Annual Groundwater Monitoring and Corrective Action Report

CPS Energy
Calaveras Power Station – Fly Ash Landfill
San Antonio, Texas

January 2022

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TABLE OF CONTENTS

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	Sections 1 and 3
§257.90(e)	Summarize key actions completed	Section 3
§257.90(e)		

4. STATISTICAL ANALYSIS AND RESULTS

Consistent with the CCR Rule and with 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 C. The steps outlined in the decision framework in the SAP include:

- Interwell versus intrawell comparisons;
- Establishment of the upgradient dataset;
-

4.3. ESTABLISHING UPPER PREDICTION LIMITS

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

Downgradient LPL Exceedances

Analyte	Well	LPL	UPL	Sample Date	Value	Unit

Tables

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	8/80/17 to 4/5/18	94/17

TABLE 3
Groundwater Analytical Results Summary
GPS Energy - Calaveras Power Station
Appendix IV - Assessment Monitoring

Constituent	Fluoride, Dissolved	2/23/17	mg/L	3/28/17	1270	S5/3/17	1300	1330	S6/20/17	1330	1270	1250	7/2

TABLE 3
Groundwater Analytical Results Summary
CPS Energy - Calaveras Power Station
Fly Ash Landfill

Constituents	Unit
Appendix III - Detection Monitoring	
Boron	mg/L
Calcium	mg/L
Chloride	mg/L
Fluoride	mg/L
Sulfate	mg/L
pH - Field Collected	SU
Total dissolved solids	mg/L
Appendix IV - Assessment Monitoring	
Antimony	mg/L
Arsenic	mg/L
Barium	mg/L
Beryllium	mg/L
Cadmium	mg/L
Chromium	mg/L
Cobalt	mg/L
Fluoride	mg/L
Lead	mg/L
Lithium	mg/L
Mercury	mg/L
Molybdenum	mg/L
Selenium	mg/L
Thallium	mg/L
Radium-226	pCi/L
Radium-228	pCi/L

NOTES:
mg/L: Milligrams per Liter.
SU: Standard Units.
pCi/L: Picocuries per Liter.

F: Relative percent difference exceeded laboratory control limits.
H: Bias in sample result likely to be high.

K: Sample analyzed outside of recommended hold time.

X: Matrix Spike/Matrix Spike Duplicate recoveries were found to be outside of the laboratory control limits.

TABLE 3
Groundwater Analytical Results Summary
CPS Energy - Calaveras Power Station
Fly Ash Landfill

Constituents	Unit
Anx III - Detectioto	
Boron	mg/L
Calcium	m/L
ChS04 Tw28-1.4426n	
ChSF53gh Luor3(/)6i.7(h Ld)-mg2L	
ChSSu5.3(l6(f(n)-r)62375887m)-1237g	

TABLE 3

TABLE 3
Groundwater Analytical Results Summary
CPS Energy - Calaveras Power Station
Fly Ash Landfill

Constituents	Unit

Figures

DATE:

DATE:

2021 Water Level Study Report

Appendix A

Annual Groundwater Monitoring and Corrective Action Reports have been completed for each of

TABLE 1
Groundwater Elevations Summary - CCR Unit Wells
CPS Energy - Calaveras Power Station

Well	CCR Unit	Well Elevation (ft msl)	Event No.	Date	Depth to Water (ft btoc)	Water Level (ft msl)
JKS-45 Upgradient	FAL	531.46	1	12/6/2016	46.83	484.63
JKS-45 Upgradient	FAL	531.46	2	2/21/2017	46.64	484.82
JKS-45 Upgradient	FAL	531.46	3	3/28/2017	46.52	484.94

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CPS Energy - Calaveras Power Station

Well	CCR Unit	Well Elevation (ft msl)	Event No.	Date	Depth to Water (ft btoc)	Water Level (ft msl)
JKS-61 Downgradient	EP	505.51	1	12/6/2016	23.95	481.56
JKS-61 Downgradient	EP	505.51	2	2/21/2017	23.31	482.20
JKS-61 Downgradient	EP	505.51	3	3/28/2017	23.10	482.41
JKS-61 Downgradient	EP	505.51	4	5/2/2017	22.85	482.66
JKS-61 Downgradient	EP	505.51	5	6/20/2017	22.05	483.46
JKS-61 Downgradient	EP	505.51	6	7/25/2017	23.50	482.01
JKS-61 Downgradient	EP	505.51	7	8/29/2017	23.60	481.91
JKS-61 Downgradient	EP	505.51	8	10/10/2017	23.97	481.54
JKS-61 Downgradient	EP	505.51	9	4/4/2018	23.08	482.43
JKS-61 Downgradient	EP	505.51	10	10/30/2018	23.94	481.57
JKS-61 Downgradient	EP	505.51	11	4/9/2019	22.97	482.54
JKS-61 Downgradient	EP	505.51	12	10/22/2019	24.20	481.31
JKS-61 Downgradient	EP	505.51	13	4/23/2020	23.74	481.77
JKS-61 Downgradient	EP	505.51	14	10/15/2020	24.60	480.91

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CPS Energy - Calaveras Power Station

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CPS Energy - Calaveras Power Station

Well	CCR Unit	Well Elevation (ft msl)	Event No.	Date	Depth to Water

TABLE 1
Groundwater Elevations Summary - CCR Unit Wells
CPS Energy - Calaveras Power Station

Well	CCR Unit	Well Elevation (ft msl)	Event No.	Date	Depth to Water (ft btoc	(ft msl	Do Wat Leveler

rvation Wells
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TABLE 2
Groundwater Elevations Summary - Non-CCR Unit Observation Wells
CPS Energy - Calaveras Power Station

Well	Well Elevation (ft msl)	Event No.	Date	Depth to Water (ft btoc)	Water No. (ft msl)

FIGURES

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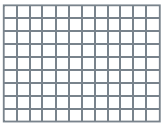

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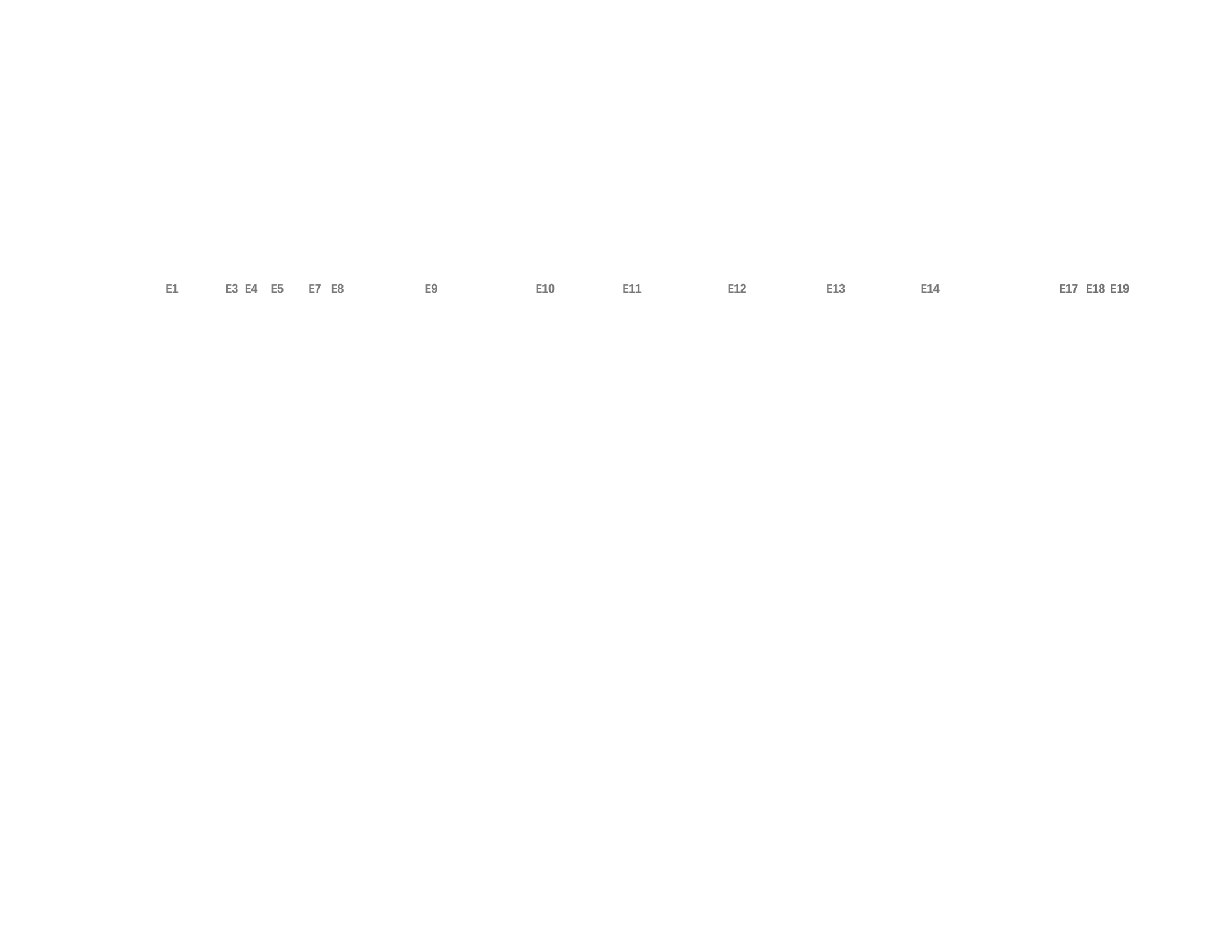
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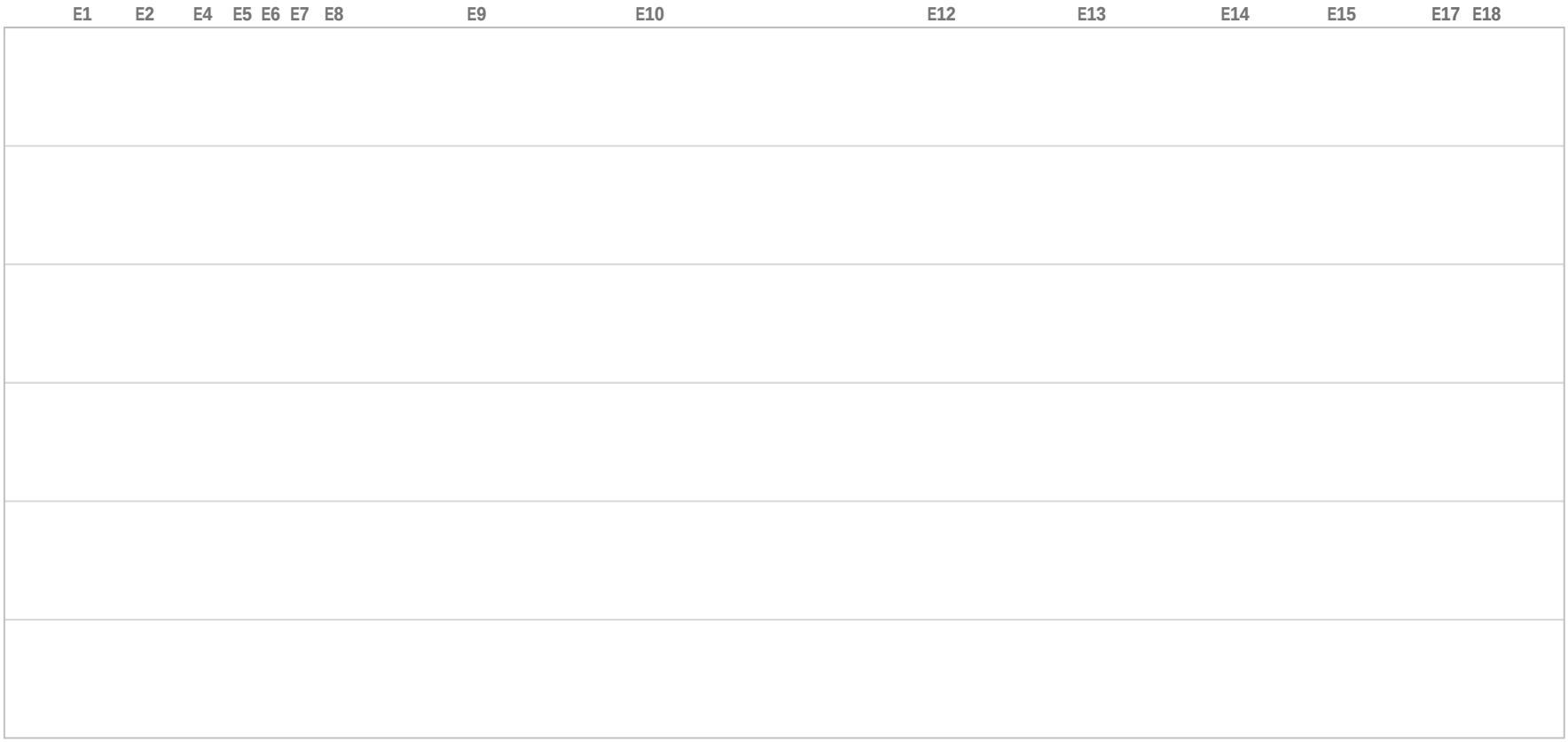
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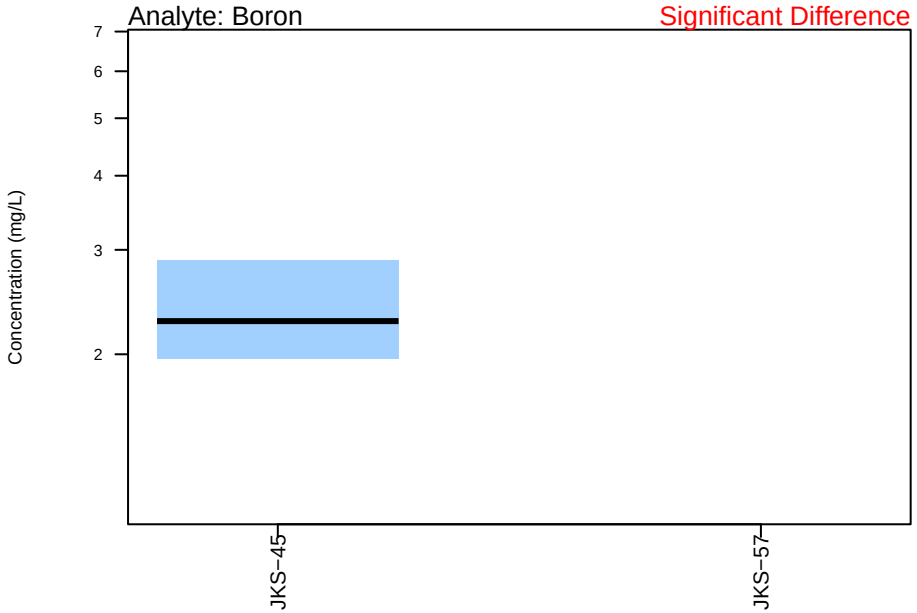
Appendix C π Table 2
Descriptive Statistics for Upgradient Wells
Calaveras Power Station
Fly Ash Landfill

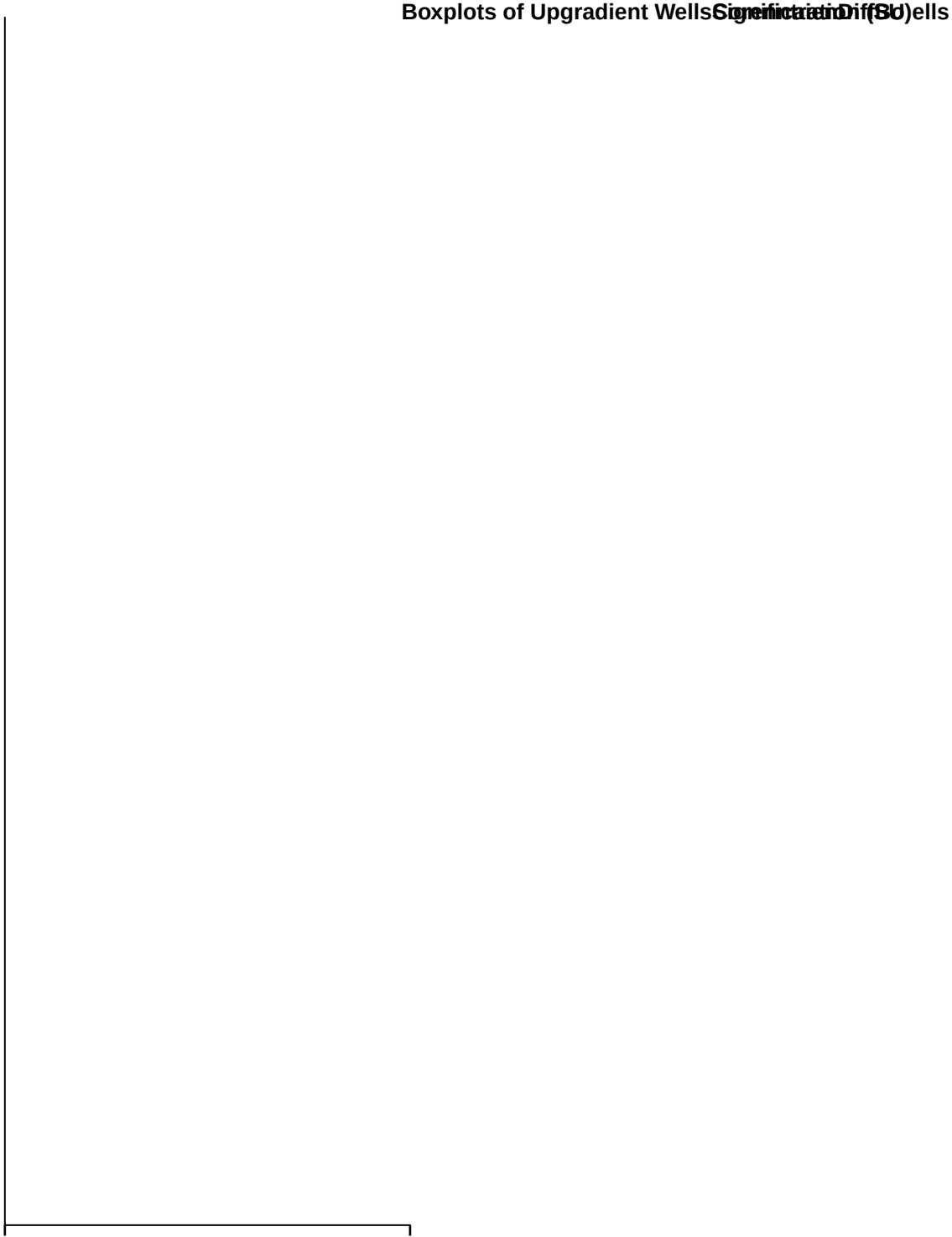
Analyte	Well	Units	N	N Detect	Percent

Appendix C π Table 3
Potential Outliers in

Appendix C − Figure 1
Unit: Fly Ash Landfill
Boxplots of Upgradient Wells



Appendix C − Figure 1
Unit: Fly Ash Landfill
Boxplots of Upgradient Wells vs Downgradient Wells



Appendix C − Figure 2
Unit: Fly Ash Landfill
QQ Plots of Upgradient Wells

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Appendix C − Figure 2

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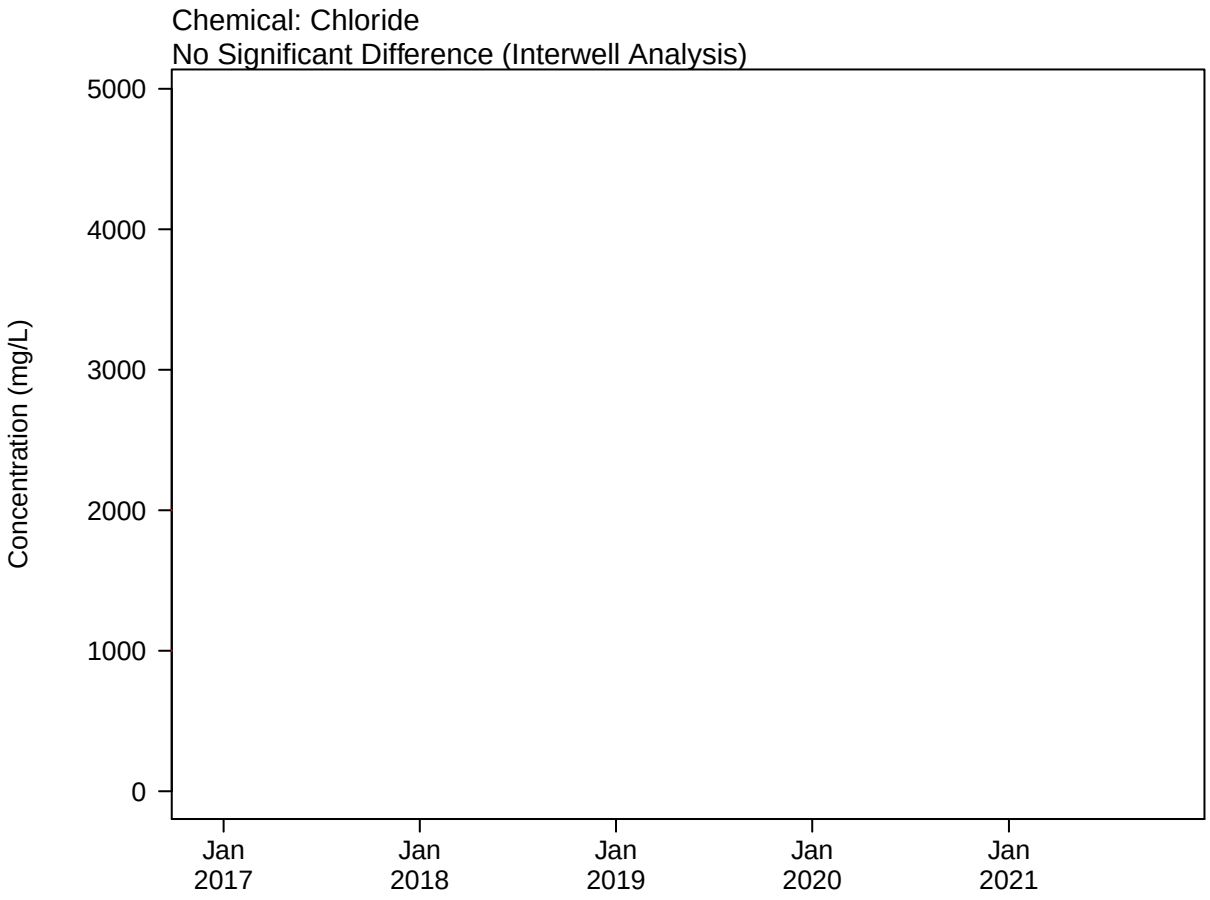
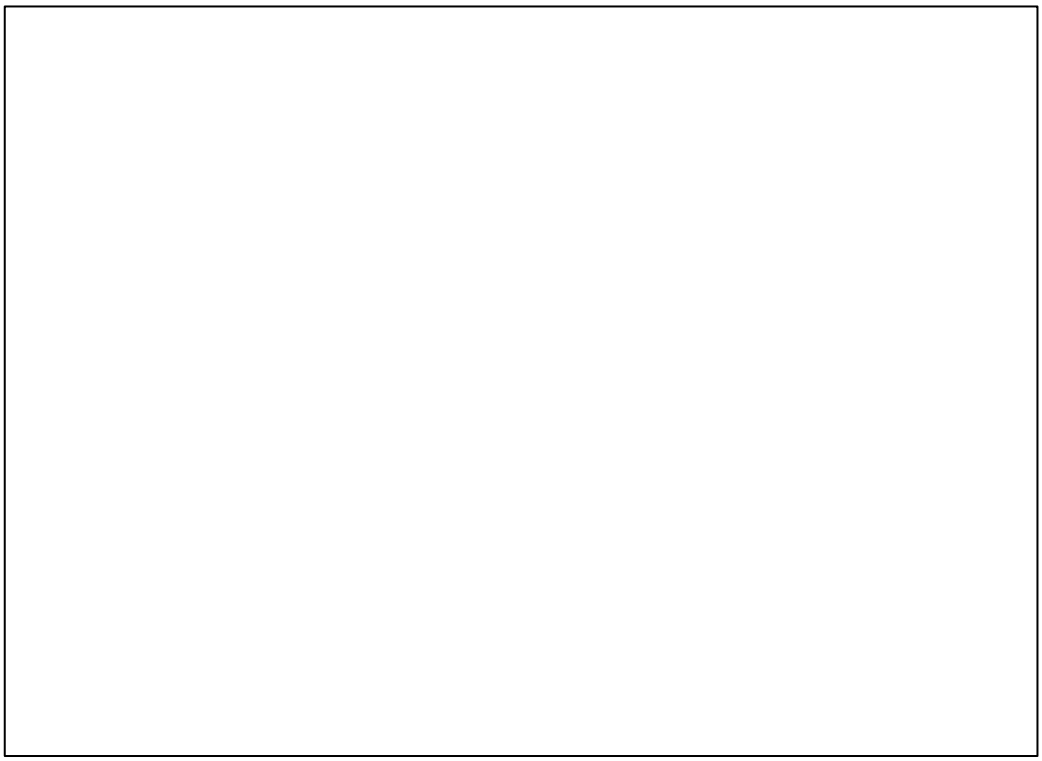
Appendix C − Figure 3
Unit: Fly Ash Landfill
Timeseries of Upgradient Wells

Appendix C − Figure 3
Unit: Fly Ash Landfill
Timeseries of Upgradient Wells



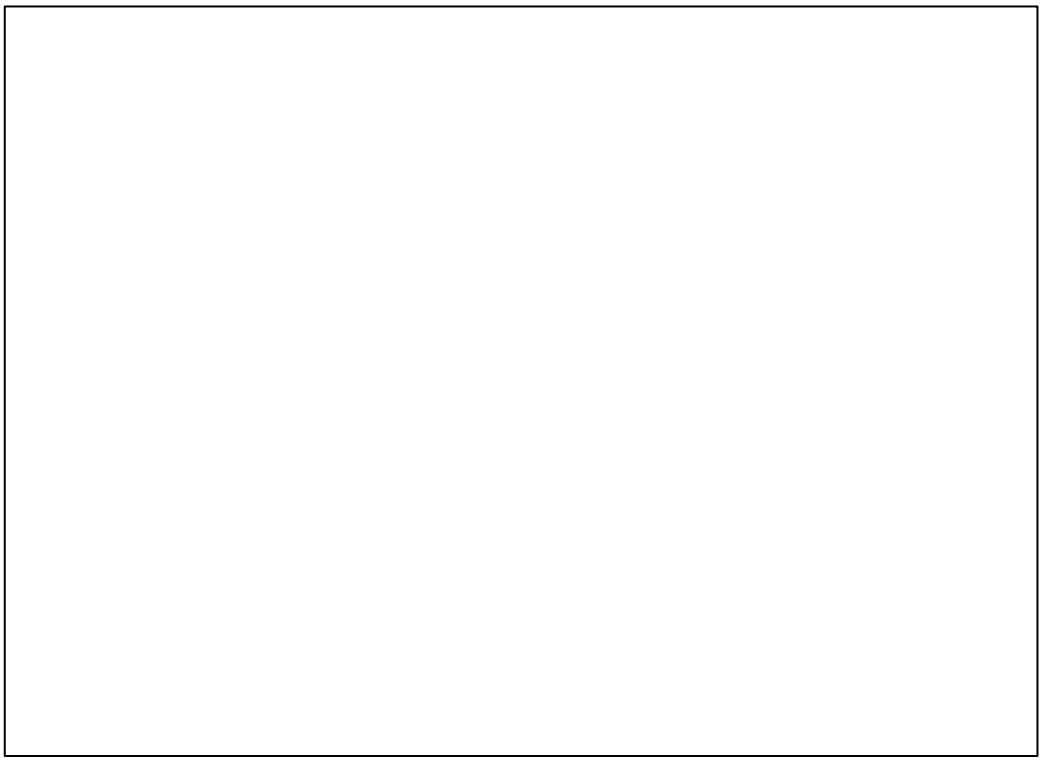
Appendix C − Figure 3
Unit: Fly Ash Landfill
Timeseries of Upgradient Wells

Chemical: pH



Appendix C − Figure 3
Unit: Fly Ash Landfill
Timeseries of Upgradient Wells

Chemical: Total dissolved solids



Appendix C − Figure 4
Unit: Fly Ash Landfill

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April 2021 Groundwater Sampling Event and August 2021 Resampling Event – Calaveras Power Station CCR Units

Appendix D

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ATTACHMENT 1 APRIL AND AUGUST 2021 GROUNDWATER SAMPLE RESULTS

Constituent	Units	2020 LPL - BAP	2020 UPL - BAP	BAP Downgradient JKS-48 4/13/2021 N	BAP Downgradient JKS-50R 4/13/2021 N	BAP Downgradient JKS-52 4/13/2021 N	BAP Downgradient JKS-55 4/13/2021 N	BAP Downgradient JKS-56 4/13/2021 N
Boron	mg/L	--	2.65	2.19	5.18	2.51	0.762	3.16
Calcium	mg/L	--	387	140	139	209	146	111
Chloride	mg/L	--	607	477	110	470	440	176
Fluoride	mg/L	--						

Constituent	Units	2020 LPL - SRH	2020 UPL - SRH	SRH Pond Downgradient JKS-52 4/13/2021 N	SRH Pond Downgradient JKS-53 4/13/2021 N	SRH Pond Downgradient JKS-54 4/13/2021 N
Boron	m					