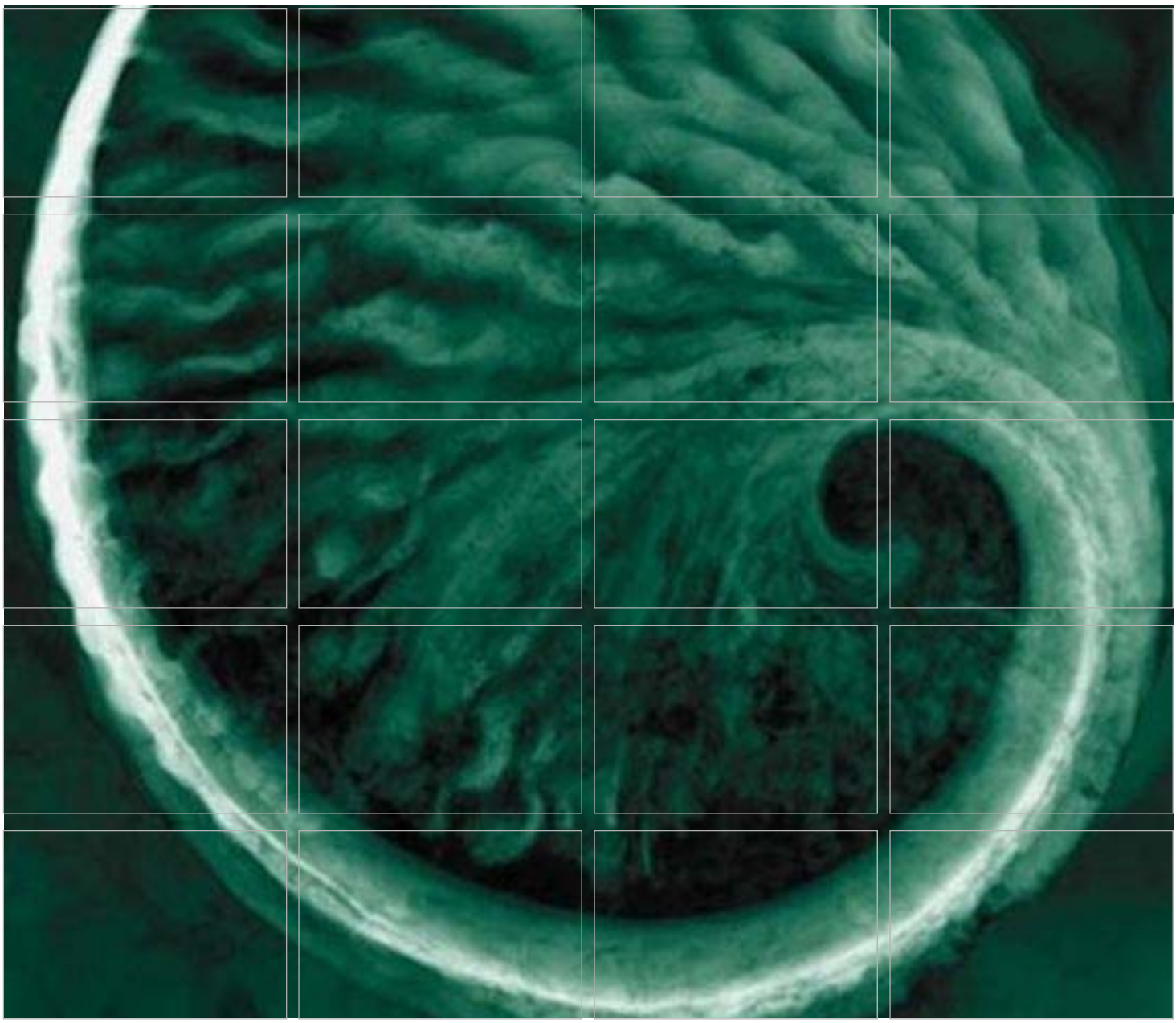

Annual Groundwater Monitoring and Corrective Action Report

CPS Energy
Calaveras Power Station – Evaporation Pond
San Antonio, Texas

January 2019

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Calaveras Power Station – Evaporation Pond

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1. INTRODUCTION

CPS Energy owns and operates the Calaveras Power Station which consists of two power plants (J.T Deely and J.K. Spruce) that are subject to regulation under Title 40, Code of Federal Regulations, Part 257 (40 CFR §257) (a.k.a. the CCR Rule). The Power Station is located in unincorporated Bexar County, Texas, approximately 13 miles southeast of San Antonio. Currently, CPS Energy operates four CCR units at the Power Station: Evaporation Pond, Bottom Ash Ponds, Fly Ash Landfill, and the Sludge Recycle Holding Pond. This *Annual Groundwater Monitoring and Corrective Action Report* (Report) addresses the Evaporation Pond. The other units listed above are discussed in separate reports.

This Report was produced by Environmental Resource Management (ERM), on behalf of CPS Energy, and summarizes the groundwater monitoring activities for the Evaporation Pond and provides a statistical summary of the findings for samples collected during the 2018 semi-annual monitoring events. Consistent with the requirements of the CCR Rule, this Report will be posted to the facility's operating record and notification will be made to the State of Texas. Additionally, this Report will be placed on the CPS Energy publically accessible internet site. Unless otherwise mentioned, the analyses in this Report follow the *Groundwater Sampling and Analysis Program* (SAP) (ERM, 2017) posted on the internet site. The table below cross references the reporting requirements under the CCR Rule with the contents of this Report.

Regulatory Requirement Cross-Reference

Regulatory Citation	Requirement (paraphrased)	Where Addressed in this Report
§257.90(e)	Status of the groundwater monitoring and corrective action program	Section 2
§257.90(e)	Summarize key actions completed	Section 2
§257.90(e)	Describe any problems encountered and actions to resolve problems	Section 2
§257.90(e)	Key activities for upcoming year	Section 4
§257.90(e)(1)	Map or aerial image of CCR unit and monitoring wells	Figure 1
§257.90(e)(2)	Identification of new monitoring wells installed or decommissioned during the preceding year	Section 2
§257.90(e)(3)	Summary of groundwater data, monitoring wells and dates sampled, and whether sample was required under detection or assessment monitoring	Sections 2 and 3, Tables 1 through 3, and Figure 2
§257.90(e)(4)	Narrative discussion of any transition between monitoring programs	Section 4

The Evaporation Pond is located northeast of the Power Station generating units and is south of the Fly Ash Landfill. The Evaporation Pond currently receives boiler chemical cleaning waste and other authorized liquid wastes. The Evaporation Pond was originally constructed as a fly ash landfill, but was converted from a landfill to an impoundment in 1996. The CCR unit location is shown on Figure 1.

2. PROGRAM STATUS

From December 2016 to October 2017, groundwater samples were collected as part of background sampling. After October 2017, groundwater samples were collected as part of detection monitoring. The samples were collected from the groundwater monitoring well network certified for use in determining compliance with the CCR Rule.

The groundwater monitoring well network consists of three upgradient monitoring wells (JKS-47, JKS-63, and JKS-64) and three downgradient monitoring wells (JKS-36, JKS-61, and JKS-62). All monitoring wells are screened within the uppermost groundwater bearing unit (GWBU). The uppermost GWBU is approximately 20 feet thick and is comprised of clayey/silty sand to well-sorted sand. The uppermost GWBU is located below unconfining units (i.e., sands, silts, and low to medium plasticity clays), and above a high plasticity clay (lower confining unit).

The monitoring well locations are shown in Figure 1. No problems were encountered in the data collection or in well performance with the exception of JKS-63. A groundwater sample was not collected from JKS-63 during the October 2018 sampling event due to a blockage in the well casing. An attempt will be made to remove the blockage prior to the next monitoring event. No new monitoring wells were installed or decommissioned after the certification of the well network.

2.1. GROUNDWATER FLOW RATE AND DIRECTION

Depth to groundwater surface measurements were made at each monitoring well prior to sampling. Groundwater elevations were calculated by subtracting the depth to groundwater from the surveyed reference elevation for each well.

Groundwater elevations collected during the monitoring events are summarized in Table 1. Groundwater elevations and the potentiometric surface for the most recent monitoring event (October 2018) are shown on Figure 2. Groundwater in the vicinity of the Evaporation Pond appears to flow towards Lake Calaveras (east). The horizontal gradient is approximately 0.004 feet/foot.

2.2. SAMPLING SUMMARY

A summary of the total number of samples collected from each monitoring well is provided in Table 2. Groundwater analytical results from the monitoring events are summarized in Table 3. Laboratory data packages are provided in Appendix A.

The Evaporation Pond monitoring wells were sampled by CPS Energy using low flow sampling techniques during the monitoring events. With the exception of JKS-63 (as noted above), no data gaps were identified during the 2018 semi-annual groundwater monitoring events.

2.3. DATA QUALITY

ERM reviewed field and laboratory documentation to assess the validity, reliability and usability of the analytical results. Samples were sent to Xenco Laboratories, located in San Antonio, Texas for analysis. Data quality information reviewed for these results included field sampling forms, chain-of-custody documentation, holding times, lab methods, cooler temperatures, laboratory method blanks, laboratory control sample recoveries, field duplicate

samples, matrix spikes / matrix spike duplicates, quantitation limits, and equipment blanks. A summary of the data qualifiers are included in Table 3. The data quality review found the results to be valid, reliable, and useable for decision making purposes with the listed qualifiers. No analytical results were rejected.

3. STATISTICAL ANALYSIS AND RESULTS

Consistent with the CCR Rule and the SAP, a prediction limit approach [40 CFR §257.93(f)] was used to identify potential impacts to groundwater. Tables and figures generated as part of the statistical analysis are provided in Appendix B. The steps outlined in the decision framework in the SAP include:

- Interwell versus intrawell comparisons;
- Establishment of upgradient dataset;
- Calculation of prediction limits; and
- Conclusions.

The remaining sections of this Report are focused on evaluation of the October 2018 sampling results. Note the April 2018 sampling results were evaluated as discussed in the *April 2018 Groundwater Sampling Event – Calaveras Power Station CCR Units* (ERM, 2017) provided in Appendix C.

3.1. INTERWELL VS INTRAWELL COMPARISONS

When multiple upgradient wells were available within the same unit, concentrations were compared among these wells to determine if they could be pooled to create a single, interwell, upgradient dataset. For each analyte, Boxplots (Appendix B, Figure 1) and Kruskal-Wallis test results (Appendix B, Table 1) are provided for upgradient wells. The statistical test shows that:

- One Appendix III analyte [fluoride] will follow interwell analysis, with no significant differences present in upgradient data; and
- The remaining six Appendix III analytes [boron, calcium, chloride, pH, sulfate, and total dissolved solids (TDS)] will follow intrawell analysis, with significant differences present in upgradient data.

Interwell analytes will use a pooled upgradient dataset for subsequent report sections. Conversely, intrawell analytes will have each individual upgradient dataset used for subsequent report sections.

3.2. ESTABLISHMENT OF UPGRADIENT DATASET

When evaluating the concentrations of analytes in groundwater, USEPA Unified Guidance (2009) recommends performing a careful quality check of the data to identify any anomalies. In addition to the data validation that was performed, descriptive statistics, outlier testing, and temporal stationarity checks were completed to finalize the upgradient dataset.

3.2.1. Descriptive Statistics

Descriptive statistics were calculated for the upgradient wells and analytes at the Evaporation Pond (Appendix B, Table 2). The descriptive statistics highlight a number of relevant characteristics about the upgradient datasets including:

- There are a total of 19 well-analyte combinations for the upgradient dataset;
- 19 well-analyte combinations have detection rates greater than or equal to 50 percent;
- 17 well-analyte combinations have 100 percent detects;
- 12 well-analyte combinations follow a normal distribution (using Shapiro-Wilks Normality Test);
- Three well-analyte combinations follow a log-normal distribution; and
- Four well-analyte combinations have no discernible distribution.

3.2.2. Outlier Determination

Both statistical and visual outlier tests were performed on the upgradient datasets. Data points identified as both a statistical and visual outlier (Appendix B, Table 3 and Appendix B, Figure 2) were reviewed before they were excluded from the dataset. A total of four potential outliers were initially flagged in the upgradient datasets. However, these values were consistent with seasonal fluctuations and concentrations detected in other upgradient wells or in historical groundwater sampling results. No analytical or sampling issues were identified during data review; therefore, the four values were considered valid and were retained for upper prediction limit (UPL) calculations.

3.2.3. Check for Temporal Stability

A trend test was performed for all values in the upgradient wells that had at least eight detected data points and at least 50 percent detection rate. Time series figures of upgradient wells are provided in Appendix B, Figure 3. Additionally, the Mann Kendall trend test results are provided in Appendix B, Table 4. The following summarizes the results of the trend analysis:

- There are a total of 19 well-analyte combinations in the upgradient dataset;
- 17 well-analyte combinations meet the data requirements of the trend test of which:
    - No well-analyte combinations had a significant increasing trend;
    - Three well-analyte combinations had a significant decreasing trend; and
    - 14 well-analyte combinations had no significant trend (i.e., concentrations were stable over time).

3.3. CALCULATION OF PREDICTION LIMITS

A multi-part assessment of the monitoring wells was performed to determine what type of UPL to calculate as a compliance point. A decision framework was applied for each upgradient well based on inter/intrawell analysis, data availability, and presence of temporal trends.

Upgradient wells that had fewer than eight detected values had a UPL based off the maximum concentration of the upgradient dataset. The two well-analyte combinations that did not meet the minimum data requirements for a calculated UPL are boron and sulfate in well JKS-63.

A total of three well-analyte combinations were found to have decreasing trends. For these well-analyte combinations, a bootstrapped UPL calculated around a Theil Sen trend was used to derive a more accurate UPL. The remaining 14 well-analyte combinations were found to have no significant trend. Sanitas was used to calculate static UPLs using an annual site-wide false positive rate of 0.1 with a 1-of-2 re-testing approach.

A final UPL was selected for each analyte and compared to the October 2018 sampling results in the downgradient wells. A final lower prediction limit (LPL) was also selected for pH. For the one analyte following interwell analysis, the upgradient dataset was pooled prior to UPL calculations, resulting in a single UPL value per analyte. For the six analytes following intrawell analysis, a UPL value was calculated for each of the upgradient wells. For these wells and analytes, the maximum UPL was selected as the representative UPL for each analyte. A similar approach was used to determine the LPL for pH, however, the minimum LPL was selected in the case of intrawell analysis. All final UPL and LPL values are shown in the table below. Full upgradient well calculations are provided in Appendix B, Table 5.

Final UPL and LPL Values

Analysis Type	Analyte	LPL	UPL	Unit
Intrawell	Boron	--	1.33	mg/L
Intrawell	Calcium	--	1,310	mg/L
Intrawell	Chloride	--	2,120	mg/L
Interwell	Fluoride	--	0.271	mg/L
Intrawell	pH	5.36	6.63	SU
Intrawell	Sulfate	--	2,110	mg/L
Intrawell	TDS	--	6,450	mg/L

3.4. CONCLUSIONS

The downgradient samples collected during the October 2018 monitoring event were used for compliance comparisons. All downgradient wells were below the UPLs and above the LPLs with the following exceptions shown in the table below. Full downgradient results are provided in Appendix B, Table 6.

Downgradient Results Exceedances

Analyte	Well	LPL	UPL	Sample Date	Value	Unit
Boron	JKS-61	--	1.33	2018-10-31	3.25	mg/L
Fluoride	JKS-36	--	0.271	2018-10-30	1.47	mg/L
Fluoride	JKS-61	--	0.271	2018-10-31	0.43	mg/L
Fluoride	JKS-62	--	0.271	2018-10-30	0.309	mg/L
pH	JKS-36	5.36	6.63	2017-10-11	3.61	SU

All initial exceedances of the UPL and LPL may be confirmed with re-testing of the downgradient wells per the 1-of-2 re-testing scheme. If the initial exceedance is confirmed with re-testing results from the same well, the well-analyte combination will be declared a

statistically significant increase (SSI) above background. Any wells with re-testing results at or below the UPL, or at or above the LPL, will be considered in compliance and will not require further action. These resampling results will be reported in the next *Annual Groundwater Monitoring and Corrective Action Report*.

The upgradient dataset for boron in JKS-61 did not meet the minimum data requirements (eight detected values) for UPL calculations. Downgradient well-analyte pairs that exceeded these UPLs will need to be re-evaluated when more data is available for calculating UPLs.

All downgradient wells with initial exceedances were examined for trends to assess the stability of concentrations. A summary of these trend test results are provided in Appendix B, Figure 4. Of the wells with potential SSIs, fluoride has an observed increasing trend in JKS-36 and pH has an observed decreasing trend in JKS-36.

4. RECOMMENDATIONS

Currently, there are no plans to transition from detection monitoring to assessment monitoring. Consistent with the 1-of-2 re-testing approach described in the Unified Guidance and the SAP, initial exceedances may be re-tested within 90 days. Based on these re-testing results, if an SSI is found, a notification or *Written Demonstration* will be prepared within 90 days. Based on the findings of the *Written Demonstration*, detection monitoring or assessment monitoring will be initiated as appropriate under §257.94 and §257.95.

5. REFERENCES

ERM, 2017. *Groundwater Sampling and Analysis Program.* Austin, Texas.

USEPA, 2009. *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities.* Unified Guidance. USEPA/530/R/09/007. Office of Resource Conservation and Recovery. Washington, D.C.

Tables

TABLE 1
Groundwater Elevations Summary
CPS Energy - Calaveras Power Station
Evaporation Pond

		JKS-47 Upgradient (1)		JKS-63 Upgradient		JKS-64 Upgradient	
		TOC Elevation	513.63	TOC Elevation	526.862	TOC Elevation	507.84
Sampling Event	Sampling Event Dates	Depth to Water (feet btoc)	Water Level (msl)	Depth to Water (feet btoc)	Water Level (msl)	Depth to Water (feet btoc)	Water Level (msl)
1	12/6/16 to 12/8/16	30.98	482.65	44.45	482.41	24.98	482.86
2	2/21/17 to 2/23/17	30.64	482.99	44.25	482.61	24.24	483.60
3	3/28/17 to 3/30/17	30.47	483.16	44.12	482.74	24.21	483.63
4	5/2/17 to 5/4/17	30.29	483.34	43.89	482.97	24.46	483.38
5	6/20/17 to 6/21/17	30.40	483.23	43.85	483.01	24.40	483.44
6	7/25/17 to 7/26/17	30.62	483.01	44.00	482.86	24.78	483.06
7	8/29/17 to 8/30/17	30.50	483.13	43.90	482.96	25.70	482.14
8	10/10/17 to 10/11/17	30.71	482.92	44.05	482.81	24.95	482.89
9	4/4/18 to 4/5/18	30.42	483.21	43.81	483.05	24.67	483.17
10	10/30/18 to 10/31/18	30.90	482.73	(2)	(2)	25.46	482.38

		JKS-36 Downgradient		JKS-61 Downgradient		JKS-62 Downgradient	
		TOC Elevation	508.41	TOC Elevation	505.51	TOC Elevation	509.84
Sampling Event	Sampling Event Dates	Depth to Water (feet btoc)	Water Level (msl)	Depth to Water (feet btoc)	Water Level (msl)	Depth to Water (feet btoc)	Water Level (msl)
1	12/6/16 to 12/8/16	25.99	482.42	23.95	481.56	28.63	481.21
2	2/21/17 to 2/23/17	25.78	482.63	23.31	482.20	28.30	481.54
3	3/28/17 to 3/30/17	25.37	483.04	23.10	482.41	28.42	481.42
4	5/2/17 to 5/4/17	43.89	464.52	22.85	482.66	28.00	481.84
5	6/20/17 to 6/21/17	25.40	483.01	22.05	483.46	28.05	481.79
6	7/25/17 to 7/26/17	25.62	482.79	23.50	482.01	28.12	481.72
7	8/29/17 to 8/30/17	25.70	482.71	23.60	481.91	28.12	481.72
8	10/10/17 to 10/11/17	25.91	482.50	23.97	481.54	28.00	481.84
9	4/4/18 to 4/5/18	25.46	482.95	23.08	482.43	27.66	482.18
10	10/30/18 to 10/31/18	25.90	482.51	23.94	481.57	28.33	481.51

NOTES:
btoc = below top of casing
msl = mean sea level
(1) JKS-47 was re-sampled on 2/28/2017.
(2) Blockage in JKS-63 well casing.

TABLE 2
Groundwater Sampling Summary
CPS Energy - Calaveras Power Station
Evaporation Pond

CCR Unit	Well ID	Well Function	Number of Samples Collected in 2016 - 2018	2016 - 2018 Sample Dates										Monitoring Program
				12/6/16 to 12/8/16	2/21/17 to 2/23/17	3/28/17 to 3/30/17	5/2/17 to 5/4/17	6/20/17 to 6/21/17	7/25/17 to 7/26/17	8/29/17 to 8/30/17	10/10/17 to 10/11/17	4/4/18 to 4/5/18	10/30/18 to 10/31/18	
Evaporation Pond	JKS-36	Downgradient Monitoring	10	X	X	X	X	X	X	X	X	X	X	Detection
	JKS-47	Upgradient Monitoring	10	X	(1)	X	X	X	X	X	X	X	X	Detection
	JKS-61	Downgradient Monitoring	10	X	X	X	X	X	X	X	X	X	X	Detection
	JKS-62	Downgradient Monitoring	10	X	X	X	X	X	X	X	X	X	X	Detection
	JKS-63	Upgradient Monitoring	8	X	X	X	X	(2)	X	X	X	X	(3)	Detection
	JKS-64	Upgradient Monitoring	10	X	X	X	X	X	X	X	X	X	X	Detection

NOTES:
X = Indicates that a sample was collected.
(1) JKS-47 was re-sampled on 2/28/2017.
(2) A sample was not collected at JKS-63 during Event 5 (June 2017), due to the well going dry during sampling activities.
(3) A sample was not collected at JKS-63 during Event 10 (October 2018), due to blockage in the well casing.

TABLE 3
Groundwater Analytical Results Summary
CPS Energy - Calaveras Power Station
Evaporation Pond

		JKS-47 Upgradient									
	Sample Date	**12/8/16**	**2/28/17**	**3/29/17**	**5/3/17**	**6/21/17**	**7/26/17**	**8/30/17**	**10/11/17**	**4/5/18**	**10/30/18**
	Task	**Event 1 Dec 2016**	**Event 2 Feb 2017**	**Event 3 Mar 2017**	**Event 4 May 2017**	**Event 5 Jun 2017**	**Event 6 Jul 2017**	**Event 7 Aug 2017**	**Event 8 Oct 2017**	**Event 9 Apr 2018**	**Event 10 Oct 2018**
Constituents	**Unit**										
Appendix III - Detection Monitoring											
Boron	mg/L	0.824	0.838	0.696	0.817	0.804	0.828 JH	0.760	1.02	0.844	0.806
Calcium	mg/L	54.0	62.1	168	26.2	71.1	62.7 JH	66.7	36.1	53.5	83.2 D
Chloride	mg/L	107	150	232	193	168	148 JH	210	68.5	151	186
Fluoride	mg/L	< 0.200	< 0.200 JH	0.315	0.382 JH	0.213 JH	< 2.00	< 0.200	< 0.500	< 0.0360	0.0998 J
Sulfate	mg/L	213	267	369	299	266	248 JH	284	171	236	262
pH - Field Collected	Std	5.82	5.83	5.75	6.00	5.75	5.85	5.90	5.93	5.91	5.72
Total dissolved solids	mg/L	811	922	1170	1060	979	806 JH	904	677	787	727
Appendix IV - Assessment Monitoring											
Antimony	mg/L	< 0.0100	< 0.00200	< 0.00200	< 0.0100	0.000275	< 0.00200	< 0.00200	< 0.00200	NR	NR
Arsenic	mg/L	0.00442	0.00130	< 0.00200	< 0.0100	0.00185	0.00105	0.00124	< 0.00200	NR	NR
Barium	mg/L	0.0475	0.0132	0.0180	0.0118	0.0154	0.00981	0.0104	0.00785	NR	NR
Beryllium	mg/L	0.000813	0.000255	< 0.00200	< 0.0100	0.000352	< 0.00200	0.000172	< 0.00200	NR	NR
Cadmium	mg/L	< 0.0100	0.000637	< 0.00200	< 0.00200	0.000735	0.000611	0.000814	< 0.00200	NR	NR
Chromium	mg/L	0.234	0.00430	< 0.00400	< 0.0200	0.00262	0.000855	0.00130	< 0.00400	NR	NR
Cobalt	mg/L	0.00915	0.00102	< 0.00200	< 0.00200	0.00227	0.000976	0.00107	< 0.00200	NR	NR
Fluoride	mg/L	< 0.200	< 0.200 JH	0.315	0.382 JH	0.213 JH	< 2.00	< 0.200	< 0.500	NR	NR
Lead	mg/L	0.00586	0.000950	< 0.00200	< 0.0100	0.00157	0.000202	0.000449	< 0.00200	NR	NR
Lithium	mg/L	0.0615	0.0478	< 0.100	0.0207	0.0720	0.0644	0.0799	0.0521	NR	NR
Mercury	mg/L	0.0000600	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	NR	NR
Molybdenum	mg/L	0.0317	0.00126	< 0.00200	< 0.00200	0.000788	0.000581	0.000653	< 0.00200	NR	NR
Selenium	mg/L	0.0493	0.0697	0.0518	0.0564	0.0613	0.0577	0.0525	0.0854	NR	NR
Thallium	mg/L	< 0.0100	< 0.00200	< 0.00200	< 0.0100	< 0.00200	< 0.00200	< 0.00200	< 0.00200	NR	NR
Radium-226	pCi/L	1.20 ± 0.342	0.578 ± 0.275	0.630 ± 0.237	0.538 ± 0.192	0.729 ± 0.278	< 0.304 ± 0.233	1.06 ± 0.361	0.246 ± 0.180	NR	NR
Radium-228	pCi/L	< 1.66 ± 1.15	< 1.34 ± 1.05	< 1.27 ± 0.960	2.17 ± 1.01	< 0.664 ± 0.929	< 0.771 ± 1.48	1.65 ± 1.05	< 0.463 ± 0.866	NR	NR

NOTES:

(1) Sample not collected due to the well going dry during sampling activities.

(2) Sample not collected due to blockage in the well casing.

mg/L: Milligrams per Liter.

Std: Standard Units.

pCi/L: Picocuries per Liter.

-- : Laboratory did not analyze sample for indicated constituent.

NR: Analysis of this constituent not required for detection monitoring.

<0.0360: Analyte not detected at laboratory reporting limit (Sample Detection Limit).

D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.

J: Analyte detected above method (sample) detection limit but below method quantitation limit.

H: Bias in sample result likely to be high.

TABLE 3
Groundwater Analytical Results Summary
CPS Energy - Calaveras Power Station
Evaporation Pond

		JKS-63 Upgradient									
	Sample Date	**12/8/16**	**2/22/17**	**3/29/17**	**5/3/17**		**7/26/17**	**8/30/17**	**10/11/17**	**4/5/18**	**10/30/18**
	Task	**Event 1 Dec 2016**	**Event 2 Feb 2017**	**Event 3 Mar 2017**	**Event 4 May 2017**	**Event 5 Jun 2017**	**Event 6 Jul 2017**	**Event 7 Aug 2017**	**Event 8 Oct 2017**	**Event 9 Apr 2018**	**Event 10 Oct 2018**
Constituents	**Unit**										
Appendix III - Detection Monitoring											
Boron	mg/L	0.800	0.866	--	0.981	(1)	1.33 JH	1.23	1.10	1.13	(2)
Calcium	mg/L	783	914	713	1060	(1)	835	174	872	836	(2)
Chloride	mg/L	1230	1160	1220	1340	(1)	1960 JH	1890	1450	1670	(2)
Fluoride	mg/L	0.0573	0.320	0.297	0.364 JH	(1)	0.0971 JH	0.182 JH	< 0.500	< 0.0360	(2)
Sulfate	mg/L	< 0.200	1860	1890	1860	(1)	1970	1920	1820	2110	(2)
pH - Field Collected	Std	5.61	5.35	5.60	5.85	(1)	5.88	5.82	5.63	5.64	(2)
Total dissolved solids	mg/L	5750	4760	4870	5560	(1)	6410	5000	5540	5220	(2)
Appendix IV - Assessment Monitoring											
Antimony	mg/L	< 0.0100	0.000459	0.000695	< 0.0100	(1)	< 0.00200	0.000424	< 0.00200	NR	NR
Arsenic	mg/L	0.00332	0.00294	0.00128	< 0.0100	(1)	0.000893	0.000992	< 0.00200	NR	NR
Barium	mg/L	0.0626	0.0540	0.0336	0.0316	(1)	0.0294	0.0258	0.0224	NR	NR
Beryllium	mg/L	< 0.0100	0.000930	0.000442	< 0.0100	(1)	0.000196	0.000223	< 0.00200	NR	NR
Cadmium	mg/L	0.00339	0.00405	0.00394	0.00316	(1)	0.00282	0.00263	0.00296	NR	NR
Chromium	mg/L	1.49	0.735	0.371	0.114	(1)	0.0742	0.0584	0.0130	NR	NR
Cobalt	mg/L	0.0802	0.0762	0.0546	0.0331	(1)	0.0137	0.0119	0.0119	NR	NR
Fluoride	mg/L	0.0573	0.320	0.297	0.364 JH	(1)	0.0971 JH	0.182 JH	< 0.500	NR	NR
Lead	mg/L	0.00441	0.00599	0.00108	< 0.0100	(1)	0.000238	0.000551	< 0.00200	NR	NR
Lithium	mg/L	< 0.0200	0.116	< 0.100	0.654	(1)	0.946	1.15	0.791	NR	NR
Mercury	mg/L	0.000236	0.000237	0.000206	0.0000400	(1)	0.000260	0.000441	0.000381	NR	NR
Molybdenum	mg/L	0.186	0.00789	0.00966	0.00419	(1)	0.00281	0.00180	< 0.00200	NR	NR
Selenium	mg/L	0.0188	0.0210	0.0257	0.0188	(1)	0.0288	0.0318	0.0249	NR	NR
Thallium	mg/L	< 0.0100	< 0.00200	< 0.00200	< 0.0100	(1)	< 0.00200	< 0.00200	< 0.00200	NR	NR
Radium-226	pCi/L	3.42 ± 0.573	2.76 ± 0.476	5.79 ± 0.790	4.57 ± 0.577	(1)	6.70 ± 0.744	7.36 ± 0.874	5.04 ± 0.711	NR	NR
Radium-228	pCi/L	2.44 ± 1.44	4.13 ± 1.21	< 2.04 ± 1.61	3.41 ± 0.968	(1)	10.9 ± 2.31	< 1.79 ± 1.27	6.77 ± 1.48	NR	NR

NOTES:

(1) Sample not collected due to the well going dry during sampling activities.

(2) Sample not collected due to blockage in the well casing.

mg/L: Milligrams per Liter.

Std: Standard Units.

pCi/L: Picocuries per Liter.

-- : Laboratory did not analyze sample for indicated constituent.

NR: Analysis of this constituent not required for detection monitoring.

<0.0360: Analyte not detected at laboratory reporting limit (Sample Detection Limit).

D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.

J: Analyte detected above method (sample) detection limit but below method quantitation limit.

H: Bias in sample result likely to be high.

TABLE 3
Groundwater Analytical Results Summary
CPS Energy - Calaveras Power Station
Evaporation Pond

		JKS-64 Upgradient									
	Sample Date	**12/8/16**	**2/23/17**	**3/29/17**	**5/4/17**	**6/21/17**	**7/26/17**	**8/30/17**	**10/11/17**	**4/5/18**	**10/30/18**
	Task	**Event 1 Dec 2016**	**Event 2 Feb 2017**	**Event 3 Mar 2017**	**Event 4 May 2017**	**Event 5 Jun 2017**	**Event 6 Jul 2017**	**Event 7 Aug 2017**	**Event 8 Oct 2017**	**Event 9 Apr 2018**	**Event 10 Oct 2018**
Constituents	**Unit**										
Appendix III - Detection Monitoring											
Boron	mg/L	0.839	0.837	1.14	0.962	0.816	0.904 JH	0.835	0.901	0.837	0.805
Calcium	mg/L	25.1	24.0	32.3	23.8	20.6	21.7 JH	21.6	25.2	23.6	24.4
Chloride	mg/L	12.8	12.4	11.8	11.0	11.4	11.5	11.5	9.63	14.2	15.5
Fluoride	mg/L	< 0.200	0.294 JH	< 4.00	0.188	0.231 JH	0.157 JH	0.224 JH	< 0.500	< 0.0360	0.106 J
Sulfate	mg/L	171	182	184	174	172	170 JH	172	164	189	196
pH - Field Collected	Std	6.46	5.50	6.30	6.33	6.21	6.09	6.20	6.21	6.13	5.97
Total dissolved solids	mg/L	606	585	611	581	572	555 JH	463	576	549	525
Appendix IV - Assessment Monitoring											
Antimony	mg/L	< 0.00200	< 0.00200	< 0.00200	< 0.0100	< 0.00200	< 0.00200	< 0.00200	< 0.00200	NR	NR
Arsenic	mg/L	0.000950	0.000730	0.000556	< 0.0100	0.000476	0.000490	0.000519	< 0.00200	NR	NR
Barium	mg/L	0.00768	0.00451	0.00415	0.00410	0.00320	0.00324	0.00275	< 0.00400	NR	NR
Beryllium	mg/L	< 0.0200	< 0.00200	< 0.00200	< 0.0100	< 0.00200	< 0.00200	< 0.00200	< 0.00200	NR	NR
Cadmium	mg/L	< 0.00200	< 0.00200	< 0.00200	< 0.0100	< 0.00200	< 0.00200	< 0.00200	< 0.00200	NR	NR
Chromium	mg/L	< 0.00400	0.000905	< 0.00400	< 0.0200	0.000867	0.000637	0.000961	< 0.00400	NR	NR
Cobalt	mg/L	0.00100	0.000952	0.000912	0.000859	0.000745	0.000856	0.000889	< 0.00200	NR	NR
Fluoride	mg/L	< 0.200	0.294 JH	< 4.00	0.188	0.231 JH	0.157 JH	0.224 JH	< 0.500	NR	NR
Lead	mg/L	< 0.00200	< 0.00200	< 0.00200	< 0.0100	< 0.00200	< 0.00200	< 0.00200	< 0.00200	NR	NR
Lithium	mg/L	0.0178	0.0146	< 0.100	0.0152	0.0173	0.0181	0.0252	0.0208	NR	NR
Mercury	mg/L	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	0.0000540	< 0.000200	NR	NR
Molybdenum	mg/L	0.000398	0.000317	< 0.00200	< 0.0100	0.000265	< 0.00200	0.000273	< 0.00200	NR	NR
Selenium	mg/L	< 0.00200	0.000550	0.000538	< 0.0100	0.000468	0.000468	< 0.00200	< 0.00200	NR	NR
Thallium	mg/L	< 0.00200	< 0.00200	< 0.00200	< 0.0100	< 0.00200	< 0.00200	< 0.00200	< 0.00200	NR	NR
Radium-226	pCi/L	0.981 ± 0.400	1.16 ± 0.408	0.530 ± 0.284	< 0.231 ± 0.174	0.258 ± 0.175	< 0.286 ± 0.247	1.05 ± 0.361	0.531 ± 0.276	NR	NR
Radium-228	pCi/L	< 0.429 ± 1.56	2.07 ± 1.22	< -0.102 ± 1.07	< 0.408 ± 0.764	< 0.699 ± 0.761	2.49 ± 1.54	< 0.260 ± 0.639	< 1.00 ±0.834	NR	NR

NOTES:

(1) Sample not collected due to the well going dry during sampling activities.

(2) Sample not collected due to blockage in the well casing.

mg/L: Milligrams per Liter.

Std: Standard Units.

pCi/L: Picocuries per Liter.

-- : Laboratory did not analyze sample for indicated constituent.

NR: Analysis of this constituent not required for detection monitoring.

<0.0360: Analyte not detected at laboratory reporting limit (Sample Detection Limit).

D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.

J: Analyte detected above method (sample) detection limit but below method quantitation limit.

H: Bias in sample result likely to be high.

TABLE 3
Groundwater Analytical Results Summary
CPS Energy - Calaveras Power Station
Evaporation Pond

		JKS-36 Downgradient									
	Sample Date	**12/8/16**	**2/23/17**	**3/29/17**	**5/4/17**	**6/21/17**	**7/26/17**	**8/30/17**	**10/11/17**	**4/5/18**	**10/30/18**
	Task	**Event 1 Dec 2016**	**Event 2 Feb 2017**	**Event 3 Mar 2017**	**Event 4 May 2017**	**Event 5 Jun 2017**	**Event 6 Jul 2017**	**Event 7 Aug 2017**	**Event 8 Oct 2017**	**Event 9 Apr 2018**	**Event 10 Oct 2018**
Constituents	**Unit**										
Appendix III - Detection Monitoring											
Boron	mg/L	0.308	0.671	0.748	0.731	0.581	0.625 JH	0.663	0.637	0.625	0.686
Calcium	mg/L	69.7	165	147	282	250	255 JH	241	289	281	311 D
Chloride	mg/L	14.5	199	37.0	355	364	379 JH	319	328	347	313
Fluoride	mg/L	< 0.200	0.439 JH	0.330	1.53	1.33	1.37 JH	1.30	1.32	1.95	1.47
Sulfate	mg/L	49.2	409	271	726	731	775 JH	707	741	816	946
pH - Field Collected	Std	6.71	4.96	6.98	4.04	3.72	3.80	5.20	3.24	3.48	3.61
Total dissolved solids	mg/L	368	1010	591	1610	1850	1700 JH	1220	1770	1650	1630
Appendix IV - Assessment Monitoring											
Antimony	mg/L	< 0.0100	< 0.00200	0.00123	< 0.0100	< 0.00200	0.00121	< 0.00200	< 0.00200	NR	NR
Arsenic	mg/L	< 0.0100	0.000588	0.00134	0.00324	0.00284	0.00369	0.00341	0.00372	NR	NR
Barium	mg/L	0.0988	0.0967	0.139	0.0270	0.0191	0.0207	0.0372	0.0225	NR	NR
Beryllium	mg/L	< 0.0100	0.00198	< 0.00200	0.0259	0.0226	0.0261	0.0212	0.0259	NR	NR
Cadmium	mg/L	0.00257	0.00510	0.000548	0.0118	0.0104	0.0117	0.0101	0.0113	NR	NR
Chromium	mg/L	< 0.0200	0.00608	0.0409	0.0100	0.00974	0.0156	0.00792	0.0132	NR	NR
Cobalt	mg/L	< 0.00200	0.0871	0.00751	0.220	0.191	0.216	0.195	0.215	NR	NR
Fluoride	mg/L	< 0.200	0.439 JH	0.330	1.53	1.33	1.37 JH	1.30	1.32	NR	NR
Lead	mg/L	< 0.0100	< 0.00200	< 0.00200	< 0.0100	< 0.00200	0.000220	0.000261	< 0.00200	NR	NR
Lithium	mg/L	< 0.0200	0.119	< 0.100	0.326	0.340	0.371	0.372	0.379	NR	NR
Mercury	mg/L	0.000834	0.000289	0.00143	0.00240	0.00244	0.00160	0.00113	0.00226	NR	NR
Molybdenum	mg/L	0.00397	0.00261	0.0686	0.00183	< 0.00200	0.000791	0.00151	< 0.00200	NR	NR
Selenium	mg/L	0.0334	0.0448	0.0313	0.0673	0.0638	0.0697	0.0633	0.0663	NR	NR
Thallium	mg/L	< 0.0100	0.000487	< 0.00200	< 0.0100	< 0.00200	0.00114	0.000889	< 0.00200	NR	NR
Radium-226	pCi/L	< 0.0888 ± 0.151	1.12 ± 0.342	0.453 ± 0.276	4.85 ± 0.656	4.02 ± 0.608	4.32 ± 0.667	6.28 ± 0.845	3.60 ± 0.600	NR	NR
Radium-228	pCi/L	2.14 ± 1.02	2.17 ± 0.979	< 0.166 ± 0.861	4.28 ± 1.19	3.44 ± 1.04	3.95 ± 1.79	2.63 ± 0.928	3.30 ± 1.33	NR	NR

NOTES:

(1) Sample not collected due to the well going dry during sampling activities.

(2) Sample not collected due to blockage in the well casing.

mg/L: Milligrams per Liter.

Std: Standard Units.

pCi/L: Picocuries per Liter.

-- : Laboratory did not analyze sample for indicated constituent.

NR: Analysis of this constituent not required for detection monitoring.

<0.0360: Analyte not detected at laboratory reporting limit (Sample Detection Limit).

D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.

J: Analyte detected above method (sample) detection limit but below method quantitation limit.

H: Bias in sample result likely to be high.

TABLE 3
Groundwater Analytical Results Summary
CPS Energy - Calaveras Power Station
Evaporation Pond

		JKS-61 Downgradient									
	Sample Date	**12/7/16**	**2/23/17**	**3/29/17**	**5/3/17**	**6/21/17**	**7/26/17**	**8/30/17**	**10/11/17**	**4/5/18**	**10/31/18**
	Task	**Event 1 Dec 2016**	**Event 2 Feb 2017**	**Event 3 Mar 2017**	**Event 4 May 2017**	**Event 5 Jun 2017**	**Event 6 Jul 2017**	**Event 7 Aug 2017**	**Event 8 Oct 2017**	**Event 9 Apr 2018**	**Event 10 Oct 2018**
Constituents	**Unit**										
Appendix III - Detection Monitoring											
Boron	mg/L	1.07	1.29	1.15	1.18	0.960	1.01 JH	0.994	0.997	1.09	3.25
Calcium	mg/L	134	99.8	155	113	115	107 JH	105	135	171	197 D
Chloride	mg/L	198	159	162	173	193	190 JH	228	210	285	213
Fluoride	mg/L	0.393	0.503	0.522	0.656 JH	0.459 JH	0.479 JH	< 0.200	< 0.500	0.406 J	0.430 J
Sulfate	mg/L	401	387 J	382	392	408	390 JH	391	401	562	548
pH - Field Collected	Std	6.72	6.51	6.48	6.68	6.53	6.55	7.40	6.27	6.42	6.38
Total dissolved solids	mg/L	1400	1180	1190	1320	1430	1290 JH	1240	1280	1620	514
Appendix IV - Assessment Monitoring											
Antimony	mg/L	< 0.0100	< 0.00200	< 0.00200	< 0.0100	< 0.00200	< 0.00200	< 0.00200	< 0.00200	NR	NR
Arsenic	mg/L	< 0.0100	< 0.00200	0.000709	< 0.0100	0.000563	0.000622	0.000592	< 0.00200	NR	NR
Barium	mg/L	0.0364	0.0190	0.0173	0.0181	0.0148	0.0167	0.0153	0.0162	NR	NR
Beryllium	mg/L	< 0.0100	< 0.00200	< 0.00200	< 0.0100	< 0.00200	< 0.00200	< 0.00200	< 0.00200	NR	NR
Cadmium	mg/L	< 0.0100	< 0.00200	< 0.00200	< 0.0100	< 0.00200	< 0.00200	< 0.00200	< 0.00200	NR	NR
Chromium	mg/L	< 0.0200	0.000911	< 0.00400	< 0.0200	< 0.00400	0.000604	0.000941	< 0.00400	NR	NR
Cobalt	mg/L	0.000719	< 0.00200	0.000769	0.000782	0.000805	0.000765	0.000855	< 0.00200	NR	NR
Fluoride	mg/L	0.393	0.503	0.522	0.656 JH	0.459 JH	0.479 JH	< 0.200	< 0.500	NR	NR
Lead	mg/L	< 0.0100	< 0.00200	< 0.00200	< 0.0100	< 0.00200	< 0.00200	< 0.00200	< 0.00200	NR	NR
Lithium	mg/L	< 0.0200	< 0.0200	< 0.100	0.0120	0.0342	0.0336	0.0443	0.0335	NR	NR
Mercury	mg/L	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	NR	NR
Molybdenum	mg/L	0.00165	0.00152	0.000984	< 0.0100	0.000776	0.000742	0.000765	< 0.00200	NR	NR
Selenium	mg/L	< 0.0100	< 0.00200	0.00123	< 0.0100	0.00185	0.00154	0.00176	< 0.00200	NR	NR
Thallium	mg/L	< 0.0100	< 0.00200	< 0.00200	< 0.0100	< 0.00200	< 0.00200	< 0.00200	< 0.00200	NR	NR
Radium-226	pCi/L	1.15 ± 0.429	0.723 ± 0.306	< 0.256 ± 0.237	< 0.237 ± 0.193	0.398 ± 0.239	0.511 ± 0.223	0.821 ± 0.324	0.485 ± 0.212	NR	NR
Radium-228	pCi/L	2.79 ± 1.44	< 0.358 ± 1.06	< 0.761 ± 0.688	< -0.064 ± 0.607	2.03 ± 0.997	< 0.491 ± 0.813	< 0.247 ± 0.710	< 1.64 ± 1.08	NR	NR

NOTES:

(1) Sample not collected due to the well going dry during sampling activities.

(2) Sample not collected due to blockage in the well casing.

mg/L: Milligrams per Liter.

Std: Standard Units.

pCi/L: Picocuries per Liter.

-- : Laboratory did not analyze sample for indicated constituent.

NR: Analysis of this constituent not required for detection monitoring.

<0.0360: Analyte not detected at laboratory reporting limit (Sample Detection Limit).

D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.

J: Analyte detected above method (sample) detection limit but below method quantitation limit.

H: Bias in sample result likely to be high.

TABLE 3
Groundwater Analytical Results Summary
CPS Energy - Calaveras Power Station
Evaporation Pond

		JKS-62 Downgradient									
	Sample Date	**12/8/16**	**2/23/17**	**3/29/17**	**5/4/17**	**6/21/17**	**7/26/17**	**8/30/17**	**10/11/17**	**4/5/18**	**10/30/18**
	Task	**Event 1 Dec 2016**	**Event 2 Feb 2017**	**Event 3 Mar 2017**	**Event 4 May 2017**	**Event 5 Jun 2017**	**Event 6 Jul 2017**	**Event 7 Aug 2017**	**Event 8 Oct 2017**	**Event 9 Apr 2018**	**Event 10 Oct 2018**
Constituents	**Unit**										
Appendix III - Detection Monitoring											
Boron	mg/L	0.549	0.481	0.597	0.601	0.501	0.485 JH	0.485	0.549	0.522	0.559
Calcium	mg/L	155	152	220	156	150	134 JH	150	158	160	161 D
Chloride	mg/L	257	279	279	278	291	260 JH	281	241	312	279
Fluoride	mg/L	0.246	0.362 JH	0.418	0.388	0.366 JH	0.342 JH	0.233 JH	< 0.500	0.353 J	0.309 J
Sulfate	mg/L	190	187	193	188	184	181 JH	188	175	200	183
pH - Field Collected	Std	6.79	6.67	6.63	6.71	6.68	6.82	7.51	6.52	6.72	6.58
Total dissolved solids	mg/L	1120	1170	1140	1100	1080	976 JH	1080	1080	1110	956
Appendix IV - Assessment Monitoring											
Antimony	mg/L	< 0.00200	< 0.00200	< 0.00200	< 0.0100	< 0.00200	< 0.00200	< 0.00200	< 0.00200	NR	NR
Arsenic	mg/L	0.000684	0.000293	< 0.00200	< 0.0100	0.000254	< 0.00200	< 0.00200	< 0.00200	NR	NR
Barium	mg/L	0.0825	0.0786	0.0813	0.0747	0.0734	0.0737	0.0708	0.0793	NR	NR
Beryllium	mg/L	< 0.00200	< 0.00200	< 0.00200	< 0.0100	< 0.00200	< 0.00200	< 0.00200	< 0.00200	NR	NR
Cadmium	mg/L	< 0.00200	< 0.00200	< 0.00200	< 0.0100	< 0.00200	< 0.00200	< 0.00200	< 0.00200	NR	NR
Chromium	mg/L	0.00186	0.00109	< 0.00400	< 0.0200	0.000551	0.000691	0.00107	< 0.00400	NR	NR
Cobalt	mg/L	0.00110	0.000198	0.000744	< 0.0100	0.000278	0.000211	< 0.00200	< 0.00200	NR	NR
Fluoride	mg/L	0.246	0.362 JH	0.418	0.388	0.366 JH	0.342 JH	0.233 JH	< 0.500	NR	NR
Lead	mg/L	0.000588	< 0.00200	< 0.00200	< 0.0100	0.000154	< 0.00200	< 0.00200	< 0.00200	NR	NR
Lithium	mg/L	< 0.0200	0.0129	< 0.100	0.00134	0.0353	0.0305	0.0457	0.0263	NR	NR
Mercury	mg/L	0.0000540	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	< 0.000200	NR	NR
Molybdenum	mg/L	0.000414	0.000259	< 0.00200	< 0.0100	< 0.00200	< 0.00200	< 0.00200	< 0.00200	NR	NR
Selenium	mg/L	0.222	0.192	0.196	0.195	0.185	0.181	0.191	0.208	NR	NR
Thallium	mg/L	< 0.00200	< 0.00200	< 0.00200	< 0.0100	< 0.00200	< 0.00200	< 0.00200	< 0.00200	NR	NR
Radium-226	pCi/L	0.485 ± 0.229	0.402 ± 0.220	0.655 ± 0.321	< 0.0997 ± 0.153	0.425 ± 0.233	0.399 ± 0.220	2.02 ± 0.489	0.669 ± 0.279	NR	NR
Radium-228	pCi/L	< 2.15 ± 1.38	< 1.53 ± 1.28	< 0.305 ± 1.10	< -0.138 ± 0.656	< 0.660 ± 0.760	< 1.07 ± 0.949	< 0.673 ± 0.821	< 0.371 ± 0.631	NR	NR

NOTES:

(1) Sample not collected due to the well going dry during sampling activities.

(2) Sample not collected due to blockage in the well casing.

mg/L: Milligrams per Liter.

Std: Standard Units.

pCi/L: Picocuries per Liter.

-- : Laboratory did not analyze sample for indicated constituent.

NR: Analysis of this constituent not required for detection monitoring.

<0.0360: Analyte not detected at laboratory reporting limit (Sample Detection Limit).

D: Sample diluted due to targets detected over highest point of calibration curve or due to matrix interference.

J: Analyte detected above method (sample) detection limit but below method quantitation limit.

H: Bias in sample result likely to be high.

Figures

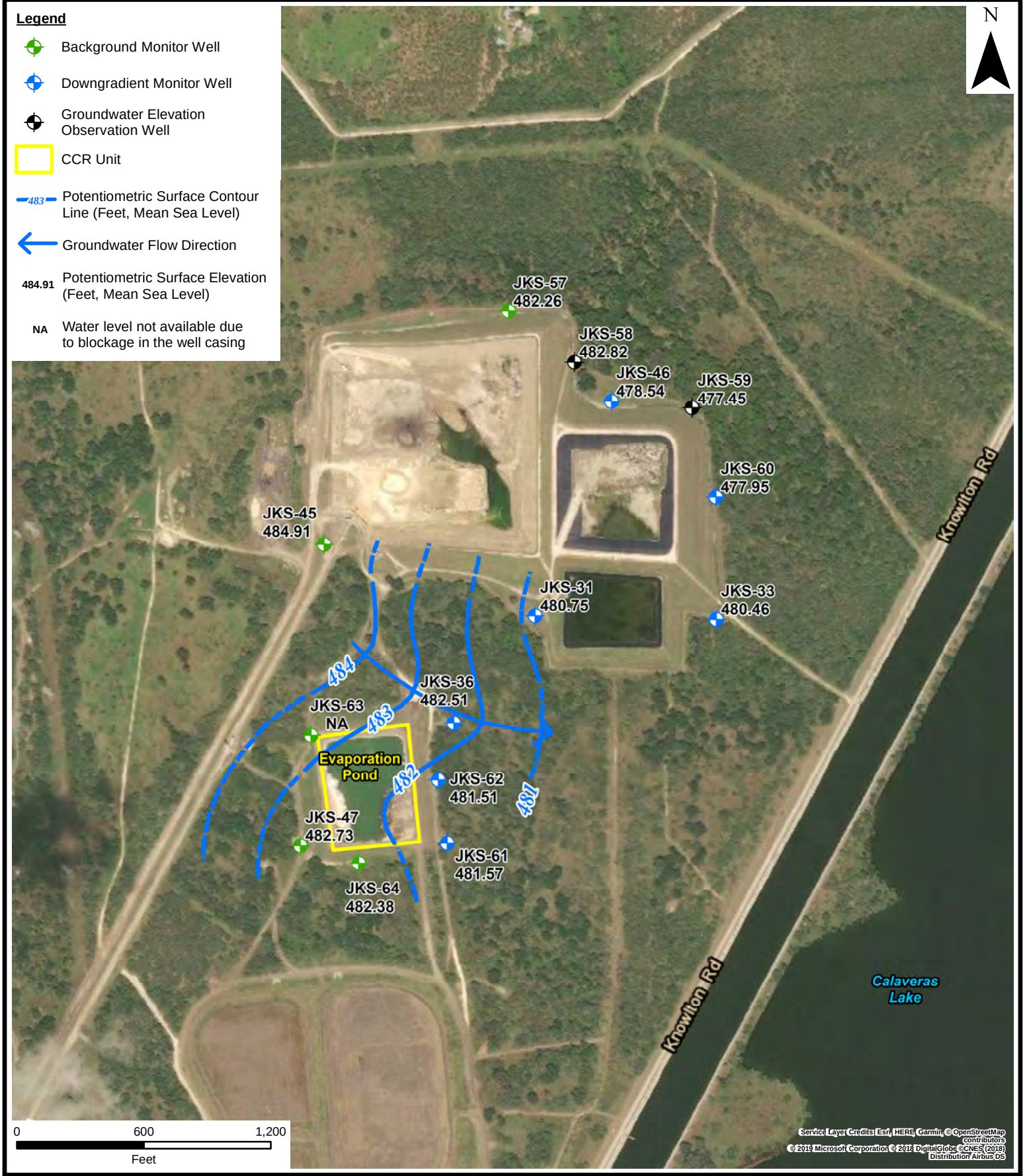
Environmental Resources Management

DESIGN:	NH	DRAWN:	EFC	CHKD.:	WZ
DATE:	1/8/2018	SCALE:	AS SHOWN	REVISION:	0

P:\Projects\0337367 CPS Energy CCR GW Investigation.WZ\Eight Background Sampling Events\GIS\MXD\2017_CAR\0337367_CPSCalv_WellsLocs.mxd

FIGURE 1
CCR WELL NETWORK LOCATION MAP
CPS Energy - Calaveras Power Station
San Antonio, Texas

ERM



Environmental Resources Management

DESIGN:	NH	DRAWN:	EFC	CHKD.:	WZ
DATE:	1/14/2019	SCALE:	AS SHOWN	REVISION:	1

P:\Projects\0337367 CPS Energy CCR GW Investigation.WZ\Sampling Events\2016-17\GIS\MXD\2018\0337367_CPSCalv_pmapN_EvapPond_oct2018.mxd

FIGURE 2
POTENTIOMETRIC SURFACE MAP - OCTOBER 2018
Evaporation Pond CCR Unit
CPS Energy - Calaveras Power Station
San Antonio, Texas

ERM

Laboratory Data Packages

Appendix A

(*Data Packages Available Upon Request*)

Statistical Analysis Tables and Figures

Appendix B

APPENDIX B - TABLE 1
Kruskal-Wallis Test Comparisons of Upgradient Wells
Calaveras Power Station
Evaporation Pond

Analyte	N	Num Detects	Percent Detect	DF	KW Statistic	p-value	Conclusion	UPL Type
Boron	27	27	1	2	7.89	0.0193	Significant Difference	Intrawell
Calcium	28	28	1	2	23.7	<0.001	Significant Difference	Intrawell
Chloride	28	28	1	2	23.9	<0.001	Significant Difference	Intrawell
Fluoride	28	17	0.607142857	2	0.554	0.758	No Significant Difference	Interwell
pH	29	29	1	2	14.8	<0.001	Significant Difference	Intrawell
Sulfate	28	27	0.964285714	2	14.7	<0.001	Significant Difference	Intrawell
TDS	28	28	1	2	23.9	<0.001	Significant Difference	Intrawell

NOTES:

Non-detects were substituted with a value of half the detection limit for calculations
N: number of data points
DF: degrees of freedom
statistic: Kruskal Wallis test statistic
p-value: P-values below 0.05 indicate that the median concentrations in the upgradient wells are significantly different from each other and the upgradient wells should not be pooled.
p-value: P-values equal or above 0.05 indicate that the median concentrations in the upgradient wells are not significantly different from each other and the upgradient wells can be pooled.

APPENDIX B - TABLE 2
Descriptive Statistics for Upgradient Wells
Calaveras Power Station
Evaporation Pond

Analyte	Well	Units	N	Num Detects	Percent Detect	Min ND	Max ND	Min Detect	Median	Mean	Max Detect	SD	CV	Distribution
Boron	JKS-47	mg/L	10	10	1			0.696	0.82	0.824	1.02	0.0818	0.09935659	Lognormal
Boron	JKS-63	mg/L	7	7	1			0.8	1.06	1.06	1.33	0.191	0.18042472	Normal
Boron	JKS-64	mg/L	10	10	1			0.805	0.838	0.888	1.14	0.101	0.11383919	NDD
Calcium	JKS-47	mg/L	10	10	1			26.2	62.4	68.4	168	38.7	0.56603305	Lognormal
Calcium	JKS-63	mg/L	8	8	1			174	836	773	1060	263	0.33942845	NDD
Calcium	JKS-64	mg/L	10	10	1			20.6	23.9	24	31.4	2.97	0.1234186	Lognormal
Chloride	JKS-47	mg/L	10	10	1			68.5	160	161	232	48.3	0.29938499	Normal
Chloride	JKS-63	mg/L	8	8	1			1160	1380	1490	1960	314	0.21124173	Normal
Chloride	JKS-64	mg/L	10	10	1			9.63	11.6	12.2	15.5	1.67	0.13700351	Normal
Fluoride	Pooled	mg/L	28	17	0.607142857	0.018	0.18	0.0573	0.132	0.152	0.382	0.127	0.83506979	NDD
pH	JKS-47	SU	10	10	1			5.72	5.84	5.85	6	0.0901	0.01540992	Normal
pH	JKS-63	SU	9	9	1			5.35	5.64	5.68	5.88	0.164	0.028887	Normal
pH	JKS-64	SU	10	10	1			5.5	6.2	6.14	6.46	0.262	0.04269877	Normal
Sulfate	JKS-47	mg/L	10	10	1			171	264	262	369	52.6	0.20112162	Normal
Sulfate	JKS-63	mg/L	8	7	0.875	0.023	0.023	1820	1880	1680	2110	684	0.40759572	NDD
Sulfate	JKS-64	mg/L	10	10	1			164	173	177	196	9.95	0.05606834	Normal
TDS	JKS-47	mg/L	10	10	1			677	858	884	1170	153	0.17354263	Normal
TDS	JKS-63	mg/L	8	8	1			4760	5150	5330	6410	550	0.10312114	Normal
TDS	JKS-64	mg/L	10	10	1			463	574	561	611	42.2	0.07512335	Normal

NOTES:

Non-detects were substituted with a value of half the detection limit for calculations
Well = Pooled, indicates that the summary statistics were produced for the pooled upgradient wells based on the Kruskal-Wallis test (Table 1).
SU: Standard units
N: number of data points
ND: Non-detect
SD: Standard Deviation
CV: Coefficient of Variation (standard deviation divided by the mean)

APPENDIX B - TABLE 3
Potential Outliers in Upgradient Wells
Calaveras Power Station
Evaporation Pond

Well	Sample	Date	Analyte	Units	Detect	Concentration	UPL type	Distribution	Statistical Outlier	Visual Outlier	Normal Outlier	Log Statistical Outlier	Log Visual Outlier	Lognormal Outlier	Statistical and Visual Outlier	Notes	Final Outlier Determination
JKS-47	JKS 47565343-007	10/11/2017	Boron	mg/L	TRUE	1.02	Intrawell	Lognormal	X	X	X	X	X	X	0		
JKS-64	JKS-64549681-009	3/29/2017	Boron	mg/L	TRUE	1.14	Intrawell	NDD	X	X	X		X		0		
JKS-47	JKS-47549681-004	3/29/2017	Calcium	mg/L	TRUE	168	Intrawell	Lognormal	X	X	X		X				
JKS-63	JKS-63552352-009	5/3/2017	Calcium	mg/L	TRUE	1060	Intrawell	NDD		X							
JKS-64	JKS-64549681-009	3/29/2017	Calcium	mg/L	TRUE	31.4	Intrawell	Lognormal	X	X	X	X	X	X	0		
JKS-64	WELL 64581537-004	4/5/2018	Chloride	mg/L	TRUE	14.2	Intrawell	Normal		X			X				
JKS-64	JKS 64603951-024	10/30/2018	Chloride	mg/L	TRUE	15.5	Intrawell	Normal		X			X				
JKS-64	JKS-64-WG-20170223	2/23/2017	pH	SU	TRUE	5.5	Intrawell	Normal	X	X	X	X	X	X	0		
JKS-47	JKS-47549681-004	3/29/2017	Sulfate	mg/L	TRUE	369	Intrawell	Normal		X			X				

NOTES:

NDD: No Discernible Distribution
SU: Standard units
Outer tests were performed on detected data only.
Statistical outliers were determined using a Dixon's test for N < 25 and with Rosner's test for N > 25.
Visual outliers were identified if they fall above the confidence envelope on the QQ plot.
Data points were considered potential outliers if they were both statistical and visual outliers.
NDD wells had data points considered as potential outliers if they were either a normal or lognormal outlier.
[Blank] data distribution indicates that the well data did not have enough detected data points for outlier analysis.
Lognormally distributed data was first log-transformed before visual and statistical outlier tests were performed.
Normal data distribution indicates that the well data was directly used for statistical and visual outlier tests.
NDD indicates that both the untransformed and transformed data were examined with statistical and visual outlier tests.
'0' indicates that the data point was a statistical and visual outlier but was retained after review by the hydrogeologist.

APPENDIX B - TABLE 4
Mann Kendall Test for Trends in Upgradient Wells
Calaveras Power Station
Evaporation Pond

Analyte	UPL Type	Well	N	Num Detects	Percent Detect	p-value	tau	Conclusion
Boron	Intrawell	JKS-47	10	10	1	0.727	0.111	Stable, No Trend
Boron	Intrawell	JKS-63	7	7	1			Insufficient Data
Boron	Intrawell	JKS-64	10	10	1	0.151	-0.36	Stable, No Trend
Calcium	Intrawell	JKS-47	10	10	1	0.862	0.0667	Stable, No Trend
Calcium	Intrawell	JKS-63	8	8	1	1	0	Stable, No Trend
Calcium	Intrawell	JKS-64	10	10	1	0.719	-0.0899	Stable, No Trend
Chloride	Intrawell	JKS-47	10	10	1	1	0.0222	Stable, No Trend
Chloride	Intrawell	JKS-63	8	8	1	0.109	0.5	Stable, No Trend
Chloride	Intrawell	JKS-64	10	10	1	1	0	Stable, No Trend
Fluoride	Interwell	7, JKS-63, J	28	17	0.6071429	0.0382	-0.297	Decreasing Trend
pH	Intrawell	JKS-47	10	10	1	0.59	0.135	Stable, No Trend
pH	Intrawell	JKS-63	9	9	1	0.358	0.278	Stable, No Trend
pH	Intrawell	JKS-64	10	10	1	0.106	-0.405	Stable, No Trend
Sulfate	Intrawell	JKS-47	10	10	1	0.381	-0.244	Stable, No Trend
Sulfate	Intrawell	JKS-63	8	7	0.875			Insufficient Data
Sulfate	Intrawell	JKS-64	10	10	1	0.719	0.0899	Stable, No Trend
TDS	Intrawell	JKS-47	10	10	1	0.0466	-0.511	Decreasing Trend
TDS	Intrawell	JKS-63	8	8	1	0.72	0.143	Stable, No Trend
TDS	Intrawell	JKS-64	10	10	1	0.00469	-0.689	Decreasing Trend

NOTES:

Non-detects were substituted with a value of zero for trend calculations
N: number of data points
tau: Kendall's tau statistic
p-value: A two-sided p-value describing the probability of the H0 being true (a=0.05)
Trend tests were performed on all upgradient data, only if the dataset met the minimum data quality criteria (ERM 2017).

APPENDIX B - TABLE 5
Calculated UPLs for Upgradient Datasets
Calaveras Power Station
Evaporation Pond

Analyte	UPL Type	Trend	Well	N	Num Detects	Percent Detects	LPL	UPL	Units	ND Adjustment	Transformation	Alpha	Method	Final LPL	Final UPL	Notes
Boron	Intrawell	Stable, No Trend	JKS-47	10	10	1		0.977	mg/L	None	No	0.00584	Param Intra 1 of 2			
Boron	Intrawell	Insufficient Data	JKS-63	7	7	1		1.33	mg/L				<8 Detects, Max Detect used		X	
Boron	Intrawell	Stable, No Trend	JKS-64	10	10	1		1.08	mg/L	None	ln(x)	0.00584	Param Intra 1 of 2			
Calcium	Intrawell	Stable, No Trend	JKS-47	10	10	1		153	mg/L	None	ln(x)	0.00584	Param Intra 1 of 2			
Calcium	Intrawell	Stable, No Trend	JKS-63	8	8	1		1310	mg/L	None	No	0.00584	Param Intra 1 of 2		X	
Calcium	Intrawell	Stable, No Trend	JKS-64	10	10	1		29.6	mg/L	None	No	0.00584	Param Intra 1 of 2			
Chloride	Intrawell	Stable, No Trend	JKS-47	10	10	1		252	mg/L	None	No	0.00584	Param Intra 1 of 2			
Chloride	Intrawell	Stable, No Trend	JKS-63	8	8	1		2120	mg/L	None	No	0.00584	Param Intra 1 of 2		X	
Chloride	Intrawell	Stable, No Trend	JKS-64	10	10	1		15.3	mg/L	None	No	0.00584	Param Intra 1 of 2			
Fluoride	Interwell	Decreasing Trend	JKS-47, JKS-63, JKS-64	28	17	0.607143		0.271	mg/L	None	No	0.00232	NP Detrended UPL		X	
pH	Intrawell	Stable, No Trend	JKS-47	10	10	1	5.68	6.02	SU	None	No	0.00292	Param Intra 1 of 2			
pH	Intrawell	Stable, No Trend	JKS-63	9	9	1	5.36	6	SU	None	No	0.00292	Param Intra 1 of 2	X		
pH	Intrawell	Stable, No Trend	JKS-64	10	10	1	5.65	6.63	SU	None	No	0.00292	Param Intra 1 of 2		X	
Sulfate	Intrawell	Stable, No Trend	JKS-47	10	10	1		360	mg/L	None	No	0.00584	Param Intra 1 of 2			
Sulfate	Intrawell	Insufficient Data	JKS-63	8	7	0.875		2110	mg/L				<8 Detects, Max Detect used		X	
Sulfate	Intrawell	Stable, No Trend	JKS-64	10	10	1		196	mg/L	None	No	0.00584	Param Intra 1 of 2			
TDS	Intrawell	Decreasing Trend	JKS-47	10	10	1		984	mg/L	None	No	0.00584	NP Detrended UPL			
TDS	Intrawell	Stable, No Trend	JKS-63	8	8	1		6450	mg/L	None	No	0.00584	Param Intra 1 of 2		X	
TDS	Intrawell	Decreasing Trend	JKS-64	10	10	1		556	mg/L	None	No	0.00584	NP Detrended UPL			

NOTES:

Non-detects were substituted with a value of half the detection limit for calculations
UPL: upper prediction limit
LPL: Lower prediction limit. These were only calculated for pH
UPLs were constructed with a site wide false positive rate of 0.1 and a 1 of 2 retesting.
UPLs were calculated using Sanitas Software.
SU: Standard units
NP: non parametric
RL: Reporting Limit
Intra: indicates an intrawell UPL was used
Inter: indicates an interwell UPL was used
In the case where multiple UPLs were calculated for an analyte, the maximum UPL was used as the final UPL.
In the case where multiple LPLs were calculated for an pH the minimum LPL was used as the final LPL.

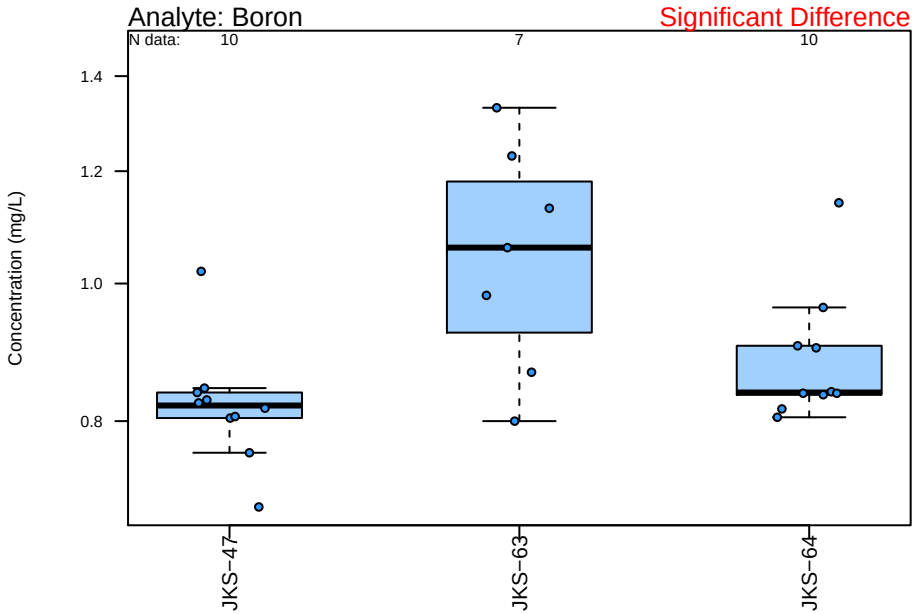
APPENDIX B - TABLE 6
Comparisons of Downgradient Wells to UPLs
Calaveras Power Station
Evaporation Pond

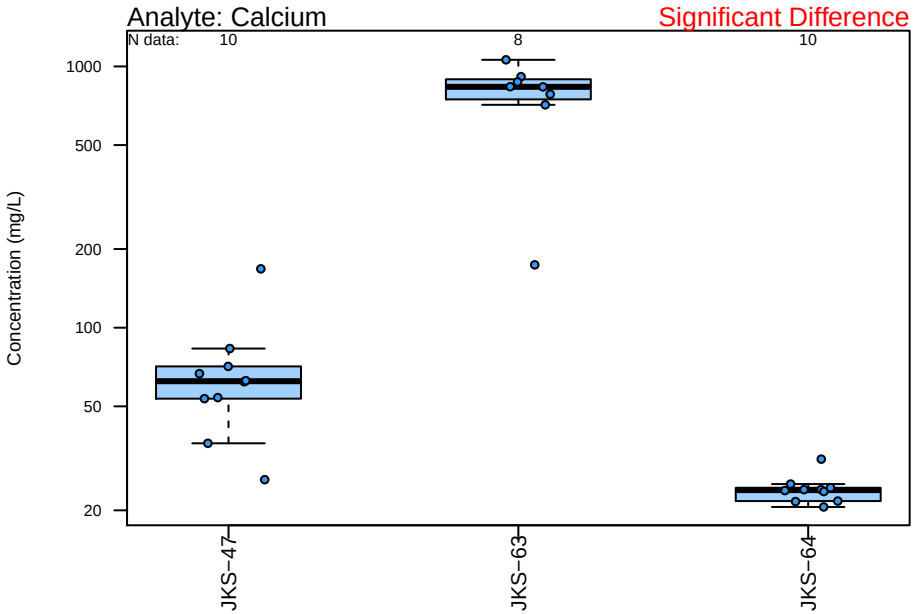
Analyte	Well	LPL	UPL	Units	Recent Date	Observation	Qualifier	Obs > UPL	Notes	Mann Kendall p-value	Mann Kendall tau
Boron	JKS-36		1.33	mg/L	10/30/2018	0.686					
Boron	JKS-61		1.33	mg/L	10/31/2018	3.25		X	Trend Test: Stable, No Trend	1	-0.0222
Boron	JKS-62		1.33	mg/L	10/30/2018	0.559					
Calcium	JKS-36		1310	mg/L	10/30/2018	311					
Calcium	JKS-61		1310	mg/L	10/31/2018	197					
Calcium	JKS-62		1310	mg/L	10/30/2018	161					
Chloride	JKS-36		2120	mg/L	10/30/2018	313					
Chloride	JKS-61		2120	mg/L	10/31/2018	213					
Chloride	JKS-62		2120	mg/L	10/30/2018	279					
Fluoride	JKS-36		0.271	mg/L	10/30/2018	1.47		X	Trend Test: Increasing Trend	0.0167	0.6
Fluoride	JKS-61		0.271	mg/L	10/31/2018	0.43		X	Trend Test: Stable, No Trend	0.281	-0.27
Fluoride	JKS-62		0.271	mg/L	10/30/2018	0.309		X	Trend Test: Stable, No Trend	0.216	-0.333
pH	JKS-36	5.36	6.63	SU	10/30/2018	3.61		X	Trend Test: Decreasing Trend	0.0286	-0.556
pH	JKS-61	5.36	6.63	SU	10/30/2018	6.38					
pH	JKS-62	5.36	6.63	SU	10/30/2018	6.58					
Sulfate	JKS-36		2110	mg/L	10/30/2018	946					
Sulfate	JKS-61		2110	mg/L	10/31/2018	548					
Sulfate	JKS-62		2110	mg/L	10/30/2018	183					
TDS	JKS-36		6450	mg/L	10/30/2018	1630					
TDS	JKS-61		6450	mg/L	10/31/2018	514					
TDS	JKS-62		6450	mg/L	10/30/2018	956					

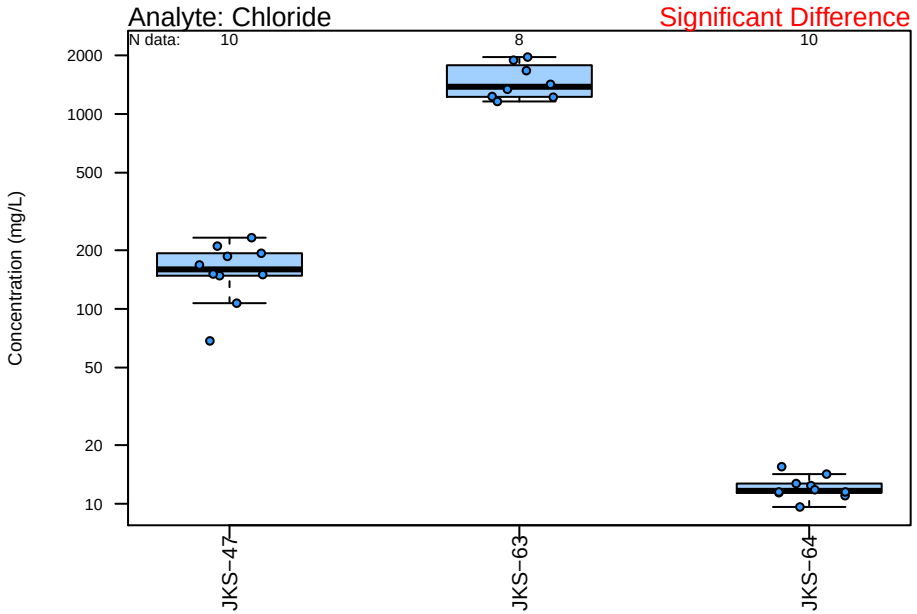
NOTES:

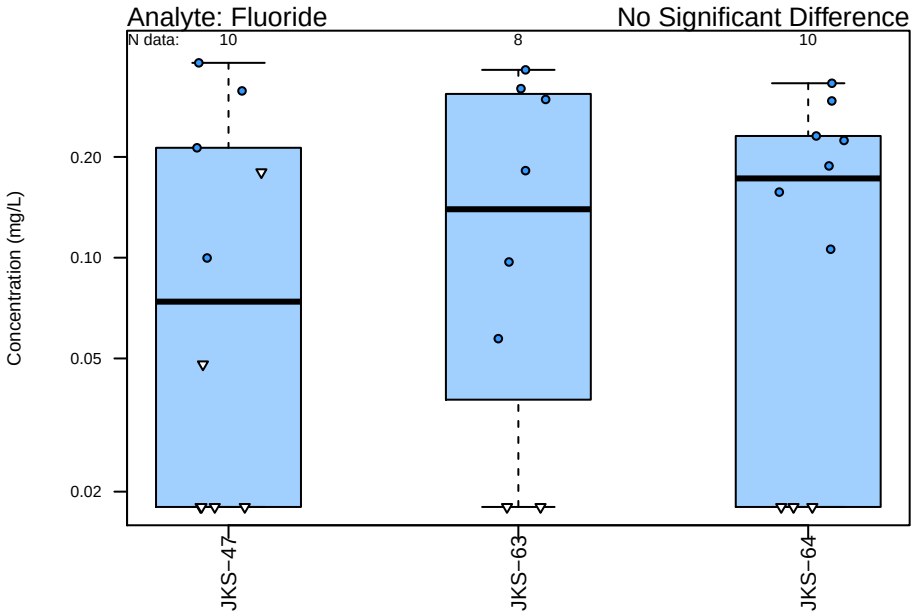
Non-detects were substituted with a value of zero for trend calculations
UPL: Upper Prediction Limit
ND: Not detected
SU: Standard units
tau: Kendall's tau statistic
p-value: A two-sided p-value describing the probability of the H0 being true (a=0.05)
Exceed 'X' indicates that the most recent observed value is higher than the UPL (or out of range of the LPL and UPL in the case of pH.)
Exceed 'X0' indicates that the two most recent values are higher than the UPL, but the upgradient well is 100% ND.
Exceed '0' indicated that the most recent observed value is higher than the UPL, but is not scored as an SSI due to Double Quantification Rule (ERM 2017).

Appendix B − Figure 1
Unit: Evaporation Pond
Boxplots of Upgradient Wells

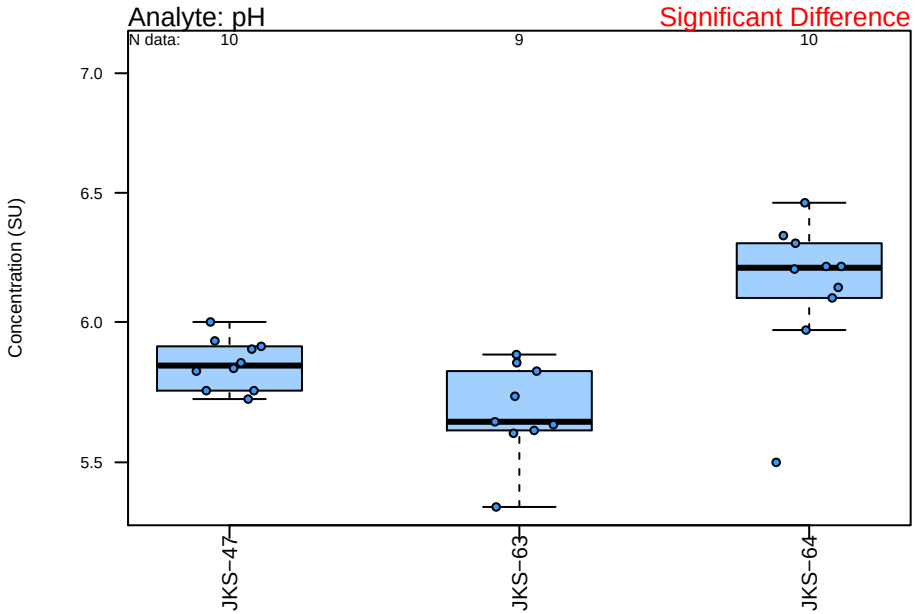


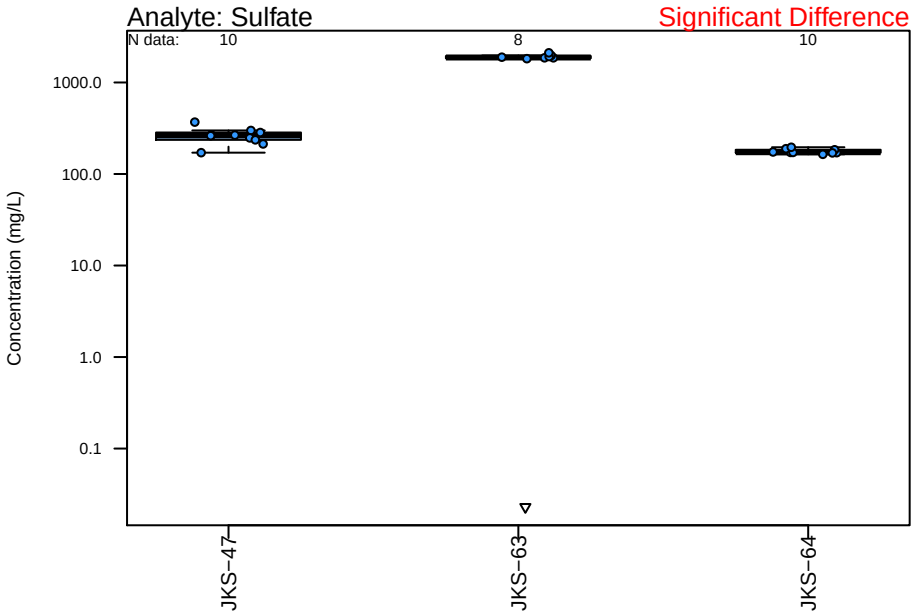


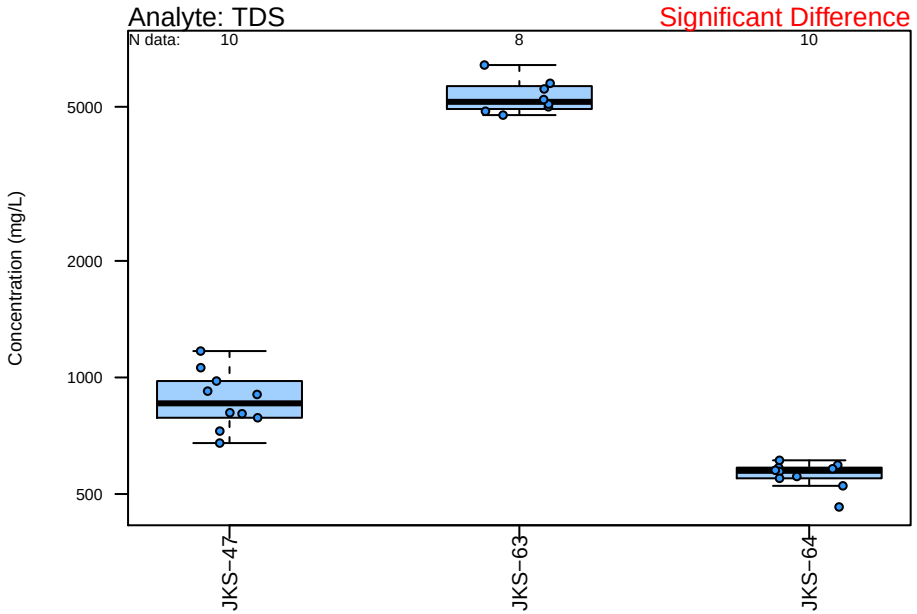




Appendix B − Figure 1
Unit: Evaporation Pond
Boxplots of Upgradient Wells







Appendix B − Figure 2
Unit: Evaporation Pond
QQ Plots of Upgradient Wells

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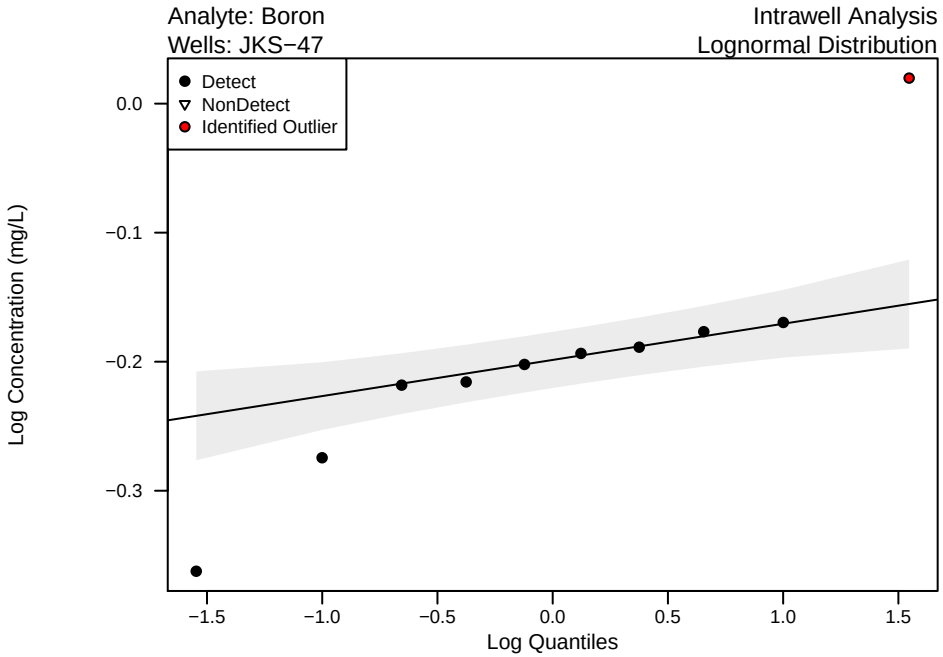
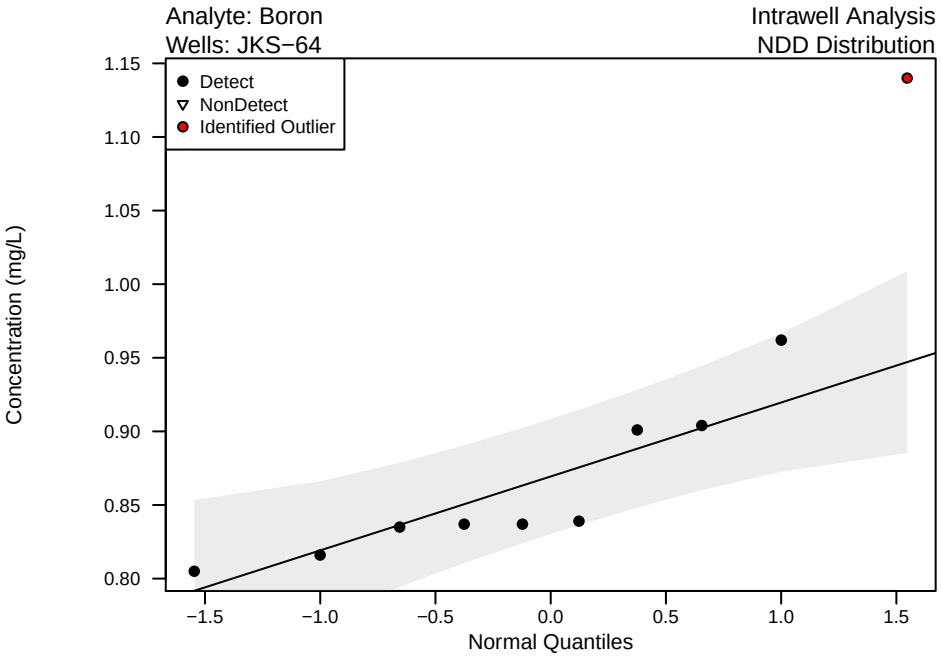
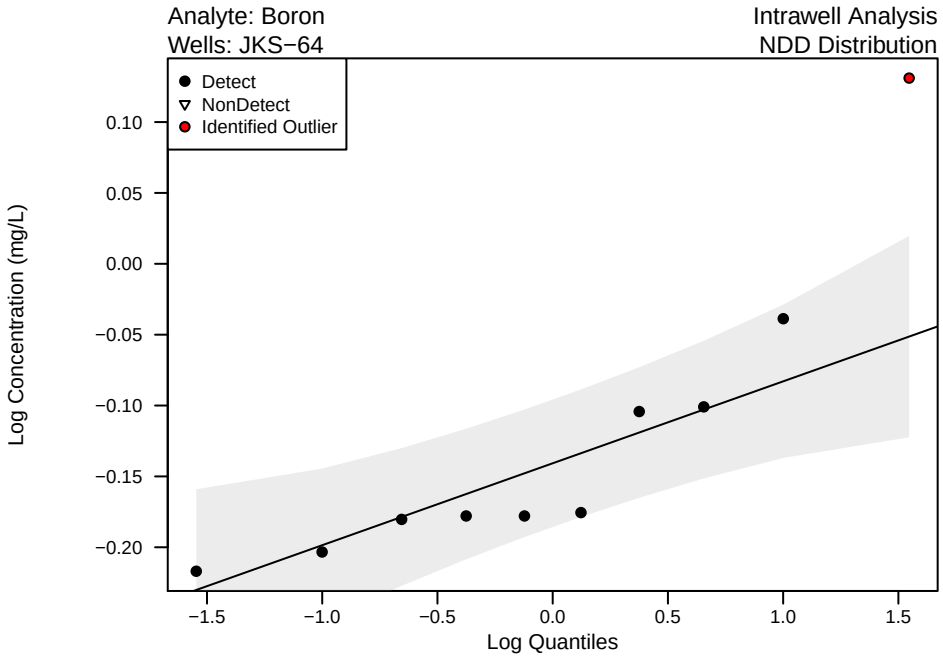
not Normal/NDD distribution.







Appendix B − Figure 2
Unit: Evaporation Pond
QQ Plots of Upgradient Wells

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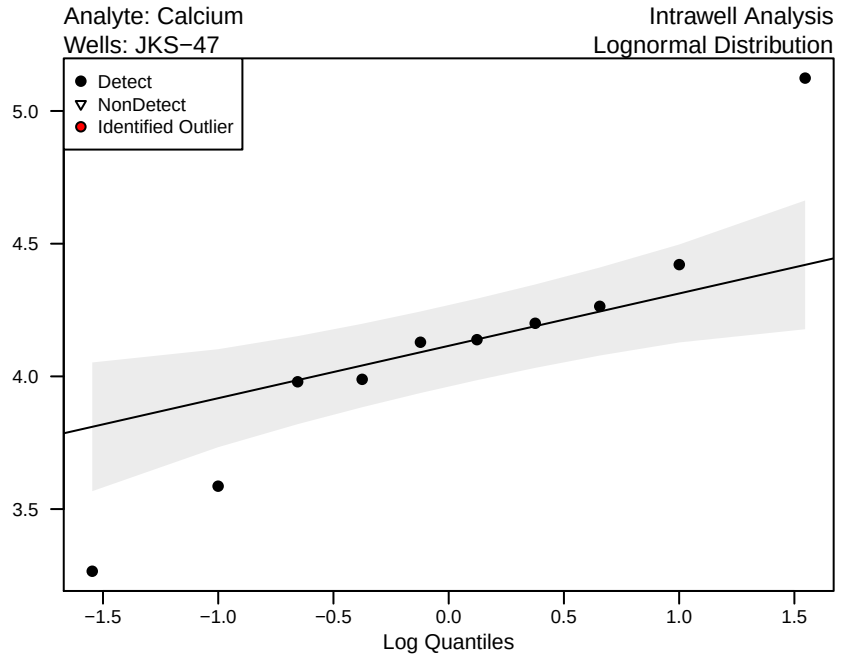
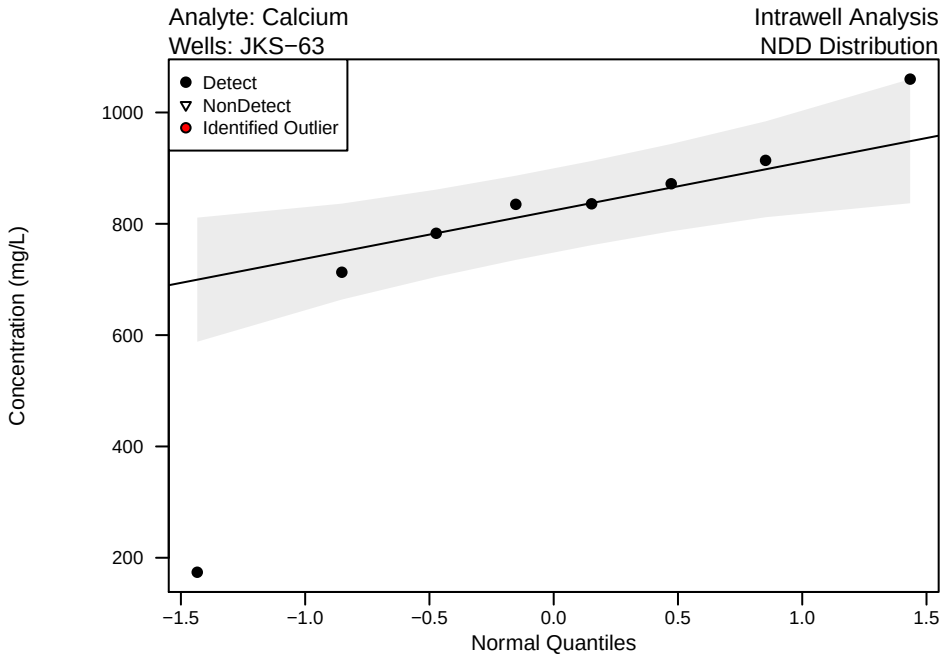
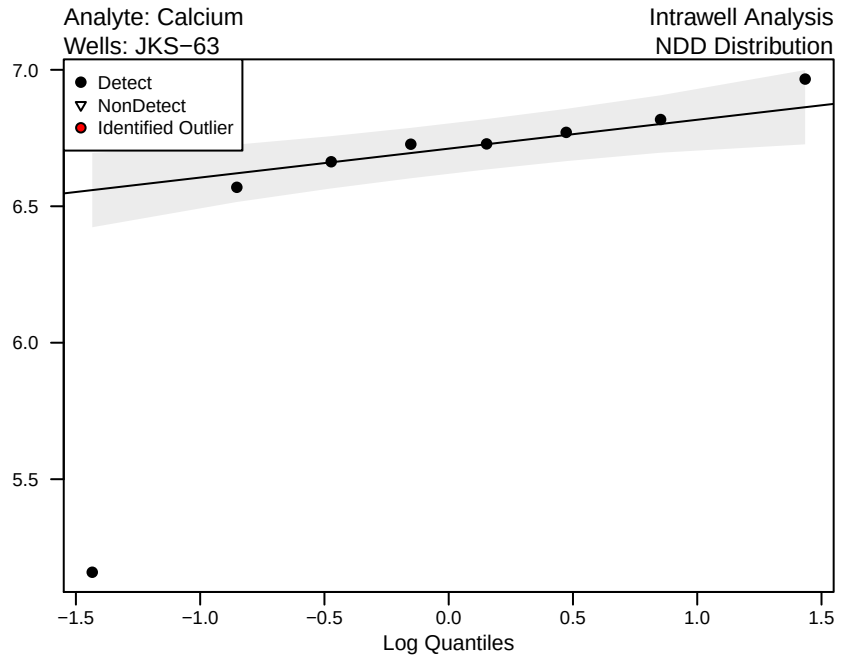
not Normal/NDD distribution.







Appendix B − Figure 2
Unit: Evaporation Pond
QQ Plots of Upgradient Wells

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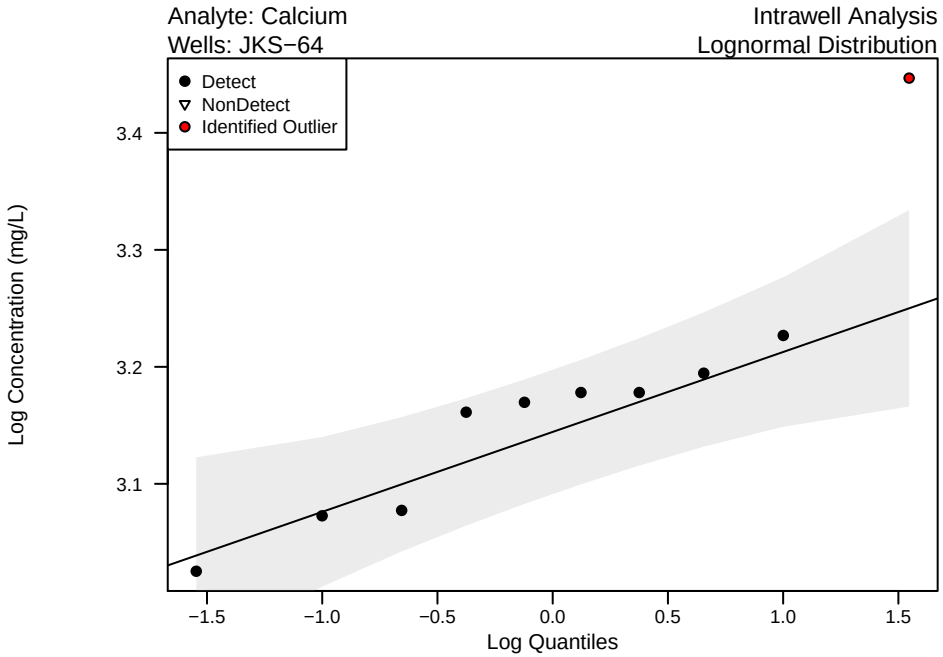
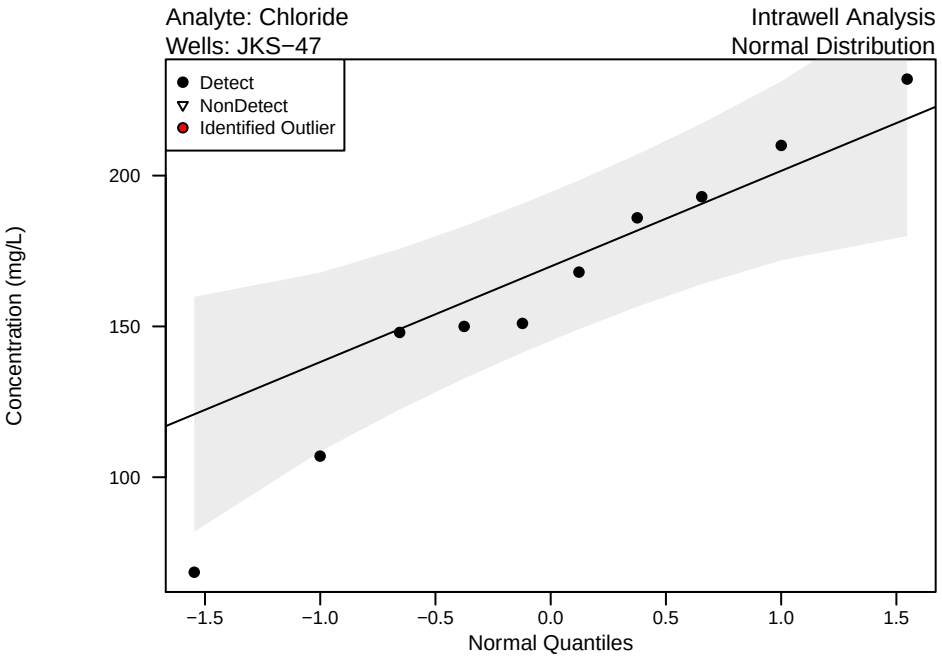
not Normal/NDD distribution.





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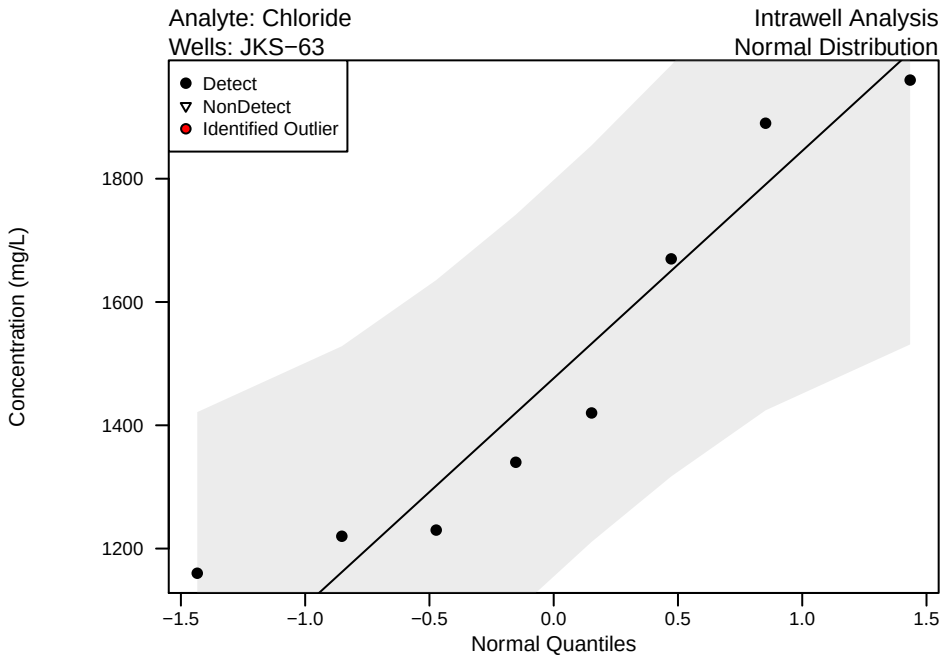
not Lognormal/NDD distribution.

Appendix B − Figure 2
Unit: Evaporation Pond
QQ Plots of Upgradient Wells



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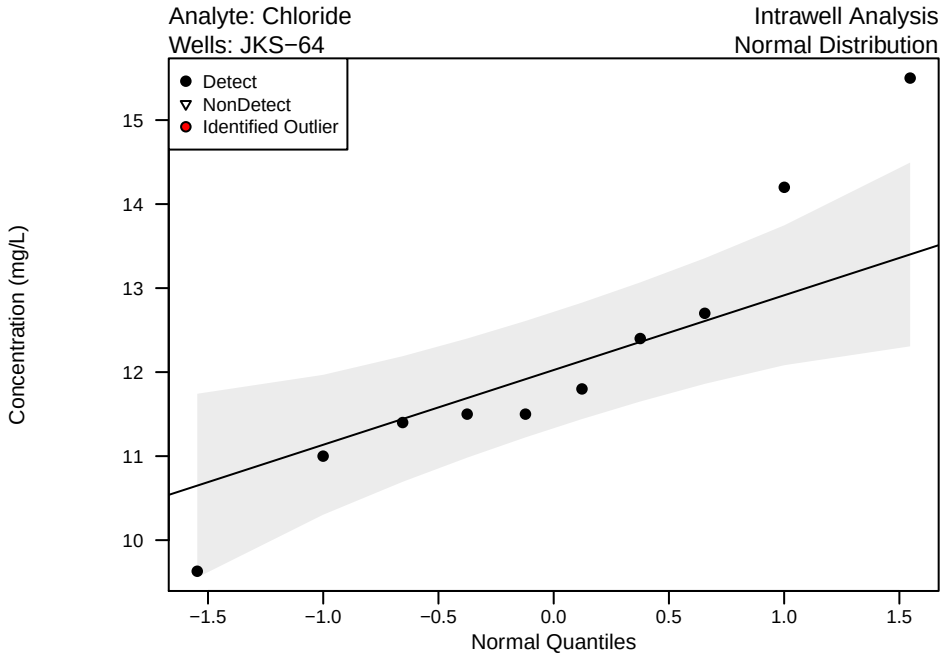

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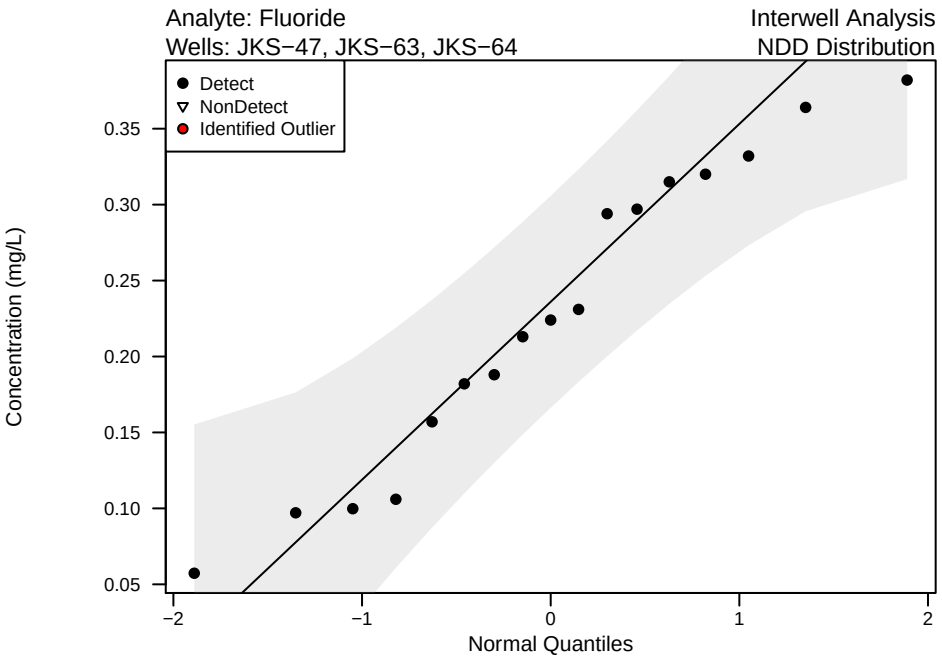
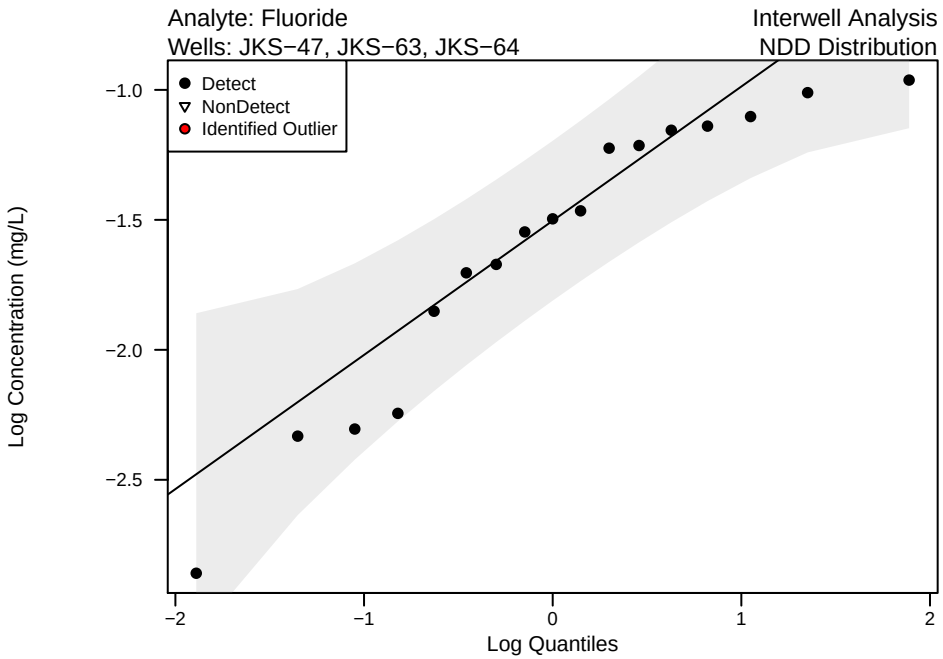
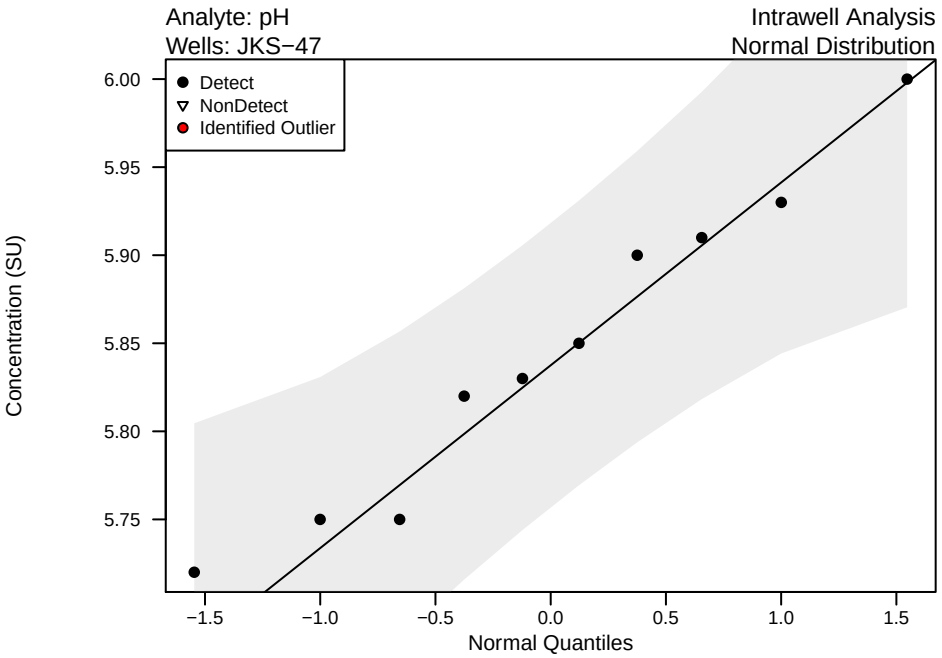
not Lognormal/NDD distribution.

Appendix B − Figure 2
Unit: Evaporation Pond
QQ Plots of Upgradient Wells







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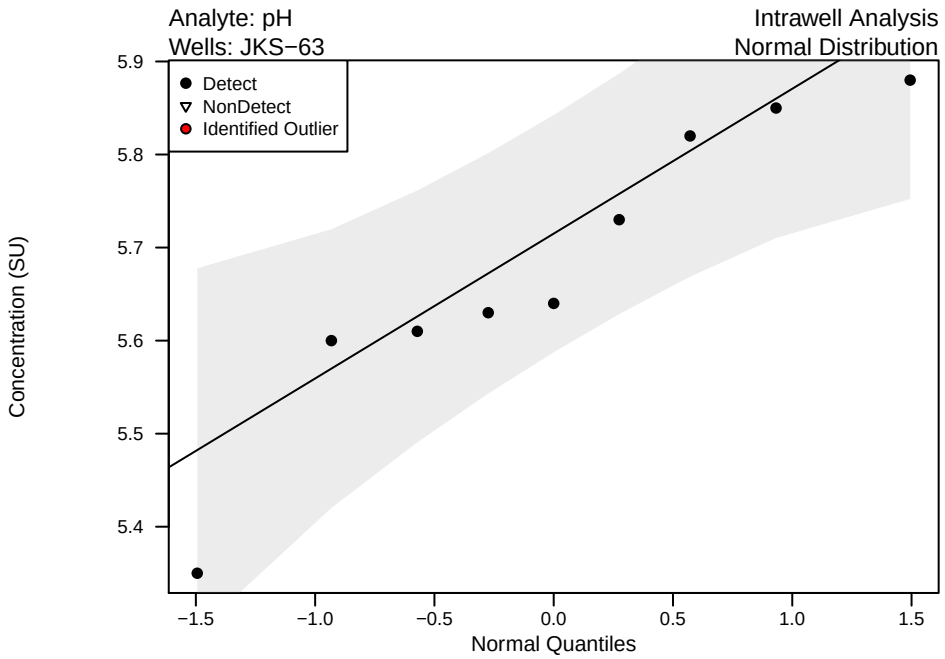
Appendix B − Figure 2
Unit: Evaporation Pond
QQ Plots of Upgradient Wells



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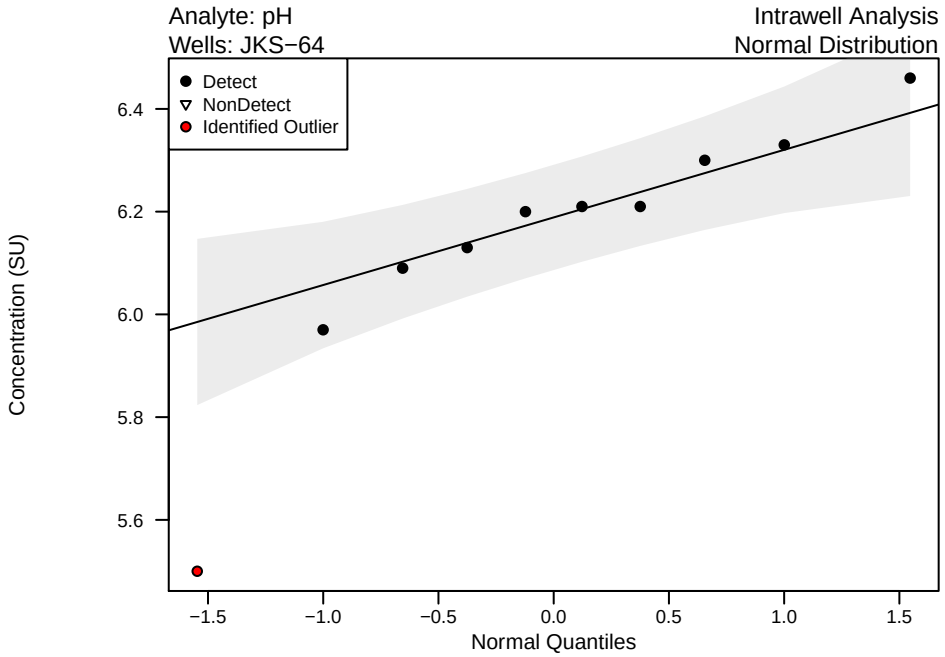

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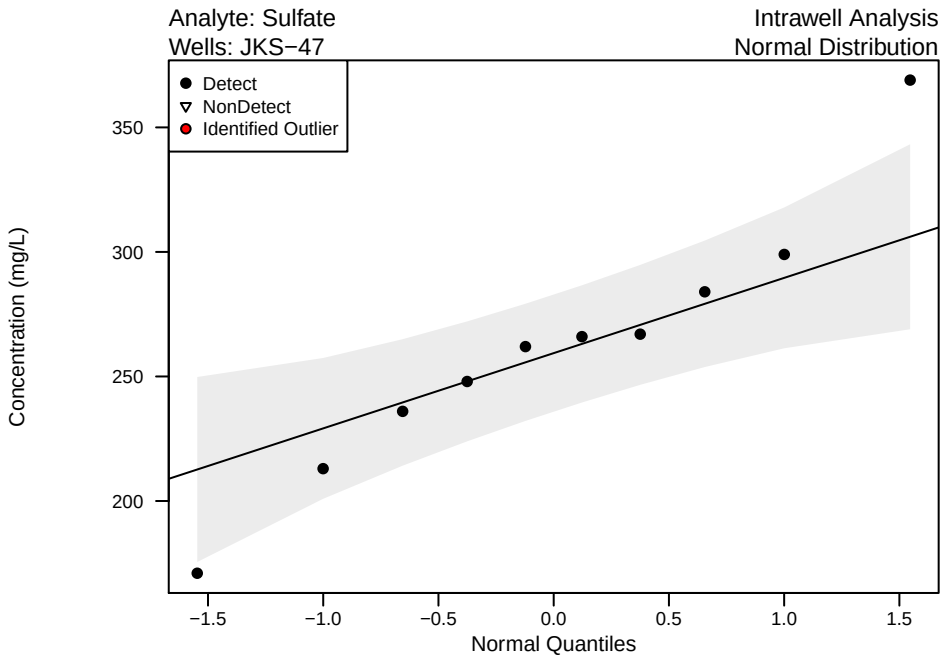
not Lognormal/NDD distribution.

Appendix B − Figure 2
Unit: Evaporation Pond
QQ Plots of Upgradient Wells



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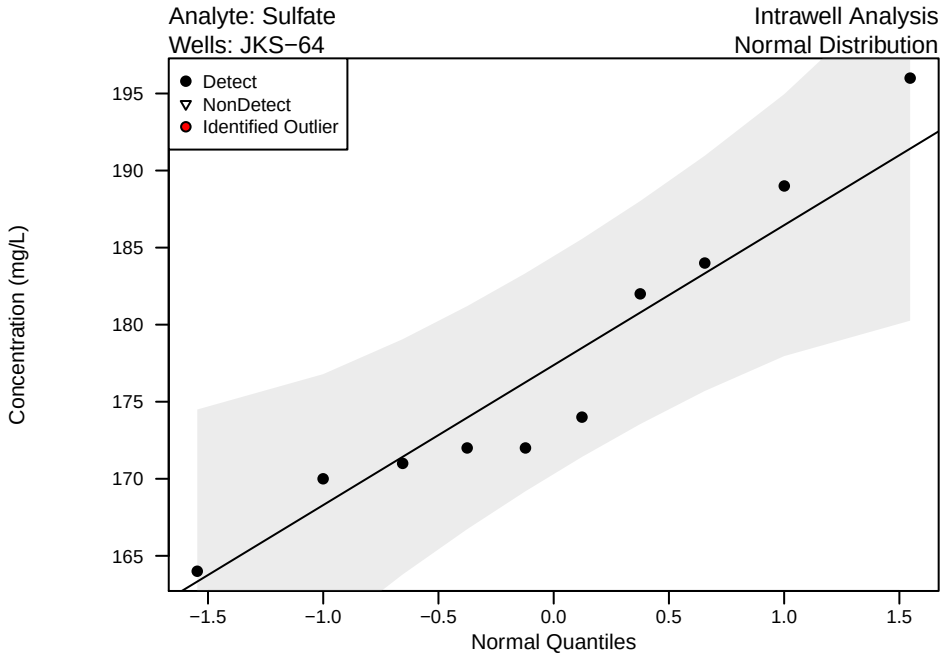

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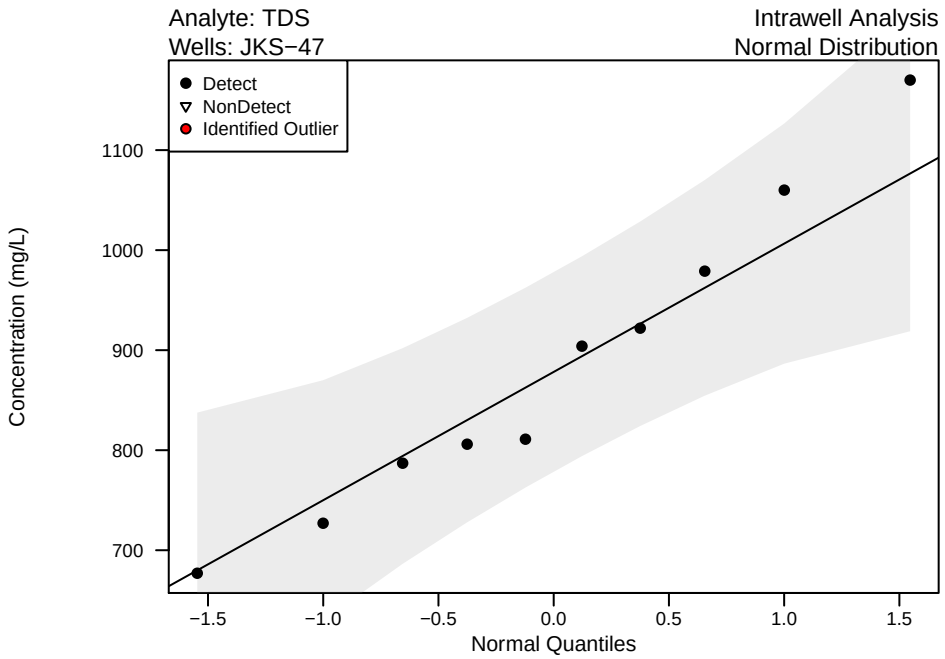
not Lognormal/NDD distribution.

Appendix B − Figure 2
Unit: Evaporation Pond
QQ Plots of Upgradient Wells



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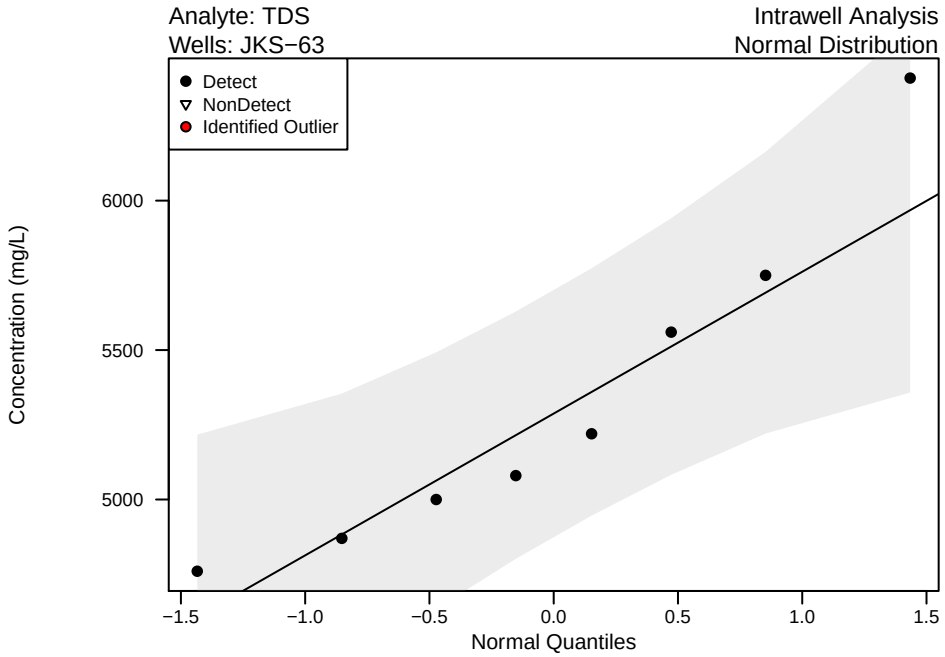

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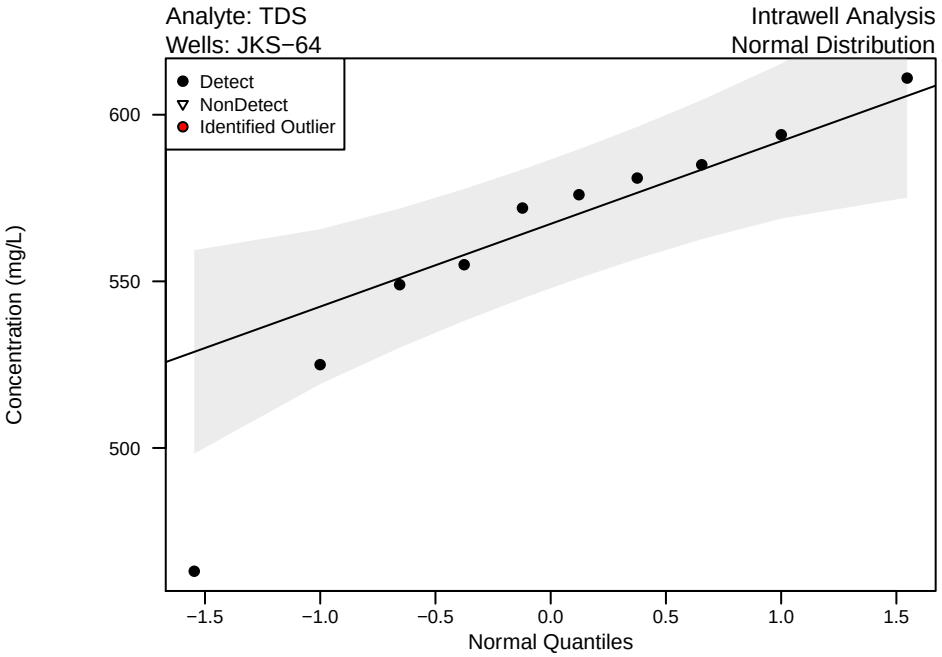
not Lognormal/NDD distribution.

Appendix B − Figure 2
Unit: Evaporation Pond
QQ Plots of Upgradient Wells



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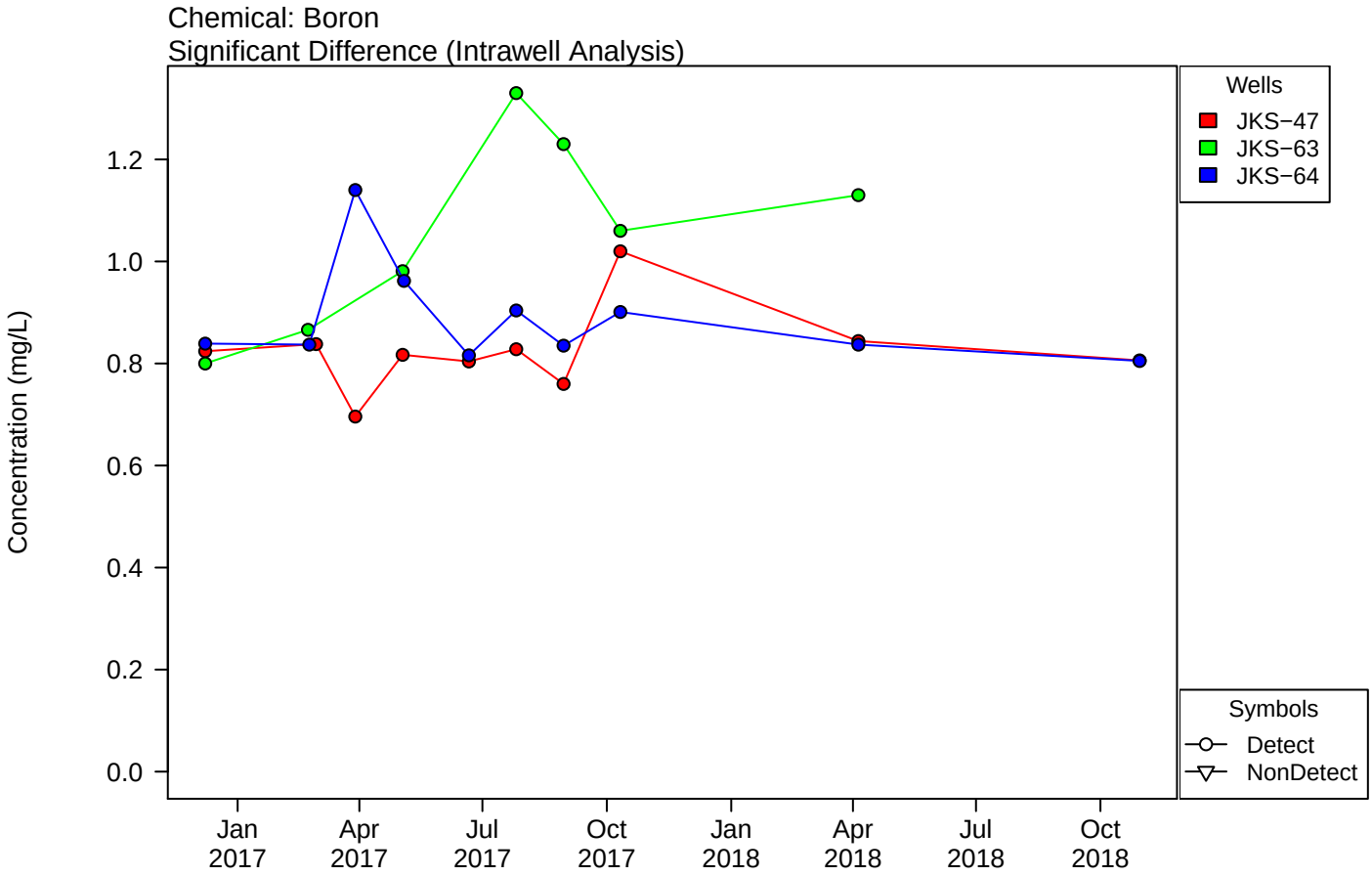
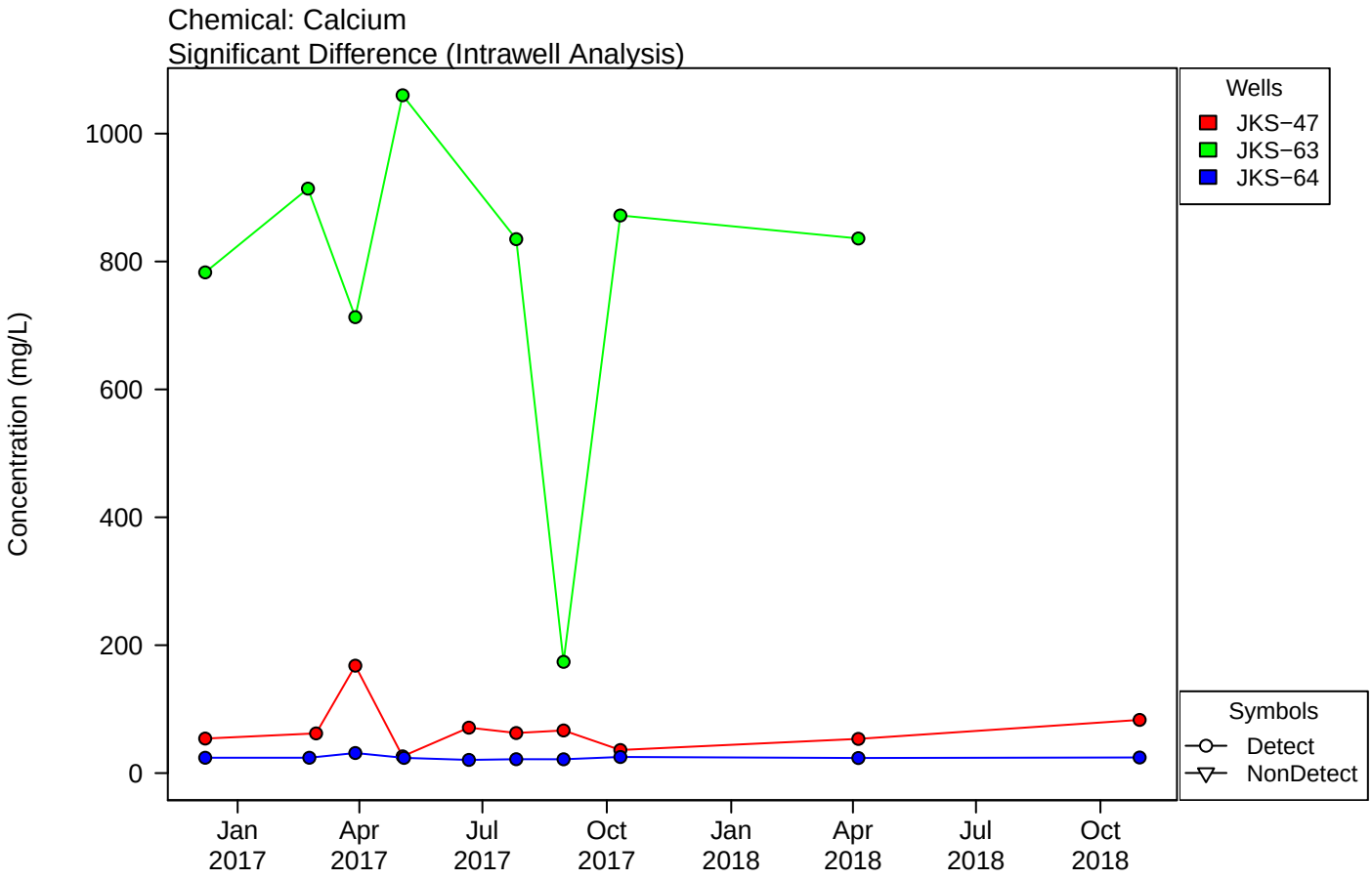
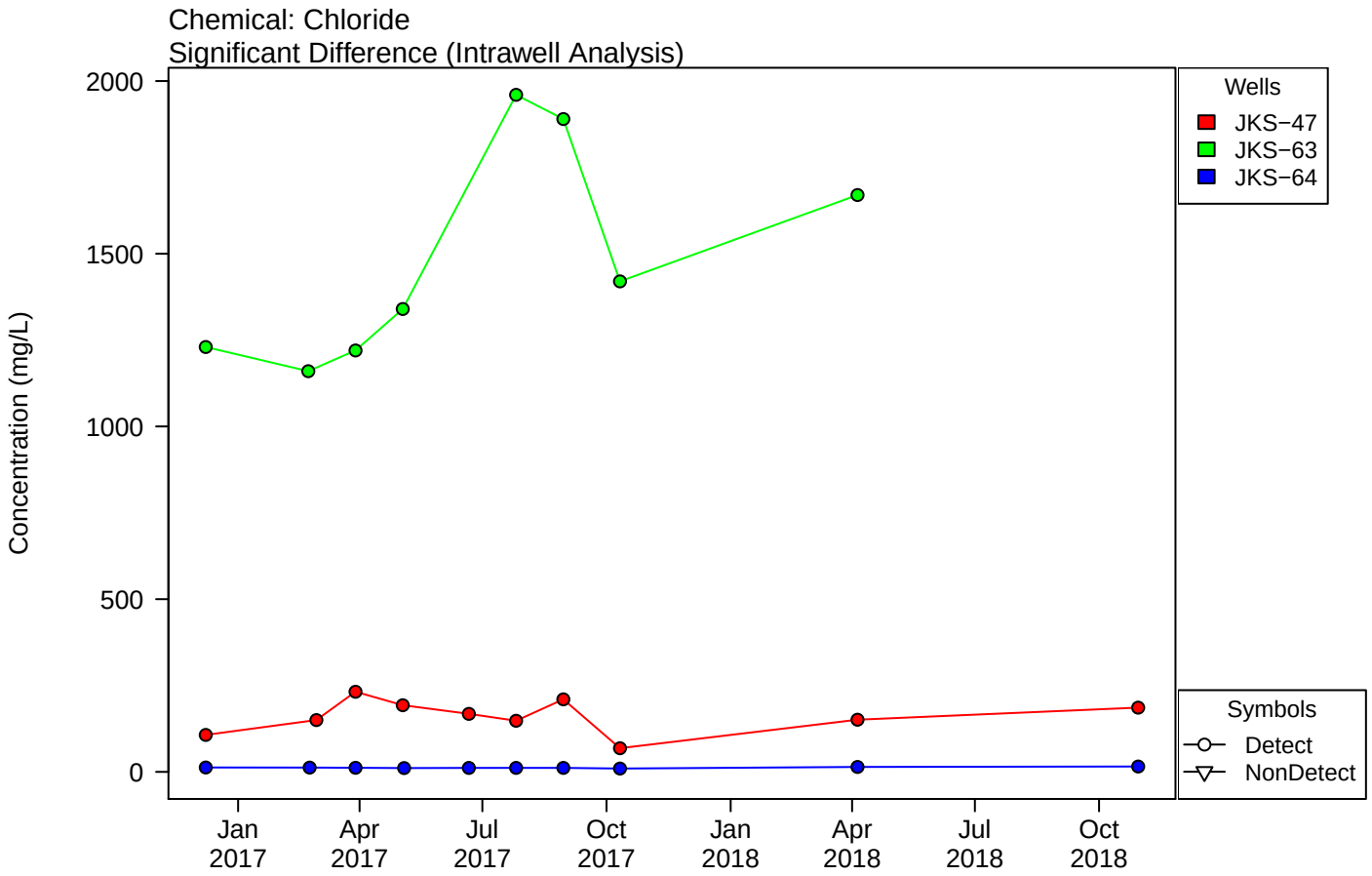
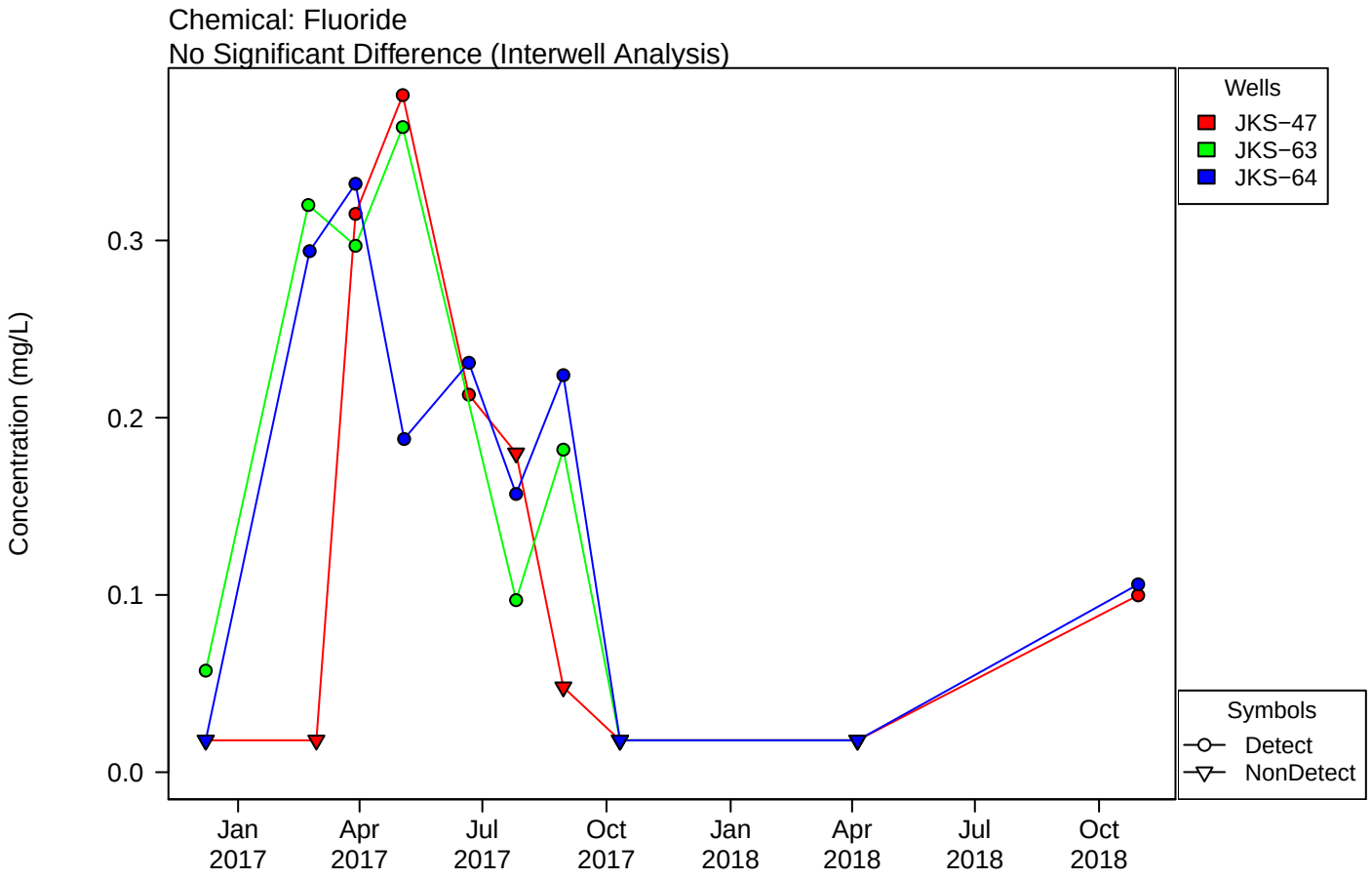
Appendix B − Figure 3
Unit: Evaporation Pond
Timeseries of Upgradient Wells



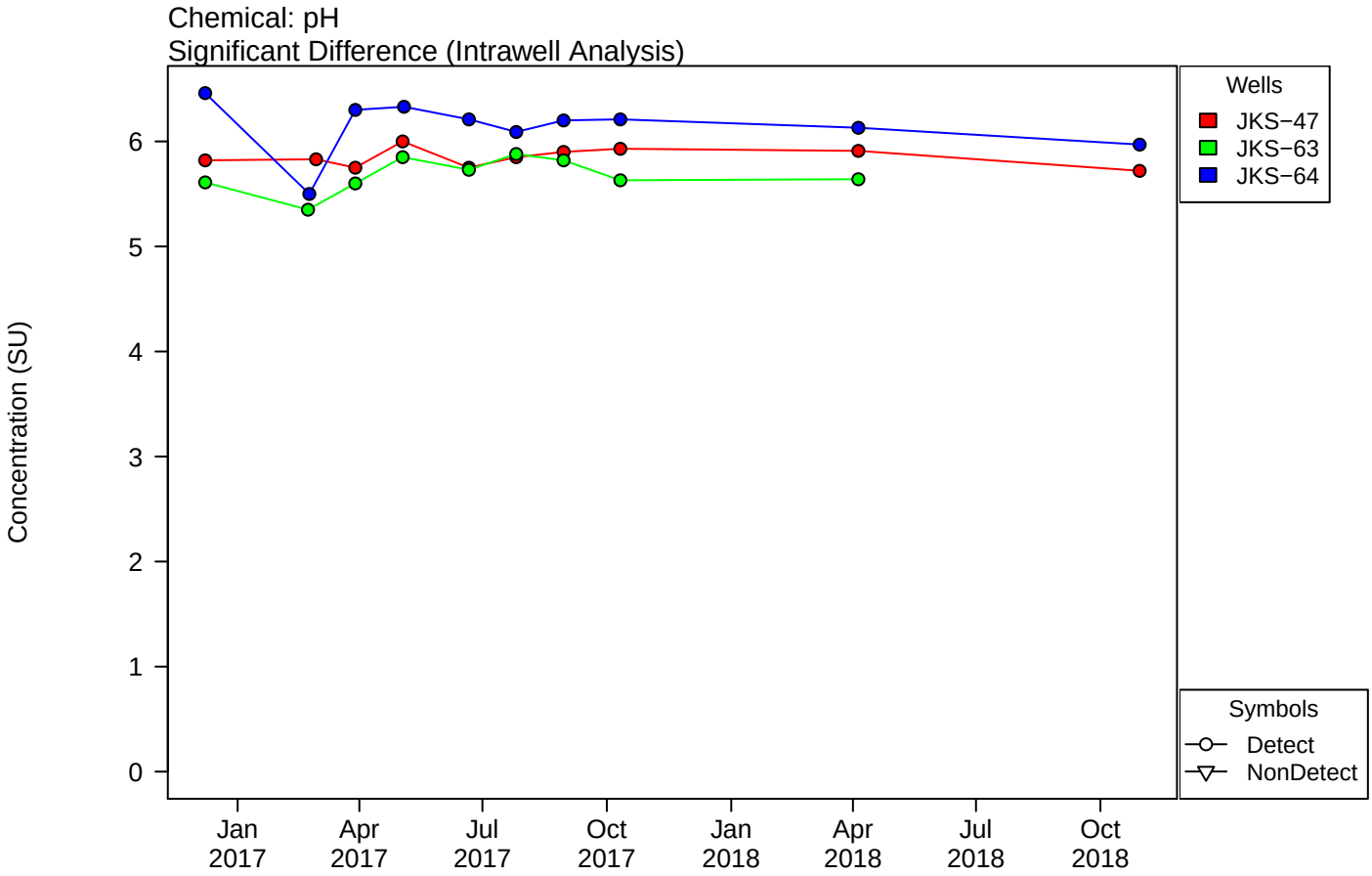


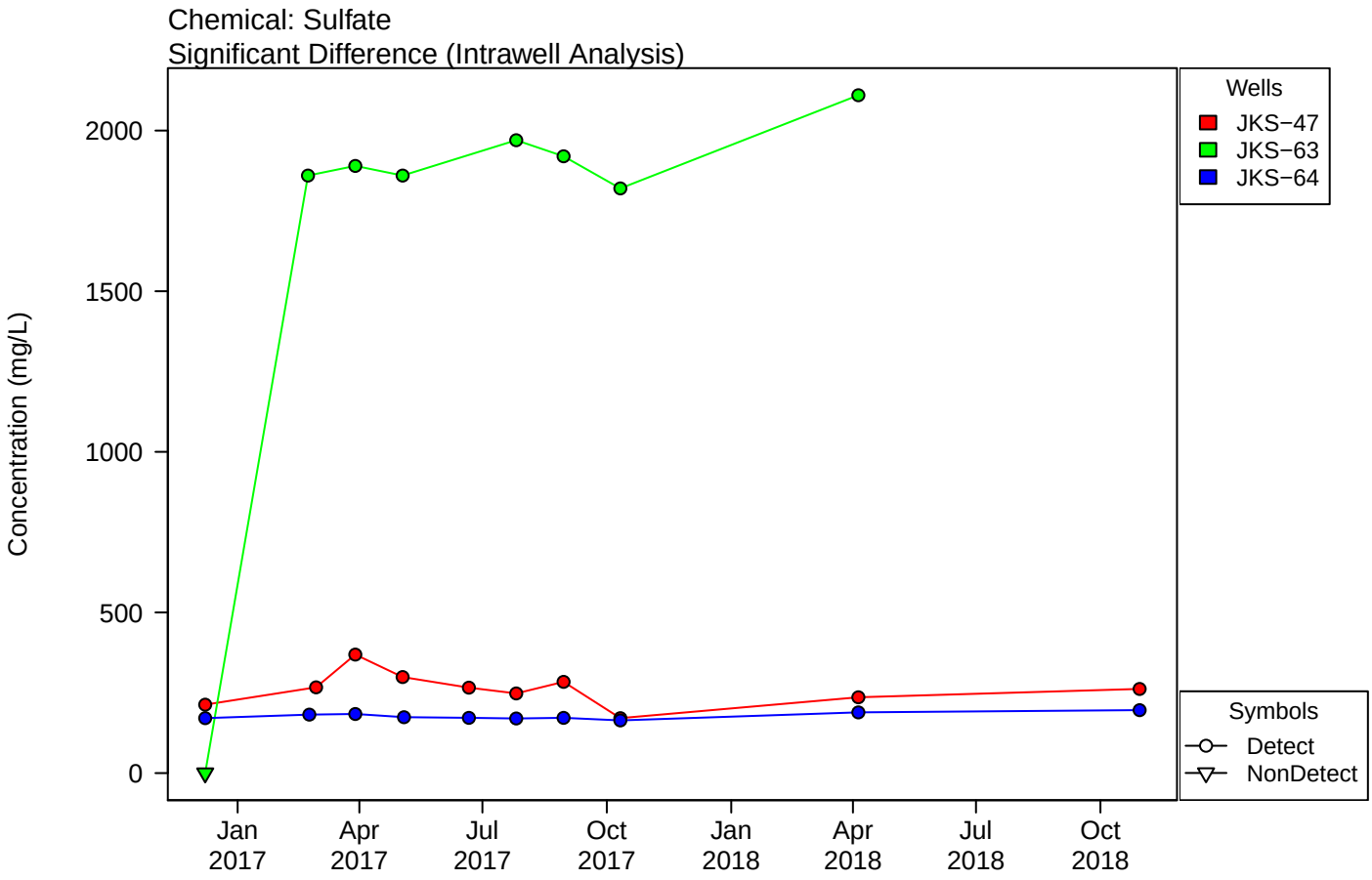
Appendix B − Figure 3
Unit: Evaporation Pond
Timeseries of Upgradient Wells





Appendix B − Figure 3
Unit: Evaporation Pond
Timeseries of Upgradient Wells





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Unit: Evaporation Pond
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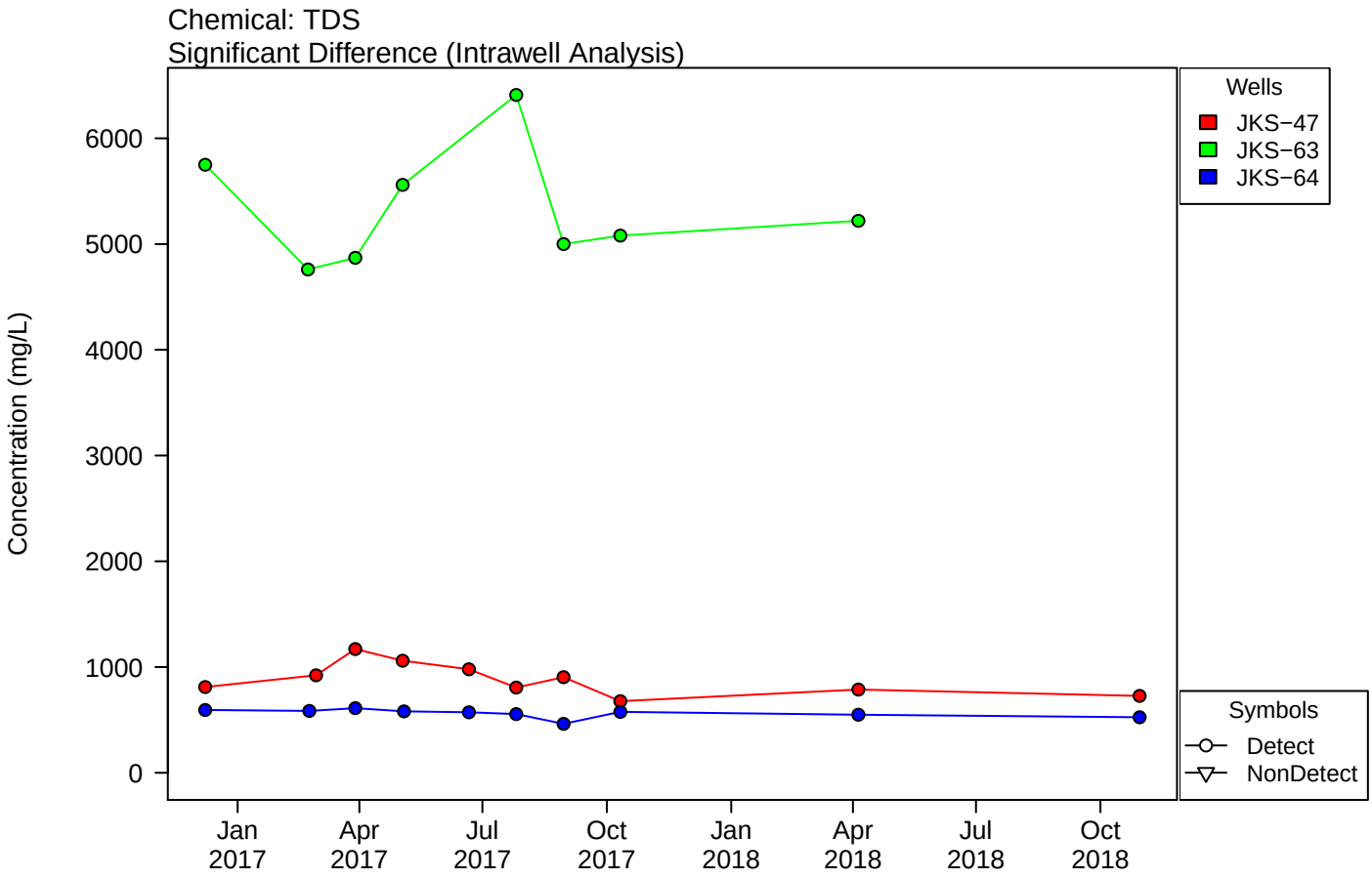
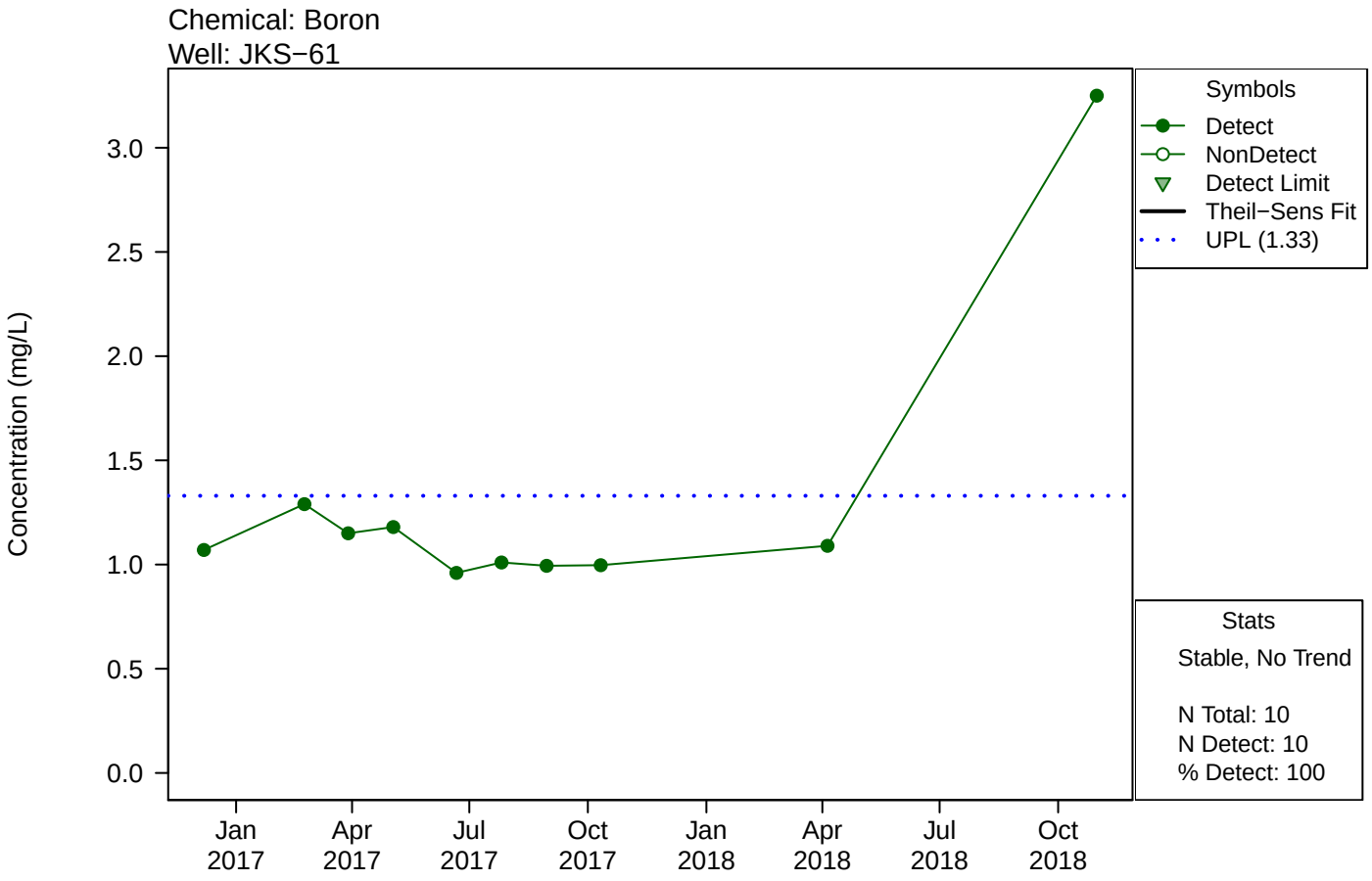
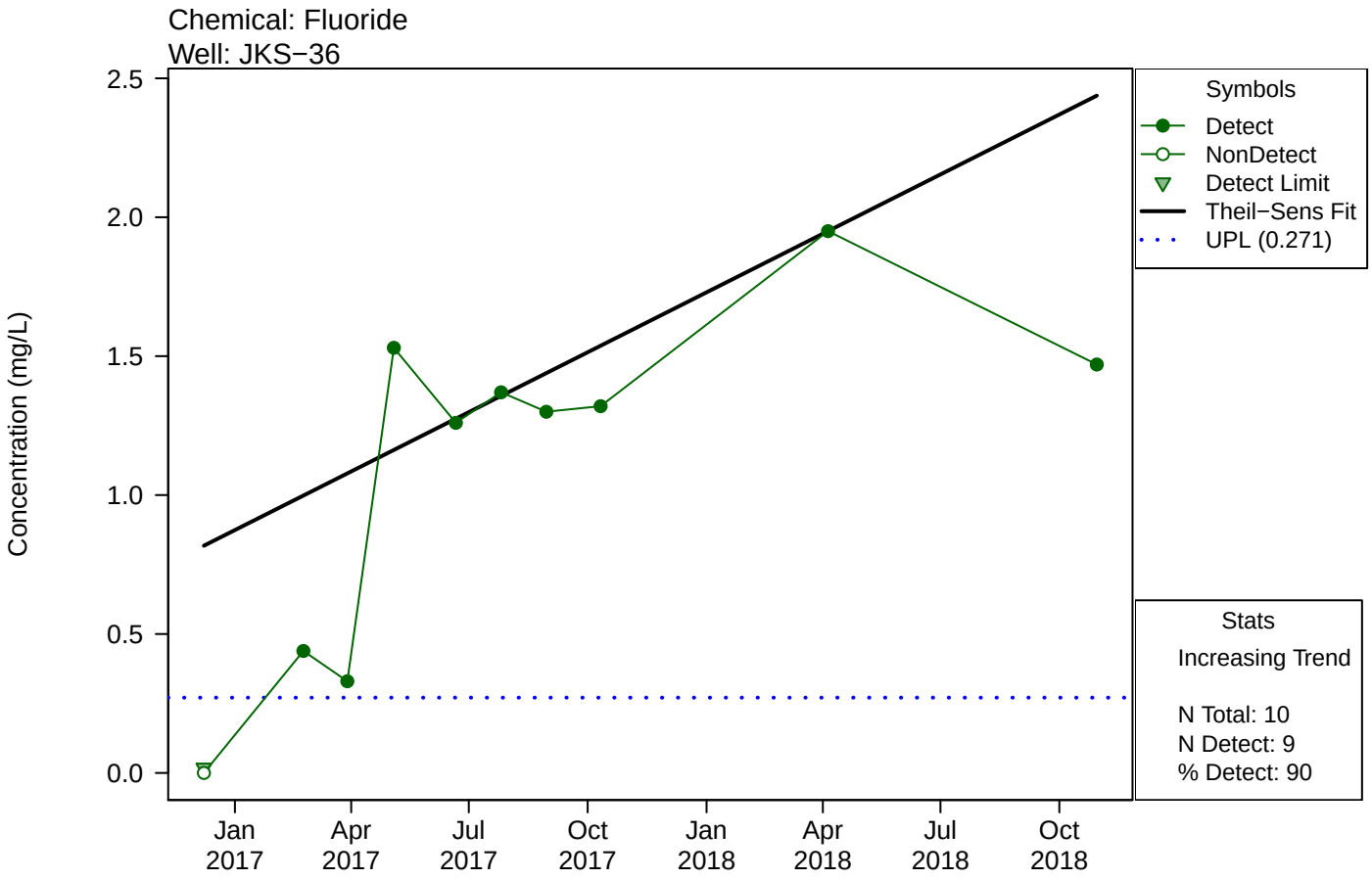
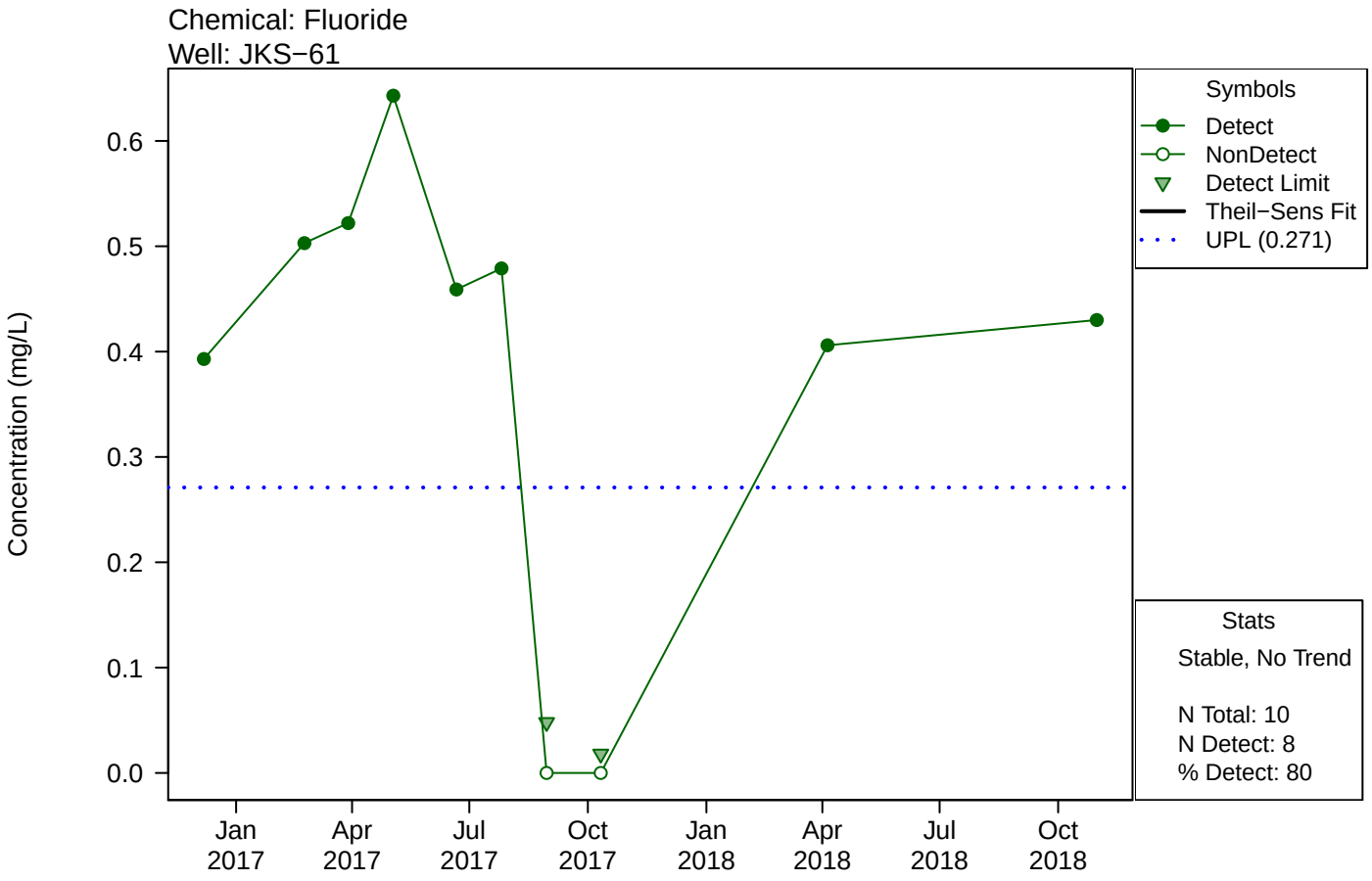


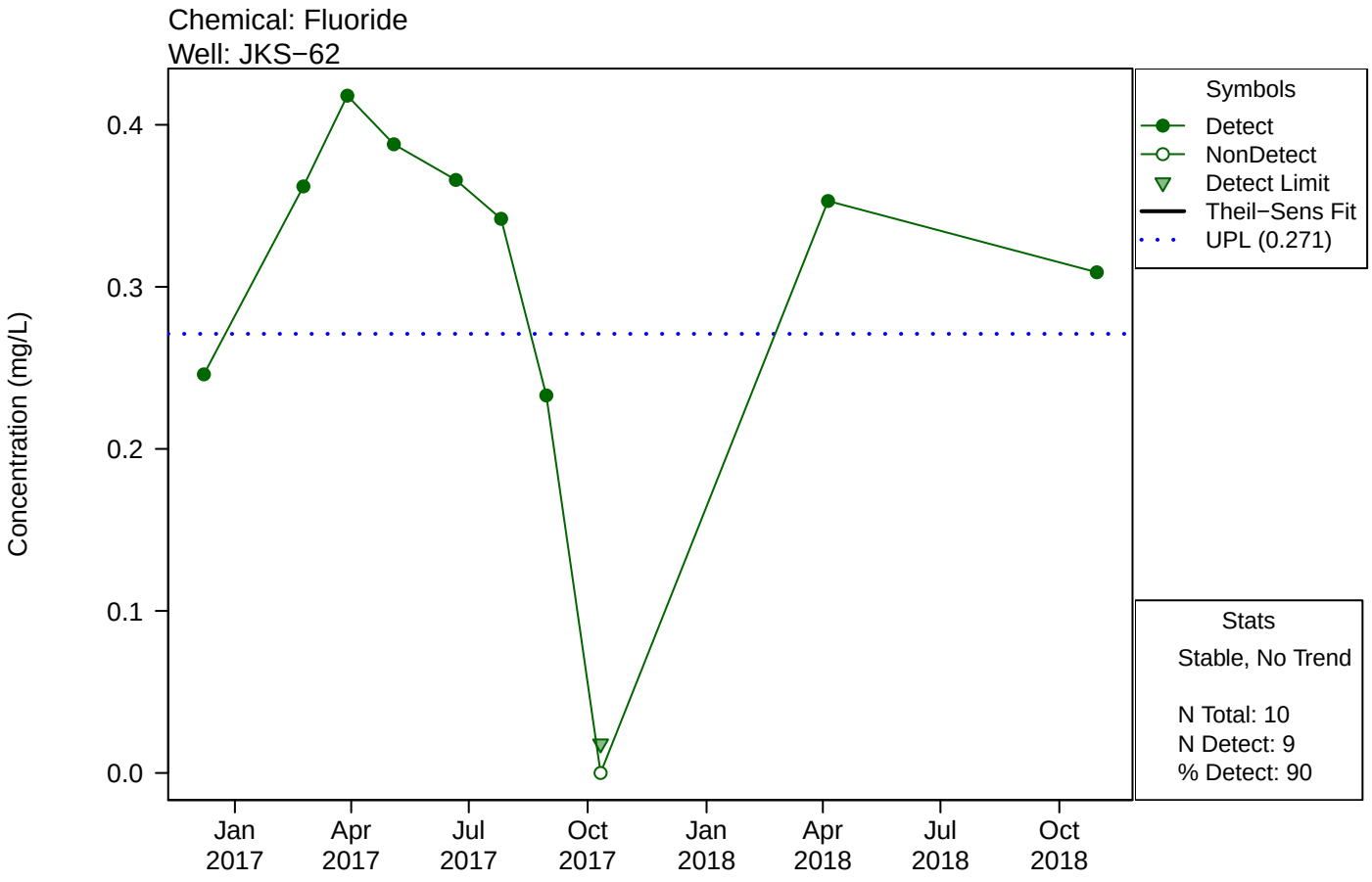
Appendix B − Figure 4
Unit: Evaporation Pond
Trend Analysis of Downgradient Wells with Exceedances



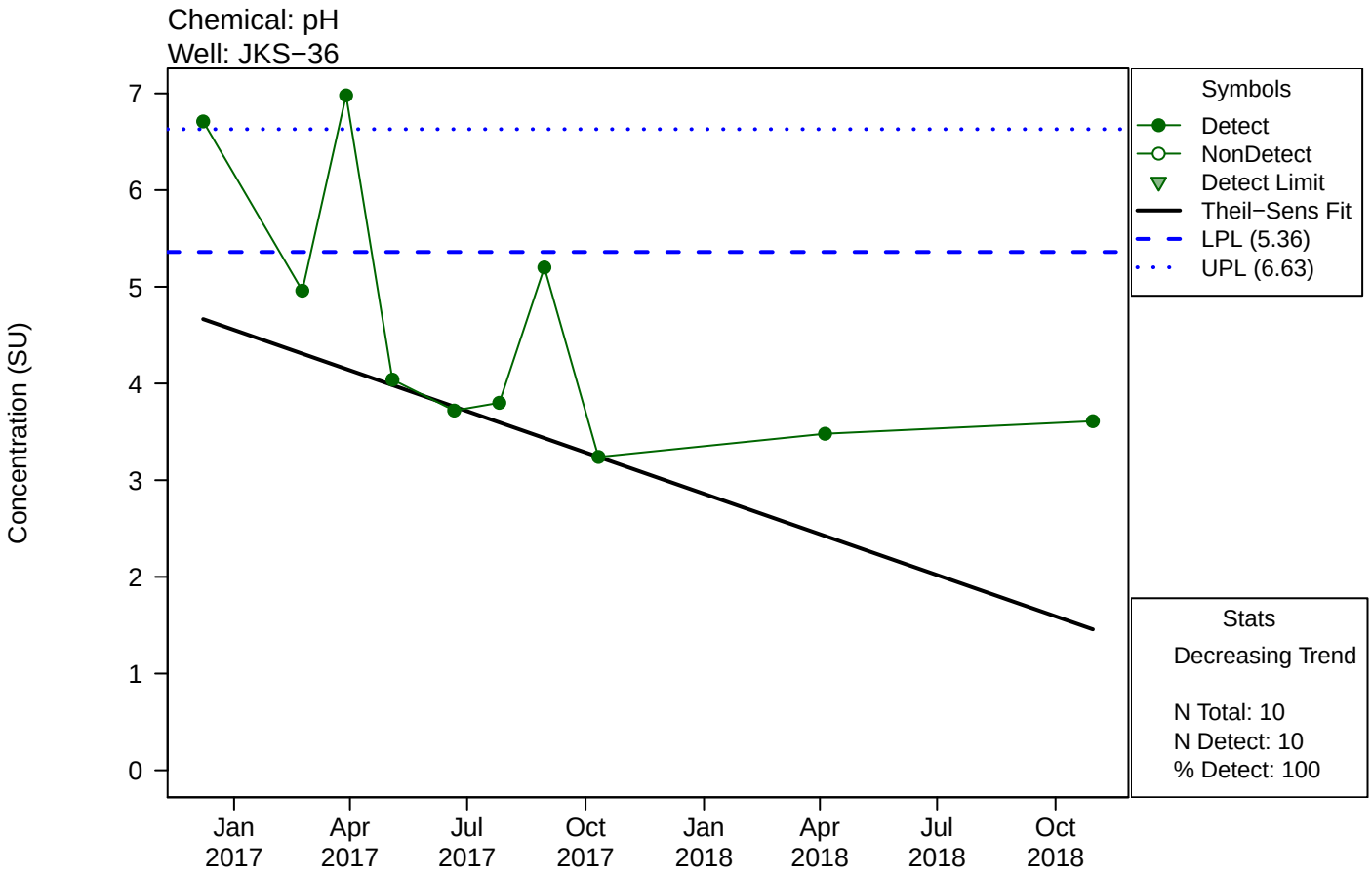


Appendix B − Figure 4
Unit: Evaporation Pond
Trend Analysis of Downgradient Wells with Exceedances





Appendix B − Figure 4
Unit: Evaporation Pond
Trend Analysis of Downgradient Wells with Exceedances



April 2018 Groundwater Sampling Event – Calaveras Power Station CCR Units

Appendix C

Environmental Resources Management

CityCentre Four
840 West Sam Houston Pkwy N.
Suite 600
Houston, Texas 77024
(281) 600-1000
(281) 600-1001 (Fax)

June 20, 2018

Mr. Michael Malone
CPS Energy
145 Navarro Street
San Antonio, Texas 78205

Project No. 0337367

Subject: April 2018 Groundwater Sampling Event
Calaveras Power Station CCR Units
San Antonio, Texas

Dear Mr. Malone:

Introduction

Title 40, Code of Federal Regulations, Part 257 (40 CFR §257) (a.k.a. the Coal Combustion Residual (CCR) Rule) was published in the Federal Register in April 2015 and became effective in October 2015. One of the many requirements of the CCR Rule was for CPS Energy to determine if there are impacts to groundwater from the surface impoundments [Evaporation Pond (EP), Bottom Ash Ponds (BAPs), and Sludge Recycling Holding (SRH) Pond] and the landfill [Fly Ash Landfill (FAL)] that contain CCR at the Calaveras Power Station.

In the initial *Annual Groundwater Monitoring and Corrective Action Report* for each CCR unit, the downgradient monitoring well results from the October 2017 sampling event were compared to the Upper Prediction Limits (UPLs) and Lower Prediction Limits (LPLs). UPLs and LPLs were calculated in the respective *Annual Groundwater Monitoring and Corrective Action Reports* for the purpose of determining a potential statistically significant increase (SSI) over background levels. The initial evaluation of the groundwater sample results indicated a potential SSI for a limited number of constituents from the EP, FAL, and BAPs. Groundwater sample results from the SRH Pond did not indicate a potential SSI.

According to the CCR Rule [§257.94(e)], if the owner or operator of a CCR unit determines there is a SSI over background levels for one or more Appendix III constituents, the owner or operator may demonstrate that a source other than the CCR unit caused the SSI over background levels or that the SSI resulted from error in sampling, analysis, statistical evaluation or natural variation in groundwater quality. The CCR Rule also indicates that the owner or operator must complete the written demonstration within 90 days of detecting a SSI over the background levels. If a successful demonstration is completed within the 90-day period, the owner or operator may continue with a detection monitoring program.

To address the potential SSIs identified in the initial *Annual Groundwater Monitoring and Corrective Action Reports*, CPS Energy prepared *Written Demonstration – Responses to Potential Statistically Significant Increases (Written Demonstration) (*dated April 4, 2018). Based on the evidence provided in the *Written Demonstration*, no SSIs over background levels were determined for any of the CPS Energy CCR units (EP, FAL, BAPs, and SRH Pond) and therefore, CPS Energy continued with a detection monitoring program that would include semiannual sampling.

Sampling Event Summary

The first semiannual groundwater sampling event was conducted in April 2018. The sampling event included the collection of water level measurements and groundwater samples from all the background and downgradient monitoring wells in the CCR monitoring program. The groundwater samples were analyzed for Appendix III constituents.

For each CCR unit, the downgradient monitoring well results from the April 2018 sampling event were compared to the UPLs and LPLs calculated in their respective *Annual Groundwater Monitoring and Corrective Action Report*. The April 2018 groundwater sample results for the downgradient monitoring wells in each CCR unit are summarized in Attachment 1.

Groundwater sample results from the SRH Pond did not indicate a potential SSI. Although the evaluations of the April 2018 groundwater sample results indicated a potential SSI for a limited number of constituents from the EP, FAL, and BAPs, the constituents associated with the potential SSIs are the same constituents, detected at similar concentrations, that were previously identified in the *Written Demonstration*. The evaluations of the April 2018 groundwater sample results with potential SSIs are summarized below.

EP – The constituents associated with potential SSIs include fluoride and pH. As previously presented in the *Written Demonstration*, the concentrations of fluoride and pH appear to reflect natural variation in groundwater quality in the vicinity of the CCR unit. The reported April 2018 concentrations were within the range of naturally occurring concentrations identified in the *Written Demonstration*.

FAL – The constituents associated with potential SSIs include calcium, chloride, and pH. As previously presented in the *Written Demonstration*, the concentrations of calcium, chloride, and pH appear to reflect natural variation in groundwater quality in the vicinity of the CCR unit. The reported April 2018 concentrations were within the range of naturally occurring concentrations identified in the *Written Demonstration*.

BAPs – The constituents associated with potential SSIs include fluoride and boron. As previously presented in the *Written Demonstration*, the concentrations of fluoride and boron appear to reflect natural variation in groundwater quality in the vicinity of the CCR unit. The reported April 2018 concentrations were within the range of naturally occurring concentrations identified in the *Written Demonstration*.

Conclusions

Based on the April 2018 groundwater sample results and the evidence provided in the *Written Demonstration* dated April 4, 2018, no SSIs over background levels have been determined for any of the CPS Energy CCR units (EP, FAL, BAPs, and SRH Pond) and therefore, CPS Energy should continue with a detection monitoring program. The second semiannual sampling event should be performed in October 2018.

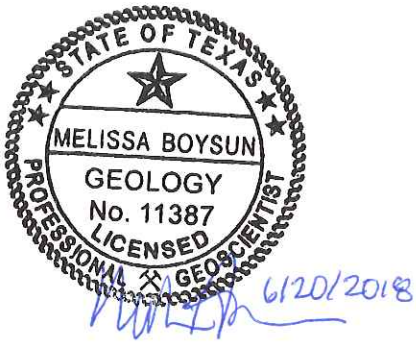
We appreciate the opportunity to work with you on this project. Please contact me if you should have any questions.

Sincerely,

Environmental Resources Management

Melissa Boysun, P.G.

Texas Professional Geoscientist No. 11387



Attachment 1
April 2018 Groundwater Sample Results

June 2018
Project No. 0337367
CPS Energy

Environmental Resources Management
CityCentre Four
840 West Sam Houston Pkwy N. Suite 600
Houston, Texas 77024
(281) 600-1000

April 2018 Groundwater Sample Results
CCR Unit: Evaporation Pond
CPS Energy Calaveras Power Station
San Antonio, TX

			CCR Unit	EP	EP	EP
			Well Designation	Downgradient	Downgradient	Downgradient
			Well ID	JKS-36	JKS-61	JKS-62
			Sample Date	04/05/2018	04/05/2018	04/05/2018
			Sample Type Code	N	N	N
Chemical	Units	2017 LPL - EP	2017 UPL - EP			
Boron	mg/L	--	1.53	0.625	1.09	0.522
Calcium	mg/L	--	1380	281	171	160
Chloride	mg/L	--	2180	347	285	312
Fluoride	mg/L	--	0.465	1.95	0.406 J (1)	0.353 J (1)
pH, Field	SU	5.68	6.75	3.48	6.42	6.72
Sulfate	mg/L	--	1970	816	562	200
Total dissolved solids	mg/L	--	6640	1650	1620	1110

NOTES:

Shaded cell indicates exceedance in either the Upper Prediction Limit (UPL) or the Lower Prediction Limit (LPL) for this CCR unit.
N - Normal
J - Estimated concentration. Qualified due to high matrix spike % recovery.
U - Analyte was not detected.
(1) Sample result was updated; updated result is provided in revised analytical report.

April 2018 Groundwater Sample Results
CCR Unit: Fly Ash Landfill
CPS Energy Calaveras Power Station
San Antonio, TX

			CCR Unit	FAL	FAL	FAL	FAL
			Well Designation	Downgradient	Downgradient	Downgradient	Downgradient
			Well ID	JKS-31	JKS-33	JKS-46	JKS-60
			Sample Date	04/04/2018	04/05/2018	04/04/2018	04/04/2018
			Sample Type Code	N	N	N	N
Chemical	Units	2017 LPL - FAL	2017 UPL - FAL				
Boron	mg/L	--	3.62	0.485	0.990	0.828	0.399
Calcium	mg/L	--	450	187	552	140	363
Chloride	mg/L	--	314	253 D	786	11.6	366 D
Fluoride	mg/L	--	3.62	0.839	1.85	2.16	0.220 J (1)
pH, Field	SU	4.02	6.73	3.74	6.33	3.15	6.09
Sulfate	mg/L	--	4680	771 D	1810	864 D	801 D
Total dissolved solids	mg/L	--	8040	1420	3970	1300	1860

NOTES:

Shaded cell indicates exceedance in either the Upper Prediction Limit (UPL) or the Lower Prediction Limit (LPL) for this CCR unit.

N - Normal

D - Sample was diluted due to targets detected over the highest point of the calibration curve or due to matrix interference. Dilution factors are included in the results.

J - Estimated concentration. Qualified due to high matrix spike % recovery.

U - Analyte was not detected.

(1) Sample result was updated; updated result is provided in revised analytical report.

April 2018 Groundwater Sample Results
CCR Unit: Bottom Ash Ponds
CPS Energy Calaveras Power Station
San Antonio, TX

			CCR Unit	BAP	BAP	BAP	BAP	BAP
			Well Designation	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient
			Well ID	JKS-48	JKS-50R	JKS-52	JKS-55	JKS-56
			Sample Date	04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018
			Sample Type Code	N	N	N	N	N
Chemical	Units	2017 LPL - BAP	2017 UPL - BAP					
Boron	mg/L	--	3.52	2.03	3.52	1.95	0.645	3.95
Calcium	mg/L	--	334	143	127	175	134	126
Chloride	mg/L	--	523	433 D	170	360 D	387 D	121
Fluoride	mg/L	--	0.857	1.35	0.335 J (1)	0.720	0.791	0.370 J (1)
pH, Field	SU	5.56	7.33	6.91	6.67	6.79	6.75	6.64
Sulfate	mg/L	--	380	282 D	131	278 D	168	193
Total dissolved solids	mg/L	--	1830	1400	883	1240	1300	992

NOTES:

Shaded cell indicates exceedance in either the Upper Prediction Limit (UPL) or the Lower Prediction Limit (LPL) for this CCR unit.

N - Normal

D - Sample was diluted due to targets detected over the highest point of the calibration curve or due to matrix interference. Dilution factors are included in the results.

U - Analyte was not detected.

(1) Sample result was updated; updated result is provided in revised analytical report.

April 2018 Groundwater Sample Results
CCR Unit: SRH Pond
CPS Energy Calaveras Power Station
San Antonio, TX

			CCR Unit	SRH Pond	SRH Pond	SRH Pond
			Well Designation	Downgradient	Downgradient	Downgradient
			Well ID	JKS-52	JKS-53	JKS-54
			Sample Date	04/04/2018	04/04/2018	04/05/2018
			Sample Type Code	N	N	N
Chemical	Units	2017 LPL - SRH	2017 UPL - SRH			
Boron	mg/L	--	3.46	1.95	1.60	1.26
Calcium	mg/L	--	326	175	113	111
Chloride	mg/L	--	516	360 D	361	382
Fluoride	mg/L	--	0.835	0.720	0.392 J (1)	0.742
pH, Field	SU	5.56	7.32	6.79	6.67	6.86
Sulfate	mg/L	--	374	278 D	249	309
Total dissolved solids	mg/L	--	1780	1240	1160	1230

NOTES:

N - Normal

D - Sample was diluted due to targets detected over the highest point of the calibration curve or due to matrix interference.

J - Estimated concentration. Qualified due to high matrix spike % recovery.

U - Analyte was not detected.

(1) Sample result was updated; updated result is provided in revised analytical report.