



2018 Annual Groundwater Monitoring and Corrective Action Report

Martin Lake Steam Electric Station PDP 5 - Rusk County, Texas

Prepared for:

Luminant Generation Company LLC

Submitted by:

Golder Associates Inc.

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January 31, 2019

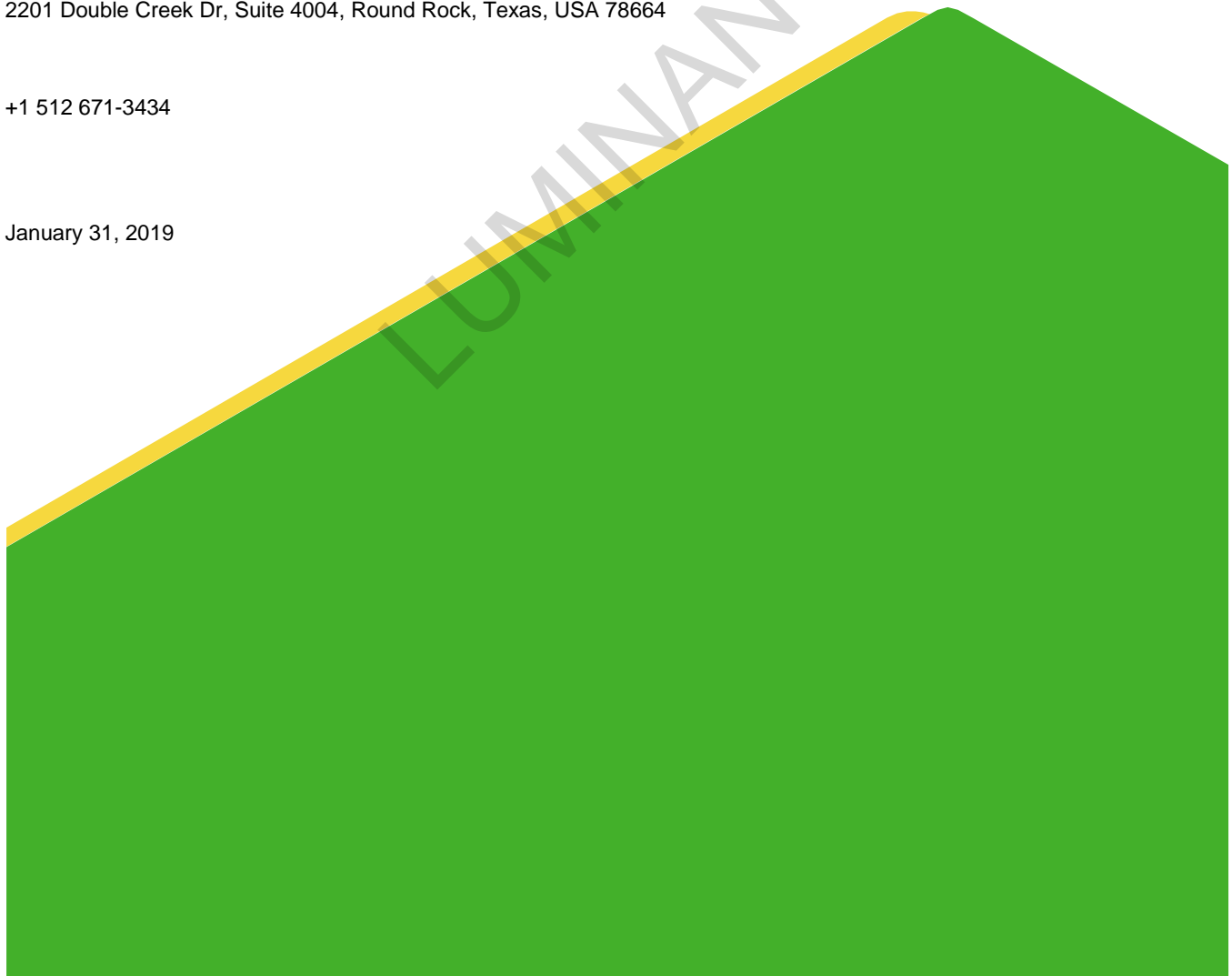


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Attachment 1 2018 Alternate Source Demonstration Report

ACRONYMS AND ABBREVIATIONS

CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
GWPS	Groundwater Protection Standard
MCL	Maximum Concentration Level
mg/L	Milligrams per Liter
MLSES	Martin Lake Steam Electric Station
NA	Not Applicable
PDP	Permanent Disposal Pond
SSI	Statistically Significant Increase
SSL	Statistically Significant Levels
USEPA	United States Environmental Protection Agency

1.0 INTRODUCTION

Golder Associates, Inc. (Golder) has prepared this report on behalf of Luminant Generation Company LLC (Luminant) to satisfy annual groundwater monitoring and corrective action reporting requirements of the Coal Combustion Residuals (CCR) Rule for the Permanent Disposal Pond 5 (PDP 5) at the Martin Lake Steam Electric Station (MLSES) in Rusk County, Texas. The CCR unit and CCR monitoring well network are shown on Figure 1.

The CCR Rule (40 CFR 257 Subpart D - *Standards for the Receipt of Coal Combustion Residuals in Landfills and Surface Impoundments*) has been promulgated by the United States Environmental Protection Agency (USEPA) to regulate the management and disposal of CCRs as solid waste under Resource Conservation and Recovery Act (RCRA) Subtitle D. For existing CCR landfills and surface impoundments, the CCR Rule requires that the owner or operator prepare an annual groundwater monitoring and corrective action report to document the status of the groundwater monitoring and corrective action program for the CCR unit for the previous calendar year. Per 40 CFR 257.90(e) of the CCR Rule, the report should contain the following information, to the extent available:

- (1) A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;
- (2) Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;
- (3) In addition to all the monitoring data obtained under §§ 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;
- (4) A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and
- (5) Other information required to be included in the annual report as specified in §§ 257.90 through 257.98.

2.0 MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

The PDP 5 CCR Unit is currently in the Detection Monitoring Program. Golder collected the initial Detection Monitoring Program groundwater samples from the PDP 5 CCR monitoring well network in September 2017. In accordance with procedures described in the Statistical Analysis Plan (PBW, 2017), verification re-samples were collected from several wells in February 2018 to verify the September 2017 sample results. The evaluation of the data was completed in 2018 using procedures described in the Statistical Analysis Plan (PBW, 2017) to identify statistically significant increases (SSIs) of Appendix III parameters over background concentrations. The Detection Monitoring Program sampling dates and parameters are summarized in the following table:

Detection Monitoring Program Summary

Sampling Dates	Parameters	SSIs	Assessment Monitoring Program Established
09/21-22/2017 02/21/2018	Appendix III	Yes	No (Alternate Source Demonstration Completed)
06/13-14/2018	Appendix III	Not Applicable	Not Applicable
09/11-12/2018 11/07/2018	Appendix III	To Be Determined	To Be Determined

The statistical background values and Appendix III analytical data are presented in Tables 1 and 2, respectively. SSIs of Appendix III parameters were identified for the September 2017 sampling event and February 2018 verification re-sampling event. An alternate source demonstration was completed in 2018, which indicated that a source other than the CCR unit caused the SSIs. As such, PDP 5 remained in the Detection Monitoring Program in 2018. A summary of the alternate source demonstration is presented in Attachment 1.

Subsequent Detection Monitoring Program groundwater samples were collected from the CCR groundwater monitoring network on a semi-annual basis in 2018, as required by the CCR Rule. The first 2018 semi-annual Detection Monitoring Program sampling event was conducted in June 2018. The second 2018 semi-annual Detection Monitoring Program sampling event was conducted in September 2018. Verification re-samples were also collected in November 2018. The analytical data from the 2018 semi-annual Detection Monitoring Program sampling events were evaluated using procedures described in the Statistical Analysis Plan to identify SSIs of Appendix III parameters over background concentrations. Since the Detection Monitoring Program data evaluation was completed in January 2019, the results of that evaluation will be presented in the 2019 Annual Groundwater Monitoring and Corrective Action Report.

3.0 KEY ACTIONS COMPLETED IN 2018

Semi-annual Detection Monitoring Program groundwater monitoring events were completed in June and September 2018. Verification re-samples were also collected in November 2018 to verify results of the September 2018 sampling event in accordance with procedures described in the Statistical Analysis Plan (PBW, 2017). Statistical background values for the Appendix III parameters are summarized in Table 1 and the analytical results for the groundwater samples collected in 2018 are summarized in Table 2. A map showing the CCR unit and monitoring wells is provided as Figure 1.

No CCR wells were installed or decommissioned in 2018.

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4.0 PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE THE PROBLEMS

No problems were encountered with the CCR groundwater monitoring program in 2018.

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5.0 KEY ACTIVITIES PLANNED FOR 2019

The following key activities are planned for 2019:

- Continue the Detection Monitoring Program in accordance with 40 CFR § 257.94.
- Complete evaluation of Appendix III analytical data and compare results to statistical background values to determine whether an SSI has occurred.
- If an SSI is identified, potential alternate sources (i.e., a source other than the CCR unit caused the SSI or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality) will be evaluated. If an alternate source is identified to be the cause of the SSI, a written demonstration will be completed within 90 days of SSI determination and included in the 2019 Annual Groundwater Monitoring and Corrective Action Report.
- If an alternate source is not identified to be the cause of the SSI, an Assessment Monitoring Program will be established in accordance with 40 CFR § 257.94(e)(2).

6.0 REFERENCES


Pastor, Behling & Wheeler, LLC, 2017. Coal Combustion Residual Rule Statistical Analysis Plan, Matin Lake Steam Electric Station, PDP 5, Rusk County, Texas.

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FIGURES

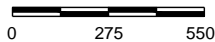


EXPLANATION

 CCR Monitoring Well



Scale in Feet



SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

MARTIN LAKE STEAM ELECTRIC STATION TATUM, TEXAS

Figure 1

PDP 5 AREA DETAILED SITE PLAN

PROJECT: 5164B

BY: AJD

REVISIONS

DATE: SEPT., 2017

CHECKED: PJB

TABLES

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Table 1
Statistical Background Values
MLSES - PDP 5

Sample Location	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	field pH (s.u.)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)
MW-17A	0.538	6.73	10.4	0.4	2.5 9.19	51.9	170
MW-18A	0.20	3.1	10.4	0.4	4.88 7.92	9.1	157
MW-19	0.782	237	57.7	0.512	4.6 8.08	672	1,380
MW-20A	0.213	25.7	12.3	0.954	3.06 8.76	148	381
PDP-22	0.411	306	32.7	1.07	4.08 8.63	216	1,780
PDP-23	0.0678	2	7.52	0.4	3.38 8.45	3.27	143
PDP-24	4.92	45.9	22.6	1.03	1.33 9.97	533	894
PDP-25	0.136	41.3	197	0.4	4.65 7.93	118	705
PDP-26	0.111	4.74	14.6	0.577	5.35 7.57	64.6	438

Table 2
Appendix III Analytical Results
MLSES - PDP 5

Sample Location	Sample Date	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	field pH (s.u.)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)
Downgradient Wells								
MW-17A	09/22/17	0.402	3.1	8.3	<0.1	6.78	31.2	111
	06/14/18	0.485	6.48	9.16	<0.1	6.87	45.9	129
	09/11/18	0.523	5.06	8.82	0.179 J	5.03	43.1	137
MW-18A	09/21/17	0.0654	1.04	5.27	<0.1	6.94	3.23	45
	06/14/18	0.102	2	6.56	<0.1	6.92	3.48	71
	09/12/18	0.211	3.23	9.06	<0.1	5.69	4.82	150
	11/07/18	0.128	NA	NA	NA	NA	NA	NA
MW-19	09/22/17	0.0677	2.74	5.36	<0.1	6.94	1.46 J	98
	06/14/18	0.577	133	24.4	0.216 J	6.78	328	758
	09/11/18	0.243	38	65.1	0.228 J	6.04	166	597
	11/07/18	NA	NA	5.22	NA	NA	NA	NA
MW-20A	09/22/17	0.0807	17.4	12.6	0.175 J	6.71	74.2	237
	02/21/18 re-sample	NA	NA	10.7	NA	NA	NA	NA
	06/13/18	0.171	24	10.9	0.672	6.72	132	250
	09/11/18	0.141	7.16	11	0.235 J	4.70	39.1	154
PDP-22	09/22/17	0.221	92.5	12.3	0.321 J	6.98	178	558
	06/14/18	0.115	7.78	11.8	0.239	6.63	186	491
	09/12/18	0.164	61.1	10.9	0.216 J	5.88	143	476
PDP-23	09/22/17	0.0463	2.34	4.48	0.147 J	6.77	1.47 J	111
	02/21/18 re-sample	NA	2.37	NA	NA	NA	NA	NA
	06/13/18	0.0357	2.29	6.21	<0.1	6.82	1.26 J	98
	09/11/18	0.0760	1.96	6.38	<0.1	5.32	1.52 J	98
	11/07/18	0.0683	NA	NA	NA	NA	NA	NA
PDP-24	09/22/17	3.01	25.8	17.5	0.898	6.95	231	440
	06/14/18	2.71	23.9	21.1	0.629	6.82	284	481
	09/11/18	4.08	41.6	19.4	0.832	4.20	460	760
PDP-25	09/22/17	0.133	36.8	130	0.157 J	6.81	89.1	481
	06/14/18	0.119	40.4	111	<0.1	6.78	73.4	439
	09/11/18	0.167	36.2	135	0.115 J	5.87	90.3	469
	11/07/18	0.142	NA	NA	NA	NA	NA	NA
PDP-26	09/22/17	0.0343	2.32	5.24	0.157 J	6.84	5.88	107
	06/14/18	0.0225 J	2.93	4.8	<0.1	6.89	4.27	100
	09/12/18	0.0371	2.37	4.88	<0.1	6.07	2.66 J	107

Notes:

1. J - concentration is below sample quantitation limit; result is an estimate.
2. NA - not analyzed.

ATTACHMENT 1
ALTERNATE SOURCE DEMONSTRATION

**COAL COMBUSTION RESIDUAL RULE
ALTERNATIVE SOURCE DEMONSTRATION REPORT**

**MARTIN LAKE STEAM ELECTRIC STATION
PERMANENT DISPOSAL POND 5 (PDP 5)
RUSK COUNTY, TEXAS**

APRIL 15, 2018

Prepared For:

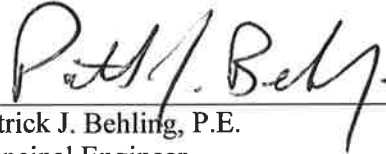
Luminant Generation Company LLC
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Irving, TX 75039

Prepared By:

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Round Rock, Texas 78664
Texas Engineering Firm No. 4760

PROFESSIONAL CERTIFICATION

This document and all attachments were prepared by Pastor, Behling & Wheeler, LLC under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I hereby certify that the alternative source demonstration at the referenced facility meets the requirements of Section 257.94(e)(2) of the CCR Rule.



Patrick J. Behling, P.E.

Principal Engineer

PASTOR, BEHLING & WHEELER, LLC



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1	Site Location Map
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<u>Appendix</u>	<u>Title</u>
A	Detection Monitoring Laboratory Analytical Report

1.0 INTRODUCTION

Luminant Generation Company LLC (Luminant) operates the Martin Lake Steam Electric Station (MLSES) located approximately 5 miles southeast of Tatum in Rusk County, Texas (Figure 1). Three CCR Units that are subject to the CCR Rule have been identified within the MLSES operations: Ash Pond Area (the West Ash Pond (WAP) East Ash Pond (EAP), and the New Scrubber Pond), Permanent Disposal Pond 5 (PDP 5), and A1 Area Landfill.

The purpose of this report is to document that a source other than PDP 5 (hereafter, the “Site”) caused the statistically significant increase (SSI) over background levels for the Appendix III samples collected during the initial detection monitoring event in 2017 as required in 40 CFR 257.94(e)(2).

1.1 CCR Unit Groundwater Monitoring Applicability

Pastor, Behling & Wheeler, LLC (PBW) was retained by Luminant to evaluate the CCR groundwater monitoring system and develop and implement a CCR groundwater sampling and analysis program at the Site. To document these activities, PBW prepared the following reports, which have been placed in the facility’s operating record to comply with Section 257.105(h) of the CCR Rule:

- CCR Groundwater Monitoring System Certification (PBW, 2017a);
- CCR Monitoring Well Design, Installation, Development, and Decommissioning Report (PBW, 2017b);
- CCR Statistical Analysis Plan (PBW, 2017c); and
- 2017 Annual Groundwater Monitoring Report (PBW, 2018).

2.0 GROUNDWATER MONITORING SYSTEM

The CCR groundwater monitoring well system at PDP 5 consists of nine monitoring wells (MW-17A, MW-18A, MW-19, MW-20A, PDP-22, PDP-23, PDP-24, PDP-25, PDP-26) that are screened in the uppermost aquifer at the Site. Based on groundwater elevation data evaluated in the 2017 Annual Groundwater Monitoring Report (PBW, 2018), groundwater flows radially outward from the hilltop where PDP 5 is located. As such, all of the PDP 5 CCR monitoring wells are downgradient of the unit. Locations of the PDP 5 CCR monitoring wells are shown on Figure 2. Well construction information and survey data for the CCR wells are summarized in Table 1.

3.0 GROUNDWATER MONITORING PROGRAM

3.1 Background Monitoring Program

Statistical analysis of groundwater monitoring data is required under Section 257.93 of the CCR Rule. Section 257.93 of the CCR Rule provides several options for statistically evaluating the groundwater data. In accordance with paragraph (f)(1) through (5) of Section 257.93, the following statistical evaluation approach was selected to demonstrate groundwater compliance for PDP 5 under the CCR Rule (PBW, 2017c):

- Use of intrawell data evaluations, which compare new sample data to historical data at each groundwater monitoring well independently; and
- Use of prediction limits for data comparisons. This approach is a common statistical method used to evaluate groundwater compliance for Subtitle D landfill facilities and is one of the approved options for groundwater quality data statistical evaluation under the CCR Rule.

Eight background groundwater monitoring events were performed using the PDP 5 CCR monitoring well system from October 2015 to December 2016. Groundwater samples collected during the background monitoring events were evaluated for each Appendix III and Appendix IV parameter at each well to establish prediction limits in accordance with procedures outlined in the CCR Statistical Analysis Plan (PBW, 2017c). Development of the prediction limits and documentation on the collection and analysis of the background sample data were detailed in the 2017 Annual Groundwater Monitoring Report (PBW, 2018).

3.2 Detection Monitoring Program

Section 257.94 of the CCR Rule requires that detection monitoring of groundwater be performed at all CCR units. The following constituents are evaluated as part of the detection monitoring program (from Appendix III to the CCR Rule):

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

If an SSI over background is determined for one or more of the constituents listed above at any monitoring well at the CCR unit waste boundary, within 90 days the owner or operator must:

- Establish an assessment monitoring program as described in Section 257.95 of the Rule; or
- Demonstrate that a source other than the CCR unit caused the SSI over background levels for a constituent or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. If a successful demonstration is completed within the 90-day period, the owner or operator of the CCR unit may continue with the detection monitoring program.

3.2.1 PDP 5 Detection Monitoring Results

PBW began evaluating the groundwater monitoring data collected during the first detection monitoring event from the PDP 5 CCR monitoring wells for SSIs over background levels by October 17, 2017. The statistical evaluation was completed in early January 2018. The detection monitoring data are presented, along with the applicable prediction limits, in Table 2. Laboratory analytical reports for the detection monitoring data are included in Appendix A.

All detection monitoring constituent concentrations in all PDP 5 CCR monitoring wells from the September 2017 monitoring event were below applicable prediction limits, with the exception of chloride in well MW-20A and calcium in well PDP-23. In accordance with the Statistical Analysis Plan (PBW, 2017c), re-samples were collected from each of these wells in February 2018. The re-samples were analyzed for the constituents that exceeded prediction limits during the initial detection monitoring event.

3.2.2 PDP 5 Chloride Re-Sample Results

The chloride concentration in the MW-20A re-sample (10.7 mg/L) was below the chloride prediction limit of 12.3 mg/L for that well; therefore, a SSI over background is not indicated in that well.

3.2.3 PDP 5 Calcium Re-Sample Results

The calcium concentration in the PDP-23 re-sample (2.37 mg/L) was similar to the calcium concentration observed in the initial detection monitoring event sample (2.34 mg/L). Both results exceeded the calcium prediction limit of 2.0 mg/L for that well; however, based on the extremely low concentrations of calcium in PDP-23, and the high variability in calcium concentrations observed in the Site-wide PDP 5 detection monitoring samples, the prediction limit exceedances observed in PDP-23 are attributed to natural variation

in groundwater quality at the unit.

As shown on Table 2, calcium sample concentrations observed in the PDP 5 CCR monitoring wells during the initial detection monitoring event ranged from 1.04 mg/L (in well MW-18A) to 92.5 mg/L (in well PDP-22). PDP-23 had the third lowest calcium concentration and lowest prediction limit of the nine wells in the CCR groundwater monitoring network. The prediction limits for calcium, which are based on sample concentrations observed during the background period, ranged from 2.0 mg/L (in well PDP-23) to 306 mg/L (in well PDP-22).

The wells nearest to PDP-23 (MW-18A and MW-19) had calcium sample concentrations similar to those of PDP-23 during the detection monitoring event, but also had higher calcium prediction limits than PDP-23. Well MW-18A, which is located approximately 300 feet south of PDP-23, had a calcium sample concentration of 1.04 mg/L and a prediction limit of 3.1 mg/L. Well MW-19, which is located approximately 480 feet west of PDP-23, had a calcium sample concentration of 2.74 mg/L and a prediction limit of 237 mg/L. The relatively high prediction limit for MW-19 is a result of the high variability in MW-19 calcium concentrations during the background period, which, as indicated in the 2017 Annual Groundwater Monitoring Report, ranged from 8.62 mg/L to 155 mg/L (PBW, 2018).

4.0 CONCLUSION

One constituent (calcium) exceeded the prediction limit in one well (PDP-23) during the initial detection monitoring event and subsequent re-sample event at PDP 5. Based on the extremely low concentrations of calcium in PDP-23 relative to the calcium concentrations observed in other CCR Site wells, and the generally high variability in calcium concentrations observed in the PDP 5 detection monitoring samples, the prediction limit exceedances observed at PDP-23 are attributed to natural variation in groundwater quality within the monitoring system and are not considered evidence of a release from the unit. In accordance with Section 257.94(e)(2), Luminant will continue the detection monitoring program at the unit. Initiation of an assessment monitoring program is not required at this time.

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5.0 REFERENCES

- Burns & McDonnell Engineering Company, Inc (BM), 2015. CCR Study for Martin Lake Steam Electric Station – Final Draft. June 2015.
- Pastor, Behling & Wheeler, LLC (PBW), 2017a. Coal Combustion Residual Rule Groundwater Monitoring System Certification, Martin Lake Steam Electric Station, PDP 5, Rusk County, Texas. October 16, 2017.
- Pastor, Behling & Wheeler, LLC (PBW), 2017b. Coal Combustion Residual Rule Monitoring Well Design, Installation, Development, and Decommissioning Report, Martin Lake Steam Electric Station, PDP 5, Rusk County, Texas. October 13, 2017.
- Pastor, Behling & Wheeler, LLC (PBW), 2017c. Coal Combustion Residual Rule Statistical Analysis Plan, Martin Lake Steam Electric Station, PDP 5, Rusk County, Texas. October 11, 2017.
- Pastor, Behling & Wheeler, LLC (PBW), 2018. Coal Combustion Residual Rule 2017 Annual Groundwater Monitoring Report, Martin Lake Steam Electric Station, PDP 5, Rusk County, Texas. January 31, 2018.

Tables

TABLE 1
WELL CONSTRUCTION SUMMARY
PDP 5
MARTIN LAKE STEAM ELECTRIC STATION

Well ID	Date Installed	Northing	Easting	Ground Elevation (ft amsl)	TOC Elevation (ft amsl)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Screen Length (ft)	Total Design Depth (ft bgs)	Casing Diameter (inches)
MW-17A	10/01/08	228279	2902653	384.57	387.75	27	47	20	47	2
MW-18A	10/02/08	228860	2902563	410.89	414.44	47	67	20	67	2
MW-19	09/30/08	229492	2902142	367.98	371.33	10	25	15	25	2
MW-20A	09/30/08	228847	2901077	395.74	398.98	10	40	30	41	2
PDP-22	09/09/15	229672	2901564	383.90	386.75	35	60	25	60	2
PDP-23	09/10/15	229231	2902465	391.06	394.43	35	45	10	45	2
PDP-24	09/11/15	228132	2902782	387.06	389.73	30	40	10	40	2
PDP-25	09/11/15	227735	2901945	385.13	387.97	50	60	10	60	2
PDP-26	09/09/15	227663	2900878	394.29	397.68	39	49	10	49	2

Notes:

- Abbreviations: ft - feet; amsl - above mean sea level; bgs - below ground surface.

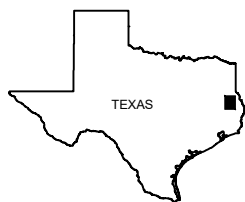
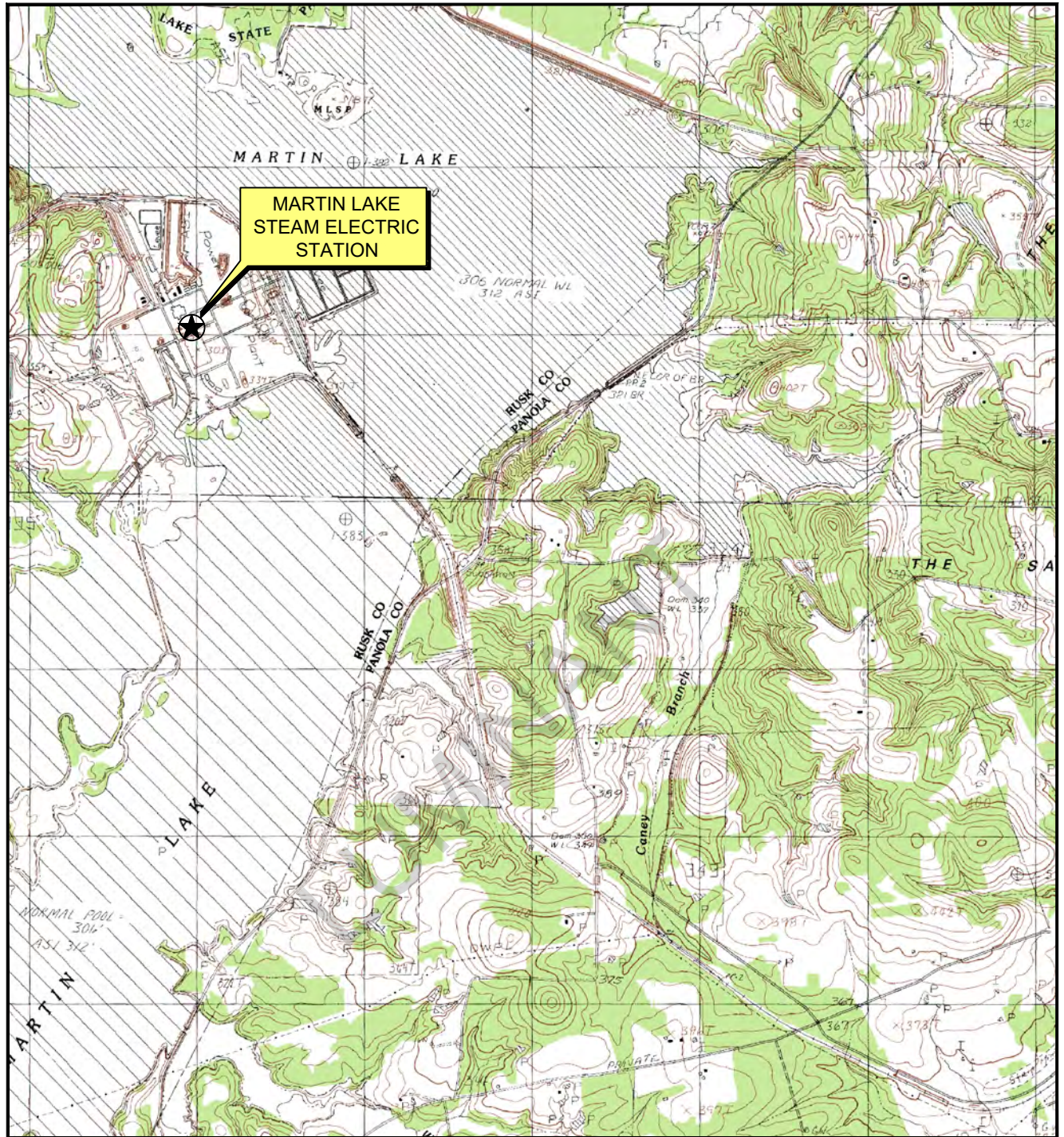
TABLE 2
CCR GROUNDWATER DETECTION MONITORING DATA SUMMARY
PDP 5
MARTIN LAKE STEAM ELECTRIC STATION

Sample Location	Date Sampled	B		Ca		Cl		F1		Field pH		SO ₄		TDS	
		Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data	Prediction Limit	Sample Data
MW-17A	9/22/17	0.538	0.402	6.73	3.1	10.4	8.3	0.4	<0.1	2.5 9.19	6.78	51.9	31.2	170	111
MW-18A	9/21/17	0.2	0.0654	3.1	1.04	10.4	5.27	0.4	<0.1	4.88 7.92	6.94	9.1	3.23	157	45
MW-19	9/22/17	0.782	0.0677	237	2.74	57.7	5.36	0.512	<0.1	4.6 8.08	6.94	672	1.46 J	1,380	98
MW-20A	9/22/17	0.213	0.0807	25.7	17.4	12.3	12.6	0.954	0.175 J	3.06 8.76	6.71	148	74.2	381	237
MW-20A Re-sample	2/21/18	--	--	--	--	12.3	10.7	--	--	--	--	--	--	--	--
PDP-22	9/22/17	0.411	0.221	306	92.5	32.7	12.3	1.07	0.321 J	4.08 8.63	6.98	216	178	1,780	558
PDP-23	9/22/17	0.0678	0.0463	2.0	2.34	7.52	4.48	0.4	0.147 J	3.38 8.45	6.77	3.27	1.47 J	143	111
PDP-23 Re-sample	2/21/18	--	--	2.0	2.37	--	--	--	--	--	--	--	--	--	--
PDP-24	9/22/17	4.92	3.01	45.9	25.8	22.6	17.5	1.03	0.898	1.33 9.97	6.95	533	231	894	440
PDP-25	9/22/17	0.136	0.133	41.3	36.8	197	130	0.4	0.157 J	4.65 7.93	6.81	118	89.1	705	481
PDP-26	9/22/17	0.111	0.0343	4.74	2.32	14.6	5.24	0.577	0.157 J	5.35 7.57	6.84	64.6	5.88	438	107

Notes:

1. All concentrations in mg/L. pH in standard units.
2. J - concentration is below sample quantitation limit; result is an estimate.
3. Highlighted sample results exceed the prediction limit.

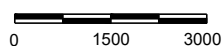
Figures



QUADRANGLE LOCATION



Scale in Feet



SOURCE:
Base map from www.tnris.gov, Tatum, TX 7.5 min. USGS quadrangle dated 1983.

MARTIN LAKE STEAM ELECTRIC STATION RUSK COUNTY, TEXAS

Figure 1

PDP 5 AREA SITE LOCATION MAP

PROJECT: 5347c

BY: AJD

REVISIONS


DATE: MARCH 2018

CHECKED: PJB

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS



EXPLANATION

 CCR Monitoring Well



Scale in Feet

0 275 550

SOURCE:
Imagery from www.tnris.gov, Rusk County, aerial photographs, 2012.

MARTIN LAKE STEAM ELECTRIC STATION RUSK COUNTY, TEXAS

Figure 2

PDP 5 AREA DETAILED SITE PLAN

PROJECT: 5347C

BY: AJD

REVISIONS

DATE: MARCH 2018

CHECKED: PJB

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

Appendix A

Detection Monitoring Laboratory Analytical Reports



October 03, 2017

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446
RE: Luminant - MLSES PDP CCR

Order No.: 1709243

Dear Will Vienne:

DHL Analytical, Inc. received 9 sample(s) on 9/23/2017 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

A handwritten signature in red ink, appearing to read "John DuPont".

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification
Number: T104704211-17-19



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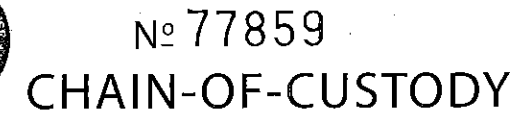
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AnalyticalDatesReport 1709243 10

Analytical Report 1709243 12

AnalyticalQCSummaryReport 1709243 21

LUMINANT



DATE: 9-22-17 PAGE 1 OF 1
PO #: 5347-C | DHL WORK ORDER #: 1709243
 PROJECT LOCATION OR NAME: LUMINANT - MLSES PDP
 CLIENT PROJECT #: 5347-C COLLECTOR: J. BEATON

RELINQUISHED BY: (Signature) <i>[Signature]</i>	DATE/TIME 9-22-17	RECEIVED BY: (Signature) 1730 FEDEX	TURN AROUND TIME RUSH <input type="checkbox"/> CALL FIRST 1 DAY <input type="checkbox"/> CALL FIRST 2 DAY <input type="checkbox"/> NORMAL <input checked="" type="checkbox"/> OTHER <input type="checkbox"/>	LABORATORY USE ONLY: RECEIVING TEMP: 2.6 THERM #: 78 CUSTODY SEALS: <input type="checkbox"/> BROKEN <input type="checkbox"/> INTACT <input checked="" type="checkbox"/> NOT USED CARRIER: <input type="checkbox"/> LONE STAR <input checked="" type="checkbox"/> FEDEX <input type="checkbox"/> UPS <input type="checkbox"/> OTHER <input type="checkbox"/> COURIER DELIVERY <input type="checkbox"/> HAND DELIVERED
RELINQUISHED BY: (Signature) OFF FEDEX	DATE/TIME 9-23-17	RECEIVED BY: (Signature) 9:45 <i>[Signature]</i>		
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)		
<input type="checkbox"/> DHL DISPOSAL @ \$5.00 each <input type="checkbox"/> Return 3				

ORIGIN ID:FWHA (512) 671-3434
JOHN BRAYTON

2201 DOUBLE CREEK DR STE 4004

ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 22SEP17
ACTWT: 67.60 LB
CAD: 6991003/SSFD1802
DIMS: 24x15x13 IN

BILL THIRD PARTY

Part # 1562972925/11/16/16 EXP 08/16

TO DHL
DHL
2300 DOUBLE CREEK DR

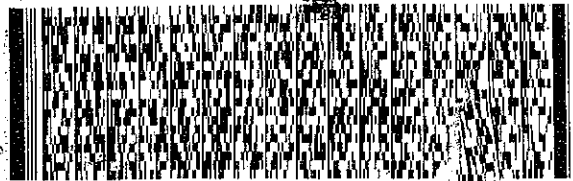
ROUND ROCK TX 78664

(000) 000-0000

REF:

INVT:
PO:

DEPT:



FedEx
Express



TRK# 7878 2559 9863
0201

SATURDAY 12:00P
PRIORITY OVERNIGHT

XO BSMA

AHS
78664
TX-US AUS



Sample Receipt Checklist

Client Name Pastor, Behling & Wheeler

Date Received: 9/25/2017

Work Order Number 1709243

Received by AH

Checklist completed by:

[Signature]
Signature

9/25/2017
Date

Reviewed by

[Signature]
Initials

9/25/2017
Date

Carrier name FedEx 1 day

Shipping container/cooler in good condition? Yes ☒ No ☐ Not Present ☐

Custody seals intact on shipping container/cooler? Yes ☒ No ☐ Not Present ☐

Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☒

Chain of custody present? Yes ☒ No ☐

Chain of custody signed when relinquished and received? Yes ☒ No ☐

Chain of custody agrees with sample labels? Yes ☒ No ☐

Samples in proper container/bottle? Yes ☒ No ☐

Sample containers intact? Yes ☒ No ☐

Sufficient sample volume for indicated test? Yes ☒ No ☐

All samples received within holding time? Yes ☒ No ☐

Container/Temp Blank temperature in compliance? Yes ☒ No ☐ 2.6 °C

Water - VOA vials have zero headspace? Yes ☐ No ☐ No VOA vials submitted ☒

Water - pH<2 acceptable upon receipt? Yes ☒ No ☐ NA ☐ LOT # 8086

Adjusted? No Checked by CND

Water - pH>9 (S) or pH>12 (CN) acceptable upon receipt? Yes ☐ No ☐ NA ☒ LOT #

Adjusted? _____ Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - MLSES PDP CCR
Lab Order: 1709243

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method E300 - Anions Analysis
Method M2540C - Total Dissolved Solids Analysis

LOG IN

The samples were received and log-in performed on 9/23/2017. A total of 9 samples were received and analyzed. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals Analysis, the recoveries of Boron and Calcium for the Matrix Spike and Matrix Spike Duplicate (1709241-001 MS/MSD) were outside of the method control limits. These are flagged accordingly in the QC Summary Report. These analytes were within method control limits in the associated LCS. No further corrective action was taken.

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - MLSES PDP CCR
Lab Order: 1709243

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1709243-01	MW-18A		09/21/17 05:10 PM	9/23/2017
1709243-02	MW-17A		09/22/17 07:40 AM	9/23/2017
1709243-03	PDP-24		09/22/17 08:25 AM	9/23/2017
1709243-04	PDP-25		09/22/17 09:15 AM	9/23/2017
1709243-05	PDP-26		09/22/17 10:10 AM	9/23/2017
1709243-06	PDP-23		09/22/17 11:00 AM	9/23/2017
1709243-07	MW-19		09/22/17 11:45 AM	9/23/2017
1709243-08	MW-20A		09/22/17 12:25 PM	9/23/2017
1709243-09	PDP-22		09/22/17 01:10 PM	9/23/2017

Lab Order: 1709243
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES PDP CCR

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1709243-01A	MW-18A	09/21/17 05:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/26/17 09:38 AM	82546
	MW-18A	09/21/17 05:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/26/17 09:38 AM	82546
1709243-01B	MW-18A	09/21/17 05:10 PM	Aqueous	E300	Anion Preparation	09/27/17 11:16 AM	82571
	MW-18A	09/21/17 05:10 PM	Aqueous	M2540C	TDS Preparation	09/26/17 02:49 PM	82558
1709243-02A	MW-17A	09/22/17 07:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/26/17 09:38 AM	82546
1709243-02B	MW-17A	09/22/17 07:40 AM	Aqueous	E300	Anion Preparation	09/27/17 11:16 AM	82571
	MW-17A	09/22/17 07:40 AM	Aqueous	M2540C	TDS Preparation	09/28/17 10:37 AM	82593
1709243-03A	PDP-24	09/22/17 08:25 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/26/17 09:38 AM	82546
1709243-03B	PDP-24	09/22/17 08:25 AM	Aqueous	E300	Anion Preparation	09/27/17 11:16 AM	82571
	PDP-24	09/22/17 08:25 AM	Aqueous	E300	Anion Preparation	09/28/17 02:30 PM	82585
	PDP-24	09/22/17 08:25 AM	Aqueous	M2540C	TDS Preparation	09/28/17 10:37 AM	82593
1709243-04A	PDP-25	09/22/17 09:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/26/17 09:38 AM	82546
	PDP-25	09/22/17 09:15 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/26/17 09:38 AM	82546
1709243-04B	PDP-25	09/22/17 09:15 AM	Aqueous	E300	Anion Preparation	09/27/17 11:16 AM	82571
	PDP-25	09/22/17 09:15 AM	Aqueous	E300	Anion Preparation	09/27/17 11:16 AM	82571
	PDP-25	09/22/17 09:15 AM	Aqueous	M2540C	TDS Preparation	09/28/17 10:37 AM	82593
1709243-05A	PDP-26	09/22/17 10:10 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/26/17 09:38 AM	82546
1709243-05B	PDP-26	09/22/17 10:10 AM	Aqueous	E300	Anion Preparation	09/27/17 11:16 AM	82571
	PDP-26	09/22/17 10:10 AM	Aqueous	E300	Anion Preparation	09/27/17 11:16 AM	82571
	PDP-26	09/22/17 10:10 AM	Aqueous	M2540C	TDS Preparation	09/28/17 10:37 AM	82593
1709243-06A	PDP-23	09/22/17 11:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/26/17 09:38 AM	82546
1709243-06B	PDP-23	09/22/17 11:00 AM	Aqueous	E300	Anion Preparation	09/27/17 11:16 AM	82571
	PDP-23	09/22/17 11:00 AM	Aqueous	M2540C	TDS Preparation	09/28/17 10:37 AM	82593
1709243-07A	MW-19	09/22/17 11:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/26/17 09:38 AM	82546
	MW-19	09/22/17 11:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/26/17 09:38 AM	82546
1709243-07B	MW-19	09/22/17 11:45 AM	Aqueous	E300	Anion Preparation	09/27/17 11:16 AM	82571
	MW-19	09/22/17 11:45 AM	Aqueous	E300	Anion Preparation	09/27/17 11:16 AM	82571
	MW-19	09/22/17 11:45 AM	Aqueous	E300	Anion Preparation	09/27/17 11:16 AM	82571

Lab Order: 1709243
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES PDP CCR

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1709243-07B	MW-19	09/22/17 11:45 AM	Aqueous	M2540C	TDS Preparation	09/28/17 10:37 AM	82593
1709243-08A	MW-20A	09/22/17 12:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/26/17 09:38 AM	82546
	MW-20A	09/22/17 12:25 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/26/17 09:38 AM	82546
1709243-08B	MW-20A	09/22/17 12:25 PM	Aqueous	E300	Anion Preparation	09/27/17 11:16 AM	82571
	MW-20A	09/22/17 12:25 PM	Aqueous	M2540C	TDS Preparation	09/28/17 10:37 AM	82593
1709243-09A	PDP-22	09/22/17 01:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/26/17 09:38 AM	82546
	PDP-22	09/22/17 01:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	09/26/17 09:38 AM	82546
1709243-09B	PDP-22	09/22/17 01:10 PM	Aqueous	E300	Anion Preparation	09/27/17 11:16 AM	82571
	PDP-22	09/22/17 01:10 PM	Aqueous	E300	Anion Preparation	09/28/17 02:30 PM	82585
	PDP-22	09/22/17 01:10 PM	Aqueous	M2540C	TDS Preparation	09/28/17 10:37 AM	82593

Lab Order: 1709243
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES PDP CCR

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1709243-01A	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	82546	1	09/27/17 03:08 PM	ICP-MS4_170927B
	MW-18A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	82546	10	09/27/17 01:42 PM	ICP-MS4_170927B
1709243-01B	MW-18A	Aqueous	E300	Anions by IC method - Water	82571	1	09/27/17 05:03 PM	IC2_170927A
	MW-18A	Aqueous	M2540C	Total Dissolved Solids	82558	1	09/28/17 10:35 AM	WC_170927B
1709243-02A	MW-17A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	82546	1	09/27/17 02:11 PM	ICP-MS4_170927B
1709243-02B	MW-17A	Aqueous	E300	Anions by IC method - Water	82571	1	09/27/17 05:17 PM	IC2_170927A
	MW-17A	Aqueous	M2540C	Total Dissolved Solids	82593	1	09/29/17 09:50 AM	WC_170928A
1709243-03A	PDP-24	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	82546	10	09/27/17 02:13 PM	ICP-MS4_170927B
1709243-03B	PDP-24	Aqueous	E300	Anions by IC method - Water	82571	1	09/27/17 05:31 PM	IC2_170927A
	PDP-24	Aqueous	E300	Anions by IC method - Water	82585	10	09/28/17 04:13 PM	IC4_170928A
	PDP-24	Aqueous	M2540C	Total Dissolved Solids	82593	1	09/29/17 09:50 AM	WC_170928A
1709243-04A	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	82546	10	09/27/17 02:15 PM	ICP-MS4_170927B
	PDP-25	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	82546	1	09/27/17 03:10 PM	ICP-MS4_170927B
1709243-04B	PDP-25	Aqueous	E300	Anions by IC method - Water	82571	10	09/27/17 05:45 PM	IC2_170927A
	PDP-25	Aqueous	E300	Anions by IC method - Water	82571	1	09/27/17 08:19 PM	IC2_170927A
	PDP-25	Aqueous	M2540C	Total Dissolved Solids	82593	1	09/29/17 09:50 AM	WC_170928A
1709243-05A	PDP-26	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	82546	1	09/27/17 02:17 PM	ICP-MS4_170927B
1709243-05B	PDP-26	Aqueous	E300	Anions by IC method - Water	82571	10	09/27/17 05:59 PM	IC2_170927A
	PDP-26	Aqueous	E300	Anions by IC method - Water	82571	1	09/27/17 08:33 PM	IC2_170927A
	PDP-26	Aqueous	M2540C	Total Dissolved Solids	82593	1	09/29/17 09:50 AM	WC_170928A
1709243-06A	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	82546	1	09/27/17 02:19 PM	ICP-MS4_170927B
1709243-06B	PDP-23	Aqueous	E300	Anions by IC method - Water	82571	1	09/27/17 06:13 PM	IC2_170927A
	PDP-23	Aqueous	M2540C	Total Dissolved Solids	82593	1	09/29/17 09:50 AM	WC_170928A
1709243-07A	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	82546	10	09/27/17 02:21 PM	ICP-MS4_170927B
	MW-19	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	82546	1	09/27/17 03:12 PM	ICP-MS4_170927B
1709243-07B	MW-19	Aqueous	E300	Anions by IC method - Water	82571	1	09/27/17 09:01 PM	IC2_170927A
	MW-19	Aqueous	E300	Anions by IC method - Water	82571	100	09/27/17 06:27 PM	IC2_170927A
	MW-19	Aqueous	E300	Anions by IC method - Water	82571	10	09/27/17 08:47 PM	IC2_170927A

Lab Order: 1709243
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES PDP CCR

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1709243-07B	MW-19	Aqueous	M2540C	Total Dissolved Solids	82593	1	09/29/17 09:50 AM	WC_170928A
1709243-08A	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	82546	1	09/27/17 03:14 PM	ICP-MS4_170927B
	MW-20A	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	82546	10	09/27/17 02:22 PM	ICP-MS4_170927B
1709243-08B	MW-20A	Aqueous	E300	Anions by IC method - Water	82571	1	09/27/17 07:09 PM	IC2_170927A
	MW-20A	Aqueous	M2540C	Total Dissolved Solids	82593	1	09/29/17 09:50 AM	WC_170928A
1709243-09A	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	82546	10	09/27/17 02:24 PM	ICP-MS4_170927B
	PDP-22	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	82546	1	09/27/17 03:16 PM	ICP-MS4_170927B
1709243-09B	PDP-22	Aqueous	E300	Anions by IC method - Water	82571	1	09/27/17 07:23 PM	IC2_170927A
	PDP-22	Aqueous	E300	Anions by IC method - Water	82585	10	09/28/17 04:25 PM	IC4_170928A
	PDP-22	Aqueous	M2540C	Total Dissolved Solids	82593	1	09/29/17 09:50 AM	WC_170928A

DHL Analytical, Inc.

Date: 03-Oct-17

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - MLSES PDP CCR
Project No: 5347-C
Lab Order: 1709243

Client Sample ID: MW-18A
Lab ID: 1709243-01
Collection Date: 09/21/17 05:10 PM
Matrix: AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A					Analyst: RO
Boron	0.0654	0.0100	0.0300		mg/L	1	09/27/17 03:08 PM
Calcium	1.04	0.100	0.300		mg/L	1	09/27/17 03:08 PM
ANIONS BY IC METHOD - WATER		E300					Analyst: JL
Chloride	5.27	0.300	1.00		mg/L	1	09/27/17 05:03 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	09/27/17 05:03 PM
Sulfate	3.23	1.00	3.00		mg/L	1	09/27/17 05:03 PM
TOTAL DISSOLVED SOLIDS		M2540C					Analyst: BTJ
Total Dissolved Solids (Residue, Filterable)	45.0	10.0	10.0		mg/L	1	09/28/17 10:35 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: 03-Oct-17

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - MLSES PDP CCR
Project No: 5347-C
Lab Order: 1709243

Client Sample ID: MW-17A
Lab ID: 1709243-02
Collection Date: 09/22/17 07:40 AM
Matrix: AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A					Analyst: RO
Boron	0.402	0.0100	0.0300		mg/L	1	09/27/17 02:11 PM
Calcium	3.10	0.100	0.300		mg/L	1	09/27/17 02:11 PM
ANIONS BY IC METHOD - WATER		E300					Analyst: JL
Chloride	8.30	0.300	1.00		mg/L	1	09/27/17 05:17 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	09/27/17 05:17 PM
Sulfate	31.2	1.00	3.00		mg/L	1	09/27/17 05:17 PM
TOTAL DISSOLVED SOLIDS		M2540C					Analyst: JW
Total Dissolved Solids (Residue, Filterable)	111	10.0	10.0		mg/L	1	09/29/17 09:50 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: 03-Oct-17

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - MLSES PDP CCR
Project No: 5347-C
Lab Order: 1709243

Client Sample ID: PDP-24
Lab ID: 1709243-03
Collection Date: 09/22/17 08:25 AM
Matrix: AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A					Analyst: RO
Boron	3.01	0.100	0.300		mg/L	10	09/27/17 02:13 PM
Calcium	25.8	1.00	3.00		mg/L	10	09/27/17 02:13 PM
ANIONS BY IC METHOD - WATER		E300					Analyst: JL
Chloride	17.5	0.300	1.00		mg/L	1	09/27/17 05:31 PM
Fluoride	0.898	0.100	0.400		mg/L	1	09/27/17 05:31 PM
Sulfate	231	10.0	30.0		mg/L	10	09/28/17 04:13 PM
TOTAL DISSOLVED SOLIDS		M2540C					Analyst: JW
Total Dissolved Solids (Residue, Filterable)	440	10.0	10.0		mg/L	1	09/29/17 09:50 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: 03-Oct-17

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - MLSES PDP CCR
Project No: 5347-C
Lab Order: 1709243

Client Sample ID: PDP-25
Lab ID: 1709243-04
Collection Date: 09/22/17 09:15 AM
Matrix: AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A					Analyst: RO
Boron	0.133	0.0100	0.0300		mg/L	1	09/27/17 03:10 PM
Calcium	36.8	1.00	3.00		mg/L	10	09/27/17 02:15 PM
ANIONS BY IC METHOD - WATER		E300					Analyst: JL
Chloride	130	3.00	10.0		mg/L	10	09/27/17 05:45 PM
Fluoride	0.157	0.100	0.400	J	mg/L	1	09/27/17 08:19 PM
Sulfate	89.1	1.00	3.00		mg/L	1	09/27/17 08:19 PM
TOTAL DISSOLVED SOLIDS		M2540C					Analyst: JW
Total Dissolved Solids (Residue, Filterable)	481	10.0	10.0		mg/L	1	09/29/17 09:50 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: 03-Oct-17

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - MLSES PDP CCR
Project No: 5347-C
Lab Order: 1709243

Client Sample ID: PDP-26
Lab ID: 1709243-05
Collection Date: 09/22/17 10:10 AM
Matrix: AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A					Analyst: RO
Boron	0.0343	0.0100	0.0300		mg/L	1	09/27/17 02:17 PM
Calcium	2.32	0.100	0.300		mg/L	1	09/27/17 02:17 PM
ANIONS BY IC METHOD - WATER		E300					Analyst: JL
Chloride	5.24	0.300	1.00		mg/L	1	09/27/17 08:33 PM
Fluoride	0.157	0.100	0.400	J	mg/L	1	09/27/17 08:33 PM
Sulfate	5.88	1.00	3.00		mg/L	1	09/27/17 08:33 PM
TOTAL DISSOLVED SOLIDS		M2540C					Analyst: JW
Total Dissolved Solids (Residue, Filterable)	107	10.0	10.0		mg/L	1	09/29/17 09:50 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: 03-Oct-17

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - MLSES PDP CCR
Project No: 5347-C
Lab Order: 1709243

Client Sample ID: PDP-23
Lab ID: 1709243-06
Collection Date: 09/22/17 11:00 AM
Matrix: AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A					Analyst: RO
Boron	0.0463	0.0100	0.0300		mg/L	1	09/27/17 02:19 PM
Calcium	2.34	0.100	0.300		mg/L	1	09/27/17 02:19 PM
ANIONS BY IC METHOD - WATER		E300					Analyst: JL
Chloride	4.48	0.300	1.00		mg/L	1	09/27/17 06:13 PM
Fluoride	0.147	0.100	0.400	J	mg/L	1	09/27/17 06:13 PM
Sulfate	1.47	1.00	3.00	J	mg/L	1	09/27/17 06:13 PM
TOTAL DISSOLVED SOLIDS		M2540C					Analyst: JW
Total Dissolved Solids (Residue, Filterable)	111	10.0	10.0		mg/L	1	09/29/17 09:50 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: 03-Oct-17

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - MLSES PDP CCR
Project No: 5347-C
Lab Order: 1709243

Client Sample ID: MW-19
Lab ID: 1709243-07
Collection Date: 09/22/17 11:45 AM
Matrix: AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A					Analyst: RO
Boron	0.0677	0.0100	0.0300		mg/L	1	09/27/17 03:12 PM
Calcium	2.74	0.100	0.300		mg/L	1	09/27/17 03:12 PM
ANIONS BY IC METHOD - WATER		E300					Analyst: JL
Chloride	5.36	0.300	1.00		mg/L	1	09/27/17 09:01 PM
Fluoride	<0.100	0.100	0.400		mg/L	1	09/27/17 09:01 PM
Sulfate	1.46	1.00	3.00	J	mg/L	1	09/27/17 09:01 PM
TOTAL DISSOLVED SOLIDS		M2540C					Analyst: JW
Total Dissolved Solids (Residue, Filterable)	98.0	10.0	10.0		mg/L	1	09/29/17 09:50 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: 03-Oct-17

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - MLSES PDP CCR
Project No: 5347-C
Lab Order: 1709243

Client Sample ID: MW-20A
Lab ID: 1709243-08
Collection Date: 09/22/17 12:25 PM
Matrix: AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A					Analyst: RO
Boron	0.0807	0.0100	0.0300		mg/L	1	09/27/17 03:14 PM
Calcium	17.4	0.100	0.300		mg/L	1	09/27/17 03:14 PM
ANIONS BY IC METHOD - WATER		E300					Analyst: JL
Chloride	12.6	0.300	1.00		mg/L	1	09/27/17 07:09 PM
Fluoride	0.175	0.100	0.400	J	mg/L	1	09/27/17 07:09 PM
Sulfate	74.2	1.00	3.00		mg/L	1	09/27/17 07:09 PM
TOTAL DISSOLVED SOLIDS		M2540C					Analyst: JW
Total Dissolved Solids (Residue, Filterable)	237	10.0	10.0		mg/L	1	09/29/17 09:50 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.

Date: 03-Oct-17

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - MLSES PDP CCR
Project No: 5347-C
Lab Order: 1709243

Client Sample ID: PDP-22
Lab ID: 1709243-09
Collection Date: 09/22/17 01:10 PM
Matrix: AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A					Analyst: RO
Boron	0.221	0.0100	0.0300		mg/L	1	09/27/17 03:16 PM
Calcium	92.5	1.00	3.00		mg/L	10	09/27/17 02:24 PM
ANIONS BY IC METHOD - WATER		E300					Analyst: JL
Chloride	12.3	0.300	1.00		mg/L	1	09/27/17 07:23 PM
Fluoride	0.321	0.100	0.400	J	mg/L	1	09/27/17 07:23 PM
Sulfate	178	10.0	30.0		mg/L	10	09/28/17 04:25 PM
TOTAL DISSOLVED SOLIDS		M2540C					Analyst: JW
Total Dissolved Solids (Residue, Filterable)	558	10.0	10.0		mg/L	1	09/29/17 09:50 AM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler

Work Order: 1709243

Project: Luminant - MLSES PDP CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170927B

The QC data in batch 82546 applies to the following samples: 1709243-01A, 1709243-02A, 1709243-03A, 1709243-04A, 1709243-05A, 1709243-06A, 1709243-07A, 1709243-08A, 1709243-09A

Sample ID	MB-82546			Batch ID:	82546		TestNo:	SW6020A		Units:	mg/L	
SampType:	MBLK			Run ID:	ICP-MS4_170927B		Analysis Date:	9/27/2017 1:14:00 PM		Prep Date:	9/26/2017	
Analyte	Result			RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron <0.0100 0.0300

Calcium <0.100 0.300

Sample ID	LCS-82546			Batch ID:	82546		TestNo:	SW6020A		Units:	mg/L	
SampType:	LCS			Run ID:	ICP-MS4_170927B		Analysis Date:	9/27/2017 1:16:00 PM		Prep Date:	9/26/2017	
Analyte		Result	RL	SPK value	Ref Val		%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron 0.211 0.0300 0.200 0 105 80 120

Calcium 5.10 0.300 5.00 0 102 80 120

Sample ID	LCSD-82546	Batch ID:	82546	TestNo:	SW6020A	Units:	mg/L			
SampType:	LCSD	Run ID:	ICP-MS4_170927B	Analysis Date:	9/27/2017 1:18:00 PM	Prep Date:	9/26/2017			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron 0.223 0.0300 0.200 0 111 80 120 5.59 15

Calcium 5.16 0.300 5.00 0 103 80 120 1.15 15

Sample ID	1709241-01A SD	Batch ID:	82546	TestNo:	SW6020A	Units:	mg/L			
SampType:	SD	Run ID:	ICP-MS4_170927B	Analysis Date:	9/27/2017 1:25:00 PM	Prep Date:	9/26/2017			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron 1.55 1.50 0 1.40 10.3 10

Calcium 151 15.0 0 147 2.42 10

Sample ID	1709241-01A PDS	Batch ID:	82546	TestNo:	SW6020A	Units:	mg/L			
SampType:	PDS	Run ID:	ICP-MS4_170927B	Analysis Date:	9/27/2017 1:48:00 PM	Prep Date:	9/26/2017			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron 3.53 0.300 2.00 1.40 107 80 120

Calcium 206 3.00 50.0 147 117 80 120

Sample ID	1709241-01A MS	Batch ID:	82546	TestNo:	SW6020A	Units:	mg/L			
SampType:	MS	Run ID:	ICP-MS4_170927B	Analysis Date:	9/27/2017 1:50:00 PM	Prep Date:	9/26/2017			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron 1.65 0.300 0.200 1.40 127 80 120 S

Calcium 154 3.00 5.00 147 129 80 120 S

Qualifiers: B Analyte detected in the associated Method Blank
 J Analyte detected between MDL and RL
 ND Not Detected at the Method Detection Limit
 RL Reporting Limit
 J Analyte detected between SDL and RL

DF Dilution Factor
 MDL Method Detection Limit
 R RPD outside accepted control limits
 S Spike Recovery outside control limits
 N Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1709243
Project: Luminant - MLSES PDP CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170927B

Sample ID	1709241-01A MSD	Batch ID:	82546	TestNo:	SW6020A	Units:	mg/L			
SampType:	MSD	Run ID:	ICP-MS4_170927B	Analysis Date:	9/27/2017 1:52:00 PM	Prep Date:	9/26/2017			
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit Qual
Boron		1.55	0.300	0.200	1.40	73.9	80	120	6.70	15 S
Calcium		151	3.00	5.00	147	69.2	80	120	1.97	15 S

LUMINANT

Qualifiers: B Analyte detected in the associated Method Blank
J Analyte detected between MDL and RL
ND Not Detected at the Method Detection Limit
RL Reporting Limit
J Analyte detected between SDL and RL

DF Dilution Factor
MDL Method Detection Limit
R RPD outside accepted control limits
S Spike Recovery outside control limits
N Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1709243
Project: Luminant - MLSES PDP CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170927B

Sample ID	ICV-170927	Batch ID:	R94418	TestNo:	SW6020A	Units:	mg/L				
SampType:	ICV	Run ID:	ICP-MS4_170927B	Analysis Date:	9/27/2017 10:26:00 AM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron	0.101	0.0300	0.100	0	101	90	110			
Calcium	2.45	0.300	2.50	0	98.1	90	110			

Sample ID	LCVL-170927		Batch ID:	R94418		TestNo:	SW6020A		Units:	mg/L	
SampType:	LCVL		Run ID:	ICP-MS4_170927B		Analysis Date:	9/27/2017 10:36:00 AM		Prep Date:		
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron	0.0242	0.0300	0.0200	0	121	70	130			
Calcium	0.0907	0.300	0.100	0	90.7	70	130			

Sample ID	CCV3-170927	Batch ID:	R94418	TestNo:	SW6020A	Units:	mg/L				
SampType:	CCV	Run ID:	ICP-MS4_170927B	Analysis Date:	9/27/2017 12:45:00 PM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron	0.218	0.0300	0.200	0	109	90	110			
Calcium	4.79	0.300	5.00	0	95.7	90	110			

Sample ID	LCVL3-170927		Batch ID:	R94418		TestNo:	SW6020A		Units:	mg/L	
SampType:	LCVL		Run ID:	ICP-MS4_170927B		Analysis Date:	9/27/2017 12:49:00 PM		Prep Date:		
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron	0.0210	0.0300	0.0200	0	105	70	130			
Calcium	0.0966	0.300	0.100	0	96.6	70	130			

Sample ID	CCV4-170927	Batch ID:	R94418	TestNo:	SW6020A	Units:	mg/L			
SampType:	CCV	Run ID:	ICP-MS4_170927B	Analysis Date:	9/27/2017 1:54:00 PM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron	0.221	0.0300	0.200	0	110	90	110			
Calcium	4.85	0.300	5.00	0	96.9	90	110			

Sample ID	LCVL4-170927	Batch ID:	R94418	TestNo:	SW6020A	Units:	mg/L				
SampType:	LCVL	Run ID:	ICP-MS4_170927B	Analysis Date:	9/27/2017 2:06:00 PM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron	0.0248	0.0300	0.0200	0	124	70	130			
Calcium	0.100	0.300	0.100	0	100	70	130			

Qualifiers: B Analyte detected in the associated Method Blank
J Analyte detected between MDL and RL
ND Not Detected at the Method Detection Limit
RL Reporting Limit
J Analyte detected between SDL and RL

DF Dilution Factor
MDL Method Detection Limit
R RPD outside accepted control limits
S Spike Recovery outside control limits
N Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1709243
Project: Luminant - MLSES PDP CCR

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_170927B

Sample ID	CCV5-170927	Batch ID:	R94418	TestNo:	SW6020A	Units:	mg/L				
SampType:	CCV	Run ID:	ICP-MS4_170927B	Analysis Date:	9/27/2017 2:52:00 PM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron	0.216	0.0300	0.200	0	108	90	110			
Calcium	4.76	0.300	5.00	0	95.3	90	110			

Sample ID	LCVL5-170927	Batch ID:	R94418	TestNo:	SW6020A	Units:	mg/L				
SampType:	LCVL	Run ID:	ICP-MS4_170927B	Analysis Date:	9/27/2017 3:00:00 PM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron	0.0210	0.0300	0.0200	0	105	70	130			
Calcium	0.0892	0.300	0.100	0	89.2	70	130			

Sample ID	CCV6-170927		Batch ID:	R94418		TestNo:	SW6020A		Units:	mg/L	
SampType:	CCV		Run ID:	ICP-MS4_170927B		Analysis Date:	9/27/2017 3:26:00 PM		Prep Date:		
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron	0.202	0.0300	0.200	0	101	90	110			
Calcium	4.77	0.300	5.00	0	95.4	90	110			

Sample ID	LCVL6-170927		Batch ID:	R94418		TestNo:	SW6020A		Units:	mg/L	
SampType:	LCVL		Run ID:	ICP-MS4_170927B		Analysis Date:	9/27/2017 3:31:00 PM		Prep Date:		
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Boron	0.0219	0.0300	0.0200	0	109	70	130			
Calcium	0.102	0.300	0.100	0	102	70	130			

Qualifiers:

- B Analyte detected in the associated Method Blank
- J Analyte detected between MDL and RL
- ND Not Detected at the Method Detection Limit
- RL Reporting Limit
- J Analyte detected between SDL and RL

- DF Dilution Factor
- MDL Method Detection Limit
- R RPD outside accepted control limits
- S Spike Recovery outside control limits
- N Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1709243
Project: Luminant - MLSES PDP CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_170927A

The QC data in batch 82571 applies to the following samples: 1709243-01B, 1709243-02B, 1709243-03B, 1709243-04B, 1709243-05B, 1709243-06B, 1709243-07B, 1709243-08B, 1709243-09B

Sample ID	MB-82571		Batch ID:	82571		TestNo:	E300		Units:	mg/L	
SampType:	MBLK		Run ID:	IC2_170927A		Analysis Date:	9/27/2017 4:14:16 PM		Prep Date:	9/27/2017	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Chloride	<0.300	1.00								
Fluoride	<0.100	0.400								
Sulfate	<1.00	3.00								

Sample ID	LCS-82571		Batch ID:	82571		TestNo:	E300		Units:	mg/L	
SampType:	LCS		Run ID:	IC2_170927A		Analysis Date:	9/27/2017 4:28:16 PM		Prep Date:	9/27/2017	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Chloride	9.70	1.00	10.00	0	97.0	90	110			
Fluoride	4.20	0.400	4.000	0	105	90	110			
Sulfate	29.4	3.00	30.00	0	97.9	90	110			

Sample ID	LCSD-82571		Batch ID:	82571		TestNo:	E300		Units:	mg/L	
SampType:	LCSD		Run ID:	IC2_170927A		Analysis Date:	9/27/2017 4:42:16 PM		Prep Date:	9/27/2017	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Chloride	9.67	1.00	10.00	0	96.7	90	110	0.258	20	
Fluoride	4.18	0.400	4.000	0	105	90	110	0.306	20	
Sulfate	29.2	3.00	30.00	0	97.2	90	110	0.678	20	

Sample ID	1709243-07BMS		Batch ID:	82571		TestNo:	E300		Units:	mg/L	
SampType:	MS		Run ID:	IC2_170927A		Analysis Date:	9/27/2017 6:41:35 PM		Prep Date:	9/27/2017	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Chloride	2170	100	2000	0	109	90	110			
Fluoride	2050	40.0	2000	0	103	90	110			
Sulfate	2080	300	2000	0	104	90	110			

Sample ID: 1709243-07BMSD	Batch ID: 82571	TestNo: E300	Units: mg/L							
SampType: MSD	Run ID: IC2_170927A	Analysis Date: 9/27/2017 6:55:35 PM	Prep Date: 9/27/2017							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Chloride	2150	100	2000	0	107	90	110	1.29	20	
Fluoride	2040	40.0	2000	0	102	90	110	0.852	20	
Sulfate	2070	300	2000	0	104	90	110	0.257	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- J Analyte detected between MDL and RL
- ND Not Detected at the Method Detection Limit
- RL Reporting Limit
- J Analyte detected between SDL and RL

- DF Dilution Factor
- MDL Method Detection Limit
- R RPD outside accepted control limits
- S Spike Recovery outside control limits
- N Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1709243
Project: Luminant - MLSES PDP CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_170927A

Sample ID	ICV-170927	Batch ID:	R94441	TestNo:	E300	Units:	mg/L			
SampType:	ICV	Run ID:	IC2_170927A	Analysis Date:	9/27/2017 3:46:16 PM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.6	1.00	25.00	0	98.5	90	110			
Fluoride	10.2	0.400	10.00	0	102	90	110			
Sulfate	74.2	3.00	75.00	0	98.9	90	110			

Sample ID	CCV1-170927	Batch ID:	R94441	TestNo:	E300	Units:	mg/L			
SampType:	CCV	Run ID:	IC2_170927A	Analysis Date:	9/27/2017 7:51:35 PM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.80	1.00	10.00	0	98.0	90	110			
Fluoride	4.23	0.400	4.000	0	106	90	110			
Sulfate	29.7	3.00	30.00	0	99.1	90	110			

Sample ID	CCV2-170927	Batch ID:	R94441	TestNo:	E300	Units:	mg/L			
SampType:	CCV	Run ID:	IC2_170927A	Analysis Date:	9/27/2017 9:43:35 PM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.75	1.00	10.00	0	97.5	90	110			
Fluoride	4.21	0.400	4.000	0	105	90	110			
Sulfate	29.5	3.00	30.00	0	98.3	90	110			

Qualifiers:

- B Analyte detected in the associated Method Blank
- J Analyte detected between MDL and RL
- ND Not Detected at the Method Detection Limit
- RL Reporting Limit
- J Analyte detected between SDL and RL

- DF Dilution Factor
- MDL Method Detection Limit
- R RPD outside accepted control limits
- S Spike Recovery outside control limits
- N Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1709243
Project: Luminant - MLSES PDP CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_170928A

The QC data in batch 82585 applies to the following samples: 1709243-03B, 1709243-09B

Sample ID	MB-82585	Batch ID:	82585	TestNo:	E300	Units:	mg/L			
SampType:	MBLK	Run ID:	IC4_170928A	Analysis Date:	9/28/2017 10:26:19 AM	Prep Date:	9/28/2017			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Sulfate	<1.00	3.00								
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Sample ID	LCS-82585		Batch ID:	82585		TestNo:	E300		Units:	mg/L	
SampType:	LCS		Run ID:	IC4_170928A		Analysis Date:	9/28/2017 10:38:19 AM		Prep Date:	9/28/2017	
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	

Sulfate	28.4	3.00	30.00	0	94.7	90	110			
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Sample ID	LCSD-82585		Batch ID:	82585		TestNo:	E300		Units:	mg/L	
SampType:	LCSD		Run ID:	IC4_170928A		Analysis Date:	9/28/2017 10:50:19 AM		Prep Date:	9/28/2017	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Sulfate	29.1	3.00	30.00	0	97.1	90	110	2.44	20	
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Sample ID	1709155-02CMS	Batch ID:	82585	TestNo:	E300	Units:	mg/L				
SampType:	MS	Run ID:	IC4_170928A	Analysis Date:	9/28/2017 11:24:29 AM	Prep Date:	9/28/2017				
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Sulfate	23200	3000	20000	2552	103	90	110			
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Sample ID: 1709155-02CMSD	Batch ID: 82585	TestNo: E300	Units: mg/L							
SampType: MSD	Run ID: IC4_170928A	Analysis Date: 9/28/2017 11:36:29 AM	Prep Date: 9/28/2017							
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Sulfate	23100	3000	20000	2552	103	90	110	0.817	20	
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Sample ID	1709156-01BMS			Batch ID:	82585		TestNo:	E300		Units:	mg/L	
SampType:	MS			Run ID:	IC4_170928A		Analysis Date:	9/28/2017 1:00:27 PM		Prep Date:	9/28/2017	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	

Sulfate	2220	300	2000	190.7	101	90	110			
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Sample ID	1709156-01BMSD		Batch ID:	82585		TestNo:	E300		Units:	mg/L	
SampType:	MSD		Run ID:	IC4_170928A		Analysis Date:	9/28/2017 1:12:27 PM		Prep Date:	9/28/2017	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Sulfate	2240	300	2000	190.7	102	90	110	0.754	20	
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Qualifiers:

- B Analyte detected in the associated Method Blank
- J Analyte detected between MDL and RL
- ND Not Detected at the Method Detection Limit
- RL Reporting Limit
- J Analyte detected between SDL and RL

- DF Dilution Factor
- MDL Method Detection Limit
- R RPD outside accepted control limits
- S Spike Recovery outside control limits
- N Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1709243
Project: Luminant - MLSES PDP CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_170928A

Sample ID	1709156-05BMS	Batch ID:	82585	TestNo:	E300	Units:	mg/L			
SampType:	MS	Run ID:	IC4_170928A	Analysis Date:	9/28/2017 3:37:06 PM	Prep Date:	9/28/2017			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	3420	300	2000	1396	101	90	110			

Sample ID	1709156-05BMSD			Batch ID:	82585		TestNo:	E300		Units:	mg/L	
SampType:	MSD			Run ID:	IC4_170928A		Analysis Date:	9/28/2017 3:49:06 PM		Prep Date:	9/28/2017	
Analyte	Result		RL	SPK value		Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	3400		300	2000		1396	100	90	110	0.623	20	

LUMINANT

Qualifiers:

- B Analyte detected in the associated Method Blank
- J Analyte detected between MDL and RL
- ND Not Detected at the Method Detection Limit
- RL Reporting Limit
- J Analyte detected between SDL and RL

- DF Dilution Factor
- MDL Method Detection Limit
- R RPD outside accepted control limits
- S Spike Recovery outside control limits
- N Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1709243
Project: Luminant - MLSES PDP CCR

ANALYTICAL QC SUMMARY REPORT

RunID: IC4_170928A

Sample ID	ICV-170928	Batch ID:	R94423	TestNo:	E300	Units:	mg/L			
SampType:	ICV	Run ID:	IC4_170928A	Analysis Date:	9/28/2017 10:02:19 AM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	75.6	3.00	75.00	0	101	90	110			

Sample ID	CCV1-170928	Batch ID:	R94423	TestNo:	E300	Units:	mg/L			
SampType:	CCV	Run ID:	IC4_170928A	Analysis Date:	9/28/2017 1:48:27 PM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	28.6	3.00	30.00	0	95.4	90	110			

Sample ID	CCV2-170928	Batch ID:	R94423	TestNo:	E300	Units:	mg/L			
SampType:	CCV	Run ID:	IC4_170928A	Analysis Date:	9/28/2017 5:49:06 PM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	28.9	3.00	30.00	0	96.5	90	110			

Qualifiers:

- B Analyte detected in the associated Method Blank
- J Analyte detected between MDL and RL
- ND Not Detected at the Method Detection Limit
- RL Reporting Limit
- J Analyte detected between SDL and RL

- DF Dilution Factor
- MDL Method Detection Limit
- R RPD outside accepted control limits
- S Spike Recovery outside control limits
- N Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1709243
Project: Luminant - MLSES PDP CCR

ANALYTICAL QC SUMMARY REPORT

RunID: WC_170927B

The QC data in batch 82558 applies to the following samples: 1709243-01B

Sample ID	MB-82558	Batch ID:	82558	TestNo:	M2540C	Units:	mg/L				
SampType:	MBLK	Run ID:	WC_170927B	Analysis Date:	9/28/2017 10:35:00 AM	Prep Date:	9/26/2017				
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Total Dissolved Solids (Residue, Filtera <10.0 10.0

Sample ID	LCS-82558	Batch ID:	82558	TestNo:	M2540C	Units:	mg/L				
SampType:	LCS	Run ID:	WC_170927B	Analysis Date:	9/28/2017 10:35:00 AM	Prep Date:	9/26/2017				
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Total Dissolved Solids (Residue, Filtera 747 10.0 745.6 0 100 90 113

Sample ID	1709241-02B-DUP	Batch ID:	82558	TestNo:	M2540C	Units:	mg/L				
SampType:	DUP	Run ID:	WC_170927B	Analysis Date:	9/28/2017 10:35:00 AM	Prep Date:	9/26/2017				
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Total Dissolved Solids (Residue, Filtera 4520 50.0 0 4565 0.991 5

Sample ID	1709237-02B-DUP	Batch ID:	82558	TestNo:	M2540C	Units:	mg/L				
SampType:	DUP	Run ID:	WC_170927B	Analysis Date:	9/28/2017 10:35:00 AM	Prep Date:	9/26/2017				
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Total Dissolved Solids (Residue, Filtera 1510 50.0 0 1540 1.97 5

Qualifiers: B Analyte detected in the associated Method Blank
J Analyte detected between MDL and RL
ND Not Detected at the Method Detection Limit
RL Reporting Limit
J Analyte detected between SDL and RL

DF Dilution Factor
MDL Method Detection Limit
R RPD outside accepted control limits
S Spike Recovery outside control limits
N Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1709243
Project: Luminant - MLSES PDP CCR

ANALYTICAL QC SUMMARY REPORT

RunID: WC_170928A

The QC data in batch 82593 applies to the following samples: 1709243-02B, 1709243-03B, 1709243-04B, 1709243-05B, 1709243-06B, 1709243-07B, 1709243-08B, 1709243-09B

Sample ID	MB-82593		Batch ID:	82593		TestNo:	M2540C		Units:	mg/L	
SampType:	MBLK		Run ID:	WC_170928A		Analysis Date:	9/29/2017 9:50:00 AM		Prep Date:	9/28/2017	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Total Dissolved Solids (Residue, Filtera <10.0 10.0

Sample ID	LCS-82593		Batch ID:	82593		TestNo:	M2540C		Units:	mg/L	
SampType:	LCS		Run ID:	WC_170928A		Analysis Date:	9/29/2017 9:50:00 AM		Prep Date:	9/28/2017	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Total Dissolved Solids (Residue, Filtera 746 10.0 745.6 0 100 90 113

Sample ID	1709268-02B-DUP	Batch ID:	82593	TestNo:	M2540C	Units:	mg/L			
SampType:	DUP	Run ID:	WC_170928A	Analysis Date:	9/29/2017 9:50:00 AM	Prep Date:	9/28/2017			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Total Dissolved Solids (Residue, Filtera 1500 50.0 0 1505 0.333 5

Sample ID	1709156-05B-DUP		Batch ID:	82593		TestNo:	M2540C		Units:	mg/L	
SampType:	DUP		Run ID:	WC_170928A		Analysis Date:	9/29/2017 9:50:00 AM		Prep Date:	9/28/2017	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Total Dissolved Solids (Residue, Filtera 8240 200 0 8540 3.58 5

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified



March 01, 2018

Will Vienne
Pastor, Behling & Wheeler
2201 Double Creek Dr #4004
Round Rock, Texas 78664
TEL: (512) 671-3434
FAX (512) 671-3446
RE: Luminant - MLSES

Order No.: 1802163

Dear Will Vienne:

DHL Analytical, Inc. received 2 sample(s) on 2/23/2018 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

A handwritten signature in red ink, appearing to read "John DuPont".

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification
Number: T104704211-17-19



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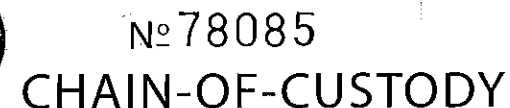
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LUMINANT



DATE: 2-21-18 PAGE 1 OF 1
PO #: 5164-B DHL WORK ORDER #: 1802163
PROJECT LOCATION OR NAME: LUMINAHT - MLSES
CLIENT PROJECT #: 5164-B COLLECTOR: JOHN BRAYTON

[illegible]

ORIGIN ID:ACTA (512) 671-3434
JOHN
PBW
2201 DOUBLE CREEK DR
ROUND ROCK, TX 78664
UNITED STATES US

SHIP DATE: 22FEB18
ACTWGT: 13.60 LB
CAD: 006993648/RSFF1822
DIMS: 11x10x12
BILL THIRD PAF

Part # 15

RT **512**

1
1

TO **DHL**
DHL
2300 DOUBLE CREEK DR

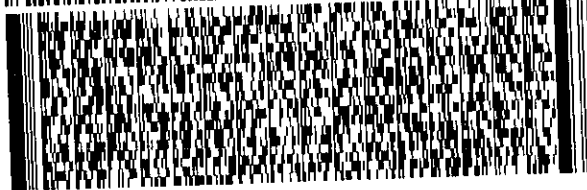
FZ

ROUND ROCK TX 78664

(512) 388-8222
INVT:
PO:

REF:

DEPT:



FedEx
Express



TRK# **7898 4832 0261**
0201

FRI - 23 FEB 10:30A
PRIORITY OVERNIGHT

44 BSMA

78664
TX-US AUS



Sample Receipt Checklist

Client Name Pastor, Behling & Wheeler

Date Received: 2/23/2018

Work Order Number 1802163

Received by EL

Checklist completed by:

Signature

2/23/2018

Date

Reviewed by

Initials

2/23/2018

Date

Carrier name FedEx 1day

Shipping container/cooler in good condition? Yes ☒ No ☐ Not Present ☐

Custody seals intact on shipping container/cooler? Yes ☐ No ☐ Not Present ☒

Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☒

Chain of custody present? Yes ☒ No ☐

Chain of custody signed when relinquished and received? Yes ☒ No ☐

Chain of custody agrees with sample labels? Yes ☒ No ☐

Samples in proper container/bottle? Yes ☒ No ☐

Sample containers intact? Yes ☒ No ☐

Sufficient sample volume for indicated test? Yes ☒ No ☐

All samples received within holding time? Yes ☒ No ☐

Container/Temp Blank temperature in compliance? Yes ☒ No ☐ 1.7 °C

Water - VOA vials have zero headspace? Yes ☐ No ☐ No VOA vials submitted ☒

Water - pH<2 acceptable upon receipt? Yes ☒ No ☐ NA ☐ LOT # 11837

Adjusted? no Checked by EL

Water - pH>9 (S) or pH>10 (CN) acceptable upon receipt? Yes ☐ No ☐ NA ☒ LOT #

Adjusted? _____ Checked by _____

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - MLSES
Lab Order: 1802163

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Method SW6020A - Metals Analysis
Method E300 - Anions Analysis

LOG IN

The samples were received and log-in performed on 2/23/18. A total of 2 samples were received. The samples arrived in good condition and were properly packaged.

METALS ANALYSIS

For Metals analysis performed on 2/27/18 the matrix spike recovery was below control limits for Calcium. This is flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

ANIONS ANALYSIS

For Anions analysis performed on 2/23/18 the matrix spike and matrix spike duplicate recoveries were slightly above control limits for Chloride. These are flagged accordingly in the QC summary report. The sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for this analyte. No further corrective actions were taken.

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - MLSES
Lab Order: 1802163**Work Order Sample Summary**

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1802163-01	MW-20A		02/21/18 01:45 PM	2/23/2018
1802163-02	PDP-23		02/21/18 01:10 PM	2/23/2018

LUMINANT

Lab Order: 1802163
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1802163-01A	MW-20A	02/21/18 01:45 PM	Aqueous	E300	Anion Preparation	02/23/18 01:23 PM	84445
1802163-02A	PDP-23	02/21/18 01:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	02/26/18 08:30 AM	84457

LUMINANT

Lab Order: 1802163
Client: Pastor, Behling & Wheeler
Project: Luminant - MLSES

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1802163-01A	MW-20A	Aqueous	E300	Anions by IC method - Water	84445	1	02/23/18 02:14 PM	IC2_180223A
1802163-02A	PDP-23	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	84457	1	02/27/18 10:43 AM	ICP-MS4_180227A

LUMINANT

DHL Analytical, Inc.

Date: 01-Mar-18

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - MLSES
Project No: 5164-B
Lab Order: 1802163

Client Sample ID: MW-20A
Lab ID: 1802163-01
Collection Date: 02/21/18 01:45 PM
Matrix: AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
ANIONS BY IC METHOD - WATER		E300					Analyst: JL
Chloride	10.7	0.300	1.00		mg/L	1	02/23/18 02:14 PM

LUMINANT

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

DHL Analytical, Inc.**Date:** 01-Mar-18

CLIENT: Pastor, Behling & Wheeler
Project: Luminant - MLSES
Project No: 5164-B
Lab Order: 1802163

Client Sample ID: PDP-23
Lab ID: 1802163-02
Collection Date: 02/21/18 01:10 PM
Matrix: AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		SW6020A					Analyst: SP
Calcium	2.37	0.100	0.300		mg/L	1	02/27/18 10:43 AM

LUMINANT

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	B	Analyte detected in the associated Method Blank
	C	Sample Result or QC discussed in the Case Narrative	DF	Dilution Factor
	E	TPH pattern not Gas or Diesel Range Pattern	J	Analyte detected between MDL and RL
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits
	N	Parameter not NELAC certified		

CLIENT: Pastor, Behling & Wheeler
Work Order: 1802163
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT**RunID: ICP-MS4_180227A**

The QC data in batch 84457 applies to the following samples: 1802163-02A

Sample ID	MB-84457		Batch ID:	84457		TestNo:	SW6020A		Units:	mg/L	
SampType:	MBLK		Run ID:	ICP-MS4_180227A		Analysis Date:	2/27/2018 10:32:00 AM		Prep Date:	2/26/2018	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	<0.100	0.300								
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Sample ID	LCS-84457		Batch ID:	84457		TestNo:	SW6020A		Units:	mg/L	
SampType:	LCS		Run ID:	ICP-MS4_180227A		Analysis Date:	2/27/2018 10:34:00 AM		Prep Date:	2/26/2018	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	5.02	0.300	5.00	0	100	80	120			
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Sample ID	LCSD-84457		Batch ID:	84457		TestNo:	SW6020A		Units:	mg/L	
SampType:	LCSD		Run ID:	ICP-MS4_180227A		Analysis Date:	2/27/2018 10:36:00 AM		Prep Date:	2/26/2018	
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	4.95	0.300	5.00	0	99.1	80	120	1.30	15	
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Sample ID	1802151-20C MS	Batch ID:	84457	TestNo:	SW6020A	Units:	mg/L			
SampType:	MS	Run ID:	ICP-MS4_180227A	Analysis Date:	2/27/2018 11:03:00 AM	Prep Date:	2/26/2018			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	143	0.300	5.00	141	37.1	80	120			S
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Sample ID	1802151-20C MSD	Batch ID:	84457	TestNo:	SW6020A	Units:	mg/L			
SampType:	MSD	Run ID:	ICP-MS4_180227A	Analysis Date:	2/27/2018 11:05:00 AM	Prep Date:	2/26/2018			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	146	0.300	5.00	141	101	80	120	2.23	15	
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Sample ID	1802151-20C SD	Batch ID:	84457	TestNo:	SW6020A	Units:	mg/L			
SampType:	SD	Run ID:	ICP-MS4_180227A	Analysis Date:	2/27/2018 11:48:00 AM	Prep Date:	2/26/2018			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	144	15.0	0	142				1.62	10	
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Sample ID	1802151-20C PDS	Batch ID:	84457	TestNo:	SW6020A	Units:	mg/L			
SampType:	PDS	Run ID:	ICP-MS4_180227A	Analysis Date:	2/27/2018 11:50:00 AM	Prep Date:	2/26/2018			
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Calcium	195	3.00	50.0	142	107	80	120			
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Qualifiers: B Analyte detected in the associated Method Blank
 J Analyte detected between MDL and RL
 ND Not Detected at the Method Detection Limit
 RL Reporting Limit
 J Analyte detected between SDL and RL

DF Dilution Factor
 MDL Method Detection Limit
 R RPD outside accepted control limits
 S Spike Recovery outside control limits
 N Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1802163
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_180227A

Sample ID	ICV-180227	Batch ID:	R96657	TestNo:	SW6020A	Units:	mg/L			
SampType:	ICV	Run ID:	ICP-MS4_180227A	Analysis Date:	2/27/2018 10:18:00 AM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.55	0.300	2.50	0	102	90	110			

Sample ID	LCVL-180227	Batch ID:	R96657	TestNo:	SW6020A	Units:	mg/L				
SampType:	LCVL	Run ID:	ICP-MS4_180227A	Analysis Date:	2/27/2018 10:22:00 AM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium		0.100	0.300	0.100	0	100	70	130			

Sample ID	CCV1-180227	Batch ID:	R96657	TestNo:	SW6020A	Units:	mg/L				
SampType:	CCV	Run ID:	ICP-MS4_180227A	Analysis Date:	2/27/2018 11:07:00 AM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium		5.34	0.300	5.00	0	107	90	110			

Sample ID	LCVL1-180227	Batch ID:	R96657	TestNo:	SW6020A	Units:	mg/L				
SampType:	LCVL	Run ID:	ICP-MS4_180227A	Analysis Date:	2/27/2018 11:12:00 AM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium		0.103	0.300	0.100	0	103	70	130			

Sample ID	CCV2-180227	Batch ID:	R96657	TestNo:	SW6020A	Units:	mg/L			
SampType:	CCV	Run ID:	ICP-MS4_180227A	Analysis Date:	2/27/2018 11:52:00 AM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.18	0.300	5.00	0	104	90	110			

Sample ID	LCVL2-180227	Batch ID:	R96657	TestNo:	SW6020A	Units:	mg/L				
SampType:	LCVL	Run ID:	ICP-MS4_180227A	Analysis Date:	2/27/2018 11:56:00 AM	Prep Date:					
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium		0.103	0.300	0.100	0	103	70	130			

Qualifiers: B Analyte detected in the associated Method Blank
J Analyte detected between MDL and RL
ND Not Detected at the Method Detection Limit
RL Reporting Limit
J Analyte detected between SDL and RL

DF Dilution Factor
MDL Method Detection Limit
R RPD outside accepted control limits
S Spike Recovery outside control limits
N Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1802163
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_180223A

The QC data in batch 84445 applies to the following samples: 1802163-01A

Sample ID	MB-84445	Batch ID:	84445	TestNo:	E300	Units:	mg/L				
SampType:	MBLK	Run ID:	IC2_180223A	Analysis Date:	2/23/2018 10:48:25 AM	Prep Date:	2/23/2018				
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Chloride	<0.300	1.00									
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Sample ID	LCS-84445	Batch ID:	84445	TestNo:	E300	Units:	mg/L				
SampType:	LCS	Run ID:	IC2_180223A	Analysis Date:	2/23/2018 11:02:25 AM	Prep Date:	2/23/2018				
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Chloride	9.95	1.00	10.00	0	99.5	90	110				
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Sample ID	LCSD-84445	Batch ID:	84445	TestNo:	E300	Units:	mg/L				
SampType:	LCSD	Run ID:	IC2_180223A	Analysis Date:	2/23/2018 11:16:25 AM	Prep Date:	2/23/2018				
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Chloride	9.94	1.00	10.00	0	99.4	90	110	0.086	20		
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Sample ID	1802145-08CMS	Batch ID:	84445	TestNo:	E300	Units:	mg/L				
SampType:	MS	Run ID:	IC2_180223A	Analysis Date:	2/23/2018 11:44:25 AM	Prep Date:	2/23/2018				
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Chloride	275	10.0	200.0	48.06	113	90	110				S
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Sample ID	1802145-08CMSD	Batch ID:	84445	TestNo:	E300	Units:	mg/L				
SampType:	MSD	Run ID:	IC2_180223A	Analysis Date:	2/23/2018 11:58:25 AM	Prep Date:	2/23/2018				
Analyte		Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Chloride	274	10.0	200.0	48.06	113	90	110	0.200	20		S
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Qualifiers:

- B Analyte detected in the associated Method Blank
- J Analyte detected between MDL and RL
- ND Not Detected at the Method Detection Limit
- RL Reporting Limit
- J Analyte detected between SDL and RL

- DF Dilution Factor
- MDL Method Detection Limit
- R RPD outside accepted control limits
- S Spike Recovery outside control limits
- N Parameter not NELAC certified

CLIENT: Pastor, Behling & Wheeler
Work Order: 1802163
Project: Luminant - MLSES

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_180223A

Sample ID	ICV-180223	Batch ID:	R96617	TestNo:	E300	Units:	mg/L			
SampType:	ICV	Run ID:	IC2_180223A	Analysis Date:	2/23/2018 10:20:25 AM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Chloride	26.6	1.00	25.00	0	107	90	110			
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Sample ID	CCV1-180223	Batch ID:	R96617	TestNo:	E300	Units:	mg/L			
SampType:	CCV	Run ID:	IC2_180223A	Analysis Date:	2/23/2018 2:56:41 PM	Prep Date:				
Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Chloride	9.33	1.00	10.00	0	93.3	90	110			
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Qualifiers:

- B Analyte detected in the associated Method Blank
- J Analyte detected between MDL and RL
- ND Not Detected at the Method Detection Limit
- RL Reporting Limit
- J Analyte detected between SDL and RL

- DF Dilution Factor
- MDL Method Detection Limit
- R RPD outside accepted control limits
- S Spike Recovery outside control limits
- N Parameter not NELAC certified

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