## **ROY S. NELSON PLANT**

# 2019 Annual Groundwater Monitoring and Corrective Action Report

PREPARED IN COMPLIANCE WITH THE
EPA FINAL RULE FOR THE DISPOSAL OF
COAL COMBUSTION RESIDUALS
TITLE 40 CODE OF FEDERAL REGULATIONS PART 257



January 2020

## CCR UNIT WESTLAKE, LA

### 2019 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

Prepared for Entergy Services, Inc 639 Loyola Ave Mail unit L-ENT 3D New Orleans, LA 70113

**Prepared By:** 

Pivotal Engineering LLC, Eagle Environmental, and TRC Solutions

January 2020

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#### 1.0 Introduction

Entergy Louisiana LLC (Entergy), operates a Coal Ash Landfill (CCR Unit) for the disposal of coal combustion residuals (CCR) at the Roy S. Nelson Plant located in Westlake, Louisiana. The CCR Unit receives CCR generated from the combustion of coal at the Nelson Plant. Management of the CCRs at the CCR Unit is performed pursuant to national criteria established in Title 40 of the Code of Federal Regulations (40 CFR) Part 257 (CCR Rule), published by the United States Environmental Protection Agency (EPA) on April 17, 2015. Entergy has installed a groundwater monitoring system at the CCR Unit that is subject to the groundwater monitoring and corrective action requirements provided under §\$257.90 through 257.98 of the CCR Rule. In accordance with \$257.90(e) of the CCR Rule, Entergy must prepare an annual report that provides information regarding the groundwater monitoring and corrective action program at the CCR Unit. This document is intended to provide the required information.

This report is the third annual groundwater monitoring report required under the CCR Rule and is the summary and analysis of results from the 2019 groundwater monitoring sampling events. The first annual groundwater monitoring report was completed in January 2018.

### 2.0 GROUNDWATER MONITORING WELL NETWORK

Entergy's groundwater monitoring system consists of 14 monitoring wells as shown in Appendix A. Pursuant to §257.91(f) of the CCR Rule, a qualified professional engineer has certified that the groundwater monitoring system has been designed and constructed to meet the requirements of this section of §257.91.

### 3.0 Installed or Decommissioned Monitoring Wells During 2019

No monitoring wells were installed or decommissioned during 2019 at the CCR Unit.

#### 4.0 GROUNDWATER MONITORING DATA

In accordance with §257.90(e)(3), all the monitoring data obtained under §§257.90 through 257.98 are provided in Appendix B along with a summary of 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 collected as part of detection or assessment monitoring.

#### 5.0 STATUS SUMMARY OF THE 2019 GROUNDWATER MONITORING PROGRAM

Groundwater monitoring was performed in accordance with the detection monitoring requirements of \$257.94. A summary of activities related to groundwater detection monitoring performed during 2019 is provided below:

• In accordance with §257.94(b), detection monitoring sampling was performed during March, June, September and December 2019 for analysis of Appendix III parameters.

- Appendix IV parameters were collected in March, June, September and December 2019 to enhance the background data set for those constituents. Sample collection for Radium 226/228 was not performed as these constituents were not detected in any of the background data. As noted above, the March, June, September and December 2019 Appendix IV data were collected for background purposes and are not required by the rule for detection or assessment monitoring.
- Statistical evaluation of the detection monitoring data was performed in accordance with the statistical method certified by a qualified Louisiana-registered professional Engineer. The certified statistical method has been posted to Entergy's CCR Rule Compliance Data and Information website.
- In 2019, Entergy completed a successful alternate source demonstration (ASD) per §257.94 (e)(2) in response to statistically significant increases (SSIs) identified for calcium during the second half of 2018 detection monitoring event. The ASD demonstrated the SSIs are the result of natural variation in the groundwater quality. The ASD was certified by a Louisiana-registered professional engineer and was placed into the facility's operating record. As required by §257.94(e)(2), a copy of the ASD is included as Appendix C. Based on the successful evaluation conducted and results presented in the ASD, Entergy continued with detection monitoring in accordance with §257.94.
- The first half 2019 detection monitoring sampling was performed during June 2019. As previously concluded in the ASD, results confirmed SSIs for calcium are the result of natural variation in the groundwater quality.
- The second half 2019 detection monitoring sampling was performed during December 2019. As previously concluded in the ASD, results confirmed SSIs for calcium are the result of natural variation in the groundwater quality.
- No problems were encountered during 2019 with regard to the groundwater monitoring system. Therefore, no actions were required to modify the system.
- The facility remained in detection monitoring for the duration of 2019 since no new SSIs were detected that were not addressed in the prior ASDs.

#### 6.0 PROJECTED ACTIVITIES FOR 2020

Planned activities for the CCR Unit's groundwater monitoring program during 2019 are listed below:

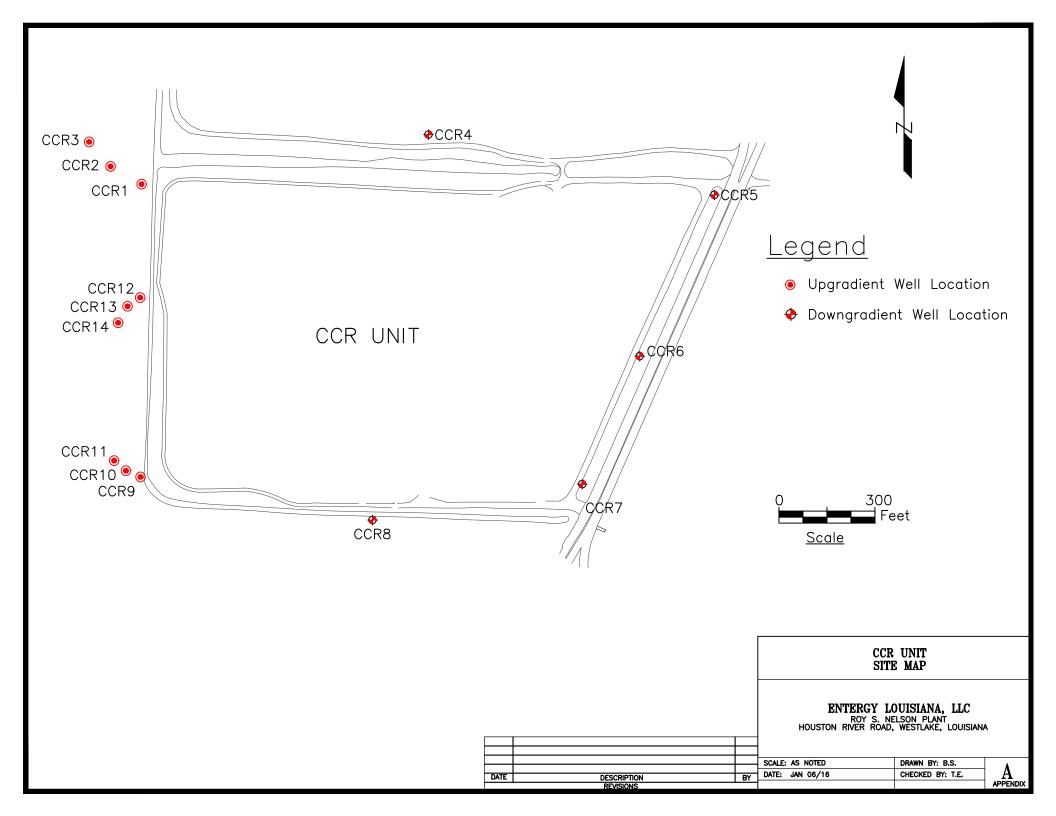
• Semi-annual detection monitoring events are planned for June and December 2020.

## APPENDIX A SITE MAP

## APPENDIX B SAMPLING SCHEDULE AND ANALYTICAL DATA

## APPENDIX C ALTERNATE SOURCE DEMONSTRATIONS

## APPENDIX A SITE MAP



## APPENDIX B SAMPLING SCHEDULE AND ANALYTICAL DATA



Well	CCR-1 (BG)	CCR-2 (BG)	CCR-3 (BG)	CCR-4	CCR-5	CCR-6	CCR-7	CCR-8	CCR-9 (BG)	CCR-10 (BG)	CCR-11 (BG)	CCR-12 (BG)	CCR-13 (BG)	CCR-14 (BG)
Date	3/5/19	3/5/19	3/5/19	3/7/19	3/7/19	3/6/19	3/6/19	3/6/19	3/6/19	3/6/19	3/6/19	3/5/19	3/5/19	3/5/19
40 CFR 257 Appendix III Parameters*	<b>&gt;</b>	^	<b>&gt;</b>	^	^	^	^	<b>&gt;</b>	1	<b>&gt;</b>	^	^	<b>&gt;</b>	<b>&gt;</b>
40 CFR 257 Appendix IV Parameters**	`	>	`	^	^	^	^	^	<b>,</b>	^	^	^	^	`
Date	6/29/19	6/56/19	6/29/19	6/28/19	6/28/19	6/28/19	6/28/19	6/28/19	6/30/19	6/30/19	61/08/9	61/08/9	6/30/19	6/30/19
40 CFR 257 Appendix III Parameters*	`	>	>	`	>	`	`	>	`	>	>	>	>	`
40 CFR 257 Appendix IV Parameters**	`	>	>	^	^	<b>&gt;</b>	^	^	<b>,</b>	^	^	^	^	>
Date	9/25/19	9/25/19	9/25/19	9/26/19	9/26/19	9/26/19	9/26/19	9/26/19	9/25/19	9/25/19	9/25/19	9/26/19	9/26/19	9/26/19
40 CFR 257 Appendix III Parameters*	>	^	>	^	^	^	^	>	/	>	^	/	<b>&gt;</b>	>
40 CFR 257 Appendix IV Parameters**	>	>	>	>	>	>	>	>	>	>	>	>	>	>
Date	12/17/19	12/17/19	12/17/19	12/17/19	12/19/19	12/19/19	12/19/19	12/18/19	12/18/19	12/18/19	12/18/19	12/18/19	12/18/19	12/18/19
40 CFR 257 Appendix III Parameters*	<b>&gt;</b>	^	<b>&gt;</b>	^	^	^	^	<b>&gt;</b>	^	<b>&gt;</b>	^	^	<b>&gt;</b>	<b>&gt;</b>
40 CFR 257 Appendix IV Parameters**	`	`	`	^	^	^	^	~	<b>,</b>	~	~	^	^	<b>&gt;</b>

\*40 CFR 257 Appendix III Parameters collected on reference date and include Boron, Calcium, Chloride, Flouride, Sulfate, and Total Dissolved Solids. Laboratory reports to follow.

\*\*40 CFR 257 Appendix IV Parameters collected on reference date and include Antimony, Arsenic, Barium, Beryillium, Cadmium, Chromium, Cobalt, Flouride, Lead, Lithium, Mercury, Molybdenum, Selenium and Thallium
Note: Detection monitoring results for pH are located on the next table.

Radium 226 and 228 combined were not analyzed in 2018 due to 100% non-detect in previous background analytical results



Well	CCR-1 (BG)	CCR-2 (BG)	CCR-3 (BG)	CCR-4	CCR-5	CCR-6	CCR-7	CCR-8	CCR-9 (BG)	CCR-10 (BG)	CCR-11 (BG)	CCR-12 (BG)	CCR-13 (BG)	CCR-14 (BG)
Date	3/5/19	3/5/19	3/5/19	3/7/19	3/7/19	3/6/19	3/6/19	3/6/19	3/6/19	3/6/19	3/6/19	3/5/19	3/5/19	3/5/19
pH (s.u.)	96.9	6.83	6.71	7.08	7.15	7.13	7.13	6.8	7.46	7.41	7.52	7.30	7.15	7.08
Date	6/29/19	6/29/19	6/29/19	6/28/19	6/28/19	6/28/19	6/28/19	6/28/19	6/30/19	6/30/19	6/30/19	6/30/19	6/30/19	6/30/19
pH (s.u.)	6.88	6.77	6.9	6.88	7.04	6.65	7.14	99.9	7.25	7.41	7.22	6.97	7.08	7.01
Date	9/25/19	9/25/19	9/25/19	9/26/19	9/26/19	9/26/19	9/26/19	9/26/19	9/25/19	9/25/19	9/25/19	9/26/19	9/26/19	9/26/19
pH (s.u.)	7.21	7.04	7.14	7.01	7.24	7.19	7.24	6.64	7.41	7.41	7.51	89.9	7.11	7.03
Date	12/17/19	12/17/19	12/17/19	12/17/19	12/19/19	12/19/19	12/19/19	12/18/19	12/18/19	12/18/19	12/18/19	12/18/19	12/18/19	12/18/19
рН (s.u.)	7.24	7.03	7.14	7.06	7.28	7.21	7.23	6.76	7.52	7.49	7.61	6.78	7.25	6.93

S.U. - Standard Units



Element Materials Technology Lafayette 2417 W. Pinhook Road Lafayette, LA 70508-3344 TEL: (337) 235-0483 FAX: (337) 233-6540

Website: www.element.com

March 18, 2019

Terry Elnaggar Pivotal Engineering LLC 1515 Poydras St., STE. 1875

New Orleans, LA 70112 TEL: (504) 799-3653

FAX:

RE: Entergy: CCR Detection Monitoring//15-125-1 Order No.: 19030183

Dear Terry Elnaggar:

Element Materials Technology Lafayette received 16 sample(s) on 3/7/2019 for the analyses presented in the following report.

In accordance with your instructions Element Lafayette conducted the analysis shown on the following pages on samples submitted by your company. The results related only to the items tested. Unless otherwise noted, all analyses were conducted using EPA approved methodologies and all test results meet all requirements of TNI. All relevant sampling information is on the attached Chain-of-Custody form.

All soil data, except for 29-B, are on a wet-weight basis unless otherwise indicated in the units field as –dry.

LELAP Certification No.: 01997. TCEQ Certification No.: T104704261. LDHH Certification No.: LA180028. ISDH Certification No.: C-LA-01. A scope of accredited parameters is available upon request. A "#" by the test method or analyte indicates this parameter is outside the scope of accreditation.

Estimated uncertainty is available upon request. This report shall not be reproduced except in full, without the written approval of the laboratory.

If you have any questions regarding these test results, please feel free to call.

Cristina Thibeaux

Customer Service Supervisor 2417 W. Pinhook Road

Lafayette, LA 70508-3344



Element Materials Technology Lafayette 2417 W. Pinhook Road Lafayette, LA 70508-3344 TEL: (337) 235-0483 FAX: (337) 233-6540

0483 FAX: (337) 233-6540 Website: www.element.com **Case Narrative** 

WO#: 19030183 Date: 3/18/2019

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring/ 15-125-1

Unless specified by the client, a duplicate or MS/MSD, wherever applicable, is randomly selected and analyzed from each analytical batch provided sample volume is sufficient. The sample chosen for duplicate or MS/MSD may or may not be a sample submitted in this workorder. A method blank and/or a lab control sample (LCS)/lab control sample duplicate (LCSD), wherever applicable, are processed as a quality control check for each analytical batch. When the matrix QC data is not available due to insufficient sample volume or when the results indicate possible matrix effect, the validity of the batch is determined by the method blank and LCS/LCSD.

The results of the laboratory internal quality control data are provided in the QC Summary Report section of the report for your review. Laboratory-related QC exceptions that may impact the validity of data are discussed in the case narrative. Sample-related QC exceptions are flagged either in the results page(s) or in the QC report page(s). End users should consider QC exceptions when evaluating sample data against data quality objectives.

Any other exceptions associated with this report will be footnoted in the results page(s) or the QC summary page(s).



Lafayette, LA 70508-3344 TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19030183**Date Reported: **3/18/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 3/5/2019 1:00:00 PM

**Project:** Entergy: CCR Detection Monitoring/ 15-125-1

**Lab ID:** 19030183-001 **Matrix:** AQUEOUS

Client Sample ID CCR-1

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP
Chloride	41.5	2.50	mg/L	10	3/11/2019 1:42:54 PM
Fluoride	0.266	0.0500	mg/L	1	3/11/2019 6:17:28 PM
Sulfate	2.10	0.250	mg/L	1	3/11/2019 6:17:28 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	3/13/2019 4:50:25 PM
Calcium	26.1	0.500	mg/L	1	3/13/2019 4:50:25 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	266	20.0	mg/L	1	3/8/2019 1:02:00 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: 19030183

Date Reported: 3/18/2019

CLIENT: Pivotal Engineering LLC Collection Date: 3/5/2019 11:50:00 AM

**Project:** Entergy: CCR Detection Monitoring/ 15-125-1

**Lab ID:** 19030183-002 **Matrix:** AQUEOUS

Client Sample ID CCR-2

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP
Chloride	55.1	2.50	mg/L	10	3/11/2019 1:56:34 PM
Fluoride	0.316	0.0500	mg/L	1	3/11/2019 6:31:11 PM
Sulfate	0.796	0.250	mg/L	1	3/11/2019 6:31:11 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	3/13/2019 4:54:54 PM
Calcium	21.2	0.500	mg/L	1	3/13/2019 4:54:54 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	244	20.0	mg/L	1	3/8/2019 1:02:00 PM

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19030183**Date Reported: **3/18/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 3/5/2019 10:40:00 AM

**Project:** Entergy: CCR Detection Monitoring/ 15-125-1

Lab ID: 19030183-003 Matrix: AQUEOUS

Client Sample ID CCR-3

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER BY	YIC		E 30	0.0	Analyst: <b>SGP</b>
Chloride	103	5.00	mg/L	20	3/11/2019 2:10:18 PM
Fluoride	0.350	0.0500	mg/L	1	3/11/2019 6:44:55 PM
Sulfate	3.96	0.250	mg/L	1	3/11/2019 6:44:55 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	3/13/2019 5:04:01 PM
Calcium	28.4	0.500	mg/L	1	3/13/2019 5:04:01 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	373	20.0	mg/L	1	3/8/2019 1:02:00 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



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**Analytical Report** 

(consolidated)

WO#: 19030183

Date Reported: 3/18/2019

CLIENT: Pivotal Engineering LLC Collection Date: 3/7/2019 9:45:00 AM

**Project:** Entergy: CCR Detection Monitoring/ 15-125-1

**Lab ID:** 19030183-004 **Matrix:** AQUEOUS

Client Sample ID CCR-4

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER BY	IC		E 30	0.0	Analyst: SGP
Chloride	41.5	2.50	mg/L	10	3/11/2019 2:24:02 PM
Fluoride	0.190	0.0500	mg/L	1	3/11/2019 6:58:38 PM
Sulfate	7.41	0.250	mg/L	1	3/11/2019 6:58:38 PM
METALS IN WATER BY ICP, TOTAL	s		SW60	10B	Analyst: STS
Boron	0.105	0.100	mg/L	1	3/13/2019 5:08:32 PM
Calcium	18.7	0.500	mg/L	1	3/13/2019 5:08:32 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	230	20.0	mg/L	1	3/8/2019 1:02:00 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



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WO#: 19030183

Date Reported: 3/18/2019

CLIENT: Pivotal Engineering LLC Collection Date: 3/7/2019 8:30:00 AM

**Project:** Entergy: CCR Detection Monitoring/ 15-125-1

Lab ID: 19030183-005 Matrix: AQUEOUS

Client Sample ID CCR-5

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER BY	' IC		E 30	0.0	Analyst: SGP
Chloride	52.7	5.00	mg/L	20	3/11/2019 3:05:14 PM
Fluoride	0.215	0.0500	mg/L	1	3/11/2019 7:39:50 PM
Sulfate	< 0.250	0.250	mg/L	1	3/11/2019 7:39:50 PM
METALS IN WATER BY ICP, TOTAL	_S		SW60	10B	Analyst: STS
Boron	0.120	0.100	mg/L	1	3/13/2019 5:23:00 PM
Calcium	33.1	0.500	mg/L	1	3/13/2019 5:23:00 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	358	20.0	mg/L	1	3/8/2019 1:02:00 PM

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

RL Reporting Limit

SDL Sample detection limit



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(consolidated)

WO#: 19030183

Date Reported: 3/18/2019

CLIENT: Pivotal Engineering LLC Collection Date: 3/6/2019 4:10:00 PM

**Project:** Entergy: CCR Detection Monitoring/ 15-125-1

**Lab ID:** 19030183-006 **Matrix:** AQUEOUS

Client Sample ID CCR-6

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP
Chloride	81.1	2.50	mg/L	10	3/11/2019 3:18:59 PM
Fluoride	0.224	0.0500	mg/L	1	3/11/2019 7:53:35 PM
Sulfate	< 0.250	0.250	mg/L	1	3/11/2019 7:53:35 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	0.106	0.100	mg/L	1	3/13/2019 5:27:27 PM
Calcium	31.5	0.500	mg/L	1	3/13/2019 5:27:27 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	306	20.0	mg/L	1	3/8/2019 1:02:00 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



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Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: 19030183

Date Reported: 3/18/2019

CLIENT: Pivotal Engineering LLC Collection Date: 3/6/2019 2:45:00 PM

**Project:** Entergy: CCR Detection Monitoring/ 15-125-1

Lab ID: 19030183-007 Matrix: AQUEOUS

**Client Sample ID** CCR-7

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP
Chloride	69.0	2.50	mg/L	10	3/11/2019 3:32:43 PM
Fluoride	0.235	0.0500	mg/L	1	3/11/2019 8:07:19 PM
Sulfate	< 0.250	0.250	mg/L	1	3/11/2019 8:07:19 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	3/13/2019 5:31:56 PM
Calcium	45.5	0.500	mg/L	1	3/13/2019 5:31:56 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	302	20.0	mg/L	1	3/8/2019 1:02:00 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



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(consolidated)

WO#: 19030183

Date Reported: 3/18/2019

CLIENT: Pivotal Engineering LLC Collection Date: 3/6/2019 1:20:00 PM

**Project:** Entergy: CCR Detection Monitoring/ 15-125-1

Lab ID: 19030183-008 Matrix: AQUEOUS

**Client Sample ID** CCR-8

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP
Chloride	81.3	2.50	mg/L	10	3/11/2019 3:46:26 PM
Fluoride	0.121	0.0500	mg/L	1	3/11/2019 8:21:04 PM
Sulfate	0.709	0.250	mg/L	1	3/11/2019 8:21:04 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	3/13/2019 5:36:25 PM
Calcium	11.6	0.500	mg/L	1	3/13/2019 5:36:25 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	276	20.0	mg/L	1	3/8/2019 1:02:00 PM

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: 19030183

Date Reported: 3/18/2019

CLIENT: Pivotal Engineering LLC Collection Date: 3/6/2019 11:00:00 AM

**Project:** Entergy: CCR Detection Monitoring/ 15-125-1

Lab ID: 19030183-009 Matrix: AQUEOUS

Client Sample ID CCR-9

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER BY	YIC		E 30	0.0	Analyst: SGP
Chloride	64.5	5.00	mg/L	20	3/11/2019 4:00:09 PM
Fluoride	0.521	0.0500	mg/L	1	3/11/2019 8:34:48 PM
Sulfate	5.99	0.250	mg/L	1	3/11/2019 8:34:48 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	3/13/2019 5:58:28 PM
Calcium	30.8	0.500	mg/L	1	3/13/2019 5:58:28 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	308	20.0	mg/L	1	3/8/2019 1:02:00 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: 19030183

Date Reported: 3/18/2019

CLIENT: Pivotal Engineering LLC Collection Date: 3/6/2019 9:30:00 AM

**Project:** Entergy: CCR Detection Monitoring/ 15-125-1

Lab ID: 19030183-010 Matrix: AQUEOUS

Client Sample ID CCR-10

Analyses	Result	Result RL Qual Units		DF	Date Analyzed	
INORGANIC ANIONS IN WATER BY	( IC		E 30	0.0	Analyst: SGP	
Chloride	38.3	2.50	mg/L	10	3/11/2019 4:13:54 PM	
Fluoride	0.552	0.0500	mg/L	1	3/11/2019 8:48:32 PM	
Sulfate	17.2	0.250	mg/L	1	3/11/2019 8:48:32 PM	
METALS IN WATER BY ICP, TOTALS			SW60	10B	Analyst: STS	
Boron	< 0.100	0.100	mg/L	1	3/13/2019 6:02:57 PM	
Calcium	27.3	0.500	mg/L	1	3/13/2019 6:02:57 PM	
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: GMS	
Total Dissolved Solids (Residue, Filterable)	324	20.0	mg/L	1	3/8/2019 1:02:00 PM	

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: 19030183

Date Reported: 3/18/2019

CLIENT: Pivotal Engineering LLC Collection Date: 3/6/2019 8:15:00 AM

**Project:** Entergy: CCR Detection Monitoring/ 15-125-1

Lab ID: 19030183-011 Matrix: AQUEOUS

Client Sample ID CCR-11

Analyses	Result	Result RL Qual Units			Date Analyzed	
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP	
Chloride	24.2	0.250	mg/L	1	3/11/2019 9:02:15 PM	
Fluoride	0.633	0.0500	mg/L	1	3/11/2019 9:02:15 PM	
Sulfate	3.49	0.250	mg/L	1	3/11/2019 9:02:15 PM	
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS	
Boron	< 0.100	0.100	mg/L	1	3/13/2019 6:07:24 PM	
Calcium	26.9	0.500	mg/L	1	3/13/2019 6:07:24 PM	
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>	
Total Dissolved Solids (Residue, Filterable)	192	20.0	mg/L	1	3/8/2019 1:02:00 PM	

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

RL Reporting Limit

SDL Sample detection limit



Lafayette, LA 70508-3344 TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: 19030183

Date Reported: 3/18/2019

CLIENT: Pivotal Engineering LLC Collection Date: 3/5/2019 5:00:00 PM

**Project:** Entergy: CCR Detection Monitoring/ 15-125-1

Lab ID: 19030183-012 Matrix: AQUEOUS

Client Sample ID CCR-12

Analyses	Result	RL Qu	al Units	DF	Date Analyzed	
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP	
Chloride	16.2	0.250	mg/L	1	3/11/2019 9:15:59 PM	
Fluoride	0.115	0.0500	mg/L	1	3/11/2019 9:15:59 PM	
Sulfate	8.46	0.250	mg/L	1	3/11/2019 9:15:59 PM	
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS	
Boron	< 0.100	0.100	mg/L	1	3/13/2019 6:11:51 PM	
Calcium	17.9	0.500	mg/L	1	3/13/2019 6:11:51 PM	
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>	
Total Dissolved Solids (Residue, Filterable)	141	20.0	mg/L	1	3/8/2019 1:02:00 PM	

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: 19030183

Date Reported: 3/18/2019

CLIENT: Pivotal Engineering LLC Collection Date: 3/5/2019 3:40:00 PM

**Project:** Entergy: CCR Detection Monitoring/ 15-125-1

Lab ID: 19030183-013 Matrix: AQUEOUS

Client Sample ID CCR-13

Analyses	Result	RL Qu	al Units	DF	Date Analyzed	
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP	
Chloride	12.0	0.250	mg/L	1	3/11/2019 9:29:43 PM	
Fluoride	0.195	0.0500	mg/L	1	3/11/2019 9:29:43 PM	
Sulfate	2.72	0.250	mg/L	1	3/11/2019 9:29:43 PM	
METALS IN WATER BY ICP, TOTALS			SW6010		Analyst: STS	
Boron	< 0.100	0.100	mg/L	1	3/13/2019 6:17:32 PM	
Calcium	20.8	0.500	mg/L	1	3/13/2019 6:17:32 PM	
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>	
Total Dissolved Solids (Residue, Filterable)	171	20.0	mg/L	1	3/8/2019 1:02:00 PM	

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: 19030183

Date Reported: 3/18/2019

CLIENT: Pivotal Engineering LLC Collection Date: 3/5/2019 2:25:00 PM

**Project:** Entergy: CCR Detection Monitoring/ 15-125-1

**Lab ID:** 19030183-014 **Matrix:** AQUEOUS

Client Sample ID CCR-14

Analyses	Result	Result RL Qual Units		DF	Date Analyzed	
INORGANIC ANIONS IN WATER BY	/ IC		E 30	0.0	Analyst: <b>SGP</b>	
Chloride	10.9	0.250	mg/L	1	3/11/2019 9:43:26 PM	
Fluoride	0.139	0.0500	mg/L	1	3/11/2019 9:43:26 PM	
Sulfate	< 0.250	0.250	mg/L	1	3/11/2019 9:43:26 PM	
METALS IN WATER BY ICP, TOTALS			SW60	10B	Analyst: STS	
Boron	< 0.100	0.100	mg/L	1	3/13/2019 6:21:59 PM	
Calcium	16.7	0.500	mg/L	1	3/13/2019 6:21:59 PM	
TOTAL DISSOLVED SOLIDS			SM2540C		Analyst: <b>GMS</b>	
Total Dissolved Solids (Residue, Filterable)	119	20.0	mg/L	1	3/8/2019 1:02:00 PM	

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



Lajayene, LA 70308-3344
TEL: (337) 235-0483 FAX: (337) 233-6540
Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: 19030183

Date Reported: 3/18/2019

CLIENT: Pivotal Engineering LLC Collection Date: 3/6/2019

**Project:** Entergy: CCR Detection Monitoring/ 15-125-1

Lab ID: 19030183-015 Matrix: AQUEOUS

Client Sample ID DUP

Analyses	Result	Result RL Qual Units		DF	Date Analyzed	
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP	
Chloride	63.6	5.00	mg/L	20	3/11/2019 5:50:00 PM	
Fluoride	0.513	0.0500	mg/L	1	3/11/2019 10:24:37 PM	
Sulfate	5.98	0.250	mg/L	1	3/11/2019 10:24:37 PM	
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS	
Boron	< 0.100	0.100	mg/L	1	3/13/2019 6:26:24 PM	
Calcium	31.0	0.500	mg/L	1	3/13/2019 6:26:24 PM	
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>	
Total Dissolved Solids (Residue, Filterable)	327	20.0	mg/L	1	3/8/2019 1:02:00 PM	

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

RL Reporting Limit

SDL Sample detection limit



Lafayette, LA /0508-3344
TEL: (337) 235-0483 FAX: (337) 233-6540
Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: 19030183

Date Reported: 3/18/2019

CLIENT: Pivotal Engineering LLC Collection Date: 3/5/2019 2:45:00 PM

**Project:** Entergy: CCR Detection Monitoring/ 15-125-1

Lab ID: 19030183-016 Matrix: AQUEOUS

Client Sample ID FB1

Analyses	Result	Result RL Qual Units		DF	Date Analyzed	
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP	
Chloride	< 0.250	0.250	mg/L	1	3/11/2019 6:03:44 PM	
Fluoride	< 0.0500	0.0500	mg/L	1	3/11/2019 6:03:44 PM	
Sulfate	< 0.250	0.250	mg/L	1	3/11/2019 6:03:44 PM	
METALS IN WATER BY ICP, TOTALS			SW6010E		Analyst: STS	
Boron	< 0.100	0.100	mg/L	1	3/13/2019 6:30:52 PM	
Calcium	< 0.500	0.500	mg/L	1	3/13/2019 6:30:52 PM	
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>	
Total Dissolved Solids (Residue, Filterable)	< 20.0	20.0	mg/L	1	3/8/2019 1:02:00 PM	

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

RL Reporting Limit

SDL Sample detection limit



### **QC SUMMARY REPORT**

29398

**BatchID:** 

WO#:

19030183

18-Mar-19

**Client:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring/ 15-125-1

RunNo: <b>76825</b> SeqNo: <b>1924705</b> %RPD RPDLimit Qual
•
%RPD RPDLimit Qual
RunNo: <b>76825</b>
SeqNo: <b>1924706</b>
%RPD RPDLimit Qual
RunNo: <b>76825</b>
SeqNo: <b>1924707</b>
%RPD RPDLimit Qual
1.81 20
0.614 20
RunNo: <b>76825</b>
SeqNo: <b>1924715</b>
%RPD RPDLimit Qual

Qualifiers:

Holding times for preparation or analysis exceeded

RL Reporting Limit

J Analyte not detected

Matrix Interference

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit



## **QC SUMMARY REPORT**

WO#: **19030183** 

18-Mar-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Detection Monitoring/ 15-125-1

BatchID: 29398

Sample ID: 19030183-004BMS	SampType: MS	TestCode: 6010_W		Units: mg/L		Prep Date: 3/12/2019		RunNo: <b>76825</b>			
Client ID: CCR-4	Batch ID: 29398	TestNo:	TestNo: SW6010B			Analysis Date: 3/13/2019			SeqNo: <b>1924715</b>		
Analyte	Result	PQL :	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	70.0	0.500	50.00	18.67	103	75	125				

Sample ID: 19030183-004BMSD	SampType: MSD	TestCode: 6010_W		Units: mg/L		Prep Date: 3/12/2019			RunNo: <b>76825</b>		
Client ID: CCR-4	Batch ID: 29398	TestN	lo: <b>SW6010B</b>		Analysis Date: 3/13/2019				SeqNo: <b>1924716</b>		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Boron	0.622	0.100	0.5000	0.1049	103	75	125	0.6204	0.290	20	
Calcium	71.2	0.500	50.00	18.67	105	75	125	69.96	1.73	20	

W Sample container temperature is out of limit as specified at testcode



## **QC SUMMARY REPORT**

WO#: 19030183

18-Mar-19

**Client:** Pivotal Engineering LLC

<b>Project:</b> Entergy: CC	CR Detection Monitoring	BatchID: R76696					
Sample ID: MB-R76696 Client ID: PBW	SampType: MBLK Batch ID: R76696	TestCode: TDS_2540C Units: mg/L TestNo: SM2540C	Prep Date:         RunNo:         76696           Analysis Date:         3/8/2019         SeqNo:         1922928				
Analyte	Result	PQL SPK value SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qua				
Total Dissolved Solids (Residue, Filterable)	< 20.0	20.0					
Sample ID: LCS-R76696	SampType: LCS	TestCode: TDS_2540C Units: mg/L	Prep Date: RunNo: 76696				
Client ID: LCSW	Batch ID: <b>R76696</b>	TestNo: SM2540C	Analysis Date: 3/8/2019 SeqNo: 1922929				
Analyte	Result	PQL SPK value SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qua				
Total Dissolved Solids (Residue, Filterable)	983	20.0 1,000 0	98.3 85 115				
Sample ID: LCSD-R76696	SampType: <b>LCSD</b>	TestCode: TDS_2540C Units: mg/L	Prep Date: RunNo: <b>76696</b>				
Client ID: LCSS02	Batch ID: <b>R76696</b>	TestNo: SM2540C	Analysis Date: 3/8/2019 SeqNo: 1922930				
Analyte	Result	PQL SPK value SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qua				
Total Dissolved Solids (Residue, Filterable)	986	20.0 1,000 0	98.6 85 115 983.0 0.305 10				
Sample ID: 19030183-004ADUP	SampType: <b>DUP</b>	TestCode: TDS_2540C Units: mg/L	Prep Date: RunNo: <b>76696</b>				
Client ID: CCR-4	Batch ID: <b>R76696</b>	TestNo: SM2540C	Analysis Date: 3/8/2019 SeqNo: 1922937				
Analyte	Result	PQL SPK value SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qua				
Total Dissolved Solids (Residue, Filterable)	226	20.0	230.0 1.75 10				

Holding times for preparation or analysis exceeded

Reporting Limit

Analyte not detected

Matrix Interference

Spike Recovery outside accepted recovery limits

Sample container temperature is out of limit as specified at testcode

Not Detected at the Reporting Limit



Element Materials Technology Lafayette 2417 W. Pinhook Road Lafayette, LA 70508-3344 TEL: (337) 235-0483 FAX: (337) 233-6540

### **QC SUMMARY REPORT**

WO#: **19030183** 

SeqNo: 1922937

18-Mar-19

**Client:** Pivotal Engineering LLC

Batch ID: R76696

Project: Entergy: CCR Detection Monitoring/ 15-125-1

BatchID: R76696

TestNo: SM2540C

Website: www.element.com

Sample ID: 19030183-004ADUP SampType: DUP TestCode: TDS\_2540C Units: mg/L Prep Date: RunNo: 76696

Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Client ID:

CCR-4

Analysis Date: 3/8/2019



## **QC SUMMARY REPORT**

R76754

WO#: 19

19030183

18-Mar-19

**Client:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring/ 15-125-1 **BatchID:** 

Sample ID: MBLK	SampType: MBLK	TestCode: 300.0 Units: mg/L		Prep Date:				RunNo: <b>767</b>			
Client ID: PBW	Batch ID: <b>R76754</b>	TestNo: E	300.0		Analysis Date: <b>3/11/2019</b>			SeqNo: <b>1923193</b>			
Analyte	Result	PQL SP	PK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	< 0.250	0.250									
Fluoride	< 0.0500	0.0500									
Sulfate	< 0.250	0.250									

Sample ID: LCS	SampType: <b>LCS</b>	TestCode: 300.0		Units: mg/L	Prep Date:				RunNo: <b>76754</b>			
Client ID: LCSW	Batch ID: <b>R76754</b>	Testi	TestNo: <b>E 300.0</b>			Analysis Date: 3/11/2019				SeqNo: <b>1923194</b>		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chloride	9.66	0.250	10.00	0	96.6	90	110					
Fluoride	1.98	0.0500	2.000	0	99.2	90	110					
Sulfate	9.75	0.250	10.00	0	97.5	90	110					

Sample ID:	LCSD	SampType: LCSD TestCode: 300.0		Units: mg/L	Prep Date:				RunNo: <b>76754</b>			
Client ID:	LCSS02	Batch ID: <b>R76754</b>	TestNo: <b>E 300.0</b>			Analysis Date: 3/11/2019				SeqNo: <b>1923195</b>		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		9.64	0.250	10.00	0	96.4	90	110	9.662	0.200	15	•
Fluoride		1.98	0.0500	2.000	0	99.1	90	110	1.984	0.0885	15	
Sulfate		9.68	0.250	10.00	0	96.8	90	110	9.753	0.757	15	

Qualifiers:

Holding times for preparation or analysis exceeded

RL Reporting Limit

J Analyte not detected

Matrix Interference

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit



# **QC SUMMARY REPORT**

D76754

RotchID.

WO#: **19030183** 

18-Mar-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Detection Monitoring/ 15-125-1

Project:	Entergy: CC	CR Detection Monitoring	ig/ 15-125-1	L		BatchiD: R76754								
Sample ID:	19030183-004AMS	SampType: MS	TestCod	de: <b>300.0</b>	Units: mg/L		Prep Da	te:		RunNo: <b>76</b>	754	·		
Client ID:	CCR-4	Batch ID: <b>R76754</b>	TestN	lo: <b>E 300.0</b>			Analysis Da	te: <b>3/11/2</b> 0	119	SeqNo: 19	23200			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Chloride		90.2	2.50	50.00	41.50	97.4	80	120						
Fluoride		9.54	0.500	10.00	0.1135	94.2	80	120						
Sulfate		50.5	2.50	50.00	4.205	92.5	80	120						
Sample ID:	19030183-004AMSD	SampType: <b>MSD</b>	TestCoo	de: <b>300.0</b>	Units: mg/L		Prep Da	te:		RunNo: <b>76</b>	754			
Client ID:	CCR-4	Batch ID: <b>R76754</b>	TestN	lo: <b>E 300.0</b>			Analysis Da	te: <b>3/11/20</b>	119	SeqNo: 19	23201			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Chloride		90.9	2.50	50.00	41.50	98.7	80	120	90.22	0.696	15			
Fluoride		9.65	0.500	10.00	0.1135	95.3	80	120	9.536	1.14	15			
Sulfate		51.0	2.50	50.00	4.205	93.7	80	120	50.46	1.15	15			
Sample ID:	19030183-016AMS	SampType: MS	TestCoo	de: <b>300.0</b>	Units: mg/L		Prep Da	te:		RunNo: <b>76</b>	754			
Client ID:	ED4	Batch ID: B76764	Tooth	lo: <b>E 200 0</b>			Analysis Da	to: 0/40/00	M0	SoaNo: 10	2222			

Sample ID:	19030183-016AMS	SampType: MS	TestCoo	de: <b>300.0</b>	Units: mg/L		Prep Da	te:		RunNo: <b>76754</b>				
Client ID:	FB1	Batch ID: <b>R76754</b>	TestN	lo: <b>E 300.0</b>			Analysis Da	te: <b>3/12/20</b>	19	SeqNo: <b>1923239</b>				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Chloride		4.83	0.250	5.000	0	96.5	80	120				•		
Fluoride		0.978	0.0500	1.000	0	97.8	80	120						
Sulfate		5.04	0.250	5.000	0	101	80	120						

Qualifiers:

Holding times for preparation or analysis exceeded

RL Reporting Limit

J Analyte not detected

Matrix Interference

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit



Element Materials Technology Lafayette 2417 W. Pinhook Road Lafayette, LA 70508-3344 TEL: (337) 235-0483 FAX: (337) 233-6540 **QC SUMMARY REPORT** 

WO#: 19

19030183

18-Mar-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Detection Monitoring/ 15-125-1

BatchID: R76754

Website: www.element.com

Sample ID:	19030183-016AMSD	SampType: MSD	TestCode: 300.0 Units: mg/L				Prep Da	te:		RunNo: 767				
Client ID:	FB1	Batch ID: <b>R76754</b>	TestN	lo: <b>E 300.0</b>			Analysis Da	te: <b>3/12/20</b>	19	SeqNo: <b>1923240</b>				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Chloride		4.81	0.250	5.000	0	96.3	80	120	4.827	0.250	15			
Fluoride		0.973	0.0500	1.000	0	97.3	80	120	0.9782	0.509	15			
Sulfate		5.02	0.250	5.000	0	100	80	120	5.040	0.416	15			



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com

#### Sample Log-In Check List

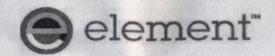
Clie	nt Name:	PIVOTAL_ENGINEERIN	Work Order Number:	19030183		RcptNo:	1
Log	ged by:	Danielle Hollier	3/7/2019 3:00:00 PM		Danis	Hollin	
Con	npleted By:	Danielle Hollier	3/7/2019 4:12:35 PM		Daniel	Holling	
Rev	iewed By:	Cristina Thibeaux	3/12/2019 1:20:16 PM		Cusina	Dissours	
<u>Cha</u>	in of Cus	stody					
1.	Is Chain of	Custody complete?		Yes	No 🗸	Not Present	
2.	How was th	e sample delivered?		<u>Element</u>			
Log	<u>In</u>						
_	Coolers are	present?		Yes 🗸	No 🗌	NA 🗌	
			_	🗔	$\Box$		
4.		ontainer/cooler in good condition		Yes 🗹	No 🗌	N.B.	
	•	als intact on shipping container/		Yes L	No 🗌	Not Present	
_	No.	Seal Date: empt made to cool the samples?		Signed By: Yes ✓	No 🗌	na 🗆	
Э.	vvas air atte	empt made to cool the samples:		163 🖭	NO L	INA L	
6.	Were all sa	mples received at a temperature	e of >0° C to 6.0°C	Yes 🗸	No 🗌	NA $\square$	
7.	Sample(s) i	in proper container(s)?		Yes 🗸	No 🗌		
8.	Sufficient s	ample volume for indicated test(	s)?	Yes 🔽	No 🗌		
9.	Are sample	s (except VOA and ONG) prope	erly preserved?	Yes 🗸	No 🗌		
10.	Was preser	rvative added to bottles?		Yes	No 🗸	NA 🗌	
4.4	la tha baada	ongo in the VOA viola lose than	1/4 inch or 6 mm <sup>2</sup>	Yes	No 🗌	No VOA Vials	
		space in the VOA vials less thar ample containers received broke		Yes	No ✓	NO VOA VIAIS 🖭	
		work match bottle labels?	511:	Yes ✓	No 🗆		
13.		epancies on chain of custody)		165 🖭	110		
14.		s correctly identified on Chain o	f Custody?	Yes 🗸	No $\square$		
15.	Is it clear w	hat analyses were requested?		Yes 🗸	No 🗌		
16.	Were all ho	lding times able to be met?		Yes 🗸	No 🗌		
	-	customer for authorization.)					
		<u>dling (if applicable)</u>					
17.	Was client	notified of all discrepancies with	this order?	Yes 🗌	No 🗹	NA 🗌	
	Perso	n Notified:	Date:				
	By WI	hom:	Via:	eMail F	Phone  Fax	☐ In Person	
	Regar	ding:					
	Client	Instructions:					
18.	Additional re	emarks:					<b>=</b>

Improper error correction(s) made by client

Added the year of collection to the COC as per samples received.

#### **Cooler Information**

Cooler No	Temp ⁰C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.1	Good	Not Present			



2203 S. Madison St., Muncie, IN 47302
765-747-9000/800-874-3563 Fax 765-747-0228

629 Washington St., Suite 300, Columbus, IN 47201 812-375-0531 Fax 812-375-0531

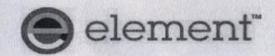
5738 Industrial Rd., Fort Wayne, IN 46825 219-471-7000 Fax 219-471-7777 2417 W. Pinhook Rd, Lafayette, LA 70508 337-235-0483/800-737-2378

Fax 337-233-6540

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918-828-9977/800324-5757 Fax 918-828-7756

Page	1 of .		2						Chain	of C	usto	dy ]	R	ecor	d			1	1	Jabor Numb	atory er	190	1301	183	
Contact 1 Phone/Fa	Name: Pivota Name: Terr ax: (504) 79 ection Time	y Eln	agga	AND THE	LLC		Qu	ote #	CCR Detection 3880 's Signature:	25-1		Z	NaOH Na2S2O3 3	Number / Type of Container	Matrix Code	TDS	300: CI, FI, SO4	6010 metals*	Test	Requ	ested			Comm Rem	
3/5/	10	X	C	С	С	R								2 Plastic	Ag	X	X	Х							
1	1150	X		С	С	R	-		2					2 Plastic		x	X	x						*6010 Meta	ls: B, Ca
V	1040	X		С	С	R		:	3		1000	THE REAL PROPERTY.	100	2 Plastic		x	x	x							
3/7	0945	х	1010	С	С	R			4			None/ H	INO3	2 Plastic	Aq	x	X	x							
3/7	0830	х	1/16	С	С	R	-		5			None/ H	INO3	2 Plastic	Aq	х	х	х		70					
3/6	1610	х		С	С	R	-	(	3			None/ H	HNO3	2 Plastic	Aq	X	х	х							
3/6	1445	X		С	С	R	-		7			None/ H	HNO3	2 Plastic	Aq	х	х	х							
3/4	1320	X		С	С	R	-	1	3			None/ H	HNO3	2 Plastic	Aq	X	X	х					-	1	
3/6	1100	X		С	С	R		9	9			None/ H	HNO3	2 Plastic	Aq	X	X	х		1				UPS / FedEx	Airborne
3/6	0930	X		С	C	R	-	10	)			None/ H	ноз	2 Plastic	Aq	X	X	X						Ball Control of the C	land / Mail
									gy for analysis ar									mater	ial re	mains		O. ımber			
-	ed by (Signa	-	7		-	elyed I		-	THE REAL PROPERTY AND ADDRESS OF THE PARTY AND	Date	Name and Address of the Owner, where	Retinqu		by: (Signa	THE RESERVE	1		Recei	ved by	Sign		-	7	势	Time 1430
Relinquish	ed by: (Signa	ture)			Rec	eived l	by:(Si	gnature	2)	Date /	Time		uishe	by Gren	atura S	ne	-	Recei	ved by	Labora	atory:(S	Signatura	<del>)</del>	3-7-19	Time 1500
GW = Gro	nking Water ound Water aste Water	AQ =	Oil		SLI	) = Liq D = Sc = Sluc	olid	C	G = Glass P = Plastic V = Vial	☑ Iced	conditions 12) 60 np. 3/	E 4	_	Requeste Ir. Ir.	_	r.	Mark S	Т	hanl	k-yo			g Elem nology	nent Mat	erials



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5738 Industrial Rd., Fort Wayne, IN 46825 219-471-7000 Fax 219-471-7777 2417 W. Pinhook Rd, Lafayette, LA 70508 337-235-0483/800-737-2378 Fax 337-233-6540

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Page	_2 of -	N.	2					(	Cha	ain	of (	Cu	isto	dy	R	ecor	.q					Labo Num	ratory ber	1	9030	183	
Contact N Phone/Fax Colle Date	ame: Terr	y Elr	agga			Sam	Quo	ote #: 3	3880 Signat	- /2.	Monitor 5-/ escript			Pres OSTH ONH IOH	NaOH Na2S2O3 2	Number / Type of Container	Matrix Code	TDS	300: CI, FI, SO4	6010 metals*	Tes	t Reg	uested				ments /
1	10815	X	0	С	С	R	-	1	1							2 Plastic	Aa	X	X	X				+			
STREET, SQUARE, SALE	V700	X		С	С	R	_	1	2	THE WAY	No.					2 Plastic		X	X	x		1				*6010 Met	als: B. Ca
1	1540	X		С	С	R	-	1	3					-	Description of	2 Plastic		x	X	x							
J	1425	X		С	С	R	-	1	4							2 Plastic		x	x	х							
3/7	1000	X	MIK	м	s		(CC	CR	4	)				None/	HNO3	2 Plastic	Aq	x	x	x				1			
317	1000	X		М	s	D	(CC	CR	4	)	S Pay			None/ I	HNO3	2 Plastic	Aq	x	х	х	115						
3/6	-	X		D	U	Р								None/	HNO3	2 Plastic	Aq	X	х	х							
3/5	1445	X		F	В		1							None/	HNO3	2 Plastic	Aq	X	Х	х				199	-	61	
	-																										x Airborn Hand / Mai
All sample with the cl																				mater	rial re	main		O. Imber			
Relinguishe	by: (Signat	ure)	6	-	-	-	-	# 1		W	Date 3/7/					by Sign				Recei		Sigp	ature)	Soci		3-7-19	Time 1430
	l by: (Signat		618		Rece	ived t	oy.(Sig	nature)			Date		Time	Relinq	Wister V/L	by: (Sign	atore)	~		Recei	ved by	y Labo	ratory:(S			Date 3-7-19	Time 1500
GW = Grou	king Water and Water ste Water	AQ =	Oil	_	SLD	= Liqu = So = Slud	olid		ntainer G = Gl P = Pla V = V	ass stic	☑ Ic		3.1		24-F 48-F Othe	ir. 🔽	72-F Stan	ir.		Т	han	k-yo			ng Elem hnology	ent Ma	terials



April 02, 2019

Terry Elnaggar Pivotal Engineering LLC 1515 Poydras St., STE. 1875 New Orleans, LA 70112

TEL: (504) 799-3653

**FAX** 

RE: Entergy: CCR Assessment Monitoring/ 15-125-1 Order No.: 19030184

Dear Terry Elnaggar:

Element Materials Technology Lafayette received 16 sample(s) on 3/7/2019 for the analyses presented in the following report.

In accordance with your instructions Element Lafayette conducted the analysis shown on the following pages on samples submitted by your company. The results related only to the items tested. Unless otherwise noted, all analyses were conducted using EPA approved methodologies and all test results meet all requirements of TNI. All relevant sampling information is on the attached Chain-of-Custody form.

All soil data, except for 29-B, are on a wet-weight basis unless otherwise indicated in the units field as –dry.

LELAP Certification No.: 01997. TCEQ Certification No.: T104704261. LDHH Certification No.: LA180028. ISDH Certification No.: C-LA-01. A scope of accredited parameters is available upon request. A "#" by the test method or analyte indicates this parameter is outside the scope of accreditation.

Estimated uncertainty is available upon request. This report shall not be reproduced except in full, without the written approval of the laboratory.

If you have any questions regarding these test results, please feel free to call.

Cristina Thibeaux

Customer Service Supervisor

2417 W. Pinhook Road



Element Materials Technology Lafayette 2417 W. Pinhook Road Lafayette, LA 70508-3344 TEL: (337) 235-0483 FAX: (337) 233-6540

Website: www.element.com

#### **Case Narrative**

WO#: **19030184**Date: **4/2/2019** 

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Assessment Monitoring/ 15-125-1

Unless specified by the client, a duplicate or MS/MSD, wherever applicable, is randomly selected and analyzed from each analytical batch provided sample volume is sufficient. The sample chosen for duplicate or MS/MSD may or may not be a sample submitted in this workorder. A method blank and/or a lab control sample (LCS)/lab control sample duplicate (LCSD), wherever applicable, are processed as a quality control check for each analytical batch. When the matrix QC data is not available due to insufficient sample volume or when the results indicate possible matrix effect, the validity of the batch is determined by the method blank and LCS/LCSD.

The results of the laboratory internal quality control data are provided in the QC Summary Report section of the report for your review. Laboratory-related QC exceptions that may impact the validity of data are discussed in the case narrative. Sample-related QC exceptions are flagged either in the results page(s) or in the QC report page(s). End users should consider QC exceptions when evaluating sample data against data quality objectives.

Any other exceptions associated with this report will be footnoted in the results page(s) or the QC summary page(s).

The Lithium, Antimony and Thallium analyses by Method 6020 were subcontracted to Gulf Coast Analytical Laboratories, Inc. Their report is attached in its entirety.



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19030184**Date Reported **4/2/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 3/5/2019 1:00:00 PM

**Project:** Entergy: CCR Assessment Monitoring/ 15-125-1

**Lab ID:** 19030184-001 **Matrix:** AQUEOUS

Client Sample ID CCR-1

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND V	VATER,TOTAL		SW74	70A	Analyst: AC
Mercury	< 0.000200	0.000200	mg/L	1	3/11/2019 1:12:13 PM
INORGANIC ANIONS IN V	VATER BY IC		E 30	0.0	Analyst: SGP
Fluoride	0.266	0.0500	mg/L	1	3/11/2019 6:17:28 PM
METALS IN WATER BY IC	CP, TOTALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	3/14/2019 6:32:49 PM
Barium	0.184	0.0100	mg/L	1	3/13/2019 4:50:25 PM
Beryllium	< 0.00100	0.00100	mg/L	1	3/13/2019 4:50:25 PM
Cadmium	< 0.00500	0.00500	mg/L	1	3/13/2019 4:50:25 PM
Chromium	< 0.0100	0.0100	mg/L	1	3/13/2019 4:50:25 PM
Cobalt	< 0.0100	0.0100	mg/L	1	3/13/2019 4:50:25 PM
Lead	< 0.0100	0.0100	mg/L	1	3/13/2019 4:50:25 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	3/13/2019 4:50:25 PM
Selenium	< 0.0200	0.0200	mg/L	1	3/13/2019 4:50:25 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



Lafayette, LA 70508-3344 TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19030184**Date Reported **4/2/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 3/5/2019 11:50:00 AM

**Project:** Entergy: CCR Assessment Monitoring/ 15-125-1

**Lab ID:** 19030184-002 **Matrix:** AQUEOUS

Client Sample ID CCR-2

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATER,TO	TAL		SW74	70A	Analyst: AC
Mercury	< 0.000200	0.000200	mg/L	1	3/11/2019 1:14:33 PM
INORGANIC ANIONS IN WATER BY	/ IC		E 30	0.0	Analyst: SGP
Fluoride	0.316	0.0500	mg/L	1	3/11/2019 6:31:11 PM
METALS IN WATER BY ICP, TOTAL	LS		SW60	10B	Analyst: STS
Arsenic Barium	< 0.0100 0.152	0.0100 0.0100	mg/L mg/L	1	3/14/2019 6:36:12 PM 3/13/2019 4:54:54 PM
Beryllium	< 0.00100	0.00100	mg/L	1	3/13/2019 4:54:54 PM
Cadmium Chromium	< 0.00500 < 0.0100	0.00500 0.0100	mg/L mg/L	1 1	3/13/2019 4:54:54 PM 3/13/2019 4:54:54 PM
Cobalt Lead	< 0.0100 < 0.0100	0.0100 0.0100	mg/L mg/L	1 1	3/13/2019 4:54:54 PM 3/13/2019 4:54:54 PM
Molybdenum Selenium	< 0.0100 < 0.0200	0.0100 0.0200	mg/L mg/L	1 1	3/13/2019 4:54:54 PM 3/13/2019 4:54:54 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19030184**Date Reported **4/2/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 3/5/2019 10:40:00 AM

**Project:** Entergy: CCR Assessment Monitoring/ 15-125-1

**Lab ID:** 19030184-003 **Matrix:** AQUEOUS

Client Sample ID CCR-3

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATER,	TOTAL		SW74	70A	Analyst: <b>AC</b>
Mercury	< 0.000200	0.000200	mg/L	1	3/11/2019 1:16:54 PM
INORGANIC ANIONS IN WATER	BY IC		E 30	0.0	Analyst: SGP
Fluoride	0.350	0.0500	mg/L	1	3/11/2019 6:44:55 PM
METALS IN WATER BY ICP, TOT	TALS		SW60	10B	Analyst: STS
Arsenic	0.0220	0.0100	mg/L	1	3/14/2019 6:39:35 PM
Barium	0.243	0.0100	mg/L	1	3/13/2019 5:04:01 PM
Beryllium	< 0.00100	0.00100	mg/L	1	3/13/2019 5:04:01 PM
Cadmium	< 0.00500	0.00500	mg/L	1	3/13/2019 5:04:01 PM
Chromium	< 0.0100	0.0100	mg/L	1	3/13/2019 5:04:01 PM
Cobalt	< 0.0100	0.0100	mg/L	1	3/13/2019 5:04:01 PM
Lead	< 0.0100	0.0100	mg/L	1	3/13/2019 5:04:01 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	3/13/2019 5:04:01 PM
Selenium	< 0.0200	0.0200	mg/L	1	3/13/2019 5:04:01 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19030184**Date Reported **4/2/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 3/7/2019 9:45:00 AM

**Project:** Entergy: CCR Assessment Monitoring/ 15-125-1

**Lab ID:** 19030184-004 **Matrix:** AQUEOUS

Client Sample ID CCR-4

Analyses	Result	RL Qu	ual Units	DF	Date Analyzed
MERCURY IN GROUND WAT	ΓER,TOTAL		SW74	70A	Analyst: AC
Mercury	< 0.000200	0.000200	mg/L	1	3/11/2019 1:19:13 PM
INORGANIC ANIONS IN WA	TER BY IC		E 30	0.0	Analyst: SGP
Fluoride	0.190	0.0500	mg/L	1	3/11/2019 6:58:38 PM
METALS IN WATER BY ICP,	TOTALS		SW60	10B	Analyst: STS
Arsenic	0.0196	0.0100	mg/L	1	3/14/2019 6:42:59 PM
Barium	0.102	0.0100	mg/L	1	3/13/2019 5:08:32 PM
Beryllium	< 0.00100	0.00100	mg/L	1	3/13/2019 5:08:32 PM
Cadmium	< 0.00500	0.00500	mg/L	1	3/13/2019 5:08:32 PM
Chromium	< 0.0100	0.0100	mg/L	1	3/13/2019 5:08:32 PM
Cobalt	< 0.0100	0.0100	mg/L	1	3/13/2019 5:08:32 PM
Lead	< 0.0100	0.0100	mg/L	1	3/13/2019 5:08:32 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	3/13/2019 5:08:32 PM
Selenium	< 0.0200	0.0200	mg/L	1	3/13/2019 5:08:32 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19030184**Date Reported **4/2/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 3/7/2019 8:30:00 AM

**Project:** Entergy: CCR Assessment Monitoring/ 15-125-1

**Lab ID:** 19030184-005 **Matrix:** AQUEOUS

**Client Sample ID** CCR-5

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND W	VATER,TOTAL		SW74	70A	Analyst: <b>AC</b>
Mercury	< 0.000200	0.000200	mg/L	1	3/11/2019 1:27:14 PM
INORGANIC ANIONS IN V	VATER BY IC		E 30	0.0	Analyst: <b>SGP</b>
Fluoride	0.215	0.0500	mg/L	1	3/11/2019 7:39:50 PM
METALS IN WATER BY IC	METALS IN WATER BY ICP, TOTALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	3/14/2019 7:13:40 PM
Barium	0.218	0.0100	mg/L	1	3/13/2019 5:23:00 PM
Beryllium	< 0.00100	0.00100	mg/L	1	3/13/2019 5:23:00 PM
Cadmium	< 0.00500	0.00500	mg/L	1	3/13/2019 5:23:00 PM
Chromium	< 0.0100	0.0100	mg/L	1	3/13/2019 5:23:00 PM
Cobalt	< 0.0100	0.0100	mg/L	1	3/13/2019 5:23:00 PM
Lead	< 0.0100	0.0100	mg/L	1	3/13/2019 5:23:00 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	3/13/2019 5:23:00 PM
Selenium	0.0238	0.0200	mg/L	1	3/13/2019 5:23:00 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19030184**Date Reported **4/2/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 3/6/2019 4:10:00 PM

**Project:** Entergy: CCR Assessment Monitoring/ 15-125-1

**Lab ID:** 19030184-006 **Matrix:** AQUEOUS

Client Sample ID CCR-6

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATER	,TOTAL		SW74	70A	Analyst: <b>AC</b>
Mercury	< 0.000200	0.000200	mg/L	1	3/11/2019 1:34:45 PM
INORGANIC ANIONS IN WATER	BY IC		E 30	0.0	Analyst: SGP
Fluoride	0.224	0.0500	mg/L	1	3/11/2019 7:53:35 PM
METALS IN WATER BY ICP, TO	TALS		SW60	10B	Analyst: STS
Arsenic	0.0174	0.0100	mg/L	1	3/14/2019 7:17:04 PM
Barium	0.205	0.0100	mg/L	1	3/13/2019 5:27:27 PM
Beryllium	< 0.00100	0.00100	mg/L	1	3/13/2019 5:27:27 PM
Cadmium	< 0.00500	0.00500	mg/L	1	3/13/2019 5:27:27 PM
Chromium	< 0.0100	0.0100	mg/L	1	3/13/2019 5:27:27 PM
Cobalt	< 0.0100	0.0100	mg/L	1	3/13/2019 5:27:27 PM
Lead	< 0.0100	0.0100	mg/L	1	3/13/2019 5:27:27 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	3/13/2019 5:27:27 PM
Selenium	< 0.0200	0.0200	mg/L	1	3/13/2019 5:27:27 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: 19030184

Date Reported 4/2/2019

CLIENT: Pivotal Engineering LLC Collection Date: 3/6/2019 2:45:00 PM

**Project:** Entergy: CCR Assessment Monitoring/ 15-125-1

**Lab ID:** 19030184-007 **Matrix:** AQUEOUS

**Client Sample ID** CCR-7

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WA	TER,TOTAL		SW74	70A	Analyst: AC
Mercury	< 0.000200	0.000200	mg/L	1	3/11/2019 1:37:05 PM
INORGANIC ANIONS IN WATER BY IC			E 30	0.0	Analyst: <b>SGP</b>
Fluoride	0.235	0.0500	mg/L	1	3/11/2019 8:07:19 PM
METALS IN WATER BY ICP,	TOTALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	3/14/2019 7:20:28 PM
Barium	0.216	0.0100	mg/L	1	3/13/2019 5:31:56 PM
Beryllium	< 0.00100	0.00100	mg/L	1	3/13/2019 5:31:56 PM
Cadmium	< 0.00500	0.00500	mg/L	1	3/13/2019 5:31:56 PM
Chromium	< 0.0100	0.0100	mg/L	1	3/13/2019 5:31:56 PM
Cobalt	< 0.0100	0.0100	mg/L	1	3/13/2019 5:31:56 PM
Lead	< 0.0100	0.0100	mg/L	1	3/13/2019 5:31:56 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	3/13/2019 5:31:56 PM
Selenium	0.0304	0.0200	mg/L	1	3/13/2019 5:31:56 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19030184**Date Reported **4/2/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 3/6/2019 1:20:00 PM

**Project:** Entergy: CCR Assessment Monitoring/ 15-125-1

**Lab ID:** 19030184-008 **Matrix:** AQUEOUS

Client Sample ID CCR-8

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND W	VATER,TOTAL		SW74	70A	Analyst: <b>AC</b>
Mercury	< 0.000200	0.000200	mg/L	1	3/11/2019 1:39:24 PM
INORGANIC ANIONS IN V	VATER BY IC		E 30	0.0	Analyst: <b>SGP</b>
Fluoride	0.121	0.0500	mg/L	1	3/11/2019 8:21:04 PM
METALS IN WATER BY IC	METALS IN WATER BY ICP, TOTALS		SW60	10B	Analyst: STS
Arsenic	0.0134	0.0100	mg/L	1	3/14/2019 7:23:50 PM
Barium	0.110	0.0100	mg/L	1	3/13/2019 5:36:25 PM
Beryllium	< 0.00100	0.00100	mg/L	1	3/13/2019 5:36:25 PM
Cadmium	< 0.00500	0.00500	mg/L	1	3/13/2019 5:36:25 PM
Chromium	< 0.0100	0.0100	mg/L	1	3/13/2019 5:36:25 PM
Cobalt	< 0.0100	0.0100	mg/L	1	3/13/2019 5:36:25 PM
Lead	< 0.0100	0.0100	mg/L	1	3/13/2019 5:36:25 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	3/13/2019 5:36:25 PM
Selenium	< 0.0200	0.0200	mg/L	1	3/13/2019 5:36:25 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19030184**Date Reported **4/2/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 3/6/2019 11:00:00 AM

**Project:** Entergy: CCR Assessment Monitoring/ 15-125-1

**Lab ID:** 19030184-009 **Matrix:** AQUEOUS

Client Sample ID CCR-9

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATER,	TOTAL		SW74	70A	Analyst: <b>AC</b>
Mercury	< 0.000200	0.000200	mg/L	1	3/11/2019 1:41:45 PM
INORGANIC ANIONS IN WATER BY IC			E 30	0.0	Analyst: SGP
Fluoride	0.521	0.0500	mg/L	1	3/11/2019 8:34:48 PM
METALS IN WATER BY ICP, TOT	ALS		SW60	10B	Analyst: STS
Arsenic	0.0127	0.0100	mg/L	1	3/14/2019 7:27:15 PM
Barium	0.245	0.0100	mg/L	1	3/13/2019 5:58:28 PM
Beryllium	< 0.00100	0.00100	mg/L	1	3/13/2019 5:58:28 PM
Cadmium	< 0.00500	0.00500	mg/L	1	3/13/2019 5:58:28 PM
Chromium	< 0.0100	0.0100	mg/L	1	3/13/2019 5:58:28 PM
Cobalt	< 0.0100	0.0100	mg/L	1	3/13/2019 5:58:28 PM
Lead	< 0.0100	0.0100	mg/L	1	3/13/2019 5:58:28 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	3/13/2019 5:58:28 PM
Selenium	< 0.0200	0.0200	mg/L	1	3/13/2019 5:58:28 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19030184**Date Reported **4/2/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 3/6/2019 9:30:00 AM

**Project:** Entergy: CCR Assessment Monitoring/ 15-125-1

**Lab ID:** 19030184-010 **Matrix:** AQUEOUS

Client Sample ID CCR-10

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND W	VATER,TOTAL		SW74	70A	Analyst: <b>AC</b>
Mercury	< 0.000200	0.000200	mg/L	1	3/11/2019 1:44:04 PM
INORGANIC ANIONS IN V	VATER BY IC		E 30	0.0	Analyst: <b>SGP</b>
Fluoride	0.552	0.0500	mg/L	1	3/11/2019 8:48:32 PM
METALS IN WATER BY IC	CP, TOTALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	3/14/2019 7:30:40 PM
Barium	0.260	0.0100	mg/L	1	3/13/2019 6:02:57 PM
Beryllium	< 0.00100	0.00100	mg/L	1	3/13/2019 6:02:57 PM
Cadmium	< 0.00500	0.00500	mg/L	1	3/13/2019 6:02:57 PM
Chromium	< 0.0100	0.0100	mg/L	1	3/13/2019 6:02:57 PM
Cobalt	< 0.0100	0.0100	mg/L	1	3/13/2019 6:02:57 PM
Lead	< 0.0100	0.0100	mg/L	1	3/13/2019 6:02:57 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	3/13/2019 6:02:57 PM
Selenium	0.0210	0.0200	mg/L	1	3/13/2019 6:02:57 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com

#### **Analytical Report**

(consolidated)

WO#: **19030184**Date Reported **4/2/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 3/6/2019 8:15:00 AM

**Project:** Entergy: CCR Assessment Monitoring/ 15-125-1

**Lab ID:** 19030184-011 **Matrix:** AQUEOUS

Client Sample ID CCR-11

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND W	VATER,TOTAL		SW74	70A	Analyst: <b>AC</b>
Mercury	< 0.000200	0.000200	mg/L	1	3/11/2019 1:46:25 PM
INORGANIC ANIONS IN V	VATER BY IC		E 30	0.0	Analyst: <b>SGP</b>
Fluoride	0.633	0.0500	mg/L	1	3/11/2019 9:02:15 PM
METALS IN WATER BY IC	METALS IN WATER BY ICP, TOTALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	3/14/2019 7:34:01 PM
Barium	0.138	0.0100	mg/L	1	3/13/2019 6:07:24 PM
Beryllium	< 0.00100	0.00100	mg/L	1	3/13/2019 6:07:24 PM
Cadmium	< 0.00500	0.00500	mg/L	1	3/13/2019 6:07:24 PM
Chromium	< 0.0100	0.0100	mg/L	1	3/13/2019 6:07:24 PM
Cobalt	< 0.0100	0.0100	mg/L	1	3/13/2019 6:07:24 PM
Lead	< 0.0100	0.0100	mg/L	1	3/13/2019 6:07:24 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	3/13/2019 6:07:24 PM
Selenium	0.0225	0.0200	mg/L	1	3/13/2019 6:07:24 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19030184**Date Reported **4/2/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 3/5/2019 5:00:00 PM

**Project:** Entergy: CCR Assessment Monitoring/ 15-125-1

**Lab ID:** 19030184-012 **Matrix:** AQUEOUS

Client Sample ID CCR-12

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND W	VATER,TOTAL		SW74	70A	Analyst: <b>AC</b>
Mercury	< 0.000200	0.000200	mg/L	1	3/11/2019 1:48:44 PM
INORGANIC ANIONS IN V	VATER BY IC		E 30	0.0	Analyst: <b>SGP</b>
Fluoride	0.115	0.0500	mg/L	1	3/11/2019 9:15:59 PM
METALS IN WATER BY IC	METALS IN WATER BY ICP, TOTALS		SW60	10B	Analyst: STS
Arsenic	0.0266	0.0100	mg/L	1	3/14/2019 7:37:10 PM
Barium	0.155	0.0100	mg/L	1	3/13/2019 6:11:51 PM
Beryllium	< 0.00100	0.00100	mg/L	1	3/13/2019 6:11:51 PM
Cadmium	< 0.00500	0.00500	mg/L	1	3/13/2019 6:11:51 PM
Chromium	< 0.0100	0.0100	mg/L	1	3/13/2019 6:11:51 PM
Cobalt	< 0.0100	0.0100	mg/L	1	3/13/2019 6:11:51 PM
Lead	< 0.0100	0.0100	mg/L	1	3/13/2019 6:11:51 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	3/13/2019 6:11:51 PM
Selenium	< 0.0200	0.0200	mg/L	1	3/13/2019 6:11:51 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19030184**Date Reported **4/2/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 3/5/2019 3:40:00 PM

**Project:** Entergy: CCR Assessment Monitoring/ 15-125-1

**Lab ID:** 19030184-013 **Matrix:** AQUEOUS

Client Sample ID CCR-13

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND W	VATER,TOTAL		SW74	70A	Analyst: <b>AC</b>
Mercury	< 0.000200	0.000200	mg/L	1	3/11/2019 1:51:05 PM
INORGANIC ANIONS IN V	VATER BY IC		E 30	0.0	Analyst: <b>SGP</b>
Fluoride	0.195	0.0500	mg/L	1	3/11/2019 9:29:43 PM
METALS IN WATER BY IC	METALS IN WATER BY ICP, TOTALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	3/14/2019 7:40:28 PM
Barium	0.0940	0.0100	mg/L	1	3/13/2019 6:17:32 PM
Beryllium	< 0.00100	0.00100	mg/L	1	3/13/2019 6:17:32 PM
Cadmium	< 0.00500	0.00500	mg/L	1	3/13/2019 6:17:32 PM
Chromium	< 0.0100	0.0100	mg/L	1	3/13/2019 6:17:32 PM
Cobalt	< 0.0100	0.0100	mg/L	1	3/13/2019 6:17:32 PM
Lead	< 0.0100	0.0100	mg/L	1	3/13/2019 6:17:32 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	3/13/2019 6:17:32 PM
Selenium	< 0.0200	0.0200	mg/L	1	3/13/2019 6:17:32 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19030184**Date Reported **4/2/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 3/5/2019 2:25:00 PM

**Project:** Entergy: CCR Assessment Monitoring/ 15-125-1

**Lab ID:** 19030184-014 **Matrix:** AQUEOUS

Client Sample ID CCR-14

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND W	VATER,TOTAL		SW74	70A	Analyst: <b>AC</b>
Mercury	< 0.000200	0.000200	mg/L	1	3/11/2019 1:53:25 PM
INORGANIC ANIONS IN V	VATER BY IC		E 30	0.0	Analyst: SGP
Fluoride	0.139	0.0500	mg/L	1	3/11/2019 9:43:26 PM
METALS IN WATER BY IC	METALS IN WATER BY ICP, TOTALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	3/14/2019 7:51:33 PM
Barium	0.0730	0.0100	mg/L	1	3/13/2019 6:21:59 PM
Beryllium	< 0.00100	0.00100	mg/L	1	3/13/2019 6:21:59 PM
Cadmium	< 0.00500	0.00500	mg/L	1	3/13/2019 6:21:59 PM
Chromium	< 0.0100	0.0100	mg/L	1	3/13/2019 6:21:59 PM
Cobalt	< 0.0100	0.0100	mg/L	1	3/13/2019 6:21:59 PM
Lead	< 0.0100	0.0100	mg/L	1	3/13/2019 6:21:59 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	3/13/2019 6:21:59 PM
Selenium	< 0.0200	0.0200	mg/L	1	3/13/2019 6:21:59 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com

#### **Analytical Report**

(consolidated)

WO#: **19030184**Date Reported **4/2/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 3/6/2019

**Project:** Entergy: CCR Assessment Monitoring/ 15-125-1

**Lab ID:** 19030184-015 **Matrix:** AQUEOUS

Client Sample ID DUP

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND W	VATER,TOTAL		SW74	70A	Analyst: AC
Mercury	< 0.000200	0.000200	mg/L	1	3/11/2019 1:55:48 PM
INORGANIC ANIONS IN WATER BY IC			E 30	0.0	Analyst: SGP
Fluoride	0.513	0.0500	mg/L	1	3/11/2019 10:24:37 PM
METALS IN WATER BY ICP, TOTALS			SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	3/14/2019 7:54:51 PM
Barium	0.250	0.0100	mg/L	1	3/13/2019 6:26:24 PM
Beryllium	< 0.00100	0.00100	mg/L	1	3/13/2019 6:26:24 PM
Cadmium	< 0.00500	0.00500	mg/L	1	3/13/2019 6:26:24 PM
Chromium	< 0.0100	0.0100	mg/L	1	3/13/2019 6:26:24 PM
Cobalt	< 0.0100	0.0100	mg/L	1	3/13/2019 6:26:24 PM
Lead	< 0.0100	0.0100	mg/L	1	3/13/2019 6:26:24 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	3/13/2019 6:26:24 PM
Selenium	0.0264	0.0200	mg/L	1	3/13/2019 6:26:24 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19030184**Date Reported **4/2/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 3/5/2019 2:45:00 PM

**Project:** Entergy: CCR Assessment Monitoring/ 15-125-1

**Lab ID:** 19030184-016 **Matrix:** AQUEOUS

Client Sample ID FB1

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND W	/ATER,TOTAL		SW74	70A	Analyst: AC
Mercury	< 0.000200	0.000200	mg/L	1	3/11/2019 2:03:19 PM
INORGANIC ANIONS IN V	VATER BY IC		E 30	0.0	Analyst: SGP
Fluoride	< 0.0500	0.0500	mg/L	1	3/11/2019 6:03:44 PM
METALS IN WATER BY IC	CP, TOTALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	3/14/2019 7:58:13 PM
Barium	< 0.0100	0.0100	mg/L	1	3/13/2019 6:30:52 PM
Beryllium	< 0.00100	0.00100	mg/L	1	3/13/2019 6:30:52 PM
Cadmium	< 0.00500	0.00500	mg/L	1	3/13/2019 6:30:52 PM
Chromium	< 0.0100	0.0100	mg/L	1	3/13/2019 6:30:52 PM
Cobalt	< 0.0100	0.0100	mg/L	1	3/13/2019 6:30:52 PM
Lead	< 0.0100	0.0100	mg/L	1	3/13/2019 6:30:52 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	3/13/2019 6:30:52 PM
Selenium	< 0.0200	0.0200	mg/L	1	3/13/2019 6:30:52 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



## **QC SUMMARY REPORT**

29388

**BatchID:** 

WO#: 19030184

02-Apr-19

**Client:** Pivotal Engineering LLC

**Project:** Entergy: CCR Assessment Monitoring/ 15-125-

1 Toject.	Entergy. CC	Assessment Won	toring/ 13-123-					attiiD. 2	<b>9300</b>		
Sample ID:	19030184-004BMS	SampType: MS	TestCode: H	IG_W_7470A Units: mg/L		Prep Date:	3/11/201	9	RunNo: <b>76</b> 7	732	
Client ID:	CCR-4	Batch ID: 29388	TestNo: S	W7470A		Analysis Date	3/11/201	9	SeqNo: 192	22732	
Analyte		Result	PQL SF	PK value SPK Ref Val	%REC	LowLimit I	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		0.0105	0.000200	0.01000 0	105	75	125				
Sample ID:	19030184-004BMSD	SampType: MSD	TestCode: H	IG_W_7470A Units: mg/L		Prep Date:	3/11/201	9	RunNo: <b>76</b> 7	732	
Client ID:	CCR-4	Batch ID: 29388	TestNo: S	W7470A		Analysis Date	3/11/201	9	SeqNo: 192	22733	
Analyte		Result	PQL SF	PK value SPK Ref Val	%REC	LowLimit I	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		0.0103	0.000200	0.01000 0	103	75	125	0.01052	2.56	20	
Sample ID:	MB-29388	SampType: MBLK	TestCode: H	IG_W_7470A Units: mg/L		Prep Date:	3/11/201	9	RunNo: <b>76</b> 7	732	
Client ID:	PBW	Batch ID: 29388	TestNo: S	W7470A		Analysis Date	3/11/201	9	SeqNo: 192	22757	
Analyte		Result	PQL SF	PK value SPK Ref Val	%REC	LowLimit I	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		< 0.000200	0.000200								
Sample ID:	LCS-29388	SampType: LCS	TestCode: H	IG_W_7470A Units: mg/L		Prep Date:	3/11/201	9	RunNo: <b>76</b> 7	732	
Client ID:	LCSW	Batch ID: 29388	TestNo: S	W7470A		Analysis Date	3/11/201	9	SeqNo: 192	22758	
Analyte		Result	PQL SF	PK value SPK Ref Val	%REC	LowLimit I	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		0.0108	0.000200	0.01000 0	108	80	120				

Qualifiers: H Holding times for preparation or analysis exceeded

RL Reporting Limit

U Analyte not detected

Matrix Interference

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit



## **QC SUMMARY REPORT**

WO#: 19030184

02-Apr-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring/ 15-125- BatchID: 29388

Sample ID: LCSD-29388 Client ID: LCSS02	SampType: LCSD Batch ID: 29388	TestCode: <b>HG_W_7470A</b> Units: <b>mg/L</b> TestNo: <b>SW7470A</b>				Prep Da Analysis Da	te: <b>3/11/20</b> te: <b>3/11/20</b>		RunNo: <b>767</b> SeqNo: <b>192</b>		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.0104	0.000200	0.01000	0	104	80	120	0.01075	3.39	20	

Qualifiers: H Holding times for preparation or analysis exceeded

RL Reporting Limit

U Analyte not detected

Matrix Interference

S Spike Recovery outside accepted recovery limits

V Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit



## **QC SUMMARY REPORT**

WO#: 19030184

02-Apr-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring/ 15-125- BatchID: 29398-1

Entergy. C	CK Assessment Wonto	Tilig/ 13-123-		DattiiD. 27370-1
Sample ID: MB-29398 Client ID: PBW	SampType: MBLK Batch ID: 29398-1	TestCode: 6010_W TestNo: SW6010B	Units: mg/L	Prep Date: <b>3/12/2019</b> RunNo: <b>76839</b> Analysis Date: <b>3/14/2019</b> SeqNo: <b>1925380</b>
Chefit ID. PBW	Daterrib. 29390-1	1 estivo. <b>3 vvoo 10 b</b>		Allalysis Date. 3/14/2019 Seq. 1923300
Analyte	Result	PQL SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	< 0.0100	0.0100		
Sample ID: LCS-29398	SampType: <b>LCS</b>	TestCode: 6010_W	Units: mg/L	Prep Date: 3/12/2019 RunNo: 76839
Client ID: LCSW	Batch ID: 29398-1	TestNo: SW6010B		Analysis Date: <b>3/14/2019</b> SeqNo: <b>1925381</b>
Analyte	Result	PQL SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	0.523	0.0100 0.5000	0	105 80 120
Sample ID: LCSD-29398	SampType: LCSD	TestCode: 6010_W	Units: mg/L	Prep Date: 3/12/2019 RunNo: 76839
Client ID: LCSS02	Batch ID: 29398-1	TestNo: SW6010B		Analysis Date: 3/14/2019 SeqNo: 1925382
Analyte	Result	PQL SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	0.549	0.0100 0.5000	0	110 80 120 0.5227 4.84 20
Sample ID: 19030184-004BMS	SampType: MS	TestCode: 6010_W	Units: mg/L	Prep Date: 3/12/2019 RunNo: 76839
Client ID: CCR-4	Batch ID: 29398-1	TestNo: SW6010B		Analysis Date: 3/14/2019 SeqNo: 1925387
Analyte	Result	PQL SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	0.545	0.0100 0.5000	0.01960	105 75 125

Qualifiers: H Holding times for preparation or analysis exceeded

RL Reporting Limit

U Analyte not detected

Matrix Interference

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit



## **QC SUMMARY REPORT**

WO#: 19030184

02-Apr-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring/ 15-125- BatchID: 29398-1

Sample ID: Client ID:	19030184-004BMSD CCR-4	SampType: MSD  Batch ID: 29398-1		de: 6010_W lo: SW6010B	Units: mg/L		Prep Date: <b>3/12/20</b> Analysis Date: <b>3/14/20</b>					
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic		0.545	0.0100	0.5000	0.01960	105	75	125	0.5448	0.0551	20	

Qualifiers: H Holding times for preparation or analysis exceeded

RL Reporting Limit

U Analyte not detected

Matrix Interference

S Spike Recovery outside accepted recovery limits

Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit



## **QC SUMMARY REPORT**

29398-1

WO#: 19030184

02-Apr-19

**Client:** Pivotal Engineering LLC

**Project:** Entergy: CCR Assessment Monitoring/ 15-125- **BatchID:** 

Sample ID: MB-29398	SampType: MBLK	TestCoo	de: <b>6010_W</b>	Units: mg/L		Prep Da	te: <b>3/12/2</b> 0	119	RunNo: <b>768</b>	336	
Client ID: PBW	Batch ID: 29398-1	TestN	lo: <b>SW6010B</b>			Analysis Da	te: <b>3/13/2</b> 0	119	SeqNo: 192	24957	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	< 0.0100	0.0100									
Beryllium	< 0.00100	0.00100									
Cadmium	< 0.00500	0.00500									
Chromium	< 0.0100	0.0100									
Cobalt	< 0.0100	0.0100									
Lead	< 0.0100	0.0100									
Molybdenum	< 0.0100	0.0100									
Selenium	< 0.0200	0.0200									

Sample ID: LCS-29398	SampType: LCS	TestCo	de: <b>6010_W</b>	Units: mg/L		Prep Da	te: <b>3/12/20</b>	19	RunNo: 768	336	
Client ID: LCSW	Batch ID: 29398-1	TestN	No: <b>SW6010B</b>			Analysis Da	te: <b>3/13/20</b>	19	SeqNo: 192	24958	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	0.506	0.0100	0.5000	0	101	80	120				
Beryllium	0.502	0.00100	0.5000	0	100	80	120				
Cadmium	0.502	0.00500	0.5000	0	100	80	120				
Chromium	0.504	0.0100	0.5000	0	101	80	120				
Cobalt	0.508	0.0100	0.5000	0	102	80	120				
Lead	0.504	0.0100	0.5000	0	101	80	120				
Molybdenum	0.498	0.0100	0.5000	0	99.6	80	120				
Selenium	0.505	0.0200	0.5000	0	101	80	120				

H Holding times for preparation or analysis exceeded

RL Reporting Limit

Qualifiers:

U Analyte not detected

Matrix Interference

S Spike Recovery outside accepted recovery limits

V Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit



## **QC SUMMARY REPORT**

WO#: 19030184

02-Apr-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring/ 15-125- BatchID: 29398-1

Sample ID: LCSD-29398	SampType: LCSD	TestCo	de: <b>6010_W</b>	Units: mg/L		Prep Da	te: <b>3/12/20</b>	19	RunNo: <b>768</b>	336	
Client ID: LCSS02	Batch ID: 29398-1	TestN	lo: <b>SW6010B</b>		Analysis Date: 3/13/2019			SeqNo: <b>1924959</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	0.503	0.0100	0.5000	0	101	80	120	0.5059	0.595	20	
Beryllium	0.502	0.00100	0.5000	0	100	80	120	0.5024	0.0796	20	
Cadmium	0.499	0.00500	0.5000	0	99.8	80	120	0.5021	0.659	20	
Chromium	0.501	0.0100	0.5000	0	100	80	120	0.5041	0.657	20	
Cobalt	0.504	0.0100	0.5000	0	101	80	120	0.5079	0.771	20	
Lead	0.510	0.0100	0.5000	0	102	80	120	0.5043	1.10	20	
Molybdenum	0.499	0.0100	0.5000	0	99.8	80	120	0.4982	0.120	20	
Selenium	0.494	0.0200	0.5000	0	98.8	80	120	0.5051	2.20	20	

Sample ID: 19030184-004BMS	SampType: MS	TestCo	de: <b>6010_W</b>	Units: mg/L		Prep Da	te: <b>3/12/20</b>	19	RunNo: <b>768</b>	336	
Client ID: CCR-4	Batch ID: 29398-1	TestN	lo: <b>SW6010B</b>			Analysis Da	te: <b>3/13/20</b>	19	SeqNo: 192	24967	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	0.612	0.0100	0.5000	0.1020	102	75	125				
Beryllium	0.508	0.00100	0.5000	0.0003000	102	75	125				
Cadmium	0.495	0.00500	0.5000	0.001300	98.7	75	125				
Chromium	0.507	0.0100	0.5000	0	101	75	125				
Cobalt	0.505	0.0100	0.5000	0	101	75	125				
Lead	0.507	0.0100	0.5000	0	101	75	125				
Molybdenum	0.512	0.0100	0.5000	0.004900	101	75	125				
Selenium	0.511	0.0200	0.5000	0.01290	99.5	75	125				

H Holding times for preparation or analysis exceeded

RL Reporting Limit

Qualifiers:

U Analyte not detected

Matrix Interference

S Spike Recovery outside accepted recovery limits

V Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit



## **QC SUMMARY REPORT**

WO#: 19030184

02-Apr-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring/ 15-125- BatchID: 29398-1

Sample ID: 19030184-004BMSD Client ID: CCR-4	SampType: MSD Batch ID: 29398-1		de: 6010_W No: SW6010B	Units: mg/L	Prep Date: <b>3/12/2019</b> Analysis Date: <b>3/13/2019</b>		RunNo: <b>76836</b> SeqNo: <b>1924968</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	0.616	0.0100	0.5000	0.1020	103	75	125	0.6121	0.668	20	
Beryllium	0.512	0.00100	0.5000	0.0003000	102	75	125	0.5083	0.725	20	
Cadmium	0.498	0.00500	0.5000	0.001300	99.4	75	125	0.4950	0.705	20	
Chromium	0.510	0.0100	0.5000	0	102	75	125	0.5071	0.649	20	
Cobalt	0.509	0.0100	0.5000	0	102	75	125	0.5047	0.809	20	
Lead	0.511	0.0100	0.5000	0	102	75	125	0.5070	0.708	20	
Molybdenum	0.515	0.0100	0.5000	0.004900	102	75	125	0.5115	0.604	20	
Selenium	0.501	0.0200	0.5000	0.01290	97.6	75	125	0.5105	1.90	20	

Qualifiers:

Holding times for preparation or analysis exceeded

RL Reporting Limit

U Analyte not detected

Matrix Interference

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit



## **QC SUMMARY REPORT**

WO#: 19030184

02-Apr-19

**Client:** Pivotal Engineering LLC

Project: Ei	ntergy: CCR Assessment Mon	nitoring/ 15-125-			В	atchID: F	R76755	
Sample ID: MBLK Client ID: PBW	SampType: MBLK Batch ID: R76755	TestCode: <b>300.0</b> TestNo: <b>E 300.0</b>	Units: mg/L	A	Prep Date: nalysis Date: 3/11/20	19	RunNo: <b>76755</b> SeqNo: <b>1923247</b>	
Analyte	Result	PQL SPK value	SPK Ref Val	%REC	LowLimit HighLimit	RPD Ref Val	%RPD RPDLimit	Qual
Fluoride	< 0.0500	0.0500						
Sample ID: LCS	SampType: LCS	TestCode: 300.0	Units: mg/L		Prep Date:		RunNo: <b>76755</b>	
Client ID: LCSW	Batch ID: <b>R76755</b>	TestNo: <b>E 300.0</b>		A	nalysis Date: 3/11/20	19	SeqNo: <b>1923248</b>	
Analyte	Result	PQL SPK value	SPK Ref Val	%REC	LowLimit HighLimit	RPD Ref Val	%RPD RPDLimit	Qual
Fluoride	1.98	0.0500 2.000	0	99.2	90 110			
Sample ID: LCSD	SampType: LCSD	TestCode: 300.0	Units: mg/L		Prep Date:		RunNo: <b>76755</b>	
Client ID: LCSS02	Batch ID: <b>R76755</b>	TestNo: <b>E 300.0</b>		A	nalysis Date: 3/11/20	19	SeqNo: <b>1923249</b>	
Analyte	Result	PQL SPK value	SPK Ref Val	%REC	LowLimit HighLimit	RPD Ref Val	%RPD RPDLimit	Qual
Fluoride	1.98	0.0500 2.000	0	99.1	90 110	1.984	0.0885 15	
Sample ID: 19030184-	004AMS SampType: MS	TestCode: 300.0	Units: mg/L		Prep Date:		RunNo: <b>76755</b>	
Client ID: CCR-4	Batch ID: <b>R76755</b>	TestNo: <b>E 300.0</b>		A	nalysis Date: 3/11/20	19	SeqNo: <b>1923254</b>	
Analyte	Result	PQL SPK value	SPK Ref Val	%REC	LowLimit HighLimit	RPD Ref Val	%RPD RPDLimit	Qual
Fluoride	9.54	0.500 10.00	0.1135	94.2	80 120			

Qualifiers: Holding times for preparation or analysis exceeded

RLReporting Limit

Analyte not detected

Matrix Interference

Spike Recovery outside accepted recovery limits

Sample container temperature is out of limit as specified at testcode

Not Detected at the Reporting Limit



## **QC SUMMARY REPORT**

R76755

WO#: 19030184

02-Apr-19

**Client:** Pivotal Engineering LLC

**Project:** Entergy: CCR Assessment Monitoring/ 15-125- **BatchID:** 

Sample ID: 19030184-004AMSD	SampType: MSD	TestCod	le: <b>300.0</b>	Units: mg/L		Prep Da	te:		RunNo: <b>76</b> 7	755	
Client ID: CCR-4	Batch ID: <b>R76755</b>	TestN	o: <b>E 300.0</b>			Analysis Da	te: <b>3/11/2</b> 0	19	SeqNo: 192	23255	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	9.65	0.500	10.00	0.1135	95.3	80	120	9.536	1.14	15	
Sample ID: 19030184-016AMS	SampType: MS	TestCod	le: <b>300.0</b>	Units: mg/L		Prep Da	te:		RunNo: <b>76</b> 7	755	
Client ID: FB1	Batch ID: <b>R76755</b>	TestN	o: <b>E 300.0</b>			Analysis Da	te: <b>3/12/20</b>	119	SeqNo: 192	23293	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	0.978	0.0500	1.000	0	97.8	80	120				
Sample ID: 19030184-016AMSD	SampType: MSD	TestCod	le: <b>300.0</b>	Units: mg/L		Prep Da	te:		RunNo: <b>76</b>	755	
Client ID: FB1	Batch ID: <b>R76755</b>	TestN	o: <b>E 300.0</b>			Analysis Da	te: <b>3/12/20</b>	19	SeqNo: 192	23294	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	0.973	0.0500	1.000	0	97.3	80	120	0.9782	0.509	15	

Qualifiers: H Holding times for preparation or analysis exceeded

RL Reporting Limit

U Analyte not detected

Matrix Interference

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com

#### Sample Log-In Check List

Client Name: PIVOTAL\_ENGINEERIN Work Order Number: 19030184 RcptNo: 1 Daniel Holling Danielle Hollier 3/7/2019 3:00:00 PM Logged by: Completed By: Danielle Hollier 3/7/2019 4:27:35 PM Reviewed By: Cristina Thibeaux 3/12/2019 1:26:58 PM **Chain of Custody** No 🗸 Yes Not Present 1. Is Chain of Custody complete? 2. How was the sample delivered? Element Log In Yes 🗸 No 🗌 NA 🗌 3 Coolers are present? Yes 🗹 No 🗌 4 Shipping container/cooler in good condition? No 🗌 Yes Custody seals intact on shipping container/cooler? Not Present ✓ Seal Date: Signed By: NA  $\square$ 5. Was an attempt made to cool the samples? Yes 🗸 Yes 🗸 NA  $\square$ No 6. Were all samples received at a temperature of >0° C to 6.0°C 7. Sample(s) in proper container(s)? **✓** 8. Sufficient sample volume for indicated test(s)? Yes No 9. Are samples (except VOA and ONG) properly preserved? Yes 10. Was preservative added to bottles? Yes No **✓** NA 🗌 No VOA Vials 11. Is the headspace in the VOA vials less than 1/4 inch or 6 mm? No No 🗸 Yes 12. Were any sample containers received broken? No 🗆 13. Does paperwork match bottle labels? Yes (Note discrepancies on chain of custody) 14. Are matrices correctly identified on Chain of Custody? 15. Is it clear what analyses were requested? Yes 🔽 16. Were all holding times able to be met? (If no, notify customer for authorization.) Special Handling (if applicable) No 🗸 NA 🗌 17. Was client notified of all discrepancies with this order? Yes Person Notified: Date: By Whom: Via: eMail Phone Fax In Person Regarding: Client Instructions: 18. Additional remarks:

Improper error correction(s) made by client

Added the year of collection to the COC as per samples received.

#### **Cooler Information**

Cooler No	Temp ⁰C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.1	Good	Not Present			



# **ANALYTICAL RESULTS**

#### **PERFORMED BY**

GCAL, LLC

7979 Innovation Park Dr. Baton Rouge, LA 70820 (225) 769-4900

**Report Date** 04/01/2019

**GCAL Report** 219031258

**Project** 19030184

**Deliver To** 

Annie Reedy

**Element Materials Technology** 

2417 W Pinhook Rd Lafayette, LA 70508

800-737-2378

**Additional Recipients** 

Caitlin Duplantis, Element Materials

Technology

Cristina Thibeaux, Element Materials

Technology

Rhonda David, Element Materials Technology Buffy Hudson, Element Materials Technology







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**Report#:** 219031258

**Project ID:** 19030184 **Report Date:** 04/01/2019

#### **Laboratory Endorsement**

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with GCAL's Standard Operating Procedures.

#### Common Abbreviations that may be Utilized in this Report

ND Indicates the result was Not Detected at the specified reporting limit

NO Indicates the sample did not ignite when preliminary test performed for EPA Method 1030

**DO** Indicates the result was Diluted Out

MI Indicates the result was subject to Matrix Interference
TNTC Indicates the result was Too Numerous To Count
SUBC Indicates the analysis was Sub-Contracted
FLD Indicates the analysis was performed in the Field

DL Detection Limit
LOD Limit of Detection
LOQ Limit of Quantitation

RE Re-analysis

**CF** HPLC or GC Confirmation

00:01 Reported as a time equivalent to 12:00 AM

#### Reporting Flags that may be Utilized in this Report

J or I Indicates the result is between the MDL and LOQ

J DOD flag on analyte in the parent sample for MS/MSD outside acceptance criteria

U Indicates the compound was analyzed for but not detected

B or V Indicates the analyte was detected in the associated Method Blank Indicates a non-compliant QC Result (See Q Flag Application Report)

Indicates a non-compliant or not applicable QC recovery or RPD – see narrative
 Organics - The result is estimated because it exceeded the instrument calibration range

E Metals - % diference for the serial dilution is > 10%
L Reporting Limits adjusted to meet risk-based limit.

P RPD between primary and confirmation result is greater than 40

**DL** Diluted analysis – when appended to Client Sample ID

Sample receipt at GCAL is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of GCAL. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with The NELAC Institute (TNI) Standard 2009 and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.

Authorized Signature GCAL Report 219031258

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**Report#:** 219031258

**Project ID:** 19030184 **Report Date:** 04/01/2019

# Certifications

Certification	Certification Number			
DOD ELAP	74960			
Alabama	01955			
Arkansas	88-0655			
Colorado	01955			
Delaware	01955			
Florida	E87854			
Georgia	01955			
Hawaii	01955			
Idaho	01955			
Illinois	200048			
Indiana	01955			
Kansas	E-10354			
Kentucky	95			
Louisiana	01955			
Maryland	01955			
Massachusetts	01955			
Michigan	01955			
Mississippi	01955			
Missouri	01955			
Montana	N/A			
Nebraska	01955			
New Mexico	01955			
North Carolina	618			
North Dakota	R-195			
Oklahoma	9403			
South Carolina	73006001			
South Dakota	01955			
Tennessee	01955			
Texas	T104704178			
Vermont	01955			
Virginia	460215			
Washington	C929			
USDA Soil Permit	P330-16-00234			

GCAL Report#: 219031258 Page 3 of 18



**Project ID:** 19030184 **Report Date:** 04/01/2019

### Case Narrative

Client: Element Materials Technology Report: 219031258

Gulf Coast Analytical Laboratories received and analyzed the sample(s) listed on the Report Sample Summary page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

No anomalies were found in the analyzed sample(s).

GCAL Report#: 219031258 Page 4 of 18



**Project ID:** 19030184 **Report Date:** 04/01/2019

# Sample Summary

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21903125801	CCR-1	Water	03/05/2019 13:00	03/12/2019 13:40
21903125802	CCR-2	Water	03/05/2019 11:50	03/12/2019 13:40
21903125803	CCR-3	Water	03/05/2019 10:40	03/12/2019 13:40
21903125804	CCR-4	Water	03/07/2019 09:45	03/12/2019 13:40
21903125805	CCR-4 MS	Water	03/07/2019 09:45	03/12/2019 13:40
21903125806	CCR-4 MSD	Water	03/07/2019 09:45	03/12/2019 13:40
21903125807	CCR-5	Water	03/07/2019 08:30	03/12/2019 13:40
21903125808	CCR-6	Water	03/06/2019 16:10	03/12/2019 13:40
21903125809	CCR-7	Water	03/06/2019 14:45	03/12/2019 13:40
21903125810	CCR-8	Water	03/06/2019 13:20	03/12/2019 13:40
21903125811	CCR-9	Water	03/06/2019 11:00	03/12/2019 13:40
21903125812	CCR-10	Water	03/06/2019 09:30	03/12/2019 13:40
21903125813	CCR-11	Water	03/06/2019 08:15	03/12/2019 13:40
21903125814	CCR-12	Water	03/05/2019 17:00	03/12/2019 13:40
21903125815	CCR-13	Water	03/05/2019 15:40	03/12/2019 13:40
21903125816	CCR-14	Water	03/05/2019 14:25	03/12/2019 13:40
21903125817	DUP	Water	03/06/2019 00:01	03/12/2019 13:40
21903125818	FB1	Water	03/05/2019 14:45	03/12/2019 13:40

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GCAL Report#: 219031258 Page 5 of 18



**Project ID:** 19030184 **Report Date:** 04/01/2019

## Sample Results

CCR-1 Collect Date 03/05/2019 13:00 GCAL ID 21903125801

Receive Date 03/12/2019 13:40 Matrix Water

#### **EPA 6020B**

<b>Prep Date</b> 03/13/2019 11:00	Prep Batch 655756	Prep Method EPA 3010A	<b>Dilution</b> 1	<b>Analysis Date</b> 03/28/2019 01:56	<b>By</b> LWZ	Analytical Batch 656784
CAS#	Parameter			Result	LOQ	Units
7440-36-0	Antimony			ND	2.00	ug/L
7439-93-2	Lithium			23.7	5.00	ug/L
7440-28-0	Thallium			ND	1.00	ug/L

 CCR-2
 Collect Date
 03/05/2019 11:50
 GCAL ID
 21903125802

 Receive Date
 03/12/2019 13:40
 Matrix
 Water

#### **EPA 6020B**

<b>Prep Date</b> 03/13/2019 11:00	Prep Batch 655756	Prep Method EPA 3010A	<b>Dilution</b> 1	<b>Analysis Date</b> 03/28/2019 02:01	<b>By</b> LWZ	Analytical Batch 656784
CAS#	Parameter			Result	LOQ	Units
7440-36-0	Antimony			ND	2.00	ug/L
7439-93-2	Lithium			23.6	5.00	ug/L
7440-28-0	Thallium			ND	1.00	ug/L

 CCR-3
 Collect Date
 03/05/2019 10:40
 GCAL ID
 21903125803

 Receive Date
 03/12/2019 13:40
 Matrix
 Water

#### **EPA 6020B**

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch
03/13/2019 11:00	655756	EPA 3010A	1	03/28/2019 03:49	LWZ	656784
CAS#	Parameter			Result	LOQ	Units
7440-36-0	Antimony			ND	2.00	ug/L
7440-28-0	Thallium			ND	1.00	ug/L

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**Project ID:** 19030184 **Report Date:** 04/01/2019

## Sample Results

#### **EPA 6020B**

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch	
03/13/2019 11:00	655756	EPA 3010A	1	03/30/2019 01:15	LWZ	656885	
CAS#	Parameter			Result	LOQ	Units	
7439-93-2	Lithium			34.1	5.00	ug/L	

 CCR-4
 Collect Date
 03/07/2019 09:45
 GCAL ID
 21903125804

 Receive Date
 03/12/2019 13:40
 Matrix
 Water

#### **EPA 6020B**

<b>Prep Date</b> 03/13/2019 11:00	Prep Batch 655756	Prep Method EPA 3010A	<b>Dilution</b> 1	<b>Analysis Date</b> 03/28/2019 02:06	<b>By</b> LWZ	Analytical Batch 656784
CAS#	Parameter			Result	LOQ	Units
7440-36-0 <b>7439-93-2</b> 7440-28-0	Antimony <mark>Lithium</mark> Thallium			ND <b>18.3</b> ND	2.00 <b>5.00</b> 1.00	ug/L <b>ug/L</b> ug/L

 CCR-4 MS
 Collect Date
 03/07/2019 09:45
 GCAL ID
 21903125805

 Receive Date
 03/12/2019 13:40
 Matrix
 Water

#### **EPA 6020B**

Prep Date 03/13/2019 11:00	Prep Batch 655756	Prep Method EPA 3010A	Dilution 1	<b>Analysis Date</b> 03/28/2019 02:11	<b>By</b> LWZ	Analytical Batch 656784
CAS#	Parameter			Result	LOQ	Units
7440-36-0	Antimony			119	2.00	ug/L
7439-93-2	Lithium			275	5.00	ug/L
7440-28-0	Thallium			52.9	1.00	ug/L

GCAL Report#: 219031258 Page 7 of 18



**Project ID:** 19030184 **Report Date:** 04/01/2019

## Sample Results

 CCR-4 MSD
 Collect Date
 03/07/2019 09:45
 GCAL ID
 21903125806

 Receive Date
 03/12/2019 13:40
 Matrix
 Water

#### **EPA 6020B**

<b>Prep Date</b> 03/13/2019 11:00	Prep Batch 655756	Prep Method EPA 3010A	<b>Dilution</b> 1	<b>Analysis Date</b> 03/28/2019 02:16	<b>By</b> LWZ	Analytical Batch 656784
CAS#	Parameter			Result	LOQ	Units
7440-36-0	Antimony			109	2.00	ug/L
7439-93-2	Lithium			255	5.00	ug/L
7440-28-0	Thallium			49.5	1.00	ug/L

 CCR-5
 Collect Date
 03/07/2019 08:30
 GCAL ID
 21903125807

 Receive Date
 03/12/2019 13:40
 Matrix
 Water

#### **EPA 6020B**

<b>Prep Date</b> 03/13/2019 11:00	Prep Batch 655756	Prep Method EPA 3010A	<b>Dilution</b> 1	<b>Analysis Date</b> 03/28/2019 02:40	<b>By</b> LWZ	Analytical Batch 656784
CAS#	Parameter			Result	LOQ	Units
7440-36-0	Antimony			ND	2.00	ug/L
7439-93-2	Lithium			22.5	5.00	ug/L
7440-28-0	Thallium			ND	1.00	ug/L

 CCR-6
 Collect Date
 03/06/2019 16:10
 GCAL ID
 21903125808

 Receive Date
 03/12/2019 13:40
 Matrix
 Water

#### **EPA 6020B**

Prep Date 03/13/2019 11:00	Prep Batch 655756	Prep Method EPA 3010A	<b>Dilution</b> 1	<b>Analysis Date</b> 03/28/2019 02:45	<b>By</b> LWZ	Analytical Batch 656784
CAS#	Parameter			Result	LOQ	Units
7440-36-0	Antimony			ND	2.00	ug/L
7439-93-2	Lithium			14.7	5.00	ug/L
7440-28-0	Thallium			ND	1.00	ug/L

GCAL Report#: 219031258 Page 8 of 18



**Project ID:** 19030184 **Report Date:** 04/01/2019

## Sample Results

CCR-7

Collect Date 03/06/2019 14:45

Receive Date 03/12/2019 13:40

CCAL ID 21903125809

Matrix Water

#### **EPA 6020B**

<b>Prep Date</b> 03/13/2019 11:00	Prep Batch 655756	Prep Method EPA 3010A	<b>Dilution</b> 1	<b>Analysis Date</b> 03/28/2019 02:50	<b>By</b> LWZ	Analytical Batch 656784
CAS#	Parameter			Result	LOQ	Units
7440-36-0	Antimony			ND	2.00	ug/L
7439-93-2	Lithium			12.2	5.00	ug/L
7440-28-0	Thallium			ND	1.00	ug/L

 CCR-8
 Collect Date
 03/06/2019 13:20
 GCAL ID
 21903125810

 Receive Date
 03/12/2019 13:40
 Matrix
 Water

#### **EPA 6020B**

<b>Prep Date</b> 03/13/2019 11:00	Prep Batch 655756	Prep Method EPA 3010A	<b>Dilution</b> 1	<b>Analysis Date</b> 03/28/2019 02:55	<b>By</b> LWZ	Analytical Batch 656784
CAS#	Parameter			Result	LOQ	Units
7440-36-0	Antimony			ND	2.00	ug/L
7439-93-2	Lithium			39.3	5.00	ug/L
7440-28-0	Thallium			ND	1.00	ug/L

 CCR-9
 Collect Date
 03/06/2019 11:00
 GCAL ID
 21903125811

 Receive Date
 03/12/2019 13:40
 Matrix
 Water

#### **EPA 6020B**

Prep Date 03/13/2019 11:00	Prep Batch 655756	Prep Method EPA 3010A	•		<b>By</b> LWZ	Analytical Batch 656784
CAS#	Parameter			Result	LOQ	Units
7440-36-0	Antimony			ND	2.00	ug/L
7439-93-2	Lithium			8.57	5.00	ug/L
7440-28-0	Thallium			ND	1.00	ug/L

GCAL Report#: 219031258 Page 9 of 18



**Project ID:** 19030184 **Report Date:** 04/01/2019

## Sample Results

CCR-10

Collect Date 03/06/2019 09:30 GCAL ID 21903125812

Receive Date 03/12/2019 13:40 Matrix Water

#### **EPA 6020B**

<b>Prep Date</b> 03/13/2019 11:00	Prep Batch 655756	Prep Method EPA 3010A	<b>Dilution</b> 1	<b>Analysis Date</b> 03/28/2019 03:05	<b>By</b> LWZ	Analytical Batch 656784	
CAS#	Parameter			Result	LOQ	Units	
7440-36-0	Antimony			ND	2.00	ug/L	
7439-93-2	Lithium			7.88	5.00	ug/L	
7440-28-0	Thallium			ND	1.00	ug/L	

 CCR-11
 Collect Date
 03/06/2019 08:15
 GCAL ID
 21903125813

 Receive Date
 03/12/2019 13:40
 Matrix
 Water

#### **EPA 6020B**

<b>Prep Date</b> 03/13/2019 11:00	Prep Batch 655756	Prep Method EPA 3010A	Dilution 1	<b>Analysis Date</b> 03/28/2019 03:10	<b>By</b> LWZ	Analytical Batch 656784
CAS#	Parameter			Result	LOQ	Units
7440-36-0	Antimony			ND	2.00	ug/L
7439-93-2	Lithium			8.01	5.00	ug/L
7440-28-0	Thallium			ND	1.00	ug/L

 CCR-12
 Collect Date
 03/05/2019 17:00
 GCAL ID
 21903125814

 Receive Date
 03/12/2019 13:40
 Matrix
 Water

#### **EPA 6020B**

<b>Prep Date</b> 03/13/2019 11:00	Prep Batch Prep Method 655756 EPA 3010A		<b>Dilution</b> 1	<b>Analysis Date</b> 03/28/2019 03:15	<b>By</b> LWZ	Analytical Batch 656784
CAS#	Parameter			Result	LOQ	Units
7440-36-0	Antimony			ND	2.00	ug/L
7439-93-2	Lithium			24.7	5.00	ug/L
7440-28-0	Thallium			ND	1.00	ug/L

GCAL Report#: 219031258 Page 10 of 18



**Project ID:** 19030184 **Report Date:** 04/01/2019

## Sample Results

#### **EPA 6020B**

<b>Prep Date</b> 03/13/2019 11:00	Prep Batch 655756	Prep Method EPA 3010A	<b>Dilution</b> 1	<b>Analysis Date</b> 03/28/2019 03:20	<b>By</b> LWZ	Analytical Batch 656784
CAS#	Parameter			Result	LOQ	Units
7440-36-0	Antimony			ND	2.00	ug/L
7439-93-2	Lithium			23.3	5.00	ug/L
7440-28-0	Thallium			ND	1.00	ug/L

CCR-14 Collect Date 03/05/2019 14:25 GCAL ID 21903125816

Receive Date 03/12/2019 13:40 Matrix Water

#### **EPA 6020B**

<b>Prep Date</b> 03/13/2019 11:00	Prep Batch 655756	Prep Method EPA 3010A	<b>Dilution</b> 1	Analysis Date         By           03/28/2019 03:24         LW		Analytical Batch 656784
CAS#	Parameter			Result	LOQ	Units
7440-36-0	Antimony			ND	2.00	ug/L
7439-93-2	Lithium			15.7	5.00	ug/L
7440-28-0	Thallium			ND	1.00	ug/L

 Collect Date
 03/06/2019 00:01
 GCAL ID
 21903125817

 Receive Date
 03/12/2019 13:40
 Matrix
 Water

#### **EPA 6020B**

<b>Prep Date</b> 03/13/2019 11:00	Prep Batch 655756	Prep Method EPA 3010A	<b>Dilution</b> 1	<b>Analysis Date</b> 03/28/2019 03:39	<b>By</b> LWZ	Analytical Batch 656784	
CAS#	Parameter			Result	LOQ	Units	
7440-36-0 7440-28-0	Antimony Thallium			ND ND	2.00 1.00	ug/L ug/L	

GCAL Report#: 219031258 Page 11 of 18



**Project ID:** 19030184 **Report Date:** 04/01/2019

## Sample Results

 Collect Date
 03/06/2019 00:01
 GCAL ID
 21903125817

 Receive Date
 03/12/2019 13:40
 Matrix
 Water

#### **EPA 6020B**

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch	
03/13/2019 11:00	655756	EPA 3010A	1	03/30/2019 01:08	8 LWZ 656885		
CAS#	Parameter			Result	LOQ	Units	
7439-93-2	Lithium			12.2	5.00	ug/L	

FB1

Collect Date 03/05/2019 14:45

Receive Date 03/12/2019 13:40

GCAL ID 21903125818

Matrix Water

#### **EPA 6020B**

Prep Date 03/13/2019 11:00	Prep Batch 655756	Prep Method EPA 3010A	Dilution 1	<b>Analysis Date</b> 03/28/2019 03:44	<b>By</b> LWZ	Analytical Batch 656784	
CAS#	Parameter			Result	LOQ	Units	
7440-36-0 7440-28-0	Antimony Thallium			ND ND	2.00 1.00	ug/L ug/L	

### **EPA 6020B**

GCAL Report#: 219031258

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch
03/13/2019 11:00	655756	EPA 3010A	1	03/30/2019 01:11	LWZ	656885
CAS#	Parameter			Result	LOQ	Units
7439-93-2	Lithium			ND	5.00	ug/L

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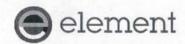
**Project ID:** 19030184 **Report Date:** 04/01/2019

# Inorganics QC Summary

Analytical Batch	Client ID	MB655756	B655756			LCS655756			
656784	GCAL ID	1904835		1904836					
Prep Batch	Sample Type	MB		LCS					
655756	Prep Date	03/13/2019 11:00	03/13/2019 11:00						
Prep Method	Analysis Date	03/28/2019 01:46	03/28/2019 01:51						
EPA 3010A	Matrix	Water		Water					
EPA 602	ΛD	Units	ug/L	Spike	Result	0/ D	Control		
EFA 002	VB	Result	LOQ	Added	Result	70 K	Limits%R		
Antimony	7440-36-0	ND	2.00	100	110	110	80 - 120		
Lithium	7439-93-2	ND	5.00	250	250	100	80 - 120		
Thallium	7440-28-0	ND	1.00	50.0	49.6	99	80 - 120		

Analytical Batch	Client ID	CCR-4		CCR-4 MS				CCR-4 N	/ISD			
656784	GCAL ID	21903125804	21903125805			21903125806						
Prep Batch	Sample Type	SAMPLE	MS				MSD					
655756	Prep Date	03/13/2019 11:0	03/13/2019 11:00				03/13/2019 11:00					
Prep Method	Analysis Date	03/28/2019 02:0	03/28/2019 02:11				03/28/2019 02:16					
EPA 3010A	Matrix	Water		Water				Water				
EPA 60	20D	Units	ug/L	Spike	Result	0/ D	Control	Spike	Result	0/ D	DDD	RPD
EPA 60	20D	Result	LŎQ	Added	Result	70 K	Limits%R	Added	Result	70 K	KPD	Limit
Antimony	7440-36-0	0.0	2.00	100	119	119	80 - 120	100	109	109	9	20
Lithium	7439-93-2	18.3	5.00	250	275	103	80 - 120	250	255	95	8	20
Thallium	7440-28-0	0.0	1.00	50.0	52.9	106	80 - 120	50.0	49.5	99	7	20

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Omega COCID 8055

Client ID: 4462 - Element Materials Technology

SDG: 219031258

PM: JLM



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com

SUB CONTR	CAL GCAL		COMPANY:	Gulf Coast			SPECIAL INSTRU	CTIONS /	COMMENTS:		
ADDRESS:	7979 GSRI A	Avenue					sub fo	r Li, S	5b, Tl.		
CITY, STATI	Baton Rouge	e, LA 70	820								
PHONE: (2:	25) 769-4900 FA	X. (225)	767-5717 EM/	AIL:							
ACCOUNT #											
ITEM #	SAMPLE ID		CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX		DATE COLLECTE	D	NUMBER OF . CONTAINERS	COMMENTS: Methanol Preserved Weights HOT Sample Notation, Additional Sample Description.	
1	19030184-001B	c	CCR-1	250HDPEHNO3	Aqueous		3/5/2019 1:00:	:00 PM	1		-1
	SW6020A	- 10	200.2	2501155511103	Ta		/F/2010 11 FO	00 444			
2	19030184-002B SW6020A	Ic	CCR-2	250HDPEHNO3	Aqueous	3	3/5/2019 11:50:	MA UU	1		
	19030184-003B	10	CCR-3	250HDPEHNO3	Aguagus	2	3/5/2019 10:40:	00 444	1		1-7
3	SW6020A		.CR-3	230HDFEHNO3	Aqueous		0/3/2019 10:40:	OU AM	1		
	19030184-004B	C	CCR-4	250HDPEHNO3	Aqueous		3/7/2019 9:45:	00 AM	3	client specified MS/MSD	-4,5,1
4	SW6020A									oneme operated morning	1,00
-	19030184-005B	C	CCR-5	250HDPEHNO3	Aqueous		3/7/2019 8:30:	MA 00:	1		47
5	SW6020A										
6	19030184-006B	C	CCR-6	250HDPEHNO3	Aqueous		3/6/2019 4:10:	00 PM	1		1-8
	SW6020A							0.51			
7	19030184-007B	C	CCR-7	250HDPEHNO3	Aqueous		3/6/2019 2:45:	00 PM	1		+9
	SW6020A										
8	19030184-008B	C	CCR-8	250HDPEHNO3	Aqueous		3/6/2019 1:20:	00 PM	1		-1D
	SW6020A										
9	19030184-009B	C	CR-9	250HDPEHNO3	Aqueous	3	3/6/2019 11:00:	MA 00:	1		-11
	SW6020A										
Relinquished I	By:	Date:	Time:	Received By:		Date:	Time:			REPORT TRANSMITTAL DESIRED:	
Relinquished E	Ву:	Date	Time:	Received By:		Date:	Time:		☐ HARDCO	PY (extra cost)	
Relinquished E	Ву	Date:	Time:	Received By:		Date:	Time:			FOR LAB USE ONLY	
	TAT: Stan	dard X	RUSH		2nd BD 🔲		dBD □		Temp of sam	*Sel organal CDC's for signatures & famples.	
									-		

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Omega COCID 8055

Client ID: 4462 - Element Materials Technology

SDG: 219031258

PM: JLM



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com

SUB CONTI	RATOR: GCAL	COMPANY:	<b>Gulf Coast</b>		SPECIAL INSTRUCTIONS	COMMENTS:		
ADDRESS:	7979 GSRI Ave	enue						
CITY, STAT	Baton Rouge, I	A 70820						
PHONE: (2	25) 769-4900 FAX: (		IL:					
ACCOUNT #				HHOME				
ITEM #	SAMPLE ID	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	COMMENTS: Methanol Preserved Weights HOT Sample Notation, Additional Sample Description.	
10	19030184-010B	CCR-10	250HDPEHNO3	Aqueous	3/6/2019 9:30:00 AM	1		-12
10	SW6020A							
11	19030184-011B	CCR-11	250HDPEHNO3	Aqueous	3/6/2019 8:15:00 AM	1		-12
11	SW6020A							1.0
12	19030184-012B	CCR-12	250HDPEHNO3	Aqueous	3/5/2019 5:00:00 PM	1		+14
12	SW6020A		1 9 197					- 17
13	19030184-013B	CCR-13	250HDPEHNO3	Aqueous	3/5/2019 3:40:00 PM	1		+15
13	SW6020A							10
	19030184-014B	CCR-14	250HDPEHNO3	Aqueous	3/5/2019 2:25:00 PM	1		716
14	SW6020A							. 4
45	19030184-015B	DUP	250HDPEHNO3	Aqueous	3/6/2019	1		+17
15	SW6020A							
16	19030184-016B	FB1	250HDPEHNO3	Aqueous	3/5/2019 2:45:00 PM	1		-19
16	SW6020A							- 10

TAT:	Standard		SH   Next BD   2nd BD   Note: RUSH requests will incur s	] 31	dBD □	FOR LAB USE ONLY  Temp of samples
Relinquished By:	Date:	Time:	Received By:	Date:	Time	
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	REPORT TRANSMITTAL DESIRED:

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Omega COCID 8045

Client ID: 4462 - Element Materials Technology

SDG: 219031258

PM: JLM

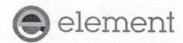
PAG



FAX: (337) 233-6540 Website: www.element.com

SUB CONTR	ATOR: GCAL	COMPANY:	Gulf Coast		SPECIAL INSTRUCTIONS /	COMMENTS:	
ADDRESS:	7979 GSRI Aven	nue		_73L   hors	Lithium		
CITY, STATE	Baton Rouge, LA	A 70820					
PHONE (2	25) 769-4900 FAX: (2	25) 767-5717 EMA	L:	L'ELECTION			
ACCOUNT#							
ITEM #	SAMPLE ID	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	COMMENTS: Methanol Preserved Weights HOT Sample Notation, Additional Sample Description.
1	19030184-001C	CCR-1	250HDPEHNO3	Aqueous	3/5/2019 1:00:00 PM	1	
1	SW6020A						
2	19030184-002C	CCR-2	250HDPEHNO3	Aqueous	3/5/2019 11:50:00 AM	1	
2	SW6020A						
2	19030184-003C	CCR-3	250HDPEHNO3	Aqueous	3/5/2019 10:40:00 AM	1	
3	SW6020A						
4	19030184-004C	CCR-4	250HDPEHNO3	Aqueous	3/7/2019 9:45:00 AM	3	
4	SW6020A						
-	19030184-005C	CCR-5	250HDPEHNO3	Aqueous	3/7/2019 8:30:00 AM	1	
5	SW6020A			*			
	19030184-006C	CCR-6	250HDPEHNO3	Aqueous	3/6/2019 4:10:00 PM	1	
6	SW6020A						
	19030184-007C	CCR-7	250HDPEHNO3	Aqueous	3/6/2019 2:45:00 PM	1	
7	SW6020A						
	19030184-008C	CCR-8	250HDPEHNO3	Aqueous	3/6/2019 1:20:00 PM	1	
8	SW6020A						
	19030184-009C	CCR-9	250HDPEHNO3	Aqueous	3/6/2019 11:00:00 AM	1	
9	SW6020A						
			1				
Relinquished	James Holling Date	3-11-14 Time 7500	Received By	Bent Day	5-11-19 Time 500		REPORT TRANSMITTAL DESIRED:
Relinquished I	By: Date	0.73	Received By:	Date		☐ HARDCOP	Y (extra cost)
Relinquished	y Beent Dy	12-19 Tup 340	Roccinator	Day Day	=1279 Time: 340 34	CPIN	FOR LAB USE ONLY
	TAT: Standard	RUSH	Next BD	2nd BD	3rd BD	Temp of sampl	les*C Attempt to Cool?
			Note: RUSH r	equests will incur surchar		Comments:	

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Omega COCID 8045

Client ID: 4462 - Element Materials Technology

SDG: 219031258

PM: JLM



FAX: (337) 233-6540 Website: www.element.com

SUB CONTR	RATOR: GCAL	COMPANY:	Gulf Coast		SPECIAL INSTRUCTIONS /	COMMENTS:	
ADDRESS:	7979 GSRI Ave	enue			Lithium		
CITY, STATI	Baton Rouge, I	A 70820					
PHONE: (2	25) 769-4900 FAX:	(225) 767-5717 EMA	IL:				
ACCOUNT			40.00				
ITEM #	SAMPLE ID	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	COMMENTS: Methanol Preserved Weights HOT Sample Notation, Additional Sample Description.
10	19030184-010C	CCR-10	250HDPEHNO3	Aqueous	3/6/2019 9:30:00 AM	1	
10	SW6020A						
	19030184-011C	CCR-11	250HDPEHNO3	Aqueous	3/6/2019 8:15:00 AM	1	
11	SW6020A						
42	19030184-012C	CCR-12	250HDPEHNO3	Aqueous	3/5/2019 5:00:00 PM	1	
12	SW6020A			***************************************			
- 12	19030184-013C	CCR-13	250HDPEHNO3	Aqueous	3/5/2019 3:40:00 PM	1	
13	SW6020A						
	19030184-014C	CCR-14	250HDPEHNO3	Aqueous	3/5/2019 2:25:00 PM	1	
14	SW6020A						
45	19030184-015C	DUP	250HDPEHNO3	Aqueous	3/6/2019	1	
15	SW6020A						
4.5	19030184-016C	FB1	250HDPEHNO3	Aqueous	3/5/2019 2:45:00 PM	1	
16	SW6020A						

Vanur Howe	10	Tim9500	F Free Contract of the Contrac	Date 3-11-17	Time 500	REPORT TRANSMITTAL DESIRED:
Relinquished By:	Date: /D	Time:	Received By:	Date:	Time:	☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE
Relinquished by:  TAT: Stand	Date: 12-19	Time 340 RUSH	Next BD 2nd BD Note: RUSH requests will incur s		Time: 340	Temp of samples 2, 4 °C Attempt to Cool?

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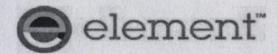


### SAMPLE RECEIVING CHECKLIST



SAMPLE DELIVERY GROU	JP 2190312	258	CHECKLIST		YES	NO				
Client PM JLM 4462 - Bement Materials	Transport M	lethod	Samples received with proper thermal preservation	?	~					
Technology			Radioactivity is <1600 cpm? If no, record cpm valu	e in notes section.	~					
Profile Number 271810	Received By Savage, Tiffa		COC relinquished and complete (including sample	Ds, collect times, and sampler)?	~					
271010	Gavage, Illia	ily ix	All containers received in good condition and within	n hold time?						
Line Item(s)	Receive Date	e(s)	All sample labels and containers received match the	ne chain of custody?	~					
13 - Li, Sb, Ti	03/12/19		Preservative added to any containers?			~				
			If received, was headspace for VOC water contained	ers < 6mm?	~					
			Samples collected in containers provided by GCAI	?		~				
COOLERS			DISCREPANCIES LAB PRESERVATIONS							
Airbill Thermomet	ter I <b>D</b> : E29	Temp °C	None	None						
		2.4								
NOTES										
		Page 46 of 48								

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- 2203 S. Madison St., Muncie, IN 47302 765-747-9000/800-874-3563 Fax 765-747-0228
- © 629 Washington St., Suite 300, Columbus, IN 47201 812-375-0531 Fax 812-375-0531
- 5738 Industrial Rd., Fort Wayne, IN 46825 219-471-7000 Fax 219-471-7777

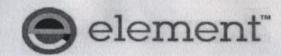
2417 W. Pinhook Rd, Lafayette, LA 70508 337-235-0483/800-737-2378

Fax 337-233-6540

☐ 3445 S Sheridan, Tulsa, OK 74145

918-828-9977/800324-5757 Fax 918-828-7756

	Page		1 of -		2					Cha	in (	of C	usto	dy	R	ecor	d					Labo Num	oratory iber	19	030	184	
	Conta	act N	me: Pivota lame: Terr x: (504) 79	y Eli	nagga		LLC		Quo	eet: CCR A	125		oring	HNO, H,SO,	serv. OzSzO, H	Number / Type of Container	Matrix Code	Fluoride	0/**6020 metal	20 Sub	Merceny	st Rec	quested			Comn	nents /
	Da	-	Time	Grab	Comp			Sam	ple I	dentification	on / De	escriptio	on	HCI	NaOH	Nur	M	300:	*6010	***6020	7470					Rem	arks
	3/	15/	9300	X		С	С	R	-	1				None	e/ HNO	3 Diastic	Aq	х	х	х	X		10 20			*6010 Meta Be, Cd, Cr.	THE RESERVE OF STREET
	1	L	1150	X		С	С	R	-	2	e fire			None	M HNO	3 Diastic	Aq	х	Х	Х	х					Mo, Se	00,10,
	,	1	1040	X	1	С	С	R	-	3				None	e/ HNO	3 Plastic	Aq	х	х	х	X					**6020 Met	als: Sb,TI
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- 2203 S. Madison St., Muncie, IN 47302 765-747-9000/800-874-3563 Fax 765-747-0228
- C 629 Washington St., Suite 300, Columbus, IN 47201 812-375-0531 Fax 812-375-0531
- 5738 Industrial Rd., Fort Wayne, IN 46825 219-471-7000 Fax 219-471-7777

2417 W. Pinhook Rd, Lafayette, LA 70508 337-235-0483/800-737-2378

Fax 337-233-6540

3445 S Sheridan, Tulsa, OK 74145

918-828-9977/800324-5757 Fax 918-828-7756

Page Client Na	me: Pivota		ginee	ring	LLC	30/8	Pro		CCR	Assessn	nent Mo	onitor		Pres		ecor	929			(1)	Te	st Rec	queste	ed f	ZI MAKENS	
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Element Materials Technology Lafayette 2417 W. Pinhook Road Lafayette, LA 70508-3344 TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com

July 16, 2019

Terry Elnaggar Pivotal Engineering LLC 1515 Poydras St., STE. 1875

New Orleans, LA 70112 TEL: (504) 799-3653

**FAX** 

RE: Entergy: CCR Detection Monitoring Order No.: 19070028

Dear Terry Elnaggar:

Element Materials Technology Lafayette received 16 sample(s) on 7/1/2019 for the analyses presented in the following report.

In accordance with your instructions Element Lafayette conducted the analysis shown on the following pages on samples submitted by your company. The results related only to the items tested. Unless otherwise noted, all analyses were conducted using EPA approved methodologies and all test results meet all requirements of TNI. All relevant sampling information is on the attached Chain-of-Custody form.

All soil data, except for 29-B, are on a wet-weight basis unless otherwise indicated in the units field as –dry.

LELAP Certification No.: 01997. TCEQ Certification No.: T104704261. LDHH Certification No.: LA180028. ISDH Certification No.: C-LA-01. A scope of accredited parameters is available upon request. A "#" by the test method or analyte indicates this parameter is outside the scope of accreditation.

Estimated uncertainty is available upon request. This report shall not be reproduced except in full, without the written approval of the laboratory.

If you have any questions regarding these test results, please feel free to call.

Cristina Thibeaux

Customer Service Supervisor

2417 W. Pinhook Road Lafayette, LA 70508-3344



35-0483 FAX: (33/) 233-6540 Website: www.element.com

### **Case Narrative**

WO#: **19070028**Date: **7/16/2019** 

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring

Unless specified by the client, a duplicate or MS/MSD, wherever applicable, is randomly selected and analyzed from each analytical batch provided sample volume is sufficient. The sample chosen for duplicate or MS/MSD may or may not be a sample submitted in this workorder. A method blank and/or a lab control sample (LCS)/lab control sample duplicate (LCSD), wherever applicable, are processed as a quality control check for each analytical batch. When the matrix QC data is not available due to insufficient sample volume or when the results indicate possible matrix effect, the validity of the batch is determined by the method blank and LCS/LCSD.

The results of the laboratory internal quality control data are provided in the QC Summary Report section of the report for your review. Laboratory-related QC exceptions that may impact the validity of data are discussed in the case narrative. Sample-related QC exceptions are flagged either in the results page(s) or in the QC report page(s). End users should consider QC exceptions when evaluating sample data against data quality objectives.

Any other exceptions associated with this report will be footnoted in the results page(s) or the QC summary page(s).



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: 19070028 Date Reported 7/16/2019

**CLIENT:** Pivotal Engineering LLC

**Collection Date:** 6/29/2019 5:40:00 PM

Matrix: AQUEOUS

**Project:** Entergy: CCR Detection Monitoring

Lab ID: 19070028-001

Client Sample ID CCR-1

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP
Chloride	44.7	2.50	mg/L	10	7/8/2019 11:19:08 AM
Fluoride	< 0.500	0.500	mg/L	10	7/8/2019 11:19:08 AM
Sulfate	48.5	2.50	mg/L	10	7/8/2019 11:19:08 AM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	7/11/2019 12:41:32 AM
Calcium	24.5	0.500	mg/L	1	7/3/2019 10:05:22 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	285	20.0	mg/L	1	7/3/2019 11:44:00 AM

Holding times for preparation or analysis exceeded Qualifiers:

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits S

U Analyte not detected

Matrix Interference RL

Reporting Limit

SDL Sample detection limit



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: 19070028 Date Reported 7/16/2019

**Collection Date:** 6/29/2019 4:20:00 PM

Matrix: AQUEOUS

**CLIENT:** Pivotal Engineering LLC

Entergy: CCR Detection Monitoring

**Project:** Lab ID: 19070028-002

Client Sample ID CCR-2

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP
Chloride	59.3	2.50	mg/L	10	7/8/2019 11:32:52 AM
Fluoride	< 0.500	0.500	mg/L	10	7/8/2019 11:32:52 AM
Sulfate	< 2.50	2.50	mg/L	10	7/8/2019 11:32:52 AM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	7/11/2019 1:02:49 AM
Calcium	20.3	0.500	mg/L	1	7/3/2019 10:10:10 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	250	20.0	mg/L	1	7/3/2019 11:44:00 AM

Holding times for preparation or analysis exceeded Qualifiers:

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits S

U Analyte not detected Matrix Interference

RL Reporting Limit

SDL Sample detection limit



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: 19070028 Date Reported 7/16/2019

**Collection Date:** 6/29/2019 3:05:00 PM

**CLIENT:** Pivotal Engineering LLC

Entergy: CCR Detection Monitoring

Lab ID: 19070028-003 Matrix: AQUEOUS

Client Sample ID CCR-3

**Project:** 

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER BY	'IC		E 30	0.0	Analyst: <b>SGP</b>
Chloride	112	5.00	mg/L	20	7/8/2019 11:46:36 AM
Fluoride	< 1.00	1.00	mg/L	20	7/8/2019 11:46:36 AM
Sulfate	< 5.00	5.00	mg/L	20	7/8/2019 11:46:36 AM
METALS IN WATER BY ICP, TOTAL	.s		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	7/11/2019 1:07:37 AM
Calcium	26.6	0.500	mg/L	1	7/3/2019 10:14:57 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: GMS
Total Dissolved Solids (Residue, Filterable)	255	20.0	mg/L	1	7/3/2019 11:44:00 AM

Holding times for preparation or analysis exceeded Qualifiers:

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

Matrix Interference RL

Reporting Limit

SDL Sample detection limit



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: 19070028 Date Reported 7/16/2019

**CLIENT:** Pivotal Engineering LLC

Entergy: CCR Detection Monitoring

**Project:** Lab ID: 19070028-004

Client Sample ID CCR-4

Matrix: AQUEOUS

**Collection Date:** 6/28/2019 3:30:00 PM

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP
Chloride	36.7	2.50	mg/L	10	7/8/2019 12:00:20 PM
Fluoride	< 0.500	0.500	mg/L	10	7/8/2019 12:00:20 PM
Sulfate	< 2.50	2.50	mg/L	10	7/8/2019 12:00:20 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	0.116	0.100	mg/L	1	7/11/2019 1:12:24 AM
Calcium	19.0	0.500	mg/L	1	7/3/2019 10:19:44 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	253	20.0	mg/L	1	7/3/2019 11:44:00 AM

Holding times for preparation or analysis exceeded Qualifiers:

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

Matrix Interference RL

Reporting Limit

SDL Sample detection limit



Website: www.element.com

**Analytical Report** (consolidated)

WO#: 19070028 Date Reported 7/16/2019

**CLIENT:** Pivotal Engineering LLC

Entergy: CCR Detection Monitoring

**Project:** Lab ID: 19070028-005

**Client Sample ID** CCR-5

Matrix: AQUEOUS

**Collection Date:** 6/28/2019 10:25:00 AM

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP
Chloride	58.4	5.00	mg/L	20	7/8/2019 12:41:34 PM
Fluoride	< 1.00	1.00	mg/L	20	7/8/2019 12:41:34 PM
Sulfate	< 5.00	5.00	mg/L	20	7/8/2019 12:41:34 PM
METALS IN WATER BY ICP, TOTA	ALS		SW60	10B	Analyst: STS
Boron	0.121	0.100	mg/L	1	7/11/2019 1:26:19 AM
Calcium	33.0	0.500	mg/L	1	7/3/2019 10:33:38 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	396	20.0	mg/L	1	7/3/2019 11:44:00 AM

Holding times for preparation or analysis exceeded Qualifiers:

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected Matrix Interference

RL Reporting Limit

SDL Sample detection limit



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: 19070028 Date Reported 7/16/2019

**Collection Date:** 6/28/2019 11:35:00 AM

Matrix: AQUEOUS

**CLIENT:** Pivotal Engineering LLC

Entergy: CCR Detection Monitoring

**Project:** Lab ID: 19070028-006

Client Sample ID CCR-6

•					
Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP
Chloride	91.9	2.50	mg/L	10	7/8/2019 12:55:18 PM
Fluoride	< 0.500	0.500	mg/L	10	7/8/2019 12:55:18 PM
Sulfate	< 2.50	2.50	mg/L	10	7/8/2019 12:55:18 PM
METALS IN WATER BY ICP, TOTA	ALS		SW60	10B	Analyst: STS
Boron	0.119	0.100	mg/L	1	7/11/2019 1:31:06 AM
Calcium	29.8	0.500	mg/L	1	7/3/2019 10:38:26 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: GMS
Total Dissolved Solids (Residue, Filterable)	320	20.0	mg/L	1	7/3/2019 11:44:00 AM

Holding times for preparation or analysis exceeded Qualifiers:

> ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected Matrix Interference

RL Reporting Limit

SDL Sample detection limit



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: 19070028 Date Reported 7/16/2019

**CLIENT:** Pivotal Engineering LLC

Entergy: CCR Detection Monitoring

**Project:** Lab ID: 19070028-007

Client Sample ID CCR-7

Matrix: AQUEOUS

**Collection Date:** 6/28/2019 12:50:00 PM

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP
Chloride	75.2	2.50	mg/L	10	7/8/2019 1:36:28 PM
Fluoride	< 0.500	0.500	mg/L	10	7/8/2019 1:36:28 PM
Sulfate	< 2.50	2.50	mg/L	10	7/8/2019 1:36:28 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	0.108	0.100	mg/L	1	7/11/2019 1:35:54 AM
Calcium	48.9	0.500	mg/L	1	7/3/2019 10:52:34 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	324	20.0	mg/L	1	7/3/2019 11:44:00 AM

Holding times for preparation or analysis exceeded Qualifiers:

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

Matrix Interference RL Reporting Limit

SDL Sample detection limit



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: **19070028**Date Reported **7/16/2019** 

**Collection Date:** 6/28/2019 2:00:00 PM

Matrix: AQUEOUS

**CLIENT:** Pivotal Engineering LLC

Entergy: CCR Detection Monitoring

**Lab ID:** 19070028-008

Client Sample ID CCR-8

**Project:** 

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER BY	YIC		E 30	0.0	Analyst: SGP
Chloride	84.5	2.50	mg/L	10	7/8/2019 1:50:12 PM
Fluoride	< 0.500	0.500	mg/L	10	7/8/2019 1:50:12 PM
Sulfate	< 2.50	2.50	mg/L	10	7/8/2019 1:50:12 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	7/11/2019 1:40:43 AM
Calcium	12.1	0.500	mg/L	1	7/3/2019 10:57:22 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	286	20.0	mg/L	1	7/3/2019 11:44:00 AM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: 19070028 Date Reported 7/16/2019

**Collection Date:** 6/30/2019 12:20:00 PM

Matrix: AQUEOUS

**CLIENT:** Pivotal Engineering LLC

Entergy: CCR Detection Monitoring

**Project:** Lab ID: 19070028-009

Client Sample ID CCR-9

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: <b>SGP</b>
Chloride	67.3	2.50	mg/L	10	7/8/2019 2:03:55 PM
Fluoride	< 0.500	0.500	mg/L	10	7/8/2019 2:03:55 PM
Sulfate	2.52	2.50	mg/L	10	7/8/2019 2:03:55 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	7/11/2019 1:45:29 AM
Calcium	30.5	0.500	mg/L	1	7/3/2019 11:02:10 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	310	20.0	mg/L	1	7/3/2019 11:44:00 AM

Holding times for preparation or analysis exceeded Qualifiers:

> ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected Matrix Interference

RL Reporting Limit

SDL Sample detection limit



Website: www.element.com

**Analytical Report** (consolidated)

WO#: 19070028 Date Reported 7/16/2019

7/3/2019 11:44:00 AM

**Collection Date:** 6/30/2019 1:30:00 PM

Matrix: AQUEOUS

**CLIENT:** Pivotal Engineering LLC

Entergy: CCR Detection Monitoring

**Project:** Lab ID: 19070028-010

Client Sample ID CCR-10

Total Dissolved Solids (Residue,

Filterable)

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER BY IC			E 30	0.0	Analyst: <b>SGP</b>
Chloride	41.9	2.50	mg/L	10	7/8/2019 2:17:40 PM
Fluoride	< 0.500	0.500	mg/L	10	7/8/2019 2:17:40 PM
Sulfate	6.84	2.50	mg/L	10	7/8/2019 2:17:40 PM
METALS IN WATER BY ICP, TOTALS			SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	7/11/2019 2:06:47 AM
Calcium	27.0	0.500	mg/L	1	7/3/2019 11:06:57 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: GMS

20.0

mg/L

346

Holding times for preparation or analysis exceeded Qualifiers:

> ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits S

U Analyte not detected Matrix Interference

RL Reporting Limit

SDL Sample detection limit



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: 19070028 Date Reported 7/16/2019

**CLIENT:** Pivotal Engineering LLC

Entergy: CCR Detection Monitoring

**Project:** 19070028-011 Lab ID:

Client Sample ID CCR-11

Matrix: AQUEOUS

**Collection Date:** 6/30/2019 2:40:00 PM

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP
Chloride	26.0	2.50	mg/L	10	7/8/2019 2:31:21 PM
Fluoride	< 0.500	0.500	mg/L	10	7/8/2019 2:31:21 PM
Sulfate	< 2.50	2.50	mg/L	10	7/8/2019 2:31:21 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	7/11/2019 2:11:34 AM
Calcium	28.7	0.500	mg/L	1	7/3/2019 11:11:44 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	203	20.0	mg/L	1	7/3/2019 11:44:00 AM

Holding times for preparation or analysis exceeded Qualifiers:

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

Matrix Interference RL

Reporting Limit SDL Sample detection limit



Website: www.element.com

**Analytical Report** (consolidated)

WO#: 19070028 Date Reported 7/16/2019

**CLIENT:** Pivotal Engineering LLC

Entergy: CCR Detection Monitoring

**Project:** Lab ID: 19070028-012

Client Sample ID CCR-12

Matrix: AQUEOUS

**Collection Date:** 6/30/2019 8:40:00 AM

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: <b>SGP</b>
Chloride	16.9	1.25	mg/L	5	7/8/2019 2:45:04 PM
Fluoride	< 0.250	0.250	mg/L	5	7/8/2019 2:45:04 PM
Sulfate	24.2	1.25	mg/L	5	7/8/2019 2:45:04 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	7/11/2019 2:16:21 AM
Calcium	18.2	0.500	mg/L	1	7/3/2019 11:16:30 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	169	20.0	mg/L	1	7/3/2019 11:44:00 AM

Holding times for preparation or analysis exceeded Qualifiers:

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

Matrix Interference RL Reporting Limit

SDL Sample detection limit



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: 19070028 Date Reported 7/16/2019

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring 19070028-013

Client Sample ID CCR-13

Lab ID:

**Collection Date:** 6/30/2019 9:50:00 AM

Matrix: AQUEOUS

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP
Chloride	12.7	1.25	mg/L	5	7/8/2019 2:58:49 PM
Fluoride	< 0.250	0.250	mg/L	5	7/8/2019 2:58:49 PM
Sulfate	< 1.25	1.25	mg/L	5	7/8/2019 2:58:49 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	7/11/2019 2:21:06 AM
Calcium	19.8	0.500	mg/L	1	7/3/2019 11:21:15 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	204	20.0	mg/L	1	7/3/2019 11:44:00 AM

Holding times for preparation or analysis exceeded Qualifiers:

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

Matrix Interference RL Reporting Limit

SDL Sample detection limit



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: **19070028**Date Reported **7/16/2019** 

**CLIENT:** Pivotal Engineering LLC

**Collection Date:** 6/30/2019 11:00:00 AM

Matrix: AQUEOUS

**Project:** Entergy: CCR Detection Monitoring

**Lab ID:** 19070028-014

Client Sample ID CCR-14

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: <b>SGP</b>
Chloride	11.5	1.25	mg/L	5	7/8/2019 3:12:32 PM
Fluoride	< 0.250	0.250	mg/L	5	7/8/2019 3:12:32 PM
Sulfate	< 1.25	1.25	mg/L	5	7/8/2019 3:12:32 PM
METALS IN WATER BY ICP, TOTA	LS		SW6010B		Analyst: STS
Boron	< 0.100	0.100	mg/L	1	7/11/2019 2:25:53 AM
Calcium	16.4	0.500	mg/L	1	7/3/2019 11:26:02 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	170	20.0	mg/L	1	7/3/2019 11:44:00 AM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference
RL Reporting Limit

SDL Sample detection limit



Website: www.element.com

**Collection Date:** 6/28/2019

**Analytical Report** 

(consolidated)

WO#: 19070028

Date Reported 7/16/2019

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring

Lab ID: 19070028-015 Matrix: AQUEOUS

Client Sample ID DUP

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER BY	/ IC		E 30	0.0	Analyst: SGP
Chloride	56.5	5.00	mg/L	20	7/8/2019 3:26:17 PM
Fluoride	< 1.00	1.00	mg/L	20	7/8/2019 3:26:17 PM
Sulfate	< 5.00	5.00	mg/L	20	7/8/2019 3:26:17 PM
METALS IN WATER BY ICP, TOTAL	_S		SW60	10B	Analyst: STS
Boron	0.114	0.100	mg/L	1	7/11/2019 2:30:39 AM
Calcium	32.6	0.500	mg/L	1	7/3/2019 11:30:48 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	379	20.0	mg/L	1	7/3/2019 11:44:00 AM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference
RL Reporting Limit

SDL Sample detection limit



Website: www.element.com

Analytical Report (consolidated)

WO#:

**Collection Date:** 6/29/2019 5:00:00 PM

Matrix: AQUEOUS

(consolidated) 19070028

Date Reported 7/16/2019

**CLIENT:** Pivotal Engineering LLC

Entergy: CCR Detection Monitoring

**Lab ID:** 19070028-016

Client Sample ID FB 1

**Project:** 

<u> </u>					
Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	SY IC		E 30	0.0	Analyst: SGP
Chloride	< 0.250	0.250	mg/L	1	7/8/2019 3:40:01 PM
Fluoride	< 0.0500	0.0500	mg/L	1	7/8/2019 3:40:01 PM
Sulfate	< 0.250	0.250	mg/L	1	7/8/2019 3:40:01 PM
METALS IN WATER BY ICP, TOTA	ALS		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	7/11/2019 2:35:26 AM
Calcium	< 0.500	0.500	mg/L	1	7/3/2019 11:35:34 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	< 20.0	20.0	mg/L	1	7/3/2019 11:44:00 AM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



Element Materials Technology Lafayette 2417 W. Pinhook Road Lafayette, LA 70508-3344 TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com

### **QC SUMMARY REPORT**

WO#: 1

19070028 16-Jul-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Detection Monitoring BatchID: 30702

Emergy. C	CR Detection Monitoring	Datenid. 50/02			
Sample ID: MB-30702	SampType: MBLK	TestCode: 6010_W	Units: mg/L	Prep Date: 7/2/2019	RunNo: <b>80132</b>
Client ID: PBW	Batch ID: 30702	TestNo: SW6010B		Analysis Date: 7/3/2019	SeqNo: <b>2007607</b>
Analyte	Result	PQL SPK value SPK	K Ref Val %REC	LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual
Calcium	< 0.500	0.500			
Sample ID: LCS-30702	SampType: <b>LCS</b>	TestCode: 6010_W	Units: mg/L	Prep Date: 7/2/2019	RunNo: <b>80132</b>
Client ID: LCSW	Batch ID: 30702	TestNo: SW6010B		Analysis Date: 7/3/2019	SeqNo: <b>2007611</b>
Analyte	Result	PQL SPK value SPK	Ref Val %REC	LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual
Calcium	51.3	0.500 50.00	0 103	80 120	
Sample ID: LCSD-30702	SampType: <b>LCSD</b>	TestCode: 6010_W	Units: mg/L	Prep Date: 7/2/2019	RunNo: <b>80132</b>
Client ID: LCSS02	Batch ID: 30702	TestNo: SW6010B		Analysis Date: 7/3/2019	SeqNo: <b>2007612</b>
Analyte	Result	PQL SPK value SPK	K Ref Val %REC	LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual
Calcium	51.2	0.500 50.00	0 102	80 120 51.30	0.293 20
Sample ID: 19070028-004BMS	SampType: MS	TestCode: 6010_W	Units: mg/L	Prep Date: 7/2/2019	RunNo: <b>80132</b>
Client ID: CCR-4	Batch ID: 30702	TestNo: SW6010B		Analysis Date: 7/3/2019	SeqNo: <b>2007617</b>
Analyte	Result	PQL SPK value SPK	K Ref Val %REC	LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual
Calcium	68.2	0.500 50.00	18.95 98.5	75 125	

Qualifiers: H Holding times for preparation or analysis exceeded

RL Reporting Limit

U Analyte not detected

Matrix Interference

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit

SDL Sample detection limit



Element Materials Technology Lafayette 2417 W. Pinhook Road Lafayette, LA 70508-3344 TEL: (337) 235-0483 FAX: (337) 233-6540 **QC SUMMARY REPORT** 

WO#: **19070028** 

16-Jul-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Detection Monitoring BatchID: 30702

Website: www.element.com

Sample ID: 19070028-004BMSD	SampType: MSD	TestCode: 6010_W	Units: mg/L		Prep Date: 7/2	2019	RunNo: <b>80132</b>	
Client ID: CCR-4	Batch ID: 30702	TestNo: SW6010B			Analysis Date: 7/3	2019	SeqNo: <b>2007618</b>	
Analyte	Result	PQL SPK value	SPK Ref Val	%REC	LowLimit HighLi	mit RPD Ref Val	%RPD RPDLimit	Qual
Calcium	68.3	0.500 50.00	18.95	98.8	75 1	25 68.18	0.234 20	l
Sample ID: 19070028-016BMS	SampType: MS	TestCode: 6010_W	Units: mg/L		Prep Date: 7/2	2019	RunNo: <b>80132</b>	
Client ID: FB 1	Batch ID: 30702	TestNo: SW6010B			Analysis Date: 7/3/	2019	SeqNo: <b>2007635</b>	
Analyte	Result	PQL SPK value	SPK Ref Val	%REC	LowLimit HighLi	mit RPD Ref Val	%RPD RPDLimit	Qual
Calcium	49.3	0.500 50.00	0.1015	98.4	75 1	25		
Sample ID: 19070028-016BMSD	SampType: MSD	TestCode: 6010_W	Units: mg/L		Prep Date: 7/2	2019	RunNo: <b>80132</b>	
Client ID: FB 1	Batch ID: 30702	TestNo: SW6010B			Analysis Date: 7/3/	2019	SeqNo: <b>2007636</b>	
Analyte	Result	PQL SPK value	SPK Ref Val	%REC	LowLimit HighLi	mit RPD Ref Val	%RPD RPDLimit	Qual
Calcium	50.0	0.500 50.00	0.1015	99.7	75 1	25 49.30	1.35 20	

Qualifiers: H Holding times for preparation or analysis exceeded

L Reporting Limit

U Analyte not detected

Matrix Interference

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit



## **QC SUMMARY REPORT**

WO#: 1

19070028

16-Jul-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Detection Monitoring BatchID: 30702

	Entergy. Co	CR Detection	r Womtoring							attiid. 3	0702		
Sample ID:	MB-30702	SampType:	MBLK	TestCod	le: 6010_W	Units: mg/L		Prep Dat	e: <b>7/2/201</b>	9	RunNo: 80	124	
Client ID:	PBW	Batch ID:	30702	TestN	lo: <b>SW6010B</b>			Analysis Dat	e: <b>7/11/20</b>	19	SeqNo: 20	07060	
Analyte			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Boron			< 0.100	0.100									
Sample ID: I	LCS-30702	SampType:	LCS	TestCod	le: <b>6010_W</b>	Units: mg/L		Prep Dat	e: <b>7/2/201</b>	9	RunNo: 80	124	
Client ID: L	LCSW	Batch ID:	30702	TestN	lo: <b>SW6010B</b>			Analysis Dat	e: <b>7/11/20</b>	19	SeqNo: 20	07061	
Analyte			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Boron			0.497	0.100	0.5000	0	99.3	80	120				
Sample ID: I	LCSD-30702	SampType:	LCSD	TestCod	le: <b>6010_W</b>	Units: mg/L		Prep Dat	e: <b>7/2/201</b>	9	RunNo: 80	124	
Client ID:	LCSS02	Batch ID:	30702	TestN	lo: <b>SW6010B</b>			Analysis Dat	e: <b>7/11/20</b>	19	SeqNo: 20	07062	
Analyte			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Boron			0.497	0.100	0.5000	0	99.4	80	120	0.4966	0.101	20	
Sample ID: 1	19070028-004BMS	SampType:	MS	TestCod	le: <b>6010_W</b>	Units: mg/L		Prep Dat	e: <b>7/2/201</b>	9	RunNo: 80	124	
Client ID: (	CCR-4	Batch ID:	30702	TestN	lo: <b>SW6010B</b>			Analysis Dat	e: <b>7/11/20</b>	19	SeqNo: 20	07071	
Analyte			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Boron			0.602	0.100	0.5000	0.1156	97.3	75	125				

Qualifiers: H Holding times for preparation or analysis exceeded

RL Reporting Limit

U Analyte not detected

Matrix Interference

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit



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## **QC SUMMARY REPORT**

WO#: **19070028** 

16-Jul-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Detection Monitoring BatchID: 30702

Website: www.element.com

		9			
Sample ID: 19070028-004BMSD	SampType: MSD	TestCode: 6010_W	Units: <b>mg/L</b>	Prep Date: <b>7/2/2019</b>	RunNo: <b>80124</b>
Client ID: CCR-4	Batch ID: 30702	TestNo: SW6010B		Analysis Date: 7/11/2019	SeqNo: <b>2007072</b>
Analyte	Result	PQL SPK value SPK	Ref Val %REC	LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual
Boron	0.609	0.100 0.5000	0.1156 98.7	75 125 0.6021	1.16 20
Sample ID: 19070028-016BMS	SampType: MS	TestCode: 6010_W	Units: <b>mg/L</b>	Prep Date: 7/2/2019	RunNo: <b>80124</b>
Client ID: FB 1	Batch ID: 30702	TestNo: SW6010B		Analysis Date: 7/11/2019	SeqNo: <b>2007089</b>
Analyte	Result	PQL SPK value SPK	Ref Val %REC	LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual
Boron	0.473	0.100 0.5000	0 94.5	75 125	
Sample ID: 19070028-016BMSD	SampType: MSD	TestCode: 6010_W	Units: <b>mg/L</b>	Prep Date: 7/2/2019	RunNo: <b>80124</b>
Client ID: FB 1	Batch ID: 30702	TestNo: SW6010B		Analysis Date: <b>7/11/2019</b>	SeqNo: <b>2007090</b>
Analyte	Result	PQL SPK value SPK	Ref Val %REC	LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual
Boron	0.494	0.100 0.5000	0 98.8	75 125 0.4726	4.47 20

Qualifiers: H Holding times for preparation or analysis exceeded

RL Reporting Limit

U Analyte not detected

Matrix Interference

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit



# **QC SUMMARY REPORT**

WO#:

19070028

16-Jul-19

**Client:** Pivotal Engineering LLC

<b>Project:</b> Entergy: CO	CR Detection Monitoring					В	atchID: F	R79905		
Sample ID: MB-R79905 Client ID: PBW	SampType: MBLK Batch ID: R79905	TestCode: TDS_2540C	•		Prep Date Analysis Date		9	RunNo: <b>79905</b> SeqNo: <b>2003107</b>		
Analyte	Result	PQL SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filterable)	< 20.0	20.0								
Sample ID: LCS-R79905	SampType: <b>LCS</b>	TestCode: TDS_254	OC Units: mg/L		Prep Date	):		RunNo: <b>79</b> 9	905	
Client ID: LCSW	Batch ID: <b>R79905</b>	TestNo: SM2540C	:		Analysis Date	e: 7/3/2019	9	SeqNo: 200	3108	
Analyte	Result	PQL SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filterable)	918	20.0 1,000	0	91.8	85	115				
Sample ID: LCSD-R79905	SampType: <b>LCSD</b>	TestCode: TDS_254	OC Units: mg/L		Prep Date	e:		RunNo: <b>79</b> 9	905	
Client ID: LCSS02	Batch ID: <b>R79905</b>	TestNo: SM2540C	;		Analysis Date	: 7/3/201	9	SeqNo: 200	3109	
Analyte	Result	PQL SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filterable)	949	20.0 1,000	0	94.9	85	115	918.0	3.32	10	
Sample ID: 19070028-004ADUP	SampType: <b>DUP</b>	TestCode: TDS_254	OC Units: mg/L		Prep Date	):		RunNo: <b>79</b> 9	905	
Client ID: CCR-4	Batch ID: <b>R79905</b>	TestNo: SM2540C	:		Analysis Date	: 7/3/2019	9	SeqNo: <b>200</b>	3114	
Analyte	Result	PQL SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filterable)	260	20.0					253.0	2.73	10	
Oualifiers: H Holding times for p	preparation or analysis exceeded	M Matrix	: Interference			ND	Not Detected at the Re	eporting Limit		

Qualifiers: H Holding times for preparation or analysis exceeded

RL Reporting Limit
U Analyte not detected

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit



Element Materials Technology Lafayette 2417 W. Pinhook Road Lafayette, LA 70508-3344 TEL: (337) 235-0483 FAX: (337) 233-6540 **QC SUMMARY REPORT** 

WO#:

19070028

16-Jul-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Detection Monitoring BatchID: R79905

Website: www.element.com

Sample ID: 19070028-004ADUP SampType: DUP TestCode: TDS\_2540C Units: mg/L Prep Date: RunNo: 79905

Client ID: CCR-4 Batch ID: R79905 TestNo: SM2540C Analysis Date: 7/3/2019 SeqNo: 2003114

Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sample ID: 19070028-016ADUP	SampType: <b>DUP</b>	TestCode: TDS_2540C Units: mg	/L Prep Date:	RunNo: <b>79905</b>
Client ID: FB 1	Batch ID: <b>R79905</b>	TestNo: SM2540C	Analysis Date: 7/3/2019	SeqNo: <b>2003127</b>
Analyte	Result	PQL SPK value SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual
'				

Total Dissolved Solids (Residue, < 20.0 20.0 0 10

Filterable)

Qualifiers: H Holding times for preparation or analysis exceeded

RL Reporting Limit

U Analyte not detected

Matrix Interference

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit



## **QC SUMMARY REPORT**

WO#:

19070028

16-Jul-19

Client: Pivotal Engineering LLC

Project: Entergy: CCR Detection Monitoring BatchID: R80006

Sample ID: MBLK	SampType: MBLK	TestCode: 300.0	Units: mg/L	Prep Date:	RunNo: <b>80006</b>
Client ID: PBW	Batch ID: <b>R80006</b>	TestNo: <b>E 300.0</b>		Analysis Date: <b>7/8/2019</b>	SeqNo: <b>2004295</b>
Analyte	Result	PQL SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual
Chloride	< 0.250	0.250			
Fluoride	< 0.0500	0.0500			
Sulfate	< 0.250	0.250			

Sample ID: LCS	SampType: LCS	TestCode: 300.0		Units: mg/L	Prep Date:			_	RunNo: <b>80006</b>		
Client ID: LCSW	Batch ID: <b>R80006</b>	I estN	o: <b>E 300.0</b>		Analysis Date: 7/8/2019			SeqNo: <b>2004296</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	9.81	0.250	10.00	0	98.1	90	110				
Fluoride	2.02	0.0500	2.000	0	101	90	110				
Sulfate	10.4	0.250	10.00	0	104	90	110				

Sample ID: LCSD	SampType: LCSD	TestCo	de: <b>300.0</b>	Units: mg/L	Prep Date:				RunNo: <b>80006</b>		
Client ID: LCSS02	Batch ID: <b>R80006</b>	Test	No: <b>E 300.0</b>		Analysis Date: <b>7/8/2019</b>				SeqNo: <b>2004297</b>		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	9.85	0.250	10.00	0	98.5	90	110	9.809	0.370	15	
Fluoride	2.03	0.0500	2.000	0	102	90	110	2.018	0.747	15	
Sulfate	10.4	0.250	10.00	0	104	90	110	10.36	0.447	15	

Qualifiers: H Holding times for preparation or analysis exceeded

Analyte not detected

RL Reporting Limit

M Matrix Interference

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit



## **QC SUMMARY REPORT**

R80006

**BatchID:** 

WO#: **19070028** 

16-Jul-19

**Client:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring

Sample ID: 19070028-004AMS Client ID: CCR-4	SampType: MS Batch ID: R80006		de: <b>300.0</b> No: <b>E 300.0</b>	Units: mg/L Prep Date: Analysis Date: 7/8/2019			9	RunNo: <b>80006</b> SeqNo: <b>2004306</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	84.6	2.50	50.00	36.72	95.7	80	120				
Fluoride	9.65	0.500	10.00	0	96.5	80	120				
Sulfate	49.9	2.50	50.00	2.362	95.1	80	120				
Sample ID: 19070028-004AMSD	SampType: MSD	TestCo	de: 300.0	Units: ma/L	Prep Date:				RunNo: 800	106	

Sample ID:	19070028-004AMSD	SampType: MSD	TestCode: 300.0		Units: mg/L	Prep Date:				RunNo: <b>80006</b>		
Client ID:	CCR-4	Batch ID: R80006	TestNo: <b>E 300.0</b>			Analysis Date: 7/8/2019			9	SeqNo: <b>200</b>	4307	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		84.4	2.50	50.00	36.72	95.4	80	120	84.58	0.215	15	
Fluoride		9.66	0.500	10.00	0	96.6	80	120	9.645	0.146	15	
Sulfate		50.0	2.50	50.00	2.362	95.2	80	120	49.92	0.114	15	

Sample ID: 19070028-016	SAMS SampType: MS	TestCo	de: <b>300.0</b>	Units: mg/L	Prep Date:				RunNo: 800		
Client ID: FB 1	Batch ID: <b>R80006</b>	Testi	TestNo: <b>E 300.0</b>		Analysis Date: 7/8/2019			9	SeqNo: <b>2004322</b>		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	4.92	0.250	5.000	0.06082	97.2	80	120				
Fluoride	0.959	0.0500	1.000	0	95.9	80	120				
Sulfate	4.45	0.250	5.000	0	89.0	80	120				

Qualifiers: H Holding times for preparation or analysis exceeded

RL Reporting Limit

U Analyte not detected

Matrix Interference

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit



Element Materials Technology Lafayette 2417 W. Pinhook Road Lafayette, LA 70508-3344 TEL: (337) 235-0483 FAX: (337) 233-6540 **QC SUMMARY REPORT** 

WO#: **19070028** 

16-Jul-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Detection Monitoring BatchID: R80006

Website: www.element.com

Sample ID:	19070028-016AMSD	SampType: MSD	TestCode: 300.0		Units: mg/L	Prep Date:				RunNo: <b>80006</b>		
Client ID:	FB 1	Batch ID: <b>R80006</b>	TestN	lo: <b>E 300.0</b>		Analysis Date: <b>7/8/2019</b>			9	SeqNo: <b>2004323</b>		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		5.21	0.250	5.000	0.06082	103	80	120	4.921	5.74	15	
Fluoride		1.08	0.0500	1.000	0	108	80	120	0.9593	11.7	15	
Sulfate		4.66	0.250	5.000	0	93.3	80	120	4.452	4.66	15	

RL Reporting Limit

U Analyte not detected

Matrix Interference

M

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit



Element Materials Technology Lafayette 2417 W. Pinhook Road Lafayette, LA 70508-3344

TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com

## Sample Log-In Check List

Client Name:	PIVOTAL_ENGIN	NEERIN Work Order	Number: <b>1907</b> (	0028		RcptNo:	1
Logged by:	Tammy Thibodea	aux 7/1/2019 12:2	5:00 PM		Maringo	& Thooleans	
Completed By:	Tammy Thibodea	aux 7/1/2019 2:51	:14 PM		Maringo	& Thodeaux	
Reviewed By:	Caitlin Duplantis	7/16/2019 7:3	0:24 AM		Cartle Duple	& Shoodeaux & Shoodeaux	
Chain of Cu	stody						
1. Is Chain o	f Custody complete	?	Yes	s 📙	No 🗸	Not Present	
2. How was t	he sample delivered	1?	<u>Ele</u>	<u>ment</u>			
<u>Log In</u>							
3. Coolers a	re present?		Yes	s <b>•</b>	No 🗌	NA $\square$	
4. Shipping of	container/cooler in go	ood condition?	Yes	s 🗸	No 🗌		
Custody s	eals intact on shippi	ng container/cooler?	Yes	s 🗌	No $\square$	Not Present 🗹	
No.	S	eal Date:	Sigr	ned By:			
5. Was an at	tempt made to cool	the samples?	Yes	s <b>•</b>	No 🗌	NA $\square$	
6. Were all s	amples received at	a temperature of >0° C to 6.	0°C Yes	s <b>•</b>	No 🗆	NA 🗆	
7. Sample(s)	in proper container	(s)?	Yes	s 🗸	No 🗆		
8. Sufficient	sample volume for i	ndicated test(s)?	Yes	s 🗸	No $\square$		
<ol><li>9. Are sample</li></ol>	es (except VOA and	d ONG) properly preserved?	Yes	<b>•</b>	No $\square$		
10. Was prese	ervative added to bo	ttles?	Yes	s 🗌	No 🗸	NA 🗌	
11. Is the hea	dspace in the VOA v	vials less than 1/4 inch or 6 r	nm? Yes	s 🗌	No 🗌	No VOA Vials	
12. Were any	sample containers r	eceived broken?	Yes	s 🗌	No 🗸		
-	erwork match bottle repancies on chain		Yes	s <b>•</b>	No 🗌		
14. Are matric	es correctly identifie	ed on Chain of Custody?	Yes	<b>•</b>	No $\square$		
15. Is it clear	what analyses were	requested?	Yes	<b>•</b>	No 🗌		
16. Were all h	olding times able to	be met?	Yes	<b>•</b>	No $\square$		
,	fy customer for auth	,					
<u> </u>	dling (if applica	<del></del>					
17. Was clien	t notified of all discre	epancies with this order?	Yes	s 📙	No 🗌	NA 🗸	
Pers	on Notified:		Date:				
By W	/hom:		Via: eM	ail 🗌 F	Phone  Fax	☐ In Person	
Rega	arding:						
Clien	t Instructions:						
18. Additional							
No s	ampler's signature b	ny client					

#### **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.3	Good	Not Present			



2203 S. Madison St., Muncie, IN 47302
765-747-9000/800-874-3563 Fax 765-747-0228
629 Washington St., Suite 300, Columbus, IN 47201

629 Washington St., Suite 300, Columbus, IN 4720 812-375-0531 Fax 812-375-0531

5738 Industrial Rd., Fort Wayne, IN 46825 219-471-7000 Fax 219-471-7777

Z	2417 W. Pinhook Rd, Lafayette, LA 70508 337-235-0483/800-737-2378
	Fax 337-233-6540 3445 S Sheridan, Tulsa, OK 74145

918-828-9977/800324-5757 Fax 918-828-7756

Page	1 of		2					Chain	of C	usto	dy I	Reco	rd					aborator umber	ry / C	2001	Das	٧
Client Na	ame: Pivota	al En	ginee	ring	LLC	3	Proj	ect: CCR Detection			Preser			T			_	Requeste	ed	1010	701-	
	Name: Terr			ar				pler's Signature:		1901	O <sub>3</sub> H <sub>2</sub> SO <sub>4</sub>	fumber / Type	ix Code		FI, S04	metals*						
Colle Date	ection Time	Grab	Comp			San		dentification / D	escriptio	n	HCI HNO3	Number of Cont	Matrix	TDS	300: CI, I	6010 me					(10000000000000000000000000000000000000	nents / narks
4/291	9/240	X		С	С	R	-	1			None/ HN	103 2 Diastic	Aq	X	X	Х						200
6/29	1620	Х		С	С	R	-	2			None/ HN	103 2 Plastic	Aq	X	Х	Х					*6010 Meta	als: B. Ca
6/29/	1505	Х		С	С	R	-	3				vos 2 Plastic		X	х	X	$\top$		11		A MANAGEMENT	
6/289	1530	X		С	С	R	*	4				ios 2 Plastic	1	X	Х	X						
10/29	NO25	X		С	С	R	2	5				103 2 Plastic		X	X	X	+	++	+			
6/200	1135	Х		С	С	R	-	6				103 2 Plastic	-	X	X	X	+	++	+			a
10/28	1250	Х		С	С	R		7				103 2 Plastic	1	×	X	X		++	+			
6/28	61400	х		С	С	R	_	8				103 2 Plastic	1	x	X	X	+	++	++			
6/30/		X		С	С	R		9		-			_				+	++	+			
		V			С	R	30	10		- 20		03 2 Dlastic		X	X	X	-	++	++		UPS / FedE	Airborne
16/30		^		С			_	1.000				103 2 Plastic		Х	Χ	X					(Element)	Hand / Mail
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Relinquished	d by: (Signatu	ire)			Rece	eived by	/:(Signa	ature)	Date	Time	and the latest and th	hed by: (Sign				Receiv	d by ta	aboratory:(			Date 91119	Time
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Page			2	1									sto	dy	R	ecor	ď					Labo Nun	orato iber	ry	190	270	Da	P
Client Na	me: Pivota	l En	ginee	ring	LLC	200	Proj	ect:	CCR D	etectio	n Monito	ring		Pres	serv.	e	22000				Tes	st Re	quest	ed				
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ys	:1.1.9												73.5													- 2		Airborne land / Mail
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July 25, 2019

Terry Elnaggar Pivotal Engineering LLC 1515 Poydras St., STE. 1875 New Orleans, LA 70112

TEL: (504) 799-3653

FAX

RE: Entergy: CCR Assessment Monitoring Order No.: 19070045

Dear Terry Elnaggar:

Element Materials Technology Lafayette received 16 sample(s) on 7/1/2019 for the analyses presented in the following report.

In accordance with your instructions Element Lafayette conducted the analysis shown on the following pages on samples submitted by your company. The results related only to the items tested. Unless otherwise noted, all analyses were conducted using EPA approved methodologies and all test results meet all requirements of TNI. All relevant sampling information is on the attached Chain-of-Custody form.

All soil data, except for 29-B, are on a wet-weight basis unless otherwise indicated in the units field as –dry.

LELAP Certification No.: 01997. TCEQ Certification No.: T104704261. LDHH Certification No.: LA180028. ISDH Certification No.: C-LA-01. A scope of accredited parameters is available upon request. A "#" by the test method or analyte indicates this parameter is outside the scope of accreditation.

Estimated uncertainty is available upon request. This report shall not be reproduced except in full, without the written approval of the laboratory.

If you have any questions regarding these test results, please feel free to call.

Cristina Thibeaux

**Customer Service Supervisor** 

2417 W. Pinhook Road

Lafayette, LA 70508-3344



Element Materials Technology Lafayette 2417 W. Pinhook Road Lafayette, LA 70508-3344

TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Case Narrative** 

WO#: **19070045**Date: **7/25/2019** 

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Assessment Monitoring

Unless specified by the client, a duplicate or MS/MSD, wherever applicable, is randomly selected and analyzed from each analytical batch provided sample volume is sufficient. The sample chosen for duplicate or MS/MSD may or may not be a sample submitted in this workorder. A method blank and/or a lab control sample (LCS)/lab control sample duplicate (LCSD), wherever applicable, are processed as a quality control check for each analytical batch. When the matrix QC data is not available due to insufficient sample volume or when the results indicate possible matrix effect, the validity of the batch is determined by the method blank and LCS/LCSD.

The results of the laboratory internal quality control data are provided in the QC Summary Report section of the report for your review. Laboratory-related QC exceptions that may impact the validity of data are discussed in the case narrative. Sample-related QC exceptions are flagged either in the results page(s) or in the QC report page(s). End users should consider QC exceptions when evaluating sample data against data quality objectives.

Any other exceptions associated with this report will be footnoted in the results page(s) or the QC summary page(s).

The Lithium by Method 6020 analyses were subcontracted to Gulf Coast Analytical Laboratories, Inc. Their report is attached in its entirety.



Lafayette, LA 70508-3344

TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19070045**Date Reported: **7/25/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 6/29/2019 5:40:00 PM

**Project:** Entergy: CCR Assessment Monitoring

**Lab ID:** 19070045-001 **Matrix:** AQUEOUS

Client Sample ID CCR-1

Analyses	Result	Result RL Qual Units			Date Analyzed
MERCURY IN GROUND WATER,TO	OTAL		SW74	70A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	7/3/2019 2:09:29 PM
INORGANIC ANIONS IN WATER B	Y IC		E 300	0.0	Analyst: SGP
Fluoride	0.279	0.0500	mg/L	1	7/23/2019 12:32:09 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	7/3/2019 10:05:22 PM
Barium	0.169	0.0100	mg/L	1	7/3/2019 10:05:22 PM
Beryllium	< 0.00100	0.00100	mg/L	1	7/3/2019 10:05:22 PM
Cadmium	< 0.00500	0.00500	mg/L	1	7/3/2019 10:05:22 PM
Chromium	< 0.0100	0.0100	mg/L	1	7/3/2019 10:05:22 PM
Cobalt	< 0.0100	0.0100	mg/L	1	7/3/2019 10:05:22 PM
Lead	< 0.0100	0.0100	mg/L	1	7/3/2019 10:05:22 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	7/3/2019 10:05:22 PM
Selenium	< 0.0200	0.0200	mg/L	1	7/3/2019 10:05:22 PM
METALS IN WATER BY ICP-MS			SW60	20A	Analyst: <b>KML</b>
Antimony	< 0.250	0.250	μg/L	1	7/16/2019 1:18:33 PM
Thallium	< 0.250	0.250	μg/L	1	7/16/2019 1:18:33 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Lafayette, LA 70508-3344

TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19070045**Date Reported: **7/25/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 6/29/2019 4:20:00 PM

**Project:** Entergy: CCR Assessment Monitoring

**Lab ID:** 19070045-002 **Matrix:** AQUEOUS

**Client Sample ID** CCR-2

Analyses	Result	Result RL Qual Units			Date Analyzed
MERCURY IN GROUND WATER,TO	OTAL		SW74	70A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	7/3/2019 2:11:46 PM
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP
Fluoride	0.341	0.0500	mg/L	1	7/23/2019 12:45:48 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Arsenic	0.0240	0.0100	mg/L	1	7/3/2019 10:10:10 PM
Barium	0.149	0.0100	mg/L	1	7/3/2019 10:10:10 PM
Beryllium	< 0.00100	0.00100	mg/L	1	7/3/2019 10:10:10 PM
Cadmium	< 0.00500	0.00500	mg/L	1	7/3/2019 10:10:10 PM
Chromium	< 0.0100	0.0100	mg/L	1	7/3/2019 10:10:10 PM
Cobalt	< 0.0100	0.0100	mg/L	1	7/3/2019 10:10:10 PM
Lead	< 0.0100	0.0100	mg/L	1	7/3/2019 10:10:10 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	7/3/2019 10:10:10 PM
Selenium	0.0219	0.0200	mg/L	1	7/3/2019 10:10:10 PM
METALS IN WATER BY ICP-MS			SW60	20A	Analyst: <b>KML</b>
Antimony	< 0.250	0.250	μg/L	1	7/16/2019 1:21:20 PM
Thallium	< 0.250	0.250	μg/L	1	7/16/2019 1:21:20 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Lafayette, LA 70508-3344 TEL: (337) 235-0483 FAX: (337) 233-6540

Website: www.element.com

#### **Analytical Report**

(consolidated)

WO#: **19070045**Date Reported: **7/25/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 6/29/2019 3:05:00 PM

**Project:** Entergy: CCR Assessment Monitoring

**Lab ID:** 19070045-003 **Matrix:** AQUEOUS

Client Sample ID CCR-3

Analyses	Result	Result RL Qual Units			Date Analyzed
MERCURY IN GROUND WATER,TO	OTAL		SW74	70A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	7/3/2019 2:14:06 PM
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP
Fluoride	0.400	0.0500	mg/L	1	7/23/2019 12:59:32 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Arsenic	0.0201	0.0100	mg/L	1	7/3/2019 10:14:57 PM
Barium	0.227	0.0100	mg/L	1	7/3/2019 10:14:57 PM
Beryllium	< 0.00100	0.00100	mg/L	1	7/3/2019 10:14:57 PM
Cadmium	< 0.00500	0.00500	mg/L	1	7/3/2019 10:14:57 PM
Chromium	< 0.0100	0.0100	mg/L	1	7/3/2019 10:14:57 PM
Cobalt	< 0.0100	0.0100	mg/L	1	7/3/2019 10:14:57 PM
Lead	< 0.0100	0.0100	mg/L	1	7/3/2019 10:14:57 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	7/3/2019 10:14:57 PM
Selenium	< 0.0200	0.0200	mg/L	1	7/3/2019 10:14:57 PM
METALS IN WATER BY ICP-MS			SW60	20A	Analyst: <b>KML</b>
Antimony	< 0.250	0.250	μg/L	1	7/16/2019 1:24:08 PM
Thallium	< 0.250	0.250	μg/L	1	7/16/2019 1:24:08 PM

Oualifiers:	Н	Holding times for preparation or analysis exceeded
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ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits

U Analyte not detected



Lafayette, LA 70508-3344

TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19070045**Date Reported: **7/25/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 6/28/2019 3:30:00 PM

**Project:** Entergy: CCR Assessment Monitoring

**Lab ID:** 19070045-004 **Matrix:** AQUEOUS

**Client Sample ID** CCR-4

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATER,TO	DTAL		SW74	70A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	7/3/2019 2:01:29 PM
INORGANIC ANIONS IN WATER BY	Y IC		E 30	0.0	Analyst: <b>SGP</b>
Fluoride	0.213	0.0500	mg/L	1	7/23/2019 1:13:16 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	7/3/2019 10:19:44 PM
Barium	0.100	0.0100	mg/L	1	7/3/2019 10:19:44 PM
Beryllium	< 0.00100	0.00100	mg/L	1	7/3/2019 10:19:44 PM
Cadmium	< 0.00500	0.00500	mg/L	1	7/3/2019 10:19:44 PM
Chromium	< 0.0100	0.0100	mg/L	1	7/3/2019 10:19:44 PM
Cobalt	< 0.0100	0.0100	mg/L	1	7/3/2019 10:19:44 PM
Lead	< 0.0100	0.0100	mg/L	1	7/3/2019 10:19:44 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	7/3/2019 10:19:44 PM
Selenium	0.0217	0.0200	mg/L	1	7/3/2019 10:19:44 PM
METALS IN WATER BY ICP-MS			SW60	20A	Analyst: <b>KML</b>
Antimony	< 0.250	0.250	μg/L	1	7/16/2019 1:41:51 PM
Thallium	< 0.250	0.250	μg/L	1	7/16/2019 1:41:51 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Lafayette, LA 70508-3344

TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19070045**Date Reported: **7/25/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 6/28/2019 10:25:00 AM

**Project:** Entergy: CCR Assessment Monitoring

Lab ID: 19070045-005 Matrix: AQUEOUS

**Client Sample ID** CCR-5

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATER,	TOTAL		SW74	70A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	7/3/2019 2:16:22 PM
INORGANIC ANIONS IN WATER	BY IC		E 300	0.0	Analyst: SGP
Fluoride	0.230	0.0500	mg/L	1	7/23/2019 1:27:00 PM
METALS IN WATER BY ICP, TO	ΓALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	7/3/2019 10:33:38 PM
Barium	0.207	0.0100	mg/L	1	7/3/2019 10:33:38 PM
Beryllium	< 0.00100	0.00100	mg/L	1	7/3/2019 10:33:38 PM
Cadmium	< 0.00500	0.00500	mg/L	1	7/3/2019 10:33:38 PM
Chromium	< 0.0100	0.0100	mg/L	1	7/3/2019 10:33:38 PM
Cobalt	< 0.0100	0.0100	mg/L	1	7/3/2019 10:33:38 PM
Lead	< 0.0100	0.0100	mg/L	1	7/3/2019 10:33:38 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	7/3/2019 10:33:38 PM
Selenium	< 0.0200	0.0200	mg/L	1	7/3/2019 10:33:38 PM
METALS IN WATER BY ICP-MS			SW60	20A	Analyst: <b>KML</b>
Antimony	< 0.250	0.250	μg/L	1	7/16/2019 1:53:03 PM
Thallium	< 0.250	0.250	μg/L	1	7/16/2019 1:53:03 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Lafayette, LA 70508-3344

TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19070045**Date Reported: **7/25/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 6/28/2019 11:35:00 AM

**Project:** Entergy: CCR Assessment Monitoring

**Lab ID:** 19070045-006 **Matrix:** AQUEOUS

**Client Sample ID** CCR-6

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATER,TO	OTAL		SW74	70A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	7/3/2019 2:18:38 PM
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP
Fluoride	0.243	0.0500	mg/L	1	7/23/2019 1:40:44 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	7/3/2019 10:38:26 PM
Barium	0.205	0.0100	mg/L	1	7/3/2019 10:38:26 PM
Beryllium	< 0.00100	0.00100	mg/L	1	7/3/2019 10:38:26 PM
Cadmium	< 0.00500	0.00500	mg/L	1	7/3/2019 10:38:26 PM
Chromium	< 0.0100	0.0100	mg/L	1	7/3/2019 10:38:26 PM
Cobalt	< 0.0100	0.0100	mg/L	1	7/3/2019 10:38:26 PM
Lead	< 0.0100	0.0100	mg/L	1	7/3/2019 10:38:26 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	7/3/2019 10:38:26 PM
Selenium	< 0.0200	0.0200	mg/L	1	7/3/2019 10:38:26 PM
METALS IN WATER BY ICP-MS			SW60	20A	Analyst: <b>KML</b>
Antimony	< 0.250	0.250	μg/L	1	7/16/2019 1:55:51 PM
Thallium	< 0.250	0.250	μg/L	1	7/16/2019 1:55:51 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



2417 W. Pinhook Road Lafayette, LA 70508-3344

TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19070045**Date Reported: **7/25/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 6/28/2019 12:50:00 PM

**Project:** Entergy: CCR Assessment Monitoring

**Lab ID:** 19070045-007 **Matrix:** AQUEOUS

**Client Sample ID** CCR-7

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATER,TO	DTAL		SW74	70A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	7/3/2019 2:20:55 PM
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP
Fluoride	0.260	0.0500	mg/L	1	7/23/2019 2:21:56 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	7/3/2019 10:52:34 PM
Barium	0.232	0.0100	mg/L	1	7/3/2019 10:52:34 PM
Beryllium	< 0.00100	0.00100	mg/L	1	7/3/2019 10:52:34 PM
Cadmium	< 0.00500	0.00500	mg/L	1	7/3/2019 10:52:34 PM
Chromium	< 0.0100	0.0100	mg/L	1	7/3/2019 10:52:34 PM
Cobalt	< 0.0100	0.0100	mg/L	1	7/3/2019 10:52:34 PM
Lead	< 0.0100	0.0100	mg/L	1	7/3/2019 10:52:34 PM
Molybdenum	0.0100	0.0100	mg/L	1	7/3/2019 10:52:34 PM
Selenium	0.0209	0.0200	mg/L	1	7/3/2019 10:52:34 PM
METALS IN WATER BY ICP-MS			SW60	20A	Analyst: <b>KML</b>
Antimony	< 0.250	0.250	μg/L	1	7/16/2019 1:58:39 PM
Thallium	< 0.250	0.250	μg/L	1	7/16/2019 1:58:39 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Element Materials Technology Lafayette 2417 W. Pinhook Road Lafayette, LA 70508-3344

TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com

**Analytical Report** 

**Collection Date:** 6/28/2019 2:00:00 PM

(consolidated)

WO#: 19070045 Date Reported: 7/25/2019

**CLIENT:** Pivotal Engineering LLC

Entergy: CCR Assessment Monitoring **Project:** 

Lab ID: Matrix: AQUEOUS 19070045-008

**Client Sample ID** CCR-8

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATER,	TOTAL		SW74	70A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	7/3/2019 2:23:12 PM
INORGANIC ANIONS IN WATER	BY IC		E 300	0.0	Analyst: SGP
Fluoride	0.134	0.0500	mg/L	1	7/23/2019 2:35:39 PM
METALS IN WATER BY ICP, TO	ΓALS		SW60	10B	Analyst: STS
Arsenic	0.0147	0.0100	mg/L	1	7/3/2019 10:57:22 PM
Barium	0.109	0.0100	mg/L	1	7/3/2019 10:57:22 PM
Beryllium	< 0.00100	0.00100	mg/L	1	7/3/2019 10:57:22 PM
Cadmium	< 0.00500	0.00500	mg/L	1	7/3/2019 10:57:22 PM
Chromium	< 0.0100	0.0100	mg/L	1	7/3/2019 10:57:22 PM
Cobalt	< 0.0100	0.0100	mg/L	1	7/3/2019 10:57:22 PM
Lead	< 0.0100	0.0100	mg/L	1	7/3/2019 10:57:22 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	7/3/2019 10:57:22 PM
Selenium	< 0.0200	0.0200	mg/L	1	7/3/2019 10:57:22 PM
METALS IN WATER BY ICP-MS			SW60	20A	Analyst: <b>KML</b>
Antimony	< 0.250	0.250	μg/L	1	7/16/2019 2:01:27 PM
Thallium	< 0.250	0.250	μg/L	1	7/16/2019 2:01:27 PM

Holding times for preparation or analysis exceeded Qualifiers:

ND Not Detected at the Reporting Limit

RL Reporting Limit SDL Sample detection limit

Sample container temperature is out of limit as specified at testcode

Matrix Interference

RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



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(consolidated)

WO#: **19070045**Date Reported: **7/25/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 6/30/2019 12:20:00 PM

**Project:** Entergy: CCR Assessment Monitoring

Lab ID: 19070045-009 Matrix: AQUEOUS

Client Sample ID CCR-9

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATER,TO	OTAL		SW74	70A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	7/3/2019 2:30:40 PM
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP
Fluoride	0.519	0.0500	mg/L	1	7/23/2019 2:49:23 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	7/3/2019 11:02:10 PM
Barium	0.196	0.0100	mg/L	1	7/3/2019 11:02:10 PM
Beryllium	< 0.00100	0.00100	mg/L	1	7/3/2019 11:02:10 PM
Cadmium	< 0.00500	0.00500	mg/L	1	7/3/2019 11:02:10 PM
Chromium	< 0.0100	0.0100	mg/L	1	7/3/2019 11:02:10 PM
Cobalt	< 0.0100	0.0100	mg/L	1	7/3/2019 11:02:10 PM
Lead	< 0.0100	0.0100	mg/L	1	7/3/2019 11:02:10 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	7/3/2019 11:02:10 PM
Selenium	0.0304	0.0200	mg/L	1	7/3/2019 11:02:10 PM
METALS IN WATER BY ICP-MS			SW60	20A	Analyst: <b>KML</b>
Antimony	< 0.250	0.250	μg/L	1	7/16/2019 2:04:14 PM
Thallium	< 0.250	0.250	μg/L	1	7/16/2019 2:04:14 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

I Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Element Materials Technology Lafayette 2417 W. Pinhook Road Lafayette, LA 70508-3344

TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19070045**Date Reported: **7/25/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 6/30/2019 1:30:00 PM

**Project:** Entergy: CCR Assessment Monitoring

Lab ID: 19070045-010 Matrix: AQUEOUS

Client Sample ID CCR-10

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATER,TO	TAL		SW74	70A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	7/3/2019 2:32:57 PM
INORGANIC ANIONS IN WATER BY	( IC		E 30	0.0	Analyst: <b>SGP</b>
Fluoride	0.459	0.0500	mg/L	1	7/23/2019 3:03:07 PM
METALS IN WATER BY ICP, TOTAL	LS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	7/3/2019 11:06:57 PM
Barium	0.208	0.0100	mg/L	1	7/3/2019 11:06:57 PM
Beryllium	< 0.00100	0.00100	mg/L	1	7/3/2019 11:06:57 PM
Cadmium	< 0.00500	0.00500	mg/L	1	7/3/2019 11:06:57 PM
Chromium	< 0.0100	0.0100	mg/L	1	7/3/2019 11:06:57 PM
Cobalt	< 0.0100	0.0100	mg/L	1	7/3/2019 11:06:57 PM
Lead	< 0.0100	0.0100	mg/L	1	7/3/2019 11:06:57 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	7/3/2019 11:06:57 PM
Selenium	0.0272	0.0200	mg/L	1	7/3/2019 11:06:57 PM
METALS IN WATER BY ICP-MS			SW60	20A	Analyst: <b>KML</b>
Antimony	< 0.250	0.250	μg/L	1	7/16/2019 2:07:02 PM
Thallium	< 0.250	0.250	μg/L	1	7/16/2019 2:07:02 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



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WO#: **19070045**Date Reported: **7/25/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 6/30/2019 2:40:00 PM

**Project:** Entergy: CCR Assessment Monitoring

**Lab ID:** 19070045-011 **Matrix:** AQUEOUS

Client Sample ID CCR-11

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATER,T	OTAL		SW74	70A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	7/3/2019 2:35:15 PM
INORGANIC ANIONS IN WATER B	BY IC		E 30	0.0	Analyst: SGP
Fluoride	0.715	0.0500	mg/L	1	7/23/2019 3:16:50 PM
METALS IN WATER BY ICP, TOTA	ALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	7/3/2019 11:11:44 PM
Barium	0.143	0.0100	mg/L	1	7/3/2019 11:11:44 PM
Beryllium	< 0.00100	0.00100	mg/L	1	7/3/2019 11:11:44 PM
Cadmium	< 0.00500	0.00500	mg/L	1	7/3/2019 11:11:44 PM
Chromium	< 0.0100	0.0100	mg/L	1	7/3/2019 11:11:44 PM
Cobalt	< 0.0100	0.0100	mg/L	1	7/3/2019 11:11:44 PM
Lead	< 0.0100	0.0100	mg/L	1	7/3/2019 11:11:44 PM
Molybdenum	0.0100	0.0100	mg/L	1	7/3/2019 11:11:44 PM
Selenium	< 0.0200	0.0200	mg/L	1	7/3/2019 11:11:44 PM
METALS IN WATER BY ICP-MS			SW60	20A	Analyst: <b>KML</b>
Antimony	< 0.250	0.250	μg/L	1	7/16/2019 2:23:52 PM
Thallium	< 0.250	0.250	μg/L	1	7/16/2019 2:23:52 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Element Materials Technology Lafayette 2417 W. Pinhook Road Lafayette, LA 70508-3344

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WO#: **19070045**Date Reported: **7/25/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 6/30/2019 8:40:00 AM

**Project:** Entergy: CCR Assessment Monitoring

**Lab ID:** 19070045-012 **Matrix:** AQUEOUS

Client Sample ID CCR-12

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATER,TO	DTAL		SW74	70A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	7/3/2019 2:37:32 PM
INORGANIC ANIONS IN WATER BY	/ IC		E 30	0.0	Analyst: <b>SGP</b>
Fluoride	0.131	0.0500	mg/L	1	7/23/2019 3:30:34 PM
METALS IN WATER BY ICP, TOTAL	LS		SW60	10B	Analyst: STS
Arsenic	0.0197	0.0100	mg/L	1	7/3/2019 11:16:30 PM
Barium	0.155	0.0100	mg/L	1	7/3/2019 11:16:30 PM
Beryllium	< 0.00100	0.00100	mg/L	1	7/3/2019 11:16:30 PM
Cadmium	< 0.00500	0.00500	mg/L	1	7/3/2019 11:16:30 PM
Chromium	< 0.0100	0.0100	mg/L	1	7/3/2019 11:16:30 PM
Cobalt	< 0.0100	0.0100	mg/L	1	7/3/2019 11:16:30 PM
Lead	< 0.0100	0.0100	mg/L	1	7/3/2019 11:16:30 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	7/3/2019 11:16:30 PM
Selenium	< 0.0200	0.0200	mg/L	1	7/3/2019 11:16:30 PM
METALS IN WATER BY ICP-MS			SW60	20A	Analyst: <b>KML</b>
Antimony	< 0.250	0.250	μg/L	1	7/16/2019 2:26:42 PM
Thallium	< 0.250	0.250	μg/L	1	7/16/2019 2:26:42 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



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TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19070045**Date Reported: **7/25/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 6/30/2019 9:50:00 AM

**Project:** Entergy: CCR Assessment Monitoring

**Lab ID:** 19070045-013 **Matrix:** AQUEOUS

Client Sample ID CCR-13

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATER,T	OTAL		SW74	70A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	7/3/2019 2:39:50 PM
INORGANIC ANIONS IN WATER E	BY IC		E 30	0.0	Analyst: SGP
Fluoride	0.206	0.0500	mg/L	1	7/23/2019 3:44:18 PM
METALS IN WATER BY ICP, TOTA	ALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	7/3/2019 11:21:15 PM
Barium	0.0934	0.0100	mg/L	1	7/3/2019 11:21:15 PM
Beryllium	< 0.00100	0.00100	mg/L	1	7/3/2019 11:21:15 PM
Cadmium	< 0.00500	0.00500	mg/L	1	7/3/2019 11:21:15 PM
Chromium	< 0.0100	0.0100	mg/L	1	7/3/2019 11:21:15 PM
Cobalt	< 0.0100	0.0100	mg/L	1	7/3/2019 11:21:15 PM
Lead	< 0.0100	0.0100	mg/L	1	7/3/2019 11:21:15 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	7/3/2019 11:21:15 PM
Selenium	< 0.0200	0.0200	mg/L	1	7/3/2019 11:21:15 PM
METALS IN WATER BY ICP-MS			SW60	20A	Analyst: <b>KML</b>
Antimony	< 0.250	0.250	μg/L	1	7/16/2019 2:29:29 PM
Thallium	< 0.250	0.250	μg/L	1	7/16/2019 2:29:29 PM

Qualifiers: H Holding times for preparation or analys	exceeded	
halifiers. H Holding times for preparation or analys	exceeded	

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits

U Analyte not detected



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TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: 19070045
Date Reported: 7/25/2019

CLIENT: Pivotal Engineering LLC Collection Date: 6/30/2019 11:00:00 AM

**Project:** Entergy: CCR Assessment Monitoring

**Lab ID:** 19070045-014 **Matrix:** AQUEOUS

Client Sample ID CCR-14

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATER,TO	DTAL		SW74	70A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	7/3/2019 2:42:09 PM
INORGANIC ANIONS IN WATER BY	YIC		E 30	0.0	Analyst: <b>SGP</b>
Fluoride	0.154	0.0500	mg/L	1	7/23/2019 3:58:02 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Arsenic	0.0104	0.0100	mg/L	1	7/3/2019 11:26:02 PM
Barium	0.0695	0.0100	mg/L	1	7/3/2019 11:26:02 PM
Beryllium	< 0.00100	0.00100	mg/L	1	7/3/2019 11:26:02 PM
Cadmium	< 0.00500	0.00500	mg/L	1	7/3/2019 11:26:02 PM
Chromium	< 0.0100	0.0100	mg/L	1	7/3/2019 11:26:02 PM
Cobalt	< 0.0100	0.0100	mg/L	1	7/3/2019 11:26:02 PM
Lead	< 0.0100	0.0100	mg/L	1	7/3/2019 11:26:02 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	7/3/2019 11:26:02 PM
Selenium	< 0.0200	0.0200	mg/L	1	7/3/2019 11:26:02 PM
METALS IN WATER BY ICP-MS			SW60	20A	Analyst: <b>KML</b>
Antimony	< 0.250	0.250	μg/L	1	7/16/2019 2:32:17 PM
Thallium	< 0.250	0.250	μg/L	1	7/16/2019 2:32:17 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



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**Analytical Report** 

(consolidated)

WO#: 19070045 Date Reported: 7/25/2019

**CLIENT:** Pivotal Engineering LLC **Collection Date:** 6/28/2019

Entergy: CCR Assessment Monitoring **Project:** 

Lab ID: 19070045-015 Matrix: AQUEOUS

Client Sample ID DUP

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATER,TO	TAL		SW74	70A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	7/3/2019 2:44:27 PM
INORGANIC ANIONS IN WATER BY	( IC		E 30	0.0	Analyst: <b>SGP</b>
Fluoride	0.229	0.0500	mg/L	1	7/23/2019 4:11:46 PM
METALS IN WATER BY ICP, TOTAL	LS		SW60	10B	Analyst: STS
Arsenic	0.0130	0.0100	mg/L	1	7/3/2019 11:30:48 PM
Barium	0.207	0.0100	mg/L	1	7/3/2019 11:30:48 PM
Beryllium	< 0.00100	0.00100	mg/L	1	7/3/2019 11:30:48 PM
Cadmium	< 0.00500	0.00500	mg/L	1	7/3/2019 11:30:48 PM
Chromium	< 0.0100	0.0100	mg/L	1	7/3/2019 11:30:48 PM
Cobalt	< 0.0100	0.0100	mg/L	1	7/3/2019 11:30:48 PM
Lead	< 0.0100	0.0100	mg/L	1	7/3/2019 11:30:48 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	7/3/2019 11:30:48 PM
Selenium	0.0251	0.0200	mg/L	1	7/3/2019 11:30:48 PM
METALS IN WATER BY ICP-MS			SW60	20A	Analyst: <b>KML</b>
Antimony	< 0.250	0.250	μg/L	1	7/16/2019 2:35:05 PM
Thallium	< 0.250	0.250	μg/L	1	7/16/2019 2:35:05 PM

Holding times for preparation or analysis exceeded Qualifiers:

ND Not Detected at the Reporting Limit

RL Reporting Limit SDL Sample detection limit

Sample container temperature is out of limit as specified at testcode

Matrix Interference

RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Lafayette, LA 70508-3344

TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19070045**Date Reported: **7/25/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 6/29/2019 5:00:00 PM

**Project:** Entergy: CCR Assessment Monitoring

**Lab ID:** 19070045-016 **Matrix:** AQUEOUS

Client Sample ID FB 1

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATER,TO	DTAL		SW74	70A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	7/3/2019 2:46:45 PM
INORGANIC ANIONS IN WATER BY	( IC		E 300	0.0	Analyst: <b>SGP</b>
Fluoride	< 0.0500	0.0500	mg/L	1	7/8/2019 3:40:01 PM
METALS IN WATER BY ICP, TOTAL	LS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	7/3/2019 11:35:34 PM
Barium	< 0.0100	0.0100	mg/L	1	7/3/2019 11:35:34 PM
Beryllium	< 0.00100	0.00100	mg/L	1	7/3/2019 11:35:34 PM
Cadmium	< 0.00500	0.00500	mg/L	1	7/3/2019 11:35:34 PM
Chromium	< 0.0100	0.0100	mg/L	1	7/3/2019 11:35:34 PM
Cobalt	< 0.0100	0.0100	mg/L	1	7/3/2019 11:35:34 PM
Lead	< 0.0100	0.0100	mg/L	1	7/3/2019 11:35:34 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	7/3/2019 11:35:34 PM
Selenium	< 0.0200	0.0200	mg/L	1	7/3/2019 11:35:34 PM
METALS IN WATER BY ICP-MS			SW60	20A	Analyst: <b>KML</b>
Antimony	< 0.250	0.250	μg/L	1	7/16/2019 2:37:53 PM
Thallium	< 0.250	0.250	μg/L	1	7/16/2019 2:37:53 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



## **QC SUMMARY REPORT**

WO#:

19070045

25-Jul-19

Pivotal Engineering LLC **Client:** 

RPD outside accepted recovery limits

SDL Sample detection limit

Project:	Entergy: Co	CR Assessment	Monitoring						В	satchID: 3	0703		
Sample ID Client ID:		SampType: M Batch ID: 30			de: <b>6020A_W</b> No: <b>SW6020A</b>	. •		Prep Date Analysis Date			RunNo: <b>80</b> 2 SeqNo: <b>20</b> 2		
Analyte		R	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony Thallium			).250 ).250	0.250 0.250									
Sample ID	LCS-30703	SampType: Lo	CS	TestCod	de: <b>6020A_W</b>	Units: µg/L		Prep Date	: 7/2/201	9	RunNo: 802	267	
Client ID:	LCSW	Batch ID: 30	0703	TestN	No: <b>SW6020A</b>			Analysis Date	7/16/20	119	SeqNo: 20	11720	
Analyte		R	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony			445	5.00	500.0	0	88.9	80	120				
Thallium			471	5.00	500.0	0	94.1	80	120				
Sample ID	LCSD-30703	SampType: L	CSD	TestCod	de: <b>6020A_W</b>	Units: µg/L		Prep Date	: 7/2/201	9	RunNo: 80	267	
Client ID:	LCSS02	Batch ID: 30	0703	TestN	No: <b>SW6020A</b>			Analysis Date	7/16/20	19	SeqNo: 20	11721	
Analyte		R	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony			468	5.00	500.0	0	93.6	80	120	444.7	5.09	20	
Thallium			502	5.00	500.0	0	100	80	120	470.7	6.42	20	
Sample ID	19070045-004BMS	SampType: <b>M</b>	s	TestCod	de: <b>6020A_W</b>	Units: μg/L		Prep Date	: 7/2/201	9	RunNo: 80	267	
Client ID:	CCR-4	Batch ID: 30	0703	TestN	No: <b>SW6020A</b>	- <del>-</del>		Analysis Date	: 7/16/20	119	SeqNo: 20	11732	
						ODK D - ( ) / - !	%REC	Low Limit	Highl imit	RPD Ref Val	%RPD	DDDI ::+	Qual
Analyte		R	Result	PQL	SPK value	SPK Ref val	70KEC	LOWLIIII	iigiiLiiiiii	INI DINEI Vai	701X1 D	RPDLimit	Quai
Analyte Antimony		R	tesult 462	5.00	SPK value 500.0	0.07774	92.3	75	125	THE THE VAL	701(1 D	RPDLIMIT	Quai

Reporting Limit

Analyte not detected

Spike Recovery outside accepted recovery limits

Sample container temperature is out of limit as sp



# **QC SUMMARY REPORT**

WO#:

19070045

25-Jul-19

Pivotal Engineering LLC **Client:** 

RPD outside accepted recovery limits

SDL Sample detection limit

Project:	Entergy: CC	CR Assessme	nt Monitoring						I	BatchID: 3	30703			
Sample ID Client ID:	19070045-004BMS CCR-4	SampType: Batch ID:			le: 6020A_W lo: SW6020A	Units: µg/L		Prep Date Analysis Date	e: 7/2/20°		RunNo: 80: SeqNo: 20:			
Analyte			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Thallium			481	5.00	500.0	0	96.2	75	125					
Sample ID	19070045-004BMSD	SampType:	MSD	TestCoo	le: <b>6020A_W</b>	Units: µg/L		Prep Date	e: <b>7/2/20</b>	19	RunNo: 80	267		
Client ID:	CCR-4	Batch ID:	30703	TestN	lo: <b>SW6020A</b>		Analysis Date: 7/16/2019				SeqNo: 20	11733		
Analyte			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Antimony Thallium			449 485	5.00 5.00	500.0 500.0	0.07774 0	89.9 96.9	75 75	125 125	461.6 480.8	2.70 0.813	20 20		
										0/0040 PunNey 00007				
Sample ID	19070045-016BMS	SampType:	MS	TestCoc	le: <b>6020A_W</b>	Units: µg/L		Prep Date	e: <b>7/2/20</b> ′	19	RunNo: 80	267		
Sample ID Client ID:		SampType: Batch ID:			le: 6020A_W lo: SW6020A			Prep Date Analysis Date			RunNo: <b>80</b> : SeqNo: <b>20</b> :			
					lo: <b>SW6020A</b>		%REC	Analysis Date	e: <b>7/16/2</b> 0				Qual	
Client ID:			30703	TestN	lo: <b>SW6020A</b>			Analysis Date	e: <b>7/16/2</b> 0	019	SeqNo: 20	11752	Qual	
Client ID: Analyte			<b>30703</b> Result	TestN PQL	lo: <b>SW6020A</b> SPK value	SPK Ref Val	%REC	Analysis Date	e: <b>7/16/2</b> 0	019	SeqNo: 20	11752	Qual	
Client ID: Analyte Antimony Thallium		Batch ID:	30703 Result 455 482	TestN PQL 5.00 5.00	SPK value	SPK Ref Val	%REC 90.9	Analysis Date  LowLimit  75 75	e: <b>7/16/20</b> HighLimit 125	RPD Ref Val	SeqNo: 20	11752 RPDLimit	Qual	
Client ID: Analyte Antimony Thallium	FB 1 19070045-016BMSD	Batch ID:	30703 Result 455 482	PQL 5.00 5.00	SPK value 500.0 500.0	SPK Ref Val  0 0 Units: µg/L	%REC 90.9 96.3	Analysis Date  LowLimit  75 75	e: <b>7/16/20</b> HighLimit 125 125 e: <b>7/2/20</b>	RPD Ref Val	SeqNo: <b>20</b> %RPD	RPDLimit	Qual	
Client ID: Analyte Antimony Thallium Sample ID	FB 1 19070045-016BMSD	Batch ID:  SampType:	30703 Result 455 482	PQL 5.00 5.00	SPK value 500.0 500.0 de: 6020A_W lo: SW6020A	SPK Ref Val  0 0 Units: µg/L	%REC 90.9 96.3	Analysis Date  LowLimit  75  75  Prep Date  Analysis Date	e: 7/16/20 HighLimit 125 125 e: 7/2/20 e: 7/16/20	RPD Ref Val	SeqNo: 20 %RPD	RPDLimit	Qual	
Client ID: Analyte Antimony Thallium Sample ID Client ID:	FB 1 19070045-016BMSD	Batch ID:  SampType:	30703  Result  455 482  MSD 30703	TestN PQL 5.00 5.00 TestCoo	SPK value 500.0 500.0 de: 6020A_W lo: SW6020A	SPK Ref Val  0 0 Units: µg/L	%REC 90.9 96.3	Analysis Date  LowLimit  75  75  Prep Date  Analysis Date	e: 7/16/20 HighLimit 125 125 e: 7/2/20 e: 7/16/20	019 RPD Ref Val	SeqNo: 20 %RPD  RunNo: 80 SeqNo: 20	11752 RPDLimit 267 11753		
Client ID: Analyte Antimony Thallium  Sample ID Client ID: Analyte	FB 1 19070045-016BMSD	Batch ID:  SampType:	30703  Result  455 482  MSD 30703  Result	TestN PQL 5.00 5.00 TestCoo TestN PQL	SPK value  500.0 500.0 de: 6020A_W do: SW6020A  SPK value	SPK Ref Val  0 0 Units: µg/L  SPK Ref Val	%REC 90.9 96.3 %REC	Analysis Date  LowLimit  75  75  Prep Date  Analysis Date  LowLimit	e: 7/16/20  HighLimit  125 125  e: 7/2/20  e: 7/16/20  HighLimit	RPD Ref Val	SeqNo: 20 %RPD RunNo: 80 SeqNo: 20 %RPD	11752 RPDLimit 267 11753 RPDLimit		

Reporting Limit

Analyte not detected

Spike Recovery outside accepted recovery limits

Sample container temperature is out of limit as sp



Element Materials Technology Lafayette 2417 W. Pinhook Road Lafayette, LA 70508-3344 TEL: (337) 235-0483 FAX: (337) 233-6540

## **QC SUMMARY REPORT**

WO#:

SeqNo: 2011753

19070045

25-Jul-19

**Client:** Pivotal Engineering LLC

Batch ID: 30703

Client ID: FB 1

Entergy: CCR Assessment Monitoring 30703 **Project: BatchID:** 

TestNo: SW6020A

Website: www.element.com

RunNo: 80267 Sample ID 19070045-016BMSD SampType: MSD TestCode: 6020A\_W Units: µg/L Prep Date: 7/2/2019

Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual Analyte

Analysis Date: 7/16/2019

Qualifiers:

Holding times for preparation or analysis exceeded

RPD outside accepted recovery limits

Sample detection limit

Matrix Interference

Reporting Limit

Analyte not detected

Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

Sample container temperature is out of limit as sp



## **QC SUMMARY REPORT**

WO#:

19070045

25-Jul-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring BatchID: 30704

Sample ID MB-30704	SampType: MBLK	TestCode: 6010_W Units: mg/L			Prep Date: <b>7/2/2019</b>				RunNo: 80		
Client ID: PBW	Batch ID: 30704	Test	No: <b>SW6010B</b>			Analysis Da	ite: 7/3/20	SeqNo: <b>20</b> 6			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	< 0.0100	0.0100									
Barium	< 0.0100	0.0100									
Beryllium	< 0.00100	0.00100									
Cadmium	< 0.00500	0.00500									
Chromium	< 0.0100	0.0100									
Cobalt	< 0.0100	0.0100									
Lead	< 0.0100	0.0100									
Molybdenum	< 0.0100	0.0100									
Selenium	< 0.0200	0.0200									

Sample ID LCS-30704	SampType: LCS	TestCo	de: <b>6010_W</b>	Prep Date: 7/2/2019				RunNo: <b>80050</b>				
Client ID: LCSW	Batch ID: 30704	Test	No: SW6010B	Analysis Date: <b>7/3/2019</b>				9	SeqNo: <b>2005077</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Arsenic	0.504	0.0100	0.5000	0	101	80	120					
Barium	0.500	0.0100	0.5000	0	99.9	80	120					
Beryllium	0.503	0.00100	0.5000	0	101	80	120					
Cadmium	0.504	0.00500	0.5000	0	101	80	120					
Chromium	0.502	0.0100	0.5000	0	100	80	120					
Cobalt	0.504	0.0100	0.5000	0	101	80	120					
Lead	0.505	0.0100	0.5000	0	101	80	120					
Molybdenum	0.510	0.0100	0.5000	0	102	80	120					
Selenium	0.511	0.0200	0.5000	0	102	80	120					

Qualifiers: H Holding times for preparation or analysis exceeded

RPD outside accepted recovery limits

SDL Sample detection limit

M Matrix Interference

RL Reporting Limit

U Analyte not detected

Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as sr



## **QC SUMMARY REPORT**

WO#: 19070045

25-Jul-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring BatchID: 30704

Sample ID LCSD-30704	SampType: LCSD	TestCod	de: <b>6010_W</b>	Units: mg/L		Prep Da	te: <b>7/2/201</b>	9	RunNo: 800		
Client ID: LCSS02	Batch ID: 30704	Test	No: <b>SW6010B</b>			Analysis Da	te: <b>7/3/201</b>	9	SeqNo: <b>200</b>		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.501	0.0100	0.5000	0	100	80	120	0.5044	0.656	20	
Barium	0.498	0.0100	0.5000	0	99.7	80	120	0.4995	0.241	20	
Beryllium	0.502	0.00100	0.5000	0	100	80	120	0.5033	0.239	20	
Cadmium	0.505	0.00500	0.5000	0	101	80	120	0.5037	0.317	20	
Chromium	0.500	0.0100	0.5000	0	100	80	120	0.5018	0.299	20	
Cobalt	0.506	0.0100	0.5000	0	101	80	120	0.5042	0.356	20	
Lead	0.505	0.0100	0.5000	0	101	80	120	0.5052	0.0990	20	
Molybdenum	0.510	0.0100	0.5000	0	102	80	120	0.5101	0.118	20	
Selenium	0.502	0.0200	0.5000	0	100	80	120	0.5108	1.76	20	

Sample ID 19070045-004BMS	SampType: MS	TestCod	de: <b>6010_W</b>	Units: mg/L	•			9	RunNo: 80	050	
Client ID: CCR-4	Batch ID: 30704	TestN	lo: <b>SW6010B</b>			Analysis Dat	te: <b>7/3/201</b>	9	SeqNo: 200	05083	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.496	0.0100	0.5000	0.009800	97.3	75	125				
Barium	0.576	0.0100	0.5000	0.1002	95.1	75	125				
Beryllium	0.471	0.00100	0.5000	0	94.1	75	125				
Cadmium	0.461	0.00500	0.5000	0.0008000	92.1	75	125				
Chromium	0.466	0.0100	0.5000	0	93.1	75	125				
Cobalt	0.461	0.0100	0.5000	0	92.2	75	125				
Lead	0.466	0.0100	0.5000	0	93.1	75	125				
Molybdenum	0.470	0.0100	0.5000	0.005500	92.8	75	125				
Selenium	0.486	0.0200	0.5000	0.02170	92.9	75	125				

Qualifiers: H Holding times for preparation or analysis exceeded

R RPD outside accepted recovery limits

SDL Sample detection limit

M Matrix Interference

RL Reporting Limit

U Analyte not detected

D Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as sr



## **QC SUMMARY REPORT**

30704

WO#:

19070045

25-Jul-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring BatchID:

Sample ID 19070045-004BMSD	SampType: MSD	TestCo	de: <b>6010_W</b>	Units: mg/L	Prep Date: <b>7/2/2019</b>				RunNo: 800		
Client ID: CCR-4	Batch ID: 30704	Test	No: <b>SW6010B</b>		Analysis Date: 7/3/2019				SeqNo: <b>20</b> 0	05084	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.471	0.0100	0.5000	0.009800	92.2	75	125	0.4961	5.21	20	
Barium	0.566	0.0100	0.5000	0.1002	93.2	75	125	0.5758	1.70	20	
Beryllium	0.462	0.00100	0.5000	0	92.5	75	125	0.4707	1.76	20	
Cadmium	0.451	0.00500	0.5000	0.0008000	90.0	75	125	0.4613	2.30	20	
Chromium	0.457	0.0100	0.5000	0	91.4	75	125	0.4657	1.93	20	
Cobalt	0.450	0.0100	0.5000	0	90.0	75	125	0.4612	2.44	20	
Lead	0.457	0.0100	0.5000	0	91.4	75	125	0.4656	1.84	20	
Molybdenum	0.460	0.0100	0.5000	0.005500	90.9	75	125	0.4695	2.00	20	
Selenium	0.468	0.0200	0.5000	0.02170	89.3	75	125	0.4864	3.79	20	

Sample ID 19070045-016BMS	SampType: MS	TestCod	de: <b>6010_W</b>	Units: mg/L		Prep Dat	te: <b>7/2/201</b>	9	RunNo: <b>800</b>	)50	
Client ID: FB 1	Batch ID: 30704	TestN	lo: <b>SW6010B</b>		Analysis Date: <b>7/3/2019</b>				SeqNo: <b>200</b>	5101	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.464	0.0100	0.5000	0	92.8	75	125				
Barium	0.467	0.0100	0.5000	0	93.4	75	125				
Beryllium	0.467	0.00100	0.5000	0	93.3	75	125				
Cadmium	0.458	0.00500	0.5000	0	91.7	75	125				
Chromium	0.465	0.0100	0.5000	0	93.1	75	125				
Cobalt	0.466	0.0100	0.5000	0	93.2	75	125				
Lead	0.470	0.0100	0.5000	0	94.1	75	125				
Molybdenum	0.472	0.0100	0.5000	0.004000	93.6	75	125				
Selenium	0.484	0.0200	0.5000	0.01090	94.5	75	125				

Qualifiers: H Holding times for preparation or analysis exceeded

RPD outside accepted recovery limits

SDL Sample detection limit

M Matrix Interference

RL Reporting Limit

U Analyte not detected

Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as sr



## **QC SUMMARY REPORT**

WO#:

19070045

25-Jul-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring BatchID: 30704

Sample ID 19070045-016BMSD	SampType: MSD	TestCode: 6010_W Units: mg/L			Prep Date: 7/2/2019				RunNo: 800		
Client ID: FB 1	Batch ID: 30704	TestN	No: <b>SW6010B</b>		Analysis Date: 7/3/2019			SeqNo: <b>20</b> 0	05102		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.504	0.0100	0.5000	0	101	75	125	0.4642	8.20	20	
Barium	0.484	0.0100	0.5000	0	96.8	75	125	0.4672	3.55	20	
Beryllium	0.482	0.00100	0.5000	0	96.3	75	125	0.4666	3.14	20	
Cadmium	0.471	0.00500	0.5000	0	94.1	75	125	0.4584	2.63	20	
Chromium	0.481	0.0100	0.5000	0	96.2	75	125	0.4654	3.30	20	
Cobalt	0.479	0.0100	0.5000	0	95.8	75	125	0.4662	2.71	20	
Lead	0.480	0.0100	0.5000	0	96.0	75	125	0.4704	2.04	20	
Molybdenum	0.485	0.0100	0.5000	0.004000	96.2	75	125	0.4718	2.76	20	
Selenium	0.481	0.0200	0.5000	0.01090	94.0	75	125	0.4835	0.539	20	

RPD outside accepted recovery limits

U Analyte not detected

Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as sr



### **QC SUMMARY REPORT**

WO#:

19070045

25-Jul-19

Client: Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring BatchID: 30725

			ornig	BatchiD: 30725						
Sample ID	MB-30725	SampType: MBLK	TestCode: HG_W_7470 Units: mg/L	Prep Date: <b>7/3/2019</b> RunNo: <b>79929</b>						
Client ID:	PBW	Batch ID: 30725	TestNo: SW7470A	Analysis Date: <b>7/3/2019</b> SeqNo: <b>2001915</b>						
Analyte		Result	PQL SPK value SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit	Qual					
Mercury		< 0.000200	0.000200							
Sample ID	LCS-30725	SampType: LCS	TestCode: HG_W_7470 Units: mg/L	Prep Date: 7/3/2019 RunNo: 79929						
Client ID:	LCSW	Batch ID: 30725	TestNo: SW7470A	Analysis Date: <b>7/3/2019</b> SeqNo: <b>2001916</b>						
Analyte		Result	PQL SPK value SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit	Qual					
Mercury		0.0111	0.000200 0.01000 0	111 80 120						
Sample ID	LCSD-30725	SampType: LCSD	TestCode: HG_W_7470 Units: mg/L	Prep Date: <b>7/3/2019</b> RunNo: <b>79929</b>						
Sample ID Client ID:		SampType: LCSD Batch ID: 30725	TestCode: HG_W_7470 Units: mg/L TestNo: SW7470A	Prep Date: <b>7/3/2019</b> RunNo: <b>79929</b> Analysis Date: <b>7/3/2019</b> SeqNo: <b>2001917</b>						
			= =	·	Qual					
Client ID:		Batch ID: <b>30725</b>	TestNo: <b>SW7470A</b>	Analysis Date: <b>7/3/2019</b> SeqNo: <b>2001917</b>	Qual					
Client ID: Analyte Mercury		Batch ID: 30725	TestNo: <b>SW7470A</b> PQL SPK value SPK Ref Val	Analysis Date: <b>7/3/2019</b> SeqNo: <b>2001917</b> %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit	Qual					
Client ID: Analyte Mercury	LCSS02 19070045-004BMS	Batch ID: <b>30725</b> Result  0.0109	TestNo: <b>SW7470A</b> PQL SPK value SPK Ref Val  0.000200 0.01000 0	Analysis Date: <b>7/3/2019</b> SeqNo: <b>2001917</b> **REC LowLimit HighLimit RPD Ref Val	Qual					
Client ID: Analyte Mercury Sample ID	LCSS02 19070045-004BMS	Batch ID: 30725  Result 0.0109  SampType: MS	TestNo: <b>SW7470A</b> PQL SPK value SPK Ref Val  0.000200 0.01000 0  TestCode: <b>HG_W_7470</b> Units: <b>mg/L</b>	Analysis Date:       7/3/2019       SeqNo: 2001917         %REC       LowLimit       HighLimit       RPD Ref Val       %RPD       RPDLimit         109       80       120       0.01111       2.33       20         Prep Date:       7/3/2019       RunNo: 79929	Qual					

Qualifiers: H Holding times for preparation or analysis exceeded

R RPD outside accepted recovery limits

SDL Sample detection limit

Matrix Interference

RL Reporting Limit

U Analyte not detected

Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as sr



### **QC SUMMARY REPORT**

WO#: 19070045

25-Jul-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring BatchID: 30725

Sample ID	19070045-004BMSD	SampType:	MSD	TestCod	de: <b>HG_W_74</b>	70 Units: mg/L		Prep Da	te: <b>7/3/201</b>	9	RunNo: <b>79</b> 9	929	
Client ID:	CCR-4	Batch ID:	30725	TestN	lo: <b>SW7470A</b>			Analysis Da	te: <b>7/3/201</b>	9	SeqNo: 200	1922	
Analyte			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury			0.0106	0.000200	0.01000	0	106	75	125	0.01069	0.614	20	

U Analyte not detected



### **QC SUMMARY REPORT**

D00026

WO#:

19070045

25-Jul-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring BatchID:

Project:	Entergy: (	CCR Assessment Monitor	ring					В	SatchID: R	180036		
Sample ID	MBLK	SampType: MBLK	TestCode:	300.0	Units: mg/L		Prep Dat	e:		RunNo: 800	036	
Client ID:	PBW	Batch ID: <b>R80036</b>	TestNo:	E 300.0			Analysis Dat	e: <b>7/8/201</b>	9	SeqNo: <b>20</b> 0	04354	
Analyte		Result	PQL S	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		< 0.0500	0.0500									
Sample ID	LCS	SampType: <b>LCS</b>	TestCode:	300.0	Units: mg/L		Prep Dat	e:		RunNo: 800	036	
Client ID:	LCSW	Batch ID: <b>R80036</b>	TestNo:	E 300.0			Analysis Dat	e: <b>7/8/201</b>	9	SeqNo: <b>20</b> 0	04355	
Analyte		Result	PQL S	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		2.02	0.0500	2.000	0	101	90	110				
Sample ID	LCSD	SampType: <b>LCSD</b>	TestCode:	300.0	Units: mg/L		Prep Dat	e:		RunNo: 800	036	
Client ID:	LCSS02	Batch ID: R80036	TestNo:	E 300.0			Analysis Dat	e: <b>7/8/20</b> 1	9	SeqNo: 200	04356	
		Balcii ID. <b>R80036</b>	1631110.	L 300.0			Allalysis Dal		-	00q110. <b>20</b> 1	0-1000	
Analyte		Result			SPK Ref Val	%REC	•		RPD Ref Val	%RPD	RPDLimit	Qual
Analyte Fluoride					SPK Ref Val		•			,		Qual
Fluoride	19070045-016AMS	Result 2.03	PQL S	SPK value 2.000		%REC	LowLimit	HighLimit 110	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		Result 2.03	PQL S 0.0500 TestCode:	SPK value 2.000	0	%REC 102	LowLimit 90	HighLimit 110 e:	RPD Ref Val 2.018	%RPD 0.747	RPDLimit 15	Qual
Fluoride Sample ID		Result 2.03 SampType: MS	PQL S 0.0500 TestCode: TestNo:	2.000 300.0 E 300.0	0	%REC 102	LowLimit 90  Prep Dat Analysis Dat	HighLimit 110 e: e: <b>7/8/201</b>	RPD Ref Val 2.018	%RPD 0.747 RunNo: <b>80</b> 0	RPDLimit 15	Qual

Qualifiers: H Holding times for preparation or analysis exceeded

RPD outside accepted recovery limits

SDL Sample detection limit

M Matrix Interference

RL Reporting Limit

U Analyte not detected

Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as sr



### **QC SUMMARY REPORT**

WO#:

19070045

25-Jul-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring BatchID: R80036

Sample ID	19070045-016AMSD	SampType: MSD	TestCo	de: <b>300.0</b>	Units: mg/L		Prep Da	te:		RunNo: 800	)36	
Client ID:	FB 1	Batch ID: R8003	36 Test	No: <b>E 300.0</b>			Analysis Da	te: <b>7/8/20</b> 1	19	SeqNo: <b>200</b>	04382	
Analyte		Resu	lt PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		1.0	3 0.0500	1.000	0	108	80	120	0.9593	11.7	15	



### **QC SUMMARY REPORT**

WO#:

19070045

25-Jul-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring BatchID: R80491

Project:	Enter	gy: CCR Assessment Monito	oring					В	BatchID: F	R80491		
Sample ID	MBLK	SampType: MBLK	TestCode	e: <b>300.0</b>	Units: mg/L		Prep Da	te:		RunNo: 80	491	
Client ID:	PBW	Batch ID: <b>R80491</b>	TestNo	e: <b>E 300.0</b>			Analysis Da	te: <b>7/23/20</b>	)19	SeqNo: 20	17917	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		< 0.0500	0.0500									
Sample ID	LCS	SampType: <b>LCS</b>	TestCode	e: <b>300.0</b>	Units: mg/L		Prep Da	te:		RunNo: 80	491	
Client ID:	LCSW	Batch ID: R80491	TestNo	o: <b>E 300.0</b>			Analysis Da	te: <b>7/23/20</b>	)19	SeqNo: 20	17918	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		1.98	0.0500	2.000	0	99.1	90	110				
Sample ID	LCSD	SampType: <b>LCSD</b>	TestCode	e: <b>300.0</b>	Units: mg/L		Prep Da	te:		RunNo: 80	491	
Client ID:	LCSS02	Batch ID: R80491	TestNo	E 300.0			Analysis Da	te: <b>7/23/2</b> 0	)19	SeqNo: 20	17919	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		2.00	0.0500	2.000	0	99.9	90	110	1.982	0.756	15	
Sample ID	19070775-003	AMS SampType: MS	TestCode	e: <b>300.0</b>	Units: mg/L		Prep Da	te:		RunNo: 80	491	
Client ID:	ZZZZZZ	Batch ID: R80491	TestNo	o: <b>E 300.0</b>			Analysis Da	te: <b>7/23/20</b>	)19	SeqNo: 20	17923	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		47.1	2.50	50.00	51.85	-9.47	80	120				S

Qualifiers: H Holding times for preparation or analysis exceeded

RPD outside accepted recovery limits

SDL Sample detection limit

Matrix Interference

RL Reporting Limit

U Analyte not detected

Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as sr



### **QC SUMMARY REPORT**

WO#: 19070045

25-Jul-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring BatchID: R80491

Sample ID	19070775-003AMSD	SampType:	MSD	TestCod	le: <b>300.0</b>	Units: mg/L		Prep Da	te:		RunNo: 804	191	
Client ID:	ZZZZZZ	Batch ID:	R80491	TestN	lo: <b>E 300.0</b>			Analysis Da	te: <b>7/23/20</b>	)19	SeqNo: <b>20</b> 1	17924	
Analyte			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride			46.4	2.50	50.00	51.85	-11.0	80	120	47.11	1.58	15	S

#### NOTES:

S - Spike recovery indicates matrix interference. The method is in control as indicated by the Lab Control Sample.

Sample ID	19070045-014AMS	SampType: MS	TestCod	de: <b>300.0</b>	Units: mg/L		Prep Da	te:		RunNo: 804	491	
Client ID:	CCR-14	Batch ID: R80491	TestN	lo: <b>E 300.0</b>			Analysis Da	te: <b>7/24/20</b>	19	SeqNo: 20	17947	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		1.13	0.0500	1.000	0.1542	97.2	80	120				

Sample ID	19070045-014AMSD	SampType:	MSD	TestCod	le: <b>300.0</b>	Units: mg/L		Prep Da	te:		RunNo: 804	191	
Client ID:	CCR-14	Batch ID:	R80491	TestN	lo: <b>E 300.0</b>			Analysis Da	te: <b>7/24/20</b>	19	SeqNo: <b>20</b> 1	17948	
Analyte			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride			1.13	0.0500	1.000	0.1542	97.7	80	120	1.126	0.456	15	

Qualifiers:

Holding times for preparation or analysis exceeded

RPD outside accepted recovery limits

SDL Sample detection limit

Matrix Interference

RL Reporting Limit

U Analyte not detected

Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as sr



Element Materials Technology Lafayette 2417 W. Pinhook Road Lafayette, LA 70508-3344

TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com

### Sample Log-In Check List

Client Name: **PIVOTAL ENGINEERIN** Work Order Number: 19070045 RcptNo: 1 Narmod Shlodeaux Narmod Shlodeaux Cithis Duplining 7/1/2019 12:25:00 PM Logged by: **Tammy Thibodeaux** Completed By: Tammy Thibodeaux 7/2/2019 12:21:26 PM Reviewed By: **Caitlin Duplantis** 7/16/2019 8:37:43 AM **Chain of Custody** Yes  $\square$ No 🗸 Not Present 1. Is Chain of Custody complete? 2. How was the sample delivered? Element Log In Yes 🗸 No  $\square$ NA 🗌 3 Coolers are present? Yes 🗸 No 🗌 4 Shipping container/cooler in good condition? Custody seals intact on shipping container/cooler? Yes Not Present Signed By: Seal Date: Yes 🗸 No 🗌 NA 🗌 5. Was an attempt made to cool the samples? Yes 🗸 NA  $\square$ 6. Were all samples received at a temperature of >0° C to 6.0°C No 7. Sample(s) in proper container(s)? 8. Sufficient sample volume for indicated test(s)? 9 Are samples (except VOA and ONG) properly preserved? Yes No L No 🗸 NA  $\square$ 10. Was preservative added to bottles? Yes No  $\square$ No VOA Vials 11. Is the headspace in the VOA vials less than 1/4 inch or 6 mm? Yes 12. Were any sample containers received broken? No 🗸 No  $\square$ 13. Does paperwork match bottle labels? Yes (Note discrepancies on chain of custody) Yes 🗹 14 Are matrices correctly identified on Chain of Custody? 15. Is it clear what analyses were requested? Yes 🗸 No 🗀 16. Were all holding times able to be met? (If no, notify customer for authorization.) Special Handling (if applicable) Yes No 🗌 NA 🗸 17. Was client notified of all discrepancies with this order? Date [ Person Notified: eMail Phone Fax In Person By Whom: Via: Regarding: Client Instructions:

18. Additional remarks:

No sampler's signature by client.

#### **Cooler Information**

Cooler No	Temp ⁰C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.3	Good	Not Present			



# **ANALYTICAL RESULTS**

#### **PERFORMED BY**

GCAL, LLC

7979 Innovation Park Dr. Baton Rouge, LA 70820 (225) 769-4900

**Report Date** 07/05/2019

GCAL Report 219070320

**Project** 19070045

**Deliver To** 

Annie Reedy

**Element Materials Technology** 

2417 W Pinhook Rd Lafayette, LA 70508

800-737-2378

**Additional Recipients** 

Caitlin Duplantis, Element Materials

Technology

Cristina Thibeaux, Element Materials

Technology

Rhonda David, Element Materials Technology Buffy Hudson, Element Materials Technology







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**Project ID:** 19070045 **Report Date:** 07/05/2019

### Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with GCAL's Standard Operating Procedures.

#### Common Abbreviations that may be Utilized in this Report

ND Indicates the result was Not Detected at the specified reporting limit

NO Indicates the sample did not ignite when preliminary test performed for EPA Method 1030

**DO** Indicates the result was Diluted Out

MI Indicates the result was subject to Matrix Interference
TNTC Indicates the result was Too Numerous To Count
SUBC Indicates the analysis was Sub-Contracted
FLD Indicates the analysis was performed in the Field

DL Detection Limit
LOD Limit of Detection
LOQ Limit of Quantitation

**RE** Re-analysis

**CF** HPLC or GC Confirmation

00:01 Reported as a time equivalent to 12:00 AM

#### Reporting Flags that may be Utilized in this Report

**J or I** Indicates the result is between the MDL and LOQ

J DOD flag on analyte in the parent sample for MS/MSD outside acceptance criteria

U Indicates the compound was analyzed for but not detected

B or V Indicates the analyte was detected in the associated Method Blank Indicates a non-compliant QC Result (See Q Flag Application Report)

\* Indicates a non-compliant or not applicable QC recovery or RPD – see narrative

E Organics - The result is estimated because it exceeded the instrument calibration range

Metals - % diference for the serial dilution is > 10%
 Reporting Limits adjusted to meet risk-based limit.

P RPD between primary and confirmation result is greater than 40

**DL** Diluted analysis – when appended to Client Sample ID

Sample receipt at GCAL is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of GCAL. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with The NELAC Institute (TNI) Standard 2009 and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.

Authorized Signature GCAL Report 219070320

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GCAL Report#: 219070320 Page 2 of 15



**Project ID:** 19070045 **Report Date:** 07/05/2019

# Certifications

Certification	Certification Number
DOD ELAP	74960
Alabama	01955
Arkansas	88-0655
Colorado	01955
Delaware	01955
Florida	E87854
Georgia	01955
Hawaii	01955
Idaho	01955
Illinois	200048
Indiana	01955
Kansas	E-10354
Kentucky	95
Louisiana	01955
Maryland	01955
Massachusetts	01955
Michigan	01955
Mississippi	01955
Missouri	01955
Montana	N/A
Nebraska	01955
New Mexico	01955
North Carolina	618
North Dakota	R-195
Oklahoma	9403
South Carolina	73006001
South Dakota	01955
Tennessee	01955
Texas	T104704178
Vermont	01955
Virginia	460215
Washington	C929
USDA Soil Permit	P330-16-00234

GCAL Report#: 219070320 Page 3 of 15



**Project ID:** 19070045 **Report Date:** 07/05/2019

### Case Narrative

Client: Element Materials Technology Report: 219070320

Gulf Coast Analytical Laboratories received and analyzed the sample(s) listed on the Report Sample Summary page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

No anomalies were found for the analyzed sample(s).

GCAL Report#: 219070320 Page 4 of 15



**Project ID:** 19070045 **Report Date:** 07/05/2019

# Sample Summary

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21907032001	CCR-1	Water	06/29/2019 17:40	07/03/2019 12:13
21907032002	CCR-2	Water	06/29/2019 16:20	07/03/2019 12:13
21907032003	CCR-3	Water	06/29/2019 15:05	07/03/2019 12:13
21907032004	CCR-4	Water	06/28/2019 15:30	07/03/2019 12:13
21907032005	CCR-4 MS	Water	06/28/2019 15:30	07/03/2019 12:13
21907032006	CCR-4 MSD	Water	06/28/2019 15:30	07/03/2019 12:13
21907032007	CCR-5	Water	06/28/2019 10:25	07/03/2019 12:13
21907032008	CCR-6	Water	06/28/2019 11:35	07/03/2019 12:13
21907032009	CCR-7	Water	06/28/2019 12:50	07/03/2019 12:13
21907032010	CCR-8	Water	06/28/2019 14:00	07/03/2019 12:13
21907032011	CCR-9	Water	06/30/2019 12:20	07/03/2019 12:13
21907032012	CCR-10	Water	06/30/2019 13:30	07/03/2019 12:13
21907032013	CCR-11	Water	06/30/2019 14:40	07/03/2019 12:13
21907032014	CCR-12	Water	06/30/2019 08:40	07/03/2019 12:13
21907032015	CCR-13	Water	06/30/2019 09:50	07/03/2019 12:13
21907032016	CCR-14	Water	06/30/2019 11:00	07/03/2019 12:13
21907032017	DUPLICATE	Water	06/28/2019 00:01	07/03/2019 12:13
21907032018	FIELD BLANK	Water	06/29/2019 17:00	07/03/2019 12:13

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**Project ID:** 19070045 **Report Date:** 07/05/2019

### Sample Results

CCR-1 Collect Date 06/29/2019 17:40 GCAL ID 21907032001

Receive Date 07/03/2019 12:13 Matrix Water

#### **EPA 6020B**

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch
07/03/2019 14:20	663152	EPA 3010A	1	07/05/2019 12:16	LWZ	663224
CAS#	Parameter			Result	LOQ	Units

7439-93-2 Lithium 22.1 5.00 ug/L

 CCR-2
 Collect Date
 06/29/2019 16:20
 GCAL ID
 21907032002

 Receive Date
 07/03/2019 12:13
 Matrix
 Water

#### **EPA 6020B**

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch
07/03/2019 14:20	663152	EPA 3010A	1	07/05/2019 12:20	LWZ	663224
CAS#	Parameter			Result	LOQ	Units
7439-93-2	Lithium			22.9	5.00	ug/L

CCR-3

Collect Date 06/29/2019 15:05

GCAL ID 21907032003

Receive Date 07/03/2019 12:13

Matrix Water

#### **EPA 6020B**

Prep Date 07/03/2019 14:20	Prep Batch 663152	Prep Method EPA 3010A	Dilution 1	<b>Analysis Date</b> 07/05/2019 12:23	<b>By</b> LWZ	Analytical Batch 663224
CAS#	Parameter			Result	LOQ	Units
7439-93-2	Lithium			26.9	5.00	ug/L

 CCR-4
 Collect Date
 06/28/2019 15:30
 GCAL ID
 21907032004

 Receive Date
 07/03/2019 12:13
 Matrix
 Water

#### **EPA 6020B**

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch	
07/03/2019 14:20	663152	EPA 3010A	1	07/05/2019 12:27	LWZ	663224	
CAS#	Parameter			Decult	LOQ	Units	
CAS#	Parameter			Result	LUQ	Ullits	

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GCAL Report#: 219070320 Page 6 of 15



**Project ID:** 19070045 **Report Date:** 07/05/2019

# Sample Results

CCR-4 MS Collect Date 06/28/2019 15:30 GCAL ID 21907032005

Receive Date 07/03/2019 12:13 Matrix Water

#### **EPA 6020B**

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch	
07/03/2019 14:20	663152	EPA 3010A	1	07/05/2019 12:31	LWZ	663224	
CAC#	Danamatan			Decult	1.00	Haita	

CAS# Parameter Result LOQ Units 7439-93-2 Lithium 269 5.00 ug/L

 CCR-4 MSD
 Collect Date
 06/28/2019 15:30
 GCAL ID
 21907032006

 Receive Date
 07/03/2019 12:13
 Matrix
 Water

#### **EPA 6020B**

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	<b>Analytical Batch</b>
07/03/2019 14:20	663152	EPA 3010A	1	07/05/2019 12:34	LWZ	663224
CAS#	Parameter			Result	LOQ	Units
7439-93-2	Lithium			270	5.00	ug/L

 CCR-5
 Collect Date
 06/28/2019 10:25
 GCAL ID
 21907032007

 Receive Date
 07/03/2019 12:13
 Matrix
 Water

#### **EPA 6020B**

GCAL Report#: 219070320

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch	
07/03/2019 14:20	663152	EPA 3010A	1	07/05/2019 12:45	LWZ	663224	
CAS#	Parameter			Result	LOQ	Units	
7439-93-2	Lithium			21.8	5.00	ug/L	

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**Project ID:** 19070045 **Report Date:** 07/05/2019

# Sample Results

CCR-6 Collect Date 06/28/2019 11:35 GCAL ID 21907032008

Receive Date 07/03/2019 12:13 Matrix Water

#### **EPA 6020B**

Prep Date 07/03/2019 14:20	Prep Batch 663152	Prep Method EPA 3010A	Dilution 1	<b>Analysis Date</b> 07/05/2019 12:48	<b>By</b> LWZ	Analytical Batch 663224	
CAS#	Parameter			Result	LOQ	Units	

7439-93-2 Lithium 14.0 5.00 ug/L

CCR-7

Collect Date 06/28/2019 12:50 GCAL ID 21907032009

Receive Date 07/03/2019 12:13 Matrix Water

#### **EPA 6020B**

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch
07/03/2019 14:20	663152	EPA 3010A	1	07/05/2019 12:52	LWZ	663224
CAS#	Parameter			Result	LOQ	Units
7439-93-2	Lithium			14.6	5.00	ug/L

 CCR-8
 Collect Date
 06/28/2019 14:00
 GCAL ID
 21907032010

 Receive Date
 07/03/2019 12:13
 Matrix
 Water

#### **EPA 6020B**

GCAL Report#: 219070320

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch	
07/03/2019 14:20	663152	EPA 3010A	1	07/05/2019 12:55	LWZ	663224	
CAS#	Parameter			Result	LOQ	Units	
7439-93-2	Lithium			37.5	5.00	ug/L	

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**Project ID:** 19070045 **Report Date:** 07/05/2019

# Sample Results

#### **EPA 6020B**

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch
07/03/2019 14:20	663152	EPA 3010A	1	07/05/2019 13:06	LWZ	663224
0.10"				- ·		11.14

CAS# Parameter Result LOQ Units 7439-93-2 Lithium 22.7 5.00 ug/L

 CCR-10
 Collect Date
 06/30/2019 13:30
 GCAL ID
 21907032012

 Receive Date
 07/03/2019 12:13
 Matrix
 Water

#### **EPA 6020B**

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch	
07/03/2019 14:20	663152	EPA 3010A	1	07/05/2019 13:10	LWZ	663224	
CAS#	Parameter			Result	LOQ	Units	
7439-93-2	Lithium			27.4	5.00	ug/L	

 CCR-11
 Collect Date
 06/30/2019 14:40
 GCAL ID
 21907032013

 Receive Date
 07/03/2019 12:13
 Matrix
 Water

#### **EPA 6020B**

<b>Prep Date</b> 07/03/2019 14:20	Prep Batch 663152	Prep Method EPA 3010A	<b>Dilution</b> 1	<b>Analysis Date</b> 07/05/2019 13:13	<b>By</b> LWZ	Analytical Batch 663224
CAS#	Parameter			Result	LOQ	Units
7439-93-2	Lithium			7.71	5.00	ug/L

GCAL Report#: 219070320 Page 9 of 15



**Project ID:** 19070045 **Report Date:** 07/05/2019

# Sample Results

CCR-12 Collect Date 06/30/2019 08:40 GCAL ID 21907032014

Receive Date 07/03/2019 12:13 Matrix Water

#### **EPA 6020B**

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch
07/03/2019 14:20	663152	EPA 3010A	1	07/05/2019 13:17	LWZ	663224
0.1.0."				5 "		

CAS# Parameter Result LOQ Units 7439-93-2 Lithium 26.7 5.00 ug/L

CCR-13

Collect Date 06/30/2019 09:50

GCAL ID 21907032015

Receive Date 07/03/2019 12:13

Matrix Water

#### **EPA 6020B**

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	<b>Analytical Batch</b>
07/03/2019 14:20	663152	EPA 3010A	1	07/05/2019 13:20	LWZ	663224
CAS#	Parameter			Result	LOQ	Units
7439-93-2	Lithium			31.8	5.00	ug/L

 CCR-14
 Collect Date
 06/30/2019 11:00
 GCAL ID
 21907032016

 Receive Date
 07/03/2019 12:13
 Matrix
 Water

#### **EPA 6020B**

<b>Prep Date</b> 07/03/2019 14:20	Prep Batch 663152	Prep Method EPA 3010A	<b>Dilution</b> 1	<b>Analysis Date</b> 07/05/2019 13:24	<b>By</b> LWZ	Analytical Batch 663224	
CAS#	Parameter			Result	LOQ	Units	
7439-93-2	Lithium			16.2	5.00	ug/L	

GCAL Report#: 219070320 Page 10 of 15



**Project ID:** 19070045 **Report Date:** 07/05/2019

### Sample Results

**Collect Date** 06/28/2019 00:01 **GCAL ID** 21907032017

Receive Date 07/03/2019 12:13 Matrix Water

**EPA 6020B** 

 Prep Date
 Prep Batch
 Prep Method
 Dilution
 Analysis Date
 By
 Analytical Batch

 07/03/2019 14:20
 663152
 EPA 3010A
 1
 07/05/2019 13:27
 LWZ
 663224

CAS# Parameter Result LOQ Units 7439-93-2 Lithium 21.7 5.00 ug/L

**EPA 6020B** 

**Prep Date Prep Method Dilution Analysis Date** Ву **Analytical Batch Prep Batch** 07/03/2019 14:20 663152 **EPA 3010A** 1 07/05/2019 13:31 LWZ 663224 CAS# **Parameter** Result LOQ Units 7439-93-2 Lithium ND 5.00 ug/L

Page 43 of 49

GCAL Report#: 219070320 Page 11 of 15



**Project ID:** 19070045 **Report Date:** 07/05/2019

# Inorganics QC Summary

Analytical Batch	Client ID	MB663152		LCS663152					
663224	GCAL ID	1940640		1940641					
Prep Batch	Sample Type	MB		LCS					
663152	Prep Date	07/03/2019 14:2	20	07/03/2019 14:20					
Prep Method	07/05/2019 12:0	)9	07/05/2019 12:13						
EPA 3010A	Matrix	Water	Water						
EPA 6020B		Units	ug/L	Spike	Result	0/. D	Control		
LFA 0020B		Result LOQ		Added	Nesult	/01	Limits%R		
Lithium	7439-93-2	ND	5.00	250	256	102	80 - 120		

Analytical Batch	Client ID	CCR-4		CCR-4 M	/IS	CCR-4 MSD						
663224	GCAL ID	21907032004		2190703	2005	21907032006						
Prep Batch	Sample Type	SAMPLE		MS		MSD						
663152	Prep Date	07/03/2019 14:2	.0	07/03/20	19 14:20			07/03/2019 14:20				
Prep Method	Analysis Date	07/05/2019 12:2	.7	07/05/20	19 12:31	07/05/20	19 12:34					
EPA 3010A	Matrix	Water		Water				Water				
EDA 602	EPA 6020B Units ug/L			Spike	Result	0/ D	Control	Spike	Result	0/ D	DDD	RPD
EPA 002	UD	Result	LOQ	Added	Nesult	/0 K	Limits%R	Added	Nesult	/0 T	KPD	Limit
Lithium	7439-93-2	17.3	5.00	250	269	101	80 - 120	250	270	101	0	20

GCAL Report#: 219070320 Page 12 of 15



### CHAIN OF CUSTODY RECORD

Omega COCID 8363

Client ID: 4462 - Element Materials Technology

SDG: 219070320

PM: JLM



FAX: (337) 233-6540 Website: www.element.com

SUB CONTR.	ATOR: GCAL	COMPANY:	Gulf Coast		SPECIAL INSTRUCTIONS /	COMMENTS:		
ADDRESS:	7979 GSRI Avenu	e			ela 072090in			
CITY, STATE	Baton Rouge, LA	70820						
PHONE: (22	25) 769-4900 FAX: (22:	5) 767-5717 EMA	IL:					
ACCOUNT#								
пем #	SAMPLE ID	CLIENT SAMPLE ID	BOTILE TYPE	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	COMMENTS: Methanol Preserved Weights HOT Sample Notation, Additional Sample Description.	-
	19070045-001C	CCR-1	250HDPEHNO3	Aqueous	6/29/2019 5:40:00 PM	1		-1
1	6020_W_SUB (SW6020A)	)	-					
	19070045-002C	CCR-2	250HDPEHNO3	Aqueous	6/29/2019 4:20:00 PM	1		7-1
2	6020_W_SUB (SW6020A)	)						
	19070045-003C	CCR-3	250HDPEHNO3	Aqueous	6/29/2019 3:05:00 PM	1		13
3	6020_W_SUB (SW6020A)	)						
	19070045-004C	CCR-4	250HDPEHNO3	Aqueous	6/28/2019 3:30:00 PM	3		74,5, le
-4	6020_W_SUB (SW6020A)	)						
	19070045-005C	CCR-5	250HDPEHNO3	Aqueous	6/28/2019 10:25:00 AM	1		17
5	6020_W_SUB (SW6020A)	)						
	19070045-006C	CCR-6	250HDPEHNO3	Aqueous	6/28/2019 11:35:00 AM	1		1-8
6	6020_W_SUB (SW6020A)	)		-				
	19070045-007C	CCR-7	250HDPEHNO3	Aqueous	6/28/2019 12:50:00 PM	1		79
7	6020_W_SUB (SW6020A)							
	19070045-008C	CCR-8	250HDPEHNO3	Aqueous	6/28/2019 2:00:00 PM	1		710
8	6020_W_SUB (SW6020A)							
	19070045-009C	CCR-9	250HDPEHNO3	Agueous	6/30/2019 12:20:00 PM	1		-11
9	6020_W_SUB (SW6020A)	)						
Relinquished I	By Grung of Shockeaux Date ?	-2-19 Time: 1530	Received By	ABOUN Date:	2-19 Time; 572		REPORT TRANSMITTAL DESIRED:	$\neg$
Relinquished I		RB Time:	Received By:	Date:	Time:	☐ HARDCO	PY (extra cost)	
Relinquistred I	By Devid Day-	3-19 Times 13	Received By	Date:	3-14 Timo213 370	Temp of sam	FOR LAB USE ONLY  Toples 2 4 °C Attempt to Cool? 1 CL	7
	TAT: Standard	RUSH	Way BR (1)	2nd BD	3rd BD	Comments:		
			Note: RUSH r	equests will incur surcharge:	s!	-		
						D	2999 45 of 40	



### CHAIN OF CUSTODY RECORD

Omega COCID 8363

Client ID: 4462 - Element Materials Technology

SDG: 219070320

PM: JLM

PAG



FAX: (337) 233-6540 Website: www.element.com

SUB CONTR.	ATOR: GCAL	COMPANY:	Gulf Coast		SPECIAL INSTRUCTIONS /	COMMENTS:		
ADDRESS:	7979 GSRI Avenue				ela 072090in			
спу, ѕтате	ZIP: Baton Rouge, LA 70	820						
PHONE: (22	25) 769-4900 FAX: (225)	767-5717 EMA	L:					
ACCOUNT#:								
пем #	SAMPLE ID	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	COMMENTS: Methanol Preserved Weights HOT Sample Notation, Additional Sample Description.	
10	19070045-010C	CR-10	250HDPEHNO3	Aqueous	6/30/2019 1:30:00 PM	1		
10	6020_W_SUB (SW6020A)			•				
	19070045-011C	CCR-11	250HDPEHNO3	Aqueous	6/30/2019 2:40:00 PM	1		-
11	6020_W_SUB (SW6020A)		-	-				
42	19070045-012C	CCR-12	250HDPEHNO3	Aqueous	6/30/2019 8:40:00 AM	1		-
12	6020_W_SUB (SW6020A)			•				
42	19070045-013C	CR-13	250HDPEHNO3	Aqueous	6/30/2019 9:50:00 AM	1		-
13	6020_W_SUB (SW6020A)							
	19070045-014C	CR-14	250HDPEHNO3	Aqueous	6/30/2019 11:00:00 AM	1	26.0	
14	6020_W_SUB (SW6020A)							
	19070045-015C	DUPLICATE	250HDPEHNO3	Aqueous	6/28/2019	1		-
15	6020_W_SUB (SW6020A)							
		TELD BLANK	250HDPEHNO3	Aqueous	6/29/2019 5:00:00 PM	1		-

Relinquished By Chang of Ild	Date: 1 Time: 3	Received By: Les Salen	Date - 2-	19 Time: 1530	
Relinquished By:	Date: 7-2 Time:	Received By:	Date:	Time:	☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE
Relinquished By: TAT:	Standard   RU	Received By  SH  Next BD   2nd Bl  Note: RUSH requests will in		F Time 213	37CPM EBY FOR LAB USE ONLY Temp of samples 2.6 °C Attempt to Cool? 1.6
					Page 46 of 49



### SAMPLE RECEIVING CHECKLIST



SAMPLE DELIVERY GROU	JP 2190703	320	CHECKLIST							
Client PM JLM 4462 - Bement Materials	Transport M	lethod	Samples received with proper thermal preservation	?	~					
Technology			Radioactivity is <1600 cpm? If no, record cpm valu	e in notes section.	~					
Profile Number 271810	Received By Savage, Tiffa		COC relinquished and complete (including sample	Ds, collect times, and sampler)?	~					
271010	Savage, Illia	ily ix	All containers received in good condition and within	n hold time?	~					
Line Item(s)	Receive Date	e(s)	All sample labels and containers received match the	ne chain of custody?	~					
1 - Water	07/03/19		Preservative added to any containers?			~				
			If received, was headspace for VOC water contained	ers < 6mm?	~					
			Samples collected in containers provided by GCAI	?		~				
COOLERS			DISCREPANCIES	LAB PRESERVATIONS						
Airbill Thermome	ter ID: E34	Temp °C	None	None						
		2.6								
NOTES		1	JL							
			P.	ngc 47 of 49						

Revision 1.6 Page 1 of 1



**2203 S. Madison St., Muncie, IN 47302** 765-747-9000/800-874-3563 Fax 765-747-0228

629 Washington St., Suite 300, Columbus, IN 47201 812-375-0531 Fax 812-375-0531

5738 Industrial Rd., Fort Wayne, IN 46825 219-471-7000 Fax 219-471-7777 2417 W. Pinhook Rd, Lafayette, LA 70508 337-235-0483/800-737-2378 Fax 337-233-6540

☐ 3445 S Sheridan, Tulsa, OK 74145

918-828-9977/800324-5757 Fax 918-828-7756

Page1 of		2		Chain			dy 1	Re	cor	ď					Lab Nun			1	90	90	20045	
Client Name: Pivota	al Engine	eering LLC	Proje	ect: CCR Assessm	ent Monito	oring	Preser	_	9 .			<u>, o</u>		Te	st Re	ques	sted		, ,			
Contact Name: Terr	y Elnag	gar	Quot	re #: 5124			H <sub>2</sub> SO,	CI I	nber / Type Container	Code	g g	*6010/**6020 metal	۵	ury								
Phone/Fax: (504) 79			Samı	oler's Signature:			ΙZ		Number of Cont	Matrix	300: Fluoride	/**602	***6020 Sub	7470 Mercury				-		ı	Comi	nents /
Collection Date Time	Grab	Sar	nple I	dentification / D	escriptio	n	HCI	NaOH	Nur	W	300:	*6010	09***	7470							Ren	narks
6/29 1740	Х	CCR	-	1			None/ HN	NO3 3	Diastic	Aq	Х	Х	Х	Х								als: As, Ba,
6/29 1620	х	C C R	-	2			None/ HN	NO3 3	Plastic	Aq	Х	X	х	x							Be, Cd, Cı Mo, Se	, Co, Pb,
6/29 1505	Х	C C R	-	3			None/ HN	VO3 3	Plastic	Aq	Х	Х	x	x							**6020 Me	tals: Sb,Tl
6/28 1530	х	C C R	-	4			None/ HN	VO3 3	Plastic	Aq	Х	Х	x	x							***6020 St	ıb Metal: Li
6/28 1025	х	C C R	-	5			None/ HN	v03 3	Diastic	Aq	Х	х	x	х								
6/28 1135	Х	C C R	-	6			None/ HN	VO3 3	Plastic	Aq	Х	Х	x	х								
6/28 1250	Х	C C R	-	7			None/ HN	VO3 3	Diastic	Aq	Х	х	x	X								
6/28 1400	Х	CCR	-	8			None/ HN	103 3	Plastic	Aq	Х	х	x	X								
6/30 1220	х	C C R	-	9			None/ HN	103 3	Diastic	Aq	Х	х	х	х						Î	Valva Com	
6/30 1350	х	C C R	-	10			None/ HN	103 3	Plastic	Aq	Х	х	x	x								Airborne and / Mail
All samples submitted with the client submit												the r	nater	ial re	emair	ا دا	P.O. Nun		h			
Relinquished by: (Signate	Ver	Received		elbert	Date 4/30	Time /500	Relinquis	shed b	y: (Signat	ture)			Recei	ved by	y:(Sigr	natur	e)				Date	Time
Relinquished by: (Signati	ure)	Received			Date	Time	Relinquis		y: (Signat			(	Rece		Labo				(e)		Date 7/11/9	Time
MDW = Drinking Water of GW = Ground Water waste Water	O = Oil	ueous LIQ = Lic SLD = S	lid	G = Glass P = Plastic V = Vial	Z Iced Tem	ip.	☐ 24 ☐ 48 ☐ Ot		equeste				T	han	k-yc	ou f			ıg El nolo	eme	ent Mat	
						Zen	2															



**2203 S. Madison St., Muncie, IN 47302**765-747-9000/800-874-3563 Fax 765-747-0228

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Fax 337-233-6540

**3445** S Sheridan, Tulsa, OK 74145

918-828-9977/800324-5757 Fax 918-828-7756

Page 2 of 2	Chain of Custo	dy Record		Nun	oratory nber	10045
Client Name: Pivotal Engineering LLC	Project: CCR Assessment Monitoring	Preserv.	L		quested	
Contact Name: Terry Elnaggar Phone/Fax: (504) 799-3653	Quote #: 5124 Sampler's Signature:	Number / Type of Container  Matrix Code	300: Fluoride *6010/**6020 metal	***6020 Sub 7470 Mercury		Comments /
Collection - A B C Sa	mple Identification / Description	HCI HI Numl of C	300: F *6010/	7470		Remarks
6/30 1440 X C C R	- 1 1	None/ HNO3 3 Plastic Aq	XX	x x		*6010 Metals: As, Ba,
6/30 0840 X C C R	- 1 2	None/ HNO3 3 Plastic Aq	ХX	x x		Be, Cd, Cr, Co, Pb, Mo, Se
6/30 0950 X C C R	- 1 3	None/ HNO3 3 Plastic Aq	ХX	x x		**6020 Metals: Sb,Tl
6/30 1100 X C C R	- 1 4	None/ HNO3 3 Plastic Aq	хх	x x		***6020 Sub Metal: Li
6/28 1545 X M S	(CCR- <u>4</u> )	None/ HNO3 3 Plastic Aq	хх	x x		
6/28 1545 X M S D	(CCR <del>/</del> _)	None/ HNO3 3 Plastic Aq	хх	x x		1
6/28 - X D U P		None/ HNO3 3 Plastic Aq	хх	x x		1 1
(d/29 1700 X F B	1	None/ HNO3 3 Plastic Aq	хх	хх		
						UPS / FedEx Airborne / Element Hand / Mail
with the client submitting the samples. Ele	Technology for analysis are accepted on a cus ment Materials Technology reserves the right to			material remair	P.O. Number	
	by:(Signature) Date Time	Relinquished by: (Signature)		Received by:(Sign	nature)	Date Time
	by:(Signature) Date Time	Relinquished by: (Signature)		Received by Labo	fatory:(Signature)	Date Time y
Matrix Codes           DW = Drinking Water AQ = Aqueous LIQ = Li           GW = Ground Water O = Oil SLD = S           WW = Waste Water SO = Soil SL = Slu	olid Plastic Temp	Requested TAT	72-Hr. Thank-you for using Element			



Website: www.element.com

October 15, 2019

Terry Elnaggar Pivotal Engineering LLC 1515 Poydras St., STE. 1875

New Orleans, LA 70112 TEL: (504) 799-3653

**FAX** 

RE: Entergy: CCR Detection Monitoring Order No.: 19091194

Dear Terry Elnaggar:

Element Materials Technology Lafayette received 16 sample(s) on 9/27/2019 for the analyses presented in the following report.

In accordance with your instructions Element Lafayette conducted the analysis shown on the following pages on samples submitted by your company. The results related only to the items tested. Unless otherwise noted, all analyses were conducted using EPA approved methodologies and all test results meet all requirements of TNI. All relevant sampling information is on the attached Chain-of-Custody form.

All soil data, except for 29-B, are on a wet-weight basis unless otherwise indicated in the units field as –dry.

LELAP Certification No.: 01997. TCEQ Certification No.: T104704261. LDHH Certification No.: LA180028. ISDH Certification No.: C-LA-01. A scope of accredited parameters is available upon request. A "#" by the test method or analyte indicates this parameter is outside the scope of accreditation.

Estimated uncertainty is available upon request. This report shall not be reproduced except in full, without the written approval of the laboratory.

If you have any questions regarding these test results, please feel free to call.

Cristina Thibeaux

Customer Service Supervisor

2417 W. Pinhook Road

Lafayette, LA 70508-3344



Website: www.element.com

#### **Case Narrative**

WO#: **19091194**Date: **10/15/2019** 

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring

Unless specified by the client, a duplicate or MS/MSD, wherever applicable, is randomly selected and analyzed from each analytical batch provided sample volume is sufficient. The sample chosen for duplicate or MS/MSD may or may not be a sample submitted in this workorder. A method blank and/or a lab control sample (LCS)/lab control sample duplicate (LCSD), wherever applicable, are processed as a quality control check for each analytical batch. When the matrix QC data is not available due to insufficient sample volume or when the results indicate possible matrix effect, the validity of the batch is determined by the method blank and LCS/LCSD.

The results of the laboratory internal quality control data are provided in the QC Summary Report section of the report for your review. Laboratory-related QC exceptions that may impact the validity of data are discussed in the case narrative. Sample-related QC exceptions are flagged either in the results page(s) or in the QC report page(s). End users should consider QC exceptions when evaluating sample data against data quality objectives.

Any other exceptions associated with this report will be footnoted in the results page(s) or the QC summary page(s).



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: **19091194**Date Reported **10/15/2019** 

**Collection Date:** 9/25/2019 1:35:00 PM

Matrix: AQUEOUS

**CLIENT:** Pivotal Engineering LLC

Entergy: CCR Detection Monitoring

**Lab ID:** 19091194-001

Client Sample ID CCR-1

**Project:** 

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: <b>SGP</b>
Chloride	44.2	2.50	mg/L	10	10/1/2019 10:16:45 AM
Fluoride	0.301	0.0500	mg/L	1	10/1/2019 3:18:48 PM
Sulfate	2.72	0.250	mg/L	1	10/1/2019 3:18:48 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	10/7/2019 4:43:42 PM
Calcium	24.7	0.500	mg/L	1	10/7/2019 4:43:42 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	305	20.0	mg/L	1	9/30/2019 1:41:00 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



Element Materials Technology Lafayette 2417 W. Pinhook Road Lafayette, LA 7508-3344

TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com

### **Analytical Report**

(consolidated)

WO#: **19091194**Date Reported **10/15/2019** 

**Collection Date:** 9/25/2019 12:30:00 PM

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring

Lab ID: 19091194-002 Matrix: AQUEOUS

Client Sample ID CCR-2

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER BY	'IC		E 30	0.0	Analyst: SGP
Chloride	55.6	2.50	mg/L	10	10/1/2019 10:30:28 AM
Fluoride	0.350	0.0500	mg/L	1	10/1/2019 3:32:31 PM
Sulfate	1.39	0.250	mg/L	1	10/1/2019 3:32:31 PM
METALS IN WATER BY ICP, TOTAL	.s		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	10/7/2019 4:47:50 PM
Calcium	23.2	0.500	mg/L	1	10/7/2019 4:47:50 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	274	20.0	mg/L	1	9/30/2019 1:41:00 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



Element Materials Technology Lafayette 2417 W. Pinhook Road Lafayette, LA 70508-3344

TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19091194**Date Reported **10/15/2019** 

**Collection Date:** 9/25/2019 11:30:00 AM

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring

Lab ID: 19091194-003 Matrix: AQUEOUS

Client Sample ID CCR-3

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: <b>SGP</b>
Chloride	107	5.00	mg/L	20	10/1/2019 10:44:13 AM
Fluoride	0.403	0.0500	mg/L	1	10/1/2019 4:13:41 PM
Sulfate	3.68	0.250	mg/L	1	10/1/2019 4:13:41 PM
METALS IN WATER BY ICP, TOTALS			SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	10/7/2019 4:54:53 PM
Calcium	28.3	0.500	mg/L	1	10/7/2019 4:54:53 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	398	20.0	mg/L	1	9/30/2019 1:41:00 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: **19091194**Date Reported **10/15/2019** 

**Collection Date:** 9/26/2019 1:00:00 PM

Matrix: AQUEOUS

**CLIENT:** Pivotal Engineering LLC

Entergy: CCR Detection Monitoring

**Lab ID:** 19091194-004

Client Sample ID CCR-4

**Project:** 

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER BY	Y IC		E 30	0.0	Analyst: <b>SGP</b>
Chloride	41.5	2.50	mg/L	10	10/1/2019 10:57:56 AM
Fluoride	0.215	0.0500	mg/L	1	10/1/2019 4:27:24 PM
Sulfate	7.72	0.250	mg/L	1	10/1/2019 4:27:24 PM
METALS IN WATER BY ICP, TOTALS			SW6010B		Analyst: STS
Boron	0.103	0.100	mg/L	1	10/7/2019 4:59:01 PM
Calcium	17.9	0.500	mg/L	1	10/7/2019 4:59:01 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	268	20.0	mg/L	1	9/30/2019 1:41:00 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

M Matrix Interference

RL Reporting Limit

SDL Sample detection limit



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: 19091194 Date Reported 10/15/2019

**CLIENT:** Pivotal Engineering LLC

Entergy: CCR Detection Monitoring

**Project:** 19091194-005

**Client Sample ID** CCR-5

Lab ID:

Matrix: AQUEOUS

**Collection Date:** 9/26/2019 11:40:00 AM

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP
Chloride	55.8	5.00	mg/L	20	10/1/2019 11:39:09 AM
Fluoride	0.235	0.0500	mg/L	1	10/1/2019 4:41:07 PM
Sulfate	< 0.250	0.250	mg/L	1	10/1/2019 4:41:07 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	0.110	0.100	mg/L	1	10/7/2019 5:11:37 PM
Calcium	27.9	0.500	mg/L	1	10/7/2019 5:11:37 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	401	20.0	mg/L	1	9/30/2019 1:41:00 PM

Holding times for preparation or analysis exceeded Qualifiers:

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

Matrix Interference RL

Reporting Limit SDL Sample detection limit



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: 19091194 Date Reported 10/15/2019

**CLIENT:** Pivotal Engineering LLC

Entergy: CCR Detection Monitoring

**Project:** Lab ID: 19091194-006

Client Sample ID CCR-6

RL Qual Units DF **Date Analyzed** 

**Collection Date:** 9/26/2019 10:20:00 AM

Matrix: AQUEOUS

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER BY	IC		E 30	0.0	Analyst: SGP
Chloride	81.8	2.50	mg/L	10	10/1/2019 11:52:53 AM
Fluoride	0.252	0.0500	mg/L	1	10/1/2019 4:54:51 PM
Sulfate	< 0.250	0.250	mg/L	1	10/1/2019 4:54:51 PM
METALS IN WATER BY ICP, TOTAL	s		SW60	10B	Analyst: STS
Boron	0.118	0.100	mg/L	1	10/7/2019 5:28:11 PM
Calcium	30.5	0.500	mg/L	1	10/7/2019 5:28:11 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: GMS
Total Dissolved Solids (Residue, Filterable)	332	20.0	mg/L	1	9/30/2019 1:41:00 PM

Holding times for preparation or analysis exceeded Qualifiers:

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected Matrix Interference

RL Reporting Limit

SDL Sample detection limit



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: 19091194 Date Reported 10/15/2019

Analyst: GMS

9/30/2019 1:41:00 PM

**Collection Date:** 9/26/2019 8:50:00 AM

Matrix: AQUEOUS

SM2540C

1

mg/L

**CLIENT:** Pivotal Engineering LLC

Entergy: CCR Detection Monitoring

**Project:** Lab ID: 19091194-007

Client Sample ID CCR-7

**TOTAL DISSOLVED SOLIDS** 

Total Dissolved Solids (Residue,

Filterable)

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER BY	'IC		E 30	0.0	Analyst: SGP
Chloride	72.2	2.50	mg/L	10	10/1/2019 12:06:37 PM
Fluoride	0.274	0.0500	mg/L	1	10/1/2019 5:08:34 PM
Sulfate	< 0.250	0.250	mg/L	1	10/1/2019 5:08:34 PM
METALS IN WATER BY ICP, TOTAL	.s		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	10/7/2019 5:32:21 PM
Calcium	43.3	0.500	mg/L	1	10/7/2019 5:32:21 PM

20.0

339

Qualifiers: Holding times for preparation or analysis exceeded

> ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected Matrix Interference

RL Reporting Limit

SDL Sample detection limit



Website: www.element.com

**Analytical Report** (consolidated)

**Collection Date:** 9/26/2019 6:30:00 PM

Matrix: AQUEOUS

WO#: 19091194 Date Reported 10/15/2019

**CLIENT:** Pivotal Engineering LLC

Entergy: CCR Detection Monitoring

**Project:** Lab ID: 19091194-008

Client Sample ID CCR-8

Filterable)

Citit Sample 12 CCK-6							
Analyses	Result	RL Qu	al Units	DF	Date Analyzed		
INORGANIC ANIONS IN WATER B	SY IC		E 30	0.0	Analyst: SGP		
Chloride	83.5	2.50	mg/L	10	10/1/2019 12:20:20 PM		
Fluoride	0.145	0.0500	mg/L	1	10/1/2019 5:22:17 PM		
Sulfate	0.517	0.250	mg/L	1	10/1/2019 5:22:17 PM		
METALS IN WATER BY ICP, TOTALS			SW6010B		Analyst: STS		
Boron	< 0.100	0.100	mg/L	1	10/7/2019 5:58:59 PM		
Calcium	11.6	0.500	mg/L	1	10/7/2019 5:58:59 PM		
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>		
Total Dissolved Solids (Residue,	308	20.0	mg/L	1	9/30/2019 1:41:00 PM		

Holding times for preparation or analysis exceeded Qualifiers:

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits S

U Analyte not detected Matrix Interference

RL Reporting Limit

SDL Sample detection limit



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: 19091194 Date Reported 10/15/2019

**CLIENT:** Pivotal Engineering LLC

Entergy: CCR Detection Monitoring

**Project:** Lab ID: 19091194-009

Client Sample ID CCR-9

Matrix: AQUEOUS

**Collection Date:** 9/25/2019 4:55:00 PM

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: <b>SGP</b>
Chloride	64.5	2.50	mg/L	10	10/1/2019 1:01:30 PM
Fluoride	0.558	0.0500	mg/L	1	10/1/2019 5:36:00 PM
Sulfate	5.87	0.250	mg/L	1	10/1/2019 5:36:00 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	10/7/2019 5:40:35 PM
Calcium	29.9	0.500	mg/L	1	10/7/2019 5:40:35 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	357	20.0	mg/L	1	9/30/2019 1:41:00 PM

Holding times for preparation or analysis exceeded Qualifiers:

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected Matrix Interference

RL Reporting Limit

SDL Sample detection limit



Website: www.element.com

**Analytical Report** (consolidated)

WO#: 19091194 Date Reported 10/15/2019

**CLIENT:** Pivotal Engineering LLC **Collection Date:** 9/25/2019 3:45:00 PM

**Project:** Entergy: CCR Detection Monitoring

Lab ID: 19091194-010 Matrix: AQUEOUS

Client Sample ID CCR-10

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER BY	/ IC		E 30	0.0	Analyst: SGP
Chloride	39.9	2.50	mg/L	10	10/1/2019 1:15:13 PM
Fluoride	0.614	0.0500	mg/L	1	10/1/2019 5:49:43 PM
Sulfate	12.7	0.250	mg/L	1	10/1/2019 5:49:43 PM
METALS IN WATER BY ICP, TOTAL	LS		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	10/7/2019 5:50:44 PM
Calcium	29.4	0.500	mg/L	1	10/7/2019 5:50:44 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	347	20.0	mg/L	1	9/30/2019 1:41:00 PM

Holding times for preparation or analysis exceeded Qualifiers:

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

Matrix Interference RL Reporting Limit

SDL Sample detection limit



Website: www.element.com

**Analytical Report** 

**Collection Date:** 9/25/2019 2:40:00 PM

Matrix: AQUEOUS

(consolidated)

WO#: 19091194 Date Reported 10/15/2019

**CLIENT:** Pivotal Engineering LLC

Entergy: CCR Detection Monitoring

**Project:** Lab ID: 19091194-011

Client Sample ID CCR-11

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER BY IC			E 300	0.0	Analyst: <b>SGP</b>
Chloride	25.3	2.50	mg/L	10	10/1/2019 1:28:57 PM
Fluoride	0.704	0.0500	mg/L	1	10/1/2019 6:03:26 PM
Sulfate	3.94	0.250	mg/L	1	10/1/2019 6:03:26 PM
METALS IN WATER BY ICP, TOTALS			SW60	10B	Analyst: STS

Boron	< 0.100	0.100	mg/L	1	10/7/2019 6:03:11 PM
Calcium	26.7	0.500	mg/L	1	10/7/2019 6:03:11 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: GMS
Total Dissolved Solids (Residue.	239	20.0	ma/L	1	9/30/2019 1:41:00 PM

Filterable)

Holding times for preparation or analysis exceeded Qualifiers:

> ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected Matrix Interference

RL Reporting Limit

SDL Sample detection limit



Website: www.element.com

**Analytical Report** 

**Collection Date:** 9/26/2019 5:10:00 PM

Matrix: AQUEOUS

(consolidated)

WO#: 19091194 Date Reported 10/15/2019

**CLIENT:** Pivotal Engineering LLC

Entergy: CCR Detection Monitoring

**Project:** Lab ID: 19091194-012

Client Sample ID CCR-12

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER BY	Y IC		E 30	0.0	Analyst: SGP
Chloride	16.2	1.25	mg/L	5	10/1/2019 1:42:40 PM
Fluoride	0.140	0.0500	mg/L	1	10/1/2019 6:17:11 PM
Sulfate	9.26	0.250	mg/L	1	10/1/2019 6:17:11 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	10/7/2019 6:07:18 PM
Calcium	18.3	0.500	mg/L	1	10/7/2019 6:07:18 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	172	20.0	mg/L	1	9/30/2019 1:41:00 PM

Holding times for preparation or analysis exceeded Qualifiers:

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected Matrix Interference

RL Reporting Limit

SDL Sample detection limit



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: 19091194 Date Reported 10/15/2019

**CLIENT:** Pivotal Engineering LLC

Entergy: CCR Detection Monitoring

**Project:** 19091194-013

Client Sample ID CCR-13

Lab ID:

**Collection Date:** 9/26/2019 3:45:00 PM

Matrix: AQUEOUS

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP
Chloride	11.4	1.25	mg/L	5	10/1/2019 1:56:23 PM
Fluoride	0.227	0.0500	mg/L	1	10/1/2019 6:58:23 PM
Sulfate	1.03	0.250	mg/L	1	10/1/2019 6:58:23 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	10/7/2019 6:27:55 PM
Calcium	21.8	0.500	mg/L	1	10/7/2019 6:27:55 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	196	20.0	mg/L	1	9/30/2019 1:41:00 PM

Holding times for preparation or analysis exceeded Qualifiers:

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected Matrix Interference

RL Reporting Limit

SDL Sample detection limit



Website: www.element.com

**Analytical Report** (consolidated)

WO#: 19091194 Date Reported 10/15/2019

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring

Lab ID: 19091194-014

Client Sample ID CCR-14

Matrix: AQUEOUS

**Collection Date:** 9/26/2019 2:30:00 PM

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP
Chloride	10.9	1.25	mg/L	5	10/1/2019 2:10:07 PM
Fluoride	0.156	0.0500	mg/L	1	10/1/2019 7:12:06 PM
Sulfate	0.567	0.250	mg/L	1	10/1/2019 7:12:06 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	10/7/2019 6:32:03 PM
Calcium	17.6	0.500	mg/L	1	10/7/2019 6:32:03 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	159	20.0	mg/L	1	9/30/2019 1:41:00 PM

Holding times for preparation or analysis exceeded Qualifiers:

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected

Matrix Interference RL Reporting Limit

SDL Sample detection limit



Website: www.element.com

Collection Date: 9/26/2019

**Analytical Report** (consolidated)

WO#: 19091194 Date Reported 10/15/2019

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring

Lab ID: 19091194-015 Matrix: AQUEOUS

Client Sample ID Dup

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: SGP
Chloride	69.8	2.50	mg/L	10	10/1/2019 2:23:51 PM
Fluoride	0.277	0.0500	mg/L	1	10/1/2019 7:25:50 PM
Sulfate	< 0.250	0.250	mg/L	1	10/1/2019 7:25:50 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	0.101	0.100	mg/L	1	10/7/2019 6:36:09 PM
Calcium	45.1	0.500	mg/L	1	10/7/2019 6:36:09 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	344	20.0	mg/L	1	9/30/2019 1:41:00 PM

Holding times for preparation or analysis exceeded Qualifiers:

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

U Analyte not detected Matrix Interference

RL Reporting Limit

SDL Sample detection limit



Website: www.element.com

**Analytical Report** (consolidated)

Collection Date: 9/25/2019 4:20:00 PM

Matrix: AQUEOUS

WO#: 19091194 Date Reported 10/15/2019

**CLIENT:** Pivotal Engineering LLC

Entergy: CCR Detection Monitoring

**Project:** Lab ID: 19091194-016

Client Sample ID FB-1

Filterable)

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	SY IC		E 30	0.0	Analyst: SGP
Chloride	< 0.250	0.250	mg/L	1	10/1/2019 2:37:34 PM
Fluoride	< 0.0500	0.0500	mg/L	1	10/1/2019 2:37:34 PM
Sulfate	< 0.250	0.250	mg/L	1	10/1/2019 2:37:34 PM
METALS IN WATER BY ICP, TOTA	ALS		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	10/14/2019 4:58:24 PM
Calcium	< 0.500	0.500	mg/L	1	10/7/2019 6:45:13 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue,	< 20.0	20.0	mg/L	1	9/30/2019 1:41:00 PM

Holding times for preparation or analysis exceeded Qualifiers:

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits S

U Analyte not detected Matrix Interference

RL Reporting Limit

SDL Sample detection limit



# **QC SUMMARY REPORT**

WO#: **19091194** 

15-Oct-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Detection Monitoring BatchID: 31738A

Project:	Entergy: Co	CR Detection Monitoring						В	SatchID: 3	31738A		
Sample ID: Client ID:	MB-31738 PBW	SampType: MBLK Batch ID: 31738A		de: <b>6010_W</b> No: <b>SW6010B</b>	Units: mg/L		Prep Date Analysis Date	e: 10/1/20 e: 10/7/20		RunNo: 820 SeqNo: 20		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Boron Calcium		< 0.100 < 0.500	0.100 0.500									
Sample ID:	LCS-31738	SampType: <b>LCS</b>	TestCo	de: <b>6010_W</b>	Units: mg/L		Prep Date	e: 10/1/20	19	RunNo: 820	689	
Client ID:	LCSW	Batch ID: 31738A	Test	No: <b>SW6010B</b>			Analysis Date	: 10/7/20	19	SeqNo: 20	70444	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Boron		0.489	0.100	0.5000	0	97.9	80	120				
Calcium		48.8	0.500	50.00	0	97.5	80	120				
Sample ID:	LCSD-31738	SampType: <b>LCSD</b>	TestCo	de: <b>6010_W</b>	Units: mg/L		Prep Date	e: 10/1/20	19	RunNo: 820	689	
Client ID:	LCSS02	Batch ID: <b>31738A</b>	Test	No: <b>SW6010B</b>			Analysis Date	: 10/7/20	19	SeqNo: 207	70445	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Boron		0.509	0.100	0.5000	0	102	80	120	0.4893	4.03	20	
Calcium		49.0	0.500	50.00	0	98.0	80	120	48.76	0.450	20	
Sample ID:	19091194-004BMS	SampType: <b>MS</b>	TestCo	de: <b>6010_W</b>	Units: mg/L		Prep Date	e: 10/1/20	19	RunNo: 820	689	
Client ID:	CCR-4	Batch ID: <b>31738A</b>	Test	No: <b>SW6010B</b>			Analysis Date	: 10/7/20	19	SeqNo: 20	70450	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Boron		0.614	0.100	0.5000	0.1026	102	75	125				
O P.C.	U Holding times for	proporation or analysis avacaded		M Motriv	Interference			ND	Not Datastad at the P.	anarting Limit		

Qualifiers: H Holding times for preparation or analysis exceeded

RL Reporting Limit

J Analyte not detected

M Matrix Interference

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit



# **QC SUMMARY REPORT**

WO#:

19091194

15-Oct-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Detection Monitoring BatchID: 31738A

Website: www.element.com

Sample ID: 19091194-004BMS	SampType: <b>MS</b>	TestCode:	6010_W	Units: mg/L		Prep Date: 10/1/2019			RunNo: 826		
Client ID: CCR-4	Batch ID: 31738A	TestNo:	SW6010B			Analysis Da	te: <b>10/7/20</b>	19	SeqNo: <b>207</b>	70450	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	67.8	0.500	50.00	17.90	99.7	75	125				

Sample ID: 19091194-004BMSE	SampType: MSD	TestCod	de: <b>6010_W</b>	Units: mg/L		Prep Da	te: <b>10/1/20</b>	19	RunNo: 826	689	
Client ID: CCR-4	Batch ID: 31738A	TestN	lo: <b>SW6010B</b>			Analysis Da	te: <b>10/7/20</b>	19	SeqNo: <b>207</b>	70451	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Boron	0.604	0.100	0.5000	0.1026	100	75	125	0.6141	1.69	20	
Calcium	64.3	0.500	50.00	17.90	92.9	75	125	67.75	5.18	20	

Qualifiers: H Holding times for preparation or analysis exceeded

RL Reporting Limit

U Analyte not detected

Matrix Interference

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit



# **QC SUMMARY REPORT**

WO#: **19091194** 

15-Oct-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CO	CR Detection Monitoring			BatchID: R82461							
Sample ID: MB-R82461 Client ID: PBW	SampType: MBLK Batch ID: R82461	TestCode: TDS_2540C TestNo: SM2540C	Units: mg/L		Prep Date: Analysis Date:	9/30/2019		RunNo: <b>82</b> 4 SeqNo: <b>20</b> 6			
Analyte	Result	PQL SPK value SF	PK Ref Val	%REC	LowLimit High	ghLimit RF	PD Ref Val	%RPD	RPDLimit	Qual	
Total Dissolved Solids (Residue, Filterable)	< 20.0	20.0									
Sample ID: LCS-R82461	SampType: <b>LCS</b>	TestCode: TDS_2540C	Units: mg/L		Prep Date:			RunNo: <b>82</b> 4	61		
Client ID: LCSW	Batch ID: <b>R82461</b>	TestNo: SM2540C			Analysis Date:	9/30/2019		SeqNo: <b>206</b>	5449		
Analyte	Result	PQL SPK value SF	PK Ref Val	%REC	LowLimit Hi	ghLimit RF	PD Ref Val	%RPD	RPDLimit	Qual	
Total Dissolved Solids (Residue, Filterable)	1,000	20.0 1,000	0	100	85	115					
Sample ID: LCSD-R82461	SampType: <b>LCSD</b>	TestCode: TDS_2540C	Units: mg/L		Prep Date:			RunNo: 824	61		
Client ID: LCSS02	Batch ID: <b>R82461</b>	TestNo: SM2540C			Analysis Date:	9/30/2019		SeqNo: <b>206</b>	5450		
Analyte	Result	PQL SPK value SF	PK Ref Val	%REC	LowLimit Hi	ghLimit RF	PD Ref Val	%RPD	RPDLimit	Qual	
Total Dissolved Solids (Residue, Filterable)	1,000	20.0 1,000	0	100	85	115	1,004	0.199	10		
Sample ID: 19091194-004ADUP	SampType: <b>DUP</b>	TestCode: TDS_2540C	Units: mg/L		Prep Date:			RunNo: 824	61		
Client ID: CCR-4	Batch ID: R82461	TestNo: SM2540C			Analysis Date:	9/30/2019		SeqNo: <b>206</b>	5471		
Analyte	Result	PQL SPK value SF	PK Ref Val	%REC	LowLimit Hi	ghLimit RF	PD Ref Val	%RPD	RPDLimit	Qual	
Total Dissolved Solids (Residue, Filterable)	267	20.0					268.0	0.374	10		
Oualifiers: H Holding times for	preparation or analysis exceeded	M Matrix Interfe	erence			ND Not	Detected at the Re	porting Limit			

Qualifiers: H Holding times for preparation or analysis exceeded

RL Reporting Limit
U Analyte not detected

Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit



#### **QC SUMMARY REPORT**

WO#: **19091194** 

15-Oct-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Detection Monitoring BatchID: R82461

Sample ID: 19091194-004ADUP SampType: DUP TestCode: TDS\_2540C Units: mg/L Prep Date: RunNo: 82461

Client ID: CCR-4 Batch ID: R82461 TestNo: SM2540C Analysis Date: 9/30/2019 SeqNo: 2065471

Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sample ID:	19091194-005ADUP	SampType: <b>DUP</b>	TestCod	le: <b>TDS_2540</b>	C Units: mg/L		Prep Da	te:		RunNo: 824	161	
Client ID:	CCR-5	Batch ID: <b>R82461</b>	TestN	lo: <b>SM2540C</b>			Analysis Da	te: <b>9/30/20</b>	19	SeqNo: <b>206</b>	55472	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Total Dissolved Solids (Residue, 401 20.0 401.0 0 10

Filterable)

Qualifiers: H Holding times for preparation or analysis exceeded

RL Reporting Limit

U Analyte not detected

Matrix Interference

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit



## **QC SUMMARY REPORT**

WO#: **19091194** 

15-Oct-19

Client: Pivotal Engineering LLC

Project: Entergy: CCR Detection Monitoring BatchID: R82480

Sample ID: MBLK	SampType: MBLK	TestCode: 300.0	Units: mg/L		Prep Da	te:		RunNo: <b>82480</b>				
Client ID: PBW	Batch ID: <b>R82480</b>	TestNo: <b>E 300.0</b>		SeqNo: <b>20</b> 6	2065719							
Analyte	Result	PQL SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Chloride	< 0.250	0.250										
Fluoride	< 0.0500	0.0500										
Sulfate	< 0.250	0.250										

Sample ID: LCS	SampType: LCS	TestCod	TestCode: 300.0 Units: mg			Prep Dat	te:		RunNo: <b>82480</b>				
Client ID: LCSW	Batch ID: <b>R82480</b>	TestN	o: <b>E 300.0</b>			Analysis Dat	te: <b>10/1/20</b>	SeqNo: <b>2065720</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Chloride	9.96	0.250	10.00	0	99.6	90	110						
Fluoride	2.01	0.0500	2.000	0	100	90	110						
Sulfate	10.0	0.250	10.00	0	100	90	110						

Sample ID: LC	SampType: LC	CSD TestCo	ode: <b>300.0</b>	Units: mg/L		Prep Dat	e:		RunNo: <b>82480</b>					
Client ID: LC	Batch ID: R8	<b>82480</b> Tes	TestNo: <b>E 300.0</b> Analysis Date: <b>10/1/2019</b>						SeqNo: <b>206</b>	2065721				
Analyte	R	Result PQL	SPK value	SPK Ref Val	%REC	RPDLimit	Qual							
Chloride		9.98 0.250	10.00	0	99.8	90	110	9.959	0.198	15				
Fluoride		2.03 0.0500	2.000	0	101	90	110	2.006	1.19	15				
Sulfate		10.3 0.250	10.00	0	103	90	110	10.05	2.46	15				

Qualifiers: H Holding times for preparation or analysis exceeded

RL Reporting Limit

U Analyte not detected

Matrix Interference

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit



# **QC SUMMARY REPORT**

WO#: **19091194** 

15-Oct-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Detection Monitoring BatchID: R82480

Troject. Emergy. Cere Detection Workforming Butching. Roz-400							102400							
Sample ID:	19091194-004AMS	SampType: <b>MS</b>	TestCo	de: <b>300.0</b>	Units: mg/L		Prep Da	te:		RunNo: 824	<del></del>			
Client ID:	CCR-4	Batch ID: <b>R82480</b>	Test	No: <b>E 300.0</b>			Analysis Da	te: <b>10/1/2</b> 0	19	SeqNo: <b>206</b>	SeqNo: <b>2065728</b>			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qua		
Chloride		86.7	2.50	50.00	41.55	90.3	80	120						
Fluoride		9.82	0.500	10.00	0	98.2	80	120						
Sulfate		52.8	2.50	50.00	6.440	92.8	80	120						
Sample ID:	19091194-004AMSD	SampType: <b>MSD</b>	TestCo	de: <b>300.0</b>	Units: mg/L	g/L Prep Date: RunNo: <b>82480</b>								
Client ID:	CCR-4	Batch ID: <b>R82480</b>	Testi	No: <b>E 300.0</b>			Analysis Da	te: <b>10/1/2</b> 0	19	SeqNo: 206	35729			
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qua		
Chloride		88.2	2.50	50.00	41.55	93.3	80	120	86.70	1.68	15			
Fluoride		10.0	0.500	10.00	0	100	80	120	9.821	2.18	15			
Sulfate		53.4	2.50	50.00	6.440	94.0	80	120	52.85	1.12	15			
Sample ID:	19091194-016AMS	SampType: <b>MS</b>	TestCo	de: <b>300.0</b>	Units: mg/L		Prep Da	te:		RunNo: 824	<del></del>			
Client ID:	FB-1	Batch ID: <b>R82480</b>	Test	No: <b>E 300.0</b>		Analysis Date: 10/1/2019 SeqNo: 2065744								
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qua		
Chloride		5.01	0.250	5.000	0.03401	99.5	80	120						
Fluoride		1.04	0.0500	1.000	0	104	80	120						
Sulfate		5.01	0.250	5.000	0	100	80	120						

Qualifiers: H Holding times for preparation or analysis exceeded

RL Reporting Limit

U Analyte not detected

Matrix Interference

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as specified at testcode

ND Not Detected at the Reporting Limit



## **QC SUMMARY REPORT**

WO#:

<sup>#</sup>: 19091194

15-Oct-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Detection Monitoring BatchID: R82480

Website: www.element.com

Sample ID:	19091194-016AMSD	SampType: MSD	TestCoo	de: <b>300.0</b>	Units: mg/L		Prep Da	te:		RunNo: 824					
Client ID:	FB-1	Batch ID: <b>R82480</b>	ch ID: <b>R82480</b> TestNo: <b>E 300.0</b>					te: <b>10/1/20</b>	19	SeqNo: <b>2065745</b>					
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual				
Chloride		4.98	0.250	5.000	0.03401	99.0	80	120	5.008	0.470	15				
Fluoride		1.06	0.0500	1.000	0	106	80	120	1.043	1.85	15				
Sulfate		5.52	0.250	5.000	0	110	80	120	5.007	9.68	15				

Qualifiers: H Holding times for preparation or analysis exceeded

RL Reporting Limit

U Analyte not detected

Matrix Interference

M

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as specified at testcode

ID Not Detected at the Reporting Limit



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com

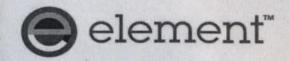
## Sample Log-In Check List

Client Name:		PIVOTAL_ENGINEER	Work Order Number:	19091194		RcptNo: 1	I
Log	ged by:	Danielle Hollier	9/27/2019 3:30:00 PM		Danis	Holling	
Con	npleted By:	Danielle Hollier	9/30/2019 8:46:33 AM		Daniel	Holling	
Rev	iewed By:	Caitlin Duplantis	10/10/2019 11:51:51 A	M	Caitlin Duplan	uli	
<u>Cha</u>	in of Cus	stody					
1.	Is Chain of	Custody complete?		Yes	No 🗸	Not Present	
2.	How was th	ne sample delivered?		<u>Element</u>			
Log	<u>In</u>						
_	Coolers are	e present?		Yes 🗸	No 🗌	NA 🗌	
4.	Shipping co	ontainer/cooler in good c	ondition?	Yes 🗹	No 🗌		
	Custody se	als intact on shipping co	ntainer/cooler?	Yes	No 🗌	Not Present 🗸	
	No.	Seal [		Signed By:			
5.	Was an att	empt made to cool the sa	amples?	Yes 🗸	No 📙	na 🗆	
6.	Were all sa	imples received at a tem	perature of >0° C to 6.0°C	Yes 🗸	No 🗆	NA 🗆	
7.	Sample(s)	in proper container(s)?		Yes 🗸	No 🗌		
8.	Sufficient s	ample volume for indicat	red test(s)?	Yes 🗸	No 🗌		
9.	Are sample	es (except VOA and ONG	G) properly preserved?	Yes 🗸	No 🗌		
10.	Was prese	rvative added to bottles?		Yes	No 🗹	NA 🗌	
11.	Is the head	space in the VOA vials le	ess than 1/4 inch or 6 mm?	Yes	No 🗌	No VOA Vials 🗹	
12.	Were any s	sample containers receiv	ed broken?	Yes	No 🗹		
13.		rwork match bottle labels epancies on chain of cus		Yes 🗸	No 🗌		
14.	Are matrice	es correctly identified on	Chain of Custody?	Yes 🗸	No 🗌		
15.	Is it clear w	hat analyses were reque	ested?	Yes 🗸	No 🗌		
16.		olding times able to be my customer for authorizat		Yes 🗸	No 🗌		
Spe		dling (if applicable					
17.	Was client	notified of all discrepance	ies with this order?	Yes	No 🗌	NA 🗹	
	Perso	n Notified:	Date:				
	By WI	hom:	Via:	eMail	Phone  Fax	☐ In Person	
	Regar						
	Client	Instructions:					
18	Additional r	remarks:					I

Added year of collection to COC as per samples received.

#### **Cooler Information**

Cooler No	Temp ⁰C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.7	Good	Not Present			
2	3.5	Good	Not Present			



2203 S. Madison St., Muncie, IN 47302
765-747-9000/800-874-3563 Fax 765-747-0228

629 Washington St., Suite 300, Columbus, IN 47201 812-375-0531 Fax 812-375-0531

5738 Industrial Rd., Fort Wayne, IN 46825 219-471-7000 Fax 219-471-7777

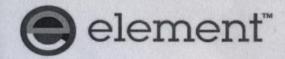
V	2417 W. Pinhook Rd, Lafayette,	LA 70508
	337-235-0483/800-737-2378	

Fax 337-233-6540

3445 S Sheridan, Tulsa, OK 74145

918-828-9977/800324-5757 Fax 918-828-7756

Page	1 of .		2					(	hain	of Custo	ody	R	ecor	d					Laboi Numb		y /	909	1/1	94
	me: Pivota	l Eng	ginee	ring	LLC	1	Pro	ect: C	CR Detectio	n Monitoring	Pre	eserv.	of	1				Tes	t Requ	ueste	d			FOR STATE OF
Contact N	Contact Name: Terry Elnaggar				Quote #: 3880					NaOH Na2S2O3	Number / Type Container	Code		804	S* *S									
	Phone/Fax: (504) 799-3653				Samplers Signature:				HNO,	N H	nber / Typ Container	Matrix		CI, FI,	metals*							Comments /		
Colle Date	Ollection							HC	NaO	Num	Σ	TDS		6010							Remarks			
9/25/	9/335	Х		С	С	R	-	1			None	HNO3	2 Plastic	Aq	Х	X	Х							
	1230	X	JAIR .	С	C	R	-	2			None	/ HNO3	2 Plastic	Aq	X	X	х							*6010 Metals: B, Ca
V	1130	X		С	С	R	( <del>-</del> )	3			None	/ HNO	2 Plastic	Aq	x	Х	х						1	
9/24	11300	X		С	С	R	-	4			None	HNO3	2 Plastic	Aq	x	Х	х							
-	1140	X		С	С	R	-	5			None	HNO3	2 Plastic	Aq	x	X	х							
	1020	X		С	С	R	-	6	4		None	/ HNO	2 Plastic	Aq	X	X	X							
	0850	Х		С	С	R	-	7	- SA		None	HNO:	2 Plastic	Aq	X	X	х			1		1		
V	1830	X		С	С	R	-	8			None	HNO3	2 Plastic	Aq	X	X	х							
9/25/4	1655	X		С	С	R	-	9	200 400		None	HNO:	2 Plastic	Aq	X	X	х							UPS / FedEx Airborne
9/25/	14545	X		С	С	R	-	10			None	e/ HNO	2 Plastic	Aq	X	X	Х							Element Hand / Mail
										re accepted on a correserves the right						the r	-	D		N	O. umber			•
Relinquishe	d by: (Signat	ure)	1		Ree	eived b	Sig	nature)	1	Pate Time		nquishe	d by: (Sign	ature)	1		Rec	the	n Q	ature	Zu	ri		Plate Time
	elinquished by: (Signature) Received by:(Signature)			nature)		Date Time	Red		n du		rd	7	Rece		Labor		(Signat	ure)	-	7/27/19 1530				
GW = Gro	Matrix Codes  OW = Drinking Water AQ = Aqueous LIQ = Liq  GW = Ground Water O = Oil SLD = So  WW = Waste Water SO = Soil SL = Slut			D = So	Solid P = Plastic Temp.				0	24-H 48-H	dr.	72-H	r.		Т	han	k-yo	u fo		ing El hnolo		ent Materials		
		NU.		W				The last	ALGERTA	(IRI				PARS A			_	1100	Jones !	1	AT NO.	10-1-1		



2203 S. Madison St., Muncie, IN 47302
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Page	_2 of _		2						C	ha	in (	of (	Cu	sto	dy l	R	ecor	d					Labo Num	orator iber	y ]	90	9	1194
Client Na	ne: Pivota	l Eng	ginee	ring	LLC		Pr	oject	CC	R Det	ection	Monito	oring		Prese	rv.	of	The Late			_	Te	st Rec	queste	d	_		
Contact N	ame: Terry	y Eln	agga	r			Qi	uote i	: 534	6					H <sub>2</sub> SO <sub>4</sub>	Na2S2O3	Type	Code		804	* *S							
Phone/Fax	c: (504) 79	9-36	53				Sa	mple	rs Sig	matur	e:	2	V		HNO	Z H	Number / Typ Container	Matrix		CI, FI,	metals*							Comments /
Colle Date	Ction Time	Grab	Comp			Sar	mple	e Ide	ntific	catio	n / De	escript	ion		НС	NaOH	Nun	Σ	TDS	300:	6010							Remarks
9/25/	1440	X		С	С	R	True.		1	1					None/ H	NO3	2 Plastic	Aq	х	X	х							
9/26	191710	х		С	С	R		dia'y	1 :	2		A STATE	O. T.		None/ H	NO3	2 Plastic	Aq	x	x	x							*6010 Metals: B, Ca
1	1545	X		С	С	R			1 :	3			Tellin.	4	None/ H	NO3	2 Plastic	Aq	х	X	х	334			17 27		Page 1	
	1430	X		С	С	R			1	4					None/ H	NO3	2 Plastic	Aq	x	X	х			5 8				
	1300	x		М	s	(8)	(0	CCR		1)		y One	1998	7.48	None/ H	NO3	2 Plastic	Aq	x	X	x							
V	1300	x		м	s	D	(0	CCR	L	f .)		All I			None/ H	NO3	2 Plastic	Aq	x	X	x							
9/26/	_	x		D	U	Р					BURN		N. Dir.	THE R	None/ H	NO3	2 Plastic	Aq	x	x	x							
	1/620	х		F	В		1								30 00	100	2 Plastic		х		x							
1																	/											
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(IRIO)



Website: www.element.com

October 24, 2019

Terry Elnaggar Pivotal Engineering LLC 1515 Poydras St., STE. 1875 New Orleans, LA 70112

TEL: (504) 799-3653

**FAX** 

RE: Entergy: CCR Assessment Monitoring Order No.: 19091195

Dear Terry Elnaggar:

Element Materials Technology Lafayette received 16 sample(s) on 9/27/2019 for the analyses presented in the following report.

In accordance with your instructions Element Lafayette conducted the analysis shown on the following pages on samples submitted by your company. The results related only to the items tested. Unless otherwise noted, all analyses were conducted using EPA approved methodologies and all test results meet all requirements of TNI. All relevant sampling information is on the attached Chain-of-Custody form.

All soil data, except for 29-B, are on a wet-weight basis unless otherwise indicated in the units field as –dry.

LELAP Certification No.: 01997. TCEQ Certification No.: T104704261. LDHH Certification No.: LA180028. ISDH Certification No.: C-LA-01. A scope of accredited parameters is available upon request. A "#" by the test method or analyte indicates this parameter is outside the scope of accreditation.

Estimated uncertainty is available upon request. This report shall not be reproduced except in full, without the written approval of the laboratory.

If you have any questions regarding these test results, please feel free to call.

Cristina Thibeaux

Customer Service Supervisor

2417 W. Pinhook Road

Lafayette, LA 70508-3344



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Case Narrative** 

WO#: **19091195**Date: **10/24/2019** 

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Assessment Monitoring

Unless specified by the client, a duplicate or MS/MSD, wherever applicable, is randomly selected and analyzed from each analytical batch provided sample volume is sufficient. The sample chosen for duplicate or MS/MSD may or may not be a sample submitted in this workorder. A method blank and/or a lab control sample (LCS)/lab control sample duplicate (LCSD), wherever applicable, are processed as a quality control check for each analytical batch. When the matrix QC data is not available due to insufficient sample volume or when the results indicate possible matrix effect, the validity of the batch is determined by the method blank and LCS/LCSD.

The results of the laboratory internal quality control data are provided in the QC Summary Report section of the report for your review. Laboratory-related QC exceptions that may impact the validity of data are discussed in the case narrative. Sample-related QC exceptions are flagged either in the results page(s) or in the QC report page(s). End users should consider QC exceptions when evaluating sample data against data quality objectives.

Exception: Due to a lab oversight, the MS/MSD for the 7470 Mercury analysis was not performed on the client specified sample CCR-4 (Lab ID: 19091195-004). The Mercury batch MS/MSD was performed on the client's sample, CCR-1 (Lab ID: 19091195-001).

Any other exceptions associated with this report will be footnoted in the results page(s) or the QC summary page(s).

The Lithium (6020) analyses were subcontracted to Pace Analytical. Their report is attached in its entirety.



Element Materials Technology Lafayette 2417 W. Pinhook Road

Lafayette, LA 70508-3344

TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19091195** 

Date Reported: 10/24/2019

CLIENT: Pivotal Engineering LLC Collection Date: 9/25/2019 1:35:00 PM

**Project:** Entergy: CCR Assessment Monitoring

**Lab ID:** 19091195-001 **Matrix:** AQUEOUS

Client Sample ID CCR-1

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WAT	TER,TOTAL		SW74	70A	Analyst: BXB
Mercury	< 0.000200	0.000200	mg/L	1	10/2/2019 12:51:33 PM
INORGANIC ANIONS IN WAT	TER BY IC		E 30	0.0	Analyst: SGP
Fluoride	0.301	0.0500	mg/L	1	10/1/2019 3:18:48 PM
METALS IN WATER BY ICP,	TOTALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	10/7/2019 4:43:42 PM
Barium	0.178	0.0100	mg/L	1	10/7/2019 4:43:42 PM
Beryllium	< 0.00100	0.00100	mg/L	1	10/7/2019 4:43:42 PM
Cadmium	< 0.00500	0.00500	mg/L	1	10/7/2019 4:43:42 PM
Chromium	< 0.0100	0.0100	mg/L	1	10/7/2019 4:43:42 PM
Cobalt	< 0.0100	0.0100	mg/L	1	10/7/2019 4:43:42 PM
Lead	< 0.0100	0.0100	mg/L	1	10/7/2019 4:43:42 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	10/7/2019 4:43:42 PM
Selenium	< 0.0200	0.0200	mg/L	1	10/7/2019 4:43:42 PM
METALS IN WATER BY ICP-	MS, TOTAL		SW60	20A	Analyst: MRM
Antimony	< 0.250	0.250	μg/L	1	10/7/2019 3:25:50 PM
Thallium	< 0.250	0.250	μg/L	1	10/7/2019 3:25:50 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19091195**Date Reported: **10/24/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 9/25/2019 12:30:00 PM

**Project:** Entergy: CCR Assessment Monitoring

**Lab ID:** 19091195-002 **Matrix:** AQUEOUS

**Client Sample ID** CCR-2

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATE	R,TOTAL		SW74	70A	Analyst: <b>BXB</b>
Mercury	< 0.000200	0.000200	mg/L	1	10/2/2019 12:59:38 PM
INORGANIC ANIONS IN WATE	R BY IC		E 30	0.0	Analyst: <b>SGP</b>
Fluoride	0.350	0.0500	mg/L	1	10/1/2019 3:32:31 PM
METALS IN WATER BY ICP, T	OTALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	10/7/2019 4:47:50 PM
Barium	0.173	0.0100	mg/L	1	10/7/2019 4:47:50 PM
Beryllium	< 0.00100	0.00100	mg/L	1	10/7/2019 4:47:50 PM
Cadmium	< 0.00500	0.00500	mg/L	1	10/7/2019 4:47:50 PM
Chromium	< 0.0100	0.0100	mg/L	1	10/7/2019 4:47:50 PM
Cobalt	< 0.0100	0.0100	mg/L	1	10/7/2019 4:47:50 PM
Lead	< 0.0100	0.0100	mg/L	1	10/7/2019 4:47:50 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	10/7/2019 4:47:50 PM
Selenium	< 0.0200	0.0200	mg/L	1	10/7/2019 4:47:50 PM
METALS IN WATER BY ICP-M	S, TOTAL		SW60	20A	Analyst: <b>MRM</b>
Antimony	< 0.250	0.250	μg/L	1	10/7/2019 3:39:53 PM
Thallium	< 0.250	0.250	μg/L	1	10/7/2019 3:39:53 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Element Materials Technology Lafayette
2417 W. Pinhook Road

2417 W. Pinhook Road Lafayette, LA 70508-3344

TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19091195** 

Date Reported: 10/24/2019

CLIENT: Pivotal Engineering LLC Collection Date: 9/25/2019 11:30:00 AM

**Project:** Entergy: CCR Assessment Monitoring

**Lab ID:** 19091195-003 **Matrix:** AQUEOUS

Client Sample ID CCR-3

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATE	R,TOTAL	SW7470A			Analyst: <b>BXB</b>
Mercury	< 0.000200	0.000200	mg/L	1	10/2/2019 1:01:57 PM
INORGANIC ANIONS IN WATE	R BY IC		E 30	0.0	Analyst: SGP
Fluoride	0.403	0.0500	mg/L	1	10/1/2019 4:13:41 PM
METALS IN WATER BY ICP, T	OTALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	10/7/2019 4:54:53 PM
Barium	0.259	0.0100	mg/L	1	10/7/2019 4:54:53 PM
Beryllium	< 0.00100	0.00100	mg/L	1	10/7/2019 4:54:53 PM
Cadmium	< 0.00500	0.00500	mg/L	1	10/7/2019 4:54:53 PM
Chromium	< 0.0100	0.0100	mg/L	1	10/7/2019 4:54:53 PM
Cobalt	< 0.0100	0.0100	mg/L	1	10/7/2019 4:54:53 PM
Lead	< 0.0100	0.0100	mg/L	1	10/7/2019 4:54:53 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	10/7/2019 4:54:53 PM
Selenium	< 0.0200	0.0200	mg/L	1	10/7/2019 4:54:53 PM
METALS IN WATER BY ICP-M	S, TOTAL		SW60	20A	Analyst: <b>MRM</b>
Antimony	< 0.250	0.250	μg/L	1	10/7/2019 3:42:43 PM
Thallium	< 0.250	0.250	μg/L	1	10/7/2019 3:42:43 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19091195**Date Reported: **10/24/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 9/26/2019 1:00:00 PM

**Project:** Entergy: CCR Assessment Monitoring

**Lab ID:** 19091195-004 **Matrix:** AQUEOUS

Client Sample ID CCR-4

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WAT	ΓER,TOTAL		SW74	70A	Analyst: BXB
Mercury	< 0.000200	0.000200	mg/L	1	10/2/2019 1:04:18 PM
INORGANIC ANIONS IN WAT	TER BY IC		E 30	0.0	Analyst: SGP
Fluoride	0.215	0.0500	mg/L	1	10/1/2019 4:27:24 PM
METALS IN WATER BY ICP,	TOTALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	10/7/2019 4:59:01 PM
Barium	0.101	0.0100	mg/L	1	10/7/2019 4:59:01 PM
Beryllium	< 0.00100	0.00100	mg/L	1	10/7/2019 4:59:01 PM
Cadmium	< 0.00500	0.00500	mg/L	1	10/7/2019 4:59:01 PM
Chromium	< 0.0100	0.0100	mg/L	1	10/7/2019 4:59:01 PM
Cobalt	< 0.0100	0.0100	mg/L	1	10/7/2019 4:59:01 PM
Lead	< 0.0100	0.0100	mg/L	1	10/7/2019 4:59:01 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	10/7/2019 4:59:01 PM
Selenium	< 0.0200	0.0200	mg/L	1	10/7/2019 4:59:01 PM
METALS IN WATER BY ICP-	MS, TOTAL		SW60	20A	Analyst: MRM
Antimony	< 0.250	0.250	μg/L	1	10/7/2019 3:45:31 PM
Thallium	< 0.250	0.250	μg/L	1	10/7/2019 3:45:31 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19091195**Date Reported: **10/24/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 9/26/2019 11:40:00 AM

**Project:** Entergy: CCR Assessment Monitoring

Lab ID: 19091195-005 Matrix: AQUEOUS

Client Sample ID CCR-5

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATE	ER,TOTAL		SW74	70A	Analyst: <b>BXB</b>
Mercury	< 0.000200	0.000200	mg/L	1	10/2/2019 1:06:37 PM
INORGANIC ANIONS IN WAT	ER BY IC		E 30	0.0	Analyst: <b>SGP</b>
Fluoride	0.235	0.0500	mg/L	1	10/1/2019 4:41:07 PM
METALS IN WATER BY ICP, T	TOTALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	10/7/2019 5:11:37 PM
Barium	0.186	0.0100	mg/L	1	10/7/2019 5:11:37 PM
Beryllium	< 0.00100	0.00100	mg/L	1	10/7/2019 5:11:37 PM
Cadmium	< 0.00500	0.00500	mg/L	1	10/7/2019 5:11:37 PM
Chromium	< 0.0100	0.0100	mg/L	1	10/7/2019 5:11:37 PM
Cobalt	< 0.0100	0.0100	mg/L	1	10/7/2019 5:11:37 PM
Lead	< 0.0100	0.0100	mg/L	1	10/7/2019 5:11:37 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	10/7/2019 5:11:37 PM
Selenium	< 0.0200	0.0200	mg/L	1	10/7/2019 5:11:37 PM
METALS IN WATER BY ICP-N	IS, TOTAL		SW60	20A	Analyst: MRM
Antimony	< 0.250	0.250	μg/L	1	10/7/2019 3:51:07 PM
Thallium	< 0.250	0.250	μg/L	1	10/7/2019 3:51:07 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Element Materials Technology Lafayette 2417 W. Pinhook Road

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TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

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WO#: **19091195**Date Reported: **10/24/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 9/26/2019 10:20:00 AM

**Project:** Entergy: CCR Assessment Monitoring

**Lab ID:** 19091195-006 **Matrix:** AQUEOUS

**Client Sample ID** CCR-6

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATE	ER,TOTAL		SW74	70A	Analyst: <b>BXB</b>
Mercury	< 0.000200	0.000200	mg/L	1	10/2/2019 1:08:54 PM
INORGANIC ANIONS IN WATI	ER BY IC		E 30	0.0	Analyst: <b>SGP</b>
Fluoride	0.252	0.0500	mg/L	1	10/1/2019 4:54:51 PM
METALS IN WATER BY ICP, T	TOTALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	10/7/2019 5:28:11 PM
Barium	0.203	0.0100	mg/L	1	10/7/2019 5:28:11 PM
Beryllium	< 0.00100	0.00100	mg/L	1	10/7/2019 5:28:11 PM
Cadmium	< 0.00500	0.00500	mg/L	1	10/7/2019 5:28:11 PM
Chromium	< 0.0100	0.0100	mg/L	1	10/7/2019 5:28:11 PM
Cobalt	< 0.0100	0.0100	mg/L	1	10/7/2019 5:28:11 PM
Lead	< 0.0100	0.0100	mg/L	1	10/7/2019 5:28:11 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	10/7/2019 5:28:11 PM
Selenium	< 0.0200	0.0200	mg/L	1	10/7/2019 5:28:11 PM
METALS IN WATER BY ICP-M	IS, TOTAL		SW60	20A	Analyst: MRM
Antimony	< 0.250	0.250	μg/L	1	10/7/2019 3:53:55 PM
Thallium	< 0.250	0.250	μg/L	1	10/7/2019 3:53:55 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Element Materials Technology Lafayette
2417 W. Pinhook Road

TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com

Lafayette, LA 70508-3344 (consolidated)
0483 FAX: (337) 233-6540 WO#: 19

Date Reported: 10/24/2019

19091195

**Analytical Report** 

CLIENT: Pivotal Engineering LLC Collection Date: 9/26/2019 8:50:00 AM

**Project:** Entergy: CCR Assessment Monitoring

**Lab ID:** 19091195-007 **Matrix:** AQUEOUS

**Client Sample ID** CCR-7

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATE	ER,TOTAL		SW74	70A	Analyst: <b>BXB</b>
Mercury	< 0.000200	0.000200	mg/L	1	10/2/2019 1:11:13 PM
INORGANIC ANIONS IN WATE	ER BY IC		E 30	0.0	Analyst: <b>SGP</b>
Fluoride	0.274	0.0500	mg/L	1	10/1/2019 5:08:34 PM
METALS IN WATER BY ICP, T	OTALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	10/7/2019 5:32:21 PM
Barium	0.221	0.0100	mg/L	1	10/7/2019 5:32:21 PM
Beryllium	< 0.00100	0.00100	mg/L	1	10/7/2019 5:32:21 PM
Cadmium	< 0.00500	0.00500	mg/L	1	10/7/2019 5:32:21 PM
Chromium	< 0.0100	0.0100	mg/L	1	10/7/2019 5:32:21 PM
Cobalt	< 0.0100	0.0100	mg/L	1	10/7/2019 5:32:21 PM
Lead	< 0.0100	0.0100	mg/L	1	10/7/2019 5:32:21 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	10/7/2019 5:32:21 PM
Selenium	< 0.0200	0.0200	mg/L	1	10/7/2019 5:32:21 PM
METALS IN WATER BY ICP-M	S, TOTAL		SW60	20A	Analyst: MRM
Antimony	< 0.250	0.250	μg/L	1	10/7/2019 3:56:43 PM
Thallium	< 0.250	0.250	μg/L	1	10/7/2019 3:56:43 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19091195**Date Reported: **10/24/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 9/26/2019 6:30:00 PM

**Project:** Entergy: CCR Assessment Monitoring

Lab ID: 19091195-008 Matrix: AQUEOUS

Client Sample ID CCR-8

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WA	TER,TOTAL		SW74	70A	Analyst: <b>BXB</b>
Mercury	< 0.000200	0.000200	mg/L	1	10/2/2019 1:13:31 PM
INORGANIC ANIONS IN WA	TER BY IC		E 30	0.0	Analyst: <b>SGP</b>
Fluoride	0.145	0.0500	mg/L	1	10/1/2019 5:22:17 PM
METALS IN WATER BY ICP	, TOTALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	10/7/2019 5:58:59 PM
Barium	0.113	0.0100	mg/L	1	10/7/2019 5:58:59 PM
Beryllium	< 0.00100	0.00100	mg/L	1	10/7/2019 5:58:59 PM
Cadmium	< 0.00500	0.00500	mg/L	1	10/7/2019 5:58:59 PM
Chromium	< 0.0100	0.0100	mg/L	1	10/7/2019 5:58:59 PM
Cobalt	< 0.0100	0.0100	mg/L	1	10/7/2019 5:58:59 PM
Lead	< 0.0100	0.0100	mg/L	1	10/7/2019 5:58:59 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	10/7/2019 5:58:59 PM
Selenium	< 0.0200	0.0200	mg/L	1	10/7/2019 5:58:59 PM
METALS IN WATER BY ICP	-MS, TOTAL		SW60	20A	Analyst: MRM
Antimony	< 0.250	0.250	μg/L	1	10/7/2019 3:59:31 PM
Thallium	< 0.250	0.250	μg/L	1	10/7/2019 3:59:31 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Element Materials Technology Lafayette 2417 W. Pinhook Road

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(consolidated)

WO#: **19091195**Date Reported: **10/24/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 9/25/2019 4:55:00 PM

**Project:** Entergy: CCR Assessment Monitoring

**Lab ID:** 19091195-009 **Matrix:** AQUEOUS

Client Sample ID CCR-9

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATE	ER,TOTAL		SW74	70A	Analyst: <b>BXB</b>
Mercury	< 0.000200	0.000200	mg/L	1	10/2/2019 1:21:04 PM
INORGANIC ANIONS IN WATI	ER BY IC		E 30	0.0	Analyst: <b>SGP</b>
Fluoride	0.558	0.0500	mg/L	1	10/1/2019 5:36:00 PM
METALS IN WATER BY ICP, T	OTALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	10/7/2019 5:40:35 PM
Barium	0.236	0.0100	mg/L	1	10/7/2019 5:40:35 PM
Beryllium	< 0.00100	0.00100	mg/L	1	10/7/2019 5:40:35 PM
Cadmium	< 0.00500	0.00500	mg/L	1	10/7/2019 5:40:35 PM
Chromium	< 0.0100	0.0100	mg/L	1	10/7/2019 5:40:35 PM
Cobalt	< 0.0100	0.0100	mg/L	1	10/7/2019 5:40:35 PM
Lead	< 0.0100	0.0100	mg/L	1	10/7/2019 5:40:35 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	10/7/2019 5:40:35 PM
Selenium	< 0.0200	0.0200	mg/L	1	10/7/2019 5:40:35 PM
METALS IN WATER BY ICP-M	IS, TOTAL		SW60	20A	Analyst: <b>MRM</b>
Antimony	< 0.250	0.250	μg/L	1	10/7/2019 4:02:18 PM
Thallium	< 0.250	0.250	μg/L	1	10/7/2019 4:02:18 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



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Lafayette, LA 70508-3344 TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19091195**Date Reported: **10/24/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 9/25/2019 3:45:00 PM

**Project:** Entergy: CCR Assessment Monitoring

**Lab ID:** 19091195-010 **Matrix:** AQUEOUS

Client Sample ID CCR-10

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WA	TER,TOTAL	SW7470A			Analyst: BXB
Mercury	< 0.000200	0.000200	mg/L	1	10/2/2019 1:23:22 PM
INORGANIC ANIONS IN WA	TER BY IC		E 30	0.0	Analyst: SGP
Fluoride	0.614	0.0500	mg/L	1	10/1/2019 5:49:43 PM
METALS IN WATER BY ICP	, TOTALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	10/7/2019 5:50:44 PM
Barium	0.287	0.0100	mg/L	1	10/7/2019 5:50:44 PM
Beryllium	< 0.00100	0.00100	mg/L	1	10/7/2019 5:50:44 PM
Cadmium	< 0.00500	0.00500	mg/L	1	10/7/2019 5:50:44 PM
Chromium	< 0.0100	0.0100	mg/L	1	10/7/2019 5:50:44 PM
Cobalt	< 0.0100	0.0100	mg/L	1	10/7/2019 5:50:44 PM
Lead	< 0.0100	0.0100	mg/L	1	10/7/2019 5:50:44 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	10/7/2019 5:50:44 PM
Selenium	< 0.0200	0.0200	mg/L	1	10/7/2019 5:50:44 PM
METALS IN WATER BY ICP	-MS, TOTAL		SW60	20A	Analyst: MRM
Antimony	< 0.250	0.250	μg/L	1	10/7/2019 4:05:06 PM
Thallium	< 0.250	0.250	μg/L	1	10/7/2019 4:05:06 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19091195**Date Reported: **10/24/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 9/25/2019 2:40:00 PM

**Project:** Entergy: CCR Assessment Monitoring

**Lab ID:** 19091195-011 **Matrix:** AQUEOUS

Client Sample ID CCR-11

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WA	ATER,TOTAL		SW74	70A	Analyst: <b>BXB</b>
Mercury	< 0.000200	0.000200	mg/L	1	10/2/2019 1:25:41 PM
INORGANIC ANIONS IN W	ATER BY IC		E 300	0.0	Analyst: SGP
Fluoride	0.704	0.0500	mg/L	1	10/1/2019 6:03:26 PM
METALS IN WATER BY ICI	P, TOTALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	10/7/2019 6:03:11 PM
Barium	0.137	0.0100	mg/L	1	10/7/2019 6:03:11 PM
Beryllium	< 0.00100	0.00100	mg/L	1	10/7/2019 6:03:11 PM
Cadmium	< 0.00500	0.00500	mg/L	1	10/7/2019 6:03:11 PM
Chromium	< 0.0100	0.0100	mg/L	1	10/7/2019 6:03:11 PM
Cobalt	< 0.0100	0.0100	mg/L	1	10/7/2019 6:03:11 PM
Lead	< 0.0100	0.0100	mg/L	1	10/7/2019 6:03:11 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	10/7/2019 6:03:11 PM
Selenium	< 0.0200	0.0200	mg/L	1	10/7/2019 6:03:11 PM
METALS IN WATER BY ICI	P-MS, TOTAL		SW60	20A	Analyst: MRM
Antimony	< 0.250	0.250	μg/L	1	10/7/2019 4:19:09 PM
Thallium	< 0.250	0.250	μg/L	1	10/7/2019 4:19:09 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Element Materials Technology Lafayette 2417 W. Pinhook Road

2417 W. Pinhook Road Lafayette, LA 70508-3344

TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19091195** 

Date Reported: 10/24/2019

CLIENT: Pivotal Engineering LLC Collection Date: 9/26/2019 5:10:00 PM

**Project:** Entergy: CCR Assessment Monitoring

**Lab ID:** 19091195-012 **Matrix:** AQUEOUS

Client Sample ID CCR-12

Analyses	Analyses Result RL Qual Units  MERCURY IN GROUND WATER, TOTAL SW7470		DF	Date Analyzed	
MERCURY IN GROUND WA			SW74	70A	Analyst: BXB
Mercury	< 0.000200	0.000200	mg/L	1	10/2/2019 1:28:00 PM
INORGANIC ANIONS IN WA	TER BY IC		E 30	0.0	Analyst: SGP
Fluoride	0.140	0.0500	mg/L	1	10/1/2019 6:17:11 PM
METALS IN WATER BY ICP	, TOTALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	10/7/2019 6:07:18 PM
Barium	0.162	0.0100	mg/L	1	10/7/2019 6:07:18 PM
Beryllium	< 0.00100	0.00100	mg/L	1	10/7/2019 6:07:18 PM
Cadmium	< 0.00500	0.00500	mg/L	1	10/7/2019 6:07:18 PM
Chromium	< 0.0100	0.0100	mg/L	1	10/7/2019 6:07:18 PM
Cobalt	< 0.0100	0.0100	mg/L	1	10/7/2019 6:07:18 PM
Lead	< 0.0100	0.0100	mg/L	1	10/7/2019 6:07:18 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	10/7/2019 6:07:18 PM
Selenium	< 0.0200	0.0200	mg/L	1	10/7/2019 6:07:18 PM
METALS IN WATER BY ICP	-MS, TOTAL		SW60	20A	Analyst: MRM
Antimony	< 0.250	0.250	μg/L	1	10/7/2019 4:21:59 PM
Thallium	< 0.250	0.250	μg/L	1	10/7/2019 4:21:59 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19091195**Date Reported: **10/24/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 9/26/2019 3:45:00 PM

**Project:** Entergy: CCR Assessment Monitoring

**Lab ID:** 19091195-013 **Matrix:** AQUEOUS

Client Sample ID CCR-13

Analyses	Result RL Qual Units		DF	Date Analyzed	
MERCURY IN GROUND WA	TER,TOTAL		SW74	70A	Analyst: BXB
Mercury	< 0.000200	0.000200	mg/L	1	10/2/2019 1:30:18 PM
INORGANIC ANIONS IN WA	TER BY IC		E 30	0.0	Analyst: SGP
Fluoride	0.227	0.0500	mg/L	1	10/1/2019 6:58:23 PM
METALS IN WATER BY ICP,	TOTALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	10/7/2019 6:27:55 PM
Barium	0.104	0.0100	mg/L	1	10/7/2019 6:27:55 PM
Beryllium	< 0.00100	0.00100	mg/L	1	10/7/2019 6:27:55 PM
Cadmium	< 0.00500	0.00500	mg/L	1	10/7/2019 6:27:55 PM
Chromium	< 0.0100	0.0100	mg/L	1	10/7/2019 6:27:55 PM
Cobalt	< 0.0100	0.0100	mg/L	1	10/7/2019 6:27:55 PM
Lead	< 0.0100	0.0100	mg/L	1	10/7/2019 6:27:55 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	10/7/2019 6:27:55 PM
Selenium	< 0.0200	0.0200	mg/L	1	10/7/2019 6:27:55 PM
METALS IN WATER BY ICP-	MS, TOTAL		SW60	20A	Analyst: MRM
Antimony	< 0.250	0.250	μg/L	1	10/7/2019 4:24:47 PM
Thallium	< 0.250	0.250	μg/L	1	10/7/2019 4:24:47 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Element Materials Technology Lafayette 2417 W. Pinhook Road

Lafayette, LA 70508-3344

TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19091195**Date Reported: **10/24/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 9/26/2019 2:30:00 PM

**Project:** Entergy: CCR Assessment Monitoring

**Lab ID:** 19091195-014 **Matrix:** AQUEOUS

Client Sample ID CCR-14

Analyses	Analyses Result RL Qual Units  MERCURY IN GROUND WATER, TOTAL SW7470		DF	Date Analyzed	
MERCURY IN GROUND W			SW74	70A	Analyst: <b>BXB</b>
Mercury	< 0.000200	0.000200	mg/L	1	10/2/2019 1:32:37 PM
INORGANIC ANIONS IN W	ATER BY IC		E 30	0.0	Analyst: <b>SGP</b>
Fluoride	0.156	0.0500	mg/L	1	10/1/2019 7:12:06 PM
METALS IN WATER BY IC	P, TOTALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	10/7/2019 6:32:03 PM
Barium	0.0808	0.0100	mg/L	1	10/7/2019 6:32:03 PM
Beryllium	< 0.00100	0.00100	mg/L	1	10/7/2019 6:32:03 PM
Cadmium	< 0.00500	0.00500	mg/L	1	10/7/2019 6:32:03 PM
Chromium	< 0.0100	0.0100	mg/L	1	10/7/2019 6:32:03 PM
Cobalt	< 0.0100	0.0100	mg/L	1	10/7/2019 6:32:03 PM
Lead	< 0.0100	0.0100	mg/L	1	10/7/2019 6:32:03 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	10/7/2019 6:32:03 PM
Selenium	< 0.0200	0.0200	mg/L	1	10/7/2019 6:32:03 PM
METALS IN WATER BY IC	P-MS, TOTAL		SW60	20A	Analyst: MRM
Antimony	< 0.250	0.250	μg/L	1	10/7/2019 4:27:35 PM
Thallium	< 0.250	0.250	μg/L	1	10/7/2019 4:27:35 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Element Materials Technology Lafayette 2417 W. Pinhook Road

Lafayette, LA 70508-3344

TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19091195**Date Reported: **10/24/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 9/26/2019

**Project:** Entergy: CCR Assessment Monitoring

**Lab ID:** 19091195-015 **Matrix:** AQUEOUS

Client Sample ID DUP

Analyses	Result RL Qual Units		DF	Date Analyzed	
MERCURY IN GROUND WATER, TOTAL			SW74	70A	Analyst: BXB
Mercury	< 0.000200	0.000200	mg/L	1	10/2/2019 1:34:55 PM
INORGANIC ANIONS IN W	ATER BY IC		E 30	0.0	Analyst: SGP
Fluoride	0.277	0.0500	mg/L	1	10/1/2019 7:25:50 PM
METALS IN WATER BY IC	P, TOTALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	10/7/2019 6:36:09 PM
Barium	0.232	0.0100	mg/L	1	10/7/2019 6:36:09 PM
Beryllium	< 0.00100	0.00100	mg/L	1	10/7/2019 6:36:09 PM
Cadmium	< 0.00500	0.00500	mg/L	1	10/7/2019 6:36:09 PM
Chromium	< 0.0100	0.0100	mg/L	1	10/7/2019 6:36:09 PM
Cobalt	< 0.0100	0.0100	mg/L	1	10/7/2019 6:36:09 PM
Lead	< 0.0100	0.0100	mg/L	1	10/7/2019 6:36:09 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	10/7/2019 6:36:09 PM
Selenium	< 0.0200	0.0200	mg/L	1	10/7/2019 6:36:09 PM
METALS IN WATER BY IC	P-MS, TOTAL		SW60	20A	Analyst: MRM
Antimony	< 0.250	0.250	μg/L	1	10/7/2019 4:30:23 PM
Thallium	< 0.250	0.250	μg/L	1	10/7/2019 4:30:23 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19091195**Date Reported: **10/24/2019** 

CLIENT: Pivotal Engineering LLC Collection Date: 9/25/2019 4:20:00 PM

**Project:** Entergy: CCR Assessment Monitoring

**Lab ID:** 19091195-016 **Matrix:** AQUEOUS

Client Sample ID FB-1

Analyses	ses Result RL Qual		al Units	DF	Date Analyzed
MERCURY IN GROUND WATER, TOTAL			SW74	70A	Analyst: <b>BXB</b>
Mercury	< 0.000200	0.000200	mg/L	1	10/2/2019 1:37:13 PM
INORGANIC ANIONS IN W	ATER BY IC		E 30	0.0	Analyst: <b>SGP</b>
Fluoride	< 0.0500	0.0500	mg/L	1	10/1/2019 2:37:34 PM
METALS IN WATER BY IC	P, TOTALS		SW60	10B	Analyst: STS
Arsenic	< 0.0100	0.0100	mg/L	1	10/15/2019 5:45:05 PM
Barium	< 0.0100	0.0100	mg/L	1	10/7/2019 6:45:13 PM
Beryllium	< 0.00100	0.00100	mg/L	1	10/7/2019 6:45:13 PM
Cadmium	< 0.00500	0.00500	mg/L	1	10/7/2019 6:45:13 PM
Chromium	< 0.0100	0.0100	mg/L	1	10/7/2019 6:45:13 PM
Cobalt	< 0.0100	0.0100	mg/L	1	10/7/2019 6:45:13 PM
Lead	< 0.0100	0.0100	mg/L	1	10/7/2019 6:45:13 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	10/7/2019 6:45:13 PM
Selenium	< 0.0200	0.0200	mg/L	1	10/7/2019 6:45:13 PM
METALS IN WATER BY IC	P-MS, TOTAL		SW60	20A	Analyst: MRM
Antimony	< 0.250	0.250	μg/L	1	10/7/2019 4:33:11 PM
Thallium	< 0.250	0.250	μg/L	1	10/7/2019 4:33:11 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit
SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



## **QC SUMMARY REPORT**

WO#: **19091195** 

24-Oct-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring BatchID: 31738B

Website: www.element.com

Sample ID MB-31738	SampType: MBLK	TestCode: 6010	D_W Units: mg/L	Prep Date: 1	0/1/2019	RunNo: <b>82690</b>		
Client ID: PBW	Batch ID: 31738B	TestNo: SW6	TestNo: SW6010B		0/7/2019	SeqNo: <b>2070297</b>		
Analyte	Result	PQL SPK \	value SPK Ref Val	%REC LowLimit High	Limit RPD Ref Val	%RPD RPDI	_imit Qual	
Arsenic	< 0.0100	0.0100						
Barium	< 0.0100	0.0100						
Beryllium	< 0.00100	0.00100						
Cadmium	< 0.00500	0.00500						
Chromium	< 0.0100	0.0100						
Cobalt	< 0.0100	0.0100						
Lead	< 0.0100	0.0100						
Molybdenum	< 0.0100	0.0100						
Selenium	< 0.0200	0.0200						

Sample ID LCS-31738	SampType: LCS	TestCode: 6010_W Units: mg/L			Prep Date: 10/1/2019			RunNo: <b>82690</b>				
Client ID: LCSW	Batch ID: 31738B	Test	TestNo: SW6010B			Analysis Date: 10/7/2019				SeqNo: <b>2070298</b>		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Arsenic	0.504	0.0100	0.5000	0	101	80	120					
Barium	0.496	0.0100	0.5000	0	99.2	80	120					
Beryllium	0.499	0.00100	0.5000	0	99.8	80	120					
Cadmium	0.498	0.00500	0.5000	0	99.6	80	120					
Chromium	0.495	0.0100	0.5000	0	98.9	80	120					
Cobalt	0.497	0.0100	0.5000	0	99.5	80	120					
Lead	0.496	0.0100	0.5000	0	99.3	80	120					
Molybdenum	0.488	0.0100	0.5000	0	97.7	80	120					
Selenium	0.501	0.0200	0.5000	0	100	80	120					

Qualifiers: H Holding times for preparation or analysis exceeded

R RPD outside accepted recovery limits

SDL Sample detection limit

M Matrix Interference

RL Reporting Limit

U Analyte not detected

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as sp



## **QC SUMMARY REPORT**

WO#: **19091195** 

24-Oct-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring BatchID: 31738B

Sample ID LCSD-31738	SampType: <b>LCSD</b>	TestCode: 6010_W		Units: mg/L	Prep Date: 10/1/2019				RunNo: 826		
Client ID: LCSS02	Batch ID: <b>31738B</b>	TestNo: SW6010B				Analysis Da	te: 10/7/20	119	SeqNo: <b>20</b> 7	70299	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.500	0.0100	0.5000	0	100	80	120	0.5036	0.757	20	
Barium	0.497	0.0100	0.5000	0	99.5	80	120	0.4961	0.242	20	
Beryllium	0.502	0.00100	0.5000	0	100	80	120	0.4991	0.659	20	
Cadmium	0.502	0.00500	0.5000	0	100	80	120	0.4980	0.720	20	
Chromium	0.496	0.0100	0.5000	0	99.2	80	120	0.4947	0.222	20	
Cobalt	0.502	0.0100	0.5000	0	100	80	120	0.4973	0.921	20	
Lead	0.502	0.0100	0.5000	0	100	80	120	0.4963	1.22	20	
Molybdenum	0.495	0.0100	0.5000	0	98.9	80	120	0.4883	1.28	20	
Selenium	0.509	0.0200	0.5000	0	102	80	120	0.5010	1.62	20	

Sample ID 19091195-004BMS	SampType: MS	TestCode: 6010_W Units: mg/L			Prep Date: 10/1/2019			RunNo: <b>82690</b>			
Client ID: CCR-4	Batch ID: <b>31738B</b>	Test	No: <b>SW6010B</b>			Analysis Date: 10/7/2019			SeqNo: <b>2070304</b>		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.504	0.0100	0.5000	0	101	75	125				
Barium	0.589	0.0100	0.5000	0.1009	97.7	75	125				
Beryllium	0.484	0.00100	0.5000	0	96.7	75	125				
Cadmium	0.467	0.00500	0.5000	0	93.4	75	125				
Chromium	0.475	0.0100	0.5000	0	95.0	75	125				
Cobalt	0.469	0.0100	0.5000	0	93.7	75	125				
Lead	0.477	0.0100	0.5000	0	95.4	75	125				
Molybdenum	0.483	0.0100	0.5000	0	96.6	75	125				
Selenium	0.461	0.0200	0.5000	0	92.2	75	125				

Qualifiers: H Holding times for preparation or analysis exceeded

R RPD outside accepted recovery limits

SDL Sample detection limit

Matrix Interference

RL Reporting Limit

U Analyte not detected

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as sp



## **QC SUMMARY REPORT**

WO#: **19091195** 

24-Oct-19

Client: Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring BatchID: 31738B

Website: www.element.com

Sample ID 19091195-004BMSD	SampType: MSD	TestCod	de: <b>6010_W</b>	Units: mg/L		Prep Da	te: <b>10/1/2</b> 0	119	RunNo: 820	690	
Client ID: CCR-4	Batch ID: <b>31738B</b>	TestN	lo: <b>SW6010B</b>			Analysis Da	te: <b>10/7/2</b> 0	19	SeqNo: 207	70305	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.515	0.0100	0.5000	0	103	75	125	0.5036	2.16	20	
Barium	0.566	0.0100	0.5000	0.1009	93.0	75	125	0.5892	4.02	20	
Beryllium	0.465	0.00100	0.5000	0	92.9	75	125	0.4837	4.01	20	
Cadmium	0.452	0.00500	0.5000	0	90.5	75	125	0.4671	3.20	20	
Chromium	0.456	0.0100	0.5000	0	91.2	75	125	0.4750	4.04	20	
Cobalt	0.454	0.0100	0.5000	0	90.8	75	125	0.4686	3.19	20	
Lead	0.458	0.0100	0.5000	0	91.6	75	125	0.4772	4.06	20	
Molybdenum	0.468	0.0100	0.5000	0	93.6	75	125	0.4830	3.15	20	
Selenium	0.467	0.0200	0.5000	0	93.5	75	125	0.4609	1.38	20	

R RPD outside accepted recovery limits

RL Reporting Limit

U Analyte not detected

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as sp



## **QC SUMMARY REPORT**

WO#: **19091195** 

24-Oct-19

Client: Pivotal Engineering LLC

SDL Sample detection limit

Project: Entergy: CCR Assessment Monitoring BatchID: 31740

Website: www.element.com

Project: Entergy: C	CR Assessment Monitor	ring	Batchib: 3	1/40
Sample ID MB-31740	SampType: MBLK	TestCode: 6020A_W Units: μg/L	Prep Date: 10/1/2019	RunNo: <b>82688</b>
Client ID: PBW	Batch ID: 31740	TestNo: SW6020A	Analysis Date: 10/7/2019	SeqNo: <b>2070015</b>
Analyte	Result	PQL SPK value SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual
Antimony	< 0.250	0.250		
Thallium	< 0.250	0.250		
Sample ID LCS-31740	SampType: <b>LCS</b>	TestCode: 6020A_W Units: μg/L	Prep Date: 10/1/2019	RunNo: <b>82688</b>
Client ID: LCSW	Batch ID: 31740	TestNo: SW6020A	Analysis Date: 10/7/2019	SeqNo: <b>2070016</b>
Analyte	Result	PQL SPK value SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual
Antimony	463	5.00 500.0 0	92.6 80 120	
Thallium	486	5.00 500.0 0	97.1 80 120	
Sample ID LCSD-31740	SampType: LCSD	TestCode: 6020A_W Units: μg/L	Prep Date: 10/1/2019	RunNo: <b>82688</b>
Client ID: LCSS02	Batch ID: 31740	TestNo: SW6020A	Analysis Date: 10/7/2019	SeqNo: <b>2070017</b>
Analyte	Result	PQL SPK value SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual
Antimony	498	5.00 500.0 0	99.6 80 120 462.9	7.29 20
Thallium	547	5.00 500.0 0	109 80 120 485.7	11.9 20
Sample ID 19091195-004BMS	SampType: <b>MS</b>	TestCode: 6020A_W Units: μg/L	Prep Date: 10/1/2019	RunNo: <b>82688</b>
Client ID: CCR-4	Batch ID: 31740	TestNo: SW6020A	Analysis Date: 10/7/2019	SeqNo: <b>2070026</b>
Analyte	Result	PQL SPK value SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual
Antimony	484	5.00 500.0 0.05333	96.8 75 125	
Qualifiers.	r preparation or analysis exceeded	M Matrix Interference	ND Not Detected at the Re	
R RPD outside acc	epted recovery limits	RL Reporting Limit	S Spike Recovery outside	e accepted recovery limits

Analyte not detected

Page 22 of 45



## **QC SUMMARY REPORT**

WO#: **19091195** 

24-Oct-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring BatchID: 31740

Website: www.element.com

Sample ID 19091195-004BMS	SampType: <b>MS</b>	TestCod	de: <b>6020A_W</b>	Units: µg/L		Prep Da	te: <b>10/1/20</b>	19	RunNo: 826	688	
Client ID: CCR-4	Batch ID: 31740	TestN	lo: <b>SW6020A</b>			Analysis Da	te: 10/7/20	19	SeqNo: <b>20</b> 7	70026	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Thallium	507	5.00	500.0	0.04288	101	75	125				

Sample ID	19091195-004BMSD	SampType:	MSD	TestCod	e: <b>6020A_W</b>	Units: µg/L		Prep Da	te: <b>10/1/2</b> 0	119	RunNo: 820	688	
Client ID:	CCR-4	Batch ID:	31740	TestN	o: <b>SW6020A</b>			Analysis Da	te: <b>10/7/2</b> 0	19	SeqNo: 20	70027	
Analyte			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony			464	5.00	500.0	0.05333	92.9	75	125	483.8	4.07	20	
Thallium			488	5.00	500.0	0.04288	97.6	75	125	507.3	3.91	20	

U Analyte not detected

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as sp



Element Materials Technology Lafayette 2417 W. Pinhook Road Lafayette, LA 70508-3344 TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com

## **QC SUMMARY REPORT**

WO#: **19091195** 

24-Oct-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring BatchID: 31752

Project: Entergy: CCR Assessment Monitoring				BatchID: 31752						
Sample ID Client ID:	MB-31752 PBW	SampType: MBLK Batch ID: 31752	TestCode: <b>HG_W_7470</b> Units: <b>mg/L</b> TestNo: <b>SW7470A</b>	Prep Date: <b>10/2/2019</b> Analysis Date: <b>10/2/2019</b>	RunNo: <b>82545</b> SeqNo: <b>2066675</b>					
Analyte		Result	PQL SPK value SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual					
Mercury		< 0.000200	0.000200							
Sample ID	LCS-31752	SampType: LCS	TestCode: HG_W_7470 Units: mg/L	Prep Date: 10/2/2019	RunNo: <b>82545</b>					
Client ID:	LCSW	Batch ID: 31752	TestNo: SW7470A	Analysis Date: 10/2/2019	SeqNo: <b>2066676</b>					
Analyte		Result	PQL SPK value SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual					
Mercury		0.0107	0.000200 0.01000 0	107 80 120						
Sample ID	LCSD-31752	SampType: <b>LCSD</b>	TestCode: HG_W_7470 Units: mg/L	Prep Date: 10/2/2019	RunNo: <b>82545</b>					
Client ID:	LCSS02	Batch ID: 31752	TestNo: SW7470A	Analysis Date: 10/2/2019	SeqNo: <b>2066677</b>					
Analyte		Result	PQL SPK value SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual					
Mercury		0.0107	0.000200 0.01000 0	107 80 120 0.01066	0.495 20					
Sample ID	19091195-001BMS	SampType: MS	TestCode: HG_W_7470 Units: mg/L	Prep Date: 10/2/2019	RunNo: <b>82545</b>					
Client ID:	CCR-1	Batch ID: 31752	TestNo: SW7470A	Analysis Date: 10/2/2019	SeqNo: <b>2066681</b>					
Analyte		Result	PQL SPK value SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual					
Mercury		0.0104	0.000200 0.01000 0	104 75 125						

Qualifiers: H Holding times for preparation or analysis exceeded

R RPD outside accepted recovery limits

SDL Sample detection limit

Matrix Interference

RL Reporting Limit

U Analyte not detected

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as sp



**QC SUMMARY REPORT** 

WO#: **19091195** 

24-Oct-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring BatchID: 31752

Website: www.element.com

'	19091195-001BMSD CCR-1	SampType: Batch ID:			de: HG_W_74 lo: SW7470A	· ·		Prep Da Analysis Da	te: 10/2/20 te: 10/2/20		RunNo: <b>825</b> SeqNo: <b>206</b>		
Analyte			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury			0.0105	0.000200	0.01000	0	105	75	125	0.01043	0.603	20	

RL Reporting Limit

U Analyte not detected



**QC SUMMARY REPORT** 

WO#: **19091195** 

24-Oct-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring BatchID: R82497

Website: www.element.com

Project:	Entergy: Co	CR Assessme	nt Monitori	ng			BatchID: R82497						
Sample ID M		SampType:	MBLK	TestCo	de: <b>300.0</b>	Units: mg/L		Prep Dat	te:		RunNo: 82	497	
Client ID: PI	BW	Batch ID:	R82497	Test	No: <b>E 300.0</b>			Analysis Dat	te: <b>10/1/2</b> 0	)19	SeqNo: 20	65794	
Analyte			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		<	0.0500	0.0500									
Sample ID L	cs	SampType:	LCS	TestCo	de: <b>300.0</b>	Units: mg/L		Prep Dat	te:		RunNo: 82	497	
Client ID: Lo	CSW	Batch ID:	R82497	Test	No: <b>E 300.0</b>			Analysis Dat	te: <b>10/1/2</b> 0	)19	SeqNo: 20	65795	
Analyte			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride			2.01	0.0500	2.000	0	100	90	110				
Sample ID L	CSD	SampType:	LCSD	TestCo	de: <b>300.0</b>	Units: mg/L		Prep Dat	te:		RunNo: 82	497	
Client ID: Lo	CSS02	Batch ID:	R82497	Test	No: <b>E 300.0</b>			Analysis Dat	te: <b>10/1/2</b> 0	)19	SeqNo: 20	65796	
Analyte			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride			2.03	0.0500	2.000	0	101	90	110	2.006	1.19	15	
Sample ID 19	9091195-004AMS	SampType:	MS	TestCo	de: <b>300.0</b>	Units: mg/L		Prep Dat	te:		RunNo: 82	497	
Client ID: C	CR-4	Batch ID:	R82497	Test	No: <b>E 300.0</b>			Analysis Dat	te: <b>10/1/2</b> 0	)19	SeqNo: 20	65803	
Analyte			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride			9.82	0.500	10.00	0	98.2	80	120				

Qualifiers: H Holding times for preparation or analysis exceeded

R RPD outside accepted recovery limits

SDL Sample detection limit

Matrix Interference

RL Reporting Limit

U Analyte not detected

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as sp



Element Materials Technology Lafayette 2417 W. Pinhook Road Lafayette, LA 70508-3344 TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com

## **QC SUMMARY REPORT**

WO#: **19091195** 

24-Oct-19

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring BatchID: R82497

	Entergy: Cort issessment fromtoring					2000020						
Sample ID	19091195-004AMSD	SampType: MSD	TestCod	de: <b>300.0</b>	Units: mg/L		Prep Da	te:		RunNo: 82	497	
Client ID:	CCR-4	Batch ID: <b>R82497</b>	TestN	lo: <b>E 300.0</b>			Analysis Da	te: 10/1/20	019	SeqNo: 20	65804	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		10.0	0.500	10.00	0	100	80	120	9.821	2.18	15	
Sample ID	19091195-016AMS	SampType: MS	TestCod	de: <b>300.0</b>	Units: mg/L		Prep Da	te:		RunNo: 82	497	
Client ID:	FB-1	Batch ID: R82497	TestN	No: <b>E 300.0</b>			Analysis Da	te: 10/1/20	019	SeqNo: <b>20</b>	65819	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		1.04	0.0500	1.000	0	104	80	120				
Sample ID	19091195-016AMSD	SampType: MSD	TestCod	de: <b>300.0</b>	Units: mg/L		Prep Da	te:		RunNo: 82	497	
Client ID:	FB-1	Batch ID: <b>R82497</b>	TestN	lo: <b>E 300.0</b>			Analysis Da	te: <b>10/1/2</b> 0	019	SeqNo: 20	65820	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		1.06	0.0500	1.000	0	106	80	120	1.043	1.85	15	

Qualifiers:

Holding times for preparation or analysis exceeded

R RPD outside accepted recovery limits

SDL Sample detection limit

Matrix Interference

RL Reporting Limit

U Analyte not detected

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as sp



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com

## Sample Log-In Check List

Clie	nt Name:	PIVOTAL_ENGINEERIN	Work Order Number:	19091195		RcptNo: 1	
Log	ged by:	Danielle Hollier	9/27/2019 3:30:00 PM	I	Daniel Daniel	Holling	
Com	npleted By:	Danielle Hollier	9/30/2019 8:47:04 AM	I	Daniel	Holling	
Rev	iewed By:	Caitlin Duplantis	10/10/2019 11:47:59	AM	Contlin Duplan	dd_	
<u>Cha</u>	in of Cus	stody					
1.	Is Chain of	Custody complete?		Yes 🗸	No 🗌	Not Present	
2.	How was th	ne sample delivered?		<u>Element</u>			
<u>Log</u>	<u>In</u>						
3.	Coolers are	e present?		Yes 🗸	No 🗌	NA 🗆	
4.	Shipping co	ontainer/cooler in good cond	lition?	Yes 🗸	No 🗌		
	Custody se	als intact on shipping conta	iner/cooler?	Yes	No $\square$	Not Present ✓	
	No.	Seal Da	te:	Signed By:			
5.	Was an att	empt made to cool the sam	ples?	Yes 🗸	No 🗌	NA 🗌	
6.	Were all sa	amples received at a temper	rature of >0° C to 6.0°C	Yes 🗸	No 🗆	NA $\square$	
7.	Sample(s)	in proper container(s)?		Yes 🗸	No $\square$		
8.	Sufficient s	ample volume for indicated	test(s)?	Yes 🗹	No $\square$		
9.	Are sample	es (except VOA and ONG) p	roperly preserved?	Yes 🗹	No $\square$		
10.	Was prese	rvative added to bottles?		Yes	No 🗸	NA 🗌	
11.	Is the head	space in the VOA vials less	than 1/4 inch or 6 mm?	Yes	No 🗌	No VOA Vials <b>✓</b>	
12.	Were any s	sample containers received	broken?	Yes	No 🗸		
13.		rwork match bottle labels? epancies on chain of custoo	lv)	Yes 🗸	No $\square$		
14.		es correctly identified on Ch		Yes 🗹	No $\square$		
15.	Is it clear w	hat analyses were requeste	ed?	Yes 🗸	No $\square$		
16.		olding times able to be met?  y customer for authorization		Yes 🗹	No 🗌		
<u>Spe</u>	cial Hand	dling (if applicable)					
17.	Was client	notified of all discrepancies	with this order?	Yes	No 🗌	NA 🗹	
	Perso	n Notified:	Date				
	By WI	hom:	Via:	eMail F	Phone Fax	☐ In Person	
	Regar	rding:	_				
	Client	Instructions:					
						I	

18. Additional remarks:

Added year of collection to COC as per samples received.

#### **Cooler Information**

Cooler No	Temp ⁰C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.7	Good	Not Present			
2	3.5	Good	Not Present			



# **ANALYTICAL RESULTS**

#### **PERFORMED BY**

**Pace Analytical Gulf Coast** 

7979 Innovation Park Dr. Baton Rouge, LA 70820 (225) 769-4900

**Report Date** 10/24/2019



**Project** 19091195

Deliver To

**Annie Reedy** 

**Element Materials Technology** 

2417 W Pinhook Rd Lafayette, LA 70508 800-737-2378

**Additional Recipients** 

Caitlin Duplantis, Element Materials

**Technology** 

Cristina Thibeaux, Element Materials

**Technology** 

Rhonda David, Element Materials Technology

Buffy Hudson, Element Materials Technology









**Project ID:** 19091195 **Report Date:** 10/24/2019

### Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with Pace Gulf Coast's Standard Operating Procedures.

#### Common Abbreviations that may be Utilized in this Report

ND Indicates the result was Not Detected at the specified reporting limit

NO Indicates the sample did not ignite when preliminary test performed for EPA Method 1030

**DO** Indicates the result was Diluted Out

MI Indicates the result was subject to Matrix Interference
TNTC Indicates the result was Too Numerous To Count
SUBC Indicates the analysis was Sub-Contracted
FLD Indicates the analysis was performed in the Field

DL Detection Limit
LOD Limit of Detection
LOQ Limit of Quantitation

**RE** Re-analysis

**CF** HPLC or GC Confirmation

00:01 Reported as a time equivalent to 12:00 AM

#### Reporting Flags that may be Utilized in this Report

J or I Indicates the result is between the MDL and LOQ

J DOD flag on analyte in the parent sample for MS/MSD outside acceptance criteria

U Indicates the compound was analyzed for but not detected

B or V Indicates the analyte was detected in the associated Method Blank
Q Indicates a non-compliant QC Result (See Q Flag Application Report)

Indicates a non-compliant or not applicable QC recovery or RPD – see narrative
 Organics - The result is estimated because it exceeded the instrument calibration range

E Metals - % diference for the serial dilution is > 10%

L Reporting Limits adjusted to meet risk-based limit.

P RPD between primary and confirmation result is greater than 40

**DL** Diluted analysis – when appended to Client Sample ID

Sample receipt at Pace Gulf Coast is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of Pace Gulf Coast. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with The NELAC Institute (TNI) Standard 2009 and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.

Authorized Signature

Pace Gulf Coast Report 219100122



**Project ID:** 19091195 **Report Date:** 10/24/2019

## Certifications

Certification	Certification Number
DOD ELAP	74960
Alabama	01955
Arkansas	88-0655
Colorado	01955
Delaware	01955
Florida	E87854
Georgia	01955
Hawaii	01955
Idaho	01955
Illinois	200048
Indiana	01955
Kansas	E-10354
Kentucky	95
Louisiana	01955
Maryland	01955
Massachusetts	01955
Michigan	01955
Mississippi	01955
Missouri	01955
Montana	N/A
Nebraska	01955
New Mexico	01955
North Carolina	618
North Dakota	R-195
Oklahoma	9403
South Carolina	73006001
South Dakota	01955
Tennessee	01955
Texas	T104704178
Vermont	01955
Virginia	460215
Washington	C929
USDA Soil Permit	P330-16-00234



**Project ID:** 19091195 **Report Date:** 10/24/2019

### **Case Narrative**

Client: Element Materials Technology Report: 219100122

Gulf Coast Analytical Laboratories received and analyzed the sample(s) listed on the Report Sample Summary page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

No anomalies were found for the analyzed sample(s).



**Project ID:** 19091195 **Report Date:** 10/24/2019

# Sample Summary

LAB ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21910012201	CCR-1	Water	09/25/2019 13:35	10/01/2019 11:34
21910012202	CCR-2	Water	09/25/2019 12:30	10/01/2019 11:34
21910012203	CCR-3	Water	09/25/2019 11:30	10/01/2019 11:34
21910012204	CCR-4	Water	09/26/2019 13:00	10/01/2019 11:34
21910012205	CCR-4 MS	Water	09/26/2019 13:00	10/01/2019 11:34
21910012206	CCR-4 MSD	Water	09/26/2019 13:00	10/01/2019 11:34
21910012207	CCR-5	Water	09/26/2019 11:40	10/01/2019 11:34
21910012208	CCR-6	Water	09/26/2019 10:20	10/01/2019 11:34
21910012209	CCR-7	Water	09/26/2019 08:50	10/01/2019 11:34
21910012210	CCR-8	Water	09/26/2019 18:30	10/01/2019 11:34
21910012211	CCR-9	Water	09/25/2019 16:55	10/01/2019 11:34
21910012212	CCR-10	Water	09/25/2019 15:45	10/01/2019 11:34
21910012213	CCR-11	Water	09/25/2019 14:40	10/01/2019 11:34
21910012214	CCR-12	Water	09/26/2019 17:10	10/01/2019 11:34
21910012215	CCR-13	Water	09/26/2019 15:45	10/01/2019 11:34
21910012216	CCR-14	Water	09/26/2019 14:30	10/01/2019 11:34
21910012217	DUP	Water	09/26/2019 00:01	10/01/2019 11:34
21910012218	FB-1	Water	09/25/2019 14:20	10/01/2019 11:34



**Project ID:** 19091195 **Report Date:** 10/24/2019

## Sample Results

CCR-1	Collect Date	09/25/2019 13:35	LAB ID	21910012201
CCK-1	Receive Date	10/01/2019 11:34	Matrix	Water

### **EPA 6020B**

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch	•
10/02/2019 08:30	668513	EPA 3010A	1	10/23/2019 18:18	LWZ	669958	
CAS#	Parameter			Result	LOQ	Units	
7439-93-2	Lithium			26.4	5.00	ug/L	

CCP 2	Collect Date	09/25/2019 12:30	LAB ID	21910012202
CCR-2	Receive Date	10/01/2019 11:34	Matrix	Water

### **EPA 6020B**

Prep Date	Prep Batch	Prep Method	<b>Dilution</b>	<b>Analysis Date</b> 10/23/2019 18:32	<b>By</b>	Analytical Batch
10/02/2019 08:30	668513	EPA 3010A	1		LWZ	669958
CAS# 7439-93-2	Parameter Lithium			Result 22.9	LOQ 5.00	Units ug/L

CCR-3	09/25/2019 11:30	LAB ID	21910012203	
CCR-3	Receive Date	10/01/2019 11:34	Matrix	Water

### EPA 6020B

Prep Date	Prep Batch	Prep Method	Dilution	<b>Analysis Date</b> 10/23/2019 18:35	<b>By</b>	Analytical Batch
10/02/2019 08:30	668513	EPA 3010A	1		LWZ	669958
CAS# 7439-93-2	Parameter Lithium			Result 27.3	LOQ 5.00	Units ug/L

CCR-4	Collect Date	09/26/2019 13:00	LAB ID	21910012204	
CCR-4	Receive Date	10/01/2019 11:34	Matrix	Water	

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch	
10/02/2019 08:30	668513	EPA 3010A	1	10/23/2019 18:38	LWZ	669958	
CAS#	Parameter			Result	LOQ	Units	
7439-93-2	Lithium			18.0	5.00	ug/L	



**Project ID:** 19091195 **Report Date:** 10/24/2019

## Sample Results

 CCR-4 MS
 Collect Date
 09/26/2019 13:00
 LAB ID
 21910012205

 Receive Date
 10/01/2019 11:34
 Matrix
 Water

#### **EPA 6020B**

Prep Date 10/02/2019 08:30	Prep Batch 668513	Prep Method EPA 3010A	<b>Dilution</b> 1	<b>Analysis Date</b> 10/23/2019 18:42	<b>By</b> LWZ	Analytical Batch 669958	
CAS# 7439-93-2	Parameter Lithium			Result 267	LOQ 5.00	Units ug/L	

 CCR-4 MSD
 Collect Date
 09/26/2019 13:00
 LAB ID
 21910012206

 Receive Date
 10/01/2019 11:34
 Matrix
 Water

#### **EPA 6020B**

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch	•
10/02/2019 08:30	668513	EPA 3010A	1	10/23/2019 18:45	LWZ	669958	
CAS#	Parameter			Result	LOQ	Units	
7439-93-2	Lithium			262	5.00	ug/L	

 CCR-5
 Collect Date
 09/26/2019 11:40
 LAB ID
 21910012207

 Receive Date
 10/01/2019 11:34
 Matrix
 Water

Prep Date 10/02/2019 08:30	Prep Batch 668513	Prep Method EPA 3010A	Dilution	<b>Analysis Date</b> 10/23/2019 18:49	<b>By</b> LWZ	Analytical Batch 669958	
CAS# 7439-93-2	Parameter Lithium	2.7(3010)	<u> </u>	Result 22.7	LOQ 5.00	Units ug/L	



**Project ID:** 19091195 **Report Date:** 10/24/2019

## Sample Results

 CCR-6
 Collect Date
 09/26/2019 10:20
 LAB ID
 21910012208

 Receive Date
 10/01/2019 11:34
 Matrix
 Water

#### **EPA 6020B**

Prep Date 10/02/2019 08:30	Prep Batch 668513	Prep Method EPA 3010A	<b>Dilution</b> 1	<b>Analysis Date</b> 10/23/2019 18:52	<b>By</b> LWZ	Analytical Batch 669958	
CAS# 7439-93-2	Parameter Lithium			Result 15.5	LOQ 5.00	Units ug/L	

CCR-7

Collect Date 09/26/2019 08:50

Receive Date 10/01/2019 11:34

Collect Date 09/26/2019 08:50

LAB ID 21910012209

Matrix Water

#### **EPA 6020B**

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	<b>Analytical Batch</b>	
10/02/2019 08:30	668513	EPA 3010A	1	10/23/2019 18:56	LWZ	669958	
CAS#	Parameter			Result	LOQ	Units	
7439-93-2	Lithium			13.3	5.00	ug/L	

 CCR-8
 Collect Date
 09/26/2019 18:30
 LAB ID
 21910012210

 Receive Date
 10/01/2019 11:34
 Matrix
 Water

Prep Date 10/02/2019 08:30	Prep Batch 668513	Prep Method EPA 3010A	Dilution	<b>Analysis Date</b> 10/23/2019 18:59	<b>By</b> LWZ	Analytical Batch 669958
CAS#	Parameter	LFA 3010A	ı	Result	LOQ	Units
7439-93-2	Lithium			37.9	5.00	ug/L



**Project ID:** 19091195 **Report Date:** 10/24/2019

## Sample Results

 CCR-9
 Collect Date
 09/25/2019 16:55
 LAB ID
 21910012211

 Receive Date
 10/01/2019 11:34
 Matrix
 Water

#### **EPA 6020B**

Prep Date 10/02/2019 08:30	Prep Batch 668513	Prep Method EPA 3010A	<b>Dilution</b> 1	<b>Analysis Date</b> 10/23/2019 19:10	<b>By</b> LWZ	Analytical Batch 669958
CAS#	Parameter			Result	LOQ	Units
7439-93-2	Lithium			11.4	5.00	ug/L

CCR-10

Collect Date 09/25/2019 15:45

Receive Date 10/01/2019 11:34

CAB ID 21910012212

Matrix Water

#### **EPA 6020B**

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch	
10/02/2019 08:30	668513	EPA 3010A	1	10/23/2019 19:13	LWZ	669958	
CAS#	Parameter			Result	LOQ	Units	
7439-93-2	Lithium			10.5	5.00	ug/L	

CCR-11 Collect Date 09/25/2019 14:40 LAB ID 21910012213

Receive Date 10/01/2019 11:34 Matrix Water

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch
10/02/2019 08:30	668513	EPA 3010A	1	10/23/2019 19:17	LWZ	669958
CAS#	Parameter			Result	LOQ	Units
7439-93-2	Lithium			8.56	5.00	ug/L



**Project ID:** 19091195 **Report Date:** 10/24/2019

## Sample Results

 CCR-12
 Collect Date
 09/26/2019 17:10
 LAB ID
 21910012214

 Receive Date
 10/01/2019 11:34
 Matrix
 Water

### **EPA 6020B**

Prep Date 10/02/2019 08:30	Prep Batch 668513	Prep Method EPA 3010A	<b>Dilution</b> 1	<b>Analysis Date</b> 10/23/2019 19:20	<b>By</b> LWZ	Analytical Batch 669958	
CAS# 7439-93-2	Parameter Lithium			Result 25.8	LOQ 5.00	Units ug/L	

CCR-13

Collect Date 09/26/2019 15:45

Receive Date 10/01/2019 11:34

LAB ID 21910012215

Matrix Water

### **EPA 6020B**

Prep Date	Prep Batch Prep Meth		Dilution	Analysis Date	Ву	<b>Analytical Batch</b>	
10/02/2019 08:30	668513	EPA 3010A	1	10/23/2019 19:24	LWZ	669958	
CAS#	Parameter			Result	LOQ	Units	
7439-93-2	Lithium			22.4	5.00	ug/L	

CCR-14	Collect Date 09	9/26/2019 14:30	LAB ID	21910012216
CCR-14	Receive Date 10	0/01/2019 11:34	Matrix	Water

Prep Date	Prep Batch	Prep Method	Dilution	<b>Analysis Date</b> 10/23/2019 19:27	<b>By</b>	Analytical Batch
10/02/2019 08:30	668513	EPA 3010A	1		LWZ	669958
CAS# 7439-93-2	Parameter Lithium			Result 16.6	LOQ 5.00	Units ug/L



**Project ID:** 19091195 **Report Date:** 10/24/2019

## Sample Results

 Collect Date
 09/26/2019 00:01
 LAB ID
 21910012217

 Receive Date
 10/01/2019 11:34
 Matrix
 Water

### **EPA 6020B**

Prep Date 10/02/2019 08:30	Prep Batch 668513	Prep Method EPA 3010A	<b>Dilution</b> 1	<b>Analysis Date</b> 10/23/2019 19:31	<b>By</b> LWZ	Analytical Batch 669958	
CAS# 7439-93-2	Parameter Lithium			Result	LOQ 5.00	Units ug/L	

FB-1

Collect Date 09/25/2019 14:20

Receive Date 10/01/2019 11:34

LAB ID 21910012218

Matrix Water

Prep Date	Prep Batch	Prep Method	Prep Method Dilution A		Ву	Analytical Batch	
10/02/2019 09:30	668515	EPA 3010A	1	10/23/2019 19:41	LWZ	669958	
CAS#	Parameter			Result	LOQ	Units	
7439-93-2	Lithium			ND	5.00	ug/L	



**Project ID:** 19091195 **Report Date:** 10/24/2019

# Inorganics QC Summary

Analytical Batch 668670	Client ID LAB ID			LCS668513 1967210			
Prep Batch	Sample Type	MB	LCS				
668513	Prep Date	10/02/2019 08:3	10/02/2019 08:30				
Prep Method	Analysis Date	10/03/2019 18:00		10/03/2019 18:04			
EPA 3010A	Matrix	Water		Water			
EPA 602	∩R	Units	ug/L	Spike	Result	% <b>P</b>	Control
EFA 002	Result	LOQ	Added	Nesuit	/01	Limits%R	
Lithium	7439-93-2	ND	5.00	250	242	97	80 - 120

Analytical Batch	Client ID	CCR-4		CCR-4 M	IS			CCR-4 MSD						
669958	LAB ID	21910012204		2191001	2205			21910012206						
Prep Batch	Sample Type	SAMPLE		MS				MSD						
668513	Prep Date	10/02/2019 08:3	0	10/02/20	19 08:30			10/02/20	19 08:30					
Prep Method	Analysis Date	10/23/2019 18:3	8	10/23/20	19 18:42			10/23/2019 18:45						
EPA 3010A	Matrix	Water		Water				Water						
EPA 602	ΛD	Units	ug/L	Spike	Spike Result %		Control	Spike	Result	0/ D	סס	RPD		
EPA 002	UB	Result	Added	d Result %K		Limits%R	Added	Result	70 K	KFD	Limit			
Lithium	7439-93-2	18.0	5.00	250	267	100	80 - 120	250	262	98	2	20		

Analytical Batch	Client ID	MB668515		LCS668515								
669453	LAB ID	1967215		1967216								
Prep Batch	Sample Type	MB		LCS								
668515	Prep Date	10/02/2019 09:3	80	10/02/2019 09:30								
Prep Method	Analysis Date	10/15/2019 20:0	06	10/15/20	19 20:11							
EPA 3010A	Matrix	Water		Water								
EPA 602	ΛD	Units	ug/L	Spike	Result	0/ D	Control					
EPA 002	VB	Result	LOQ	Added	Result	70 K	Limits%R					
Lithium	7439-93-2	ND	5.00	250	237	95	80 - 120					



### CHAIN OF CUSTODY RECORD

Omega COCID 8582

Client ID: 4462 - Element Materials Technology

SDG: 219100122

PM: JLM

PAC



FAX: (337) 233-6540 Website: www.element.com

SUB CONTR	ATOR: GCAL	COMPANY:	Pace Analyti	ical (FKA GCAL)	SPECIAL INSTRUCTIONS /	COMMENTS:		7
ADDRESS:	7979 GSRI Avenu	e			Lithium by 6020			
CITY, STATE	Baton Rouge, LA	70820						
PHONE: (2:	25) 769-4900 FAX: (22	5) 767-5717 EMA	IL:		2			
ACCOUNT#	t.							
ITEM #	SAMPLE ID	CLIENT SAMPLE ID	BOTILE TYPE	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	COMMENTS: Methanol Preserved Weights HOT Sample Notation, Additional Sample Description.	
1	19091195-001C	CCR-1	250HDPEHNO3	Aqueous	9/25/2019 1:35:00 PM	1		<u> </u>
17	6020_W_SUB (SW6020A)	la control de la						
,	19091195-002C	CCR-2	250HDPEHNO3	Aqueous	9/25/2019 12:30:00 PM	1		7-2
2	6020_W_SUB (SW6020A)							
2	19091195-003C	CCR-3	250HDPEHNO3	Aqueous	9/25/2019 11:30:00 AM	1		7-3
3 .	6020_W_SUB (SW6020A)	h						
	19091195-004C	CCR-4	250HDPEHNO3	Aqueous	9/26/2019 1:00:00 PM	3		7-4
4	6020_W_SUB (SW6020A)							
_	19091195-005C	CCR-5	250HDPEHNO3	Aqueous	9/26/2019 11:40:00 AM	1		7-7
5	6020_W_SUB (SW6020A)							
_	19091195-006C	CCR-6	250HDPEHNO3	Aqueous	9/26/2019 10:20:00 AM	1		7-8
6	6020_W_SUB (SW6020A)	•				-		
32	19091195-007C	CCR-7	250HDPEHNO3	Aqueous	9/26/2019 8:50:00 AM	1		79
7	6020_W_SUB (SW6020A)							
	19091195-008C	CCR-8	250HDPEHNO3	Aqueous	9/26/2019 6:30:00 PM	1		7-11
8	6020_W_SUB (SW6020A)							-
14.1	19091195-009C	CCR-9	250HDPEHNO3	Aqueous	9/25/2019 4:55:00 PM	1		7-11
9	6020_W_SUB (SW6020A)							
linquished		30/2019 Time: /500	Received By	Be 20 Page: 30		=	REPORT TRANSMITTAL DESIRED:	T
elinquished i	By: Date:	Time:	Received By:	Date:	Time:	☐ HARDCOF	PY (extra cost) FAX EMAIL ONLINE	_
elinquistred	By Berry Date:	1-19 Time; 34	Received B	Date: 70-1-	19 Time: 34	Temp of samp	FOR LAB USE ONLY  J. 7 °C Attempt to Cool?	
	TAT: Standard	RUSH	Next BD 🗆	2nd BD	3rd BD	Comments:	CZY YYCPM	
			Note: RUSH re	equests will incur surcharges!		Comments:	- E3-1 1-10//	

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### CHAIN OF CUSTODY RECORD

Omega COCID 8582

Client ID: 4462 - Element Materials Technology

SDG: 219100122

PM: JLM

PAG



FAX: (337) 233-6540 Website: www.element.com

SUB CONTR	RATOR: GCAL	COMPANY:	Pace Analyt	ical (FKA GCAL)	SPECIAL INSTRUCTIONS /	COMMENTS:		
ADDRESS:	7979 GSRI Ave	nue			Lithium by 6020			- 1
CITY, STATI	Baton Rouge, L	A 70820						- 1
PHONE: (2	25) 769-4900 FAX: (	225) 767-5717 EMA	IL:					
ACCOUNT#	k	9 250		(				
гтем #	SAMPLE ID	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	COMMENTS: Methanol Preserved Weights HOT Sample Notation, Additional Sample Description.	
10	19091195-010C	CCR-10	250HDPEHNO3	Aqueous	9/25/2019 3:45:00 PM	1		-12
10	6020_W_SUB (SW602	0A)	•					
11	19091195-011C	CCR-11	250HDPEHNO3	Aqueous	9/25/2019 2:40:00 PM	1		-13
11	6020_W_SUB (SW602	0A)						
12	19091195-012C	CCR-12	250HDPEHNO3	Aqueous	9/26/2019 5:10:00 PM	1		-14
12	6020_W_SUB (SW602)	0A)						
13	19091195-013C	CCR-13	250HDPEHNO3	Aqueous	9/26/2019 3:45:00 PM	1		-15
13	6020_W_SUB (SW6020	0A)						
14	19091195-014C	CCR-14	250HDPEHNO3	Aqueous	9/26/2019 2:30:00 PM	1		+16
14	6020_W_SUB (SW6020	0A)						
15	19091195-015C	DUP	250HDPEHNO3	Aqueous	9/26/2019	1		77
13	6020_W_SUB (SW6020	0A)						
16	19091195-016C	FB-1	250HDPEHNO3	Aqueous	9/25/2019 4:20:00 PM	1		-18
10	6020_W_SUB (SW6020	0A)						

Relinquished By: Daniel Holling Da	ate: Time: 1500	Received By. Bout	Date: 30-19	Time:			TAL DESIRED:	
Relinquished By: Da	ate: Time:	Received By:	Date:	Time:	☐ HARDCOPY (extra cost)	☐ FAX	☐ EMAIL	ONLINE
Relinquished By- Da TAT: Standard	8-1-17 7134	- My fundament	Date -/-/9 3rd BL	Time: 734	Temp of samples 3.	1	Attempt to Cool?	ile_

Page 42 of 45

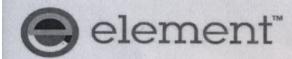


## **SAMPLE RECEIVING CHECKLIST**



SAMPLE DELIVERY GRO	UP 2191001	122	CHECKLIST	YES	NO						
Client PM JLM 4462 - ⊟ement Materials	Transport N	lethod	Samples received with proper thermal preservation	?	~						
Technology			Radioactivity is <1600 cpm? If no, record cpm valu	ue in notes section.	~						
Profile Number 271810	Received By Savage, Tiffa		COC relinquished and complete (including sample	IDs, collect times, and sampler)?	~						
271010	Javage, IIIIa	шу гх	All containers received in good condition and withi	~							
Line Item(s)	Receive Date	e(s)	All sample labels and containers received match t	he chain of custody?	~						
1 - Water	10/01/19		Preservative added to any containers?			~					
			If received, was headspace for VOC water contain	ers < 6mm?	~						
			Samples collected in containers provided by Pace	Gulf Coast?		~					
COOLERS	•		DISCREPANCIES	LAB PRESERVATIONS							
Airbill Thermome	eter ID: E34	Temp °C	None	None							
		3.7									
NOTES											
110.20											
				Page 43 of 45							

Revision 1.6 Page 1 of 1



2203 S. Madison St., Muncie, IN 47302
765-747-9000/800-874-3563 Fax 765-747-0228
629 Washington St., Suite 300, Columbus, IN 47201

629 Washington St., Suite 300, Columbus, IN 4720 812-375-0531 Fax 812-375-0531

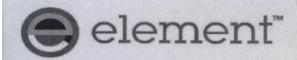
5738 Industrial Rd., Fort Wayne, IN 46825 219-471-7000 Fax 219-471-7777

V	2417 W. Pinhook Rd, Lafayette, LA 70508
	337-235-0483/800-737-2378
	Eav 227 222 6540

3445 S Sheridan, Tulsa, OK 74145

918-828-9977/800324-5757 Fax 918-828-7756

Page			2					Chain	of Custo	dy	R	ecor	d					Labo		- 1	90	911	95
Client Nan	ne: Pivota	l Eng	gineer	ring	LLC	/ 1	Proje	ect: CCR Assessme	ent Monitoring	Pres	erv.	of					Te	st Re	ques	ted			1 Michelle Company
Contact Na	ame: Terr	y Eln	agga	r			Quo	te #: 5346		H,SO.	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	Type	Matrix Code	e	*6010/**6020 metals	0	lıy						
Phone/Fax	: (504) 79	99-36						pler's Signature:	n	HNO,		umber / Typ Container	atrix	Fluoride	/**602	**6020 Sub	Mercury						Comments /
Collect Date	Time	Grab	Comp			San	ple I	dentification / De	escription	HCI	NaOH	Num	Σ	300:	*6010	09***	7470						Remarks
9/25/1	1335	x		С	С	R		1		None/ I	HNO3	3 Plastic	Aq	х	Х	Х	Х						*6010 Metals: As, Ba,
1	1230	X		С	С	R		2		None/ I	HNO3	3 Plastic	Aq	х	х	Х	Х						Be, Cd, Cr, Co, Pb, Mo, Se
4	1130	х		С	C	R		3		None/ i	HNO3	3 Plastic	Aq	X	х	х	Х						**6020 Metals: Sb,Tl
9/26	91300	х		С	С	R	-	4		None/	HNO3	3 Plastic	Aq	х	х	Х	х						***6020 Sub Metal: Li
1	1140	X		С	С	R	-	5		None/	HNO3	3 Plastic	Aq	х	х	Х	х						
	1020	X		С	С	R		6		None/	HNO3	3 Plastic	Aq	х	Х	Х	х						
	0850	х		С	С	R	-	7		None/	HNOS	3 Plastic	Aq	x	x	х	х						
V	1830	X		С	С	R	-	8	Monage Comme	None/	HNO3	3 Plastic	Aq	x	х	X	х			19			Children Control
9/24/4	1655	x		С	С	R		9		None/	HNO3	3 Plastic	Aq	x	х	х	х						
9/25/	1545	х	100	С	С	R		10		None/	HNO3	3 Plastic	Aq	x	х	х	х						UPS / FedEx Airborne Element Hand / Mail
								ology for analysis are aterials Technology							the n		1	)		P.O. Netmi	er		
Relinquished	by Signat	ure)	3		Reco	eived b	Sign	ature)	Pale Time 7/27/13:13	Retinq	ruisho	d by: (Sign	ature)	-	1	Rece		V:(Sig			an	(Cr	Pate Aluss
Relinquished	by: (Signat	ure)			Rece	eived b	y:(Sign	ature)	Date Time	P	uishe		alure)	EQ		Rece				y:(Sign	nature)	-	9/27/14 1530
DW = Drink GW = Grou	ing Water	AQ =	Aque	_		= Liqu		Container Types G = Glass P = Plastic	Shipping Conditions  Iced 3.7°C Temp. 3.5°C		24-H 48-H		72-H Stand	r.		Т	har	nk-y	ou f			Elen	nent Materials
WW = Was		so=	Soil		SL	= Slud	ge	V = Vial	Ambient 40		Othe	200000	1200				we p			, ,	, OI II I	ology	THE SHOPPING
									(IRO	)												11991	



2203 S. Madison St., Muncie, IN 47302
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629 Washington St. Suite 300 Columbus IN 47204

300, Columbus, IN 4720 812-375-0531 Fax 812-375-0531

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Page	2 of .		2						Ch	ain	of	C	usto	dy	R	ecor	d					Lab Nur	orat		190	911	195
Client Nar	ne: Pivota	l Eng	ginee	ring	LLC		Pro	ject:	CCR	Assessm	ent M	onito	ring	Pres	serv.	Jo				270	Te	est Re	ques	sted			
Contact N				r				3,0	5346 Signa	ture:				O, H,SO,	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	ober / Type	Matrix Code	oride	'6010/**6020 metals	qiis	Mercury						
Colle						Car	-	-		1		_		I MNO	NaOH	Vumber / Conta	Matr	300: Fluoride	10/**6	*6020 Sub	7470 Me						Comments / Remarks
Date	Time	Grab	Сотр		ml.	Sai	npie	Iden	nncai	ion / D	escri	puoi	n	HCI	Z	ž		30	9	1	74						
9/25/4	1440	х		С	С	R		1	1		No			None/	/ HNO3	3 Plastic	Aq	X	х	X	Х						*6010 Metals: As, Ba,
9/26	1710	X		С	С	R	-	1	2					None/	/ HNO3	3 Plastic	Aq	X	х	X	Х						Be, Cd, Cr, Co, Pb, Mo, Se
1	1545	X		С	С	R	-	1	3	100				None/	/ HNO3	3 Plastic	Aq	x	х	x	Х	110					**6020 Metals: Sb,Tl
	1430	X		С	С	R	-	1	4		1770			None/	/ HNO3	3 Plastic	Aq	x	X	х	х						***6020 Sub Metal: Li
	1300	X		М	S		(C	CR-	4					None/	/ HNO3	3 Plastic	Aq	х	X	x	х	433					
1	1300	X		М	s	D	(C	CR-	4	_)				None/	/ HNO3	3 Plastic	Aq	x	х	x	х	,					
9/24	1	х		D	U	P		Telli		1/1/29				None/	/ HNO3	3 Plastic	Aq	x	x	x	х						
	1620	Х		F	В		1							None/	/ HNO3	3 Plastic	Aq	Х	х	х	х						
	y a se					ngi V	distant.				18																
					10.11		MAN.					No.															/Element Hand / Mail
All sample with the cl																			the	mate	rial r	emair	,0	P.O.	ber		
Relinquished			2	~	_	_	by:(Sig	nature	_	~	D	Date	Time	Reline		d by (Sign				Rec	ive	by:(Sig	halu	re)V	Sur	D	Pate Time
Relinquished	by: (Signat	ure)			Reo	eived	_	nature			-	Date	Time	Relin	hishe	d to (Sign	Pa	vi	0	Rece					gnature)	_	127 1530
DW = Drink GW = Grou	ing Water	AQ =	Aque	-		= Liq		C	G = G P = Pl			Iced	370		24-H 48-H	Requeste	72-H	ir.		1	Thai	nk-y	ou		using		nent Materials
WW = Was	te Water	so=	Soil	101	SL	= Slu	dge		V = 1			Amb	ient RV		Othe	er			file		1				001111	o.ogy	



Element Materials Technology Lafayette 2417 W. Pinhook Road Lafayette, LA 70508-3344 TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com

January 08, 2020

Terry Elnaggar Pivotal Engineering LLC 1515 Poydras St., STE. 1875

New Orleans, LA 70112 TEL: (504) 799-3653

FAX:

RE: Entergy: CCR Detection Monitoring Order No.: 19121059

Dear Terry Elnaggar:

Element Materials Technology Lafayette received 16 sample(s) on 12/20/2019 for the analyses presented in the following report.

In accordance with your instructions Element Lafayette conducted the analysis shown on the following pages on samples submitted by your company. The results related only to the items tested. Unless otherwise noted, all analyses were conducted using EPA approved methodologies and all test results meet all requirements of TNI. All relevant sampling information is on the attached Chain-of-Custody form.

All soil data, except for 29-B, are on a wet-weight basis unless otherwise indicated in the units field as –dry.

LELAP Certification No.: 01997. TCEQ Certification No.: T104704261. LDHH Certification No.: LA023. ISDH Certification No.: C-LA-01. NDELCP Certification No.: R-226. A scope of accredited parameters is available upon request. A "#" by the test method or analyte indicates this parameter is outside the scope of accreditation.

Estimated uncertainty is available upon request. This report shall not be reproduced except in full, without the written approval of the laboratory.

If you have any questions regarding these test results, please feel free to call.

Cristina Thibeaux

Customer Service Supervisor 2417 W. Pinhook Road

Lafayette, LA 70508-3344



Website: www.element.com

WO#: **19121059** 

Date:

**Case Narrative** 

1/8/2020

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring

Unless specified by the client, a duplicate or MS/MSD, wherever applicable, is randomly selected and analyzed from each analytical batch provided sample volume is sufficient. The sample chosen for duplicate or MS/MSD may or may not be a sample submitted in this workorder. A method blank and/or a lab control sample (LCS)/lab control sample duplicate (LCSD), wherever applicable, are processed as a quality control check for each analytical batch. When the matrix QC data is not available due to insufficient sample volume or when the results indicate possible matrix effect, the validity of the batch is determined by the method blank and LCS/LCSD.

The results of the laboratory internal quality control data are provided in the QC Summary Report section of the report for your review. Laboratory-related QC exceptions that may impact the validity of data are discussed in the case narrative. Sample-related QC exceptions are flagged either in the results page(s) or in the QC report page(s). End users should consider QC exceptions when evaluating sample data against data quality objectives.

Any other exceptions associated with this report will be footnoted in the results page(s) or the QC summary page(s).



Lajayette, LA 70308-3544
TEL: (337) 235-0483 FAX: (337) 233-6540
Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: **19121059**Date Reported: **1/8/2020** 

**Collection Date:** 12/17/2019 5:15:00 PM

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring

Lab ID: 19121059-001 Matrix: AQUEOUS

Client Sample ID CCR-1

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: MRM
Chloride	42.0	2.50	mg/L	10	12/30/2019 2:08:45 PM
Fluoride	0.303	0.0500	mg/L	1	12/30/2019 7:12:23 PM
Sulfate	2.86	0.250	mg/L	1	12/30/2019 7:12:23 PM
METALS IN WATER BY ICP, TOTALS			SW6010B		Analyst: STS
Boron	< 0.100	0.100	mg/L	1	12/26/2019 7:05:59 PM
Calcium	24.9	0.500	mg/L	1	12/26/2019 7:05:59 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	283	20.0	mg/L	1	12/23/2019 10:19:00 AM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19121059**Date Reported: **1/8/2020** 

**Collection Date:** 12/17/2019 3:45:00 PM

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring

Lab ID: 19121059-002 Matrix: AQUEOUS

**Client Sample ID** CCR-2

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: MRM
Chloride	56.5	2.50	mg/L	10	12/30/2019 2:22:28 PM
Fluoride	0.352	0.0500	mg/L	1	12/30/2019 7:26:08 PM
Sulfate	1.05	0.250	mg/L	1	12/30/2019 7:26:08 PM
METALS IN WATER BY ICP, TOTALS			SW6010B		Analyst: STS
Boron	< 0.100	0.100	mg/L	1	12/26/2019 7:10:29 PM
Calcium	20.5	0.500	mg/L	1	12/26/2019 7:10:29 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	265	20.0	mg/L	1	12/23/2019 10:19:00 AM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: 19121059

Date Reported: 1/8/2020

**Collection Date:** 12/17/2019 2:20:00 PM

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring

Lab ID: 19121059-003 Matrix: AQUEOUS

Client Sample ID CCR-3

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: MRM
Chloride	126	5.00	mg/L	20	12/30/2019 2:36:11 PM
Fluoride	0.390	0.0500	mg/L	1	12/30/2019 7:39:52 PM
Sulfate	3.82	0.250	mg/L	1	12/30/2019 7:39:52 PM
METALS IN WATER BY ICP, TOTALS			SW6010B		Analyst: STS
Boron	< 0.100	0.100	mg/L	1	12/26/2019 7:15:03 PM
Calcium	27.4	0.500	mg/L	1	12/26/2019 7:15:03 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	381	20.0	mg/L	1	12/23/2019 10:19:00 AM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Lafayette, LA /0508-3344 TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19121059**Date Reported: **1/8/2020** 

**Collection Date:** 12/17/2019 12:30:00 PM

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring

Lab ID: 19121059-004 Matrix: AQUEOUS

Client Sample ID CCR-4

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: MRM
Chloride	42.8	2.50	mg/L	10	12/30/2019 2:49:55 PM
Fluoride	0.221	0.0500	mg/L	1	12/30/2019 7:53:36 PM
Sulfate	9.79	0.250	mg/L	1	12/30/2019 7:53:36 PM
METALS IN WATER BY ICP, TOTALS			SW6010B		Analyst: STS
Boron	< 0.100	0.100	mg/L	1	12/26/2019 7:19:31 PM
Calcium	18.3	0.500	mg/L	1	12/26/2019 7:19:31 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	249	20.0	mg/L	1	12/23/2019 10:19:00 AM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19121059**Date Reported: **1/8/2020** 

**Collection Date:** 12/19/2019 7:40:00 AM

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring

Lab ID: 19121059-005 Matrix: AQUEOUS

**Client Sample ID** CCR-5

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: MRM
Chloride	57.9	5.00	mg/L	20	12/30/2019 3:03:38 PM
Fluoride	0.256	0.0500	mg/L	1	12/30/2019 8:07:20 PM
Sulfate	< 0.250	0.250	mg/L	1	12/30/2019 8:07:20 PM
METALS IN WATER BY ICP, TOTALS			SW6010B		Analyst: STS
Boron	0.112	0.100	mg/L	1	12/26/2019 7:23:59 PM
Calcium	32.8	0.500	mg/L	1	12/26/2019 7:23:59 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	399	20.0	mg/L	1	12/23/2019 10:19:00 AM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19121059**Date Reported: **1/8/2020** 

**Collection Date:** 12/19/2019 9:10:00 AM

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring

Lab ID: 19121059-006 Matrix: AQUEOUS

Client Sample ID CCR-6

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: MRM
Chloride	85.8	2.50	mg/L	10	12/30/2019 3:17:21 PM
Fluoride	0.267	0.0500	mg/L	1	12/30/2019 8:21:04 PM
Sulfate	< 0.250	0.250	mg/L	1	12/30/2019 8:21:04 PM
METALS IN WATER BY ICP, TOTALS			SW6010B		Analyst: STS
Boron	0.101	0.100	mg/L	1	12/26/2019 7:28:27 PM
Calcium	30.3	0.500	mg/L	1	12/26/2019 7:28:27 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	318	20.0	mg/L	1	12/23/2019 10:19:00 AM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19121059**Date Reported: **1/8/2020** 

**Collection Date:** 12/19/2019 10:45:00 AM

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring

Lab ID: 19121059-007 Matrix: AQUEOUS

**Client Sample ID** CCR-7

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: MRM
Chloride	76.3	5.00	mg/L	20	12/30/2019 3:31:04 PM
Fluoride	0.293	0.0500	mg/L	1	12/30/2019 8:34:47 PM
Sulfate	< 0.250	0.250	mg/L	1	12/30/2019 8:34:47 PM
METALS IN WATER BY ICP, TOTALS			SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	12/26/2019 7:32:56 PM
Calcium	44.3	0.500	mg/L	1	12/26/2019 7:32:56 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	331	20.0	mg/L	1	12/23/2019 10:19:00 AM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL Sample detection limi

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19121059**Date Reported: **1/8/2020** 

**Collection Date:** 12/18/2019 5:30:00 PM

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring

Lab ID: 19121059-008 Matrix: AQUEOUS

**Client Sample ID** CCR-8

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: MRM
Chloride	84.1	2.50	mg/L	10	12/30/2019 4:12:16 PM
Fluoride	0.167	0.0500	mg/L	1	12/30/2019 8:48:32 PM
Sulfate	0.540	0.250	mg/L	1	12/30/2019 8:48:32 PM
METALS IN WATER BY ICP, TOTALS			SW6010B		Analyst: STS
Boron	< 0.100	0.100	mg/L	1	12/26/2019 7:56:33 PM
Calcium	11.1	0.500	mg/L	1	12/26/2019 7:56:33 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	276	20.0	mg/L	1	12/23/2019 10:19:00 AM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19121059**Date Reported: **1/8/2020** 

**Collection Date:** 12/18/2019 4:15:00 PM

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring

Lab ID: 19121059-009 Matrix: AQUEOUS

Client Sample ID CCR-9

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: MRM
Chloride	69.5	5.00	mg/L	20	12/30/2019 4:55:10 PM
Fluoride	0.593	0.0500	mg/L	1	12/30/2019 9:57:09 PM
Sulfate	6.10	0.250	mg/L	1	12/30/2019 9:57:09 PM
METALS IN WATER BY ICP, TOTALS			SW6010B		Analyst: STS
Boron	< 0.100	0.100	mg/L	1	12/26/2019 8:11:24 PM
Calcium	30.8	0.500	mg/L	1	12/26/2019 8:11:24 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	315	20.0	mg/L	1	12/23/2019 10:19:00 AM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL Sample detection limi

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19121059**Date Reported: **1/8/2020** 

CLIENT: Pivotal Engineering LLC Collection Date: 12/18/2019 2:25:00 PM

**Project:** Entergy: CCR Detection Monitoring

Lab ID: 19121059-010 Matrix: AQUEOUS

Client Sample ID CCR-10

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: MRM
Chloride	40.2	2.50	mg/L	10	12/30/2019 5:08:53 PM
Fluoride	0.635	0.0500	mg/L	1	12/30/2019 10:10:52 PM
Sulfate	11.6	0.250	mg/L	1	12/30/2019 10:10:52 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	12/26/2019 8:15:51 PM
Calcium	26.9	0.500	mg/L	1	12/26/2019 8:15:51 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	338	20.0	mg/L	1	12/23/2019 10:19:00 AM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Lafayette, LA 70508-3344 TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19121059**Date Reported: **1/8/2020** 

**Collection Date:** 12/18/2019 1:00:00 PM

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring

Lab ID: 19121059-011 Matrix: AQUEOUS

Client Sample ID CCR-11

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: MRM
Chloride	24.6	0.250	mg/L	1	12/30/2019 10:24:36 PM
Fluoride	0.715	0.0500	mg/L	1	12/30/2019 10:24:36 PM
Sulfate	3.62	0.250	mg/L	1	12/30/2019 10:24:36 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	12/26/2019 8:20:19 PM
Calcium	27.1	0.500	mg/L	1	12/26/2019 8:20:19 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	218	20.0	mg/L	1	12/23/2019 10:19:00 AM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL Sample detection limi

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com

**Analytical Report** (consolidated)

Collection Date: 12/18/2019 11:30:00 AM

WO#: 19121059 1/8/2020 Date Reported:

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring

Lab ID: Matrix: AQUEOUS 19121059-012

Client Sample ID CCR-12

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: MRM
Chloride	16.6	0.250	mg/L	1	12/30/2019 10:38:20 PM
Fluoride	0.155	0.0500	mg/L	1	12/30/2019 10:38:20 PM
Sulfate	8.99	0.250	mg/L	1	12/30/2019 10:38:20 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	12/26/2019 8:24:48 PM
Calcium	17.7	0.500	mg/L	1	12/26/2019 8:24:48 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	156	20.0	mg/L	1	12/23/2019 10:19:00 AM

Holding times for preparation or analysis exceeded Qualifiers:

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL

Sample container temperature is out of limit as specified at testcode

Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19121059**Date Reported: **1/8/2020** 

**Collection Date:** 12/18/2019 10:00:00 AM

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring

Lab ID: 19121059-013 Matrix: AQUEOUS

Client Sample ID CCR-13

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER BY	/ IC		E 30	0.0	Analyst: MRM
Chloride	12.2	0.250	mg/L	1	12/30/2019 10:52:03 PM
Fluoride	0.236	0.0500	mg/L	1	12/30/2019 10:52:03 PM
Sulfate	1.90	0.250	mg/L	1	12/30/2019 10:52:03 PM
METALS IN WATER BY ICP, TOTAL	_S		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	12/26/2019 8:29:18 PM
Calcium	21.8	0.500	mg/L	1	12/26/2019 8:29:18 PM
TOTAL DISSOLVED SOLIDS			SM2540C		Analyst: GMS
Total Dissolved Solids (Residue, Filterable)	170	20.0	mg/L	1	12/23/2019 10:19:00 AM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19121059**Date Reported: **1/8/2020** 

CLIENT: Pivotal Engineering LLC Collection Date: 12/18/2019 8:40:00 AM

**Project:** Entergy: CCR Detection Monitoring

Lab ID: 19121059-014 Matrix: AQUEOUS

Client Sample ID CCR-14

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: MRM
Chloride	11.3	0.250	mg/L	1	12/30/2019 11:05:47 PM
Fluoride	0.177	0.0500	mg/L	1	12/30/2019 11:05:47 PM
Sulfate	< 0.250	0.250	mg/L	1	12/30/2019 11:05:47 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	12/26/2019 8:33:47 PM
Calcium	16.4	0.500	mg/L	1	12/26/2019 8:33:47 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	120	20.0	mg/L	1	12/23/2019 10:19:00 AM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Lafayette, LA 70508-3344 TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19121059**Date Reported: **1/8/2020** 

**Collection Date:** 12/17/2019

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring

Lab ID: 19121059-015 Matrix: AQUEOUS

Client Sample ID DUP

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: MRM
Chloride	43.7	2.50	mg/L	10	12/30/2019 6:17:29 PM
Fluoride	0.220	0.0500	mg/L	1	12/30/2019 11:19:32 PM
Sulfate	9.64	0.250	mg/L	1	12/30/2019 11:19:32 PM
METALS IN WATER BY ICP, TOTA	LS		SW60	10B	Analyst: STS
Boron	0.109	0.100	mg/L	1	12/26/2019 8:38:16 PM
Calcium	18.8	0.500	mg/L	1	12/26/2019 8:38:16 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	266	20.0	mg/L	1	12/23/2019 10:19:00 AM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **Analytical Report** 

(consolidated)

WO#: **19121059**Date Reported: **1/8/2020** 

**Collection Date:** 12/18/2019 5:00:00 PM

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring

Lab ID: 19121059-016 Matrix: AQUEOUS

Client Sample ID FB1

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
INORGANIC ANIONS IN WATER B	Y IC		E 30	0.0	Analyst: MRM
Chloride	< 0.250	0.250	mg/L	1	12/30/2019 6:58:39 PM
Fluoride	< 0.0500	0.0500	mg/L	1	12/30/2019 6:58:39 PM
Sulfate	< 0.250	0.250	mg/L	1	12/30/2019 6:58:39 PM
METALS IN WATER BY ICP, TOTA	ALS		SW60	10B	Analyst: STS
Boron	< 0.100	0.100	mg/L	1	12/26/2019 8:51:18 PM
Calcium	< 0.500	0.500	mg/L	1	12/26/2019 8:51:18 PM
TOTAL DISSOLVED SOLIDS			SM25	40C	Analyst: <b>GMS</b>
Total Dissolved Solids (Residue, Filterable)	< 20.0	20.0	mg/L	1	12/23/2019 10:19:00 AM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL Sample detection limi

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



# **QC SUMMARY REPORT**

WO#: **19121059** 

08-Jan-20

**Client:** Pivotal Engineering LLC

SDL Sample detection limit

Project: Entergy: CCR Detection Monitoring BatchID: 32670

MB-32670	SampType: MBLK	TestCod	le: <b>6010_W</b>	Units: mg/L		Prep Date	e: <b>12/23/2</b>	019	RunNo: 848	370	
PBW	Batch ID: 32670	TestN	o: <b>SW6010B</b>			Analysis Date	: <b>12/26/2</b>	019	SeqNo: 212	26436	
	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
	< 0.100 < 0.500	0.100 0.500									
LCS-32670	SampType: <b>LCS</b>	TestCod	le: <b>6010_W</b>	Units: mg/L		Prep Date	: 12/23/2	019	RunNo: 848	370	
LCSW	Batch ID: 32670	TestN	o: <b>SW6010B</b>			Analysis Date	e: <b>12/26/2</b>	019	SeqNo: 212	26437	
	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
	0.490 48.9	0.100 0.500	0.5000 50.00	0 0	97.9 97.8	80 80	120 120				
LCSD-32670	SampType: <b>LCSD</b>	TestCod	TestCode: 6010_W Units: mg/L Prep Date: 12/23/2019		RunNo: 848	370					
LCSS02	Batch ID: 32670	TestN	o: <b>SW6010B</b>			Analysis Date	: <b>12/26/2</b>	019	SeqNo: 212	26438	
	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qua
	0.499 48.8	0.100 0.500	0.5000 50.00	0 0	99.9 97.6	80 80	120 120	0.4896 48.90	1.96 0.184	20 20	
19121059-008BMS	SampType: MS	TestCod	le: <b>6010_W</b>	Units: mg/L		Prep Date	e: <b>12/23/2</b>	019	RunNo: 848	370	
CCR-8	Batch ID: 32670	TestN	o: <b>SW6010B</b>			Analysis Date	: <b>12/26/2</b>	019	SeqNo: 212	26451	
	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qua
	0.573	0.100	0.5000	0	115	75	125				
	LCS-32670 LCSW  LCSD-32670 LCSS02  19121059-008BMS	PBW Batch ID: 32670 Result < 0.100 < 0.500  LCS-32670 SampType: LCS Batch ID: 32670 Result	PBW         Batch ID:         32670         TestN           Result         PQL           < 0.100	PBW         Batch ID:         32670         TestNo:         SW6010B           Result         PQL         SPK value           < 0.100	PBW         Batch ID:         32670         TestNo:         SW6010B           Result         PQL         SPK value         SPK Ref Val           < 0.100 < 0.500	PBW         Batch ID: 32670         TestNo: SW6010B         SPK value         SPK Ref Val         %REC           < 0.100 < 0.500	PBW         Batch ID:         32670         TestNo:         SW6010B         Analysis Date           Result         PQL         SPK value         SPK Ref Val         %REC         LowLimit           < 0.100	PBW         Batch ID:         32670         TestNo:         SW6010B         Analysis Date:         12/26/2           Result         PQL         SPK value         SPK Ref Val         %REC         LowLimit         HighLimit           < 0.100	PBW   Batch ID:   32670   TestNo:   SW6010B   SPK Ref Val   %REC   LowLimit   HighLimit   RPD Ref Val	PBW         Batch ID: 32670         TestNo: SW6010B         Analysis Date: 12/26/2019         SeqNo: 21/26/2019         RunNo: 84/26/2019         SeqNo: 21/26/2019         RunNo: 84/26/2019         SeqNo: 21/26/2019         Se	PBW   Batch   D: 32670   Test\to   SPK value   SPK Ref Val   %REC   LowLimit   HighLimit   RPD Ref Val   %RPD   RPDLimit   Record   Result   PQL   SPK value   SPK Ref Val   %REC   LowLimit   HighLimit   RPD Ref Val   %RPD   RPDLimit   Record   Record

Analyte not detected

Sample container temperature is out of limit as s<sub>I</sub>



# **QC SUMMARY REPORT**

WO#:

19121059

08-Jan-20

Client: Pivotal Engineering LLC

Project: Entergy: CCR Detection Monitoring BatchID: 32670

Sample ID: 19121059-008BMS	SampType: MS	TestCode: 6010_W		Units: mg/L		Prep Date: 12/23/2019		RunNo: <b>84870</b>			
Client ID: CCR-8	Batch ID: 32670	TestNo	TestNo: SW6010B			Analysis Date: 12/26/2019			SeqNo: <b>2126451</b>		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	61.4	0.500	50.00	11.14	101	75	125				

Sample ID: 19121059-008BMSD			de: 6010_W	Units: mg/L		·	e: <b>12/23/2</b>		RunNo: 848	_	
Client ID: CCR-8	Batch ID: <b>32670</b>	I estN	lo: <b>SW6010B</b>			Analysis Dat	ie: <b>12/26/2</b>	019	SeqNo: 212	26452	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Boron	0.589	0.100	0.5000	0	118	75	125	0.5732	2.69	20	_
Calcium	62.1	0.500	50.00	11.14	102	75	125	61.44	1.04	20	

RL Reporting Limit

U Analyte not detected

S Spike Recovery outside accepted recovery limits



# **QC SUMMARY REPORT**

WO#: **19121059** 

08-Jan-20

Client: Pivotal Engineering LLC

SDL Sample detection limit

Project: Entergy: CCR Detection Monitoring BatchID: R84781

Project: Entergy: Co	CR Detection Monitoring		BatchID: R84781	
Sample ID: MB-R84781	SampType: MBLK	TestCode: TDS_2540C Units: mg/L	Prep Date: RunNo: 84781	
Client ID: PBW	Batch ID: <b>R84781</b>	TestNo: SM2540C	Analysis Date: 12/23/2019 SeqNo: 21263	193
Analyte	Result	PQL SPK value SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD F	RPDLimit Qual
Total Dissolved Solids (Residue, Filterable)	< 20.0	20.0		
Sample ID: LCS-R84781	SampType: <b>LCS</b>	TestCode: TDS_2540C Units: mg/L	Prep Date: RunNo: 84781	<u> </u>
Client ID: LCSW	Batch ID: <b>R84781</b>	TestNo: SM2540C	Analysis Date: 12/23/2019 SeqNo: 21263	<b>194</b>
Analyte	Result	PQL SPK value SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD F	RPDLimit Qual
Total Dissolved Solids (Residue, Filterable)	1,000	20.0 1,000 0	100 85 115	
Sample ID: LCSD-R84781	SampType: <b>LCSD</b>	TestCode: TDS_2540C Units: mg/L	Prep Date: RunNo: <b>84781</b>	<u> </u>
Client ID: LCSS02	Batch ID: <b>R84781</b>	TestNo: SM2540C	Analysis Date: 12/23/2019 SeqNo: 21263	195
Analyte	Result	PQL SPK value SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD F	RPDLimit Qual
Total Dissolved Solids (Residue, Filterable)	1,010	20.0 1,000 0	101 85 115 1,001 0.895	10
Sample ID: 19121059-008ADUP	SampType: <b>DUP</b>	TestCode: TDS_2540C Units: mg/L	Prep Date: RunNo: 84781	
Client ID: CCR-8	Batch ID: <b>R84781</b>	TestNo: SM2540C	Analysis Date: 12/23/2019 SeqNo: 21264	104
Analyte	Result	PQL SPK value SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD F	RPDLimit Qua
Total Dissolved Solids (Residue, Filterable)	276	20.0	276.0 0	10
Quantities	preparation or analysis exceeded oted recovery limits	M Matrix Interference RL Reporting Limit	ND Not Detected at the Reporting Limit S Spike Recovery outside accepted recovery limits	s

Analyte not detected

Sample container temperature is out of limit as s<sub>I</sub>



**QC SUMMARY REPORT** 

WO#: **19121059** 

08-Jan-20

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Detection Monitoring BatchID: R84781

Website: www.element.com

Sample ID: 19121059-008ADUP SampType: DUP TestCode: TDS\_2540C Units: mg/L Prep Date: RunNo: 84781

Client ID: CCR-8 Batch ID: R84781 TestNo: SM2540C Analysis Date: 12/23/2019 SeqNo: 2126404

Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sample ID: 19121059-015ADUP Client ID: DUP	SampType: DUP Batch ID: R84781		de: TDS_2540 lo: SM2540C	ū		Prep Da Analysis Da		019	RunNo: <b>847</b> SeqNo: <b>212</b>		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filterable)	256	20.0						266.0	3.83	10	



# **QC SUMMARY REPORT**

WO#: **19121059** 

08-Jan-20

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Detection Monitoring BatchID: R84930

Sample ID: MBLK	SampType: MBLK	TestCode: 300.0	Units: mg/L	Prep Date:	RunNo: <b>84930</b>
Client ID: PBW	Batch ID: <b>R84930</b>	TestNo: <b>E 300.0</b>		Analysis Date: 12/30/2019	SeqNo: <b>2129175</b>
Analyte	Result	PQL SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Va	l %RPD RPDLimit Qual
Chloride	< 0.250	0.250			
Fluoride	< 0.0500	0.0500			
Sulfate	< 0.250	0.250			

Sample ID: LCS	SampType: LCS	TestCod	e: <b>300.0</b>	Units: mg/L		Prep Dat	te:		RunNo: 849	30	
Client ID: LCSW	Batch ID: <b>R84930</b>	TestN	o: <b>E 300.0</b>		Analysis Date: 12/30/2019			SeqNo: <b>2129176</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	10.3	0.250	10.00	0	103	90	110				
Fluoride	2.03	0.0500	2.000	0	101	90	110				
Sulfate	10.4	0.250	10.00	0	104	90	110				

Sample ID: LCSD	SampType: LCSD	TestCod	le: <b>300.0</b>	Units: mg/L		Prep Da	te:		RunNo: <b>849</b>	30	
Client ID: LCSS02	Batch ID: <b>R84930</b>	TestN	lo: <b>E 300.0</b>		Analysis Date: 12/30/2019				SeqNo: <b>2129177</b>		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	10.7	0.250	10.00	0	107	90	110	10.35	3.79	15	-
Fluoride	2.17	0.0500	2.000	0	109	90	110	2.027	7.03	15	
Sulfate	11.0	0.250	10.00	0	110	90	110	10.38	5.72	15	

Qualifiers:

Holding times for preparation or analysis exceeded

R RPD outside accepted recovery limits

SDL Sample detection limit

M Matrix Interference

RL Reporting Limit

U Analyte not detected

ND Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as s<sub>1</sub>



# **QC SUMMARY REPORT**

WO#: 19121059

08-Jan-20

**Client:** Pivotal Engineering LLC

**Project:** Entergy: CCR Detection Monitoring **BatchID:** R84930

Sample ID:	19121059-008AMS	SampType: MS	TestCod	de: <b>300.0</b>	Units: mg/L		Prep Dat	e:		RunNo: <b>84930</b>		
Client ID:	CCR-8	Batch ID: <b>R84930</b>	TestN	lo: <b>E 300.0</b>			Analysis Dat	e: <b>12/30/2</b>	019	SeqNo: 212	<u> 1</u> 9192	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		130	2.50	50.00	84.13	91.8	80	120				
Sample ID:	19121059-008AMSD	SampType: MSD	TestCod	de: <b>300.0</b>	Units: mg/L		Prep Dat	:e:		RunNo: 849	<del></del>	
Client ID:	CCR-8	Batch ID: <b>R84930</b>	TestN	lo: <b>E 300.0</b>			Analysis Dat	e: <b>12/30/2</b>	019	SeqNo: 212	29194	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		130	2.50	50.00	84.13	92.0	80	120	130.1	0.0523	15	
Sample ID:	19121059-008AMS	SampType: MS	TestCo	de: <b>300.0</b>	Units: mg/L		Prep Dat	e:		RunNo: 849	930	
Client ID:	CCR-8	Batch ID: <b>R84930</b>	TestN	lo: <b>E 300.0</b>			Analysis Dat	e: <b>12/30/2</b>	019	SeqNo: 212	<u>1</u> 9229	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		1.15	0.0500	1.000	0.1671	98.1	80	120				
Sulfate		5.43	0.250	5.000	0.5404	97.7	80	120				
Sample ID:	19121059-008AMSD	SampType: MSD	TestCo	de: <b>300.0</b>	Units: mg/L		Prep Dat	e:		RunNo: 849	)30	
Client ID:	CCR-8	Batch ID: <b>R84930</b>	TestN	lo: <b>E 300.0</b>			Analysis Dat	e: <b>12/30/2</b>	019	SeqNo: 212	<u>1</u> 9233	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		1.15	0.0500	1.000	0.1671	98.3	80	120	1.148	0.166	15	
Sulfate		5.37	0.250	5.000	0.5404	96.6	80	120	5.427	1.04	15	

RPD outside accepted recovery limits

SDL Sample detection limit

Reporting Limit

Analyte not detected

Spike Recovery outside accepted recovery limits

Sample container temperature is out of limit as s<sub>I</sub>



TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com

## Sample Log-In Check List

Work Order Number: 19121059 **PIVOTAL ENGINEERIN** RcptNo: 1 Client Name: Daniel Holling **Danielle Hollier** 12/20/2019 1:16:00 PM Logged by: Completed By: **Danielle Hollier** 12/20/2019 2:38:12 PM Reviewed By: **Caitlin Duplantis** 1/2/2020 3:49:25 PM Chain of Custody Yes 🗸 No 🗌 Not Present 1. Is Chain of Custody complete? 2. How was the sample delivered? Element Log In 3. Coolers are present? Yes 🗸 NA 🗌 Yes 🗸 No 4. Shipping container/cooler in good condition? Yes No 🗌 Not Present ✓ Custody seals intact on shipping container/cooler? Seal Date: Signed By: NA 🗌 5. Was an attempt made to cool the samples? Yes 🗸 No Yes 🔽 No  $\square$ NA  $\square$ 6. Were all samples received at a temperature of >0° C to 6.0°C No 7. Sample(s) in proper container(s)? No 8. Sufficient sample volume for indicated test(s)? Yes 9. Are samples (except VOA and ONG) properly preserved? **✓** No No 🗸 NA 🗌 10. Was preservative added to bottles? Yes No VOA Vials No 11. Is the headspace in the VOA vials less than 1/4 inch or 6 mm? Yes Yes No 🗸 12. Were any sample containers received broken? 13. Does paperwork match bottle labels? Yes 🗸 No (Note discrepancies on chain of custody) Yes 🗸 No  $\square$ 14. Are matrices correctly identified on Chain of Custody? No 15. Is it clear what analyses were requested? No 16. Were all holding times able to be met? Yes (If no, notify customer for authorization.) Special Handling (if applicable) Yes NA 🗸 17. Was client notified of all discrepancies with this order? No Person Notified: Date: Phone Fax By Whom: Via: eMail Regarding: Client Instructions:

### 18. Additional remarks:

#### **Cooler Information**

Cooler No	Temp ⁰C	Condition	<b>Seal Intact</b>	Seal No	Seal Date	Signed By
1	2.4	Good	Not Present			

ompany Name:	Pivotal En			lling Infor	mation:			PO Numbe	r.				Number:	n	THE RESERVE TO A SECOND SECOND	Page of Matrix Code
Name: ddress:	Terry Elna							Quote Num	14		Me		ning		1	DW = Drinking Water NW = Waste Water GW = Ground Water
ate Zip:								Required C	C Leve	H					1	AQ = Aqueous DT = Other SL = Sludge SOL = Solid
Phone lumber: lumber: E-mail ddress:	504-799-36	3Ext:				Ext:		Bill Monthly  Yes  No	,			ping Method:  UPS / FedEx / NOW  HL / Element / Hand / Mail		lail I	O = Oil SO = Soil F = Food SW = Swa NG = Natural Gas NGL = Natural Gas Liquid PW = Produced Water	
	tions Apply:	Turn Time		(Rush tu	rn times	Con	tainer	Pres.			Re	queste	d Tests	100	1.9	Comments
V ES VFDA AP/RISC	□ Drinking Water □ Distribution □ Special □ State □ Other	Standar RUSH 1 Day 2 Day Other		will incur surcharg must be approved lab.)	a je and pre-		stic,	3 24		CIP SH	5					& Metals: B,Ca
e ID/Des	scription	Collection Date 37	Time	Grab / Composite	Matrix	Quantity	C P=Pla	NaO NaO	105	30.	00					John
R-1		12/17	1715		AR	2	P	H103		1		1000		Page 1		
2-3		12/17/1	14/20													
2-4		12/17/1	0740												-	
R-6		12/19/	0910										1			
e-7		12/18/	1045								a poli					
R-9		12/18/1	1615		1	1	7	1	y	4	y					
	Relinquished by			te/Time		1011/100		ived by	4,71100		100	Date/T	ime	Fie	eld Note	es:
12/19 1400		7	oflun Alex	pert		1	2/9	19	1400	Re	A	at lab on ice?				
-	John Helbert		اعدادا	19 17	316	1	11	~			12-1	111-10	9 13/1	0	Yes [	No Temp: 2.4

8800 North US 31 Columbus, IN 47201 USA P 812-375-0531 F 812-375-0731

328 Ley Road, Suite 100 Fort Wayne, IN 46825 USA P 260-471-7000 F 260-471-7777

909 Executive Dr Warsaw, IN 46580 USA P 574-267-3305 F 574-269-6569

3371 Cleveland Road, Suite 100A South Bend, IN 46628 USA P 574-277-0707 F 574-273-5699 Page 26 of 27

2417 W. Pinhook Rd Lafayette, LA 70508 USA P 337-235-0483 F 337-233-6540

- C	ement	:	Bi	lling Infor	mation:		1001/20	PO Numbe	er:	MG To	Projec	t Name/N	lumber:		-	ige of	
Name:	ivotal E	ng. Ll	-6			1111111	8592	6					tecti			atrix Code V = Drinking Water	
Address:	erry Elna	ggar						Quote Nun	4			er's Sign	DONG ature	}	GV GV	WW = Waste Water GW = Ground Water AQ = Aqueous	
tate Zip:								Required C	C Lev	rel					OT	I = Aqueous = Other = Sludge SOL = Soli	
Number:	tione 504.799.3653Ext:			Ext			□Yes			Shipping Method:  UPS / FedEx / NOW			O F	O = Oil SO = Soil F = Food SW = Swa NG = Natural Gas NGL = Natural Gas Liqui			
E-mail Address:								No			DHL	/ Eleme	nent / Hand / Mail		PW = Produced Water CF = Completion Fluid		
Regulation A	ns Apply:	Turn Time	rd	(Rush tur		Con	tainer	Pres.			Re	questec	Tests		96	Comments	
W ES A/FDA AP/RISC	Distribution Special State Other	RUSH 1 Day 2 Day Other		surcharg must be approved lab.)	e and pre-	tity	stic,	HCI, HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> NaOH, Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	2	1,19,50v	*01					Ar Notals	
le ID/Descri	ption	Collect	Time	Grab / Composite	Matrix	2 Quantity	P=Pla	97	7	300:Ch	9				3	A Metals: B. Ca	
R-10 R-11		12/18/	4/4/25	Sensor V	AQ	2	P	HN03									
21-12		12/18	1/300														
CR-13		12/18	14/000											3 700	M		
R-14		12/18/1	0840	TO A CONTRACT		1									•.		
5/MS	D (CCR-8) BLANK	12/18				4			1000				1				
UPLIC		12/17	19-		1	b	1	1									
	linevial by		Do	te/Time			Page	band bu				Date/Tin		Field I	Natas		
N.	linguished by		12/1		00	-		eived by		10.19	ala	1 -	11,000	rieid i	votes		
	m ttebert		-	olia v		7	1-	1000			120	20.10	1211			t lab on ice? lo Temp: 2.4	

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Website: www.element.com

January 09, 2020

Terry Elnaggar Pivotal Engineering LLC 1515 Poydras St., STE. 1875

New Orleans, LA 70112 TEL: (504) 799-3653

**FAX** 

RE: Entergy: CCR Assessment Monitoring Order No.: 19121061

Dear Terry Elnaggar:

Element Materials Technology Lafayette received 16 sample(s) on 12/20/2019 for the analyses presented in the following report.

In accordance with your instructions Element Lafayette conducted the analysis shown on the following pages on samples submitted by your company. The results related only to the items tested. Unless otherwise noted, all analyses were conducted using EPA approved methodologies and all test results meet all requirements of TNI. All relevant sampling information is on the attached Chain-of-Custody form.

All soil data, except for 29-B, are on a wet-weight basis unless otherwise indicated in the units field as –dry.

LELAP Certification No.: 01997. TCEQ Certification No.: T104704261. LDHH Certification No.: LA023. ISDH Certification No.: C-LA-01. NDELCP Certification No.: R-226. A scope of accredited parameters is available upon request. A "#" by the test method or analyte indicates this parameter is outside the scope of accreditation.

Estimated uncertainty is available upon request. This report shall not be reproduced except in full, without the written approval of the laboratory.

If you have any questions regarding these test results, please feel free to call.

Cristina Thibeaux

Customer Service Supervisor

2417 W. Pinhook Road

Lafayette, LA 70508-3344



Website: www.element.com

**Case Narrative** 

WO#: **19121061**Date: **1/9/2020** 

**CLIENT:** Pivotal Engineering LLC

**Project:** Entergy: CCR Assessment Monitoring

Unless specified by the client, a duplicate or MS/MSD, wherever applicable, is randomly selected and analyzed from each analytical batch provided sample volume is sufficient. The sample chosen for duplicate or MS/MSD may or may not be a sample submitted in this workorder. A method blank and/or a lab control sample (LCS)/lab control sample duplicate (LCSD), wherever applicable, are processed as a quality control check for each analytical batch. When the matrix QC data is not available due to insufficient sample volume or when the results indicate possible matrix effect, the validity of the batch is determined by the method blank and LCS/LCSD.

The results of the laboratory internal quality control data are provided in the QC Summary Report section of the report for your review. Laboratory-related QC exceptions that may impact the validity of data are discussed in the case narrative. Sample-related QC exceptions are flagged either in the results page(s) or in the QC report page(s). End users should consider QC exceptions when evaluating sample data against data quality objectives.

Metals Note: Due to an interference during analytical run, the Arsenic analytical was reported by Method 6020, not 6010 as listed on COC.

Any other exceptions associated with this report will be footnoted in the results page(s) or the QC summary page(s).

The Lithium analyses by Method 6020 were subcontracted to Pace Analytical. Their report is attached in its entirety.



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: **19121061**Date Reported **1/9/2020** 

**CLIENT:** Pivotal Engineering LLC

**Collection Date:** 12/17/2019 5:15:00 PM

**Project:** Entergy: CCR Assessment Monitoring

Lab ID: 19121061-001 Matrix: AQUEOUS

Client Sample ID CCR-1

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATE	R,TOTAL		SW74	70A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	12/23/2019 6:31:57 PM
INORGANIC ANIONS IN WATE	R BY IC		E 30	0.0	Analyst: MRM
Fluoride	0.303	0.0500	mg/L	1	12/30/2019 7:12:23 PM
METALS IN WATER BY ICP, T	OTALS		SW60	10B	Analyst: STS
Barium	0.178	0.0100	mg/L	1	12/26/2019 7:05:59 PM
Beryllium	< 0.00100	0.00100	mg/L	1	12/26/2019 7:05:59 PM
Cadmium	< 0.00500	0.00500	mg/L	1	12/26/2019 7:05:59 PM
Chromium	< 0.0100	0.0100	mg/L	1	12/26/2019 7:05:59 PM
Cobalt	< 0.0100	0.0100	mg/L	1	12/26/2019 7:05:59 PM
Lead	< 0.0100	0.0100	mg/L	1	12/26/2019 7:05:59 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	12/26/2019 7:05:59 PM
Selenium	< 0.0200	0.0200	mg/L	1	12/26/2019 7:05:59 PM
METALS IN WATER BY ICP-M	S, TOTAL		SW60	20A	Analyst: MRM
Antimony	< 0.250	0.250	μg/L	1	1/6/2020 12:57:44 PM
Arsenic	< 10.0	10.0	μg/L	1	1/6/2020 12:57:44 PM
Thallium	< 0.250	0.250	μg/L	1	1/6/2020 12:57:44 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL Sample detection limit
W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Website: www.element.com

**Analytical Report** (consolidated)

WO#: 19121061 Date Reported 1/9/2020

**CLIENT:** Pivotal Engineering LLC **Collection Date:** 12/17/2019 3:45:00 PM

Matrix: AQUEOUS

**Project:** Entergy: CCR Assessment Monitoring

Lab ID: 19121061-002

Client Sample ID CCR-2

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATE	R,TOTAL		SW74	70A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	12/23/2019 6:34:15 PM
INORGANIC ANIONS IN WATE	R BY IC		E 30	0.0	Analyst: MRM
Fluoride	0.352	0.0500	mg/L	1	12/30/2019 7:26:08 PM
METALS IN WATER BY ICP, T	OTALS		SW60	10B	Analyst: STS
Barium	0.147	0.0100	mg/L	1	12/26/2019 7:10:29 PM
Beryllium	< 0.00100	0.00100	mg/L	1	12/26/2019 7:10:29 PM
Cadmium	< 0.00500	0.00500	mg/L	1	12/26/2019 7:10:29 PM
Chromium	< 0.0100	0.0100	mg/L	1	12/26/2019 7:10:29 PM
Cobalt	< 0.0100	0.0100	mg/L	1	12/26/2019 7:10:29 PM
Lead	< 0.0100	0.0100	mg/L	1	12/26/2019 7:10:29 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	12/26/2019 7:10:29 PM
Selenium	< 0.0200	0.0200	mg/L	1	12/26/2019 7:10:29 PM
METALS IN WATER BY ICP-M	S, TOTAL		SW60	20A	Analyst: MRM
Antimony	< 0.250	0.250	μg/L	1	1/6/2020 1:11:45 PM
Arsenic	< 10.0	10.0	μg/L	1	1/6/2020 1:11:45 PM
Thallium	< 0.250	0.250	μg/L	1	1/6/2020 1:11:45 PM

Qualifiers: Holding times for preparation or analysis exceeded

Sample detection limit

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL

Sample container temperature is out of limit as specified at testcode

Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: **19121061**Date Reported **1/9/2020** 

**CLIENT:** Pivotal Engineering LLC

**Collection Date:** 12/17/2019 2:20:00 PM

**Project:** Entergy: CCR Assessment Monitoring

Lab ID: 19121061-003 Matrix: AQUEOUS

Client Sample ID CCR-3

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATER	R,TOTAL		SW74	70A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	12/23/2019 6:36:33 PM
INORGANIC ANIONS IN WATER	R BY IC		E 30	0.0	Analyst: MRM
Fluoride	0.390	0.0500	mg/L	1	12/30/2019 7:39:52 PM
METALS IN WATER BY ICP, TO	<b>DTALS</b>		SW60	10B	Analyst: STS
Barium	0.251	0.0100	mg/L	1	12/26/2019 7:15:03 PM
Beryllium	< 0.00100	0.00100	mg/L	1	12/26/2019 7:15:03 PM
Cadmium	< 0.00500	0.00500	mg/L	1	12/26/2019 7:15:03 PM
Chromium	< 0.0100	0.0100	mg/L	1	12/26/2019 7:15:03 PM
Cobalt	< 0.0100	0.0100	mg/L	1	12/26/2019 7:15:03 PM
Lead	< 0.0100	0.0100	mg/L	1	12/26/2019 7:15:03 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	12/26/2019 7:15:03 PM
Selenium	< 0.0200	0.0200	mg/L	1	12/26/2019 7:15:03 PM
METALS IN WATER BY ICP-MS	S, TOTAL		SW60	20A	Analyst: MRM
Antimony	< 0.250	0.250	μg/L	1	1/6/2020 1:14:35 PM
Arsenic	< 10.0	10.0	μg/L	1	1/6/2020 1:14:35 PM
Thallium	< 0.250	0.250	μg/L	1	1/6/2020 1:14:35 PM

Qualifiers: H Holding times for preparation or analysis exceeded

Sample detection limit

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL

V Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: **19121061**Date Reported **1/9/2020** 

**CLIENT:** Pivotal Engineering LLC

**Collection Date:** 12/17/2019 12:30:00 PM

**Project:** Entergy: CCR Assessment Monitoring

Lab ID: 19121061-004 Matrix: AQUEOUS

Client Sample ID CCR-4

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WAT	ER,TOTAL		SW74	70A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	12/23/2019 6:38:52 PM
INORGANIC ANIONS IN WAT		E 30	0.0	Analyst: MRM	
Fluoride	0.221	0.0500	mg/L	1	12/30/2019 7:53:36 PM
METALS IN WATER BY ICP,	TOTALS		SW60	10B	Analyst: STS
Barium	0.100	0.0100	mg/L	1	12/26/2019 7:19:31 PM
Beryllium	< 0.00100	0.00100	mg/L	1	12/26/2019 7:19:31 PM
Cadmium	< 0.00500	0.00500	mg/L	1	12/26/2019 7:19:31 PM
Chromium	< 0.0100	0.0100	mg/L	1	12/26/2019 7:19:31 PM
Cobalt	< 0.0100	0.0100	mg/L	1	12/26/2019 7:19:31 PM
Lead	< 0.0100	0.0100	mg/L	1	12/26/2019 7:19:31 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	12/26/2019 7:19:31 PM
Selenium	< 0.0200	0.0200	mg/L	1	12/26/2019 7:19:31 PM
METALS IN WATER BY ICP-N	IS, TOTAL		SW60	20A	Analyst: <b>MRM</b>
Antimony	< 0.250	0.250	μg/L	1	1/6/2020 1:17:22 PM
Arsenic	< 10.0	10.0	μg/L	1	1/6/2020 1:17:22 PM
Thallium	< 0.250	0.250	μg/L	1	1/6/2020 1:17:22 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL Sample detection limit
W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Website: www.element.com

**Analytical Report** (consolidated)

WO#: 19121061 Date Reported 1/9/2020

**CLIENT:** Pivotal Engineering LLC

Entergy: CCR Assessment Monitoring

**Project:** 

19121061-005

**Client Sample ID** CCR-5

Lab ID:

Matrix: AQUEOUS

**Collection Date:** 12/19/2019 7:40:00 AM

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATER,	TOTAL		SW74	70A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	12/23/2019 6:41:10 PM
INORGANIC ANIONS IN WATER	BY IC		E 30	0.0	Analyst: MRM
Fluoride	0.256	0.0500	mg/L	1	12/30/2019 8:07:20 PM
METALS IN WATER BY ICP, TO	ΓALS		SW60	10B	Analyst: STS
Barium	0.214	0.0100	mg/L	1	12/26/2019 7:23:59 PM
Beryllium	< 0.00100	0.00100	mg/L	1	12/26/2019 7:23:59 PM
Cadmium	< 0.00500	0.00500	mg/L	1	12/26/2019 7:23:59 PM
Chromium	< 0.0100	0.0100	mg/L	1	12/26/2019 7:23:59 PM
Cobalt	< 0.0100	0.0100	mg/L	1	12/26/2019 7:23:59 PM
Lead	< 0.0100	0.0100	mg/L	1	12/26/2019 7:23:59 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	12/26/2019 7:23:59 PM
Selenium	< 0.0200	0.0200	mg/L	1	12/26/2019 7:23:59 PM
METALS IN WATER BY ICP-MS,	TOTAL		SW60	20A	Analyst: MRM
Antimony	< 0.250	0.250	μg/L	1	1/6/2020 1:20:10 PM
Arsenic	< 10.0	10.0	μg/L	1	1/6/2020 1:20:10 PM
Thallium	< 0.250	0.250	μg/L	1	1/6/2020 1:20:10 PM

Qualifiers: Holding times for preparation or analysis exceeded

> ND Not Detected at the Reporting Limit

RL Reporting Limit

SDLSample detection limit

Sample container temperature is out of limit as specified at testcode

Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: 19121061 Date Reported 1/9/2020

**CLIENT:** Pivotal Engineering LLC **Collection Date:** 12/19/2019 9:10:00 AM

**Project:** Entergy: CCR Assessment Monitoring

Lab ID: Matrix: AQUEOUS 19121061-006

Client Sample ID CCR-6

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND W	ATER,TOTAL		SW74	70A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	12/23/2019 6:43:28 PM
INORGANIC ANIONS IN W	ATER BY IC		E 30	0.0	Analyst: MRM
Fluoride	0.267	0.0500	mg/L	1	12/30/2019 8:21:04 PM
METALS IN WATER BY IC	P, TOTALS		SW60	10B	Analyst: STS
Barium	0.199	0.0100	mg/L	1	12/26/2019 7:28:27 PM
Beryllium	< 0.00100	0.00100	mg/L	1	12/26/2019 7:28:27 PM
Cadmium	< 0.00500	0.00500	mg/L	1	12/26/2019 7:28:27 PM
Chromium	< 0.0100	0.0100	mg/L	1	12/26/2019 7:28:27 PM
Cobalt	< 0.0100	0.0100	mg/L	1	12/26/2019 7:28:27 PM
Lead	< 0.0100	0.0100	mg/L	1	12/26/2019 7:28:27 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	12/26/2019 7:28:27 PM
Selenium	< 0.0200	0.0200	mg/L	1	12/26/2019 7:28:27 PM
METALS IN WATER BY IC	P-MS, TOTAL		SW60	20A	Analyst: <b>MRM</b>
Antimony	< 0.250	0.250	μg/L	1	1/6/2020 1:22:58 PM
Arsenic	< 10.0	10.0	μg/L	1	1/6/2020 1:22:58 PM
Thallium	< 0.250	0.250	μg/L	1	1/6/2020 1:22:58 PM

Qualifiers: Holding times for preparation or analysis exceeded

> ND Not Detected at the Reporting Limit

RL Reporting Limit

SDLSample detection limit Sample container temperature is out of limit as specified at testcode Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: 19121061 Date Reported 1/9/2020

**CLIENT:** Pivotal Engineering LLC

**Collection Date:** 12/19/2019 10:45:00 AM

**Project:** Entergy: CCR Assessment Monitoring

Lab ID: 19121061-007 Matrix: AQUEOUS

**Client Sample ID** CCR-7

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATER	R,TOTAL		SW74	70A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	12/23/2019 6:51:02 PM
INORGANIC ANIONS IN WATE	R BY IC		E 30	0.0	Analyst: MRM
Fluoride	0.293	0.0500	mg/L	1	12/30/2019 8:34:47 PM
METALS IN WATER BY ICP, TO	OTALS		SW60	10B	Analyst: STS
Barium	0.215	0.0100	mg/L	1	12/26/2019 7:32:56 PM
Beryllium	< 0.00100	0.00100	mg/L	1	12/26/2019 7:32:56 PM
Cadmium	< 0.00500	0.00500	mg/L	1	12/26/2019 7:32:56 PM
Chromium	< 0.0100	0.0100	mg/L	1	12/26/2019 7:32:56 PM
Cobalt	< 0.0100	0.0100	mg/L	1	12/26/2019 7:32:56 PM
Lead	< 0.0100	0.0100	mg/L	1	12/26/2019 7:32:56 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	12/26/2019 7:32:56 PM
Selenium	0.0210	0.0200	mg/L	1	12/26/2019 7:32:56 PM
METALS IN WATER BY ICP-MS	S, TOTAL		SW60	20A	Analyst: MRM
Antimony	< 0.250	0.250	μg/L	1	1/6/2020 1:25:46 PM
Arsenic	< 10.0	10.0	μg/L	1	1/6/2020 1:25:46 PM
Thallium	< 0.250	0.250	μg/L	1	1/6/2020 1:25:46 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL Sample detection limit
W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: **19121061**Date Reported **1/9/2020** 

**CLIENT:** Pivotal Engineering LLC

**Collection Date:** 12/18/2019 5:30:00 PM

**Project:** Entergy: CCR Assessment Monitoring

Lab ID: 19121061-008 Matrix: AQUEOUS

**Client Sample ID** CCR-8

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WAT	ER,TOTAL		SW74	70A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	12/23/2019 6:53:20 PM
INORGANIC ANIONS IN WAT	ER BY IC		E 30	0.0	Analyst: MRM
Fluoride	0.167	0.0500	mg/L	1	12/30/2019 8:48:32 PM
METALS IN WATER BY ICP,	TOTALS		SW60	10B	Analyst: STS
Barium	0.105	0.0100	mg/L	1	12/26/2019 7:56:33 PM
Beryllium	< 0.00100	0.00100	mg/L	1	12/26/2019 7:56:33 PM
Cadmium	< 0.00500	0.00500	mg/L	1	12/26/2019 7:56:33 PM
Chromium	< 0.0100	0.0100	mg/L	1	12/26/2019 7:56:33 PM
Cobalt	< 0.0100	0.0100	mg/L	1	12/26/2019 7:56:33 PM
Lead	< 0.0100	0.0100	mg/L	1	12/26/2019 7:56:33 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	12/26/2019 7:56:33 PM
Selenium	< 0.0200	0.0200	mg/L	1	12/26/2019 7:56:33 PM
METALS IN WATER BY ICP-M	MS, TOTAL		SW60	20A	Analyst: MRM
Antimony	< 0.250	0.250	μg/L	1	1/6/2020 1:28:33 PM
Arsenic	< 10.0	10.0	μg/L	1	1/6/2020 1:28:33 PM
Thallium	< 0.250	0.250	μg/L	1	1/6/2020 1:28:33 PM

Qualifiers: H Holding times for preparation or analysis exceeded

Sample detection limit

ND Not Detected at the Reporting Limit

RL Reporting Limit

 $\operatorname{SDL}$ 

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: **19121061**Date Reported **1/9/2020** 

**CLIENT:** Pivotal Engineering LLC

**Collection Date:** 12/18/2019 4:15:00 PM

**Project:** Entergy: CCR Assessment Monitoring

Lab ID: 19121061-009 Matrix: AQUEOUS

Client Sample ID CCR-9

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATER	,TOTAL		SW74	70A	Analyst: MRM
Mercury	0.000341	0.000200	mg/L	1	12/23/2019 7:01:22 PM
INORGANIC ANIONS IN WATER	R BY IC		E 30	0.0	Analyst: MRM
Fluoride	0.593	0.0500	mg/L	1	12/30/2019 9:57:09 PM
METALS IN WATER BY ICP, TO	TALS		SW60	10B	Analyst: STS
Barium	0.242	0.0100	mg/L	1	12/26/2019 8:11:24 PM
Beryllium	< 0.00100	0.00100	mg/L	1	12/26/2019 8:11:24 PM
Cadmium	< 0.00500	0.00500	mg/L	1	12/26/2019 8:11:24 PM
Chromium	< 0.0100	0.0100	mg/L	1	12/26/2019 8:11:24 PM
Cobalt	< 0.0100	0.0100	mg/L	1	12/26/2019 8:11:24 PM
Lead	< 0.0100	0.0100	mg/L	1	12/26/2019 8:11:24 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	12/26/2019 8:11:24 PM
Selenium	< 0.0200	0.0200	mg/L	1	12/26/2019 8:11:24 PM
METALS IN WATER BY ICP-MS	, TOTAL		SW60	20A	Analyst: <b>MRM</b>
Antimony	< 0.250	0.250	μg/L	1	1/6/2020 1:50:59 PM
Arsenic	< 10.0	10.0	μg/L	1	1/6/2020 1:50:59 PM
Thallium	< 0.250	0.250	μg/L	1	1/6/2020 1:50:59 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL Sample detection limit
W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: **19121061**Date Reported **1/9/2020** 

**CLIENT:** Pivotal Engineering LLC

**Collection Date:** 12/18/2019 2:25:00 PM

**Project:** Entergy: CCR Assessment Monitoring

Lab ID: 19121061-010 Matrix: AQUEOUS

Client Sample ID CCR-10

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATER	R,TOTAL		SW74	70A	Analyst: <b>MRM</b>
Mercury	< 0.000200	0.000200	mg/L	1	12/23/2019 7:04:14 PM
INORGANIC ANIONS IN WATER	R BY IC		E 30	0.0	Analyst: MRM
Fluoride	0.635	0.0500	mg/L	1	12/30/2019 10:10:52 PM
METALS IN WATER BY ICP, TO	TALS		SW60	10B	Analyst: STS
Barium	0.261	0.0100	mg/L	1	12/26/2019 8:15:51 PM
Beryllium	< 0.00100	0.00100	mg/L	1	12/26/2019 8:15:51 PM
Cadmium	< 0.00500	0.00500	mg/L	1	12/26/2019 8:15:51 PM
Chromium	< 0.0100	0.0100	mg/L	1	12/26/2019 8:15:51 PM
Cobalt	< 0.0100	0.0100	mg/L	1	12/26/2019 8:15:51 PM
Lead	< 0.0100	0.0100	mg/L	1	12/26/2019 8:15:51 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	12/26/2019 8:15:51 PM
Selenium	< 0.0200	0.0200	mg/L	1	12/26/2019 8:15:51 PM
METALS IN WATER BY ICP-MS	, TOTAL		SW60	20A	Analyst: MRM
Antimony	< 0.250	0.250	μg/L	1	1/6/2020 1:53:48 PM
Arsenic	< 10.0	10.0	μg/L	1	1/6/2020 1:53:48 PM
Thallium	< 0.250	0.250	μg/L	1	1/6/2020 1:53:48 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL Sample detection limit
W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: **19121061**Date Reported **1/9/2020** 

**CLIENT:** Pivotal Engineering LLC

**Collection Date:** 12/18/2019 1:00:00 PM

**Project:** Entergy: CCR Assessment Monitoring

Lab ID: 19121061-011 Matrix: AQUEOUS

Client Sample ID CCR-11

Analyses	Result	RL Qu	al Units	DF	Date Analyzed	
MERCURY IN GROUND WATER	R,TOTAL		SW74	70A	Analyst: MRM	
Mercury	< 0.000200	0.000200	mg/L	1	12/23/2019 7:06:36 PM	
INORGANIC ANIONS IN WATER	R BY IC		E 30	0.0	Analyst: MRM	
Fluoride	0.715	0.0500	mg/L	1	12/30/2019 10:24:36 PM	
METALS IN WATER BY ICP, TO	OTALS		SW60	10B	Analyst: STS	
Barium	0.139	0.0100	mg/L	1	12/26/2019 8:20:19 PM	
Beryllium	< 0.00100	0.00100	mg/L	1	12/26/2019 8:20:19 PM	
Cadmium	< 0.00500	0.00500	mg/L	1	12/26/2019 8:20:19 PM	
Chromium	< 0.0100	0.0100	mg/L	1	12/26/2019 8:20:19 PM	
Cobalt	< 0.0100	0.0100	mg/L	1	12/26/2019 8:20:19 PM	
Lead	< 0.0100	0.0100	mg/L	1	12/26/2019 8:20:19 PM	
Molybdenum	< 0.0100	0.0100	mg/L	1	12/26/2019 8:20:19 PM	
Selenium	< 0.0200	0.0200	mg/L	1	12/26/2019 8:20:19 PM	
METALS IN WATER BY ICP-MS	, TOTAL		SW60	20A	Analyst: MRM	
Antimony	< 0.250	0.250	μg/L	1	1/6/2020 1:56:35 PM	
Arsenic	< 10.0	10.0	μg/L	1	1/6/2020 1:56:35 PM	
Thallium	< 0.250	0.250	μg/L	1	1/6/2020 1:56:35 PM	

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL Sample detection limit
W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: **19121061**Date Reported **1/9/2020** 

**CLIENT:** Pivotal Engineering LLC

**Collection Date:** 12/18/2019 11:30:00 AM

**Project:** Entergy: CCR Assessment Monitoring

Lab ID: 19121061-012 Matrix: AQUEOUS

Client Sample ID CCR-12

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATE	R,TOTAL		SW74	70A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	12/23/2019 7:08:55 PM
INORGANIC ANIONS IN WATE	R BY IC		E 30	0.0	Analyst: MRM
Fluoride	0.155	0.0500	mg/L	1	12/30/2019 10:38:20 PM
METALS IN WATER BY ICP, TO	OTALS		SW60	10B	Analyst: STS
Barium	0.158	0.0100	mg/L	1	12/26/2019 8:24:48 PM
Beryllium	< 0.00100	0.00100	mg/L	1	12/26/2019 8:24:48 PM
Cadmium	< 0.00500	0.00500	mg/L	1	12/26/2019 8:24:48 PM
Chromium	< 0.0100	0.0100	mg/L	1	12/26/2019 8:24:48 PM
Cobalt	< 0.0100	0.0100	mg/L	1	12/26/2019 8:24:48 PM
Lead	< 0.0100	0.0100	mg/L	1	12/26/2019 8:24:48 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	12/26/2019 8:24:48 PM
Selenium	< 0.0200	0.0200	mg/L	1	12/26/2019 8:24:48 PM
METALS IN WATER BY ICP-MS	S, TOTAL		SW60	20A	Analyst: MRM
Antimony	< 0.250	0.250	μg/L	1	1/6/2020 1:59:23 PM
Arsenic	< 10.0	10.0	μg/L	1	1/6/2020 1:59:23 PM
Thallium	< 0.250	0.250	μg/L	1	1/6/2020 1:59:23 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL Sample detection limit

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: **19121061**Date Reported **1/9/2020** 

**CLIENT:** Pivotal Engineering LLC

**Collection Date:** 12/18/2019 10:00:00 AM

**Project:** Entergy: CCR Assessment Monitoring

Lab ID: 19121061-013 Matrix: AQUEOUS

Client Sample ID CCR-13

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATE	R,TOTAL		SW74	70A	Analyst: <b>MRM</b>
Mercury	< 0.000200	0.000200	mg/L	1	12/23/2019 7:11:13 PM
INORGANIC ANIONS IN WATE	R BY IC		E 30	0.0	Analyst: MRM
Fluoride	0.236	0.0500	mg/L	1	12/30/2019 10:52:03 PM
METALS IN WATER BY ICP, TO	OTALS		SW60	10B	Analyst: STS
Barium	0.0936	0.0100	mg/L	1	12/26/2019 8:29:18 PM
Beryllium	< 0.00100	0.00100	mg/L	1	12/26/2019 8:29:18 PM
Cadmium	< 0.00500	0.00500	mg/L	1	12/26/2019 8:29:18 PM
Chromium	< 0.0100	0.0100	mg/L	1	12/26/2019 8:29:18 PM
Cobalt	< 0.0100	0.0100	mg/L	1	12/26/2019 8:29:18 PM
Lead	< 0.0100	0.0100	mg/L	1	12/26/2019 8:29:18 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	12/26/2019 8:29:18 PM
Selenium	< 0.0200	0.0200	mg/L	1	12/26/2019 8:29:18 PM
METALS IN WATER BY ICP-M	S, TOTAL		SW60	20A	Analyst: MRM
Antimony	< 0.250	0.250	μg/L	1	1/6/2020 2:02:11 PM
Arsenic	< 10.0	10.0	μg/L	1	1/6/2020 2:02:11 PM
Thallium	< 0.250	0.250	μg/L	1	1/6/2020 2:02:11 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL Sample detection limit
W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: **19121061**Date Reported **1/9/2020** 

**CLIENT:** Pivotal Engineering LLC

**Collection Date:** 12/18/2019 8:40:00 AM

**Project:** Entergy: CCR Assessment Monitoring

Lab ID: 19121061-014 Matrix: AQUEOUS

Client Sample ID CCR-14

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WAT	ER,TOTAL		SW74	70A	Analyst: <b>MRM</b>
Mercury	< 0.000200	0.000200	mg/L	1	12/23/2019 7:13:32 PM
INORGANIC ANIONS IN WAT	TER BY IC		E 30	0.0	Analyst: MRM
Fluoride	0.177	0.0500	mg/L	1	12/30/2019 11:05:47 PM
METALS IN WATER BY ICP,	TOTALS		SW60	10B	Analyst: STS
Barium	0.0754	0.0100	mg/L	1	12/26/2019 8:33:47 PM
Beryllium	< 0.00100	0.00100	mg/L	1	12/26/2019 8:33:47 PM
Cadmium	< 0.00500	0.00500	mg/L	1	12/26/2019 8:33:47 PM
Chromium	< 0.0100	0.0100	mg/L	1	12/26/2019 8:33:47 PM
Cobalt	< 0.0100	0.0100	mg/L	1	12/26/2019 8:33:47 PM
Lead	< 0.0100	0.0100	mg/L	1	12/26/2019 8:33:47 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	12/26/2019 8:33:47 PM
Selenium	< 0.0200	0.0200	mg/L	1	12/26/2019 8:33:47 PM
METALS IN WATER BY ICP-	MS, TOTAL		SW60	20A	Analyst: MRM
Antimony	< 0.250	0.250	μg/L	1	1/6/2020 2:04:59 PM
Arsenic	< 10.0	10.0	μg/L	1	1/6/2020 2:04:59 PM
Thallium	< 0.250	0.250	μg/L	1	1/6/2020 2:04:59 PM

Qualifiers: H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RL Reporting Limit

SDL Sample detection limit
W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Website: www.element.com

**Collection Date:** 12/17/2019

**Analytical Report** 

(consolidated)

WO#: 19121061 Date Reported 1/9/2020

**CLIENT:** Pivotal Engineering LLC

Entergy: CCR Assessment Monitoring

Lab ID: Matrix: AQUEOUS 19121061-015

Client Sample ID DUP

**Project:** 

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WATER	,TOTAL		SW74	170A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	12/23/2019 7:21:07 PM
INORGANIC ANIONS IN WATER	BY IC		E 30	0.0	Analyst: MRM
Fluoride	0.220	0.0500	mg/L	1	12/30/2019 11:19:32 PM
METALS IN WATER BY ICP, TO	TALS		SW60	)10B	Analyst: STS
Barium	0.104	0.0100	mg/L	1	12/26/2019 8:38:16 PM
Beryllium	< 0.00100	0.00100	mg/L	1	12/26/2019 8:38:16 PM
Cadmium	< 0.00500	0.00500	mg/L	1	12/26/2019 8:38:16 PM
Chromium	< 0.0100	0.0100	mg/L	1	12/26/2019 8:38:16 PM
Cobalt	< 0.0100	0.0100	mg/L	1	12/26/2019 8:38:16 PM
Lead	< 0.0100	0.0100	mg/L	1	12/26/2019 8:38:16 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	12/26/2019 8:38:16 PM
Selenium	< 0.0200	0.0200	mg/L	1	12/26/2019 8:38:16 PM
METALS IN WATER BY ICP-MS	, TOTAL		SW60	)20A	Analyst: MRM
Antimony	< 0.250	0.250	μg/L	1	1/6/2020 2:07:47 PM
Arsenic	< 10.0	10.0	μg/L	1	1/6/2020 2:07:47 PM
Thallium	< 0.250	0.250	μg/L	1	1/6/2020 2:07:47 PM

Qualifiers: Holding times for preparation or analysis exceeded

> ND Not Detected at the Reporting Limit

RL Reporting Limit

 $\operatorname{SDL}$ Sample detection limit

Sample container temperature is out of limit as specified at testcode

Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



Website: www.element.com

**Analytical Report** 

(consolidated)

WO#: **19121061**Date Reported **1/9/2020** 

**CLIENT:** Pivotal Engineering LLC

**Collection Date:** 12/18/2019 5:00:00 PM

**Project:** Entergy: CCR Assessment Monitoring

Lab ID: 19121061-016 Matrix: AQUEOUS

Client Sample ID FB1

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
MERCURY IN GROUND WAT	ΓER,TOTAL		SW74	70A	Analyst: MRM
Mercury	< 0.000200	0.000200	mg/L	1	12/23/2019 7:23:25 PM
INORGANIC ANIONS IN WA	TER BY IC		E 30	0.0	Analyst: MRM
Fluoride	< 0.0500	0.0500	mg/L	1	12/30/2019 6:58:39 PM
METALS IN WATER BY ICP,	TOTALS		SW60	10B	Analyst: STS
Barium	< 0.0100	0.0100	mg/L	1	12/26/2019 8:51:18 PM
Beryllium	< 0.00100	0.00100	mg/L	1	12/26/2019 8:51:18 PM
Cadmium	< 0.00500	0.00500	mg/L	1	12/26/2019 8:51:18 PM
Chromium	< 0.0100	0.0100	mg/L	1	12/26/2019 8:51:18 PM
Cobalt	< 0.0100	0.0100	mg/L	1	12/26/2019 8:51:18 PM
Lead	< 0.0100	0.0100	mg/L	1	12/26/2019 8:51:18 PM
Molybdenum	< 0.0100	0.0100	mg/L	1	12/26/2019 8:51:18 PM
Selenium	< 0.0200	0.0200	mg/L	1	12/26/2019 8:51:18 PM
METALS IN WATER BY ICP-	MS, TOTAL		SW60	20A	Analyst: MRM
Antimony	< 0.250	0.250	μg/L	1	1/6/2020 2:10:34 PM
Arsenic	< 10.0	10.0	μg/L	1	1/6/2020 2:10:34 PM
Thallium	< 0.250	0.250	μg/L	1	1/6/2020 2:10:34 PM

Qualifiers: H Holding times for preparation or analysis exceeded

Sample detection limit

ND Not Detected at the Reporting Limit

RL Reporting Limit

 $\operatorname{SDL}$ 

W Sample container temperature is out of limit as specified at testcode

M Matrix Interference

R RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



# **QC SUMMARY REPORT**

WO#: **19121061** 

09-Jan-20

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring BatchID: 32671

Sample ID: MB-32671	SampType: MBLK	TestCod	de: <b>6010_W</b>	Units: mg/L		Prep Da	te: <b>12/23/2</b>	2019	RunNo: 848	378	
Client ID: PBW	Batch ID: 32671	TestN	No: <b>SW6010B</b>			Analysis Da	te: <b>12/26/2</b>	2019	SeqNo: 212	26712	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	< 0.0100	0.0100									
Beryllium	< 0.00100	0.00100									
Cadmium	< 0.00500	0.00500									
Chromium	< 0.0100	0.0100									
Cobalt	< 0.0100	0.0100									
Lead	< 0.0100	0.0100									
Molybdenum	< 0.0100	0.0100									
Selenium	< 0.0200	0.0200									

Sample ID: LCS-32671	SampType: <b>LCS</b>	TestCode: 6010_W		Units: mg/L	Prep Date: 12/23/2019				RunNo: 848		
Client ID: LCSW	Batch ID: 32671	TestN	lo: <b>SW6010B</b>		Analysis Date: 12/26/2019			SeqNo: <b>2126713</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	0.484	0.0100	0.5000	0	96.7	80	120				
Beryllium	0.488	0.00100	0.5000	0	97.7	80	120				
Cadmium	0.479	0.00500	0.5000	0	95.7	80	120				
Chromium	0.482	0.0100	0.5000	0	96.5	80	120				
Cobalt	0.483	0.0100	0.5000	0	96.5	80	120				
Lead	0.485	0.0100	0.5000	0	96.9	80	120				
Molybdenum	0.473	0.0100	0.5000	0	94.6	80	120				
Selenium	0.461	0.0200	0.5000	0	92.2	80	120				

Qualifiers: H Holding times for preparation or analysis exceeded

R RPD outside accepted recovery limits

SDL Sample detection limit

I Matrix Interference

RL Reporting Limit

U Analyte not detected

Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as s<sub>1</sub>



# **QC SUMMARY REPORT**

WO#: **19121061** 

09-Jan-20

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring BatchID: 32671

Sample ID: LCSD-32671 Client ID: LCSS02	SampType: LCSD  Batch ID: 32671		de: 6010_W lo: SW6010B	Units: mg/L		Prep Da Analysis Da		RunNo: <b>848</b> SeqNo: <b>212</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	0.488	0.0100	0.5000	0	97.6	80	120	0.4836	0.865	20	
Beryllium	0.488	0.00100	0.5000	0	97.6	80	120	0.4885	0.123	20	
Cadmium	0.484	0.00500	0.5000	0	96.7	80	120	0.4787	0.998	20	
Chromium	0.487	0.0100	0.5000	0	97.4	80	120	0.4825	0.887	20	
Cobalt	0.487	0.0100	0.5000	0	97.4	80	120	0.4826	0.867	20	
Lead	0.483	0.0100	0.5000	0	96.6	80	120	0.4846	0.351	20	
Molybdenum	0.471	0.0100	0.5000	0	94.2	80	120	0.4728	0.424	20	
Selenium	0.487	0.0200	0.5000	0	97.5	80	120	0.4608	5.59	20	

Sample ID: 19121061-008BMS	SampType: MS TestCode		e: 6010_W Units: mg/L		Prep Date: 12/23/2019				RunNo: <b>84878</b>			
Client ID: CCR-8	Batch ID: 32671	TestNo: SW6010B			Analysis Date: 12/26/2019				SeqNo: <b>2126727</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Barium	0.606	0.0100	0.5000	0.1053	100	75	125	<u> </u>				
Beryllium	0.504	0.00100	0.5000	0	101	75	125					
Cadmium	0.488	0.00500	0.5000	0	97.7	75	125					
Chromium	0.493	0.0100	0.5000	0	98.6	75	125					
Cobalt	0.490	0.0100	0.5000	0	98.1	75	125					
Lead	0.490	0.0100	0.5000	0	98.0	75	125					
Molybdenum	0.489	0.0100	0.5000	0	97.9	75	125					
Selenium	0.505	0.0200	0.5000	0	101	75	125					

Qualifiers: H Holding times for preparation or analysis exceeded

R RPD outside accepted recovery limits

SDL Sample detection limit

M Matrix Interference

RL Reporting Limit

U Analyte not detected

Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits

W Sample container temperature is out of limit as s<sub>1</sub>



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# **QC SUMMARY REPORT**

WO#:

19121061

09-Jan-20

Pivotal Engineering LLC **Client:** 

Project: Entergy: CCR Assessment Monitoring **BatchID:** 32671

Website: www.element.com

Sample ID: 19121061-008BMSD Client ID: CCR-8	SampType: MSD  Batch ID: 32671		de: 6010_W	Units: mg/L		Prep Date			RunNo: <b>848</b> SegNo: <b>212</b>		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit		%RPD	RPDLimit	Qual
Barium	0.610	0.0100	0.5000	0.1053	101	75	125	0.6062	0.625	20	
Beryllium	0.507	0.00100	0.5000	0	101	75	125	0.5037	0.614	20	
Cadmium	0.491	0.00500	0.5000	0	98.1	75	125	0.4884	0.449	20	
Chromium	0.495	0.0100	0.5000	0	99.0	75	125	0.4928	0.466	20	
Cobalt	0.494	0.0100	0.5000	0	98.8	75	125	0.4903	0.732	20	
Lead	0.496	0.0100	0.5000	0	99.2	75	125	0.4899	1.22	20	
Molybdenum	0.496	0.0100	0.5000	0	99.2	75	125	0.4894	1.32	20	
Selenium	0.509	0.0200	0.5000	0	102	75	125	0.5052	0.808	20	

Holding times for preparation or analysis exceeded Qualifiers:

RPD outside accepted recovery limits

SDL Sample detection limit Matrix Interference

RLReporting Limit

Analyte not detected

Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

Sample container temperature is out of limit as sı



Element Materials Technology Lafayette 2417 W. Pinhook Road Lafayette, LA 70508-3344 TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com

# **QC SUMMARY REPORT**

WO#: **19121061** 

09-Jan-20

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring BatchID: 32672

Sample ID: MB-32672 Client ID: PBW	SampType: MBLK Batch ID: 32672	TestCode: 6020A_V			Prep Da Analysis Da	te: 12/23/2 te: 1/6/202		RunNo: <b>850</b> SeqNo: <b>213</b>		
Analyte	Result	PQL SPK value	e SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	< 0.250	0.250								
Arsenic	< 0.250	0.250								
Thallium	< 0.250	0.250								

Sample ID: LCS-32672	SampType: LCS	TestCod	e: <b>6020A_W</b>	Units: µg/L		Prep Dat	e: <b>12/23/2</b>	019	RunNo: 850	70	
Client ID: LCSW	Batch ID: 32672	TestN	o: <b>SW6020A</b>			Analysis Dat	te: <b>1/6/202</b>	0	SeqNo: <b>213</b>	0899	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	499	5.00	500.0	0	99.8	80	120				
Arsenic	498	5.00	500.0	0	99.7	80	120				
Thallium	509	5.00	500.0	0	102	80	120				

Sample ID: LCSD-32672 Client ID: LCSS02	SampType: LCSD Batch ID: 32672		e: <b>6020A_W</b> o: <b>SW6020A</b>	Units: µg/L		Prep Dat Analysis Dat	te: <b>12/23/2</b> te: <b>1/6/202</b>		RunNo: <b>850</b> SeqNo: <b>213</b>		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	495	5.00	500.0	0	99.1	80	120	498.8	0.696	20	
Arsenic	500	5.00	500.0	0	100	80	120	498.4	0.279	20	
Thallium	511	5.00	500.0	0	102	80	120	508.9	0.461	20	

Qualifiers: H Holding times for preparation or analysis exceeded

R RPD outside accepted recovery limits

SDL Sample detection limit

M Matrix Interference

RL Reporting Limit

U Analyte not detected

Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits



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# **QC SUMMARY REPORT**

WO#: **19121061** 

09-Jan-20

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring BatchID: 32672

Sample ID: 19121061-008BMS	SampType: MS	TestCod	e: <b>6020A_W</b>	Units: µg/L		Prep Da	te: <b>12/23/2</b>	019	RunNo: 850	70	
Client ID: CCR-8	Batch ID: 32672	TestN	o: <b>SW6020A</b>			Analysis Da	te: <b>1/6/202</b>	0	SeqNo: 213	80918	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	475	5.00	500.0	0	95.1	75	125				
Arsenic	515	5.00	500.0	0.04689	103	75	125				
Thallium	512	5.00	500.0	0	102	75	125				

Sample ID:	19121061-008BMSD	SampType: MSD	TestCoo	de: <b>6020A_W</b>	Units: µg/L		Prep Da	te: <b>12/23/2</b>	019	RunNo: 850	70	
Client ID:	CCR-8	Batch ID: 32672	TestN	lo: <b>SW6020A</b>			Analysis Da	te: <b>1/6/202</b>	0	SeqNo: <b>21</b> 3	30920	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony		492	5.00	500.0	0	98.3	75	125	475.3	3.36	20	
Arsenic		520	5.00	500.0	0.04689	104	75	125	515.1	0.987	20	
Thallium		500	5.00	500.0	0	100	75	125	512.2	2.38	20	

Qualifiers: H Holding times for preparation or analysis exceeded

R RPD outside accepted recovery limits

SDL Sample detection limit

Matrix Interference

RL Reporting Limit

U Analyte not detected

D Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits



Element Materials Technology Lafayette 2417 W. Pinhook Road Lafayette, LA 70508-3344 TEL: (337) 235-0483 FAX: (337) 233-6540

# **QC SUMMARY REPORT**

WO#: **19121061** 

09-Jan-20

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring BatchID: 32675

Website: www.element.com

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Sample ID:	MB-32675	SampType: MBLK	TestCoo	de: <b>HG_W_74</b>	70A Units: mg/L		Prep Da	te: <b>12/23/2</b>	2019	RunNo: 84	816	
Client ID:	PBW	Batch ID: 32675	TestN	lo: <b>SW7470A</b>			Analysis Da	te: 12/23/2	2019	SeqNo: 21	25396	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		< 0.000200	0.000200									
Sample ID:	19121061-008BMS	SampType: MS	TestCoo	de: <b>HG_W_74</b>	70A Units: mg/L		Prep Da	te: <b>12/23/2</b>	2019	RunNo: 84	816	
Client ID:	CCR-8	Batch ID: 32675	TestN	lo: <b>SW7470A</b>			Analysis Da	te: <b>12/23/2</b>	2019	SeqNo: 21	25409	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		0.0114	0.000200	0.01000	0	114	75	125				
Sample ID:	19121061-008BMSD	SampType: MSD	TestCoo	de: <b>HG_W_74</b>	70A Units: mg/L		Prep Da	te: 12/23/2	2019	RunNo: 84	816	
Client ID:	CCR-8	Batch ID: 32675	TestN	lo: <b>SW7470A</b>			Analysis Da	te: <b>12/23/2</b>	2019	SeqNo: 21	25410	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		0.0114	0.000200	0.01000	0	114	75	125	0.01140	0.149	20	
Sample ID:	LCS-32675	SampType: LCS	TestCoo	de: <b>HG_W_74</b>	70A Units: mg/L		Prep Da	te: 12/23/2	2019	RunNo: 84	816	
Client ID:	LCSW	Batch ID: 32675	TestN	lo: <b>SW7470A</b>			Analysis Da	te: <b>12/26/2</b>	2019	SeqNo: 21	25929	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
•		0.00970	0.000200	0.01000	0	97.0	80	120	·			

Qualifiers: H Holding times for preparation or analysis exceeded

R RPD outside accepted recovery limits

SDL Sample detection limit

M Matrix Interference

RL Reporting Limit

U Analyte not detected

Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits



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# **QC SUMMARY REPORT**

WO#:

19121061

09-Jan-20

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring BatchID: 32675

Sample ID: LCSD-32675 Client ID: LCSS02	SampType: LCSD  Batch ID: 32675		de: <b>HG_W_74</b> No: <b>SW7470A</b>	70A Units: mg/L		Prep Da Analysis Da	te: <b>12/23/2</b>		RunNo: <b>848</b> SeqNo: <b>212</b>	_	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.00949	0.000200	0.01000	0	94.9	80	120	0.009699	2.21	20	

R RPD outside accepted recovery limits

SDL Sample detection limit

Matrix Interference

RL Reporting Limit

U Analyte not detected

Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits



Element Materials Technology Lafayette 2417 W. Pinhook Road Lafayette, LA 70508-3344 TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com **QC SUMMARY REPORT** 

WO#: **19121061** 

09-Jan-20

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring BatchID: R84976

rroject:	Littergy. Co	Assessment Monto	iiig						oattiid: F	<b>CO49/</b> 0		
Sample ID:		SampType: MBLK		de: <b>300.0</b>	Units: mg/L		Prep Da			RunNo: 849		
Client ID:	PBW	Batch ID: <b>R84976</b>	I estiv	lo: <b>E 300.0</b>			Analysis Da	te: <b>12/30/2</b>	019	SeqNo: 212	29257	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		< 0.0500	0.0500									
Sample ID:	LCS	SampType: <b>LCS</b>	TestCoo	de: <b>300.0</b>	Units: mg/L		Prep Da	te:		RunNo: 849	976	
Client ID:	LCSW	Batch ID: <b>R84976</b>	TestN	lo: <b>E 300.0</b>			Analysis Da	te: <b>12/30/2</b>	019	SeqNo: 212	29258	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride		2.03	0.0500	2.000	0	101	90	110				
	1000	SampType: <b>LCSD</b>	TestCoo	de: <b>300.0</b>	Units: mg/L		Prep Da	te:		RunNo: 849	976	
Sample ID:	LCSD	Camp Type. <b>EC3D</b>	1631000	. J00.0	3		•					
Sample ID: Client ID:	LCSS02	Batch ID: R84976		lo: <b>E 300.0</b>	J		·	ite: 12/30/2	019	SeqNo: 212	29259	
		. ,,		lo: <b>E 300.0</b>	SPK Ref Val	%REC	·		RPD Ref Val	SeqNo: 212	29259 RPDLimit	Qual
Client ID:		Batch ID: <b>R84976</b>	TestN	lo: <b>E 300.0</b>	, and the second	%REC 109	Analysis Da					Qual
Client ID: Analyte Fluoride		Batch ID: R84976  Result	PQL 0.0500	lo: <b>E 300.0</b> SPK value	SPK Ref Val		Analysis Da	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Client ID: Analyte Fluoride  Sample ID:	LCSS02	Batch ID: <b>R84976</b> Result  2.17	PQL 0.0500	SPK value 2.000	SPK Ref Val		Analysis Da LowLimit 90 Prep Da	HighLimit	RPD Ref Val 2.027	%RPD 7.03	RPDLimit 15	Qual
Client ID: Analyte Fluoride  Sample ID:	LCSS02 19121061-008AMS	Batch ID: R84976  Result  2.17  SampType: MS	PQL 0.0500	SPK value 2.000	SPK Ref Val		Analysis Da LowLimit 90 Prep Da	HighLimit 110 tte: tte: 12/30/2	RPD Ref Val 2.027	%RPD 7.03 RunNo: <b>84</b> 9	RPDLimit 15	Qual

Qualifiers: H Holding times for preparation or analysis exceeded

R RPD outside accepted recovery limits

SDL Sample detection limit

Matrix Interference

RL Reporting Limit

U Analyte not detected

D Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits



Element Materials Technology Lafayette 2417 W. Pinhook Road Lafayette, LA 70508-3344 TEL: (337) 235-0483 FAX: (337) 233-6540 **QC SUMMARY REPORT** 

WO#: **19121061** 

09-Jan-20

**Client:** Pivotal Engineering LLC

Project: Entergy: CCR Assessment Monitoring BatchID: R84976

Website: www.element.com

Sample ID:	19121061-008AMSD	SampType:	MSD	TestCoo	de: <b>300.0</b>	Units: mg/L		Prep Da	te:		RunNo: 849	76	
Client ID:	CCR-8	Batch ID:	R84976	TestN	lo: <b>E 300.0</b>			Analysis Da	te: <b>12/30/2</b>	019	SeqNo: 212	9293	
Analyte			Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride			1 15	0.0500	1 000	0.1671	98.3	80	120	1 148	0.166	15	

R RPD outside accepted recovery limits

SDL Sample detection limit

Matrix Interference

RL Reporting Limit

U Analyte not detected

Not Detected at the Reporting Limit

S Spike Recovery outside accepted recovery limits



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TEL: (337) 235-0483 FAX: (337) 233-6540 Website: www.element.com

## Sample Log-In Check List

**PIVOTAL ENGINEERIN** Client Name: Work Order Number: 19121061 RcptNo: 1 Daniel Holling Logged by: **Danielle Hollier** 12/20/2019 1:16:00 PM Daniel Holling Completed By: Danielle Hollier 12/20/2019 2:59:13 PM Reviewed By: **Caitlin Duplantis** 1/2/2020 3:51:32 PM Chain of Custody Yes 🗸 No Not Present 1. Is Chain of Custody complete? 2. How was the sample delivered? Element Log In 3. Coolers are present? Yes 🗸 NA  $\square$ Yes 🗸 4. Shipping container/cooler in good condition? No  $\square$ No  $\square$ Yes  $\square$ Not Present Custody seals intact on shipping container/cooler? Seal Date: Signed By: NA 🗌 Yes 🗸 5. Was an attempt made to cool the samples? No | Yes 🗸 NA  $\square$ 6. Were all samples received at a temperature of >0° C to 6.0°C Yes 🗸 7 Sample(s) in proper container(s)? **✓** 8. Sufficient sample volume for indicated test(s)? Yes No 9. Are samples (except VOA and ONG) properly preserved? Yes 🗸 No 🗌 No 🗸 Yes  $\square$ NA 🗌 10 Was preservative added to bottles? No VOA Vials No  $\square$ Yes 11. Is the headspace in the VOA vials less than 1/4 inch or 6 mm? Yes No 🗸 12. Were any sample containers received broken? No 🗌 13. Does paperwork match bottle labels? Yes 🗸 (Note discrepancies on chain of custody) Yes 🗹 14. Are matrices correctly identified on Chain of Custody? No Yes 🗸 15. Is it clear what analyses were requested? Yes 🗸 16. Were all holding times able to be met? No (If no, notify customer for authorization.) Special Handling (if applicable) NA 🗸 17. Was client notified of all discrepancies with this order? Yes No  $\square$ Person Notified: Date: eMail Phone Fax By Whom: Via: In Person Regarding: Client Instructions:

## 18. Additional remarks:

#### **Cooler Information**

C	ooler No	Temp ⁰C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1		2.4	Good	Not Present			



# **ANALYTICAL RESULTS**

#### **PERFORMED BY**

**Pace Analytical Gulf Coast** 

7979 Innovation Park Dr. Baton Rouge, LA 70820 (225) 769-4900

**Report Date** 01/06/2020



**Project** 19121061

Deliver To

**Annie Reedy** 

**Element Materials Technology** 

2417 W Pinhook Rd Lafayette, LA 70508 800-737-2378

**Additional Recipients** 

Caitlin Duplantis, Element Materials

**Technology** 

Cristina Thibeaux, Element Materials

**Technology** 

Rhonda David, Element Materials Technology

Buffy Hudson, Element Materials Technology









**Project ID:** 19121061 **Report Date:** 01/06/2020

## Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with Pace Gulf Coast's Standard Operating Procedures.

#### Common Abbreviations that may be Utilized in this Report

ND Indicates the result was Not Detected at the specified reporting limit

NO Indicates the sample did not ignite when preliminary test performed for EPA Method 1030

**DO** Indicates the result was Diluted Out

MI Indicates the result was subject to Matrix Interference
TNTC Indicates the result was Too Numerous To Count
SUBC Indicates the analysis was Sub-Contracted
FLD Indicates the analysis was performed in the Field

DL Detection Limit
LOD Limit of Detection
LOQ Limit of Quantitation

**RE** Re-analysis

**CF** HPLC or GC Confirmation

00:01 Reported as a time equivalent to 12:00 AM

#### Reporting Flags that may be Utilized in this Report

J or I Indicates the result is between the MDL and LOQ

J DOD flag on analyte in the parent sample for MS/MSD outside acceptance criteria

U Indicates the compound was analyzed for but not detected

B or V Indicates the analyte was detected in the associated Method Blank Indicates a non-compliant QC Result (See Q Flag Application Report)

Indicates a non-compliant or not applicable QC recovery or RPD – see narrative
 Organics - The result is estimated because it exceeded the instrument calibration range

Metals - % diference for the serial dilution is > 10%
 Reporting Limits adjusted to meet risk-based limit.

P RPD between primary and confirmation result is greater than 40

DL Diluted analysis – when appended to Client Sample ID

Sample receipt at Pace Gulf Coast is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of Pace Gulf Coast. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with The NELAC Institute (TNI) Standard 2009 and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.

Authorized Signature

Pace Gulf Coast Report 219122644



**Project ID:** 19121061 **Report Date:** 01/06/2020

# Certifications

Certification	Certification Number
DOD ELAP	74960
Alabama	01955
Arkansas	88-0655
Colorado	01955
Delaware	01955
Florida	E87854
Georgia	01955
Hawaii	01955
Idaho	01955
Illinois	200048
Indiana	01955
Kansas	E-10354
Kentucky	95
Louisiana	01955
Maryland	01955
Massachusetts	01955
Michigan	01955
Mississippi	01955
Missouri	01955
Montana	N/A
Nebraska	01955
New Mexico	01955
North Carolina	618
North Dakota	R-195
Oklahoma	9403
South Carolina	73006001
South Dakota	01955
Tennessee	01955
Texas	T104704178
Vermont	01955
Virginia	460215
Washington	C929
USDA Soil Permit	P330-16-00234



**Project ID:** 19121061 **Report Date:** 01/06/2020

## **Case Narrative**

Client: Element Materials Technology Report: 219122644

Pace Analytical Gulf Coast received and analyzed the sample(s) listed on the Report Sample Summary page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

No anomalies were found for the analyzed sample(s).



**Project ID:** 19121061 **Report Date:** 01/06/2020

# Sample Summary

LAB ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21912264401	CCR-1	Water	12/17/2019 17:15	12/26/2019 09:24
21912264402	CCR-2	Water	12/17/2019 15:45	12/26/2019 09:24
21912264403	CCR-3	Water	12/17/2019 14:20	12/26/2019 09:24
21912264404	CCR-4	Water	12/17/2019 12:30	12/26/2019 09:24
21912264405	CCR-5	Water	12/19/2019 07:40	12/26/2019 09:24
21912264406	CCR-6	Water	12/19/2019 09:10	12/26/2019 09:24
21912264407	CCR-7	Water	12/19/2019 10:45	12/26/2019 09:24
21912264408	CCR-8	Water	12/18/2019 17:30	12/26/2019 09:24
21912264409	CCR-8 MS	Water	12/18/2019 17:30	12/26/2019 09:24
21912264410	CCR-8 MSD	Water	12/18/2019 17:30	12/26/2019 09:24
21912264411	CCR-9	Water	12/18/2019 16:15	12/26/2019 09:24
21912264412	CCR-10	Water	12/18/2019 14:25	12/26/2019 09:24
21912264413	CCR-11	Water	12/18/2019 13:00	12/26/2019 09:24
21912264414	CCR-12	Water	12/18/2019 11:30	12/26/2019 09:24
21912264415	CCR-13	Water	12/18/2019 10:00	12/26/2019 09:24
21912264416	CCR-14	Water	12/18/2019 08:40	12/26/2019 09:24
21912264417	DUP	Water	12/17/2019 00:01	12/26/2019 09:24
21912264418	FB1	Water	12/18/2019 17:00	12/26/2019 09:24



**Project ID:** 19121061 **Report Date:** 01/06/2020

# Sample Results

 CCR-1
 Collect Date
 12/17/2019 17:15
 LAB ID
 21912264401

 Receive Date
 12/26/2019 09:24
 Matrix
 Water

## **EPA 6020B**

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch	
12/30/2019 09:30	674413	EPA 3010A	1	01/03/2020 21:47	LWZ	674717	
CAS#	Parameter			Result	LOQ	Units	
7439-93-2	Lithium			26.0	5.00	ug/L	

CCR-2	Collect Date	12/17/2019 15:45	LAB ID	21912264402
CCR-2	Receive Date	12/26/2019 09:24	Matrix	Water

## **EPA 6020B**

Prep Date	Prep Batch	Prep Method	<b>Dilution</b>	<b>Analysis Date</b> 01/03/2020 21:51	<b>By</b>	Analytical Batch
12/30/2019 09:30	674413	EPA 3010A	1		LWZ	674717
CAS# 7439-93-2	Parameter Lithium			Result 23.2	LOQ 5.00	Units ug/L

CCR-3	Collect Date	12/17/2019 14:20	LAB ID	21912264403
CCR-3	Receive Date	12/26/2019 09:24	Matrix	Water

## **EPA 6020B**

Prep Date	Prep Batch	Prep Method	<b>Dilution</b>	<b>Analysis Date</b> 01/03/2020 21:54	<b>By</b>	Analytical Batch
12/30/2019 09:30	674413	EPA 3010A	1		LWZ	674717
CAS# 7439-93-2	Parameter Lithium			Result 29.7	LOQ 5.00	Units ug/L

CCR-4	Collect Date	12/17/2019 12:30	LAB ID	21912264404
CCR-4	Receive Date	12/26/2019 09:24	Matrix	Water

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch	
12/30/2019 09:30	674413	EPA 3010A	1	01/03/2020 21:58	LWZ	674717	
CAS#	Parameter			Result	LOQ	Units	
7439-93-2	Lithium			18.2	5.00	ug/L	



**Project ID:** 19121061 **Report Date:** 01/06/2020

# Sample Results

 CCR-5
 Collect Date
 12/19/2019 07:40
 LAB ID
 21912264405

 Receive Date
 12/26/2019 09:24
 Matrix
 Water

#### **EPA 6020B**

Prep Date 12/30/2019 09:30	Prep Batch 674413	Prep Method EPA 3010A	<b>Dilution</b> 1	<b>Analysis Date</b> 01/03/2020 22:01	<b>By</b> LWZ	Analytical Batch 674717	
CAS# 7439-93-2	Parameter Lithium			Result 23.1	LOQ 5.00	Units ug/L	

CCR-6

Collect Date 12/19/2019 09:10

LAB ID 21912264406

Receive Date 12/26/2019 09:24

Matrix Water

#### **EPA 6020B**

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch
12/30/2019 09:30	674413	EPA 3010A	1	01/03/2020 22:05	LWZ	674717
CAS#	Parameter			Result	LOQ	Units
7439-93-2	Lithium			16.3	5.00	ug/L

CCR-7

Collect Date 12/19/2019 10:45

Receive Date 12/26/2019 09:24

CAB ID 21912264407

Matrix Water

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch	
12/30/2019 09:30	674413	EPA 3010A	1	01/03/2020 22:08	LWZ	674717	
CAS#	Parameter			Result	LOQ	Units	



**Project ID:** 19121061 **Report Date:** 01/06/2020

# Sample Results

 CCR-8
 Collect Date
 12/18/2019 17:30
 LAB ID
 21912264408

 Receive Date
 12/26/2019 09:24
 Matrix
 Water

## **EPA 6020B**

Prep Date 12/30/2019 09:30	Prep Batch 674413	Prep Method EPA 3010A	<b>Dilution</b> 1	<b>Analysis Date</b> 01/03/2020 22:12	<b>By</b> LWZ	Analytical Batch 674717	
CAS# 7439-93-2	Parameter Lithium			Result 38.1	LOQ 5.00	Units ug/L	

CCD 0 MC	Collect Date	12/18/2019 17:30	LAB ID	21912264409	
CCR-8 MS	Receive Date	12/26/2019 09:24	Matrix	Water	ĺ

## **EPA 6020B**

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch
12/30/2019 09:30	674413	EPA 3010A	1	01/03/2020 22:15	LWZ	674717
CAS#	Parameter			Result	LOQ	Units
7439-93-2	Lithium			281	5.00	ug/L

CCD 9 MCD	Collect Date	12/18/2019 17:30	LAB ID	21912264410
CCR-8 MSD	Receive Date	12/26/2019 09:24	Matrix	Water

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch	
12/30/2019 09:30	674413	EPA 3010A	1	01/03/2020 22:19	LWZ	674717	
CAS#	Parameter			Result	LOQ	Units	
7439-93-2	Lithium			279	5.00	ug/L	



**Project ID:** 19121061 **Report Date:** 01/06/2020

# Sample Results

 CCR-9
 Collect Date
 12/18/2019 16:15
 LAB ID
 21912264411

 Receive Date
 12/26/2019 09:24
 Matrix
 Water

#### **EPA 6020B**

Prep Date 12/30/2019 09:30	Prep Batch 674413	Prep Method EPA 3010A	<b>Dilution</b> 1	<b>Analysis Date</b> 01/03/2020 22:36	<b>By</b> LWZ	Analytical Batch 674717	
CAS# 7439-93-2	Parameter Lithium			Result 17.8	LOQ 5.00	Units ug/L	

 CCR-10
 Collect Date
 12/18/2019 14:25
 LAB ID
 21912264412

 Receive Date
 12/26/2019 09:24
 Matrix
 Water

#### **EPA 6020B**

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch
12/30/2019 09:30	674413	EPA 3010A	1	01/03/2020 22:40	LWZ	674717
CAS#	Parameter			Result	LOQ	Units
7439-93-2	Lithium			12.6	5.00	ug/L

 CCR-11
 Collect Date
 12/18/2019 13:00
 LAB ID
 21912264413

 Receive Date
 12/26/2019 09:24
 Matrix
 Water

Prep Date	Prep Batch	Prep Method	<b>Dilution</b>	<b>Analysis Date</b> 01/03/2020 22:43	<b>By</b>	Analytical Batch
12/30/2019 09:30	674413	EPA 3010A	1		LWZ	674717
CAS# 7439-93-2	Parameter Lithium			Result 7.82	LOQ 5.00	Units ug/L



**Project ID:** 19121061 **Report Date:** 01/06/2020

# Sample Results

 CCR-12
 Collect Date
 12/18/2019 11:30
 LAB ID
 21912264414

 Receive Date
 12/26/2019 09:24
 Matrix
 Water

#### **EPA 6020B**

Prep Date 12/30/2019 09:30	Prep Batch 674413	Prep Method EPA 3010A	<b>Dilution</b> 1	<b>Analysis Date</b> 01/03/2020 22:47	<b>By</b> LWZ	Analytical Batch 674717	
CAS# 7439-93-2	Parameter Lithium			Result 24.9	LOQ 5.00	Units ug/L	

 CCR-13
 Collect Date
 12/18/2019 10:00
 LAB ID
 21912264415

 Receive Date
 12/26/2019 09:24
 Matrix
 Water

#### **EPA 6020B**

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch
12/30/2019 09:30	674413	EPA 3010A	1	01/03/2020 22:50	LWZ	674717
CAS#	Parameter			Result	LOQ	Units
7439-93-2	Lithium			19.2	5.00	ug/L

 CCR-14
 Collect Date
 12/18/2019 08:40
 LAB ID
 21912264416

 Receive Date
 12/26/2019 09:24
 Matrix
 Water

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch
12/30/2019 09:30	674413	EPA 3010A	1	01/03/2020 22:54	LWZ	674717
0.40#						
CAS#	Parameter			Result	LOQ	Units



**Project ID:** 19121061 **Report Date:** 01/06/2020

# Sample Results

 Collect Date
 12/17/2019 00:01
 LAB ID
 21912264417

 Receive Date
 12/26/2019 09:24
 Matrix
 Water

## **EPA 6020B**

Prep Date 12/30/2019 09:30	Prep Batch 674413	Prep Method EPA 3010A	<b>Dilution</b> 1	<b>Analysis Date</b> 01/03/2020 22:57	<b>By</b> LWZ	Analytical Batch 674717	
CAS# 7439-93-2	Parameter Lithium			Result 19.6	LOQ 5.00	Units ug/L	

FB1 Collect Date 12/18/2019 17:00 LAB ID 21912264418

Receive Date 12/26/2019 09:24 Matrix Water

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	Ву	Analytical Batch	
12/30/2019 09:30	674413	EPA 3010A	1	01/03/2020 23:01	LWZ	674717	
CAS#	Parameter			Result	LOQ	Units	
7439-93-2	Lithium			ND	5.00	ug/L	



**Project ID:** 19121061 **Report Date:** 01/06/2020

# Inorganics QC Summary

Analytical Batch 674717		MB674413 1997108		LCS6744 1997109				
Prep Batch	Sample Type	MB		LCS				
674413	Prep Date	12/30/2019 09:3	30	12/30/20	19 09:30			
Prep Method	Analysis Date	01/03/2020 21:4	10	01/03/20	20 21:44			
EPA 3010A	Matrix	Water		Water				
EPA 602	ΛP	Units	ug/L	Spike	Result	0/ D	Control	
EFA 002	VB	Result	LOQ	Added	Nesuit	/01	Limits%R	
Lithium	7439-93-2	ND	5.00	250	248	99	80 - 120	

Analytical Batch	Client ID	CCR-8		CCR-8 M	1S			CCR-8 M	/ISD			
674717	LAB ID	21912264408		2191226	4409			2191226	4410			
Prep Batch	Sample Type	SAMPLE		MS				MSD				
674413	Prep Date	12/30/2019 09:3	0	12/30/20	19 09:30			12/30/20	19 09:30			
Prep Method	Analysis Date	01/03/2020 22:1	2	01/03/20	20 22:15		01/03/2020 22:19					
EPA 3010A	Matrix	Water		Water		Water						
EPA 602	Units	ug/L	Spike	Dogult	0/ D	Control	Spike	Result	0/ D	DDD	RPD	
EPA 002	Result	LÓQ	Added	Added Result		Limits%R	Added	Result	70 K	KFD	Limit	
Lithium	7439-93-2	38.1	5.00	250	281	97	80 - 120	250	279	97	1	20



## CHAIN OF CUSTODY RECORD

Omega COCID 8870

Client ID: 4462 - Element Materials Technology

SDG: 219122644

PM: JLM

PAGE



FAX: (337) 233-6540 Website: www.element.com

UB CONTI	RATOR: GCAL	COMPANY:	Pace Analyti	ical (FKA GCAL)	SPECIAL INSTRUCTIONS /	COMMENTS:		
DDRESS:	7979 GSRI Avenu	ie			6020-Lithium			
TY, STAT	E, ZIP: Baton Rouge, LA	70820						
HONE (2	225) 769-4900 FAX: (22	5) 767-5717 EMA	JIL:					
CCOUNT :					=			
ITEM #	SAMPLE ID	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	COMMENTS: Methanol Preserved Weights HOT Sample Notation, Additional Sample Description.	
	19121061-001C	CCR-1	250HDPEHNO3	Aqueous	12/17/2019 5:15:00 PM	1		-1
1	6020_W_SUB (SW6020A)	)	•					
2	19121061-002C	CCR-2	250HDPEHNO3	Aqueous	12/17/2019 3:45:00 PM	1		72
2	6020_W_SUB (SW6020A)	)						
2	19121061-003C	CCR-3	250HDPEHNO3	Aqueous	12/17/2019 2:20:00 PM	1		73
3	6020_W_SUB (SW6020A)	)						
4	19121061-004C	CCR-4	250HDPEHNO3	Aqueous	12/17/2019 12:30:00 PM	1		74
4	6020_W_SUB (SW6020A)	)						
5	19121061-005C	CCR-5	250HDPEHNO3	Aqueous	12/19/2019 7:40:00 AM	1		75
3	6020_W_SUB (SW6020A)	)						
6	19121061-006C	CCR-6	250HDPEHNO3	Aqueous	12/19/2019 9:10:00 AM	1		+6
0	6020_W_SUB (SW6020A)	)						
7	19121061-007C	CCR-7	250HDPEHNO3	Aqueous	12/19/2019 10:45:00 AM	1		-7
	6020_W_SUB (SW6020A)	)						
8	19121061-008C	CCR-8	250HDPEHNO3	Aqueous	12/18/2019 5:30:00 PM	3		78,9
0	6020_W_SUB (SW6020A)	)						
9	19121061-009C	CCR-9	250HDPEHNO3	Aqueous	12/18/2019 4:15:00 PM	1		11-1600
	6020_W_SUB (SW6020A)	)						<b>W</b>
		26-19		4				
nquished	Bank Holling Date 12	Time 3700	Received By:	Date:	26A 0700		REPORT TRANSMITTAL DESIRED:	
quished	By: Date:	Time:	Received	Date: 12-2	619 0924	☐ HARDCOF	PY (extra cost)	
quished		26/19 092T	Received B	Date:	Time:		FOR LAB USE ONLY	
		1	U			Temp of samp		
	TAT: Standard	RUSH	Next BD	2nd BD	3rd BD	Comments:	14CPIN 634	
			Note: RUSH r	equests will incur surcharges				
								$\neg$
						P	Page 41 of 45	



## CHAIN OF CUSTODY RECORD

Omega COCID 8870

Client ID: 4462 - Element Materials Technology

SDG: 219122644

PM: JLM

PAG



FAX: (337) 233-6540 Website: www.element.com

SUB CONTR	TATOR: GCAL	COMPANY:	Pace Analyti	cal (FKA GCAL)		COMMENTS:		
ADDRESS:	7979 GSRI Ave	nue			6020-Lithium			
СПҮ, STATI	Baton Rouge, L	A 70820			7			
PHONE (2		225) 767-5717 EMAI	L:					
ACCOUNT#		220) 101 011						
ITEM #	SAMPLE ID	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	DATE COLLECTED	NUMBER OF CONTAINERS	COMMENTS: Methanol Preserved Weights HOT Sample Notation, Additional Sample Description.	
	19121061-010C	CCR-10	250HDPEHNO3	Aqueous	12/18/2019 2:25:00 PM	1		
10	6020_W_SUB (SW602	0A)						
94	19121061-011C	CCR-11	250HDPEHNO3	Aqueous	12/18/2019 1:00:00 PM	1		( )
11	6020_W_SUB (SW602	0A)						
12	19121061-012C	CCR-12	250HDPEHNO3	Aqueous	12/18/2019 11:30:00 AM	1		
12	6020_W_SUB (SW602	0A)						
- 12	19121061-013C	CCR-13	250HDPEHNO3	Aqueous	12/18/2019 10:00:00 AM	1		
13	6020_W_SUB (SW602	0A)						
14	19121061-014C	CCR-14	250HDPEHNO3	Aqueous	12/18/2019 8:40:00 AM	1		
14	6020_W_SUB (SW602	0A)						
15	19121061-015C	DUP	250HDPEHNO3	Aqueous	12/17/2019	1		-
15	6020_W_SUB (SW602	0A)						
	19121061-016C	FB1	250HDPEHNO3	Aqueous	12/18/2019 5:00:00 PM	1		
16	6020_W_SUB (SW602	0A)		***				

		12-26-19										
Relinquished By:	+ Holling	Date: 12/20/2019	Time: 0700	Received By:	16	Date: 12-26-19	Time: 0700			AL DESIRED:		
Relinquished By:	1	Date: 12-26/9	Time: 0924	Received	dn	Date: 12-26-1	Time: 924 -	HARDCOPY (extra cost)	☐ FAX	☐ EMAIL	ONLINE	_
Relinquished By:		Date:	Time:	Received By (	)"	Date:	Time:	Temp of samples	FOR LAB USE	ONLY Attempt to Cool?	100	
TAT:	Stand	lard 🗀	RUSH				D 🗆	Comments	14CPA	1 53	4	
				Note: R	JSH requests will incur su	rcharges!						_

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## **SAMPLE RECEIVING CHECKLIST**



SAMPLE DELIVERY GRO	OUP 2191226	644	CHECKLIST		YES	NO
Client PM JLM 4462 - Bement Materials	Transport N	lethod	Samples received with proper thermal preservation	?	~	
Technology			Radioactivity is <1600 cpm? If no, record cpm valu	ue in notes section.	~	
Profile Number 271810	Received By Savage, Tiffa		COC relinquished and complete (including sample	IDs, collect times, and sampler)?	~	
271010	Gavage, Illia	ily ix	All containers received in good condition and withi	n hold time?	~	
Line Item(s)	Receive Date	e(s)	All sample labels and containers received match t	he chain of custody?	~	
1 - Water	12/26/19		Preservative added to any containers?			~
			If received, was headspace for VOC water contained	ers < 6mm?	~	
			Samples collected in containers provided by Pace	Gulf Coast?		~
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# APPENDIX C ALTERNATE SOURCE DEMONSTRATION



## **Alternate Source Demonstration**

2<sup>nd</sup> Half 2018 Sampling Event

Entergy Roy S. Nelson Plant Coal Ash Disposal Landfill Westlake, Calcasieu Parish, Louisiana

June 2019



## **Alternate Source Demonstration**

Entergy Roy S. Nelson Plant Coal Ash Disposal Landfill Westlake, Calcasieu Parish, Louisiana

June 2019

Prepared For
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Roy S. Nelson Plant
3500 Houston River Road
Westlake, Louisiana 70669

Tarek Elnaggar, P.E. (Piyot

Principal

Jason S. House (TRC) Project Manager

TRC Environmental Corporation | Entergy Louisiana, L.L.C. Alternate Source Demonstration — Entergy Roy S. Nelson Plant

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# **Executive Summary**

Entergy Louisiana, L.L.C (Entergy) operates the Roy S. Nelson Plant (Plant), a coal fired power plant, to generate electricity. The Plant is located near Westlake, Calcasieu Parish, Louisiana, as shown in Figure 1.

Coal combustion residuals (CCR) are produced as part of the electrical generation operations which began for the Plant in 1960. Disposal of CCR has occurred since then in the on-site coal ash disposal landfill (landfill) that is approximately 31 acres in size (see Figure 2).

Entergy operates a Type I landfill under Louisiana Department of Environmental Quality (LDEQ) Solid Waste Permit No. P-0018-R1-M5. Entergy also manages CCR at the landfill as provided in the federal Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule (CCR Rule), effective October 17, 2015.

Pursuant to the CCR Rule, Entergy has installed a groundwater monitoring network and has implemented groundwater monitoring at the landfill. The CCR certified groundwater monitoring network consists of 14 wells screened in the first continuous water bearing unit beneath the landfill (see Figure 3). A potentiometric map with water levels measured in December 2018 is shown in Figure 4.

Pursuant to the CCR Rule, Entergy performed nine background monitoring events between 2015 and 2017. The samples were analyzed for the Appendix III to Part 257 – Constituents for Detection Monitoring and the Appendix IV to Part 257 – Constituents for Assessment Monitoring parameters. The 2<sup>nd</sup> Half 2018 semiannual detection monitoring event for the Appendix III constituents was performed in December 2018.

Statistical analysis of the 2<sup>nd</sup> half 2018 semiannual detection monitoring event results for the Appendix III constituents relative to the background results was performed pursuant to 40 CFR 257.93(f) and the Statistical Analysis Plan. Based on the results of the Statistical analysis, SSIs were identified as follows:

- Calcium Statistically Significant Increase (SSI) in the groundwater at CCR-5
- Calcium Statistically Significant Increase (SSI) in the groundwater at CCR-7

The SSIs for Calcium in CCR-5 and CCR-7 are a result of exceedance of the interwell prediction limit (Appendix C).

Pursuant to 40 CFR 257.94(e)(2), Entergy may demonstrate that a source other than the CCR management unit caused the SSI or that it resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The information provided in this report serves as Entergy's alternate source demonstration (ASD) prepared in accordance with 40 CFR 257.94(e)(2) and demonstrates that the SSI determined based on the 2<sup>nd</sup> half 2018 semiannual detection monitoring event is not due to leakage from the base of the landfill, but due to the following:

- The source of the calcium SSI in groundwater at CCR-5 is natural variation in the groundwater quality. This conclusion is based on the following primary lines of evidence:
  - Boron concentrations in the groundwater at CCR-5 have been stable, and within the range of concentrations measured in the nine background monitoring wells, installed upgradient to the landfill. If the source of the calcium SSI was leachate leaking from the base of the landfill, the boron concentrations in the groundwater would be increasing as it migrated downgradient along with calcium to CCR-5; and
  - Sulfate concentrations in the groundwater at CCR-5 have been stable, and within the range of concentrations measured in the nine background monitoring wells, installed upgradient to the landfill. If the source of the calcium SSI was leachate leaking from the base of the landfill, the sulfate concentrations in the groundwater would be increasing as it migrated downgradient along with calcium to CCR-5; and
  - Calcium concentrations in the groundwater at CCR-5 have been stable since quarterly detection monitoring began in November 2015; and
  - Prior to the CCR Rule, LDEQ monitoring wells in the area of CCR-5 were sampled on a semiannual basis, and indicated calcium concentrations in the groundwater ranging from 19 milligrams per liter (mg/L) to 119 mg/L. The SSI concentration for calcium in CCR-5 is 33.4 mg/L, within the range of historical calcium concentration trends at the site; and
  - Soil tests from samples collected at the site showed high levels of leachable calcium in the soil (25.3 mg/kg to 1,250 mg/kg) at depths where the lower sand unit water bearing unit is present; and
  - The presence of a low hydraulic conductivity confining unit above the lower sand unit, hydraulically isolates the unit from overlying sources of water. Therefore, changes in groundwater constituent concentrations are likely derived from natural conditions within the aquifer unrelated to the presence of the landfill; and
  - An analysis of the major ion chemistry of the groundwater shows that groundwater at CCR-5 is not different from the groundwater at the other monitoring wells. The piper plot in Figure 8 demonstrates this point. The concentrations of calcium measured at CCR-5 is naturally occurring and the SSI is a result of the statistical analysis chosen.

- The source of the calcium SSI in groundwater at CCR-7 is natural variation in the groundwater quality. This conclusion is based on the following primary lines of evidence:
  - Boron concentrations in the groundwater at CCR-7 have been stable, and within the range of concentrations measured in the nine background monitoring wells, installed upgradient to the landfill. If the source of the calcium SSI was leachate leaking from the base of the landfill, the boron concentrations in the groundwater would be increasing as it migrated downgradient along with calcium to CCR-7; and
  - Sulfate concentrations in the groundwater at CCR-7 have been stable, and within the range of concentrations measured in the nine background monitoring wells, installed upgradient to the landfill. If the source of the calcium SSI was leachate leaking from the base of the landfill, the sulfate concentrations in the groundwater would be increasing as it migrated downgradient along with calcium to CCR-7; and
  - Calcium concentrations in the groundwater at CCR-7 have been stable since quarterly detection monitoring began in November 2015; and
  - Prior to the CCR Rule, LDEQ monitoring wells in the area of CCR-7 were sampled on a semiannual basis, and indicated calcium concentrations in the groundwater ranging from 19 milligrams per liter (mg/L) to 119 mg/L. The SSI concentration for calcium in CCR-7 is 46.8 mg/L, within the range of historical calcium concentration trends at the site; and
  - Soil tests from samples collected at the site showed high levels of leachable calcium in the soil (25.3 mg/kg to 1,250 mg/kg) at depths where the lower sand unit water bearing unit is present; and
  - The presence of a low hydraulic conductivity confining unit above the lower sand unit, hydraulically isolates the unit from overlying sources of water. Therefore, changes in groundwater constituent concentrations are likely derived from natural conditions within the aquifer unrelated to the presence of the landfill; and
  - An analysis of the major ion chemistry of the groundwater shows that groundwater at CCR-7 is not different from the groundwater at the other monitoring wells. The piper plot in Figure 8 demonstrates this point. The increase in calcium at CCR-7 is naturally occurring and the SSI is a result of the statistical analysis chosen.

# Section 1 Introduction

## 1.1 Background

The Entergy Louisiana, L.L.C (Entergy) Roy S. Nelson Plant operates an on-site coal ash disposal landfill (landfill) located at 3500 Houston River Road in Westlake, Louisiana (Figure 1). The facility has been generating and disposing of coal combustion residuals (CCR) since it began operations in 1960.

Entergy operates a Type I landfill under Louisiana Department of Environmental Quality (LDEQ) Solid Waste Permit No. P-0018-R1-M5. Entergy also manages CCR at the landfill as provided in the federal Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule (CCR Rule), effective October 17, 2015. Currently, four active disposal cells exist in the landfill and are regulated under the CCR rule. The areal extent of the landfill is shown in Figure 2.

The certified groundwater monitoring network at the landfill consists of 14 monitoring wells (CCR-1 through CCR-14), installed in accordance with the CCR Rule in the first continuous water bearing zone beneath the landfill, the Lower Sand unit. Pursuant to the CCR Rule, Entergy obtained certification by a qualified professional engineer stating that the groundwater monitoring system has been designed and constructed to meet the requirements of 40 CFR 257.91 of the CCR Rule (Pivotal 2017a). Also, pursuant to CFR 257.93(f)(6) of the CCR Rule, statistical analysis of the monitoring results is performed in accordance with the Statistical Analysis Plan and Entergy obtained certification by a qualified professional engineer stating that the selected statistical method is appropriate for evaluating the groundwater monitoring data for the CCR management area (Pivotal 2017b).

Pursuant to the CCR Rule, Entergy performed nine background monitoring events between 2015 and 2017. The samples were analyzed for the Appendix III to Part 257 – Constituents for Detection Monitoring and the Appendix IV to Part 257 – Constituents for Assessment Monitoring parameters. The 2<sup>nd</sup> Half 2018 semiannual detection monitoring event for the Appendix III constituents was performed in December 2018.

Statistical analysis of the 2<sup>nd</sup> half 2018 semiannual detection monitoring event results for the Appendix III constituents relative to the background results was performed pursuant to 40 CFR 257.93(f) and the Statistical Analysis Plan. Based on the results of the Statistical analysis, SSIs were identified as follows:

- Calcium Statistically Significant Increase (SSI) in the groundwater at CCR-5
- Calcium Statistically Significant Increase (SSI) in the groundwater at CCR-7

The SSIs for Calcium in CCR-5 and CCR-7 are a result of exceedance of the interwell prediction limit (Appendix C).

#### 1.2 Purpose

Pursuant to 40 CFR 257.93(h), an SSI was determined for Appendix III constituent (calcium) at a monitoring well screened in the geologic unit referred to as the Lower Sand. Pursuant to 40 CFR 257.94(e)(2), Entergy may demonstrate that a source other than the CCR management unit caused the SSI or that the SSI resulted from error in sampling analysis, statistical evaluation, or natural variation in groundwater quality. As per 40 CFR 257.94(e)(2), Entergy must complete the demonstration within 90 days of determination of the SSI.

The objective of this report is to provide written documentation of the alternate source demonstration (ASD) for the SSI determined in the 2<sup>nd</sup> half 2018 semiannual detection monitoring event, as provided for in 40 CFR 257.94(e)(2) of the CCR Rule. Also, pursuant to 40 CFR(e)(2), this ASD report has been certified by a qualified Louisiana professional engineer verifying the accuracy of the information provided in this report.

#### 1.3 Site Hydrogeology

Site investigations have identified two subsurface strata relevant to the CCR monitoring program, beneath the landfill:

- Upper Clay unit is the confining unit for the Lower Sand unit. The Upper Clay unit is composed of silty and sandy clays ranging in consistency from stiff to very stiff with low to medium plasticities. In-situ hydraulic conductivities in the Upper Clay unit ranged from  $1.5 \times 10^{-5}$  centimeters per second (cm/s) to  $6.9 \times 10^{-7}$  cm/s, with a general trend of decreasing hydraulic conductivity with depth. The base elevations of the Upper Clay are between -10 and -22 feet (TRC 2015).
- Lower Sand unit consists of clays, silts, and dense sands. The sand portion is generally clean and very fine sands that tend to be thinly laminated and graded. Lenses of silt, clay, and organics occur intermittently with organics increasing toward the base as sand grains become coarser. The base of the unit is characterized by a concentration of wood fragments. The Lower Sand unit ranges in thickness from 14.5 feet to 63 feet, with bottom elevations ranging from -27 feet to -86.5 feet. Calculated in-situ hydraulic conductivities in the Lower Sand unit range from  $1.3 \times 10^{4}$  cm/s to  $3.2 \times 10^{6}$  cm/s. All CCR Rule groundwater monitoring wells are screened in the Lower Sand unit because it is the first continuous water bearing unit beneath the landfill. A potentiometric map, with water levels measured in September 2017, of the Lower Sand unit is shown in Figure 4.

# Section 2

# **Alternate Source Demonstration**

Collection of the 2<sup>nd</sup> half 2018 semiannual detection monitoring event was completed in November 2018. Eight background quarterly detection monitoring events were previously collected per 40 CFR 257.93(d) and 257.94(b). Statistical analysis of the second semiannual detection monitoring data was performed pursuant to 40 CFR 257.93(f) and (g), an in accordance with the Statistical Methods Certification (Pivotal, 2017b). Based on interwell statistical analysis, the following SSI was determined:

- Calcium SSI (CCR-5)
- Calcium SSI (CCR-7)

All other Appendix III constituents were within their interwell prediction limits in all the CCR Rule groundwater monitoring system wells (Appendix C).

#### 2.1 Calcium SSI at CCR-5

The SSI of calcium at CCR-5 is a result of natural variation in the groundwater quality. It is not a result of leachate leaking from the base of the landfill and subsequent migration of CCR constituents in the groundwater. The primary lines of evidence for this demonstration are as follows:

#### Primary Lines of Evidence:

- Boron Time-Trend Analysis Boron is another Appendix III constituent monitored in the groundwater at the landfill. Both boron and calcium are found in CCR leachate. Boron is a conservative constituent, meaning it would more readily migrate through the Upper Clay unit than calcium, if leachate leaked from the base of the landfill. If CCR leachate was the source of the calcium SSI, an increase in boron concentration at CCR-5 would be expected to precede, or coincide with the increase in calcium concentration. As shown in Figures 5 and 6, the boron and calcium concentrations have both been stable since the beginning of the background quarterly detection monitoring in November 2015. Boron did not trigger an SSI at the semiannual detection monitoring event in November 2018, and it has consistently been within the range of boron concentrations measured in the groundwater at the sites nine background monitoring wells, upgradient of the landfill. This line of evidence indicates that the source of the calcium SSI at CCR-5 is not CCR leachate leaking from the base of the landfill.
- Sulfate Time-Trend Analysis Sulfate is another Appendix III constituent monitored in the groundwater at the landfill. Both sulfate and calcium are found in

CCR leachate. Sulfate is a conservative constituent, meaning it would more readily migrate through the Upper Clay unit than calcium, if leachate leaked from the base of the landfill. If CCR leachate was the source of the calcium SSI, an increase in sulfate concentration at CCR-5 would be expected to precede, or coincide with the increase in calcium concentration. As shown in Figures 5 and 7, the sulfate and calcium concentrations have both been stable since the beginning of the background quarterly detection monitoring in November 2015. Sulfate did not trigger an SSI at the semiannual detection monitoring event in November 2018, and it has consistently been within the range of sulfate concentrations measured in the groundwater at the sites nine background monitoring wells, upgradient of the landfill. This line of evidence indicates that the source of the calcium SSI at CCR-7 is not CCR leachate leaking from the base of the landfill.

- Stable Calcium Concentration Trends The calcium concentration in CCR-5 has exhibited a stable trend since the first sample was collected in November 2015. The nine background quarterly detection monitoring samples collected at CCR-5 have been above the interwell prediction limit. The calcium concentrations did not start below the interwell prediction limit and then increase as a result of some calcium source (see Figure 5). This indicates that calcium is not affecting the groundwater.
- Natural Variation in Groundwater Quality Pre-CCR rule monitoring wells, compliant to LDEQ standards for monitoring the landfill have since been abandoned, but sampling data from previous groundwater reports are available. These data from wells NEAL-3, NEAL-4, and NEAL-5 (well locations and data shown in Appendix A) provide evidence of natural variation in calcium concentrations ranging from 20 mg/L to 119 mg/L. The above noted was confirmed with calcium Non-Parametric Analysis of Variance (ANOVA) testing completed in the up-gradient back ground wells CCR-1 CCR-3 and CCR-9 CCR-14 located at the site and confirm the existence of natural variation/spatial variation. Therefore, natural variation can also occur in down gradient wells as evidenced by the detection of SSIs. Supporting documentation is attached in Appendix B.
- Soil Tests Five investigative soil borings were advanced in locations downgradient of the landfill to determine the leachable calcium present in the natural soils. This study shows high concentrations (25.3 mg/kg to 1,250 mg/kg) of leachable calcium exist in the soil between 37.5 feet below ground surface (bgs) and 62.5 feet bgs. This depth range is within the lower sand aquifer, where the CCR certified monitoring well network is screened.
- Lower Sand Unit Hydraulic Isolation An upper sand unit is present beneath the landfill discontinuously across the site. The upper sand unit, where present, is located above the upper clay unit. As previously described the upper clay unit is present continuously above the lower sand unit across the site. Pumping tests demonstrated that the upper clay unit has sufficiently low hydraulic conductivity to

confine the lower sand unit from the upper sand unit. Measurements taken in the pumping tests showed no draw down occurring in the upper sand when the lower sand was pumped (TRC, 2015). This hydraulic isolation of the lower sand unit, which is the upper most continuous water bearing unit at the site, provides evidence that changes in groundwater constituent concentrations are likely derived from natural conditions within the aquifer unrelated to the presence of the CCR unit.

Major Ion Groundwater Composition – The major ion chemistry of the groundwater at all monitoring well locations is similar. The piper plot shown in Figure 9 provides evidence that CCR-5 groundwater has the same geochemical fingerprint as the other wells in the approved CCR certified monitoring network. The increase in calcium at CCR-5 is naturally occurring and does not make the groundwater at CCR-7 unique or different from the groundwater at the other monitoring wells. The SSI triggered as a result of the calcium increase is an artifact of the statistical method chosen for the analysis.

#### 2.2 Calcium SSI at CCR-7

The SSI of calcium at CCR-7 is a result of natural variation in the groundwater quality. It is not a result of leachate leaking from the base of the landfill and subsequent migration of CCR constituents in the groundwater. The primary lines of evidence for this demonstration are as follows:

#### Primary Lines of Evidence:

- Boron Time-Trend Analysis Boron is another Appendix III constituent monitored in the groundwater at the landfill. Both boron and calcium are found in CCR leachate. Boron is a conservative constituent, meaning it would more readily migrate through the Upper Clay unit than calcium, if leachate leaked from the base of the landfill. If CCR leachate was the source of the calcium SSI, an increase in boron concentration at CCR-7 would be expected to precede, or coincide with the increase in calcium concentration. As shown in Figures 5 and 6, the boron and calcium concentrations have both been stable since the beginning of the background quarterly detection monitoring in November 2015. Boron did not trigger an SSI at the semiannual detection monitoring event in December 2018, and it has consistently been within the range of boron concentrations measured in the groundwater at the sites nine background monitoring wells, upgradient of the landfill. This line of evidence indicates that the source of the calcium SSI at CCR-7 is not CCR leachate leaking from the base of the landfill.
- Sulfate Time-Trend Analysis Sulfate is another Appendix III constituent monitored in the groundwater at the landfill. Both sulfate and calcium are found in CCR leachate. Sulfate is a conservative constituent, meaning it would more readily migrate through the Upper Clay unit than calcium, if leachate leaked from the base of the landfill. If CCR leachate was the source of the calcium SSI, an increase in sulfate

concentration at CCR-7 would be expected to precede, or coincide with the increase in calcium concentration. As shown in Figures 5 and 7, the sulfate and calcium concentrations have both been stable since the beginning of the background quarterly detection monitoring in November 2015. Sulfate did not trigger an SSI at the semiannual detection monitoring event in December 2018, and it has consistently been within the range of sulfate concentrations measured in the groundwater at the sites nine background monitoring wells, upgradient of the landfill. This line of evidence indicates that the source of the calcium SSI at CCR-7 is not CCR leachate leaking from the base of the landfill.

- Stable Calcium Concentration Trends The calcium concentration in CCR-7 has exhibited a stable trend since the first sample was collected in November 2015. The nine background quarterly detection monitoring samples collected at CCR-7 have been above the interwell prediction limit. The calcium concentrations did not start below the interwell prediction limit and then increase as a result of some calcium source (see Figure 5). This indicates that calcium is not affecting the groundwater.
- Natural Variation in Groundwater Quality Pre-CCR rule monitoring wells, compliant to LDEQ standards for monitoring the landfill have since been abandoned, but sampling data from previous groundwater reports are available. These data from wells NEAL-3, NEAL-4, and NEAL-5 (well locations and data shown in Appendix A) provide evidence of natural variation in calcium concentrations ranging from 20 mg/L to 119 mg/L. The above noted was confirmed with calcium Non-Parametric Analysis of Variance (ANOVA) testing completed in the up-gradient back ground wells CCR-1 CCR-3 and CCR-9 CCR-14 located at the site and confirm the existence of natural variation/spatial variation. Therefore, natural variation can also occur in down gradient wells as evidenced by the detection of SSIs. Supporting documentation is attached in Appendix B.
- Soil Tests Five investigative soil borings were advanced in locations downgradient of the landfill to determine the leachable calcium present in the natural soils. This study shows high concentrations (25.3 mg/kg to 1,250 mg/kg) of leachable calcium exist in the soil between 37.5 feet below ground surface (bgs) and 62.5 feet bgs. This depth range is within the lower sand aquifer, where the CCR certified monitoring well network is screened.
- Lower Sand Unit Hydraulic Isolation An upper sand unit is present beneath the landfill discontinuously across the site. The upper sand unit, where present, is located above the upper clay unit. As previously described the upper clay unit is present continuously above the lower sand unit across the site. Pumping tests demonstrated that the upper clay unit has sufficiently low hydraulic conductivity to confine the lower sand unit from the upper sand unit. Measurements taken in the pumping tests showed no draw down occurring in the upper sand when the lower sand was pumped (TRC, 2015). This hydraulic isolation of the lower sand unit, which

- is the upper most continuous water bearing unit at the site, provides evidence that changes in groundwater constituent concentrations are likely derived from natural conditions within the aquifer unrelated to the presence of the CCR unit.
- Major Ion Groundwater Composition The major ion chemistry of the groundwater at all monitoring well locations is similar. The piper plot shown in Figure 8 provides evidence that CCR-7 groundwater has the same geochemical fingerprint as the other wells in the approved CCR certified monitoring network. The increase in calcium at CCR-7 is naturally occurring and does not make the groundwater at CCR-7 unique or different from the groundwater at the other monitoring wells. The SSI triggered as a result of the calcium increase is an artifact of the statistical method chosen for the analysis.

### Section 3 Conclusions

The information provided in this report serves as the alternate source demonstration prepared in accordance with 40 CFR 257.94(e)(2) of the CCR Rule and demonstrates that the SSI determined based on the 2<sup>nd</sup> half 2018 semiannual detection monitoring event performed in December 2018 is not due to leakage from the base of the active landfill, but are due to the following:

- The source of the calcium SSIs in groundwater at CCR-5 and CCR-7 is natural variation in the groundwater quality. This conclusion is based on the following primary lines of evidence:
  - Boron concentrations in the groundwater atCCR-5 and CCR-7 have been stable, and within the range of concentrations measured in the nine background monitoring wells, installed upgradient to the landfill. If the source of the calcium SSI was leachate leaking from the base of the landfill, the boron concentrations in the groundwater would be increasing as it migrated downgradient along with calcium to CCR-5 and CCR-7; and
  - Sulfate concentrations in the groundwater at CCR-5 and CCR-7 have been stable, and within the range of concentrations measured in the nine background monitoring wells, installed upgradient to the landfill. If the source of the calcium SSI was leachate leaking from the base of the landfill, the Sulfate concentrations in the groundwater would be increasing as it migrated downgradient along with calcium to CCR-5 and CCR-7; and
  - Calcium concentrations in the groundwater at CCR-5 and CCR-7 have been stable since quarterly detection monitoring began in November 2015; and
  - Prior to the CCR Rule, LDEQ monitoring wells in the area of CCR-5 and CCR-7 were sampled on a semiannual basis, and indicated calcium concentrations in the groundwater ranging from 19 mg/L to 119 mg/L. The SSI concentration for calcium in CCR-7 is 52 mg/L, within the range of historical calcium concentration trends at the site Non-Parametric ANOVA testing completed in the up-gradient back ground wells CCR-1 CCR-3 and CCR-9 CCR-14 located at the site and confirm the existence of natural variation/spatial variation. Therefore, natural variation can also occur in down gradient wells as evidenced by the detection of SSIs; and
  - Soil tests from samples collected at the site showed high levels of calcium in the soil (25.3 mg/kg to 1,250 mg/kg) at depths where the lower sand unit water bearing unit is present; and
  - The presence of a low hydraulic conductivity confining unit above the lower sand unit, hydraulically isolates the unit from overlying sources of water. Therefore,

- changes in groundwater constituent concentrations are likely derived from natural conditions within the aquifer unrelated to the presence of the CCR unit; and
- An analysis of the major ion chemistry of the groundwater shows that groundwater at CCR-5 and CCR-7 is not different from the groundwater at the other monitoring wells. The piper plot in Figure 7 demonstrates this point. The calcium concentrations observed at CCR-5 and CCR-7 are naturally occurring and the SSI is a result of the statistical analysis chosen.

Therefore, based on the information provided in this ASD report, Entergy will continue to conduct detection monitoring as per 40 CFR 257.94 at the certified groundwater monitoring network. Based on the information provided, Entergy is not required to implement an assessment monitoring program pursuant to the CCR Rule during the first half 2019 semiannual detection monitoring event scheduled for June 2019.

### **Section 4** Certification

I hereby certify that the alternate source demonstration presented within this document for the Roy S. Nelson Plant CCR unit has been prepared to meet the requirements of Title 40 CFR §257.94(e) 2 of the Federal CCR Rule. This document is accurate and has been prepared in accordance with good engineering practices, including the consideration of applicable industry standards, and with the requirements of Title 40 CFR §257.94(e) 2.

Name:

Company: Pivotal Engineering, LLC

Date:

### Section 5 References

- Pivotal Engineering, LLC and TRC Environmental Corporation. 2017a. Groundwater Monitoring System Certification: Roy S. Nelson Generating Plant. Westlake, Louisiana. October 2017.
- Pivotal Engineering, LLC and TRC Environmental Corporation. 2017b. Statistical Methods Certification: Roy S. Nelson Generating Plant. Westlake, Louisiana. October 2017.
- TRC Environmental Corporation. 2015. Site Conceptual Model: Entergy Roy S. Nelson Coal Ash Landfill. Westlake, Calcasieu Parish, Louisiana. November 2015.

Table 1 Lower Sand Unit Groundwater Elevations (December 2018)

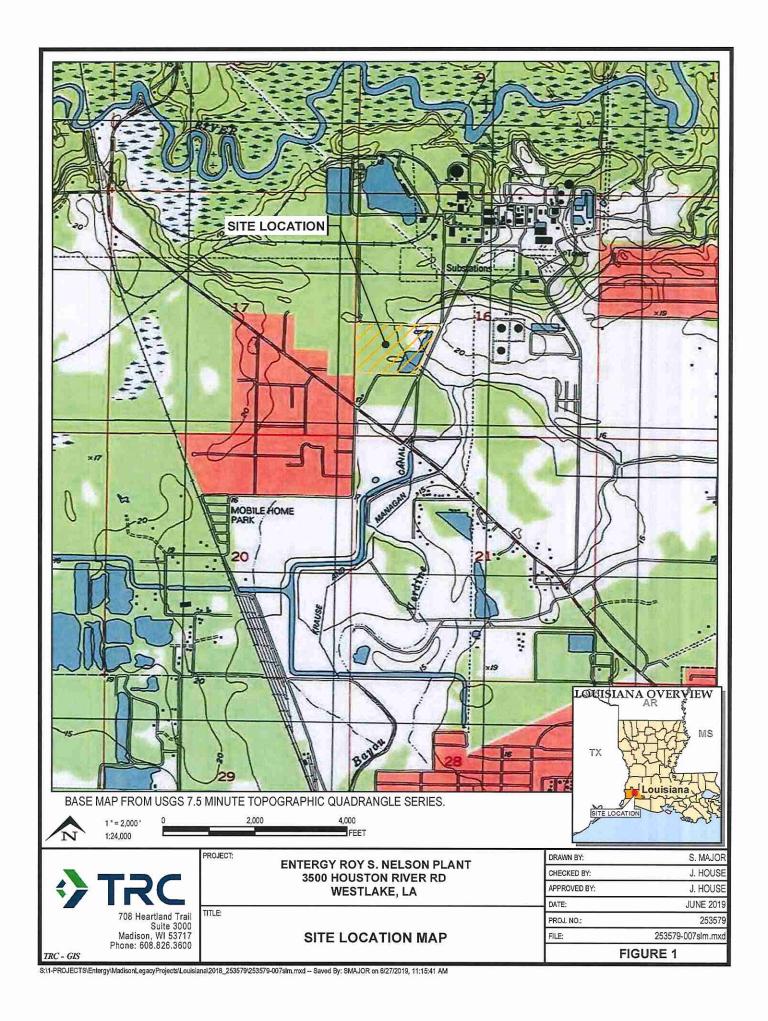
Table 1
Lower Sand Unit Groundwater Elevations (Dec 2018)

WELL ID	GROUNDWATER ELEVATION (ft amsl)
CCR-01	14.51
CCR-02	14.59
CCR-03	14.49
CCR-04	13.52
CCR-05	12.42
CCR-06	13.16
CCR-07	12.64
CCR-08	13.97
CCR-09	14.75
CCR-10	14.81
CCR-11	14.94
CCR-12	14.87
CCR-13	14.93
CCR-14	14.93

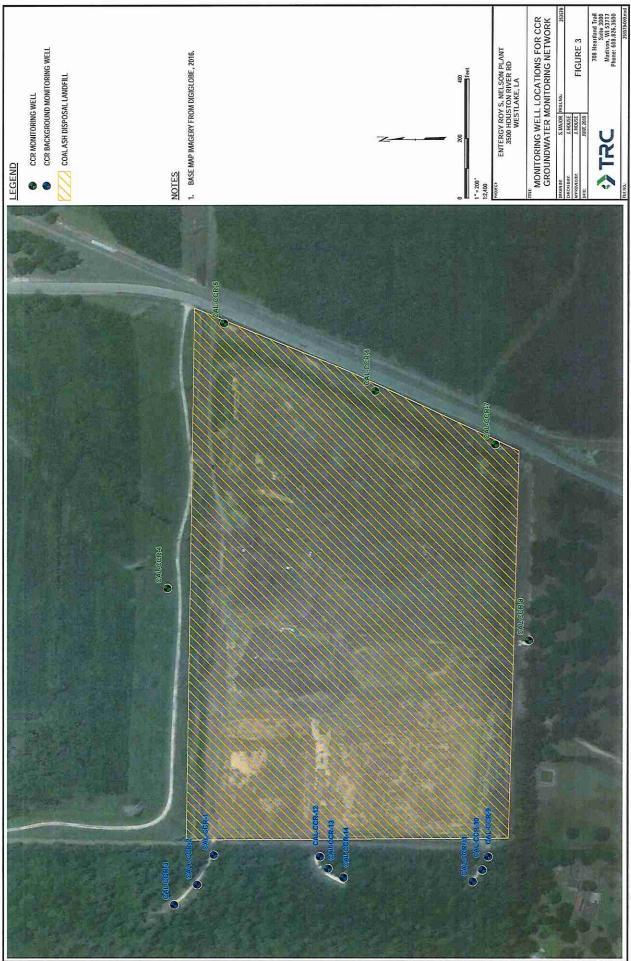
Prepared by: J.House (6/26/2019)

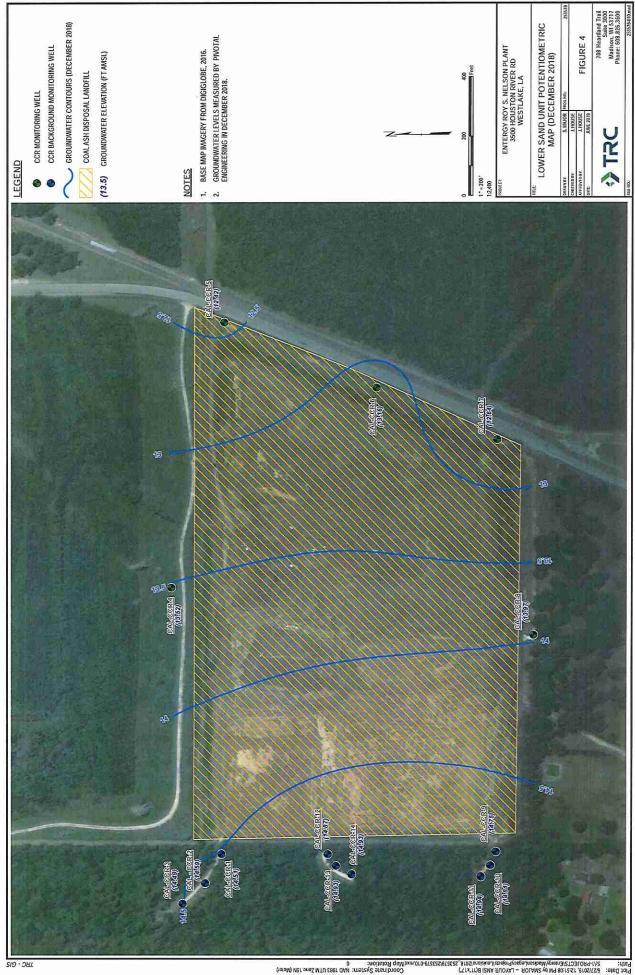
Checked by:

Figure 1	Site Location Map
Figure 2	Roy S. Nelson Generating Plant Facility Map
Figure 3	Monitoring Well Locations for CCR Groundwater Monitoring Network
Figure 4	Lower Sand Unit Potentiometric Map (December 2018)
Figure 5	Calcium Time-Trend Plot
Figure 6	Boron Time-Trend Plot
Figure 7	Sulfate Time Trend Plot
Figure 8	Piper Plot









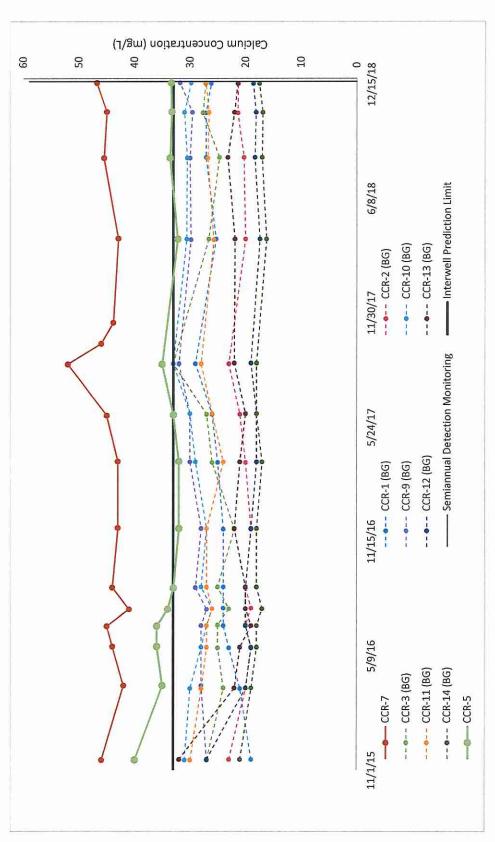


Figure 5: CCR background groundwater monitoring wells (dotted lines) and monitoring wells CCR-5 and CCR-7 (solid line) calcium concentration time trends.

Figure 5 Calcium Time-Trend Plot

Prepared by: J. House (6/26/2019) Checked by:

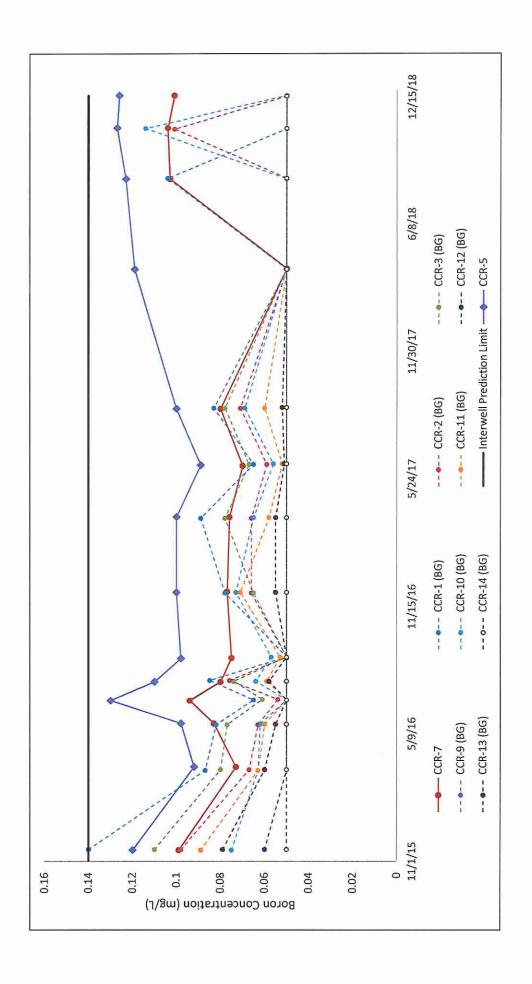
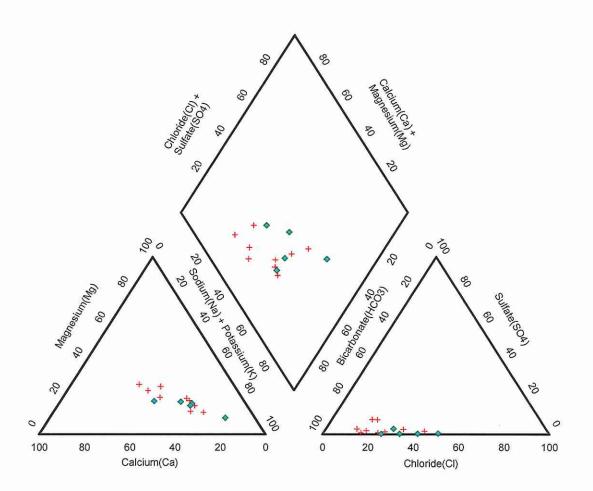


Figure 7: CCR background groundwater monitoring wells (dotted lines) and monitoring well CCR-7 (solid line) sulfate concentration time trends.

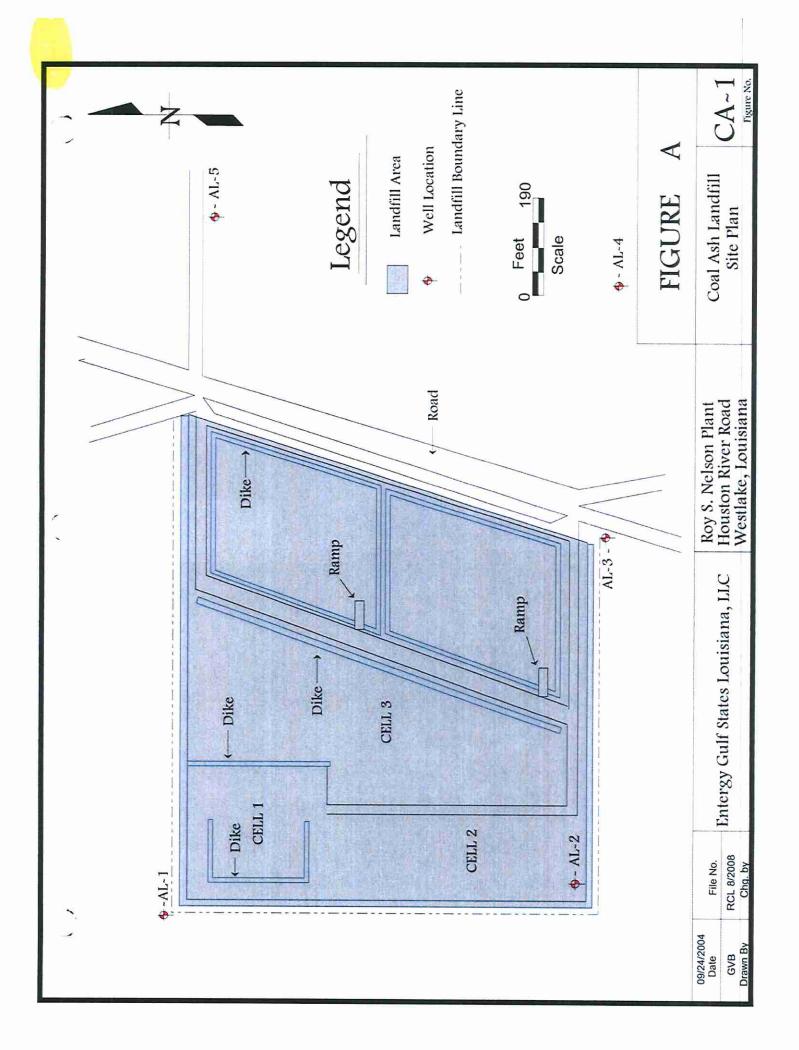
Figure 7
Sulfate Time-Trend Plot

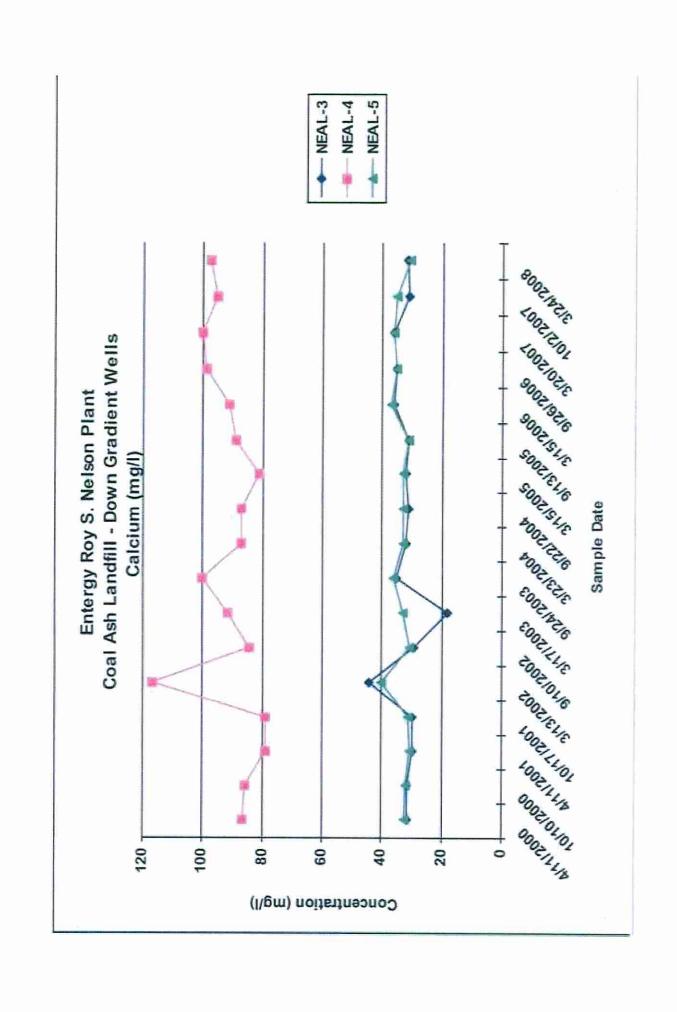
Prepared by: J. House (6/26/2019) Checked by:

Figure 8 - Piper Plot



# Appendix A LDEQ Calcium Groundwater Monitoring Data and Well Location Map





### Appendix B Non-Parametric ANOVA Results

Sanitas** v 0	5.32 Software	licenned to Ente	my Services Inc. U.G.	

#### Non-Parametric ANOVA

Constituent: Calcium Analysis Run 6/26/2019 1:23 PM

Nelson - Coal Ash Landfill Client: Entergy Data: Entergy Nelson CCR 2H2018

For observations made between 11/18/2015 and 12/18/2018, the non-parametric analysis of variance test indicates a DIFFERENCE between the medians of the groups tested at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one group has a significantly different median concentration of this constituent when compared to another group.

Calculated Kruskal-Wallis statistic = 100

Tabulated Chi-Squared value = 15.507 with 8 degrees of freedom at the 5% significance level.

There were 21 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.

Kruskal-Wallis statistic (H) = 99.76

Adjusted Kruskal-Wallis statistic (H') = 100

## Appendix C Interwell Prediction Limit Results

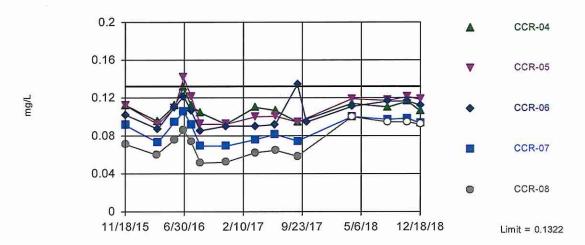
Parameter	2017 Interwell Limit	Limit	2017 SSI	12/18 Interwell Limit	ll Limit	12/18 SSI
Boron (mg/l)	Non-parametric	0.14		Non-parametric	0.1322	
Calcium (mg/l)	Non-parametric	33	CCR-7: 46	Non-parametric	33	CCR-5: 33.4 CCR-7: 46.8
Chloride (mg/I)	Non-parametric	110		Non-parametric	115	
Fluoride (mg/I)	Non-parametric	0.93		Parametric	1.13	
pH - Low (s.u.)	Parametric	6.47		Parametric	6.41	
pH - High (s.u.)	Parametric	7.7		Parametric	7.62	
Sulfate (mg/I)	Non-parametric	42		Non-parametric	42	
TDS (mg/l)	Parametric	453.6		Parametric	438.5	

Sanitas™ v.9.6.12 Sanitas software licensed to Eagle Environmental, Inc. UG Hollow symbols indicate censored values.

Within Limit

#### Prediction Limit

#### Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Chi Squared normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 126 background values. 46.83% NDs. Annual perconstituent alpha = 0.001244. Individual comparison alpha = 0.0001245 (1 of 2). Comparing 5 points to limit. Data were deseasonalized.

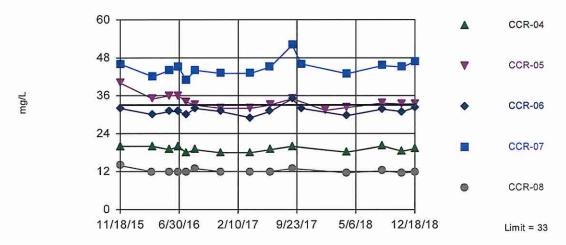
Constituent: Boron Analysis Run 1/15/2019 11:24

Sanitas™ v.9.6.12 Sanitas software licensed to Eagle Environmental, Inc. UG

Exceeds Limit: CCR-05, CCR-07

#### Prediction Limit

#### Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Chi Squared normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 126 background values. Annual per-constituent alpha = 0.001244. Individual comparison alpha = 0.0001245 (1 of 2). Comparing 5 points to limit. Seasonality was not detected with 95% confidence.

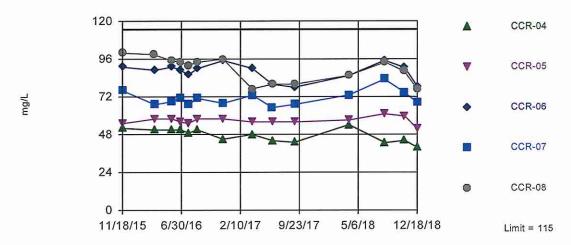
Constituent: Calcium Analysis Run 1/15/2019 11:24

Sanitas™ v.9.6.12 Sanitas software licensed to Eagle Environmental, Inc. UG

Within Limit

#### Prediction Limit

#### Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Chi Squared normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 126 background values. Annual per-constituent alpha = 0.001244. Individual comparison alpha = 0.0001245 (1 of 2). Comparing 5 points to limit. Seasonality was not detected with 95% confidence.

Constituent: Chloride Analysis Run 1/15/2019 11:24

Client: Entergy Gulf States Louisiana, LLC Data: Entergy Nelson CCR

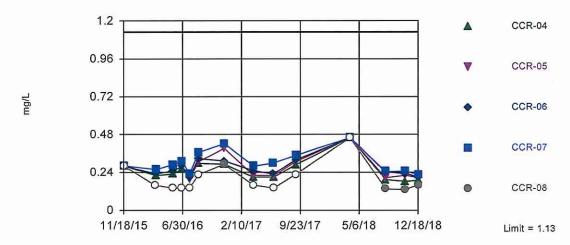
Sanitas™ v.9.6.12 Sanitas software licensed to Eagle Environmental, Inc. UG Hollow symbols indicate censored values.

Nelson - Coal Ash Landfill

Within Limit

#### Prediction Limit

#### Interwell Parametric



Background Data Summary (based on square root transformation) (after Aitchison's Adjustment): Mean=0.5391, Std. Dev.=0.2922, n=126, 17.46% NDs. Seasonality was detected with 95% confidence and data were deseasonalized. Normality test: Chi Squared @alpha = 0.01, calculated = 12.89, critical = 14.07. Kappa = 1.794 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.001504. Comparing 5 points to limit.

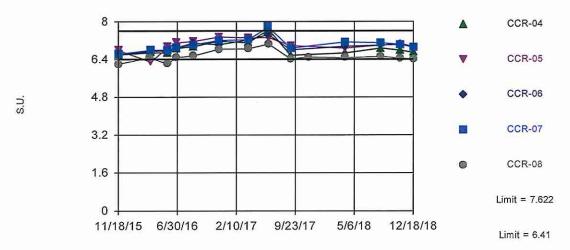
Constituent: Fluoride Analysis Run 1/15/2019 11:24

Sanitas™ v.9.6.12 Sanitas software licensed to Eagle Environmental, Inc. UG

Within Limits

#### Prediction Limit

#### Interwell Parametric



Background Data Summary: Mean=7.016, Std. Dev.=0.3371, n=117. Seasonality was not detected with 95% confidence. Normality test: Chi Squared @alpha = 0.01, calculated = 4.453, critical = 14.07. Kappa = 1.798 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.000752. Comparing 5 points to limit.

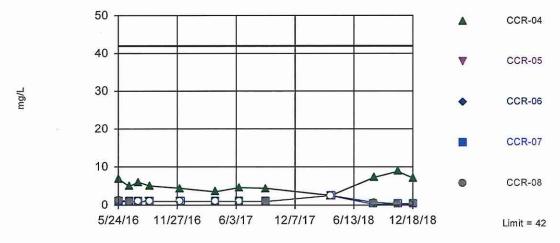
Constituent: pH Analysis Run 1/15/2019 11:24

Sanitas\*\* v.9.6.12 Sanitas software licensed to Eagle Environmental, Inc. UG Hollow symbols indicate censored values.

Within Limit

#### Prediction Limit

#### Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Chi Squared normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 108 background values. 25.93% NDs. Annual perconstituent alpha = 0.001699. Individual comparison alpha = 0.0001701 (1 of 2). Comparing 5 points to limit. Seasonality was not detected with 95% confidence.

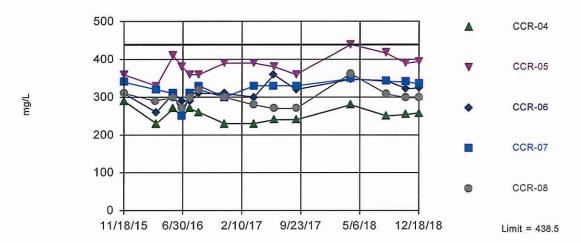
Constituent: Sulfate Analysis Run 1/15/2019 11:25

Sanitas™ v.9.6.12 Sanitas software licensed to Eagle Environmental, Inc. UG

Within Limit

#### Prediction Limit

#### Interwell Parametric



Background Data Summary: Mean=275.6, Std. Dev.=90.81, n=126. Seasonality was not detected with 95% confidence. Normality test: Chi Squared @alpha = 0.01, calculated = 5.905, critical = 14.07. Kappa = 1.794 (c=7, w=5, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.001504. Comparing 5 points to limit.

Constituent: Total Dissolved Solids Analysis Run 1/15/2019 11:24