## **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:

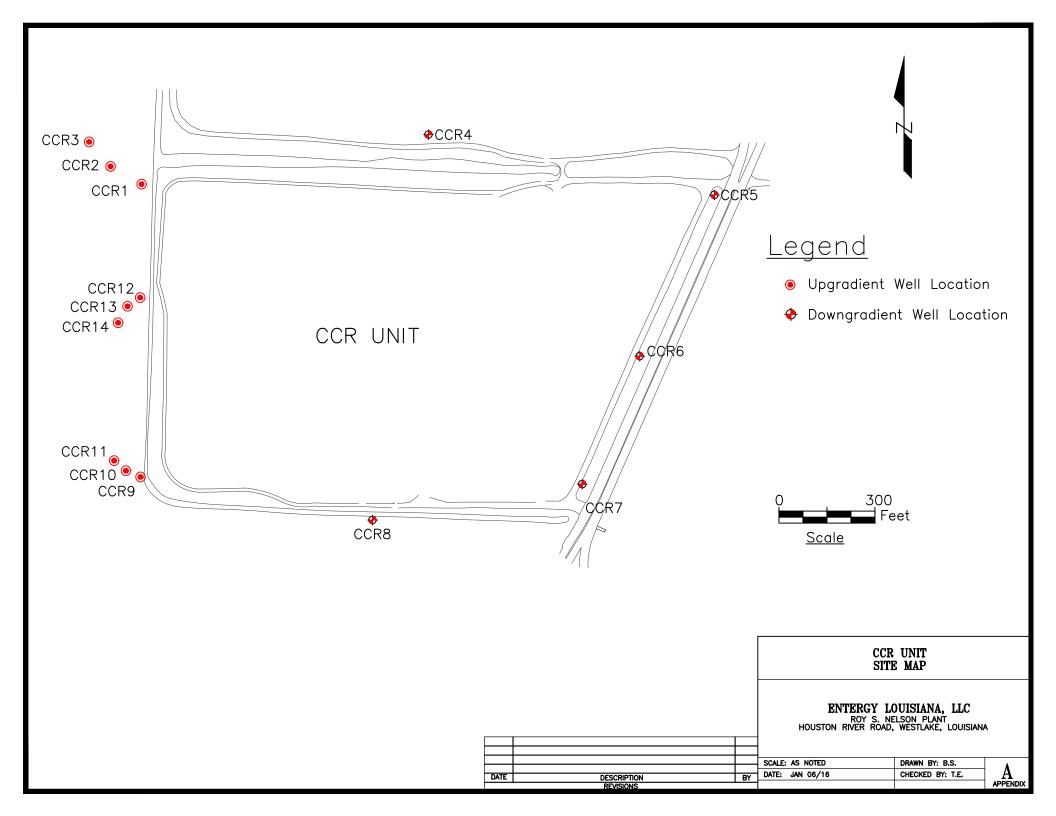
• Semi-annual detection monitoring events are planned for June and December 2020.

## 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



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(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



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(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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**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



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 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><br>SeqNo: <b>1924705</b><br>%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<br>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

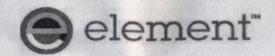
| Clie       | nt Name:      | PIVOTAL_ENGINEERIN  | Work Order Number:            | 19030183            |              | RcptNo:        | 1        |
|------------|---------------|---|-------------------------------|---------------------|--------------|----------------|----------|
| Log        | ged 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:<br>empt made to cool the samples?                        |                               | Signed By:<br>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<br>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      |
|--|
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629 Washington St., Suite 300, Columbus, IN 47201 812-375-0531 Fax 812-375-0531

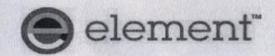
5738 Industrial Rd., Fort Wayne, IN 46825 219-471-7000 Fax 219-471-7777 2417 W. Pinhook Rd, Lafayette, LA 70508 337-235-0483/800-737-2378

Fax 337-233-6540

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| Page               | 1 of .   |       | 2    |         |     |                             |        |         | Chain  | of C   | usto                                 | dy ]               | R              | ecor                          | d           |     |                  | 1            | 1      | Jabor<br>Numb | atory<br>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<br>of Container | Matrix Code | TDS | 300: CI, FI, SO4 | 6010 metals* | Test   | Requ          | ested       |             |                  | Comm<br>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.<br>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<br>1500 |
| GW = Gro           | nking Water<br>ound Water<br>aste Water          | AQ =  | Oil  |         | SLI | ) = Liq<br>D = Sc<br>= Sluc | olid   | C       | G = Glass P = Plastic V = Vial   | ☑ Iced | conditions<br>12) 60<br>np. 3/       | E 4                | _              | Requeste<br>Ir.<br>Ir.        | _           | r.  | Mark S           | Т            | hanl   | k-yo          |             |             | g Elem<br>nology | nent Mat   | erials       |



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| Page                           | _2 of -                              | N.    | 2    |   |      |                          |         | (        | Cha                                   | ain         | of (                      | Cu | isto | dy                | R                    | ecor                          | .q           |     |                  |              |         | Labo<br>Num | ratory<br>ber | 1           | 9030               | 183         |                         |
|--------------------------------|--------------------------------------|-------|------|---|------|--------------------------|---------|----------|---------------------------------------|-------------|---------------------------|----|------|-------------------|----------------------|-------------------------------|--------------|-----|------------------|--------------|---------|-------------|---------------|-------------|--------------------|-------------|-------------------------|
| Contact N Phone/Fax Colle Date | ame: Terr                            | y Elr | agga |   |      | Sam                      | Quo     | ote #: 3 | 3880<br>Signat                        | - /2.       | Monitor<br>5-/<br>escript |    |      | Pres OSTH ONH IOH | NaOH Na2S2O3 2       | Number / Type<br>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<br>Hand / Mai |
| All sample<br>with the cl      |                                      |       |      |   |      |                          |         |          |                                       |             |                           |    |      |                   |                      |                               |              |     |                  | mater        | rial re | main        |               | O.<br>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<br>V/L        | by: (Sign                     | atore)       | ~   |                  | Recei        | ved by  | y Labo      | ratory:(S     |             |                    | Date 3-7-19 | Time<br>1500            |
| GW = Grou                      | king Water<br>and Water<br>ste Water | AQ =  | Oil  | _ | SLD  | = Liqu<br>= So<br>= Slud | olid    |          | ntainer<br>G = Gl<br>P = Pla<br>V = V | ass<br>stic | ☑ Ic                      |    | 3.1  |                   | 24-F<br>48-F<br>Othe | ir. 🔽                         | 72-F<br>Stan | ir. |                  | Т            | han     | k-yo        |               |             | ng Elem<br>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<br>Barium             | < 0.0100<br>0.152     | 0.0100<br>0.0100  | mg/L<br>mg/L | 1      | 3/14/2019 6:36:12 PM<br>3/13/2019 4:54:54 PM |
| Beryllium                     | < 0.00100             | 0.00100           | mg/L         | 1      | 3/13/2019 4:54:54 PM                         |
| Cadmium<br>Chromium           | < 0.00500<br>< 0.0100 | 0.00500<br>0.0100 | mg/L<br>mg/L | 1<br>1 | 3/13/2019 4:54:54 PM<br>3/13/2019 4:54:54 PM |
| Cobalt<br>Lead                | < 0.0100<br>< 0.0100  | 0.0100<br>0.0100  | mg/L<br>mg/L | 1<br>1 | 3/13/2019 4:54:54 PM<br>3/13/2019 4:54:54 PM |
| Molybdenum<br>Selenium        | < 0.0100<br>< 0.0200  | 0.0100<br>0.0200  | mg/L<br>mg/L | 1<br>1 | 3/13/2019 4:54:54 PM<br>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<br>Analysis Da | te: <b>3/11/20</b><br>te: <b>3/11/20</b> |             | RunNo: <b>767</b><br>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:<br>Client ID: | 19030184-004BMSD<br>CCR-4 | SampType: MSD  Batch ID: 29398-1 |        | de: 6010_W<br>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<br>No: SW6010B | Units: mg/L | Prep Date: <b>3/12/2019</b> Analysis Date: <b>3/13/2019</b> |          | RunNo: <b>76836</b><br>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:<br>nalysis Date: 3/11/20 | 19          | RunNo: <b>76755</b><br>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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GCAL Report#: 219031258 Page 1 of 18



**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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GCAL Report#: 219031258 Page 2 of 18



**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<br>655756 | Prep Method<br>EPA 3010A | <b>Dilution</b><br>1 | <b>Analysis Date</b> 03/28/2019 01:56 | <b>By</b><br>LWZ | Analytical Batch<br>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<br>655756 | Prep Method<br>EPA 3010A | <b>Dilution</b><br>1 | <b>Analysis Date</b> 03/28/2019 02:01 | <b>By</b><br>LWZ | Analytical Batch<br>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             |

GCAL Report#: 219031258 Page 6 of 18



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

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**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<br>655756 | Prep Method<br>EPA 3010A | <b>Dilution</b><br>1 | <b>Analysis Date</b> 03/28/2019 02:16 | <b>By</b><br>LWZ | Analytical Batch<br>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<br>655756 | Prep Method<br>EPA 3010A | <b>Dilution</b><br>1 | <b>Analysis Date</b> 03/28/2019 02:40 | <b>By</b><br>LWZ | Analytical Batch<br>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<br>03/13/2019 11:00 | Prep Batch<br>655756 | Prep Method<br>EPA 3010A | <b>Dilution</b><br>1 | <b>Analysis Date</b> 03/28/2019 02:45 | <b>By</b><br>LWZ | Analytical Batch<br>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                       |

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**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<br>655756 | Prep Method<br>EPA 3010A | <b>Dilution</b><br>1 | <b>Analysis Date</b> 03/28/2019 02:50 | <b>By</b><br>LWZ | Analytical Batch<br>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<br>655756 | Prep Method<br>EPA 3010A | <b>Dilution</b><br>1 | <b>Analysis Date</b> 03/28/2019 02:55 | <b>By</b><br>LWZ | Analytical Batch<br>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<br>03/13/2019 11:00 | Prep Batch<br>655756 | Prep Method<br>EPA 3010A | • |        | <b>By</b><br>LWZ | Analytical Batch<br>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                       |

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**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<br>655756 | Prep Method<br>EPA 3010A | <b>Dilution</b><br>1 | <b>Analysis Date</b> 03/28/2019 03:05 | <b>By</b><br>LWZ | Analytical Batch<br>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<br>655756 | Prep Method<br>EPA 3010A | Dilution<br>1 | <b>Analysis Date</b> 03/28/2019 03:10 | <b>By</b><br>LWZ | Analytical Batch<br>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<br>655756 EPA 3010A |  | <b>Dilution</b><br>1 | <b>Analysis Date</b> 03/28/2019 03:15 | <b>By</b><br>LWZ | Analytical Batch<br>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                       |

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

## Sample Results

#### **EPA 6020B**

| <b>Prep Date</b> 03/13/2019 11:00 | Prep Batch<br>655756 | Prep Method<br>EPA 3010A | <b>Dilution</b><br>1 | <b>Analysis Date</b> 03/28/2019 03:20 | <b>By</b><br>LWZ | Analytical Batch<br>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<br>655756 | Prep Method<br>EPA 3010A | <b>Dilution</b><br>1 | Analysis Date         By           03/28/2019 03:24         LW |      | Analytical Batch<br>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<br>655756 | Prep Method<br>EPA 3010A | <b>Dilution</b><br>1 | <b>Analysis Date</b> 03/28/2019 03:39 | <b>By</b><br>LWZ | Analytical Batch<br>656784 |  |
|-----------------------------------|----------------------|--------------------------|----------------------|---------------------------------------|------------------|----------------------------|--|
| CAS#                              | Parameter            |                          |                      | Result                                | LOQ              | Units                      |  |
| 7440-36-0<br>7440-28-0            | Antimony<br>Thallium |                          |                      | ND<br>ND                              | 2.00<br>1.00     | ug/L<br>ug/L               |  |

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**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<br>03/13/2019 11:00 | Prep Batch<br>655756 | Prep Method<br>EPA 3010A | Dilution<br>1 | <b>Analysis Date</b> 03/28/2019 03:44 | <b>By</b><br>LWZ | Analytical Batch<br>656784 |  |
|-------------------------------|----------------------|--------------------------|---------------|---------------------------------------|------------------|----------------------------|--|
| CAS#                          | Parameter            |                          |               | Result                                | LOQ              | Units                      |  |
| 7440-36-0<br>7440-28-0        | Antimony<br>Thallium |                          |               | ND<br>ND                              | 2.00<br>1.00     | ug/L<br>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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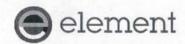
**Project ID:** 19030184 **Report Date:** 04/01/2019

# 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 .<br>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<br>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<br>CONTAINERS | COMMENTS: Methanol Preserved Weights<br>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

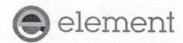
PAG



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<br>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<br>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<br>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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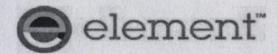


### SAMPLE RECEIVING CHECKLIST



| SAMPLE DELIVERY GROU                     | JP 2190312                   | 258           | CHECKLIST  |                                  | YES | NO |  |  |  |  |
|--|------------------------------|---------------|--|----------------------------------|-----|----|--|--|--|--|
| Client PM JLM<br>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<br>271810                 | Received By<br>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 |  |                                  |     |    |  |  |  |  |

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

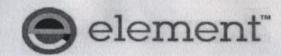
2417 W. Pinhook Rd, Lafayette, LA 70508 337-235-0483/800-737-2378

Fax 337-233-6540

☐ 3445 S Sheridan, Tulsa, OK 74145

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

|   | Page   |        | 1 of -                                  |       | 2     |         |     |                            |              | Cha                             | in (        | of C        | usto                           | dy         | R                   | ecor                          | d             |          |                |         |         | Labo<br>Num | oratory<br>iber | 19         | 030              | 184                       |                         |
|---|--------|--------|---|-------|-------|---------|-----|----------------------------|--------------|---------------------------------|-------------|-------------|--------------------------------|------------|---------------------|-------------------------------|---------------|----------|----------------|---------|---------|-------------|-----------------|------------|------------------|---------------------------|-------------------------|
|   | Conta  | act N  | me: Pivota<br>lame: Terr<br>x: (504) 79 | y Eli | nagga |         | LLC |                            | Quo          | eet: CCR A                      | 125         |             | oring                          | HNO, H,SO, | serv. OzSzO, H      | Number / Type<br>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<br>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              |
| - | 3      | 17     | 0945                                    | X     | 100   | С       | С   | R                          | -            | 4                               |             |             |                                | None       | e/ HNO              | 3 Plastic                     | Aq            | х        | х              | х       | X       |             |                 |            | 50 19            | •••6020 Su                | b Metal: Li             |
|   | 31     | 8      | 0830                                    | X     |       | С       | С   | R                          | -            | 5                               |             |             |                                | None       | e/ HNO              | 3 Plastic                     | Aq            | х        | х              | х       | X       |             |                 |            |                  |                           |                         |
| 1 | 31     | 6      | 1610                                    | X     |       | С       | С   | R                          | -            | 6                               |             |             |                                | None       | e/ HNO:             | 3 Plastic                     | Aq            | х        | X              | х       | X       |             |                 |            |                  |                           |                         |
| 2 | 3/     | 6      | 1445                                    | X     |       | С       | С   | R                          | -            | 7                               |             | NEW HEE     | 0000                           | None       | e/ HNO:             | 3 Plastic                     | Aq            | x        | х              | x       | X       |             |                 |            |                  |                           |                         |
| I | 3      | 16     | 1320                                    | X     |       | С       | С   | R                          | -            | 8                               | FE TO       |             |                                | None       | e/ HNO:             | 3 Drastic                     | Aq            | X        | х              | x       | x       |             | la dia          |            |                  |                           |                         |
|   | 3      | 16     | 1100                                    | X     | N 100 | С       | С   | R                          | 1            | 9                               |             | N. Take     | 12402A                         | None       | e/ HNO:             | 3 Plastic                     | Aq            | x        | х              | х       | x       | 100         |                 |            |                  |                           |                         |
|   | 3      |        | 0930                                    | x     |       | С       | С   | R                          | -            | 10                              |             |             |                                | None       | e/ HNO:             | 3 Plastic                     | Aq            | x        | х              | x       | x       |             |                 |            |                  | Charles and a second      | Airborne<br>Hand / Mail |
|   |        |        | es submitte                             |       |       |         |     |                            |              | ology for ana<br>aterials Tech  |             |             |                                |            |                     |                               |               |          |                | HEE     | -956    | 12190       | Nu              | ).<br>mber |                  |                           |                         |
|   | Reling | uish   | d by: (Signat                           | ure)  | a     |         | Rec | eived (                    | <b>V</b> igt | ature)                          | 1           | Date 3/1/19 | Time /230                      | Rela       | nquishe             | d by (Sian                    | ature)        | 1        |                | Rece    | rived l | Vila        | nature)         | Bo         | D                | 3-7-8                     | Time /438               |
|   | Relinq | quishe | d by: (Signat                           | ure)  |       |         | Rec | eived t                    | y:(Sign      | ature)                          |             | Date        | Time                           | Reli       | nquish              | by (Sign                      | ature)        | N        |                | Rece    | ived I  | 2 Labo      | oratory:(S      |            |                  | Date<br>3719              | Time<br>1500            |
|   | GW =   | Grő    | king Water<br>und Water<br>ste Water    | AQ =  | Oil   | 2000000 | SLI | = Liqu<br>D = So<br>= Slud | lid          | Container G = Gla P = Pla V = V | ass<br>stic | ☑ Iced      | Conditions<br>d 100<br>np. 3.1 | חחח        | 24-l<br>48-l<br>Oth | dr. 🗵                         | 72-H<br>Stand | 523D1.// |                | 7       | Thai    | nk-yo       |                 |            | g Elem<br>nology | ent Mat                   | erials                  |



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

3445 S Sheridan, Tulsa, OK 74145

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

| Page<br>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 |  |
|-------------------|--------------------------------------|-------|-------|------|-----|---------|---------|--------|-------------------------|---------|---------|--------------|--------|------------|---------------------|-------------------------------|--------------|---------------|--------------------|-----------|---------|--------|----------|-------------|-----------|--|
| Phone/Fa          | Name: Terr<br>x: (504) 79            | 9-36  | 53    | r    |     |         |         | ote #: |                         | ture:   | 5-1     |              |        | HNO, H,SO, | H Na2S2O3           | Number / Type<br>of Container | Matrix Code  | 300: Fluoride | *6010/**6020 metal | *6020 Sub | Mercety |        |          |             |           | Comments /                                 |
| Date              | Time                                 | Grab  | Сотр  |      |     | San     | nple    | Iden   | ificat                  | ion / I | escrip  | ption        | 1      | HCI        | NaOH                | Nur                           | 2            | 300           | .601               | 9***      | 7470    |        |          |             |           | Remarks                                    |
| 3/6               | 08/5                                 | Х     |       | С    | С   | R       | -       | 1      | 1                       | hotels. | III AVI | 1            |        | None/      | HNO                 | 3 Plastic                     | Aq           | х             | х                  | х         | Х       | 188    |          |             |           | *6010 Metals: As, Ba                       |
| 3/5/              | 1700                                 | x     |       | С    | С   | R       | -       | 1      | 2                       |         |         |              |        | None/      | HNO                 | 3 Dtastic                     | Aq           | x             | X                  | х         | x       | 2/0    |          |             |           | Be, Cd, Cr, Co, Pb,<br>Mo, Se              |
| 1"                | 1540                                 | X     |       | С    | С   | R       | -       | 1      | 3                       |         |         |              | AU NA  | None/      | HNO                 | 3 Diastic                     | Aq           | x             | х                  | x         | х       |        | Par la   |             |           | **6020 Metals: Sb,Tl                       |
| V                 | 1425                                 | x     |       | С    | С   | R       | -       | 1      | 4                       |         | Ship    | 7500         |        | None/      | HNOS                | 3 Dtastic                     | Aq           | х             | х                  | x         | x       |        |          |             |           | ***6020 Sub Metal: L                       |
| 3/2               | 1000                                 | X     | VAL   | М    | s   | VOI)    | (CI     | CR-    | 4                       | )       | Name.   |              | No.    | None/      | HNO                 | 3 Plastic                     | Aq           | х             | х                  | х         | х       |        |          |             |           |  |
| 3/7               | 1000                                 | X     | Mu.   | М    | S   | D       | (CI     | CR-    | 4                       |         |         |              |        | None/      | HNOS                | 3 Plastic                     | Aq           | х             | х                  | х         | X       |        |          |             |           |  |
| 3/6               | -                                    | X     |       | D    | U   | Р       |         |        | 7                       |         | 1       |              |        | None/      | HNO                 | 3 Plastic                     | Aq           | х             | х                  | x         | x       |        |          |             |           |  |
| 3/5               | 1445                                 | X     |       | F    | В   |         | 1       |        |                         |         |         |              |        | None/      | HNO                 | 3 Plastic                     | Aq           | х             | Х                  | x         | x       |        |          |             |           |  |
|                   |                                      |       |       |      |     |         |         |        |                         |         |         |              |        |            |                     |                               |              |               | 9.8                |           |         |        |          |             |           | UPS / FedEx Airborn<br>/ Element Hand / Ma |
|                   | es submitt                           |       |       |      |     |         |         |        |                         |         |         |              |        |            |                     |                               |              |               |                    | mate      | erial r | emair  |          | O.<br>Numbe | er        |  |
|                   | d by: (Signat                        |       | -     |      |     |         |         | nature |                         | _       | Da 3/1  | ite          | Time   |            |                     | d by: (Signa                  |              |               |                    | Rece      | ived    | in     | nature   | 3           | andt      | 3-7-79 1436                                |
| Relinquishe       | d by: (Signat                        | ure)  |       |      | Rec | eived l | by:(Sig | nature |                         |         | Da      |              | Time   | Reline     | quisky              | d by (Sten                    | ture)        | Bur           | _                  | Rece      | ived b  | y Lab  | oratory: | (Signa      | sture)    | 3-3-19 / Time                              |
| GW = Gro          | king Water<br>und Water<br>ste Water | 0 = ( | Aqu   | 2000 | SLE | = Liq   | olid    | Co     | G = G<br>P = P<br>V = ' | astic   | E.      | lced<br>Temp | p. 3./ | חחח        | 24-1<br>48-1<br>Oth | fr. 🗵                         | 72-H<br>Stan | r.            |                    | 1         | har     | nk-yo  | ou fo    |             | sing Eler | ment Materials                             |

-40 7.10



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



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

|                             |                 | 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<br>Analysis Date |             | 9                      | RunNo: <b>79905</b><br>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><br>No: <b>E 300.0</b> | Units: mg/L Prep Date: Analysis Date: 7/8/2019 |            |          | 9         | RunNo: <b>80006</b><br>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<br>& 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             |
|---|
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| 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<br>337-235-0483/800-737-2378 |
|---|--|
|   | Fax 337-233-6540<br>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<br>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<br>Date       | ection<br>Time                               | Grab  | Comp          |              |              | San                            |          | dentification / D                           | escriptio                 | n                         | HCI HNO3   | Number<br>of Cont                     | Matrix          | TDS              | 300: CI, I | 6010 me |           |                   |              |      | (10000000000000000000000000000000000000 | nents /<br>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      |
| All sample with the | is submitte                                  | tting | Elem<br>the s | ent I<br>amp | Mate<br>les. | rials T<br>Elem                | ent M    | ology for analysis a<br>aterials Technology | re accepted<br>reserves t | d on a cus<br>he right to | todial ba<br>return u  | sis only. (                           | Ownersh         | nip of<br>tions, | the n      | nateria | al rema   |                   | .O.<br>umber |      |   | 8                |
| Relinquished        | by: (Signati                                 | ure)  |               | _            | Rece         | cived by                       | y:(Signa |   | Date 4/30/19              | Time                      | _  | shed By: (Sign                        | Witness Co.     |                  |            | Receive | ad by (Si | ignature)         |              |      | Date                                    | Time             |
| 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             |
| GW Grou             | Making Water A<br>und Water (<br>ste Water ( | 0 = 0 | Aque<br>Dil   |              | SLD          | = Liqui<br>) = Soli<br>= Sludg | id       | G = Glass P Plastic V = Vial                |                           |                           | ☐ 24<br>☐ 48   | Request<br>I-Hr. □<br>I-Hr. ☑<br>ther | ed TAT<br>72-Hr |                  |            | Th      | ank-y     |                   | r usinç      | /    | ent Mat                                 |                  |



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|---|---------------------------------------|----|
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Fax 337-233-6540

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| Page                      |   |       | 2     | 1           |        |                            |                |                 |  |                   |           |          | sto                 | dy              | R               | ecor                       | ď           |        |           |         |          | Labo<br>Nun | orato<br>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           |        |        |             |                         |
| Contact N                 |   | 5     | -     | ır          |        |                            | 20             | te #: 5         | 124<br>Signati                         | # ire:            |           |          |                     | HNO, H2SO,      | Na2S2O3         | nber / Type<br>Container   | Matrix Code |        | , FI, SO4 | metals* |          |             |               |              |        |        |             |                         |
| Colle<br>Date             | ection<br>Time                            | Grab  | Comp  |             |        | San                        | nple I         | denti           | ficatio                                | on / D            | escripti  | ion      |                     | нсі н           | NaOH            | Number<br>of Cont          | Mat         | TDS    | 300: CI,  | 6010 m  |          |             |               |              |        |        | Comn<br>Rem |                         |
| 6/30                      | 91440                                     | Х     |       | С           | С      | R                          | -              | 1               | 1                                      |                   |           |          |                     | None/           | /HNO3           | 2 Dlastic                  | Aq          | X      | X         | X       |          |             |               |              |        |        |             |                         |
| 6130                      | 0840                                      | Х     |       | С           | С      | R                          | _              | 1               | 2                                      |                   |           |          |                     | None/           | HNO             | 2 Diastic                  | Aq          | Х      | X         | х       |          |             |               |              |        | *6     | 010 Meta    | ls: B, Ca               |
| 10/30/1                   | 0950                                      | Х     |       | С           | С      | R                          | 2              | 1               | 3                                      |                   | 91        |          |                     | None/           | / HNO3          | 2 Dlastic                  | Aq          | Х      | X         | Х       |          |             |               |              |        |        |             |                         |
| 6/30                      | 31100                                     | Х     |       | С           | С      | R                          | -              | 1               | 4                                      |                   |           |          |                     | None/           | HNO             | 2 Plastic                  | Aq          | Х      | X         | х       |          |             |               | $\top$       |        |        |             |                         |
| lalzz                     | 1545                                      | Х     |       | М           | s      |                            | (CC            | R-              | 4                                      | )                 |           |          |                     | None/           | / HNO3          | 2 Plastic                  | Aa          | x      | x         | х       |          |             | T             |              |        |        |             |                         |
| 6/201                     | 1545                                      | х     |       | M           | s      | D                          |                | R-              | ,                                      | )                 |           |          |                     | $\vdash$        |                 | 2 Plastic                  |             | X      | X         | X       |          |             |               | $\top$       |        |        |             |                         |
| 6/28/                     | 2-  | Х     |       | D           | U      | Р                          | 100            | _               | -                                      |                   |           |          |                     |                 |                 | 2 Plastic                  |             | X      | X         | X       |          | _           | $\forall$     | $\top$       | +      | $\neg$ |             |                         |
| 1/29                      | 91200                                     | X     |       | F           | В      | 1                          |                |                 |  |                   |           |          |                     |                 |                 | 2 Dtastic                  |             | X      | X         | X       | $\dashv$ | 1           | $\forall$     | +            | +      |        |             |                         |
| 7-4                       | 120                                       | 7     |       |             | 19110  |                            |                |                 | 117                                    |                   |           |          |                     |                 |                 |                            |             |        |           |         |          |             | 1             |              | $\top$ |        |             |                         |
| ys                        | :1.1.9                                    |       |       |             |        |                            |                |                 |  |                   |           |          | 73.5                |                 |                 |                            |             |        |           |         |          |             |               |              |        | - 2    |             | Airborne<br>land / Mail |
| All sample<br>with the cl | es submitte                               | ed to | Elem  | nent<br>amp | Mate   | rials<br>Elem              | Techn<br>ent M | ology<br>ateria | for ana<br>Is Tech                     | lysis a<br>nology | re accept | ted o    | n a cus<br>right to | todial<br>retur | l basi<br>n unu | s only. O                  | wners       | hip of | the i     | nater   | ial re   | emair       | ns P          | P.O.<br>Numb | er     |        |             |                         |
| Relinquishe               | d by: (Signat                             | ure)  | 1     |             | 100000 |                            | y:(Sign        | M. Calondania   | _+                                     |                   | Gate Ago  |          | Time                |                 | quishe          | d lay: (Signa              | ture)       |        |           | Recei   | ved by   | v:(Sigr     | nature)       |              |        |        | Date        | Time                    |
| Relinquished              | d by: (Signat                             | ure)  |       |             |        |                            | y:(Sign        |                 |  |                   | Date      |          | Time                | Relina          |                 | d by: (Signa               |             | 6      | (         | Recei   | yed      | y Labo      |               | (S/gna       | ature) | 12     | Date / L 19 | Time<br>1225            |
| GW-Grou                   | M<br>king Water<br>und Water<br>ste Water | 0 = 0 | Aque  |             | SLE    | = Liqu<br>) = So<br>= Slud | lid            | (               | tainer<br>3 = Gla<br>9 Plas<br>V = Vis | ss                |           | ed<br>mp |                     | ппп             |                 | Requeste<br>Ir. ☐<br>Ir. ☑ |             | r.     |           | Т       | han      | k-yo        | ou fo         |              | sing É | lemer  | nt Mat      |                         |



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 |
|-------------|---|--|
|-------------|---|--|

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



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 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



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 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

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 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



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 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



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 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



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

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<br>Batch ID: 30 |                |                | de: <b>6020A_W</b><br>No: <b>SW6020A</b> | . •               |       | Prep Date<br>Analysis Date |              |               | RunNo: <b>80</b> 2<br>SeqNo: <b>20</b> 2 |          |      |
| Analyte              |                 | R                           | Result         | PQL            | SPK value                                | SPK Ref Val       | %REC  | LowLimit                   | HighLimit    | RPD Ref Val   | %RPD                                     | RPDLimit | Qual |
| Antimony<br>Thallium |                 |                             | ).250<br>).250 | 0.250<br>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<br>Antimony  |                 | R                           | tesult<br>462  | 5.00           | SPK value<br>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<br>Client ID:  | 19070045-004BMS<br>CCR-4 | SampType:<br>Batch ID: |   |                                       | le: 6020A_W<br>lo: SW6020A                                | Units: µg/L                               |                              | Prep Date<br>Analysis Date  | e: 7/2/20°   |                     | RunNo: 80:<br>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<br>Thallium   |                          |                        | 449<br>485                                | 5.00<br>5.00                          | 500.0<br>500.0  | 0.07774<br>0                              | 89.9<br>96.9                 | 75<br>75  | 125<br>125   | 461.6<br>480.8      | 2.70<br>0.813                                       | 20<br>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<br>Client ID:  |                          | SampType:<br>Batch ID: |   |                                       | le: 6020A_W<br>lo: SW6020A                                |   |                              | Prep Date<br>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:<br>Analyte  |                          |                        | <b>30703</b> Result                       | TestN<br>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<br>Result<br>455<br>482             | TestN<br>PQL<br>5.00<br>5.00          | SPK value   | SPK Ref Val                               | %REC<br>90.9                 | Analysis Date  LowLimit  75 75                                      | e: <b>7/16/20</b><br>HighLimit<br>125                            | RPD Ref Val         | SeqNo: 20   | 11752<br>RPDLimit                             | Qual |  |
| Client ID: Analyte Antimony Thallium                               | FB 1 19070045-016BMSD    | Batch ID:              | 30703<br>Result<br>455<br>482             | PQL<br>5.00<br>5.00                   | SPK value<br>500.0<br>500.0                               | SPK Ref Val  0 0 Units: µg/L              | %REC<br>90.9<br>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><br>%RPD                            | RPDLimit                                      | Qual |  |
| Client ID: Analyte Antimony Thallium Sample ID                     | FB 1 19070045-016BMSD    | Batch ID:  SampType:   | 30703<br>Result<br>455<br>482             | PQL<br>5.00<br>5.00                   | SPK value 500.0 500.0 de: 6020A_W lo: SW6020A             | SPK Ref Val  0 0 Units: µg/L              | %REC<br>90.9<br>96.3         | Analysis Date  LowLimit  75  75  Prep Date  Analysis Date           | e: 7/16/20<br>HighLimit<br>125<br>125<br>e: 7/2/20<br>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<br>90.9<br>96.3         | Analysis Date  LowLimit  75  75  Prep Date  Analysis Date           | e: 7/16/20<br>HighLimit<br>125<br>125<br>e: 7/2/20<br>e: 7/16/20 | 019<br>RPD Ref Val  | SeqNo: 20 %RPD  RunNo: 80 SeqNo: 20                 | 11752<br>RPDLimit<br>267<br>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<br>90.9<br>96.3<br>%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<br>%RPD<br>RunNo: 80<br>SeqNo: 20<br>%RPD | 11752<br>RPDLimit<br>267<br>11753<br>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<br>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<br>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<br>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<br>Fluoride |                 |                          |   |                           | SPK Ref Val |             | •                                  |   |                      | ,                                   |                | Qual |
| Fluoride            | 19070045-016AMS | Result 2.03              | PQL S                                   | SPK value<br>2.000        |             | %REC        | LowLimit                           | HighLimit<br>110                            | RPD Ref Val          | %RPD                                | RPDLimit       | Qual |
| Fluoride            |                 | Result 2.03              | PQL S<br>0.0500<br>TestCode:            | SPK value<br>2.000        | 0           | %REC<br>102 | LowLimit 90                        | HighLimit<br>110<br>e:                      | RPD Ref Val<br>2.018 | %RPD<br>0.747                       | RPDLimit<br>15 | Qual |
| Fluoride Sample ID  |                 | Result 2.03 SampType: MS | PQL S<br>0.0500<br>TestCode:<br>TestNo: | 2.000<br>300.0<br>E 300.0 | 0           | %REC<br>102 | LowLimit 90  Prep Dat Analysis Dat | HighLimit<br>110<br>e:<br>e: <b>7/8/201</b> | RPD Ref Val<br>2.018 | %RPD<br>0.747<br>RunNo: <b>80</b> 0 | RPDLimit<br>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<br>07/03/2019 14:20 | Prep Batch<br>663152 | Prep Method<br>EPA 3010A | Dilution<br>1 | <b>Analysis Date</b> 07/05/2019 12:23 | <b>By</b><br>LWZ | Analytical Batch<br>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<br>07/03/2019 14:20 | Prep Batch<br>663152 | Prep Method<br>EPA 3010A | Dilution<br>1 | <b>Analysis Date</b> 07/05/2019 12:48 | <b>By</b><br>LWZ | Analytical Batch<br>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<br>663152 | Prep Method<br>EPA 3010A | <b>Dilution</b><br>1 | <b>Analysis Date</b> 07/05/2019 13:13 | <b>By</b><br>LWZ | Analytical Batch<br>663224 |
|-----------------------------------|----------------------|--------------------------|----------------------|---------------------------------------|------------------|----------------------------|
| CAS#                              | Parameter            |                          |                      | Result                                | LOQ              | Units                      |
| 7439-93-2                         | Lithium              |                          |                      | 7.71                                  | 5.00             | ug/L                       |

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**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<br>663152 | Prep Method<br>EPA 3010A | <b>Dilution</b><br>1 | <b>Analysis Date</b> 07/05/2019 13:24 | <b>By</b><br>LWZ | Analytical Batch<br>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

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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<br>CONTAINERS | COMMENTS: Methanol Preserved Weights<br>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<br>CONTAINERS | COMMENTS: Methanol Preserved Weights<br>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<br>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<br>271810                 | Received By<br>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

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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

☐ 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<br>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<br>Container | Code   | g<br>g        | *6010/**6020 metal | ۵           | ury          |            |       |             |   |               |     |                      |                        |
| Phone/Fax: (504) 79                                   |           |                            | Samı   | oler's Signature:              |               |           | ΙZ                   |        | Number<br>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<br>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<br>and / Mail |
| All samples submitted with the client submit          |           |                            |        |                                |               |           |                      |        |                          |        |               | the r              | nater       | ial re       | emair      | ا دا  | P.O.<br>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<br>SLD = S | lid    | G = Glass P = Plastic V = Vial | Z Iced<br>Tem | ip.       | ☐ 24<br>☐ 48<br>☐ Ot |        | equeste                  |        |               |                    | T           | han          | k-yc       | ou f  |             |   | ıg El<br>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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| Page 2 of 2  | Chain of Custo   | dy Record                               |                                     | Nun                         | oratory<br>nber    | 10045   |
|--|--|---|-------------------------------------|-----------------------------|--------------------|---|
| Client Name: Pivotal Engineering LLC   | Project: CCR Assessment Monitoring   | Preserv.                                | L                                   |                             | quested            |   |
| Contact Name: Terry Elnaggar<br>Phone/Fax: (504) 799-3653  | Quote #: 5124 Sampler's Signature:   | Number / Type of Container  Matrix Code | 300: Fluoride<br>*6010/**6020 metal | ***6020 Sub<br>7470 Mercury |                    | Comments /                                    |
| Collection - A B C Sa  | mple Identification / Description  | HCI HI Numl of C                        | 300: F<br>*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,<br>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<br>/ Element Hand / Mail |
| with the client submitting the samples. Ele  | Technology for analysis are accepted on a cus<br>ment Materials Technology reserves the right to |   |                                     | material remair             | P.O.<br>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:<br>Client ID: | MB-31738<br>PBW     | SampType: MBLK Batch ID: 31738A  |                | de: <b>6010_W</b><br>No: <b>SW6010B</b> | Units: mg/L  |      | Prep Date<br>Analysis Date | e: 10/1/20<br>e: 10/7/20 |                        | RunNo: 820<br>SeqNo: 20 |          |      |
| Analyte                  |                     | Result                           | PQL            | SPK value                               | SPK Ref Val  | %REC | LowLimit                   | HighLimit                | RPD Ref Val            | %RPD                    | RPDLimit | Qual |
| Boron<br>Calcium         |                     | < 0.100<br>< 0.500               | 0.100<br>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:<br>Analysis Date: | 9/30/2019  |                    | RunNo: <b>82</b> 4<br>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,<br>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

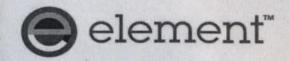
## Sample Log-In Check List

| 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<br>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 |         |           |           |



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|--|
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|  |

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

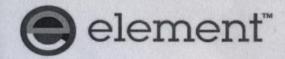
| V | 2417 W. Pinhook Rd, Lafayette, | LA 70508 |
|---|--------------------------------|----------|
|   | 337-235-0483/800-737-2378      |          |

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<br>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<br>Container | Code    |             | 804     | S* *S   |       |         |      |               |                 |             |               |     |  |
|               | Phone/Fax: (504) 799-3653  |       |        |         | Samplers Signature:     |           |                  |          | HNO,        | N H                                    | nber / Typ<br>Container    | Matrix  |             | CI, FI, | metals* |       |         |      |               |                 |             | Comments /    |     |  |
| Colle<br>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.<br>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<br>48-H                           | dr.                        | 72-H    | r.          |         | Т       | han   | k-yo    | u fo |               | ing El<br>hnolo |             | ent Materials |     |  |
|               |  | NU.   |        | W       |                         |           |                  | The last | ALGERTA     | (IRI                                   |                            |         |             | PARS A  |         |       | _       | 1100 | Jones !       | 1               | AT NO.      | 10-1-1        |     |  |



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|--|
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|   | Fav 337-233-6540                        |

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| Page                                | _2 of _                 |       | 2     |      |     |                          |       |        | C      | ha                       | in (   | of (    | Cu          | sto                        | dy l                           | R                    | ecor                      | d                  |     |         |         |         | Labo<br>Num | orator<br>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<br>H               | Number / Typ<br>Container | Matrix             |     | CI, FI, | metals* |         |             |                |       |       |        | Comments /                                  |
| Colle<br>Date                       | Ction<br>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                                   |                         |       |       |      |     |                          |       |        |        |                          |  |         |             |                            |                                |                      | /                         |                    |     |         |         |         |             |                |       |       |        |   |
| Negy I                              | No.                     |       | 15    |      |     |                          |       |        |        |                          |  |         |             | in i                       |                                |                      | /                         |                    |     |         |         |         |             |                | 6     |       |        | UPS / FedEx Airborne<br>Element Hand / Mail |
|                                     | es submitte             |       |       |      |     |                          |       |        |        |                          |  |         |             |                            |                                |                      |                           |                    |     | the i   | nater   | rial re | main        |                | O.    | r     |        |   |
| -                                   | by: (Signati            | ure)  | -     |      |     |                          |       | ignatu | _      | -                        | - Control of the cont | Date    |             | Time                       | Relinqu                        | -                    | by (Sign                  |                    | 1   | ,       | Reg     | h       | y:(Sig      | nature)        | 1     |       | 0      | 97371455                                    |
|                                     | d by: (Signati          |       |       |      | Rec | eived                    | by:(S | ignatu | re)    |                          |  | Date    | -           | Time                       |                                | ishe                 | by con                    | anne de la company | र्द | 7       | _       | _       | _           | oratory:       |       |       |        | 957 19 1530                                 |
| DW = Drink<br>GW = Grou<br>WW = Was | king Water<br>and Water | AQ =  | Dil   | E000 | SLC | = Lic<br>) = Si<br>= Slu | olid  |        | P =    | e Glas<br>Plast<br>= Via | tic  | ☑ Ic    | ced<br>emp. | onditions<br>3,90<br>entRb | 1 4                            | 24-H<br>18-H<br>Othe | Requester.                |                    | r.  |         | Т       | har     | nk-yo       | ou fo          |       | ing E |        | nent Materials                              |

(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

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 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



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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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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



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(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



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(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



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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



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(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



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(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

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## **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<br>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><br>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<br>CCR-1 | SampType:<br>Batch ID: |        |          | de: HG_W_74<br>lo: SW7470A | · ·         |      | Prep Da<br>Analysis Da | te: 10/2/20<br>te: 10/2/20 |             | RunNo: <b>825</b><br>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?<br>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#<br>7439-93-2 | Parameter<br>Lithium |             |                 | Result<br>22.9                        | LOQ<br>5.00 | Units<br>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#<br>7439-93-2 | Parameter<br>Lithium |             |          | Result 27.3                           | LOQ<br>5.00 | Units<br>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<br>10/02/2019 08:30 | Prep Batch<br>668513 | Prep Method<br>EPA 3010A | <b>Dilution</b><br>1 | <b>Analysis Date</b> 10/23/2019 18:42 | <b>By</b><br>LWZ | Analytical Batch<br>669958 |  |
|-------------------------------|----------------------|--------------------------|----------------------|---------------------------------------|------------------|----------------------------|--|
| CAS#<br>7439-93-2             | Parameter<br>Lithium |                          |                      | Result<br>267                         | LOQ<br>5.00      | Units<br>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<br>10/02/2019 08:30 | Prep Batch<br>668513 | Prep Method<br>EPA 3010A | Dilution | <b>Analysis Date</b> 10/23/2019 18:49 | <b>By</b><br>LWZ | Analytical Batch<br>669958 |  |
|-------------------------------|----------------------|--------------------------|----------|---------------------------------------|------------------|----------------------------|--|
| CAS#<br>7439-93-2             | Parameter<br>Lithium | 2.7(3010)                | <u> </u> | Result 22.7                           | LOQ<br>5.00      | Units<br>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<br>10/02/2019 08:30 | Prep Batch<br>668513 | Prep Method<br>EPA 3010A | <b>Dilution</b><br>1 | <b>Analysis Date</b> 10/23/2019 18:52 | <b>By</b><br>LWZ | Analytical Batch<br>669958 |  |
|-------------------------------|----------------------|--------------------------|----------------------|---------------------------------------|------------------|----------------------------|--|
| CAS#<br>7439-93-2             | Parameter<br>Lithium |                          |                      | Result<br>15.5                        | LOQ<br>5.00      | Units<br>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<br>10/02/2019 08:30 | Prep Batch<br>668513 | Prep Method<br>EPA 3010A | Dilution | <b>Analysis Date</b> 10/23/2019 18:59 | <b>By</b><br>LWZ | Analytical Batch<br>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<br>10/02/2019 08:30 | Prep Batch<br>668513 | Prep Method<br>EPA 3010A | <b>Dilution</b><br>1 | <b>Analysis Date</b> 10/23/2019 19:10 | <b>By</b><br>LWZ | Analytical Batch<br>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<br>10/02/2019 08:30 | Prep Batch<br>668513 | Prep Method<br>EPA 3010A | <b>Dilution</b><br>1 | <b>Analysis Date</b> 10/23/2019 19:20 | <b>By</b><br>LWZ | Analytical Batch<br>669958 |  |
|-------------------------------|----------------------|--------------------------|----------------------|---------------------------------------|------------------|----------------------------|--|
| CAS#<br>7439-93-2             | Parameter<br>Lithium |                          |                      | Result 25.8                           | LOQ<br>5.00      | Units<br>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#<br>7439-93-2 | Parameter<br>Lithium |             |          | Result<br>16.6                        | LOQ<br>5.00 | Units<br>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<br>10/02/2019 08:30 | Prep Batch<br>668513 | Prep Method<br>EPA 3010A | <b>Dilution</b><br>1 | <b>Analysis Date</b> 10/23/2019 19:31 | <b>By</b><br>LWZ | Analytical Batch<br>669958 |  |
|-------------------------------|----------------------|--------------------------|----------------------|---------------------------------------|------------------|----------------------------|--|
| CAS#<br>7439-93-2             | Parameter<br>Lithium |                          |                      | Result                                | LOQ<br>5.00      | Units<br>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<br>668670 | Client ID<br>LAB ID |                  |                  | LCS668513<br>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<br>CONTAINERS | COMMENTS: Methanol Preserved Weights<br>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<br>CONTAINERS | COMMENTS: Methanol Preserved Weights<br>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_   |

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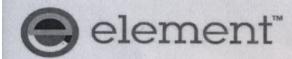


## **SAMPLE RECEIVING CHECKLIST**



| SAMPLE DELIVERY GRO                      | UP 2191001                   | 122     | CHECKLIST   | YES                               | NO |   |  |  |  |  |  |
|--|------------------------------|---------|---|-----------------------------------|----|---|--|--|--|--|--|
| Client PM JLM<br>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<br>271810                 | Received By<br>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

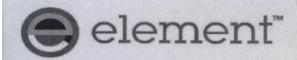
5738 Industrial Rd., Fort Wayne, IN 46825 219-471-7000 Fax 219-471-7777

| 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<br>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,<br>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<br>Element Hand / Mail |
|                         |             |       |        |      |      |         |         | ology for analysis are<br>aterials Technology |   |         |   |                          |               |          | the n               |            | 1       | )      |      | P.O.<br>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<br>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<br>48-H                                  |                          | 72-H<br>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          |
|--|
| 765-747-9000/800-874-3563 Fax 765-747-0228     |
| 629 Washington St. Suite 300 Columbus IN 47204 |

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

| 7 | 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                      | 2 of .      |       | 2     |      |       |       |          |        | Ch              | ain     | of    | C     | usto    | dy       | R   | ecor              | d           |               |                     |           |         | Lab<br>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<br>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 /<br>Conta | Matr        | 300: Fluoride | 10/**6              | *6020 Sub | 7470 Me |            |      |      |          |       | Comments /<br>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,<br>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<br>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<br>GW = Grou   | ing Water   | AQ =  | Aque  | -    |       | = Liq |          | C      | G = G<br>P = Pl |         |       | Iced  | 370     |          | 24-H<br>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



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(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



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(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



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**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<br>< 0.500                                       | 0.100<br>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<br>48.9  | 0.100<br>0.500   | 0.5000<br>50.00  | 0<br>0   | 97.9<br>97.8  | 80<br>80  | 120<br>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<br>48.8  | 0.100<br>0.500   | 0.5000<br>50.00  | 0<br>0   | 99.9<br>97.6  | 80<br>80  | 120<br>120   | 0.4896<br>48.90   | 1.96<br>0.184   | 20<br>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<br>LCSW  LCSD-32670<br>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<br>< 0.500 | PBW         Batch ID: 32670         TestNo: SW6010B         SPK value         SPK Ref Val         %REC           < 0.100<br>< 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<br>lo: SM2540C | ū           |      | Prep Da<br>Analysis Da |           | 019         | RunNo: <b>847</b><br>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>



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## 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<br>Name:                                  | Pivotal En  |                                |            | lling Infor  | mation:             |          |         | PO Numbe              | r.      |        |        |   | Number: | n      | THE RESERVE TO A SECOND SECOND  | Page of Matrix Code  |
|--|---|--------------------------------|------------|--|---------------------|----------|---------|-----------------------|---------|--------|--------|---|---------|--------|---|--|
| Name:<br>ddress:                                 | Terry Elna  |                                |            |  |                     |          |         | Quote Num             | 14      |        | Me     |   | ning    |        | 1   | DW = Drinking Water<br>NW = Waste Water<br>GW = Ground Water |
| ate Zip:   |   |                                |            |  |                     |          |         | Required C            | C Leve  | H      |        |   |         |        | 1   | AQ = Aqueous<br>DT = Other<br>SL = Sludge SOL = Solid        |
| Phone<br>lumber:<br>lumber:<br>E-mail<br>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<br>F = Food SW = Swa<br>NG = Natural Gas<br>NGL = Natural Gas Liquid<br>PW = Produced Water |  |
|  | tions Apply:  | Turn Time                      |            | (Rush tu   | rn times            | Con      | tainer  | Pres.                 |         |        | Re     | queste  | d Tests | 100    | 1.9   | Comments   |
| V<br>ES<br>VFDA<br>AP/RISC                       | □ Drinking Water □ Distribution □ Special □ State □ Other | Standar RUSH 1 Day 2 Day Other |            | will incur<br>surcharg<br>must be<br>approved<br>lab.) | a<br>je and<br>pre- |          | stic,   | 3 24                  |         | CIP SH | 5      |   |         |        |   | & Metals:<br>B,Ca  |
| e ID/Des   | scription   | Collection Date 37             | Time       | Grab /<br>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   |

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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<br>ature      | }  | GV<br>GV                                     | WW = Waste Water GW = Ground Water AQ = Aqueous |  |
| tate Zip:                   |                                  |                        |        |  |               |            |         | Required C  | C Lev | rel                                 |        |           |                    |  | OT   | I = Aqueous<br>= Other<br>= 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<br>Address:          |                                  |                        |        |  |               |            |         | No  |       |                                     | DHL    | / Eleme   | nent / Hand / Mail |  | PW = Produced Water<br>CF = Completion Fluid |   |  |
| Regulation<br>A             | ns Apply:                        | Turn Time              | rd     | (Rush tur                                |               | Con        | tainer  | Pres.   |       |                                     | Re     | questec   | Tests              |  | 96   | Comments  |  |
| W<br>ES<br>A/FDA<br>AP/RISC | Distribution Special State Other | RUSH 1 Day 2 Day Other |        | surcharg<br>must be<br>approved<br>lab.) | e and<br>pre- | tity       | stic,   | HCI, HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub><br>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 /<br>Composite                      | Matrix        | 2 Quantity | P=Pla   | 97  | 7     | 300:Ch                              | 9      |           |                    |  | 3  | A Metals:<br>B. Ca                              |  |
| R-10<br>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)<br>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?<br>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<br>lo: SW6010B | Units: mg/L |      | Prep Da<br>Analysis Da |           | RunNo: <b>848</b><br>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>



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

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><br>SegNo: <b>212</b> |          |      |
|--|--------------------------------|---------|----------------------|-------------|------|--------------|-------------|-------------|--|----------|------|
| Oliche ID. Con-o                             | Daton 1D. 32071                | 1030    | 10. <b>3110010</b> B |             |      | Allalysis Da | .c. 12/20/2 | 013         | Ocq140. 212                            | 20720    |      |
| Analyte                                      | Result                         | PQL     | SPK value            | SPK Ref Val | %REC | LowLimit     | HighLimit   | RPD Ref Val | %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<br>Client ID: PBW | SampType: MBLK Batch ID: 32672 | TestCode: 6020A_W TestNo: SW6020A |             |      | Prep Da<br>Analysis Da | te: <b>12/23/2</b><br>te: <b>1/6/202</b> |             | RunNo: <b>850</b><br>SeqNo: <b>213</b> |          |      |
|---------------------------------------|--------------------------------|-----------------------------------|-------------|------|------------------------|--|-------------|--|----------|------|
| Analyte                               | Result                         | PQL SPK value                     | 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: <b>LCS</b> | TestCode | 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      | TestNo   | 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<br>Client ID: LCSS02 | SampType: LCSD Batch ID: 32672 |      | e: <b>6020A_W</b><br>o: <b>SW6020A</b> | Units: µg/L |      | Prep Dat<br>Analysis Dat | te: <b>12/23/2</b><br>te: <b>1/6/202</b> |             | RunNo: <b>850</b><br>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



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: 19121061-008BMS | SampType: MS    | TestCod | le: <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



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: 32675

| Sample ID: LCSD-32675 Client ID: LCSS02 | SampType: LCSD  Batch ID: 32675 |          | de: <b>HG_W_74</b><br>lo: <b>SW7470A</b> | 70A Units: mg/L |      | Prep Da<br>Analysis Da | te: <b>12/23/2</b> |             | RunNo: <b>848</b><br>SeqNo: <b>212</b> | -        |      |
|---|---------------------------------|----------|--|-----------------|------|------------------------|--------------------|-------------|--|----------|------|
| Analyte                                 | Result                          | PQL      |  | SPK Ref Val     | %REC | •                      | -                  | 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:                                | Entergy. Co               | CK Assessment Monto                          | iiig          |                                 |                         |             |                                 | -                                       | oatchid: F           | X04970                                |                         |      |
|---|---------------------------|--|---------------|---------------------------------|-------------------------|-------------|---------------------------------|---|----------------------|---------------------------------------|-------------------------|------|
| Sample ID:                              |                           | SampType: MBLK                               |               | de: <b>300.0</b>                | Units: mg/L             |             | Prep Da                         |   |                      | RunNo: 84                             |                         |      |
| Client ID:                              | PBW                       | Batch ID: <b>R84976</b>                      | I estiv       | lo: <b>E 300.0</b>              |                         |             | Analysis Da                     | ate: 12/30/2                            | 2019                 | SeqNo: 21:                            | 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                         | ate:                                    |                      | RunNo: 84                             | 976                     |      |
| Client ID:                              | LCSW                      | Batch ID: R84976                             | TestN         | lo: <b>E 300.0</b>              |                         |             | Analysis Da                     | ate: 12/30/2                            | 2019                 | SeqNo: <b>21</b>                      | 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                                     |                      |                                       |                         |      |
|   |                           |  |               |                                 |                         |             |                                 |   |                      |                                       |                         |      |
| Sample ID:                              | LCSD                      | SampType: <b>LCSD</b>                        | TestCoo       | de: <b>300.0</b>                | Units: mg/L             |             | Prep Da                         | ate:                                    |                      | RunNo: 84                             | 976                     |      |
| Sample ID:<br>Client ID:                | LCSD<br>LCSS02            | SampType: LCSD Batch ID: R84976              |               | de: <b>300.0</b>                | Units: mg/L             |             | •                               | ate: 12/30/2                            | 2019                 | RunNo: <b>84</b> : SeqNo: <b>21</b> : |                         |      |
|   |                           |  |               | lo: <b>E 300.0</b>              | Units: mg/L SPK Ref Val | %REC        | •                               | ate: 12/30/2                            | 2019<br>RPD Ref Val  |                                       |                         | Qual |
| Client ID:                              |                           | Batch ID: <b>R84976</b>                      | TestN         | lo: <b>E 300.0</b>              | J                       | %REC<br>109 | Analysis Da                     | ate: 12/30/2                            |                      | SeqNo: 21                             | 29259                   | Qual |
| Client ID: Analyte Fluoride             |                           | Batch ID: R84976  Result                     | PQL<br>0.0500 | lo: <b>E 300.0</b><br>SPK value | SPK Ref Val             |             | Analysis Da                     | ate: <b>12/30/2</b><br>HighLimit<br>110 | RPD Ref Val          | SeqNo: 21:                            | 29259<br>RPDLimit<br>15 | 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 | ate: <b>12/30/2</b><br>HighLimit<br>110 | RPD Ref Val<br>2.027 | SeqNo: <b>21</b> :<br>%RPD<br>7.03    | 29259  RPDLimit  15     | Qual |
| Client ID: Analyte Fluoride  Sample ID: | LCSS02<br>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 ate: 12/30/2              | RPD Ref Val<br>2.027 | SeqNo: 21: %RPD 7.03 RunNo: 84:       | 29259  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 | le: <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



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

**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#<br>7439-93-2 | Parameter<br>Lithium |             |                 | Result 23.2                           | LOQ<br>5.00 | Units<br>ug/L    |

| CCD 2 | 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#<br>7439-93-2 | Parameter<br>Lithium |             |                 | Result<br>29.7                        | LOQ<br>5.00 | Units<br>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<br>12/30/2019 09:30 | Prep Batch<br>674413 | Prep Method<br>EPA 3010A | <b>Dilution</b><br>1 | <b>Analysis Date</b> 01/03/2020 22:01 | <b>By</b><br>LWZ | Analytical Batch<br>674717 |  |
|-------------------------------|----------------------|--------------------------|----------------------|---------------------------------------|------------------|----------------------------|--|
| CAS#<br>7439-93-2             | Parameter<br>Lithium |                          |                      | Result<br>23.1                        | LOQ<br>5.00      | Units<br>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<br>12/30/2019 09:30 | Prep Batch<br>674413 | Prep Method<br>EPA 3010A | <b>Dilution</b><br>1 | <b>Analysis Date</b> 01/03/2020 22:12 | <b>By</b><br>LWZ | Analytical Batch<br>674717 |  |
|-------------------------------|----------------------|--------------------------|----------------------|---------------------------------------|------------------|----------------------------|--|
| CAS#<br>7439-93-2             | Parameter<br>Lithium |                          |                      | Result<br>38.1                        | LOQ<br>5.00      | Units<br>ug/L              |  |

| CCR-8 MS   | Collect Date | 12/18/2019 17:30 | LAB ID | 21912264409 |   |
|------------|--------------|------------------|--------|-------------|---|
| CCR-6 IVIS | Receive Date | 12/26/2019 09:24 | Matrix | Water       | l |

## **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<br>12/30/2019 09:30 | Prep Batch<br>674413 | Prep Method<br>EPA 3010A | <b>Dilution</b><br>1 | <b>Analysis Date</b> 01/03/2020 22:36 | <b>By</b><br>LWZ | Analytical Batch<br>674717 |  |
|-------------------------------|----------------------|--------------------------|----------------------|---------------------------------------|------------------|----------------------------|--|
| CAS#<br>7439-93-2             | Parameter<br>Lithium |                          |                      | Result<br>17.8                        | LOQ<br>5.00      | Units<br>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#<br>7439-93-2 | Parameter<br>Lithium |             |                 | Result<br>7.82                        | LOQ<br>5.00 | Units<br>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<br>12/30/2019 09:30 | Prep Batch<br>674413 | Prep Method<br>EPA 3010A | <b>Dilution</b><br>1 | <b>Analysis Date</b> 01/03/2020 22:47 | <b>By</b><br>LWZ | Analytical Batch<br>674717 |  |
|-------------------------------|----------------------|--------------------------|----------------------|---------------------------------------|------------------|----------------------------|--|
| CAS#<br>7439-93-2             | Parameter<br>Lithium |                          |                      | Result<br>24.9                        | LOQ<br>5.00      | Units<br>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           |
| CAC#             |            |             |          |                  |     |                  |
| 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<br>12/30/2019 09:30 | Prep Batch<br>674413 | Prep Method<br>EPA 3010A | <b>Dilution</b><br>1 | <b>Analysis Date</b> 01/03/2020 22:57 | <b>By</b><br>LWZ | Analytical Batch<br>674717 |  |
|-------------------------------|----------------------|--------------------------|----------------------|---------------------------------------|------------------|----------------------------|--|
| CAS#<br>7439-93-2             | Parameter<br>Lithium |                          |                      | Result<br>19.6                        | LOQ<br>5.00      | Units<br>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<br>674717 |               | MB674413<br>1997108 |              | LCS674413<br>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           | 01/03/2020 21:44     |          |         |          |  |  |
| EPA 3010A                  | Matrix        | Water               |              | Water                |          |         |          |  |  |
| EPA 602                    | ΛP            | Units               | Spike Result |                      | 0/. D    | Control |          |  |  |
| EPA 002                    | VB            | Result              | LOQ          | Added                | Nesuit   | /0 K    | Limits%R |  |  |
| Lithium                    | 7439-93-2     | ND                  | 5.00         | 250                  | 248      | 99      | 80 - 120 |  |  |

| Analytical Batch | Client ID     | CCR-8           |          | CCR-8 N  | 1S              | CCR-8 MSD   |                  |       |        |      |     |       |
|------------------|---------------|-----------------|----------|----------|-----------------|-------------|------------------|-------|--------|------|-----|-------|
| 674717           | LAB ID        | 21912264408     |          | 2191226  | 4409            | 21912264410 |                  |       |        |      |     |       |
| Prep Batch       | Sample Type   | SAMPLE          |          | MS       |                 |             |                  | MSD   |        |      |     |       |
| 674413           | Prep Date     | 12/30/2019 09:3 | 12/30/20 | 19 09:30 |                 |             | 12/30/2019 09:30 |       |        |      |     |       |
| Prep Method      | Analysis Date | 01/03/2020 22:1 | 01/03/20 | 20 22:15 | 01/03/20        | 20 22:19    |                  |       |        |      |     |       |
| EPA 3010A        | Matrix        | Water           |          | Water    |                 |             |                  | Water |        |      |     |       |
| EDA 602          | Units         |                 | ug/L     | Spike    | Dogult          | 0/ D        | Control          | Spike | Result | 0/ D | DDD | RPD   |
| EPA 002          | EPA 6020B     |                 |          | Added    | Added Result %R |             | Limits%R         | Added | Nesuit | %K   | KPD | 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

| SUB CONTI | RATOR: GCAL             | COMPANY:         | Pace Analyti  | ical (FKA GCAL)               | SPECIAL INSTRUCTIONS / | COMMENTS:               |   |                |
|-----------|-------------------------|------------------|---------------|-------------------------------|------------------------|-------------------------|---|----------------|
| DDRESS:   | 7979 GSRI Avenu         | ie               |               |                               | 6020-Lithium           |                         |   |                |
| ΠΥ, STAT  | E, ZIP: Baton Rouge, LA | 70820            |               |                               |                        |                         |   |                |
| HONE (2   | 225) 769-4900 FAX: (22  | 5) 767-5717 EMA  | II.:          |                               |                        |                         |   |                |
| CCOUNT    | #:                      |                  |               |                               |                        |                         |   |                |
| ITEM #    | SAMPLE ID               | CLIENT SAMPLE ID | BOTTLE TYPE   | MATRIX                        | DATE COLLECTED         | NUMBER OF<br>CONTAINERS | COMMENTS: Methanol Preserved Weights<br>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)    | )                |               |                               |                        |                         |   |                |
| _         | 19121061-002C           | CCR-2            | 250HDPEHNO3   | Aqueous                       | 12/17/2019 3:45:00 PM  | 1                       |   | 72             |
| 2         | 6020_W_SUB (SW6020A)    | )                |               |                               |                        |                         |   |                |
| _         | 19121061-003C           | CCR-3            | 250HDPEHNO3   | Aqueous                       | 12/17/2019 2:20:00 PM  | 1                       |   | 73             |
| 3         | 6020_W_SUB (SW6020A)    | )                | •             | -                             |                        |                         |   |                |
|           | 19121061-004C           | CCR-4            | 250HDPEHNO3   | Aqueous                       | 12/17/2019 12:30:00 PM | 1                       |   | -4             |
| 4         | 6020_W_SUB (SW6020A)    | )                |               |                               |                        |                         |   | •              |
| -         | 19121061-005C           | CCR-5            | 250HDPEHNO3   | Aqueous                       | 12/19/2019 7:40:00 AM  | 1                       |   | 75             |
| 5         | 6020_W_SUB (SW6020A)    | )                |               | 1                             |                        |                         |   |                |
| ,         | 19121061-006C           | CCR-6            | 250HDPEHNO3   | Aqueous                       | 12/19/2019 9:10:00 AM  | 1                       |   | +6             |
| 6         | 6020_W_SUB (SW6020A)    | )                |               |                               |                        | •                       |   |                |
| 7         | 19121061-007C           | CCR-7            | 250HDPEHNO3   | Aqueous                       | 12/19/2019 10:45:00 AM | 1                       |   | 77             |
| ,         | 6020_W_SUB (SW6020A)    | )                |               |                               |                        |                         |   |                |
| 0         | 19121061-008C           | CCR-8            | 250HDPEHNO3   | Aqueous                       | 12/18/2019 5:30:00 PM  | 3                       |   | 78,9           |
| 8         | 6020_W_SUB (SW6020A)    | )                |               |                               |                        |                         |   |                |
| 9         | 19121061-009C           | CCR-9            | 250HDPEHNO3   | Aqueous                       | 12/18/2019 4:15:00 PM  | 1                       |   | 11-1600        |
| 9         | 6020_W_SUB (SW6020A)    | )                |               |                               |                        |                         |   | <b>D</b> " · · |
|           |                         | 26-19            |               |                               |                        |                         |   |                |
| nquished  | Brunt Holling Date 12   | Time: 0700       | Received By:  | Date:                         | 16 Time 0700           |                         | REPORT TRANSMITTAL DESIRED:   |                |
| quished   | By: Date:               | lime:            | Received      | Date: 12-2                    | 6-19 Time 0924         | ☐ HARDCOE               | PY (extra cost)   |                |
| quished   |                         | 7 Time:          | Received B    | Date:                         | Time:                  |                         | FOR LAB USE ONLY  |                |
|           | TATE SIMILATE           | Buch             | North C       | 3-100 E                       | 1-JBD [7]              | Temp of samp            |   |                |
|           | TAT: Standard           | RUSH             | Next BD       | 2nd BD                        | 3rd BD                 | Comments:               | 14CPW E34   |                |
|           |                         |                  | Note: RUSH re | equests will incur surcharges |                        |                         |   |                |
|           |                         |                  |               |                               |                        |                         |   |                |
|           |                         |                  |               |                               |                        | F                       | age 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   | RATOR GCAL             | COMPANY;           | Pace Analyti | cal (FKA GCAL) |                        | COMMENTS:               |   |    |
|-------------|------------------------|--------------------|--------------|----------------|------------------------|-------------------------|---|----|
| ADDRESS:    | 7979 GSRI Ave          | nue                |              |                | 6020-Lithium           |                         |   |    |
| CITY, STATI | E, ZIP: Baton Rouge, L | A 70820            |              |                |                        |                         |   |    |
| PHONE (2    |                        | 225) 767-5717 EMAI | L:           |                |                        |                         |   |    |
| ACCOUNT#    | 2 2                    | 220) 101 0111      |              |                |                        |                         |   |    |
| ITEM #      | SAMPLE ID              | CLIENT SAMPLE ID   | BOTTLE TYPE  | MATRIX         | DATE COLLECTED         | NUMBER OF<br>CONTAINERS | COMMENTS: Methanol Preserved Weights<br>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)                |              |                |                        |                         |   |    |
| Sec.        | 19121061-011C          | CCR-11             | 250HDPEHNO3  | Aqueous        | 12/18/2019 1:00:00 PM  | 1                       |   | (0 |
| 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)                |              |                |                        |                         |   |    |
|             | 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)                |              |                |                        |                         |   |    |
| 16          | 19121061-016C          | FB1                | 250HDPEHNO3  | Aqueous        | 12/18/2019 5:00:00 PM  | 1                       |   |    |
| 16          | 6020_W_SUB (SW602      | 0A)                | *            | 767            |                        |                         |   |    |

|                  |         | 12-26-19         | 1           |              |                    |                   |              |                       |             |                       |        |  |
|------------------|---------|------------------|-------------|--------------|--------------------|-------------------|--------------|-----------------------|-------------|-----------------------|--------|--|
| Relinquished By: | Holling | Date: 12/20/2019 | Time: 0700  | Received By: | de                 | Date: 12-26-19    | Time: 0700   |                       |             | TAL DESIRED:          | _      |  |
| Relinquished By: |         | Date: /2-26/9    | Time: (2924 | Received B   | Ldn                | Date: 26-1        | Time: 0924 - | HARDCOPY (extra cost) | ☐ FAX       | ☐ EMAIL               | ONLINE |  |
| Relinquished By: |         | Date:            | Time:       | Received By  | 0                  | Date:             | Time:        | Temp of samples       | FOR LAB USE | ONLY Attempt to Cool? | 121    |  |
| TAT:             | Stand   | ard 🗀            | RUSH        |              |                    |                   | D 🗆          | Comments:             | 14CPA       | 1 53                  | 4      |  |
|                  |         |                  |             | Note: 1      | RUSH requests will | incur surcharges! |              |                       |             |                       |        |  |
|                  |         |                  |             |              |                    |                   |              |                       |             |                       |        |  |

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## **SAMPLE RECEIVING CHECKLIST**



| SAMPLE DELIVERY GROU                     | JP 2191226  | 544     | CHECKLIST  |                                   |   |   |  |  |  |
|--|-------------|---------|--|-----------------------------------|---|---|--|--|--|
| Client PM JLM<br>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<br>271810                 | Received By |         | COC relinquished and complete (including sample      | IDs, collect times, and sampler)? | ~ |   |  |  |  |
| 271810 Savage, Tiffany R                 |             |         | All containers received in good condition and within | n hold time?                      | ~ |   |  |  |  |
| Line Item(s)  Receive Date(s)            |             |         | All sample labels and containers received match the  | ne 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?                       |   | ~ |  |  |  |
| COOLERS                                  |             |         | DISCREPANCIES  | LAB PRESERVATIONS                 |   |   |  |  |  |
| Airbill Thermomet                        | er ID: E34  | Temp °C | None   | None                              |   |   |  |  |  |
|  |             | 1.9     |  |                                   |   |   |  |  |  |
|  |             |         |  |                                   |   |   |  |  |  |
|  |             |         |  |                                   |   |   |  |  |  |
|  |             |         |  |                                   |   |   |  |  |  |
|  |             |         |  |                                   |   |   |  |  |  |
|  |             |         |  |                                   |   |   |  |  |  |
|  |             |         |  |                                   |   |   |  |  |  |
| NOTES                                    |             |         |  |                                   |   |   |  |  |  |
|  |             |         |  |                                   |   |   |  |  |  |

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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
Entergy Louisiana, L.L.C.
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)

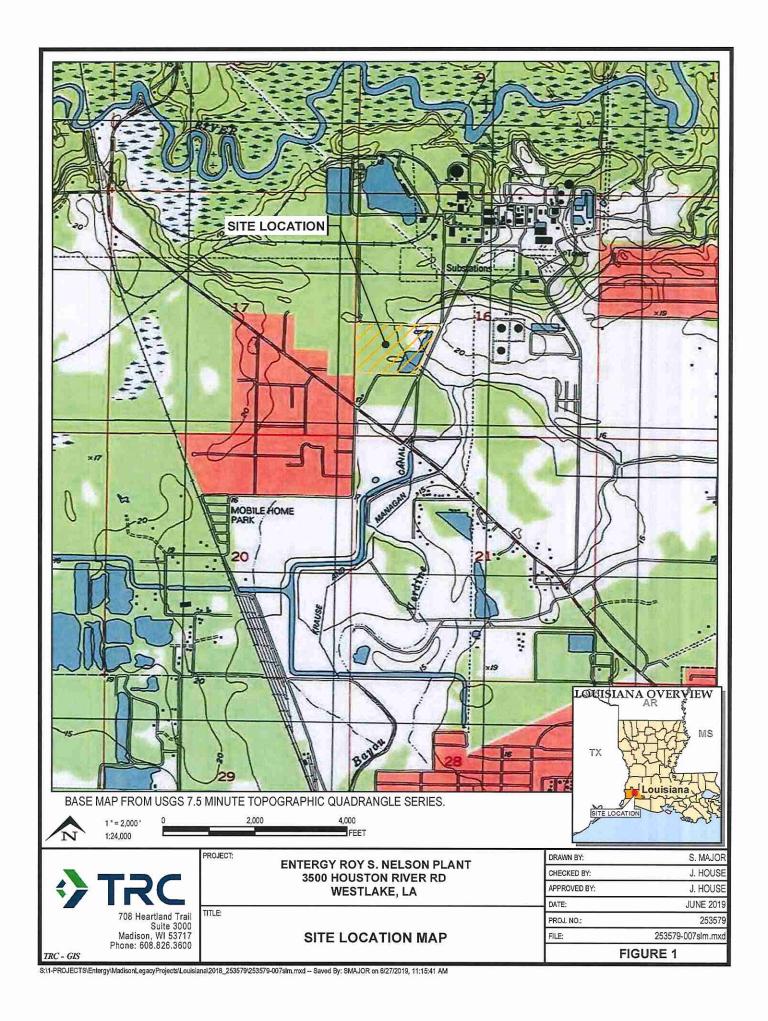
Table 1
Lower Sand Unit Groundwater Elevations (Dec 2018)

| 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                           |

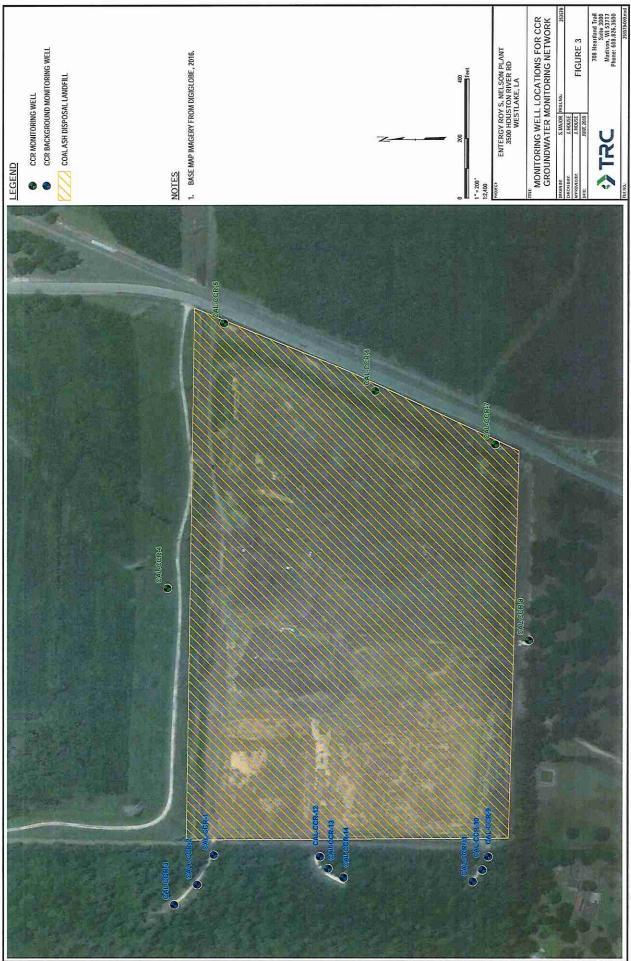
Prepared by: J.House (6/26/2019)

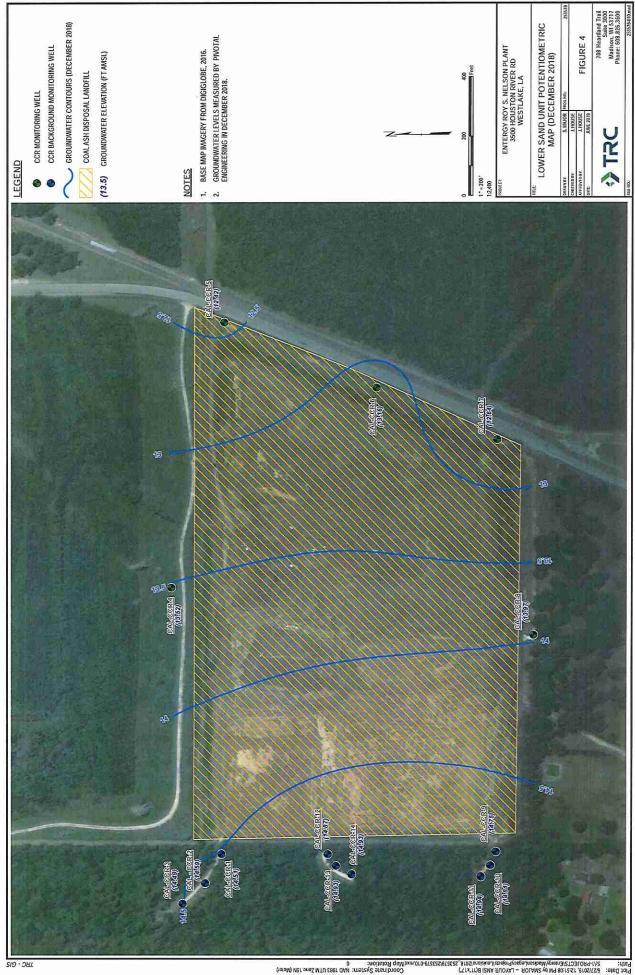
Checked by:

| 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   |









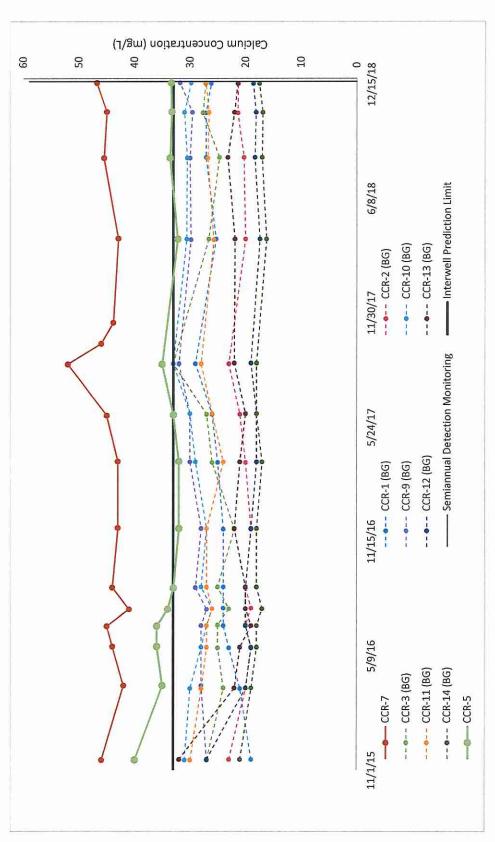


Figure 5: CCR background groundwater monitoring wells (dotted lines) and monitoring wells CCR-5 and CCR-7 (solid line) calcium concentration time trends.

Figure 5 Calcium Time-Trend Plot

Prepared by: J. House (6/26/2019) Checked by:

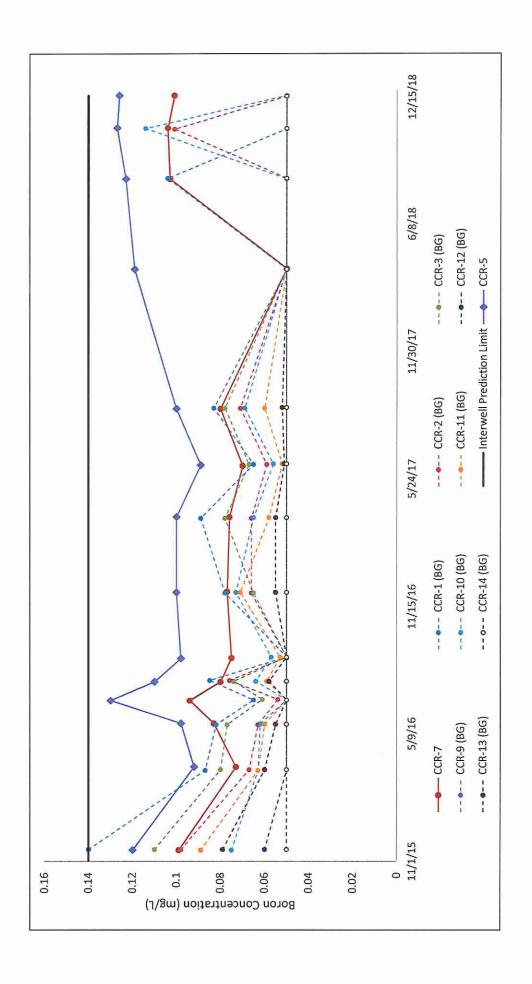
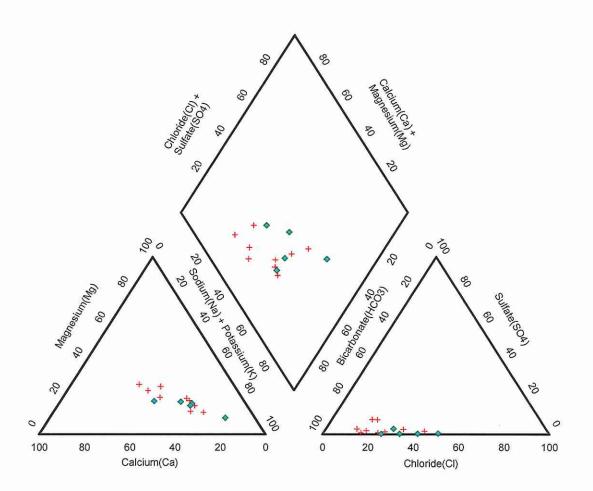


Figure 7: CCR background groundwater monitoring wells (dotted lines) and monitoring well CCR-7 (solid line) sulfate concentration time trends.

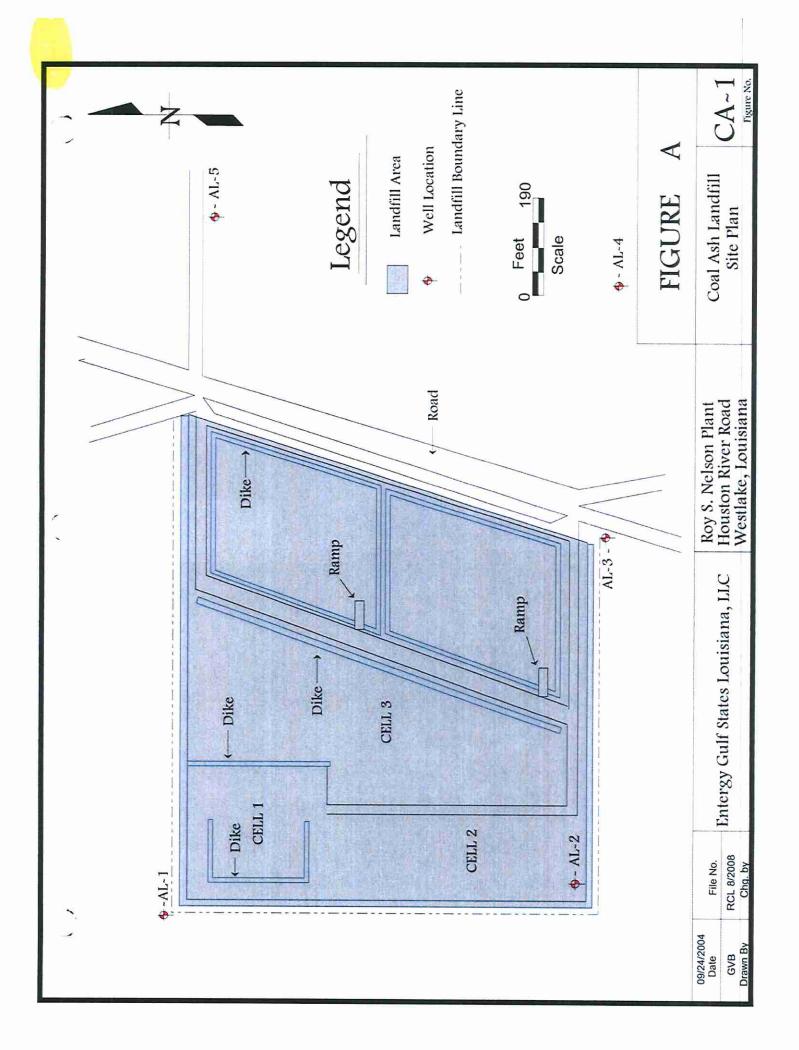
Figure 7
Sulfate Time-Trend Plot

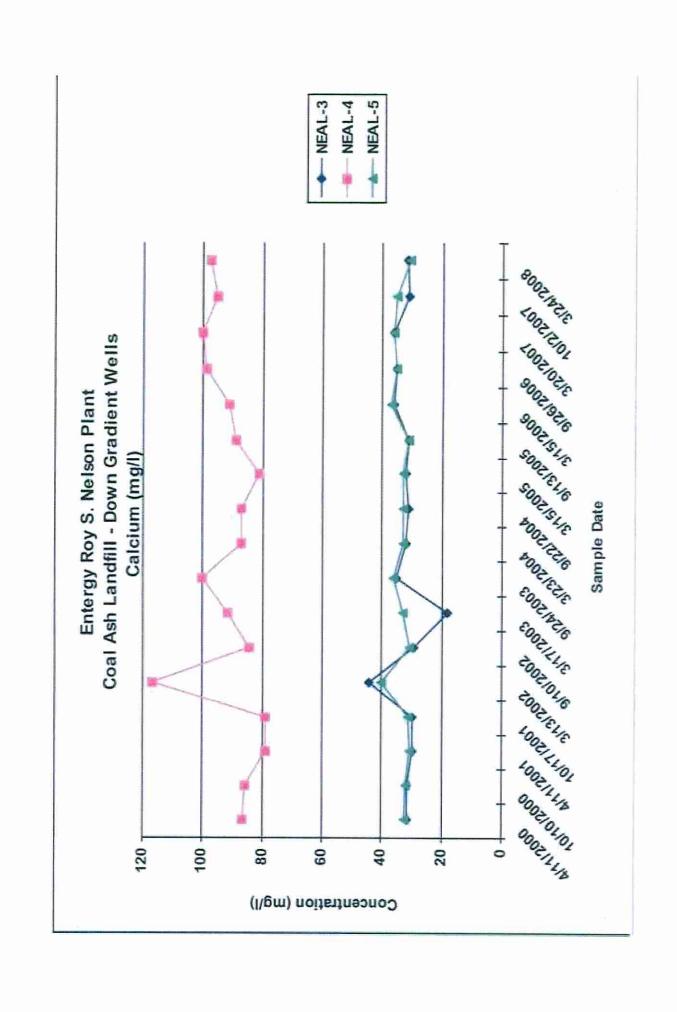
Prepared by: J. House (6/26/2019) Checked by:

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

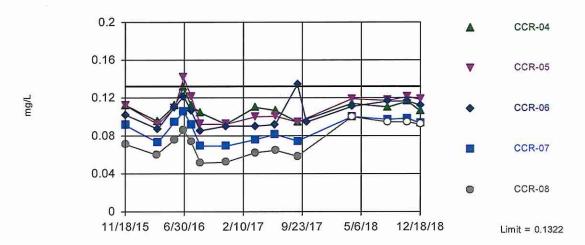
| Parameter        | 2017 Interwell Limit | Limit | 2017 SSI  | 12/18 Interwell Limit | ll Limit | 12/18 SSI                  |
|------------------|----------------------|-------|-----------|-----------------------|----------|----------------------------|
| Boron (mg/l)     | Non-parametric       | 0.14  |           | Non-parametric        | 0.1322   |                            |
| Calcium (mg/l)   | Non-parametric       | 33    | CCR-7: 46 | Non-parametric        | 33       | CCR-5: 33.4<br>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.

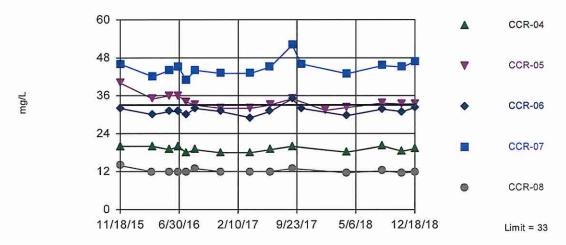
Constituent: Boron Analysis Run 1/15/2019 11:24

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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.

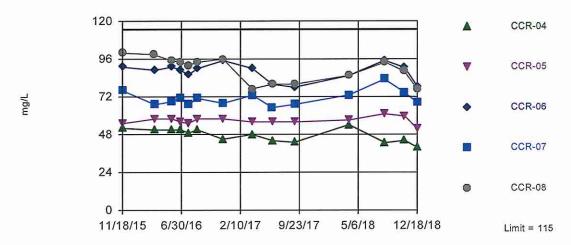
Constituent: Calcium Analysis Run 1/15/2019 11:24

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

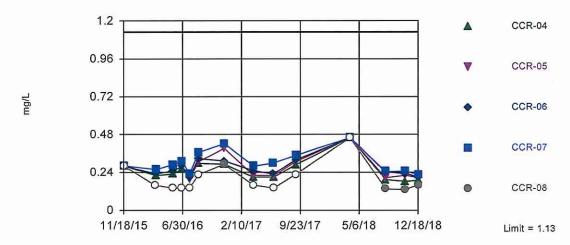
Sanitas™ v.9.6.12 Sanitas software licensed to Eagle Environmental, Inc. UG Hollow symbols indicate censored values.

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.

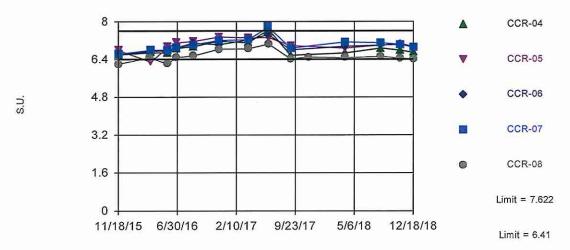
Constituent: Fluoride Analysis Run 1/15/2019 11:24

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.

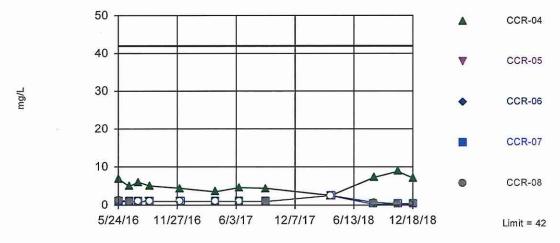
Constituent: pH Analysis Run 1/15/2019 11:24

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.

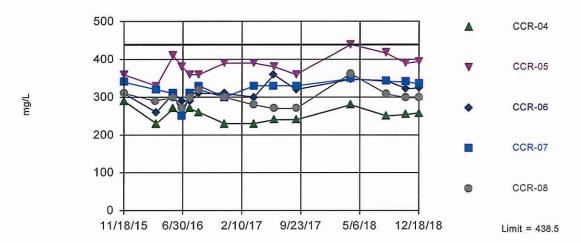
Constituent: Sulfate Analysis Run 1/15/2019 11:25

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