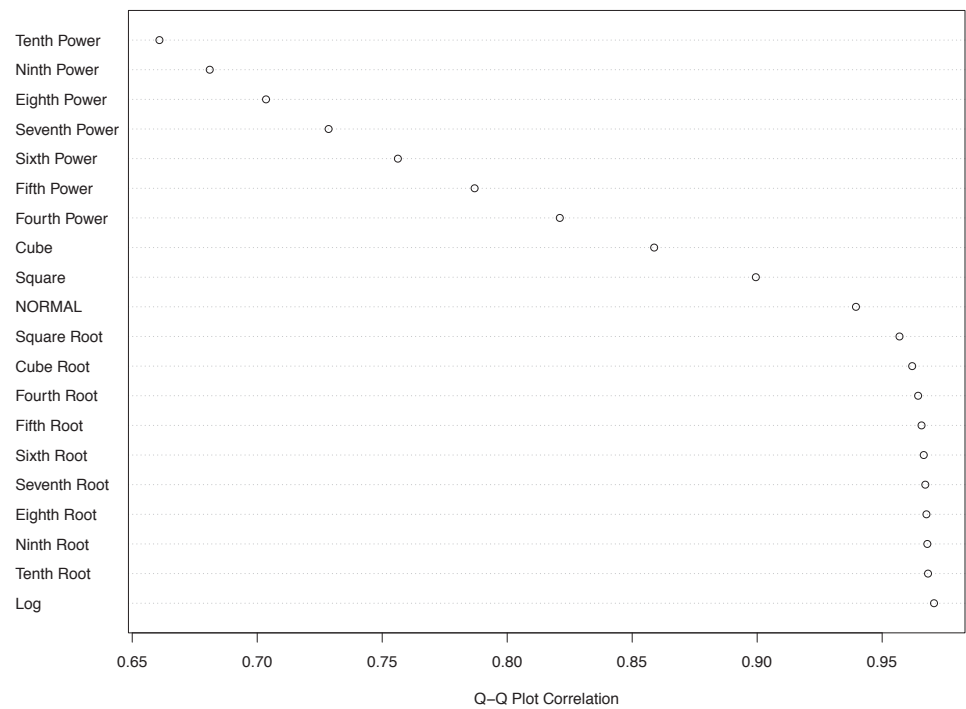
Fit Corr. by Model for BA at Location FC-2



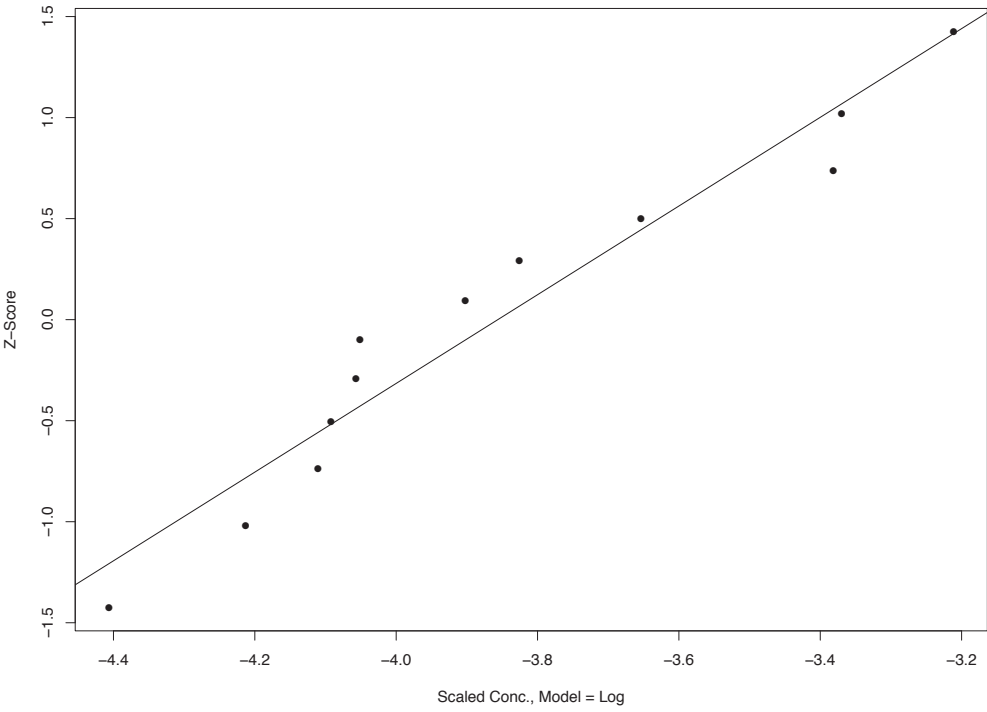
Censored Q-Q Plot for BA at Location FC-2



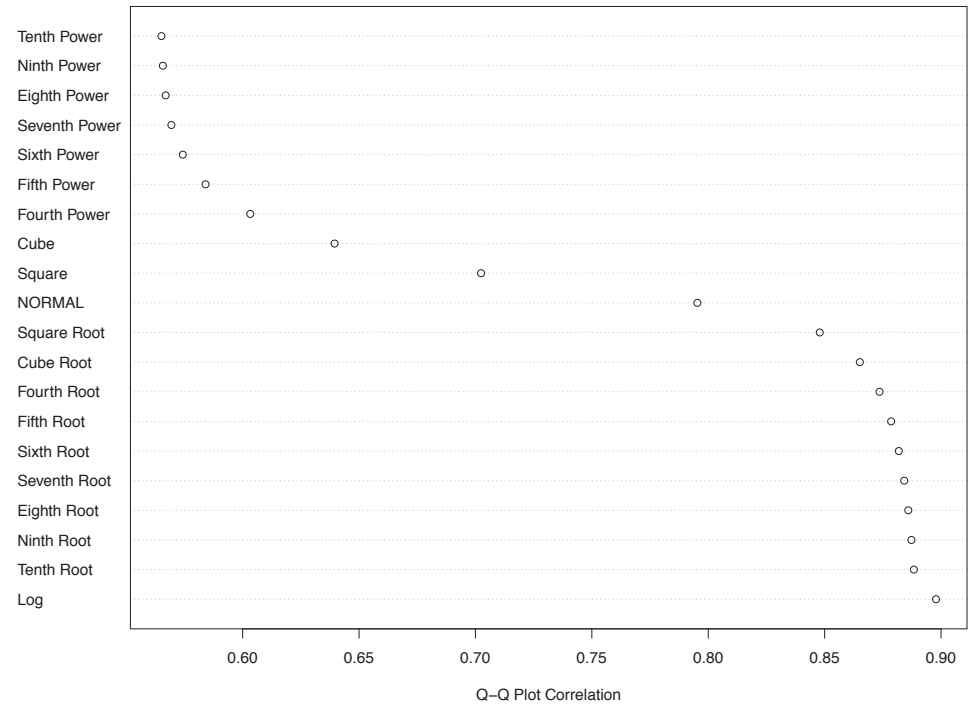
Fit Corr. by Model for BA at Location FC-3A



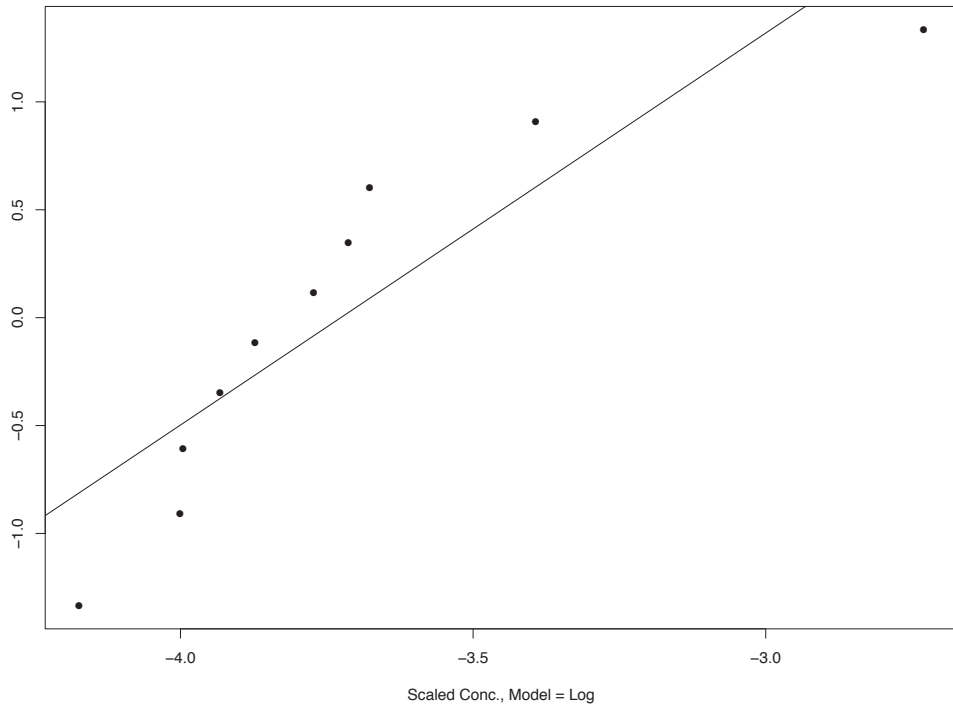
Censored Q-Q Plot for BA at Location FC-3A



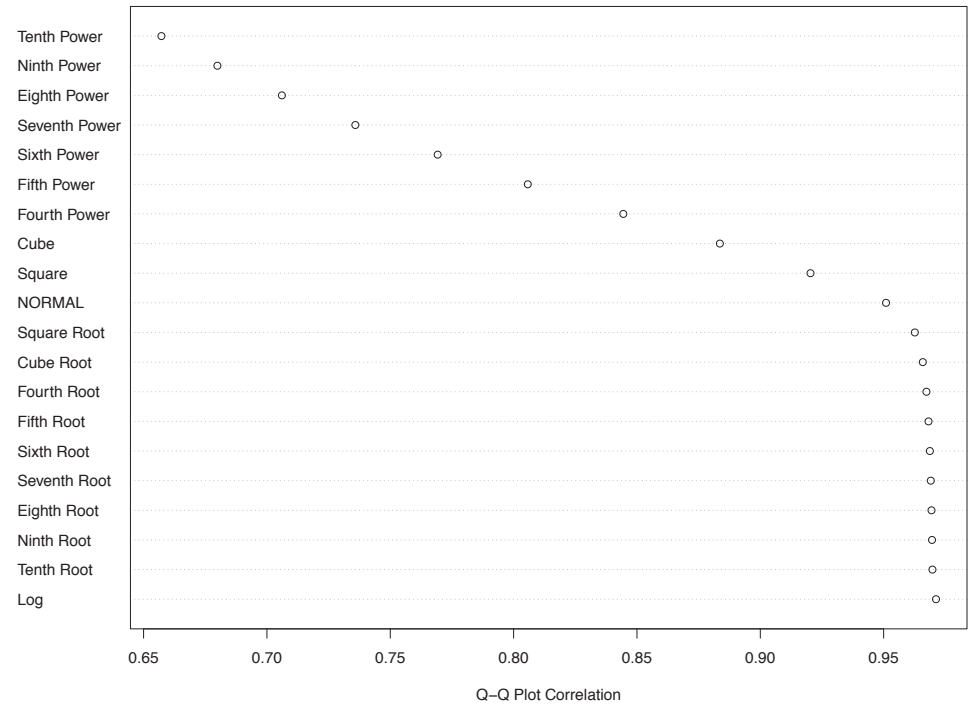
Fit Corr. by Model for BA at Location FC-3B



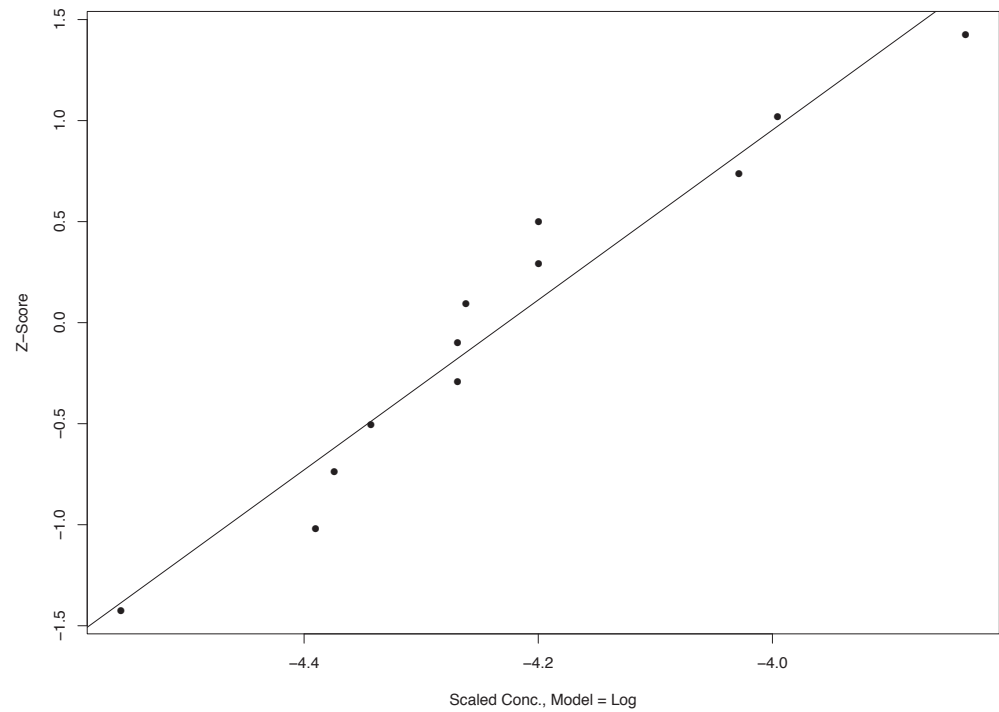
Censored Q-Q Plot for BA at Location FC-3B



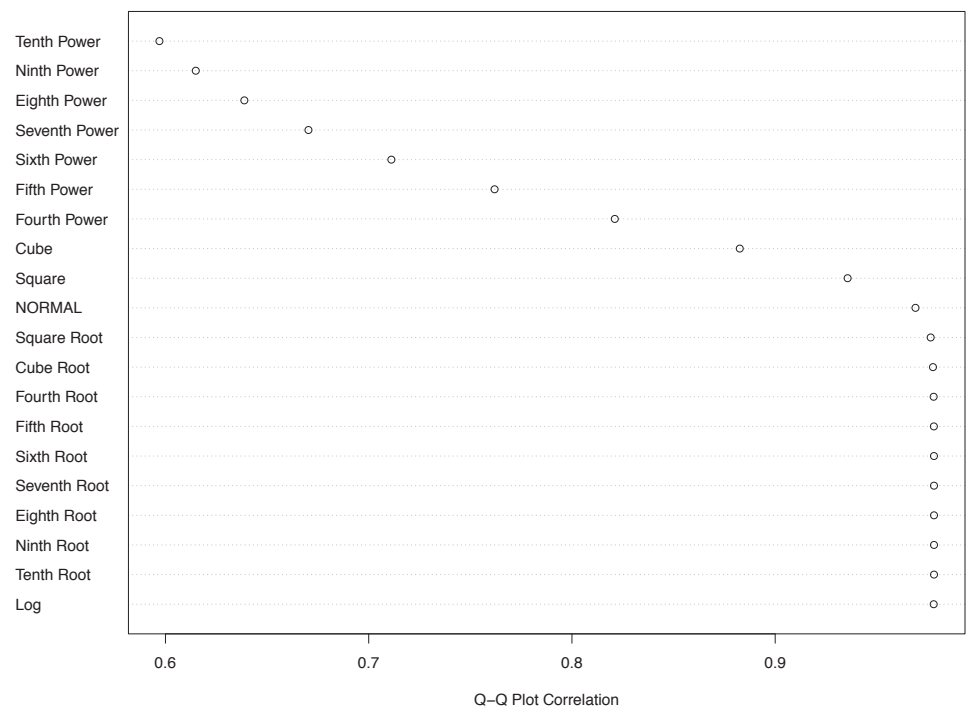
Fit Corr. by Model for BA at Location SC-10



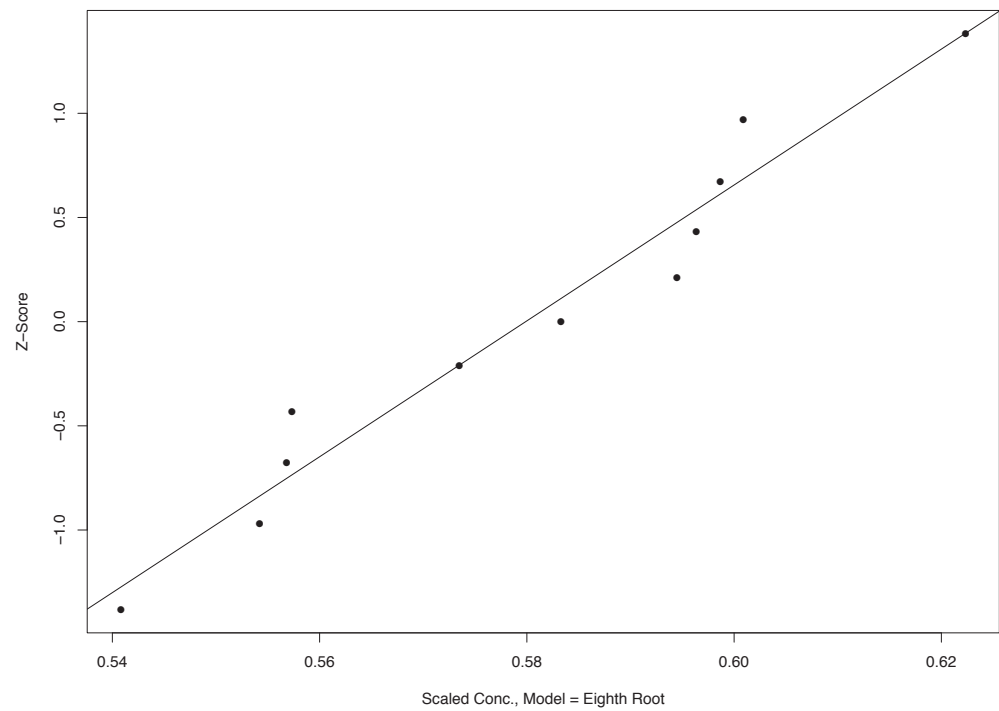
Censored Q-Q Plot for BA at Location SC-10



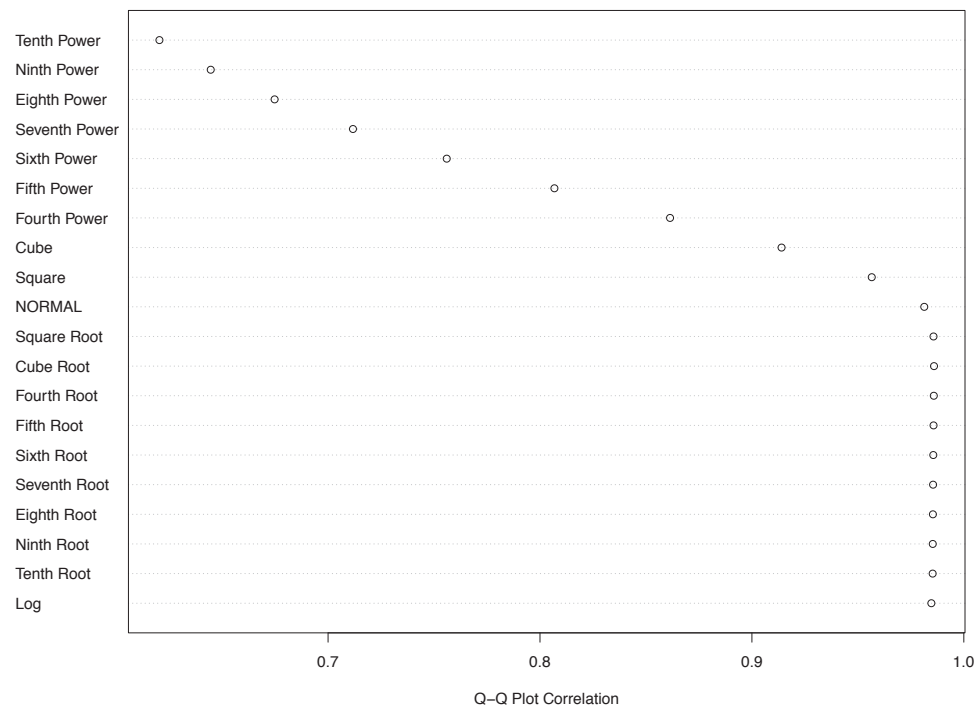
Fit Corr. by Model for BA at Location SC-11



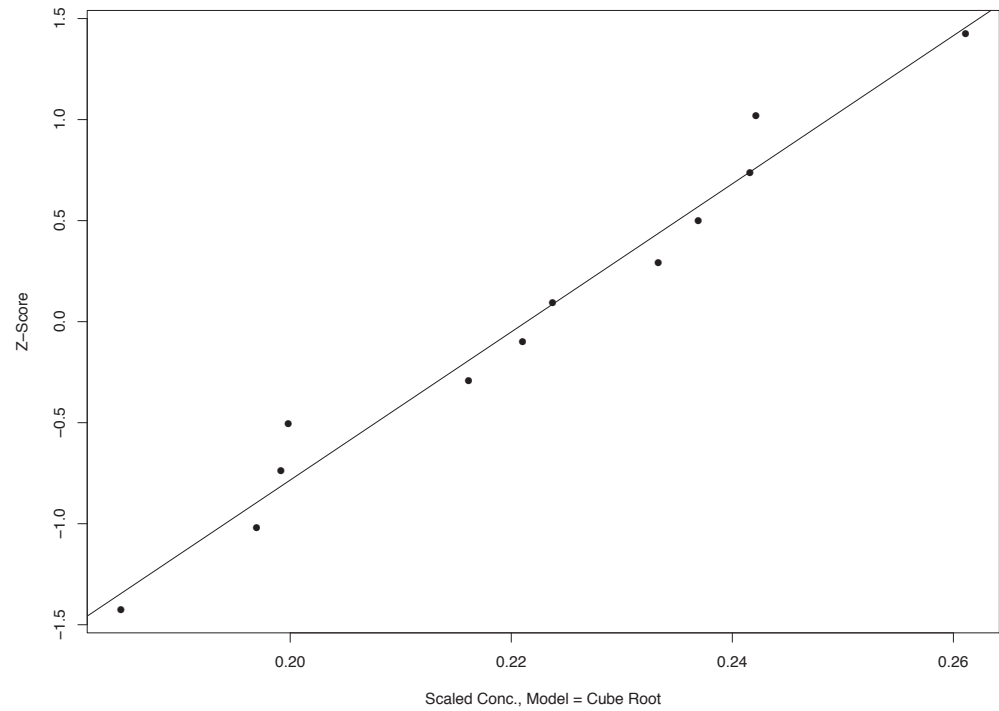
Censored Q-Q Plot for BA at Location SC-11



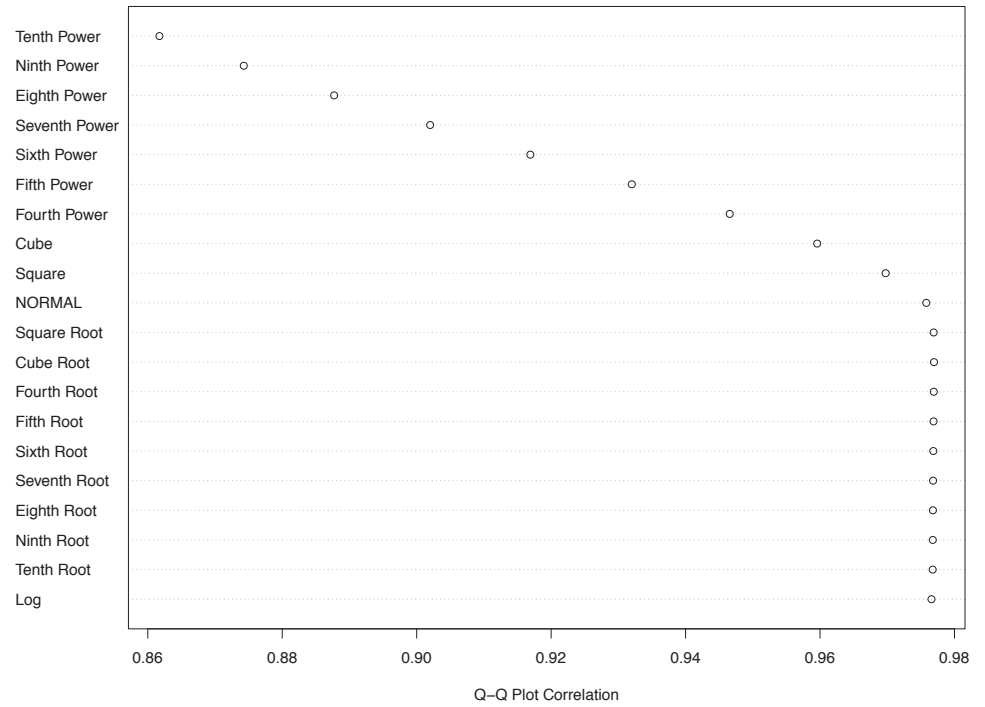
Fit Corr. by Model for BA at Location SC-12



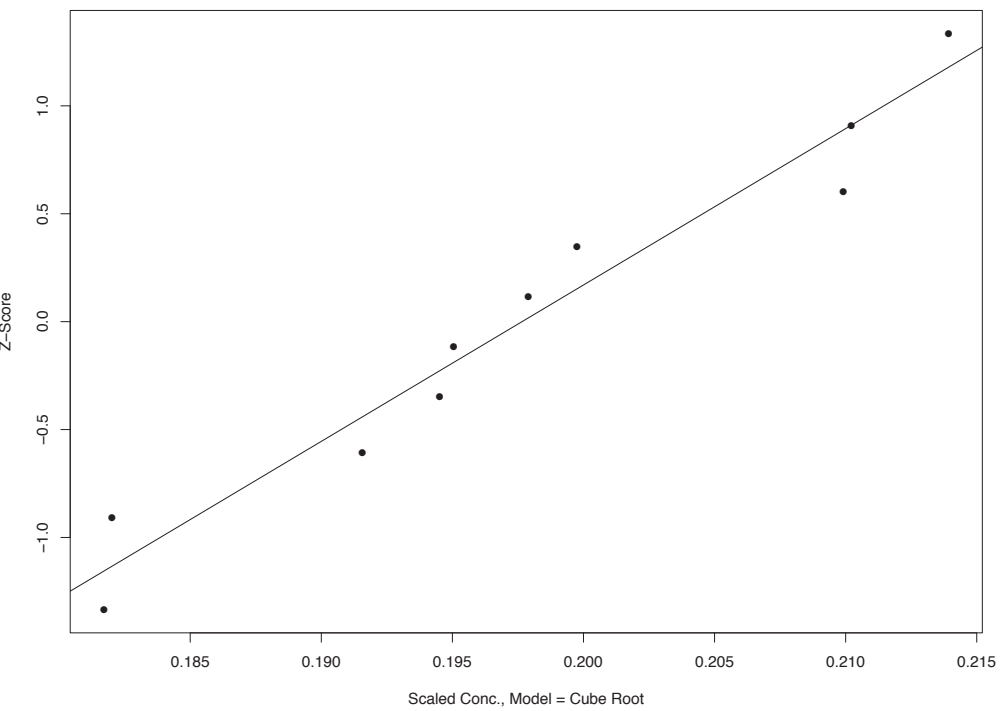
Censored Q-Q Plot for BA at Location SC-12



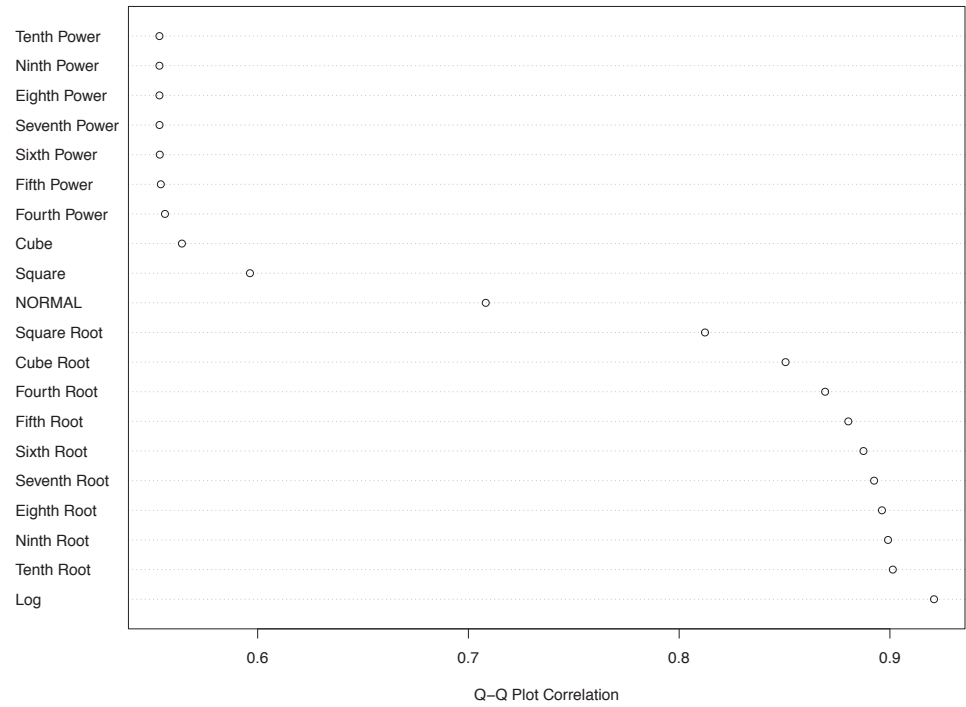
Fit Corr. by Model for BA at Location SC-13



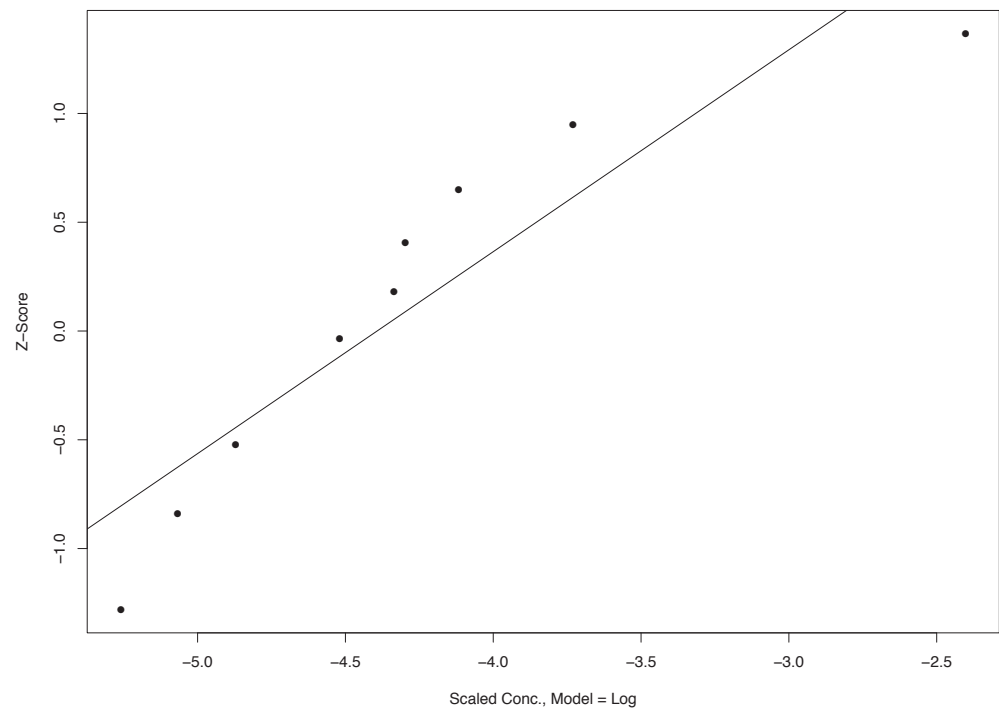
Censored Q-Q Plot for BA at Location SC-13



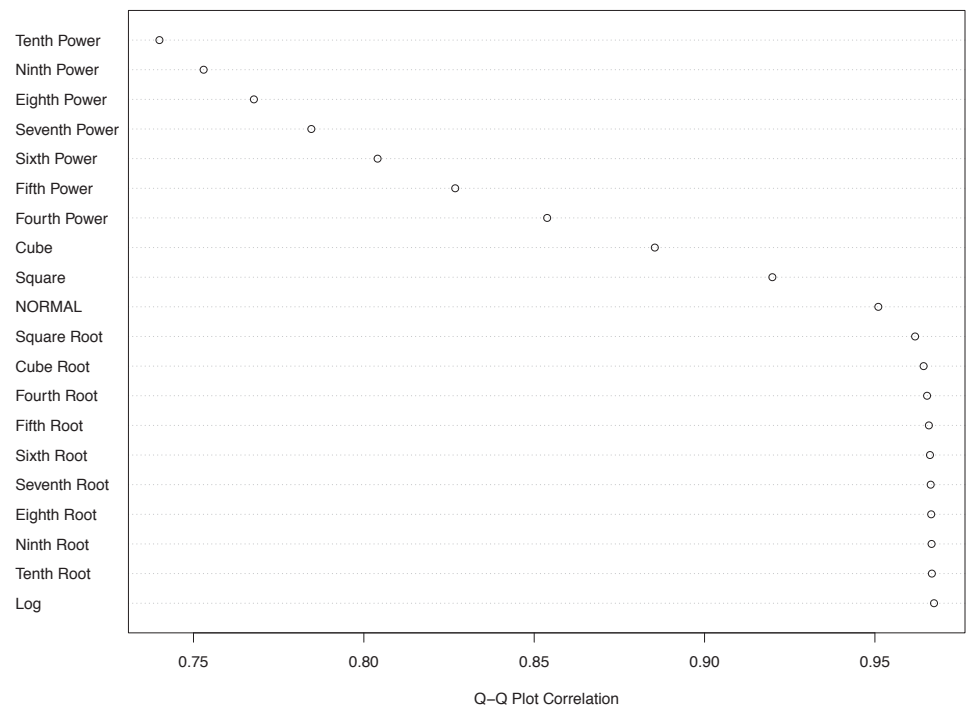
Fit Corr. by Model for BA at Location SC-14



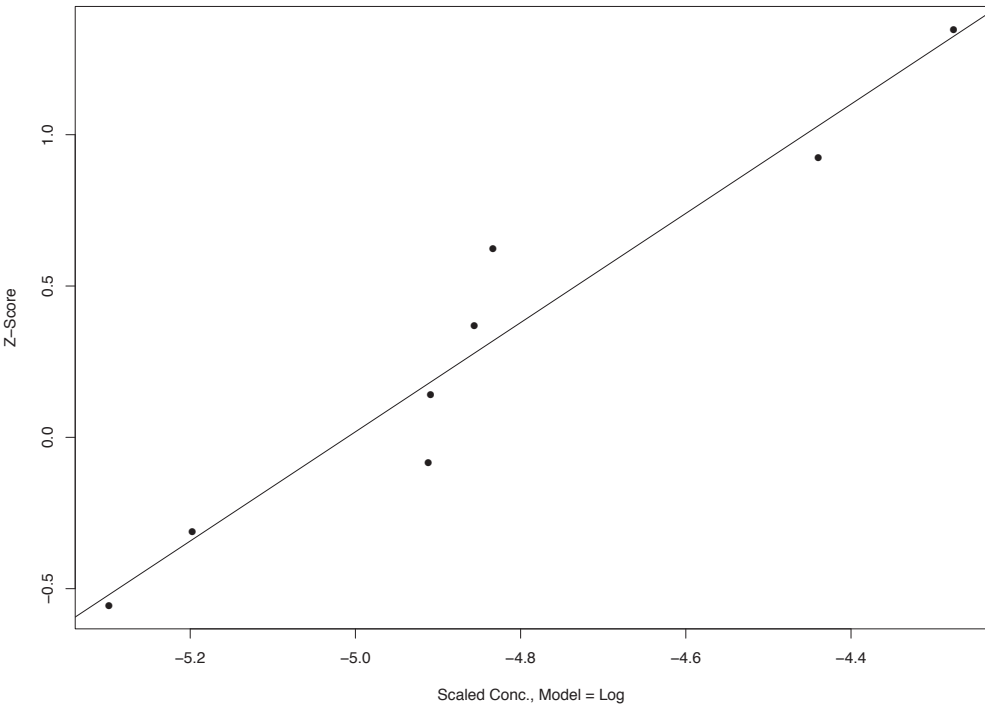
Censored Q-Q Plot for BA at Location SC-14



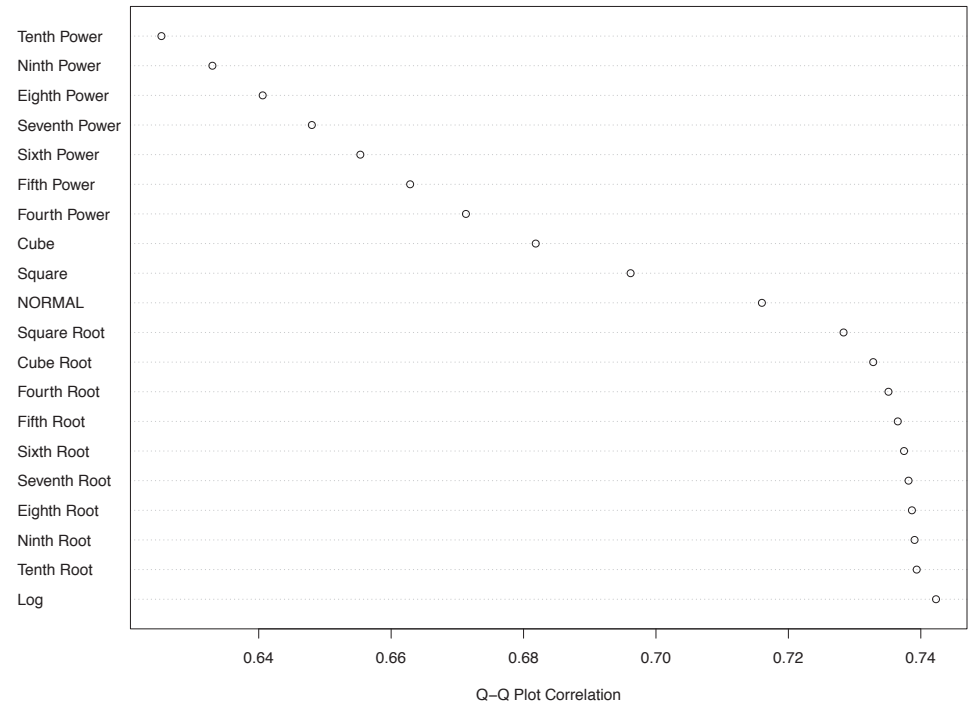
Fit Corr. by Model for CO at Location FC-3B



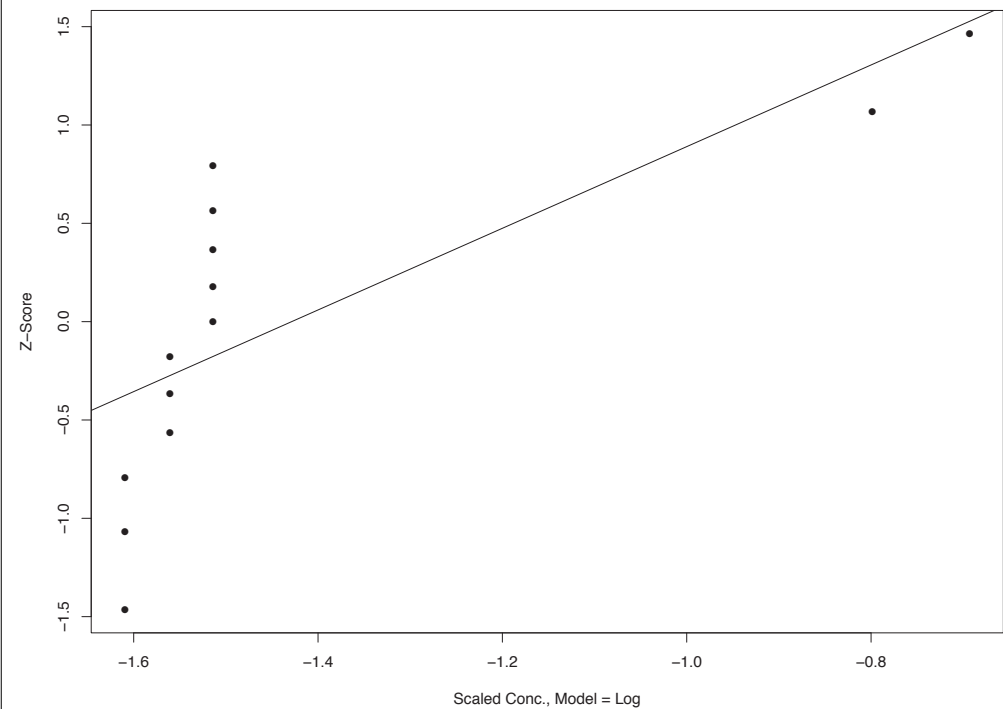
Censored Q-Q Plot for CO at Location FC-3B



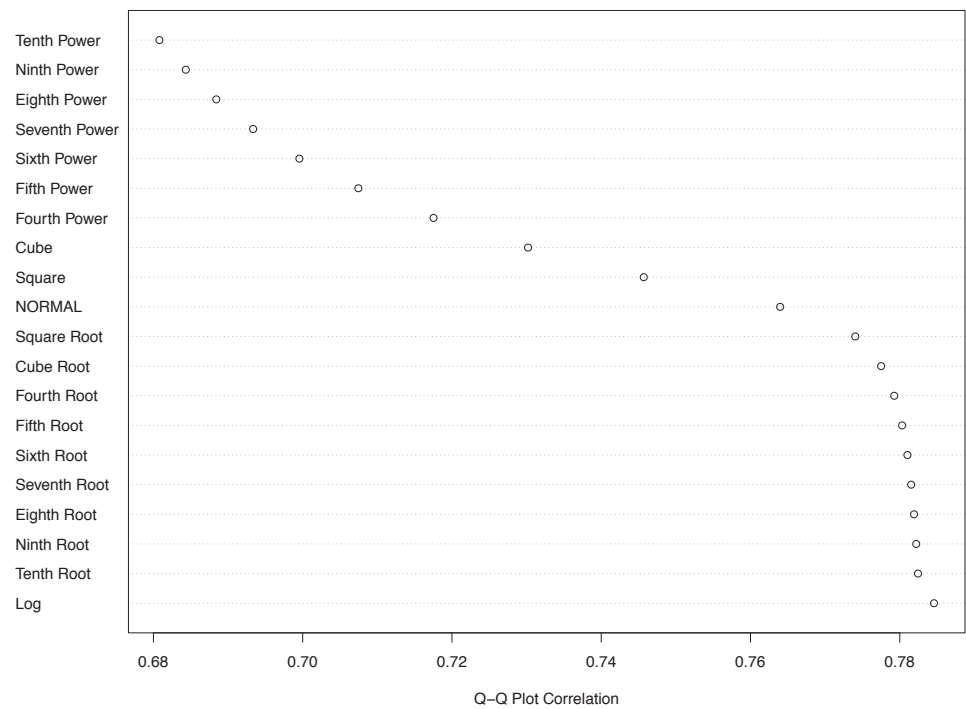
Fit Corr. by Model for F at Location CC-1



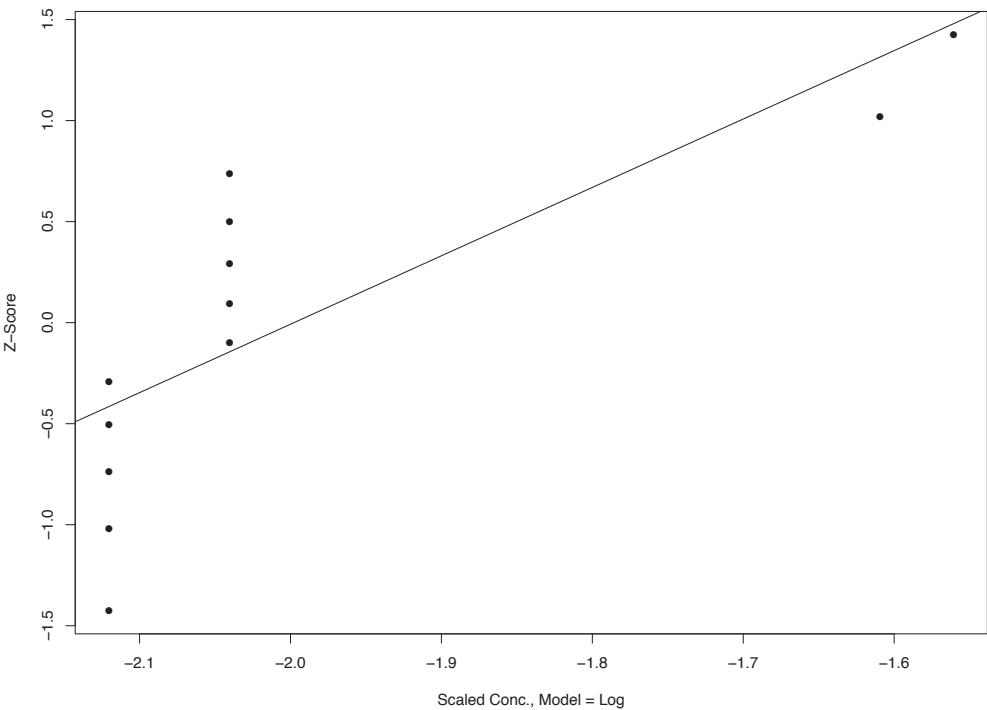
Censored Q-Q Plot for F at Location CC-1



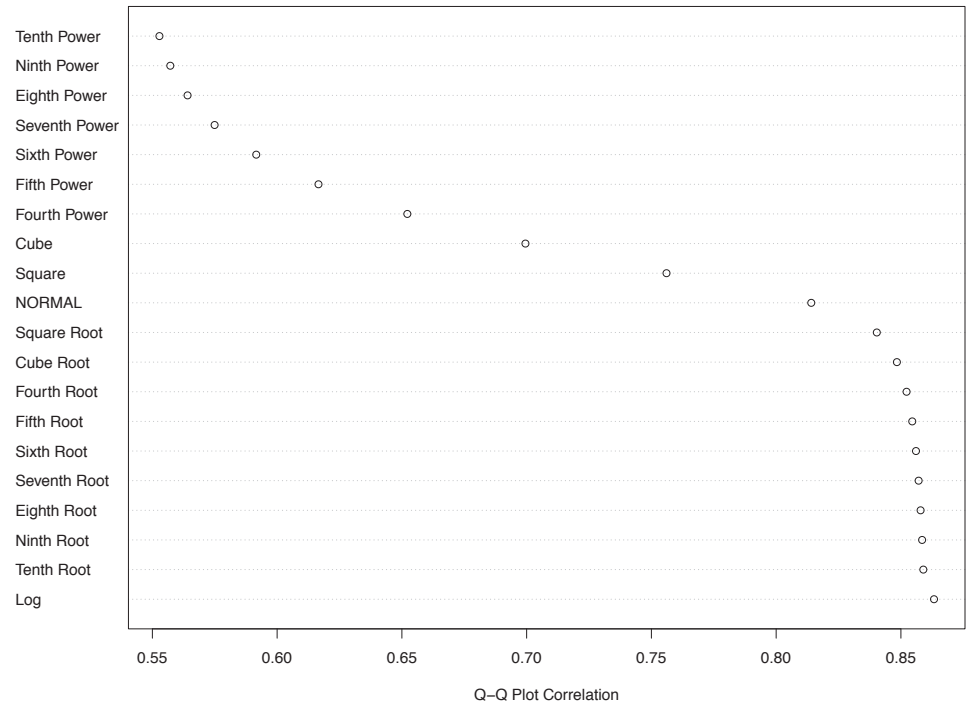
Fit Corr. by Model for F at Location FC-1



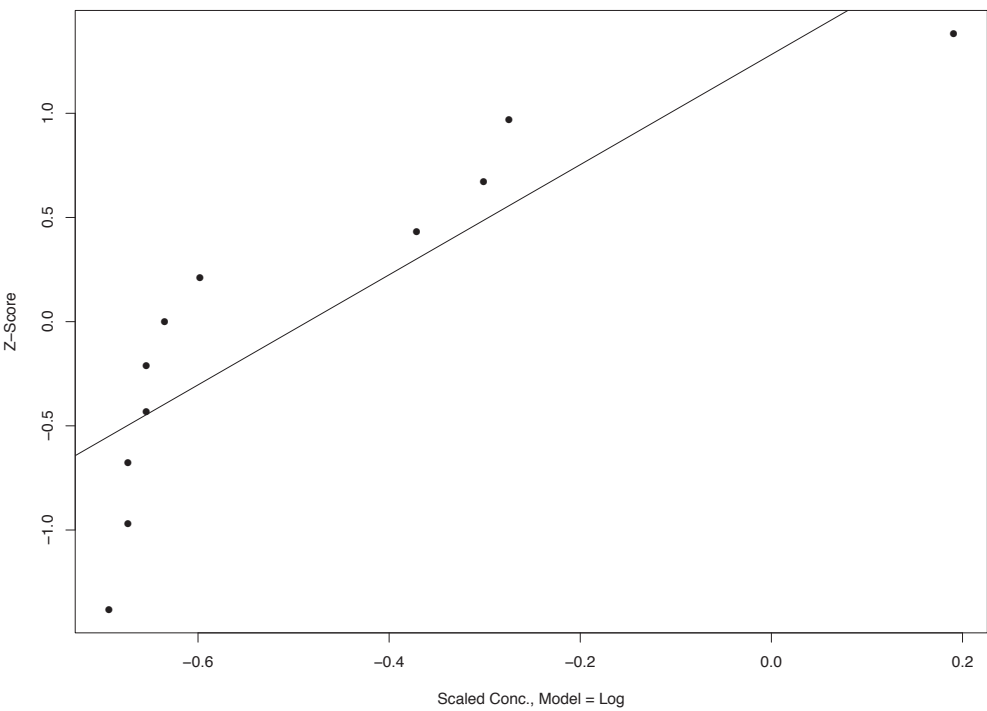
Censored Q-Q Plot for F at Location FC-1



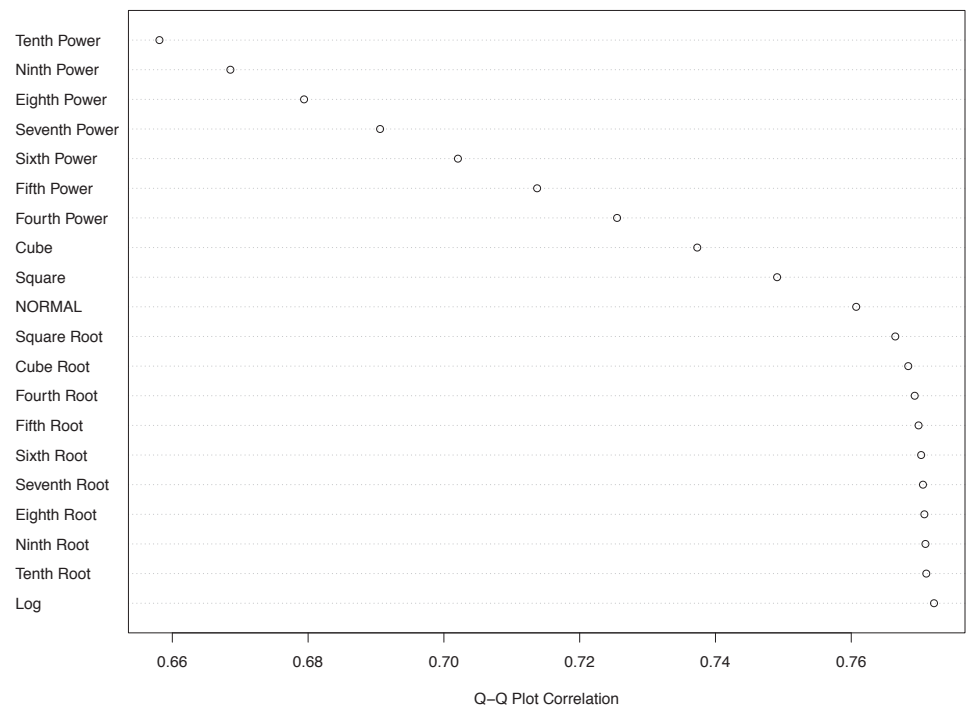
Fit Corr. by Model for F at Location FC-2



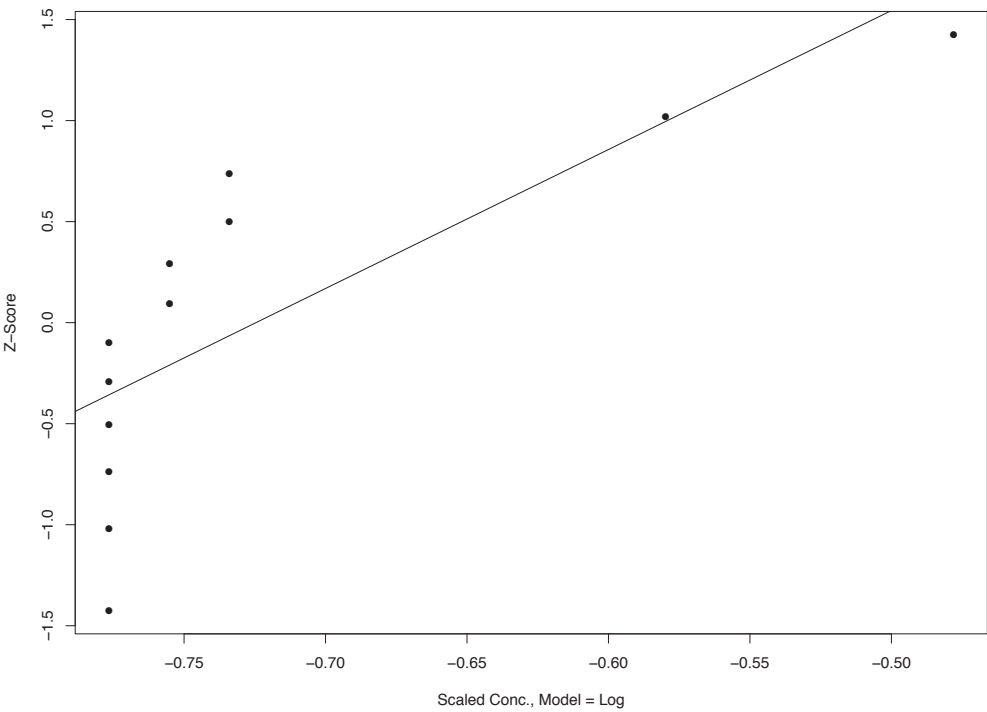
Censored Q-Q Plot for F at Location FC-2



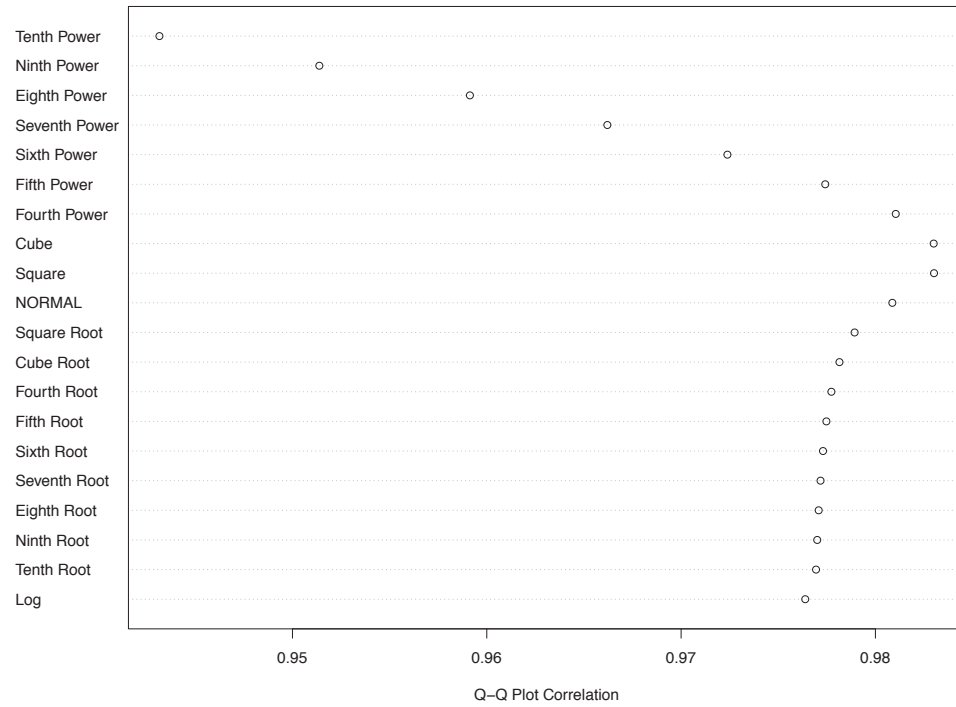
Fit Corr. by Model for F at Location FC-3A



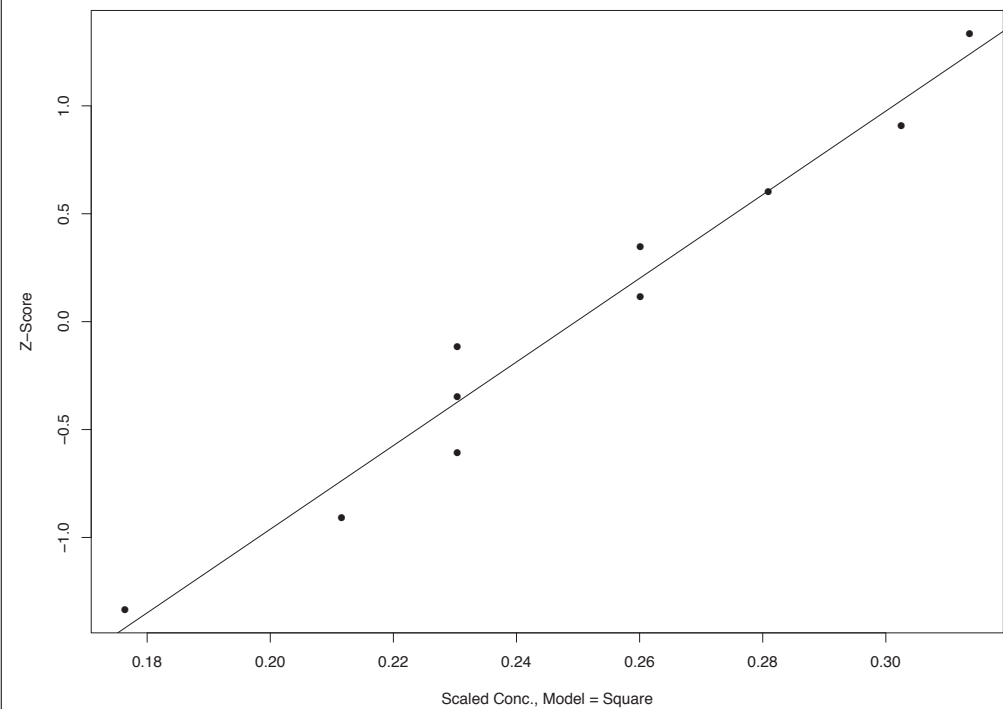
Censored Q-Q Plot for F at Location FC-3A



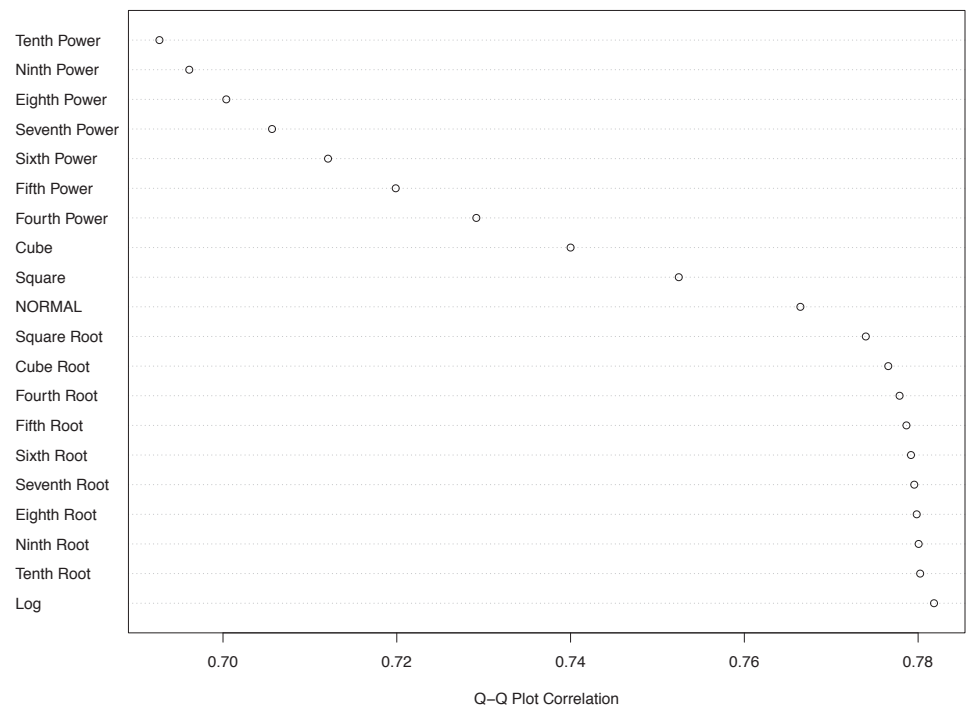
Fit Corr. by Model for F at Location FC-3B



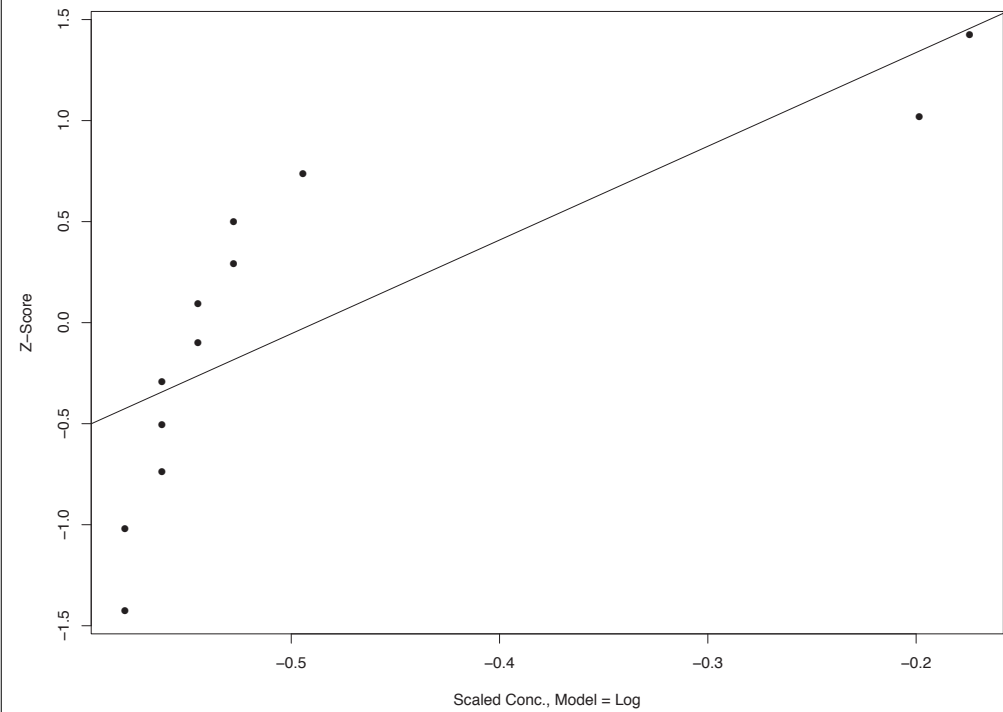
Censored Q-Q Plot for F at Location FC-3B



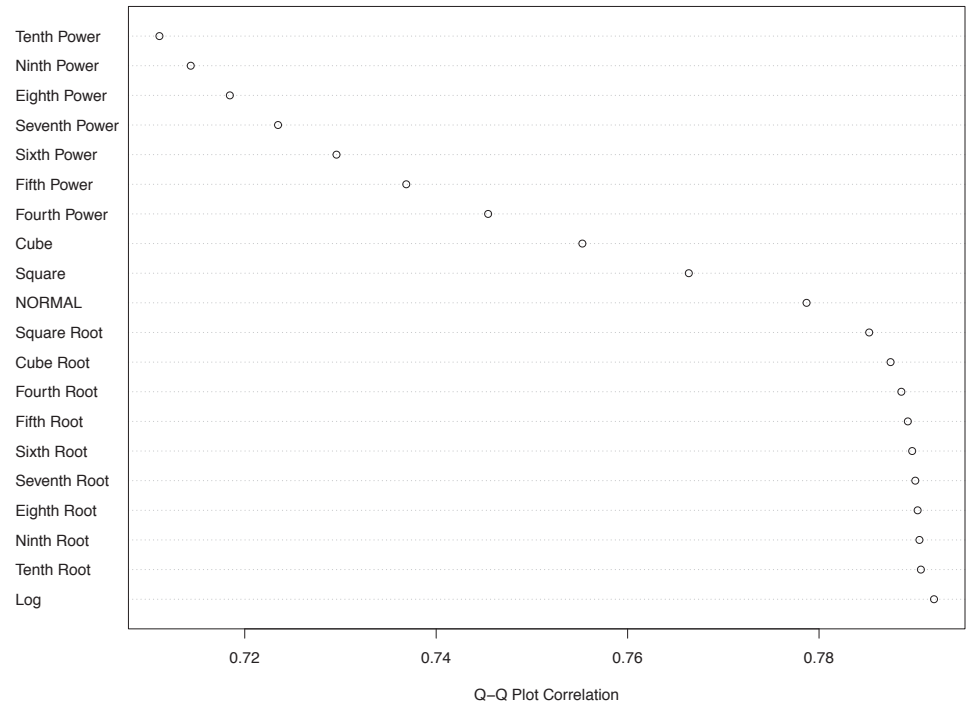
Fit Corr. by Model for F at Location SC-10



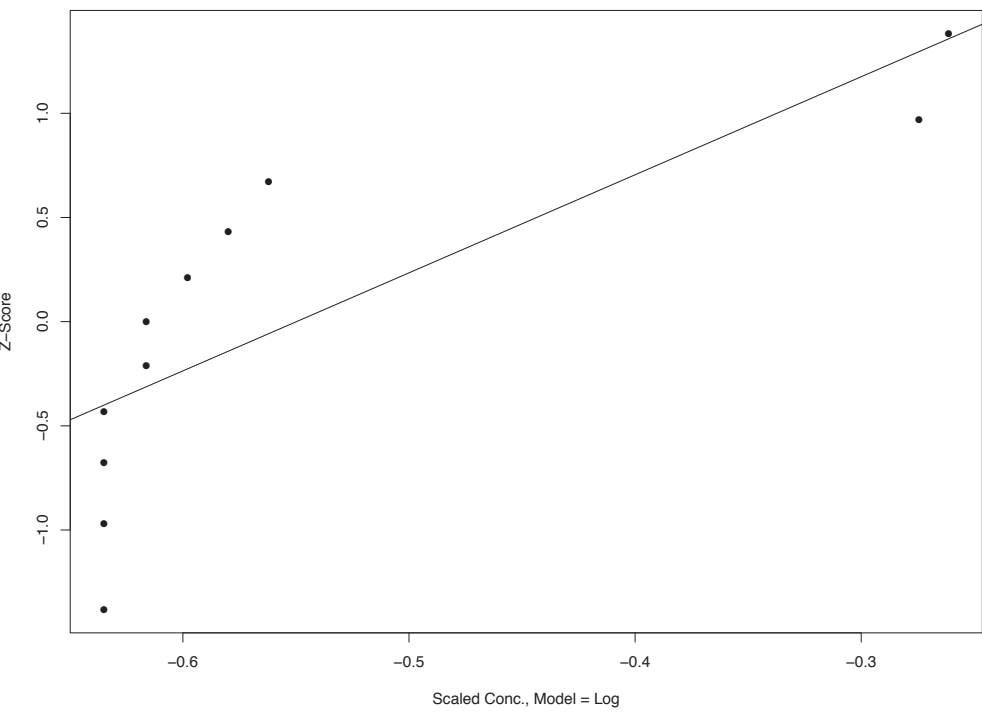
Censored Q-Q Plot for F at Location SC-10



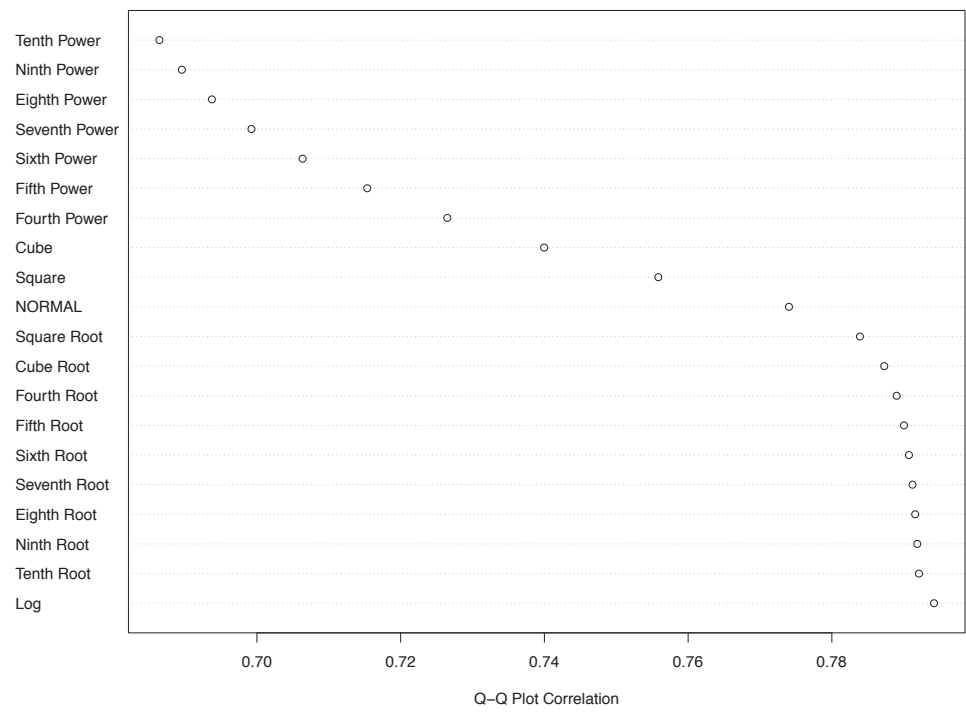
Fit Corr. by Model for F at Location SC-11



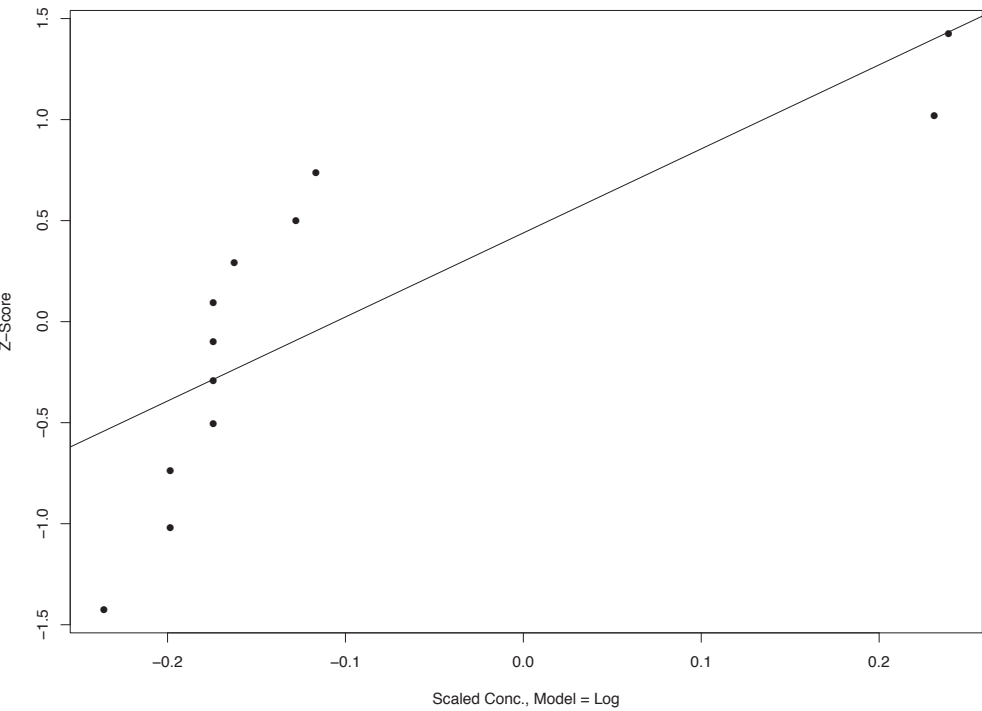
Censored Q-Q Plot for F at Location SC-11



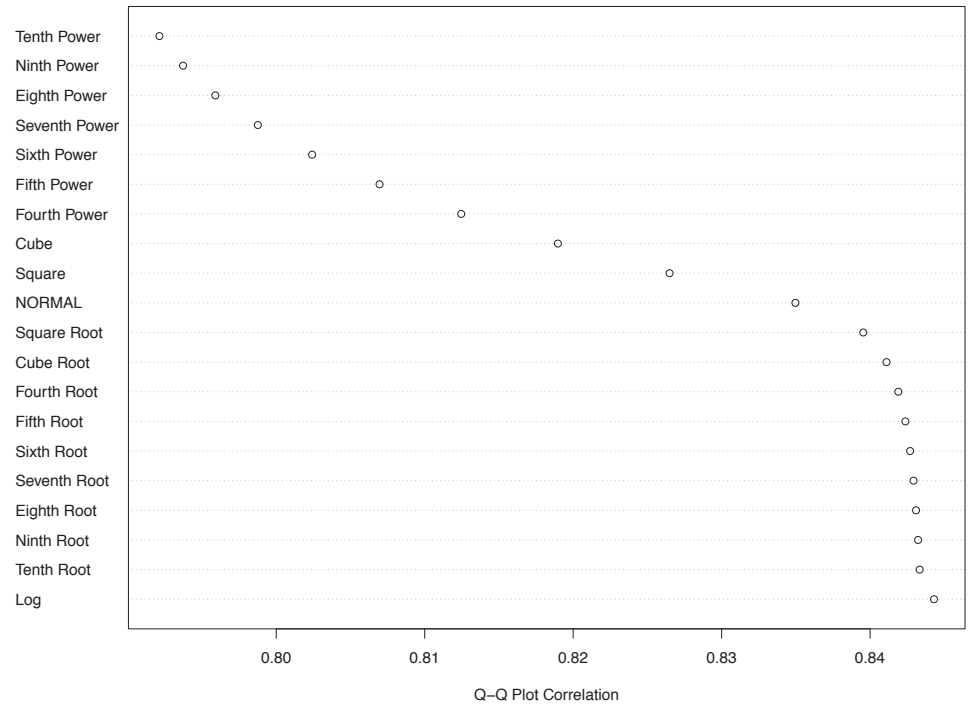
Fit Corr. by Model for F at Location SC-12



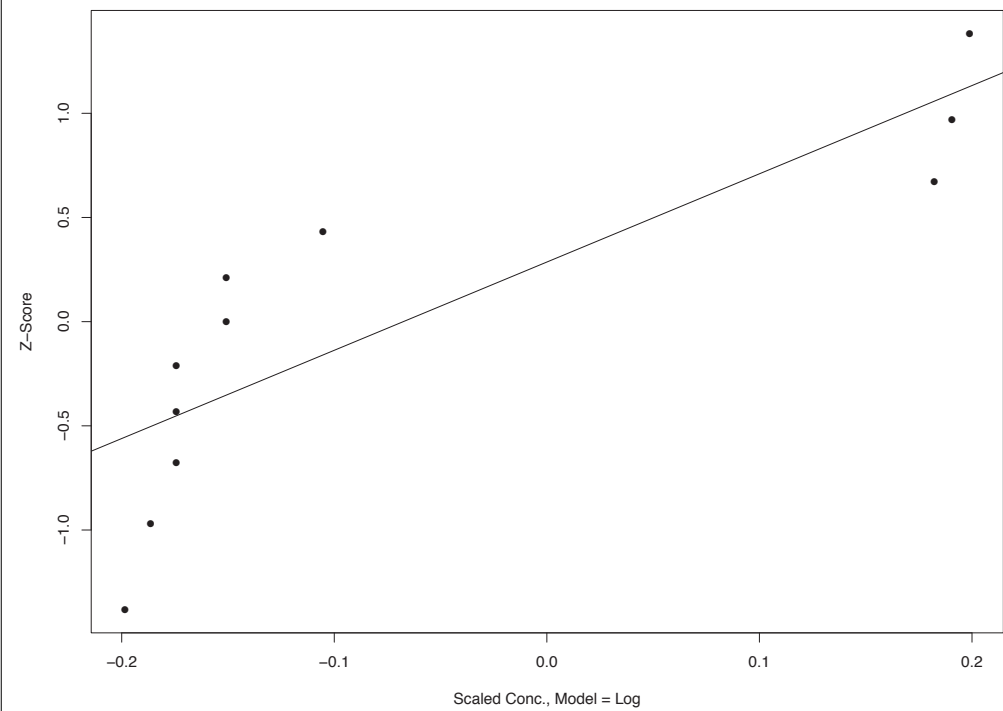
Censored Q-Q Plot for F at Location SC-12



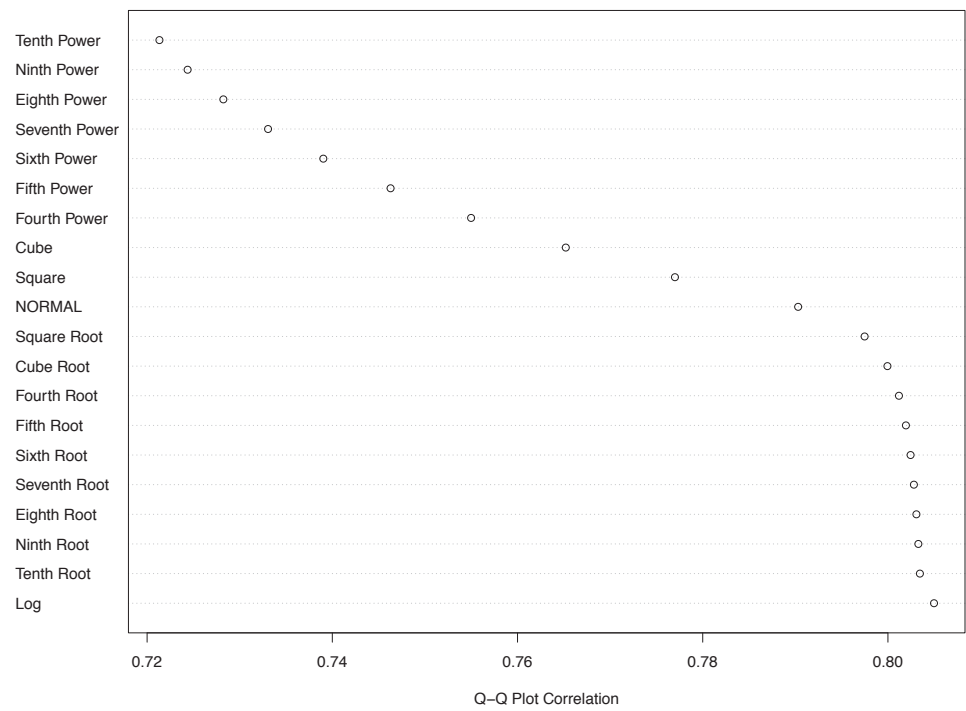
Fit Corr. by Model for F at Location SC-13



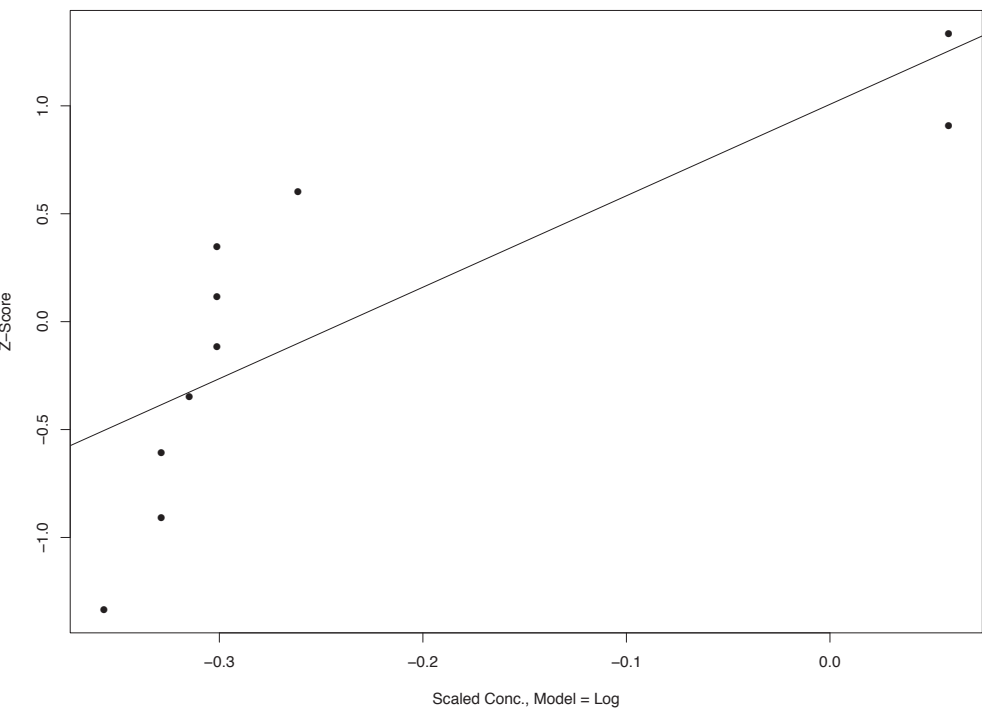
Censored Q-Q Plot for F at Location SC-13



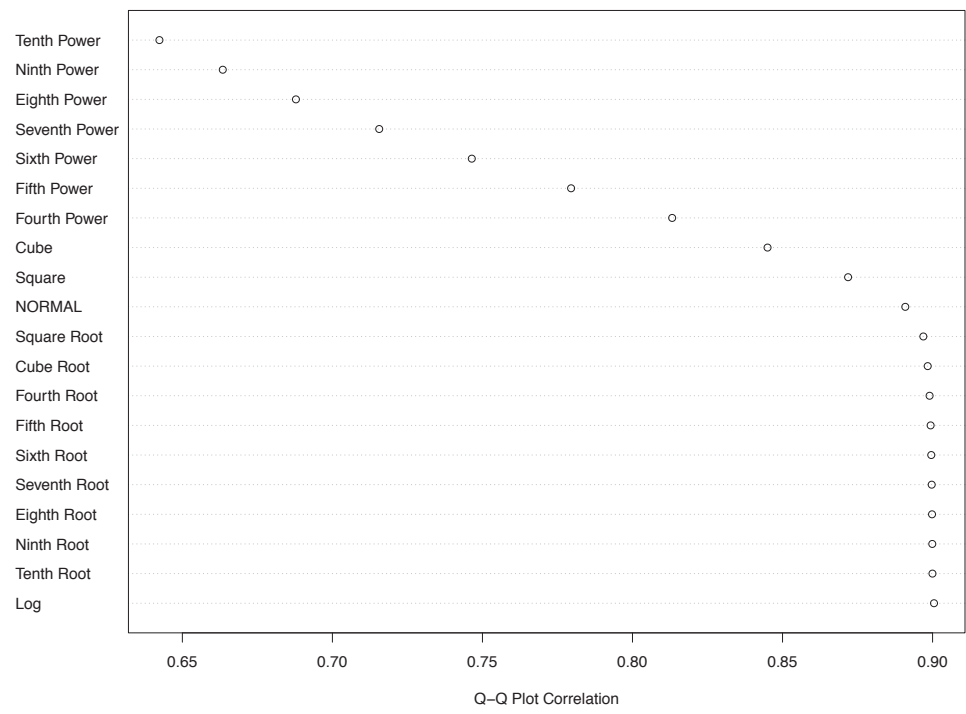
Fit Corr. by Model for F at Location SC-14



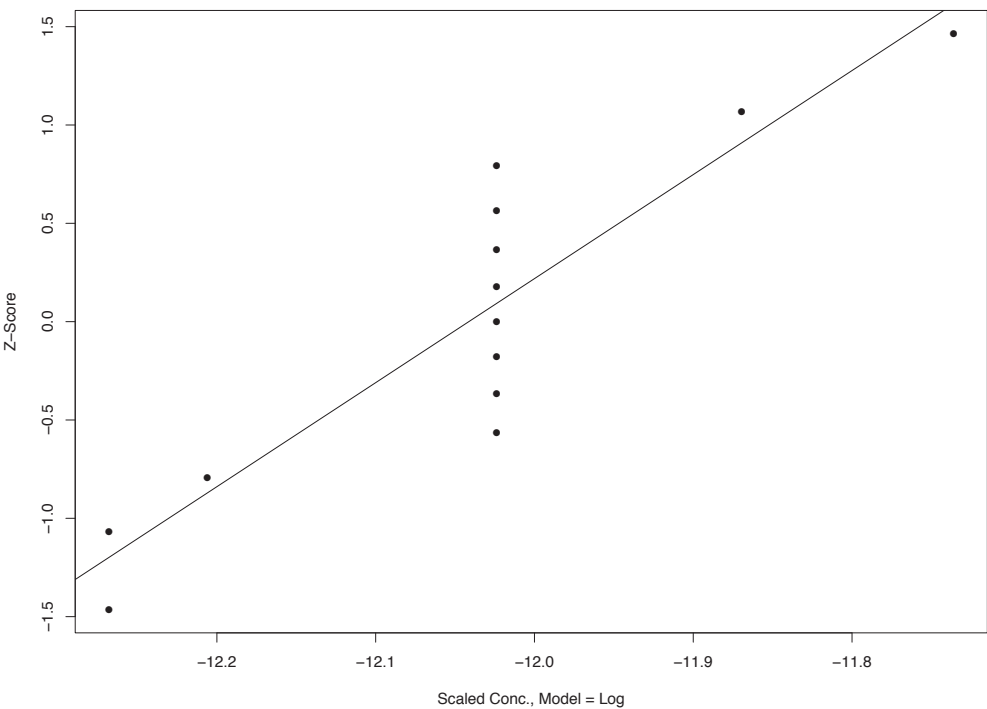
Censored Q-Q Plot for F at Location SC-14



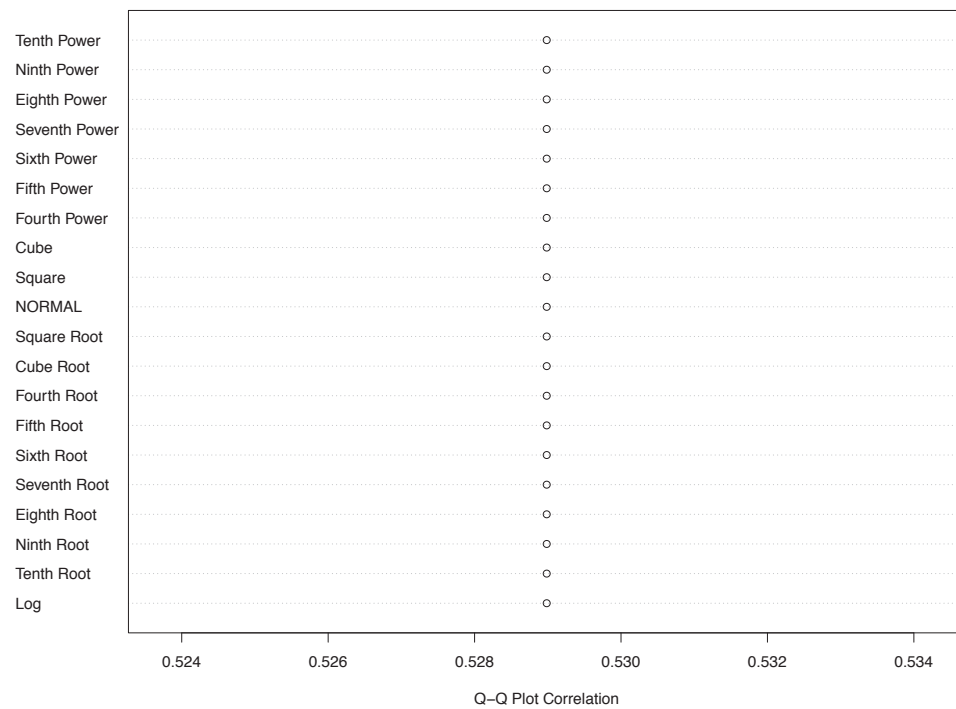
Fit Corr. by Model for HG at Location CC-1



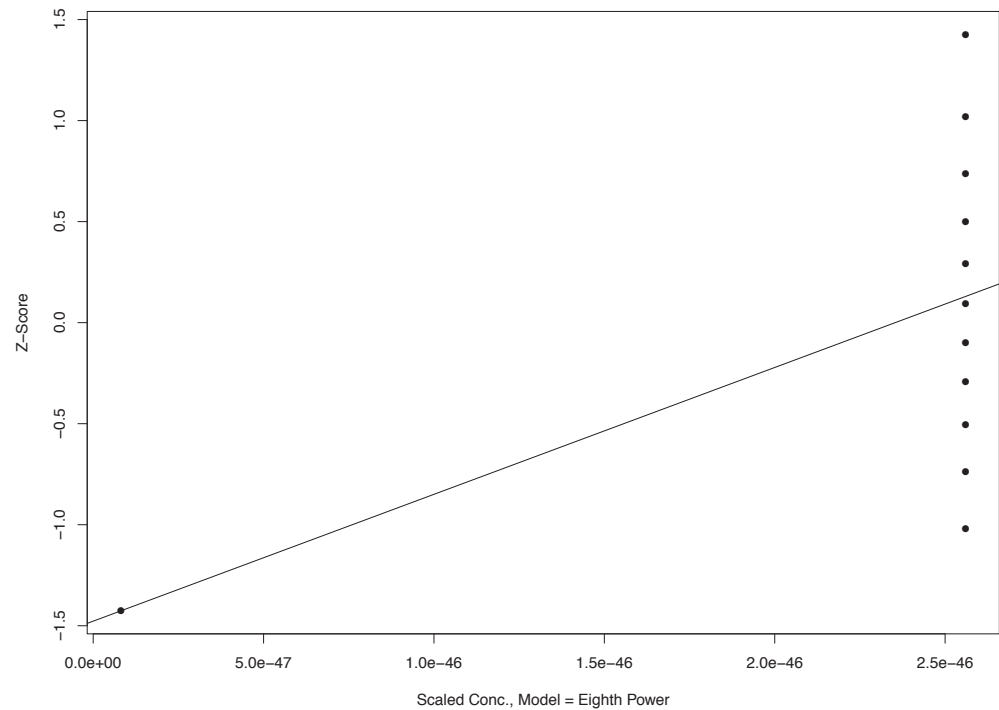
Censored Q-Q Plot for HG at Location CC-1



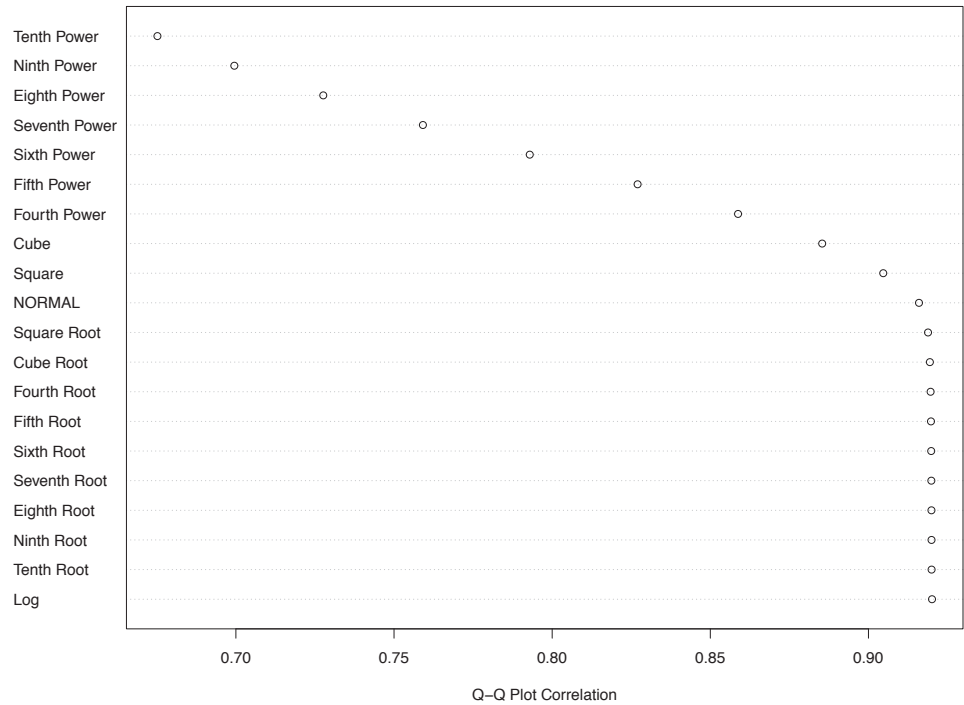
Fit Corr. by Model for HG at Location FC-1



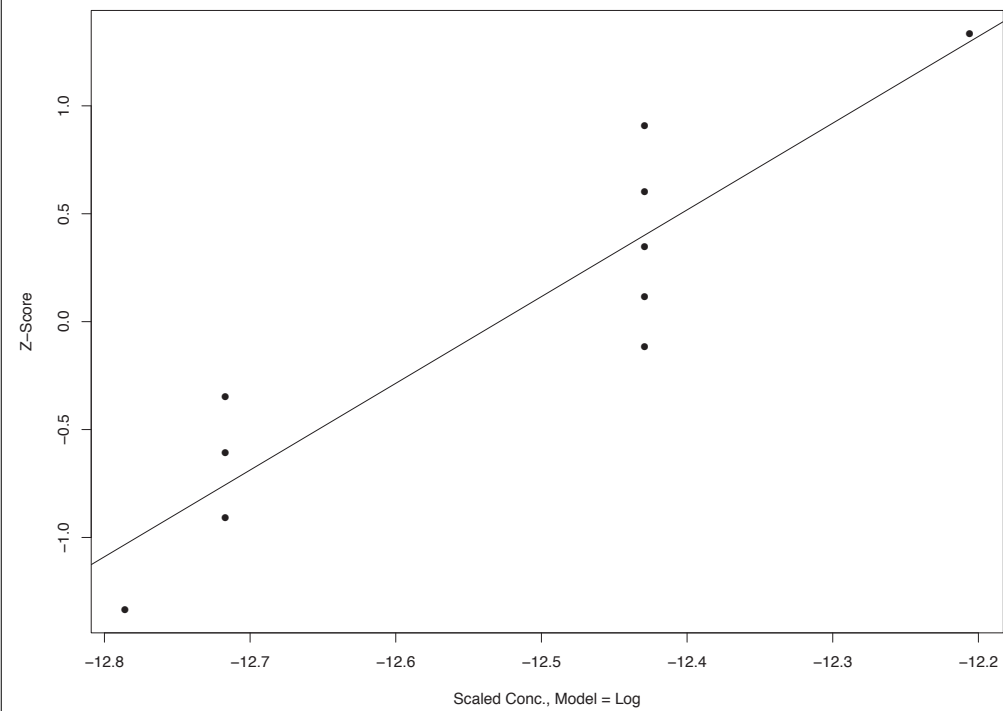
Censored Q-Q Plot for HG at Location FC-1



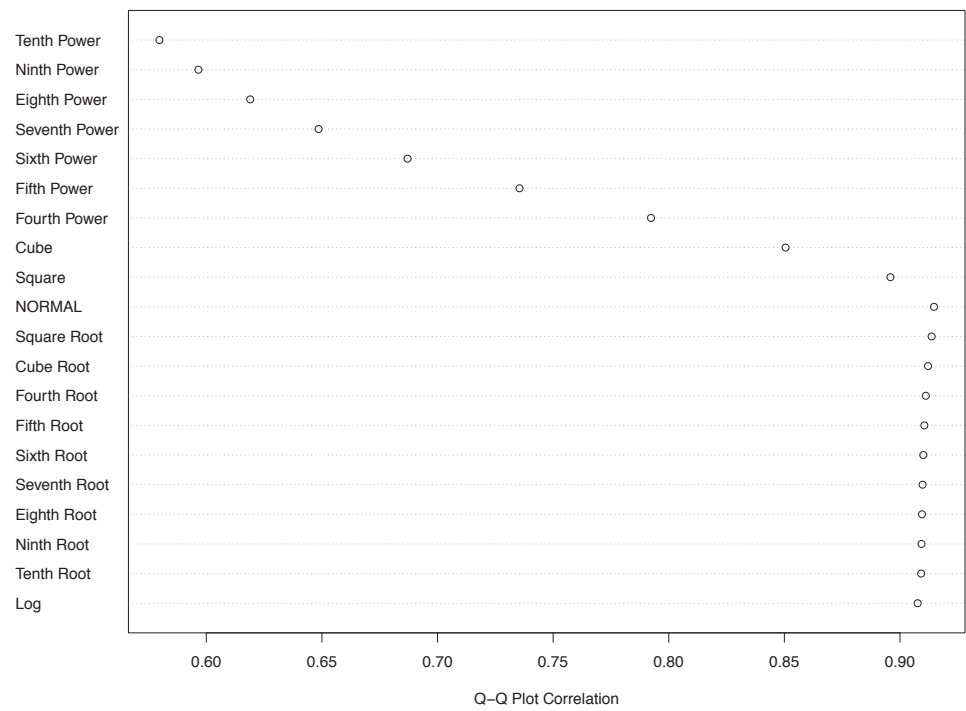
Fit Corr. by Model for HG at Location FC-2



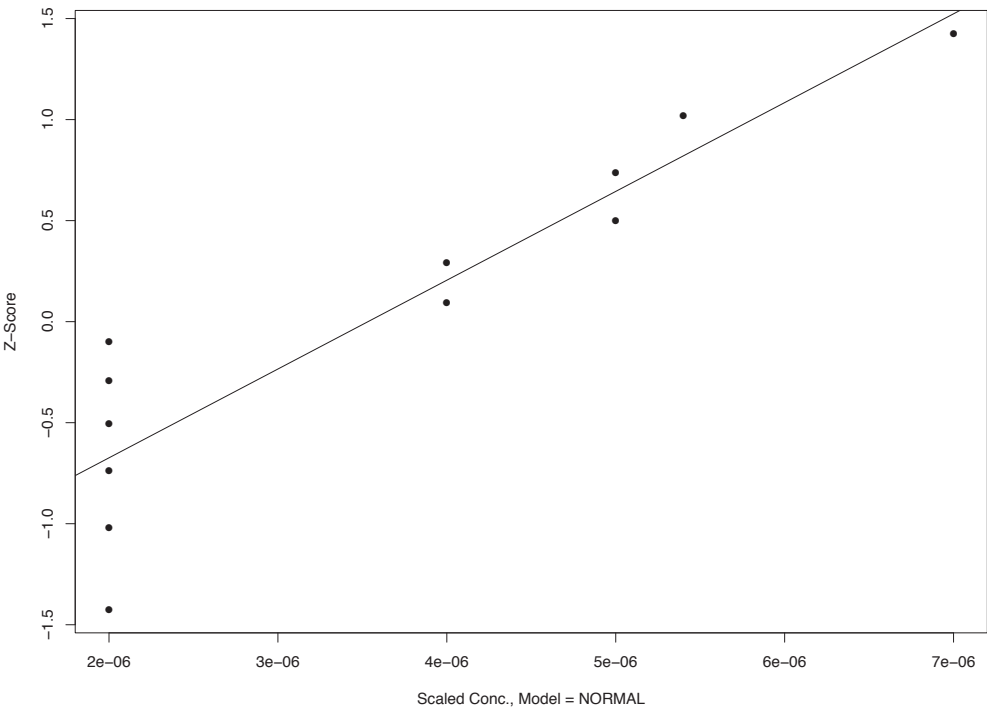
Censored Q-Q Plot for HG at Location FC-2



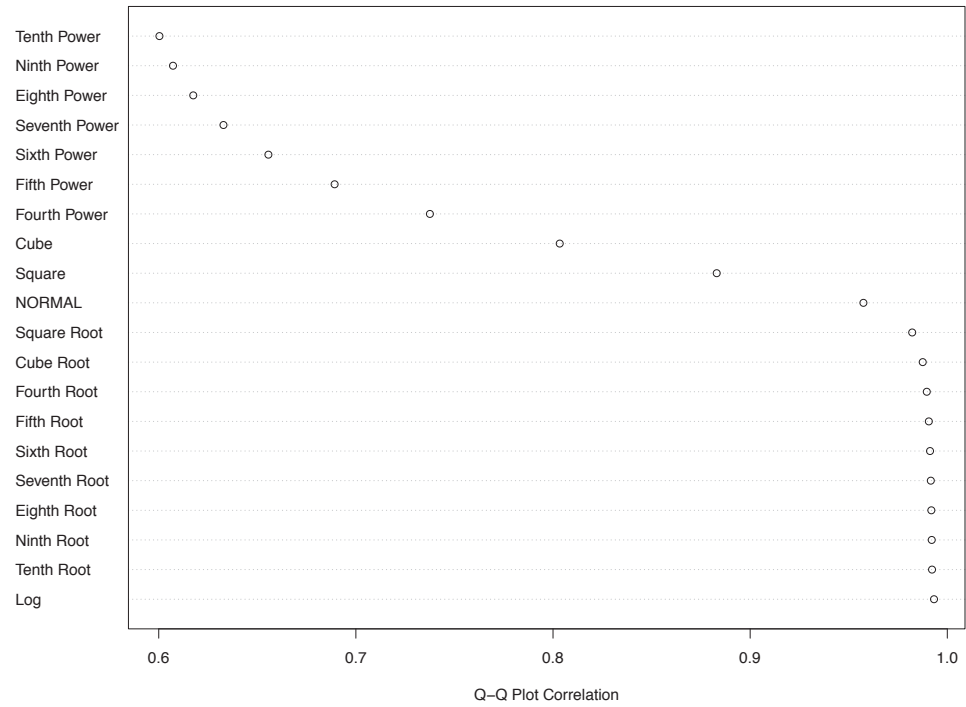
Fit Corr. by Model for HG at Location FC-3A



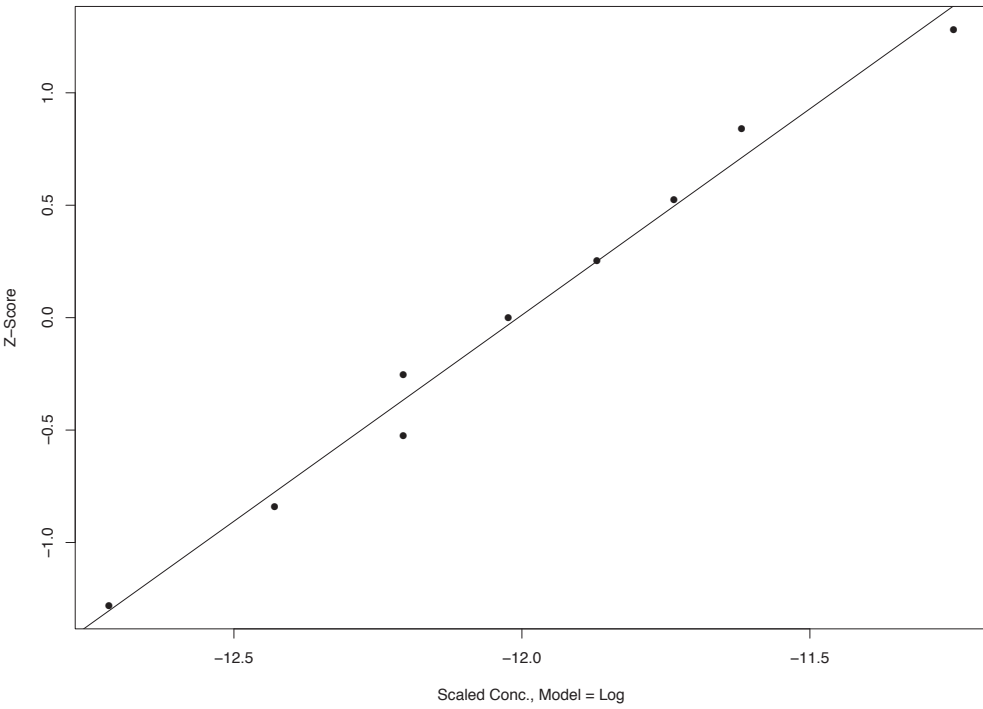
Censored Q-Q Plot for HG at Location FC-3A



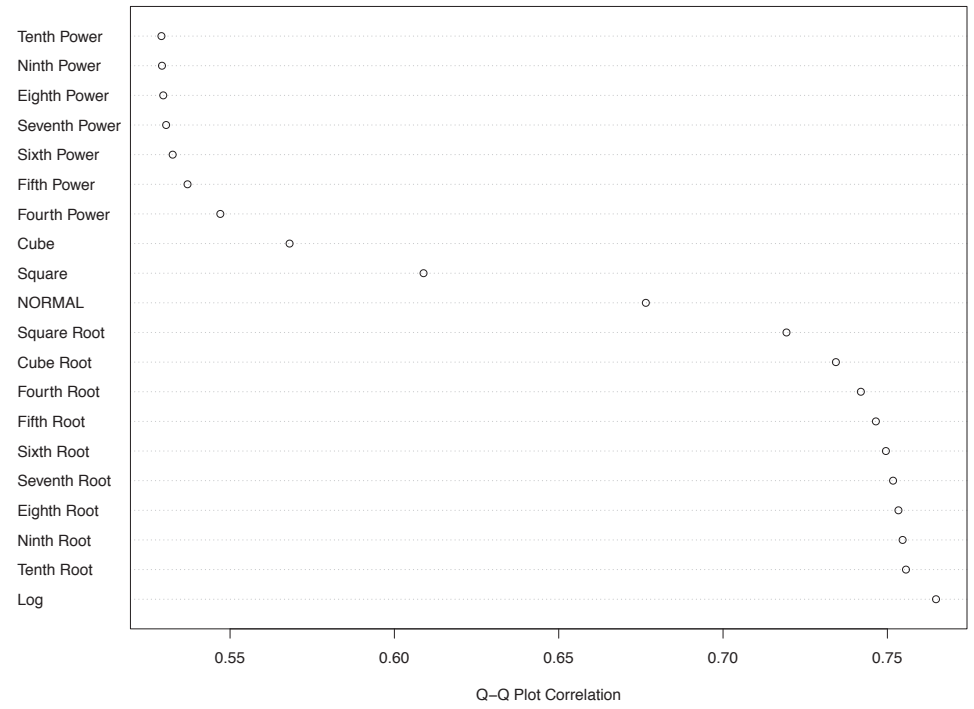
Fit Corr. by Model for HG at Location FC-3B



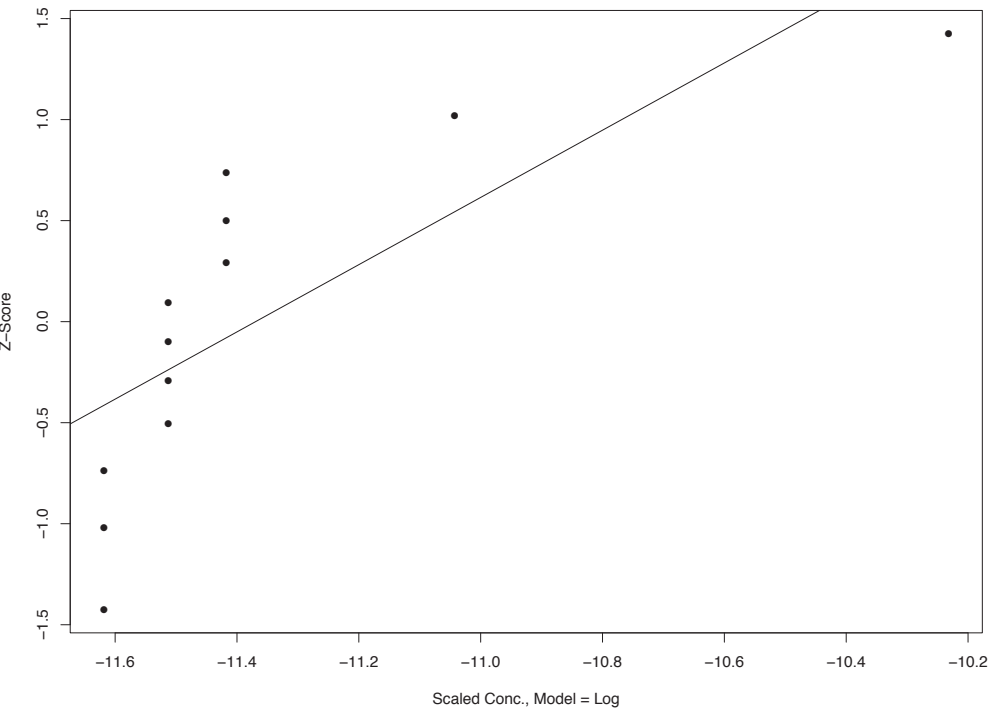
Censored Q-Q Plot for HG at Location FC-3B



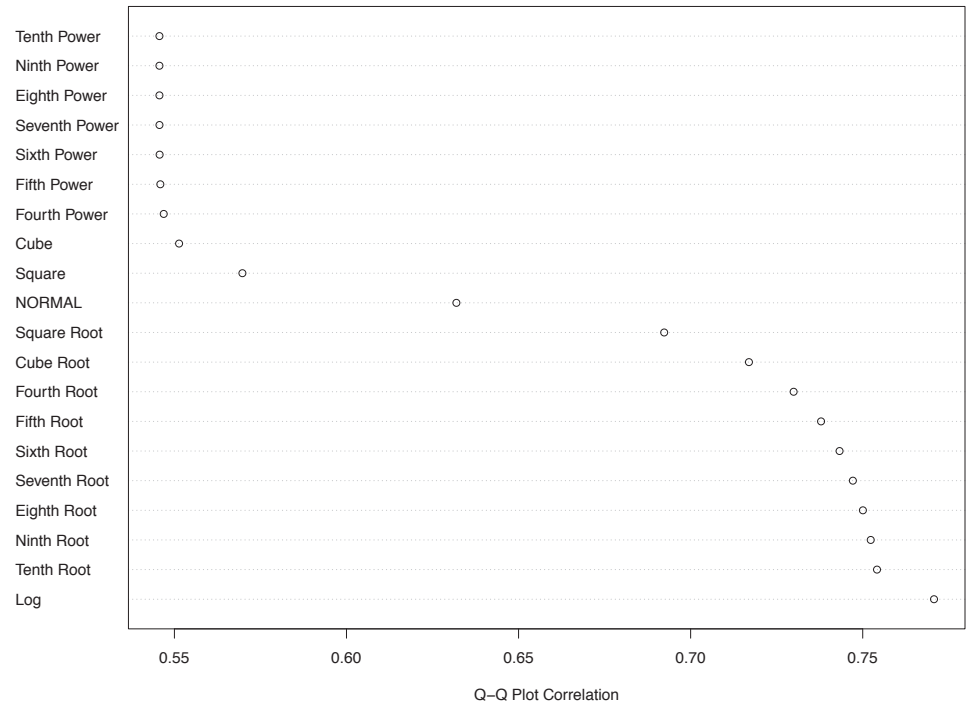
Fit Corr. by Model for HG at Location SC-10



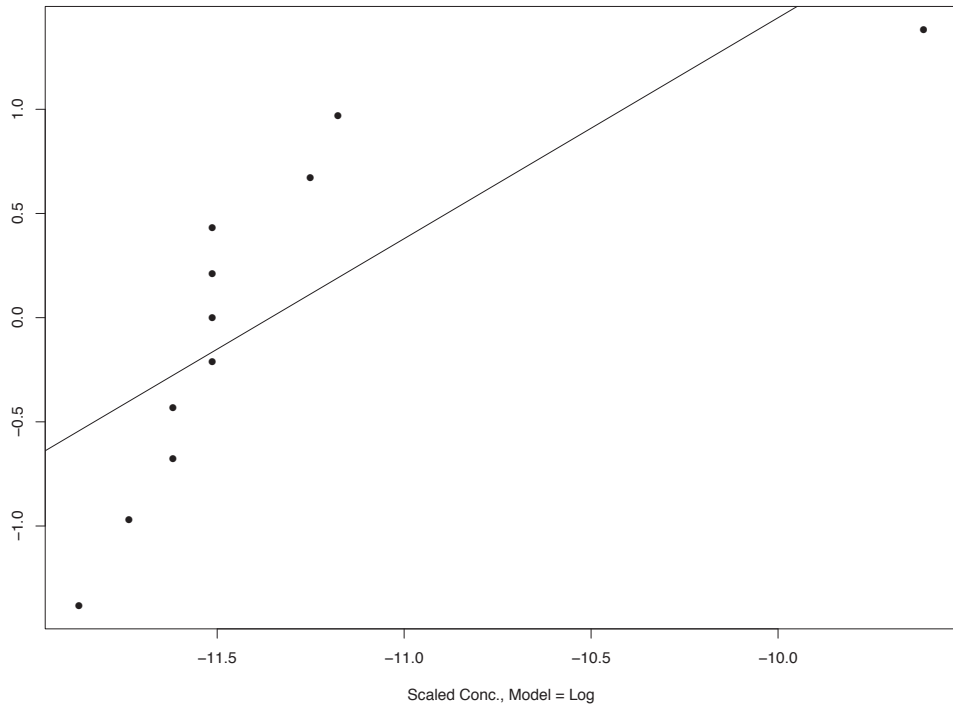
Censored Q-Q Plot for HG at Location SC-10



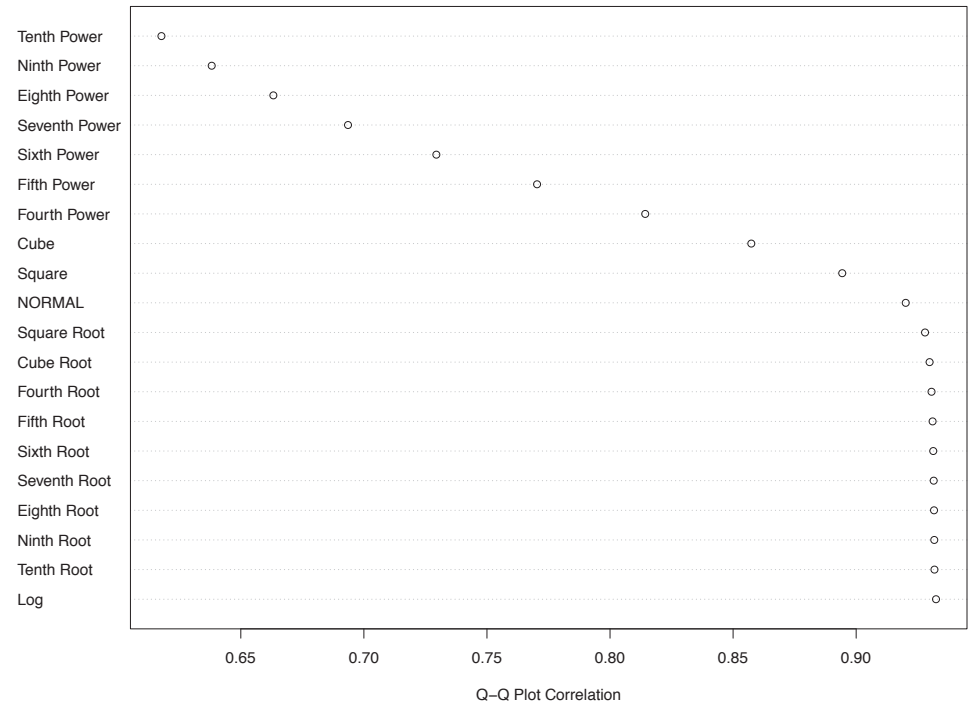
Fit Corr. by Model for HG at Location SC-11



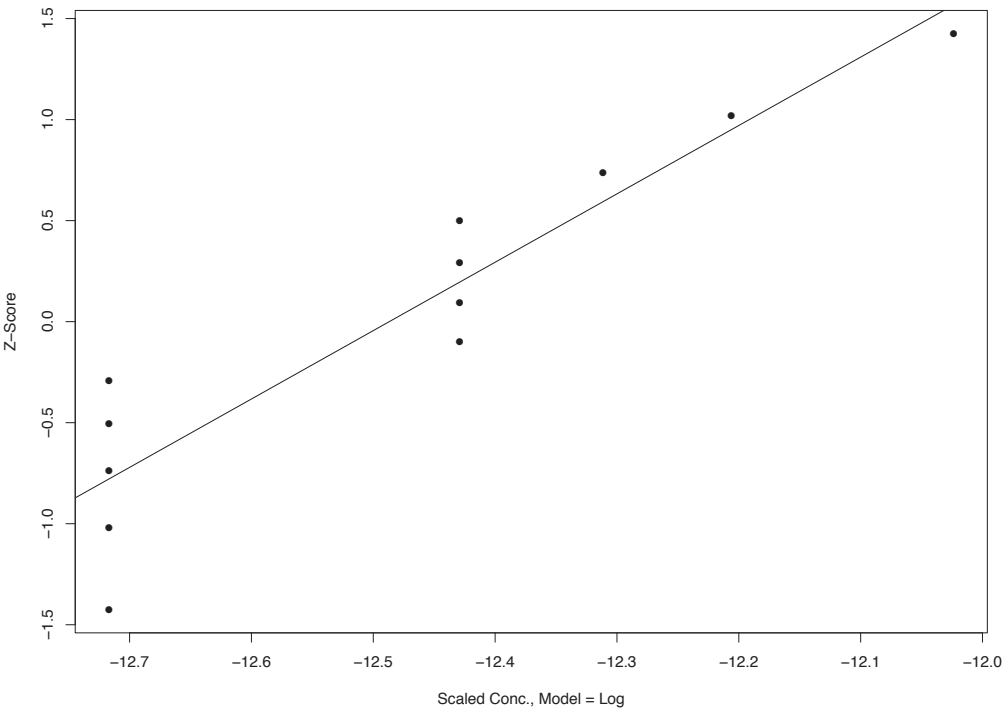
Censored Q-Q Plot for HG at Location SC-11



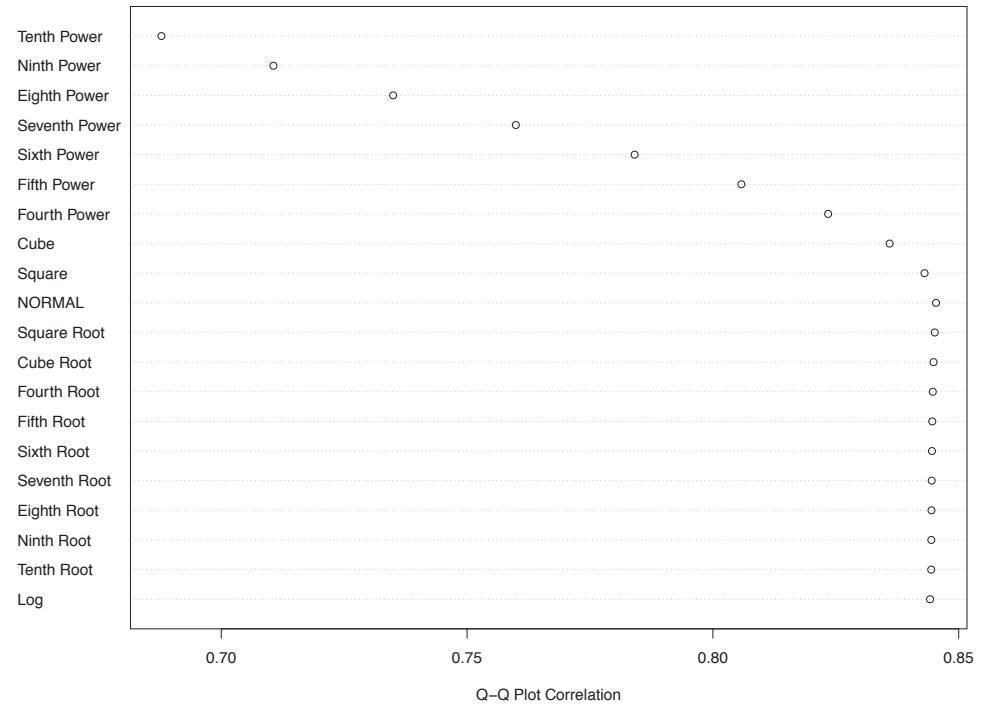
Fit Corr. by Model for HG at Location SC-12



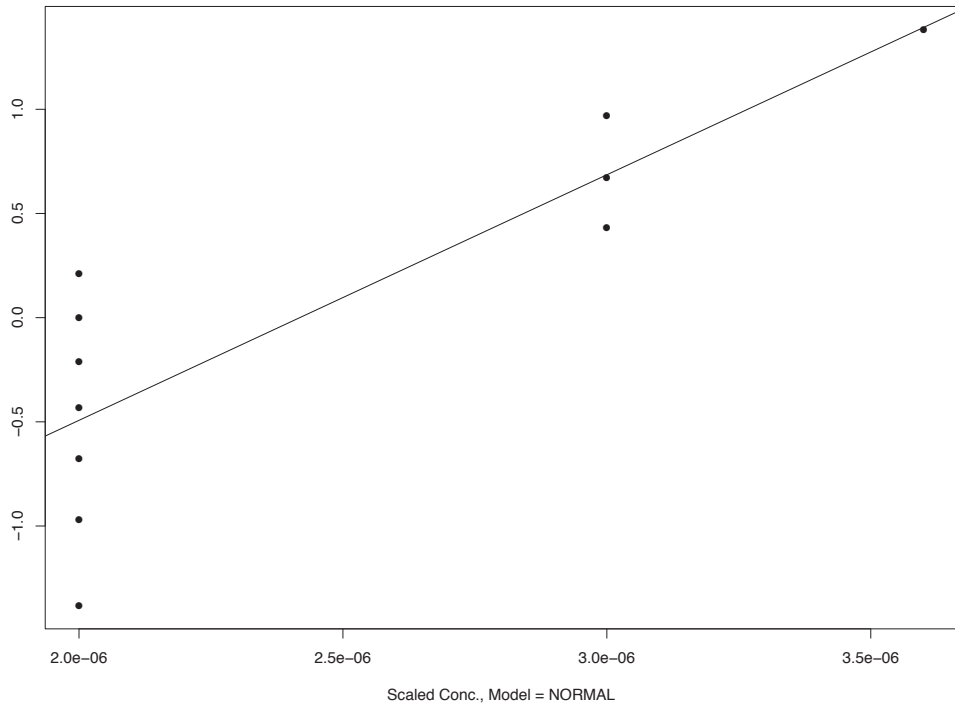
Censored Q-Q Plot for HG at Location SC-12



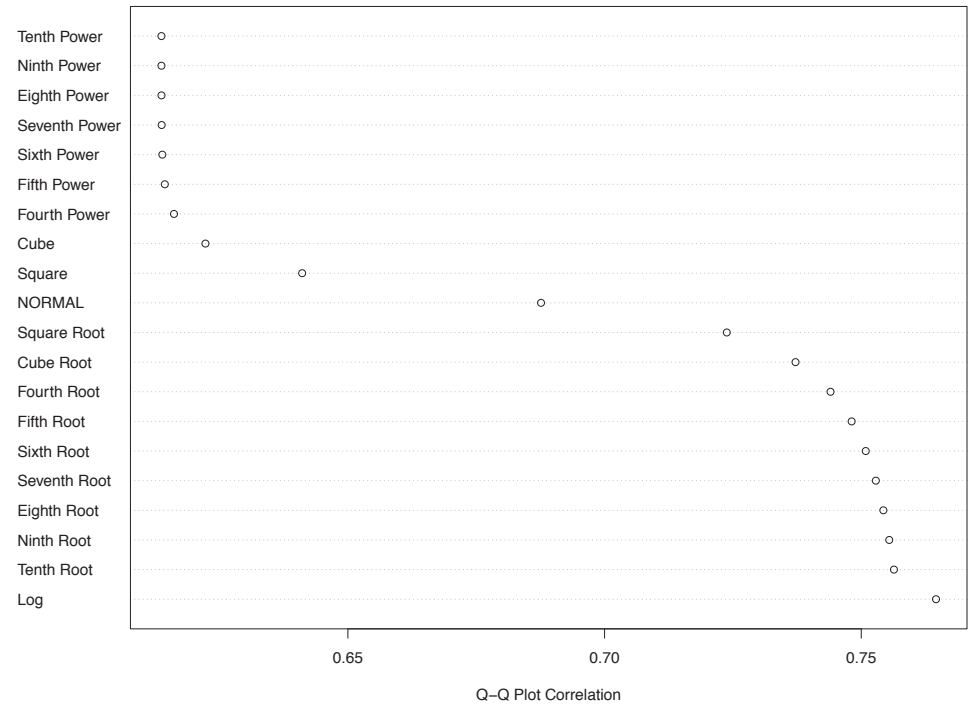
Fit Corr. by Model for HG at Location SC-13



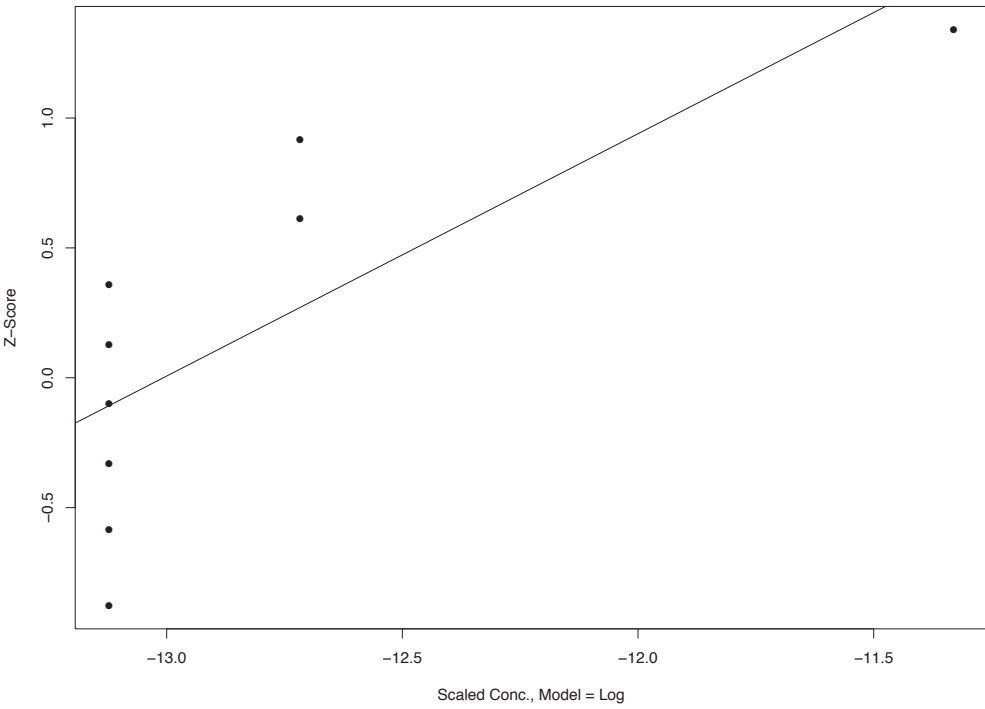
Censored Q-Q Plot for HG at Location SC-13



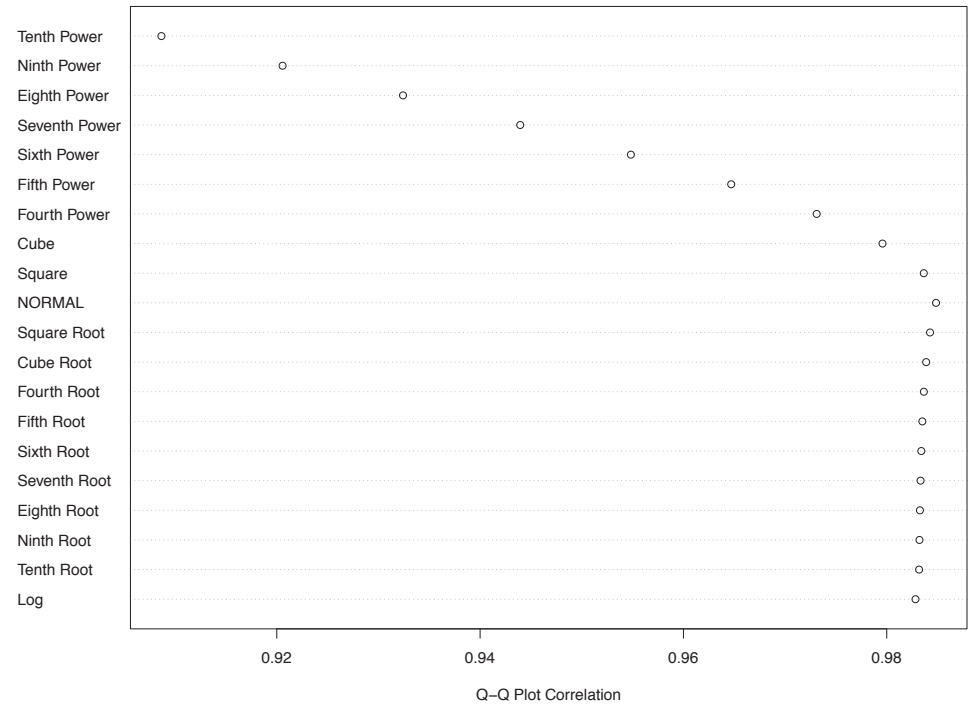
Fit Corr. by Model for HG at Location SC-14



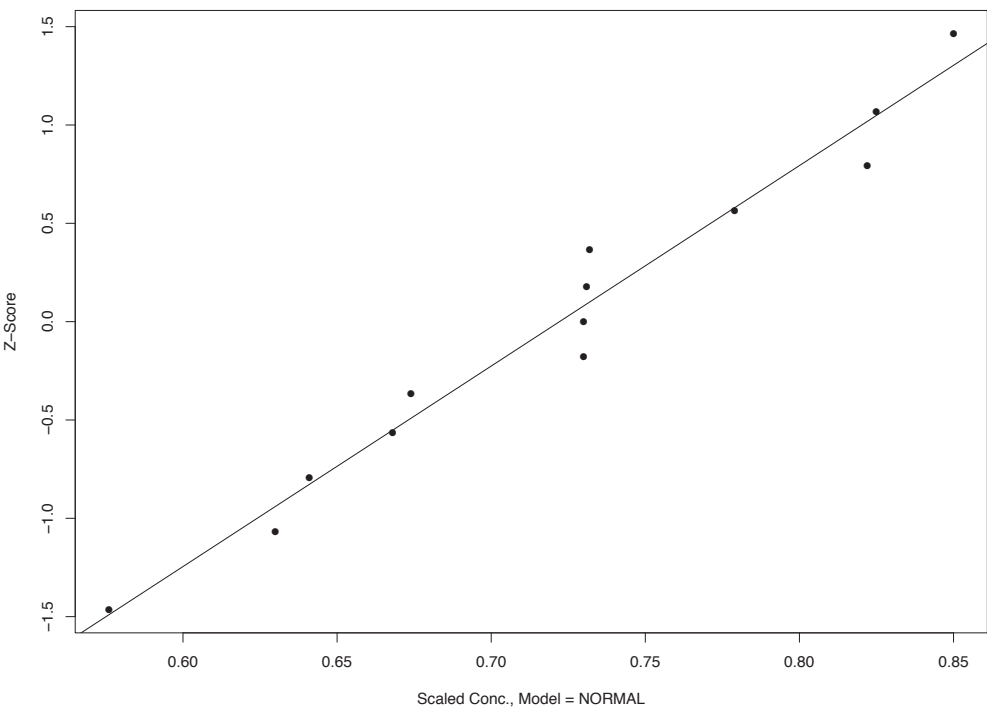
Censored Q-Q Plot for HG at Location SC-14



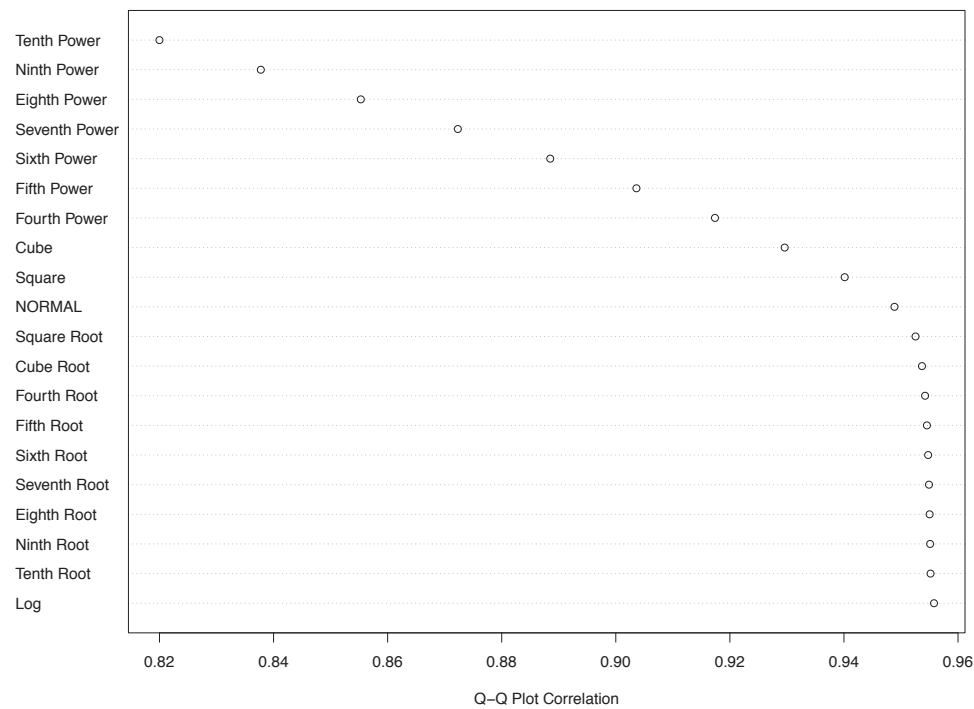
Fit Corr. by Model for LI at Location CC-1



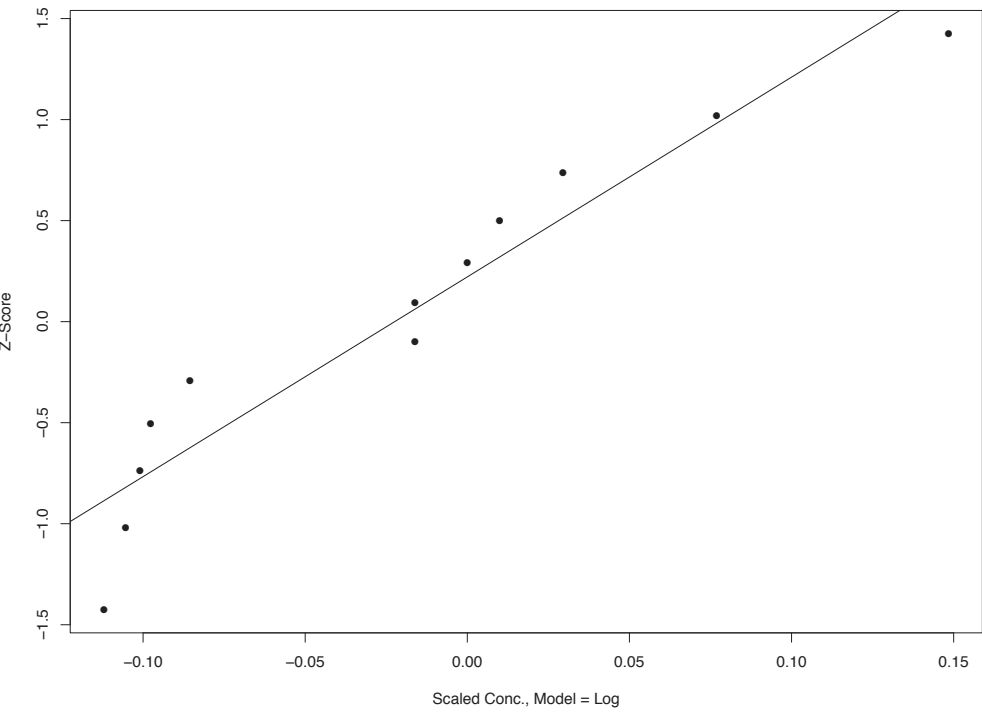
Censored Q-Q Plot for LI at Location CC-1



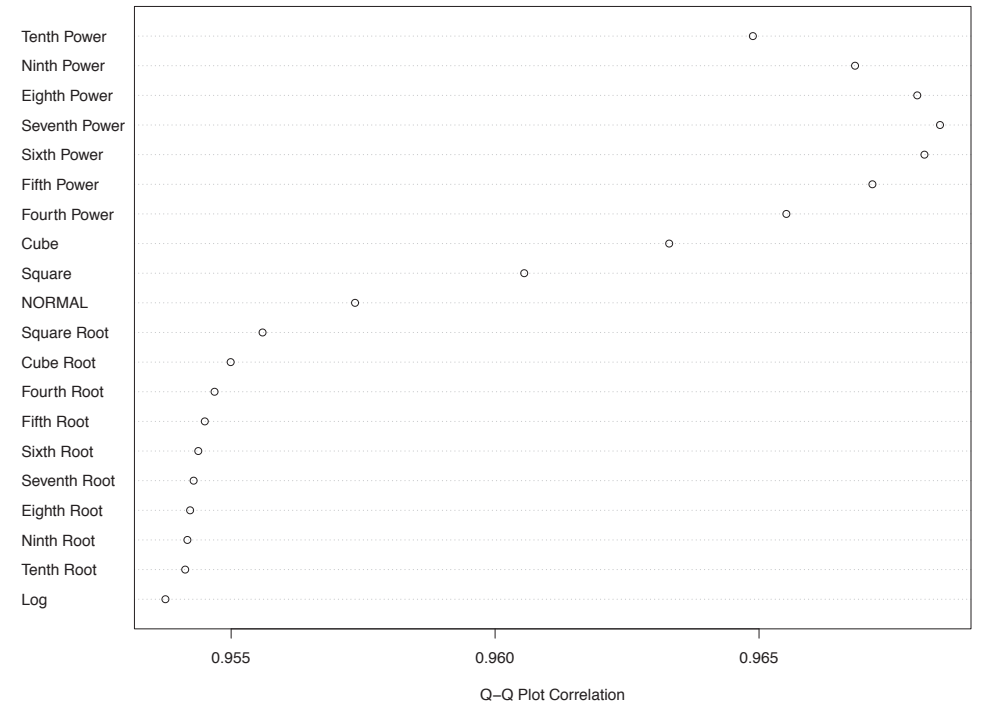
Fit Corr. by Model for LI at Location FC-1



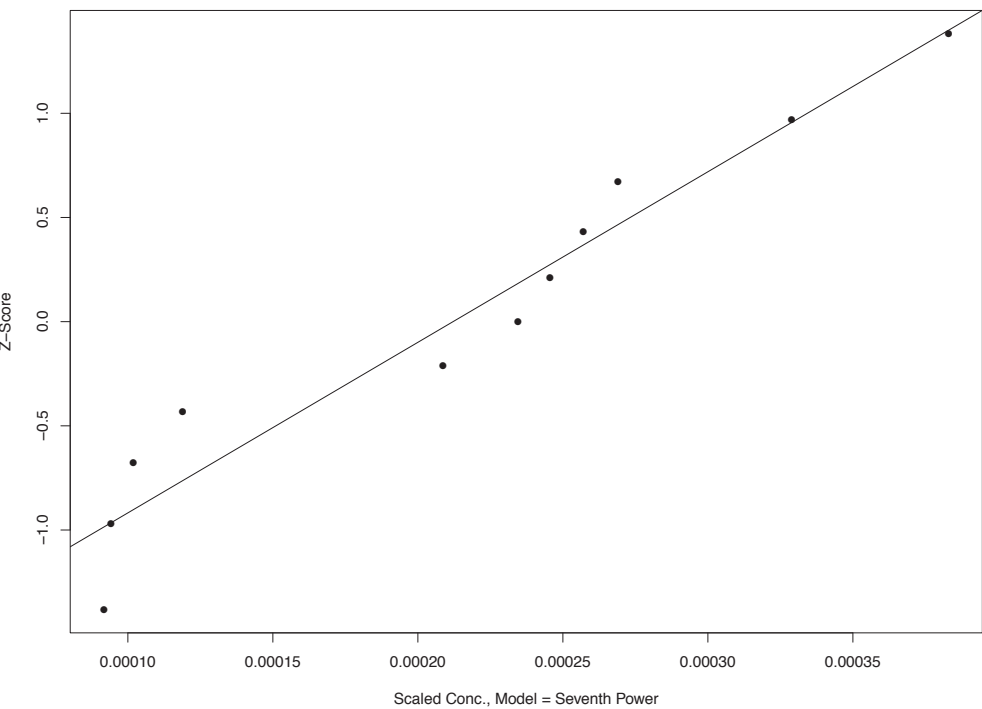
Censored Q-Q Plot for LI at Location FC-1



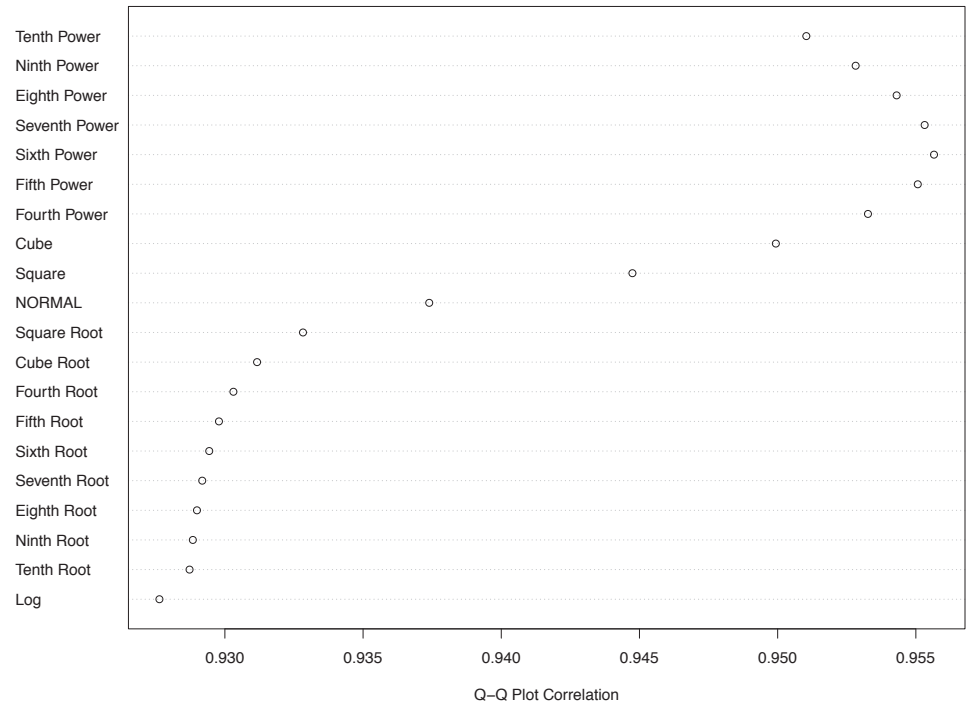
Fit Corr. by Model for LI at Location FC-2



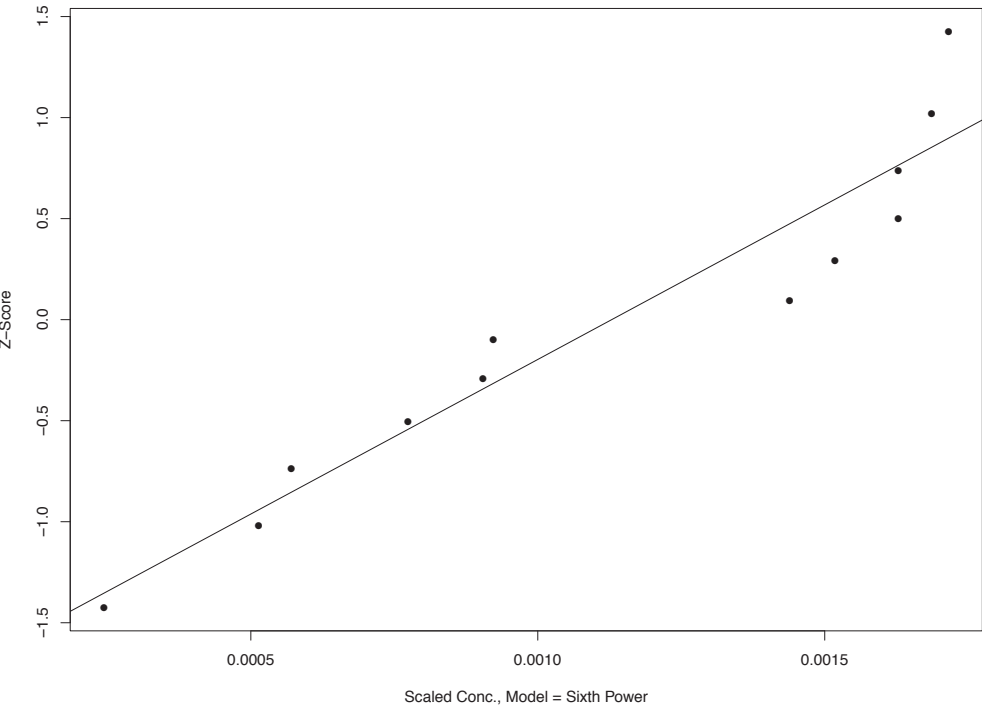
Censored Q-Q Plot for LI at Location FC-2



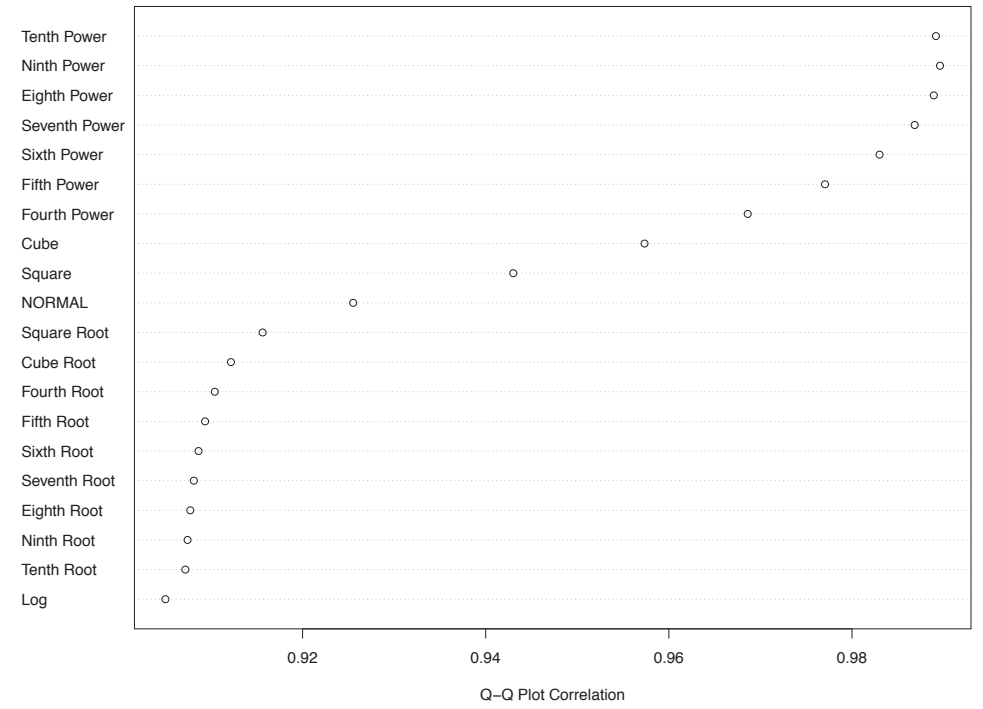
Fit Corr. by Model for LI at Location FC-3A



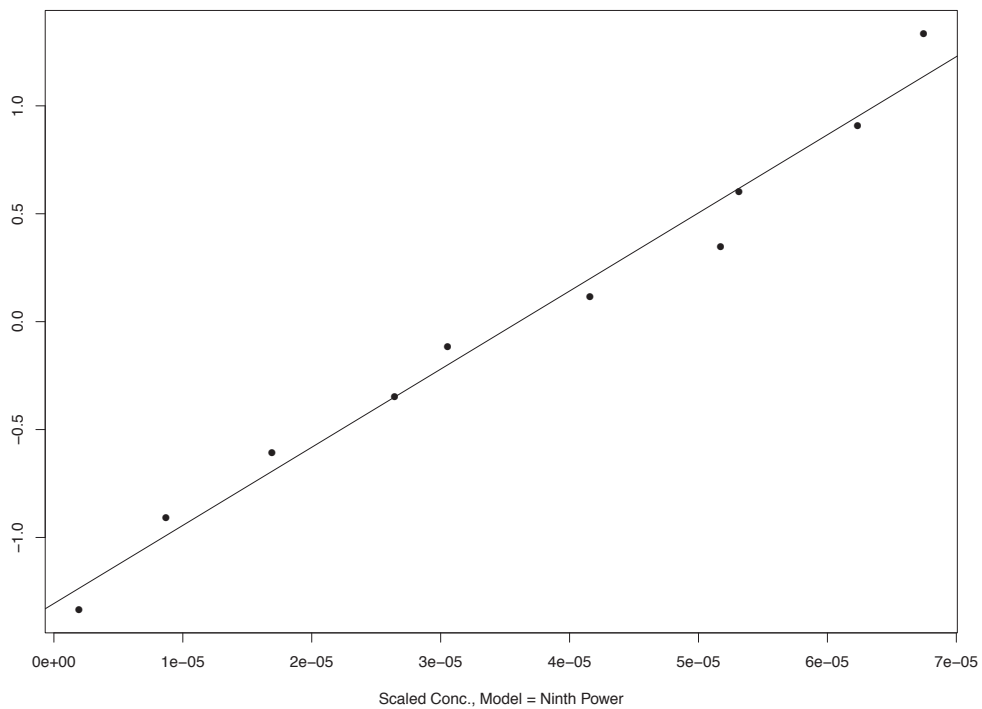
Censored Q-Q Plot for LI at Location FC-3A



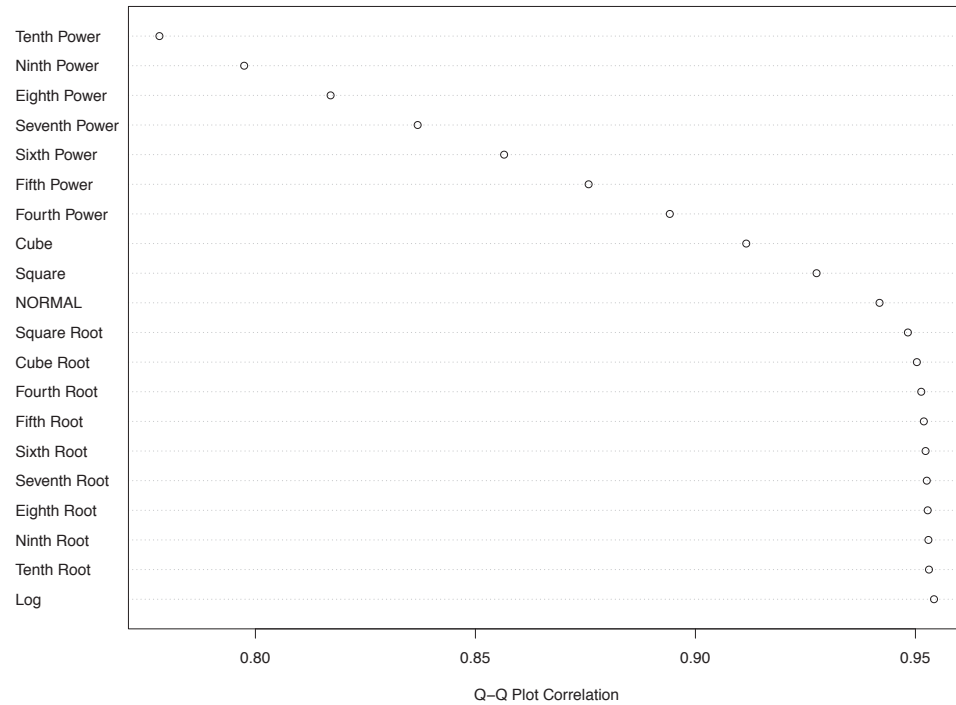
Fit Corr. by Model for LI at Location FC-3B



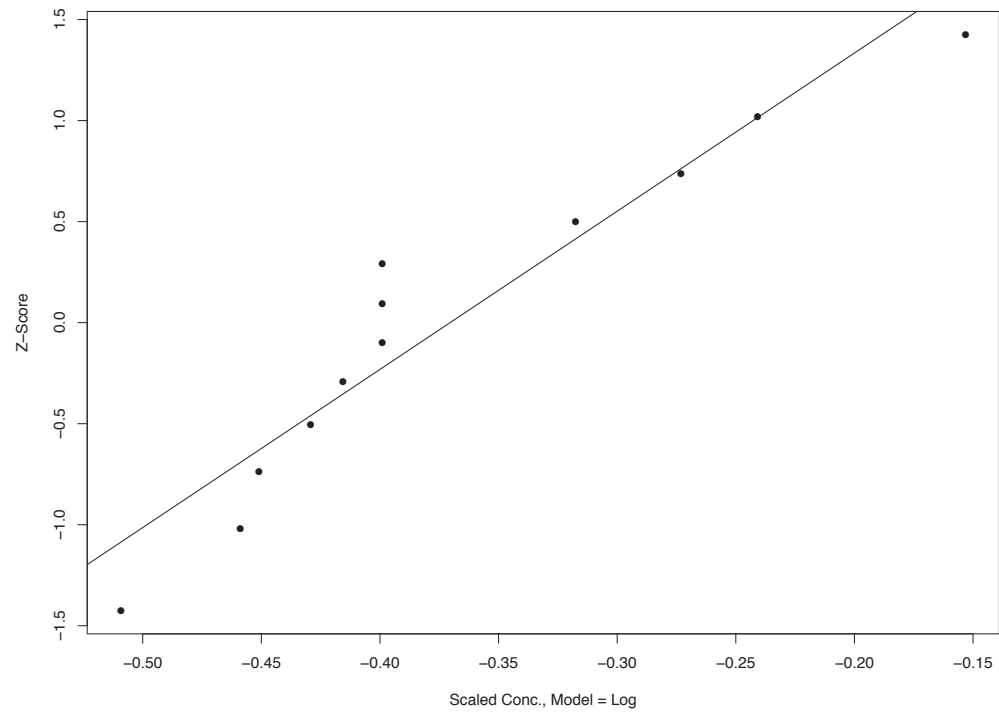
Censored Q-Q Plot for LI at Location FC-3B



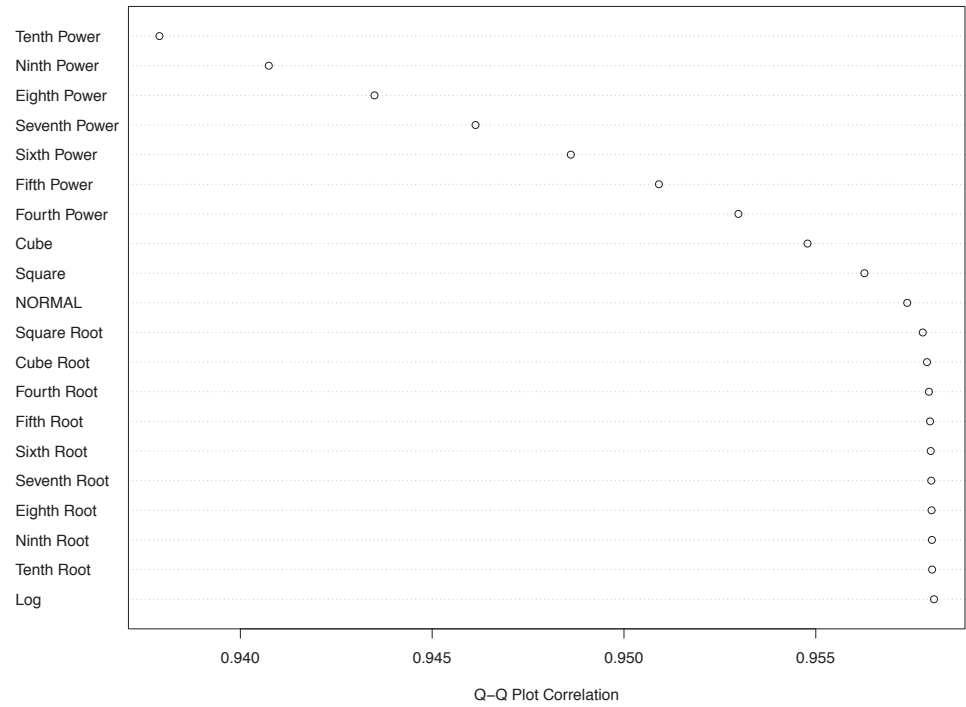
Fit Corr. by Model for LI at Location SC-10



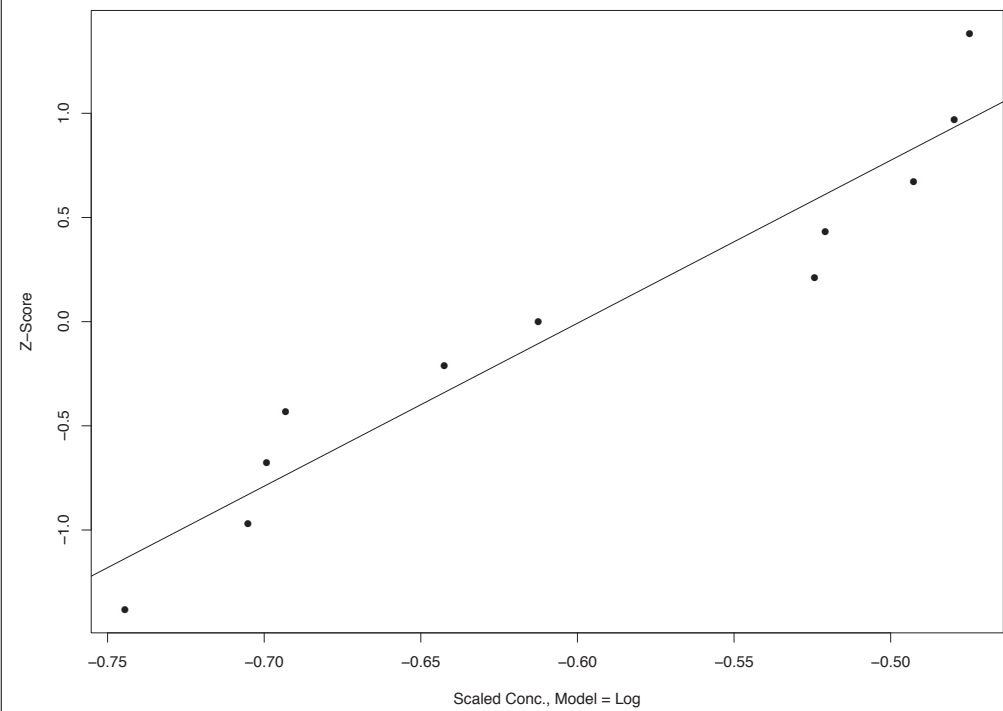
Censored Q-Q Plot for LI at Location SC-10



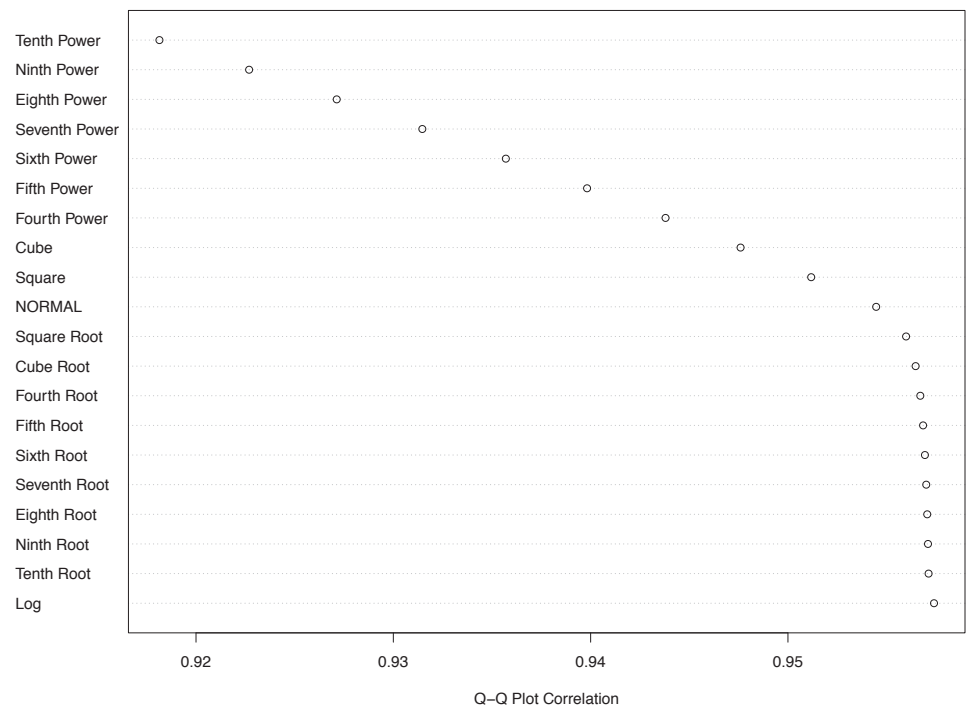
Fit Corr. by Model for LI at Location SC-11



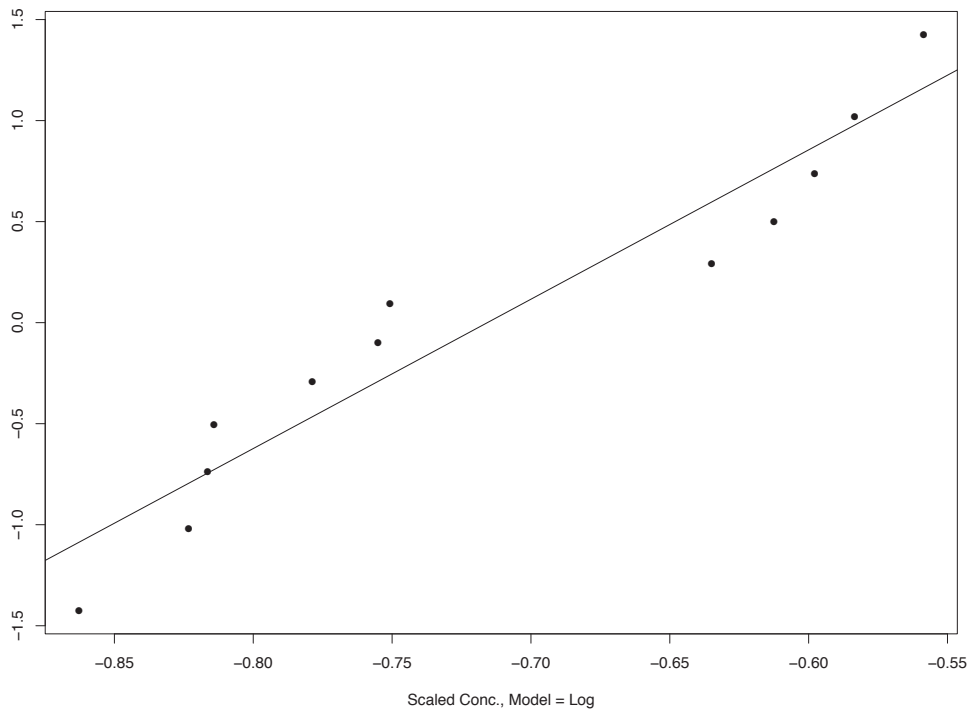
Censored Q-Q Plot for LI at Location SC-11



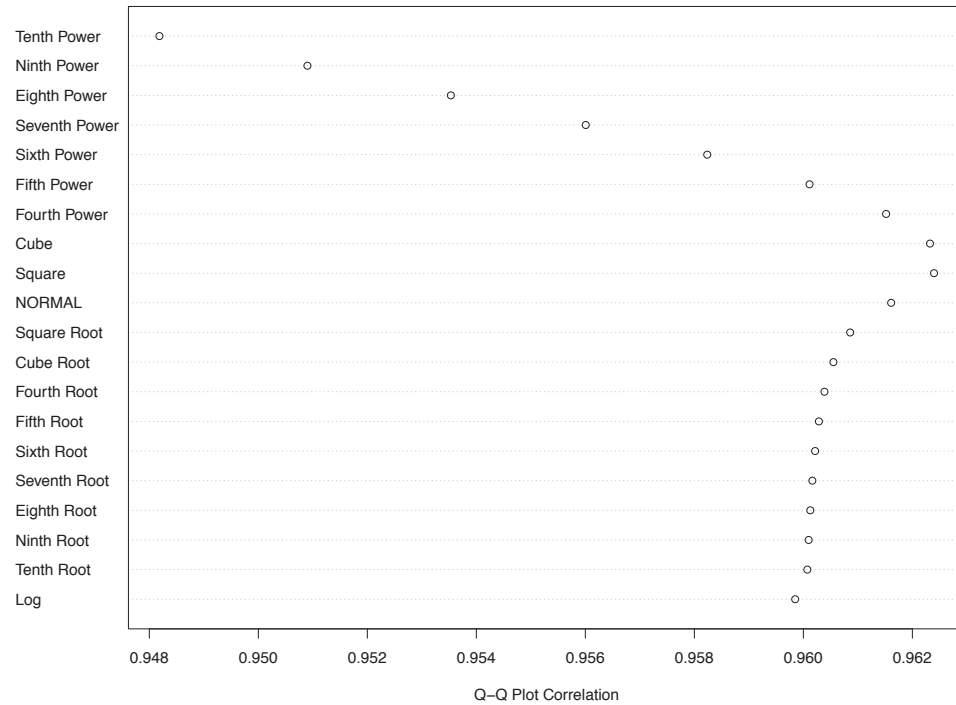
Fit Corr. by Model for LI at Location SC-12



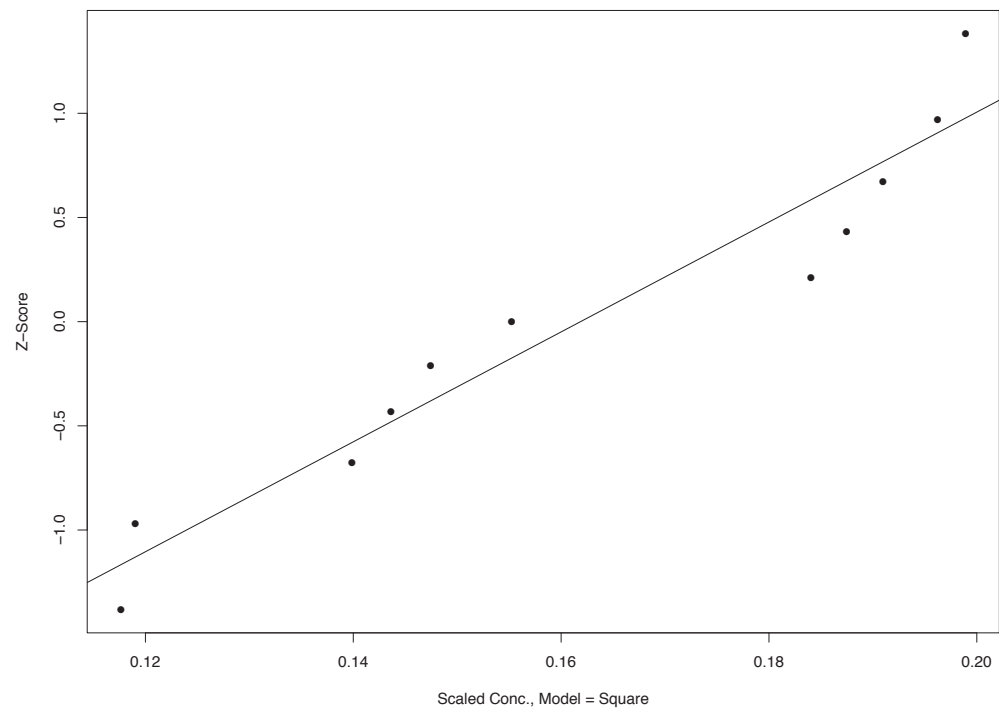
Censored Q-Q Plot for LI at Location SC-12



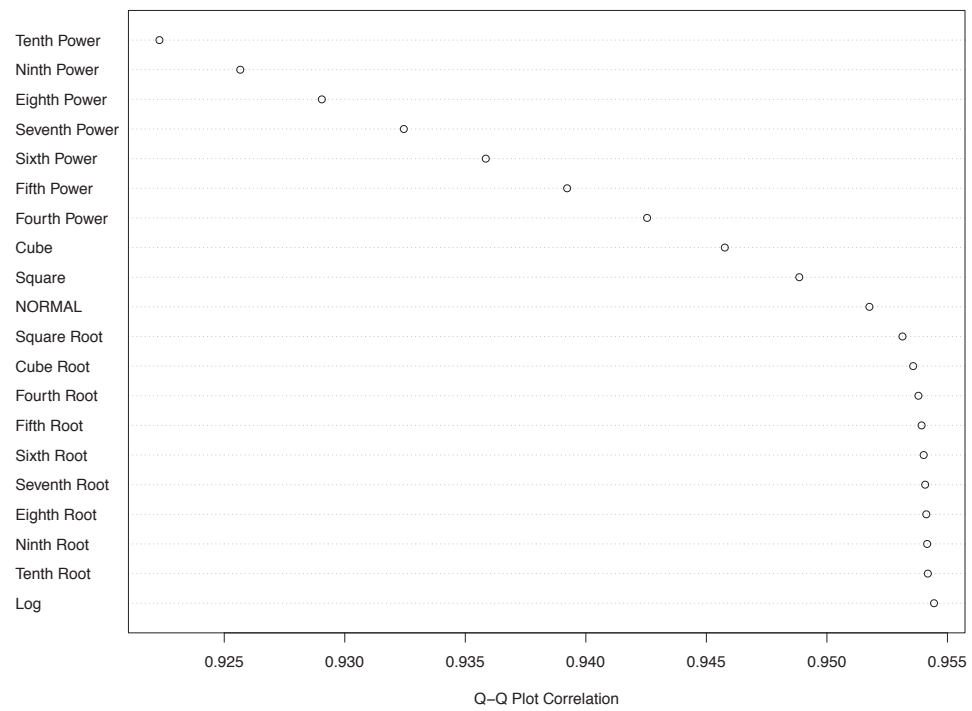
Fit Corr. by Model for LI at Location SC-13



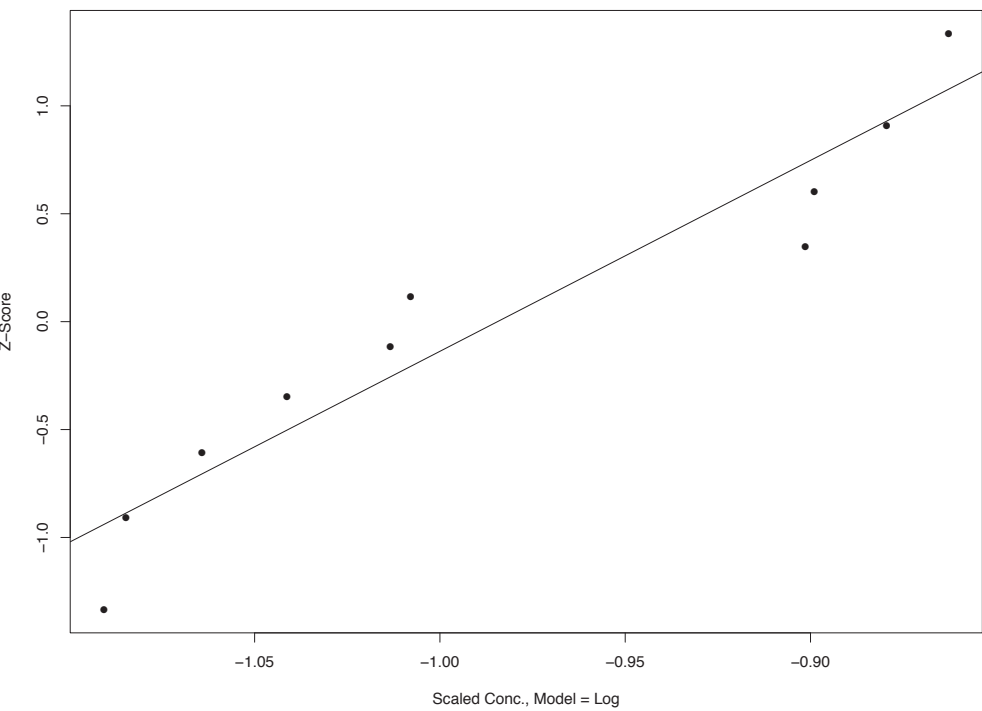
Censored Q-Q Plot for LI at Location SC-13



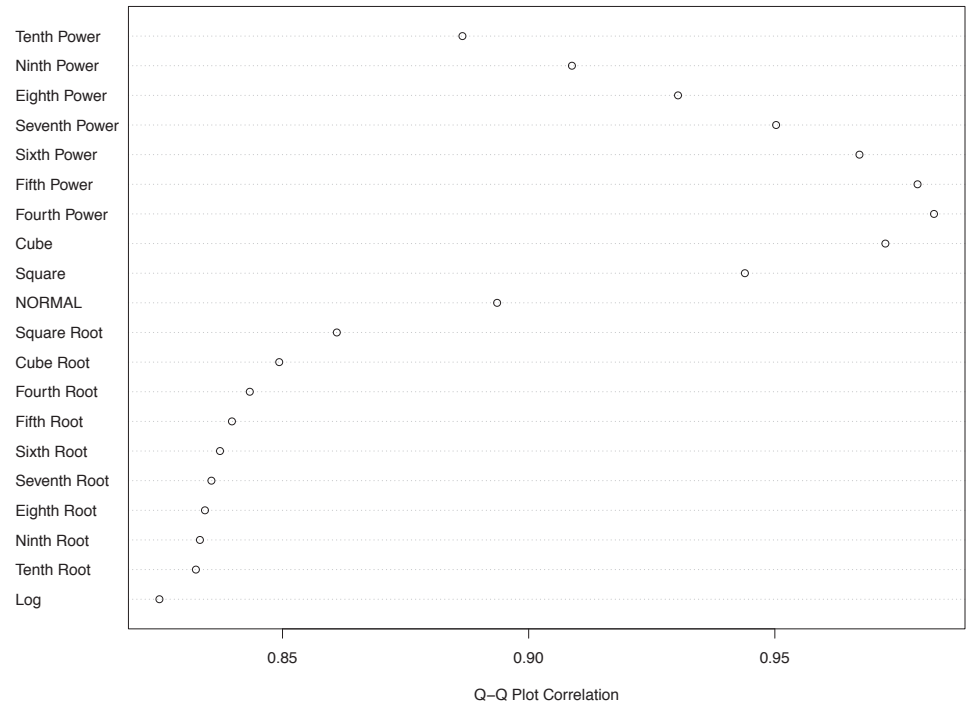
Fit Corr. by Model for LI at Location SC-14



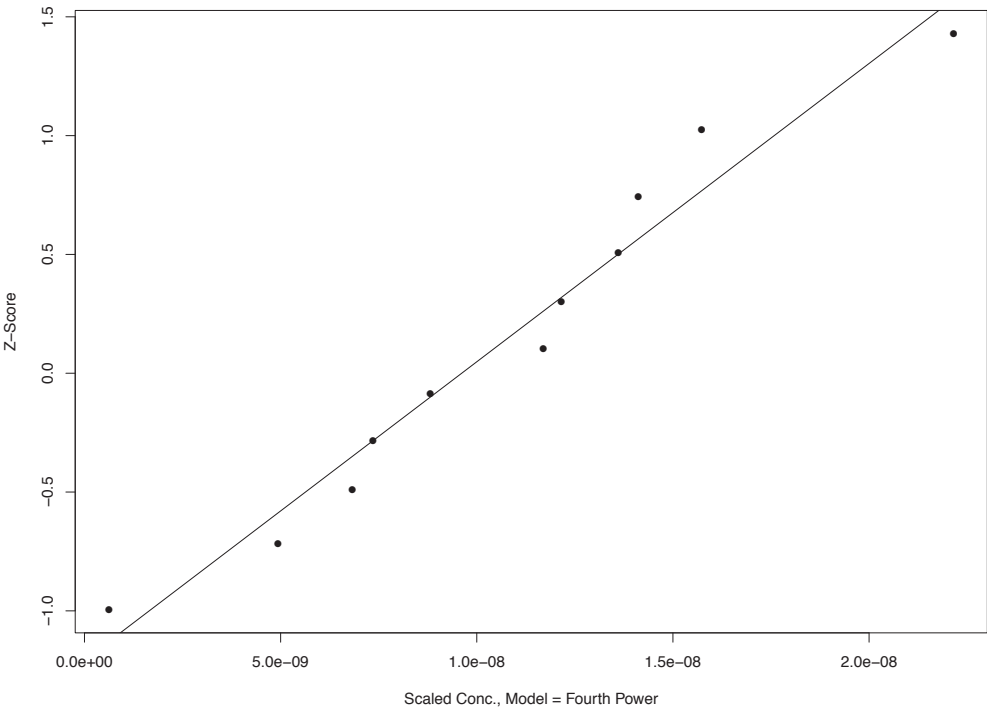
Censored Q-Q Plot for LI at Location SC-14



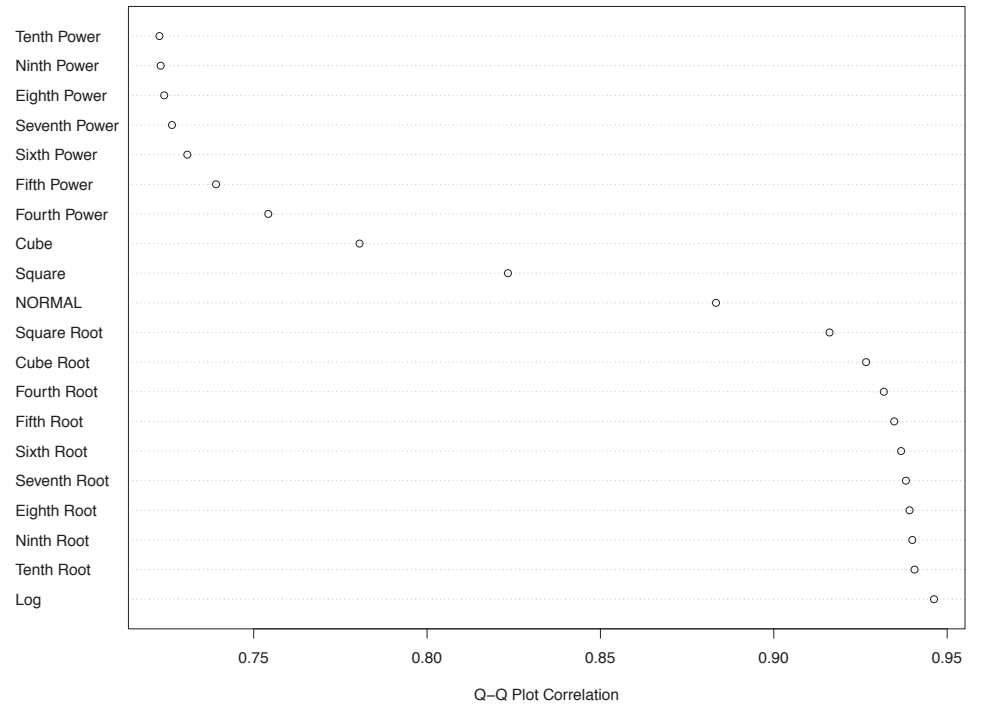
Fit Corr. by Model for MO at Location FC-3A



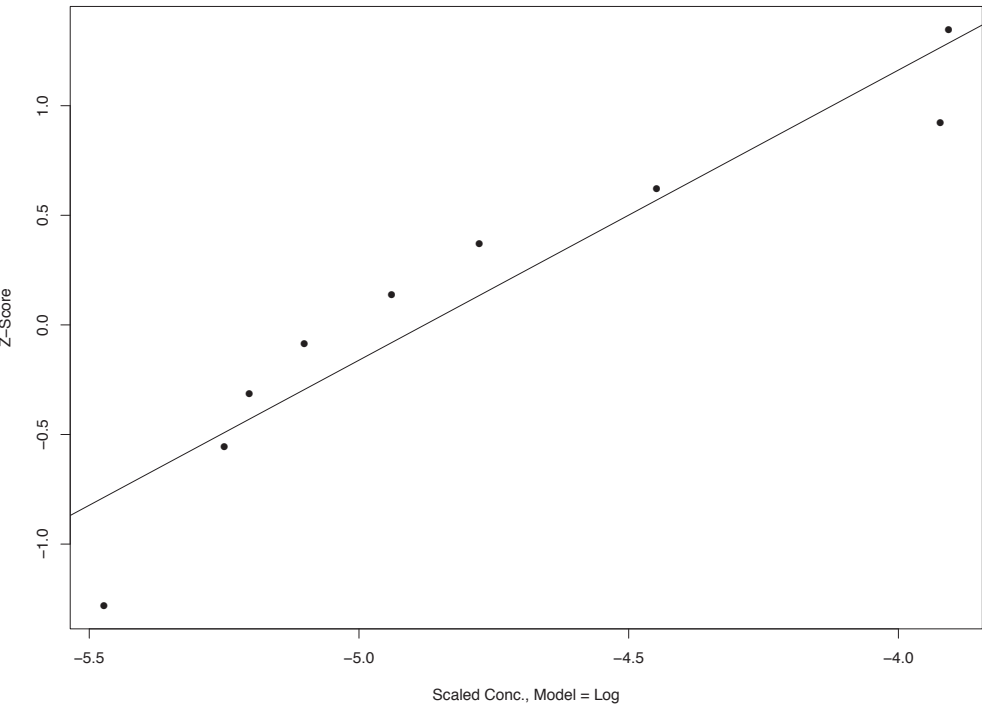
Censored Q-Q Plot for MO at Location FC-3A



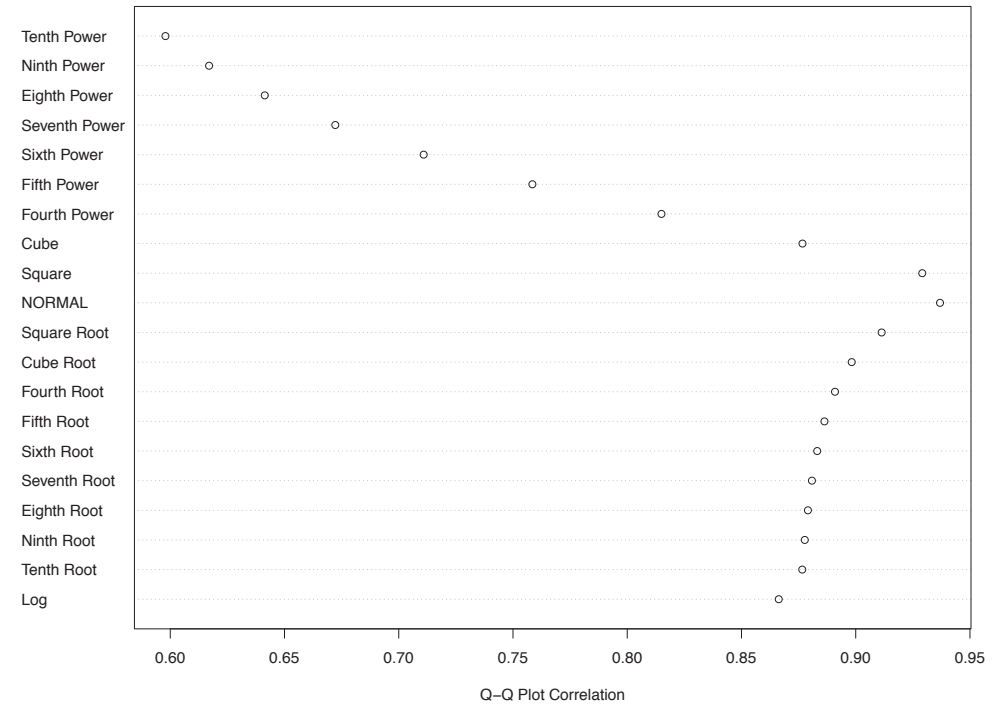
Fit Corr. by Model for MO at Location FC-3B



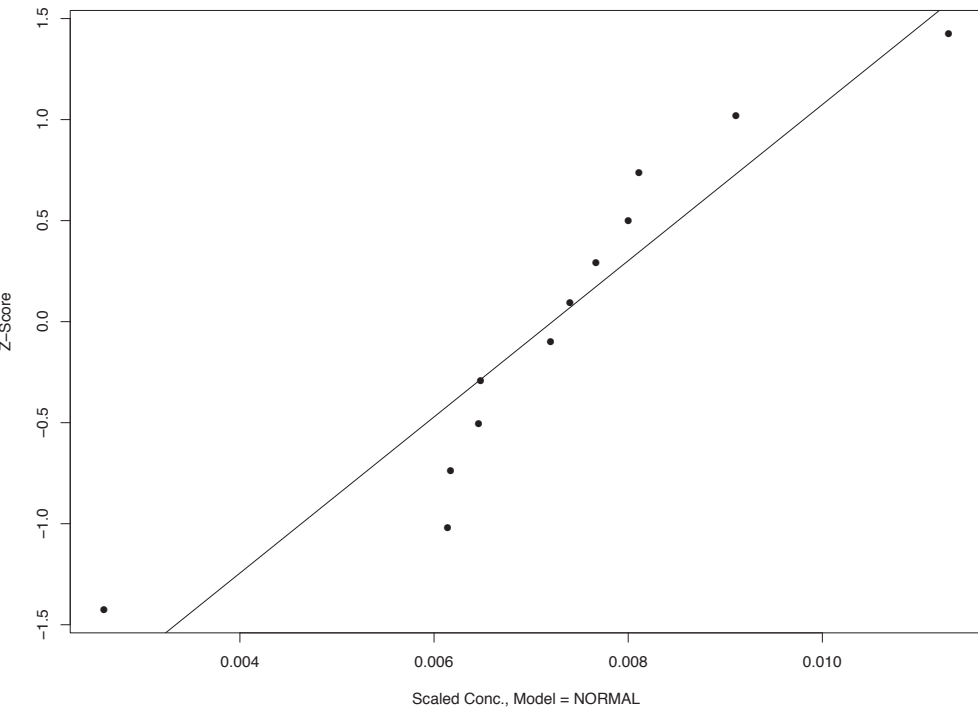
Censored Q-Q Plot for MO at Location FC-3B



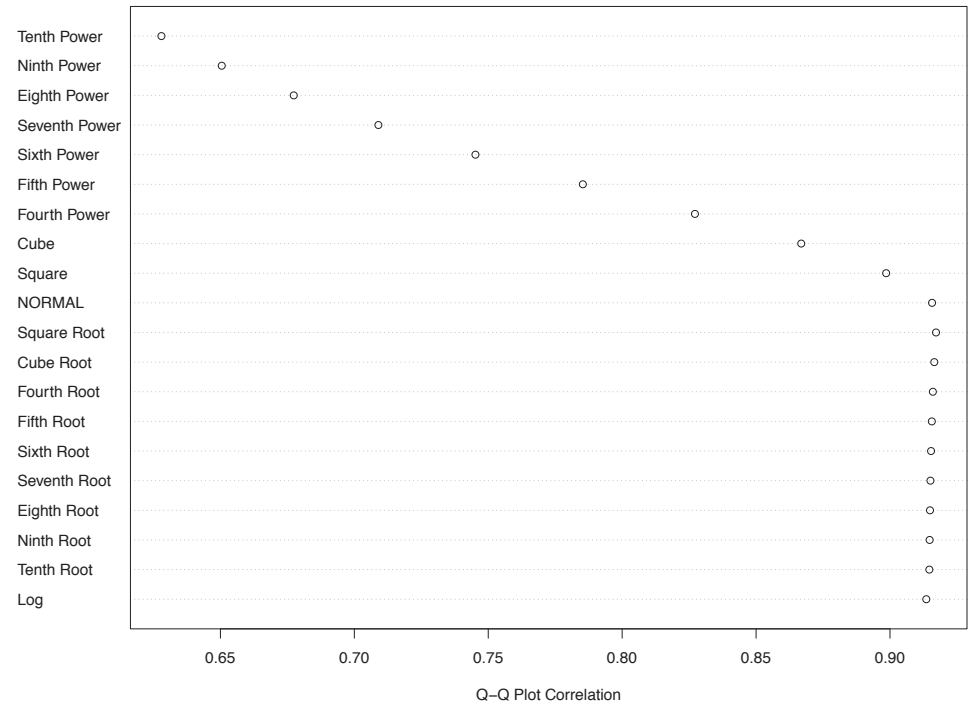
Fit Corr. by Model for MO at Location SC-10



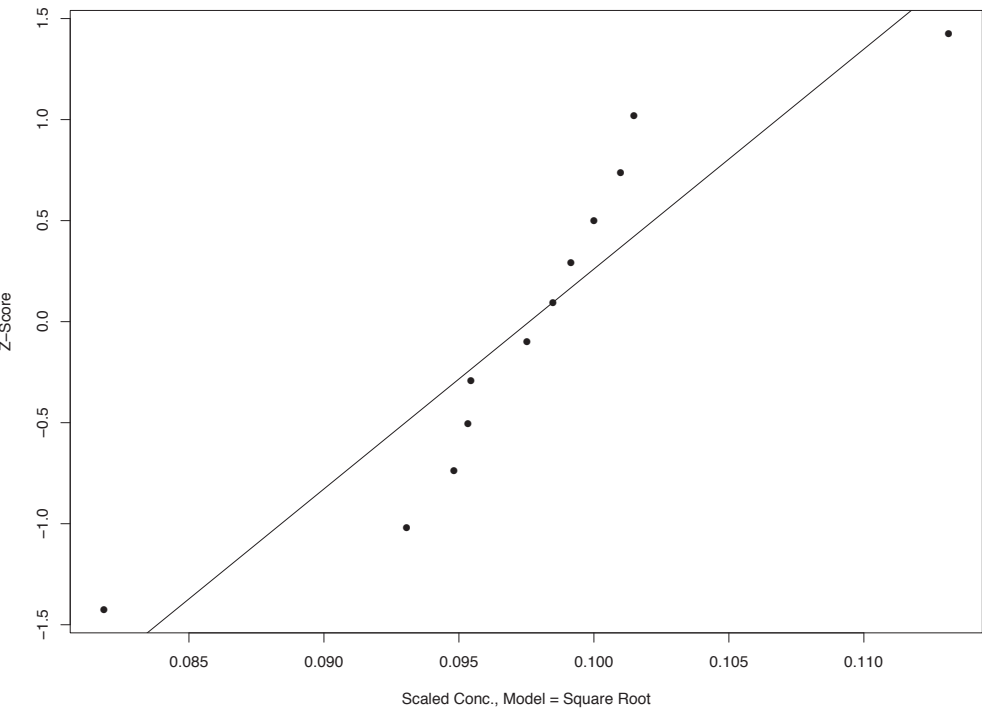
Censored Q-Q Plot for MO at Location SC-10



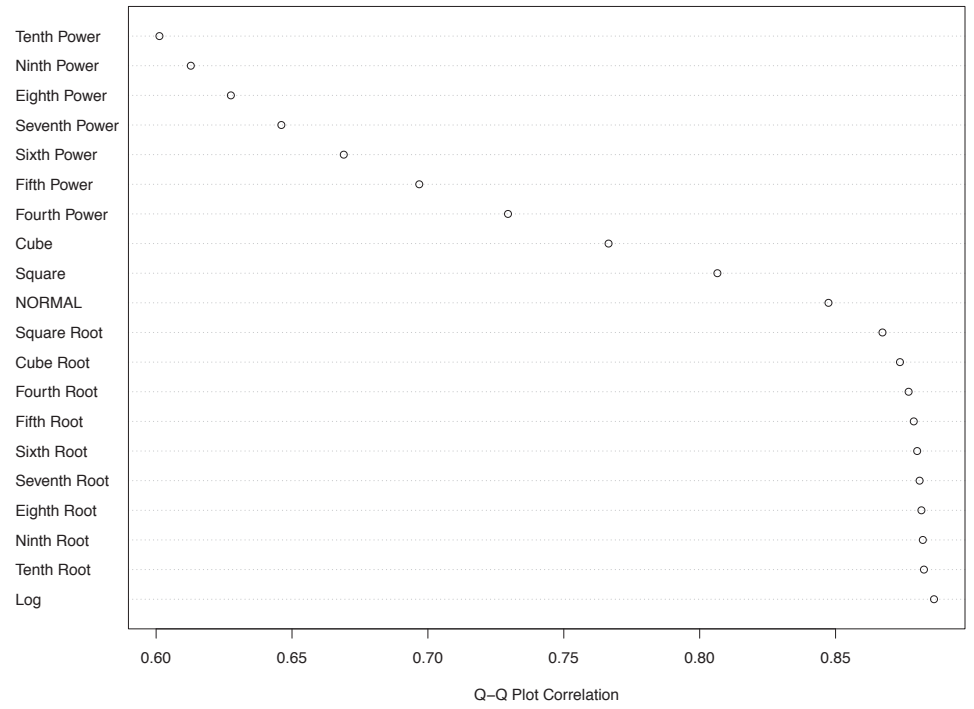
Fit Corr. by Model for MO at Location SC-12



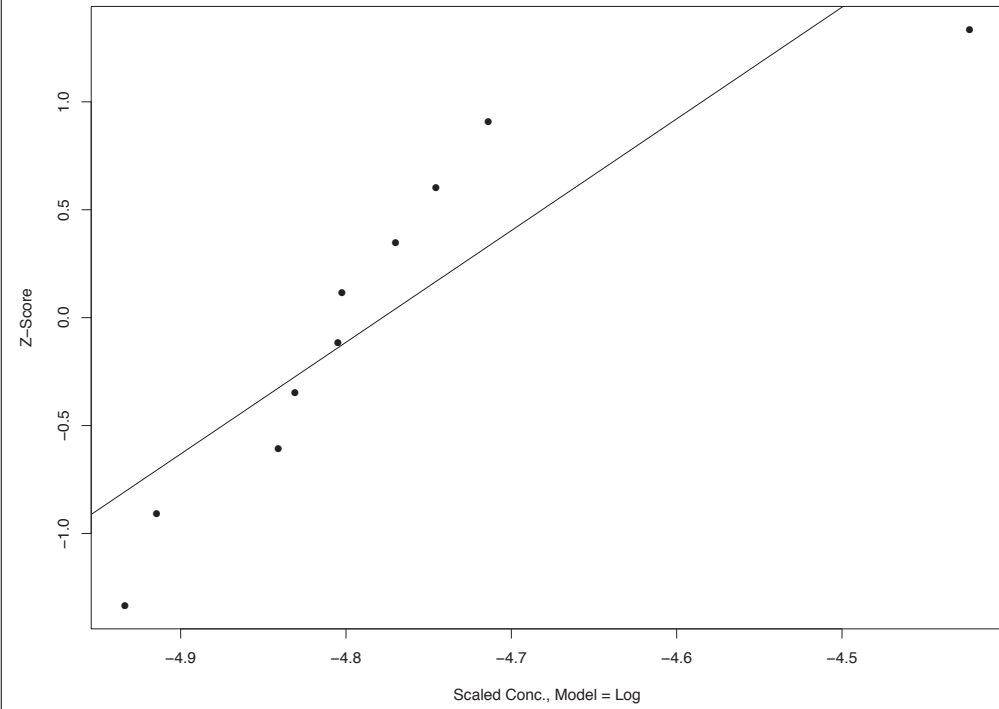
Censored Q-Q Plot for MO at Location SC-12



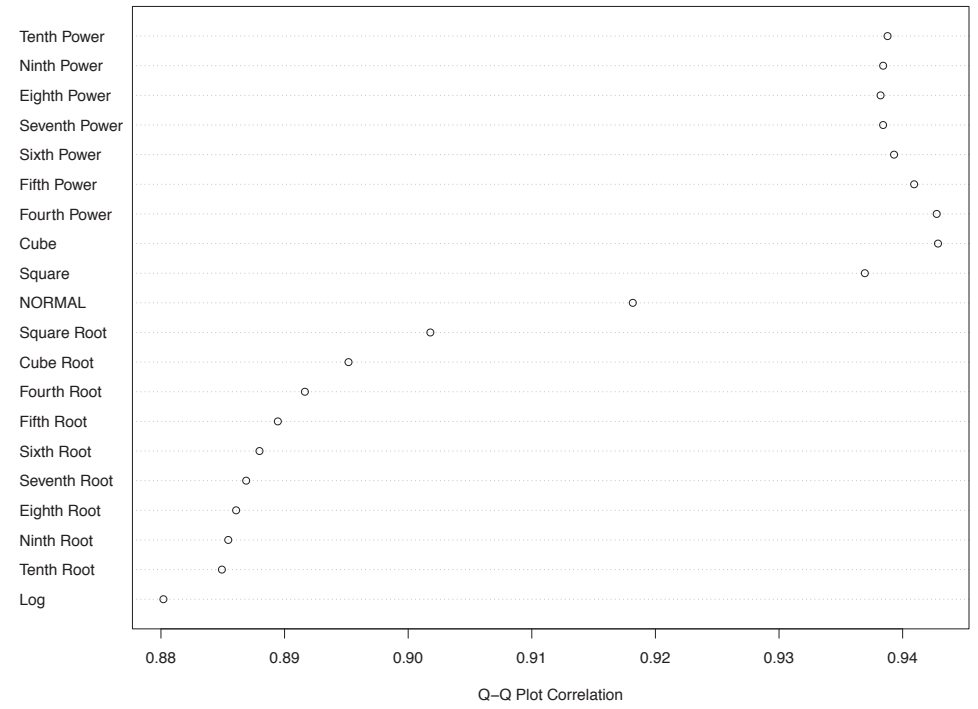
Fit Corr. by Model for MO at Location SC-14



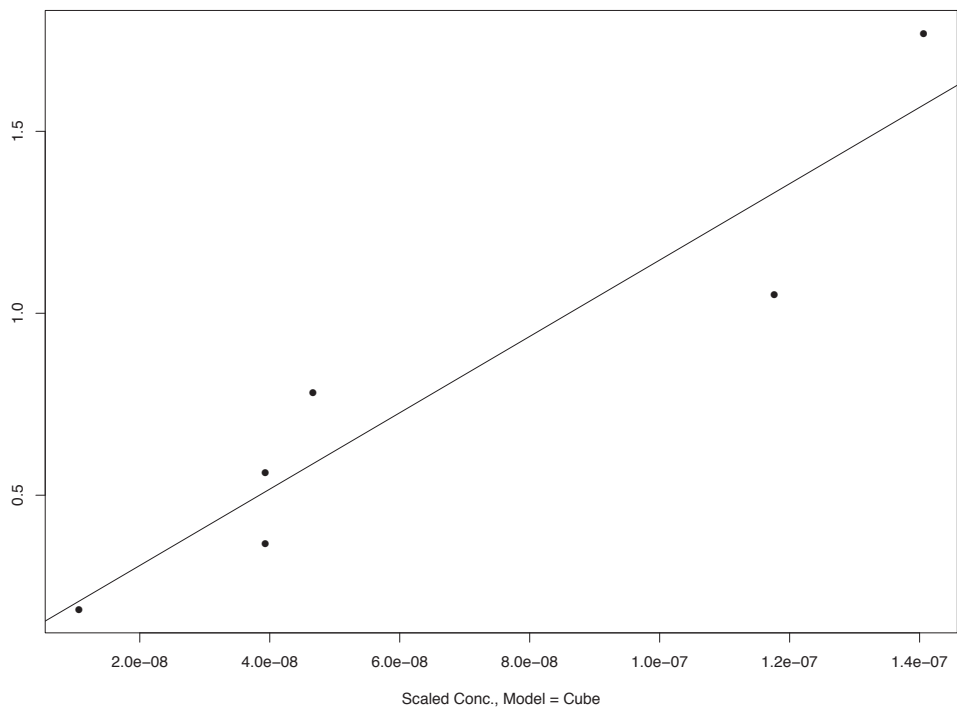
Censored Q-Q Plot for MO at Location SC-14



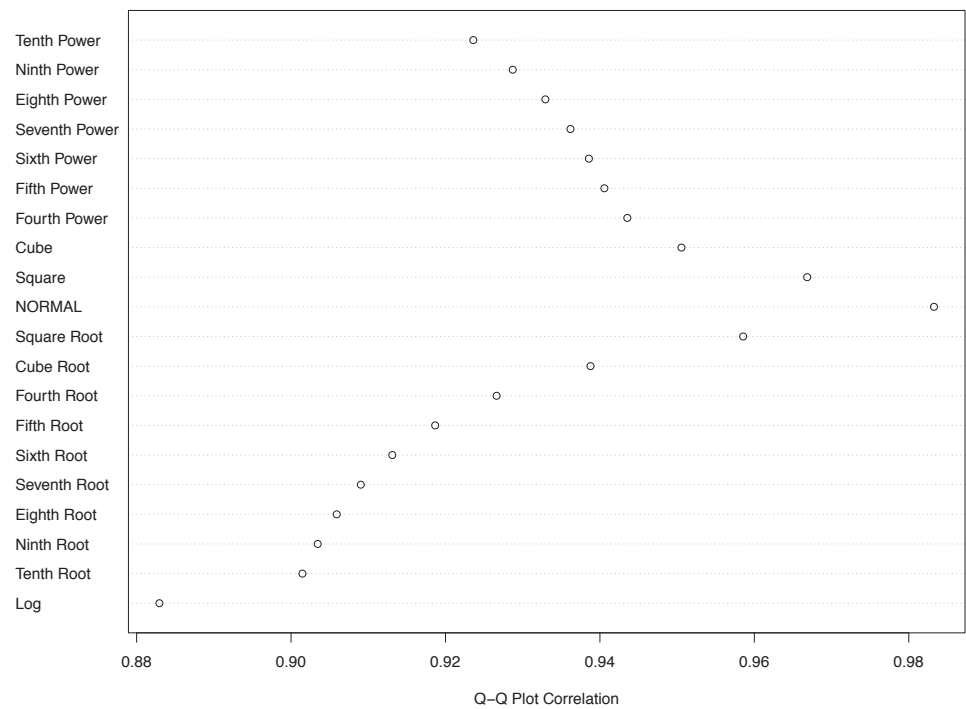
Fit Corr. by Model for PB at Location CC-1



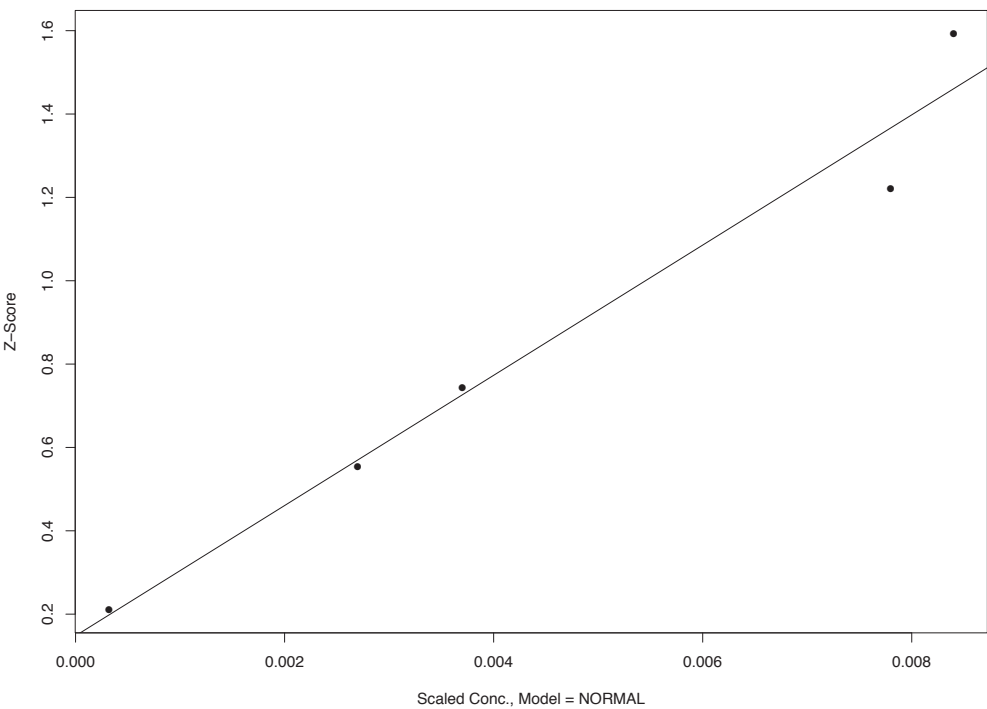
Censored Q-Q Plot for PB at Location CC-1



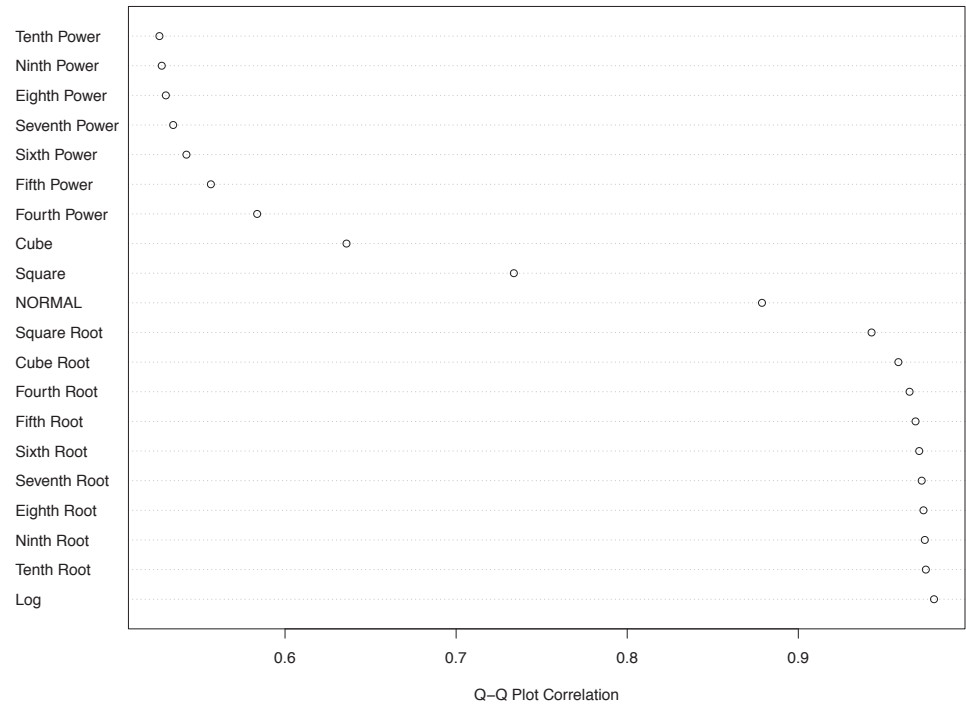
Fit Corr. by Model for PB at Location FC-1



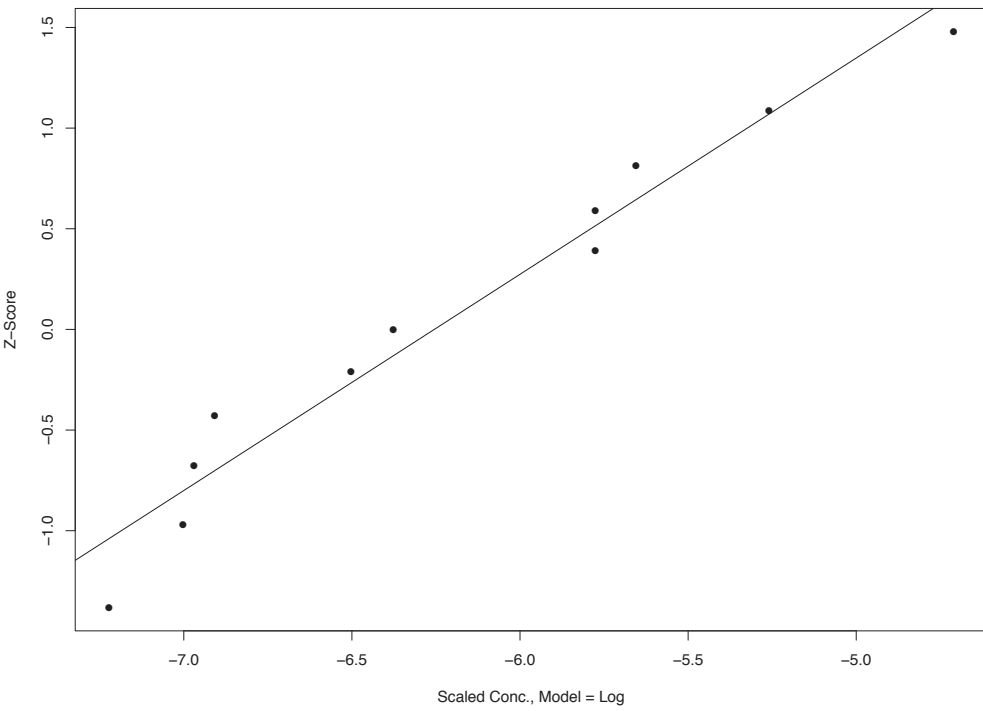
Censored Q-Q Plot for PB at Location FC-1



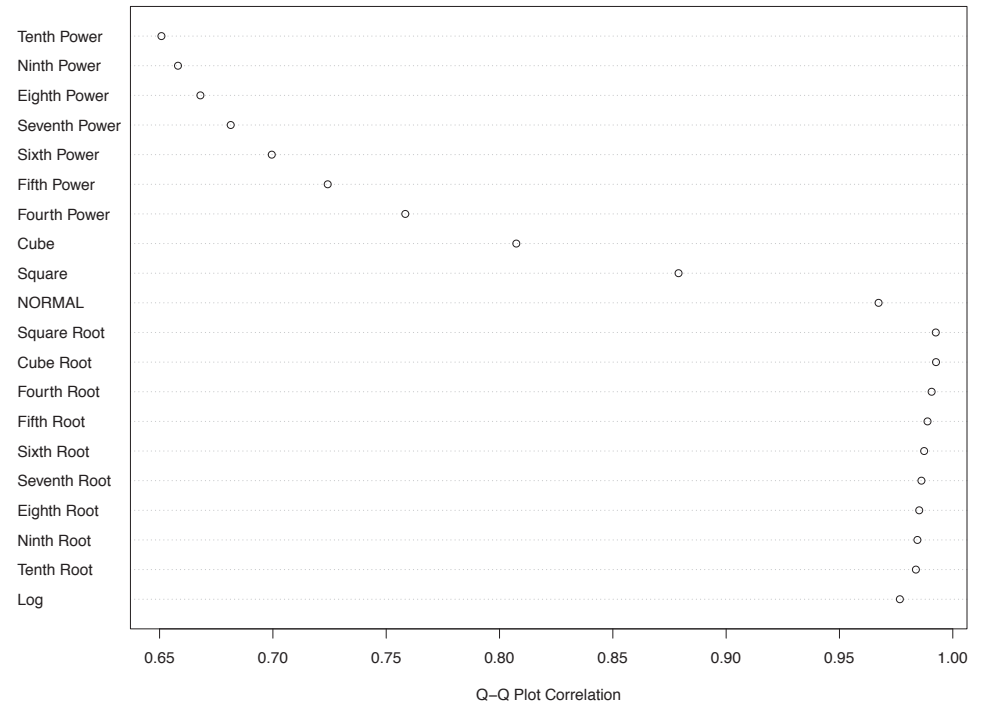
Fit Corr. by Model for PB at Location FC-3A



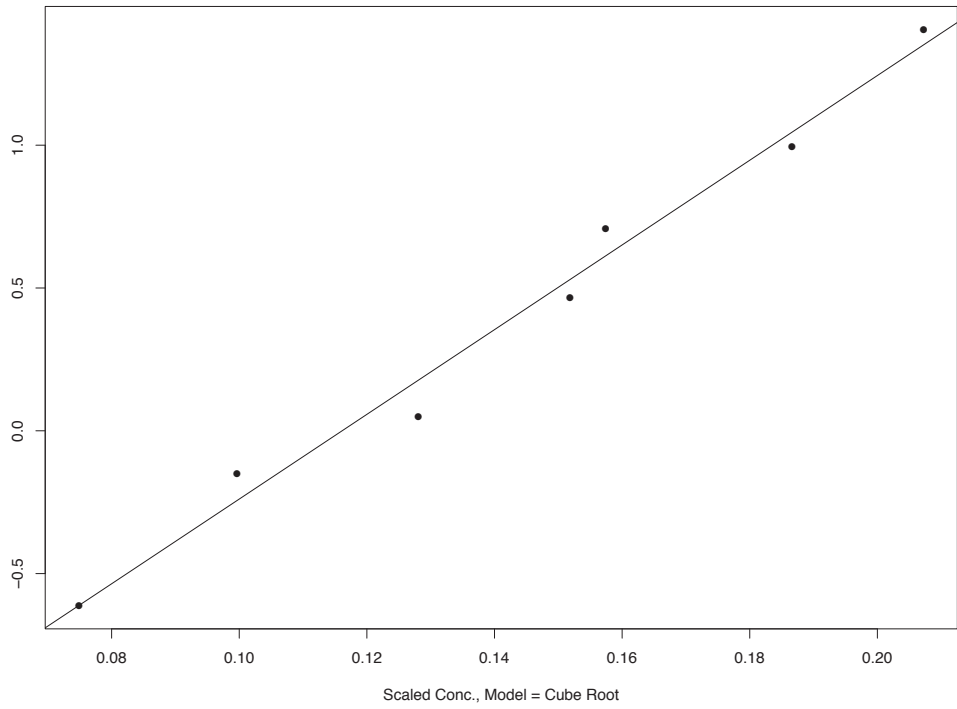
Censored Q-Q Plot for PB at Location FC-3A



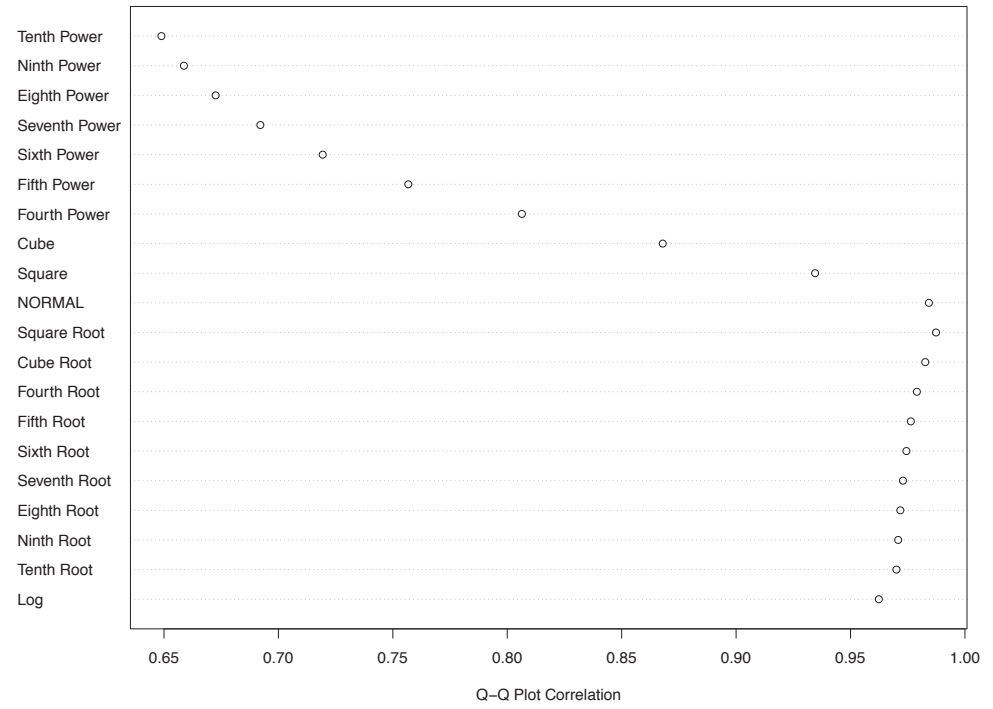
Fit Corr. by Model for PB at Location FC-3B



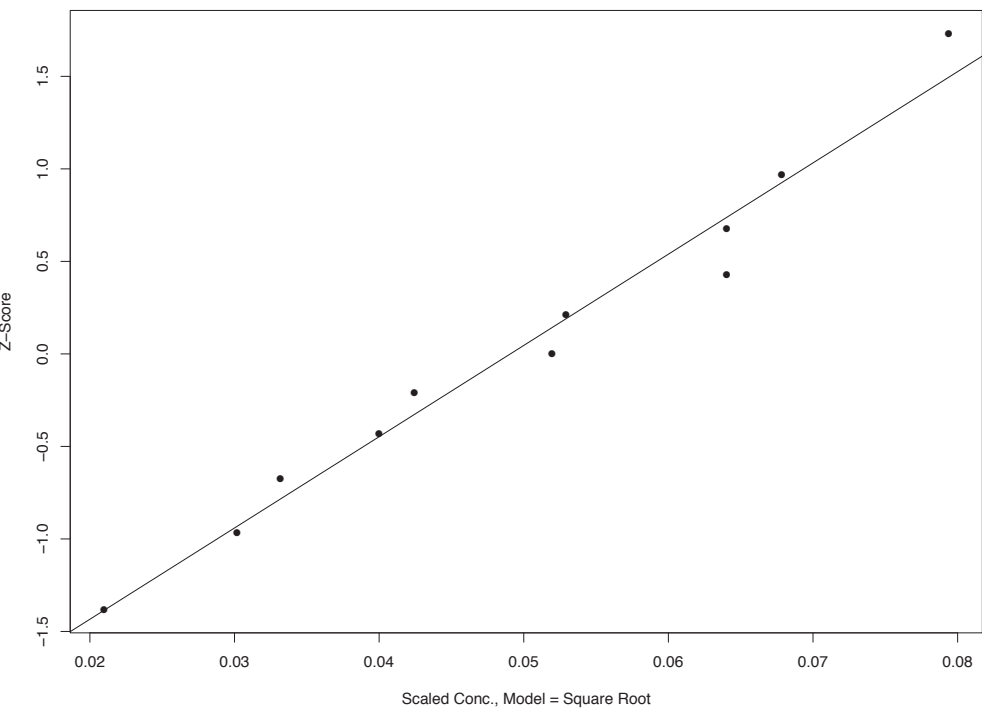
Censored Q-Q Plot for PB at Location FC-3B



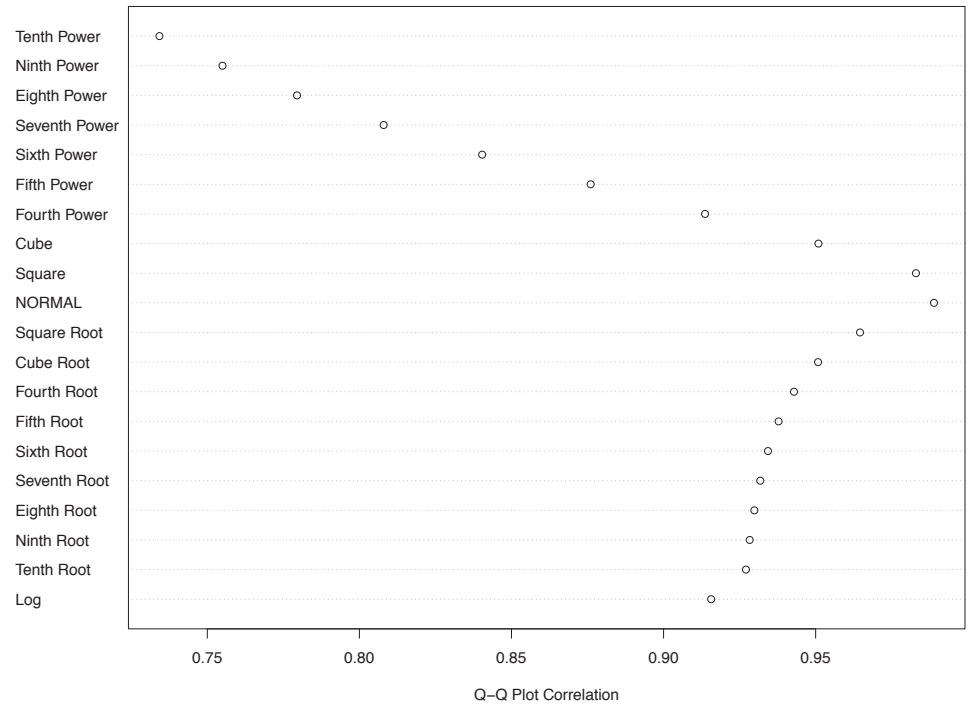
Fit Corr. by Model for PB at Location SC-10



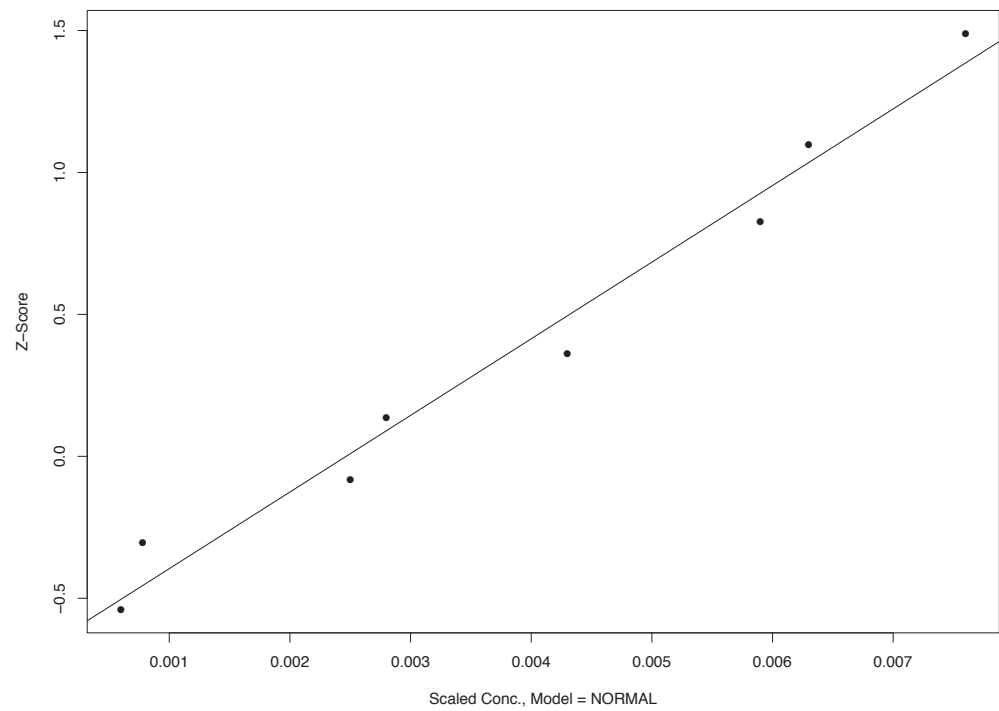
Censored Q-Q Plot for PB at Location SC-10



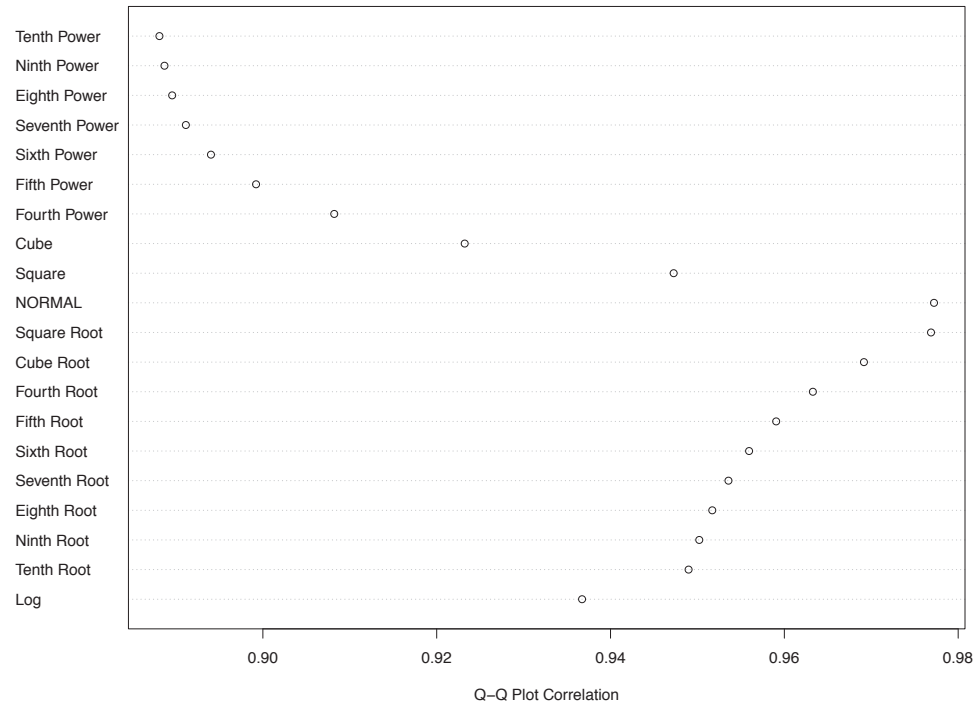
Fit Corr. by Model for PB at Location SC-11



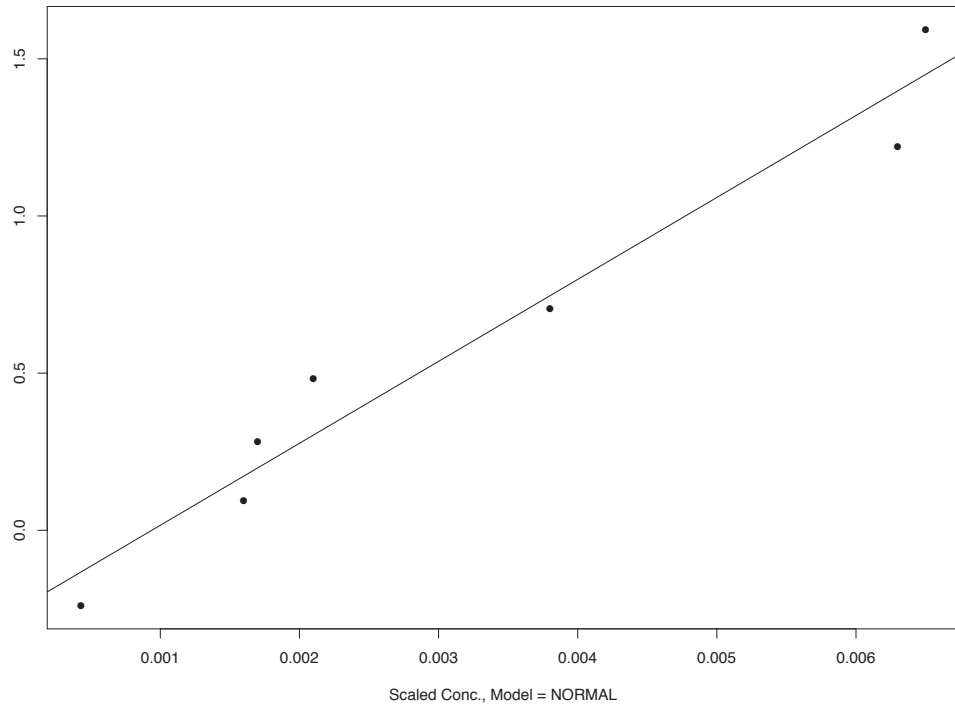
Censored Q-Q Plot for PB at Location SC-11



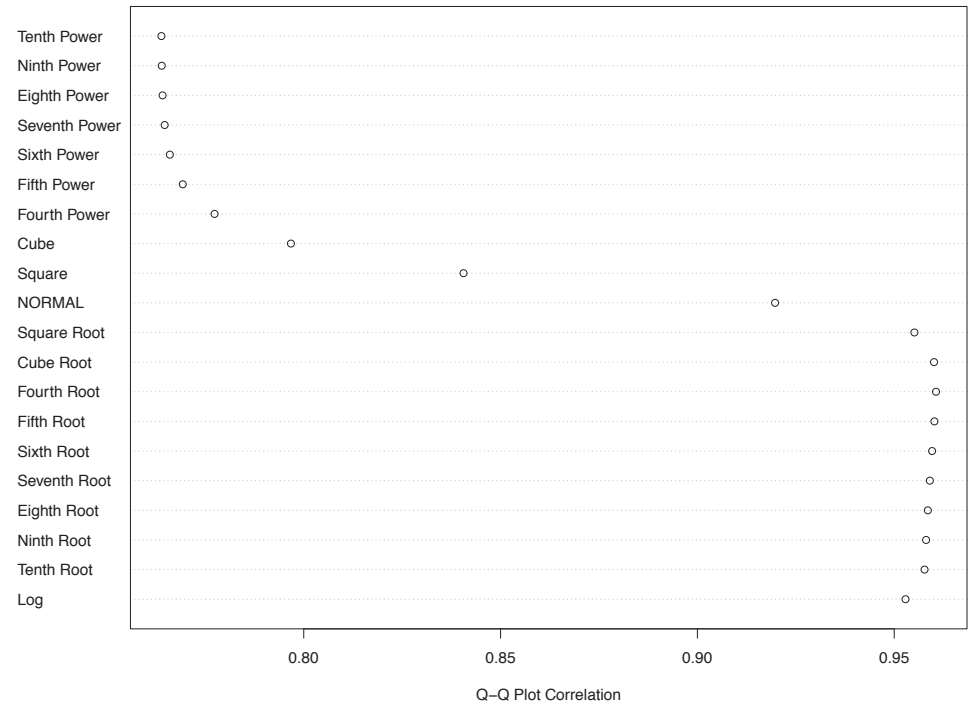
Fit Corr. by Model for PB at Location SC-12



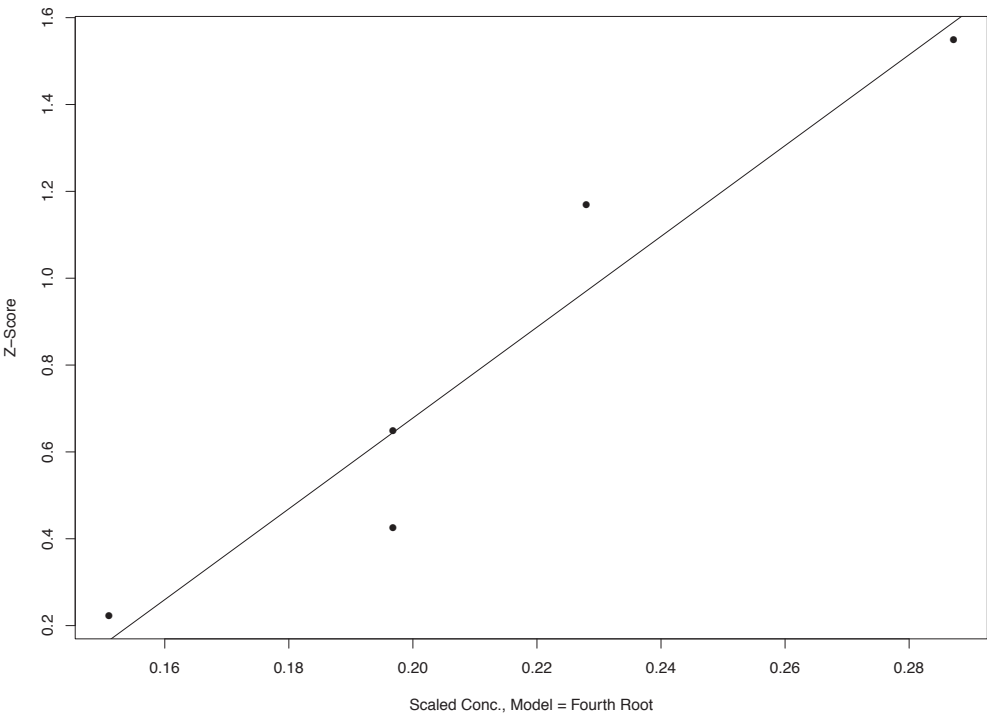
Censored Q-Q Plot for PB at Location SC-12



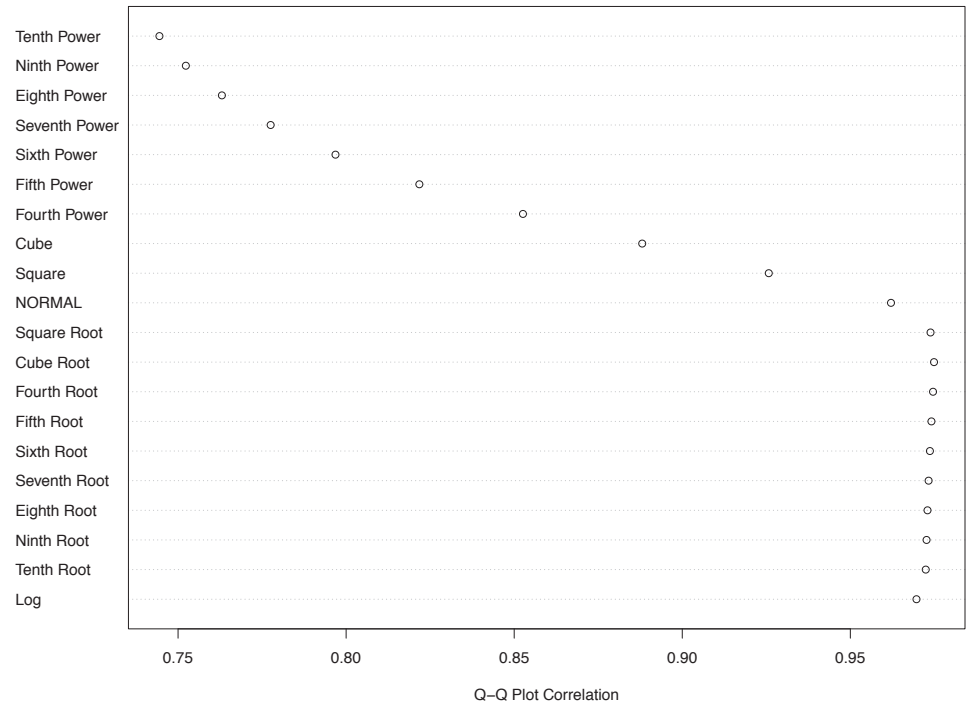
Fit Corr. by Model for PB at Location SC-13



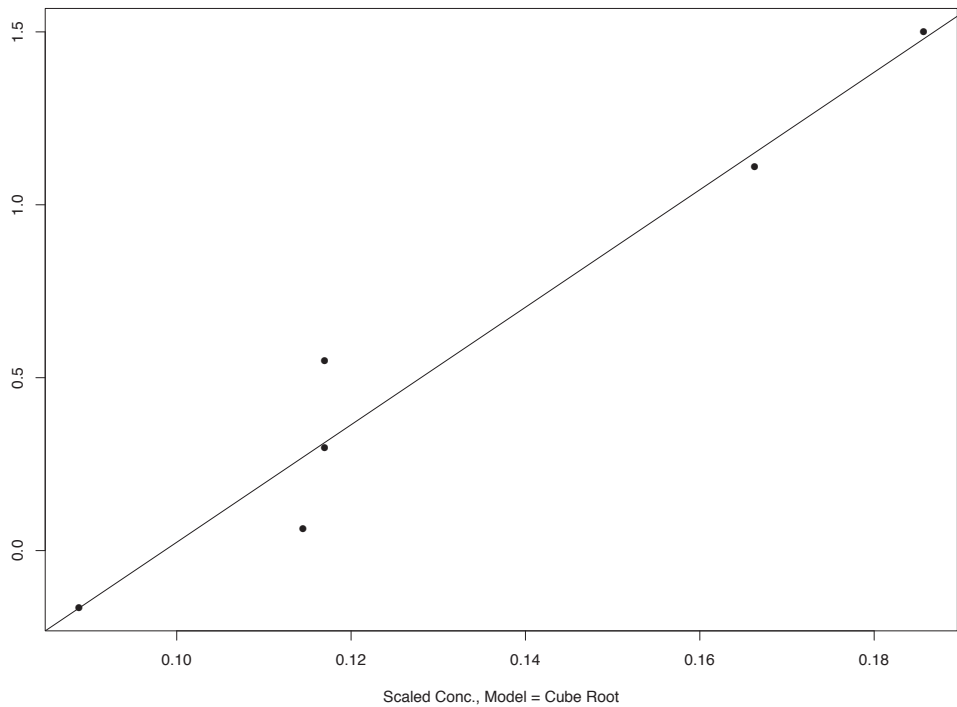
Censored Q-Q Plot for PB at Location SC-13



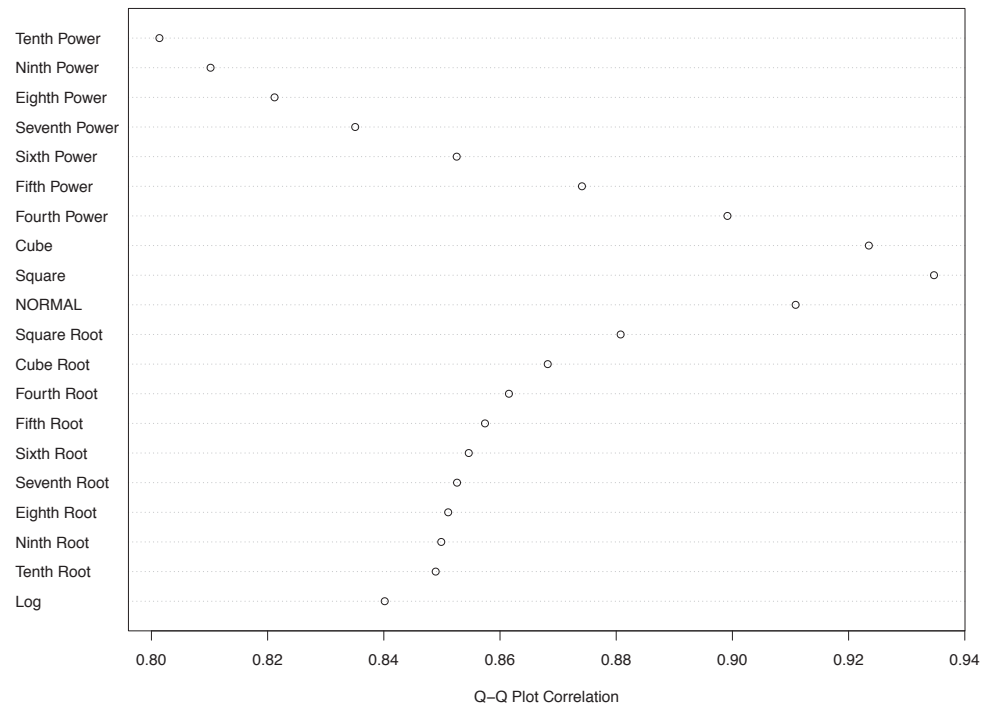
Fit Corr. by Model for PB at Location SC-14



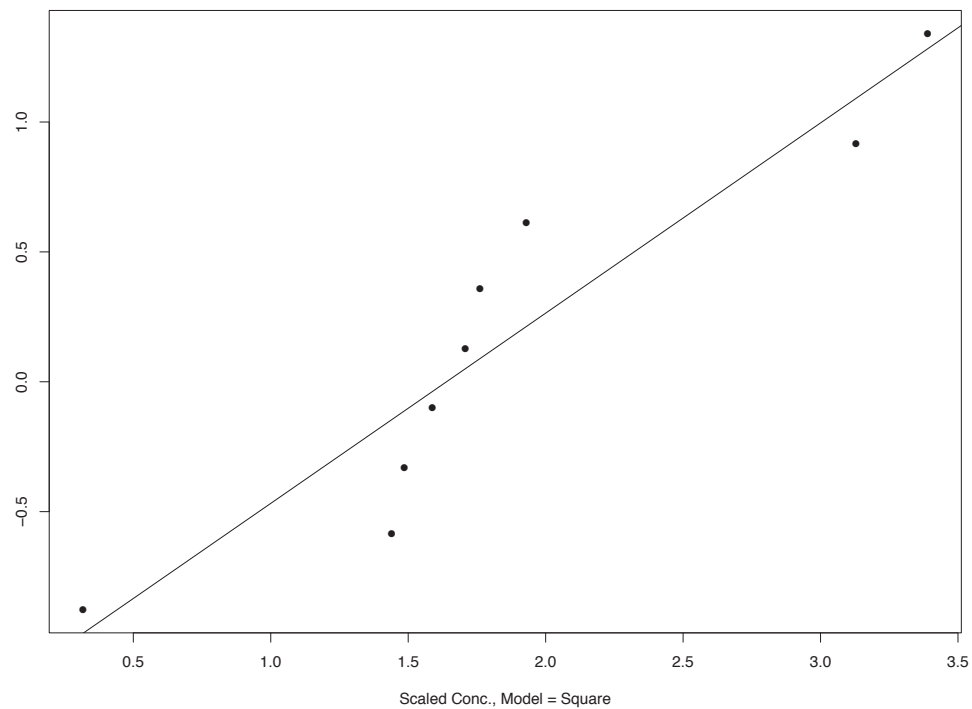
Censored Q-Q Plot for PB at Location SC-14



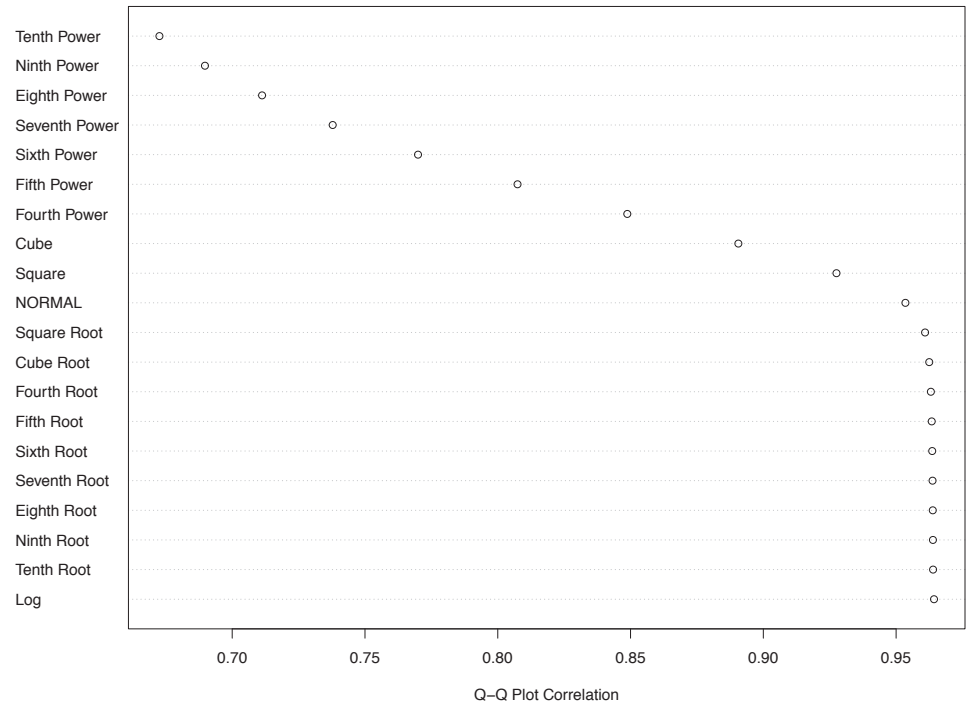
Fit Corr. by Model for Rad226+228 at Location CC-1



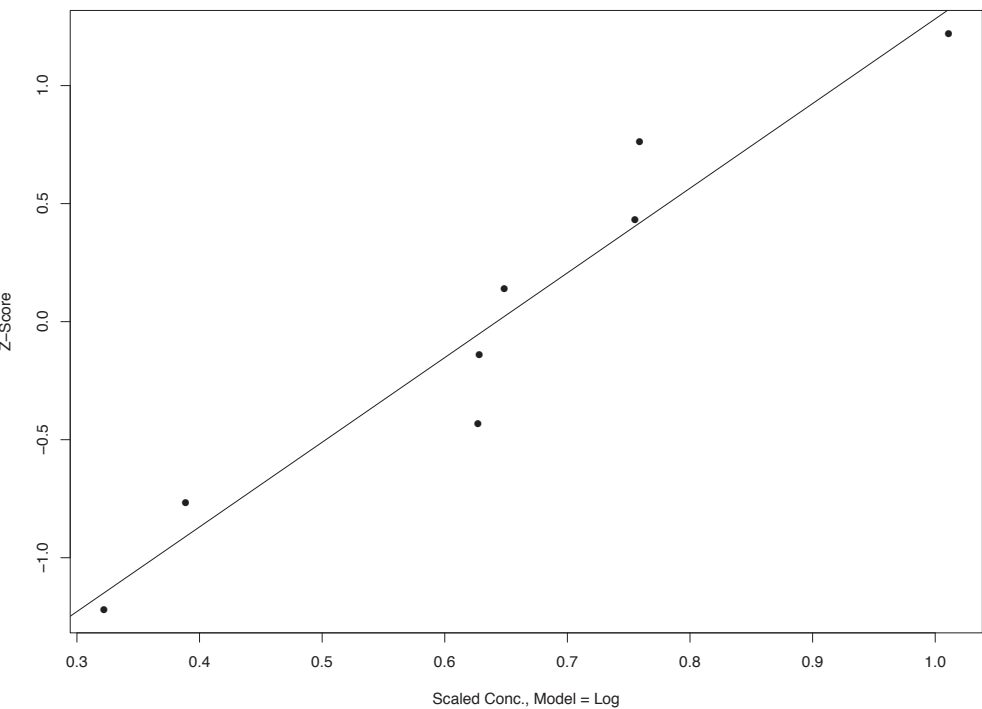
Censored Q-Q Plot for Rad226+228 at Location CC-1



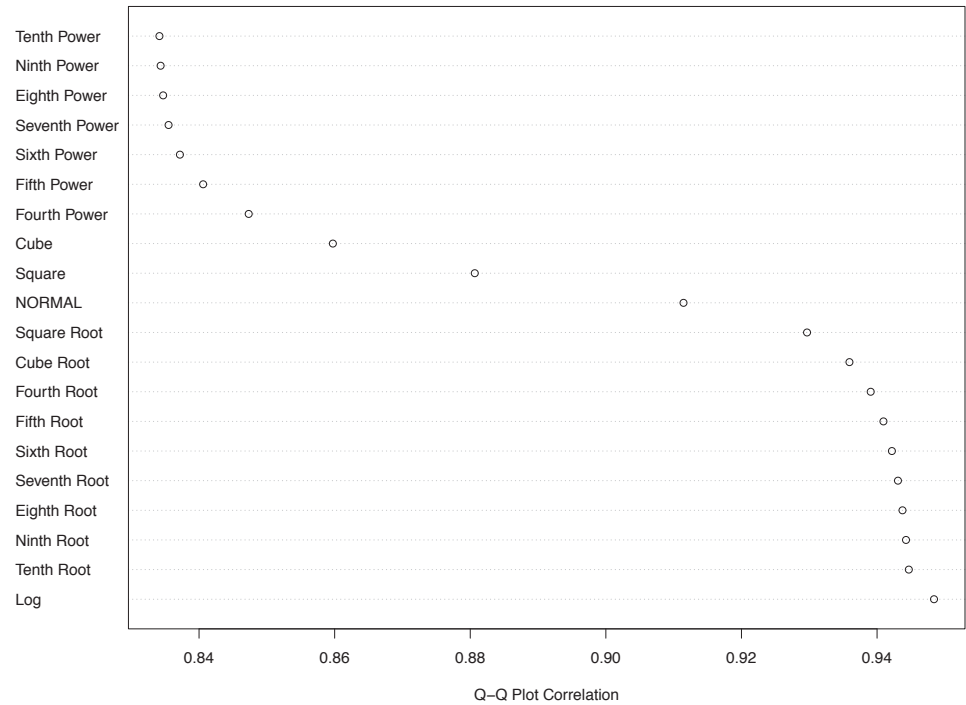
Fit Corr. by Model for Rad226+228 at Location FC-1



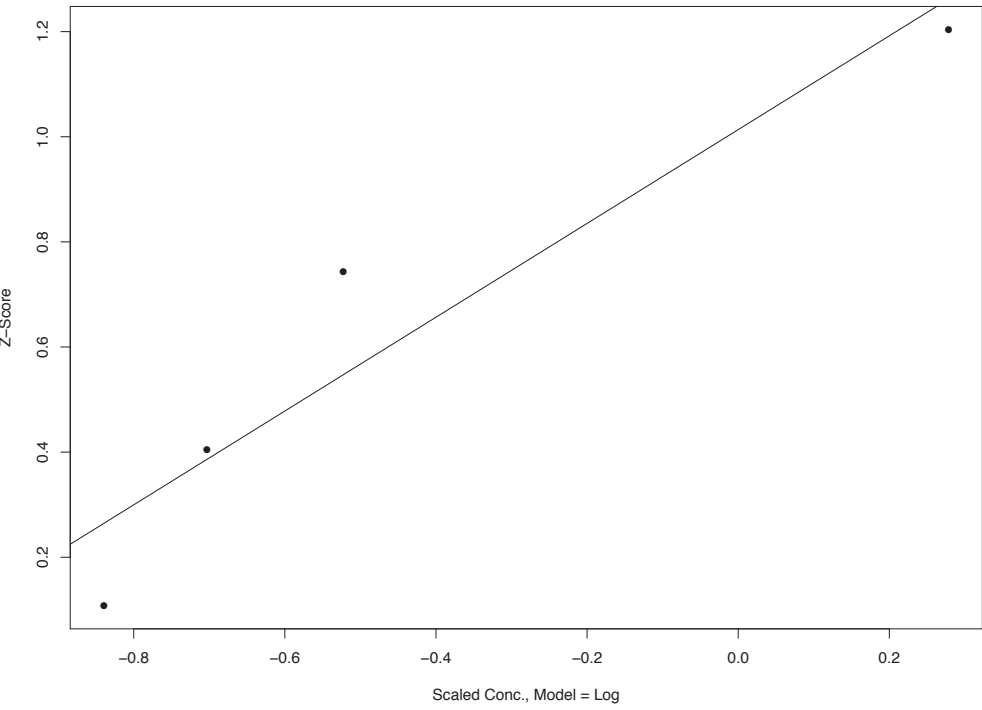
Censored Q-Q Plot for Rad226+228 at Location FC-1



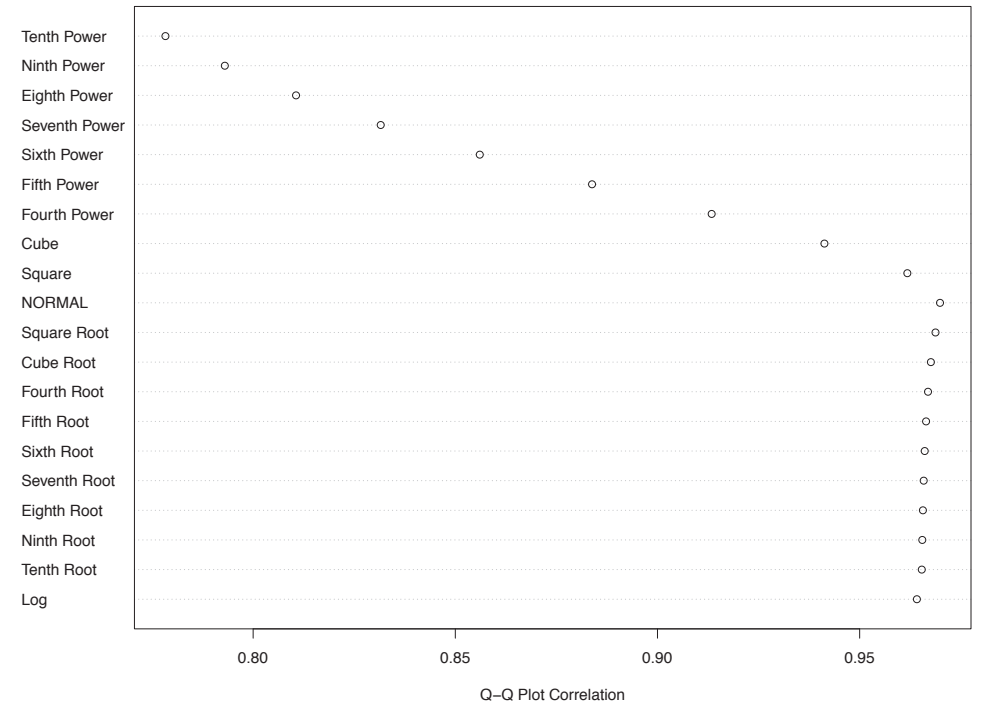
Fit Corr. by Model for Rad226+228 at Location FC-3A



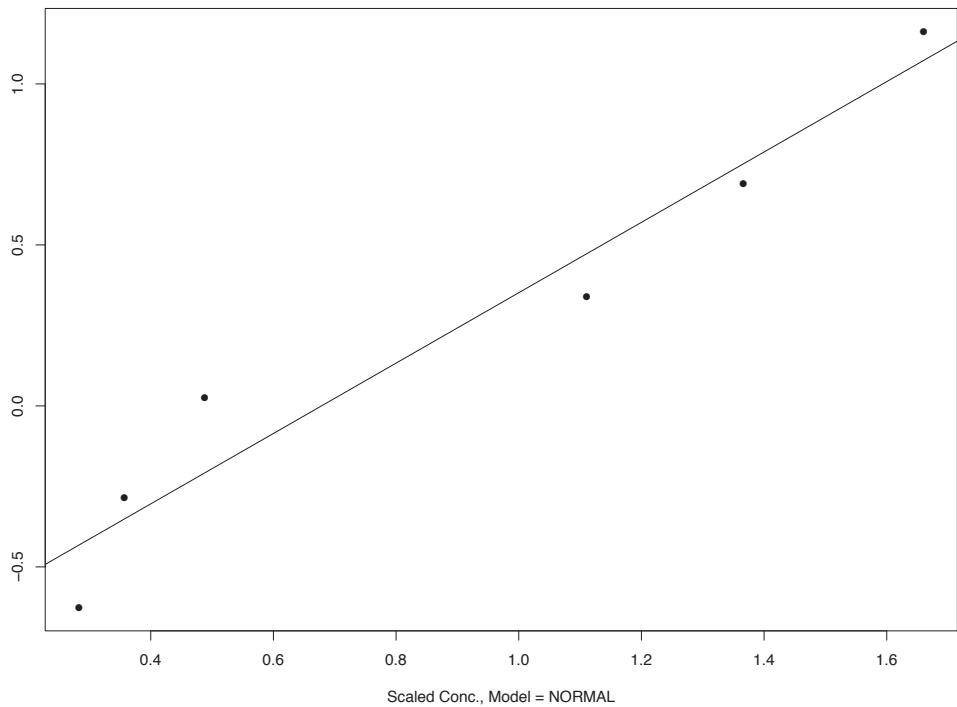
Censored Q-Q Plot for Rad226+228 at Location FC-3A



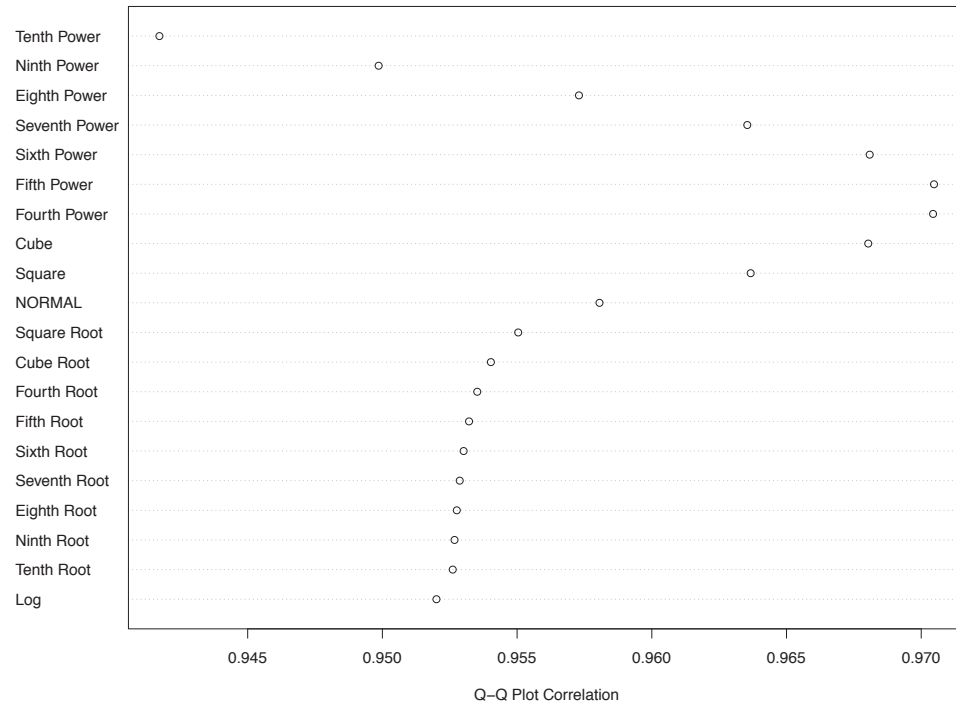
Fit Corr. by Model for Rad226+228 at Location FC-3B



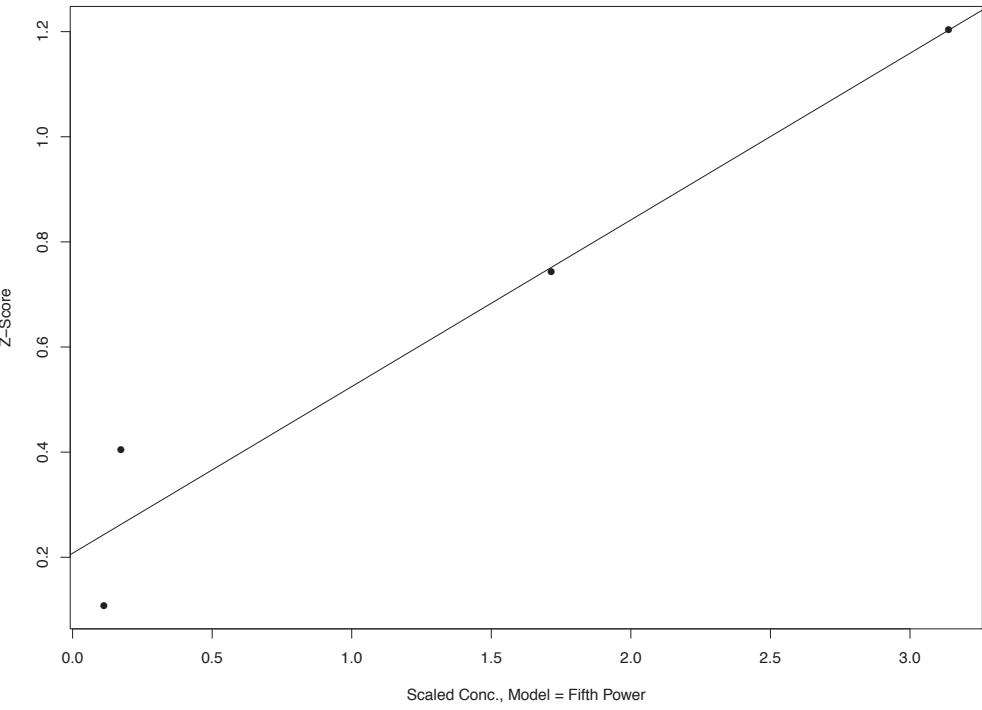
Censored Q-Q Plot for Rad226+228 at Location FC-3B



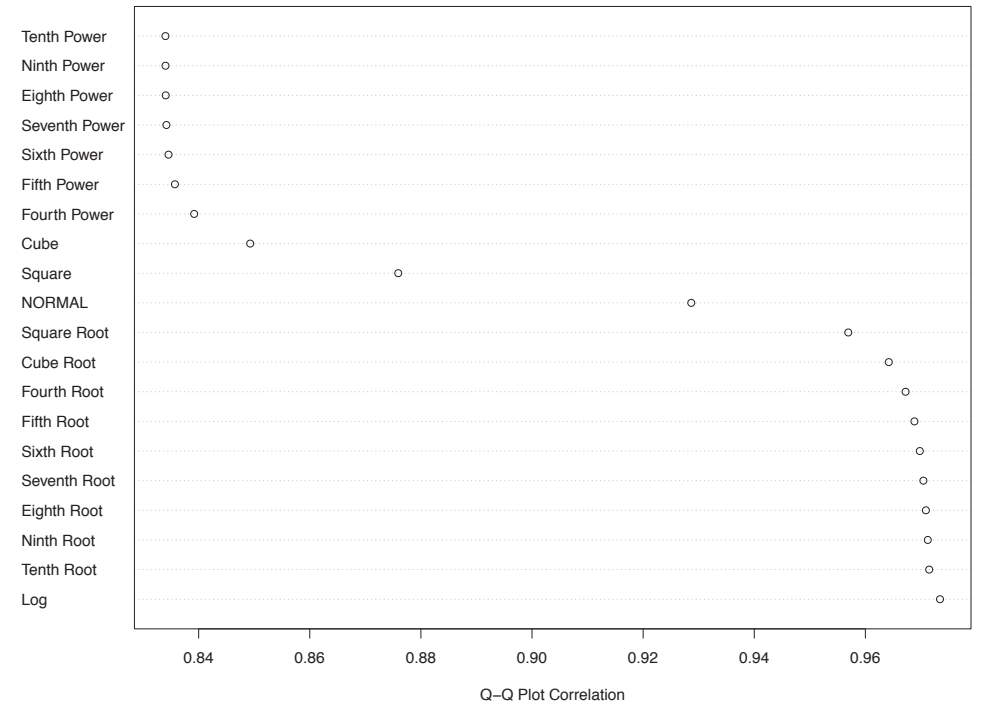
Fit Corr. by Model for Rad226+228 at Location SC-10



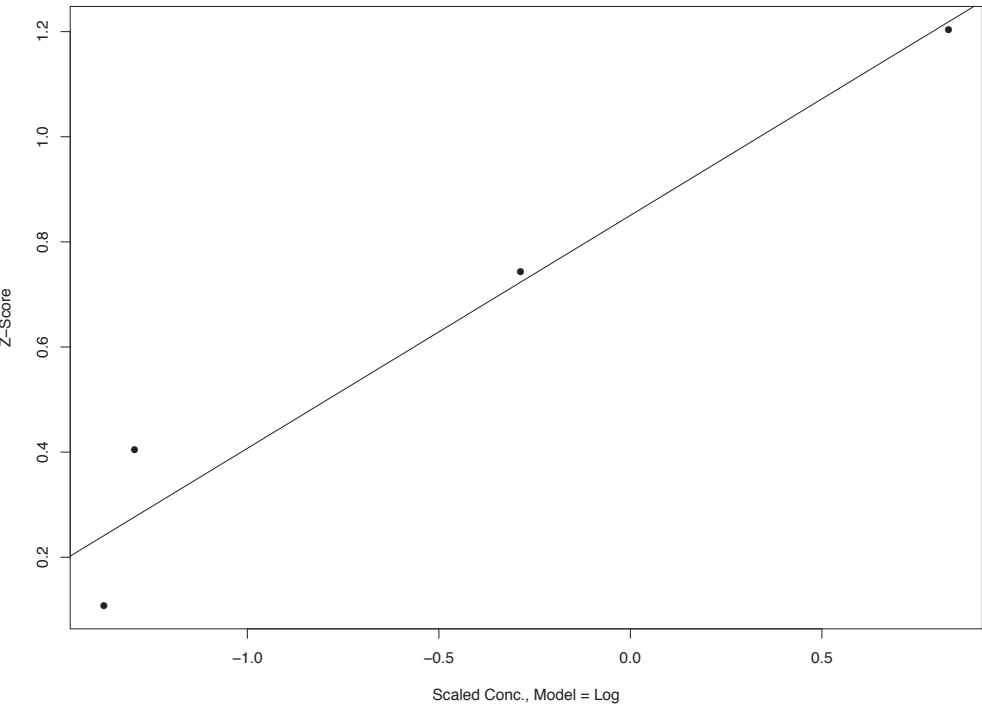
Censored Q-Q Plot for Rad226+228 at Location SC-10



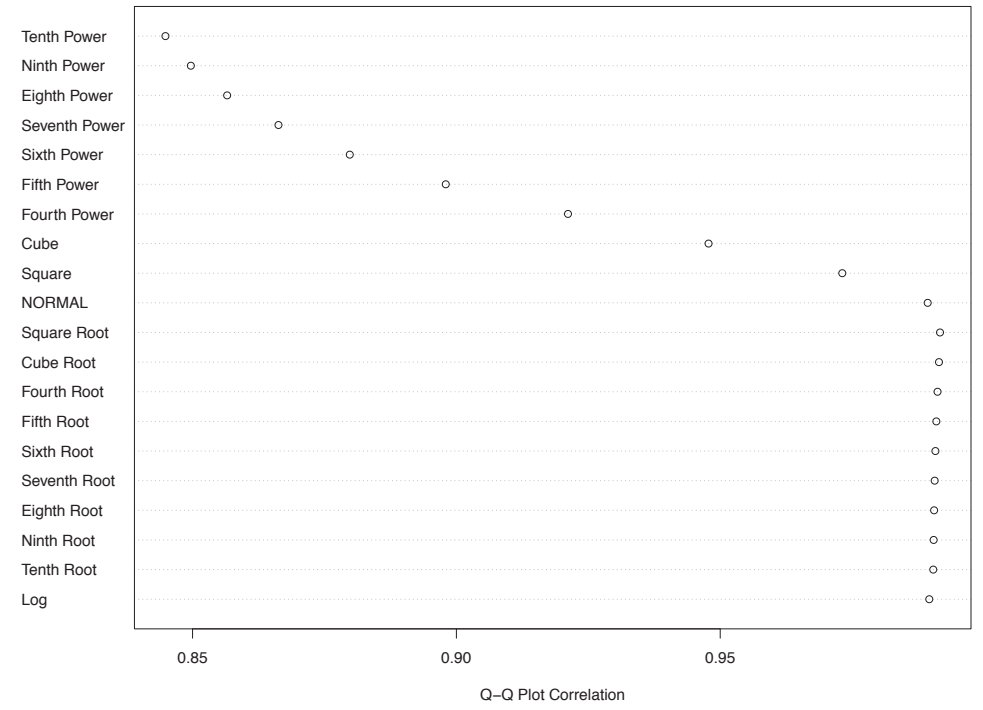
Fit Corr. by Model for Rad226+228 at Location SC-11



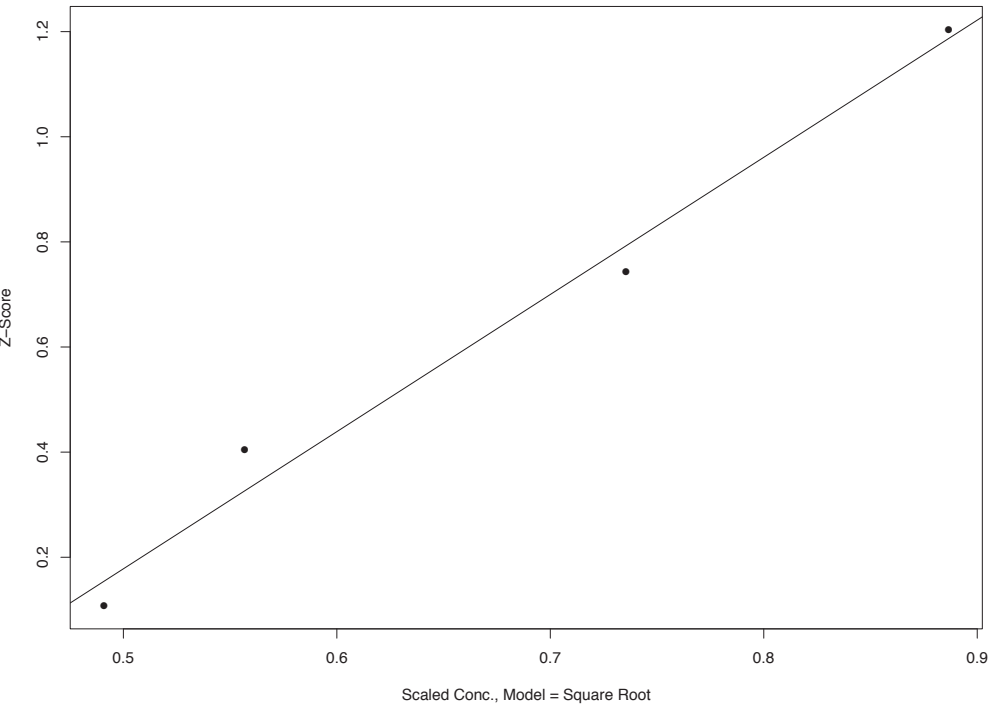
Censored Q-Q Plot for Rad226+228 at Location SC-11



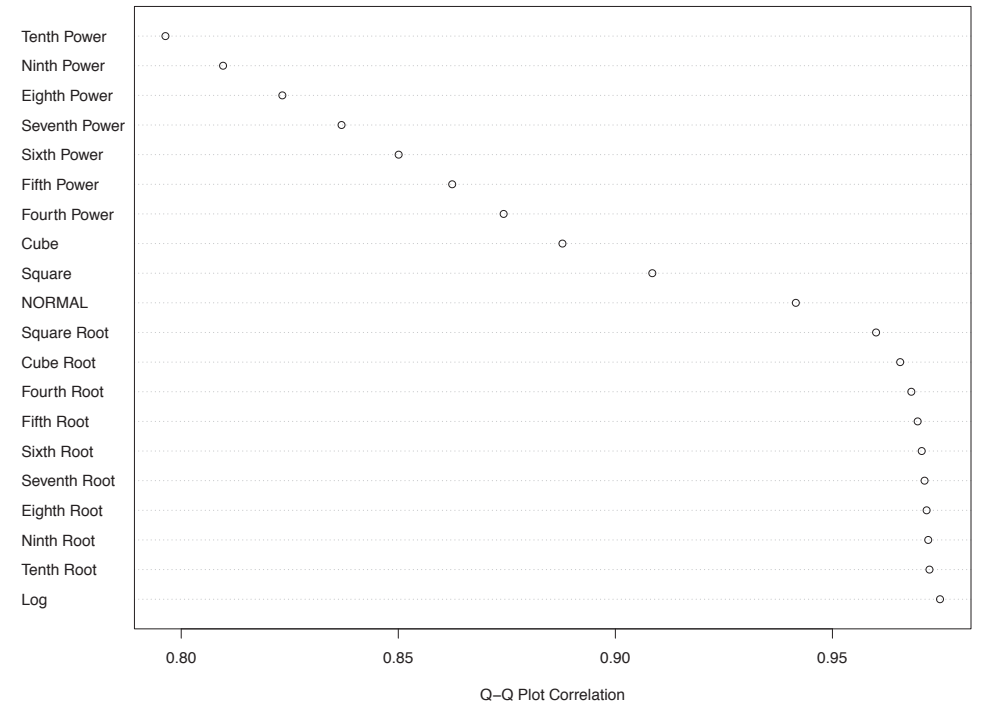
Fit Corr. by Model for Rad226+228 at Location SC-14



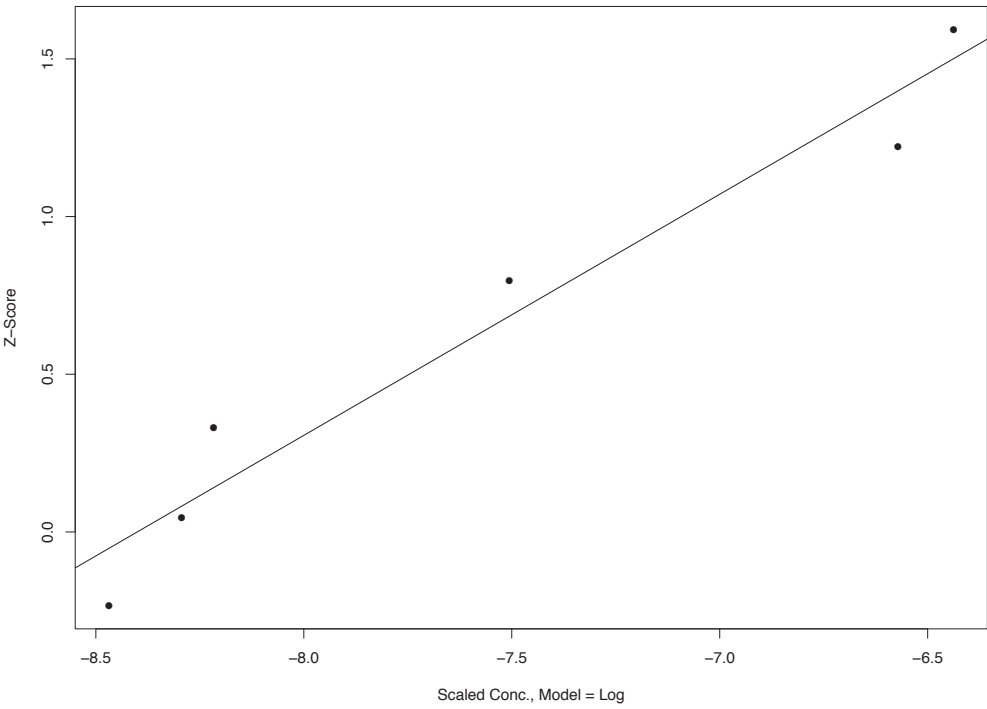
Censored Q-Q Plot for Rad226+228 at Location SC-14



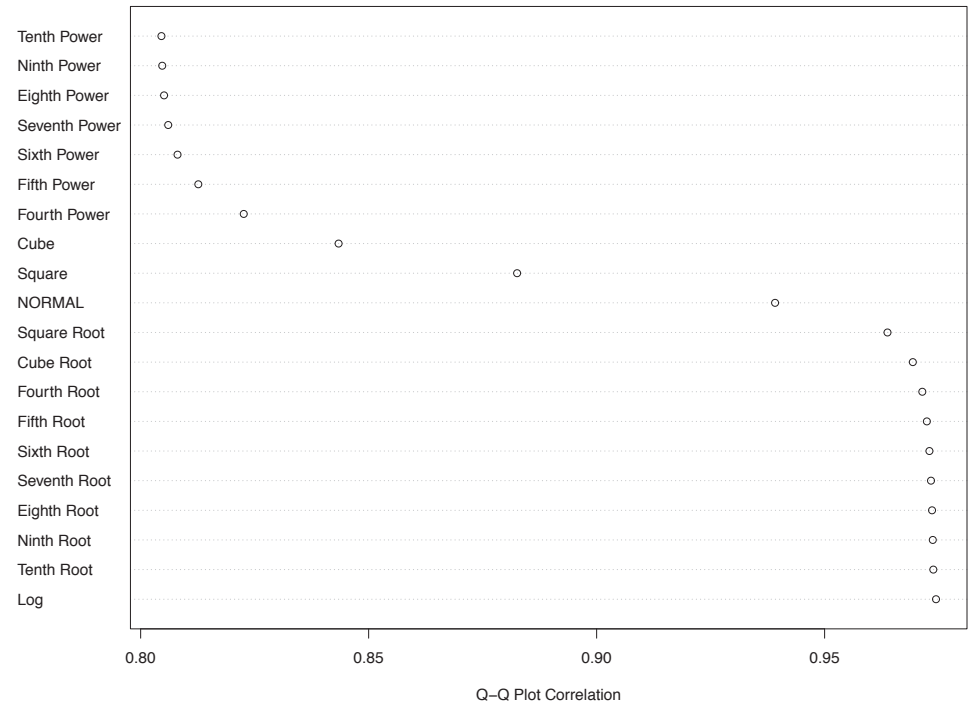
Fit Corr. by Model for SB at Location FC-3A



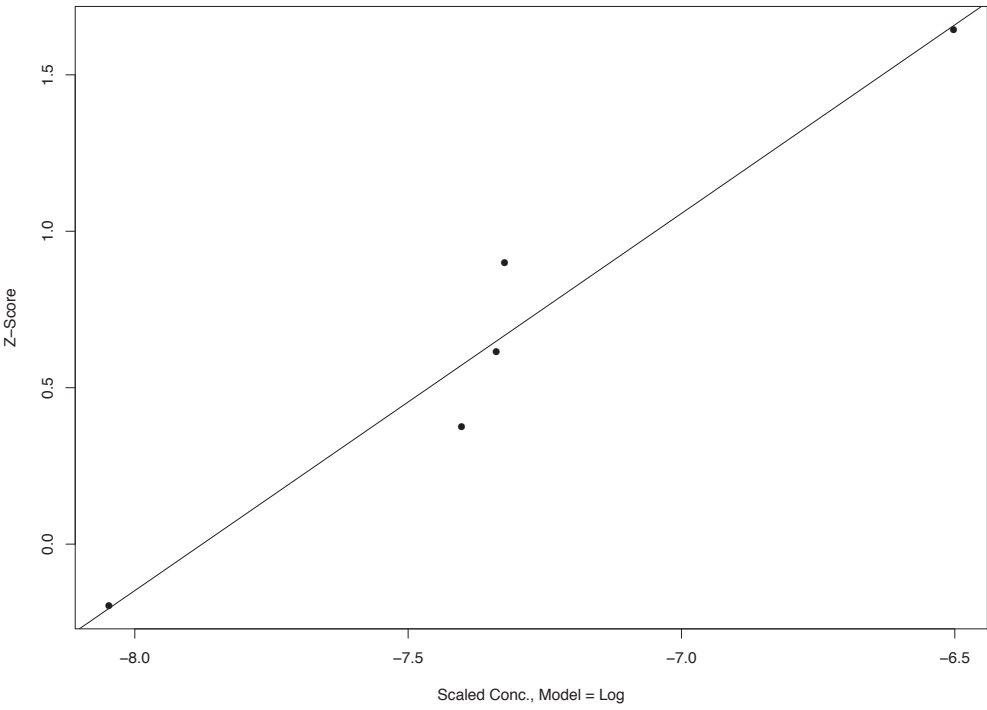
Censored Q-Q Plot for SB at Location FC-3A



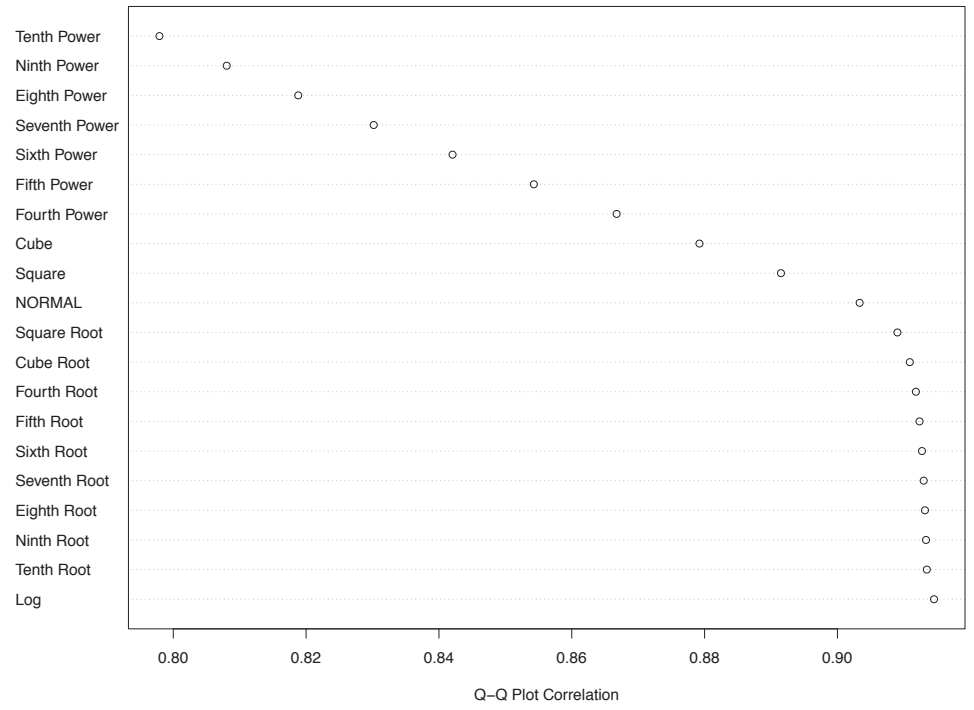
Fit Corr. by Model for SB at Location FC-3B



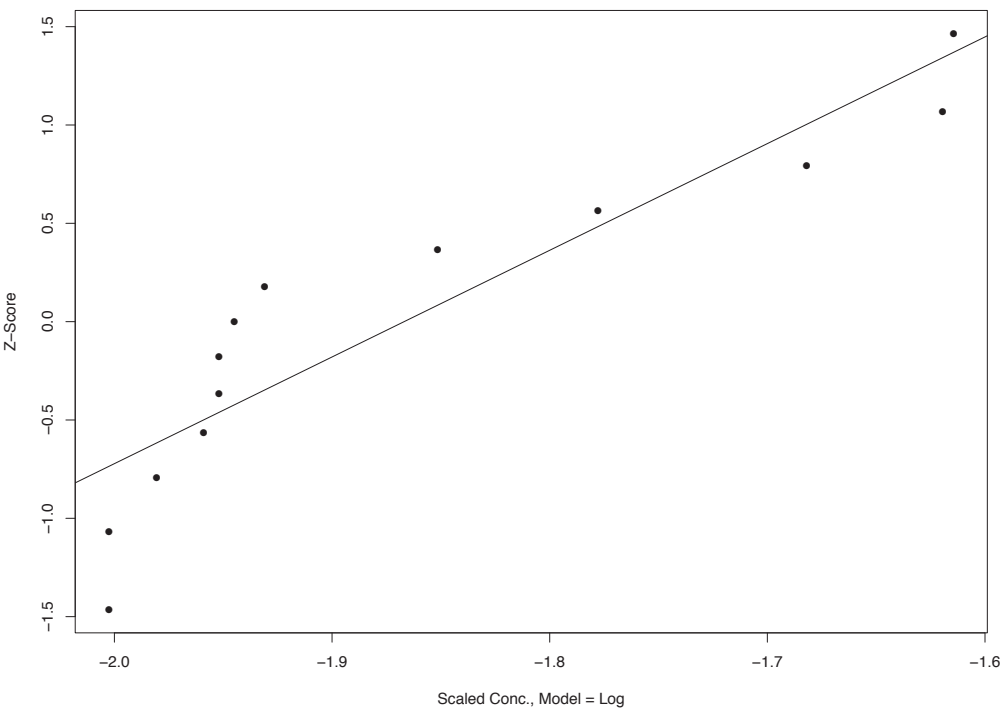
Censored Q-Q Plot for SB at Location FC-3B



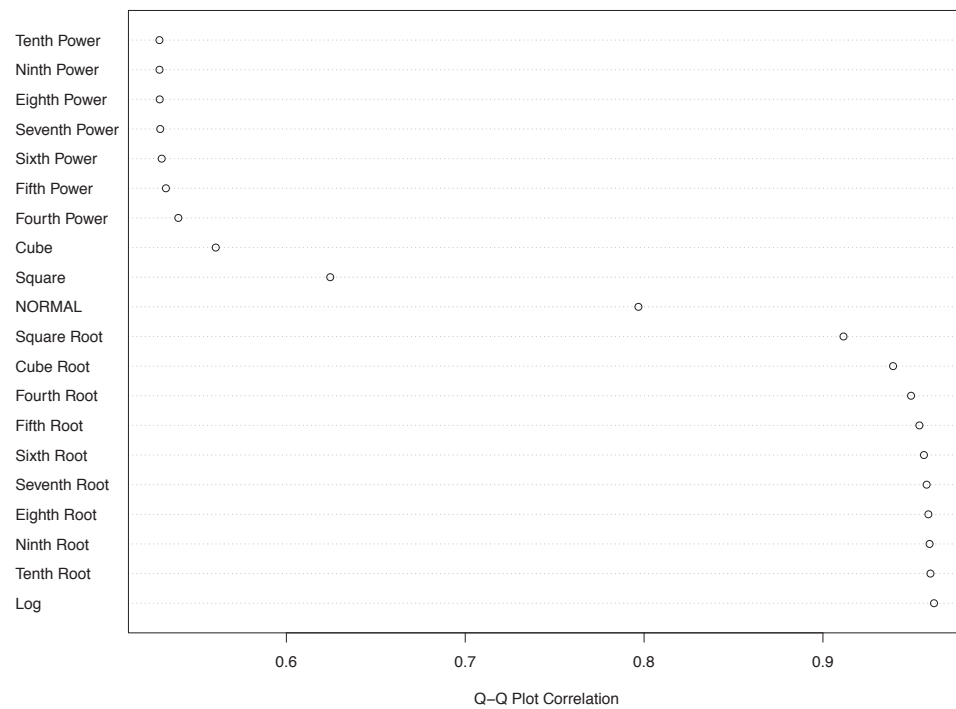
Fit Corr. by Model for SE at Location CC-1



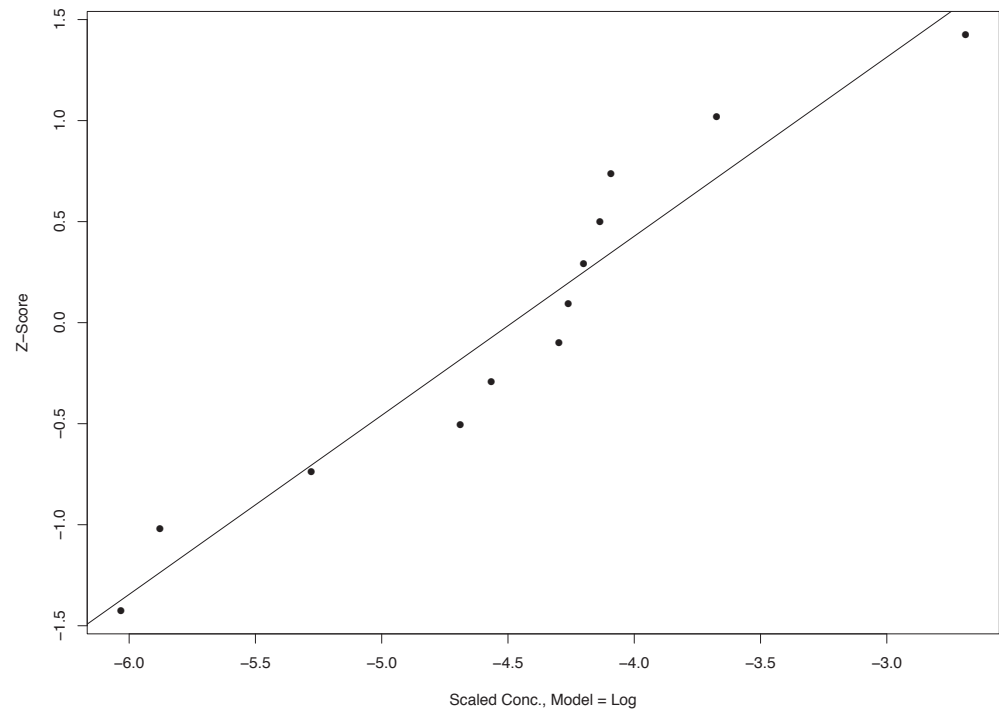
Censored Q-Q Plot for SE at Location CC-1



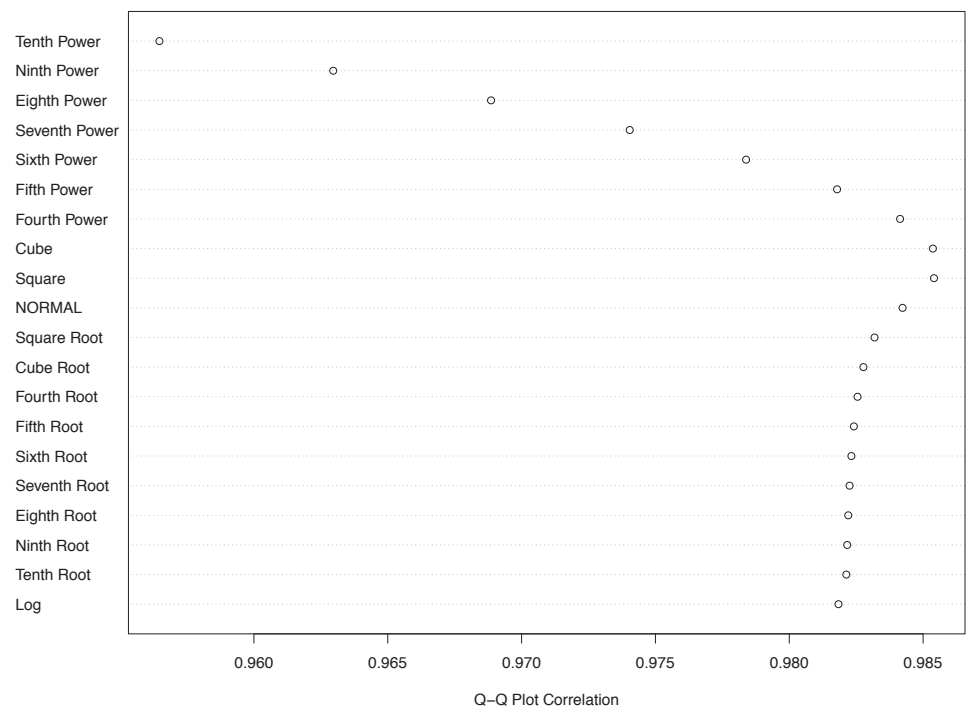
Fit Corr. by Model for SE at Location FC-1



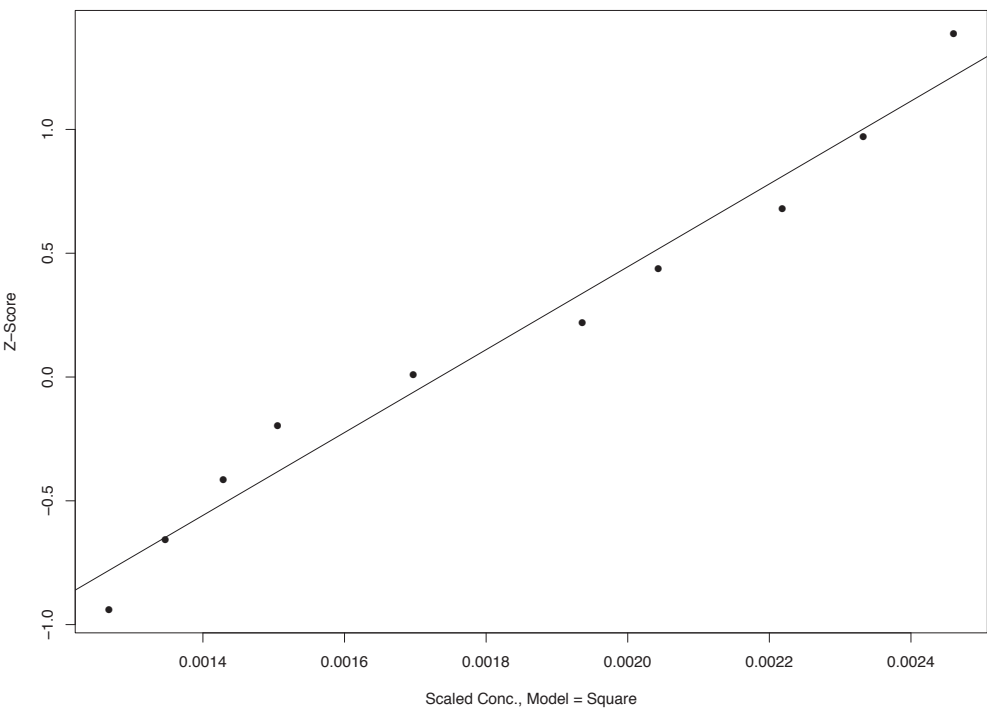
Censored Q-Q Plot for SE at Location FC-1



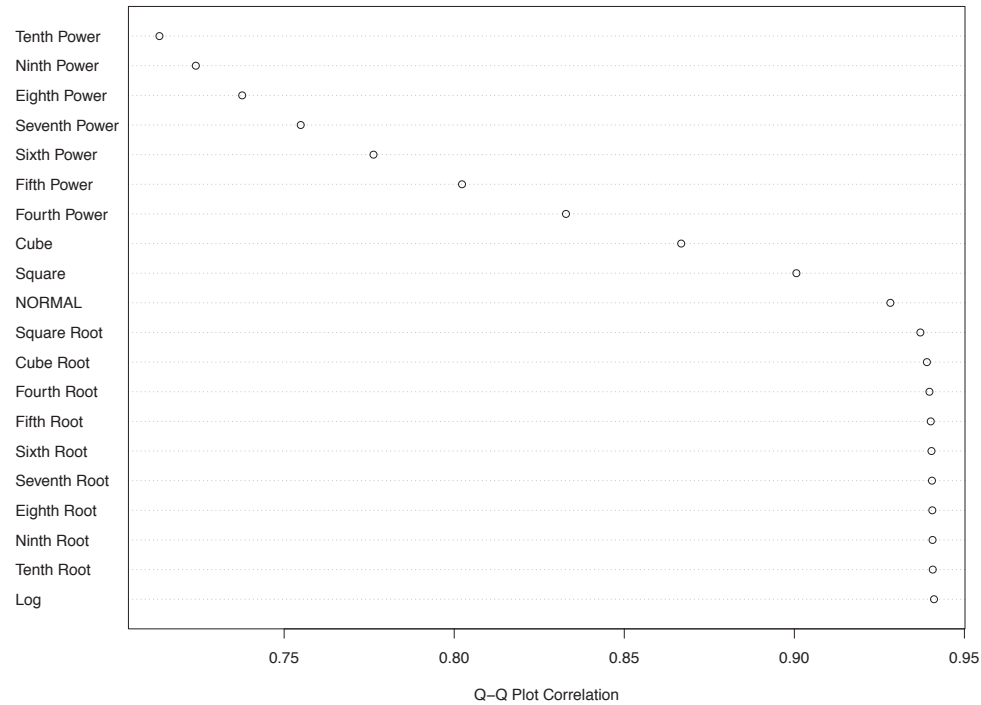
Fit Corr. by Model for SE at Location FC-2



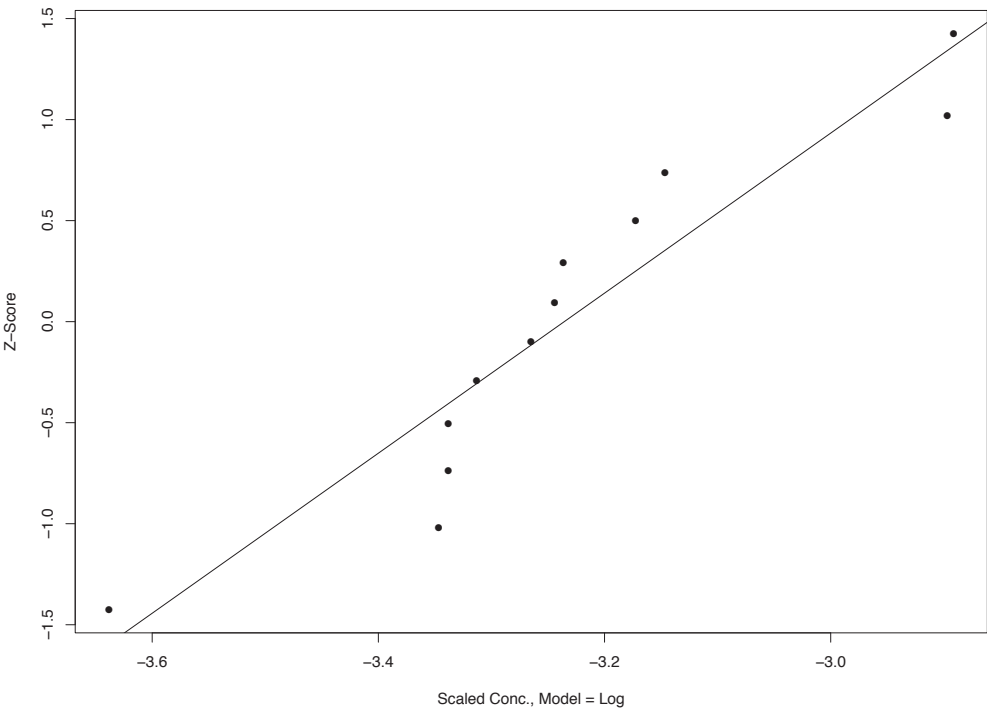
Censored Q-Q Plot for SE at Location FC-2



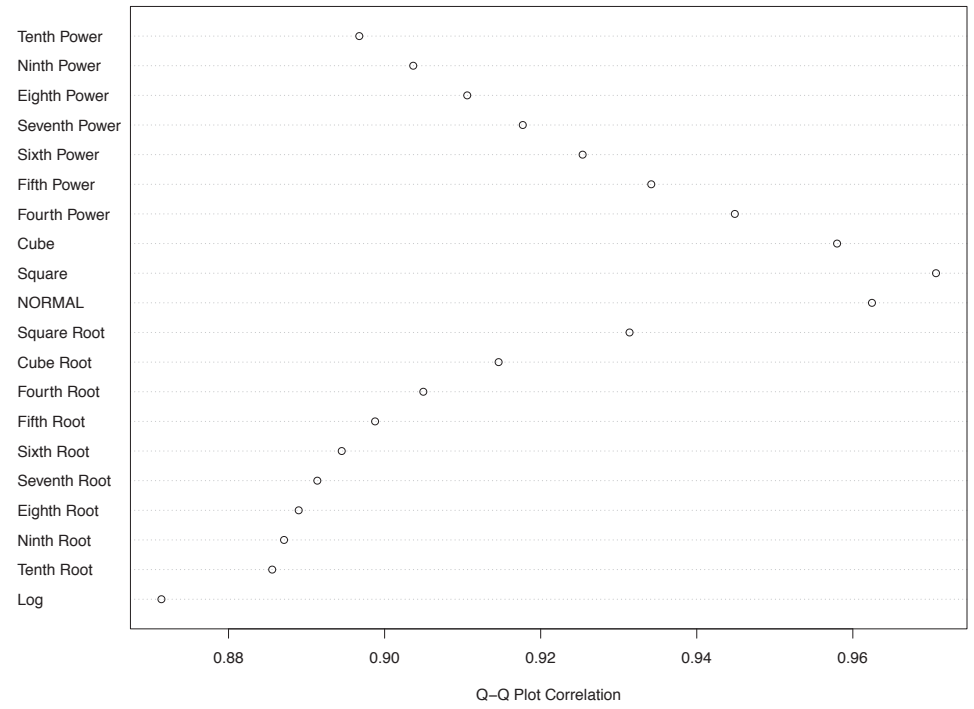
Fit Corr. by Model for SE at Location FC-3A



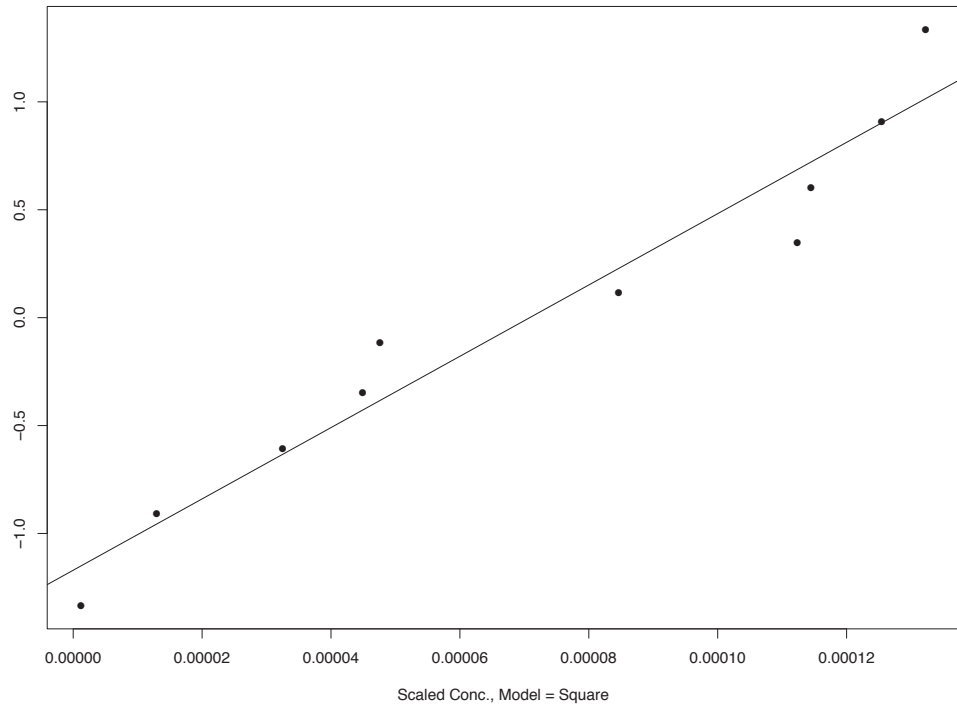
Censored Q-Q Plot for SE at Location FC-3A



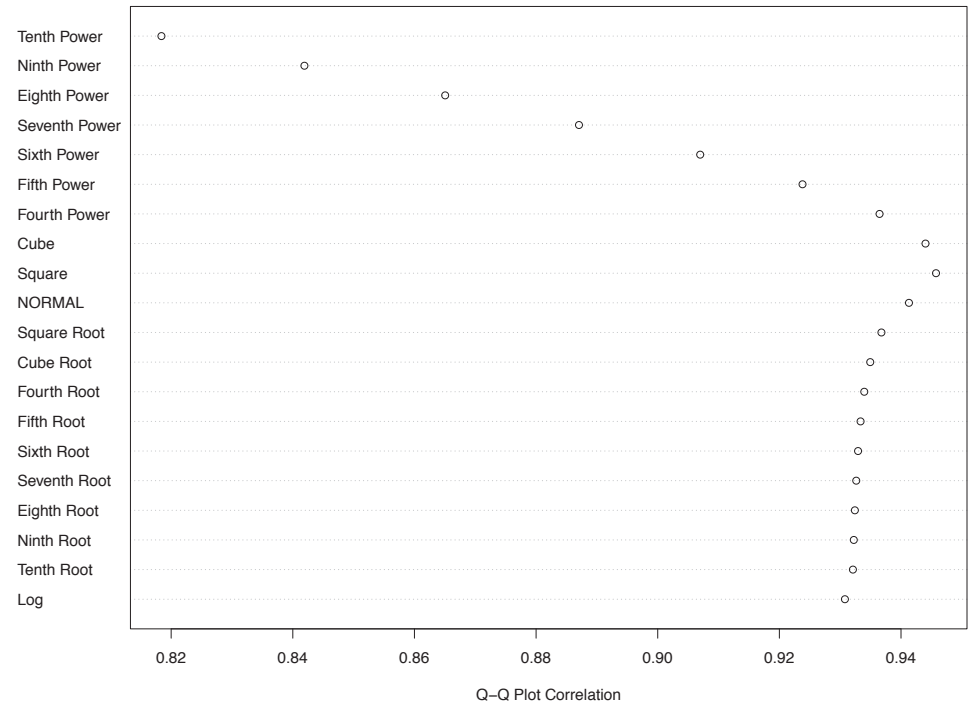
Fit Corr. by Model for SE at Location FC-3B



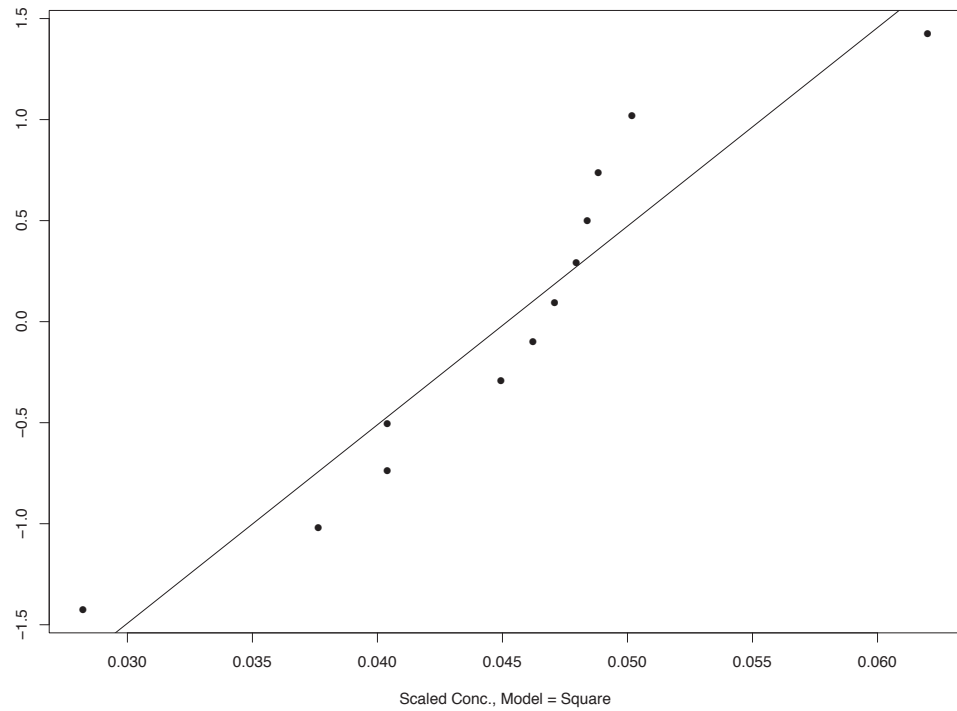
Censored Q-Q Plot for SE at Location FC-3B



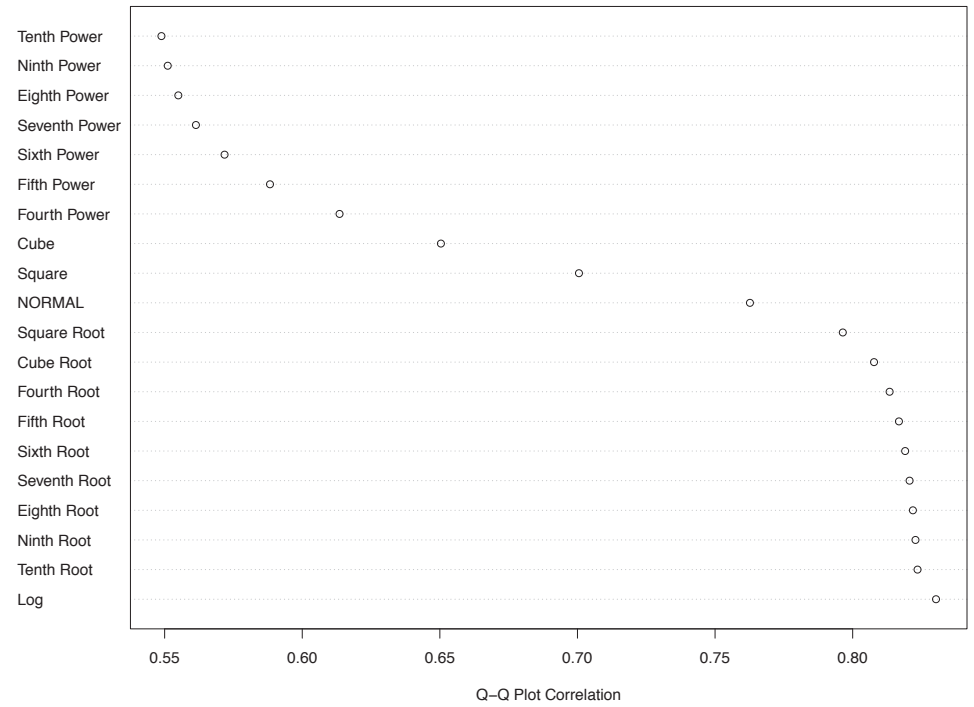
Fit Corr. by Model for SE at Location SC-10



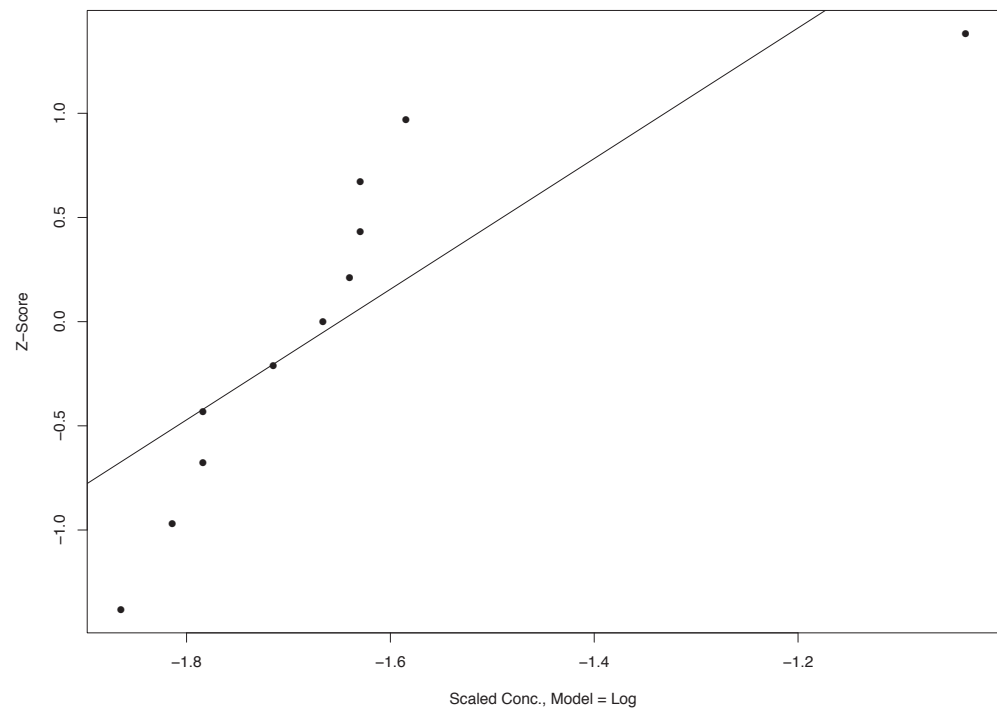
Censored Q-Q Plot for SE at Location SC-10



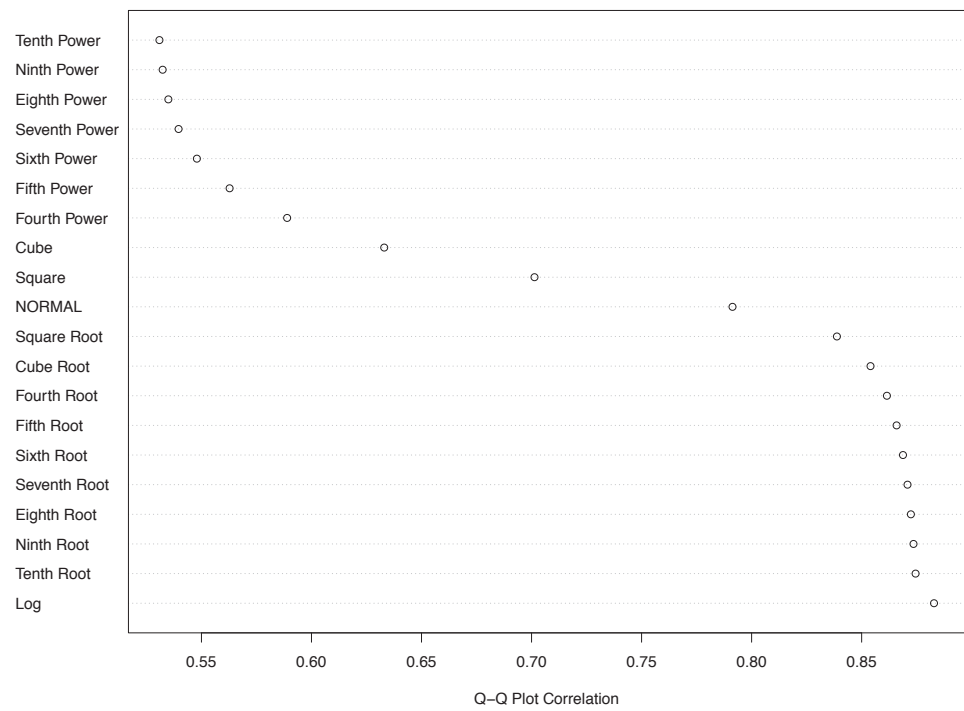
Fit Corr. by Model for SE at Location SC-11



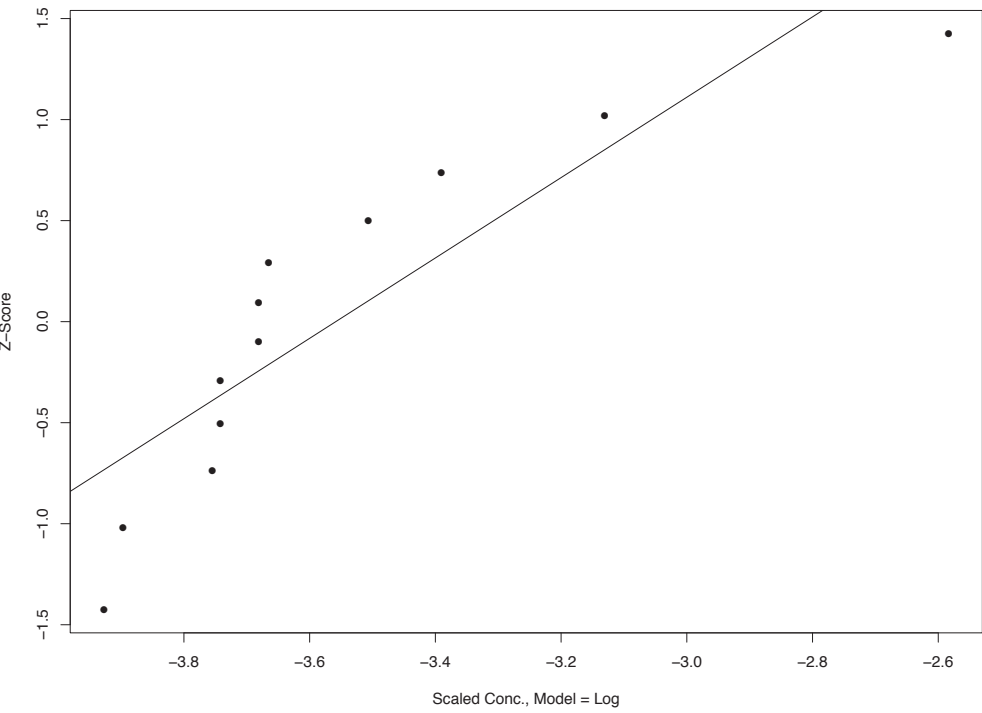
Censored Q-Q Plot for SE at Location SC-11



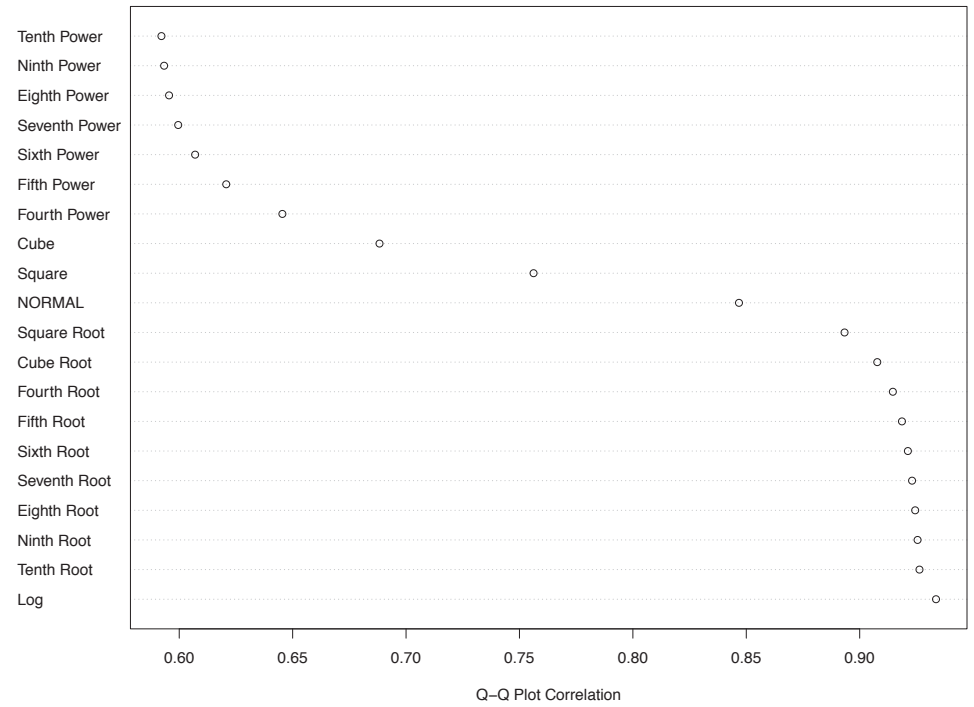
Fit Corr. by Model for SE at Location SC-12



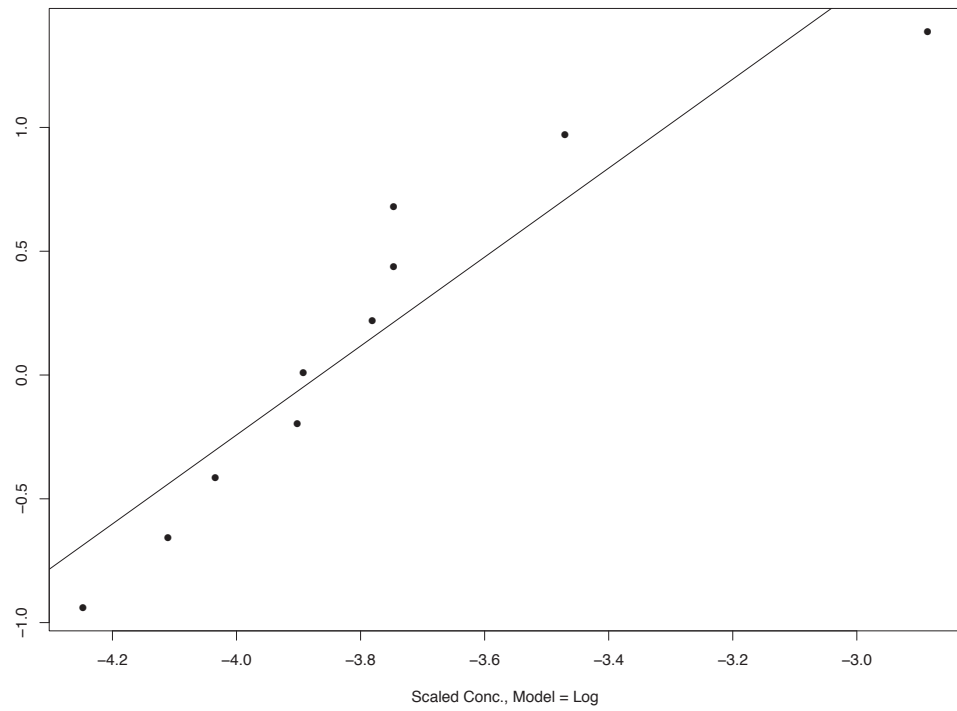
Censored Q-Q Plot for SE at Location SC-12



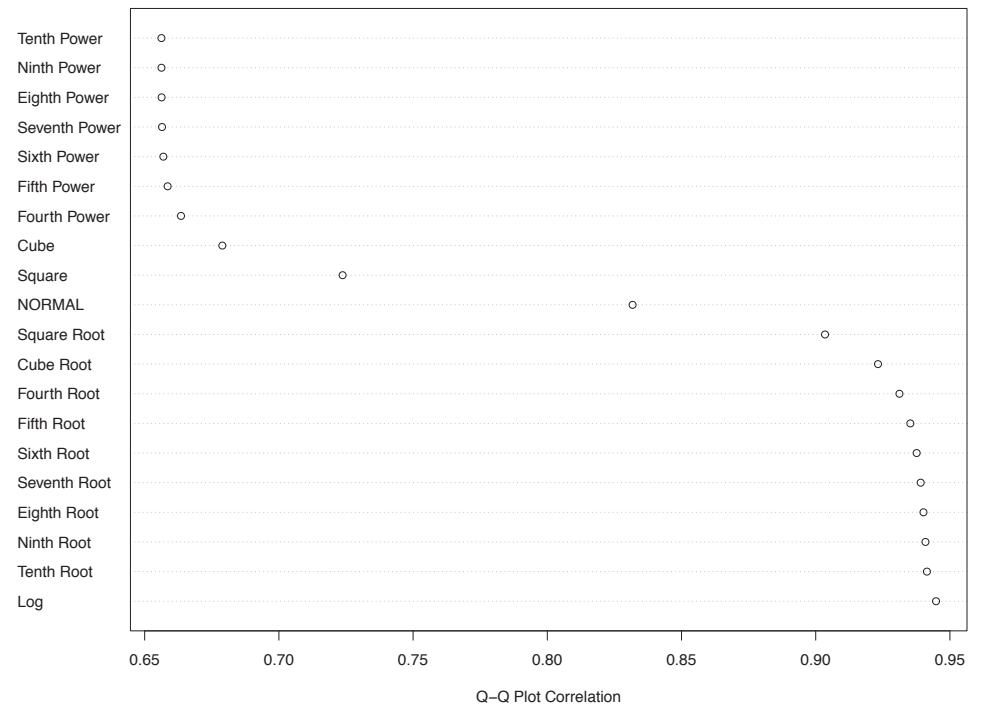
Fit Corr. by Model for SE at Location SC-13



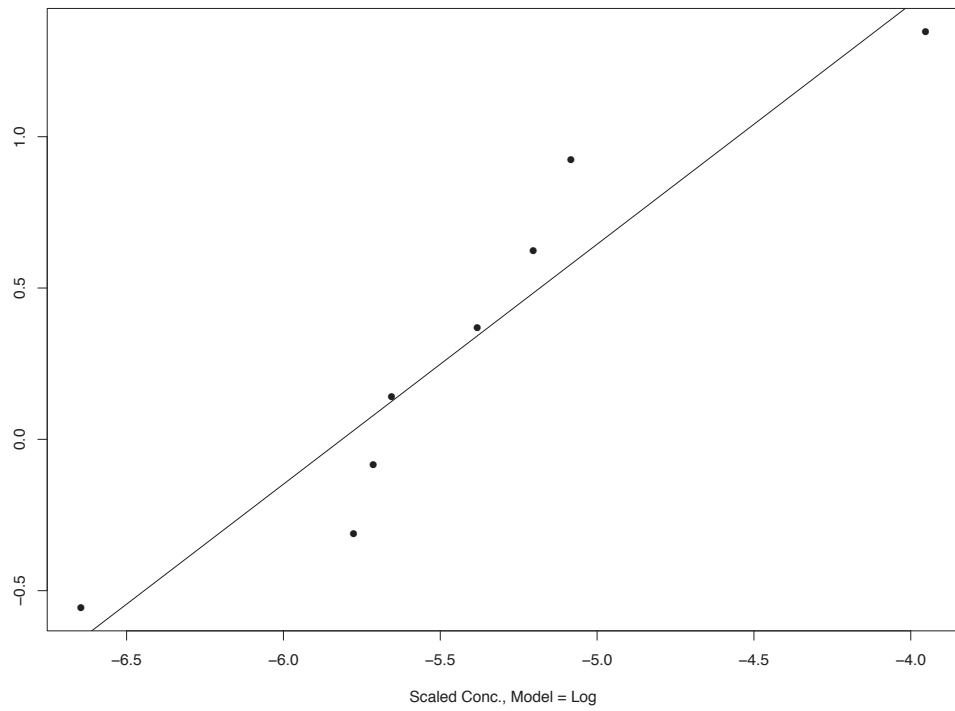
Censored Q-Q Plot for SE at Location SC-13



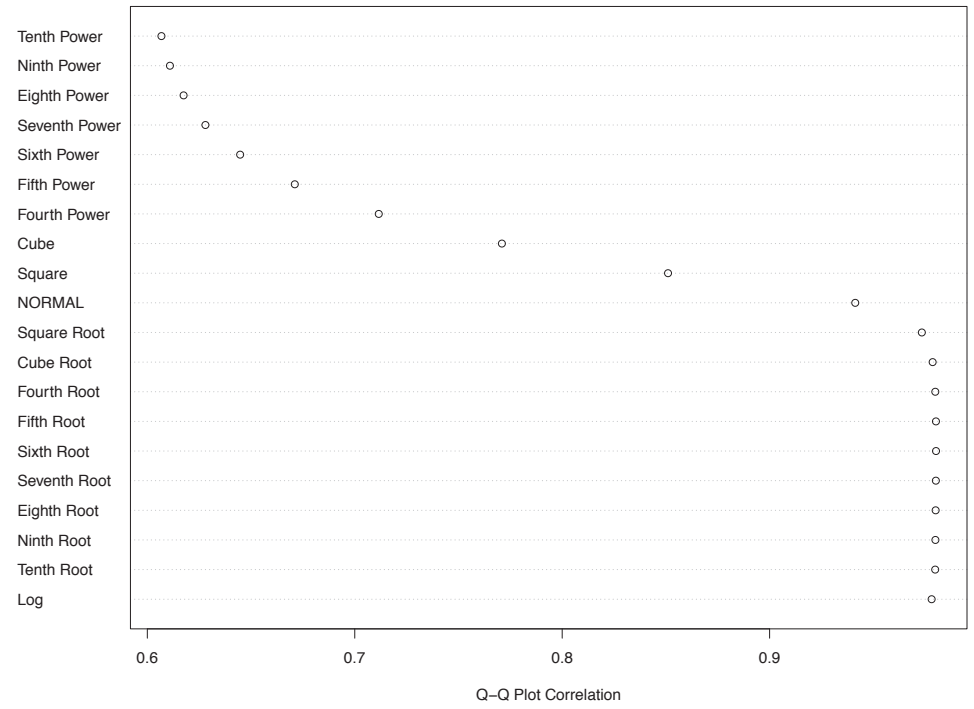
Fit Corr. by Model for SE at Location SC-14



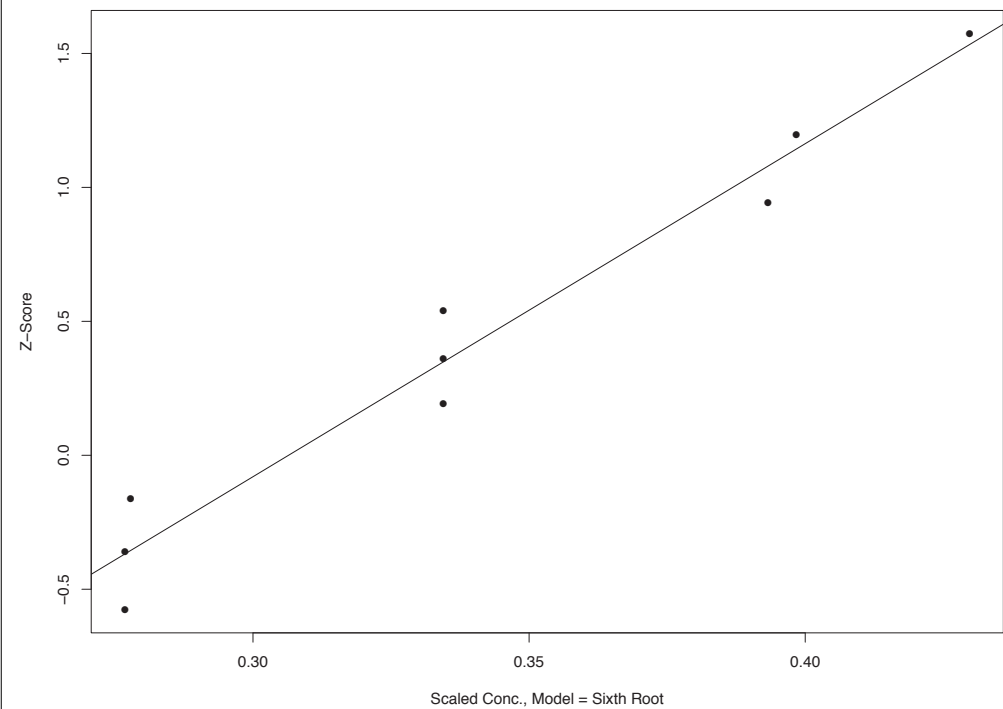
Censored Q-Q Plot for SE at Location SC-14



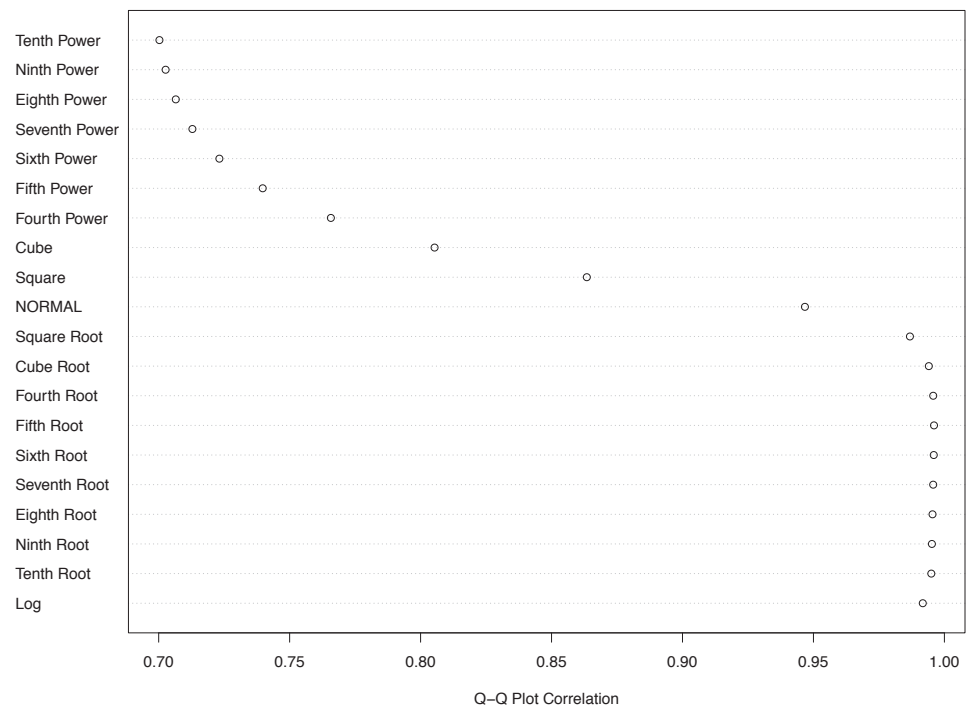
Fit Corr. by Model for TL at Location CC-1



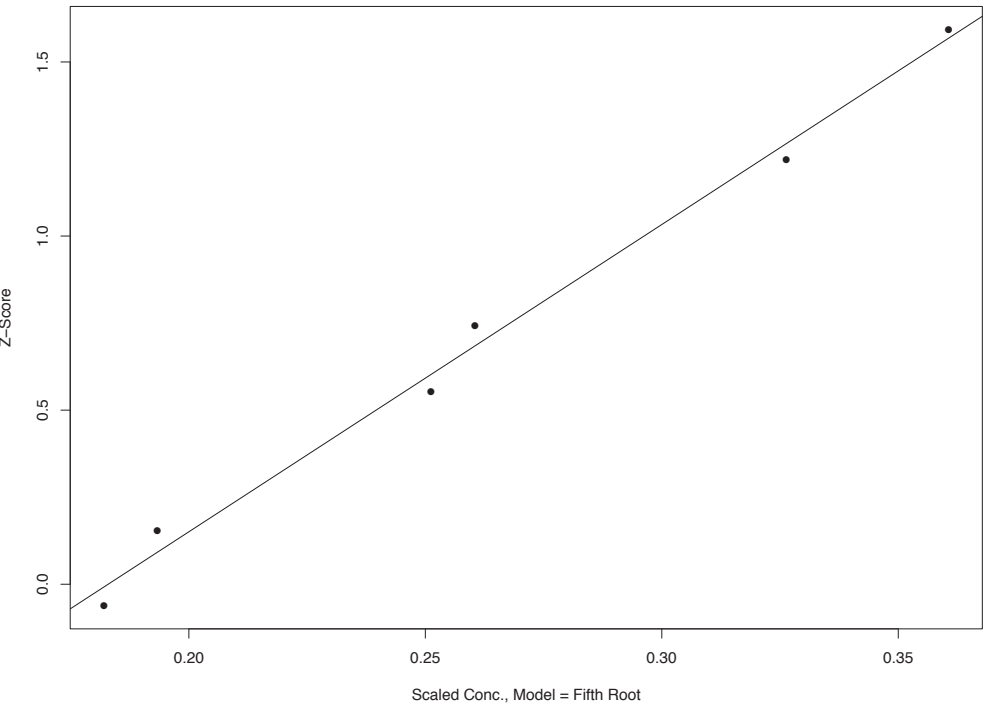
Censored Q-Q Plot for TL at Location CC-1



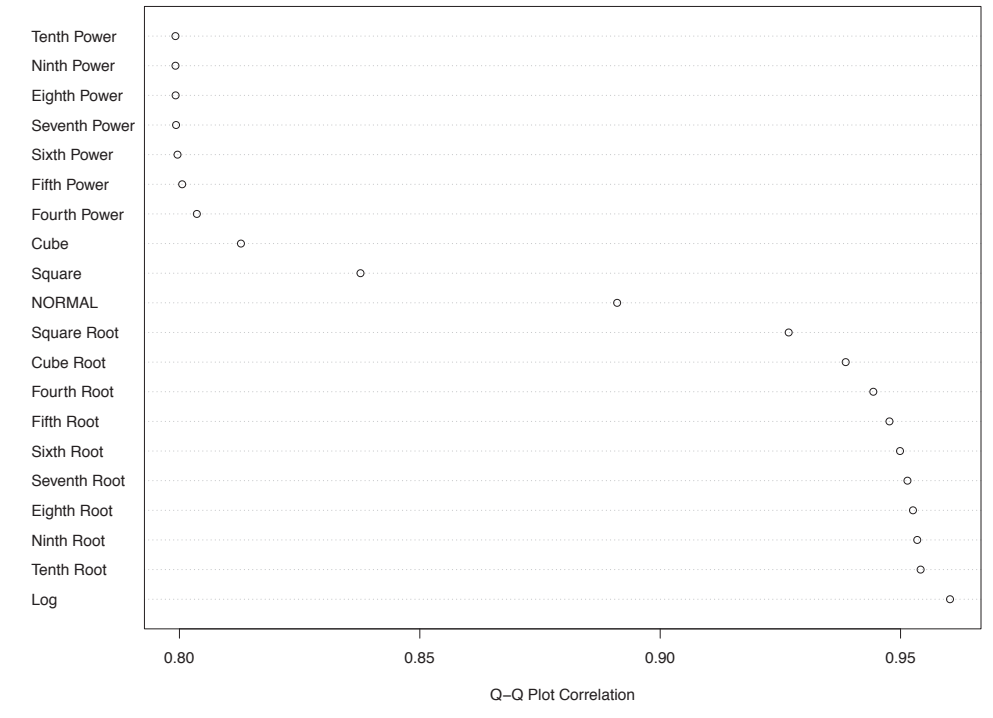
Fit Corr. by Model for TL at Location FC-1



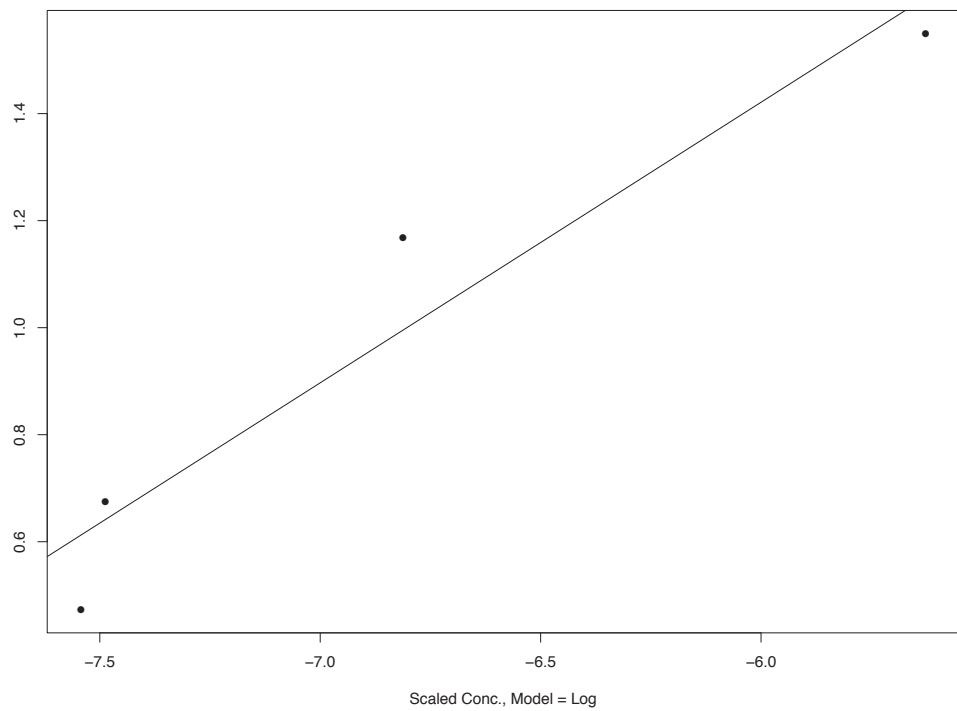
Censored Q-Q Plot for TL at Location FC-1



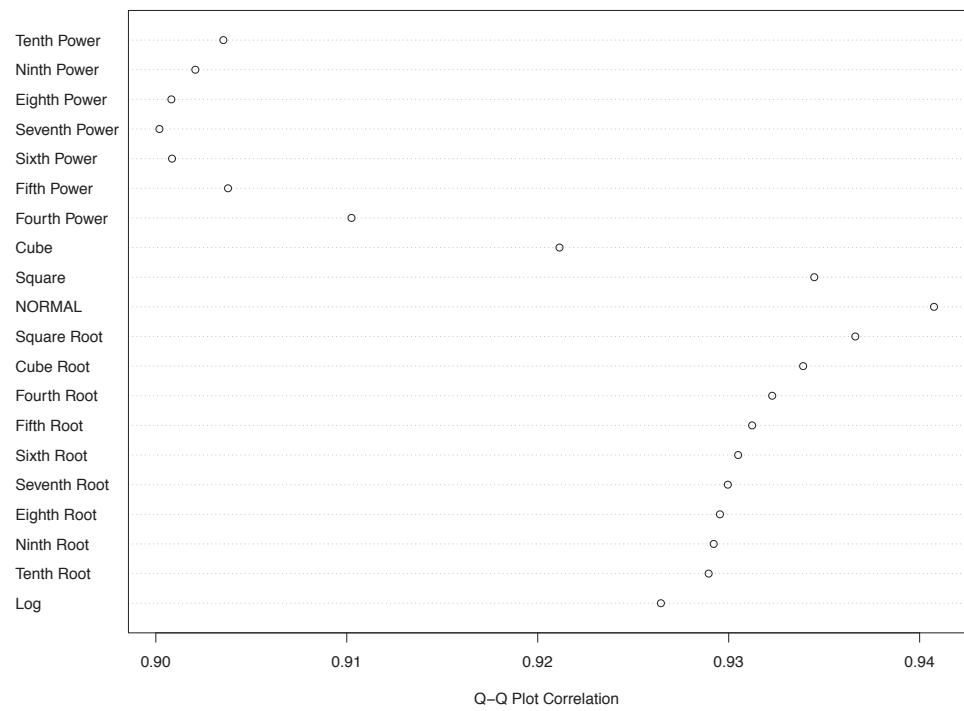
Fit Corr. by Model for TL at Location FC-2



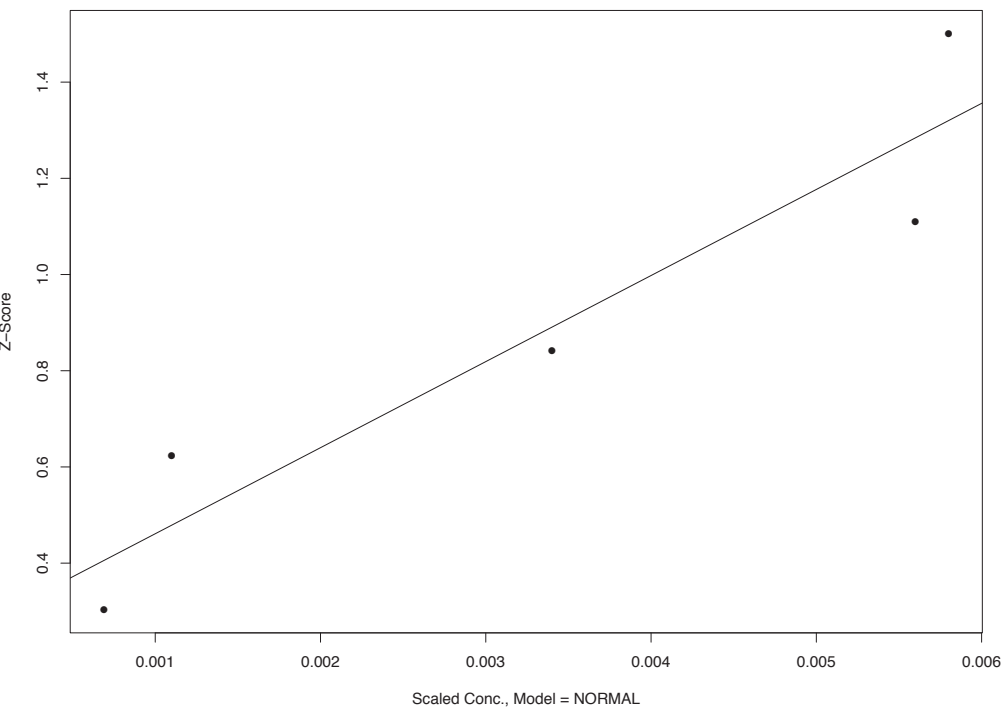
Censored Q-Q Plot for TL at Location FC-2



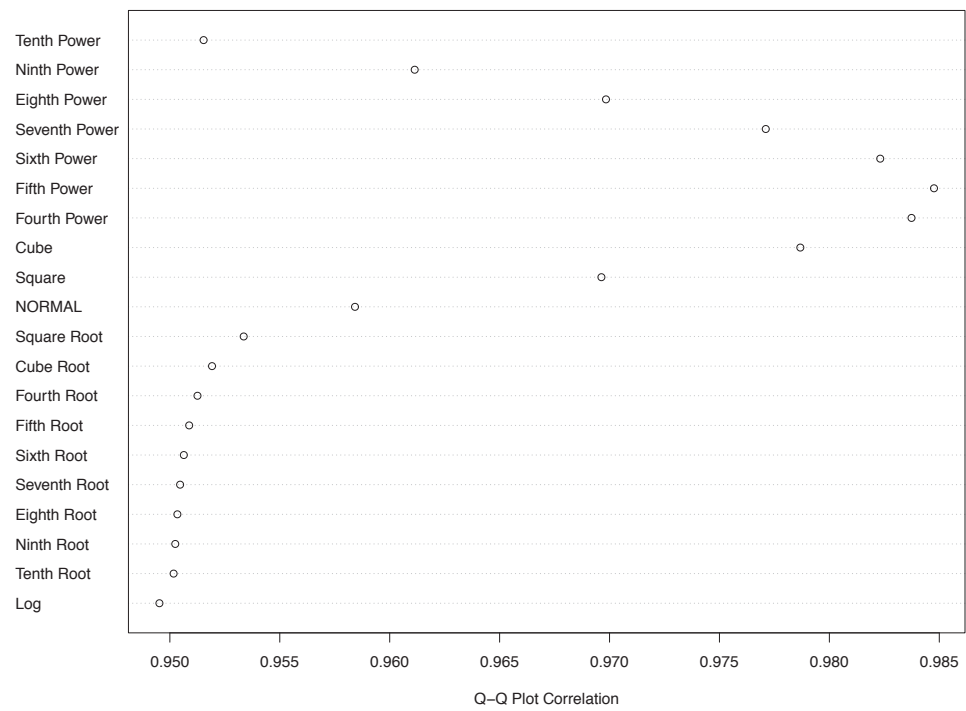
Fit Corr. by Model for TL at Location FC-3A



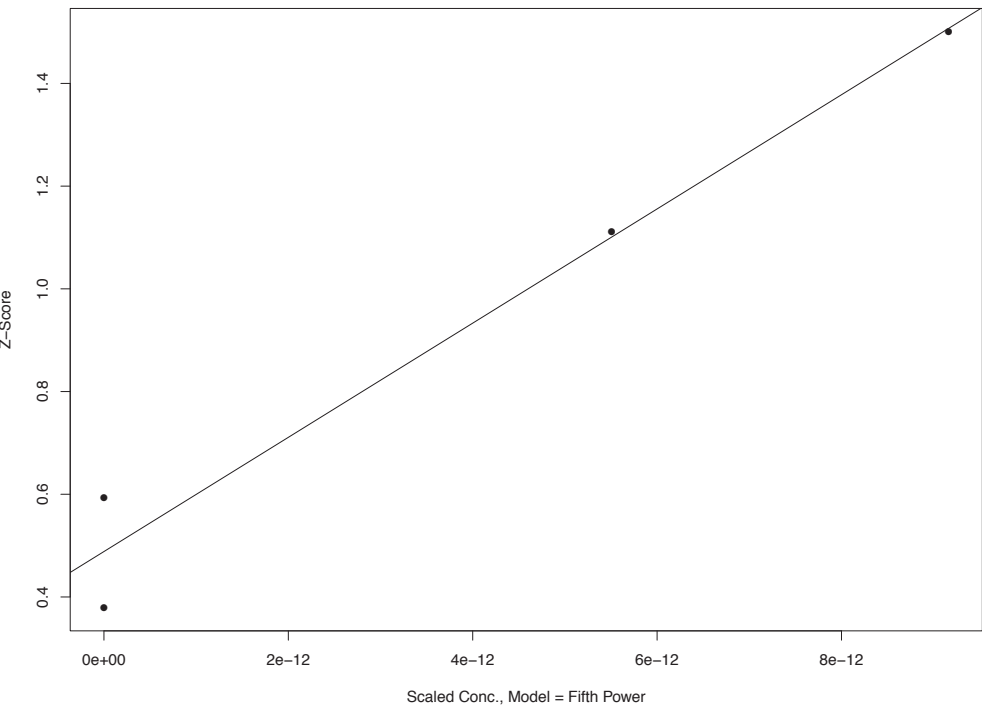
Censored Q-Q Plot for TL at Location FC-3A



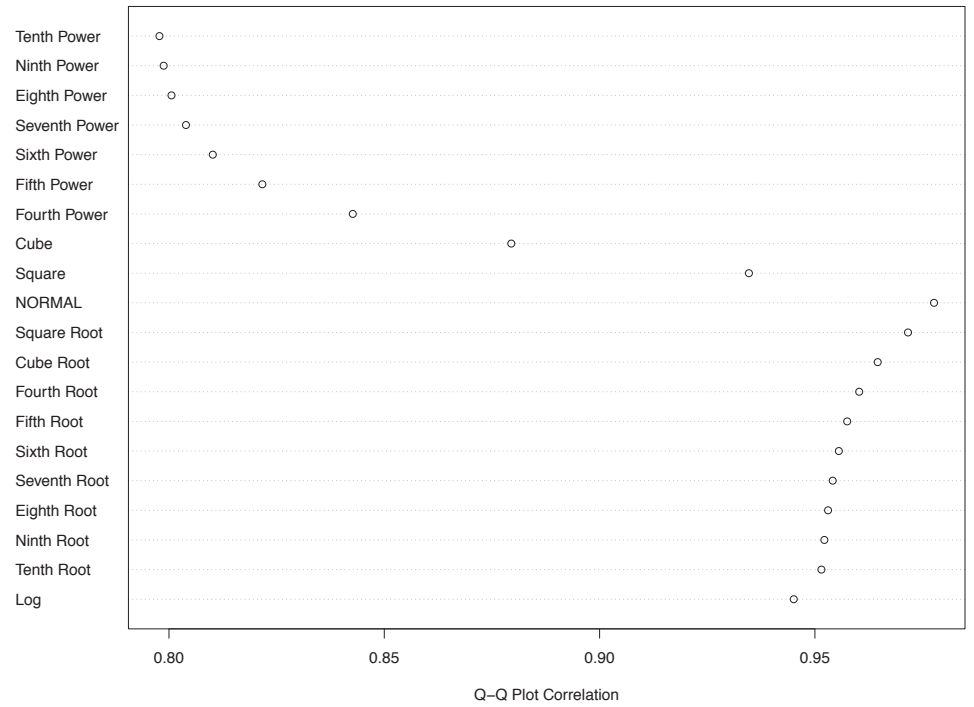
Fit Corr. by Model for TL at Location FC-3B



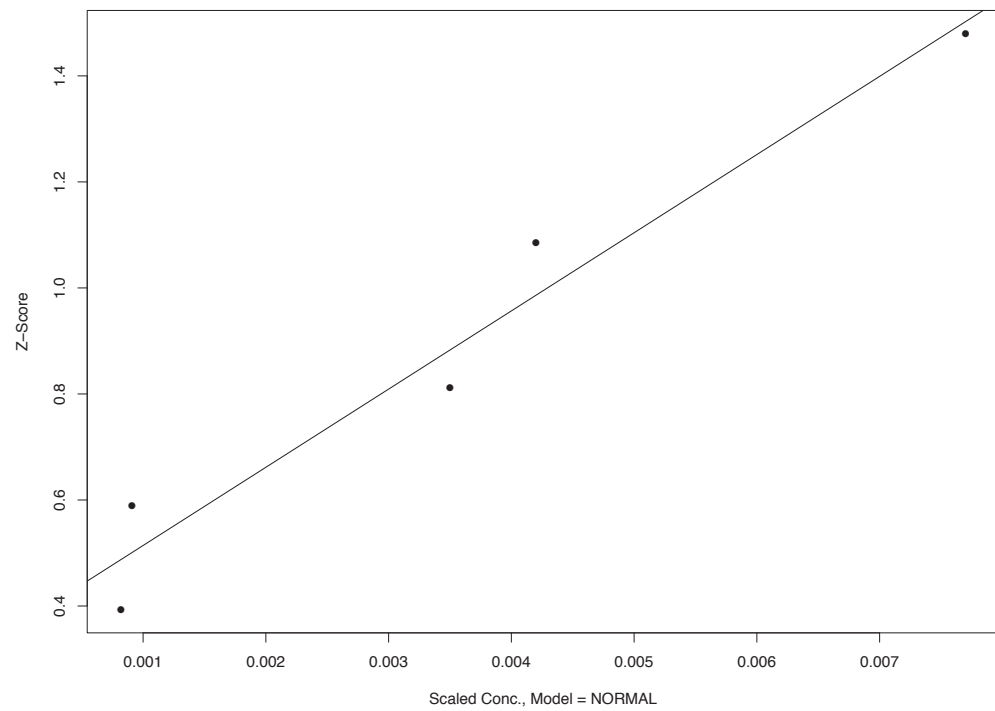
Censored Q-Q Plot for TL at Location FC-3B



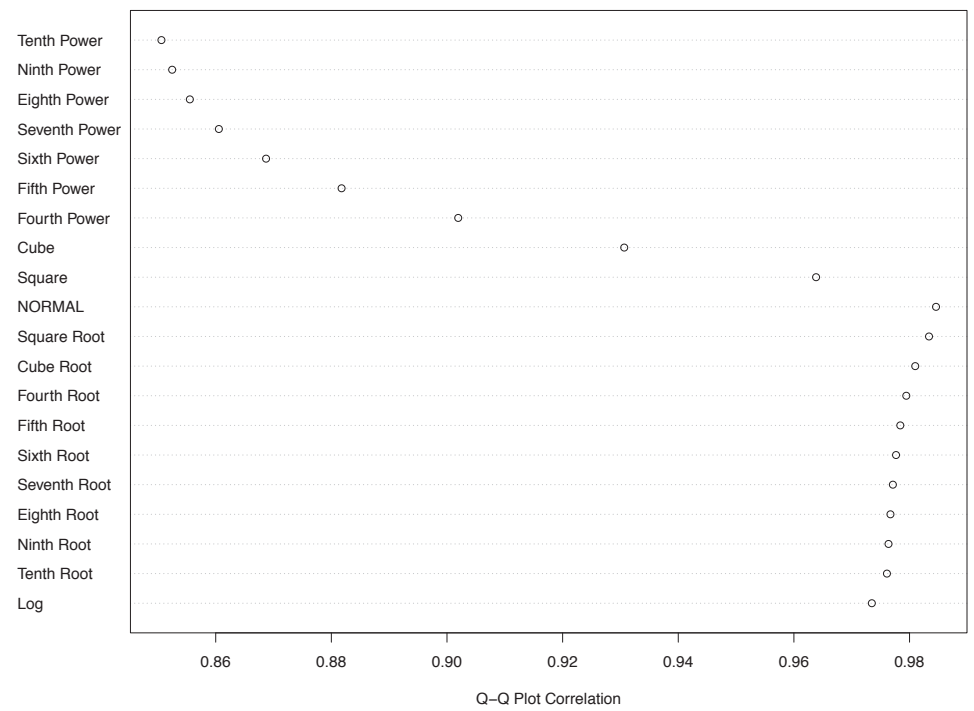
Fit Corr. by Model for TL at Location SC-10



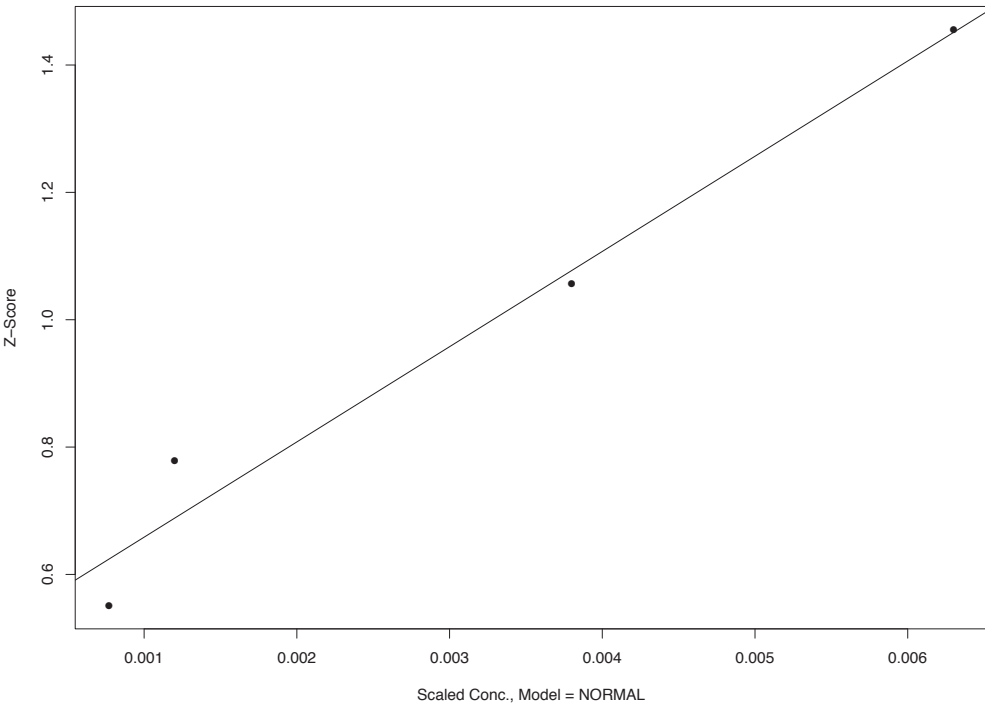
Censored Q-Q Plot for TL at Location SC-10



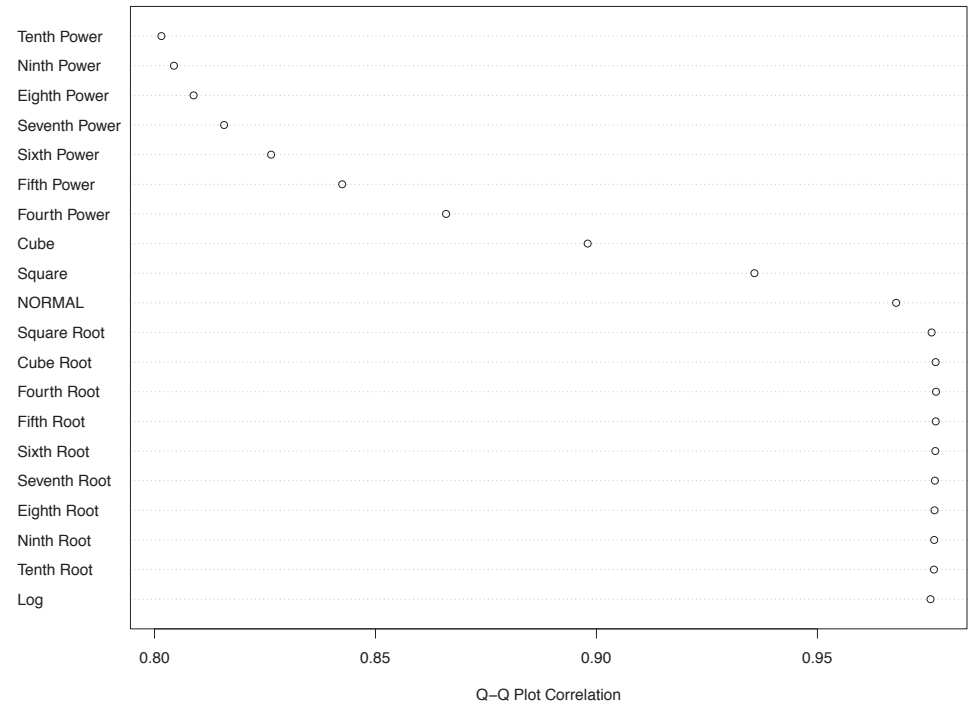
Fit Corr. by Model for TL at Location SC-11



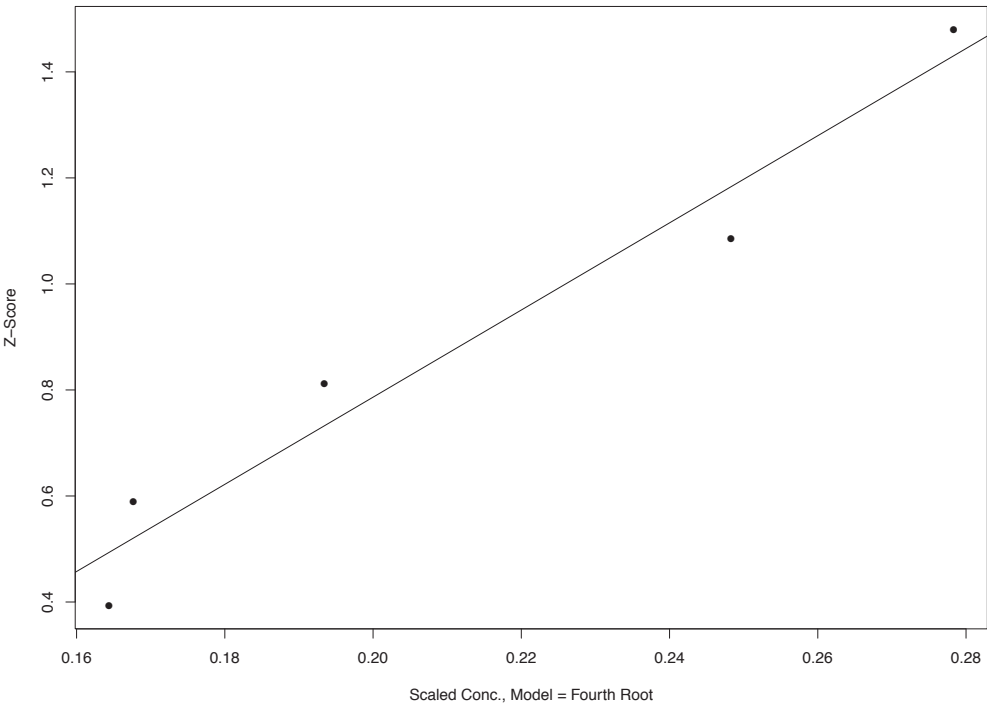
Censored Q-Q Plot for TL at Location SC-11



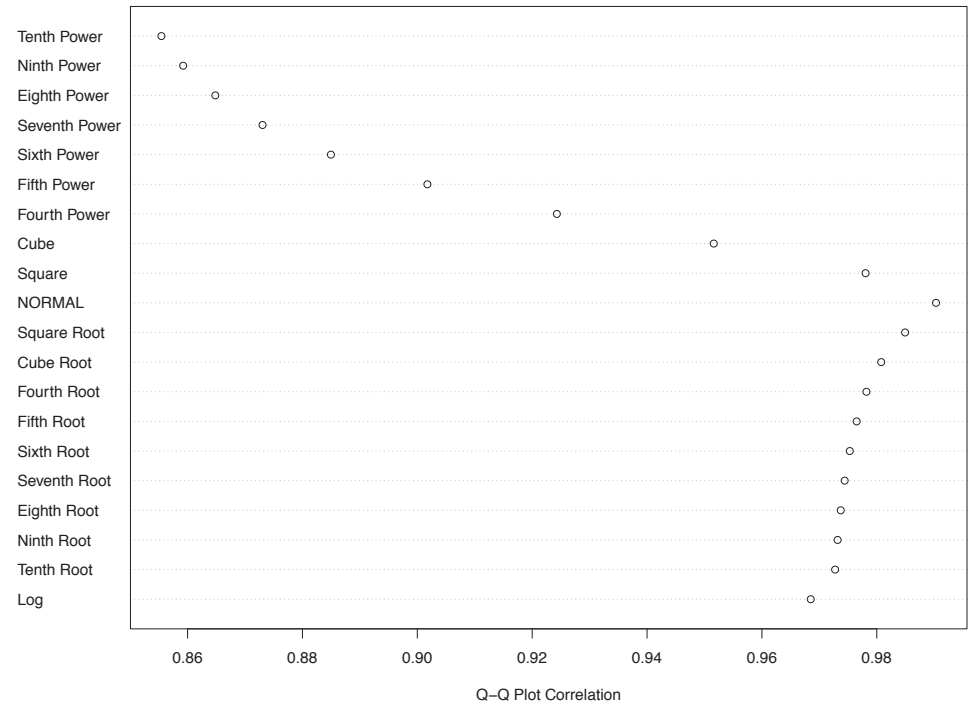
Fit Corr. by Model for TL at Location SC-12



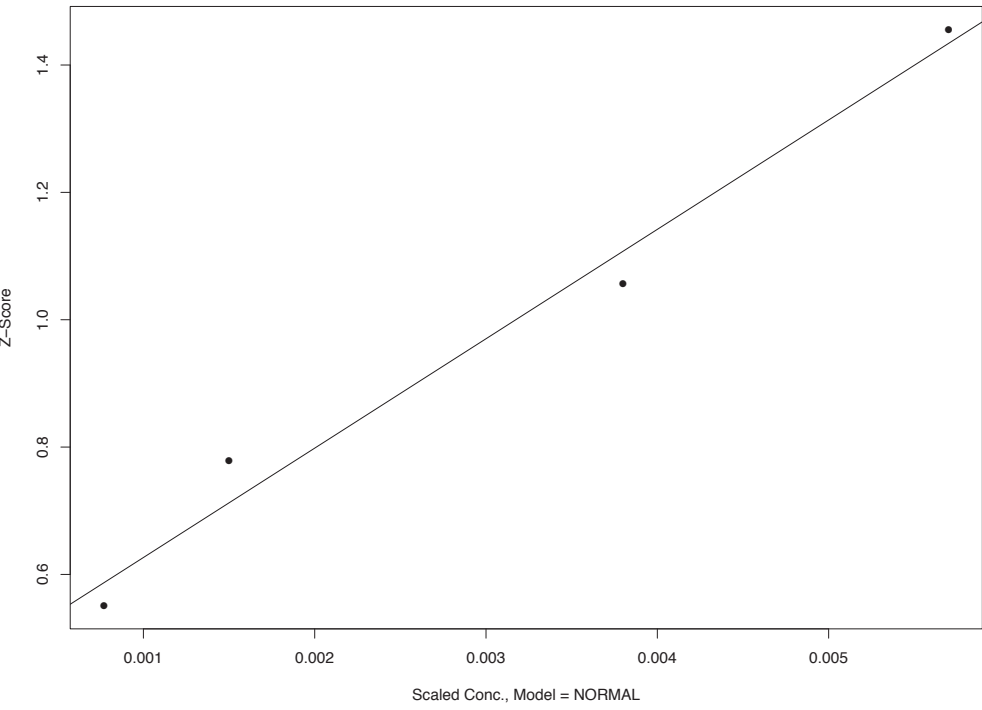
Censored Q-Q Plot for TL at Location SC-12



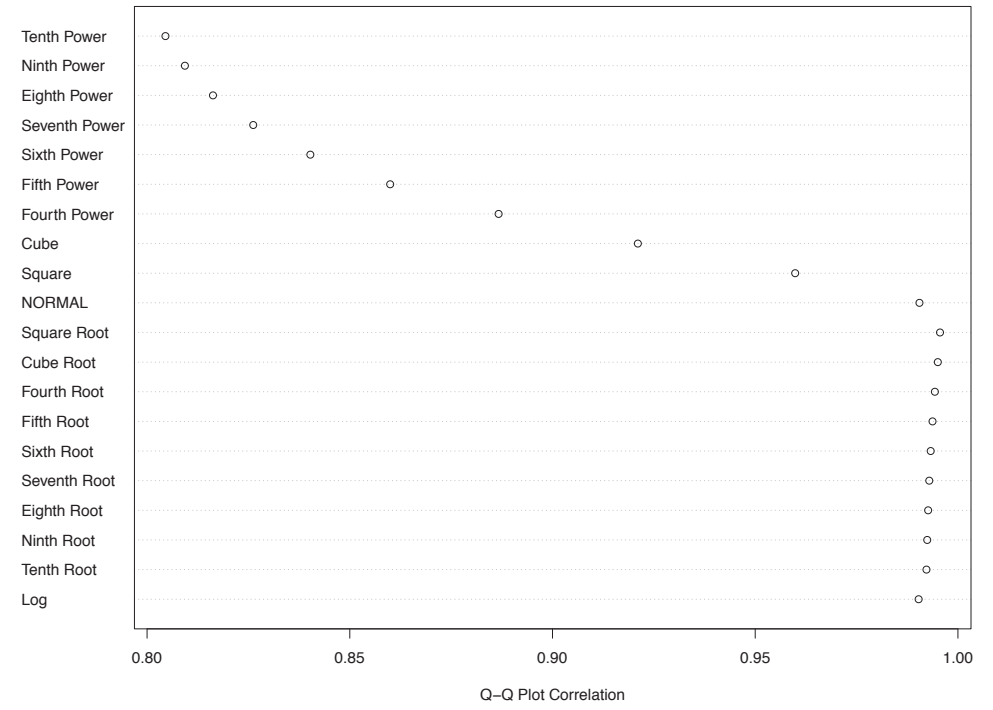
Fit Corr. by Model for TL at Location SC-13



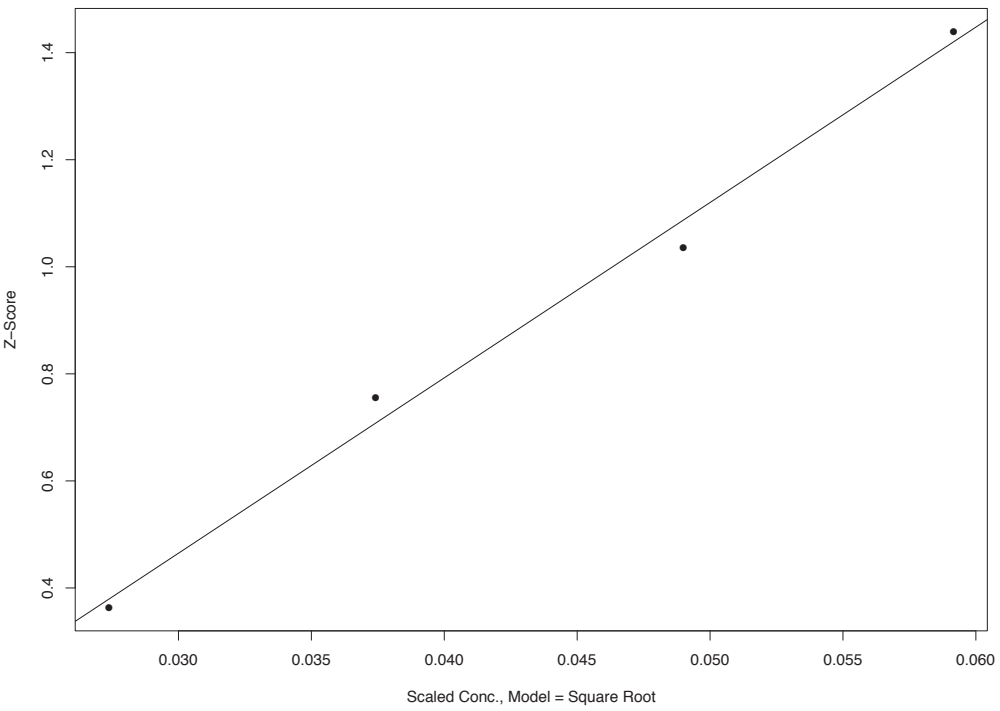
Censored Q-Q Plot for TL at Location SC-13



Fit Corr. by Model for TL at Location SC-14



Censored Q-Q Plot for TL at Location SC-14



APPENDIX G

APPENDIX H

coc	N	ND.pct	model	cov	conf	utl	units	reglim	gwps
AS	59	18.6	Square Root	0.95	0.950	0.0120	MG/L	0.01	0.0120
BA	58	6.9	Log	0.95	0.950	0.0437	MG/L	2	2.0000
BE	58	100	NP	0.95	0.949	0.0020	MG/L	0.004	0.0040
CD	58	94.8	NP	0.95	0.949	0.0050	MG/L	0.005	0.0050
CO	58	84.5	NP	0.95	0.949	0.0139	MG/L	0.006	0.0139
CR	57	89.5	NP	0.95	0.946	0.0100	MG/L	0.1	0.1000
F	58	0	NP	0.95	0.949	1.2100	MG/L	4	4.0000
HG	56	0	NP	0.95	0.943	0.0000	MG/L	0.002	0.0020
LI	58	0	NP	0.95	0.949	1.1600	MG/L	0.04	1.1600
MO	58	60.3	Cube Root	0.95	0.950	0.0179	MG/L	0.1	0.1000
PB	58	44.8	NORMAL	0.95	0.950	0.0088	MG/L	0.015	0.0150
Rad226+228	49	38.8	NORMAL	0.95	0.950	2.4904	PCI/L	5	5.0000
SB	58	75.9	Fourth Root	0.95	0.950	0.0016	MG/L	0.006	0.0060
SE	58	1.7	Sixth Root	0.95	0.950	0.2767	MG/L	0.05	0.2767
TL	58	51.7	Square Root	0.95	0.950	0.0073	MG/L	0.002	0.0073

Footnotes:

coc = Contaminant of Concern

N = Combined background sample size

ND.pct = Percentage of non-detects in background

model = Data transformation or distribution applied or estimated to normalize background

cov = statistical coverage of upper tolerance limit (UTL)

conf = statistical confidence of UTL

reglim = published regulatory limit or MCL

gwps = groundwater protection standard

coc	locid	N	ND-pct	model	stat	conf	ave	lcl	ucl	gwps	units	SSI	gradient
AS	CC-1	13	15.4	Square	MEDIAN	0.98	0.0073	0.0037	0.0097	0.0120	MG/L	FALSE	U
AS	FC-1	12	16.7	Sixth Root	MEDIAN	0.98	0.0035	0.0021	0.0058	0.0120	MG/L	FALSE	U
AS	FC-2	12	41.7	Log	MEDIAN	0.98	0.0014	0.0006	0.0030	0.0120	MG/L	FALSE	U
AS	FC-3A	12	16.7	Log	MEDIAN	0.98	0.0020	0.0012	0.0032	0.0120	MG/L	FALSE	U
AS	FC-3B	10	0	NORMAL	MEAN	0.98	0.0050	0.0033	0.0067	0.0120	MG/L	FALSE	U
AS	SC-10	12	0	Cube Root	MEDIAN	0.98	0.0058	0.0039	0.0084	0.0120	MG/L	FALSE	D
AS	SC-11	11	9.1	Square	MEDIAN	0.98	0.0070	0.0031	0.0094	0.0120	MG/L	FALSE	D
AS	SC-12	12	25	Log	MEDIAN	0.98	0.0017	0.0008	0.0037	0.0120	MG/L	FALSE	D
AS	SC-13	11	54.5	Log	MEDIAN	0.98	0.0008	0.0003	0.0019	0.0120	MG/L	FALSE	D
AS	SC-14	10	70	NP	MEDIAN	0.998	0.0005	0.0005	0.0030	0.0120	MG/L	FALSE	D
BA	CC-1	13	15.4	Ninth Power	MEDIAN	0.98	0.0057	0.0053	0.0059	2.0000	MG/L	FALSE	U
BA	FC-1	12	0	Log	MEDIAN	0.98	0.0093	0.0088	0.0098	2.0000	MG/L	FALSE	U
BA	FC-2	11	18.2	Sixth Power	MEDIAN	0.98	0.0052	0.0049	0.0054	2.0000	MG/L	FALSE	U
BA	FC-3A	12	0	Log	MEDIAN	0.98	0.0211	0.0158	0.0284	2.0000	MG/L	FALSE	U
BA	FC-3B	10	0	Log	MEDIAN	0.98	0.0241	0.0167	0.0348	2.0000	MG/L	FALSE	U
BA	SC-10	12	0	Log	MEDIAN	0.98	0.0146	0.0125	0.0170	2.0000	MG/L	FALSE	D
BA	SC-11	11	0	Eighth Root	MEDIAN	0.98	0.0128	0.0095	0.0170	2.0000	MG/L	FALSE	D
BA	SC-12	12	0	Cube Root	MEDIAN	0.98	0.0109	0.0084	0.0137	2.0000	MG/L	FALSE	D
BA	SC-13	11	9.1	Cube Root	MEDIAN	0.98	0.0077	0.0067	0.0088	2.0000	MG/L	FALSE	D
BA	SC-14	10	10	Log	MEDIAN	0.98	0.0126	0.0059	0.0269	2.0000	MG/L	FALSE	D
BE	CC-1	13	100	NA	MEDIAN	NA	0.0010	0.0000	0.0010	0.0040	MG/L	FALSE	U
BE	FC-1	12	100	NA	MEDIAN	NA	0.0010	0.0000	0.0010	0.0040	MG/L	FALSE	U
BE	FC-2	11	100	NA	MEDIAN	NA	0.0010	0.0000	0.0010	0.0040	MG/L	FALSE	U
BE	FC-3A	12	100	NA	MEDIAN	NA	0.0010	0.0000	0.0010	0.0040	MG/L	FALSE	U
BE	FC-3B	10	100	NA	MEDIAN	NA	0.0010	0.0000	0.0010	0.0040	MG/L	FALSE	U
BE	SC-10	12	100	NA	MEDIAN	NA	0.0010	0.0000	0.0010	0.0040	MG/L	FALSE	D
BE	SC-11	11	100	NA	MEDIAN	NA	0.0010	0.0000	0.0010	0.0040	MG/L	FALSE	D
BE	SC-12	12	100	NA	MEDIAN	NA	0.0010	0.0000	0.0010	0.0040	MG/L	FALSE	D

coc	locid	N	ND-pct	model	stat	conf	ave	lcl	ucl	gwps	units	SSI	gradient
BE	SC-13	11	90.9	NP	MEDIAN	0.988	0.0010	0.0005	0.0010	0.0040	MG/L	FALSE	D
BE	SC-14	10	100	NA	MEDIAN	NA	0.0010	0.0000	0.0010	0.0040	MG/L	FALSE	D
CD	CC-1	13	100	NA	MEDIAN	NA	0.0025	0.0000	0.0025	0.0050	MG/L	FALSE	U
CD	FC-1	12	100	NA	MEDIAN	NA	0.0025	0.0000	0.0025	0.0050	MG/L	FALSE	U
CD	FC-2	11	90.9	NP	MEDIAN	0.988	0.0025	0.0003	0.0025	0.0050	MG/L	FALSE	U
CD	FC-3A	12	91.7	NP	MEDIAN	0.994	0.0025	0.0004	0.0025	0.0050	MG/L	FALSE	U
CD	FC-3B	10	90	NP	MEDIAN	0.998	0.0025	0.0003	0.0025	0.0050	MG/L	FALSE	U
CD	SC-10	12	100	NA	MEDIAN	NA	0.0025	0.0000	0.0025	0.0050	MG/L	FALSE	D
CD	SC-11	11	100	NA	MEDIAN	NA	0.0025	0.0000	0.0025	0.0050	MG/L	FALSE	D
CD	SC-12	12	100	NA	MEDIAN	NA	0.0025	0.0000	0.0025	0.0050	MG/L	FALSE	D
CD	SC-13	11	100	NA	MEDIAN	NA	0.0025	0.0000	0.0025	0.0050	MG/L	FALSE	D
CD	SC-14	10	100	NA	MEDIAN	NA	0.0025	0.0000	0.0025	0.0050	MG/L	FALSE	D
CO	CC-1	13	92.3	NP	MEDIAN	0.997	0.0025	0.0025	0.0025	0.0139	MG/L	FALSE	U
CO	FC-1	12	100	NA	MEDIAN	NA	0.0025	0.0000	0.0025	0.0139	MG/L	FALSE	U
CO	FC-2	11	100	NA	MEDIAN	NA	0.0025	0.0000	0.0025	0.0139	MG/L	FALSE	U
CO	FC-3A	12	100	NA	MEDIAN	NA	0.0025	0.0000	0.0025	0.0139	MG/L	FALSE	U
CO	FC-3B	10	20	Log	MEDIAN	0.98	0.0067	0.0044	0.0101	0.0139	MG/L	FALSE	U
CO	SC-10	12	91.7	NP	MEDIAN	0.994	0.0025	0.0025	0.0025	0.0139	MG/L	FALSE	D
CO	SC-11	11	90.9	NP	MEDIAN	0.988	0.0025	0.0025	0.0025	0.0139	MG/L	FALSE	D
CO	SC-12	12	91.7	NP	MEDIAN	0.994	0.0025	0.0025	0.0025	0.0139	MG/L	FALSE	D
CO	SC-13	11	100	NA	MEDIAN	NA	0.0025	0.0000	0.0025	0.0139	MG/L	FALSE	D
CO	SC-14	10	100	NA	MEDIAN	NA	0.0025	0.0000	0.0025	0.0139	MG/L	FALSE	D
CR	CC-1	13	92.3	NP	MEDIAN	0.997	0.0050	0.0050	0.0050	0.1000	MG/L	FALSE	U
CR	FC-1	12	91.7	NP	MEDIAN	0.994	0.0050	0.0050	0.0050	0.1000	MG/L	FALSE	U
CR	FC-2	10	90	NP	MEDIAN	0.998	0.0050	0.0020	0.0054	0.1000	MG/L	FALSE	U
CR	FC-3A	12	91.7	NP	MEDIAN	0.994	0.0050	0.0050	0.0050	0.1000	MG/L	FALSE	U
CR	FC-3B	10	80	NP	MEDIAN	0.998	0.0050	0.0050	0.0086	0.1000	MG/L	FALSE	U
CR	SC-10	12	91.7	NP	MEDIAN	0.994	0.0050	0.0050	0.0050	0.1000	MG/L	FALSE	D

coc	locid	N	ND.pct	model	stat	conf	ave	lcl	ucl	gwps	units	SSI	gradient
CR	SC-11	11	90.9 NP	MEDIAN	0.988	0.0050	0.0050	0.0050	0.1000	MG/L	FALSE	D	
CR	SC-12	12	91.7 NP	MEDIAN	0.994	0.0050	0.0050	0.0050	0.1000	MG/L	FALSE	D	
CR	SC-13	11	90.9 NP	MEDIAN	0.988	0.0050	0.0029	0.0050	0.1000	MG/L	FALSE	D	
CR	SC-14	10	90 NP	MEDIAN	0.998	0.0050	0.0020	0.0066	0.1000	MG/L	FALSE	D	
F	CC-1	13	0 NP	MEDIAN	0.997	0.2200	0.2000	0.4500	4.0000	MG/L	FALSE	U	
F	FC-1	12	0 NP	MEDIAN	0.994	0.1300	0.1200	0.2000	4.0000	MG/L	FALSE	U	
F	FC-2	11	0 NP	MEDIAN	0.988	0.5300	0.5100	0.7600	4.0000	MG/L	FALSE	U	
F	FC-3A	12	0 NP	MEDIAN	0.994	0.4650	0.4600	0.5600	4.0000	MG/L	FALSE	U	
F	FC-3B	10	0 Square	MEDIAN	0.98	0.4996	0.4605	0.5360	4.0000	MG/L	FALSE	U	
F	SC-10	12	0 NP	MEDIAN	0.994	0.5800	0.5600	0.8200	4.0000	MG/L	FALSE	D	
F	SC-11	11	0 NP	MEDIAN	0.988	0.5400	0.5300	0.7600	4.0000	MG/L	FALSE	D	
F	SC-12	12	0 NP	MEDIAN	0.994	0.8400	0.8200	1.2600	4.0000	MG/L	FALSE	D	
F	SC-13	11	0 NP	MEDIAN	0.988	0.8600	0.8300	1.2100	4.0000	MG/L	FALSE	D	
F	SC-14	10	0 NP	MEDIAN	0.998	0.7400	0.7000	1.0600	4.0000	MG/L	FALSE	D	
HG	CC-1	13	0 Log	MEDIAN	0.98	0.0000	0.0000	0.0000	0.0020	MG/L	FALSE	U	
HG	FC-1	12	0 NP	MEDIAN	0.994	0.0000	0.0000	0.0000	0.0020	MG/L	FALSE	U	
HG	FC-2	10	0 Log	MEDIAN	0.98	0.0000	0.0000	0.0000	0.0020	MG/L	FALSE	U	
HG	FC-3A	12	0 NORMAL	MEAN	0.98	0.0000	0.0000	0.0000	0.0020	MG/L	FALSE	U	
HG	FC-3B	9	0 Log	MEDIAN	0.98	0.0000	0.0000	0.0000	0.0020	MG/L	FALSE	U	
HG	SC-10	12	0 NP	MEDIAN	0.994	0.0000	0.0000	0.0000	0.0020	MG/L	FALSE	D	
HG	SC-11	11	0 NP	MEDIAN	0.988	0.0000	0.0000	0.0000	0.0020	MG/L	FALSE	D	
HG	SC-12	12	0 Log	MEDIAN	0.98	0.0000	0.0000	0.0000	0.0020	MG/L	FALSE	D	
HG	SC-13	11	0 NP	MEDIAN	0.988	0.0000	0.0000	0.0000	0.0020	MG/L	FALSE	D	
HG	SC-14	10	10 NP	MEDIAN	0.998	0.0000	0.0000	0.0000	0.0020	MG/L	FALSE	D	
LI	CC-1	13	0 NORMAL	MEAN	0.98	0.7222	0.6606	0.7837	1.1600	MG/L	FALSE	U	
LI	FC-1	12	0 Log	MEDIAN	0.98	0.9778	0.9169	1.0429	1.1600	MG/L	FALSE	U	
LI	FC-2	11	0 Seventh Power	MEDIAN	0.98	0.2987	0.2783	0.3131	1.1600	MG/L	FALSE	U	
LI	FC-3A	12	0 Sixth Power	MEDIAN	0.98	0.3227	0.2989	0.3400	1.1600	MG/L	FALSE	U	

coc	locid	N	ND.pct	model	stat	conf	ave	lcl	ucl	gwps	units	SSI	gradient
LI	FC-3B	10	0 Ninth Power	MEDIAN	0.98	0.3209	0.2928	0.3372	1.1600	MG/L	FALSE	U	
LI	SC-10	12	0 Log	MEDIAN	0.98	0.6904	0.6366	0.7488	1.1600	MG/L	FALSE	D	
LI	SC-11	11	0 Log	MEDIAN	0.98	0.5494	0.5042	0.5986	1.1600	MG/L	FALSE	D	
LI	SC-12	12	0 Log	MEDIAN	0.98	0.4889	0.4484	0.5329	1.1600	MG/L	FALSE	D	
LI	SC-13	11	0 Square	MEDIAN	0.98	0.4023	0.3692	0.4329	1.1600	MG/L	FALSE	D	
LI	SC-14	10	0 Log	MEDIAN	0.98	0.3736	0.3449	0.4048	1.1600	MG/L	FALSE	D	
MO	CC-1	13	100 NA	MEDIAN	NA	0.0025	0.0000	0.0050	0.1000	MG/L	FALSE	U	
MO	FC-1	12	91.7 NP	MEDIAN	0.994	0.0025	0.0025	0.0025	0.1000	MG/L	FALSE	U	
MO	FC-2	11	81.8 NP	MEDIAN	0.988	0.0025	0.0025	0.0025	0.1000	MG/L	FALSE	U	
MO	FC-3A	12	8.3 Fourth Power	MEDIAN	0.98	0.0099	0.0080	0.0111	0.1000	MG/L	FALSE	U	
MO	FC-3B	10	10 Log	MEDIAN	0.98	0.0076	0.0044	0.0132	0.1000	MG/L	FALSE	U	
MO	SC-10	12	0 NORMAL	MEAN	0.98	0.0072	0.0056	0.0088	0.1000	MG/L	FALSE	D	
MO	SC-11	11	81.8 NP	MEDIAN	0.988	0.0025	0.0025	0.0025	0.1000	MG/L	FALSE	D	
MO	SC-12	12	0 Square Root	MEDIAN	0.98	0.0095	0.0085	0.0107	0.1000	MG/L	FALSE	D	
MO	SC-13	11	81.8 NP	MEDIAN	0.988	0.0025	0.0025	0.0036	0.1000	MG/L	FALSE	D	
MO	SC-14	10	0 Log	MEDIAN	0.98	0.0084	0.0074	0.0096	0.1000	MG/L	FALSE	D	
PB	CC-1	13	53.8 Cube	MEDIAN	0.98	0.0010	0.0000	0.0039	0.0150	MG/L	FALSE	U	
PB	FC-1	12	58.3 NORMAL	MEAN	0.98	-0.0006	-0.0048	0.0036	0.0150	MG/L	FALSE	U	
PB	FC-2	11	72.7 NP	MEDIAN	0.988	0.0002	0.0001	0.0018	0.0150	MG/L	FALSE	U	
PB	FC-3A	12	8.3 Log	MEDIAN	0.98	0.0019	0.0010	0.0036	0.0150	MG/L	FALSE	U	
PB	FC-3B	10	30 Cube Root	MEDIAN	0.98	0.0016	0.0003	0.0049	0.0150	MG/L	FALSE	U	
PB	SC-10	12	8.3 Square Root	MEDIAN	0.98	0.0024	0.0013	0.0040	0.0150	MG/L	FALSE	D	
PB	SC-11	11	27.3 NORMAL	MEAN	0.98	0.0025	-0.0002	0.0053	0.0150	MG/L	FALSE	D	
PB	SC-12	12	41.7 NORMAL	MEAN	0.98	0.0011	-0.0014	0.0037	0.0150	MG/L	FALSE	D	
PB	SC-13	11	54.5 Fourth Root	MEDIAN	0.98	0.0004	0.0000	0.0019	0.0150	MG/L	FALSE	D	
PB	SC-14	10	40 Cube Root	MEDIAN	0.98	0.0010	0.0002	0.0031	0.0150	MG/L	FALSE	D	
Rad226+22	CC-1	12	25 Square	MEDIAN	0.98	1.2841	0.9308	1.5593	5.0000	PCI/L	FALSE	U	
Rad226+22	FC-1	10	20 Log	MEDIAN	0.98	1.9011	1.6027	2.2550	5.0000	PCI/L	FALSE	U	

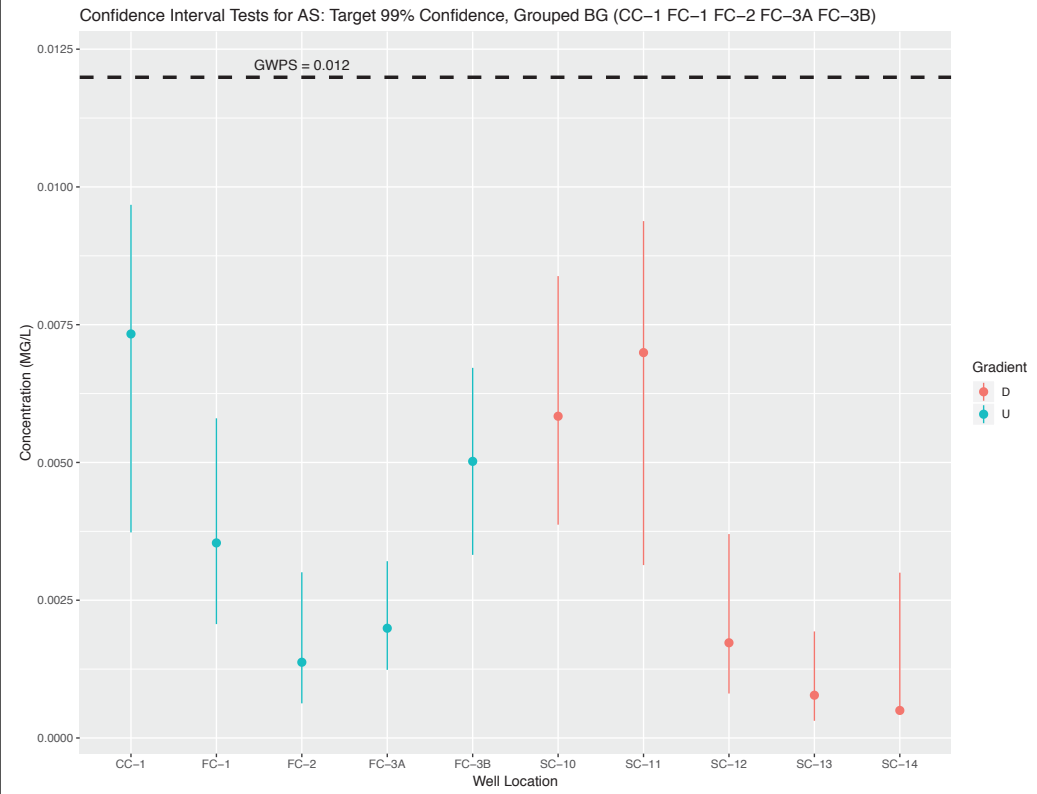
coc	locid	N	ND.pct	model	stat	conf	ave	lcl	ucl	gwps	units	SSI	gradient
Rad226+22 FC-2		9	66.7 NP	MEDIAN		0.996	0.3430	0.0000	3.0500	5.0000 PCI/L	FALSE	U	
Rad226+22 FC-3A		9	55.6 Log	MEDIAN		0.98	0.3427	0.1634	0.7190	5.0000 PCI/L	FALSE	U	
Rad226+22 FC-3B		9	33.3 NORMAL	MEAN		0.98	0.6749	0.0381	1.3118	5.0000 PCI/L	FALSE	U	
Rad226+22 SC-10		9	55.6 Fifth Power	MEDIAN		0.98	0.0000	0.0000	1.1014	5.0000 PCI/L	FALSE	D	
Rad226+22 SC-11		9	55.6 Log	MEDIAN		0.98	0.1565	0.0327	0.7484	5.0000 PCI/L	FALSE	D	
Rad226+22 SC-12		9	77.8 NP	MEDIAN		0.996	0.0000	0.0000	3.1800	5.0000 PCI/L	FALSE	D	
Rad226+22 SC-13		9	88.9 NP	MEDIAN		0.996	0.0000	0.0000	3.4450	5.0000 PCI/L	FALSE	D	
Rad226+22 SC-14		9	55.6 Square Root	MEDIAN		0.98	0.1885	0.0253	0.5030	5.0000 PCI/L	FALSE	D	
SB CC-1		13	84.6 NP	MEDIAN		0.997	0.0003	0.0001	0.0015	0.0060 MG/L	FALSE	U	
SB FC-1		12	91.7 NP	MEDIAN		0.994	0.0003	0.0001	0.0016	0.0060 MG/L	FALSE	U	
SB FC-2		11	100 NA	MEDIAN	NA	0.0001	0.0000	0.0000	0.0004	0.0060 MG/L	FALSE	U	
SB FC-3A		12	50 Log	MEDIAN		0.98	0.0002	0.0001	0.0006	0.0060 MG/L	FALSE	U	
SB FC-3B		10	50 Log	MEDIAN		0.98	0.0004	0.0002	0.0007	0.0060 MG/L	FALSE	U	
SB SC-10		12	75 NP	MEDIAN		0.994	0.0003	0.0001	0.0006	0.0060 MG/L	FALSE	D	
SB SC-11		11	81.8 NP	MEDIAN		0.988	0.0003	0.0001	0.0004	0.0060 MG/L	FALSE	D	
SB SC-12		12	83.3 NP	MEDIAN		0.994	0.0003	0.0001	0.0004	0.0060 MG/L	FALSE	D	
SB SC-13		11	72.7 NP	MEDIAN		0.988	0.0003	0.0001	0.0010	0.0060 MG/L	FALSE	D	
SB SC-14		10	80 NP	MEDIAN		0.998	0.0002	0.0001	0.0004	0.0060 MG/L	FALSE	D	
SE CC-1		13	0 Log	MEDIAN		0.98	0.1546	0.1389	0.1721	0.2767 MG/L	FALSE	U	
SE FC-1		12	0 Log	MEDIAN		0.98	0.0113	0.0055	0.0233	0.2767 MG/L	FALSE	U	
SE FC-2		11	9.1 Square	MEDIAN		0.98	0.0416	0.0359	0.0465	0.2767 MG/L	FALSE	U	
SE FC-3A		12	0 Log	MEDIAN		0.98	0.0393	0.0336	0.0461	0.2767 MG/L	FALSE	U	
SE FC-3B		10	0 Square	MEDIAN		0.98	0.0084	0.0052	0.0107	0.2767 MG/L	FALSE	U	
SE SC-10		12	0 Square	MEDIAN		0.98	0.2126	0.1969	0.2272	0.2767 MG/L	FALSE	D	
SE SC-11		11	0 NP	MEDIAN		0.988	0.1890	0.1630	0.2050	0.2767 MG/L	FALSE	D	
SE SC-12		12	0 NP	MEDIAN		0.994	0.0252	0.0203	0.0437	0.2767 MG/L	FALSE	D	
SE SC-13		11	9.1 Log	MEDIAN		0.98	0.0210	0.0144	0.0306	0.2767 MG/L	FALSE	D	
SE SC-14		10	20 Log	MEDIAN		0.98	0.0031	0.0012	0.0076	0.2767 MG/L	FALSE	D	

coc	locid	N	ND.pct	model	stat	conf	ave	lcl	ucl	gwps	units	SSI	gradient
TL CC-1		13	30.8 Sixth Root	MEDIAN		0.98	0.0009	0.0003	0.0022	0.0073 MG/L	FALSE	U	
TL FC-1		12	50 Fifth Root	MEDIAN		0.98	0.0002	0.0000	0.0013	0.0073 MG/L	FALSE	U	
TL FC-2		11	63.6 Log	MEDIAN		0.98	0.0002	0.0001	0.0007	0.0073 MG/L	FALSE	U	
TL FC-3A		12	58.3 NORMAL	MEAN		0.98	-0.0009	-0.0042	0.0024	0.0073 MG/L	FALSE	U	
TL FC-3B		10	60 Fifth Power	MEDIAN		0.98	0.0000	0.0000	0.0049	0.0073 MG/L	FALSE	U	
TL SC-10		12	58.3 NORMAL	MEAN		0.98	-0.0021	-0.0064	0.0022	0.0073 MG/L	FALSE	D	
TL SC-11		11	63.6 NORMAL	MEAN		0.98	-0.0031	-0.0076	0.0015	0.0073 MG/L	FALSE	D	
TL SC-12		12	58.3 Fourth Root	MEDIAN		0.98	0.0001	0.0000	0.0013	0.0073 MG/L	FALSE	D	
TL SC-13		11	63.6 NORMAL	MEAN		0.98	-0.0024	-0.0064	0.0016	0.0073 MG/L	FALSE	D	
TL SC-14		10	60 Square Root	MEDIAN		0.98	0.0003	0.0000	0.0016	0.0073 MG/L	FALSE	D	

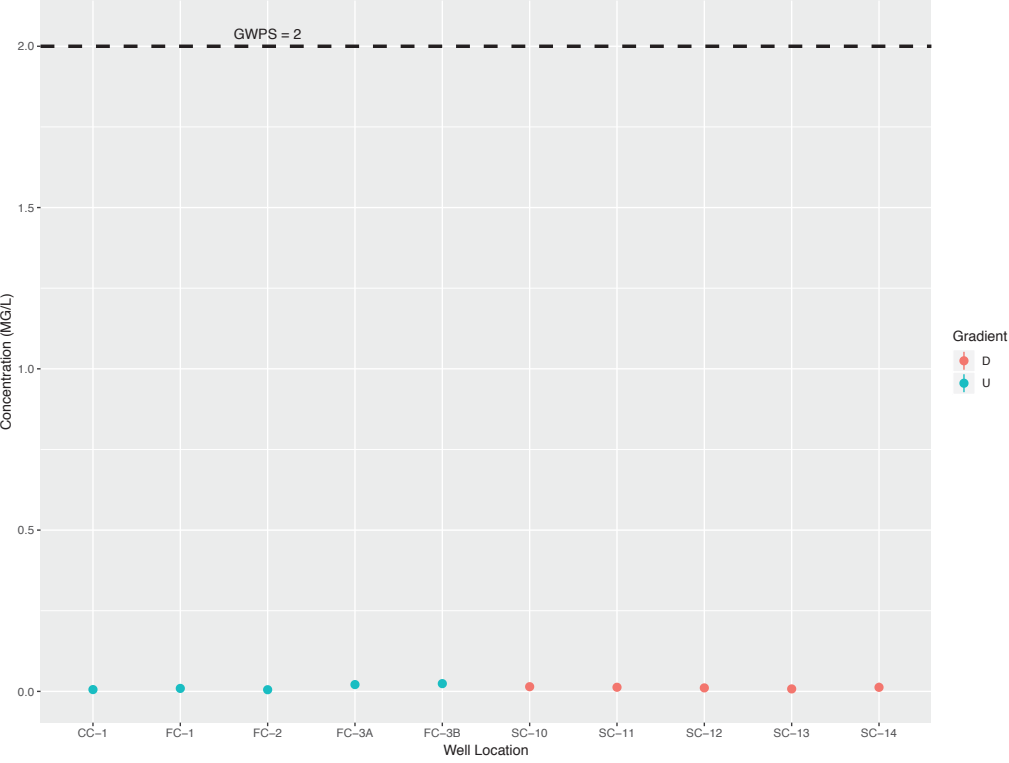
Footnotes:

coc = Contaminant of Concern
locid = well location
N = Sample size
ND.pct = Percentage of non-detects
model = method used to conduct confidence interval test; BOOT = bootstrap
stat = population statistic being estimated and tested
conf = statistical confidence of confidence interval
ave = estimated statistic
lcl = lower confidence limit
ucl = upper confidence limit
gwps = groundwater protection standard
SSI = flag indicating whether or not LCL exceeds GWPS

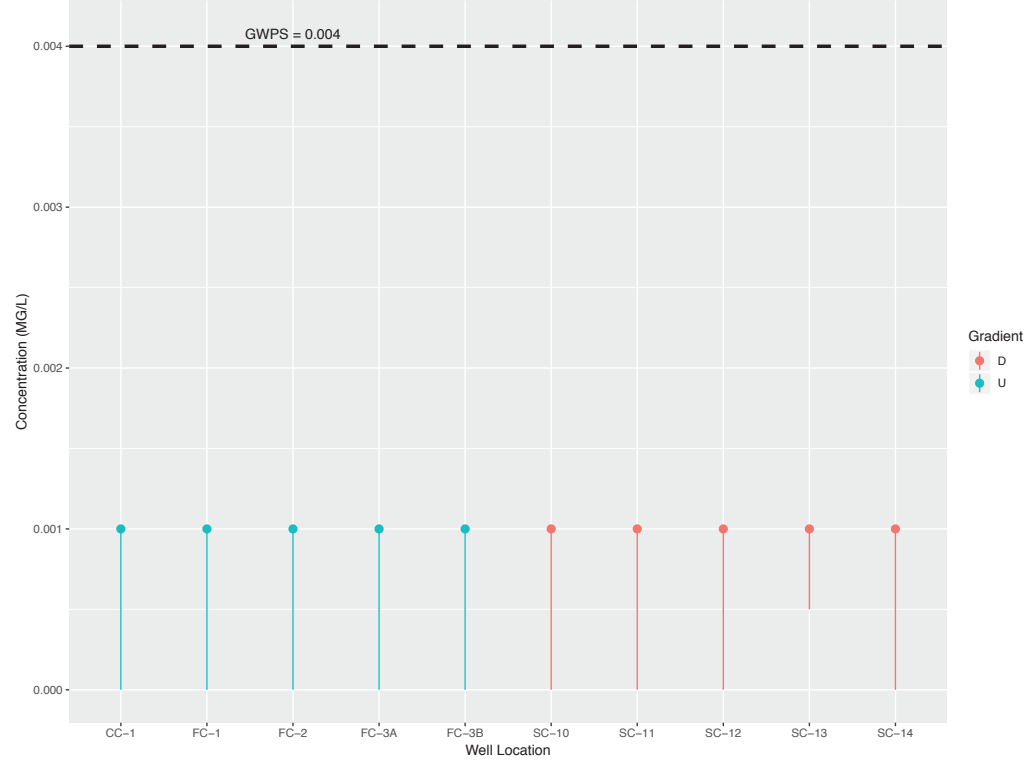
APPENDIX I



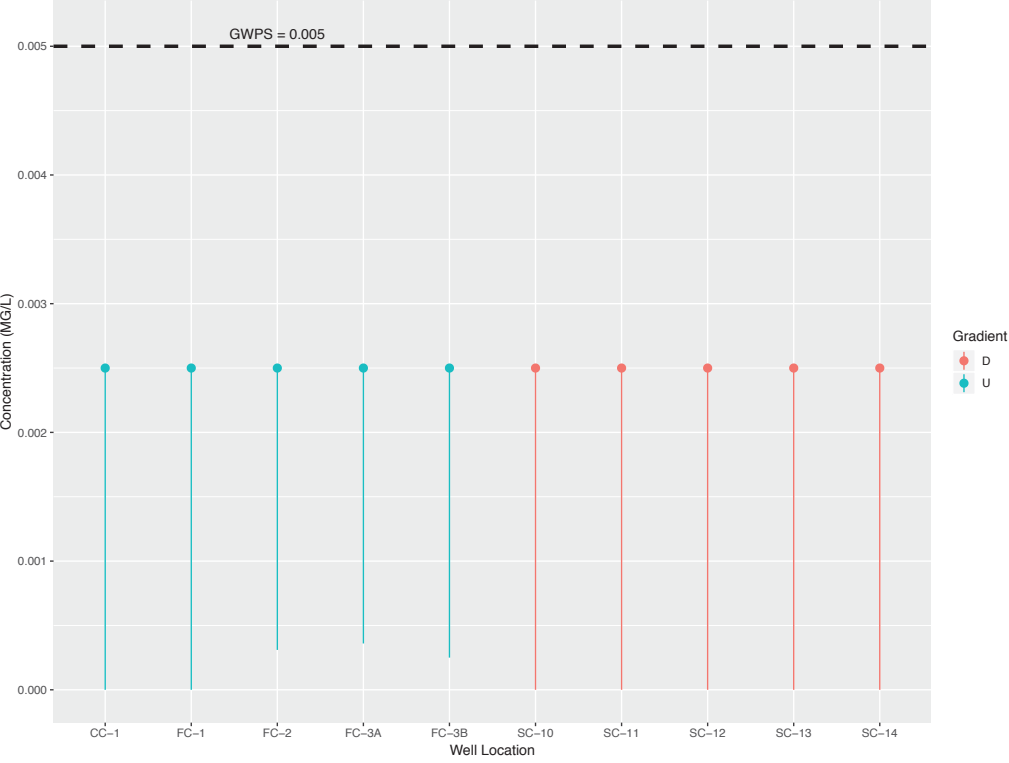
Confidence Interval Tests for BA: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)



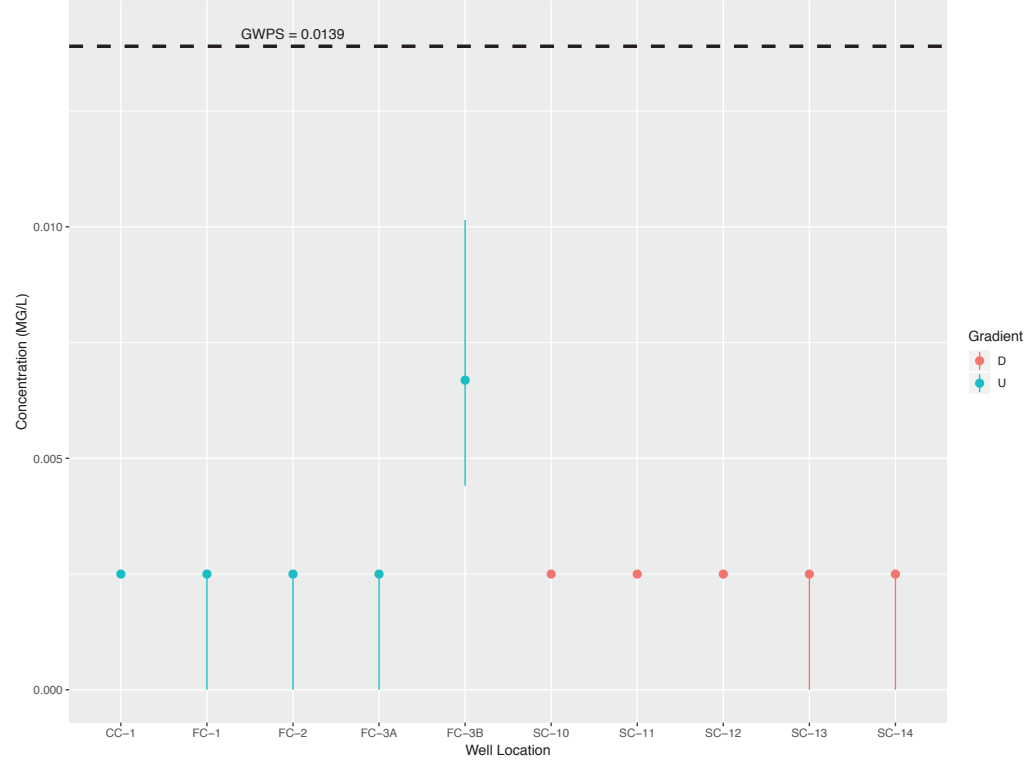
Confidence Interval Tests for BE: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)



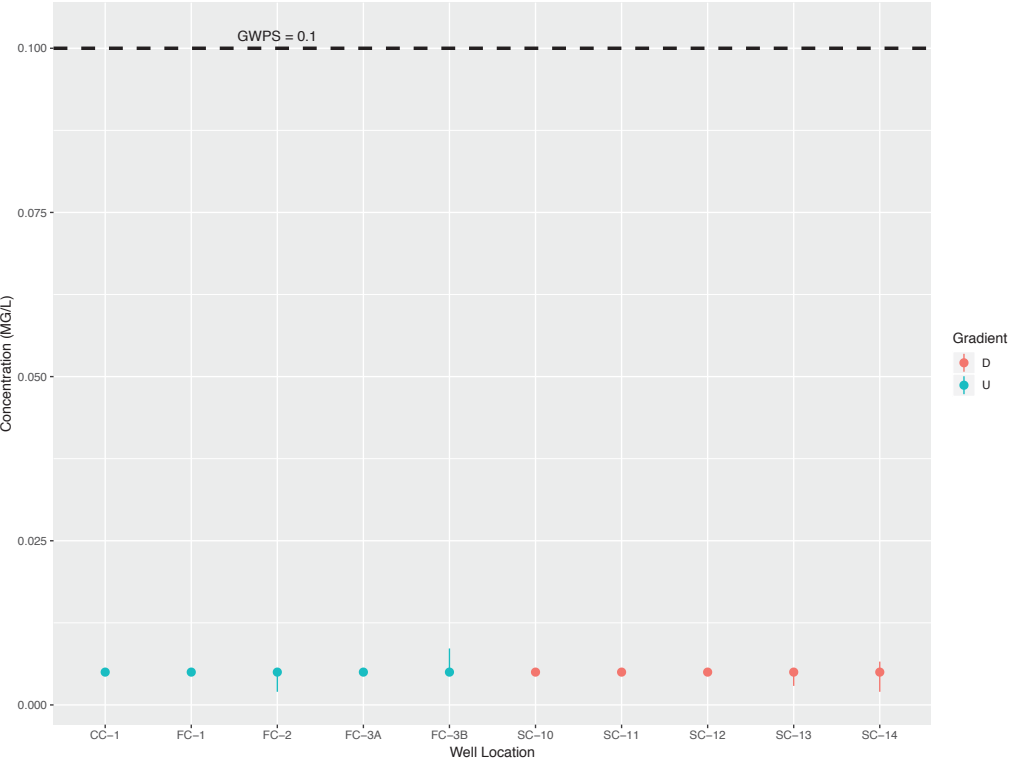
Confidence Interval Tests for CD: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)



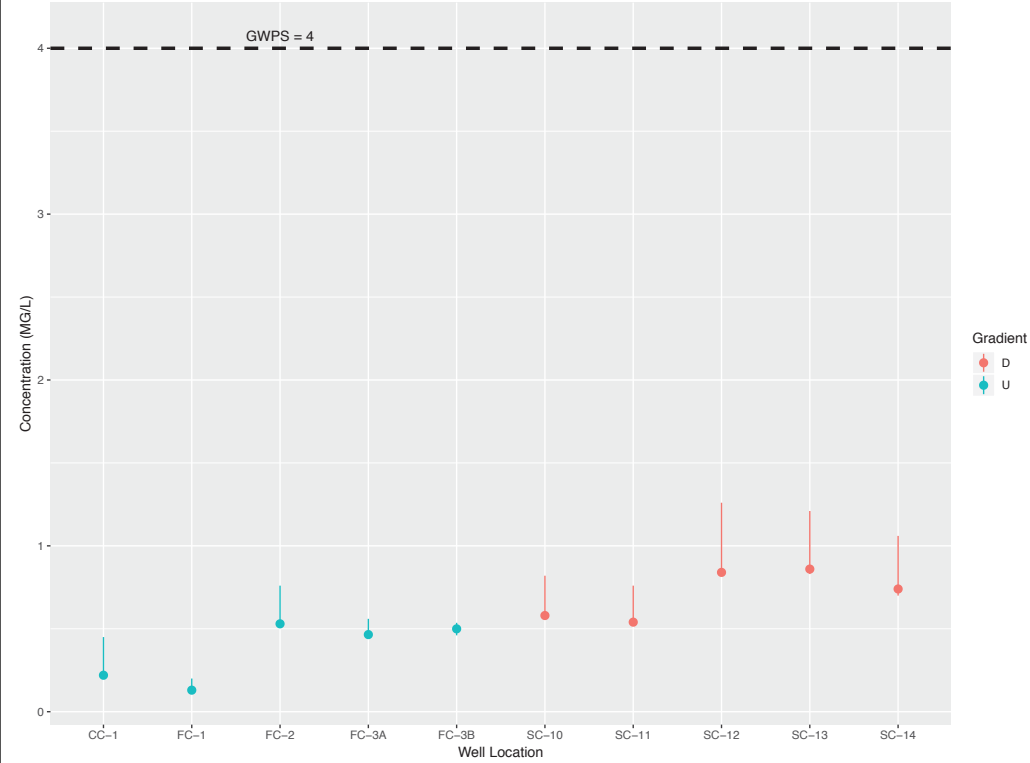
Confidence Interval Tests for CO: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)



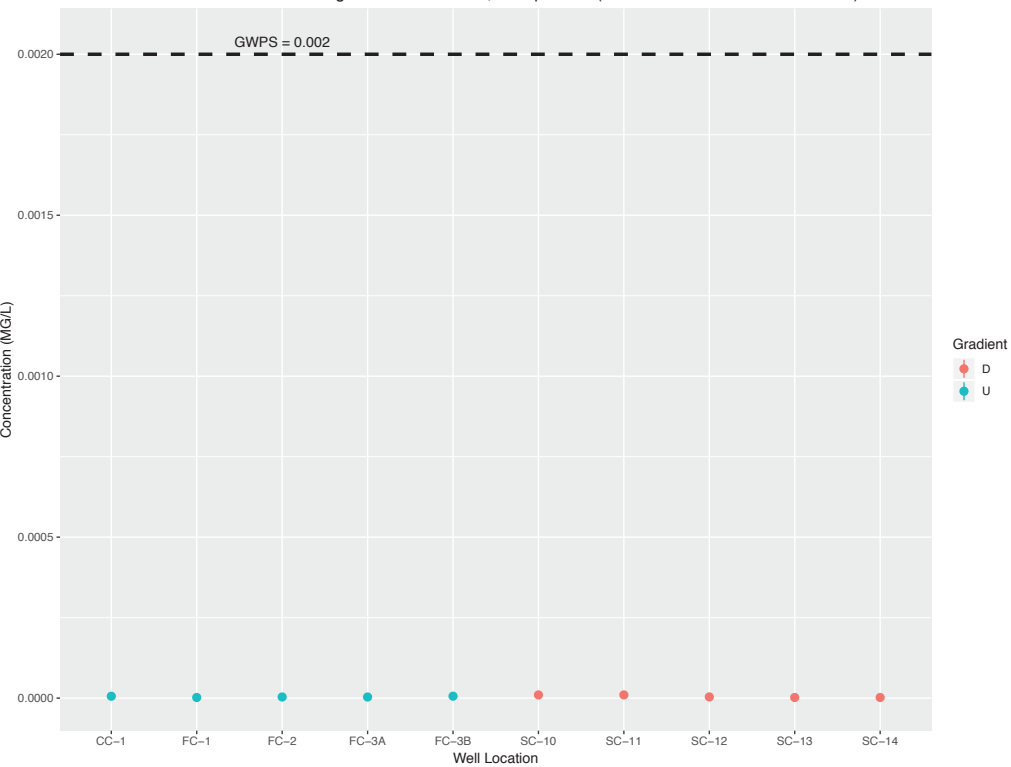
Confidence Interval Tests for CR: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)



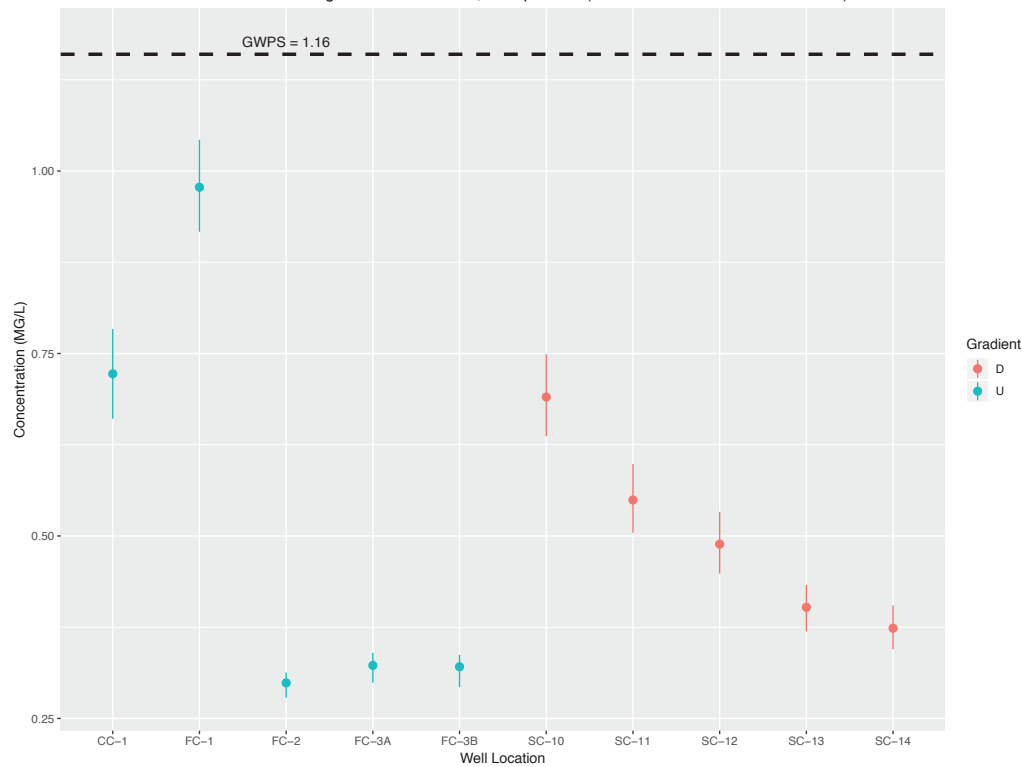
Confidence Interval Tests for F: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)



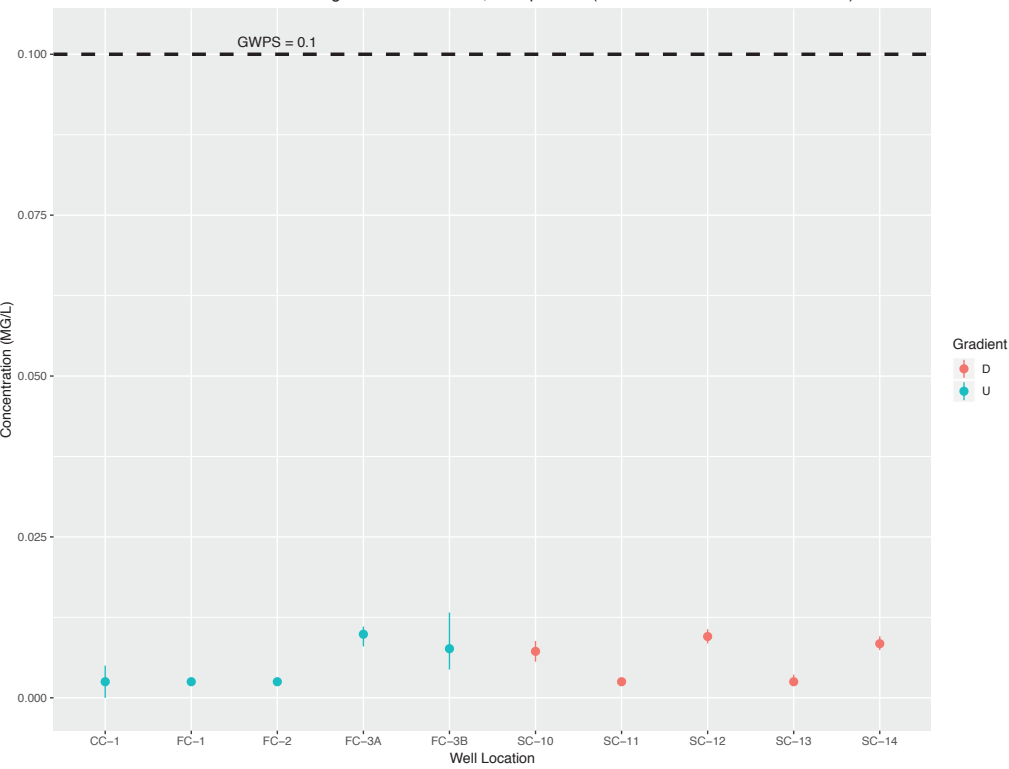
Confidence Interval Tests for HG: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)



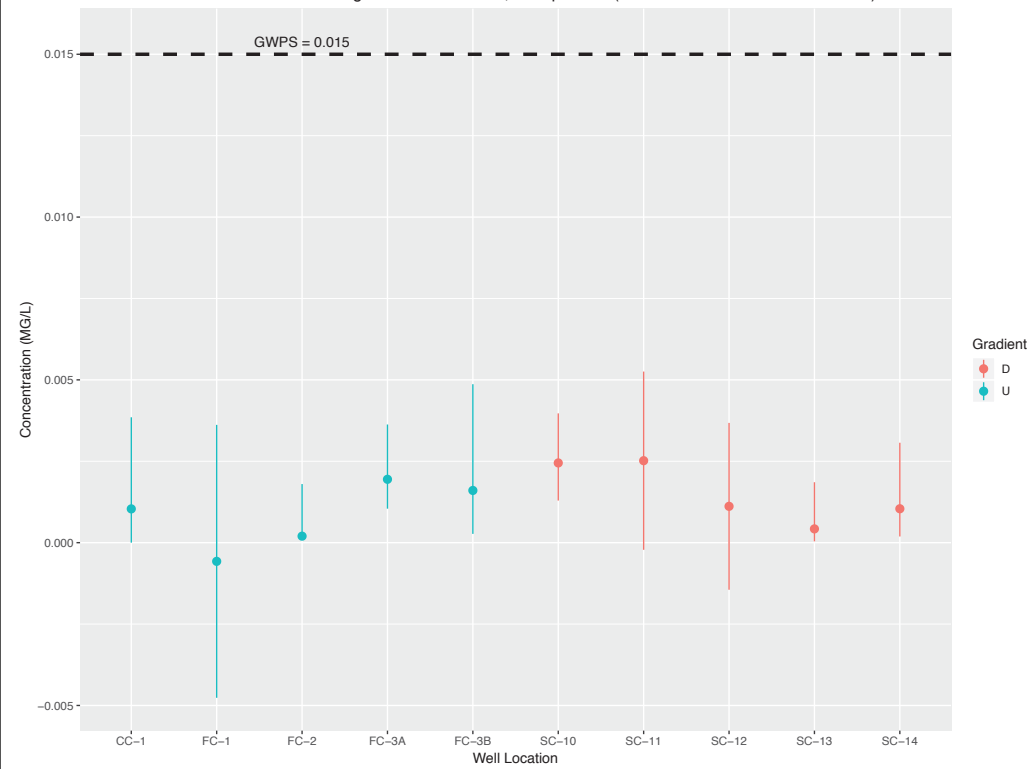
Confidence Interval Tests for LI: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)



Confidence Interval Tests for MO: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)

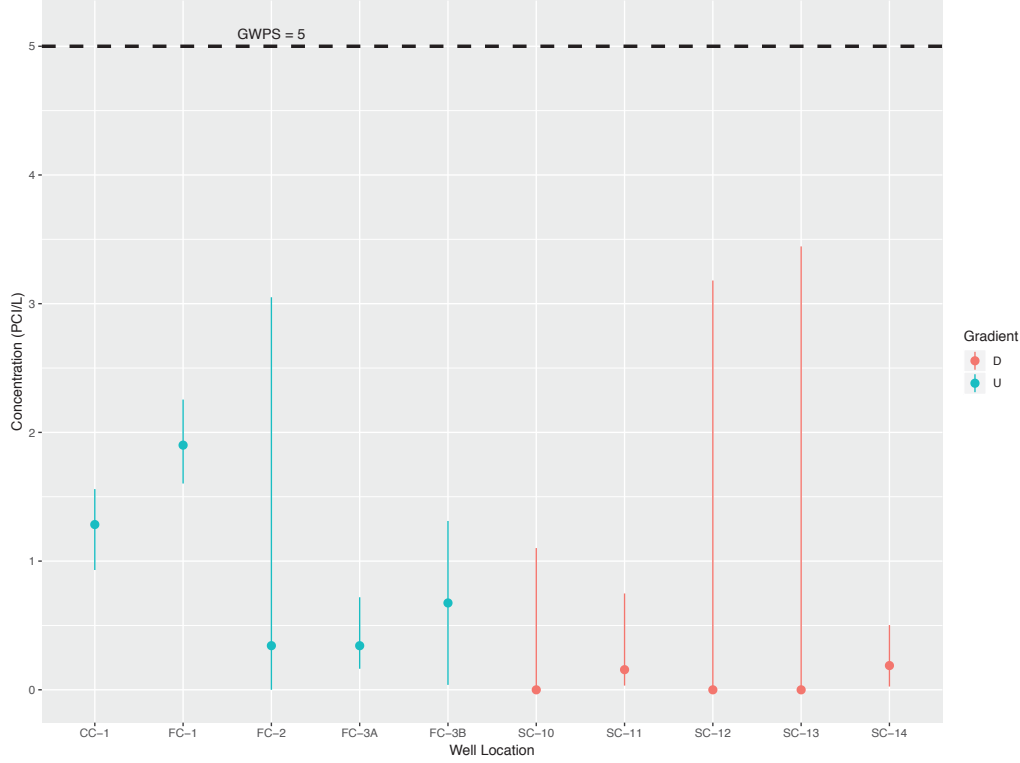


Confidence Interval Tests for PB: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)



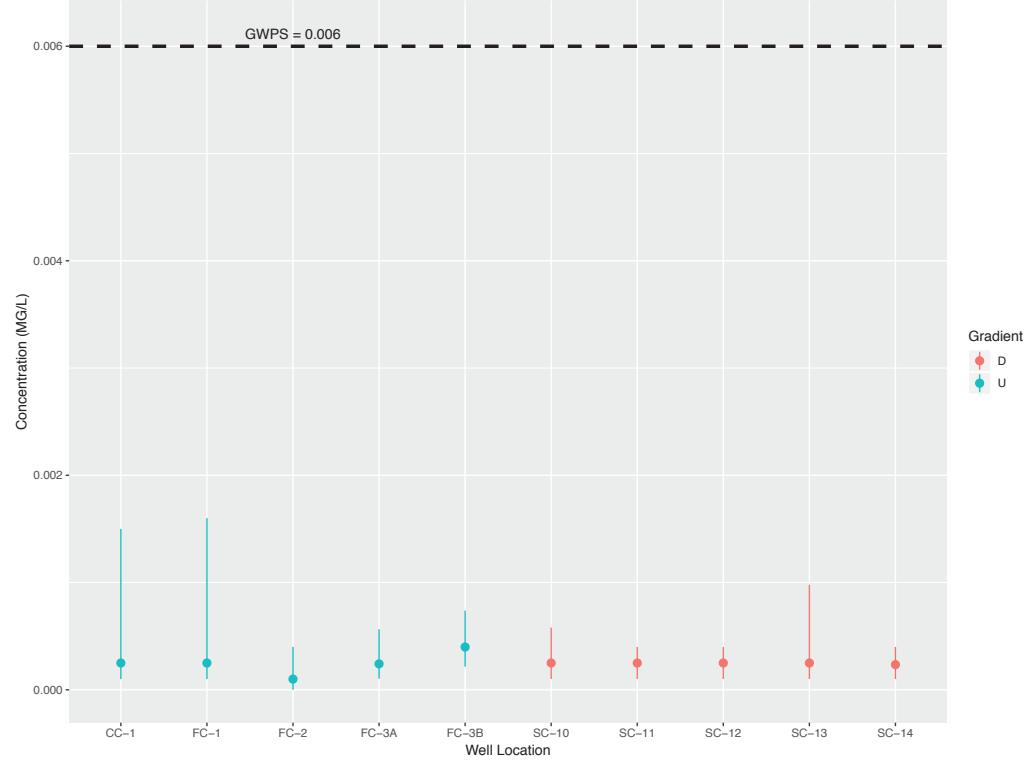
Confidence Interval Tests for Rad226+228: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)

GWPS = 5

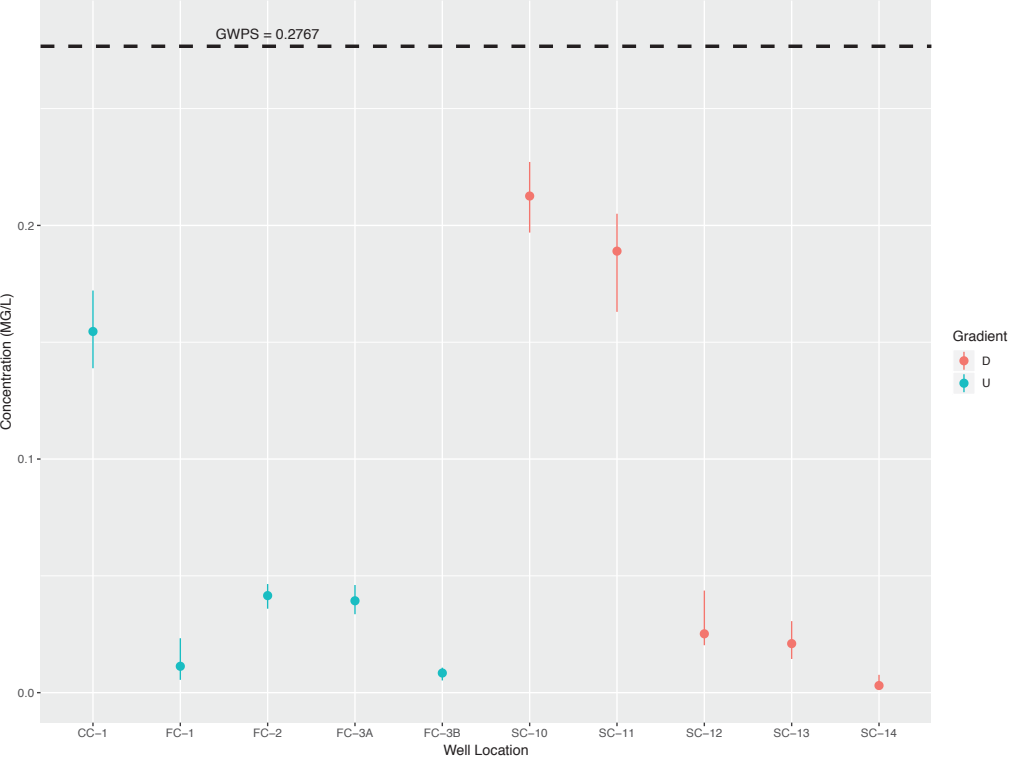


Confidence Interval Tests for SB: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)

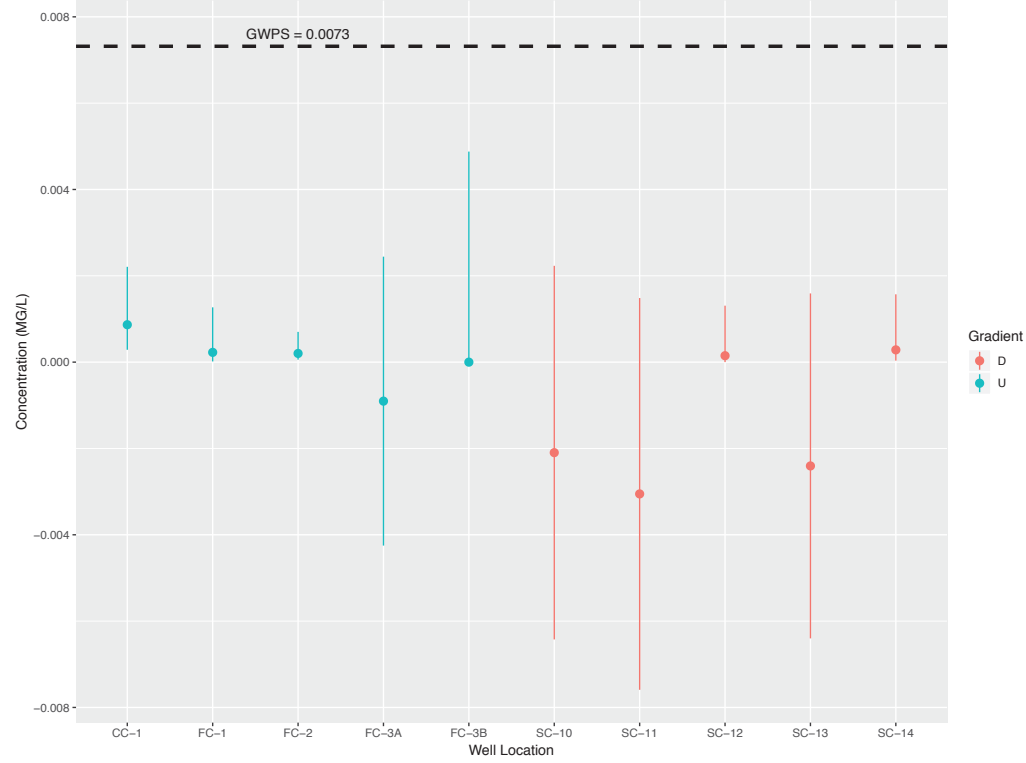
GWPS = 0.006



Confidence Interval Tests for SE: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)



Confidence Interval Tests for TL: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)



APPENDIX J

coc	locid	N	ND.pct	model	stat	conf	ave	lcl	ucl	gwps	units	SSI	gradient
AS	CC-1	13	15.4	BOOT	MEAN	0.98	0.0068	0.0047	0.0090	0.0110	MG/L	FALSE	U
AS	FC-1	12	16.7	BOOT	MEAN	0.98	0.0041	0.0027	0.0060	0.0110	MG/L	FALSE	U
AS	FC-2	12	41.7	BOOT	MEAN	0.98	0.0024	0.0013	0.0039	0.0110	MG/L	FALSE	U
AS	FC-3A	12	16.7	BOOT	MEAN	0.98	0.0024	0.0016	0.0036	0.0110	MG/L	FALSE	U
AS	FC-3B	10	0	BOOT	MEAN	0.98	0.0050	0.0037	0.0063	0.0110	MG/L	FALSE	U
AS	SC-10	12	0	BOOT	MEAN	0.98	0.0063	0.0044	0.0082	0.0110	MG/L	FALSE	D
AS	SC-11	11	9.1	BOOT	MEAN	0.98	0.0065	0.0042	0.0087	0.0110	MG/L	FALSE	D
AS	SC-12	12	25	BOOT	MEAN	0.98	0.0027	0.0015	0.0042	0.0110	MG/L	FALSE	D
AS	SC-13	11	54.5	BOOT	MEAN	0.98	0.0017	0.0011	0.0028	0.0110	MG/L	FALSE	D
AS	SC-14	10	70	BOOT	MEAN	0.98	0.0013	0.0005	0.0019	0.0110	MG/L	FALSE	D
BA	CC-1	13	15.4	BOOT	MEAN	0.98	0.0054	0.0049	0.0058	2.0000	MG/L	FALSE	U
BA	FC-1	12	0	BOOT	MEAN	0.98	0.0093	0.0089	0.0097	2.0000	MG/L	FALSE	U
BA	FC-2	11	18.2	BOOT	MEAN	0.98	0.0052	0.0049	0.0054	2.0000	MG/L	FALSE	U
BA	FC-3A	12	0	BOOT	MEAN	0.98	0.0226	0.0173	0.0286	2.0000	MG/L	FALSE	U
BA	FC-3B	10	0	BOOT	MEAN	0.98	0.0264	0.0195	0.0378	2.0000	MG/L	FALSE	U
BA	SC-10	12	0	BOOT	MEAN	0.98	0.0149	0.0131	0.0170	2.0000	MG/L	FALSE	D
BA	SC-11	11	0	BOOT	MEAN	0.98	0.0134	0.0104	0.0165	2.0000	MG/L	FALSE	D
BA	SC-12	12	0	BOOT	MEAN	0.98	0.0112	0.0091	0.0133	2.0000	MG/L	FALSE	D
BA	SC-13	11	9.1	BOOT	MEAN	0.98	0.0078	0.0069	0.0087	2.0000	MG/L	FALSE	D
BA	SC-14	10	10	BOOT	MEAN	0.98	0.0194	0.0081	0.0419	2.0000	MG/L	FALSE	D
BE	CC-1	13	100	NA	MEDIAN	NA	0.0010	0.0000	0.0020	0.0040	MG/L	FALSE	U
BE	FC-1	12	100	NA	MEDIAN	NA	0.0010	0.0000	0.0020	0.0040	MG/L	FALSE	U
BE	FC-2	11	100	NA	MEDIAN	NA	0.0010	0.0000	0.0020	0.0040	MG/L	FALSE	U
BE	FC-3A	12	100	NA	MEDIAN	NA	0.0010	0.0000	0.0020	0.0040	MG/L	FALSE	U
BE	FC-3B	10	100	NA	MEDIAN	NA	0.0010	0.0000	0.0020	0.0040	MG/L	FALSE	U
BE	SC-10	12	100	NA	MEDIAN	NA	0.0010	0.0000	0.0020	0.0040	MG/L	FALSE	D
BE	SC-11	11	100	NA	MEDIAN	NA	0.0010	0.0000	0.0020	0.0040	MG/L	FALSE	D
BE	SC-12	12	100	NA	MEDIAN	NA	0.0010	0.0000	0.0020	0.0040	MG/L	FALSE	D

coc	locid	N	ND.pct	model	stat	conf	ave	lcl	ucl	gwps	units	SSI	gradient
BE	SC-13	11	90.9	BOOT	MEAN	0.98	0.0002	0.0002	0.0010	0.0040	MG/L	FALSE	D
BE	SC-14	10	100	NA	MEDIAN	NA	0.0010	0.0000	0.0020	0.0040	MG/L	FALSE	D
CD	CC-1	13	100	NA	MEDIAN	NA	0.0025	0.0000	0.0050	0.0050	MG/L	FALSE	U
CD	FC-1	12	100	NA	MEDIAN	NA	0.0025	0.0000	0.0050	0.0050	MG/L	FALSE	U
CD	FC-2	11	90.9	BOOT	MEAN	0.98	0.0003	0.0003	0.0025	0.0050	MG/L	FALSE	U
CD	FC-3A	12	91.7	BOOT	MEAN	0.98	0.0004	0.0004	0.0025	0.0050	MG/L	FALSE	U
CD	FC-3B	10	90	BOOT	MEAN	0.98	0.0003	0.0003	0.0025	0.0050	MG/L	FALSE	U
CD	SC-10	12	100	NA	MEDIAN	NA	0.0025	0.0000	0.0050	0.0050	MG/L	FALSE	D
CD	SC-11	11	100	NA	MEDIAN	NA	0.0025	0.0000	0.0050	0.0050	MG/L	FALSE	D
CD	SC-12	12	100	NA	MEDIAN	NA	0.0025	0.0000	0.0050	0.0050	MG/L	FALSE	D
CD	SC-13	11	100	NA	MEDIAN	NA	0.0025	0.0000	0.0050	0.0050	MG/L	FALSE	D
CD	SC-14	10	100	NA	MEDIAN	NA	0.0025	0.0000	0.0050	0.0050	MG/L	FALSE	D
CO	CC-1	13	92.3	BOOT	MEAN	0.98	0.0051	0.0025	0.0054	0.0139	MG/L	FALSE	U
CO	FC-1	12	100	NA	MEDIAN	NA	0.0025	0.0000	0.0050	0.0139	MG/L	FALSE	U
CO	FC-2	11	100	NA	MEDIAN	NA	0.0025	0.0000	0.0050	0.0139	MG/L	FALSE	U
CO	FC-3A	12	100	NA	MEDIAN	NA	0.0025	0.0000	0.0050	0.0139	MG/L	FALSE	U
CO	FC-3B	10	20	BOOT	MEAN	0.98	0.0077	0.0059	0.0100	0.0139	MG/L	FALSE	U
CO	SC-10	12	91.7	BOOT	MEAN	0.98	0.0009	0.0009	0.0052	0.0139	MG/L	FALSE	D
CO	SC-11	11	90.9	BOOT	MEAN	0.98	0.0009	0.0009	0.0051	0.0139	MG/L	FALSE	D
CO	SC-12	12	91.7	BOOT	MEAN	0.98	0.0009	0.0009	0.0051	0.0139	MG/L	FALSE	D
CO	SC-13	11	100	NA	MEDIAN	NA	0.0025	0.0000	0.0050	0.0139	MG/L	FALSE	D
CO	SC-14	10	100	NA	MEDIAN	NA	0.0025	0.0000	0.0050	0.0139	MG/L	FALSE	D
CR	CC-1	13	92.3	BOOT	MEAN	0.98	0.0052	0.0043	0.0064	0.1000	MG/L	FALSE	U
CR	FC-1	12	91.7	BOOT	MEAN	0.98	0.0050	0.0043	0.0060	0.1000	MG/L	FALSE	U
CR	FC-2	10	90	BOOT	MEAN	0.98	0.0047	0.0041	0.0054	0.1000	MG/L	FALSE	U
CR	FC-3A	12	91.7	BOOT	MEAN	0.98	0.0051	0.0043	0.0062	0.1000	MG/L	FALSE	U
CR	FC-3B	10	80	BOOT	MEAN	0.98	0.0072	0.0050	0.0086	0.1000	MG/L	FALSE	U
CR	SC-10	12	91.7	BOOT	MEAN	0.98	0.0050	0.0043	0.0061	0.1000	MG/L	FALSE	D

coc	locid	N	ND.pct	model	stat	conf	ave	lcl	ucl	gwps	units	SSI	gradient
CR	SC-11	11	90.9	BOOT	MEAN	0.98	0.0057	0.0042	0.0074	0.1000	MG/L	FALSE	D
CR	SC-12	12	91.7	BOOT	MEAN	0.98	0.0054	0.0043	0.0069	0.1000	MG/L	FALSE	D
CR	SC-13	11	90.9	BOOT	MEAN	0.98	0.0029	0.0029	0.0050	0.1000	MG/L	FALSE	D
CR	SC-14	10	90	BOOT	MEAN	0.98	0.0053	0.0041	0.0066	0.1000	MG/L	FALSE	D
F	CC-1	13	0	BOOT	MEAN	0.98	0.2523	0.2085	0.3192	4.0000	MG/L	FALSE	U
F	FC-1	12	0	BOOT	MEAN	0.98	0.1383	0.1233	0.1600	4.0000	MG/L	FALSE	U
F	FC-2	11	0	BOOT	MEAN	0.98	0.6400	0.5318	0.8009	4.0000	MG/L	FALSE	U
F	FC-3A	12	0	BOOT	MEAN	0.98	0.4867	0.4633	0.5242	4.0000	MG/L	FALSE	U
F	FC-3B	10	0	BOOT	MEAN	0.98	0.4980	0.4690	0.5250	4.0000	MG/L	FALSE	U
F	SC-10	12	0	BOOT	MEAN	0.98	0.6200	0.5733	0.6892	4.0000	MG/L	FALSE	D
F	SC-11	11	0	BOOT	MEAN	0.98	0.5827	0.5373	0.6491	4.0000	MG/L	FALSE	D
F	SC-12	12	0	BOOT	MEAN	0.98	0.9117	0.8300	1.0300	4.0000	MG/L	FALSE	D
F	SC-13	11	0	BOOT	MEAN	0.98	0.9473	0.8464	1.0746	4.0000	MG/L	FALSE	D
F	SC-14	10	0	BOOT	MEAN	0.98	0.7980	0.7260	0.9010	4.0000	MG/L	FALSE	D
HG	CC-1	13	0	BOOT	MEAN	0.98	0.0000	0.0000	0.0000	0.0020	MG/L	FALSE	U
HG	FC-1	12	0	BOOT	MEAN	0.98	0.0000	0.0000	0.0000	0.0020	MG/L	FALSE	U
HG	FC-2	10	0	BOOT	MEAN	0.98	0.0000	0.0000	0.0000	0.0020	MG/L	FALSE	U
HG	FC-3A	12	0	BOOT	MEAN	0.98	0.0000	0.0000	0.0000	0.0020	MG/L	FALSE	U
HG	FC-3B	9	0	BOOT	MEAN	0.98	0.0000	0.0000	0.0000	0.0020	MG/L	FALSE	U
HG	SC-10	12	0	BOOT	MEAN	0.98	0.0000	0.0000	0.0000	0.0020	MG/L	FALSE	D
HG	SC-11	11	0	BOOT	MEAN	0.98	0.0000	0.0000	0.0000	0.0020	MG/L	FALSE	D
HG	SC-12	12	0	BOOT	MEAN	0.98	0.0000	0.0000	0.0000	0.0020	MG/L	FALSE	D
HG	SC-13	11	0	BOOT	MEAN	0.98	0.0000	0.0000	0.0000	0.0020	MG/L	FALSE	D
HG	SC-14	10	10	BOOT	MEAN	0.98	0.0000	0.0000	0.0000	0.0020	MG/L	FALSE	D
LI	CC-1	13	0	BOOT	MEAN	0.98	0.7222	0.6718	0.7718	1.0920	MG/L	FALSE	U
LI	FC-1	12	0	BOOT	MEAN	0.98	0.9809	0.9312	1.0357	1.0920	MG/L	FALSE	U
LI	FC-2	11	0	BOOT	MEAN	0.98	0.2945	0.2807	0.3082	1.0920	MG/L	FALSE	U
LI	FC-3A	12	0	BOOT	MEAN	0.98	0.3166	0.2963	0.3348	1.0920	MG/L	FALSE	U

coc	locid	N	ND.pct	model	stat	conf	ave	lcl	ucl	gwps	units	SSI	gradient
LI	FC-3B	10	0	BOOT	MEAN	0.98	0.3106	0.2844	0.3318	1.0920	MG/L	FALSE	U
LI	SC-10	12	0	BOOT	MEAN	0.98	0.6939	0.6512	0.7423	1.0920	MG/L	FALSE	D
LI	SC-11	11	0	BOOT	MEAN	0.98	0.5520	0.5162	0.5905	1.0920	MG/L	FALSE	D
LI	SC-12	12	0	BOOT	MEAN	0.98	0.4916	0.4575	0.5274	1.0920	MG/L	FALSE	D
LI	SC-13	11	0	BOOT	MEAN	0.98	0.4006	0.3755	0.4252	1.0920	MG/L	FALSE	D
LI	SC-14	10	0	BOOT	MEAN	0.98	0.3750	0.3530	0.4000	1.0920	MG/L	FALSE	D
MO	CC-1	13	100	NA	MEDIAN	NA	0.0025	0.0000	0.0100	0.1000	MG/L	FALSE	U
MO	FC-1	12	91.7	BOOT	MEAN	0.98	0.0015	0.0015	0.0031	0.1000	MG/L	FALSE	U
MO	FC-2	11	81.8	BOOT	MEAN	0.98	0.0022	0.0014	0.0030	0.1000	MG/L	FALSE	U
MO	FC-3A	12	8.3	BOOT	MEAN	0.98	0.0094	0.0077	0.0106	0.1000	MG/L	FALSE	U
MO	FC-3B	10	10	BOOT	MEAN	0.98	0.0092	0.0057	0.0136	0.1000	MG/L	FALSE	U
MO	SC-10	12	0	BOOT	MEAN	0.98	0.0072	0.0059	0.0086	0.1000	MG/L	FALSE	D
MO	SC-11	11	81.8	BOOT	MEAN	0.98	0.0025	0.0016	0.0033	0.1000	MG/L	FALSE	D
MO	SC-12	12	0	BOOT	MEAN	0.98	0.0096	0.0087	0.0105	0.1000	MG/L	FALSE	D
MO	SC-13	11	81.8	BOOT	MEAN	0.98	0.0037	0.0025	0.0050	0.1000	MG/L	FALSE	D
MO	SC-14	10	0	BOOT	MEAN	0.98	0.0085	0.0078	0.0095	0.1000	MG/L	FALSE	D
PB	CC-1	13	53.8	BOOT	MEAN	0.98	0.0020	0.0007	0.0033	0.0150	MG/L	FALSE	U
PB	FC-1	12	58.3	BOOT	MEAN	0.98	0.0021	0.0004	0.0043	0.0150	MG/L	FALSE	U
PB	FC-2	11	72.7	BOOT	MEAN	0.98	0.0012	0.0002	0.0034	0.0150	MG/L	FALSE	U
PB	FC-3A	12	8.3	BOOT	MEAN	0.98	0.0027	0.0014	0.0045	0.0150	MG/L	FALSE	U
PB	FC-3B	10	30	BOOT	MEAN	0.98	0.0028	0.0009	0.0051	0.0150	MG/L	FALSE	U
PB	SC-10	12	8.3	BOOT	MEAN	0.98	0.0027	0.0016	0.0040	0.0150	MG/L	FALSE	D
PB	SC-11	11	27.3	BOOT	MEAN	0.98	0.0030	0.0013	0.0051	0.0150	MG/L	FALSE	D
PB	SC-12	12	41.7	BOOT	MEAN	0.98	0.0020	0.0006	0.0036	0.0150	MG/L	FALSE	D
PB	SC-13	11	54.5	BOOT	MEAN	0.98	0.0013	0.0003	0.0030	0.0150	MG/L	FALSE	D
PB	SC-14	10	40	BOOT	MEAN	0.98	0.0018	0.0006	0.0034	0.0150	MG/L	FALSE	D
Rad22fCC-1	12	25	BOOT	MEAN	0.98	1.1875	0.7602	1.5265	5.7979	PCI/L	FALSE	U	
Rad22fFC-1	10	20	BOOT	MEAN	0.98	1.9408	1.6324	2.2938	5.7979	PCI/L	FALSE	U	

coc	locid	N	ND.pct	model	stat	conf	ave	lcl	ucl	gwps	units	SSI	gradient
Rad22fFC-2	9	66.7	BOOT	MEAN	0.98	0.2210	0.0490	1.1603	5.7979	PCI/L	FALSE	U	
Rad22fFC-3A	9	55.6	BOOT	MEAN	0.98	0.4059	0.0720	0.9104	5.7979	PCI/L	FALSE	U	
Rad22fFC-3B	9	33.3	BOOT	MEAN	0.98	0.7521	0.2560	1.2696	5.7979	PCI/L	FALSE	U	
Rad22fSC-10	9	55.6	BOOT	MEAN	0.98	0.5316	0.1173	1.0237	5.7979	PCI/L	FALSE	D	
Rad22fSC-11	9	55.6	BOOT	MEAN	0.98	0.5104	0.0506	1.3899	5.7979	PCI/L	FALSE	D	
Rad22fSC-12	9	77.8	BOOT	MEAN	0.98	0.1081	0.0331	1.3377	5.7979	PCI/L	FALSE	D	
Rad22fSC-13	9	88.9	BOOT	MEAN	0.98	0.0554	0.0000	1.4612	5.7979	PCI/L	FALSE	D	
Rad22fSC-14	9	55.6	BOOT	MEAN	0.98	0.2683	0.0602	0.5378	5.7979	PCI/L	FALSE	D	
SB	CC-1	13	84.6	BOOT	MEAN	0.98	0.0003	0.0002	0.0011	0.0060	MG/L	FALSE	U
SB	FC-1	12	91.7	BOOT	MEAN	0.98	0.0003	0.0001	0.0012	0.0060	MG/L	FALSE	U
SB	FC-2	11	100	NA	MEDIAN	NA	0.0001	0.0000	0.0008	0.0060	MG/L	FALSE	U
SB	FC-3A	12	50	BOOT	MEAN	0.98	0.0005	0.0002	0.0008	0.0060	MG/L	FALSE	U
SB	FC-3B	10	50	BOOT	MEAN	0.98	0.0005	0.0003	0.0009	0.0060	MG/L	FALSE	U
SB	SC-10	12	75	BOOT	MEAN	0.98	0.0003	0.0002	0.0006	0.0060	MG/L	FALSE	D
SB	SC-11	11	81.8	BOOT	MEAN	0.98	0.0003	0.0002	0.0004	0.0060	MG/L	FALSE	D
SB	SC-12	12	83.3	BOOT	MEAN	0.98	0.0003	0.0002	0.0004	0.0060	MG/L	FALSE	D
SB	SC-13	11	72.7	BOOT	MEAN	0.98	0.0009	0.0002	0.0027	0.0060	MG/L	FALSE	D
SB	SC-14	10	80	BOOT	MEAN	0.98	0.0002	0.0002	0.0003	0.0060	MG/L	FALSE	D
SE	CC-1	13	0	BOOT	MEAN	0.98	0.1562	0.1432	0.1719	0.1990	MG/L	FALSE	U
SE	FC-1	12	0	BOOT	MEAN	0.98	0.0166	0.0085	0.0283	0.1990	MG/L	FALSE	U
SE	FC-2	11	9.1	BOOT	MEAN	0.98	0.0387	0.0284	0.0453	0.1990	MG/L	FALSE	U
SE	FC-3A	12	0	BOOT	MEAN	0.98	0.0401	0.0350	0.0454	0.1990	MG/L	FALSE	U
SE	FC-3B	10	0	BOOT	MEAN	0.98	0.0077	0.0052	0.0100	0.1990	MG/L	FALSE	U
SE	SC-10	12	0	BOOT	MEAN	0.98	0.2118	0.1985	0.2234	0.1990	MG/L	FALSE	D
SE	SC-11	11	0	BOOT	MEAN	0.98	0.1972	0.1722	0.2415	0.1990	MG/L	FALSE	D
SE	SC-12	12	0	BOOT	MEAN	0.98	0.0308	0.0236	0.0423	0.1990	MG/L	FALSE	D
SE	SC-13	11	9.1	BOOT	MEAN	0.98	0.0224	0.0139	0.0324	0.1990	MG/L	FALSE	D
SE	SC-14	10	20	BOOT	MEAN	0.98	0.0049	0.0022	0.0094	0.1990	MG/L	FALSE	D

APPENDIX K

coc	locid	N	ND.pct	model	stat	conf	ave	lcl	ucl	gwps	units	SSI	gradient
TL	CC-1	13	30.8	BOOT	MEAN	0.98	0.0016	0.0006	0.0029	0.0063	MG/L	FALSE	U
TL	FC-1	12	50	BOOT	MEAN	0.98	0.0012	0.0003	0.0024	0.0063	MG/L	FALSE	U
TL	FC-2	11	63.6	BOOT	MEAN	0.98	0.0007	0.0002	0.0015	0.0063	MG/L	FALSE	U
TL	FC-3A	12	58.3	BOOT	MEAN	0.98	0.0015	0.0003	0.0030	0.0063	MG/L	FALSE	U
TL	FC-3B	10	60	BOOT	MEAN	0.98	0.0015	0.0003	0.0032	0.0063	MG/L	FALSE	U
TL	SC-10	12	58.3	BOOT	MEAN	0.98	0.0015	0.0003	0.0033	0.0063	MG/L	FALSE	D
TL	SC-11	11	63.6	BOOT	MEAN	0.98	0.0012	0.0003	0.0027	0.0063	MG/L	FALSE	D
TL	SC-12	12	58.3	BOOT	MEAN	0.98	0.0012	0.0003	0.0025	0.0063	MG/L	FALSE	D
TL	SC-13	11	63.6	BOOT	MEAN	0.98	0.0011	0.0002	0.0025	0.0063	MG/L	FALSE	D
TL	SC-14	10	60	BOOT	MEAN	0.98	0.0009	0.0003	0.0019	0.0063	MG/L	FALSE	D

Footnotes:

coc = Contaminant of Concern

locid = well location

N = Sample size

ND.pct = Percentage of non-detects

model = method used to conduct confidence interval test; BOOT = bootstrap

stat = population statistic being estimated and tested

conf = statistical confidence of confidence interval

ave = estimated statistic

lcl = lower confidence limit

ucl = upper confidence limit

gwps = groundwater protection standard

SSI = flag indicating whether or not LCL exceeds GWPS

APPENDIX L

coc	N	ND.pct	model	cov	conf	utl	units	reglim	gwps
AS	59	18.6	BOOT	0.95	0.95	0.0110	MG/L	0.01	0.0110
BA	58	6.9	BOOT	0.95	0.95	0.0652	MG/L	2	2.0000
BE	58	100	NA	NA	NA	0.0020	MG/L	0.004	0.0040
CD	58	94.8	BOOT	0.95	0.95	0.0021	MG/L	0.005	0.0050
CO	58	84.5	BOOT	0.95	0.95	0.0139	MG/L	0.006	0.0139
CR	57	89.5	BOOT	0.95	0.95	0.0093	MG/L	0.1	0.1000
F	58	0	BOOT	0.95	0.95	0.8275	MG/L	4	4.0000
HG	56	0	BOOT	0.95	0.95	0.0000	MG/L	0.002	0.0020
LI	58	0	BOOT	0.95	0.95	1.0920	MG/L	0.04	1.0920
MO	58	60.3	BOOT	0.95	0.95	0.0201	MG/L	0.1	0.1000
PB	58	44.8	BOOT	0.95	0.95	0.0090	MG/L	0.015	0.0150
Rad226+228	49	38.8	BOOT	0.95	0.95	5.7979	PCI/L	5	5.7979
SB	58	75.9	BOOT	0.95	0.95	0.0048	MG/L	0.006	0.0060
SE	58	1.7	BOOT	0.95	0.95	0.1990	MG/L	0.05	0.1990
TL	58	51.7	BOOT	0.95	0.95	0.0063	MG/L	0.002	0.0063

Footnotes:

coc = Contaminant of Concern

N = Combined background sample size

ND.pct = Percentage of non-detects in background

model = method used to produce UTL estimates; BOOT = bootstrap; NA denotes cases when all data are non-detect and no method could be used

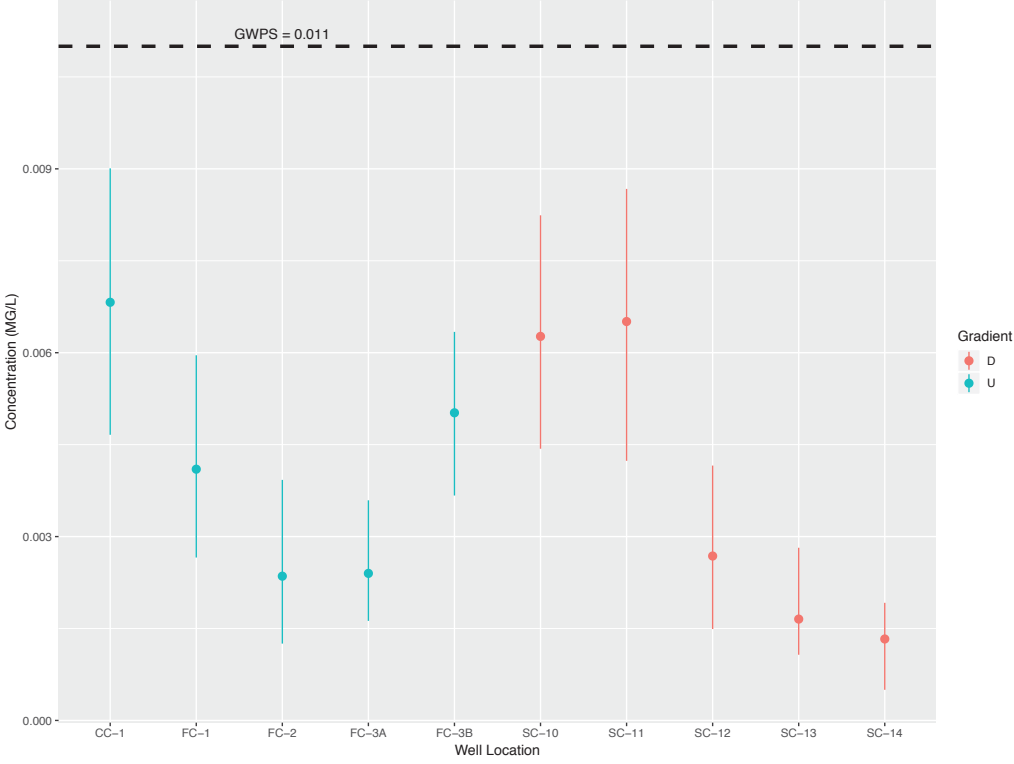
cov = statistical coverage of upper tolerance limit (UTL)

conf = statistical confidence of UTL

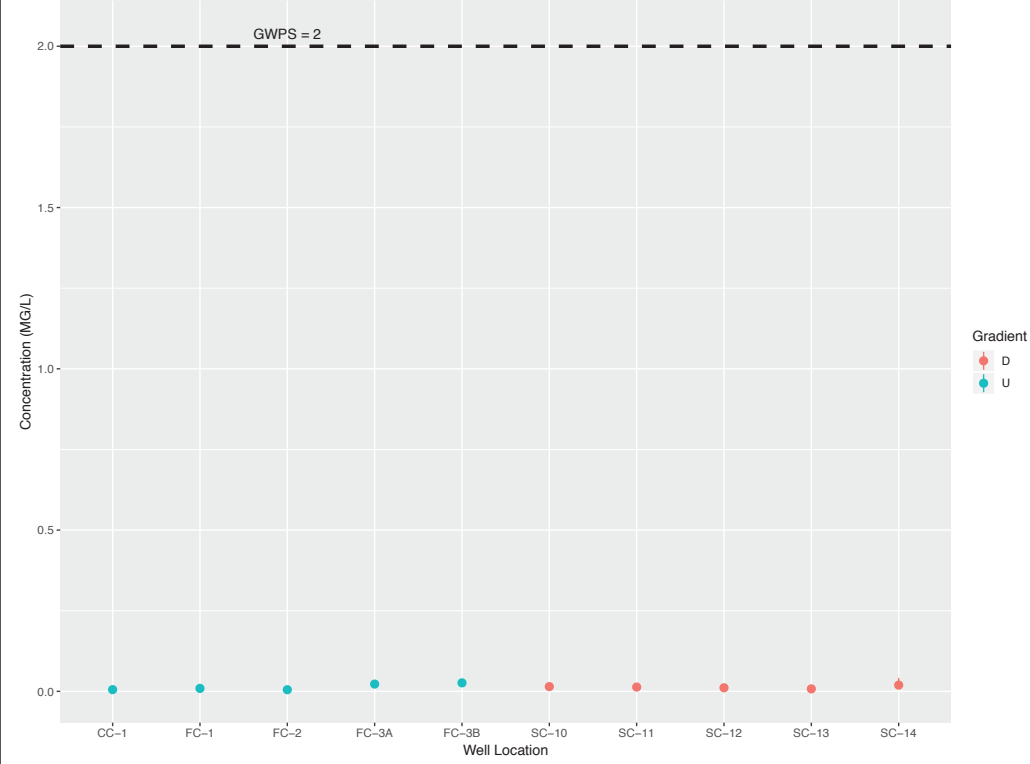
reglim = published regulatory limit or MCL

gwps = groundwater protection standard

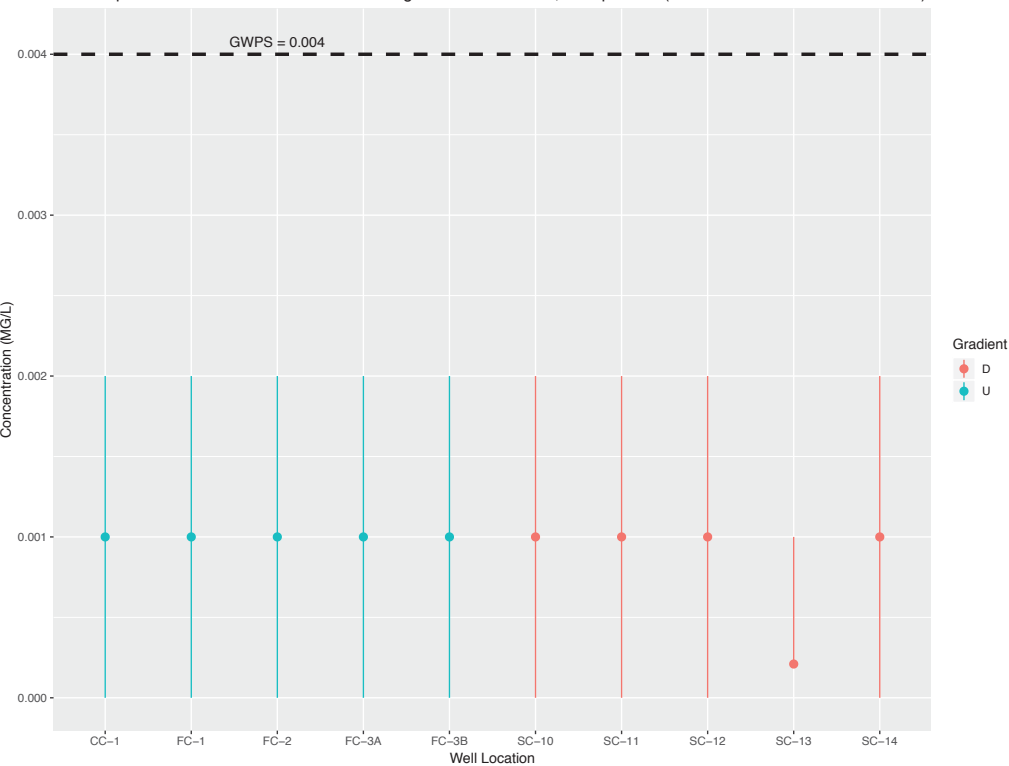
Bootstrap Confidence Interval Tests for AS: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)



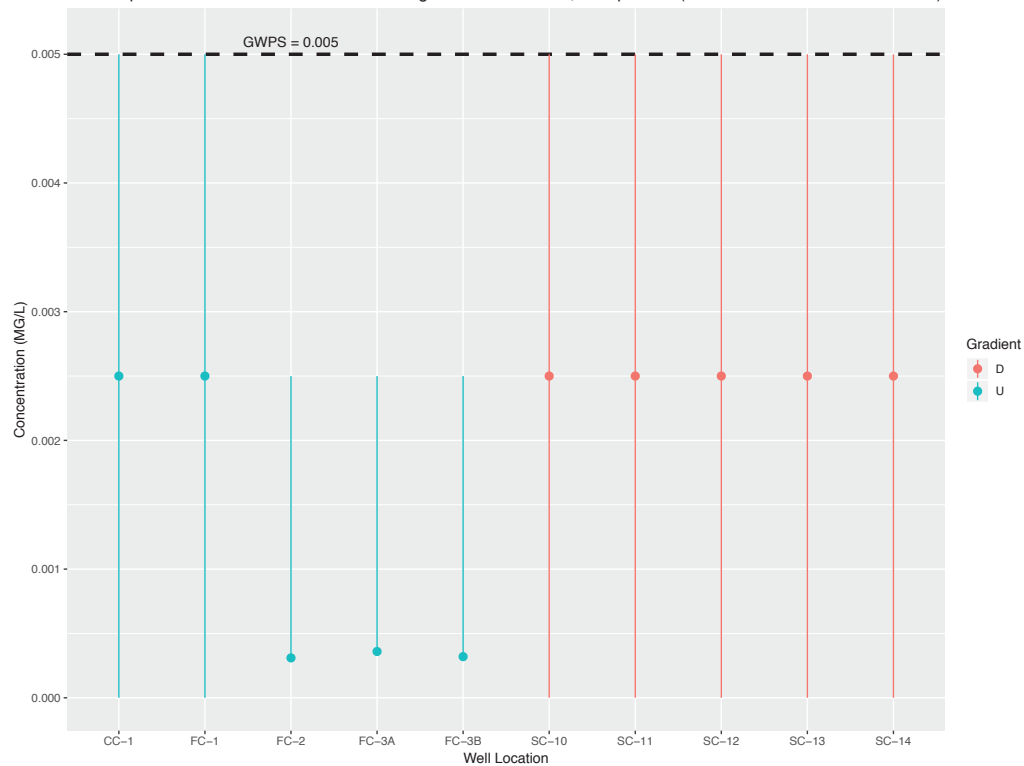
Bootstrap Confidence Interval Tests for BA: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)



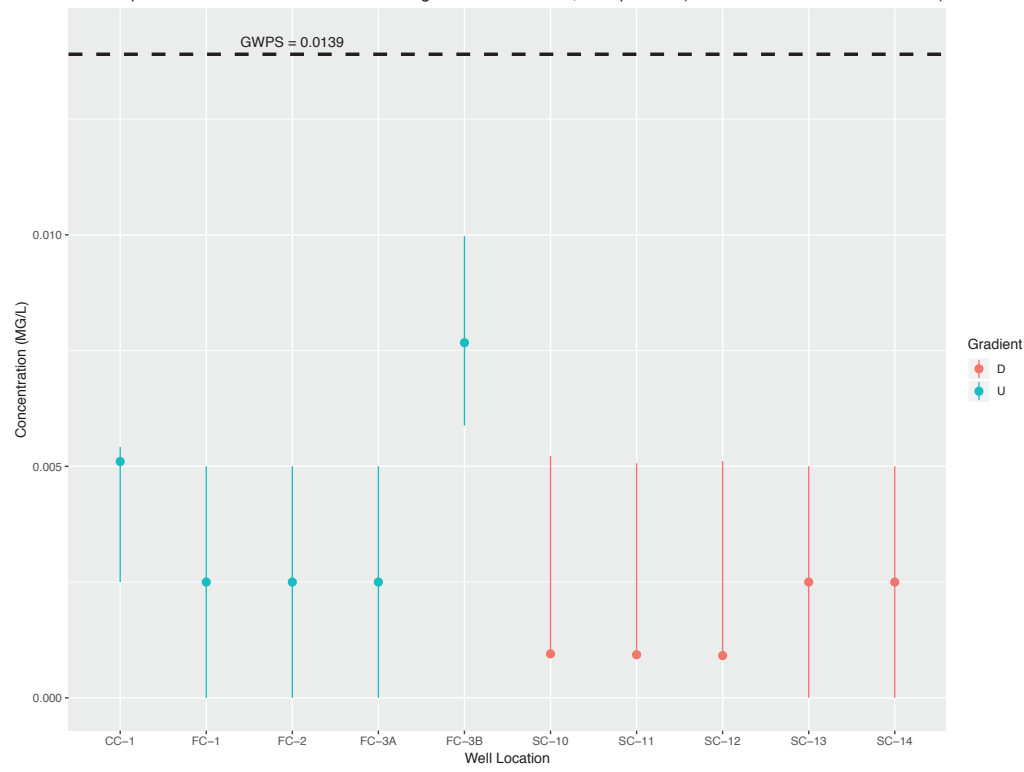
Bootstrap Confidence Interval Tests for BE: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)



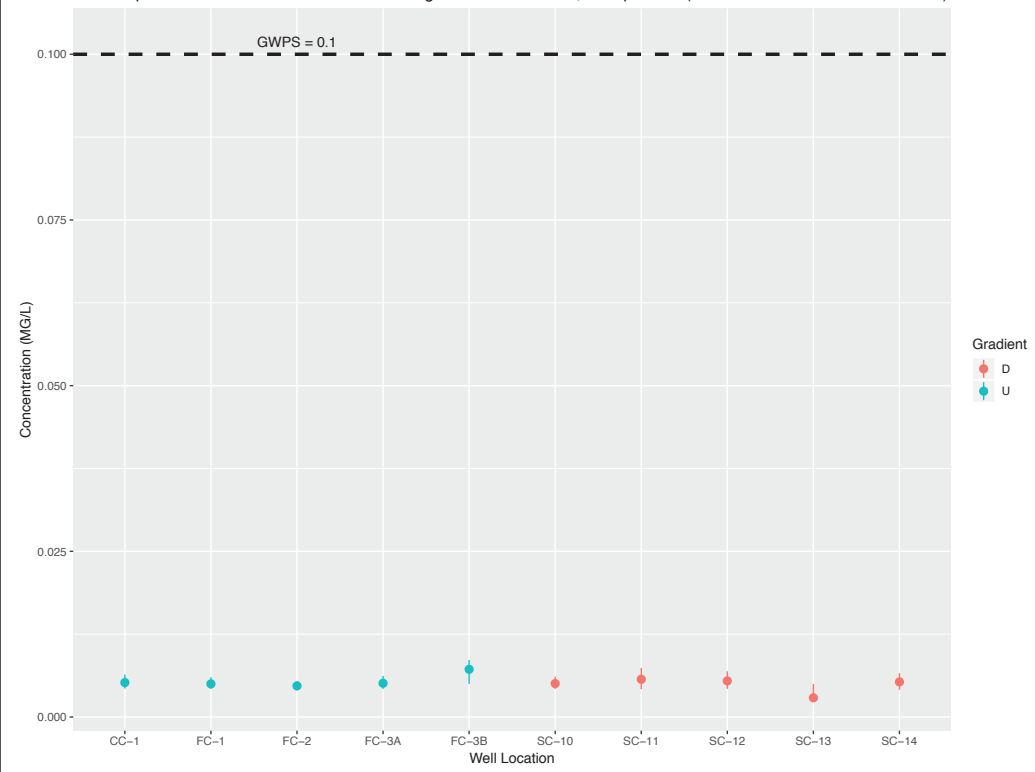
Bootstrap Confidence Interval Tests for CD: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)



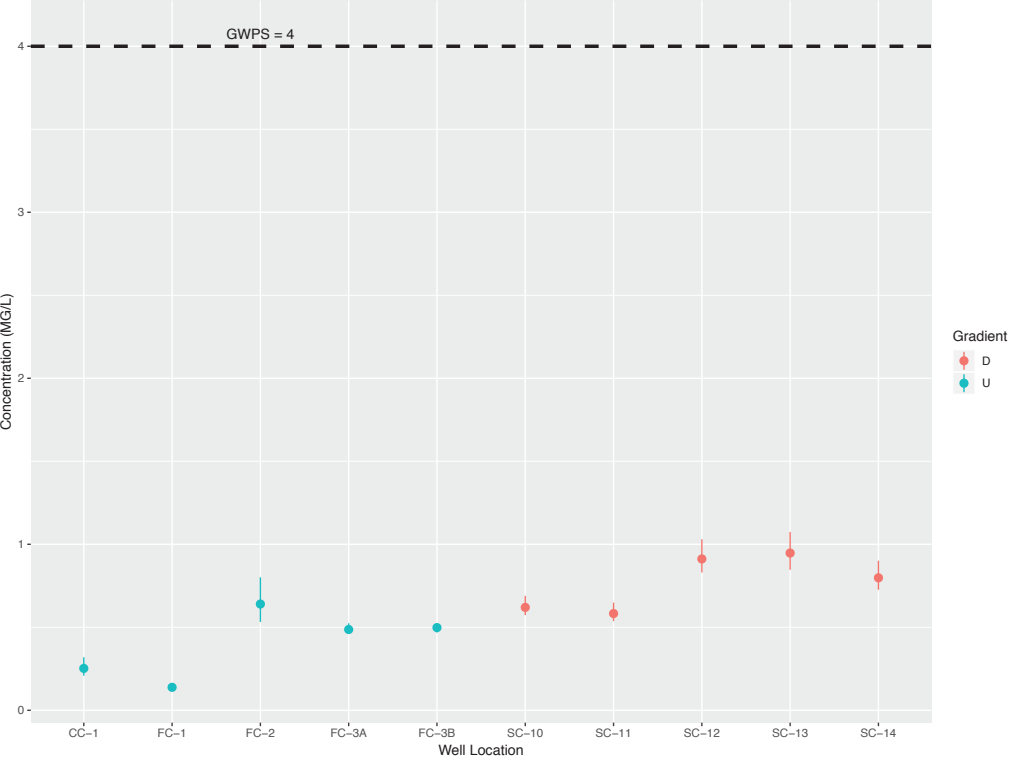
Bootstrap Confidence Interval Tests for CO: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)



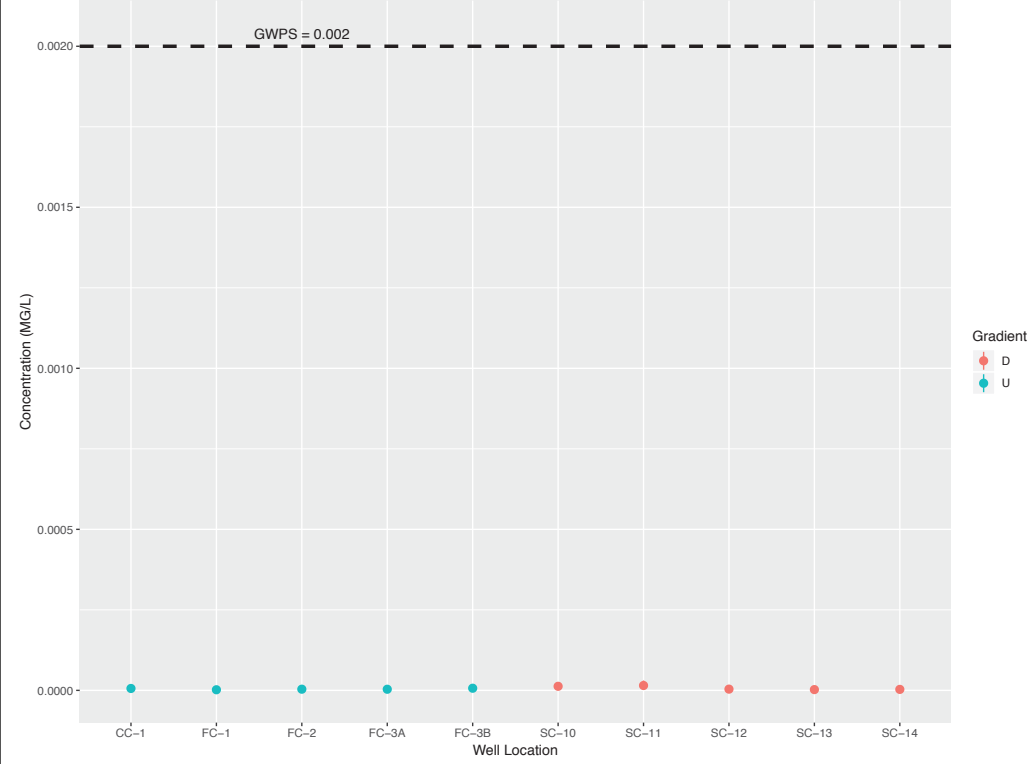
Bootstrap Confidence Interval Tests for CR: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)



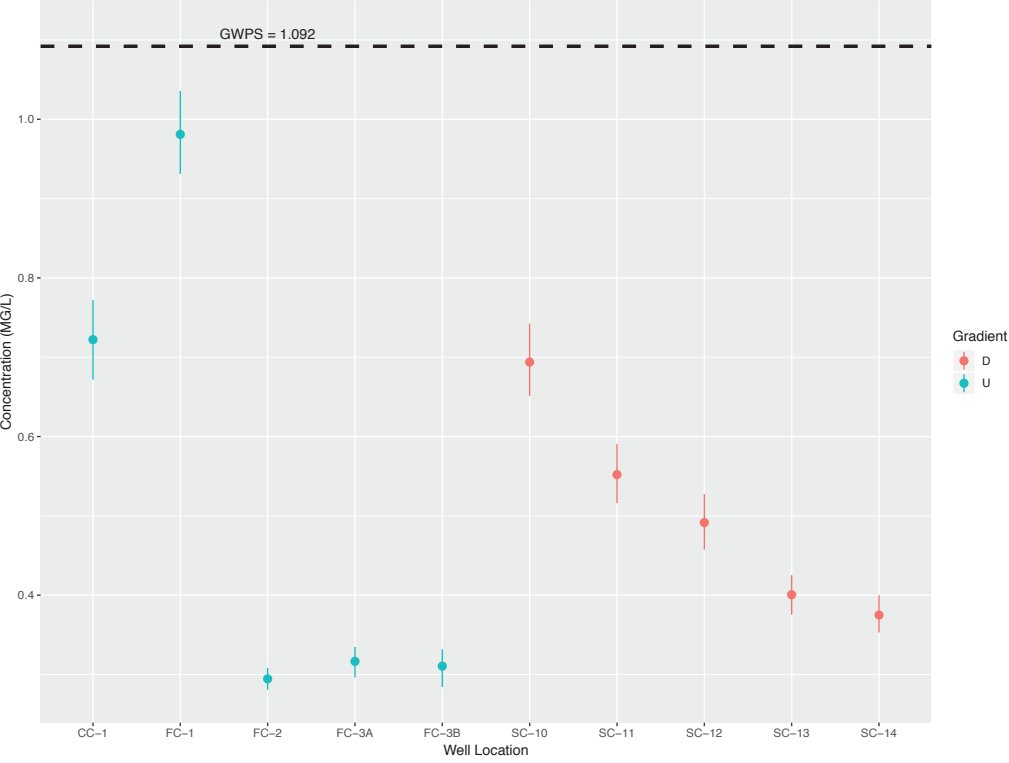
Bootstrap Confidence Interval Tests for F: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)



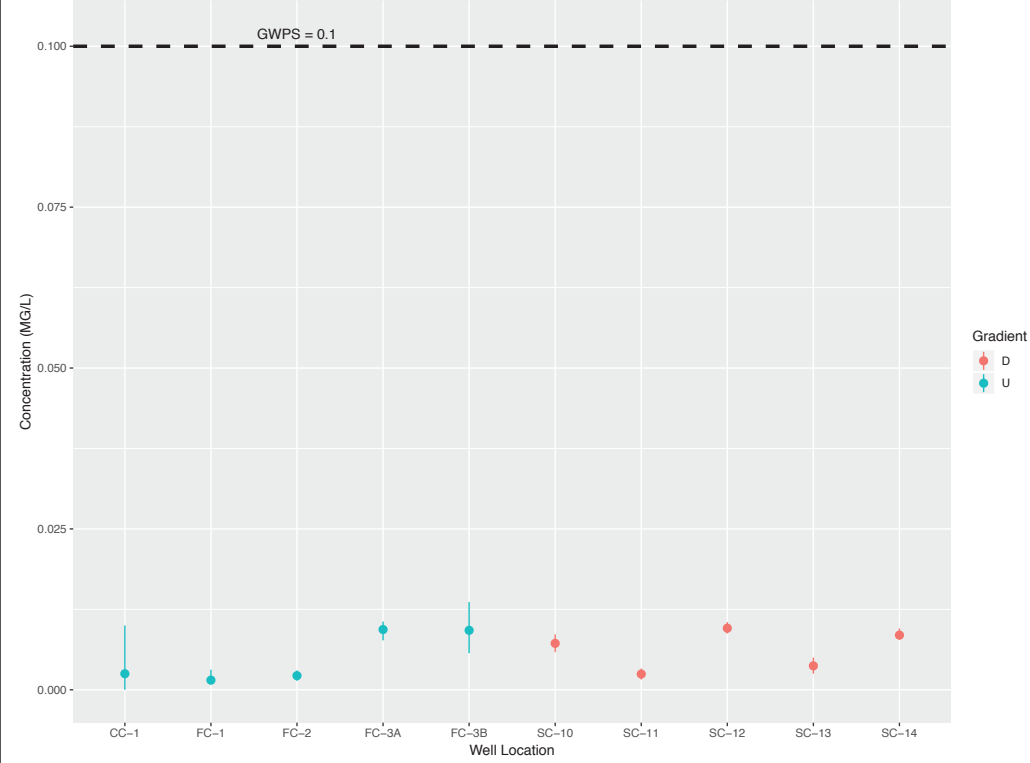
Bootstrap Confidence Interval Tests for HG: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)



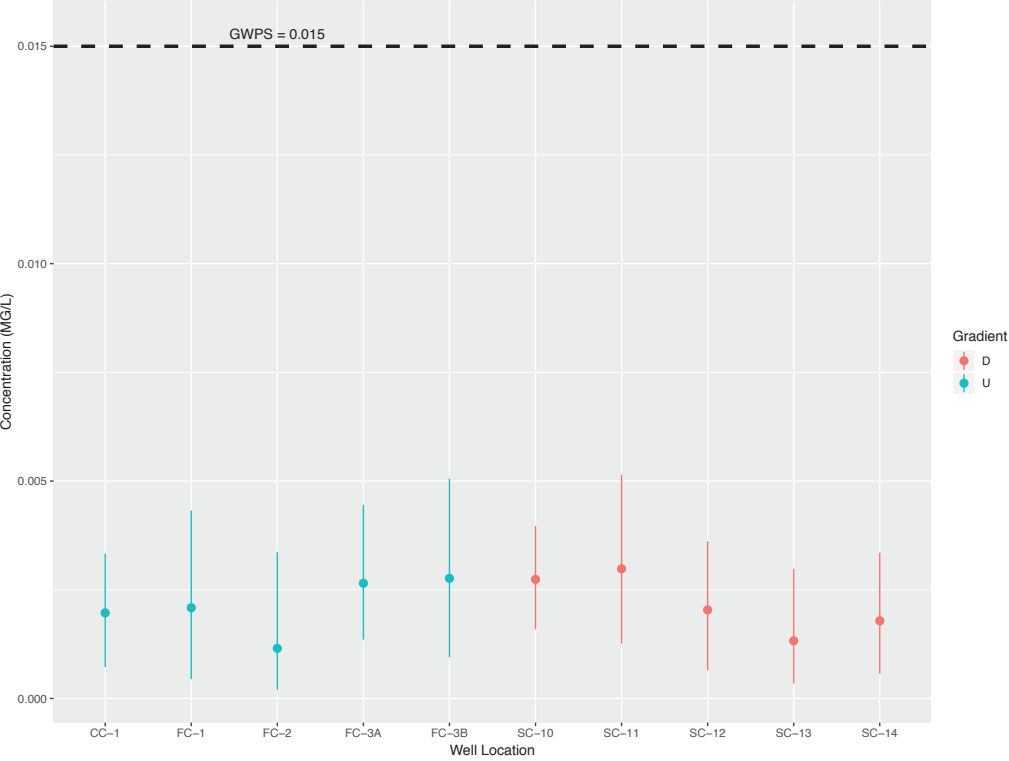
Bootstrap Confidence Interval Tests for LI: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)



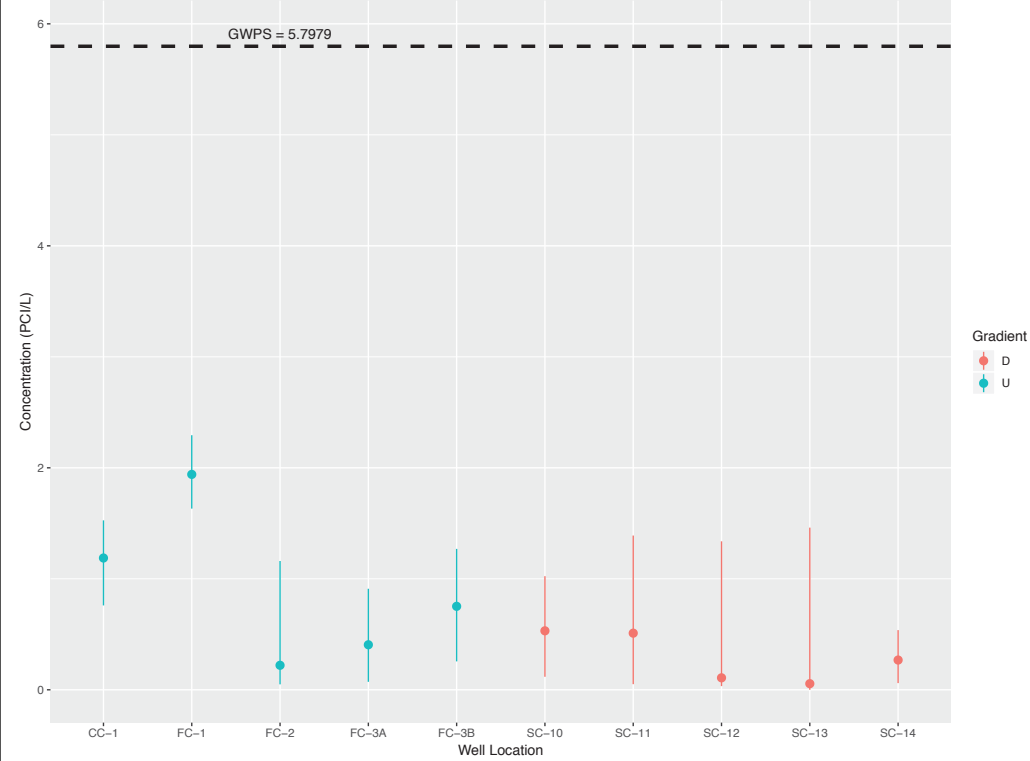
Bootstrap Confidence Interval Tests for MO: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)



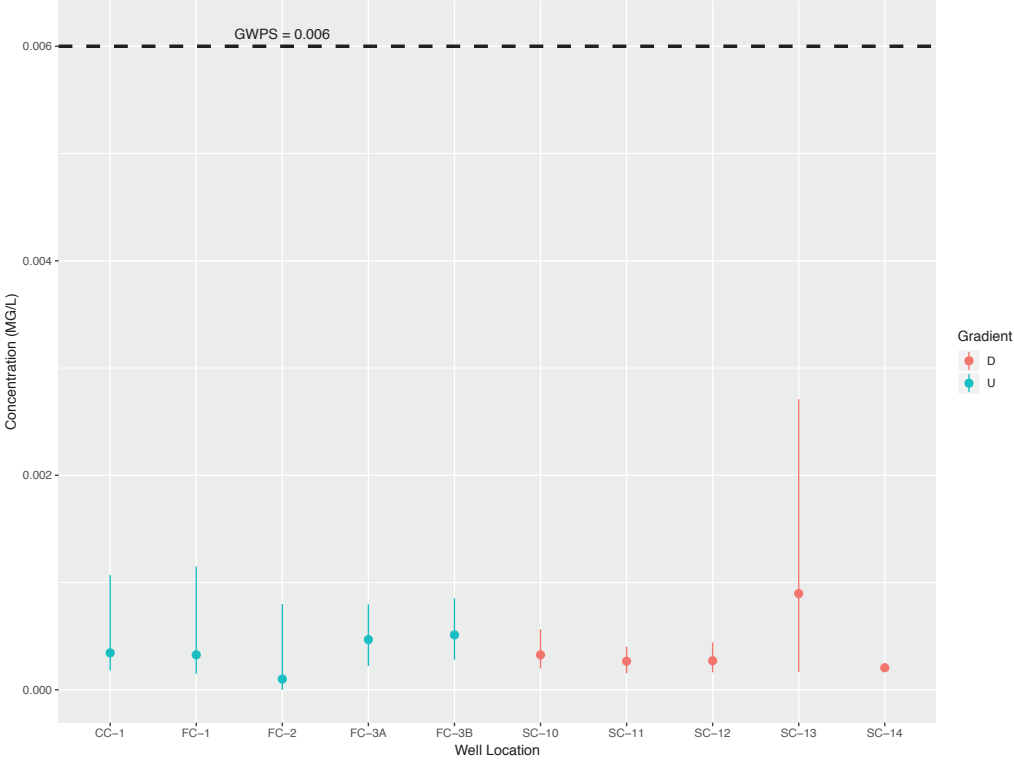
Bootstrap Confidence Interval Tests for PB: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)



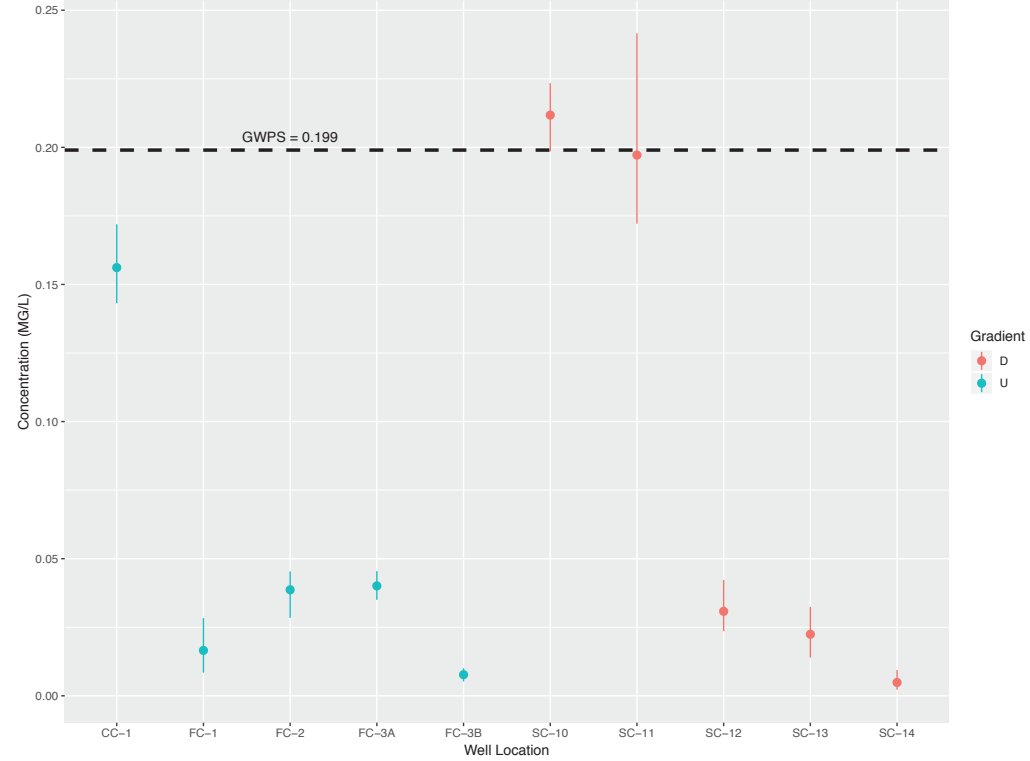
Bootstrap Confidence Interval Tests for Rad226+228: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)



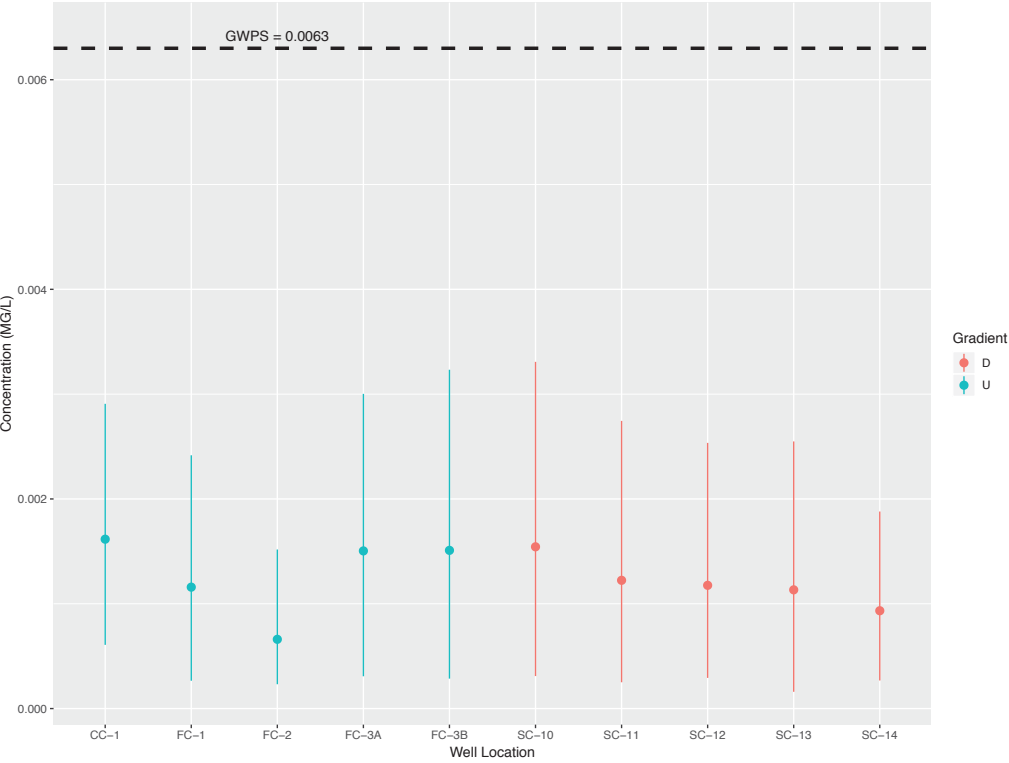
Bootstrap Confidence Interval Tests for SB: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)



Bootstrap Confidence Interval Tests for SE: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)



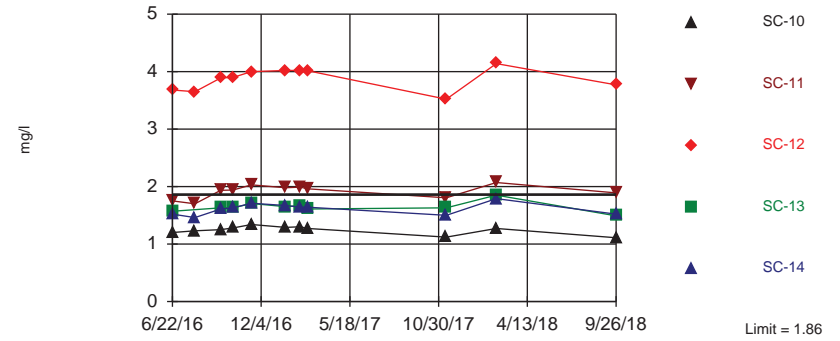
Bootstrap Confidence Interval Tests for TL: Target 99% Confidence, Grouped BG (CC-1 FC-1 FC-2 FC-3A FC-3B)



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Exceeds Limit: SC-11, SC-12

Prediction Limit
Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 55 background values. Annual per-constituent alpha = 0.006311. Individual comparison alpha = 0.0006329 (1 of 2). Comparing 5 points to limit.

Constituent: Boron, Total Analysis Run 1/17/2019 9:39 AM View: CCR Landfill Prediction Limit
Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Prediction Limit

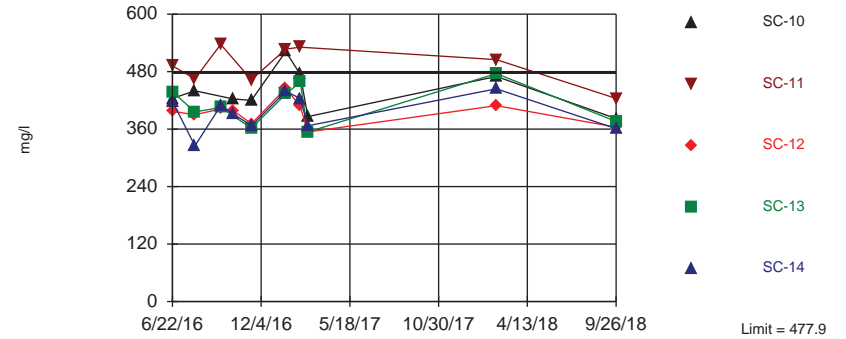
Constituent: Boron, Total (mg/l) Analysis Run 1/17/2019 9:41 AM View: CCR Landfill Prediction Limit
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	SC-13	SC-12	SC-11	SC-10	CC-1	FC-2	SC-14	FC-3A	FC-3B
6/22/2016	0.976 (T)	1.57	3.68	1.75	1.2	1.07 (D)	0.901 (T)	1.52		
6/23/2016									1.31	
6/27/2016										1.09
8/2/2016	0.9285 (D)					1.03	0.902		1.08	1.28
8/3/2016			3.65	1.7	1.23 (D)			1.46		
9/19/2016	0.932					1.05	0.937 (D)		1.2	1.46
9/20/2016		1.63	3.89	1.935 (D)	1.25			1.61		
10/12/2016	0.931					1.1	0.923		1.175 (D)	1.53
10/13/2016		1.63	3.9 (D)	1.94	1.28			1.63		
11/15/2016	1.03					1.12	0.936		1.185 (D)	1.68
11/16/2016		1.705 (D)	4	2.03	1.34			1.71		
1/18/2017	0.98					1.125 (D)	0.946		1.19	1.66
1/19/2017		1.65	4.02	1.98	1.29			1.67		
2/14/2017	0.972					1.115 (D)	0.934		1.14	1.59
2/15/2017		1.67	4.02	1.99	1.3 (D)			1.64		
2/28/2017	0.9495 (D)					1.03 (D)	0.956 (D)		1.14 (D)	1.73 (D)
3/1/2017		1.61 (DT1)	4.015 (DT1)	1.96 (DT1)	1.27 (DT1)			1.64 (D)		
11/13/2017	0.884					1.04	0.925 (D)		1.05	1.69
11/14/2017		1.63	3.52	1.805 (D)	1.12			1.5		
2/14/2018	1.05 (D)					1.08 (D)	0.957 (D)		1.13 (D)	1.86 (D)
2/15/2018		1.85 (DT)	4.14 (DT)	2.07 (DT)	1.27 (DT)			1.79 (DT)		
9/25/2018	0.887 (D)					1 (D)	0.887 (D)		1.03 (D)	1.73 (D)
9/26/2018		1.49 (D)	3.77 (D)	1.89 (D)	1.11 (D)			1.52 (D)		

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Within Limit

Prediction Limit
Interwell Parametric



Background Data Summary (based on square transformation): Mean=156245, Std. Dev.=38254, n=42. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9317, critical = 0.922. Kappa = 1.886 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.001504. Comparing 5 points to limit.

Constituent: Calcium, Total Analysis Run 1/17/2019 9:39 AM View: CCR Landfill Prediction Limit
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Prediction Limit

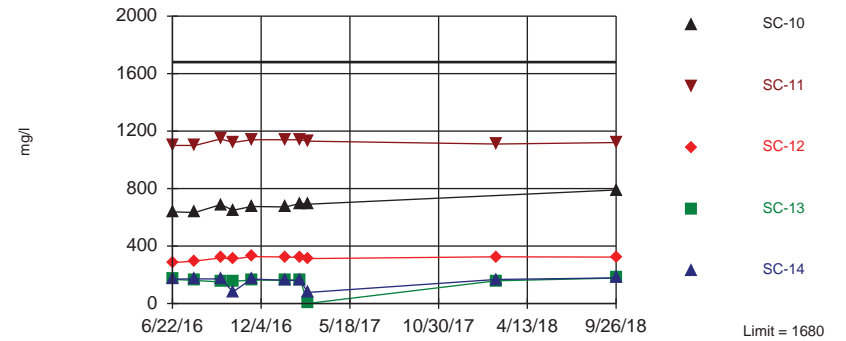
Constituent: Calcium, Total (mg/l) Analysis Run 1/17/2019 9:41 AM View: CCR Landfill Prediction Limit
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	SC-10	SC-11	FC-2	SC-12	CC-1	SC-14	SC-13	FC-3A	FC-3B
6/22/2016	404	424 (DT1)	492 (DT1)	405 (T1D)	397 (DT1)	472 (DT1)	418 (DT1)	438 (DT1)		
6/23/2016									440 (DT1)	453 (DT1)
6/27/2016										412 (DT1)
8/2/2016	410 (DT1)			440 (DT1)					417 (DT1)	
8/3/2016		440 (DT1)	465 (DT1)		390 (DT1)		325	396 (DT1)		
9/19/2016	388 (DT1)			393.5 (DT1)		483 (DT1)			433 (DT1)	424 (DT1)
9/20/2016			537 (DT1)		402 (DT1)		409 (D)	405 (D)		
10/12/2016	389 (D)			390 (D)		398 (DT1)			398 (DT1)	
10/13/2016		423 (DT1)			399 (DT1)			392 (DT1)		
11/15/2016									385 (D)	331 (D)
11/16/2016		420 (DT1)	463 (DT1)		371 (DT1)		367 (DT1)	362 (DT1)		
1/18/2017	438 (T1D)			438 (T1D)					445 (DT1)	282 (DT1)
1/19/2017		522 (DT1)	527 (DT1)		445 (D)		439 (DT1)	433 (DT1)		
2/14/2017	408 (DT1)					431.5 (DT1)			420 (DT1)	296 (DT1)
2/15/2017		474.5 (DT1)	531 (DT1)		408 (DT1)		424 (DT1)	458 (DT1)		
2/28/2017	376.5 (DT1)			381 (DT1)		379 (DT1)			390 (DT1)	325 (DT1)
3/1/2017		386 (DT1)			354 (DT1)		367 (DT1)	354 (DT1)		
2/14/2018	397 (DT)			387 (DT)		392 (DT)			401 (DT)	246 (DT)
2/15/2018		470 (DT)	505 (DT)		409 (DT)		444 (DT)	476 (DT)		
9/25/2018	370 (D)			368 (D)					386 (D)	233 (D)
9/26/2018		382 (D)	424 (D)		364 (D)		361 (D)	376 (D)		

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Within Limit

Prediction Limit
Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 50 background values. Annual per-constituent alpha = 0.007403. Individual comparison alpha = 0.0007428 (1 of 2). Comparing 5 points to limit.

Constituent: Chloride Analysis Run 1/17/2019 9:39 AM View: CCR Landfill Prediction Limit
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Prediction Limit

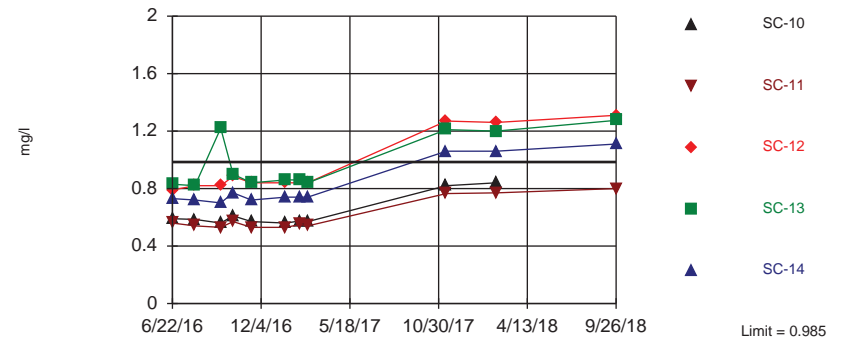
Constituent: Chloride (mg/l) Analysis Run 1/17/2019 9:41 AM View: CCR Landfill Prediction Limit
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	SC-13	SC-12	SC-11	SC-10	CC-1	FC-2	SC-14	FC-3A	FC-3B
6/22/2016	772 (D)	168 (D)	284 (D)	1100 (D)	638 (D)	1535 (D)	132 (D)	170 (D)		
6/23/2016									92.5 (D)	
6/27/2016										319 (D)
8/2/2016	761.5 (D)					1540 (D)	128 (D)		91 (D)	504 (D)
8/3/2016		160 (D)	296 (D)	1100 (D)	633.5 (D)			171 (D)		
9/19/2016	760 (D)					1530 (D)	130 (D)		96.3 (D)	594 (D)
9/20/2016		150 (D)	317 (D)	1145 (D)	688 (D)			171 (D)		
10/12/2016	750 (D)					1500 (D)	124 (D)		99.55 (D)	687 (D)
10/13/2016		154 (D)	308.5 (D)	1120 (D)	649 (D)			81.2 (D)		
11/15/2016	71.2 (D)					1550 (D)	127 (D)		101.5 (D)	676 (D)
11/16/2016		163 (D)	326 (D)	1140 (D)	675 (D)			170 (D)		
1/18/2017	741 (D)					1680 (D)	125 (D)		104 (D)	631 (D)
1/19/2017		162 (D)	324 (D)	1140 (D)	672 (D)			162 (D)		
2/14/2017	738 (D)					1515 (D)	123 (D)		107 (D)	732 (D)
2/15/2017		165 (D)	320 (D)	1140 (D)	697.5 (D)			160 (D)		
2/28/2017	769 (D)					1560 (D)	122 (D)		107 (D)	818 (D)
3/1/2017		0.163 (D)	312.5 (D)	1130 (D)	691 (D)			76.5 (D)		
2/14/2018	756 (D)					1530 (D)	124 (D)		115.5 (D)	652 (D)
2/15/2018		158 (DT)	325 (TD)	1110 (DT)				167 (DT)		
9/25/2018	783.5 (D)					1520 (D)	118 (D)		122 (D)	1210 (D)
9/26/2018		177 (D)	323 (D)	1120 (D)	790 (D)			178 (D)		

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Exceeds Limit: SC-12, SC-13, SC-14

Prediction Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 55 background values. Annual per-constituent alpha = 0.006311. Individual comparison alpha = 0.0006329 (1 of 2). Comparing 5 points to limit.

Constituent: Fluoride, Total Analysis Run 1/17/2019 9:39 AM View: CCR Landfill Prediction Limit
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Prediction Limit

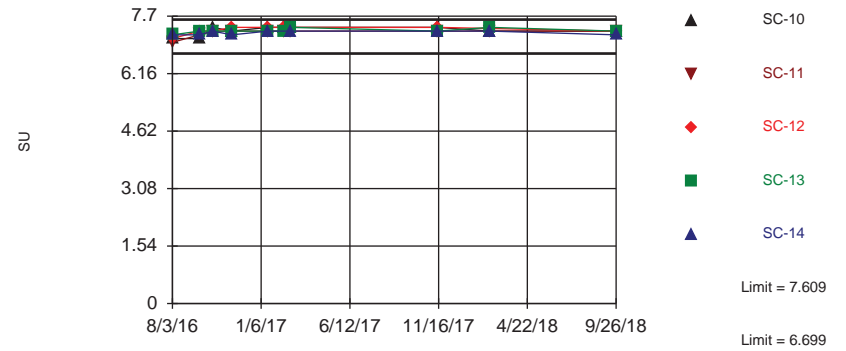
Constituent: Fluoride, Total (mg/l) Analysis Run 1/17/2019 9:41 AM View: CCR Landfill Prediction Limit
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	SC-13	SC-12	SC-11	SC-10	SC-14	CC-1	FC-2	FC-3A	FC-3B
6/22/2016	0.12 (T)									
6/23/2016		0.83 (T)	0.79 (T)	0.56 (T)	0.59 (T)	0.73 (T)	0.215 (TD)	0.51 (T)		
6/27/2016										0.55
8/2/2016	0.06006 (TD)						0.21 (T)	0.5 (T)	0.46 (T)	0.00048 (T)
8/3/2016		0.82 (T)	0.82 (T)	0.54 (T)	0.585 (TD)	0.72 (T)				
9/19/2016	0.13						0.22	0.985 (D)	0.48	0.48
9/20/2016		1.22 (D)	0.82	0.53 (D)	0.56	0.7				
10/12/2016	0.12 (T)						0.21 (T)	0.52 (T)	0.465 (TD)	0.51 (T)
10/13/2016		0.9 (T)	0.885 (TD)	0.57 (T)	0.61 (T)	0.77 (T)				
11/15/2016	0.12 (T)						0.2 (T)	0.51 (T)	0.46 (TD)	0.46 (T)
11/16/2016		0.84 (D)	0.84 (T)	0.53 (T)	0.57 (T)	0.72 (T)				
1/18/2017	0.13 (T)						0.2 (TD)	0.52 (T)	0.46 (T)	0.56 (T)
1/19/2017		0.86 (T)	0.84 (T)	0.53 (T)	0.56 (T)	0.74 (T)				
2/14/2017	0.13 (T)						0.22 (TD)	0.55 (T)	0.48 (T)	0.51 (T)
2/15/2017		0.86 (T)		0.55 (T)	0.575 (TD)	0.74 (T)				
2/28/2017	0.13 (TD)						0.22 (T)	0.53 (T)	0.47 (T)	0.42 (T)
3/1/2017		0.84 (T)	0.84 (TD)	0.54 (T)	0.57 (T)	0.74 (T)				
11/13/2017	0.2						0.45	0.7 (D)	0.56	0.48
11/14/2017		1.21	1.27	0.765 (D)	0.82	1.06				
2/14/2018	0.21						0.5	0.74	0.615 (D)	0.53
2/15/2018		1.2	1.26	0.77	0.84	1.06				
9/25/2018	0.195 (D)						0.48	0.73	0.62	0.52
9/26/2018		1.275 (D)	1.31	0.8		1.11				

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Within Limits

Prediction Limit
Interwell Parametric



Background Data Summary: Mean=7.154, Std. Dev.=0.2443, n=50. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.954, critical = 0.935. Kappa = 1.862 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.000752. Comparing 5 points to limit.

Constituent: pH Analysis Run 1/17/2019 9:39 AM View: CCR Landfill Prediction Limit
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Prediction Limit

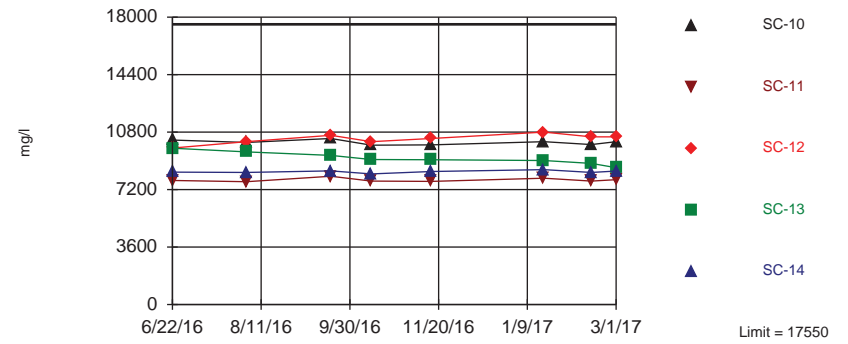
Constituent: pH (SU) Analysis Run 1/17/2019 9:41 AM View: CCR Landfill Prediction Limit
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	FC-3B	FC-3A	CC-1	FC-2	SC-12	SC-11	SC-10	SC-14	SC-13
8/2/2016	7 (D)	7.2	7.5	6.8	7.2					
8/3/2016						7.1	7	7.1 (D)	7.2	7.2
9/19/2016	7.1	6.9	7.5	6.7	7.2					
9/20/2016						7.3	7.2	7.1	7.2	7.3
10/12/2016	7.1	7	7.5	6.9	7.2					
10/13/2016						7.3	7.3	7.4	7.3	7.3
11/15/2016	7.1	7	7.6	6.9	7.3					
11/16/2016						7.4	7.3	7.3	7.2	7.3
1/18/2017	7.1	7	7.6	6.9	7.3					
1/19/2017						7.4	7.3	7.4	7.3	7.3
2/14/2017	7.1	7	7.6	6.9	7.3					
2/15/2017						7.4	7.3	7.4		7.3
2/28/2017	7.2	7	7.5	6.9	7.3					
3/1/2017						7.4	7.3	7.4	7.3	7.4
11/13/2017	7.2	7	7.6	7	7.3					
11/14/2017						7.4	7.3	7.4	7.3	7.3
2/14/2018	7.1	6.8	7.6	6.9	7.3					
2/15/2018							7.3	7.3	7.3	7.4
9/25/2018	7	7.1	7.3	6.8	7.3					
9/26/2018						7.3	7.3	7.3	7.2	7.3

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Within Limit

Prediction Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 40 background values. Annual per-constituent alpha = 0.0113. Individual comparison alpha = 0.001136 (1 of 2). Comparing 5 points to limit.

Constituent: Sulfate Analysis Run 1/17/2019 9:39 AM View: CCR Landfill Prediction Limit
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Prediction Limit

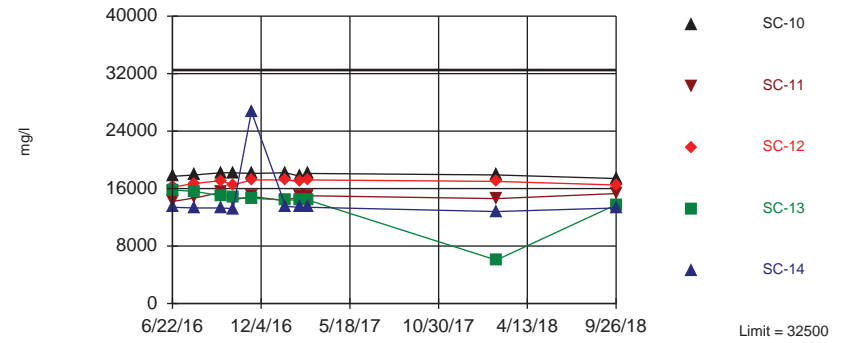
Constituent: Sulfate (mg/l) Analysis Run 1/17/2019 9:41 AM View: CCR Landfill Prediction Limit
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	CC-1	SC-10	FC-2	SC-14	SC-11	SC-13	SC-12	FC-3A	FC-3B
6/22/2016	13200 (D)	17200 (D)	10300 (D)	7080 (D)	8290 (D)	7770 (D)	9790 (D)	9800 (D)		
6/23/2016									5870 (D)	
6/27/2016										4820 (D)
8/2/2016	13000 (D)	17200 (D)		7000 (D)					5650 (D)	5240 (D)
8/3/2016			10150 (D)		8270 (D)	7690 (D)	9560 (D)	10200 (D)		
9/19/2016	13000 (D)	17300 (D)		7030 (D)					5800 (D)	5380 (D)
9/20/2016			10400 (D)		8370 (D)	8035 (D)	9340 (D)	10600 (D)		
10/12/2016	12800 (D)	16600 (D)		6910 (D)					5635 (D)	4940 (D)
10/13/2016			9980 (D)		8180 (D)	7730 (D)	9080 (D)	10200 (D)		
11/15/2016	13600 (D)	17400 (D)		6910					5735 (D)	5370 (D)
11/16/2016			10000 (D)		8330 (D)	7710 (D)	9070 (D)	10400 (D)		
1/18/2017	13700 (D)	17550 (D)		7040 (D)					5880 (D)	4590 (D)
1/19/2017			10200 (D)		8450 (D)	7910 (D)	9020 (D)	10800 (D)		
2/14/2017	13200 (D)	16800 (D)		6840 (D)					5720 (D)	4470 (D)
2/15/2017			10020 (D)		8270 (D)	7730 (D)	8840 (D)	10500 (D)		
2/28/2017	13100 (D)	17400 (D)		6940 (D)					5820 (D)	4640 (D)
3/1/2017			10200 (D)		8360 (D)	7820 (D)	8570 (D)	10500 (D)		

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Within Limit

Prediction Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 50 background values. Annual per-constituent alpha = 0.007403. Individual comparison alpha = 0.0007428 (1 of 2). Comparing 5 points to limit.

Constituent: TDS Analysis Run 1/17/2019 9:39 AM View: CCR Landfill Prediction Limit
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Prediction Limit

Constituent: TDS (mg/l) Analysis Run 1/17/2019 9:41 AM View: CCR Landfill Prediction Limit
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	SC-13	SC-12	SC-11	SC-10	CC-1	FC-2	SC-14	FC-3A	FC-3B
6/22/2016	22300	15800	16200	14200	17700	30950 (D)	11200	13400		
6/23/2016									9460	
6/27/2016										7770
8/2/2016	22000 (D)					2.1	10900		9140	9200
8/3/2016		15600	16700	14700	17900 (D)			13300		
9/19/2016	21900					30500	11250 (D)		9320	9410
9/20/2016		15000	17100	15450 (D)	18200			13300		
10/12/2016	23200					31400	11600		9470 (D)	9450
10/13/2016		14700	16500 (D)	14400	18200			13200		
11/15/2016	22100					30600	11300		9320 (D)	9630
11/16/2016		14650 (D)	17200	14900	18100			26700		
1/18/2017	22200					31200 (D)	11200		9180	9250
1/19/2017		14400	17200	14300	18200			13500		
2/14/2017	22100					30450 (D)	11200		9310	9350
2/15/2017		14400	17000	15000	17700 (D)			13400		
2/28/2017	22100 (D)					30800	11300		9490	9410
3/1/2017		14400	17200 (D)	15000	18100			13400		
2/14/2018	22300					32500	11000		9400 (D)	9040
2/15/2018		6040	17000	14600	17900			12800		
9/25/2018	21800 (D)					31400	10900		9700	8970
9/26/2018		13750 (D)	16500	15300	17400			13300		

Tolerance Limit

Constituent: Antimony, Total (mg/l) Analysis Run 1/17/2019 9:58 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	CC-1	FC-2	FC-3A	FC-3B
6/22/2016	<0.0002	<0.0002 (D)	<0.0002		
6/23/2016				0.00021	
6/27/2016					0.00065
8/2/2016	<0.0002 (D)	<0.0002	<0.0002	<0.0002	0.00061
9/19/2016	<0.0002 (D1)	<0.0002 (D1)	<0.0002 (D1)	<0.0002 (D1)	<0.0002 (D1)
10/12/2016	<0.0002 (D1)	0.0004 (D)	<0.0002 (D1)	0.00026 (D)	0.00032 (D)
11/15/2016	0.0016 (D)	0.0015 (D)	<0.0002 (D1)	0.0015 (D)	0.0015 (D)
1/18/2017	<0.0005 (D1P)	<0.0005 (D1)	<0.0005 (D1P)	0.00055 (D)	<0.0005 (D1)
2/14/2017	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	0.00066 (D)
2/28/2017	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)
11/13/2017	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)
2/14/2018	<0.008	<0.008	<0.0008	<0.0008 (D)	<0.0008
9/25/2018	<0.0005 (D)	<0.0005	<0.0005	<0.0005	<0.0005

Tolerance Limit

Constituent: Arsenic, Total (mg/l) Analysis Run 1/17/2019 9:58 AM View: CCR Landfill GWPS
Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	FC-2	CC-1	FC-3A	FC-3B
6/22/2016	0.0042	0.0025	0.0109 (D)		
6/23/2016				0.0031	
6/27/2016					0.0026
8/2/2016	0.0025 (D)	0.0016	0.0105	0.0021	0.0031
9/19/2016	0.0094 (D)	0.0036 (D)	0.0089 (D)	0.0029 (D)	0.0051 (D)
10/12/2016	0.0023 (D)	<-0.001 (D1)	0.0071 (D)	0.001325 (D)	0.0056 (D)
11/15/2016	0.0036 (D)	<-0.001 (D1)	0.0054 (D)	0.0018 (D)	0.007 (D)
1/18/2017	0.0061 (D)	0.0011 (D)	0.00255 (D)	<-0.001 (D1)	0.0057 (D)
2/14/2017	<-0.001 (D1)	<-0.001 (D1)	0.00495 (D)	<-0.001 (D1)	0.004 (D)
2/28/2017	0.00625 (D)	0.0076 (D)	0.011 (D)	0.0069 (D)	0.0081 (D)
11/13/2017	0.0041 (D)	0.0025 (D)	0.008 (D)	0.0022 (D)	0.0064 (D)
2/14/2018	<-0.002	<-0.001		0.00115 (D)	0.0026
9/25/2018	0.005 (D)	0.0014	0.0115	0.003	0.0074

Tolerance Limit

Constituent: Barium, Total (mg/l) Analysis Run 1/17/2019 9:58 AM View: CCR Landfill GWPS
Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	CC-1	FC-2	FC-3A	FC-3B
6/22/2016	0.00954	2.83285 (D)	0.00503		
6/23/2016				0.034	
6/27/2016					0.0336
8/2/2016	0.008725 (D)	0.00512	<0.005	0.0202	0.0253
9/19/2016	0.00928	0.00542	0.00525 (D)	0.0218	0.0183
10/12/2016	0.00905	0.00593	0.00536	0.03735 (D)	0.0184
11/15/2016	0.0102	0.00608	0.00516	0.01735 (D)	0.0652
1/18/2017	0.00929	0.005675 (D)	0.00539	0.0164	0.0244
2/14/2017	0.01	0.006005 (D)	0.00566	0.0167	0.023
2/28/2017	0.009 (D)	<-0.005	0.0054	0.0148	0.0208
11/13/2017	0.0082 (D)	0.004 (D)	0.00435 (D)	0.0259 (D)	0.0154 (D)
2/14/2018	0.0105	<-0.01	<-0.01	0.01206 (D)	0.0196
9/25/2018	0.00665 (D)	0.0039	0.004	0.021	0.037

Tolerance Limit

Constituent: Beryllium, Total (mg/l) Analysis Run 1/17/2019 9:58 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	CC-1	FC-2	FC-3A	FC-3B
6/22/2016	<0.002	<0.002 (D)	<0.002		
6/23/2016				<0.002	
6/27/2016					<0.002
8/2/2016	<0.002 (D)	<0.002	<0.002	<0.002	<0.002
9/19/2016	<0.002	<0.002	<0.002 (D)	<0.002	<0.002
10/12/2016	<0.002	<0.002	<0.002	<0.002 (D)	<0.002
11/15/2016	<0.002	<0.002	<0.002	<0.002 (D)	<0.002
1/18/2017	<0.002	<0.002 (D)	<0.002	<0.002	<0.002
2/14/2017	<0.002	<0.002 (D)	<0.002	<0.002	<0.002
2/28/2017	<0.002 (D)	<0.002	<0.002	<0.002	<0.002
11/13/2017	<0.0002 (D1)	<0.0002 (D1)	<0.0002 (D1)	<0.0002 (D1)	<0.0002 (D1)
2/14/2018	<0.001 (T)	<0.001 (T)	<0.0004 (T)	<0.0004 (TD)	<0.001 (T)
9/25/2018	<0.0002 (D)	<0.0002	<0.0002	<0.0002	<0.0002

Tolerance Limit

Constituent: Cadmium, Total (mg/l) Analysis Run 1/17/2019 9:58 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	CC-1	FC-2	FC-3A	FC-3B
6/22/2016	<0.005	<0.005 (D)	<0.005		
6/23/2016				<0.005	
6/27/2016					<0.005
8/2/2016	<0.005 (D)	<0.005	<0.005	<0.005	<0.005
9/19/2016	<0.005	<0.005	<0.005	<0.005	<0.005
10/12/2016	<0.005	<0.005	<0.005	<0.005 (D)	<0.005
11/15/2016	<0.005	<0.005	<0.005	<0.005 (D)	<0.005
1/18/2017	<0.005	<0.005 (D)	<0.005	<0.005	<0.005
2/14/2017	<0.005	<0.005 (D)	<0.005	<0.005	<0.005
2/28/2017	<0.005 (D)	<0.005	<0.005	<0.005	<0.005
11/13/2017	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)
2/14/2018	<0.001	<0.001	0.00031	0.000365 (D)	0.00032
9/25/2018	<0.0005 (D)	<0.0005	<0.0005	<0.0005	<0.0005

Tolerance Limit

Constituent: Chromium, Total (mg/l) Analysis Run 1/17/2019 9:58 AM View: CCR Landfill GWPS
Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	CC-1	FC-2	FC-3A	FC-3B
6/22/2016	<0.01	<0.01 (D)	<0.01		
6/23/2016				<0.01	
6/27/2016					<0.01
8/2/2016	<0.01 (D)	<0.01	<0.01	<0.01	<0.01
9/19/2016	<0.01	<0.01	<0.01 (D)	<0.01	<0.01
10/12/2016	<0.01	<0.01	<0.01	<0.01 (D)	<0.01
11/15/2016	<0.01	<0.01	<0.01	<0.01 (D)	<0.01
1/18/2017	<0.01	<0.01 (D)	<0.01	<0.01	<0.01
2/14/2017	<0.01	<0.01 (D)	<0.01	<0.01	<0.01
2/28/2017	<0.01 (D)	<0.01	<0.01	<0.01	<0.01
11/13/2017	0.006 (D)	0.0064 (D)	0.0051 (D)	0.0062 (D)	0.0086 (D)
2/14/2018	<0.004	<0.004	<0.004	<0.004 (D)	0.0058
9/25/2018	0.001 (D)	0.0017	0.001	0.0025	0.0061

Tolerance Limit

Constituent: Cobalt, Total (mg/l) Analysis Run 1/17/2019 9:58 AM View: CCR Landfill GWPS
Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	CC-1	FC-2	FC-3A	FC-3B
6/22/2016	<0.005	<0.005 (D)	<0.005		
6/23/2016				<0.005	
6/27/2016					0.0078
8/2/2016	<0.005 (D)		<0.005	<0.005	0.005
9/19/2016	<0.005	<0.005	<0.005 (D)	<0.005	<0.005
10/12/2016	<0.005	<0.005	<0.005	<0.005 (D)	<0.005
11/15/2016	<0.005	<0.005	<0.005	<0.005 (D)	0.00736
1/18/2017	<0.005	<0.005 (D)	<0.005	<0.005	0.00778
2/14/2017	<0.005	<0.005 (D)	<0.005	<0.005	0.00796
2/28/2017	<0.005 (D)	<0.005	<0.005	<0.005	0.00553
11/13/2017	<0.005	<0.005	<0.005 (D)	<0.005	0.0118
2/14/2018		0.00636	<0.005	<0.005 (D)	0.0139
9/25/2018	<0.005 (DD1)	<0.005 (DD1)	<0.005 (DD1)	<0.005 (DD1)	0.0108 (D)

Tolerance Limit

Constituent: Fluoride, Total (mg/l) Analysis Run 1/17/2019 9:58 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	CC-1	FC-2	FC-3A	FC-3B
6/22/2016	0.12 (T)	0.215 (TD)	0.51 (T)		
6/23/2016				0.46 (T)	
6/27/2016					0.55
8/2/2016	0.06006 (TD)	0.21 (T)	0.5 (T)	0.46 (T)	0.00048 (T)
9/19/2016	0.13	0.22	0.985 (D)	0.48	0.48
10/12/2016	0.12 (T)	0.21 (T)	0.52 (T)	0.465 (TD)	0.51 (T)
11/15/2016	0.12 (T)	0.2 (T)	0.51 (T)	0.46 (TD)	0.46 (T)
1/18/2017	0.13 (T)	0.2 (TD)	0.52 (T)	0.46 (T)	0.56 (T)
2/14/2017	0.13 (T)	0.22 (TD)	0.55 (T)	0.48 (T)	0.51 (T)
2/28/2017	0.13 (TD)	0.22 (T)	0.53 (T)	0.47 (T)	0.42 (T)
11/13/2017	0.2	0.45	0.7 (D)	0.56	0.48
2/14/2018	0.21	0.5	0.74	0.615 (D)	0.53
9/25/2018	0.195 (D)	0.48	0.73	0.62	0.52

Tolerance Limit

Constituent: Lead, Total (mg/l) Analysis Run 1/17/2019 9:58 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	CC-1	FC-2	FC-3A	FC-3B
6/22/2016	<0.0002	<0.0002 (D)	0.0002		
6/23/2016				0.0052	
6/27/2016					0.0039
8/2/2016	<0.0002 (D)	<0.0002	<0.0002	0.0015	0.0021
9/19/2016	0.00032 (D)	<0.0002 (D1)	<0.0002 (D1)	0.001 (D)	0.00042 (D)
10/12/2016	<0.0002 (D1)	<0.0002 (D1)	<0.0002 (D1)	0.000835 (D)	<0.0002 (D1)
11/15/2016	0.0037 (D)	0.0052 (D)	<0.0002 (D1)	0.0031 (D)	0.0065 (D)
1/18/2017	<0.0005 (D1)	0.0035 (D)	<0.0005 (D1)	0.0035 (D)	0.0035 (D)
2/14/2017	0.0027 (D)	0.0028 (D)	0.0018 (D)	0.0017 (D)	0.00099 (D)
2/28/2017	0.0081 (D)	0.0049 (D)	0.0089 (D)	0.009	0.0089 (D)
11/13/2017	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	0.00091 (D)	<0.0005 (D1)
2/14/2018	<0.005	<0.005	<0.0025	<0.0025 (D)	<0.0025
9/25/2018	<0.0005 (D)	<0.0005	<0.0005	0.00086	0.0046

Tolerance Limit

Constituent: Lithium, Total (mg/l) Analysis Run 1/17/2019 9:58 AM View: CCR Landfill GWPS
Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	CC-1	FC-2	FC-3A	FC-3B
6/22/2016	0.904	0.671 (D)	0.269		
6/23/2016				0.303	
6/27/2016					0.232
8/2/2016	0.984 (D)	0.731	0.305	0.311	0.274
9/19/2016	1.01	0.779	0.306 (D)	0.343	0.295
10/12/2016	1.03	0.825	0.307	0.3455 (D)	0.315
11/15/2016	1.16	0.822	0.325 (T)	0.3375 (D)	0.344
1/18/2017	1.08	0.791 (D)	0.318	0.343 (D)	0.335
2/14/2017	1	0.73 (D)	0.298	0.312	0.334
2/28/2017	0.9125 (D)	0.641	0.275 (D)	0.283 (D)	0.326 (D)
11/13/2017	0.894	0.63	0.2665 (D)	0.288	0.31
2/14/2018	0.9 (D)	0.576 (D)	0.265 (D)	0.2635 (D)	0.341 (D)
9/25/2018	0.9085 (D)	0.664 (D)	0.276 (D)	0.302 (D)	0.316 (D)

Tolerance Limit

Constituent: Mercury, Total (mg/l) Analysis Run 1/17/2019 9:58 AM View: CCR Landfill GWPS
Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	CC-1	FC-2	FC-3A	FC-3B
6/22/2016	1.3E-06	4.7E-06 (D)	2.8E-06		
6/23/2016				5.4E-06	
6/27/2016					1.3E-05
8/2/2016	2E-06 (D)	6E-06	4E-06	7E-06	6E-06
9/19/2016	2E-06	6E-06	3E-06 (D)	4E-06	3E-06
10/12/2016	2E-06	6E-06		5E-06 (D)	3E-06
11/15/2016	2E-06	6E-06	4E-06	2E-06 (D)	9E-06
1/18/2017	2E-06	7.5E-06 (D)	5E-06	2E-06	8E-06
2/14/2017	2E-06	6E-06 (D)	4E-06	2E-06	4E-06
2/28/2017	2E-06 (D)	6E-06	4E-06	2E-06	5E-06
11/13/2017	2E-06 (T)	6E-06 (T)	3.5E-06 (TD)	4E-06 (T)	7E-06 (T)
2/14/2018	2E-06	5E-06	3E-06	2E-06 (D)	5E-06
9/25/2018	2.5E-06 (D)	5E-06	3E-06	3E-06	2.4E-05

Tolerance Limit

Constituent: Molybdenum, Total (mg/l) Analysis Run 1/17/2019 9:58 AM View: CCR Landfill GWPS
Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	CC-1	FC-2	FC-3A	FC-3B
6/22/2016	<0.005	<0.005 (D)	<0.005		
6/23/2016				<0.005	
6/27/2016					0.0201
8/2/2016	<0.005 (D)	<0.005	<0.005	0.00838	0.0198
9/19/2016	<0.005	<0.005	<0.005 (D)	0.0122	0.00609
10/12/2016	<0.005	<0.005	0.002502 (D)	0.009175 (D)	0.00525
11/15/2016	<0.005	<0.005	<0.005	0.01065 (D)	0.0117
1/18/2017	<0.005	<0.005 (D)	<0.005	0.00969	<0.005
2/14/2017	<0.005	<0.005 (D)	<0.005	0.0104	0.00716
2/28/2017	<0.005 (D)	<0.005	<0.005	0.0109	0.00842
11/13/2017	0.0015 (D)	<0.0002 (D1)	0.0014 (D)	0.005 (D)	0.0042 (D)
2/14/2018	<0.01	<0.01	0.003	0.0112 (D)	0.0055
9/25/2018	0.0015 (D)	0.0006	0.002	0.0086	0.0027

Tolerance Limit

Constituent: Rad 226+228 (pCi/L) Analysis Run 1/17/2019 9:58 AM View: CCR Landfill GWPS
Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	FC-2	CC-1	FC-3A	FC-3B
6/22/2016	1.475	<0.675	1.317 (D)		
6/23/2016				1.321	
6/27/2016					1.111
8/2/2016	1.38	<0.59	1.389	<0.627	1.66
9/19/2016	2.136	<0.726	0.563	<0.759	<0.992
10/12/2016	1.913	<0.695	1.26	0.432	0.283
11/15/2016	2.128	0.694	1.2	<0.79	0.488
1/18/2017	1.874	0.343	1.494 (D)	0.495	0.357
2/14/2017	2.31 (D)	0.51		0.593	1.366
2/28/2017		<0.446	1.435 (D)	0.582	<0.828
11/13/2017	3.98	2.41	2.9		<4.45
2/14/2018	3	<4.343	1.48	<5.272 (D)	<5.58
9/25/2018	1.8	1	1.98	1.26	<5.111

Tolerance Limit

Constituent: Selenium, Total (mg/l) Analysis Run 1/17/2019 9:58 AM View: CCR Landfill GWPS
Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	CC-1	FC-2	FC-3A	FC-3B
6/22/2016	0.016	0.1985 (D)	0.0471		
6/23/2016				0.0393	
6/27/2016					0.0057
8/2/2016	0.0098 (D)	0.186	0.0412	0.0382	0.0069
9/19/2016	0.028 (D)	0.157 (D)	0.04895 (D)	0.0364 (D)	0.0112 (D)
10/12/2016	0.0167 (D)	0.138 (D)	<0.001 (D1)	0.04245 (D)	0.0115 (D)
11/15/2016	0.0136	0.145 (D)	0.0356 (D)	0.0355 (D)	0.0106 (D)
1/18/2017	0.0254 (D)	0.1385 (D)	0.0452 (D)	0.039 (D)	0.0067 (D)
2/14/2017	0.0141 (DT)	0.1415 (D)	0.0388 (DT)	0.0352 (DT)	0.0092 (D)
2/28/2017	0.00375 (D)	0.143 (D)	0.0367 (D)	0.0263 (D)	0.0011 (D)
11/13/2017	0.015 (D)	0.135 (D)	0.0381 (D)	0.0552 (D)	0.0107 (D)
2/14/2018	0.0068	0.169	0.044	0.0543 (D)	0.0036
9/25/2018	0.02165 (D)	0.17	0.0371	0.0512	0.0142

Tolerance Limit

Constituent: Thallium, Total (mg/l) Analysis Run 1/17/2019 9:58 AM View: CCR Landfill GWPS
Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	CC-1	FC-2	FC-3A	FC-3B
6/22/2016	0.0002	0.000455 (D)	<0.0002		
6/23/2016				<0.0002	
6/27/2016					<0.0002
8/2/2016	<0.0002 (D)	0.00045	<0.0002	<0.0002	<0.0002
9/19/2016	0.00027 (D)	<0.0002 (D1)	0.000545 (D)	<0.0002 (D1)	<0.0002 (D1)
10/12/2016	<0.0002 (D1)	<0.0002 (D1)	<0.0002 (D1)	<0.0002 (D)	<0.0002 (D1)
11/15/2016	0.0061 (D)	0.0063 (D)	<0.0002 (D1)	0.0057 (D)	0.0056 (D)
1/18/2017	<0.0005 (D1)	0.0014 (D)	<0.0005 (D1)	0.00069 (D)	0.00098 (D)
2/14/2017	0.0037 (D)	0.00385 (D)	0.0036 (D)	0.0034 (D)	0.0062 (D)
2/28/2017	0.0011 (D)	0.0014 (D)	0.0011 (D)	0.0011 (D)	0.00091 (D)
11/13/2017	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)
2/14/2018	<0.002	<0.002	<0.001	<0.001 (D)	<0.001
9/25/2018	<0.0005 (D)	<0.0005	<0.0005	<0.0005	<0.0005

Tolerance Limit

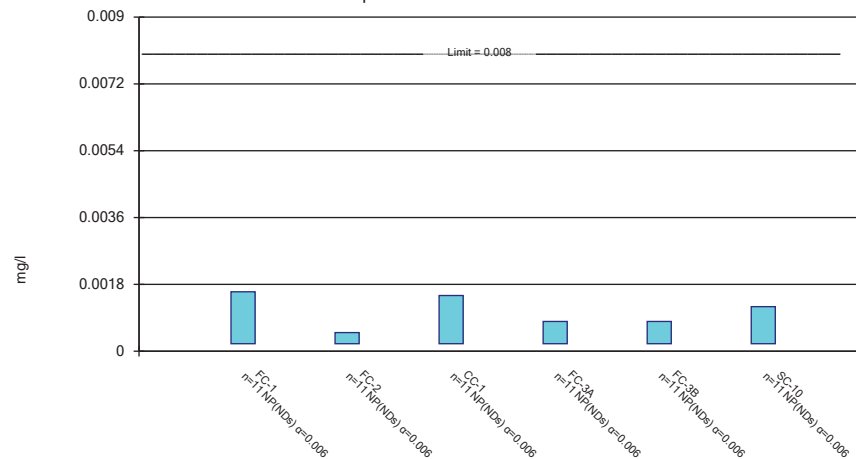
Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database Printed 1/17/2019, 9:58 AM

Constituent	Well	Upper Lim.	Date	Obsrv.	Sig.	Rq.N	%Nds	Transform	Alpha	Method
Antimony, Total (mg/l)	n/a	0.008	n/a	n/a	n/a	55	78.18	n/a	0.05954	NP Inter(NDs)
Arsenic, Total (mg/l)	n/a	0.01238	n/a	n/a	n/a	54	14.81	sqrt(x)	0.05	Inter
Barium, Total (mg/l)	n/a	2.833	n/a	n/a	n/a	55	7.273	n/a	0.05954	NP Inter(normal...
Beryllium, Total (mg/l)	n/a	0.0002	n/a	n/a	n/a	55	100	n/a	0.05954	NP Inter(NDs)
Cadmium, Total (mg/l)	n/a	0.005	n/a	n/a	n/a	55	94.55	n/a	0.05954	NP Inter(NDs)
Chromium, Total (mg/l)	n/a	0.01	n/a	n/a	n/a	55	80	n/a	0.05954	NP Inter(NDs)
Cobalt, Total (mg/l)	n/a	0.0139	n/a	n/a	n/a	53	81.13	n/a	0.06597	NP Inter(NDs)
Fluoride, Total (mg/l)	n/a	0.395	n/a	n/a	n/a	55	0	n/a	0.05954	NP Inter(normal...
Lead, Total (mg/l)	n/a	0.009	n/a	n/a	n/a	55	47.27	n/a	0.05954	NP Inter(normal...
Lithium, Total (mg/l)	n/a	1.16	n/a	n/a	n/a	55	0	n/a	0.05954	NP Inter(normal...
Mercury, Total (mg/l)	n/a	0.000024	n/a	n/a	n/a	54	0	n/a	0.06267	NP Inter(normal...
Molybdenum, Total (mg/l)	n/a	0.0201	n/a	n/a	n/a	55	50.91	n/a	0.05954	NP Inter(NDs)
Rad 226+228 (pCi/L)	n/a	3.361	n/a	n/a	n/a	52	28.85	x^(1/3)	0.05	Inter
Selenium, Total (mg/l)	n/a	0.2024	n/a	n/a	n/a	55	1.818	x^(1/3)	0.05	Inter
Thallium, Total (mg/l)	n/a	0.0063	n/a	n/a	n/a	55	60	n/a	0.05954	NP Inter(NDs)

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Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



Constituent: Antimony, Total Analysis Run 1/17/2019 10:02 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

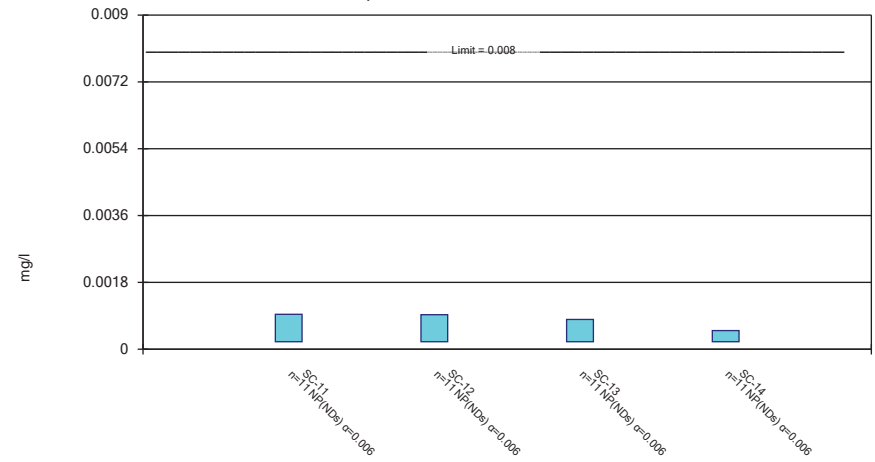
Constituent: Antimony, Total (mg/l) Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	FC-2	CC-1	FC-3A	FC-3B	SC-10
6/22/2016	<0.0002	<0.0002	<0.0002 (D)			<0.0002
6/23/2016				0.00021		
6/27/2016					0.00065	
8/2/2016	<0.0002 (D)	<0.0002	<0.0002	<0.0002	0.00061	
8/3/2016						<0.0002 (D)
9/19/2016	<0.0002 (D1)	<0.0002 (D1)	<0.0002 (D1)	<0.0002 (D1)	<0.0002 (D1)	
9/20/2016						<0.0002 (D1)
10/12/2016	<0.0002 (D1)	<0.0002 (D1)	0.0004 (D)	0.00026 (D)	0.00032 (D)	
10/13/2016						0.00025 (D)
11/15/2016	0.0016 (D)	<0.0002 (D1)	0.0015 (D)	0.0015 (D)	0.0015 (D)	
11/16/2016						0.0012 (D)
1/18/2017	<0.0005 (D1P)	<0.0005 (D1P)	<0.0005 (D1)	0.00055 (D)	<0.0005 (D1)	
1/19/2017						<0.0005 (D1)
2/14/2017	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	0.00066 (D)	
2/15/2017						0.00054 (D)
2/28/2017	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	
3/1/2017						<0.0005 (D1)
11/13/2017	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	
11/14/2017						<0.0005 (D1)
2/14/2018	<0.008	<0.0008	<0.008	<0.0008 (D)	<0.0008	
2/15/2018						<0.008
9/25/2018	<0.0005 (D)	<0.0005	<0.0005	<0.0005	<0.0005	
9/26/2018						<0.0005
Mean	0.001173	0.0003909	0.001182	0.00052	0.0006127	0.001145
Std. Dev.	0.002299	0.0002023	0.002289	0.0003755	0.0003366	0.002291
Upper Lim.	0.0016	0.0005	0.0015	0.0008	0.0008	0.0012
Lower Lim.	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002

Sanitas™ v.9.6.12 For the statistical analyses of ground water by Colorado Springs Utilities only. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



Constituent: Antimony, Total Analysis Run 1/17/2019 10:02 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

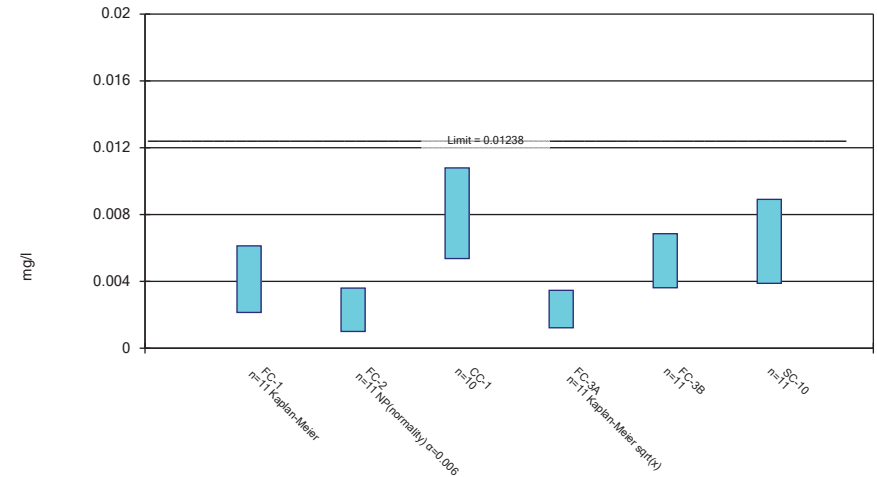
Constituent: Antimony, Total (mg/l) Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	SC-11	SC-12	SC-13	SC-14
6/22/2016	<0.0002	<0.0002	<0.0002	0.00021
8/3/2016	<0.0002	<0.0002	<0.0002	<0.0002
9/20/2016	<0.0002 (D1)	<0.0002 (D1)	0.0002 (D)	0.00022 (D)
10/13/2016	0.0002 (D)	0.00023 (D)	<0.0002 (D1)	<0.0002 (D1)
11/16/2016	0.00094 (D)	0.00093 (D)	0.00059 (D)	<0.0002 (D1)
1/19/2017	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)
2/15/2017	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)
3/1/2017	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)
11/14/2017	<0.0005 (D1)	<0.0005 (D1)	0.0071 (DT)	<0.0005 (D1)
2/15/2018	<0.008	<0.008	<0.0008	<0.0008
9/26/2018	<0.0005	<0.0005	<0.0005 (D)	<0.0005
Mean	0.001113	0.001115	0.001026	0.0003936
Std. Dev.	0.002295	0.002294	0.002024	0.0001995
Upper Lim.	0.00094	0.00093	0.0008	0.0005
Lower Lim.	0.0002	0.0002	0.0002	0.0002

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Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic, Total Analysis Run 1/17/2019 10:02 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

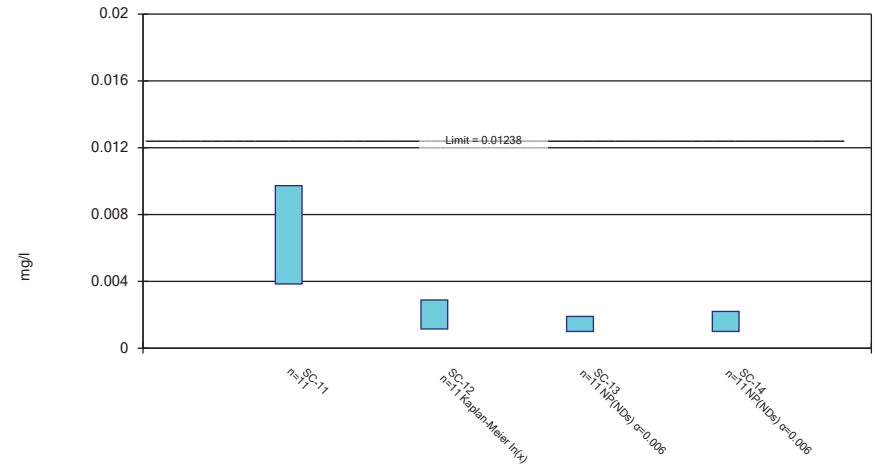
Constituent: Arsenic, Total (mg/l) Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	FC-2	CC-1	FC-3A	FC-3B	SC-10
6/22/2016	0.0042	0.0025	0.0109 (D)			0.0083
6/23/2016				0.0031		
6/27/2016					0.0026	
8/2/2016	0.0025 (D)	0.0016	0.0105	0.0021	0.0031	
8/3/2016						0.00625 (D)
9/19/2016	0.0094 (D)	0.0036 (D)	0.0089 (D)	0.0029 (D)	0.0051 (D)	
9/20/2016						0.0073 (D)
10/12/2016	0.0023 (D)	<-0.001 (D1)	0.0071 (D)	0.001325 (D)	0.0056 (D)	
10/13/2016						0.0051 (D)
11/15/2016	0.0036 (D)	<-0.001 (D1)	0.0054 (D)	0.0018 (D)	0.007 (D)	
11/16/2016						0.003 (D)
1/18/2017	0.0061 (D)	0.0011 (D)	0.00255 (D)	<-0.001 (D1)	0.0057 (D)	
1/19/2017						0.0039 (D)
2/14/2017	<-0.001 (D1)	<-0.001 (D1)	0.00495 (D)	<-0.001 (D1)	0.004 (D)	
2/15/2017						0.0054 (D)
2/28/2017	0.00625 (D)	0.0076 (D)	0.011 (D)	0.0069 (D)	0.0081 (D)	
3/1/2017						0.0126 (D)
11/13/2017	0.0041 (D)	0.0025 (D)	0.008 (D)	0.0022 (D)	0.0064 (D)	
11/14/2017						0.0095 (D)
2/14/2018	<-0.002	<-0.001		0.00115 (D)	0.0026	
2/15/2018						0.0022
9/25/2018	0.005 (D)	0.0014	0.0115	0.003	0.0074	
9/26/2018						0.0068
Mean	0.004223	0.002209	0.00808	0.002407	0.005236	0.006395
Std. Dev.	0.002397	0.001982	0.003041	0.001688	0.001942	0.003013
Upper Lim.	0.006123	0.0036	0.01079	0.003465	0.006854	0.008906
Lower Lim.	0.002141	0.001	0.005367	0.001223	0.003618	0.003885

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Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic, Total Analysis Run 1/17/2019 10:02 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

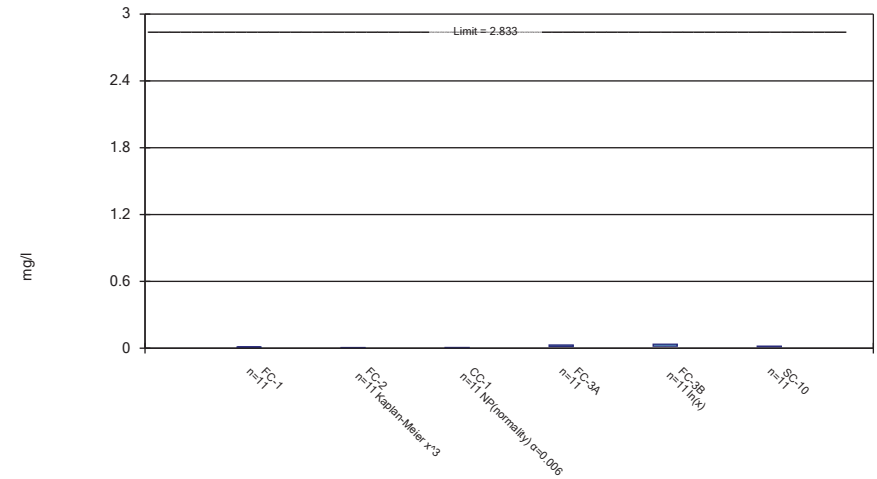
Constituent: Arsenic, Total (mg/l) Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	SC-11	SC-12	SC-13	SC-14
6/22/2016	0.0093	0.0017	0.0019	0.0022
8/3/2016	0.0095	0.0014	<0.001	<0.001
9/20/2016	0.00825 (D)	0.0026 (D)	0.0013 (D)	<0.001 (D1)
10/13/2016	0.0062 (D)	0.00285 (D)	0.0015 (D)	<0.001 (D1)
11/16/2016	<0.001 (D1)	0.0016 (D)	<0.001 (D)	<0.001 (D1)
1/19/2017	0.0033 (D)	<0.001 (D1)	<0.001 (D1)	<0.001 (D1)
2/15/2017	0.0046 (D)	<0.001 (D1)	<0.001 (D1)	<0.001 (D)
3/1/2017	0.0111 (D)	0.0067 (D)	0.0057 (D)	0.003 (D)
11/14/2017	0.0089 (D)	0.0027 (D)	0.0018 (D)	0.0011 (D)
2/15/2018	0.0021	0.0011	<0.001	<0.001
9/26/2018	0.0104	0.0013	<0.001 (D)	<0.001
Mean	0.006786	0.002177	0.001655	0.0013
Std. Dev.	0.003531	0.00165	0.001384	0.0006678
Upper Lim.	0.009729	0.002885	0.0019	0.0022
Lower Lim.	0.003844	0.001149	0.001	0.001

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Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium, Total Analysis Run 1/17/2019 10:02 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

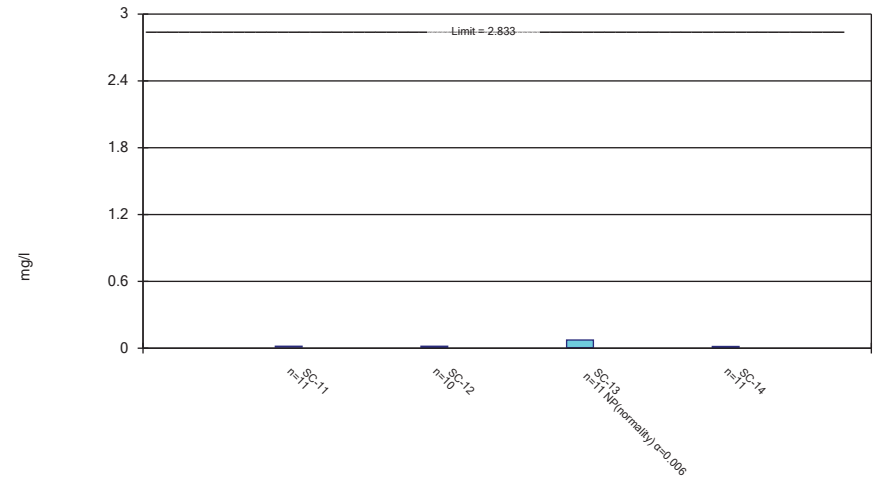
Constituent: Barium, Total (mg/l) Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	FC-2	CC-1	FC-3A	FC-3B	SC-10
6/22/2016	0.00954	0.00503	2.83285 (D)			0.0184
6/23/2016				0.034		
6/27/2016					0.0336	
8/2/2016	0.008725 (D)	<-0.005	0.00512	0.0202	0.0253	
8/3/2016						0.0138 (D)
9/19/2016	0.00928	0.00525 (D)	0.00542	0.0218	0.0183	
9/20/2016						0.013
10/12/2016	0.00905	0.00536	0.00593	0.03735 (D)	0.0184	
10/13/2016						0.0141
11/15/2016	0.0102	0.00516	0.00608	0.01735 (D)	0.0652	
11/16/2016						0.0178
1/18/2017	0.00929	0.00539	0.005675 (D)	0.0164	0.0244	
1/19/2017						0.0216
2/14/2017	0.01	0.00566	0.006005 (D)	0.0167	0.023	
2/15/2017						0.0145 (D)
2/28/2017	0.009 (D)	0.0054	<0.005	0.0148	0.0208	
3/1/2017						0.0105
11/13/2017	0.0082 (D)	0.00435 (D)	0.004 (D)	0.0259 (D)	0.0154 (D)	
11/14/2017						0.014 (D)
2/14/2018	0.0105	<-0.01	<0.01	0.01205 (D)	0.0196	
2/15/2018						0.0124
9/25/2018	0.00665 (D)	0.004	0.0039	0.021	0.037	
9/26/2018						0.0165
Mean	0.00913	0.004827	0.262	0.0216	0.02736	0.01515
Std. Dev.	0.001058	0.0009116	0.8526	0.007932	0.01416	0.003154
Upper Lim.	0.01001	0.005428	0.00608	0.02821	0.03527	0.01777
Lower Lim.	0.008249	0.004574	0.0025	0.01499	0.01779	0.01252

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Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Barium, Total Analysis Run 1/17/2019 10:02 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

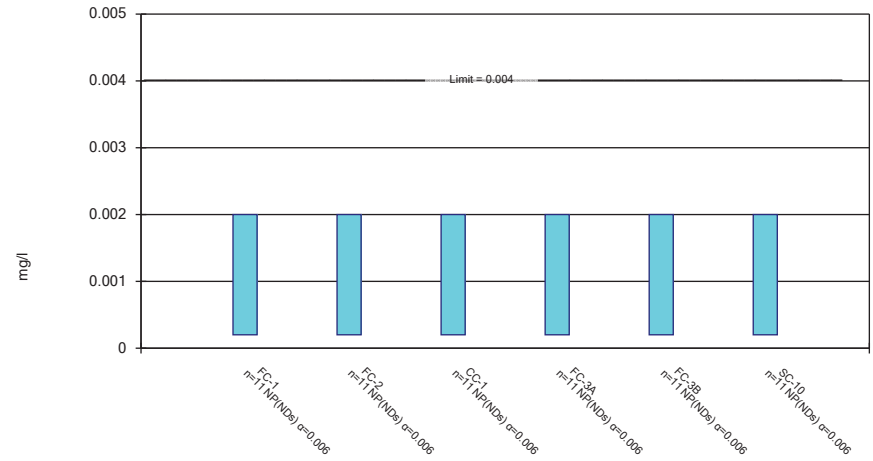
Constituent: Barium, Total (mg/l) Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	SC-11	SC-12	SC-13	SC-14
6/22/2016	0.017	0.0112	0.00979	0.024
8/3/2016	0.0165	0.0133	0.00703	0.0131
9/20/2016	0.009275 (D)		0.0736	0.0109
10/13/2016	0.0225	0.01415 (D)	0.00797	0.0163
11/16/2016	0.016	0.0178	4.629645 (D)	0.0136
1/19/2017	0.0117	0.0108	0.0075	0.00905
2/15/2017	0.0156	0.0127	0.00742	0.00766
3/1/2017	0.00732	0.00781 (D)	0.00603	0.0063
11/14/2017	0.01395 (D)	0.0063 (D)	0.006 (D)	0.0052 (D)
2/15/2018	0.0089	0.0079	<0.01	<0.01
9/26/2018	0.0099	0.0245	0.00575 (D)	0.0057
Mean	0.01351	0.01265	0.4332	0.01062
Std. Dev.	0.004544	0.00539	1.392	0.005843
Upper Lim.	0.0173	0.01745	0.0736	0.01549
Lower Lim.	0.009726	0.007837	0.005	0.00575

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Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



Constituent: Beryllium, Total Analysis Run 1/17/2019 10:02 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

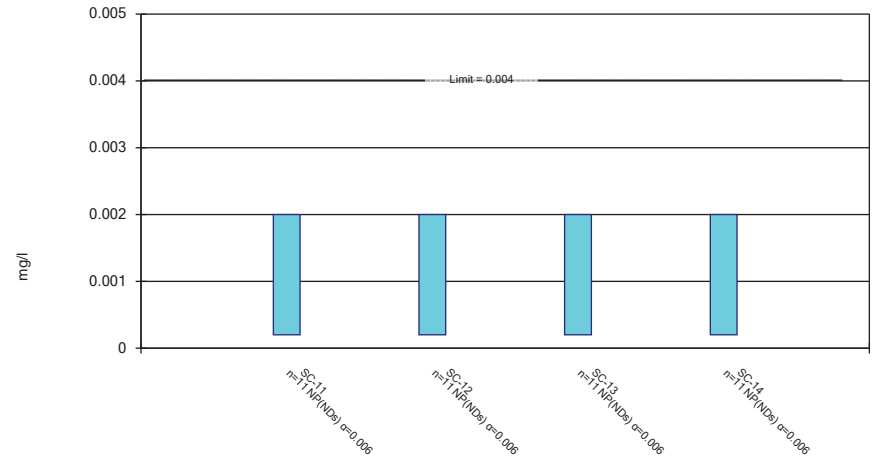
Constituent: Beryllium, Total (mg/l) Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	FC-2	CC-1	FC-3A	FC-3B	SC-10
6/22/2016	<0.002	<0.002	<0.002 (D)			<0.002
6/23/2016				<0.002		
6/27/2016					<0.002	
8/2/2016	<0.002 (D)	<0.002	<0.002	<0.002	<0.002	
8/3/2016						<0.002 (D)
9/19/2016	<0.002	<0.002 (D)	<0.002	<0.002	<0.002	
9/20/2016						<0.002
10/12/2016	<0.002	<0.002	<0.002	<0.002 (D)	<0.002	
10/13/2016						<0.002
11/15/2016	<0.002	<0.002	<0.002	<0.002 (D)	<0.002	
11/16/2016						<0.002
1/18/2017	<0.002	<0.002	<0.002 (D)	<0.002	<0.002	
1/19/2017						<0.002
2/14/2017	<0.002	<0.002	<0.002 (D)	<0.002	<0.002	
2/15/2017						<0.002 (D)
2/28/2017	<0.002 (D)	<0.002	<0.002	<0.002	<0.002	
3/1/2017						<0.002
11/13/2017	<0.0002 (D1)	<0.0002 (D1)	<0.0002 (D1)	<0.0002 (D1)	<0.0002 (D1)	
11/14/2017						<0.0002 (D1)
2/14/2018	<0.001 (T)	<0.0004 (T)	<0.001 (T)	<0.0004 (TD)	<0.001 (T)	
2/15/2018						<0.002
9/25/2018	<0.0002 (D)	<0.0002	<0.0002	<0.0002	<0.0002	
9/26/2018						<0.0002
Mean	0.001582	0.001527	0.001582	0.001527	0.001582	0.001673
Std. Dev.	0.0007454	0.0008113	0.0007454	0.0008113	0.0007454	0.0007281
Upper Lim.	0.002	0.002	0.002	0.002	0.002	0.002
Lower Lim.	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002

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Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



Constituent: Beryllium, Total Analysis Run 1/17/2019 10:02 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

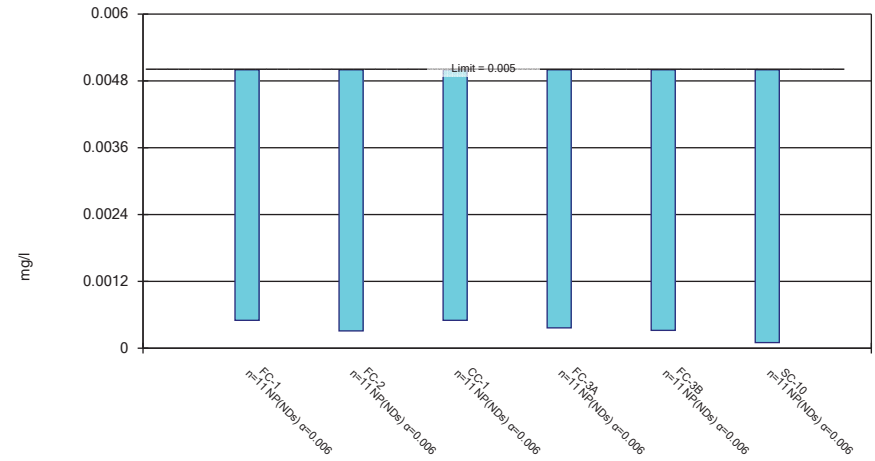
Constituent: Beryllium, Total (mg/l) Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	SC-11	SC-12	SC-13	SC-14
6/22/2016	<0.002	<0.002	<0.002	<0.002
8/3/2016	<0.002	<0.002	<0.002	<0.002
9/20/2016	<0.002 (D)	<0.002	<0.002	<0.002
10/13/2016	<0.002	<0.002 (D)	<0.002	<0.002
11/16/2016	<0.002	<0.002	<0.002 (D)	<0.002
1/19/2017	<0.002	<0.002	<0.002	<0.002
2/15/2017	<0.002	<0.002	<0.002	<0.002
3/1/2017	<0.002	<0.002 (D)	<0.002	<0.002
11/14/2017	<0.0002 (D1)	<0.0002 (D1)	0.00021 (D)	<0.0002 (D1)
2/15/2018	<0.002	<0.002	<0.001 (T)	<0.001 (T)
9/26/2018	<0.0002	<0.0002	<0.0002 (D)	<0.0002
Mean	0.001673	0.001673	0.001583	0.001582
Std. Dev.	0.0007281	0.0007281	0.0007436	0.0007454
Upper Lim.	0.002	0.002	0.002	0.002
Lower Lim.	0.0002	0.0002	0.0002	0.0002

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Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



Constituent: Cadmium, Total Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

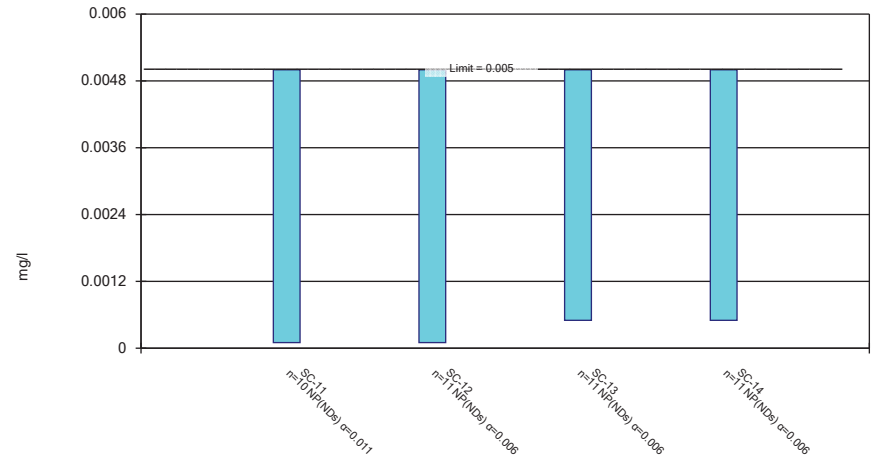
Constituent: Cadmium, Total (mg/l) Analysis Run 1/17/2019 10:04 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	FC-2	CC-1	FC-3A	FC-3B	SC-10
6/22/2016	<0.005	<0.005	<0.005 (D)			<0.005
6/23/2016				<0.005		
6/27/2016					<0.005	
8/2/2016	<0.005 (D)	<0.005	<0.005	<0.005	<0.005	
8/3/2016						<0.005 (D)
9/19/2016	<0.005	<0.005	<0.005	<0.005	<0.005	
9/20/2016						<0.005
10/12/2016	<0.005	<0.005	<0.005	<0.005 (D)	<0.005	
10/13/2016						<0.005
11/15/2016	<0.005	<0.005	<0.005	<0.005 (D)	<0.005	
11/16/2016						<0.005
1/18/2017	<0.005	<0.005	<0.005 (D)	<0.005	<0.005	
1/19/2017						<0.005
2/14/2017	<0.005	<0.005	<0.005 (D)	<0.005	<0.005	
2/15/2017						<0.005 (D)
2/28/2017	<0.005 (D)	<0.005	<0.005	<0.005	<0.005	
3/1/2017						<0.005
11/13/2017	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	
11/14/2017						<0.0005 (D1)
2/14/2018	<0.001	0.00031	<0.001	0.000365 (D)	0.00032	
2/15/2018						<0.0001
9/25/2018	<0.0005 (D)	<0.0005	<0.0005	<0.0005	<0.0005	
9/26/2018						<0.0005
Mean	0.003818	0.003755	0.003818	0.00376	0.003756	0.003736
Std. Dev.	0.002028	0.002132	0.002028	0.002123	0.00213	0.002167
Upper Lim.	0.005	0.005	0.005	0.005	0.005	0.005
Lower Lim.	0.0005	0.00031	0.0005	0.000365	0.00032	0.0001

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Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



Constituent: Cadmium, Total Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

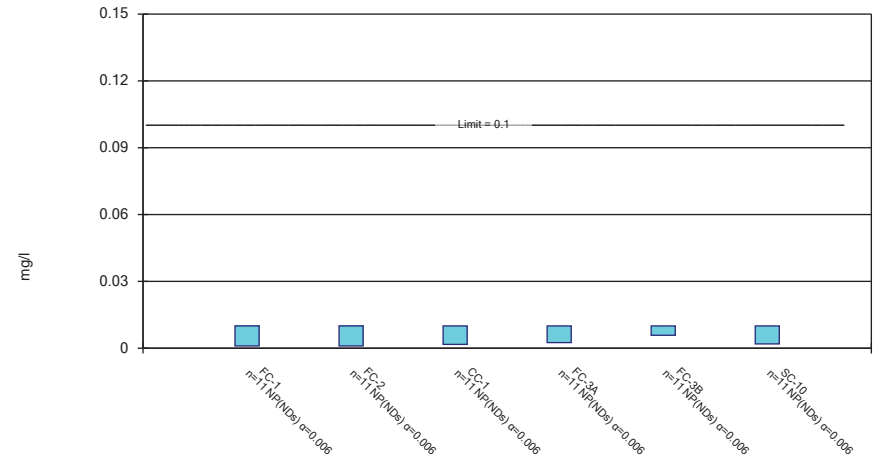
Constituent: Cadmium, Total (mg/l) Analysis Run 1/17/2019 10:04 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	SC-11	SC-12	SC-13	SC-14
6/22/2016	<0.005	<0.005	<0.005	<0.005
8/3/2016	<0.005	<0.005	<0.005	<0.005
9/20/2016	<0.005 (D)	<0.005	<0.005	<0.005
10/13/2016	<0.005	<0.005 (D)	<0.005	<0.005
11/16/2016	<0.005	<0.005	<0.005 (D)	<0.005
1/19/2017	<0.005	<0.005	<0.005	<0.005
2/15/2017	<0.005	<0.005	<0.005	<0.005
3/1/2017	<0.005	<0.005 (D)	<0.005	<0.005
11/14/2017	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)
2/15/2018	<0.0001	<0.0001	<0.001	<0.001
9/26/2018	<0.0005	<0.0005	<0.0005 (D)	<0.0005
Mean	0.00361	0.003736	0.003818	0.003818
Std. Dev.	0.002241	0.002167	0.002028	0.002028
Upper Lim.	0.005	0.005	0.005	0.005
Lower Lim.	0.0001	0.0001	0.0005	0.0005

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Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



Constituent: Chromium, Total Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

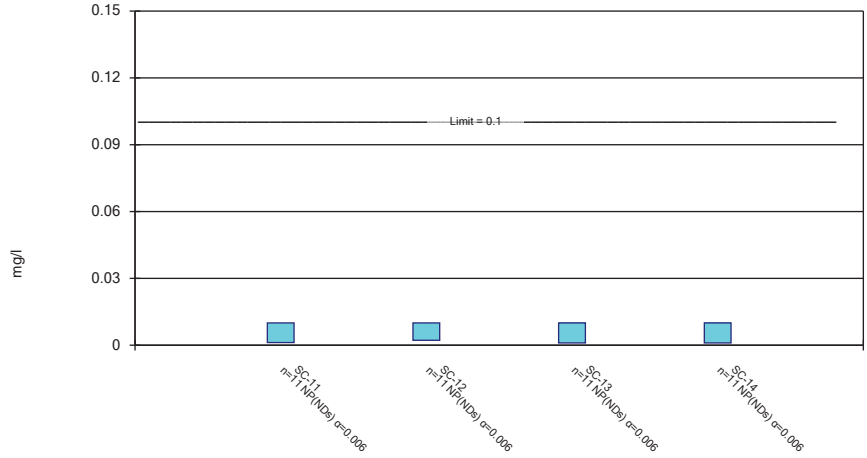
Constituent: Chromium, Total (mg/l) Analysis Run 1/17/2019 10:04 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	FC-2	CC-1	FC-3A	FC-3B	SC-10
6/22/2016	<0.01	<0.01	<0.01 (D)			<0.01
6/23/2016				<0.01		
6/27/2016					<0.01	
8/2/2016	<0.01 (D)	<0.01	<0.01	<0.01	<0.01	
8/3/2016						<0.01 (D)
9/19/2016	<0.01	<0.01 (D)	<0.01	<0.01	<0.01	
9/20/2016						<0.01
10/12/2016	<0.01	<0.01	<0.01	<0.01 (D)	<0.01	
10/13/2016						<0.01
11/15/2016	<0.01	<0.01	<0.01	<0.01 (D)	<0.01	
11/16/2016						<0.01
1/18/2017	<0.01	<0.01	<0.01 (D)	<0.01	<0.01	
1/19/2017						<0.01
2/14/2017	<0.01	<0.01	<0.01 (D)	<0.01	<0.01	
2/15/2017						<0.01 (D)
2/28/2017	<0.01 (D)	<0.01	<0.01	<0.01	<0.01	
3/1/2017						<0.01
11/13/2017	0.006 (D)	0.0051 (D)	0.0064 (D)	0.0062 (D)	0.0086 (D)	
11/14/2017						0.0061 (D)
2/14/2018	<0.004	<0.004	<0.004	<0.004 (D)	0.0058	
2/15/2018						<0.004
9/25/2018	0.001 (D)	0.001	0.0017	0.0025	0.0061	
9/26/2018						0.0019
Mean	0.008273	0.008191	0.008373	0.008427	0.009136	0.008364
Std. Dev.	0.003165	0.003241	0.002979	0.002819	0.001631	0.002956
Upper Lim.	0.01	0.01	0.01	0.01	0.01	0.01
Lower Lim.	0.001	0.001	0.0017	0.0025	0.0058	0.0019

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Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



Constituent: Chromium, Total Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

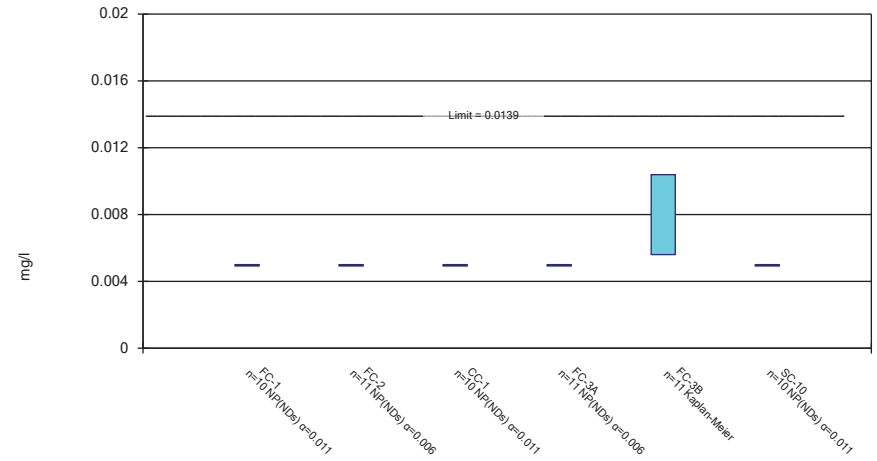
Constituent: Chromium, Total (mg/l) Analysis Run 1/17/2019 10:04 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	SC-11	SC-12	SC-13	SC-14
6/22/2016	<0.01	<0.01	<0.01	<0.01
8/3/2016	<0.01	<0.01	<0.01	<0.01
9/20/2016	<0.01 (D)	<0.01	<0.01	<0.01
10/13/2016	<0.01	<0.01 (D)	<0.01	<0.01
11/16/2016	<0.01	<0.01	<0.01 (D)	<0.01
1/19/2017	<0.01	<0.01	<0.01	<0.01
2/15/2017	<0.01	<0.01	<0.01	<0.01
3/1/2017	<0.01	<0.01 (D)	<0.01	<0.01
11/14/2017	0.0075 (D)	0.0069 (D)	0.0029 (D)	0.0066 (D)
2/15/2018	<0.004	<0.004	<0.004	<0.004
9/26/2018	0.0012	0.0022	<0.001 (D)	<0.001
Mean	0.008427	0.008464	0.007991	0.008327
Std. Dev.	0.003041	0.002837	0.003507	0.003127
Upper Lim.	0.01	0.01	0.01	0.01
Lower Lim.	0.0012	0.0022	0.001	0.001

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Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt, Total Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

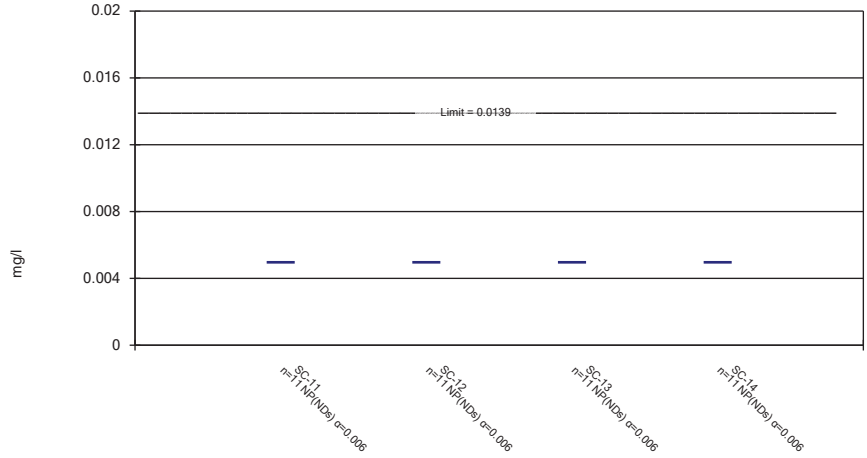
Confidence Interval

Constituent: Cobalt, Total (mg/l) Analysis Run 1/17/2019 10:04 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	FC-2	CC-1	FC-3A	FC-3B	SC-10
6/22/2016	<0.005	<0.005	<0.005 (D)			<0.005
6/23/2016				<0.005		
6/27/2016					0.0078	
8/2/2016	<0.005 (D)	<0.005		<0.005	0.005	
8/3/2016						<0.005 (D)
9/19/2016	<0.005	<0.005 (D)	<0.005	<0.005	<0.005	
10/12/2016	<0.005	<0.005	<0.005	<0.005 (D)	<0.005	
10/13/2016						<0.005
11/15/2016	<0.005	<0.005	<0.005	<0.005 (D)	0.00736	
11/16/2016						<0.005
1/18/2017	<0.005	<0.005	<0.005 (D)	<0.005	0.00778	
1/19/2017						<0.005
2/14/2017	<0.005	<0.005	<0.005 (D)	<0.005	0.00796	
2/15/2017						<0.005 (D)
2/28/2017	<0.005 (D)	<0.005	<0.005	<0.005	0.00553	
3/1/2017						<0.005
11/13/2017	<0.005	<0.005 (D)	<0.005	<0.005	0.0118	
11/14/2017						<0.005
2/14/2018		<0.005	0.00636	<0.005 (D)	0.0139	
2/15/2018						0.0059
9/25/2018	<0.005 (DD1)	<0.005 (DD1)	<0.005 (DD1)	<0.005 (DD1)	0.0108 (D)	<0.005 (DD1)
9/26/2018						
Mean	0.005	0.005	0.005136	0.005	0.007994	0.00509
Std. Dev.	0	0	0.0004301	0	0.003011	0.0002846
Upper Lim.	0.005	0.005	0.005	0.005	0.01039	0.005
Lower Lim.	0.005	0.005	0.005	0.005	0.005601	0.005

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Non-Parametric Confidence Interval Compliance Limit is not exceeded.



Constituent: Cobalt, Total Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

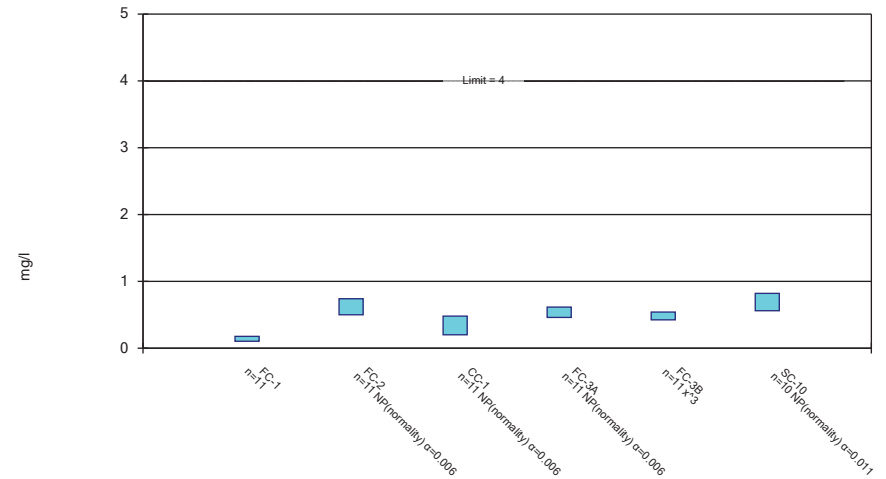
Constituent: Cobalt, Total (mg/l) Analysis Run 1/17/2019 10:04 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	SC-11	SC-12	SC-13	SC-14
6/22/2016	<0.005	<0.005	<0.005	<0.005
8/3/2016	0.005	<0.005	<0.005	<0.005
9/20/2016	<0.005 (D)	<0.005	<0.005	<0.005
10/13/2016	<0.005	<0.005 (D)	<0.005	<0.005
11/16/2016	<0.005	<0.005	<0.005 (D)	<0.005
1/19/2017	<0.005	<0.005	<0.005	<0.005
2/15/2017	<0.005	<0.005	<0.005	<0.005
3/1/2017	<0.005	<0.005 (D)	<0.005	<0.005
11/14/2017	<0.005 (D)	<0.005	<0.005	<0.005
2/15/2018	0.00525	0.00546	<0.005	<0.005
9/26/2018	<0.005 (DD1)	<0.005 (DD1)	<0.005 (DD1)	<0.005 (DD1)
Mean	0.005023	0.005042	0.005	0.005
Std. Dev.	7.538E-05	0.0001387	0	0
Upper Lim.	0.005	0.005	0.005	0.005
Lower Lim.	0.005	0.005	0.005	0.005

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Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Fluoride, Total Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

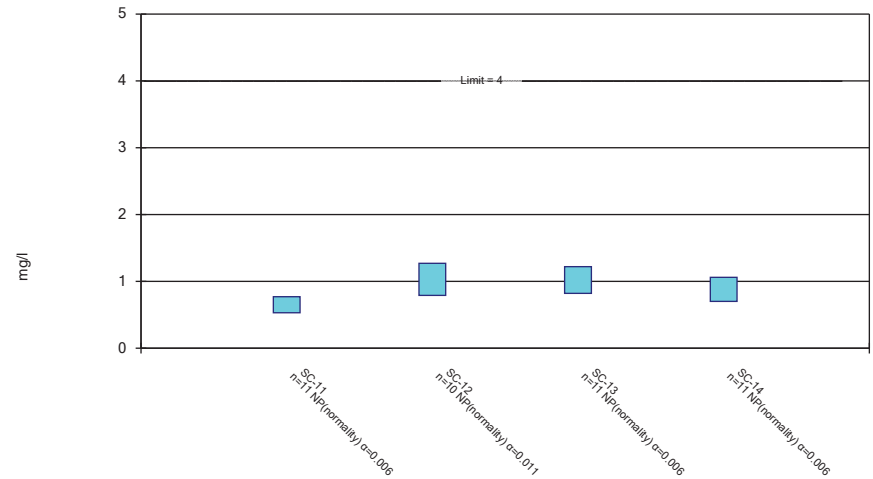
Constituent: Fluoride, Total (mg/l) Analysis Run 1/17/2019 10:04 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	FC-2	CC-1	FC-3A	FC-3B	SC-10
6/22/2016	0.12 (T)	0.51 (T)	0.215 (TD)			0.59 (T)
6/23/2016				0.46 (T)		
6/27/2016					0.55	
8/2/2016	0.06006 (TD)	0.5 (T)	0.21 (T)	0.46 (T)	0.00048 (T)	
8/3/2016						0.585 (TD)
9/19/2016	0.13	0.985 (D)	0.22	0.48	0.48	
9/20/2016						0.56
10/12/2016	0.12 (T)	0.52 (T)	0.21 (T)	0.465 (TD)	0.51 (T)	
10/13/2016						0.61 (T)
11/15/2016	0.12 (T)	0.51 (T)	0.2 (T)	0.46 (TD)	0.46 (T)	
11/16/2016						0.57 (T)
1/18/2017	0.13 (T)	0.52 (T)	0.2 (TD)	0.46 (T)	0.56 (T)	
1/19/2017						0.56 (T)
2/14/2017	0.13 (T)	0.55 (T)	0.22 (TD)	0.48 (T)	0.51 (T)	
2/15/2017						0.575 (TD)
2/28/2017	0.13 (TD)	0.53 (T)	0.22 (T)	0.47 (T)	0.42 (T)	
3/1/2017						0.57 (T)
11/13/2017	0.2	0.7 (D)	0.45	0.56	0.48	
11/14/2017						0.82
2/14/2018	0.21	0.74	0.5	0.615 (D)	0.53	
2/15/2018						0.84
9/25/2018	0.195 (D)	0.73	0.48	0.62	0.52	
Mean	0.1405	0.6177	0.2841	0.5027	0.4564	0.628
Std. Dev.	0.04417	0.1542	0.1244	0.06361	0.1565	0.1076
Upper Lim.	0.1773	0.74	0.48	0.615	0.5406	0.82
Lower Lim.	0.1036	0.5	0.2	0.46	0.4244	0.56

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Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



Constituent: Fluoride, Total Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

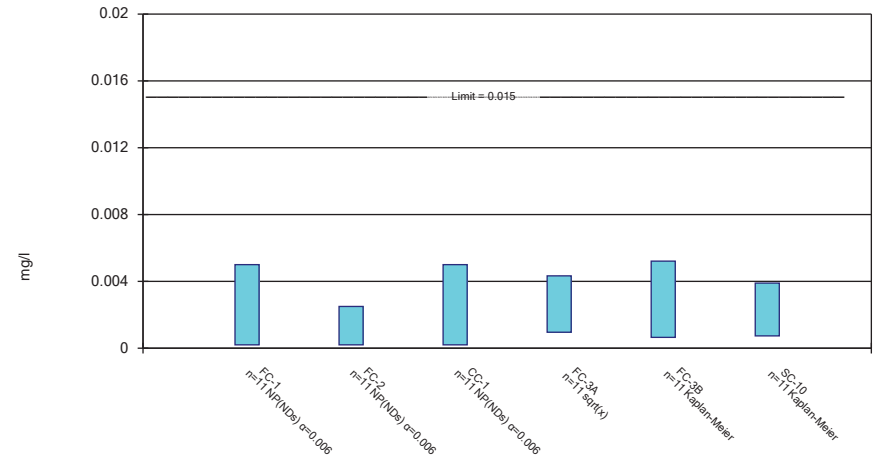
Constituent: Fluoride, Total (mg/l) Analysis Run 1/17/2019 10:04 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	SC-11	SC-12	SC-13	SC-14
6/22/2016	0.56 (T)	0.79 (T)	0.83 (T)	0.73 (T)
8/3/2016	0.54 (T)	0.82 (T)	0.82 (T)	0.72 (T)
9/20/2016	0.53 (D)	0.82	1.22 (D)	0.7
10/13/2016	0.57 (T)	0.885 (TD)	0.9 (T)	0.77 (T)
11/16/2016	0.53 (T)	0.84 (T)	0.84 (D)	0.72 (T)
1/19/2017	0.53 (T)	0.84 (T)	0.86 (T)	0.74 (T)
2/15/2017	0.55 (T)		0.86 (T)	0.74 (T)
3/1/2017	0.54 (T)	0.84 (TD)	0.84 (T)	0.74 (T)
11/14/2017	0.765 (D)	1.27	1.21	1.06
2/15/2018	0.77	1.26	1.2	1.06
9/26/2018	0.8	1.31	1.275 (D)	1.11
Mean	0.6077	0.9675	0.9868	0.8264
Std. Dev.	0.1106	0.2173	0.1918	0.1622
Upper Lim.	0.77	1.27	1.22	1.06
Lower Lim.	0.53	0.79	0.82	0.7

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Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lead, Total Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

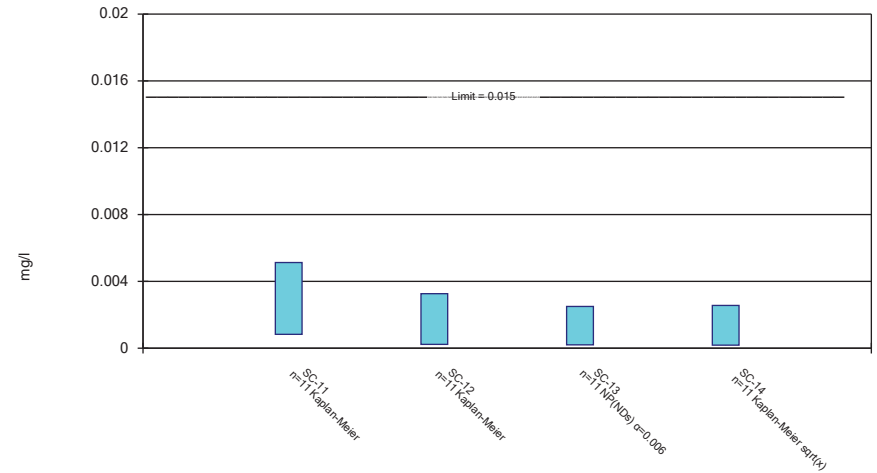
Constituent: Lead, Total (mg/l) Analysis Run 1/17/2019 10:04 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	FC-2	CC-1	FC-3A	FC-3B	SC-10
6/22/2016	<0.0002	0.0002	<0.0002 (D)			0.0041
6/23/2016				0.0052		
6/27/2016					0.0039	
8/2/2016	<0.0002 (D)	<0.0002	<0.0002	0.0015	0.0021	
8/3/2016						0.0017 (D)
9/19/2016	0.00032 (D)	<0.0002 (D1)	<0.0002 (D1)	0.001 (D)	0.00042 (D)	
9/20/2016						0.00091 (D)
10/12/2016	<0.0002 (D1)	<0.0002 (D1)	<0.0002 (D1)	0.000835 (D)	<0.0002 (D1)	
10/13/2016						0.00044 (D)
11/15/2016	0.0037 (D)	<0.0002 (D1)	0.0052 (D)	0.0031 (D)	0.0065 (D)	
11/16/2016						0.0063 (D)
1/18/2017	<0.0005 (D1)	<0.0005 (D1)	0.0035 (D)	0.0035 (D)	0.0035 (D)	
1/19/2017						0.0041 (D)
2/14/2017	0.0027 (D)	0.0018 (D)	0.0028 (D)	0.0017 (D)	0.00099 (D)	
2/15/2017						0.00275 (D)
2/28/2017	0.0081 (D)	0.0089 (D)	0.0049 (D)	0.009	0.0089 (D)	
3/1/2017						0.0046 (D)
11/13/2017	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	0.00091 (D)	<0.0005 (D1)	
11/14/2017						0.0011 (D)
2/14/2018	<0.005	<0.0025	<0.005	<0.0025 (D)	<0.0025	
2/15/2018						<0.005
9/25/2018	<0.0005 (D)	<0.0005	<0.0005	0.00086	0.0046	
9/26/2018						<0.0005 (D1)
Mean	0.001993	0.001427	0.002109	0.002737	0.003101	0.002864
Std. Dev.	0.002625	0.002593	0.002188	0.002493	0.002764	0.002054
Upper Lim.	0.005	0.0025	0.005	0.004332	0.005212	0.003896
Lower Lim.	0.0002	0.0002	0.0002	0.0009531	0.0006468	0.0007365

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Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lead, Total Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

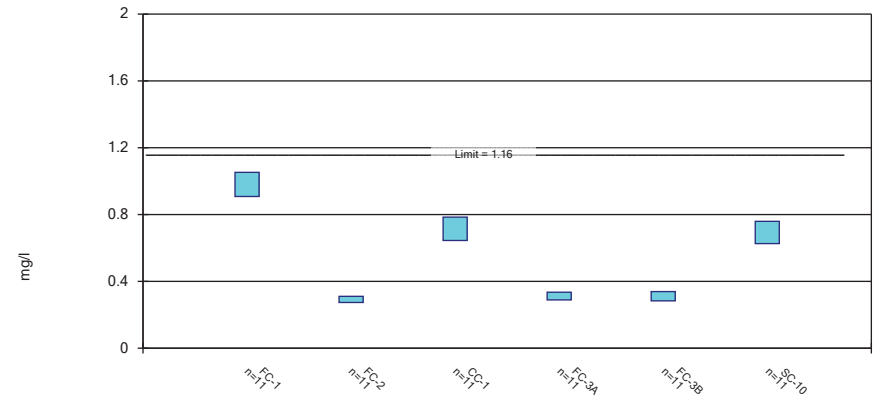
Constituent: Lead, Total (mg/l) Analysis Run 1/17/2019 10:04 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	SC-11	SC-12	SC-13	SC-14
6/22/2016	0.0076	0.00043	0.00052	0.0046
8/3/2016	0.0043	0.0016	<0.0002	0.0007
9/20/2016	<0.0002 (D1)	<0.0002 (D1)	<0.0002 (D1)	<0.0002 (D1)
10/13/2016	0.0006 (D)	<0.0002 (D)	<0.0002 (D1)	<0.0002 (D1)
11/16/2016	0.0063 (D)	0.0038 (D)	0.00145 (D)	0.0016 (D)
1/19/2017	0.0025 (D)	0.0017 (D)	0.0015 (D)	0.0016 (D)
2/15/2017	0.0028 (D)	0.0021 (D)	0.0015 (D)	0.0015 (D)
3/1/2017	0.0059 (D)	0.0064 (D)	0.0068 (D)	0.0064 (D)
11/14/2017	0.00073 (D)	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)
2/15/2018	<0.005	<0.005	<0.0025	<0.0025
9/26/2018	<0.0005 (D1)	0.0012	<0.0005 (D)	<0.0005
Mean	0.003312	0.002103	0.001443	0.001845
Std. Dev.	0.002653	0.002088	0.001926	0.001984
Upper Lim.	0.005125	0.003262	0.0025	0.002558
Lower Lim.	0.0008288	0.0002263	0.0002	0.0001833

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Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium, Total Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

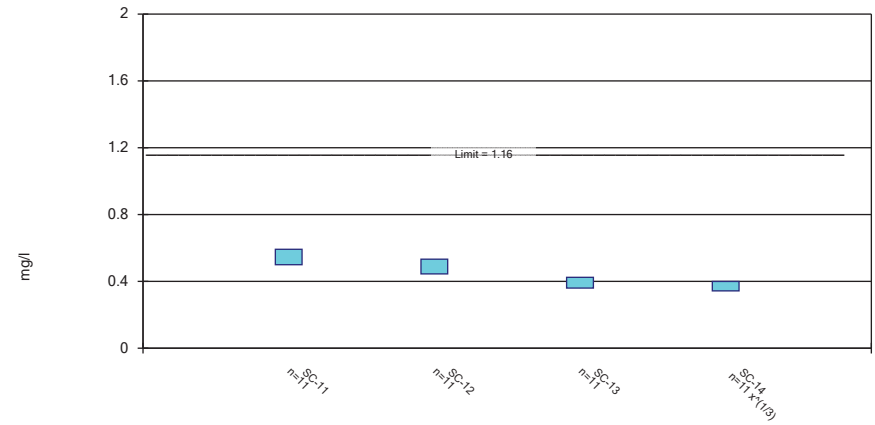
Constituent: Lithium, Total (mg/l) Analysis Run 1/17/2019 10:04 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	FC-2	CC-1	FC-3A	FC-3B	SC-10
6/22/2016	0.904	0.269	0.671 (D)			0.601
6/23/2016				0.303		
6/27/2016					0.232	
8/2/2016	0.984 (D)	0.305	0.731	0.311	0.274	
8/3/2016						0.661 (D)
9/19/2016	1.01	0.306 (D)	0.779	0.343	0.295	
9/20/2016						0.728
10/12/2016	1.03	0.307	0.825	0.3455 (D)	0.315	
10/13/2016						0.761
11/15/2016	1.16	0.325 (T)	0.822	0.3375 (D)	0.344	
11/16/2016						0.786
1/18/2017	1.08	0.318	0.791 (D)	0.343 (D)	0.335	
1/19/2017						0.858 (D)
2/14/2017	1	0.298	0.73 (D)	0.312	0.334	
2/15/2017						0.671 (D)
2/28/2017	0.9125 (D)	0.275 (D)	0.641	0.283 (D)	0.326 (D)	
3/1/2017						0.637 (D)
11/13/2017	0.894	0.2665 (D)	0.63	0.288	0.31	
11/14/2017						0.632
2/14/2018	0.9 (D)	0.265 (D)	0.576 (D)	0.2635 (D)	0.341 (D)	
2/15/2018						0.66 (D)
9/25/2018	0.9085 (D)	0.276 (D)	0.664 (D)	0.302 (D)	0.316 (D)	
9/26/2018						0.626 (D)
Mean	0.9803	0.2919	0.7145	0.312	0.3111	0.6928
Std. Dev.	0.08687	0.02201	0.08394	0.02765	0.03351	0.08008
Upper Lim.	1.053	0.3102	0.7845	0.335	0.339	0.7596
Lower Lim.	0.9079	0.2735	0.6446	0.2889	0.2832	0.6261

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Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium, Total Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

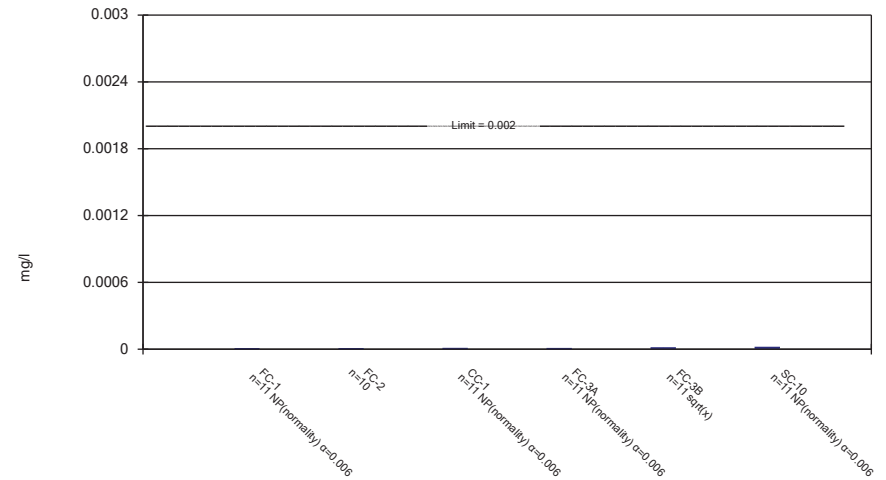
Constituent: Lithium, Total (mg/l) Analysis Run 1/17/2019 10:04 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	SC-11	SC-12	SC-13	SC-14
6/22/2016	0.475	0.422	0.394	0.363
8/3/2016	0.497	0.47	0.384	0.353
9/20/2016	0.593 (D)	0.53	0.429	0.406
10/13/2016	0.611	0.546 (D)	0.437	0.415
11/16/2016	0.622	0.572	0.4445 (D)	0.422
1/19/2017	0.619 (D)	0.558 (D)	0.433 (D)	0.407 (D)
2/15/2017	0.542	0.472	0.379	0.365
3/1/2017	0.5 (D)	0.449 (D)	0.343 (D)	0.338 (D)
11/14/2017	0.519 (D)	0.443	0.345	0.336
2/15/2018	0.494 (D)	0.442 (D)	0.374 (D)	0.345 (D)
9/26/2018	0.534 (D)	0.471 (D)	0.3495 (D)	0.336 (D)
Mean	0.546	0.4886	0.392	0.3715
Std. Dev.	0.0554	0.05288	0.03848	0.0342
Upper Lim.	0.5922	0.5327	0.4241	0.3994
Lower Lim.	0.4998	0.4446	0.3599	0.343

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Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Mercury, Total Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

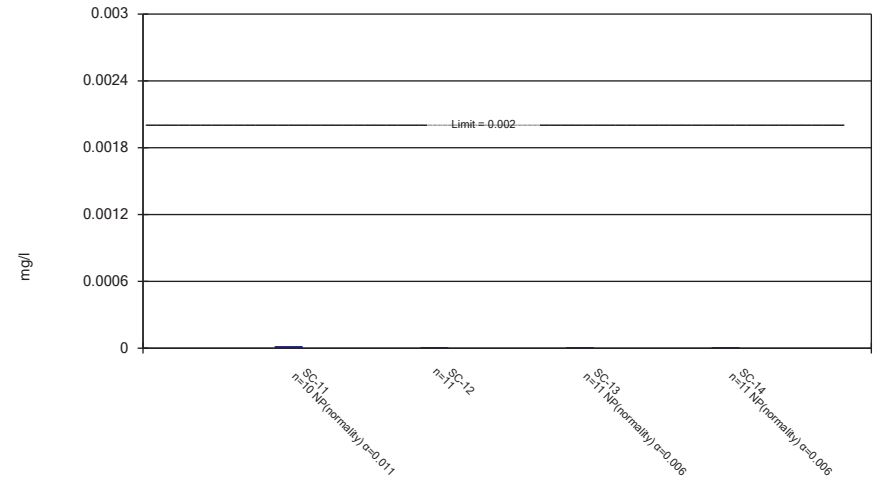
Constituent: Mercury, Total (mg/l) Analysis Run 1/17/2019 10:04 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	FC-2	CC-1	FC-3A	FC-3B	SC-10
6/22/2016	1.3E-06	2.8E-06	4.7E-06 (D)			3.6E-05
6/23/2016				5.4E-06		
6/27/2016					1.3E-05	
8/2/2016	2E-06 (D)	4E-06	6E-06	7E-06	6E-06	
8/3/2016						1.05E-05 (D)
9/19/2016	2E-06	3E-06 (D)	6E-06	4E-06	3E-06	
9/20/2016						1.6E-05
10/12/2016	2E-06		6E-06	5E-06 (D)	3E-06	
10/13/2016						1E-05
11/15/2016	2E-06	4E-06	6E-06	2E-06 (D)	9E-06	
11/16/2016						1E-05
1/18/2017	2E-06	5E-06	7.5E-06 (D)	2E-06	8E-06	
1/19/2017						1.1E-05
2/14/2017	2E-06	4E-06	6E-06 (D)	2E-06	4E-06	
2/15/2017						9E-06 (D)
2/28/2017	2E-06 (D)	4E-06	6E-06	2E-06	5E-06	
3/1/2017						9E-06
11/13/2017	2E-06 (T)	3.5E-06 (TD)	6E-06 (T)	4E-06 (T)	7E-06 (T)	
11/14/2017						1E-05
2/14/2018	2E-06	3E-06	5E-06	2E-06 (D)	5E-06	
2/15/2018						1.1E-05
9/25/2018	2.5E-06 (D)	3E-06	5E-06	3E-06	2.4E-05	
9/26/2018						9E-06
Mean	1.982E-06	3.63E-06	5.836E-06	3.491E-06	7.909E-06	1.286E-05
Std. Dev.	2.7E-07	6.9E-07	7.5E-07	1.735E-06	6.09E-06	7.919E-06
Upper Lim.	2E-06	4.248E-06	6E-06	5.4E-06	1.185E-05	1.6E-05
Lower Lim.	1.3E-06	3.012E-06	4.7E-06	2E-06	3.596E-06	9E-06

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Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Mercury, Total Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

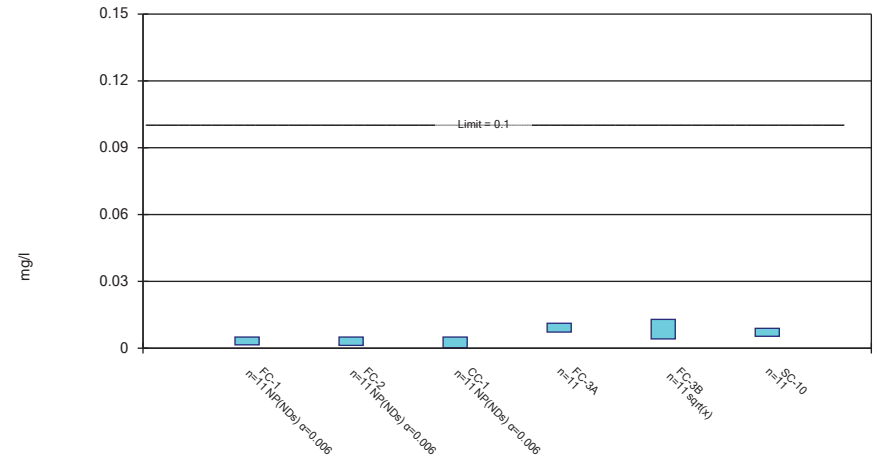
Constituent: Mercury, Total (mg/l) Analysis Run 1/17/2019 10:04 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	SC-11	SC-12	SC-13	SC-14
6/22/2016	6.7E-05	4.5E-06	3.6E-06	1.2E-05
8/3/2016		6E-06	2E-06	3E-06
9/20/2016	9.5E-06 (D)	5E-06	3E-06	3E-06
10/13/2016	1E-05	3E-06 (D)	2E-06	2E-06
11/16/2016	1E-05	4E-06	2E-06 (D)	2E-06
1/19/2017	1E-05	4E-06	3E-06	2E-06
2/15/2017	8E-06	3E-06	2E-06	2E-06
3/1/2017	9E-06	3E-06 (D)	3E-06	<2E-06
11/14/2017	7.5E-06 (D)	4E-06	2E-06	2E-06
2/15/2018	1.3E-05	4E-06	2E-06	2E-06
9/26/2018	8E-06	5E-06	2E-06 (D)	2E-06
Mean	1.52E-05	4.136E-06	2.418E-06	3E-06
Std. Dev.	1.827E-05	9.5E-07	6E-07	3.033E-06
Upper Lim.	1.3E-05	4.929E-06	3E-06	3E-06
Lower Lim.	7.5E-06	3.344E-06	2E-06	1E-06

Sanitas™ v.9.6.12 For the statistical analyses of ground water by Colorado Springs Utilities only. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Molybdenum, Total Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

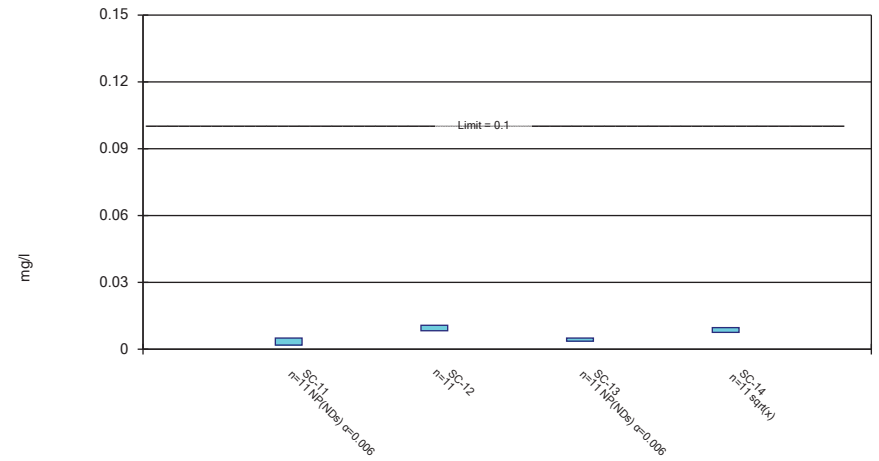
Constituent: Molybdenum, Total (mg/l) Analysis Run 1/17/2019 10:04 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	FC-2	CC-1	FC-3A	FC-3B	SC-10
6/22/2016	<0.005	<0.005	<0.005 (D)			0.0113
6/23/2016				<0.005		
6/27/2016					0.0201	
8/2/2016	<0.005 (D)	<0.005	<0.005	0.00838	0.0198	
8/3/2016						0.008055 (D)
9/19/2016	<0.005	<0.005 (D)	<0.005	0.0122	0.00609	
9/20/2016						0.00911
10/12/2016	<0.005	0.001252 (D)	<0.005	0.009175 (D)	0.00525	
10/13/2016						0.00767
11/15/2016	<0.005	<0.005	<0.005	0.01065 (D)	0.0117	
11/16/2016						0.0074
1/18/2017	<0.005	<0.005	<0.005 (D)	0.00969	<0.005	
1/19/2017						0.00614
2/14/2017	<0.005	<0.005	<0.005 (D)	0.0104	0.00716	
2/15/2017						0.006325 (D)
2/28/2017	<0.005 (D)	<0.005	<0.005	0.0109	0.00842	
3/1/2017						0.00646
11/13/2017	0.0015 (D)	0.0014 (D)	<0.0002 (D1)	0.005 (D)	0.0042 (D)	
11/14/2017						0.0026 (D)
2/14/2018	<0.01	0.003	<0.01	0.0112 (D)	0.0055	
2/15/2018						0.0072
9/25/2018	0.0015 (D)	0.002	0.0006	0.0086	0.0027	
9/26/2018						0.0062
Mean	0.004818	0.003877	0.004618	0.0092	0.00872	0.007133
Std. Dev.	0.002217	0.001617	0.002565	0.002366	0.006029	0.002145
Upper Lim.	0.005	0.005	0.005	0.01117	0.01292	0.00892
Lower Lim.	0.0015	0.001252	0.0002	0.007228	0.004141	0.005346

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Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Molybdenum, Total Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

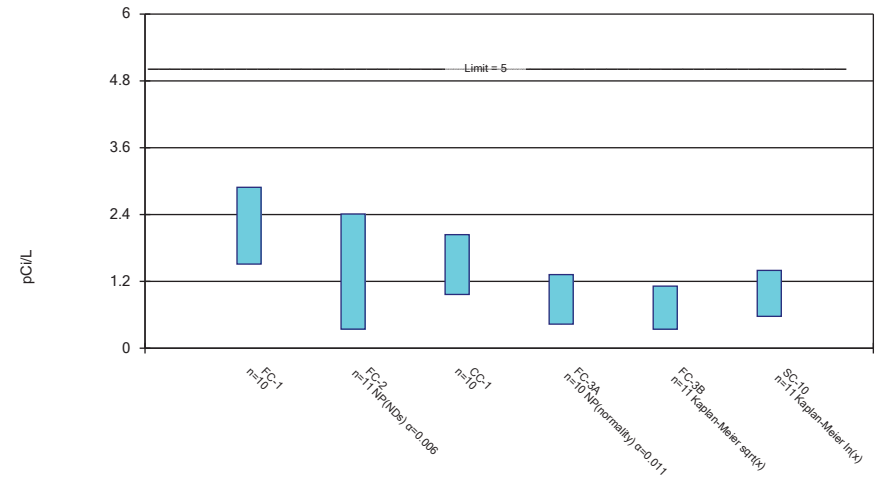
Constituent: Molybdenum, Total (mg/l) Analysis Run 1/17/2019 10:04 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	SC-11	SC-12	SC-13	SC-14
6/22/2016	<0.005	0.0128	<0.005	0.0079
8/3/2016	<0.005	0.0103	<0.005	0.00734
9/20/2016	<0.005 (D)	0.00983	<0.005	0.00819
10/13/2016	<0.005	0.0101 (D)	<0.005	0.00848
11/16/2016	<0.005	0.00951	<0.005 (D)	0.00897
1/19/2017	<0.005	0.00866	<0.005	0.00798
2/15/2017	<0.005	0.00909	<0.005	0.00821
3/1/2017	<0.005	0.00905 (D)	<0.005	0.00869
11/14/2017	0.00185 (D)	0.0067 (D)	0.0036 (D)	0.0072 (D)
2/15/2018	0.0033	0.0097	0.005	0.012
9/26/2018	0.003	0.0089	0.00375 (D)	0.0098
Mean	0.004377	0.009513	0.004759	0.008615
Std. Dev.	0.00112	0.00146	0.000537	0.001338
Upper Lim.	0.005	0.01073	0.005	0.009667
Lower Lim.	0.00185	0.008296	0.0036	0.007542

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Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Rad 226+228 Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

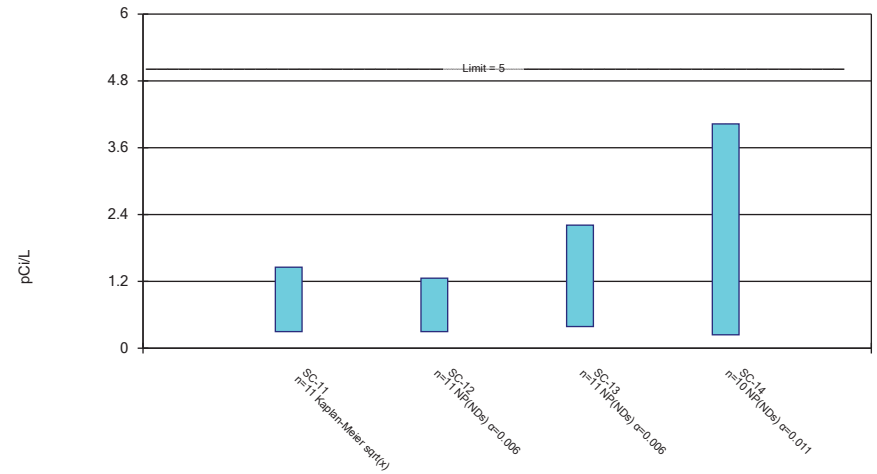
Constituent: Rad 226+228 (pCi/L) Analysis Run 1/17/2019 10:04 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	FC-2	CC-1	FC-3A	FC-3B	SC-10
6/22/2016	1.475	<0.675	1.317 (D)			1.257
6/23/2016				1.321		
6/27/2016					1.111	
8/2/2016	1.38	<0.59	1.389	<0.627	1.66	
8/3/2016						0.646
9/19/2016	2.136	<0.726	0.563	<0.759	<0.992	
9/20/2016						<0.722
10/12/2016	1.913	<0.695	1.26	0.432	0.283	
10/13/2016						<0.648
11/15/2016	2.128	0.694	1.2	<0.79	0.488	
11/16/2016						<0.755
1/18/2017	1.874	0.343	1.494 (D)	0.495	0.357	
1/19/2017						0.704
2/14/2017	2.31 (D)	0.51		0.593	1.366	
2/15/2017						1.114
2/28/2017		<0.446	1.435 (D)	0.582	<0.828	
3/1/2017						<0.864
11/13/2017	3.98	2.41	2.9		<4.45	
11/14/2017						3.15
2/14/2018	3	<4.343	1.48	<5.272 (D)	<5.58	
2/15/2018						1.76
9/25/2018	1.8	1	1.98	1.26	<5.111	
9/26/2018						0.559
Mean	2.2	1.13	1.502	1.213	2.021	1.107
Std. Dev.	0.7729	1.204	0.6024	1.458	2.003	0.7642
Upper Lim.	2.889	2.41	2.039	1.321	1.114	1.397
Lower Lim.	1.51	0.343	0.9643	0.432	0.3409	0.5714

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Parametric and Non-Parametric (NP) Confidence Interval

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Constituent: Rad 226+228 Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

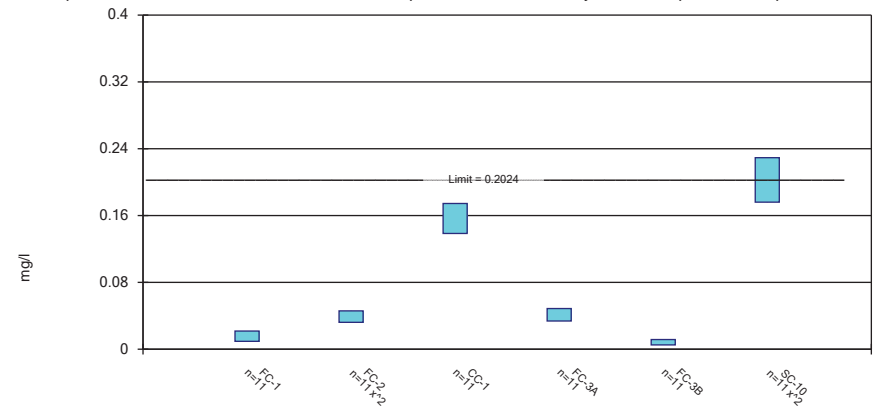
Constituent: Rad 226+228 (pCi/L) Analysis Run 1/17/2019 10:04 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	SC-11	SC-12	SC-13	SC-14
6/22/2016	2.295	<0.506	<0.541	0.786
8/3/2016	0.274	0.298	<0.547	0.541
9/20/2016	<0.911	<0.717	<0.896	0.241
10/13/2016	<0.673	<0.874	<0.61	<0.907
11/16/2016	<0.572	<0.627	<0.682	<0.739
1/19/2017	0.253	<0.786	0.451	
2/15/2017	0.751	0.459	0.388	<0.795
3/1/2017	0.632	<0.71	<0.636	<0.869
11/14/2017	1.965 (D)	1.52	2.21	2.46
2/15/2018	2.03	1.2575 (D)	3.18	<5.224
9/26/2018	<4.428	0.761	1.2355 (D)	<4.028
Mean	1.344	0.7741	1.034	1.659
Std. Dev.	1.253	0.3503	0.8802	1.692
Upper Lim.	1.455	1.258	2.21	4.028
Lower Lim.	0.2974	0.298	0.388	0.241

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Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Selenium, Total Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

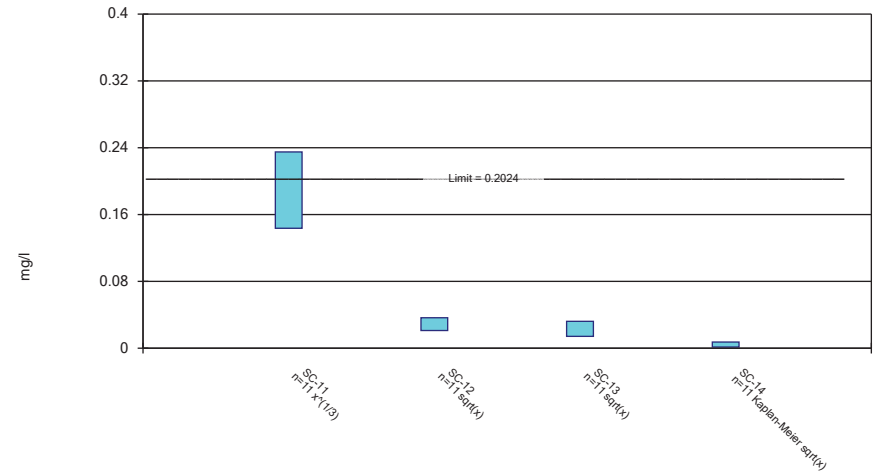
Constituent: Selenium, Total (mg/l) Analysis Run 1/17/2019 10:04 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	FC-2	CC-1	FC-3A	FC-3B	SC-10
6/22/2016	0.016	0.0471	0.1985 (D)			0.212
6/23/2016				0.0393		
6/27/2016					0.0057	
8/2/2016	0.0098 (D)	0.0412	0.186	0.0382	0.0069	
8/3/2016						0.216 (D)
9/19/2016	0.028 (D)	0.04895 (D)	0.157 (D)	0.0364 (D)	0.0112 (D)	
9/20/2016						0.201 (D)
10/12/2016	0.0167 (D)	<-0.001 (D1)	0.138 (D)	0.04245 (D)	0.0115 (D)	
10/13/2016						0.194 (D)
11/15/2016	0.0136	0.0356 (D)	0.145 (D)	0.0355 (D)	0.0106 (D)	
11/16/2016						0.201 (DP1)
1/18/2017	0.0254 (D)	0.0452 (D)	0.1385 (D)	0.039 (D)	0.0067 (D)	
1/19/2017						0.22 (D)
2/14/2017	0.0141 (DT)	0.0388 (DT)	0.1415 (D)	0.0352 (DT)	0.0092 (D)	
2/15/2017						0.22 (D)
2/28/2017	0.00375 (D)	0.0367 (D)	0.143 (D)	0.0263 (D)	0.0011 (D)	
3/1/2017						0.224 (D)
11/13/2017	0.015 (D)	0.0381 (D)	0.135 (D)	0.0552 (D)	0.0107 (D)	
11/14/2017						0.168 (D)
2/14/2018	0.0068	0.044	0.169	0.0543 (D)	0.0036	
2/15/2018						0.249
9/25/2018	0.02165 (D)	0.0371	0.17	0.0512	0.0142	
9/26/2018						0.111 (D)
Mean	0.01553	0.03757	0.1565	0.04119	0.008309	0.2015
Std. Dev.	0.007388	0.01309	0.02154	0.008945	0.00388	0.03624
Upper Lim.	0.02168	0.04586	0.1745	0.04864	0.01154	0.2293
Lower Lim.	0.009371	0.03211	0.1385	0.03373	0.005076	0.1761

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Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Selenium, Total Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

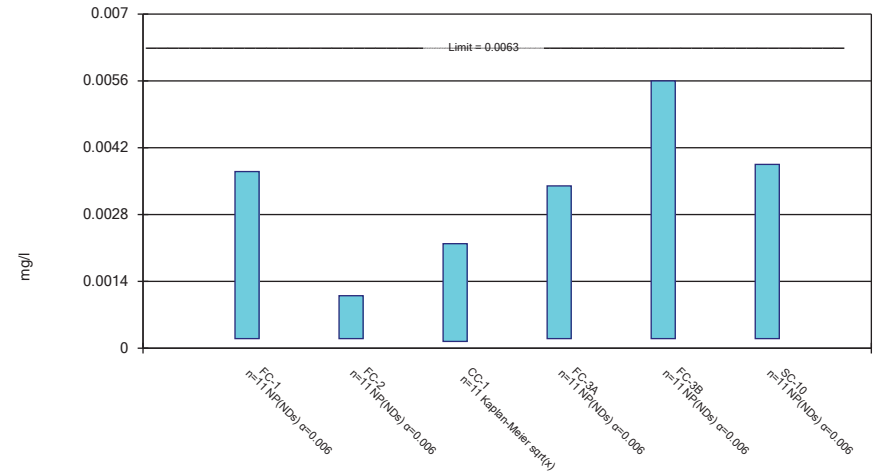
Constituent: Selenium, Total (mg/l) Analysis Run 1/17/2019 10:04 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	SC-11	SC-12	SC-13	SC-14
6/22/2016	0.168	0.0203	0.0311	0.0031
8/3/2016	0.155	0.0197	0.0236	0.0035
9/20/2016	0.188 (D)	0.0252 (D)	0.0228 (D)	0.0062 (D)
10/13/2016	0.168 (D)	0.05055 (D)	0.0558 (D)	0.0192 (D)
11/16/2016	0.163 (DP1)	0.0237 (DP1)	0.00765 (D)	<-0.001 (D1P)
1/19/2017	0.196 (D)	0.0337 (D)	0.0202 (D)	0.0013 (D)
2/15/2017	0.194 (D)	0.03 (D)	0.0164 (D)	0.0033 (D)
3/1/2017	0.189 (D)	0.02355 (D)	0.0177 (D)	<-0.001 (D1)
11/14/2017	0.213 (D)	0.0252 (D)	0.0236 (D)	0.0046 (D)
2/15/2018	0.355	0.0437	0.0204	0.0055
9/26/2018	0.107 (D)	0.0231	0.01845 (D)	0.002
Mean	0.1905	0.02897	0.02343	0.004518
Std. Dev.	0.06133	0.009936	0.01218	0.005224
Upper Lim.	0.2349	0.03646	0.03215	0.007315
Lower Lim.	0.1436	0.02117	0.01414	0.001392

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Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Thallium, Total Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

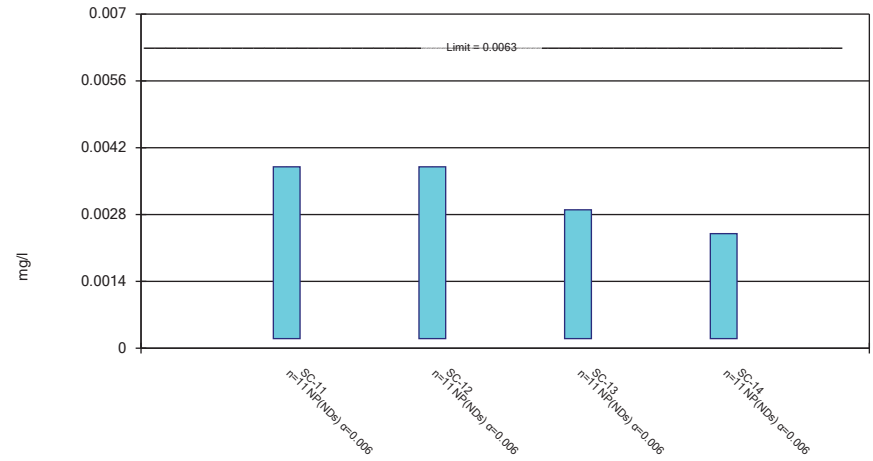
Constituent: Thallium, Total (mg/l) Analysis Run 1/17/2019 10:04 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	FC-1	FC-2	CC-1	FC-3A	FC-3B	SC-10
6/22/2016	0.0002	<0.0002	0.000455 (D)			<0.0002
6/23/2016				<0.0002		
6/27/2016					<0.0002	
8/2/2016	<0.0002 (D)	<0.0002	0.00045	<0.0002	<0.0002	
8/3/2016						<0.0002 (D)
9/19/2016	0.00027 (D)	0.000545 (D)	<0.0002 (D1)	<0.0002 (D1)	<0.0002 (D1)	
9/20/2016						<0.0002 (D1)
10/12/2016	<0.0002 (D1)	<0.0002 (D1)	<0.0002 (D1)	<0.0002 (D)	<0.0002 (D1)	
10/13/2016						<0.0002 (D1)
11/15/2016	0.0061 (D)	<0.0002 (D1)	0.0063 (D)	0.0057 (D)	0.0056 (D)	
11/16/2016						0.0077 (D)
1/18/2017	<0.0005 (D1)	<0.0005 (D1)	0.0014 (D)	0.00069 (D)	0.00098 (D)	
1/19/2017						0.00091 (D)
2/14/2017	0.0037 (D)	0.0036 (D)	0.00385 (D)	0.0034 (D)	0.0062 (D)	
2/15/2017						0.00385 (D)
2/28/2017	0.0011 (D)	0.0011 (D)	0.0014 (D)	0.0011 (D)	0.00091 (D)	
3/1/2017						0.00082 (D)
11/13/2017	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	
11/14/2017						<0.0005 (D1)
2/14/2018	<0.002	<0.001	<0.002	<0.001 (D)	<0.001	
2/15/2018						<0.0004
9/25/2018	<0.0005 (D)	<0.0005	<0.0005	<0.0005	<0.0005	
9/26/2018						<0.0005 (D1)
Mean	0.001388	0.0007768	0.001569	0.001245	0.001499	0.001407
Std. Dev.	0.001894	0.0009869	0.001907	0.001742	0.002203	0.002338
Upper Lim.	0.0037	0.0011	0.002189	0.0034	0.0056	0.00385
Lower Lim.	0.0002	0.0002	0.0001423	0.0002	0.0002	0.0002

Sanitas™ v.9.6.12 For the statistical analyses of ground water by Colorado Springs Utilities only. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded.



Constituent: Thallium, Total Analysis Run 1/17/2019 10:03 AM View: CCR Landfill GWPS
 Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

Confidence Interval

Constituent: Thallium, Total (mg/l) Analysis Run 1/17/2019 10:04 AM View: CCR Landfill GWPS

Clear Spring Ranch Client: CSU Data: Ash Landfill SHDF Master Database

	SC-11	SC-12	SC-13	SC-14
6/22/2016	<0.0002	<0.0002	<0.0002	<0.0002
8/3/2016	<0.0002	<0.0002	<0.0002	<0.0002
9/20/2016	<0.0002 (D)	<0.0002 (D1)	<0.0002 (D1)	<0.0002 (D1)
10/13/2016	<0.0002 (D1)	<0.0002 (D1)	<0.0002 (D1)	<0.0002 (D1)
11/16/2016	0.0063 (D)	0.006 (D)	0.0029 (D)	0.0024 (D)
1/19/2017	0.0012 (D)	0.0014 (D)	0.0015 (D)	0.0014 (D)
2/15/2017	0.0038 (D)	0.0038 (D)	0.0038 (D)	0.0035 (D)
3/1/2017	0.00077 (D)	0.00076 (D)	0.00077 (D)	0.00075 (D)
11/14/2017	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)	<0.0005 (D1)
2/15/2018	<0.0004	<0.002	<0.001	<0.001
9/26/2018	<0.0005 (D1)	<0.0005	<0.0005 (D)	<0.0005
Mean	0.001297	0.001433	0.00107	0.0009864
Std. Dev.	0.001961	0.001872	0.001215	0.001072
Upper Lim.	0.0038	0.0038	0.0029	0.0024
Lower Lim.	0.0002	0.0002	0.0002	0.0002

APPENDIX C

Analytical Results of Groundwater Samples

CCR LANDFILL
Analytical Results of Groundwater Samples (2018)
Constituents - Antimony to Fluoride

Monitoring Well ID	Well Purpose	Sample Date & Purpose	Antimony ^T (mg/L)	Arsenic ^T (mg/L)	Barium ^T (mg/L)	Beryllium ^T (mg/l)	Boron ^T (mg/l)	Cadmium ^T (mg/l)	Calcium ^T (mg/l)	Chloride ^T (mg/l)	Chromium ^T (mg/l)	Cobalt ^T (mg/l)	Fluoride ^T (mg/l)
CC-1	Upgradient	02/14/2018 DM AM	<0.008	<0.002	<0.01	<0.001	1.08	<0.001	392	1530	<0.004	0.00636	0.5
		09/25/2018 DM AM	<0.0005	0.0115	0.0039	<0.0002	1	<0.0005	386	1520	0.0017	<0.005	0.48
FC-1	Upgradient	02/14/2018 DM AM	<0.008	<0.002	0.0105	<0.001	1.05	<0.001	397	756	<0.004	<0.005	0.21
		09/25/2018 DM AM	<0.0005	0.005	0.00665	<0.0002	0.887	<0.0005	370	783.5	0.001	<0.005	0.195
FC-2	Upgradient	02/14/2018 DM AM	<0.0008	<0.001	<0.01	<0.0004	0.957	0.00031	387	124	<0.004	<0.005	0.74
		09/25/2018 DM AM	<0.0005	0.0014	0.004	<0.0002	0.887	<0.0005	368	118	0.001	<0.005	0.73
FC-3A	Upgradient	02/14/2018 DM AM	<0.0008	0.00115	0.01205	<0.0004	1.13	0.000365	401	115.5	<0.004	<0.005	0.615
		09/25/2018 DM AM	<0.0005	0.003	0.021	<0.0002	1.03	<0.0005	396	122	0.0025	<0.005	0.62
FC-3B	Upgradient	02/14/2018 DM AM	<0.0008	0.0026	0.196	<0.001	1.86	0.00032	246	652	0.0058	0.0139	0.53
		09/25/2018 DM AM	<0.0005	0.0074	0.037	<0.0002	1.73	<0.0005	233	1210	0.0061	0.0108	0.52
SC-10	Downgradient	02/15/2018 DM AM	<0.008	0.0022	0.0124	<0.002	1.27	<0.0001	470	737	<0.004	0.0059	0.84
		09/26/2018 DM AM	<0.0005	0.0068	0.0165	<0.0002	1.11	<0.0005	382	790	0.0019	<0.005	0.88
SC-11	Downgradient	02/15/2018 DM AM	<0.0008	0.0021	0.0089	<0.002	2.07	<0.0001	505	1110	<0.004	0.00525	0.77
		09/26/2018 DM AM	<0.0005	0.0104	0.0099	<0.0002	1.89	<0.0005	424	1120	0.0012	<0.005	0.8
SC-12	Downgradient	02/15/2018 DM AM	<0.008	0.001015	0.0078	<0.002	4.31	<0.0001	432	323	<0.004	0.00534	1.265
		09/26/2018 DM AM	<0.0005	0.0013	0.0245	<0.0002	3.77	<0.0005	364	323	0.0022	<0.005	1.31
SC-13	Downgradient	02/15/2018 DM AM	<0.0008	<0.001	<0.01	<0.001	1.85	<0.001	476	128	<0.004	<0.005	1.2
		09/26/2018 DM AM	<0.0005	<0.001	0.00575	<0.0002	1.49	<0.0005	376	177	<0.001	<0.005	1.275
SC-14	Cross-Gradient	02/15/2018 DM AM	<0.0008	<0.001	<0.01	<0.001	1.79	<0.001	444	167	<0.004	<0.005	1.06
		09/26/2018 DM AM	<0.0005	<0.001	0.0057	<0.0002	1.52	<0.0005	361	178	<0.001	<0.005	1.11

< Indicates that the compound was not detected above the stated laboratory reporting limit.
AM Assessment Monitoring.
DM Detection Monitoring.
NA Not Analyzed.
T Total Recoverable Concentration.
Italics Average of duplicate samples collected.

CCR LANDFILL
Analytical Results of Groundwater Samples (2018)
Constituents – Lead to TDS

Monitoring Well ID	Well Purpose	Sample Date & Purpose	Lead ^T (mg/L)	Lithium ^T (mg/L)	Mercury ^T (mg/L)	Molybdenum ^T (mg/l)	pH	Radium 226 (pCi/L)	Radium 228 (pCi/l)	Selenium ^T (mg/l)	Sulfate ^T (mg/l)	Thallium ^T (mg/l)	TDS
CC-1	Upgradient	02/14/2018 DM AM	<0.005	0.576	0.000005	<0.01	6.9	1.48	<3.48	0.169	NA	<0.002	32500
		09/25/2018 DM AM	<0.0005	0.661	0.000005	<0.0005	6.8	1.98	<4.55	0.17	17900	<0.0005	31400
FC-1	Upgradient	02/14/2018 DM AM	<0.005	0.9	0.000002	<0.01	7.1	3	<4.46	0.0068	NA	<0.002	22300
		09/25/2018 DM AM	<0.0005	<i>0.9085</i>	<i>0.0000025</i>	<i>0.0015</i>	7	1.8	<3.34	<i>0.02165</i>	<i>12850</i>	<0.0005	<i>21800</i>
FC-2	Upgradient	02/14/2018 DM AM	<0.0025	0.265	0.000003	0.003	7.3	<0.743	<3.6	0.044	NA	<0.001	11000
		09/25/2018 DM AM	<0.0005	0.276	0.000003	0.002	7.3	1	<3.34	0.0371	6680	<0.0005	10900
FC-3A	Upgradient	02/14/2018 DM AM	<0.0025	<i>0.2635</i>	<i>0.000002</i>	<i>0.0112</i>	7.6	<0.772	<4.5	<i>0.0543</i>	NA	<0.001	9400
		09/25/2018 DM AM	0.00086	0.302	0.000003	0.0086	7.3	1.26	<3.88	0.0512	5980	<0.0005	9700
FC-3B	Upgradient	02/14/2018 DM AM	<0.0025	0.341	0.000005	0.0055	7.1	<1.23	<4.35	0.0036	NA	<0.001	9040
		09/25/2018 DM AM	0.0046	0.316	0.000024	0.0027	7.1	<0.691	<4.42	0.0142	4420	<0.0005	8970
SC-10	Downgradient	02/15/2018 DM AM	<0.005	0.66	0.000011	0.0072	7.3	1.76	<4.08	0.249	NA	<0.0004	17900
		09/26/2018 DM AM	<0.0005	0.626	0.000009	0.0062	7.3	0.559	<4.25	0.111	NA	<0.0005	17400
SC-11	Downgradient	02/15/2018 DM AM	<0.005	0.494	0.000013	0.0033	7.3	2.03	<4.14	0.355	NA	<0.0004	14600
		09/26/2018 DM AM	<0.0005	0.534	0.000008	0.003	7.3	<0.618	<3.81	0.107	NA	<0.0005	15300
SC-12	Downgradient	02/15/2018 DM AM	<0.005	<i>0.4675</i>	<i>0.000004</i>	0.0097	7.3	<i>1.2575</i>	<3.47	<i>0.04295</i>	NA	<0.0004	<i>16600</i>
		09/26/2018 DM AM	0.0012	0.471	0.000005	0.0089	7.3	0.761	<4.04	0.0231	NA	<0.0005	16500
SC-13	Downgradient	02/15/2018 DM AM	<0.0025	0.374	0.000002	0.005	7.4	<0.994	3.18	0.0204	NA	<0.001	6040
		09/26/2018 DM AM	<0.0005	<i>0.3495</i>	<i>0.000002</i>	<i>0.00375</i>	7.3	<i>1.2355</i>	<3.42	<i>0.01845</i>	NA	<0.0005	<i>13750</i>
SC-14	Cross-Gradient	02/15/2018 DM AM	<0.0025	0.345	0.000002	0.012	7.3	<0.724	<4.5	0.0055	NA	<0.001	12800
		09/26/2018 DM AM	<0.0005	0.336	0.000002	0.0098	7.2	<0.628	<3.4	0.002	NA	<0.0005	13300

< Indicates that the compound was not detected above the stated laboratory reporting limit.
AM Assessment Monitoring.
DM Detection Monitoring.
NA Not Analyzed.
T Total Recoverable Concentration.
Italics Average of duplicate samples collected.

APPENDIX D

Laboratory Analytical Results



Colorado Springs Utilities

It's how we're all connected

LABORATORY SERVICES
719-448-4800
www.csu.org

Report Date: April 05, 2018

This report contains test results for the following samples:

274514	14-Feb-2018 12:04	Crooked Canyon Well #1
274515	14-Feb-2018 09:56	Fort Carson Well #1
274516	14-Feb-2018 10:31	Fort Carson Well #2
274517	14-Feb-2018 13:17	Fort Carson Well #3A
274518	14-Feb-2018 13:17	Fort Carson Well #3A
274519	14-Feb-2018 13:48	Fort Carson Well #3B
274520	14-Feb-2018 12:18	Equipment Blank
274521	15-Feb-2018 09:07	Sand Canyon Well #10
274522	15-Feb-2018 09:35	Sand Canyon Well #11
274523	15-Feb-2018 10:11	Sand Canyon Well #12
274524	15-Feb-2018 10:11	Sand Canyon Well #12
274525	15-Feb-2018 10:44	Sand Canyon Well #13
274526	15-Feb-2018 11:18	Sand Canyon Well #14
274527	15-Feb-2018 10:23	Equipment Blank

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

Comments: _____

Report Approved By: Wendy M. Asay
Wendy M. Asay - Environmental Specialist

4-5-18
Date

Report Date: April 05, 2018

Sample Site: Crooked Canyon Well #1
Site Identity: CC_1
Sample Number: 274514
Date/Time Sampled: 14-FEB-2018 12:04
Comp/Grab: GRAB
Sample Comments:

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	32500	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	0.50	mg/L	0.10	
EPA_300_0	Chloride	1530	mg/L	0.25	D
EPA_1631	Mercury (Total)	0.005	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	1080	ug/L	20.0	D
	Calcium (Total Recoverable)	392000	ug/L	100	D/T
	Cobalt (Total Recoverable)	6.36	ug/L	5.00	
	Lithium (Total Recoverable)	576	ug/L	10.0	D
* EPA_200_8	Antimony (Total Recoverable)	<8.0	ug/L	8.0	
	Arsenic (Total Recoverable)	<2.0	ug/L	2.0	
	Barium (Total Recoverable)	<10	ug/L	10	
	Beryllium (Total Recoverable)	<1.0	ug/L	1.0	T
	Cadmium (Total Recoverable)	<1.0	ug/L	1.0	
	Chromium (Total Recoverable)	<4.0	ug/L	4.0	
	Lead (Total Recoverable)	<5.0	ug/L	5.0	
	Molybdenum (Total Recoverable)	<10	ug/L	10	
	Selenium (Total Recoverable)	169	ug/L	4.0	
	Thallium (Total Recoverable)	<2.0	ug/L	2.0	
* EPA_903_1	Radium 226	1.48	pCi/L	0.90	J
* EPA_904_0	Radium 228	<3.48	pCi/L	3.48	
NA	Depth to Water	13.26	ft.		
+ SM_2510_B	Conductivity	25600	umhos/cm	1	
+ SM_2550_B	Temperature Centigrade (Field)	12.6	degrees C		
+ SM_4500HB	pH	6.9	SU	2.0	

Report Date: April 05, 2018

Sample Site: Fort Carson Well #1
 Site Identity: FC_1
 Sample Number: 274515
 Date/Time Sampled: 14-FEB-2018 09:56
 Comp/Grab: GRAB
 Sample Comments:

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	22300	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	0.21	mg/L	0.10	
EPA_300_0	Chloride	756	mg/L	0.25	D
EPA_1631	Mercury (Total)	0.002	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	1050	ug/L	20.0	D
	Calcium (Total Recoverable)	397000	ug/L	100	D/T
	Cobalt (Total Recoverable)	<5.00	ug/L	5.00	
	Lithium (Total Recoverable)	900	ug/L	10.0	D
* EPA_200_8	Antimony (Total Recoverable)	<8.0	ug/L	8.0	
	Arsenic (Total Recoverable)	<2.0	ug/L	2.0	
	Barium (Total Recoverable)	10.5	ug/L	10.0	
	Beryllium (Total Recoverable)	<1.0	ug/L	1.0	T
	Cadmium (Total Recoverable)	<1.0	ug/L	1.0	
	Chromium (Total Recoverable)	<4.0	ug/L	4.0	
	Lead (Total Recoverable)	<5.0	ug/L	5.0	
	Molybdenum (Total Recoverable)	<10	ug/L	10	
	Selenium (Total Recoverable)	6.8	ug/L	4.0	
	Thallium (Total Recoverable)	<2.0	ug/L	2.0	
* EPA_903_1	Radium 226	3.00	pCi/L	0.78	J
* EPA_904_0	Radium 228	<4.46	pCi/L	4.46	
NA	Depth to Water	14.69	ft.		
+ SM_2510_B	Conductivity	21700	umhos/cm	1	
+ SM_2550_B	Temperature Centigrade (Field)	13.5	degrees C		
+ SM_4500HB	pH	7.1	SU	2.0	

Report Date: April 05, 2018

Sample Site: Fort Carson Well #2
 Site Identity: FC_2
 Sample Number: 274516
 Date/Time Sampled: 14-FEB-2018 10:31
 Comp/Grab: GRAB
 Sample Comments:

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	11000	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	0.74	mg/L	0.10	
EPA_300_0	Chloride	124	mg/L	0.25	D
EPA_1631	Mercury (Total)	0.003	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	957	ug/L	20.0	D
	Calcium (Total Recoverable)	387000	ug/L	100	D/T
	Cobalt (Total Recoverable)	<5.00	ug/L	5.00	
	Lithium (Total Recoverable)	265	ug/L	10.0	D
* EPA_200_8	Antimony (Total Recoverable)	<0.80	ug/L	0.80	
	Arsenic (Total Recoverable)	<1.0	ug/L	1.0	
	Barium (Total Recoverable)	<10	ug/L	10	
	Beryllium (Total Recoverable)	<0.40	ug/L	0.40	T
	Cadmium (Total Recoverable)	0.31	ug/L	0.20	
	Chromium (Total Recoverable)	<4.0	ug/L	4.0	
	Lead (Total Recoverable)	<2.5	ug/L	2.5	
	Molybdenum (Total Recoverable)	3.0	ug/L	2.0	
	Selenium (Total Recoverable)	44	ug/L	2.0	
	Thallium (Total Recoverable)	<1.0	ug/L	1.0	
* EPA_903_1	Radium 226	<0.743	pCi/L	0.743	
* EPA_904_0	Radium 228	<3.60	pCi/L	3.60	
NA	Depth to Water	12.91	ft.		
+ SM_2510_B	Conductivity	10400	umhos/cm	1	
+ SM_2550_B	Temperature Centigrade (Field)	13.0	degrees C		
+ SM_4500HB	pH	7.3	SU	2.0	

Report Date: April 05, 2018

Sample Site: Fort Carson Well #3A
 Site Identity: FC_3A
 Sample Number: 274517
 Date/Time Sampled: 14-FEB-2018 13:17
 Comp/Grab: GRAB
 Sample Comments:

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	9480	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	0.62	mg/L	0.10	
EPA_300_0	Chloride	116	mg/L	0.25	D
EPA_1631	Mercury (Total)	0.002	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	1120	ug/L	20.0	D
	Calcium (Total Recoverable)	402000	ug/L	100	D/T
	Cobalt (Total Recoverable)	<5.00	ug/L	5.00	
	Lithium (Total Recoverable)	250	ug/L	10.0	D
* EPA_200_8	Antimony (Total Recoverable)	<0.80	ug/L	0.80	
	Arsenic (Total Recoverable)	1.1	ug/L	1.0	
	Barium (Total Recoverable)	12.2	ug/L	10.0	
	Beryllium (Total Recoverable)	<0.40	ug/L	0.40	T
	Cadmium (Total Recoverable)	0.36	ug/L	0.20	
	Chromium (Total Recoverable)	<4.0	ug/L	4.0	
	Lead (Total Recoverable)	<2.5	ug/L	2.5	
	Molybdenum (Total Recoverable)	11.2	ug/L	2.0	
	Selenium (Total Recoverable)	55.5	ug/L	2.0	
	Thallium (Total Recoverable)	<1.0	ug/L	1.0	
* EPA_903_1	Radium 226	<0.772	pCi/L	0.772	
* EPA_904_0	Radium 228	<4.50	pCi/L	4.50	
NA	Depth to Water	17.23	ft.		
+ SM_2510_B	Conductivity	9550	umhos/cm	1	
+ SM_2550_B	Temperature Centigrade (Field)	12.8	degrees C		
+ SM_4500HB	pH	7.6	SU	2.0	

Report Date: April 05, 2018

Sample Site: Fort Carson Well #3A
 Site Identity: FC_3A
 Sample Number: 274518
 Date/Time Sampled: 14-FEB-2018 13:17
 Comp/Grab: GRAB
 Sample Comments: FC_3A Duplicate

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	9320	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	0.61	mg/L	0.10	
EPA_300_0	Chloride	115	mg/L	0.25	D
EPA_1631	Mercury (Total)	0.002	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	1140	ug/L	20.0	D
	Calcium (Total Recoverable)	400000	ug/L	100	D/T
	Cobalt (Total Recoverable)	<5.00	ug/L	5.00	
	Lithium (Total Recoverable)	277	ug/L	10.0	D
* EPA_200_8	Antimony (Total Recoverable)	<0.80	ug/L	0.80	
	Arsenic (Total Recoverable)	1.2	ug/L	1.0	
	Barium (Total Recoverable)	11.9	ug/L	10.0	
	Beryllium (Total Recoverable)	<0.40	ug/L	0.40	T
	Cadmium (Total Recoverable)	0.37	ug/L	0.20	
	Chromium (Total Recoverable)	<4.0	ug/L	4.0	
	Lead (Total Recoverable)	<2.5	ug/L	2.5	
	Molybdenum (Total Recoverable)	11.2	ug/L	2.0	
	Selenium (Total Recoverable)	53.1	ug/L	2.0	
	Thallium (Total Recoverable)	<1.0	ug/L	1.0	
* EPA_903_1	Radium 226	<0.689	pCi/L	0.689	
* EPA_904_0	Radium 228	<2.96	pCi/L	2.96	

Report Date: April 05, 2018

Sample Site: Fort Carson Well #3B
 Site Identity: FC_3B
 Sample Number: 274519
 Date/Time Sampled: 14-FEB-2018 13:48
 Comp/Grab: GRAB
 Sample Comments:

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	9040	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	0.53	mg/L	0.10	
EPA_300_0	Chloride	652	mg/L	0.25	D
EPA_1631	Mercury (Total)	0.005	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	1860	ug/L	20.0	D
	Calcium (Total Recoverable)	246000	ug/L	100	D/T
	Cobalt (Total Recoverable)	13.9	ug/L	5.00	
	Lithium (Total Recoverable)	341	ug/L	10.0	D
* EPA_200_8	Antimony (Total Recoverable)	<0.80	ug/L	0.80	
	Arsenic (Total Recoverable)	2.6	ug/L	1.0	
	Barium (Total Recoverable)	19.6	ug/L	10.0	
	Beryllium (Total Recoverable)	<1.0	ug/L	1.0	T
	Cadmium (Total Recoverable)	0.32	ug/L	0.20	
	Chromium (Total Recoverable)	5.8	ug/L	4.0	
	Lead (Total Recoverable)	<2.5	ug/L	2.5	
	Molybdenum (Total Recoverable)	5.5	ug/L	2.0	
	Selenium (Total Recoverable)	3.6	ug/L	2.0	
	Thallium (Total Recoverable)	<1.0	ug/L	1.0	
* EPA_903_1	Radium 226	<1.23	pCi/L	1.23	
* EPA_904_0	Radium 228	<4.35	pCi/L	4.35	
NA	Depth to Water	28.84	ft.		
+ SM_2510_B	Conductivity	10800	umhos/cm	1	
+ SM_2550_B	Temperature Centigrade (Field)	12.7	degrees C		
+ SM_4500HB	pH	6.8	SU	2.0	

Report Date: April 05, 2018

Sample Site: Equipment Blank
 Site Identity: EQUIP_BLK
 Sample Number: 274520
 Date/Time Sampled: 14-FEB-2018 12:18
 Comp/Grab: GRAB
 Sample Comments:

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	<10	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	<0.10	mg/L	0.10	
EPA_300_0	Chloride	<0.25	mg/L	0.25	
EPA_1631	Mercury (Total)	<0.002	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	<20.0	ug/L	20.0	
	Calcium (Total Recoverable)	<100	ug/L	100	T
	Cobalt (Total Recoverable)	<5.00	ug/L	5.00	
	Lithium (Total Recoverable)	<10.0	ug/L	10.0	
* EPA_200_8	Antimony (Total Recoverable)	<0.80	ug/L	0.80	
	Arsenic (Total Recoverable)	<1.0	ug/L	1.0	
	Barium (Total Recoverable)	<10	ug/L	10	
	Beryllium (Total Recoverable)	<0.40	ug/L	0.40	T
	Cadmium (Total Recoverable)	<0.20	ug/L	0.20	
	Chromium (Total Recoverable)	<4.0	ug/L	4.0	
	Lead (Total Recoverable)	<2.5	ug/L	2.5	
	Molybdenum (Total Recoverable)	<2.0	ug/L	2.0	
	Selenium (Total Recoverable)	<2.0	ug/L	2.0	
	Thallium (Total Recoverable)	<1.0	ug/L	1.0	

Report Date: April 05, 2018

Sample Site: Sand Canyon Well #10
 Site Identity: SC_10
 Sample Number: 274521
 Date/Time Sampled: 15-FEB-2018 09:07
 Comp/Grab: GRAB
 Sample Comments:

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	17900	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	0.84	mg/L	0.10	
EPA_300_0	Chloride	737	mg/L	0.25	D/T
EPA_1631	Mercury (Total)	0.011	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	1270	ug/L	20.0	D/T
	Calcium (Total Recoverable)	470000	ug/L	100	D/T
	Cobalt (Total Recoverable)	5.90	ug/L	5.00	
	Lithium (Total Recoverable)	660	ug/L	10.0	D
* EPA_200_8	Antimony (Total Recoverable)	<8.0	ug/L	8.0	
	Arsenic (Total Recoverable)	2.2	ug/L	0.40	
	Barium (Total Recoverable)	12.4	ug/L	4.0	
	Beryllium (Total Recoverable)	<2.0	ug/L	2.0	
	Cadmium (Total Recoverable)	<0.10	ug/L	0.10	
	Chromium (Total Recoverable)	<4.0	ug/L	4.0	
	Lead (Total Recoverable)	<5.0	ug/L	5.0	
	Molybdenum (Total Recoverable)	7.2	ug/L	1.0	
	Selenium (Total Recoverable)	249	ug/L	4.00	
	Thallium (Total Recoverable)	<0.40	ug/L	0.40	
* EPA_903_1	Radium 226	1.76	pCi/L	0.54	J
* EPA_904_0	Radium 228	<4.08	pCi/L	4.08	
NA	Depth to Water	11.15	ft.		
+ SM_2510_B	Conductivity	17500	umhos/cm	1	
+ SM_2550_B	Temperature Centigrade (Field)	14.5	degrees C		
+ SM_4500HB	pH	7.3	SU	2.0	

Report Date: April 05, 2018

Sample Site: Sand Canyon Well #11
 Site Identity: SC_11
 Sample Number: 274522
 Date/Time Sampled: 15-FEB-2018 09:35
 Comp/Grab: GRAB
 Sample Comments:

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	14600	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	0.77	mg/L	0.10	
EPA_300_0	Chloride	1110	mg/L	0.25	D/T
EPA_1631	Mercury (Total)	0.013	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	2070	ug/L	20.0	D/T
	Calcium (Total Recoverable)	505000	ug/L	100	D/T
	Cobalt (Total Recoverable)	5.25	ug/L	5.00	
	Lithium (Total Recoverable)	494	ug/L	10.0	D
* EPA_200_8	Antimony (Total Recoverable)	<8.0	ug/L	8.0	
	Arsenic (Total Recoverable)	2.1	ug/L	0.40	
	Barium (Total Recoverable)	8.9	ug/L	4.0	
	Beryllium (Total Recoverable)	<2.0	ug/L	2.0	
	Cadmium (Total Recoverable)	<0.10	ug/L	0.10	
	Chromium (Total Recoverable)	<4.0	ug/L	4.0	
	Lead (Total Recoverable)	<5.0	ug/L	5.0	
	Molybdenum (Total Recoverable)	3.3	ug/L	1.0	
	Selenium (Total Recoverable)	355	ug/L	0.40	
	Thallium (Total Recoverable)	<0.40	ug/L	0.40	
* EPA_903_1	Radium 226	2.03	pCi/L	0.65	J
* EPA_904_0	Radium 228	<4.14	pCi/L	4.14	
NA	Depth to Water	8.13	ft.		
+ SM_2510_B	Conductivity	15800	umhos/cm	1	
+ SM_2550_B	Temperature Centigrade (Field)	13.4	degrees C		
+ SM_4500HB	pH	7.3	SU	2.0	

Report Date: April 05, 2018

Sample Site: Sand Canyon Well #12
 Site Identity: SC_12
 Sample Number: 274523
 Date/Time Sampled: 15-FEB-2018 10:11
 Comp/Grab: GRAB
 Sample Comments:

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	17000	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	1.26	mg/L	0.10	
EPA_300_0	Chloride	325	mg/L	0.25	T/D
EPA_1631	Mercury (Total)	0.004	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	4140	ug/L	20.0	D/T
	Calcium (Total Recoverable)	409000	ug/L	100	D/T
	Cobalt (Total Recoverable)	5.46	ug/L	5.00	
	Lithium (Total Recoverable)	442	ug/L	10.0	D
* EPA_200_8	Antimony (Total Recoverable)	<8.0	ug/L	8.0	
	Arsenic (Total Recoverable)	1.1	ug/L	0.40	
	Barium (Total Recoverable)	7.9	ug/L	4.0	
	Beryllium (Total Recoverable)	<2.0	ug/L	2.0	
	Cadmium (Total Recoverable)	<0.10	ug/L	0.10	
	Chromium (Total Recoverable)	<4.0	ug/L	4.0	
	Lead (Total Recoverable)	<5.0	ug/L	5.0	
	Molybdenum (Total Recoverable)	9.7	ug/L	1.0	
	Selenium (Total Recoverable)	43.7	ug/L	0.40	
	Thallium (Total Recoverable)	<2.0	ug/L	2.0	
* EPA_903_1	Radium 226	1.52	pCi/L	1.20	J
* EPA_904_0	Radium 228	<3.47	pCi/L	3.47	
NA	Depth to Water	9.04	ft.		
+ SM_2510_B	Conductivity	16200	umhos/cm	1	
+ SM_2550_B	Temperature Centigrade (Field)	13.1	degrees C		
+ SM_4500HB	pH	7.4	SU	2.0	

Report Date: April 05, 2018

Sample Site: Sand Canyon Well #12
 Site Identity: SC_12
 Sample Number: 274524
 Date/Time Sampled: 15-FEB-2018 10:11
 Comp/Grab: GRAB
 Sample Comments: SC_12 Duplicate

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	16200	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	1.27	mg/L	0.10	
EPA_300_0	Chloride	321	mg/L	0.25	D/T
EPA_1631	Mercury (Total)	0.004	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	4480	ug/L	20.0	D/T
	Calcium (Total Recoverable)	455000	ug/L	100	D/T
	Cobalt (Total Recoverable)	5.22	ug/L	5.00	
	Lithium (Total Recoverable)	493	ug/L	10.0	D
* EPA_200_8	Antimony (Total Recoverable)	<8.0	ug/L	8.0	
	Arsenic (Total Recoverable)	0.93	ug/L	0.40	
	Barium (Total Recoverable)	7.7	ug/L	4.0	
	Beryllium (Total Recoverable)	<2.0	ug/L	2.0	
	Cadmium (Total Recoverable)	<0.10	ug/L	0.10	
	Chromium (Total Recoverable)	<4.0	ug/L	4.0	
	Lead (Total Recoverable)	<5.0	ug/L	5.0	
	Molybdenum (Total Recoverable)	9.7	ug/L	1.0	
	Selenium (Total Recoverable)	42.2	ug/L	0.40	
	Thallium (Total Recoverable)	<0.40	ug/L	0.40	
* EPA_903_1	Radium 226	0.995	pCi/L	0.846	J
* EPA_904_0	Radium 228	<4.25	pCi/L	4.25	

Report Date: April 05, 2018

Sample Site: Sand Canyon Well #13
 Site Identity: SC_13
 Sample Number: 274525
 Date/Time Sampled: 15-FEB-2018 10:44
 Comp/Grab: GRAB
 Sample Comments:

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	6040	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	1.20	mg/L	0.10	
EPA_300_0	Chloride	158	mg/L	0.25	D/T
EPA_1631	Mercury (Total)	0.002	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	1850	ug/L	20.0	D/T
	Calcium (Total Recoverable)	476000	ug/L	100	D/T
	Cobalt (Total Recoverable)	<5.00	ug/L	5.00	
	Lithium (Total Recoverable)	374	ug/L	10.0	D
* EPA_200_8	Antimony (Total Recoverable)	<0.80	ug/L	0.80	
	Arsenic (Total Recoverable)	<1.0	ug/L	1.0	
	Barium (Total Recoverable)	<10	ug/L	10	
	Beryllium (Total Recoverable)	<1.0	ug/L	1.0	T
	Cadmium (Total Recoverable)	<1.0	ug/L	1.0	
	Chromium (Total Recoverable)	<4.0	ug/L	4.0	
	Lead (Total Recoverable)	<2.5	ug/L	2.5	
	Molybdenum (Total Recoverable)	5.0	ug/L	2.0	
	Selenium (Total Recoverable)	20.4	ug/L	2.0	
	Thallium (Total Recoverable)	<1.0	ug/L	1.0	
* EPA_903_1	Radium 226	<0.994	pCi/L	0.994	
* EPA_904_0	Radium 228	3.18	pCi/L	3.06	J
NA	Depth to Water	9.40	ft.		
+ SM_2510_B	Conductivity	12200	umhos/cm	1	
+ SM_2550_B	Temperature Centigrade (Field)	12.9	degrees C		
+ SM_4500HB	pH	7.4	SU	2.0	

Report Date: April 05, 2018

Sample Site: Sand Canyon Well #14
 Site Identity: SC_14
 Sample Number: 274526
 Date/Time Sampled: 15-FEB-2018 11:18
 Comp/Grab: GRAB
 Sample Comments:

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	12800	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	1.06	mg/L	0.10	
EPA_300_0	Chloride	167	mg/L	0.25	D/T
EPA_1631	Mercury (Total)	0.002	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	1790	ug/L	20.0	D/T
	Calcium (Total Recoverable)	444000	ug/L	100	D/T
	Cobalt (Total Recoverable)	<5.00	ug/L	5.00	
	Lithium (Total Recoverable)	345	ug/L	10.0	D
* EPA_200_8	Antimony (Total Recoverable)	<0.80	ug/L	0.80	
	Arsenic (Total Recoverable)	<1.0	ug/L	1.0	
	Barium (Total Recoverable)	<10	ug/L	10	
	Beryllium (Total Recoverable)	<1.0	ug/L	1.0	T
	Cadmium (Total Recoverable)	<1.0	ug/L	1.0	
	Chromium (Total Recoverable)	<4.0	ug/L	4.0	
	Lead (Total Recoverable)	<2.5	ug/L	2.5	
	Molybdenum (Total Recoverable)	12.0	ug/L	2.0	
	Selenium (Total Recoverable)	5.5	ug/L	2.0	
	Thallium (Total Recoverable)	<1.0	ug/L	1.0	
* EPA_903_1	Radium 226	<0.724	pCi/L	0.724	
* EPA_904_0	Radium 228	<4.50	pCi/L	4.50	
NA	Depth to Water	8.94	ft.		
+ SM_2510_B	Conductivity	12300	umhos/cm	1	
+ SM_2550_B	Temperature Centigrade (Field)	11.9	degrees C		
+ SM_4500HB	pH	7.3	SU	2.0	

Report Date: April 05, 2018

Sample Site: Equipment Blank
 Site Identity: EQUIP_BLK
 Sample Number: 274527
 Date/Time Sampled: 15-FEB-2018 10:23
 Comp/Grab: GRAB
 Sample Comments:

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	<10	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	<0.10	mg/L	0.10	
EPA_300_0	Chloride	<0.25	mg/L	0.25	T
EPA_1631	Mercury (Total)	<0.002	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	<20.0	ug/L	20.0	T
	Calcium (Total Recoverable)	<100	ug/L	100	T
	Cobalt (Total Recoverable)	<5.00	ug/L	5.00	
	Lithium (Total Recoverable)	<10.0	ug/L	10.0	
* EPA_200_8	Antimony (Total Recoverable)	<0.80	ug/L	0.80	
	Arsenic (Total Recoverable)	<1.0	ug/L	1.0	
	Barium (Total Recoverable)	<10	ug/L	10	
	Beryllium (Total Recoverable)	<0.40	ug/L	0.40	T
	Cadmium (Total Recoverable)	<0.20	ug/L	0.20	
	Chromium (Total Recoverable)	<10	ug/L	10	
	Lead (Total Recoverable)	<2.5	ug/L	2.5	
	Molybdenum (Total Recoverable)	<2.0	ug/L	2.0	
	Selenium (Total Recoverable)	<2.0	ug/L	2.0	
	Thallium (Total Recoverable)	<1.0	ug/L	1.0	

Analysis Information:

*: Analysis performed by an external contract laboratory.
 +: Analysis performed in the Field.
 ^: The Reporting Limit for the total analytes is less than two times the method Detection Limit (MDL).
 The associated concentration value reported is an approximation of the analyte.
 #: Total value is a result of a calculation.
 ~: Sample was not distilled prior to analysis.
 **: This analysis is not listed in 40 CFR Part 136.

Data Qualifiers:

D - Sample required dilution. The associated analyte concentration value reported has dilution factor applied. Reporting Limit does not reflect dilution factor.
 J - Analysis confirms the presence of the analyte at a concentration which is less than the established Reporting Limit (RL), but greater than the Method Detection Limit (MDL). The associated concentration value reported is approx.
 T - The matrix spike recovery for the sample batch is outside the established range. The performance of the method is shown to be in control. The recovery is matrix related, not method related.

CCR Landfill Groundwater Assessment

Sample Date: 2-14-18

QC Report Needed

Sampler: J. HETZEL

LOCATION	# Bottles	LIMS #	Sample Time	PH Field (m) SM 4500 H	Temperature Field (C) SM 2550 B	Conductivity Field (umhos/cm) SM 2510 B	Depth to Water (feet)	Fluoride, SM 4500 F C	TOTAL Dissolved Solids, SM 2540 C	Chloride, EPA 300.0	EPA 200.7 (B, Ca, Co & U - Total Recoverable)	EPA 200.8 (Sb, As, Ba, Bi, Cd, Cr, Pb, Mn, Se & Tl - Total Recoverable) (Sent to SGS Accounts)	Mercury, EPA 1631 (not collect using clean-hands/dry-hands)	Radium 226 & Radium 228 (sent to GEL)	Comments
CC_1	8	274514	1304	6.90	12.6	25,600	13.26	X	X	X	X	X	X	X	Not Field Analyzed
FC_1	8	274515	956	7.09	13.5	21,700	14.69	X	X	X	X	X	X	X	
FC_2	8	274516	1031	7.27	13.0	10,420	12.91	X	X	X	X	X	X	X	
FC_3A	8	274517	1317	7.55	12.8	9,550	17.23	X	X	X	X	X	X	X	
Duplicate	8	274518	1317												
FC_3B	8	274519	1348	6.85	12.7	10,850	28.84	X	X	X	X	X	X	X	
EQUIP_BLK	6	274520	1218					X	X	X	X	X	X	X	
Total # of Bottles	54														

Additional Comments / Sample Rejections/
Actions
Sample Template: CCR_LAND
Project ID: CCR_LAND
Test Schedule: CCR_LAND
Logged in 2-5-18

Signature/Print last name: J. Hetzel Date/Time: 2-14-18 @ 1422
 Reinspected by: Michael Hestel
 Received by: Michael Campbell 2-14-18 @ 1422

CCR Landfill Groundwater Assessment

Sample Date: 2-15-18

QC Report Needed

Sampler: J. HETZEL

LOCATION	# Bottles	LIMS #	Sample Time	PH Field (m) SM 4500 H	Temperature Field (C) SM 2550 B	Conductivity Field (umhos/cm) SM 2510 B	Depth to Water (feet)	Fluoride, SM 4500 F C	TOTAL Dissolved Solids, SM 2540 C	Chloride, EPA 300.0	EPA 200.7 (B, Ca, Co & U - Total Recoverable)	EPA 200.8 (Sb, As, Ba, Bi, Cd, Cr, Pb, Mn, Se & Tl - Total Recoverable) (Sent to SGS Accounts)	Mercury, EPA 1631 (not collect using clean-hands/dry-hands)	Radium 226 & Radium 228 (sent to GEL)	Comments
SC_10	8	274521	907	7.34	14.5	17,500	11.15	X	X	X	X	X	X	X	
SC_11	8	274522	935	7.31	13.4	15,800	8.13	X	X	X	X	X	X	X	
SC_12	8	274523	1011	7.37	13.1	16,150	9.04	X	X	X	X	X	X	X	
Duplicate	8	274524	1011												
SC_13	8	274525	1044	7.35	12.9	12,200	7.40	X	X	X	X	X	X	X	
SC_14	8	274526	1118	7.32	11.9	12,320	8.94	X	X	X	X	X	X	X	
EQUIP_BLK	6	274527	1023					X	X	X	X	X	X	X	
Total # of Bottles	54														

Additional Comments / Sample Rejections/
Actions
Sample Template: CCR_LAND
Project ID: CCR_LAND
Test Schedule: CCR_LAND
Logged in 2-5-18

Signature/Print last name: J. Hetzel Date/Time: 2-15-18 @ 1158
 Reinspected by: Michael Hestel
 Received by: A. Berk / BEREMANI 2-15-18 @ 1158

2-21-18
WMT



**Laboratory Services Section
QC Report**

**CCR Landfill Assessment
February 2018**

Quality Assurance Officer Approval: _____

Date: 4-4-18

QC Narrative

This report is for sample numbers 274514-274527.

Total Dissolved Solids by Standard Methods 2540 C

There are no anomalies to report for this analysis.

Fluoride by Standard Methods 4500 F C

There are no anomalies to report for this analysis.

Anions by EPA Method 300.0

The matrix spike recovery is outside the established range for Chloride. The performance of the method is shown to be in control. The recovery is matrix related, not method related. Associated samples 274521-274527 are qualified.

Mercury by EPA 1631 E

There are no anomalies to report for this analysis.

EPA 200.7

The matrix spike recovery is outside the established range for Total Recoverable Calcium. The performance of the method is shown to be in control. The recovery is matrix related, not method related. Associated samples 274514-274527 are qualified.

The matrix spike recovery is outside the established range for Total Recoverable Boron. The performance of the method is shown to be in control. The recovery is matrix related, not method related. Associated samples 274521-274527 are qualified.

EPA 200.8

There are no anomalies to report for this analysis.

Method: Total Dissolved Solids by Standard Methods 2540 C
 Batch Analysis date: 2/15/18
 Sampled date: 2/14/18 for samples 274514-274520
 Sampled date: 2/15/18 for samples 274521-274527

Matrix QC performed on sample # 274514 and 274522

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
QCS	Total Dissolved Solids	100	84 - 110		
Duplicate	Total Dissolved Solids (274514)			2	<10
Duplicate	Total Dissolved Solids (274522)			3	<10

Method: Fluoride by Standard Methods 4500 F C
 Batch Analysis date: 2/15/18
 Sampled date: 2/14/18 for samples 274514-274520

Matrix QC performed on sample # 274514

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Fluoride (Total)	95	90 - 110		
QCS	Fluoride (Total)	92	90 - 110		
MS	Fluoride (Total)	91	80 - 120		
MSD	Fluoride (Total)			1	<20
QC Type	Analyte	Concentration	Limit		
LRB	Fluoride (Total)	<0.10 mg/L	0.10 mg/L		

Method: Fluoride by Standard Methods 4500 F C
 Batch Analysis date: 2/16/18
 Sampled date: 2/15/18 for samples 275421-274527

Matrix QC performed on sample # 274525

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Fluoride (Total)	96	90 - 110		
QCS	Fluoride (Total)	92	90 - 110		
MS	Fluoride (Total)	92	80 - 120		
MSD	Fluoride (Total)			<1	<20
QC Type	Analyte	Concentration	Limit		
LRB	Fluoride (Total)	<0.10 mg/L	0.10 mg/L		

Method: Anions by EPA Method 300.0
 Batch Analysis date: 2/14/18
 Sampled date: 2/14/18 for samples 274514-274520

Matrix QC performed on LIMS # 274508

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Chloride	104	50-150		
LFB	Chloride	100	90-110	<1	<20
FD	Chloride			<1	<20
MS	Chloride	94	80-120		
QC Type	Analyte	Concentration	Limit		
LRB	Chloride	<0.25 mg/L	0.25 mg/L		

Method: Anions by EPA Method 300.0
 Batch Analysis date: 2/16/18
 Sampled date: 2/15/18 for samples 274521-274527

Matrix QC performed on LIMS # 274523

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Chloride	105	50-150		
LFB	Chloride	100	90-110	<1	<20
FD	Chloride			1	<20
MS	Chloride	*131	80-120		
QC Type	Analyte	Concentration	Limit		
LRB	Chloride	<0.25 mg/L	0.25 mg/L		

*See Narrative

Method: Mercury by EPA 1631 E
 Batch Analysis date: 2/22/18
 Sampled date: 2/14/18 for samples 274514-274520
 Sampled date: 2/15/18 for samples 274521-274527

Matrix QC performed on sample 274517 and 274523

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Mercury (Total)	98	50-150		
QCS	Mercury (Total)	92	77-123		
MS	Mercury (Total) (274517)	84	71-125		
MSD	Mercury (Total) (274517)			1	<24
MS	Mercury (Total) (274523)	75	71-125		
MSD	Mercury (Total) (274523)			<1	<24
QC Type	Analyte	Concentration	Limit		
LRB	Mercury (Total)	<0.5 ng/L	0.5 ng/L		

Method: EPA 200.7
 Batch Analysis date: 2/21/18
 Sampled date: 2/14/18 for samples 274514 - 274520

Matrix QC performed on sample 274517

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Cobalt (Total Recoverable)	106	50-150		
LFB	Cobalt (Total Recoverable)	98	85-115		
MS	Cobalt (Total Recoverable)	88	70-130		
MSD	Cobalt (Total Recoverable)			<1	<20
QC Type	Analyte	Concentration	Limit		
LRB	Cobalt (Total Recoverable)	<1.20 ug/L	1.20 ug/L		

Method: EPA 200.7
 Batch Analysis date: 2/21/18
 Sampled date: 2/15/18 for samples 274521 - 274527

Matrix QC performed on sample 274523

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Cobalt (Total Recoverable)	118	50-150		
LFB	Cobalt (Total Recoverable)	98	85-115		
MS	Cobalt (Total Recoverable)	87	70-130		
MSD	Cobalt (Total Recoverable)			<1	<20
QC Type	Analyte	Concentration	Limit		
LRB	Cobalt (Total Recoverable)	<1.20 ug/L	1.20 ug/L		

Method: EPA 200.7
 Batch Analysis date: 2/21/18
 Sampled date: 2/15/18 for samples 274514 -274520

Matrix QC performed on sample 274517

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Boron (Total Recoverable)	97	50-150		
LFB	Boron (Total Recoverable)	100	85-115		
MS	Boron (Total Recoverable)	95	70-130		
MSD	Boron (Total Recoverable)			1	<20
MRL	Calcium (Total Recoverable)	102	50-150		
LFB	Calcium (Total Recoverable)	96	85-115		

MS	Calcium (Total Recoverable)	*18	70-130		
MSD	Calcium (Total Recoverable)			<1	<20
MRL	Lithium (Total Recoverable)	90	50-150		
LFB	Lithium (Total Recoverable)	99	85-115		
MS	Lithium (Total Recoverable)	101	70-130		
MSD	Lithium (Total Recoverable)			<1	<20
QC Type	Analyte	Concentration	Limit		
LRB	Boron (Total Recoverable)	<8.23 ug/L	8.23 ug/L		
LRB	Calcium (Total Recoverable)	<19.8 ug/L	19.8 ug/L		
LRB	Lithium (Total Recoverable)	<7.19 ug/L	7.19 ug/L		

*See Narrative

Method: EPA 200.7
 Batch Analysis date: 2/21/18
 Sampled date: 2/15/18 for samples 27421 -274527

Matrix QC performed on sample 274523

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Calcium (Total Recoverable)	106	50-150		
LFB	Calcium (Total Recoverable)	104	85-115		
MS	Calcium (Total Recoverable)	*217	70-130		
MSD	Calcium (Total Recoverable)			2	<20
QC Type	Analyte	Concentration	Limit		
LRB	Calcium (Total Recoverable)	<19.8 ug/L	19.8 ug/L		

*See Narrative

Method: EPA 200.7
 Batch Analysis date: 2/21/18
 Sampled date: 2/15/18 for samples 274521 -274527

Matrix QC performed on sample 274523

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Boron (Total Recoverable)	93	50-150		
LFB	Boron (Total Recoverable)	101	85-115		
MS	Boron (Total Recoverable)	*168	70-130		
MSD	Boron (Total Recoverable)			2	<20
MRL	Lithium (Total Recoverable)	100	50-150		
LFB	Lithium (Total Recoverable)	102	85-115		
MS	Lithium (Total Recoverable)	114	70-130		
MSD	Lithium (Total Recoverable)			5	<20
QC Type	Analyte	Concentration	Limit		

LRB	Boron (Total Recoverable)	<8.23 ug/L	8.23 ug/L
LRB	Lithium (Total Recoverable)	<7.19 ug/L	7.19 ug/L

*See Narrative

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

SGS

Wheat Ridge, CO

03/01/18

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Colorado Springs Utilities

CCR Landfill Groundwater Assessment

SGS Job Number: DA2835

Sampling Date: 02/14/18

Report to:

Colorado Springs Utilities
701 East Las Vegas Street
Colorado Springs, CO 80903
wasay@csu.org

ATTN: Wendy Asay

Total number of pages in report: 25



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Scott Heideman
Scott Heideman
Laboratory Director

Client Service contact: Elizabeth Sutcliffe 303-425-6021

Certifications: CO (CO00049), ID (CO00049), NE (NE-OS-06-04), ND (R-027), NJ (CO007), OK (D9942)
UT (NELAP CO00049), LA (LA150028), TX (T104704511), WY (8TMS-L)

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Test results relate only to samples analyzed.

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SGS North America Inc.

Sample Summary

Colorado Springs Utilities

Job No: DA2835

CCR Landfill Groundwater Assessment

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
DA2835-1	02/14/18	12:04 JH	02/21/18	AQ	Ground Water	CC_1 274514
DA2835-2	02/14/18	09:56 JH	02/21/18	AQ	Ground Water	FC_1 274515
DA2835-3	02/14/18	10:31 JH	02/21/18	AQ	Ground Water	FC_2 274516
DA2835-4	02/14/18	13:17 JH	02/21/18	AQ	Ground Water	FC_3A 274517
DA2835-5	02/14/18	13:17 JH	02/21/18	AQ	Ground Water	FC_3A DUPLICATE 274518
DA2835-6	02/14/18	13:48 JH	02/21/18	AQ	Ground Water	FC_3B 274519
DA2835-7	02/14/18	12:18 JH	02/21/18	AQ	Ground Water	EQUIP_BLK 274520

CASE NARRATIVE / CONFORMANCE SUMMARY

2

Client: Colorado Springs Utilities **Job No** DA2835
Site: CCR Landfill Groundwater Assessment **Report Date** 3/1/2018 4:19:20 PM

On 02/21/2018, 7 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at SGS North America Inc. (SGS) at a temperature of 1.1 °C. The samples were intact and properly preserved, unless noted below. An SGS Job Number of DA2835 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Metals Analysis By Method EPA 200.8

Matrix: AQ	Batch ID: MP24240
-------------------	--------------------------

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA2835-2MS, DA2835-2MSD were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Beryllium are outside control limits. Spike recovery indicates possible matrix interference.
- DA2835-1 and -2 for Antimony: Elevated detection limit due to dilution required for possible matrix interference.

Matrix: AQ	Batch ID: MP24282
-------------------	--------------------------

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA2834-5MS, DA2834-5MSD were used as the QC samples for the metals analysis.
- DA2835-1 and -2 for Arsenic, Cadmium, Lead, Molybdenum, and Thallium: Elevated detection limit due to dilution required for possible matrix interference.

SGS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting SGS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by SGS indicated via signature on the report cover.

Summary of Hits

Job Number: DA2835
Account: Colorado Springs Utilities
Project: CCR Landfill Groundwater Assessment
Collected: 02/14/18

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
--------------------------	------------------	-----------------	----	-----	-------	--------

DA2835-1		CC_1 274514				
Selenium		169	4.0		ug/l	EPA 200.8
DA2835-2		FC_1 274515				
Barium		10.5	10		ug/l	EPA 200.8
Selenium		6.8	4.0		ug/l	EPA 200.8
DA2835-3		FC_2 274516				
Cadmium		0.31	0.20		ug/l	EPA 200.8
Molybdenum		3.0	2.0		ug/l	EPA 200.8
Selenium		44.4	2.0		ug/l	EPA 200.8
DA2835-4		FC_3A 274517				
Arsenic		1.1	1.0		ug/l	EPA 200.8
Barium		12.2	10		ug/l	EPA 200.8
Cadmium		0.36	0.20		ug/l	EPA 200.8
Molybdenum		11.2	2.0		ug/l	EPA 200.8
Selenium		55.5	2.0		ug/l	EPA 200.8
DA2835-5		FC_3A DUPLICATE 274518				
Arsenic		1.2	1.0		ug/l	EPA 200.8
Barium		11.9	10		ug/l	EPA 200.8
Cadmium		0.37	0.20		ug/l	EPA 200.8
Molybdenum		11.2	2.0		ug/l	EPA 200.8
Selenium		53.1	2.0		ug/l	EPA 200.8
DA2835-6		FC_3B 274519				
Arsenic		2.6	1.0		ug/l	EPA 200.8
Barium		19.6	10		ug/l	EPA 200.8
Cadmium		0.32	0.20		ug/l	EPA 200.8
Chromium		5.8	4.0		ug/l	EPA 200.8
Molybdenum		5.5	2.0		ug/l	EPA 200.8
Selenium		3.6	2.0		ug/l	EPA 200.8

DA2835-7 **EQUIP_BLK 274520**

No hits reported in this sample.



Wheat Ridge, CO

Section 4

4

Sample Results

Report of Analysis



SGS North America Inc.

Report of Analysis

Client Sample ID:	CC_1 274514	Date Sampled:	02/14/18
Lab Sample ID:	DA2835-1	Date Received:	02/21/18
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Project:	CCR Landfill Groundwater Assessment		

4.1

4

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony ^a	< 8.0	8.0	ug/l	20	02/22/18	02/27/18 SB	EPA 200.8 ²	EPA 200.8 ⁵
Arsenic ^a	< 2.0	2.0	ug/l	10	02/28/18	02/28/18 JR	EPA 200.8 ⁴	EPA 200.8 ⁶
Barium	< 10	10	ug/l	5	02/22/18	02/27/18 JM	EPA 200.8 ³	EPA 200.8 ⁵
Beryllium	< 1.0	1.0	ug/l	5	02/22/18	02/27/18 JM	EPA 200.8 ³	EPA 200.8 ⁵
Cadmium ^a	< 1.0	1.0	ug/l	10	02/28/18	02/28/18 JR	EPA 200.8 ⁴	EPA 200.8 ⁶
Chromium	< 4.0	4.0	ug/l	2	02/22/18	02/27/18 SB	EPA 200.8 ¹	EPA 200.8 ⁵
Lead ^a	< 5.0	5.0	ug/l	10	02/28/18	02/28/18 JR	EPA 200.8 ⁴	EPA 200.8 ⁶
Molybdenum ^a	< 10	10	ug/l	10	02/28/18	02/28/18 JR	EPA 200.8 ⁴	EPA 200.8 ⁶
Selenium	169	4.0	ug/l	10	02/28/18	02/28/18 JR	EPA 200.8 ⁴	EPA 200.8 ⁶
Thallium ^a	< 2.0	2.0	ug/l	10	02/28/18	02/28/18 JR	EPA 200.8 ⁴	EPA 200.8 ⁶

- (1) Instrument QC Batch: MA9641
- (2) Instrument QC Batch: MA9644
- (3) Instrument QC Batch: MA9645
- (4) Instrument QC Batch: MA9653
- (5) Prep QC Batch: MP24240
- (6) Prep QC Batch: MP24282

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit



Report of Analysis

Client Sample ID: FC_1 274515	Date Sampled: 02/14/18
Lab Sample ID: DA2835-2	Date Received: 02/21/18
Matrix: AQ - Ground Water	Percent Solids: n/a
Project: CCR Landfill Groundwater Assessment	

4.2
4

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony ^a	< 8.0	8.0	ug/l	20	02/22/18	02/27/18	SB EPA 200.8 ²	EPA 200.8 ⁵
Arsenic ^a	< 2.0	2.0	ug/l	10	02/28/18	02/28/18	JR EPA 200.8 ⁴	EPA 200.8 ⁶
Barium	10.5	10	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵
Beryllium	< 1.0	1.0	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵
Cadmium ^a	< 1.0	1.0	ug/l	10	02/28/18	02/28/18	JR EPA 200.8 ⁴	EPA 200.8 ⁶
Chromium	< 4.0	4.0	ug/l	2	02/22/18	02/26/18	SB EPA 200.8 ¹	EPA 200.8 ⁵
Lead ^a	< 5.0	5.0	ug/l	10	02/28/18	02/28/18	JR EPA 200.8 ⁴	EPA 200.8 ⁶
Molybdenum ^a	< 10	10	ug/l	10	02/28/18	02/28/18	JR EPA 200.8 ⁴	EPA 200.8 ⁶
Selenium	6.8	4.0	ug/l	10	02/28/18	02/28/18	JR EPA 200.8 ⁴	EPA 200.8 ⁶
Thallium ^a	< 2.0	2.0	ug/l	10	02/28/18	02/28/18	JR EPA 200.8 ⁴	EPA 200.8 ⁶

- (1) Instrument QC Batch: MA9641
- (2) Instrument QC Batch: MA9644
- (3) Instrument QC Batch: MA9645
- (4) Instrument QC Batch: MA9653
- (5) Prep QC Batch: MP24240
- (6) Prep QC Batch: MP24282

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit



Report of Analysis

Client Sample ID: FC_2 274516	Date Sampled: 02/14/18
Lab Sample ID: DA2835-3	Date Received: 02/21/18
Matrix: AQ - Ground Water	Percent Solids: n/a
Project: CCR Landfill Groundwater Assessment	

4.3
4

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony	< 0.80	0.80	ug/l	2	02/22/18	02/27/18	SB EPA 200.8 ²	EPA 200.8 ⁵
Arsenic	< 1.0	1.0	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵
Barium	< 10	10	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵
Beryllium	< 0.40	0.40	ug/l	2	02/28/18	02/28/18	JR EPA 200.8 ⁴	EPA 200.8 ⁶
Cadmium	0.31	0.20	ug/l	2	02/28/18	02/28/18	JR EPA 200.8 ⁴	EPA 200.8 ⁶
Chromium	< 4.0	4.0	ug/l	2	02/22/18	02/27/18	SB EPA 200.8 ¹	EPA 200.8 ⁵
Lead	< 2.5	2.5	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵
Molybdenum	3.0	2.0	ug/l	2	02/22/18	02/27/18	SB EPA 200.8 ¹	EPA 200.8 ⁵
Selenium	44.4	2.0	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵
Thallium	< 1.0	1.0	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵

- (1) Instrument QC Batch: MA9641
- (2) Instrument QC Batch: MA9644
- (3) Instrument QC Batch: MA9645
- (4) Instrument QC Batch: MA9653
- (5) Prep QC Batch: MP24240
- (6) Prep QC Batch: MP24282

RL = Reporting Limit



Report of Analysis

Client Sample ID: FC_3A 274517	Date Sampled: 02/14/18
Lab Sample ID: DA2835-4	Date Received: 02/21/18
Matrix: AQ - Ground Water	Percent Solids: n/a
Project: CCR Landfill Groundwater Assessment	

4.4
4

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony	< 0.80	0.80	ug/l	2	02/22/18	02/27/18	SB EPA 200.8 ²	EPA 200.8 ⁵
Arsenic	1.1	1.0	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵
Barium	12.2	10	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵
Beryllium	< 0.40	0.40	ug/l	2	02/28/18	02/28/18	JR EPA 200.8 ⁴	EPA 200.8 ⁶
Cadmium	0.36	0.20	ug/l	2	02/28/18	02/28/18	JR EPA 200.8 ⁴	EPA 200.8 ⁶
Chromium	< 4.0	4.0	ug/l	2	02/22/18	02/27/18	SB EPA 200.8 ¹	EPA 200.8 ⁵
Lead	< 2.5	2.5	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵
Molybdenum	11.2	2.0	ug/l	2	02/22/18	02/27/18	SB EPA 200.8 ¹	EPA 200.8 ⁵
Selenium	55.5	2.0	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵
Thallium	< 1.0	1.0	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵

- (1) Instrument QC Batch: MA9641
- (2) Instrument QC Batch: MA9644
- (3) Instrument QC Batch: MA9645
- (4) Instrument QC Batch: MA9653
- (5) Prep QC Batch: MP24240
- (6) Prep QC Batch: MP24282

RL = Reporting Limit

Report of Analysis

Client Sample ID: FC_3A DUPLICATE 274518	Date Sampled: 02/14/18
Lab Sample ID: DA2835-5	Date Received: 02/21/18
Matrix: AQ - Ground Water	Percent Solids: n/a
Project: CCR Landfill Groundwater Assessment	

4.5
4

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony	< 0.80	0.80	ug/l	2	02/22/18	02/27/18	SB EPA 200.8 ²	EPA 200.8 ⁵
Arsenic	1.2	1.0	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵
Barium	11.9	10	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵
Beryllium	< 0.40	0.40	ug/l	2	02/28/18	02/28/18	JR EPA 200.8 ⁴	EPA 200.8 ⁶
Cadmium	0.37	0.20	ug/l	2	02/28/18	02/28/18	JR EPA 200.8 ⁴	EPA 200.8 ⁶
Chromium	< 4.0	4.0	ug/l	2	02/22/18	02/27/18	SB EPA 200.8 ¹	EPA 200.8 ⁵
Lead	< 2.5	2.5	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵
Molybdenum	11.2	2.0	ug/l	2	02/22/18	02/27/18	SB EPA 200.8 ¹	EPA 200.8 ⁵
Selenium	53.1	2.0	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵
Thallium	< 1.0	1.0	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵

- (1) Instrument QC Batch: MA9641
- (2) Instrument QC Batch: MA9644
- (3) Instrument QC Batch: MA9645
- (4) Instrument QC Batch: MA9653
- (5) Prep QC Batch: MP24240
- (6) Prep QC Batch: MP24282

RL = Reporting Limit

Report of Analysis

Client Sample ID: FC_3B 274519	Date Sampled: 02/14/18
Lab Sample ID: DA2835-6	Date Received: 02/21/18
Matrix: AQ - Ground Water	Percent Solids: n/a
Project: CCR Landfill Groundwater Assessment	

4.6
4

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony	< 0.80	0.80	ug/l	2	02/22/18	02/27/18 SB	EPA 200.8 ²	EPA 200.8 ⁵
Arsenic	2.6	1.0	ug/l	5	02/22/18	02/27/18 JM	EPA 200.8 ³	EPA 200.8 ⁵
Barium	19.6	10	ug/l	5	02/22/18	02/27/18 JM	EPA 200.8 ³	EPA 200.8 ⁵
Beryllium	< 1.0	1.0	ug/l	5	02/22/18	02/27/18 JM	EPA 200.8 ³	EPA 200.8 ⁵
Cadmium	0.32	0.20	ug/l	2	02/28/18	02/28/18 JR	EPA 200.8 ⁴	EPA 200.8 ⁶
Chromium	5.8	4.0	ug/l	2	02/22/18	02/27/18 SB	EPA 200.8 ¹	EPA 200.8 ⁵
Lead	< 2.5	2.5	ug/l	5	02/22/18	02/27/18 JM	EPA 200.8 ³	EPA 200.8 ⁵
Molybdenum	5.5	2.0	ug/l	2	02/22/18	02/27/18 SB	EPA 200.8 ¹	EPA 200.8 ⁵
Selenium	3.6	2.0	ug/l	5	02/22/18	02/27/18 JM	EPA 200.8 ³	EPA 200.8 ⁵
Thallium	< 1.0	1.0	ug/l	5	02/22/18	02/27/18 JM	EPA 200.8 ³	EPA 200.8 ⁵

- (1) Instrument QC Batch: MA9641
- (2) Instrument QC Batch: MA9644
- (3) Instrument QC Batch: MA9645
- (4) Instrument QC Batch: MA9653
- (5) Prep QC Batch: MP24240
- (6) Prep QC Batch: MP24282

RL = Reporting Limit

Report of Analysis

Client Sample ID: EQUIP_BLK 274520	Date Sampled: 02/14/18
Lab Sample ID: DA2835-7	Date Received: 02/21/18
Matrix: AQ - Ground Water	Percent Solids: n/a
Project: CCR Landfill Groundwater Assessment	

4.7
4

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony	< 0.80	0.80	ug/l	2	02/22/18	02/27/18 SB	EPA 200.8 ²	EPA 200.8 ⁵
Arsenic	< 1.0	1.0	ug/l	5	02/22/18	02/27/18 JM	EPA 200.8 ³	EPA 200.8 ⁵
Barium	< 10	10	ug/l	5	02/22/18	02/27/18 JM	EPA 200.8 ³	EPA 200.8 ⁵
Beryllium	< 0.40	0.40	ug/l	2	02/28/18	02/28/18 JR	EPA 200.8 ⁴	EPA 200.8 ⁶
Cadmium	< 0.20	0.20	ug/l	2	02/28/18	02/28/18 JR	EPA 200.8 ⁴	EPA 200.8 ⁶
Chromium	< 4.0	4.0	ug/l	2	02/22/18	02/27/18 SB	EPA 200.8 ¹	EPA 200.8 ⁵
Lead	< 2.5	2.5	ug/l	5	02/22/18	02/27/18 JM	EPA 200.8 ³	EPA 200.8 ⁵
Molybdenum	< 2.0	2.0	ug/l	2	02/22/18	02/27/18 SB	EPA 200.8 ¹	EPA 200.8 ⁵
Selenium	< 2.0	2.0	ug/l	5	02/22/18	02/27/18 JM	EPA 200.8 ³	EPA 200.8 ⁵
Thallium	< 1.0	1.0	ug/l	5	02/22/18	02/27/18 JM	EPA 200.8 ³	EPA 200.8 ⁵

- (1) Instrument QC Batch: MA9641
- (2) Instrument QC Batch: MA9644
- (3) Instrument QC Batch: MA9645
- (4) Instrument QC Batch: MA9653
- (5) Prep QC Batch: MP24240
- (6) Prep QC Batch: MP24282

RL = Reporting Limit



Wheat Ridge, CO

Section 5

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

5



CHAIN OF CUSTODY

4000 Yanggild Street, Wheat Ridge, CO 80033
 TEL: 303-451-6621 FAX: 303-421-6854
 www.accutest.com

PEDEX Tracking # _____
 Billing Code Center # _____
 Analytic Code # **DA2835**

Client / Reporting Information			Project Information											Requested Analysis (see TEST CODE sheet)												Matrix Codes		
Company Name Colorado Springs Utilities			Project Name CCR Landfill Groundwater Assessment											DW - Drinking Water GW - Ground Water WW - Wastewater SW - Surface Water SO - Soil SL - Sludge SED - Sediment LO - Other Liquid AL - Air SOL - Other Solid WP - Waste FE - Field Blank EQ - Equipment Blank SB - Source Blank TB - Trip Blank														
Street Address 701 E. Las Vegas St			City Colorado Springs		State CO		Billing Information (if different from Report to)																					
Phone # 719-668-4903			Project #		Street Address 701 E. Las Vegas St																							
Sample ID / Point of Collection			Client Purchase Order #		City Colorado Springs																							
Sampler's Name(s) JH			Project Manager Liza Sutcliffe		Attention Liza									Metals by 200, 8; Sb, As, Ba, Bi, Cd, Cr, Pb, Mo, Se and Tl LAB USE ONLY														
Sample #	Field ID / Point of Collection	MECHDYN#	Date	Time	Sample # by	Matrix	# of bottles	LOD	LOQ	MIN	MAX	RES	NOX	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER					
	CC_1 274514		2/14/18	1204	JH	GW	1																	01				
	FC_1 274515		2/14/18	0956	JH	GW	1																	02				
	FC_2 274516		2/14/18	1031	JH	GW	1																	03				
	FC_3A 274517		2/14/18	1317	JH	GW	1																	04				
	FC_3A Duplicate 274518		2/14/18	1317	JH	GW	1																	05				
	FC_3B 274519		2/14/18	1348	JH	GW	1																	06				
	EQUIP_BLK 274520		2/14/18	1218	JH	GW	1																	07				

Turnaround Time (Business days)			Approved By (Analyst PM) / Date			Data Deliverable Information				Comments / Special Instructions		
<input type="checkbox"/> 8-12 Business Days	<input checked="" type="checkbox"/> 10 Business Days	<input type="checkbox"/> 14 Business Days	_____	_____	_____	<input type="checkbox"/> Commercial "A" (Level 1)	<input type="checkbox"/> State Forms Required	Samples may have a high salt content.				
<input type="checkbox"/> Day RUSH	<input type="checkbox"/> Day Emergency	<input type="checkbox"/> Day Emergency	_____	_____	_____	<input type="checkbox"/> Commercial "B" (Level 2)	<input type="checkbox"/> Send Forms to State					
<input type="checkbox"/> Day Emergency	<input type="checkbox"/> Day Emergency	<input type="checkbox"/> Day Emergency	_____	_____	_____	<input checked="" type="checkbox"/> COMMERCIAL	<input type="checkbox"/> Report by Fax					
<input type="checkbox"/> Day Emergency	<input type="checkbox"/> Day Emergency	<input type="checkbox"/> Day Emergency	_____	_____	_____	<input type="checkbox"/> COMMERCIAL	<input type="checkbox"/> Report by PDF					
<input type="checkbox"/> Day Emergency	<input type="checkbox"/> Day Emergency	<input type="checkbox"/> Day Emergency	_____	_____	_____	<input type="checkbox"/> COMMERCIAL	<input type="checkbox"/> EDD Format					
<input type="checkbox"/> Day Emergency	<input type="checkbox"/> Day Emergency	<input type="checkbox"/> Day Emergency	_____	_____	_____	<input type="checkbox"/> COMMERCIAL	<input type="checkbox"/> EDD Format					
<input type="checkbox"/> Day Emergency	<input type="checkbox"/> Day Emergency	<input type="checkbox"/> Day Emergency	_____	_____	_____	<input type="checkbox"/> COMMERCIAL	<input type="checkbox"/> EDD Format					
<input type="checkbox"/> Day Emergency	<input type="checkbox"/> Day Emergency	<input type="checkbox"/> Day Emergency	_____	_____	_____	<input type="checkbox"/> COMMERCIAL	<input type="checkbox"/> EDD Format					
<input type="checkbox"/> Day Emergency	<input type="checkbox"/> Day Emergency	<input type="checkbox"/> Day Emergency	_____	_____	_____	<input type="checkbox"/> COMMERCIAL	<input type="checkbox"/> EDD Format					
<input type="checkbox"/> Day Emergency	<input type="checkbox"/> Day Emergency	<input type="checkbox"/> Day Emergency	_____	_____	_____	<input type="checkbox"/> COMMERCIAL	<input type="checkbox"/> EDD Format					
<input type="checkbox"/> Day Emergency	<input type="checkbox"/> Day Emergency	<input type="checkbox"/> Day Emergency	_____	_____	_____	<input type="checkbox"/> COMMERCIAL	<input type="checkbox"/> EDD Format					
<input type="checkbox"/> Day Emergency	<input type="checkbox"/> Day Emergency	<input type="checkbox"/> Day Emergency	_____	_____	_____	<input type="checkbox"/> COMMERCIAL	<input type="checkbox"/> EDD Format					

Signatory Custody must be documented below each time samples change possession, including courier delivery			
Received by	Date/Time	Received by	Date/Time
1 <i>[Signature]</i>	2/20/18 11:35	2 <i>[Signature]</i>	2/21/18 10:00
3 _____		4 _____	
5 _____		6 _____	

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5



SGS Accutest Sample Receipt Summary

Job Number: DA2835 Client: COLORADO SPRINGS UTILITIES Project: CCR LANDFILL GW ASSESSMENT

Date / Time Received: 2/21/2018 10:00:00 AM Delivery Method: Airbill #'s: ups

Cooler Temps (Initial/Adjusted): #1: (1.1/1.1)

Cooler Security

1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smp Dates/Time OK	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Cooler Temperature

1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Cooler temp verification:	IR Gun:	
3. Cooler media:	Ice (Bag)	
4. No. Coolers:	1	

Quality Control Preservation

	Y	or	N	N/A
1. Trip Blank present / cooler:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
2. Trip Blank listed on COC:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. Samples preserved properly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
4. VOCs headspace free:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Comments

Sample Integrity - Documentation

1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Sample Integrity - Condition

1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Condition of sample:	Intact	

Sample Integrity - Instructions

	Y	or	N	N/A
1. Analysis requested is clear:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Bottles received for unspecified tests:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

5.1
5

DA2835: Chain of Custody
Page 2 of 2

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: DA2835
Account: SPRUCOCS - Colorado Springs Utilities
Project: CCR Landfill Groundwater Assessment

QC Batch ID: MP24240 Methods: EPA 200.8
Matrix Type: AQUEOUS Units: ug/l
Prep Date: 02/22/18

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	1.1	2		
Antimony	0.40	.0022	.011	-0.018	<0.40
Arsenic	0.20	.017	.044	-0.0040	<0.20
Barium	2.0	.016	.079	0.052	<2.0
Beryllium	0.20	.016	.069	0.0040	<0.20
Boron	40	.49	2.1		
Calcium	400	5.6	12		
Chromium	2.0	.053	.053	-0.15	<2.0
Cobalt	0.20	.0049	.015		
Copper	2.0	.06	.13		
Iron	10	1.1	4.6		
Lead	0.50	.0079	.008	0.017	<0.50
Magnesium	100	1.3	1.3		
Manganese	1.0	.074	.13		
Molybdenum	1.0	.049	.029	-0.015	<1.0
Nickel	2.0	.0088	.027		
Phosphorus	60	2.6	4.3		
Potassium	200	2.9	2.9		
Selenium	0.40	.06	.21	0.013	<0.40
Silver	0.10	.0019	.008		
Sodium	500	4.9	4.9		
Strontium	20	.01	.015		
Thallium	0.20	.0024	.005	0.0	<0.20
Tin	10	.063	1.3		
Titanium	2.0	.014	.092		
Uranium	0.20	.0017	.002		
Vanadium	1.0	.037	.2		
Zinc	10	.21	.96		

Associated samples MP24240: DA2835-1, DA2835-2, DA2835-3, DA2835-4, DA2835-5, DA2835-6, DA2835-7

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

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6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA2835
Account: SPRUCOCS - Colorado Springs Utilities
Project: CCR Landfill Groundwater Assessment

QC Batch ID: MP24240 Methods: EPA 200.8
Matrix Type: AQUEOUS Units: ug/l
Prep Date: 02/22/18

Metal	DA2835-2 Original MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony	0.0	98.6	100	98.6 70-130
Barium	10.5	446	400	108.9 70-130
Beryllium	0.0	69.9	100	69.9N(a) 70-130
Boron				
Calcium				
Chromium	0.0	83.8	100	83.8 70-130
Cobalt				
Copper				
Iron				
Magnesium				
Manganese				
Nickel				
Phosphorus				
Potassium				
Silver				
Sodium				
Strontium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP24240: DA2835-1, DA2835-2, DA2835-3, DA2835-4, DA2835-5, DA2835-6, DA2835-7

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike recovery indicates possible matrix interference.

612
6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA2835
 Account: SPRUCOCS - Colorado Springs Utilities
 Project: CCR Landfill Groundwater Assessment

QC Batch ID: MP24240 Methods: EPA 200.8
 Matrix Type: AQUEOUS Units: ug/l

Prep Date: 02/22/18

Metal	DA2835-2 Original MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit	
Aluminum						
Antimony	0.0	93.2	100	93.2	17.4	20
Barium	10.5	460	400	112.4	3.1	20
Beryllium	0.0	70.0	100	70.0	0.1	20
Boron						
Calcium						
Chromium	0.0	84.1	100	84.1	0.4	20
Cobalt						
Copper						
Iron						
Magnesium						
Manganese						
Nickel						
Phosphorus						
Potassium						
Silver						
Sodium						
Strontium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP24240: DA2835-1, DA2835-2, DA2835-3, DA2835-4, DA2835-5, DA2835-6, DA2835-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

612
6

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: DA2835
 Account: SPRUCOCS - Colorado Springs Utilities
 Project: CCR Landfill Groundwater Assessment

QC Batch ID: MP24240 Methods: EPA 200.8
 Matrix Type: AQUEOUS Units: ug/l

Prep Date: 02/22/18

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony	102	100	102.0	85-115
Arsenic	196	200	98.0	85-115
Barium	416	400	104.0	85-115
Beryllium	102	100	102.0	85-115
Boron				
Calcium				
Chromium	90.8	100	90.8	85-115
Cobalt				
Copper				
Iron				
Lead	208	200	104.0	85-115
Magnesium				
Manganese				
Molybdenum	99.3	100	99.3	85-115
Nickel				
Phosphorus				
Potassium				
Selenium	200	200	100.0	85-115
Silver				
Sodium				
Strontium				
Thallium	214	200	107.0	85-115
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP24240: DA2835-1, DA2835-2, DA2835-3, DA2835-4, DA2835-5, DA2835-6, DA2835-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

613
6

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: DA2835
Account: SPRUCOCS - Colorado Springs Utilities
Project: CCR Landfill Groundwater Assessment

QC Batch ID: MP24282 Methods: EPA 200.8
Matrix Type: AQUEOUS Units: ug/l
Prep Date: 02/28/18

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	1.1	2		
Antimony	0.40	.0022	.011		
Arsenic	0.20	.017	.044	0.0090	<0.20
Barium	2.0	.016	.079		
Beryllium	0.20	.016	.069	0.0	<0.20
Boron	40	.49	2.1		
Cadmium	0.10	.036	.042	-0.029	<0.10
Calcium	400	5.6	12		
Chromium	2.0	.053	.053		
Cobalt	0.20	.0049	.015		
Copper	2.0	.06	.13		
Iron	10	3.5	4.6		
Lead	0.50	.0079	.008	0.048	<0.50
Magnesium	100	1.3	1.3		
Manganese	1.0	.12	.13		
Molybdenum	1.0	.049	.029	0.032	<1.0
Nickel	2.0	.0088	.027		
Phosphorus	60	2.6	4.3		
Potassium	200	2.9	2.9		
Selenium	0.40	.06	.21	0.0070	<0.40
Silver	0.10	.0019	.008		
Sodium	500	4.9	4.9		
Strontium	20	.01	.015		
Thallium	0.20	.0024	.005	0.0040	<0.20
Tin	10	.063	1.3		
Titanium	2.0	.059	.092		
Uranium	0.20	.0017	.002		
Vanadium	1.0	.037	.2		
Zinc	10	.21	.96		

Associated samples MP24282: DA2835-1, DA2835-2, DA2835-3, DA2835-4, DA2835-5, DA2835-6, DA2835-7

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

621
6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA2835
Account: SPRUCOCS - Colorado Springs Utilities
Project: CCR Landfill Groundwater Assessment

QC Batch ID: MP24282 Methods: EPA 200.8
Matrix Type: AQUEOUS Units: ug/l
Prep Date: 02/28/18

Metal	DA2834-5 Original MS	Spikelot ICPALL2	% Rec	QC Limits	
Aluminum					
Antimony					
Arsenic	1.2	206	200	102.5	70-130
Barium					
Beryllium	0.0	81.7	100	81.7	70-130
Boron					
Cadmium	0.43	91.0	100	90.6	70-130
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead	0.17	212	200	105.9	70-130
Magnesium					
Manganese					
Molybdenum	5.1	109	100	103.9	70-130
Nickel					
Phosphorus					
Potassium					
Selenium	22.8	216	200	96.6	70-130
Silver					
Sodium					
Strontium					
Thallium	0.11	210	200	104.9	70-130
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP24282: DA2835-1, DA2835-2, DA2835-3, DA2835-4, DA2835-5, DA2835-6, DA2835-7

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

622
6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA2835
 Account: SPRUCOCS - Colorado Springs Utilities
 Project: CCR Landfill Groundwater Assessment

QC Batch ID: MP24282 Methods: EPA 200.8
 Matrix Type: AQUEOUS Units: ug/l
 Prep Date: 02/28/18

Metal	DA2834-5 Original MSD		Spikelot ICPALL2 % Rec		MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	1.2	202	200	100.5	2.0	20
Barium						
Beryllium	0.0	80.9	100	80.9	1.0	20
Boron						
Cadmium	0.43	90.3	100	89.9	0.8	20
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead	0.17	211	200	105.4	0.5	20
Magnesium						
Manganese						
Molybdenum	5.1	109	100	103.9	0.0	20
Nickel						
Phosphorus						
Potassium						
Selenium	22.8	215	200	96.1	0.5	20
Silver						
Sodium						
Strontium						
Thallium	0.11	208	200	103.9	1.0	20
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP24282: DA2835-1, DA2835-2, DA2835-3, DA2835-4, DA2835-5, DA2835-6, DA2835-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

622
6

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: DA2835
 Account: SPRUCOCS - Colorado Springs Utilities
 Project: CCR Landfill Groundwater Assessment

QC Batch ID: MP24282 Methods: EPA 200.8
 Matrix Type: AQUEOUS Units: ug/l
 Prep Date: 02/28/18

Metal	BSP Result	Spikelot ICPALL2 % Rec	QC Limits
Aluminum			
Antimony			
Arsenic	204	200	102.0 85-115
Barium			
Beryllium	96.8	100	96.8 85-115
Boron			
Cadmium	97.7	100	97.7 85-115
Calcium			
Chromium			
Cobalt			
Copper			
Iron			
Lead	204	200	102.0 85-115
Magnesium			
Manganese			
Molybdenum	99.3	100	99.3 85-115
Nickel			
Phosphorus			
Potassium			
Selenium	195	200	97.5 85-115
Silver			
Sodium			
Strontium			
Thallium	201	200	100.5 85-115
Tin			
Titanium			
Uranium			
Vanadium			
Zinc			

Associated samples MP24282: DA2835-1, DA2835-2, DA2835-3, DA2835-4, DA2835-5, DA2835-6, DA2835-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

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Wheat Ridge, CO

03/01/18

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Colorado Springs Utilities

CCR Landfill Groundwater Assessment

SGS Job Number: DA2834

Sampling Date: 02/15/18

Report to:

Colorado Springs Utilities
701 East Las Vegas Street
Colorado Springs, CO 80903
wasay@csu.org

ATTN: Wendy Asay

Total number of pages in report: 29



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Scott Heideman
Laboratory Director

Client Service contact: Elizabeth Sutcliffe 303-425-6021

Certifications: CO (CO00049), ID (CO00049), NE (NE-OS-06-04), ND (R-027), NJ (CO007), OK (D9942)
UT (NELAP CO00049), LA (LA150028), TX (T104704511), WY (8TMS-L)

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Test results relate only to samples analyzed.

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DA2834

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DA2834

Sample Summary

Colorado Springs Utilities

CCR Landfill Groundwater Assessment

Job No: DA2834

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
DA2834-1	02/15/18	09:07 JH	02/21/18	AQ	Ground Water	SC_10 274521
DA2834-2	02/15/18	09:35 JH	02/21/18	AQ	Ground Water	SC_11 274522
DA2834-3	02/15/18	10:11 JH	02/21/18	AQ	Ground Water	SC_12 274523
DA2834-4	02/15/18	10:11 JH	02/21/18	AQ	Ground Water	SC_12 DUPLICATE 274524
DA2834-5	02/15/18	10:44 JH	02/21/18	AQ	Ground Water	SC_13 274525
DA2834-6	02/15/18	11:18 JH	02/21/18	AQ	Ground Water	SC_14 274526
DA2834-7	02/15/18	10:23 JH	02/21/18	AQ	Ground Water	EQUIP_BLK 274527

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: Colorado Springs Utilities

Job No DA2834

Site: CCR Landfill Groundwater Assessment

Report Date 3/1/2018 4:16:46 PM

On 02/21/2018, 7 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at SGS North America Inc. (SGS) at a temperature of 1.1 °C. The samples were intact and properly preserved, unless noted below. An SGS Job Number of DA2834 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Metals Analysis By Method EPA 200.8

Matrix: AQ **Batch ID:** MP24236

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA2813-1FAMS, DA2813-1FAMSD were used as the QC samples for the metals analysis.
- DA2834-1 through -4 for Antimony: Elevated detection limit due to dilution required for possible matrix interference.
- MP24236-MB1 for Lead: All sample results < RL or > 10x MB concentration.

Matrix: AQ **Batch ID:** MP24240

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA2835-2MS, DA2835-2MSD were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Beryllium are outside control limits. Spike recovery indicates possible matrix interference.

Matrix: AQ **Batch ID:** MP24282

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA2834-5MS, DA2834-5MSD were used as the QC samples for the metals analysis.
- DA2834-6 for Cadmium: Elevated detection limit due to dilution required for possible matrix interference.

SGS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting SGS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by SGS indicated via signature on the report cover.

Summary of Hits

Job Number: DA2834
Account: Colorado Springs Utilities
Project: CCR Landfill Groundwater Assessment
Collected: 02/15/18

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Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
DA2834-1 SC_10 274521						
Arsenic		2.2	0.40		ug/l	EPA 200.8
Barium		12.4	4.0		ug/l	EPA 200.8
Molybdenum		7.2	1.0		ug/l	EPA 200.8
Selenium		249	4.0		ug/l	EPA 200.8
DA2834-2 SC_11 274522						
Arsenic		2.1	0.40		ug/l	EPA 200.8
Barium		8.9	4.0		ug/l	EPA 200.8
Molybdenum		3.3	1.0		ug/l	EPA 200.8
Selenium		355	0.40		ug/l	EPA 200.8
DA2834-3 SC_12 274523						
Arsenic		1.1	0.40		ug/l	EPA 200.8
Barium		7.9	4.0		ug/l	EPA 200.8
Molybdenum		9.7	1.0		ug/l	EPA 200.8
Selenium		43.7	0.40		ug/l	EPA 200.8
DA2834-4 SC_12 DUPLICATE 274524						
Arsenic		0.93	0.40		ug/l	EPA 200.8
Barium		7.7	4.0		ug/l	EPA 200.8
Molybdenum		9.7	1.0		ug/l	EPA 200.8
Selenium		42.2	0.40		ug/l	EPA 200.8
DA2834-5 SC_13 274525						
Molybdenum		5.0	2.0		ug/l	EPA 200.8
Selenium		20.4	2.0		ug/l	EPA 200.8
DA2834-6 SC_14 274526						
Molybdenum		12.0	2.0		ug/l	EPA 200.8
Selenium		5.5	2.0		ug/l	EPA 200.8

DA2834-7 EQUIP_BLK 274527

No hits reported in this sample.

SGS

Wheat Ridge, CO

Section 4

4

Sample Results

Report of Analysis

SGS

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DA2834

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DA2834

Report of Analysis

Client Sample ID: SC_10 274521	Date Sampled: 02/15/18
Lab Sample ID: DA2834-1	Date Received: 02/21/18
Matrix: AQ - Ground Water	Percent Solids: n/a
Project: CCR Landfill Groundwater Assessment	

4.1
4

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony ^a	< 8.0	8.0	ug/l	20	02/22/18	02/27/18 SB	EPA 200.8 ³	EPA 200.8 ⁵
Arsenic	2.2	0.40	ug/l	2	02/22/18	02/26/18 SB	EPA 200.8 ²	EPA 200.8 ⁵
Barium	12.4	4.0	ug/l	2	02/22/18	02/26/18 SB	EPA 200.8 ²	EPA 200.8 ⁵
Beryllium	< 2.0	2.0	ug/l	10	02/22/18	02/28/18 SB	EPA 200.8 ⁴	EPA 200.8 ⁵
Cadmium	< 0.10	0.10	ug/l	1	02/22/18	02/23/18 SB	EPA 200.8 ¹	EPA 200.8 ⁵
Chromium	< 4.0	4.0	ug/l	2	02/22/18	02/26/18 SB	EPA 200.8 ²	EPA 200.8 ⁵
Lead	< 5.0	5.0	ug/l	10	02/22/18	02/28/18 SB	EPA 200.8 ⁴	EPA 200.8 ⁵
Molybdenum	7.2	1.0	ug/l	1	02/22/18	02/23/18 SB	EPA 200.8 ¹	EPA 200.8 ⁵
Selenium	249	4.0	ug/l	10	02/22/18	02/28/18 SB	EPA 200.8 ⁴	EPA 200.8 ⁵
Thallium	< 0.40	0.40	ug/l	2	02/22/18	02/26/18 SB	EPA 200.8 ²	EPA 200.8 ⁵

- (1) Instrument QC Batch: MA9635
- (2) Instrument QC Batch: MA9641
- (3) Instrument QC Batch: MA9644
- (4) Instrument QC Batch: MA9649
- (5) Prep QC Batch: MP24236

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Report of Analysis

Client Sample ID: SC_11 274522	Date Sampled: 02/15/18
Lab Sample ID: DA2834-2	Date Received: 02/21/18
Matrix: AQ - Ground Water	Percent Solids: n/a
Project: CCR Landfill Groundwater Assessment	

4.2
4

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony ^a	< 8.0	8.0	ug/l	20	02/22/18	02/27/18 SB	EPA 200.8 ³	EPA 200.8 ⁶
Arsenic	2.1	0.40	ug/l	2	02/22/18	02/26/18 SB	EPA 200.8 ²	EPA 200.8 ⁶
Barium	8.9	4.0	ug/l	2	02/22/18	02/26/18 SB	EPA 200.8 ²	EPA 200.8 ⁶
Beryllium	< 2.0	2.0	ug/l	10	02/22/18	02/28/18 SB	EPA 200.8 ⁵	EPA 200.8 ⁶
Cadmium	< 0.10	0.10	ug/l	1	02/22/18	02/23/18 SB	EPA 200.8 ¹	EPA 200.8 ⁶
Chromium	< 4.0	4.0	ug/l	2	02/22/18	02/26/18 SB	EPA 200.8 ²	EPA 200.8 ⁶
Lead	< 5.0	5.0	ug/l	10	02/22/18	02/28/18 SB	EPA 200.8 ⁵	EPA 200.8 ⁶
Molybdenum	3.3	1.0	ug/l	1	02/22/18	02/23/18 SB	EPA 200.8 ¹	EPA 200.8 ⁶
Selenium	355	0.40	ug/l	1	02/22/18	02/27/18 JR	EPA 200.8 ⁴	EPA 200.8 ⁶
Thallium	< 0.40	0.40	ug/l	2	02/22/18	02/26/18 SB	EPA 200.8 ²	EPA 200.8 ⁶

- (1) Instrument QC Batch: MA9635
- (2) Instrument QC Batch: MA9641
- (3) Instrument QC Batch: MA9644
- (4) Instrument QC Batch: MA9648
- (5) Instrument QC Batch: MA9649
- (6) Prep QC Batch: MP24236

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Report of Analysis

Client Sample ID: SC_12 274523	Date Sampled: 02/15/18
Lab Sample ID: DA2834-3	Date Received: 02/21/18
Matrix: AQ - Ground Water	Percent Solids: n/a
Project: CCR Landfill Groundwater Assessment	

4.3
4

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony ^a	< 8.0	8.0	ug/l	20	02/22/18	02/27/18 SB	EPA 200.8 ³	EPA 200.8 ⁶
Arsenic	1.1	0.40	ug/l	2	02/22/18	02/26/18 SB	EPA 200.8 ²	EPA 200.8 ⁶
Barium	7.9	4.0	ug/l	2	02/22/18	02/26/18 SB	EPA 200.8 ²	EPA 200.8 ⁶
Beryllium	< 2.0	2.0	ug/l	10	02/22/18	02/28/18 SB	EPA 200.8 ⁵	EPA 200.8 ⁶
Cadmium	< 0.10	0.10	ug/l	1	02/22/18	02/23/18 SB	EPA 200.8 ¹	EPA 200.8 ⁶
Chromium	< 4.0	4.0	ug/l	2	02/22/18	02/26/18 SB	EPA 200.8 ²	EPA 200.8 ⁶
Lead	< 5.0	5.0	ug/l	10	02/22/18	02/28/18 SB	EPA 200.8 ⁵	EPA 200.8 ⁶
Molybdenum	9.7	1.0	ug/l	1	02/22/18	02/23/18 SB	EPA 200.8 ¹	EPA 200.8 ⁶
Selenium	43.7	0.40	ug/l	1	02/22/18	02/27/18 JR	EPA 200.8 ⁴	EPA 200.8 ⁶
Thallium	< 2.0	2.0	ug/l	10	02/22/18	02/28/18 SB	EPA 200.8 ⁵	EPA 200.8 ⁶

- (1) Instrument QC Batch: MA9635
- (2) Instrument QC Batch: MA9641
- (3) Instrument QC Batch: MA9644
- (4) Instrument QC Batch: MA9648
- (5) Instrument QC Batch: MA9649
- (6) Prep QC Batch: MP24236

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Report of Analysis

Client Sample ID: SC_12 DUPLICATE 274524	Date Sampled: 02/15/18
Lab Sample ID: DA2834-4	Date Received: 02/21/18
Matrix: AQ - Ground Water	Percent Solids: n/a
Project: CCR Landfill Groundwater Assessment	

4.4
4

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony ^a	< 8.0	8.0	ug/l	20	02/22/18	02/27/18 SB	EPA 200.8 ³	EPA 200.8 ⁶
Arsenic	0.93	0.40	ug/l	2	02/22/18	02/26/18 SB	EPA 200.8 ²	EPA 200.8 ⁶
Barium	7.7	4.0	ug/l	2	02/22/18	02/26/18 SB	EPA 200.8 ²	EPA 200.8 ⁶
Beryllium	< 2.0	2.0	ug/l	10	02/22/18	02/28/18 SB	EPA 200.8 ⁵	EPA 200.8 ⁶
Cadmium	< 0.10	0.10	ug/l	1	02/22/18	02/23/18 SB	EPA 200.8 ¹	EPA 200.8 ⁶
Chromium	< 4.0	4.0	ug/l	2	02/22/18	02/26/18 SB	EPA 200.8 ²	EPA 200.8 ⁶
Lead	< 5.0	5.0	ug/l	10	02/22/18	02/28/18 SB	EPA 200.8 ⁵	EPA 200.8 ⁶
Molybdenum	9.7	1.0	ug/l	1	02/22/18	02/23/18 SB	EPA 200.8 ¹	EPA 200.8 ⁶
Selenium	42.2	0.40	ug/l	1	02/22/18	02/27/18 JR	EPA 200.8 ⁴	EPA 200.8 ⁶
Thallium	< 0.40	0.40	ug/l	2	02/22/18	02/26/18 SB	EPA 200.8 ²	EPA 200.8 ⁶

- (1) Instrument QC Batch: MA9635
- (2) Instrument QC Batch: MA9641
- (3) Instrument QC Batch: MA9644
- (4) Instrument QC Batch: MA9648
- (5) Instrument QC Batch: MA9649
- (6) Prep QC Batch: MP24236

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Report of Analysis

Client Sample ID: SC_13 274525	Date Sampled: 02/15/18
Lab Sample ID: DA2834-5	Date Received: 02/21/18
Matrix: AQ - Ground Water	Percent Solids: n/a
Project: CCR Landfill Groundwater Assessment	

4.5
4

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony	< 0.80	0.80	ug/l	2	02/22/18	02/27/18	SB EPA 200.8 ²	EPA 200.8 ⁵
Arsenic	< 1.0	1.0	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵
Barium	< 10	10	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵
Beryllium	< 1.0	1.0	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵
Cadmium	< 1.0	1.0	ug/l	10	02/28/18	02/28/18	JR EPA 200.8 ⁴	EPA 200.8 ⁶
Chromium	< 4.0	4.0	ug/l	2	02/22/18	02/26/18	SB EPA 200.8 ¹	EPA 200.8 ⁵
Lead	< 2.5	2.5	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵
Molybdenum	5.0	2.0	ug/l	2	02/22/18	02/26/18	SB EPA 200.8 ¹	EPA 200.8 ⁵
Selenium	20.4	2.0	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵
Thallium	< 1.0	1.0	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵

- (1) Instrument QC Batch: MA9641
- (2) Instrument QC Batch: MA9644
- (3) Instrument QC Batch: MA9645
- (4) Instrument QC Batch: MA9653
- (5) Prep QC Batch: MP24240
- (6) Prep QC Batch: MP24282

RL = Reporting Limit

Report of Analysis

Client Sample ID: SC_14 274526	Date Sampled: 02/15/18
Lab Sample ID: DA2834-6	Date Received: 02/21/18
Matrix: AQ - Ground Water	Percent Solids: n/a
Project: CCR Landfill Groundwater Assessment	

4.6
4

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony	< 0.80	0.80	ug/l	2	02/22/18	02/27/18	SB EPA 200.8 ²	EPA 200.8 ⁵
Arsenic	< 1.0	1.0	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵
Barium	< 10	10	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵
Beryllium	< 1.0	1.0	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵
Cadmium ^a	< 1.0	1.0	ug/l	10	02/28/18	02/28/18	JR EPA 200.8 ⁴	EPA 200.8 ⁶
Chromium	< 4.0	4.0	ug/l	2	02/22/18	02/27/18	SB EPA 200.8 ¹	EPA 200.8 ⁵
Lead	< 2.5	2.5	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵
Molybdenum	12.0	2.0	ug/l	2	02/22/18	02/27/18	SB EPA 200.8 ¹	EPA 200.8 ⁵
Selenium	5.5	2.0	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵
Thallium	< 1.0	1.0	ug/l	5	02/22/18	02/27/18	JM EPA 200.8 ³	EPA 200.8 ⁵

- (1) Instrument QC Batch: MA9641
- (2) Instrument QC Batch: MA9644
- (3) Instrument QC Batch: MA9645
- (4) Instrument QC Batch: MA9653
- (5) Prep QC Batch: MP24240
- (6) Prep QC Batch: MP24282

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	EQUIP_BLK 274527	Date Sampled:	02/15/18
Lab Sample ID:	DA2834-7	Date Received:	02/21/18
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Project:	CCR Landfill Groundwater Assessment		

4.7
4

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Antimony	< 0.80	0.80	ug/l	2	02/22/18	02/27/18 SB	EPA 200.8 ²	EPA 200.8 ⁵
Arsenic	< 1.0	1.0	ug/l	5	02/22/18	02/27/18 JM	EPA 200.8 ³	EPA 200.8 ⁵
Barium	< 10	10	ug/l	5	02/22/18	02/27/18 JM	EPA 200.8 ³	EPA 200.8 ⁵
Beryllium	< 0.40	0.40	ug/l	2	02/28/18	02/28/18 JR	EPA 200.8 ⁴	EPA 200.8 ⁶
Cadmium	< 0.20	0.20	ug/l	2	02/28/18	02/28/18 JR	EPA 200.8 ⁴	EPA 200.8 ⁶
Chromium	< 10	10	ug/l	5	02/22/18	02/27/18 JM	EPA 200.8 ³	EPA 200.8 ⁵
Lead	< 2.5	2.5	ug/l	5	02/22/18	02/27/18 JM	EPA 200.8 ³	EPA 200.8 ⁵
Molybdenum	< 2.0	2.0	ug/l	2	02/22/18	02/27/18 SB	EPA 200.8 ¹	EPA 200.8 ⁵
Selenium	< 2.0	2.0	ug/l	5	02/22/18	02/27/18 JM	EPA 200.8 ³	EPA 200.8 ⁵
Thallium	< 1.0	1.0	ug/l	5	02/22/18	02/27/18 JM	EPA 200.8 ³	EPA 200.8 ⁵

- (1) Instrument QC Batch: MA9641
- (2) Instrument QC Batch: MA9644
- (3) Instrument QC Batch: MA9645
- (4) Instrument QC Batch: MA9653
- (5) Prep QC Batch: MP24240
- (6) Prep QC Batch: MP24282

RL = Reporting Limit



Wheat Ridge, CO

Section 5

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody



CHAIN OF CUSTODY

PAGE ___ OF ___

4031 Youngfield Street, Wheat Ridge, CO 80033
TEL: 303-433-4633 FAX: 303-433-4884
www.accutest.com

Accutest Testing # _____
Accutest Order # _____
Accutest Job # **DA2834**

Client / Reporting Information		Project Information		Requested Analysis (see TEST CODE sheet)		Matrix Codes	
Company Name Colorado Springs Utilities		Project Name CCR Landfill Groundwater Assessment				GW - Drinking Water GW - Ground Water WY - Wastewater SW - Surface Water SD - Soil SL - Sludge SED-Equipment GI - GI LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FIB-Field Blank EB-Equipment Blank PB - Bottle Blank TB-Trip Blank	
Address 701 E. Las Vegas St		City Colorado Springs		Billing Information (if different from Report to)			
City Colorado Springs		State CO		Company Name Colorado Springs Utilities			
Project Contact Wendy Asay		Project #		Street Address 701 E. Las Vegas St.			
Phone # 719-669-4603		Client Purchase Order #		City Colorado Springs			
Sample(s) Name(s) JH		Project Manager Lize Bullock		Address			
Lize Bullock		Lize					
Accession #		Collection		Number of preserved bottles		LAB USE ONLY	
Field ID / Point of Collection		Date		Time		Matrix	
SC_10 274521		2/15/18		0907		JH GW 1 X	
SC_11 274522		2/15/18		0935		JH GW 1 X	
SC_12 274523		2/15/18		1011		JH GW 1 X	
SC_12 Duplicate 274524		2/15/18		1011		JH GW 1 X	
SC_13 274525		2/15/18		1044		JH GW 1 X	
SC_14 274526		2/15/18		1118		JH GW 1 X	
EQUIP_BLK 274527		2/15/18		1023		JH GW 1 X	

DA2834: Chain of Custody
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SGS Accutest Sample Receipt Summary

Job Number: DA2834 Client: COLORADO SPRINGS UTILITIES Project: CCR LANDFILL GW ASSESSMENT
 Date / Time Received: 2/21/2018 10:00:00 AM Delivery Method: Airbill #'s: ups
 Cooler Temps (Initial/Adjusted): #1: (1.1/1.1)

Cooler Security	<u>Y or N</u>	<u>Y or N</u>	Sample Integrity - Documentation	<u>Y or N</u>
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1. Sample labels present on bottles:	<input checked="" type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2. Container labeling complete:	<input checked="" type="checkbox"/>
			3. Sample container label / COC agree:	<input checked="" type="checkbox"/>
Cooler Temperature	<u>Y or N</u>	<u>Y or N</u>	Sample Integrity - Condition	<u>Y or N</u>
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1. Sample recvd within HT:	<input checked="" type="checkbox"/>
2. Cooler temp verification:			2. All containers accounted for:	<input checked="" type="checkbox"/>
3. Cooler media:			3. Condition of sample:	Intact
4. No. Coolers:		1		
			Sample Integrity - Instructions	<u>Y or N</u> <u>N/A</u>
Quality Control Preservation	<u>Y or N</u>	<u>N/A</u>	1. Analysis requested is clear:	<input checked="" type="checkbox"/>
1. Trip Blank present / cooler:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2. Bottles received for unspecified tests:	<input checked="" type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Compositing instructions clear:	<input checked="" type="checkbox"/>
4. VOCs headspace free:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	5. Filtering instructions clear:	<input type="checkbox"/>

Comments

DA2834: Chain of Custody
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Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

6

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: DA2834
Account: SPRUCOCS - Colorado Springs Utilities
Project: CCR Landfill Groundwater Assessment

QC Batch ID: MP24236
Matrix Type: AQUEOUS

Methods: EPA 200.8
Units: ug/l

Prep Date: 02/22/18

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	1.1	2		
Antimony	0.40	.0022	.011	-0.017	<0.40
Arsenic	0.20	.017	.044	0.012	<0.20
Barium	2.0	.016	.079	0.12	<2.0
Beryllium	0.20	.006	.069	0.0060	<0.20
Boron	40	.49	2.1		
Cadmium	0.10	.019	.042	0.0049	<0.10
Calcium	400	5.6	12		
Chromium	2.0	.018	.053	0.17	<2.0
Cobalt	0.20	.0049	.015		
Copper	2.0	.06	.13		
Iron	10	1.1	4.6		
Lead	0.50	.0079	.008	0.69	* (a)
Magnesium	100	1.3	1.3		
Manganese	1.0	.074	.13		
Molybdenum	1.0	.049	.029	0.11	<1.0
Nickel	2.0	.0088	.027		
Phosphorus	60	2.6	4.3		
Potassium	200	2.9	2.9		
Selenium	0.40	.028	.21	-0.0040	<0.40
Silver	0.10	.0019	.008		
Sodium	500	4.9	4.9		
Strontium	20	.01	.015		
Thallium	0.20	.0024	.005	0.0010	<0.20
Tin	10	.063	1.3		
Titanium	2.0	.014	.092		
Uranium	0.20	.0017	.002		
Vanadium	1.0	.037	.2		
Zinc	10	.21	.96		

Associated samples MP24236: DA2834-1, DA2834-2, DA2834-3, DA2834-4

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) All sample results < RL or > 10x MB concentration.

611

6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA2834
 Account: SPRUCOCS - Colorado Springs Utilities
 Project: CCR Landfill Groundwater Assessment

QC Batch ID: MP24236
 Matrix Type: AQUEOUS
 Prep Date: 02/22/18
 Methods: EPA 200.8
 Units: ug/l

Metal	DA2813-1FA Original MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum	anr			
Antimony	0.39	90.1	100	89.6 70-130
Arsenic	0.44	201	200	100.3 70-130
Barium	39.5	442	400	100.5 70-130
Beryllium	0.0	101	100	101.0 70-130
Boron				
Cadmium	0.086	96.4	100	96.3 70-130
Calcium				
Chromium	0.26	94.9	100	94.5 70-130
Cobalt				
Copper	anr			
Iron	anr			
Lead				
Magnesium				
Manganese				
Molybdenum	4.3	103	100	98.7 70-130
Nickel	anr			
Phosphorus				
Potassium				
Selenium	0.23	187	200	93.3 70-130
Silver	anr			
Sodium				
Strontium				
Thallium	0.41	198	200	99.0 70-130
Tin				
Titanium				
Uranium	anr			
Vanadium				
Zinc	anr			

Associated samples MP24236: DA2834-1, DA2834-2, DA2834-3, DA2834-4

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

612 6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA2834
 Account: SPRUCOCS - Colorado Springs Utilities
 Project: CCR Landfill Groundwater Assessment

QC Batch ID: MP24236
 Matrix Type: AQUEOUS
 Prep Date: 02/22/18
 Methods: EPA 200.8
 Units: ug/l

Metal	DA2813-1FA Original MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum	anr				
Antimony	0.39	90.2	100	89.6 10.3	20
Arsenic	0.44	202	200	100.8 0.5	20
Barium	39.5	445	400	101.3 0.7	20
Beryllium	0.0	103	100	103.0 2.0	20
Boron					
Cadmium	0.086	96.4	100	96.3 0.0	20
Calcium					
Chromium	0.26	94.7	100	94.3 0.2	20
Cobalt					
Copper	anr				
Iron	anr				
Lead					
Magnesium					
Manganese					
Molybdenum	4.3	104	100	99.7 1.0	20
Nickel	anr				
Phosphorus					
Potassium					
Selenium	0.23	188	200	93.8 0.5	20
Silver	anr				
Sodium					
Strontium					
Thallium	0.41	200	200	100.0 1.0	20
Tin					
Titanium					
Uranium	anr				
Vanadium					
Zinc	anr				

Associated samples MP24236: DA2834-1, DA2834-2, DA2834-3, DA2834-4

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

612 6

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: DA2834
 Account: SPRUCOCS - Colorado Springs Utilities
 Project: CCR Landfill Groundwater Assessment

QC Batch ID: MP24236
 Matrix Type: AQUEOUS
 Methods: EPA 200.8
 Units: ug/l
 Prep Date: 02/22/18

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum	anr			
Antimony	90.6	100	90.6	85-115
Arsenic	204	200	102.0	85-115
Barium	404	400	101.0	85-115
Beryllium	101	100	101.0	85-115
Boron				
Cadmium	99.4	100	99.4	85-115
Calcium				
Chromium	97.2	100	97.2	85-115
Cobalt				
Copper	anr			
Iron	anr			
Lead	208	200	104.0	85-115
Magnesium				
Manganese				
Molybdenum	113	100	113.0	85-115
Nickel	anr			
Phosphorus				
Potassium				
Selenium	193	200	96.5	85-115
Silver	anr			
Sodium				
Strontium				
Thallium	203	200	101.5	85-115
Tin				
Titanium				
Uranium	anr			
Vanadium				
Zinc	anr			

Associated samples MP24236: DA2834-1, DA2834-2, DA2834-3, DA2834-4

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

613
6

BLANK RESULTS SUMMARY
 Part 2 - Method Blanks

Login Number: DA2834
 Account: SPRUCOCS - Colorado Springs Utilities
 Project: CCR Landfill Groundwater Assessment

QC Batch ID: MP24240
 Matrix Type: AQUEOUS
 Methods: EPA 200.8
 Units: ug/l
 Prep Date: 02/22/18

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	1.1	2		
Antimony	0.40	.0022	.011	-0.018	<0.40
Arsenic	0.20	.017	.044	-0.0040	<0.20
Barium	2.0	.016	.079	0.052	<2.0
Beryllium	0.20	.016	.069	0.0040	<0.20
Boron	40	.49	2.1		
Calcium	400	5.6	12		
Chromium	2.0	.053	.053	-0.15	<2.0
Cobalt	0.20	.0049	.015		
Copper	2.0	.06	.13		
Iron	10	1.1	4.6		
Lead	0.50	.0079	.008	0.017	<0.50
Magnesium	100	1.3	1.3		
Manganese	1.0	.074	.13		
Molybdenum	1.0	.049	.029	-0.015	<1.0
Nickel	2.0	.0088	.027		
Phosphorus	60	2.6	4.3		
Potassium	200	2.9	2.9		
Selenium	0.40	.06	.21	0.013	<0.40
Silver	0.10	.0019	.008		
Sodium	500	4.9	4.9		
Strontium	20	.01	.015		
Thallium	0.20	.0024	.005	0.0	<0.20
Tin	10	.063	1.3		
Titanium	2.0	.014	.092		
Uranium	0.20	.0017	.002		
Vanadium	1.0	.037	.2		
Zinc	10	.21	.96		

Associated samples MP24240: DA2834-5, DA2834-6, DA2834-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

621
6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA2834
 Account: SPRUCOCS - Colorado Springs Utilities
 Project: CCR Landfill Groundwater Assessment

QC Batch ID: MP24240 Methods: EPA 200.8
 Matrix Type: AQUEOUS Units: ug/l

Prep Date: 02/22/18

Metal	DA2835-2 Original MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony	0.0 98.6	100	98.6	70-130
Barium	10.5 446	400	108.9	70-130
Beryllium	0.0 69.9	100	69.9N(a)	70-130
Boron				
Calcium				
Chromium	0.0 83.8	100	83.8	70-130
Cobalt				
Copper				
Iron				
Magnesium				
Manganese				
Nickel				
Phosphorus				
Potassium				
Silver				
Sodium				
Strontium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP24240: DA2834-5, DA2834-6, DA2834-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested
 (a) Spike recovery indicates possible matrix interference.

622
6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA2834
 Account: SPRUCOCS - Colorado Springs Utilities
 Project: CCR Landfill Groundwater Assessment

QC Batch ID: MP24240 Methods: EPA 200.8
 Matrix Type: AQUEOUS Units: ug/l

Prep Date: 02/22/18

Metal	DA2835-2 Original MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum					
Antimony	0.0 93.2	100	93.2	17.4	20
Barium	10.5 460	400	112.4	3.1	20
Beryllium	0.0 70.0	100	70.0	0.1	20
Boron					
Calcium					
Chromium	0.0 84.1	100	84.1	0.4	20
Cobalt					
Copper					
Iron					
Magnesium					
Manganese					
Nickel					
Phosphorus					
Potassium					
Silver					
Sodium					
Strontium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP24240: DA2834-5, DA2834-6, DA2834-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

622
6

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: DA2834
 Account: SPRUCOCS - Colorado Springs Utilities
 Project: CCR Landfill Groundwater Assessment

QC Batch ID: MP24240
 Matrix Type: AQUEOUS
 Prep Date: 02/22/18
 Methods: EPA 200.8
 Units: ug/l

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony	102	100	102.0	85-115
Arsenic	196	200	98.0	85-115
Barium	416	400	104.0	85-115
Beryllium	102	100	102.0	85-115
Boron				
Calcium				
Chromium	90.8	100	90.8	85-115
Cobalt				
Copper				
Iron				
Lead	208	200	104.0	85-115
Magnesium				
Manganese				
Molybdenum	99.3	100	99.3	85-115
Nickel				
Phosphorus				
Potassium				
Selenium	200	200	100.0	85-115
Silver				
Sodium				
Strontium				
Thallium	214	200	107.0	85-115
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP24240: DA2834-5, DA2834-6, DA2834-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

623
6

BLANK RESULTS SUMMARY
 Part 2 - Method Blanks

Login Number: DA2834
 Account: SPRUCOCS - Colorado Springs Utilities
 Project: CCR Landfill Groundwater Assessment

QC Batch ID: MP24282
 Matrix Type: AQUEOUS
 Prep Date: 02/28/18
 Methods: EPA 200.8
 Units: ug/l

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	1.1	2		
Antimony	0.40	.0022	.011		
Arsenic	0.20	.017	.044		
Barium	2.0	.016	.079		
Beryllium	0.20	.016	.069	0.0	<0.20
Boron	40	.49	2.1		
Cadmium	0.10	.036	.042	-0.029	<0.10
Calcium	400	5.6	12		
Chromium	2.0	.053	.053		
Cobalt	0.20	.0049	.015		
Copper	2.0	.06	.13		
Iron	10	3.5	4.6		
Lead	0.50	.0079	.008		
Magnesium	100	1.3	1.3		
Manganese	1.0	.12	.13		
Molybdenum	1.0	.049	.029		
Nickel	2.0	.0088	.027		
Phosphorus	60	2.6	4.3		
Potassium	200	2.9	2.9		
Selenium	0.40	.06	.21		
Silver	0.10	.0019	.008		
Sodium	500	4.9	4.9		
Strontium	20	.01	.015		
Thallium	0.20	.0024	.005		
Tin	10	.063	1.3		
Titanium	2.0	.059	.092		
Uranium	0.20	.0017	.002		
Vanadium	1.0	.037	.2		
Zinc	10	.21	.96		

Associated samples MP24282: DA2834-5, DA2834-6, DA2834-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

624
6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA2834
 Account: SPRUCOCS - Colorado Springs Utilities
 Project: CCR Landfill Groundwater Assessment

QC Batch ID: MP24282
 Matrix Type: AQUEOUS
 Methods: EPA 200.8
 Units: ug/l
 Prep Date: 02/28/18

Metal	DA2834-5 Original MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium				
Beryllium	0.0	81.7	100	81.7 70-130
Boron				
Cadmium	0.43	91.0	100	90.6 70-130
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead	anr			
Magnesium				
Manganese				
Molybdenum	anr			
Nickel				
Phosphorus				
Potassium				
Selenium	anr			
Silver				
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP24282: DA2834-5, DA2834-6, DA2834-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

632
6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA2834
 Account: SPRUCOCS - Colorado Springs Utilities
 Project: CCR Landfill Groundwater Assessment

QC Batch ID: MP24282
 Matrix Type: AQUEOUS
 Methods: EPA 200.8
 Units: ug/l
 Prep Date: 02/28/18

Metal	DA2834-5 Original MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum					
Antimony					
Arsenic	anr				
Barium					
Beryllium	0.0	80.9	100	80.9	1.0 20
Boron					
Cadmium	0.43	90.3	100	89.9	0.8 20
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead	anr				
Magnesium					
Manganese					
Molybdenum	anr				
Nickel					
Phosphorus					
Potassium					
Selenium	anr				
Silver					
Sodium					
Strontium					
Thallium	anr				
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP24282: DA2834-5, DA2834-6, DA2834-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

632
6

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: DA2834
 Account: SPRUCOCS - Colorado Springs Utilities
 Project: CCR Landfill Groundwater Assessment

QC Batch ID: MP24282 Methods: EPA 200.8
 Matrix Type: AQUEOUS Units: ug/l

Prep Date: 02/28/18

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium				
Beryllium	96.8	100	96.8	85-115
Boron				
Cadmium	97.7	100	97.7	85-115
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead	anr			
Magnesium				
Manganese				
Molybdenum	anr			
Nickel				
Phosphorus				
Potassium				
Selenium	anr			
Silver				
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP24282: DA2834-5, DA2834-6, DA2834-7

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested



March 21, 2018

Ms. Wendy Asay
 Colorado Springs Utilities
 701 E. Las Vegas St.
 Colorado Springs, Colorado 80903

Re: Routine Analysis
 Work Order: 444474

Dear Ms. Asay:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on February 22, 2018. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4778.

Sincerely,

Taylor Cannon for
 Hope Taylor
 Project Manager

Purchase Order: 201718264
 Enclosures

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis Report
for

CSUT001 Colorado Springs Utilities
Client SDG: 444474 GEL Work Order: 444474

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- ** Analyte is a surrogate compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Hope Taylor.

Reviewed by _____



GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: March 21, 2018

Company : Colorado Springs Utilities
Address : 701 E. Las Vegas St.

Colorado Springs, Colorado 80903

Contact: Ms. Wendy Asay
Project: Routine Analysis

Client Sample ID: SC_10 274521
Sample ID: 444474001
Matrix: Ground Water
Collect Date: 15-FEB-18 09:07
Receive Date: 22-FEB-18
Collector: Client

Project: CSUT00117
Client ID: CSUT001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting GFPC Ra228, Liquid "As Received"												
Radium-228	U	1.39	4.08	5.00	pCi/L			JXC9	03/13/18	1525	1741803	1
Rad Radium-226 Lucas Cell, Ra226, Liquid "As Received"												
Radium-226		1.76	0.537	5.00	pCi/L			PCW	03/13/18	0952	1741733	2

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	EPA 904.0/SW846 9320 Modified		
2	EPA 903.1 Modified		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			90.2	(15%-125%)

Notes:

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Lc/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

Certificate of Analysis

Report Date: March 21, 2018

Company : Colorado Springs Utilities
Address : 701 E. Las Vegas St.

Contact: Colorado Springs, Colorado 80903
Ms. Wendy Asay
Project: Routine Analysis

Client Sample ID: SC_11 274522	Project: CSUT00117
Sample ID: 444474002	Client ID: CSUT001
Matrix: Ground Water	
Collect Date: 15-FEB-18 09:35	
Receive Date: 22-FEB-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC Ra228, Liquid "As Received"												
Radium-228	U	1.21	4.14	5.00	pCi/L			JXC9	03/13/18	1718	1741803	1
Rad Radium-226												
Lucas Cell, Ra226, Liquid "As Received"												
Radium-226		2.03	0.649	5.00	pCi/L			PCW	03/13/18	0920	1741733	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			100	(15%-125%)

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

Certificate of Analysis

Report Date: March 21, 2018

Company : Colorado Springs Utilities
Address : 701 E. Las Vegas St.

Contact: Colorado Springs, Colorado 80903
Ms. Wendy Asay
Project: Routine Analysis

Client Sample ID: SC_12 274523	Project: CSUT00117
Sample ID: 444474003	Client ID: CSUT001
Matrix: Ground Water	
Collect Date: 15-FEB-18 10:11	
Receive Date: 22-FEB-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC Ra228, Liquid "As Received"												
Radium-228	U	0.264	3.47	5.00	pCi/L			JXC9	03/13/18	1525	1741803	1
Rad Radium-226												
Lucas Cell, Ra226, Liquid "As Received"												
Radium-226		1.52	1.20	5.00	pCi/L			PCW	03/13/18	0920	1741733	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			96.6	(15%-125%)

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

Certificate of Analysis

Report Date: March 21, 2018

Company : Colorado Springs Utilities
Address : 701 E. Las Vegas St.

Contact: Colorado Springs, Colorado 80903
Ms. Wendy Asay
Project: Routine Analysis

Client Sample ID: SC_12 Duplicate 274524	Project: CSUT00117
Sample ID: 444474004	Client ID: CSUT001
Matrix: Ground Water	
Collect Date: 15-FEB-18 10:11	
Receive Date: 22-FEB-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC Ra228, Liquid "As Received"												
Radium-228	U	2.23	4.25	5.00	pCi/L			JXC9	03/13/18	1525	1741803	1
Rad Radium-226												
Lucas Cell, Ra226, Liquid "As Received"												
Radium-226		0.995	0.846	5.00	pCi/L			PCW	03/13/18	0920	1741733	2

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	EPA 904.0/SW846 9320 Modified		
2	EPA 903.1 Modified		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			100	(15%-125%)

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

Certificate of Analysis

Report Date: March 21, 2018

Company : Colorado Springs Utilities
Address : 701 E. Las Vegas St.

Contact: Colorado Springs, Colorado 80903
Ms. Wendy Asay
Project: Routine Analysis

Client Sample ID: SC_13 274525	Project: CSUT00117
Sample ID: 444474005	Client ID: CSUT001
Matrix: Ground Water	
Collect Date: 15-FEB-18 10:44	
Receive Date: 22-FEB-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC Ra228, Liquid "As Received"												
Radium-228		3.18	3.06	5.00	pCi/L			JXC9	03/13/18	1525	1741803	1
Rad Radium-226												
Lucas Cell, Ra226, Liquid "As Received"												
Radium-226	U	0.069	0.994	5.00	pCi/L			PCW	03/13/18	0920	1741733	2

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	EPA 904.0/SW846 9320 Modified		
2	EPA 903.1 Modified		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			107	(15%-125%)

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

Certificate of Analysis

Report Date: March 21, 2018

Company : Colorado Springs Utilities
Address : 701 E. Las Vegas St.

Contact: Colorado Springs, Colorado 80903
Ms. Wendy Asay
Project: Routine Analysis

Client Sample ID: SC_14 274526	Project: CSUT00117
Sample ID: 444474006	Client ID: CSUT001
Matrix: Ground Water	
Collect Date: 15-FEB-18 11:18	
Receive Date: 22-FEB-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC Ra228, Liquid "As Received"												
Radium-228	U	1.33	4.50	5.00	pCi/L			JXC9	03/13/18	1718	1741803	1
Rad Radium-226												
Lucas Cell, Ra226, Liquid "As Received"												
Radium-226	U	0.590	0.724	5.00	pCi/L			PCW	03/13/18	0920	1741733	2

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	EPA 904.0/SW846 9320 Modified		
2	EPA 903.1 Modified		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			91.9	(15%-125%)

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

Certificate of Analysis

Report Date: March 21, 2018

Company : Colorado Springs Utilities
Address : 701 E. Las Vegas St.

Contact: Colorado Springs, Colorado 80903
Ms. Wendy Asay
Project: Routine Analysis

Client Sample ID: CC_1 274514	Project: CSUT00117
Sample ID: 444474007	Client ID: CSUT001
Matrix: Ground Water	
Collect Date: 14-FEB-18 12:04	
Receive Date: 22-FEB-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC Ra228, Liquid "As Received"												
Radium-228	U	3.29	3.48	5.00	pCi/L			JXC9	03/13/18	1525	1741803	1
Rad Radium-226												
Lucas Cell, Ra226, Liquid "As Received"												
Radium-226		1.48	0.901	5.00	pCi/L			PCW	03/13/18	0920	1741733	2

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	EPA 904.0/SW846 9320 Modified		
2	EPA 903.1 Modified		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			93.8	(15%-125%)

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

Certificate of Analysis

Report Date: March 21, 2018

Company : Colorado Springs Utilities
Address : 701 E. Las Vegas St.

Contact: Colorado Springs, Colorado 80903
Project: Ms. Wendy Asay
Routine Analysis

Client Sample ID: FC_1 274515	Project: CSUT00117
Sample ID: 444474008	Client ID: CSUT001
Matrix: Ground Water	
Collect Date: 14-FEB-18 09:56	
Receive Date: 22-FEB-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC Ra228, Liquid "As Received"												
Radium-228	U	1.91	4.46	5.00	pCi/L			JXC9	03/13/18	1718	1741803	1
Rad Radium-226												
Lucas Cell, Ra226, Liquid "As Received"												
Radium-226		3.00	0.776	5.00	pCi/L			PCW	03/13/18	0920	1741733	2

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	EPA 904.0/SW846 9320 Modified		
2	EPA 903.1 Modified		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			93.8	(15%-125%)

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

Certificate of Analysis

Report Date: March 21, 2018

Company : Colorado Springs Utilities
Address : 701 E. Las Vegas St.

Contact: Colorado Springs, Colorado 80903
Project: Ms. Wendy Asay
Routine Analysis

Client Sample ID: FC_2 274516	Project: CSUT00117
Sample ID: 444474009	Client ID: CSUT001
Matrix: Ground Water	
Collect Date: 14-FEB-18 10:30	
Receive Date: 22-FEB-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC Ra228, Liquid "As Received"												
Radium-228	U	1.75	3.60	5.00	pCi/L			JXC9	03/13/18	1525	1741803	1
Rad Radium-226												
Lucas Cell, Ra226, Liquid "As Received"												
Radium-226	U	0.403	0.743	5.00	pCi/L			PCW	03/13/18	1025	1741733	2

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	EPA 904.0/SW846 9320 Modified		
2	EPA 903.1 Modified		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			95.1	(15%-125%)

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

Certificate of Analysis

Report Date: March 21, 2018

Company : Colorado Springs Utilities
Address : 701 E. Las Vegas St.

Contact: Colorado Springs, Colorado 80903
Ms. Wendy Asay
Project: Routine Analysis

Client Sample ID: FC_3A 274517	Project: CSUT00117
Sample ID: 444474010	Client ID: CSUT001
Matrix: Ground Water	
Collect Date: 14-FEB-18 13:17	
Receive Date: 22-FEB-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC Ra228, Liquid "As Received"												
Radium-228	U	-2.15	4.50	5.00	pCi/L		JXC9	03/13/18	1525	1741803		1
Rad Radium-226												
Lucas Cell, Ra226, Liquid "As Received"												
Radium-226	U	0.0698	0.772	5.00	pCi/L		PCW	03/13/18	0952	1741733		2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			89.5	(15%-125%)

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

Certificate of Analysis

Report Date: March 21, 2018

Company : Colorado Springs Utilities
Address : 701 E. Las Vegas St.

Contact: Colorado Springs, Colorado 80903
Ms. Wendy Asay
Project: Routine Analysis

Client Sample ID: FC_3A Duplicate 274518	Project: CSUT00117
Sample ID: 444474011	Client ID: CSUT001
Matrix: Ground Water	
Collect Date: 14-FEB-18 13:17	
Receive Date: 22-FEB-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC Ra228, Liquid "As Received"												
Radium-228	U	-0.361	2.96	5.00	pCi/L		JXC9	03/13/18	1525	1741803		1
Rad Radium-226												
Lucas Cell, Ra226, Liquid "As Received"												
Radium-226	U	0.575	0.689	5.00	pCi/L		PCW	03/13/18	0952	1741733		2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			106	(15%-125%)

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

Certificate of Analysis

Report Date: March 21, 2018

Company : Colorado Springs Utilities
Address : 701 E. Las Vegas St.

Colorado Springs, Colorado 80903
Contact: Ms. Wendy Asay
Project: Routine Analysis

Client Sample ID: FC_3B 274519
Sample ID: 444474012
Matrix: Ground Water
Collect Date: 14-FEB-18 13:48
Receive Date: 22-FEB-18
Collector: Client

Project: CSUT00117
Client ID: CSUT001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC Ra228, Liquid "As Received"												
Radium-228	U	1.62	4.35	5.00	pCi/L			JXC9	03/13/18	1525	1741803	1
Rad Radium-226												
Lucas Cell, Ra226, Liquid "As Received"												
Radium-226	U	0.596	1.23	5.00	pCi/L			PCW	03/13/18	0952	1741733	2

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	EPA 904.0/SW846 9320 Modified		
2	EPA 903.1 Modified		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			101	(15%-125%)

Notes:

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity
MDC: Minimum Detectable Concentration
Le/LC: Critical Level
PF: Prep Factor
RL: Reporting Limit
SQL: Sample Quantitation Limit

QC Summary

Report Date: March 21, 2018

Page 1 of 2

Colorado Springs Utilities
701 E. Las Vegas St.
Colorado Springs, Colorado
Contact: Ms. Wendy Asay

Workorder: 444474

Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Gas Flow											
Batch	1741803										
QC1203977926	444480008	DUP									
Radium-228		4.08	U	3.01	pCi/L	30		(0% - 100%)	JXC9	03/13/18	15:21
QC1203977927	LCS										
Radium-228	55.6			59.1	pCi/L		106	(75%-125%)		03/13/18	15:21
QC1203977925	MB										
Radium-228			U	1.47	pCi/L					03/13/18	15:21
Rad Ra-226											
Batch	1741733										
QC1203977765	444474001	DUP									
Radium-226		1.76		1.42	pCi/L	21.1		(0% - 100%)	PCW	03/13/18	10:25
QC1203977767	LCS										
Radium-226	65.0			66.8	pCi/L		103	(75%-125%)		03/13/18	10:25
QC1203977764	MB										
Radium-226			U	0.425	pCi/L					03/13/18	10:25
QC1203977766	444474001	MS									
Radium-226	130	1.76		134	pCi/L		102	(75%-125%)		03/13/18	10:25

Notes:

The Qualifiers in this report are defined as follows:

- ** Analyte is a Tracer compound
- < Result is less than value reported
- > Result is greater than value reported
- BD Results are either below the MDC or tracer recovery is low
- FA Failed analysis.
- H Analytical holding time was exceeded

QC Summary

Workorder: 444474

Page 2 of 2

Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
J		Value is estimated									
K		Analyte present. Reported value may be biased high. Actual value is expected to be lower.									
L		Analyte present. Reported value may be biased low. Actual value is expected to be higher.									
M		M if above MDC and less than LLD									
M		REMP Result > MDC/CL and < RDL									
N/A		RPD or %Recovery limits do not apply.									
N1		See case narrative									
ND		Analyte concentration is not detected above the detection limit									
NJ		Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier									
Q		One or more quality control criteria have not been met. Refer to the applicable narrative or DER.									
R		Sample results are rejected									
U		Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.									
UI		Gamma Spectroscopy--Uncertain identification									
UJ		Gamma Spectroscopy--Uncertain identification									
UL		Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.									
X		Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier									
Y		Other specific qualifiers were required to properly define the results. Consult case narrative.									
^		RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.									
h		Preparation or preservation holding time was exceeded									

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
 ^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
 * Indicates that a Quality Control parameter was not within specifications.
 For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Product: GFPC Ra228, Liquid
Analytical Method: EPA 904.0/SW846 9320 Modified
Analytical Procedure: GL-RAD-A-063 REV# 1
Analytical Batch: 1741803

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
444474001	SC_10 274521
444474002	SC_11 274522
444474003	SC_12 274523
444474004	SC_12 Duplicate 274524
444474005	SC_13 274525
444474006	SC_14 274526
444474007	CC_1 274514
444474008	FC_1 274515
444474009	FC_2 274516
444474010	FC_3A 274517
444474011	FC_3A Duplicate 274518
444474012	FC_3B 274519
1203977925	Method Blank (MB)
1203977926	444480008(HR_GP22 274512) Sample Duplicate (DUP)
1203977927	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Recounts
 Samples 444474002 (SC_11 274522), 444474006 (SC_14 274526) and 444474008 (FC_1 274515) were recounted to verify sample results. Recounts are reported.

Product: Lucas Cell, Ra226, Liquid
Analytical Method: EPA 903.1 Modified
Analytical Procedure: GL-RAD-A-008 REV# 15
Analytical Batch: 1741733

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#

444474001
444474002
444474003
444474004
444474005
444474006
444474007
444474008
444474009
444474010
444474011
444474012
1203977764
1203977765
1203977766
1203977767

Client Sample Identification

SC_10 274521
SC_11 274522
SC_12 274523
SC_12 Duplicate 274524
SC_13 274525
SC_14 274526
CC_1 274514
FC_1 274515
FC_2 274516
FC_3A 274517
FC_3A Duplicate 274518
FC_3B 274519
Method Blank (MB)
444474001(SC_10 274521) Sample Duplicate (DUP)
444474001(SC_10 274521) Matrix Spike (MS)
Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Miscellaneous Information

Additional Comments

The matrix spike, 1203977766 (SC_10 274521MS), aliquot was reduced to conserve sample volume.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Page

Page: _____ of _____
 Subject # / Gravel Pit: _____
 GEL Quote #: _____
 Site Number: _____
 GEL Number: 201718264

GEL Laboratories LLC
 Chemistry | Radiochemistry | Radiobiology | Specialty Analytics
 Chain of Custody and Analytical Request
 GEL Work Order Number: 141414 GEL Project Manager:
 Phone # 719-668-4603 Fax # _____

Client Name: Colorado Springs Utilities
 Project/Site Name: CCR Landfill Groundwater Assessment
 Address: 701 E. Las Vegas St. Colorado Springs, CO 80903
 Collected By: JH Send Results To: Wendy Asty

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (Military (hh:mm))	QC Code in Matrix	Field Filtered in Matrix	Sample Collected	Total number of containers	Should this sample be considered:	Sample Analysis Requested (6)	Comments
SC_10 274521	2/15/2018	0907	N	GW	2	X	X	Ra 228, EPA 904.0	Note: extra sample is required for sample specific QC
SC_11 274522	2/15/2018	0935	N	GW	2	X	X	Ra 226, EPA 903.1	
SC_12 274523	2/15/2018	1011	N	GW	2	X	X		
SC_12 Duplicate 274524	2/15/2018	1011	N	GW	2	X	X		
SC_13 274525	2/15/2018	1044	N	GW	2	X	X		
SC_14 274526	2/15/2018	1118	N	GW	2	X	X		

TAT Requested: Normal: _____ Rush: _____ Specify: _____ (Subject to SurchARGE)
 Fax Results: Yes No
 Select Deliverable: C of A QC Summary Level 1 Level 2 Level 3 Level 4
 Additional Remarks:
 For Lab Receiving Use Only: Caretaker Initial? Yes No Cooler Temp: _____ °C
 Sample Collection Time Zone: Eastern Pacific Central Mountain Other: _____

Chain of Custody Signatures

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
<i>[Signature]</i>	2-20-18	1135	<i>[Signature]</i>	2-22-18	0945

> For sample shipping and delivery details, see Sample Receipt & Review form (SRR.)

1.) Chain of Custody Number - Client Determined
 2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EH = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
 3.) Field Filtered: For liquid matrices, indicate with a 'Y' - for yes the sample was field filtered or a 'N' - for sample was not field filtered.
 4.) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Pipe, U=Urine, F=Feet, N=Nail
 5.) Sample Analysis Requested: Analytical method requested (i.e. 8260B, 8010B/7470A) and number of containers provided for each (i.e. 8260B - 3, 8010B/7470A - 1).
 6.) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Acetic Acid, HX = Hexams, ST = Sodium Thiosulfate. If no preservative is added = leave field blank
 7.) **KNOWN OR POSSIBLE HAZARDS**
 Characteristic Hazards
 FL = Flammable/Ignitable
 CO = Corrosive
 RE = Reactive
 TSCA Regulated
 PCB = Polychlorinated biphenyls
 RCRA Metals
 As = Arsenic
 Ba = Barium
 Cd = Cadmium
 Cr = Chromium
 Hg = Mercury
 Se = Selenium
 Ag = Silver
 MR = Misc. RCRA metals
 Pb = Lead
 Listed Waste
 LW = Listed Waste
 FL = Flammable/Ignitable
 CO = Corrosive
 RE = Reactive
 Waste code(s):
 Other
 OT = Other / Unknown
 (i.e.: High/low pH, asbestos, beryllium, irritants, other misc. health hazards, etc.)
 Description:

Please provide any additional details below regarding handling and/or disposal concerns. (i.e.: Origin of sample(s), type of site collected from, odd matrices, etc.)

GEL Laboratories LLC
 2040 Savage Road
 Charleston, SC 29407
 Phone: (843) 556-8171
 Fax: (843) 766-1178

GEL Project Manager:
 Phone # 719-468-4603
 Fax #

GEL Work Order Number:
 Project/Site Name: CCR Landfill Groundwater Assessment
 Address: 701 E. Las Vegas St. Colorado Springs, CO 80903

Chain of Custody and Analytical Request
 Send Results To: Wendy Asay
 Collected By: JH

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (Military)	OC Code	Field Filtered	Sample Matrix	Total number of containers	Should this sample be considered:	Sample Analysis Requested (5)	Preservative Type (6)	Comments
CC-1 274514	2/14/2018	1204	N	N	GW	2	(7) Known or (8) Suspected (9) Radiactive (if Y, please specify isotopes info.)	Ra 226, EPA 903.1 Ra 228, EPA 904.0	<-- Preservative Type (6)	Note: extra sample is required for sample specific QC
FC-1 274516	2/14/2018	0956	N	N	GW	2				
FC-2 274517	2/14/2018	1030	N	N	GW	2				
FC-3A 274517	2/14/2018	1317	N	N	GW	2				
FC-3A Duplicate 274518	2/14/2018	1317	N	N	GW	2				
FC-3B 274519	2/14/2018	1348	N	N	GW	2				

Chain of Custody Signatures

Relinquished By (Signed)	Date	Time
<i>[Signature]</i>	2/20/18	11:55
<i>[Signature]</i>	2/22/18	09:45

TAT Requested: Normal: Rush: Specify: _____ (Subject to Surcharge)
Fax Results: Yes No
Select Deliverable: C of A QC Summary Level 1 Level 2 Level 3 Level 4
Additional Remarks:
For Lab Receiving Use Only: Custody Seal Intact? Yes No **Cooler Temp:** _____ °C
Sample Collection Time Zone: Eastern Pacific Central Mountain Other: _____

Characteristic Hazards
 FL = Flammable/Ignitable
 CO = Corrosive
 RE = Reactive
 TSCA Regulated
 PCB = Polychlorinated biphenyls

RCRA Metals
 As = Arsenic
 Ba = Barium
 Cd = Cadmium
 Cr = Chromium
 Pb = Lead

Listed Waste
 LW = Listed Waste (F, K, P and U-listed wastes.)
 Waste code(s): _____

Other
 OT = Other / Unknown (i.e.: High/low pH, asbestos, beryllium, irritants, other misc. health hazards, etc.)
 Description: _____

1) Chain of Custody Number - Client Determined
2) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, ER = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
3) Field Filtered: For liquid matrices, indicate with a 'Y'. For solids the sample was field filtered or -N- for sample was not field filtered.
4) Matrix Codes: DW-Drinking Water, GW-Groundwater, SW-Surface Water, W-Water, ML-Misc. Liquid, SD-Sediment, SL-Sludge, SS-Solid Waste, O-Oil, F-Filter, P-Wipe, U-Urine, F-Fecal, N-Nasal
5) Sample Analysis Requested: Analytical method requested (i.e. 8260B, 6010B/7470A) and number of containers provided for each (i.e. 8260B - 3, 6010B/7470A - 1).
6) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sulfuric Acid, AA = Acetic Acid, IX = Ixonic Acid, ST = Sodium Thiosulfate, IFO preservative is added - leave field blank
7) UNKNOWN OR POSSIBLE HAZARDS

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: CSUT **SDG/AR/COC/Work Order:** 444474 **HT**

Received By: Chakeris Tarplin **Date Received:** 02-22-2018

Carrier and Tracking Number
 FedEx Express FedEx Ground UPS Field Services Courier Other
 12XF72230195075306
 12XF72230195145098

Suspected Hazard Information
 Yes No
 Shipped as a DOT Hazardous?
 COC/Samples marked or classified as radioactive?
 Is package, COC, and/or Samples marked HAZ?

Comments/Qualifiers (Required for Non-Conforming Items)
 *If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
 Hazard Class Shipped: _____ UN#: _____
 Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0 (CPM) / mR/Hr
 Classified as: Rad 1 Rad 2 Rad 3
 If yes, select Hazards below, and contact the GEL Safety Group.
 PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other: _____

Sample Receipt Criteria	Y	N	A	Z	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Wet Ice Ice Packs Dry Ice (None) Other: _____ *all temperatures are recorded in Celsius TEMP: 21C
4 Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: IR4-17 Secondary Temperature Device Serial # (if Applicable): _____
5 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6 Samples requiring chemical preservation at proper pH?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and Containers Affected: see below in comments If Preservation added, Log #: 1501268P If Yes, Are Encores or Soil Kits present? Yes ___ No ___ (if yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes ___ No ___ N/A ___ (if unknown, select No) VOA vials free of headspace? Yes ___ No ___ N/A ___ Sample ID's and containers affected: _____
7 Do any samples require Volatile Analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected: _____
8 Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected: _____
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected: _____
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected: _____
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected: _____
12 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Comments (Use Continuation Form if needed):
 Preserved w/ Nitric upon arrival
 FC-3B274519 both bottles came unpreserved
 SC-14274526 1 bottle came unpreserved
 SC-13274525 1 bottle came unpreserved

PM (or PMA) review: Initials TMC **Date** 2/23/18 **Page** 1 of 1

GL-CHL-SR-001 Rev 5

Sample received 2/22/18 at GEL

Subject: Sample received 2/22/18 at GEL
From: Brielle Luthman <Brielle.Luthman@gel.com>
Date: 2/23/2018 2:44 PM
To: wasay@csu.org, "team.taylor" <team.taylor@gel.com>

Good afternoon Wendy,

Sample IDs FC_3B 274519, SC_14 274526 (1 of 2), and SC_13 274525 (1 of 2) did not hold preservative. We have added more Nitric Acid upon receipt at GEL.

Thank you,
Brielle

--
Brielle Luthman
Project Manager Assistant



2040 Savage Road, Charleston, SC 29407 | PO Box 30712, Charleston, SC 29417
Office Main: 843.556.8171 Ext. 4487 | Fax: 843.766.1178
E-Mail: Brielle.Luthman@gel.com | Website: www.gel.com

Analytical Testing | Environmental | Engineering | Surveying



List of current GEL Certifications as of 21 March 2018

State	Certification
Alaska	17-018
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (A133904)
Louisiana SDWA	LA180011
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122018-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-18-13
Utah NELAP	SC000122017-25
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404



Colorado Springs Utilities
It's how we're all connected

LABORATORY SERVICES
719-448-4800
www.csu.org

Report Date: January 10, 2019

This report contains test results for the following samples:

284282	25-Sep-2018 11:45	Crooked Canyon Well #1
284283	25-Sep-2018 09:34	Fort Carson Well #1
284284	25-Sep-2018 10:14	Fort Carson Well #2
284285	25-Sep-2018 12:40	Fort Carson Well #3A
284286	25-Sep-2018 13:31	Fort Carson Well #3B
284287	25-Sep-2018 09:34	Fort Carson Well #1
284288	25-Sep-2018 09:42	Equipment Blank
284289	26-Sep-2018 12:27	Sand Canyon Well #10
284290	26-Sep-2018 11:38	Sand Canyon Well #11
284291	26-Sep-2018 10:56	Sand Canyon Well #12
284292	26-Sep-2018 10:16	Sand Canyon Well #13
284293	26-Sep-2018 10:16	Sand Canyon Well #13
284294	26-Sep-2018 09:42	Sand Canyon Well #14
284295	26-Sep-2018 10:21	Equipment Blank

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

Comments: Report revised 1-10-19 to include sulfate data on samples 284282-284288

Report Approved By: Wendy M. Asay
Wendy M. Asay - Environmental Specialist

1-10-19
Date

Report Date: January 10, 2019

Sample Site: Crooked Canyon Well #1
Site Identity: CC_1
Sample Number: 284282
Date/Time Sampled: 25-SEP-2018 11:45
Comp/Grab: GRAB
Sample Comments:

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	31400	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	0.48	mg/L	0.10	
EPA_300_0	Chloride	1520	mg/L	0.25	D
	Sulfate	17900	mg/L	0.25	D
EPA_1631	Mercury (Total)	0.005	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	1000	ug/L	20.0	D
	Calcium (Total Recoverable)	386000	ug/L	100	D
	Cobalt (Total Recoverable)	<5.00	ug/L	5.00	D/D1
	Lithium (Total Recoverable)	664	ug/L	10.0	D
EPA_200_8	Antimony (Total Recoverable)	<0.50	ug/L	0.50	
	Arsenic (Total Recoverable)	11.5	ug/L	1.0	
	Barium (Total Recoverable)	3.9	ug/L	0.20	
	Beryllium (Total Recoverable)	<0.20	ug/L	0.20	
	Cadmium (Total Recoverable)	<0.50	ug/L	0.50	
	Chromium (Total Recoverable)	1.7	ug/L	1.0	
	Lead (Total Recoverable)	<0.50	ug/L	0.50	
	Molybdenum (Total Recoverable)	0.60	ug/L	0.20	
	Selenium (Total Recoverable)	170	ug/L	1.0	
	Thallium (Total Recoverable)	<0.50	ug/L	0.50	
* EPA_903_0	Radium 226	1.98	pCi/L	0.446	J
* EPA_904_0	Radium 228	<4.55	pCi/L	4.55	
NA	Depth to Water	13.54	ft.		
+ SM_2510_B	Conductivity	26100	umhos/cm	1	
+ SM_2550_B	Temperature Centigrade (Field)	12.4	degrees C		
+ SM_4500HB	pH	6.8	SU	2.0	

Report Date: January 10, 2019

Sample Site: Fort Carson Well #1
 Site Identity: FC_1
 Sample Number: 284283
 Date/Time Sampled: 25-SEP-2018 09:34
 Comp/Grab: GRAB
 Sample Comments:

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	22000	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	0.20	mg/L	0.10	
EPA_300_0	Chloride	779	mg/L	0.25	D
	Sulfate	12700	mg/L	0.25	D
EPA_1631	Mercury (Total)	0.002	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	886	ug/L	20.0	D
	Calcium (Total Recoverable)	372000	ug/L	100	D
	Cobalt (Total Recoverable)	<5.00	ug/L	5.00	D/D1
	Lithium (Total Recoverable)	907	ug/L	10.0	D
EPA_200_8	Antimony (Total Recoverable)	<0.50	ug/L	0.50	
	Arsenic (Total Recoverable)	4.8	ug/L	1.0	
	Barium (Total Recoverable)	6.8	ug/L	0.20	
	Beryllium (Total Recoverable)	<0.20	ug/L	0.20	
	Cadmium (Total Recoverable)	<0.50	ug/L	0.50	
	Chromium (Total Recoverable)	1.0	ug/L	1.0	
	Lead (Total Recoverable)	<0.50	ug/L	0.50	
	Molybdenum (Total Recoverable)	1.5	ug/L	0.20	
	Selenium (Total Recoverable)	21.8	ug/L	1.0	
	Thallium (Total Recoverable)	<0.50	ug/L	0.50	
* EPA_903_0	Radium 226	1.80	pCi/L	0.589	J
* EPA_904_0	Radium 228	<3.34	pCi/L	3.34	
NA	Depth to Water	14.94	ft.		
+ SM_2510_B	Conductivity	21600	umhos/cm	1	
+ SM_2550_B	Temperature Centigrade (Field)	13.2	degrees C		
+ SM_4500HB	pH	7.0	SU	2.0	

Report Date: January 10, 2019

Sample Site: Fort Carson Well #2
 Site Identity: FC_2
 Sample Number: 284284
 Date/Time Sampled: 25-SEP-2018 10:14
 Comp/Grab: GRAB
 Sample Comments:

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	10900	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	0.73	mg/L	0.10	
EPA_300_0	Chloride	118	mg/L	0.25	D
	Sulfate	6680	mg/L	0.25	D
EPA_1631	Mercury (Total)	0.003	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	887	ug/L	20.0	D
	Calcium (Total Recoverable)	368000	ug/L	100	D
	Cobalt (Total Recoverable)	<5.00	ug/L	5.00	D/D1
	Lithium (Total Recoverable)	276	ug/L	10.0	D
EPA_200_8	Antimony (Total Recoverable)	<0.50	ug/L	0.50	
	Arsenic (Total Recoverable)	1.4	ug/L	1.0	
	Barium (Total Recoverable)	4.0	ug/L	0.20	
	Beryllium (Total Recoverable)	<0.20	ug/L	0.20	
	Cadmium (Total Recoverable)	<0.50	ug/L	0.50	
	Chromium (Total Recoverable)	1.0	ug/L	1.0	
	Lead (Total Recoverable)	<0.50	ug/L	0.50	
	Molybdenum (Total Recoverable)	2.0	ug/L	0.20	
	Selenium (Total Recoverable)	37.1	ug/L	1.0	
	Thallium (Total Recoverable)	<0.50	ug/L	0.50	
* EPA_903_0	Radium 226	1.00	pCi/L	0.456	J
* EPA_904_0	Radium 228	<3.34	pCi/L	3.34	
NA	Depth to Water	12.88	ft.		
+ SM_2510_B	Conductivity	10300	umhos/cm	1	
+ SM_2550_B	Temperature Centigrade (Field)	13.2	degrees C		
+ SM_4500HB	pH	7.3	SU	2.0	

Report Date: January 10, 2019

Sample Site: Fort Carson Well #3A
 Site Identity: FC_3A
 Sample Number: 284285
 Date/Time Sampled: 25-SEP-2018 12:40
 Comp/Grab: GRAB
 Sample Comments:

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	9700	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	0.62	mg/L	0.10	
EPA_300_0	Chloride	122	mg/L	0.25	D
	Sulfate	5980	mg/L	0.25	D
EPA_1631	Mercury (Total)	0.003	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	1030	ug/L	20.0	D
	Calcium (Total Recoverable)	386000	ug/L	100	D
	Cobalt (Total Recoverable)	<5.00	ug/L	5.00	D/D1
	Lithium (Total Recoverable)	302	ug/L	10.0	D
EPA_200_8	Antimony (Total Recoverable)	<0.50	ug/L	0.50	
	Arsenic (Total Recoverable)	3.0	ug/L	1.0	
	Barium (Total Recoverable)	21.0	ug/L	0.20	
	Beryllium (Total Recoverable)	<0.20	ug/L	0.20	
	Cadmium (Total Recoverable)	<0.50	ug/L	0.50	
	Chromium (Total Recoverable)	2.5	ug/L	1.0	
	Lead (Total Recoverable)	0.86	ug/L	0.50	
	Molybdenum (Total Recoverable)	8.6	ug/L	0.20	
	Selenium (Total Recoverable)	51.2	ug/L	1.0	
	Thallium (Total Recoverable)	<0.50	ug/L	0.50	
* EPA_903_0	Radium 226	1.26	pCi/L	0.483	J
* EPA_904_0	Radium 228	<3.88	pCi/L	3.88	
NA	Depth to Water	17.25	ft.		
+ SM_2510_B	Conductivity	9820	umhos/cm	1	
+ SM_2550_B	Temperature Centigrade (Field)	13.2	degrees C		
+ SM_4500HB	pH	7.3	SU	2.0	

Report Date: January 10, 2019

Sample Site: Fort Carson Well #3B
 Site Identity: FC_3B
 Sample Number: 284286
 Date/Time Sampled: 25-SEP-2018 13:31
 Comp/Grab: GRAB
 Sample Comments:

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	8970	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	0.52	mg/L	0.10	
EPA_300_0	Chloride	1210	mg/L	0.25	D
	Sulfate	4420	mg/L	0.25	D
EPA_1631	Mercury (Total)	0.024	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	1730	ug/L	20.0	D
	Calcium (Total Recoverable)	233000	ug/L	100	D
	Cobalt (Total Recoverable)	10.8	ug/L	5.00	D
	Lithium (Total Recoverable)	316	ug/L	10.0	D
EPA_200_8	Antimony (Total Recoverable)	<0.50	ug/L	0.50	
	Arsenic (Total Recoverable)	7.4	ug/L	1.0	
	Barium (Total Recoverable)	37.0	ug/L	0.20	
	Beryllium (Total Recoverable)	<0.20	ug/L	0.20	
	Cadmium (Total Recoverable)	<0.50	ug/L	0.50	
	Chromium (Total Recoverable)	6.1	ug/L	1.0	
	Lead (Total Recoverable)	4.6	ug/L	0.50	
	Molybdenum (Total Recoverable)	2.7	ug/L	0.20	
	Selenium (Total Recoverable)	14.2	ug/L	1.0	
	Thallium (Total Recoverable)	<0.50	ug/L	0.50	
* EPA_903_0	Radium 226	<0.691	pCi/L	0.691	
* EPA_904_0	Radium 228	<4.42	pCi/L	4.42	
NA	Depth to Water	17.06	ft.		
+ SM_2510_B	Conductivity	10100	umhos/cm	1	
+ SM_2550_B	Temperature Centigrade (Field)	13.0	degrees C		
+ SM_4500HB	pH	7.1	SU	2.0	

Report Date: January 10, 2019

Sample Site: Fort Carson Well #1
 Site Identity: FC_1
 Sample Number: 284287
 Date/Time Sampled: 25-SEP-2018 09:34
 Comp/Grab: GRAB
 Sample Comments: FC_1 duplicate

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	21600	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	0.19	mg/L	0.10	
EPA_300_0	Chloride	788	mg/L	0.25	D
	Sulfate	13000	mg/L	0.25	D
EPA_1631	Mercury (Total)	0.003	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	888	ug/L	20.0	D
	Calcium (Total Recoverable)	368000	ug/L	100	D
	Cobalt (Total Recoverable)	<5.00	ug/L	5.00	D/D1
	Lithium (Total Recoverable)	910	ug/L	10.0	D
EPA_200_8	Antimony (Total Recoverable)	<0.50	ug/L	0.50	
	Arsenic (Total Recoverable)	5.2	ug/L	1.0	
	Barium (Total Recoverable)	6.5	ug/L	0.20	
	Beryllium (Total Recoverable)	<0.20	ug/L	0.20	
	Cadmium (Total Recoverable)	<0.50	ug/L	0.50	
	Chromium (Total Recoverable)	1.0	ug/L	1.0	
	Lead (Total Recoverable)	<0.50	ug/L	0.50	
	Molybdenum (Total Recoverable)	1.5	ug/L	0.20	
	Selenium (Total Recoverable)	21.5	ug/L	1.0	
	Thallium (Total Recoverable)	<0.50	ug/L	0.50	
* EPA_903_0	Radium 226	<0.709	pCi/L	0.709	
* EPA_904_0	Radium 228	<4.33	pCi/L	4.33	

Report Date: January 10, 2019

Sample Site: Equipment Blank
 Site Identity: EQUIP_BLK
 Sample Number: 284288
 Date/Time Sampled: 25-SEP-2018 09:42
 Comp/Grab: GRAB
 Sample Comments:

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	<10	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	<0.10	mg/L	0.10	
EPA_300_0	Chloride	<0.25	mg/L	0.25	
	Sulfate	<0.25	mg/L	0.25	
EPA_1631	Mercury (Total)	<0.002	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	<20.0	ug/L	20.0	
	Calcium (Total Recoverable)	<100	ug/L	100	
	Cobalt (Total Recoverable)	<5.00	ug/L	5.00	
	Lithium (Total Recoverable)	<10.0	ug/L	10.0	
EPA_200_8	Antimony (Total Recoverable)	<0.50	ug/L	0.50	
	Arsenic (Total Recoverable)	<1.0	ug/L	1.0	
	Barium (Total Recoverable)	<0.20	ug/L	0.20	
	Beryllium (Total Recoverable)	<0.20	ug/L	0.20	
	Cadmium (Total Recoverable)	<0.50	ug/L	0.50	
	Chromium (Total Recoverable)	<1.0	ug/L	1.0	
	Lead (Total Recoverable)	<0.50	ug/L	0.50	
	Molybdenum (Total Recoverable)	<0.20	ug/L	0.20	
	Selenium (Total Recoverable)	<1.0	ug/L	1.0	
	Thallium (Total Recoverable)	<0.50	ug/L	0.50	

Report Date: January 10, 2019

Sample Site: Sand Canyon Well #10
 Site Identity: SC_10
 Sample Number: 284289
 Date/Time Sampled: 26-SEP-2018 12:27
 Comp/Grab: GRAB
 Sample Comments:

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	17400	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	0.88	mg/L	0.10	
EPA_300_0	Chloride	790	mg/L	0.25	D
EPA_1631	Mercury (Total)	0.009	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	1110	ug/L	20.0	D
	Calcium (Total Recoverable)	382000	ug/L	100	D
	Cobalt (Total Recoverable)	<5.00	ug/L	5.00	D/D1
	Lithium (Total Recoverable)	626	ug/L	10.0	D
EPA_200_8	Antimony (Total Recoverable)	<0.50	ug/L	0.50	
	Arsenic (Total Recoverable)	6.8	ug/L	1.0	
	Barium (Total Recoverable)	16.5	ug/L	0.20	
	Beryllium (Total Recoverable)	<0.20	ug/L	0.20	
	Cadmium (Total Recoverable)	<0.50	ug/L	0.50	
	Chromium (Total Recoverable)	1.9	ug/L	1.0	
	Lead (Total Recoverable)	<0.50	ug/L	0.50	D1
	Molybdenum (Total Recoverable)	6.2	ug/L	0.20	
	Selenium (Total Recoverable)	111	ug/L	1.0	D
	Thallium (Total Recoverable)	<0.50	ug/L	0.50	D1
* EPA_903_0	Radium 226	0.559	pCi/L	0.536	J
* EPA_904_0	Radium 228	<4.25	pCi/L	4.25	
NA	Depth to Water	11.24	ft.		
+ SM_2510_B	Conductivity	17300	umhos/cm	1	
+ SM_2550_B	Temperature Centigrade (Field)	14.7	degrees C		
+ SM_4500HB	pH	7.3	SU	2.0	

Report Date: January 10, 2019

Sample Site: Sand Canyon Well #11
 Site Identity: SC_11
 Sample Number: 284290
 Date/Time Sampled: 26-SEP-2018 11:38
 Comp/Grab: GRAB
 Sample Comments:

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	15300	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	0.80	mg/L	0.10	
EPA_300_0	Chloride	1120	mg/L	0.25	D
EPA_1631	Mercury (Total)	0.008	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	1890	ug/L	20.0	D
	Calcium (Total Recoverable)	424000	ug/L	100	D
	Cobalt (Total Recoverable)	<5.00	ug/L	5.00	D/D1
	Lithium (Total Recoverable)	534	ug/L	10.0	D
EPA_200_8	Antimony (Total Recoverable)	<0.50	ug/L	0.50	
	Arsenic (Total Recoverable)	10.4	ug/L	1.0	
	Barium (Total Recoverable)	9.9	ug/L	0.20	
	Beryllium (Total Recoverable)	<0.20	ug/L	0.20	
	Cadmium (Total Recoverable)	<0.50	ug/L	0.50	
	Chromium (Total Recoverable)	1.2	ug/L	1.0	
	Lead (Total Recoverable)	<0.50	ug/L	0.50	D1
	Molybdenum (Total Recoverable)	3.0	ug/L	0.20	
	Selenium (Total Recoverable)	107	ug/L	1.0	D
	Thallium (Total Recoverable)	<0.50	ug/L	0.50	D1
* EPA_903_0	Radium 226	<0.618	pCi/L	0.618	
* EPA_904_0	Radium 228	<3.81	pCi/L	3.81	
NA	Depth to Water	8.28	ft.		
+ SM_2510_B	Conductivity	15800	umhos/cm	1	
+ SM_2550_B	Temperature Centigrade (Field)	13.8	degrees C		
+ SM_4500HB	pH	7.3	SU	2.0	

Report Date: January 10, 2019

Sample Site: Sand Canyon Well #12
 Site Identity: SC_12
 Sample Number: 284291
 Date/Time Sampled: 26-SEP-2018 10:56
 Comp/Grab: GRAB
 Sample Comments:

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	16500	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	1.31	mg/L	0.10	
EPA_300_0	Chloride	323	mg/L	0.25	D
EPA_1631	Mercury (Total)	0.005	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	3770	ug/L	20.0	D
	Calcium (Total Recoverable)	364000	ug/L	100	D
	Cobalt (Total Recoverable)	<5.00	ug/L	5.00	D/D1
	Lithium (Total Recoverable)	471	ug/L	10.0	D
EPA_200_8	Antimony (Total Recoverable)	<0.50	ug/L	0.50	
	Arsenic (Total Recoverable)	1.3	ug/L	1.0	
	Barium (Total Recoverable)	24.5	ug/L	0.20	
	Beryllium (Total Recoverable)	<0.20	ug/L	0.20	
	Cadmium (Total Recoverable)	<0.50	ug/L	0.50	
	Chromium (Total Recoverable)	2.2	ug/L	1.0	
	Lead (Total Recoverable)	1.2	ug/L	0.50	
	Molybdenum (Total Recoverable)	8.9	ug/L	0.20	
	Selenium (Total Recoverable)	23.1	ug/L	1.0	
	Thallium (Total Recoverable)	<0.50	ug/L	0.50	
* EPA_903_0	Radium 226	0.761	pCi/L	0.577	J
* EPA_904_0	Radium 228	<4.04	pCi/L	4.04	
NA	Depth to Water	9.45	ft.		
+ SM_2510_B	Conductivity	15600	umhos/cm	1	
+ SM_2550_B	Temperature Centigrade (Field)	14.5	degrees C		
+ SM_4500HB	pH	7.3	SU	2.0	

Report Date: January 10, 2019

Sample Site: Sand Canyon Well #13
 Site Identity: SC_13
 Sample Number: 284292
 Date/Time Sampled: 26-SEP-2018 10:16
 Comp/Grab: GRAB
 Sample Comments:

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	13700	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	1.28	mg/L	0.10	
EPA_300_0	Chloride	177	mg/L	0.25	
EPA_1631	Mercury (Total)	0.002	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	1480	ug/L	20.0	D
	Calcium (Total Recoverable)	374000	ug/L	100	D
	Cobalt (Total Recoverable)	<5.00	ug/L	5.00	D/D1
	Lithium (Total Recoverable)	350	ug/L	10.0	D
EPA_200_8	Antimony (Total Recoverable)	<0.50	ug/L	0.50	
	Arsenic (Total Recoverable)	<1.0	ug/L	1.0	
	Barium (Total Recoverable)	5.8	ug/L	0.20	
	Beryllium (Total Recoverable)	<0.20	ug/L	0.20	
	Cadmium (Total Recoverable)	<0.50	ug/L	0.50	
	Chromium (Total Recoverable)	<1.0	ug/L	1.0	
	Lead (Total Recoverable)	<0.50	ug/L	0.50	
	Molybdenum (Total Recoverable)	3.8	ug/L	0.20	
	Selenium (Total Recoverable)	18.7	ug/L	1.0	
	Thallium (Total Recoverable)	<0.50	ug/L	0.50	
* EPA_903_0	Radium 226	0.911	pCi/L	0.488	J
* EPA_904_0	Radium 228	<3.42	pCi/L	3.42	
NA	Depth to Water	10.39	ft.		
+ SM_2510_B	Conductivity	12400	umhos/cm	1	
+ SM_2550_B	Temperature Centigrade (Field)	13.5	degrees C		
+ SM_4500HB	pH	7.3	SU	2.0	

Report Date: January 10, 2019

Sample Site: Sand Canyon Well #13
 Site Identity: SC_13
 Sample Number: 284293
 Date/Time Sampled: 26-SEP-2018 10:16
 Comp/Grab: GRAB
 Sample Comments: SC_13 duplicate

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	13800	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	1.27	mg/L	0.10	
EPA_300_0	Chloride	177	mg/L	0.25	D
EPA_1631	Mercury (Total)	0.002	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	1500	ug/L	20.0	D
	Calcium (Total Recoverable)	378000	ug/L	100	D
	Cobalt (Total Recoverable)	<5.00	ug/L	5.00	D/D1
	Lithium (Total Recoverable)	349	ug/L	10.0	D
EPA_200_8	Antimony (Total Recoverable)	<0.50	ug/L	0.50	
	Arsenic (Total Recoverable)	<1.0	ug/L	1.0	
	Barium (Total Recoverable)	5.7	ug/L	0.20	
	Beryllium (Total Recoverable)	<0.20	ug/L	0.20	
	Cadmium (Total Recoverable)	<0.50	ug/L	0.50	
	Chromium (Total Recoverable)	<1.0	ug/L	1.0	
	Lead (Total Recoverable)	<0.50	ug/L	0.50	
	Molybdenum (Total Recoverable)	3.7	ug/L	0.20	
	Selenium (Total Recoverable)	18.2	ug/L	1.0	
	Thallium (Total Recoverable)	<0.50	ug/L	0.50	
* EPA_903_0	Radium 226	1.56	pCi/L	0.549	J
* EPA_904_0	Radium 228	<3.28	pCi/L	3.28	

Report Date: January 10, 2019

Sample Site: Sand Canyon Well #14
 Site Identity: SC_14
 Sample Number: 284294
 Date/Time Sampled: 26-SEP-2018 09:42
 Comp/Grab: GRAB
 Sample Comments:

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	13300	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	1.11	mg/L	0.10	
EPA_300_0	Chloride	178	mg/L	0.25	D
EPA_1631	Mercury (Total)	0.002	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	1520	ug/L	20.0	D
	Calcium (Total Recoverable)	361000	ug/L	100	D
	Cobalt (Total Recoverable)	<5.00	ug/L	5.00	D/D1
	Lithium (Total Recoverable)	336	ug/L	10.0	D
EPA_200_8	Antimony (Total Recoverable)	<0.50	ug/L	0.50	
	Arsenic (Total Recoverable)	<1.0	ug/L	1.0	
	Barium (Total Recoverable)	5.7	ug/L	0.20	
	Beryllium (Total Recoverable)	<0.20	ug/L	0.20	
	Cadmium (Total Recoverable)	<0.50	ug/L	0.50	
	Chromium (Total Recoverable)	<1.0	ug/L	1.0	
	Lead (Total Recoverable)	<0.50	ug/L	0.50	
	Molybdenum (Total Recoverable)	9.8	ug/L	0.20	
	Selenium (Total Recoverable)	2.0	ug/L	1.0	
	Thallium (Total Recoverable)	<0.50	ug/L	0.50	
* EPA_903_0	Radium 226	<0.628	pCi/L	0.628	
* EPA_904_0	Radium 228	<3.40	pCi/L	3.40	
NA	Depth to Water	10.3	ft.		
+ SM_2510_B	Conductivity	12200	umhos/cm	1	
+ SM_2550_B	Temperature Centigrade (Field)	11.6	degrees C		
+ SM_4500HB	pH	7.2	SU	2.0	

Report Date: January 10, 2019

Sample Site: Equipment Blank
 Site Identity: EQUIP_BLK
 Sample Number: 284295
 Date/Time Sampled: 26-SEP-2018 10:21
 Comp/Grab: GRAB
 Sample Comments:

Method	Analyte	Result	Units	RL	Qualifier
SM_2540_C	Total Dissolved Solids	<10	mg/L	10	
~ SM_4500_FC	Fluoride (Total)	<0.10	mg/L	0.10	
EPA_300_0	Chloride	<0.25	mg/L	0.25	
EPA_1631	Mercury (Total)	<0.002	ug/L	0.002	
EPA_200_7	Boron (Total Recoverable)	<20.0	ug/L	20.0	
	Calcium (Total Recoverable)	<100	ug/L	100	
	Cobalt (Total Recoverable)	<5.00	ug/L	5.00	
	Lithium (Total Recoverable)	<10.0	ug/L	10.0	
EPA_200_8	Antimony (Total Recoverable)	<0.50	ug/L	0.50	
	Arsenic (Total Recoverable)	<1.0	ug/L	1.0	
	Barium (Total Recoverable)	<0.20	ug/L	0.20	
	Beryllium (Total Recoverable)	<0.20	ug/L	0.20	
	Cadmium (Total Recoverable)	<0.50	ug/L	0.50	
	Chromium (Total Recoverable)	<1.0	ug/L	1.0	
	Lead (Total Recoverable)	<0.50	ug/L	0.50	
	Molybdenum (Total Recoverable)	<0.20	ug/L	0.20	
	Selenium (Total Recoverable)	<1.0	ug/L	1.0	
	Thallium (Total Recoverable)	<0.50	ug/L	0.50	

Analysis Information:

- *: Analysis performed by an external contract laboratory.
- + : Analysis performed in the Field.
- ^: The Reporting Limit for the total analytes is less than two times the method Detection Limit (MDL).
The associated concentration value reported is an approximation of the analyte.
- #: Total value is a result of a calculation.
- ~: Sample was not distilled prior to analysis.
- ** : This analysis is not listed in 40 CFR Part 136.

Data Qualifiers:

- D - Sample required dilution. The associated analyte concentration value reported has dilution factor applied. Reporting Limit does not reflect dilution factor.
- D1 - To minimize matrix effects, the sample required dilution. The result is below the Reporting Limit, but within the method defined instrument detection.
- J - Analysis confirms the presence of the analyte at a concentration which is less than the established Reporting Limit(RL), but greater than the Method Detection Limit(MDL). The associated concentration value reported is approx.

CCR Landfill Groundwater Assessment

Sample Date: 4-26-18

QC Report Needed



Colorado Springs Utilities
Laboratory Services
Grab Samples

LOCATION	# Bottles	LIMS #	Sample Time	PH Field (mV) SM 4500 H	Temperature Field (C) SM 2550 B	Conductivity Field (umhos/cm) SM 2510 B	Depth to Water (feet)	Fluoride, SM 4500 F C	Total Dissolved Solids, SM 2540 C	Chloride, EPA 300 B	EPA 200.7 (B, Ca, Cl, U - Total Recoverable)	EPA 200.8 (Sb, As, Ba, Br, Cd, Cr, Pb, Mn, Se & Tl - Total Recoverable)	Mercury, EPA 1631 (not collect using clean-handistry-knives)	Radium 226 & Radium 228 (sent to GEL)	Comments
SC_10	6	284289	12:27	7.30	14.7	17,310	11.24	X	X	X	X	X	X	X	
SC_11	6	284290	11:38	7.29	13.8	15,750	8.28	X	X	X	X	X	X	X	
SC_12	6	284291	10:56	7.32	14.5	15,640	7.45	X	X	X	X	X	X	X	
SC_13	6	284292	10:16	7.27	13.5	12,380	10.39	X	X	X	X	X	X	X	
SC_13 Duplicate	6	284293	10:16					X	X	X	X	X	X	X	
SC_14	6	284294	9:42	7.25	11.6	12,240	10.30	X	X	X	X	X	X	X	
EQUIP_BLK	6	284295	10:21					X	X	X	X	X	X	X	
Total # of Bottles	54														

F = Field Filtered

Additional Comments / Sample Rejections/ Actions

Signature/Print last name

[Signature] HETZEL

Relinquished by

9-26-18 1313

Received by

[Signature] 9-26-18 1313

9-27-18 WMT

CCR Landfill Groundwater Assessment

Sample Date: 9-25-18

QC Report Needed



Colorado Springs Utilities
Laboratory Services
Grab Samples

LOCATION	# Bottles	LIMS #	Sample Time	PH Field (mV) SM 4500 H	Temperature Field (C) SM 2550 B	Conductivity Field (umhos/cm) SM 2510 B	Depth to Water (feet)	Fluoride, SM 4500 F C	Total Dissolved Solids, SM 2540 C	Chloride, EPA 300 B	EPA 200.7 (B, Ca, Cl, U - Total Recoverable)	EPA 200.8 (Sb, As, Ba, Br, Cd, Cr, Pb, Mn, Se & Tl - Total Recoverable)	Mercury, EPA 1631 (not collect using clean-handistry-knives)	Radium 226 & Radium 228 (sent to GEL)	Comments
DC_1	7 [#]	284282	11:45	6.85	12.4	26,100	13.54	X	X	X	X	X	X	X	
FC_1	7 [#]	284283	9:34	7.05	13.2	21,600	14.94	X	X	X	X	X	X	X	
FC_2	7 [#]	284284	10:14	7.27	13.2	19,310	12.88	X	X	X	X	X	X	X	
FC_3A	7 [#]	284285	12:40	7.33	13.2	9,820	17.25	X	X	X	X	X	X	X	
FC_3B	7 [#]	284286	13:31	7.07	13.0	10,100	17.06	X	X	X	X	X	X	X	
FC_3B-1 Duplicate	7 [#]	284287	9:34					X	X	X	X	X	X	X	
EQUIP_BLK	5 [#]	284288	9:42					X	X	X	X	X	X	X	
Total # of Bottles	49														

F = Field Filtered

Additional Comments / Sample Rejections/ Actions

Signature/Print last name

[Signature] HETZEL

Relinquished by

9-25-18 1414

Received by

[Signature] 9-25-18 1414



**Laboratory Services Section
QC Report**

**CCR Landfill Assessment
September 2018**

Quality Assurance Officer Approval:

Date: 1-10-19

QC Narrative

This report is for sample numbers 284282-284295.

Total Dissolved Solids by Standard Methods 2540 C

There are no anomalies to report for this analysis.

Fluoride by Standard Methods 4500 F C

There are no anomalies to report for this analysis.

Anions by EPA Method 300.0

There are no anomalies to report for this analysis.

Mercury by EPA 1631 E

There are no anomalies to report for this analysis.

EPA 200.7

There are no anomalies to report for this analysis.

EPA 200.8

There are no anomalies to report for this analysis.

Method: Total Dissolved Solids by Standard Methods 2540 C
 Batch Analysis date: 9/25/18
 Sampled date: 9/25/18 for samples 284282-284288

Matrix QC performed on sample 284282

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
QCS	Total Dissolved Solids	106	85 - 110		
Duplicate	Total Dissolved Solids			<1	<10

Method: Total Dissolved Solids by Standard Methods 2540 C
 Batch Analysis date: 9/25/18
 Sampled date: 9/25/18 for samples 284282-284288

Matrix QC performed on sample 284289

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
QCS	Total Dissolved Solids	98	85 - 110		
Duplicate	Total Dissolved Solids			<1	<10

Method: Fluoride by Standard Methods 4500 F C
 Batch Analysis date: 9/28/18
 Sampled date: 9/25/18 for samples 284282-284288
 Sampled date: 9/26/18 for samples 284289-284295

Matrix QC performed on samples 284282 and 284291

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Fluoride (Total)	102	90 - 110		
QCS	Fluoride (Total)	94	90 - 110		
MS	Fluoride (Total) (284282)	93	80 - 120		
MSD	Fluoride (Total) (284282)			1	<20
MS	Fluoride (Total) (284291)	104	80 - 120		
MSD	Fluoride (Total) (284291)			4	<20
QC Type	Analyte	Concentration	Limit		
LRB	Fluoride (Total)	<0.10 mg/L	0.10 mg/L		

Method: Anions by EPA Method 300.0
 Batch Analysis date: 9/27/18
 Sampled date: 9/25/18 for samples 284282 - 284288
 Sampled date: 9/26/18 for samples 284289 - 284295

Matrix QC performed on samples 284265 and 284283

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Chloride	93	50-150		
LFB	Chloride	100	90-110	<1	<20
FD	Chloride (284265)			<1	<20
MS	Chloride (284265)	98	80-120		
FD	Chloride (284283)			1	<20
MS	Chloride (284283)	92	80-120		
QC Type	Analyte	Concentration	Limit		
LRB	Chloride	<0.25 mg/L	0.25 mg/L		

Method: Anions by EPA Method 300.0
 Batch Analysis date: 9/27/18
 Sampled date: 9/25/18 for samples 284282 - 284288

Matrix QC performed on samples 284265 and 284283

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Sulfate	93	50-150		
LFB	Sulfate	100	90-110	<1	<20
FD	Sulfate (284265)			<1	<20
MS	Sulfate (284265)	94	80-120		
FD	Sulfate (284283)				<20
MS	Sulfate (284283)	97	80-120		
QC Type	Analyte	Concentration	Limit		
LRB	Chloride	<0.25 mg/L	0.25 mg/L		

Method: Mercury by EPA 1631 E
 Batch Analysis date: 9/28/18
 Sampled date: 9/25/18 for samples 284282 - 284288
 Sampled date: 9/26/18 for samples 284289 - 284295

Matrix QC performed on sample 284283 and 284292

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Mercury (Total)	87	50-150		
QCS	Mercury (Total)	95	77-123		
MS	Mercury (Total) (284283)	93	71-125		
MSD	Mercury (Total) (284283)			3	<24
MS	Mercury (Total) (284292)	81	71-125		
MSD	Mercury (Total) (284292)			<1	<24
QC Type	Analyte	Concentration	Limit		
LRB	Mercury (Total)	<0.5 ng/L	0.5 ng/L		

Method: EPA 200.7
 Batch Analysis date: 10/2/18
 Digestion date: 9/27/18
 Sampled date: 9/25/18 for samples 284282 - 284288

Matrix QC performed on sample 284283

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Boron (Total Recoverable)	82	50-150		
LFB	Boron (Total Recoverable)	94	85-115		
MS	Boron (Total Recoverable)	94	70-130		
MSD	Boron (Total Recoverable)			2	<20
MRL	Calcium (Total Recoverable)	107	50-150		
LFB	Calcium (Total Recoverable)	95	85-115		
MS	Calcium (Total Recoverable)	104	70-130		
MSD	Calcium (Total Recoverable)			<1	<20
MRL	Lithium (Total Recoverable)	92	50-150		
LFB	Lithium (Total Recoverable)	97	85-115		
MS	Lithium (Total Recoverable)	120	70-130		
MSD	Lithium (Total Recoverable)			<1	<20
QC Type	Analyte	Concentration	Limit		
LRB	Boron (Total Recoverable)	<8.23 ug/L	8.23 ug/L		
LRB	Calcium (Total Recoverable)	<19.8 ug/L	19.8 ug/L		
LRB	Lithium (Total Recoverable)	<7.19 ug/L	7.19 ug/L		

Method: EPA 200.7
 Batch Analysis date: 10/3/18
 Digestion date: 9/27/18
 Sampled date: 9/25/18 for samples 284282 and 284284 - 284287

Matrix QC performed on sample 284283

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Cobalt (Total Recoverable)	95	50-150		
LFB	Cobalt (Total Recoverable)	96	85-115		
MS	Cobalt (Total Recoverable)	84	70-130		
MSD	Cobalt (Total Recoverable)			<1	<20
QC Type	Analyte	Concentration	Limit		
LRB	Cobalt (Total Recoverable)	<1.20 ug/L	1.20 ug/L		

Method: EPA 200.7
 Batch Analysis date: 10/2/18
 Digestion date: 9/27/18
 Sampled date: 9/25/18 for samples 284283 and 284288

Matrix QC performed on sample 284283 (diluted)

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Cobalt (Total Recoverable)	94	50-150		
LFB	Cobalt (Total Recoverable)	94	85-115		
MS	Cobalt (Total Recoverable)	95	70-130		
MSD	Cobalt (Total Recoverable)			2	<20
QC Type	Analyte	Concentration	Limit		
LRB	Cobalt (Total Recoverable)	<1.20 ug/L	1.20 ug/L		

Method: EPA 200.7
 Batch Analysis date: 10/2/18
 Digestion date: 9/27/18
 Sampled date: 9/26/18 for samples 284289 - 284295

Matrix QC performed on sample 284292

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Boron (Total Recoverable)	80	50-150		
LFB	Boron (Total Recoverable)	93	85-115		
MS	Boron (Total Recoverable)	92	70-130		
MSD	Boron (Total Recoverable)			2	<20
MRL	Calcium (Total Recoverable)	92	50-150		
LFB	Calcium (Total Recoverable)	93	85-115		
MS	Calcium (Total Recoverable)	88	70-130		
MSD	Calcium (Total Recoverable)			2	<20
MRL	Cobalt (Total Recoverable)	95	50-150		
LFB	Cobalt (Total Recoverable)	94	85-115		
MS	Cobalt (Total Recoverable)	84	70-130		
MSD	Cobalt (Total Recoverable)			<1	<20
MRL	Lithium (Total Recoverable)	97	50-150		
LFB	Lithium (Total Recoverable)	97	85-115		
MS	Lithium (Total Recoverable)	112	70-130		
MSD	Lithium (Total Recoverable)			<1	<20
QC Type	Analyte	Concentration	Limit		
LRB	Boron (Total Recoverable)	<8.23 ug/L	8.23 ug/L		
LRB	Calcium (Total Recoverable)	<19.8 ug/L	19.8 ug/L		
LRB	Cobalt (Total Recoverable)	<1.20 ug/L	1.20 ug/L		
LRB	Lithium (Total Recoverable)	<7.19 ug/L	7.19 ug/L		

Method: EPA 200.8

Digestion date: 9/27/18

Batch Analysis date: 10/12/18

Sampled date: 9/25/18 for samples 284282 – 284288

Sampled date: 9/26/18 for sample 284291 (for all analytes except Lead and Thallium)

Matrix QC performed on sample 284283

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Antimony (Total Recoverable)	100	50-150		
LFB	Antimony (Total Recoverable)	110	85-115		
MS	Antimony (Total Recoverable)	86	70-130		
MSD	Antimony (Total Recoverable)			2	<20
MRL	Arsenic (Total Recoverable)	100	50-150		
LFB	Arsenic (Total Recoverable)	111	85-115		
MS	Arsenic (Total Recoverable)	88	70-130		
MSD	Arsenic (Total Recoverable)			2	<20
MRL	Barium (Total Recoverable)	96	50-150		
LFB	Barium (Total Recoverable)	109	85-115		
MS	Barium (Total Recoverable)	86	70-130		
MSD	Barium (Total Recoverable)			1	<20
MRL	Beryllium (Total Recoverable)	100	50-150		
LFB	Beryllium (Total Recoverable)	108	85-115		
MS	Beryllium (Total Recoverable)	77	70-130		
MSD	Beryllium (Total Recoverable)			3	<20
MRL	Cadmium (Total Recoverable)	97	50-150		
LFB	Cadmium (Total Recoverable)	111	85-115		
MS	Cadmium (Total Recoverable)	81	70-130		
MSD	Cadmium (Total Recoverable)			<1	<20
MRL	Chromium (Total Recoverable)	94	50-150		
LFB	Chromium (Total Recoverable)	112	85-115		
MS	Chromium (Total Recoverable)	82	70-130		
MSD	Chromium (Total Recoverable)			4	<20
MRL	Lead (Total Recoverable)	96	50-150		
LFB	Lead (Total Recoverable)	112	85-115		
MS	Lead (Total Recoverable)	85	70-130		
MSD	Lead (Total Recoverable)			2	<20
MRL	Molybdenum (Total Recoverable)	101	50-150		
LFB	Molybdenum (Total Recoverable)	110	85-115		
MS	Molybdenum (Total Recoverable)	86	70-130		
MSD	Molybdenum (Total Recoverable)			1	<20
MRL	Selenium (Total Recoverable)	106	50-150		
LFB	Selenium (Total Recoverable)	114	85-115		
MS	Selenium (Total Recoverable)	92	70-130		
MSD	Selenium (Total Recoverable)			<1	<20
MRL	Thallium (Total Recoverable)	102	50-150		
LFB	Thallium (Total Recoverable)	111	85-115		
MS	Thallium (Total Recoverable)	86	70-130		
MSD	Thallium (Total Recoverable)			2	<20

QC Type	Analyte	Concentration	Limit
LRB	Antimony (Total Recoverable)	<0.009 ug/L	0.009 ug/L
LRB	Arsenic (Total Recoverable)	<0.062 ug/L	0.062 ug/L

LRB	Barium (Total Recoverable)	<0.008 ug/L	0.008 ug/L
LRB	Beryllium (Total Recoverable)	<0.008 ug/L	0.008 ug/L
LRB	Cadmium (Total Recoverable)	<0.010 ug/L	0.010 ug/L
LRB	Chromium (Total Recoverable)	<0.011 ug/L	0.011 ug/L
LRB	Lead (Total Recoverable)	<0.016 ug/L	0.016 ug/L
LRB	Molybdenum (Total Recoverable)	<0.007 ug/L	0.007 ug/L
LRB	Selenium (Total Recoverable)	<0.057 ug/L	0.057 ug/L
LRB	Thallium (Total Recoverable)	<0.056 ug/L	0.056 ug/L

Method: EPA 200.8

Digestion date: 9/27/18

Batch Analysis date: 10/3/18

Sampled date: 9/26/18 for samples 284289, 284290 and 284292 – 284295

Sampled date: 9/26/18 284291 (for only Lead and Thallium)

Matrix QC performed on sample 284292

QC Type	Analyte	Recovery (%)	Acceptable Range (%)	RPD (%)	RPD Limit (%)
MRL	Antimony (Total Recoverable)	99	50-150		
LFB	Antimony (Total Recoverable)	98	85-115		
MS	Antimony (Total Recoverable)	100	70-130		
MSD	Antimony (Total Recoverable)			<1	<20
MRL	Arsenic (Total Recoverable)	100	50-150		
LFB	Arsenic (Total Recoverable)	99	85-115		
MS	Arsenic (Total Recoverable)	97	70-130		
MSD	Arsenic (Total Recoverable)			2	<20
MRL	Barium (Total Recoverable)	98	50-150		
LFB	Barium (Total Recoverable)	100	85-115		
MS	Barium (Total Recoverable)	100	70-130		
MSD	Barium (Total Recoverable)			1	<20
MRL	Beryllium (Total Recoverable)	106	50-150		
LFB	Beryllium (Total Recoverable)	103	85-115		
MS	Beryllium (Total Recoverable)	74	70-130		
MSD	Beryllium (Total Recoverable)			<1	<20
MRL	Cadmium (Total Recoverable)	99	50-150		
LFB	Cadmium (Total Recoverable)	99	85-115		
MS	Cadmium (Total Recoverable)	91	70-130		
MSD	Cadmium (Total Recoverable)			<1	<20
MRL	Chromium (Total Recoverable)	95	50-150		
LFB	Chromium (Total Recoverable)	100	85-115		
MS	Chromium (Total Recoverable)	91	70-130		
MSD	Chromium (Total Recoverable)			1	<20
MRL	Lead (Total Recoverable)	94	50-150		
LFB	Lead (Total Recoverable)	99	85-115		
MS	Lead (Total Recoverable)	102	70-130		
MSD	Lead (Total Recoverable)			<1	<20
MRL	Molybdenum (Total Recoverable)	100	50-150		
LFB	Molybdenum (Total Recoverable)	99	85-115		
MS	Molybdenum (Total Recoverable)	99	70-130		
MSD	Molybdenum (Total Recoverable)			<1	<20

MRL	Selenium (Total Recoverable)	99	50-150		
LFB	Selenium (Total Recoverable)	98	85-115		
MS	Selenium (Total Recoverable)	105	70-130		
MSD	Selenium (Total Recoverable)			4	<20
MRL	Thallium (Total Recoverable)	100	50-150		
LFB	Thallium (Total Recoverable)	97	85-115		
MS	Thallium (Total Recoverable)	101	70-130		
MSD	Thallium (Total Recoverable)			<1	<20

QC Type	Analyte	Concentration	Limit
LRB	Antimony (Total Recoverable)	<0.009 ug/L	0.009 ug/L
LRB	Arsenic (Total Recoverable)	<0.062 ug/L	0.062 ug/L
LRB	Barium (Total Recoverable)	<0.008 ug/L	0.008 ug/L
LRB	Beryllium (Total Recoverable)	<0.008 ug/L	0.008 ug/L
LRB	Cadmium (Total Recoverable)	<0.010 ug/L	0.010 ug/L
LRB	Chromium (Total Recoverable)	<0.011 ug/L	0.011 ug/L
LRB	Lead (Total Recoverable)	<0.016 ug/L	0.016 ug/L
LRB	Molybdenum (Total Recoverable)	<0.007 ug/L	0.007 ug/L
LRB	Selenium (Total Recoverable)	<0.057 ug/L	0.057 ug/L
LRB	Thallium (Total Recoverable)	<0.056 ug/L	0.056 ug/L

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



a member of The GEL Group INC

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October 24, 2018

Ms. Wendy Asay
Colorado Springs Utilities
701 E. Las Vegas St.
Colorado Springs, Colorado 80903

Re: Routine Analysis
Work Order: 460246

Dear Ms. Asay:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on September 27, 2018. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4778.

Sincerely,

Hope Taylor
Project Manager

Purchase Order: 201718264
Enclosures

**Certificate of Analysis Report
for**

CSUT001 Colorado Springs Utilities
 Client SDG: 460246 GEL Work Order: 460246

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- ** Analyte is a surrogate compound
- J Analysis confirms the presence of the analyte at a concentration which is less than the established Reporting Limit (RL), but greater than the Method Detection Limit (MDL). The associated concentration value reported is approximate.
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the "U" qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Hope Taylor.

Reviewed by _____



Certificate of Analysis

Report Date: October 24, 2018

Company : Colorado Springs Utilities
 Address : 701 E. Las Vegas St.

Colorado Springs, Colorado 80903

Contact: Ms. Wendy Asay
 Project: Routine Analysis

Client Sample ID:	CC_1 284282	Project:	CSUT00117
Sample ID:	460246001	Client ID:	CSUT001
Matrix:	Ground Water		
Collect Date:	24-SEP-18 11:45		
Receive Date:	27-SEP-18		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC Ra228, Liquid "As Received"												
Radium-228	U	2.10	4.55	5.00	pCi/L			JXC9	10/08/18	1410	1807605	1
Rad Radium-226												
Lucas Cell, Ra226, Liquid "As Received"												
Radium-226	J	1.98	0.446	5.00	pCi/L			PCW	10/05/18	0735	1805511	2
The following Analytical Methods were performed:												
Method	Description	Analyst Comments										
1	EPA 904.0/SW846 9320 Modified											
2	EPA 903.1 Modified											
Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits							
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			89.3	(15%-125%)							

Notes:

Column headers are defined as follows:

- | | |
|---------------------------------------|--------------------------------|
| DF: Dilution Factor | Lc/LC: Critical Level |
| DL: Detection Limit | PF: Prep Factor |
| MDA: Minimum Detectable Activity | RL: Reporting Limit |
| MDC: Minimum Detectable Concentration | SQL: Sample Quantitation Limit |

Certificate of Analysis

Report Date: October 24, 2018

Company : Colorado Springs Utilities
Address : 701 E. Las Vegas St.

Contact: Colorado Springs, Colorado 80903
Ms. Wendy Asay
Project: Routine Analysis

Client Sample ID: FC_1 284283	Project: CSUT00117
Sample ID: 460246002	Client ID: CSUT001
Matrix: Ground Water	
Collect Date: 24-SEP-18 09:34	
Receive Date: 27-SEP-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC Ra228, Liquid "As Received"												
Radium-228	U	3.18	3.34	5.00	pCi/L			JXC9	10/08/18	1410	1807605	1
Rad Radium-226												
Lucas Cell, Ra226, Liquid "As Received"												
Radium-226	J	1.80	0.589	5.00	pCi/L			PCW	10/05/18	0735	1805511	2

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	EPA 904.0/SW846 9320 Modified		
2	EPA 903.1 Modified		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			98.1	(15%-125%)

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

Certificate of Analysis

Report Date: October 24, 2018

Company : Colorado Springs Utilities
Address : 701 E. Las Vegas St.

Contact: Colorado Springs, Colorado 80903
Ms. Wendy Asay
Project: Routine Analysis

Client Sample ID: FC_2 284284	Project: CSUT00117
Sample ID: 460246003	Client ID: CSUT001
Matrix: Ground Water	
Collect Date: 24-SEP-18 00:00	
Receive Date: 27-SEP-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC Ra228, Liquid "As Received"												
Radium-228	U	1.73	3.34	5.00	pCi/L			JXC9	10/08/18	1410	1807605	1
Rad Radium-226												
Lucas Cell, Ra226, Liquid "As Received"												
Radium-226	J	1.00	0.456	5.00	pCi/L			PCW	10/05/18	0735	1805511	2

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	EPA 904.0/SW846 9320 Modified		
2	EPA 903.1 Modified		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			91.5	(15%-125%)

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

Certificate of Analysis

Report Date: October 24, 2018

Company : Colorado Springs Utilities
Address : 701 E. Las Vegas St.

Contact: Colorado Springs, Colorado 80903
Ms. Wendy Asay
Project: Routine Analysis

Client Sample ID: FC_3A 284285	Project: CSUT00117
Sample ID: 460246004	Client ID: CSUT001
Matrix: Ground Water	
Collect Date: 24-SEP-18 12:40	
Receive Date: 27-SEP-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC Ra228, Liquid "As Received"												
Radium-228	U	0.0893	3.88	5.00	pCi/L		JXC9	10/08/18	1411	1807605		1
Rad Radium-226												
Lucas Cell, Ra226, Liquid "As Received"												
Radium-226	J	1.26	0.483	5.00	pCi/L		PCW	10/05/18	0815	1805511		2

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	EPA 904.0/SW846 9320 Modified		
2	EPA 903.1 Modified		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			87.9	(15%-125%)

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

Certificate of Analysis

Report Date: October 24, 2018

Company : Colorado Springs Utilities
Address : 701 E. Las Vegas St.

Contact: Colorado Springs, Colorado 80903
Ms. Wendy Asay
Project: Routine Analysis

Client Sample ID: FC_3B 284286	Project: CSUT00117
Sample ID: 460246005	Client ID: CSUT001
Matrix: Ground Water	
Collect Date: 24-SEP-18 13:31	
Receive Date: 27-SEP-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC Ra228, Liquid "As Received"												
Radium-228	U	3.17	4.42	5.00	pCi/L		JXC9	10/08/18	1411	1807605		1
Rad Radium-226												
Lucas Cell, Ra226, Liquid "As Received"												
Radium-226	U	0.299	0.691	5.00	pCi/L		PCW	10/05/18	0815	1805511		2

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	EPA 904.0/SW846 9320 Modified		
2	EPA 903.1 Modified		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			82.8	(15%-125%)

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

Certificate of Analysis

Report Date: October 24, 2018

Company : Colorado Springs Utilities
Address : 701 E. Las Vegas St.

Colorado Springs, Colorado 80903
Contact: Ms. Wendy Asay
Project: Routine Analysis

Client Sample ID: FC_1 duplicate 284287 Project: CSUT00117
Sample ID: 460246006 Client ID: CSUT001
Matrix: Ground Water
Collect Date: 24-SEP-18 09:34
Receive Date: 27-SEP-18
Collector: Client

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
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Rad Gas Flow Proportional Counting												
GFPC Ra228, Liquid "As Received"												
Radium-228	U	2.50	4.33	5.00	pCi/L			JXC9	10/08/18	1411	1807605	1
Rad Radium-226												
Lucas Cell, Ra226, Liquid "As Received"												
Radium-226	U	-0.132	0.709	5.00	pCi/L			PCW	10/05/18	0815	1805511	2

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	EPA 904.0/SW846 9320 Modified		
2	EPA 903.1 Modified		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			86.4	(15%-125%)

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

QC Summary

Report Date: October 24, 2018

Page 1 of 2

Colorado Springs Utilities
701 E. Las Vegas St.
Colorado Springs, Colorado

Contact: Ms. Wendy Asay

Workorder: 460246

Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Gas Flow											
Batch	1807605										
QC1204124964	460246004	DUP									
Radium-228		U	0.0893	U	-0.637	pCi/L	N/A		N/A	JXC9	10/08/18 15:32
QC1204124965	LCS										
Radium-228	51.8				38.8	pCi/L	75	(75%-125%)			10/08/18 14:18
QC1204124963	MB										
Radium-228				U	1.65	pCi/L					10/08/18 14:18
Rad Ra-226											
Batch	1805511										
QC1204120345	460000012	DUP									
Radium-226		U	0.260	U	0.379	pCi/L	N/A		N/A	PCW	10/05/18 08:50
QC1204120347	LCS										
Radium-226	26.0				21.2	pCi/L	81.6	(75%-125%)			10/05/18 08:50
QC1204120344	MB										
Radium-226				U	0.130	pCi/L					10/05/18 08:50
QC1204120346	460000012	MS									
Radium-226	130	U	0.260		117	pCi/L	89.9	(75%-125%)			10/05/18 08:50

Notes:

The Qualifiers in this report are defined as follows:

- ** Analyte is a Tracer compound
- < Result is less than value reported
- > Result is greater than value reported
- BD Results are either below the MDC or tracer recovery is low
- FA Failed analysis.
- H Analytical holding time was exceeded

QC Summary

Workorder: 460246

Page 2 of 2

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
J		Analysis confirms the presence of the analyte at a concentration which is less than the established Reporting Limit (RL), but greater than the Method Detection Limit (MDL). The associated concentration value reported is approximate.									
J		Value is estimated									
K		Analyte present. Reported value may be biased high. Actual value is expected to be lower.									
L		Analyte present. Reported value may be biased low. Actual value is expected to be higher.									
M		M if above MDC and less than LLD									
M		REMP Result > MDC/CL and < RDL									
N/A		RPD or %Recovery limits do not apply.									
NI		See case narrative									
ND		Analyte concentration is not detected above the detection limit									
NJ		Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier									
Q		One or more quality control criteria have not been met. Refer to the applicable narrative or DER.									
R		Sample results are rejected									
U		Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.									
UI		Gamma Spectroscopy--Uncertain identification									
UJ		Gamma Spectroscopy--Uncertain identification									
UL		Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.									
X		Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier									
Y		Other specific qualifiers were required to properly define the results. Consult case narrative.									
^		RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.									
h		Preparation or preservation holding time was exceeded									

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
 ^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
 * Indicates that a Quality Control parameter was not within specifications.
 For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Product: GFPC Ra228, Liquid
Analytical Method: EPA 904.0/SW846 9320 Modified
Analytical Procedure: GL-RAD-A-063 REV# 2
Analytical Batch: 1807605

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
460246001	CC_1 284282
460246002	FC_1 284283
460246003	FC_2 284284
460246004	FC_3A 284285
460246005	FC_3B 284286
460246006	FC_1 duplicate 284287
1204124963	Method Blank (MB)
1204124964	460246004(FC_3A 284285) Sample Duplicate (DUP)
1204124965	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Recounts
 Sample 1204124964 (FC_3A 284285DUP) was recounted due to results more negative than the three sigma TPU. The second count is reported.

Product: Lucas Cell, Ra226, Liquid
Analytical Method: EPA 903.1 Modified
Analytical Procedure: GL-RAD-A-008 REV# 15
Analytical Batch: 1805511

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
460246001	CC_1 284282
460246002	FC_1 284283
460246003	FC_2 284284
460246004	FC_3A 284285

460246005 FC_3B 284286
 460246006 FC_1 duplicate 284287
 1204120344 Method Blank (MB)
 1204120345 460000012(NonSDG) Sample Duplicate (DUP)
 1204120346 460000012(NonSDG) Matrix Spike (MS)
 1204120347 Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Miscellaneous Information

Additional Comments

The matrix spike, 1204120346 (Non SDG 460000012MS), aliquot was reduced to conserve sample volume.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Page: _____ of _____
 Project # CCR Landfill Groundwater Assessment
 GEL Quote #: _____
 GOC Number (1): _____
 ID Number: 201718264

GEL Laboratories LLC
 Chain of Custody and Analytical Request
 GEL Project Manager:

Client Name: Colorado Springs Utilities
 Project/Site Name: CSR Gravel Pit #1
 Address: 701 E. Las Vegas St. Colorado Springs, CO 80903
 Phone # 719-468-4603 Fax # _____

Send Results To: Wendy Assy

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (Militar (0000))	QC Code (a)	Field Filtered (b)	Matrix (c)	Radioactive (if % (c) please supply isotopic info.)	Should this sample be considered:	Total number of containers	Comments
CC_1 284282	9/24/2018	1145	N	Y	GW		(7) Known or (8) Possible Hazards	2	X X
FC_1 284283	9/24/2018	0934	N	Y	GW			2	X X
FC_2 284284	9/24/2018	0100	N	Y	GW			2	X X
FC_3A 284285	9/24/2018	1240	N	Y	GW			2	X X
FC_3B 284286	9/24/2018	1331	N	Y	GW			2	X X
FC_1 duplicate 284287	9/24/2018	0934	FD	Y	GW			2	X X

* For comparatives - indicate start and stop date/time

Retinquished By (Signed) _____ Date _____ Time _____
 Received by (signed) _____ Date _____ Time _____

TAT Requested: Normal: _____ Rush: _____ Specify: _____ (Subject to Surcharge)

QC Results: Yes No
 Select Deliverable: C of A QC Summary Level 1 Level 2 Level 3 Level 4

Additional Remarks:
 For Lab Receipting Use Only: Custody Seal Intact? Yes No Cooler Temp: _____ °C
 Sample Collection Time Zone: Eastern Pacific Central Mountain Other: _____

1.) Chain of Custody Number - Client Determined
 2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
 3.) Field Filtered: For liquid matrices, indicate with a - Y - for yes the sample was field filtered or - N - for sample was not field filtered.
 4.) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Mix-Liquid, SO=Soil, SD=Soil, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, P=Feecal, N=Soil
 5.) Sample Analysis Requested: Analytical method requested (i.e. 8200R, 6010R, 7470R) and number of containers provided for each (i.e. 8260R - 3, 6010R/7470R - 1).
 6.) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Acetic Acid, IR = Hexane, ST = Sodium Thiosulfate. If no preservative is added = leave field blank
 7.) **KNOWN OR POSSIBLE HAZARDS**
 Characteristic Hazards
 FL = Flammable/ignitable
 CO = Corrosive
 RE = Reactive
 Listed Waste
 LW = Listed Waste
 (F,K,P and U-listed wastes)
 Waste code(s): _____
 TSCA Regulated
 PCB = Polychlorinated biphenyls

Other (Unknown)
 (i.e.: High/low pH, asbestos, beryllium, iridium, other misc. health hazards, etc.)
 Description: _____

Please provide any additional details below regarding handling and/or disposal concerns. (i.e.: Origin of sample(s), type of site collected from, odd matrices, etc.)

SAMPLE RECEIPT & REVIEW FORM

Client: <u>CSVT</u>		SDG/AR/COC/Work Order: <u>460246</u>
Received By: <u>AA</u>		Date Received: <u>9/27/18</u>
Carrier and Tracking Number		
Circle Applicable: <input checked="" type="checkbox"/> FedEx Express <input type="checkbox"/> FedEx Ground <input type="checkbox"/> UPS <input type="checkbox"/> Field Services <input type="checkbox"/> Courier <input type="checkbox"/> Other <u>7733 3020 1317</u>		
Suspected Hazard Information		*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation. Hazard Class Shipped: _____ UN#: _____
Shipped as a DOT Hazardous?		Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> CPM / mR/Hr Classified as: Rad 1 Rad 2 Rad 3
COC/Samples marked or classified as radioactive?		If yes, select Hazards below, and contact the GEL Safety Group. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other: _____
Is package, COC, and/or Samples marked HAZ?		
Sample Receipt Criteria		Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	Circle Applicable: Seals broken Damaged container Leaking container Other (describe) _____
2	Chain of custody documents included with shipment?	
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	Preservation Method: Wet Ice Ice Packs Dry ice (<input checked="" type="checkbox"/> None) Other: _____ *all temperatures are recorded in Celsius TEMP: <u>25°</u>
4	Daily check performed and passed on IR temperature gun?	Temperature Device Serial #: <u>292-18</u> Secondary Temperature Device Serial #: (if Applicable) _____
5	Sample containers intact and sealed?	Circle Applicable: Seals broken Damaged container Leaking container Other (describe) _____
6	Samples requiring chemical preservation at proper pH?	Sample ID's and Containers Affected: _____ If Preservation added, Lot#: _____
7	Do any samples require Volatile Analysis?	If Yes, Are Encores or Soil Kits present? Yes ___ No ___ (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes ___ No ___ N/A ___ (If unknown, select No) VOA vials free of headspace? Yes ___ No ___ N/A ___ Sample ID's and containers affected: _____
8	Samples received within holding time?	ID's and tests affected: _____
9	Sample ID's on COC match ID's on bottles?	Sample ID's and containers affected: _____
10	Date & time on COC match date & time on bottles? <u>9/28</u>	Sample ID's affected: <u>No times on samples</u>
11	Number of containers received match number indicated on COC?	Sample ID's affected: _____
12	Are sample containers identifiable as GEL provided?	
13	COC form is properly signed in relinquished/received sections?	
Comments (Use Continuation Form if needed):		

PM (or PMA) review: Initials JMC Date 9/28/18 Page 1 of 1

List of current GEL Certifications as of 24 October 2018

State	Certification
Alaska	17-018
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (A133904)
Louisiana SDWA	LA180011
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122018-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-18-13
Utah NELAP	SC000122018-27
Vermont	VT87156
Virginia NELAP	460202
Washington	C780



October 26, 2018

Ms. Wendy Asay
Colorado Springs Utilities
701 E. Las Vegas St.
Colorado Springs, Colorado 80903

Re: Routine Analysis
Work Order: 460458

Dear Ms. Asay:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on September 28, 2018. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4778.

Sincerely,

Katelyn Gray for
Hope Taylor
Project Manager

Purchase Order: 201718264
Enclosures

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis Report
for**

CSUT001 Colorado Springs Utilities
Client SDG: 460458 GEL Work Order: 460458

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a Tracer compound
- ** Analyte is a surrogate compound
- J Analysis confirms the presence of the analyte at a concentration which is less than the established Reporting Limit (RL), but greater than the Method Detection Limit (MDL). The associated concentration value reported is approximate.
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Hope Taylor.

Reviewed by _____

Certificate of Analysis

Report Date: October 26, 2018

Company : Colorado Springs Utilities
Address : 701 E. Las Vegas St.

Contact: Colorado Springs, Colorado 80903
Ms. Wendy Asay
Project: Routine Analysis

Client Sample ID: SC_10 284289	Project: CSUT00117
Sample ID: 460458001	Client ID: CSUT001
Matrix: Ground Water	
Collect Date: 26-SEP-18 12:27	
Receive Date: 28-SEP-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC Ra228, Liquid "As Received"												
Radium-228	U	0.347	4.25	5.00	pCi/L		JXC9	10/08/18	1411	1807605		1
Rad Radium-226												
Lucas Cell, Ra226, Liquid "As Received"												
Radium-226	J	0.559	0.536	5.00	pCi/L		PCW	10/05/18	0815	1805511		2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			95.7	(15%-125%)

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

Certificate of Analysis

Report Date: October 26, 2018

Company : Colorado Springs Utilities
Address : 701 E. Las Vegas St.

Contact: Colorado Springs, Colorado 80903
Ms. Wendy Asay
Project: Routine Analysis

Client Sample ID: SC_11 284290	Project: CSUT00117
Sample ID: 460458002	Client ID: CSUT001
Matrix: Ground Water	
Collect Date: 26-SEP-18 11:38	
Receive Date: 28-SEP-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC Ra228, Liquid "As Received"												
Radium-228	U	0.264	3.81	5.00	pCi/L		JXC9	10/08/18	1411	1807605		1
Rad Radium-226												
Lucas Cell, Ra226, Liquid "As Received"												
Radium-226	U	0.497	0.618	5.00	pCi/L		PCW	10/05/18	0815	1805511		2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			86.5	(15%-125%)

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

Certificate of Analysis

Report Date: October 26, 2018

Company : Colorado Springs Utilities
Address : 701 E. Las Vegas St.

Contact: Colorado Springs, Colorado 80903
Ms. Wendy Asay
Project: Routine Analysis

Client Sample ID: SC_12 284291	Project: CSUT00117
Sample ID: 460458003	Client ID: CSUT001
Matrix: Ground Water	
Collect Date: 26-SEP-18 10:56	
Receive Date: 28-SEP-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC Ra228, Liquid "As Received"												
Radium-228	U	0.284	4.04	5.00	pCi/L		JXC9	10/08/18	1411	1807605		1
Rad Radium-226												
Lucas Cell, Ra226, Liquid "As Received"												
Radium-226	J	0.761	0.577	5.00	pCi/L		PCW	10/05/18	0815	1805511		2

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	EPA 904.0/SW846 9320 Modified		
2	EPA 903.1 Modified		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			93	(15%-125%)

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

Certificate of Analysis

Report Date: October 26, 2018

Company : Colorado Springs Utilities
Address : 701 E. Las Vegas St.

Contact: Colorado Springs, Colorado 80903
Ms. Wendy Asay
Project: Routine Analysis

Client Sample ID: SC_13 284292	Project: CSUT00117
Sample ID: 460458004	Client ID: CSUT001
Matrix: Ground Water	
Collect Date: 26-SEP-18 10:16	
Receive Date: 28-SEP-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC Ra228, Liquid "As Received"												
Radium-228	U	0.476	3.42	5.00	pCi/L		JXC9	10/08/18	1411	1807605		1
Rad Radium-226												
Lucas Cell, Ra226, Liquid "As Received"												
Radium-226	J	0.911	0.488	5.00	pCi/L		PCW	10/05/18	0815	1805511		2

The following Analytical Methods were performed:

Method	Description	Analyst	Comments
1	EPA 904.0/SW846 9320 Modified		
2	EPA 903.1 Modified		

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			96.1	(15%-125%)

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

Certificate of Analysis

Report Date: October 26, 2018

Company : Colorado Springs Utilities
Address : 701 E. Las Vegas St.

Contact: Colorado Springs, Colorado 80903
Ms. Wendy Asay
Project: Routine Analysis

Client Sample ID: SC_13 duplicate 284293	Project: CSUT00117
Sample ID: 460458005	Client ID: CSUT001
Matrix: Ground Water	
Collect Date: 26-SEP-18 09:42	
Receive Date: 28-SEP-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC Ra228, Liquid "As Received"												
Radium-228	U	0.892	3.28	5.00	pCi/L			JXC9	10/08/18	1411	1807605	1
Rad Radium-226												
Lucas Cell, Ra226, Liquid "As Received"												
Radium-226	J	1.56	0.549	5.00	pCi/L			PCW	10/05/18	0850	1805511	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			92.3	(15%-125%)

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

Certificate of Analysis

Report Date: October 26, 2018

Company : Colorado Springs Utilities
Address : 701 E. Las Vegas St.

Contact: Colorado Springs, Colorado 80903
Ms. Wendy Asay
Project: Routine Analysis

Client Sample ID: SC_14 284294	Project: CSUT00117
Sample ID: 460458006	Client ID: CSUT001
Matrix: Ground Water	
Collect Date: 26-SEP-18 10:21	
Receive Date: 28-SEP-18	
Collector: Client	

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting												
GFPC Ra228, Liquid "As Received"												
Radium-228	U	1.15	3.40	5.00	pCi/L			JXC9	10/08/18	1411	1807605	1
Rad Radium-226												
Lucas Cell, Ra226, Liquid "As Received"												
Radium-226	U	0.466	0.628	5.00	pCi/L			PCW	10/05/18	0850	1805511	2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			103	(15%-125%)

Notes:

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

QC Summary

Report Date: October 26, 2018

Page 1 of 2

Colorado Springs Utilities
701 E. Las Vegas St.
Colorado Springs, Colorado
Contact: Ms. Wendy Asay

Workorder: 460458

Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Gas Flow											
Batch	1807605										
QC1204124964	460246004	DUP									
Radium-228		U	0.0893	U	-0.637	pCi/L	N/A		N/A	JXC9	10/08/18 15:32
QC1204124965	LCS										
Radium-228	51.8				38.8	pCi/L	75	(75%-125%)			10/08/18 14:18
QC1204124963	MB										
Radium-228			U		1.65	pCi/L					10/08/18 14:18
Rad Ra-226											
Batch	1805511										
QC1204120345	460000012	DUP									
Radium-226		U	0.260	U	0.379	pCi/L	N/A		N/A	PCW	10/05/18 08:50
QC1204120347	LCS										
Radium-226	26.0				21.2	pCi/L	81.6	(75%-125%)			10/05/18 08:50
QC1204120344	MB										
Radium-226			U		0.130	pCi/L					10/05/18 08:50
QC1204120346	460000012	MS									
Radium-226	130	U	0.260		117	pCi/L	89.9	(75%-125%)			10/05/18 08:50

Notes:

The Qualifiers in this report are defined as follows:

- ** Analyte is a Tracer compound
- < Result is less than value reported
- > Result is greater than value reported
- BD Results are either below the MDC or tracer recovery is low
- FA Failed analysis.
- H Analytical holding time was exceeded

QC Summary

Workorder: 460458

Page 2 of 2

Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
J	Analysis confirms the presence of the analyte at a concentration which is less than the established Reporting Limit (RL), but greater than the Method Detection Limit (MDL). The associated concentration value reported is approximate.										
J	Value is estimated										
K	Analyte present. Reported value may be biased high. Actual value is expected to be lower.										
L	Analyte present. Reported value may be biased low. Actual value is expected to be higher.										
M	M if above MDC and less than LLD										
M	REMP Result > MDC/CL and < RDL										
N/A	RPD or %Recovery limits do not apply.										
NI	See case narrative										
ND	Analyte concentration is not detected above the detection limit										
NJ	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
Q	One or more quality control criteria have not been met. Refer to the applicable narrative or DER.										
R	Sample results are rejected										
U	Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.										
UI	Gamma Spectroscopy--Uncertain identification										
UJ	Gamma Spectroscopy--Uncertain identification										
UL	Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.										
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier										
Y	Other specific qualifiers were required to properly define the results. Consult case narrative.										
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.										
h	Preparation or preservation holding time was exceeded										
<p>N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable. ^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result. * Indicates that a Quality Control parameter was not within specifications. For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.</p>											
Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.											

**Radiochemistry
Technical Case Narrative
Colorado Springs Utilities (CSUT)
SDG #: 460458**

Product: GFPC Ra228, Liquid

Analytical Method: EPA 904.0/SW846 9320 Modified

Analytical Procedure: GL-RAD-A-063 REV# 2

Analytical Batch: 1807605

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
460458001	SC_10 284289
460458002	SC_11 284290
460458003	SC_12 284291
460458004	SC_13 284292
460458005	SC_13 duplicate 284293
460458006	SC_14 284294
1204124963	Method Blank (MB)
1204124964	460246004(FC_3A 284285) Sample Duplicate (DUP)
1204124965	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Recounts

Sample 1204124964 (FC_3A 284285DUP) was recounted due to results more negative than the three sigma TPU. The second count is reported.

Product: Lucas Cell, Ra226, Liquid

Analytical Method: EPA 903.1 Modified

Analytical Procedure: GL-RAD-A-008 REV# 15

Analytical Batch: 1805511

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
460458001	SC_10 284289
460458002	SC_11 284290
460458003	SC_12 284291
460458004	SC_13 284292

460458005	SC_13 duplicate 284293
460458006	SC_14 284294
1204120344	Method Blank (MB)
1204120345	460000012(NonSDG) Sample Duplicate (DUP)
1204120346	460000012(NonSDG) Matrix Spike (MS)
1204120347	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Miscellaneous Information

Additional Comments

The matrix spike, 1204120346 (Non SDG 460000012MS), aliquot was reduced to conserve sample volume.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Page: _____ of _____
 Project # : CCR Landfill Groundwater Assessment
 GEL Quote #: 400458
 COC Number (1):
 PO Number: 201718264
 Client Name: Colorado Springs Utilities
 GEL Work Order Number: 400458
 Phone # 719-668-4603
 Fax #

GEL Laboratories, LLC
 2040 Savage Road
 Charleston, SC 29407
 Phone: (843) 556-8171
 Fax: (843) 766-1178

Chemistry | Radiochemistry | Radiobiology | Specialty Analytics
 Chain of Custody and Analytical Request
 GEL Project Manager:

Project/Site Name: CCR Landfill Groundwater Assessment
 Address: 701 E. Las Vegas St. Colorado Springs, CO 80903
 Collected By: JH
 Send Results To: Wendy Asay

Sample Analysis Requested (5) (Fill in the number of containers for each test)
 Preservative Type (6)

Sample ID	*Date Collected (mm-dd-yy)	*Time Collected (Military)	COC Code (1)	Field Code (2)	Sample Matrix (3)	Should this sample be considered: (7) Known or possible hazards (scope title)	Radionuclide (Yes/No) (4)	Total number of containers	Comments
SC_10_284289	9/26/2018	1227	N	Y	GW			2	X Note: extra sample is required for sample specific QC
SC_11_284290	9/26/2018	1138	N	Y	GW			2	X
SC_12_284291	9/26/2018	1056	N	Y	GW			2	X
SC_13_284292	9/26/2018	1016	N	Y	GW			2	X
SC_13 duplicate 284293	9/26/2018	0942	FD	Y	GW			2	X
SC_14_284294	9/26/2018	1021	N	Y	GW			2	X

Chain of Custody Signatures
 Relinquished By (Signed) _____ Date _____ Time _____
 Received by (signed) _____ Date 9/28/18 Time 8:45
 TAT Requested: Normal: _____ Rush: _____ Specify: _____ (Subject to Surcharge)
 FAX Results: [] Yes [] No
 Select Deliverable: [] C of A [] OC Summary [] Level 1 [] Level 2 [] Level 3 [] Level 4
 Additional Remarks:
 For Lab Receiving Use Only: Custody Seal Intact? [] Yes [] No Cooler Temp: _____ °C
 Sample Collection Time Zone: [] Eastern [] Pacific [] Central [] Mountain [] Other: _____

1.) Chain of Custody Number = Client Determined
 2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
 3.) Field Filtered: For liquid matrices, indicate with a - Y - for yes this sample was field filtered or - N - for sample was not field filtered.
 4.) Matrix Code: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, ML=Misc Liquid, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Fecal, N=Nasal
 5.) Sample Analysis Requested: Analytical method requested (i.e. 8340B, 60100/7470A) and number of containers provided for each (i.e. 4340B - 3, 60100/7470A - 1).
 6.) Preservative Type: HA = Hydrochloric Acid, NH = Nitric Acid, SH = Sulfuric Acid, AA = Acetic Acid, HN = Hexam, SF = Sodium Thiosulfate. If no preservative is added = leave field blank
 7.) KNOWN OR POSSIBLE HAZARDS
 Characteristic Hazards
 FL = Flammable/ignitable
 CO = Corrosive
 RE = Reactive
 Listed Waste
 LW = Listed Waste
 (F, K, P and U-listed wastes.)
 Waste code(s):
 Other
 OT = Other / Unknown
 (i.e.: High/low pH, asbestos, beryllium, irritants, other misc. health hazards, etc.)
 Description:
 Please provide any additional details below regarding handling and/or disposal of file collected from, old matrices, etc.)
 RCRA Metals: Hg = Mercury
 As = Arsenic
 Ba = Barium
 Cd = Cadmium
 Cr = Chromium
 Pb = Lead
 TSCA Regulated PCB = Polychlorinated biphenyl(s)
 MI = MISC. RCRA metals

GEL Laboratories, LLC
 SAMPLE RECEIPT & REVIEW FORM

Client: CSU
 Received By: ZKW
 Carrier and Tracking Number: 7733 3932 6343
 SDG/AR/COC/Work Order: 400458
 Date Received: 9/28/18
 FedEx Express, FedEx Ground, UPS, Field Services, Courier, Other

Suspected Hazard Information
 Shipped as a DOT Hazardous?
 COC/Samples marked or classified as radioactive?
 Is package, COC, and/or Samples marked HAZ?

Sample Receipt Criteria
 1. Shipping containers received intact and sealed?
 2. Chain of custody documents included with shipment?
 3. Samples requiring cold preservation within (0 ≤ 6 deg. C)?
 4. Daily check performed and passed on IR temperature gun?
 5. Sample containers intact and sealed?
 6. Samples requiring chemical preservation at proper pH?
 7. Do any samples require Volatile Analysis?
 8. Samples received within holding time?
 9. Sample ID's on COC match ID's on bottles?
 10. Date & time on COC match date & time on bottles?
 11. Number of containers received match number indicated on COC?
 12. Are sample containers identifiable as GEL provided?
 13. COC form is properly signed in relinquished/received sections?

Comments/Qualifiers (Required for Non-Conforming Items)
 Circle Applicable: Seals broken, Damaged container, Leaking container, Other (describe)
 Preservation Method: Wet Ice, Ice Packs, Dry Ice, None, Other: TEMP: 17C
 Temperature Device Serial #: IR3-18
 Circle Applicable: Seals broken, Damaged container, Leaking container, Other (describe)
 Sample ID's and Containers Affected:
 If Preservation added, List:
 If Yes, Are Encores or Soil Kits present? Yes ___ No ___ (If yes, take to VOA Freezer)
 Do VOA vials contain acid preservation? Yes ___ No ___ N/A ___ (If unknown, select No)
 VOA vials free of headspace? Yes ___ No ___ N/A ___
 Sample ID's and containers affected:
 ID's and tests affected:
 Sample ID's and containers affected:
 Sample ID's affected:
 Sample ID's affected:
 No Time on Samples

PM (or PMA) review: Initials JWC Date 10/1/18 Page 1 of 1

List of current GEL Certifications as of 26 October 2018

State	Certification
Alaska	17-018
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA180011
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122018-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-18-13
Utah NELAP	SC000122018-27
Vermont	VT87156
Virginia NELAP	460202
Washington	C780