Prepared for

Gulf Power Company
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Pensacola, Florida 32520

ASSESSMENT OF CORRECTIVE MEASURES

GULF POWER COMPANY, PLANT CRIST GYPSUM STORAGE AREA

Prepared by

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Geosyntec
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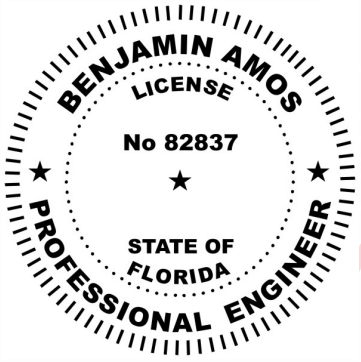
CERTIFICATION STATEMENT

This *Assessment of Corrective Measures Report, Gulf Power Company – Plant Crist – Gypsum Storage Area* has been prepared in general accordance with the requirements of the United States Environmental Protection Agency coal combustion residuals rule (40 Code of Federal Regulations [CFR] Part 257, Subpart D) under the supervision of a State of Florida licensed Professional Engineer and Professional Geologist with Geosyntec Consultants, Inc.



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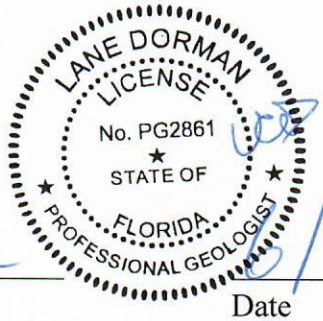

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1.0 INTRODUCTION

1.1 Purpose and Scope

On behalf of Gulf Power Company (Gulf Power), Geosyntec Consultants, Inc. (Geosyntec) has prepared this *Assessment of Corrective Measures Report* (Report) for Gulf Power's Plant Crist (Plant Crist or Site) coal combustion residuals (CCR) unit, Gypsum Storage Area (GSA).

Pursuant to 40 Code of Federal Regulations [CFR] §257.96 (CCR Rule), the Assessment of Corrective Measures (ACM) was initiated on January 13, 2019[1] in response to detections of two Appendix IV constituents (cobalt and total radium) at statistically significant levels (SSLs).

The purpose of this Report is to document the assessment of potential corrective measures to address the observed SSLs for cobalt and total radium at the Site.

1.2 Requirements

In accordance with the CCR Rule, this Report provides an assessment of potential corrective measures for groundwater remediation at the Plant Crist GSA. The requirements of the ACM, as outlined in the CCR Rule, include:

(1) The performance, reliability, ease of implementation, and potential impacts of appropriate potential remedies, including safety impacts, cross-media impacts, and control of exposure to any residual contamination;

(2) The time required to begin and complete the remedy; and

(3) The institutional requirements, such as state or local permit requirements or other environmental or public health requirements that may substantially affect implementation of the remedy(s).

[1] For reference, the need for a 60-day extension to complete the ACM due to site-specific considerations was documented on April 12, 2019 and will be included in the 2019 Annual Report.

2.0 SITE BACKGROUND

2.1 Site Description

Plant Crist is an active coal-fired power plant located at 11999 Pate Street in Pensacola Escambia County, Florida. A Site location map is provided in **Figure 1**. The Site is bordered by Governors Bayou to the east and Clear Creek to the northeast. Land use around the Site is undeveloped areas or a mixture of residential and commercial, as well as local roadways. The active coal-operated power plant occupies the eastern half of the Site. The western half of the Site consists of undeveloped land, former and active permitted storage areas, and disposal basins for materials such as fly ash, bottom ash, and stormwater runoff.

Site topography ranges from approximately 120 feet (ft) relative to the North American Vertical Datum of 1988 (NAVD88) on the western portions of the Site and along Pate Street to approximately 5 ft NAVD88 near Clear Creek to the north and Governor's Bayou to the east.

2.2 CCR Unit Description

The GSA, also referred to as the gypsum storage pond, which is the only CCR pond at the Site, occupies approximately 14.3 acres and is constructed of an engineered composite liner. Decant water from the GSA is managed through gravity feed pipes to two lined ponds, the Process Sedimentation Pond and the Process Return Water Pond. The GSA and associated infrastructure (gypsum processing buildings, the two adjacent lined ponds, and piping associated with each) were constructed and became operational in 2010. The GSA is bounded to the north/northeast by Clear Creek, to the east by Governor's Bayou, to the south by the facility, and to the west by a permitted solid waste unit.

2.3 Hydrogeologic Site Conditions

The Sand and Gravel Aquifer, the uppermost aquifer underlying the Site, includes Pleistocene terrace deposits, the Pleistocene Citronelle Formation, and the upper portion of the Pliocene/Miocene coarse clastics. The Sand and Gravel Aquifer has been subdivided into three major zones (listed in order from ground surface): (i) the surficial zone; (ii) the low permeability zone; and (iii) the main producing zone (Roaza et al., 1991).

The surficial zone consists of the upper most layer of sand and gravel, although layers of silt and clay may also occur within this zone. Beneath the surficial zone is the low

permeability zone. The low permeability zone is the first substantial, more regionally continuous lower permeability layer encountered within the Sand and Gravel Aquifer (Roaza et al., 1991). This layer generally consists of a poorly sorted mixture of sand, silt, and clay, although actual lithology is variable. As a semi-confining interval, the low permeability zone limits vertical groundwater flow between the surficial zone above and the main producing zone below (Roaza et al., 1991). The main producing zone is lithologically similar to the surficial zone with moderate to well sorted quartz sands and gravels with interbedded layers of sandy clay and clay. Groundwater in the main producing zone is under semi-confined conditions due to the nature of the low permeability zone that lies above and a regionally extensive confining unit that lies underneath (Richards, 2001).

Site-specific lithology in the uppermost aquifer (i.e., the Sand and Gravel Aquifer) consists primarily of silty or clayey sands interbedded with well-graded sands and gravels. Groundwater in the uppermost aquifer at the Site is generally encountered between 15 and 4 ft NAVD88 in a laterally extensive water-bearing zone of fine to coarse sand. This aquifer is considered the uppermost aquifer for groundwater monitoring purposes. The GSA CCR-groundwater monitoring wells (MW-200 to MW-206; see **Figure 2**) were screened in the uppermost aquifer between approximately 6 and -14 ft NAVD88 (see **Table 1**).

2.4 Groundwater Monitoring Activities

2.4.1 General Groundwater Conditions

Pursuant to the CCR Rule, in 2015/2016 Gulf Power installed and certified a CCR groundwater monitoring system for the GSA within the uppermost aquifer at the Site (Southern Company, 2018). Monitoring wells in the GSA groundwater monitoring network are listed below:

- Background: MW-100, MW-101, MW-107, MW-108, MW-306, and MW-307; and
- Downgradient: MW-200, MW-201, MW-202, MW-203, MW-204, MW-205, and MW-206.

The locations of the CCR monitoring wells and piezometers are presented on **Figure 2**, with construction details provided in **Table 1**.

In accordance with the CCR Rule, Gulf Power initiated an assessment monitoring program for the GSA in March 2018. Samples collected during the semi-annual

assessment monitoring events were analyzed for all Appendix III constituents and those Appendix IV constituents detected in the March 2018 assessment monitoring event. Statistical analysis of the CCR-groundwater monitoring data identified SSLs of two Appendix IV constituents (Geosyntec, 2019a). The following SSLs were identified at the GSA:

- radium 226 and 228 combined (total radium): MW-200, MW-201, MW-203, MW-204, and MW-206; and
- cobalt: MW-204.

Accordingly, this Report focuses on evaluation of applicable remedial options for total radium and cobalt.

2.4.2 Nature and Extent

Following identification of SSLs, and pursuant to the CCR Rule, Gulf Power initiated characterization activities to evaluate the nature and extent of cobalt and total radium impacts.

Delineation Sampling

In February 2019, Gulf Power sampled groundwater from MW-205 in the vicinity of MW-204 to delineate the horizontal nature and extent of cobalt. Construction details for MW-205 are provided in **Table 1** and its location is shown in **Figure 3**. Vertical delineation efforts for cobalt are ongoing in the vicinity at MW-204.

To delineate the nature and extent of total radium at the GSA, samples were collected in February, March, and April 2019 in the vicinities of monitoring wells MW-200, MW-201, MW-203, MW-204, and MW-206, as described below:

- To delineate the horizontal and vertical extent of total radium at MW-200, Gulf Power installed and sampled PZ-200S and PZ-200D, respectively.
- To delineate the horizontal and vertical extent of total radium at MW-201, Gulf Power sampled GSA-2S and installed/sampled PZ-201D, respectively.
- To delineate the horizontal extent of total radium at MW-203, Gulf Power sampled MW-202.

- To delineate the horizontal extent of total radium at MW-204, Gulf Power sampled MW-205.

- To delineate the horizontal and vertical extent of total radium at MW-206, Gulf Power sampled GSA-2S and GE-1D, respectively.

Vertical delineation efforts for total radium are ongoing in the vicinity of MW-203 and MW-204. Construction information for monitoring wells and piezometers used for delineation are provided in **Table 1** and locations are shown in **Figure 3**.

Groundwater samples were collected in accordance with the methods described in the *2018 Annual Groundwater Monitoring Report* (Geosyntec, 2019a) and analyzed for all Appendix III and those Appendix IV parameters detected in the 2018 assessment monitoring scan event (Geosyntec, 2019a). Laboratory analyses were performed by TestAmerica Laboratories, Inc. (TAL). TAL is accredited by the National Environmental Laboratory Accreditation Program (NELAP) and maintains a NELAP certification for all parameters analyzed for this project. Data were validated consistent with the methods presented in the *2018 Annual Groundwater Monitoring Report* (Geosyntec, 2019a). A summary of results is presented in **Table 2**. Laboratory, data validation, and field sampling reports are included in **Appendix A**.

Delineation Results

Groundwater results from MW-205 included cobalt concentrations approximately 3-fold below the GWPS of 0.006 milligrams per liter (mg/L), indicating complete horizontal delineation of the cobalt SSL at MW-204. Vertical delineation activities are currently being pursued by Gulf Power. Other detected Appendix IV constituents, including total radium, were below the applicable GWPSs.

Delineation activities of total radium SSLs are summarized below:

- *MW-200:* Groundwater results from PZ-200D were below the minimum detectable concentration for total radium indicating complete vertical delineation of total radium at MW-200. The concentration of total radium at PZ-200S was 6.56 picocuries per liter (pCi/L), slightly above the GWPS of 5 pCi/L. Although the concentration at this well during this individual sampling event was above the GWPS, additional data are needed to evaluate temporal concentration variability at PZ-200S given data trends at MW-200. In addition, the detected total radium is likely due, in whole or in part, to naturally occurring radium as documented previously for the Site (LBG-Guyton, 1998; FDEP, 1999). Additional evaluations

are currently being considered by Gulf Power to refine the need for horizontal delineation of total radium near MW-200. Other detected Appendix IV constituents at PZ-200D and PZ-200S were below applicable GWPSs.

- *MW-201:* Groundwater results from PZ-201D were below the minimum detectable concentration for total radium and approximately 2-fold below the GWPS of 5 pCi/L for total radium in GSA-2S. These results indicate complete horizontal and vertical delineation of the total radium at MW-201. Other detected Appendix IV constituents were below the applicable GWPSs in PZ-201D and GSA-2S.

- *MW-203:* Groundwater results from MW-202 included total radium concentrations approximately 2-fold below the GWPS of 5 pCi/L indicating complete horizontal delineation of the total radium at MW-203. Vertical delineation activities are currently being pursued by Gulf Power. Other detected Appendix IV constituents at MW-202 were below the applicable GWPSs.

- *MW-204:* Groundwater results from MW-205 included total radium concentrations approximately 1.5-fold below the GWPS of 5 pCi/L indicating complete horizontal delineation of the total radium at MW-204. Vertical delineation activities are currently being pursued by Gulf Power. Other detected Appendix IV constituents at MW-205, including cobalt (discussed above), were below the applicable GWPSs.

- *MW-206:* Groundwater results from GE-1D and GSA-2S included total radium concentrations approximately 8- to 2-fold below the GWPS of 5 pCi/L for total radium in GSA-2S. These results indicate complete horizontal and vertical delineation of the total radium at MW-206. Other detected Appendix IV constituents at GE-1D and GSA-2S were below the applicable GWPSs.

Although vertical delineation of the nature and extent of cobalt and/or total radium at select locations is ongoing at Plant Crist, adequate data are available to evaluate viable corrective measures.

2.5 Remedial History

As reported by Southern Company (2017) and Geosyntec (2019a), and pursuant to Consent Order OGC No. 16-1250 (Consent Order) between Gulf Power and the Florida Department of Environmental Protection (FDEP), Gulf Power implemented the following remedial actions in the vicinity of the GSA:

- repaired GSA-related infrastructure as a source control measure, including slip lining the piping systems between the GSA, the Process Sedimentation Pond and Process Return Pond; and

- installed a groundwater pump and treat system downgradient of the GSA to promote hydraulic containment and removal of groundwater impacts resulting from the unpermitted discharge from GSA infrastructure. Extracted groundwater is treated onsite and disposed through permitted deep injection wells. Groundwater extraction and treatment are ongoing downgradient of the GSA, and Gulf Power plans to continue operating the groundwater pump and treat system in 2019.

3.0 ACM OBJECTIVES AND EVALUATION PROCEDURE

3.1 Source Control

As discussed in Section 2.5, source control at Plant Crist was previously completed through repairs to the GSA infrastructure pursuant to the Consent Order, in addition to the engineered composite liner for the GSA.

3.2 Objectives of Groundwater Remedial Technology Evaluation

The objective of the remedial technology evaluation at Plant Crist is to assess the applicability of potential remedial technologies to address cobalt and total radium concentrations above remedial goals.

3.3 Evaluation Procedure Overview

The remedial technology evaluation process involved a step-wise identification, screening, and evaluation of potentially applicable remedial technologies, culminating in development and more detailed analysis of corrective measures alternatives for groundwater. First, several remedial technologies were screened for general technology advantages, limitations, and applicability to important Site-specific conditions (see **Table 3**). Technologies retained from the initial screening level evaluation were utilized to develop groundwater corrective measures alternatives, some of which consist of a combination of remedial technologies. The corrective measures alternatives were subject to a detailed Site-specific analysis, as summarized in **Table 4**, based on assessment of corrective measures criteria presented in 40 CFR §257.96. The remedy selection criteria in 40 CFR §257.97 were also considered as part of the ACM, as summarized in **Table 5**. The criteria utilized for the detailed analyses are briefly described herein.

4.0 ASSESSMENT OF CORRECTIVE MEASURES

4.1 Remedial Technology Screening Evaluation

The remedial technology screening evaluation for applicability of potential groundwater remedies downgradient of the GSA is presented in **Table 3**. The initial screening process focused on remedial technologies that are broadly applicable to CCR-related constituents and/or applied at CCR units, including the following:

- Monitored Natural Attenuation (MNA)
- Hydraulic Containment (Pump and Treat)
- In-Situ Injection
- Permeable Reactive Barrier (PRB)
- Vertical Barrier Wall (Slurry Wall)
- Phytoremediation/TreeWell® system

Table 3 provides a description of each of the above groundwater remedial technologies, advantages and limitations associated with each technology, and Site-specific considerations relevant to the potential for remedial success.

Based on the evaluation summarized in **Table 3**, three of the groundwater remedial technologies were considered to be most applicable for the Site and carried forward into the more detailed evaluation.

4.2 Development of Groundwater Corrective Measures

Groundwater corrective measures consisting of one or more technologies were assembled from the retained technologies from the initial screening evaluation discussed in Section 4.1. The range of corrective action alternatives developed for GSA groundwater includes the following:

- Alternative 1: MNA
- Alternative 2: Hydraulic Containment (Pump and Treat) and MNA
- Alternative 3: In-Situ Injection and MNA

As summarized in Sections 2.5 and 3.1, the infrastructure repair at the GSA and engineered composite liner for the GSA serve as the source control measure. The source control measure will be the same and coupled with any of the groundwater corrective measure alternatives defined above. As such, the source control measure was not included in the detailed evaluations presented in **Tables 4 and 5**.

4.3 Description of Evaluated Groundwater Alternatives

The groundwater corrective measure alternatives developed in Section 4.2 were subjected to a detailed Site-specific analysis, as summarized in **Tables 4 and 5**, relative to applicable criteria summarized in Section 3.3. A brief description of each alternative is provided in this section.

Alternative 1: Monitored Natural Attenuation (MNA)

MNA relies on natural attenuation processes to achieve site-specific remediation objectives within a reasonable timeframe. Under certain conditions (e.g., through sorption, mineral precipitation, and/or oxidation-reduction reactions), MNA effectively reduces the dissolved concentrations and/or toxic forms of inorganic constituents in groundwater. Attenuation processes include mineral precipitation, sorption reactions such as adsorption on the surfaces of soil minerals, absorption into the matrix of soil minerals or partitioning into organic matter, dilution, dispersion, and radioactive decay. Further, oxidation-reduction (redox) reactions via abiotic or biotic processes, can transform the valence states of some inorganic constituents to less soluble and thus less mobile and/or less toxic forms. The attenuation mechanisms for each constituent are often unique and/or depend on site conditions. Implementation of an MNA process requires monitoring and evaluation of these attenuation processes. The timeframe to achieve cleanup goals is highly variable (from years to decades); as such, MNA remedies often include a remedial decision framework for development of contingent remedies.

Under the right conditions, MNA can be effective as a stand-alone technology to reduce concentrations of cobalt and total radium to remedial goals (e.g., GWPSs or background concentrations if the constituent is naturally occurring). The effectiveness of MNA for cobalt and total radium is anticipated to be enhanced by the completed source control measures (infrastructure repairs and GSA liner). This includes likely reduction in the time required to meet remedial objectives. Despite variable remedial timeframes, MNA is expected to be successful within a reasonable timeframe, assuming aquifer conditions that result in cobalt and total radium attenuation remain favorable. Improving our current understanding and documentation of Site- and constituent-specific attenuation

mechanisms and/or temporal concentration changes will assist in predicting long-term performance.

Alternative 2: Hydraulic Containment (Pump and Treat) and MNA

Hydraulic Containment (Pump and Treat) involves the extraction of impacted groundwater to induce artificial gradients, which mitigates plume migration and facilitates removal of constituent mass. Impacted groundwater is removed through a series of extraction wells (or trenches) installed with screen intervals in the target zone, operating at design flow rates which result in capture of the groundwater plume. If needed, extracted groundwater is then treated aboveground for appropriate disposal. Hydraulic containment systems require significant capital expenditures for proper design (of both the extraction system and potentially the groundwater treatment system), construction, and operation. Hydraulic containment is an active remediation technology with a proven track record.

As discussed in Section 2.5, a groundwater pump and treat system has been installed downgradient of the GSA to promote hydraulic containment and removal of groundwater constituents resulting from unpermitted discharge from the GSA-related infrastructure. This hydraulic containment system has been documented to be effective at reducing concentrations of groundwater constituents (Geosyntec, 2019b). Based on extraction system design, the system is anticipated to be effective for containment/mass removal of cobalt and total radium. In addition, optimization of the current extraction system would be feasible, if needed, to meet remedial objectives related to CCR constituents. Challenges may be incurred with the following:

- increased extraction volumes, which may:
    - be constrained, in part, based the capacity for disposal in the permitted deep injection wells; and
    - require modification of select permits (e.g., consumptive use); and/or
- the design and operation of any potential changes to the aboveground treatment system related to cobalt and/or total radium. A variety of sorption and precipitation approaches exist for the treatment of cobalt and total radium that will need to be considered.

Hydraulic Containment is routinely coupled with MNA, which is a component of this alternative. MNA can occur during operation of the extraction system. In addition, once

the Pump and Treat system has successfully achieved the desired level of performance, the Site can transition to an MNA-only remedy as a polishing step to further reduce concentrations and/or maintain constituents at remedial goals. Additional discussion of MNA was provided in the above discussion for Alternative 1.

Alternative 3: In-Situ Injection and MNA

In-situ injection is a remediation technique used to treat select groundwater constituents. It is accomplished by introduction of a liquid or solid amendment to the aquifer which results in chemical and/or biological changes in the constituent leading to reduction in toxicity or mobility and/or enhances attenuation processes. The effective immobilization of cobalt and total radium using an in-situ injection technology has been successfully shown under aerobic conditions. Under aerobic conditions, soluble iron and oxygen (either via air sparging or through injection of a chemical oxidant) could be injected to promote the formation of iron (oxy-)hydroxides for subsequent sorption of cobalt and total radium onto these mineral phases. If sufficient iron is present in groundwater, the use of air sparging alone may be considered to precipitate iron (oxy-)hydroxides for sorption. Immobilization of cobalt and total radium under anaerobic conditions is also expected to occur (likely involving the injection of an electron donor together with iron and sulfur) but may require further evaluation to demonstrate effectiveness.

In-situ injection remedies may require additional Site characterization and lab- or pilot-scale testing to evaluate the appropriate amendment(s), distribution of injected materials in the subsurface, injection well network design, and other implementation considerations (e.g., injection flow rates). In addition, the potential for unintended mobilization of other aquifer constituents during/following in-situ injection may require careful consideration and monitoring.

Installation of the injection well network may require coverage across a significant area to address the complete plume footprint. Alternative installation approaches may be considered, such as along the downgradient edge of the plume if sufficient area is available for well installation. Once implemented, operational costs are low and primarily associated with groundwater monitoring and performance evaluation/reporting unless a subsequent reinjection event is necessary. In-situ injection is often coupled with MNA, which is a component of this alternative. MNA will be utilized as a polishing step to further reduce concentrations and/or maintain constituents below remedial goals. Additional discussion of MNA was provided in the above discussion for Alternative 1.

5.0 REMEDY SELECTION PROCESS

5.1 Additional Data or Characterization Needs

Horizontal delineation of cobalt concentrations greater than its GWPS was successfully completed in the vicinity of MW-204. Similarly, delineation was completed for total radium in the vicinity of MW-200 (vertical), MW-201 (horizontal and vertical), MW-203 (horizontal), MW-204 (horizontal), and MW-206 (horizontal and vertical). Additional evaluation and/or delineation activities of total radium and/or cobalt in groundwater are ongoing to evaluate the nature and extent of these constituents at select locations downgradient of the GSA. Additional evaluation may include assessment of the contribution of naturally occurring total radium to observed groundwater detections. Completion of these additional activities will provide a better understanding of groundwater impacts and, when coupled with the evaluation presented in this Report, can aid Gulf Power in remedy selection.

Groundwater conditions will need to be monitored to evaluate Site-specific influences on attenuation processes. Improved understanding and documentation of Site- and constituent-specific attenuation mechanisms and/or temporal concentration changes since completion of the source control measure will assist in predicting long-term performance of any of the groundwater corrective measure alternatives considered herein.

In the interim, continued groundwater assessment monitoring in accordance with the CCR Rule will provide useful data to support Gulf Power's selection of a groundwater corrective measure for the Site.

5.2 Schedule for Selecting Remedy

The final groundwater remedy will be selected pursuant to the requirements identified in 40 CFR §257.97, including consideration of stakeholder input. At least 30 days prior to the selection of a final remedy, a public meeting will be held in accordance with 40 CFR §257.96(e). Depending on the timing of the public meeting and final remedy selection, semiannual report(s) will be prepared describing the progress in remedy selection. Upon selection of the final remedy, a final report describing the remedy and how it will meet the standards of 40 CFR §257.97(b) will be completed.

6.0 REFERENCES

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TABLES

TABLE 1: MONITORING WELL NETWORK SUMMARY
Plant Crist - GSA, Gulf Power Company, Pensacola, Florida

Well Name	Installation Date	Northing	Easting	Ground Elevation	Top of Casing Elevation	Top of Screen Elevation	Bottom of Screen Elevation	Designation
Gypsum Storage Area - CCR Groundwater Monitoring Network								
MW-100	11/11/2015	578116.11	1107316.00	99.84	103.03	-5.16	-15.16	Upgradient
MW-101	11/10/2015	577158.45	1107724.27	105.1	108	-1.9	-11.9	Upgradient
MW-107	11/17/2015	577201.66	1107442.83	111.4	114.71	1.4	-8.6	Upgradient
MW-108	11/17/2015	576208.36	1107577.06	80.51	83.54	-4.49	-14.49	Upgradient
MW-200	11/11/2015	581703.17	1108041.01	17.2	20.13	-2.8	-12.8	Downgradient
MW-201	11/11/2015	581138.29	1108637.91	52.45	52.12	3.15	-6.85	Downgradient
MW-202	11/10/2015	580559.03	1109045.35	55.8	55.45	6.3	-3.7	Downgradient
MW-203	11/9/2015	580100.37	1108497.51	47.46	50.6	-2.54	-12.54	Downgradient
MW-204	11/9/2015	580325.06	1107978.45	16.43	19.47	-3.57	-13.57	Downgradient
MW-205	11/17/2015	581076.41	1107907.46	17.31	20.28	-2.69	-12.69	Downgradient
MW-206	2/9/2016	581888.48	1108613.37	26.25	29.11	1.25	-8.75	Downgradient
MW-306	11/19/2015	578417.11	1106200.44	67.61	70.56	-12.39	-22.39	Upgradient
MW-307	11/19/2015	578209.77	1106865.99	101.11	104.18	-8.89	-18.89	Upgradient
Groundwater Monitoring Locations for Delineation								
PZ-200S	2/5/2019	581853.34	1108016.45	5.09	8.31	-19.83	-24.83	Delineation
GSA-2S	4/13/2017	582073.8	1108707.19	21.03	24	-20.97	-30.97	Delineation
PZ-201D	2/6/2019	581161.53	1108641.12	52.02	52	-131.98	-136.98	Delineation
GE-1D	6/24/2009	581996.86	1108509.35	18.94	20.77	-77.06	-82.06	Delineation
PZ-200D	1/29/2019	581775.39	1108002.66	8.89	12.03	-129.11	-139.11	Delineation

Notes:

1. Northing and easting are in feet relative to the State Plane Florida North Datum of 1983.
2. Elevations are in feet relative to the North American Vertical Datum on 1988.

TABLE 2: ANALYTICAL RESULTS OF DELINEATION SAMPLING
Plant Crist - GSA, Gulf Power Company, Pensacola, Florida

Monitoring Well	Well Designation	Sample Date	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Combined Radium (pCi/L)	Fluoride (mg/L)	Lead (mg/L)	Lithium (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	pH (SU)	Selenium (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Thallium (mg/L)
		GWPS	*0.006*	*0.01*	*2*	*0.004*	*NE*	*0.005*	*NE*	*NE*	*0.1*	*0.006*	*5*	*4*	*0.015*	*0.04*	*0.002*	*0.1*	*NE*	*0.05*	*NE*	*NE*	*0.002*
MW-202	Downgradient	3/5/2019	0.001 U	0.00046 U	0.029	0.00034 U	0.098	0.00034 U	5	15	0.0011 U	0.00077 J	2.17	0.032 U	0.00035 U	0.0011 U	0.000078 J	0.002 U	4.93	0.00071 U	6.1	68	0.000085 U
MW-205	Downgradient	2/28/2019	0.001 U	0.00046 U	0.057	0.00034 U	1.4	0.00034 U	27	19	0.0011 U	0.0022 J	3.28	0.07 J	0.00047 J	0.0011 U	0.00019 J	0.002 U	5.02	0.00071 U	110	200	0.000085 U
PZ-200S	Delineation	3/5/2019	0.001 U	0.00046 U	0.05	0.00034 U	10	0.00034 U	220	450	--	0.0055	6.56	0.04 J	0.0005 J	0.0017 J	0.00007 U	0.002 U	5.31	0.0027	160	1300	0.00015 J
GSA-2S	Delineation	3/6/2019	0.001 U	0.00046 U	0.031	0.00034 U	1.6	0.00034 U	39	56	--	0.001 J	2.65	0.032 U	0.00056 J	0.0011 U	0.00007 U	0.002 U	4.48	0.0011 J	46	240	0.000085 U
PZ-201D	Delineation	3/5/2019	0.001 U	0.00046 U	0.062	0.00034 U	0.028 J	0.00034 U	5.1	2.7	--	0.0004 U	0.376 U	0.06 J	0.00088 J	0.0097	0.00007 U	0.002 U	6.74	0.00071 U	1.5 J	76	0.000085 U
GE-1D	Delineation	3/6/2019	0.001 U	0.00046 U	0.019	0.00034 U	0.021 U	0.00034 U	5.6	22	--	0.0019 J	0.599	0.032 U	0.00049 J	0.0028 J	0.00007 U	0.002 U	4.87	0.00071 U	2.5 J	40	0.000085 U
PZ-200D	Delineation	4/2/2019	0.001 U	0.00046 U	0.055	0.00034 U	0.022 J	0.00034 U	5.5	6.9	--	0.0012 J	0.518 U	0.07 J	0.0021	0.005	0.00007 U	0.002 U	6.69	0.00071 U	14	96	0.000085 U

Notes:

1. mg/L indicates milligrams per liter, pCi/L indicates picocuries per liter, SU indicates standard units.
2. TDS indicates Total Dissolved Solids.
3. GWPS indicates Groundwater Protection Standard as tabulated in Geosyntec (2019). NE indicates not established.
4. -- indicates that the constituent was not sampled in this assessment.
5. "U" indicates analyte was analyzed but not detected. "J" indicates that the analyte was positively identified but the result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
6. Data validation flags are included in Table 2. Data validation reports are included in Appendix A.

TABLE 3: REMEDIAL TECHNOLOGIES SCREENING MATRIX
Plant Crist - GSA, Gulf Power Company, Pensacola, Florida

Groundwater Remedial Technology	Description	Advantages	Limitations	Site-Specific Considerations
Monitored Natural Attenuation (MNA)	MNA relies on natural attenuation processes to achieve site-specific remediation objectives within a reasonable timeframe. Under certain conditions (e.g., through sorption, mineral precipitation or oxidation-reduction reactions), MNA effectively reduces the dissolved concentrations and/or toxic forms of target constituents. Natural attenuation processes include biotic and abiotic reduction of constituent concentration or toxicity, mineral precipitation, sorption reactions such as adsorption on the surfaces of soil minerals, absorption into the matrix of soil minerals, partitioning into organic matter, dilution, dispersion, and radioactive decay. Further, oxidation-reduction (redox) reactions via abiotic or biotic processes, can transform the valence states of some inorganic constituents to less soluble and thus less mobile and/or less toxic forms. Implementation of an MNA remedial technology requires monitoring and evaluation of these attenuation processes, with a timeframe for contingency planning.	-Naturally occurring process(es) -Low adverse construction-related impacts on surrounding community -Negligible physical disruption to the remediation area -Negligible operation and maintenance or oversight -Can be coupled with other technologies	-Most viable when source is controlled and plume is relatively stable or receding -May require extended sampling and reporting timeframe with framework for contingency planning -Differing natural attenuation mechanisms and effectiveness for different inorganic constituents -May require demonstration of attenuation mechanisms and the capacity of the aquifer to attenuate constituents over the long-term -Reactions are potentially reversible, which may impact long-term effectiveness	MNA would be an applicable remedy for Cobalt (Co) and Total Radium (Ra) at Plant Crist. Given that the source control remedy (infrastructure repair) is in place, MNA can be used to passively remediate the downgradient plume. The natural processes resulting in Co and Ra removal could include sorption to the aquifer matrix on sulfide and/or iron (oxy-)hydroxide minerals, redox reactions that reduce mobility, and dilution/dispersion of the groundwater plume.
Hydraulic Containment (Pump and Treat)	Hydraulic containment via pump and treat (P&T) refers to the use of groundwater extraction to 1.) artificially induce a hydraulic gradient to capture groundwater constituents, and/or 2.) remove constituent mass within the plume. This approach uses extraction wells or trenches to capture groundwater, which may be treated above ground and then discharged to a water treatment plant, receiving water body, reinjected into the subsurface, or reused (e.g., land application, Coal Combustion Residual (CCR) conditioning, etc.).	-Effective for all inorganic constituents -Can provide downgradient plume containment to limit plume migration -Can be used at active facilities	-Requires sufficient extraction volume and extraction wells to create effective capture zones -Requires viable option for management or treatment of extracted groundwater -May have to operate for extended periods of time -Potential for diminishing effectiveness over time -As a mass removal strategy, there will be differing levels of effectiveness depending on adsorption of individual compounds and/or subsurface heterogeneity	P&T would be applicable to inorganic constituents, including Ra and Co. At Plant Crist, there is an existing P&T system that serves to provide capture and treatment of select groundwater constituents. If P&T is selected for treatment of Co and Ra, evaluation of the existing system and consideration of the necessity for system optimization to meet CCR remedial objectives would be performed. Consideration of groundwater flow to nearby surface water bodies and wetlands may be needed if a significant increase in the groundwater extraction volume is required to maintain hydraulic containment.
In-Situ Injection	Use of an injection well network to provide suitable air or liquid reagents to cause constituents within a plume to precipitate from solution or adsorb to the geologic formation under either anaerobic or aerobic conditions. Reagent selection will depend on the constituent of concern, chemical composition of groundwater, aquifer oxidation-reduction potential, and pH.	-Minimal site disruption -Can be focused to a specific treatment zone -Does not require continuous active operation -May be viable to treat high risk constituents or targeted hot spots	-Each constituent may need a specific reagent for treatment -Requires sufficiently permeable geologic media for injection -Requires detailed understanding of nature and extent of impacts -Long-term, slow release amendments preferred to reduce reinjection frequency -Reactions are potentially reversible, which may impact long-term effectiveness -Has not been widely applied at CCR sites -Requires bench- and pilot-scale studies for effective design	In-situ injection would be applicable for Co and Ra remediation at Plant Crist. Under aerobic conditions, soluble iron and oxygen (either via air sparging or through a chemical oxidant) could be injected to promote the formation of iron (oxy-) hydroxides for subsequent sorption of Co and Ra onto these mineral phases. If sufficient iron is present in groundwater, the use of air sparging alone may be considered to precipitate iron (oxy-)hydroxides for sorption. Immobilization of Co and Ra under anaerobic conditions is also expected to occur (likely involving the injection of an electron donor together with iron and sulfur) but would require further evaluation to demonstrate effectiveness.
Permeable Reactive Barrier (PRB)	A PRB is a barrier placed to intercept the groundwater plume. The PRB contains a reactive media that enhances removal of constituents by precipitation or sorption to the media and/or degradation as the plume moves through the media. Reactive media selection will depend on the constituent of concern, chemical composition of groundwater, aquifer oxidation-reduction potential, and pH.	-Provides control of specific constituents without groundwater extraction and treatment -PRBs have been successfully used for a range of inorganics in non-CCR applications	-Each constituent may need a specific reagent for treatment -Reactive media replacement may be required -Installation generally limited to unconsolidated formations -Installation depth is limited (at least 40 ft is currently achievable), and depends on available media placement equipment -Design may require the PRB to be keyed into bedrock or confining unit to prevent groundwater flow beneath the PRB -Requires detailed site characterization and delineation of groundwater plume and flow pathway -Has not been widely applied at CCR sites -Site disruption during construction	A PRB consisting of a reactive media (e.g., zero valient iron, polymer, or carbon) for the sorption and precipitation of Co and Ra is anticipated to be potentially effective at Plant Crist. Exact placement of the PRB would be evaluated during the remedial design. The higher permeability/conductivity of the PRB would not be expected to impede groundwater flow. Implementation uncertainties include the available space for PRB installation, reactive media mix and longevity, and the necessity to key into a continuous confining unit.
Vertical Barrier Wall	A vertical barrier wall is a physical barrier to groundwater flow that is placed in the subsurface, often around a capped source area, in order to contain the source and prevent future migration in groundwater from beneath the source to downgradient areas. Barrier walls include driven materials such as sheet pile and materials that are filled into trenches, such as a mixture of soil, cement, and/or bentonite (e.g. slurry wall).	-Can be implemented at an active facility -Effective for all inorganic constituents -Installation depths up to 200 feet -Substantially restricts groundwater flow -Well established design and construction methods -Commonly coupled with source control measures such as capping	-Typically applied where source material remains in place -Additional remedies may be required for any constituent beyond the boundary of the barrier wall -Hydraulic gradient control systems (e.g., pumping) may require long-term operation -Costs can increase if depth is greater than attainable with conventional construction equipment (currently about 80-100 feet) -Large staging/construction area and site disruption during installation	A vertical barrier wall could be installed to an appropriate depth to limit groundwater movement at the GSA for the containment of Co and Ra. A barrier wall, however, is typically coupled with source control measures such as capping, where the source material remains in place. Given the implemented source control measures at the GSA, a barrier wall is anticipated to be less effective than other remedial technologies considered.
Phytoremediation / TreeWell® System	Phytoremediation involves the use of an engineered TreeWell® system along the edge of the plume for uptake of impacted groundwater to achieve hydraulic control without the need for above-ground water treatment components. The system promotes root development to the targeted groundwater zone (depth), allowing for hydraulic control of impacted groundwater.	-Minimal adverse construction-related impacts on surrounding community (area must be cleared of above ground and below ground structures) -Minimal operation and maintenance after the first three growing seasons -Effective for all inorganic constituents -Aesthetically pleasing option and provides additional cover and habitat for wildlife -Provides hydraulic containment without the need for above-ground infrastructure or water treatment	-Requires sufficient and substantial area for planting of TreeWell® system to capture the plume -Delay of three growing seasons (minimum) for trees to become adequately sized to obtain capture -Potential seasonal impacts on tree growth and development -Limits potential future use of land where TreeWell® system has been installed -Most effective in areas where groundwater flow velocity is slow to moderate -Has not been widely applied at CCR sites -High winds can significantly impact TreeWell® system	While applicable to Co and Ra, the high permeability, sandy aquifer at the Site may limit use of this technology. In addition, the available space to plant trees for removal of impacted groundwater may not be sufficient downgradient of the GSA.

Notes:
1. Italicized Groundwater Remedial Technologies were assembled into groundwater corrective measures evaluated for the Site - See Tables 4 and 5.
2. All groundwater remedial technologies assume source control measures associated with infrastructure repair at the GSA have been completed.

TABLE 4: EVALUATION OF POTENTIAL CORRECTIVE MEASURES PURSUANT TO 40 CFR §257.96
Plant Crist - GSA, Gulf Power Company, Pensacola, Florida

Groundwater Corrective Measure	Performance	Reliability	Ease of Implementation	Potential Impacts	Time Required to Begin and Complete Remedy	Institutional Requirements
Monitored Natural Attenuation (MNA)	Coupled with completed source control (infrastructure repair in the case of the GSA at Plant Crist), MNA can be effective at achieving remedial goals. Attenuation processes for Cobalt (Co) and Total Radium (Ra) are likely occurring at the site, and the completed source control measure is anticipated to expedite attenuation processes. A better understanding of site-specific mechanisms of Co and Ra attenuation and temporal concentration changes following source control would be advantageous to predict long-term performance.	Coupled with completed source control, MNA is reliable as long as the aquifer conditions that result in Co and Ra attenuation remain favorable and/or are enhanced. MNA can be used as a polishing technology for downgradient portions of groundwater impacted by Co and/or Ra following source control.	Easy with respect to infrastructure, but moderate to complex with respect to predictability. MNA is a proven technology, but future data may show that the existing attenuation capacity is insufficient to meet site objectives within a reasonable timeframe. The monitoring well network already exists to implement groundwater monitoring efforts.	Limited. Although MNA remedies may take time to reach remedial goals, MNA relies on natural processes in the aquifer to reduce constituent concentrations without disturbing the surface or the subsurface. Potential exposure and safety concerns during sampling activities and generation of minimal investigation derived waste (IDW). Exposure and safety concerns can be minimized through standard engineering controls, appropriate procedures, and personal protective equipment (PPE).	The infrastructure to begin MNA is in place; however, demonstrating attenuation mechanisms and MNA effectiveness takes time. The timeline to achieve remedial objectives with an MNA-only remedy can be highly-variable (a few years to decades). However, MNA is expected to be successful within a reasonable timeframe given completed source control measures.	An existing Site administrative measure (water use permit) limits human exposure to Site-related constituents. MNA would generate limited carbon emissions during sampling associated with performance monitoring.
Hydraulic Containment (Pump and Treat) and MNA	Pump and Treat (P&T) is effective at providing hydraulic control through extraction of impacted groundwater, as documented. Based on a preliminary analysis of data presented by Geosyntec (2019b), there is an apparent decreasing Co concentration trend at MW-204 (the only CCR monitoring well with a Co SSL) and there is an apparent decreasing concentration trend in the majority of monitoring wells with Ra SSLs. Decreasing trends may be related to coupled source control and/or operation of the existing on-site P&T system. Continued downgradient monitoring would confirm system performance for Co and Ra. MNA would be utilized as a polishing technology outside the capture zone for maintenance of remedial goals. In addition, once the P&T system had successfully achieved the desired level of performance, the Site could transition to an MNA-only remedy to further reduce concentrations and/or maintain constituents below remedial goals.	P&T is generally reliable for hydraulic containment, especially when coupled with completed source control and a downgradient polishing technology like MNA.	Easy/Moderate. A P&T system is currently installed downgradient of the GSA and has been shown to be effective for constituent mass removal. System optimization with respect to Co and Ra remediation may present a challenge due to their spatial distribution, above ground treatment approach, and/or potential increases in extraction volume. System optimization would be considered during the design phase. Additional operation and maintenance (O&M) requirements due to system optimization with respect to Co and Ra remediation are anticipated to be minimal.	Low. Since the system is currently in place, the only potential Site-related impacts are related to additional system components, which may not be necessary given the current Co and Ra trends. Potential exposure and safety concerns during sampling activities and generation of IDW. Exposure and safety concerns can be minimized through standard engineering controls, appropriate procedures, and PPE. Consideration of groundwater flow to nearby surface water bodies and wetlands may be needed if significant additional groundwater extraction volume is required to maintain hydraulic containment.	At Plant Crist, there is an existing P&T system that serves to provide capture and treatment of select groundwater constituents. If P&T is selected for treatment of Co and Ra, evaluation of the existing system and consideration of the necessity for system optimization to meet CCR remedial objectives could be performed and changed (if needed) could be implemented relatively quickly. MNA will be utilized for the maintenance of Co and Ra below remedial goals downgradient of the extraction system.	An existing Site administrative measure (water use permit) limits human exposure to Site-related constituents. However, permits may be necessary or require modifications (e.g. consumptive/water use permit, UIC permit) due to potential system optimization. Potential monitoring of surrounding wetlands may be required if significant groundwater extraction volume is needed to maintain hydraulic containment. Above-ground treatment components of the existing system may need to be operated for an extended period of time, creating carbon emissions and generating residuals requiring management and disposal. However, since the system is already in place and operating, the additional carbon emissions and disposal residuals would be minimal.
In-Situ Injection and MNA	The effective immobilization of Co and Ra using in-situ injection technology is expected to be successful as it has been demonstrated under aerobic and anaerobic conditions. Under aerobic conditions, soluble iron and oxygen (either via air sparging or through a chemical oxidant) could be injected to promote the formation of iron (oxy-) hydroxides for subsequent sorption of Co and Ra onto these mineral phases. Anaerobic immobilization is also expected to occur but the approach (likely involving the injection of an electron donor together with iron and sulfur) may require study and testing to demonstrate effectiveness. Downgradient of the radius of influence (ROI) of injected materials, MNA would be utilized as a polishing technology to achieve remedial goals.	In-situ injection is anticipated to be reliable in the permeable, sandy aquifer. Reliability will be dependent on (1) the ability to consistently and evenly distribute the injected materials throughout the aquifer; and (2) the longevity of amendments, which will dictate reinjection frequency.	Moderate. Installation of the injection well network may require coverage across a significant area to address the plume footprint or architecture. Alternative installation approaches may be considered, such as along the downgradient edge of impacted groundwater. Material distribution in the aquifer during injections (i.e., ROI) would require evaluation during remedial design and/or pilot testing.	Low. The main potential impacts are short-term and related to construction activities during the installation of injection well network and subsequent injection activities. Once the network and initial injection event are complete, impacts are expected to be associated with the monitoring as detailed above. Potential safety concerns exist with injection well installation and injection processes. Safety concerns and exposure can be minimized through standard engineering controls, appropriate procedures, and PPE. The potential for unintended mobilization of other aquifer constituents during/following in-situ injection may require consideration and monitoring.	Installation of the injection network and an initial injection event can be accomplished relatively quickly. However, bench- and/or pilot-testing may be required to obtain design parameters to support remedial design. Once installed, achieving remedial goals within the treatment area will depend on the distribution of the injected materials and kinetics of the attenuation processes. MNA will be utilized to achieve remedial goals for Co and Ra downgradient of the injection system.	An existing Site administrative measure (water use permit) limits human exposure to Site-related constituents. The potential for unintended mobilization of other aquifer constituents during/following in-situ injection may require consideration and monitoring. Following installation, the remedy is passive, and only limited carbon emissions would be generated during sampling associated with performance monitoring and/or reinjection events.

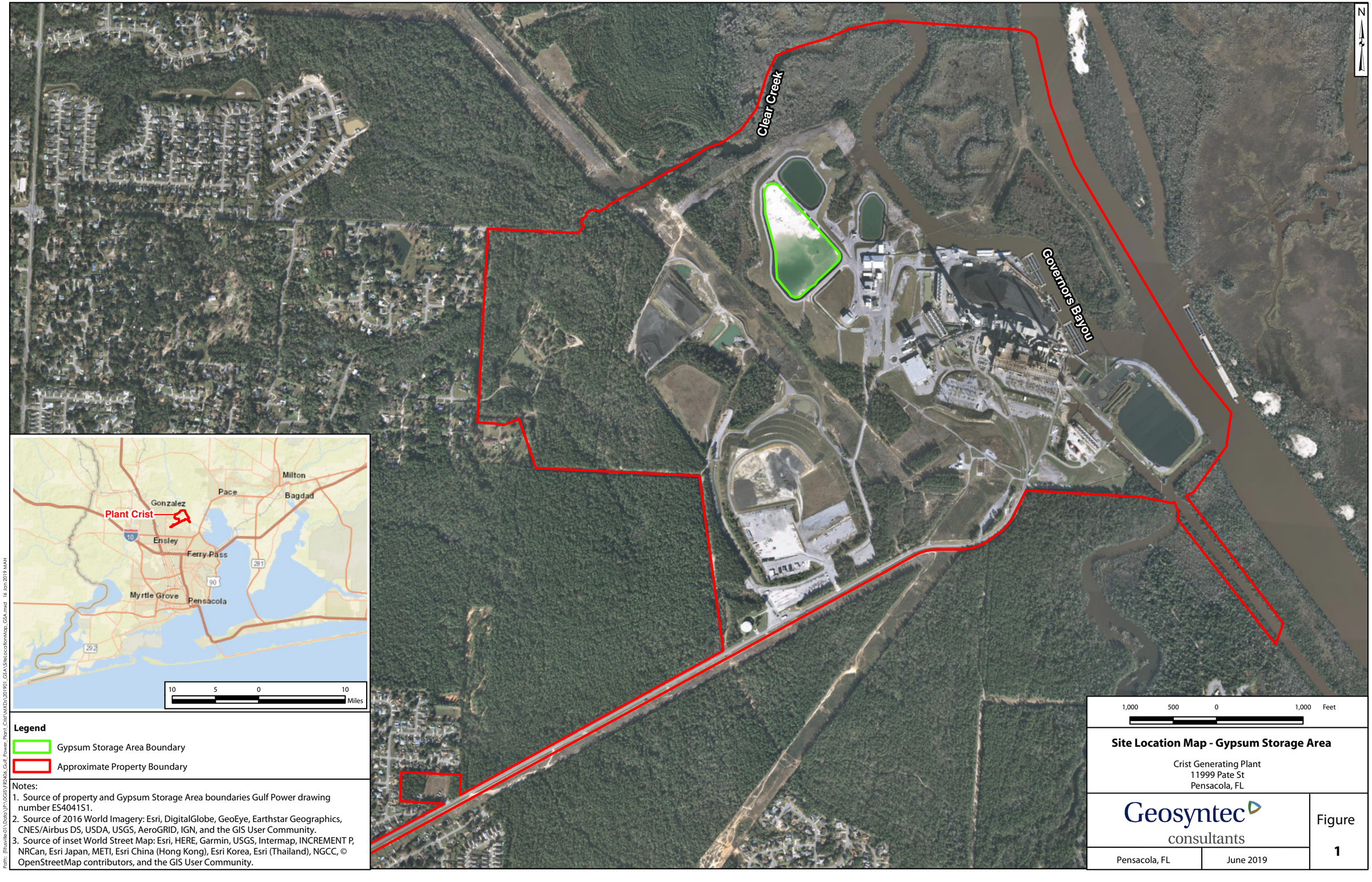
Note:
1. All groundwater remedial technologies assume source control measures associated with infrastructure repair at the GSA have been completed.

TABLE 5: EVALUATION OF POTENTIAL CORRECTIVE MEASURES PURSUANT TO 40 CFR §257.97
Plant Crist - GSA, Gulf Power Company, Pensacola, Florida

Groundwater Corrective Measure	Protective of Human Health and the Environment	Attain the Groundwater Protection Standard (GWPS)	Control the Source(s) of Release	Removal of Material Released from the CCR Unit	Comply with Standards for Management of Waste	Long and Short-Term Effectiveness and Protectiveness of the Potential Remedy	Remedy Effectiveness in Controlling the Source to Reduce Further Releases	Ease of Implementation	Remedy Schedule
Monitored Natural Attenuation (MNA)	Coupled with completed source control (infrastructure repair in the case of the GSA at Plant Crist), MNA can be effective at achieving remedial goals. Attenuation processes for Cobalt (Co) and Total Radium (Ra) are likely occurring at the Site, and the completed source control measure is anticipated to expedite attenuation processes. A better understanding of site-specific mechanisms of Co and Ra attenuation and temporal concentration changes following source control would be advantageous to predict long-term performance. An existing administrative measure (i.e., a water use permit) limits human exposure to groundwater.	Coupled with source control, MNA is anticipated to achieve remedial goals when the aquifer conditions that result in Co and Ra attenuation remain favorable and/or are being enhanced. Additional data collection to better understand temporal attenuation mechanisms following source control will aid in predicting the time to achieve remedial goals.	The infrastructure repair coupled with the GSA's engineered liner system are anticipated to control the source and reduce or eliminate further releases to the environment.	MNA relies on the natural processes active in the aquifer to reduce constituent toxicity and/or mobility by reducing constituent concentrations.	Waste generation during sampling would be minimal but management would require compliance with applicable standards.	Coupled with completed source control (infrastructure repair in the case of the GSA at Plant Crist), MNA can be effective in the long- and short-term when the aquifer conditions that result in Co and Ra attenuation remain favorable and/or are being enhanced. Attenuation processes for Co and Ra are likely occurring at the Site, and the completed source control measure is anticipated to expedite attenuation processes. A better understanding of site-specific mechanisms of Co and Ra attenuation and temporal concentration changes following source control would be advantageous to predict long-term performance. An existing administrative measure (i.e., a water use permit) limits human exposure to groundwater.	The infrastructure repair coupled with the GSA's engineered liner system are anticipated to control the source and reduce or eliminate further releases to the environment.	Easy with respect to infrastructure, but moderate to complex with respect to predictability. MNA is a proven technology, but future data may show that the existing attenuation capacity is insufficient to meet site objectives within a reasonable timeframe. The monitoring well network already exists to implement groundwater monitoring efforts.	The infrastructure to begin MNA is in place; however, demonstrating attenuation mechanisms and MNA effectiveness takes time. The timeline to achieve remedial objectives with an MNA-only remedy can be highly-variable (a few years to decades). However, MNA is expected to be successful within a reasonable timeframe given completed source control measures.
Hydraulic Containment (Pump and Treat) and MNA	Pump and Treat (P&T) is anticipated to be protective of human health and the environment through extraction and above-ground treatment of impacted groundwater. MNA would be utilized as a polishing technology outside the capture zone and is expected to be protective of human health and the environment. Consideration of groundwater flow to nearby surface water bodies and wetlands may be needed if significant additional groundwater extraction volume is required to maintain hydraulic containment.	P&T is anticipated to be effective in achievement of remedial goals within the capture zone by removing impacted groundwater followed by above ground treatment. Coupled with P&T and source control, MNA can be used to reduce concentrations of constituents below remedial goals outside the capture zone.	The infrastructure repair coupled with the GSA's engineered liner system are anticipated to control the source and reduce or eliminate further releases to the environment.	Placement of extraction wells and/or trenches would be completed to induce hydraulic capture and extract impacted groundwater for above-ground treatment. This is anticipated to reduce concentrations/volume of impacted groundwater. See above for processes related to MNA.	Effluent management would require compliance with applicable standards for waste management and current/modified permits. See above for waste management during groundwater sampling activities.	Pump and Treat (P&T) is effective at providing hydraulic control through extraction of impacted groundwater, as documented for Co and Ra with the existing P&T system at the GSA. Continued downgradient monitoring would confirm system performance for CCR constituents. MNA would be utilized as a polishing technology outside the capture zone for maintenance of remedial goals. In addition, once the P&T system had successfully achieved the desired level of performance, the Site could transition to an MNA-only remedy to further reduce concentrations and/or maintain constituents below remedial goals.	The infrastructure repair coupled with the GSA's engineered liner system are anticipated to control the source and reduce or eliminate further releases to the environment.	Easy/Moderate. A P&T system is currently installed downgradient of the GSA and has been shown to be effective for constituent mass removal. System optimization with respect to Co and Ra remediation may present a challenge due to their spatial distribution, above ground treatment approach, and/or potential increases in extraction volume. System optimization would be considered during the design phase. Additional operation and maintenance (O&M) requirements due to system optimization with respect to Co and Ra remediation are anticipated to be minimal.	At Plant Crist, there is an existing P&T system that serves to provide capture and treatment of select groundwater constituents. If P&T is selected for treatment of Co and Ra, evaluation of the existing system and consideration of the necessity for system optimization to meet CCR remedial objectives could be performed and changed (if needed) could be implemented relatively quickly. MNA will be utilized for the maintenance of Co and Ra below remedial goals downgradient of the extraction system.
In-Situ Injection	In-situ injection is anticipated to be protective of human health and the environment through injection of materials for the immobilization of Co and Ra. MNA would be utilized as a polishing technology outside the radius of influence (ROI) and is expected to be protective of human health and the environment. The potential for unintended mobilization of other aquifer constituents during/following in-situ injection may require consideration and monitoring.	In-situ injection is anticipated to be effective in achievement of remedial goals within the ROI by immobilizing Co and Ra. Coupled with injection and source control, MNA can be used to reduce concentrations of constituents below remedial goals outside the ROI.	The infrastructure repair coupled with the GSA's engineered liner system are anticipated to control the source and reduce or eliminate further releases to the environment.	Placement of injection wells would be completed to create a ROI of injected materials to address impacted groundwater. This is anticipated to reduce concentrations/volume and toxicity of impacted groundwater. See above for processes related to MNA.	Waste generation during injection and sampling would be minimal but management would require compliance with applicable standards.	The effective immobilization of Co and Ra using in-situ injection technology is expected to be successful as it has been demonstrated under aerobic and anaerobic conditions. Under aerobic conditions, soluble iron and oxygen (either via air sparging or through a chemical oxidant) could be injected to promote the formation of iron (oxy-) hydroxides for subsequent sorption of Co and Ra onto these mineral phases. Anaerobic immobilization is also expected to occur but the approach (likely involving the injection of an electron donor together with iron and sulfur) may require study and testing to demonstrate effectiveness. Downgradient of the ROI of injected materials, MNA would be utilized as a polishing technology to achieve remedial goals.	The infrastructure repair coupled with the GSA's engineered liner system are anticipated to control the source and reduce or eliminate further releases to the environment.	Moderate. Installation of the injection well network may require coverage across a significant area to address the plume footprint or architecture. Alternative installation approaches may be considered, such as along the downgradient edge of impacted groundwater. Material distribution in the aquifer during injections (i.e., ROI) would require evaluation during remedial design and/or pilot testing.	Installation of the injection network and an initial injection event can be accomplished relatively quickly. However, bench- and/or pilot-testing may be required to obtain design parameters to support remedial design. Once installed, achieving remedial goals within the treatment area will depend on the distribution of the injected materials and kinetics of the attenuation processes. MNA will be utilized to achieve remedial goals for Co and Ra downgradient of the injection system.

Notes:
1. All groundwater remedial technologies assume source control measures associated with infrastructure repair at the GSA have been completed.
2. The 40 CFR §257.97 criterion related to community concerns will be considered following the public meeting during remedy selection.

FIGURES



Legend

- Gypsum Storage Area Boundary
- Approximate Property Boundary

Notes:

1. Source of property and Gypsum Storage Area boundaries Gulf Power drawing number ES4041S1.
2. Source of 2016 World Imagery: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.
3. Source of inset World Street Map: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community.

Site Location Map - Gypsum Storage Area

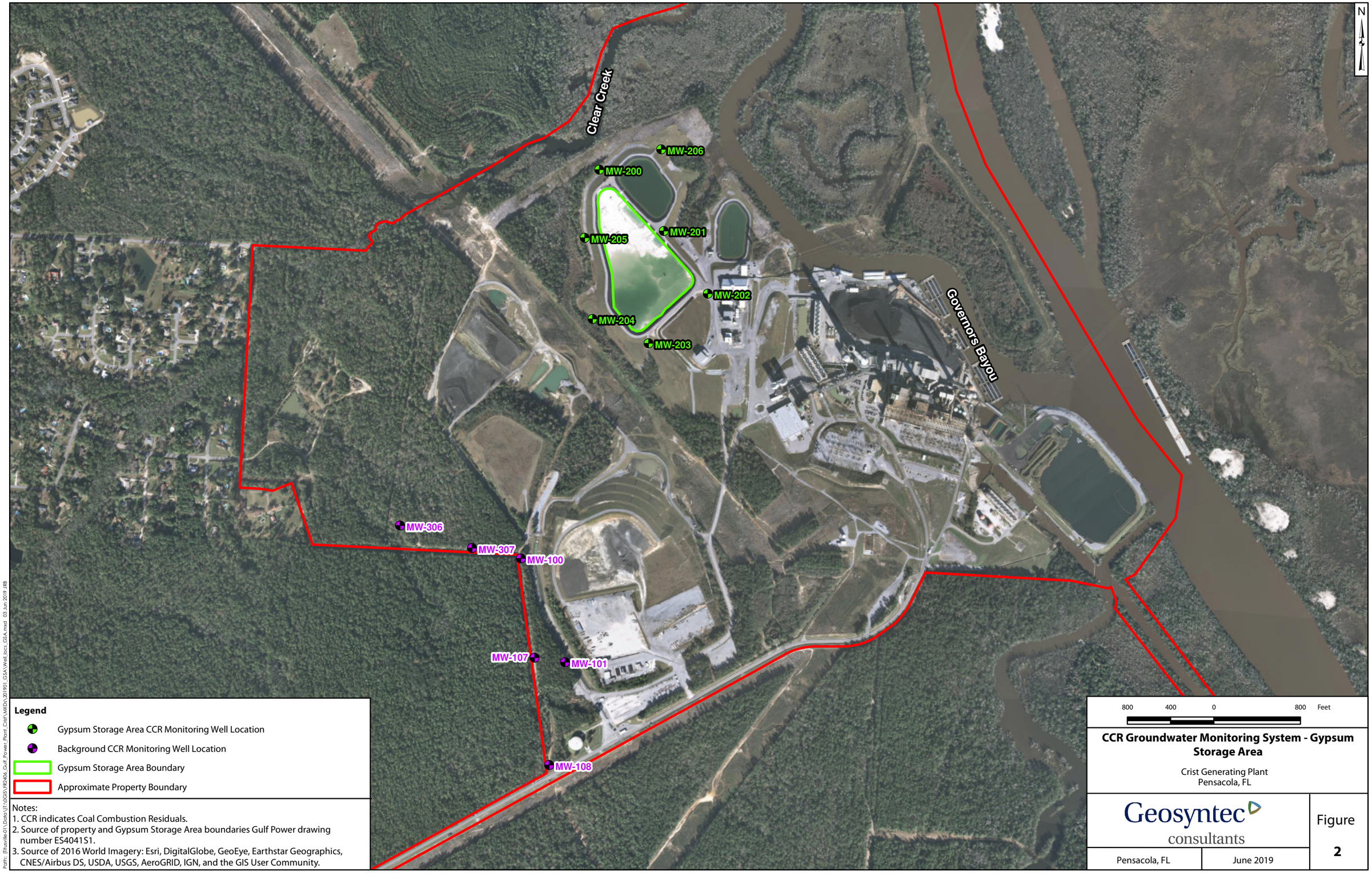
Crist Generating Plant
11999 Pate St
Pensacola, FL

Geosyntec consultants

Pensacola, FL | June 2019

Figure 1

Path: \\Tallville-01\Data\VP\GIS\FP2406_Gulf Power_Plant Crist\MXDs\201901_GSA\SiteLocationMap_GSA.mxd 16 Jan 2019 MAH



Legend

- Gypsum Storage Area CCR Monitoring Well Location
- Background CCR Monitoring Well Location
- Gypsum Storage Area Boundary
- Approximate Property Boundary

Notes:
1. CCR indicates Coal Combustion Residuals.
2. Source of property and Gypsum Storage Area boundaries Gulf Power drawing number ES4041S1.
3. Source of 2016 World Imagery: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

800 400 0 800 Feet

CCR Groundwater Monitoring System - Gypsum Storage Area

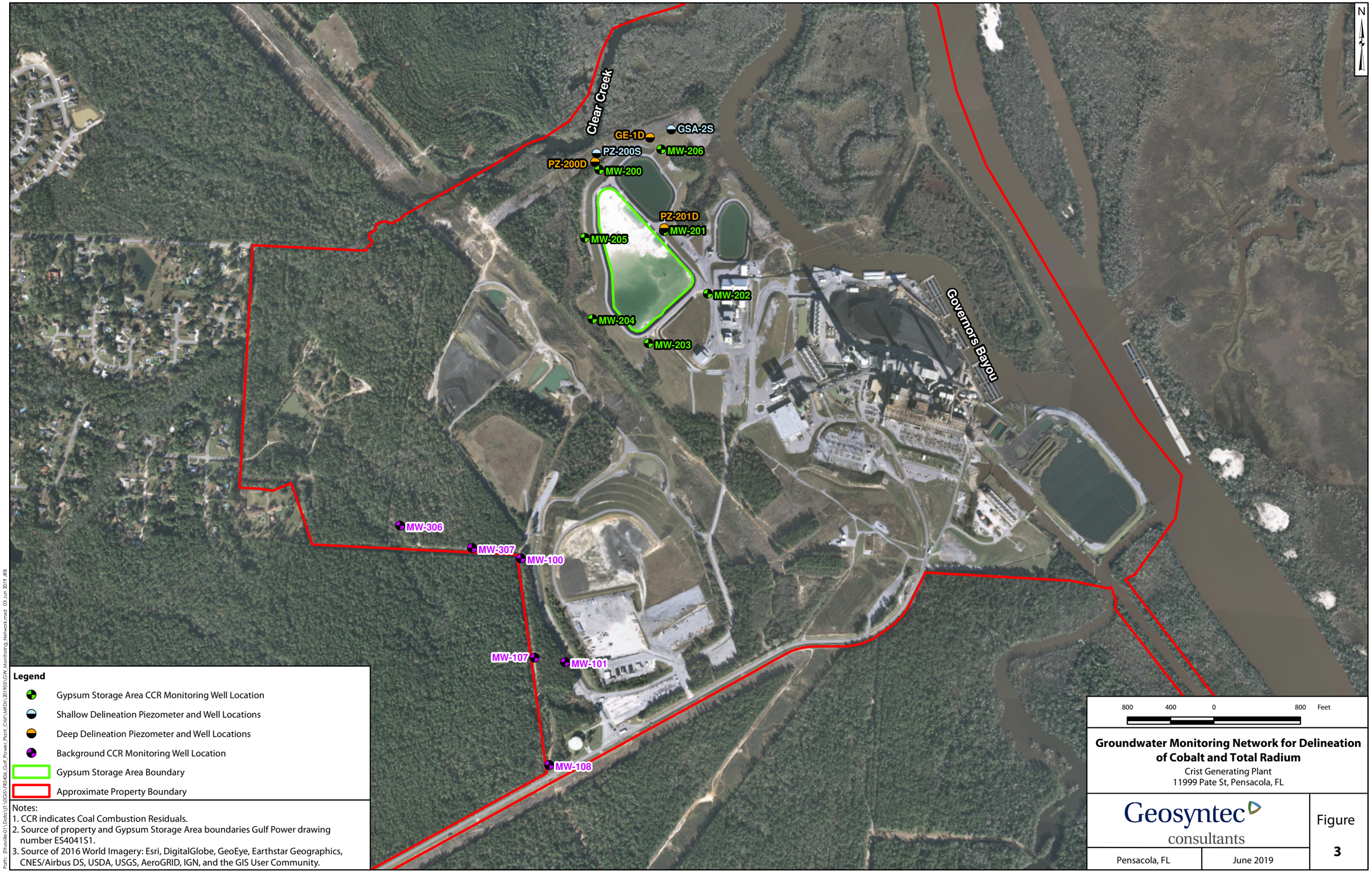
Crist Generating Plant
Pensacola, FL

Geosyntec consultants

Pensacola, FL | June 2019

Figure **2**

Path: \\Tallville-01\Data\1\T\NGIS\1TR406_Gulf_Power_Plant_Crist\MXD\x.201901_GSA Well Locs_GSA.mxd 03 Jan 2019 JRB


N
Clear Creek
GE-1D
GSA-2S
PZ-200S
MW-206
PZ-200D
MW-200
PZ-201D
MW-201
MW-205
MW-202
MW-204
MW-203
Governors Bayou
MW-306
MW-307
MW-100
MW-107
MW-101
MW-108
Legend
Gypsum Storage Area CCR Monitoring Well Location
Shallow Delineation Piezometer and Well Locations
Deep Delineation Piezometer and Well Locations
Background CCR Monitoring Well Location
Gypsum Storage Area Boundary
Approximate Property Boundary
Notes:
1. CCR indicates Coal Combustion Residuals.
2. Source of property and Gypsum Storage Area boundaries Gulf Power drawing number ES4041S1.
3. Source of 2016 World Imagery: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.
800 400 0 800 Feet
Groundwater Monitoring Network for Delineation of Cobalt and Total Radium
Crist Generating Plant
11999 Pate St, Pensacola, FL
Geosyntec consultants
Pensacola, FL
June 2019
Figure
3
Path: I:\Tallville-01\Data\1\1\GIS\1\FR2406_Gulf_Power_Plant_Crist\MXDs\20190530\GW_Monitoring_Network.mxd 03 Jun 2019 JRB

APPENDIX A

Laboratory Analytical, Data Validation, and Field Sampling Reports

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Pensacola
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Laboratory Job ID: 400-166764-1
Laboratory Sample Delivery Group: Gypsum Storage Area
Client Project/Site: CCR Plant Crist

For:
Gulf Power Company
BIN 731
One Energy Place
Pensacola, Florida 32520

Attn: Kristi Mitchell

Cheyenne R Whitmire

Authorized for release by:
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Laboratory: Eurofins TestAmerica, Pensacola

Narrative

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Metals

Method(s) 6020: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 433042 and analytical batch 433286 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 6020: The following samples were diluted to bring the concentration of target analytes within the calibration range: MW-200 (400-166764-1), MW-204 (400-166764-3), MW-206 (400-166764-5), DUP-05 (400-166764-9) and MW-201 (400-166764-10). Elevated reporting limits (RLs) are provided.

Method(s) 7470A: The matrix spike duplicate (MSD) recoveries for preparation batch 432932 and analytical batch 433378 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

General Chemistry

Method(s) SM 4500 F C: The sample duplicate precision for the following sample associated with analytical batch 433548 was outside control limits: (400-166764-B-4 DU). The associated Laboratory Control Sample (LCS)met acceptance criteria.

Method(s) SM 4500 F C: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 433548 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) SM 4500 Cl- E: Due to the concentration of chlorides in the parent sample the MS/MSD were diluted after the spike. The spike amounts were adjusted by the dilution factor. (400-166648-A-5 MS), (400-166648-A-5 MSD), (400-166764-B-10 MS) and (400-166764-B-10 MSD)

Method(s) SM 4500 Cl- E: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 433709 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) SM 4500 Cl- E: The following samples were diluted to bring the concentration of target analytes within the calibration range: MW-200 (400-166764-1), MW-204 (400-166764-3), MW-206 (400-166764-5), DUP-05 (400-166764-9), MW-201 (400-166764-10), (400-166764-B-10 MS), (400-166764-B-10 MSD), (400-166648-A-5), (400-166648-A-5 MS) and (400-166648-A-5 MSD). Elevated reporting limits (RLs) are provided.

Method(s) SM 4500 SO4 E: Due to the concentration of sulfates in the parent sample the MS/MSD were diluted after the spike. The spike amounts were adjusted by the dilution factor. (400-166648-A-5 MS) and (400-166648-A-5 MSD)

Method(s) SM 4500 SO4 E: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 433223 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) SM 4500 SO4 E: The following samples were diluted to bring the concentration of target analytes within the calibration range: MW-200 (400-166764-1), MW-203 (400-166764-2), MW-204 (400-166764-3), MW-205 (400-166764-4), MW-206 (400-166764-5), DUP-02 (400-166764-6), (400-166648-A-5), (400-166648-A-5 MS), (400-166648-A-5 MSD), DUP-05 (400-166764-9) and MW-201 (400-166764-10). Elevated reporting limits (RLs) are provided.

Method(s) SM 4500 SO4 E: The native sample, matrix spike, and matrix spike duplicate (MS/MSD) associated with analytical batch 433751 were performed at the same dilution. Due to the additional level of analyte present in the spiked samples, the concentration of Sulfate in the MS/MSD was above the instrument calibration range. The data have been reported and qualified.

Detection Summary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-1
SDG: Gypsum Storage Area

Client Sample ID: MW-200 — Lab Sample ID: 400-166764-1

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00067	I	0.0013	0.00046	mg/L	5		6020	Total Recoverable
Barium	0.045		0.0025	0.00049	mg/L	5		6020	Total Recoverable
Cobalt	0.0024	I	0.0025	0.00040	mg/L	5		6020	Total Recoverable
Lead	0.0012	I	0.0013	0.00035	mg/L	5		6020	Total Recoverable
Lithium	0.0025	I	0.0050	0.0011	mg/L	5		6020	Total Recoverable
Selenium	0.0044		0.0013	0.00071	mg/L	5		6020	Total Recoverable
Thallium	0.00010	I	0.00050	0.000085	mg/L	5		6020	Total Recoverable
Boron - DL	8.5		0.50	0.21	mg/L	50		6020	Total Recoverable
Calcium - DL	230		2.5	1.3	mg/L	50		6020	Total Recoverable
Mercury	0.0016		0.00020	0.000070	mg/L	1		7470A	Total/NA
Total Dissolved Solids	1400		10	6.8	mg/L	1		SM 2540C	Total/NA
Chloride	470		40	28	mg/L	20		SM 4500 Cl- E	Total/NA
Fluoride	0.30		0.10	0.032	mg/L	1		SM 4500 F C	Total/NA
Sulfate	130		50	14	mg/L	10		SM 4500 SO4 E	Total/NA
Field pH	4.97				SU	1		Field Sampling	Total/NA

Client Sample ID: MW-203 — Lab Sample ID: 400-166764-2

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.039		0.0025	0.00049	mg/L	5		6020	Total Recoverable
Boron	1.1		0.050	0.021	mg/L	5		6020	Total Recoverable
Calcium	30		0.25	0.13	mg/L	5		6020	Total Recoverable
Cobalt	0.0023	I	0.0025	0.00040	mg/L	5		6020	Total Recoverable
Lithium	0.0011	I	0.0050	0.0011	mg/L	5		6020	Total Recoverable
Selenium	0.0014		0.0013	0.00071	mg/L	5		6020	Total Recoverable
Total Dissolved Solids	190		5.0	3.4	mg/L	1		SM 2540C	Total/NA
Chloride	24		2.0	1.4	mg/L	1		SM 4500 Cl- E	Total/NA
Fluoride	0.040	I	0.10	0.032	mg/L	1		SM 4500 F C	Total/NA
Sulfate	100		25	7.0	mg/L	5		SM 4500 SO4 E	Total/NA
Field pH	4.46				SU	1		Field Sampling	Total/NA

Client Sample ID: MW-204 — Lab Sample ID: 400-166764-3

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.0015		0.0013	0.00046	mg/L	5		6020	Total Recoverable
Barium	0.024		0.0025	0.00049	mg/L	5		6020	Total Recoverable
Beryllium	0.00038	I	0.0025	0.00034	mg/L	5		6020	Total Recoverable
Calcium	62		0.25	0.13	mg/L	5		6020	Total Recoverable

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Pensacola

Client Sample ID: MW-204 (Continued) — Lab Sample ID: 400-166764-3

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	0.013		0.0025	0.00040	mg/L	5		6020	Total Recoverable
Lead	0.0019		0.0013	0.00035	mg/L	5		6020	Total Recoverable
Lithium	0.0016	I	0.0050	0.0011	mg/L	5		6020	Total Recoverable
Selenium	0.0028		0.0013	0.00071	mg/L	5		6020	Total Recoverable
Thallium	0.00027	I	0.00050	0.000085	mg/L	5		6020	Total Recoverable
Boron - DL	4.9		0.50	0.21	mg/L	50		6020	Total Recoverable
Total Dissolved Solids	660		10	6.8	mg/L	1		SM 2540C	Total/NA
Chloride	72		4.0	2.8	mg/L	2		SM 4500 Cl- E	Total/NA
Fluoride	0.27		0.10	0.032	mg/L	1		SM 4500 F C	Total/NA
Sulfate	310		100	28	mg/L	20		SM 4500 SO4 E	Total/NA
Field pH	4.31				SU	1		Field Sampling	Total/NA

Client Sample ID: MW-205 — Lab Sample ID: 400-166764-4

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.057		0.0025	0.00049	mg/L	5		6020	Total Recoverable
Boron	1.4		0.050	0.021	mg/L	5		6020	Total Recoverable
Calcium	27		0.25	0.13	mg/L	5		6020	Total Recoverable
Cobalt	0.0022	I	0.0025	0.00040	mg/L	5		6020	Total Recoverable
Lead	0.00047	I	0.0013	0.00035	mg/L	5		6020	Total Recoverable
Mercury	0.00019	I	0.00020	0.000070	mg/L	1		7470A	Total/NA
Total Dissolved Solids	200		5.0	3.4	mg/L	1		SM 2540C	Total/NA
Chloride	19		2.0	1.4	mg/L	1		SM 4500 Cl- E	Total/NA
Fluoride	0.070	I	0.10	0.032	mg/L	1		SM 4500 F C	Total/NA
Sulfate	110		25	7.0	mg/L	5		SM 4500 SO4 E	Total/NA
Field pH	5.02				SU	1		Field Sampling	Total/NA

Client Sample ID: MW-206 — Lab Sample ID: 400-166764-5

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00089	I	0.0013	0.00046	mg/L	5		6020	Total Recoverable
Barium	0.048		0.0025	0.00049	mg/L	5		6020	Total Recoverable
Cadmium	0.00065	I	0.0025	0.00034	mg/L	5		6020	Total Recoverable
Cobalt	0.0022	I	0.0025	0.00040	mg/L	5		6020	Total Recoverable
Lead	0.0019		0.0013	0.00035	mg/L	5		6020	Total Recoverable
Selenium	0.011		0.0013	0.00071	mg/L	5		6020	Total Recoverable
Thallium	0.00024	I	0.00050	0.000085	mg/L	5		6020	Total Recoverable
Boron - DL	20		1.0	0.42	mg/L	100		6020	Total Recoverable

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-1
SDG: Gypsum Storage Area

Client Sample ID: MW-206 (Continued) — Lab Sample ID: 400-166764-5

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium - DL	350		5.0	2.5	mg/L	100		6020	Total Recoverable
Mercury	0.00012	I	0.00020	0.000070	mg/L	1		7470A	Total/NA
Total Dissolved Solids	1700		25	17	mg/L	1		SM 2540C	Total/NA
Chloride	720		40	28	mg/L	20		SM 4500 Cl- E	Total/NA
Fluoride	0.10		0.10	0.032	mg/L	1		SM 4500 F C	Total/NA
Sulfate	240		100	28	mg/L	20		SM 4500 SO4 E	Total/NA
Field pH	4.42				SU	1		Field Sampling	Total/NA

Client Sample ID: DUP-02 — Lab Sample ID: 400-166764-6

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.056		0.0025	0.00049	mg/L	5		6020	Total Recoverable
Boron	1.5		0.050	0.021	mg/L	5		6020	Total Recoverable
Calcium	27		0.25	0.13	mg/L	5		6020	Total Recoverable
Cobalt	0.0022	I	0.0025	0.00040	mg/L	5		6020	Total Recoverable
Mercury	0.00018	I	0.00020	0.000070	mg/L	1		7470A	Total/NA
Total Dissolved Solids	240		5.0	3.4	mg/L	1		SM 2540C	Total/NA
Chloride	20		2.0	1.4	mg/L	1		SM 4500 Cl- E	Total/NA
Fluoride	0.060	I	0.10	0.032	mg/L	1		SM 4500 F C	Total/NA
Sulfate	110		25	7.0	mg/L	5		SM 4500 SO4 E	Total/NA
Field pH	5.02				SU	1		Field Sampling	Total/NA

Client Sample ID: FB-02 — Lab Sample ID: 400-166764-7

No Detections.

Client Sample ID: EB-02 — Lab Sample ID: 400-166764-8

No Detections.

Client Sample ID: DUP-05 — Lab Sample ID: 400-166764-9

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.036		0.0025	0.00049	mg/L	5		6020	Total Recoverable
Cadmium	0.0024	I	0.0025	0.00034	mg/L	5		6020	Total Recoverable
Calcium	43		0.25	0.13	mg/L	5		6020	Total Recoverable
Chromium	0.0021	I	0.0025	0.0011	mg/L	5		6020	Total Recoverable
Cobalt	0.0018	I	0.0025	0.00040	mg/L	5		6020	Total Recoverable
Lead	0.00041	I	0.0013	0.00035	mg/L	5		6020	Total Recoverable
Lithium	0.0039	I	0.0050	0.0011	mg/L	5		6020	Total Recoverable
Selenium	0.0012	I	0.0013	0.00071	mg/L	5		6020	Total Recoverable
Thallium	0.00017	I	0.00050	0.000085	mg/L	5		6020	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: DUP-05 (Continued) — Lab Sample ID: 400-166764-9

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron - DL	2.1		0.25	0.11	mg/L	25		6020	Total Recoverable
Mercury	0.0031		0.00020	0.000070	mg/L	1		7470A	Total/NA
Total Dissolved Solids	290		5.0	3.4	mg/L	1		SM 2540C	Total/NA
Chloride	73		4.0	2.8	mg/L	2		SM 4500 Cl- E	Total/NA
Fluoride	0.65		0.10	0.032	mg/L	1		SM 4500 F C	Total/NA
Sulfate	86		25	7.0	mg/L	5		SM 4500 SO4 E	Total/NA
Field pH	4.71				SU	1		Field Sampling	Total/NA

Client Sample ID: MW-201 — Lab Sample ID: 400-166764-10

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.035		0.0025	0.00049	mg/L	5		6020	Total Recoverable
Cadmium	0.0023	I	0.0025	0.00034	mg/L	5		6020	Total Recoverable
Calcium	43		0.25	0.13	mg/L	5		6020	Total Recoverable
Cobalt	0.0017	I	0.0025	0.00040	mg/L	5		6020	Total Recoverable
Lead	0.00037	I	0.0013	0.00035	mg/L	5		6020	Total Recoverable
Lithium	0.0043	I	0.0050	0.0011	mg/L	5		6020	Total Recoverable
Selenium	0.0012	I	0.0013	0.00071	mg/L	5		6020	Total Recoverable
Thallium	0.00016	I	0.00050	0.000085	mg/L	5		6020	Total Recoverable
Boron - DL	2.1		0.25	0.11	mg/L	25		6020	Total Recoverable
Mercury	0.0026		0.00020	0.000070	mg/L	1		7470A	Total/NA
Total Dissolved Solids	300		5.0	3.4	mg/L	1		SM 2540C	Total/NA
Chloride	75		4.0	2.8	mg/L	2		SM 4500 Cl- E	Total/NA
Fluoride	0.64		0.10	0.032	mg/L	1		SM 4500 F C	Total/NA
Sulfate	86		25	7.0	mg/L	5		SM 4500 SO4 E	Total/NA
Field pH	4.71				SU	1		Field Sampling	Total/NA

Client Sample ID: MW-202 — Lab Sample ID: 400-166764-11

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.029		0.0025	0.00049	mg/L	5		6020	Total Recoverable
Boron	0.098		0.050	0.021	mg/L	5		6020	Total Recoverable
Calcium	5.0		0.25	0.13	mg/L	5		6020	Total Recoverable
Cobalt	0.00077	I	0.0025	0.00040	mg/L	5		6020	Total Recoverable
Mercury	0.000078	I	0.00020	0.000070	mg/L	1		7470A	Total/NA
Total Dissolved Solids	68		5.0	3.4	mg/L	1		SM 2540C	Total/NA
Chloride	15		2.0	1.4	mg/L	1		SM 4500 Cl- E	Total/NA
Sulfate	6.1		5.0	1.4	mg/L	1		SM 4500 SO4 E	Total/NA
Field pH	4.93				SU	1		Field Sampling	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-1
SDG: Gypsum Storage Area

Method	Method Description	Protocol	Laboratory
6020	Metals (ICP/MS)	SW846	TAL PEN
7470A	Mercury (CVAA)	SW846	TAL PEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL PEN
SM 4500 Cl- E	Chloride, Total	SM	TAL PEN
SM 4500 F C	Fluoride	SM	TAL PEN
SM 4500 SO4 E	Sulfate, Total	SM	TAL PEN
Field Sampling	Field Sampling	EPA	TAL PEN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL PEN
7470A	Preparation, Mercury	SW846	TAL PEN

Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL PEN = Eurofins TestAmerica, Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

Sample Summary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-1
SDG: Gypsum Storage Area

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
400-166764-1	MW-200	Water	02/28/19 10:05	03/02/19 09:30
400-166764-2	MW-203	Water	03/01/19 10:35	03/02/19 09:30
400-166764-3	MW-204	Water	02/28/19 13:55	03/02/19 09:30
400-166764-4	MW-205	Water	02/28/19 09:05	03/02/19 09:30
400-166764-5	MW-206	Water	02/28/19 10:55	03/02/19 09:30
400-166764-6	DUP-02	Water	02/28/19 08:05	03/02/19 09:30
400-166764-7	FB-02	Water	03/01/19 10:37	03/02/19 09:30
400-166764-8	EB-02	Water	03/01/19 11:05	03/02/19 09:30
400-166764-9	DUP-05	Water	03/05/19 08:30	03/06/19 16:35
400-166764-10	MW-201	Water	03/05/19 09:30	03/06/19 16:35
400-166764-11	MW-202	Water	03/05/19 11:20	03/06/19 16:35

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-1
SDG: Gypsum Storage Area

Client Sample ID: MW-200

Date Collected: 02/28/19 10:05
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-1

Matrix: Water

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0010	U	0.0025	0.0010	mg/L		03/13/19 08:16	03/13/19 20:07	5
Arsenic	**0.00067**	**I**	0.0013	0.00046	mg/L		03/13/19 08:16	03/13/19 20:07	5
Barium	**0.045**		0.0025	0.00049	mg/L		03/13/19 08:16	03/13/19 20:07	5
Beryllium	0.00034	U	0.0025	0.00034	mg/L		03/13/19 08:16	03/13/19 20:07	5
Cadmium	0.00034	U	0.0025	0.00034	mg/L		03/13/19 08:16	03/13/19 20:07	5
Chromium	0.0011	U	0.0025	0.0011	mg/L		03/13/19 08:16	03/13/19 20:07	5
Cobalt	**0.0024**	**I**	0.0025	0.00040	mg/L		03/13/19 08:16	03/13/19 20:07	5
Lead	**0.0012**	**I**	0.0013	0.00035	mg/L		03/13/19 08:16	03/13/19 20:07	5
Lithium	**0.0025**	**I**	0.0050	0.0011	mg/L		03/13/19 08:16	03/13/19 20:07	5
Molybdenum	0.0020	U	0.015	0.0020	mg/L		03/13/19 08:16	03/13/19 20:07	5
Selenium	**0.0044**		0.0013	0.00071	mg/L		03/13/19 08:16	03/13/19 20:07	5
Thallium	**0.00010**	**I**	0.00050	0.000085	mg/L		03/13/19 08:16	03/13/19 20:07	5

Method: 6020 - Metals (ICP/MS) - Total Recoverable - DL

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**8.5**		0.50	0.21	mg/L		03/13/19 08:16	03/14/19 18:26	50
Calcium	**230**		2.5	1.3	mg/L		03/13/19 08:16	03/14/19 18:26	50

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.0016**		0.00020	0.000070	mg/L		03/12/19 09:30	03/18/19 14:48	1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**1400**		10	6.8	mg/L			03/05/19 09:01	1
Chloride	**470**		40	28	mg/L			03/13/19 12:34	20
Fluoride	**0.30**		0.10	0.032	mg/L			03/15/19 17:17	1
Sulfate	**130**		50	14	mg/L			03/13/19 15:43	10

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field pH	**4.97**				SU			02/28/19 10:05	1

Client Sample Results

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-1
SDG: Gypsum Storage Area

Client Sample ID: MW-203

Date Collected: 03/01/19 10:35
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-2

Matrix: Water

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0010	U	0.0025	0.0010	mg/L		03/13/19 08:16	03/13/19 20:10	5
Arsenic	0.00046	U	0.0013	0.00046	mg/L		03/13/19 08:16	03/13/19 20:10	5
Barium	**0.039**		0.0025	0.00049	mg/L		03/13/19 08:16	03/13/19 20:10	5
Beryllium	0.00034	U	0.0025	0.00034	mg/L		03/13/19 08:16	03/13/19 20:10	5
Boron	**1.1**		0.050	0.021	mg/L		03/13/19 08:16	03/13/19 20:10	5
Cadmium	0.00034	U	0.0025	0.00034	mg/L		03/13/19 08:16	03/13/19 20:10	5
Calcium	**30**		0.25	0.13	mg/L		03/13/19 08:16	03/13/19 20:10	5
Chromium	0.0011	U	0.0025	0.0011	mg/L		03/13/19 08:16	03/13/19 20:10	5
Cobalt	**0.0023**	**I**	0.0025	0.00040	mg/L		03/13/19 08:16	03/13/19 20:10	5
Lead	0.00035	U	0.0013	0.00035	mg/L		03/13/19 08:16	03/13/19 20:10	5
Lithium	**0.0011**	**I**	0.0050	0.0011	mg/L		03/13/19 08:16	03/13/19 20:10	5
Molybdenum	0.0020	U	0.015	0.0020	mg/L		03/13/19 08:16	03/13/19 20:10	5
Selenium	**0.0014**		0.0013	0.00071	mg/L		03/13/19 08:16	03/13/19 20:10	5
Thallium	0.000085	U	0.00050	0.000085	mg/L		03/13/19 08:16	03/13/19 20:10	5

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000070	U	0.00020	0.000070	mg/L		03/12/19 09:30	03/18/19 14:50	1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**190**		5.0	3.4	mg/L			03/05/19 13:58	1
Chloride	**24**		2.0	1.4	mg/L			03/18/19 10:20	1
Fluoride	**0.040**	**I**	0.10	0.032	mg/L			03/19/19 10:12	1
Sulfate	**100**		25	7.0	mg/L			03/18/19 16:04	5

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field pH	**4.46**				SU			03/01/19 10:35	1

Client Sample Results

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-1
SDG: Gypsum Storage Area

Client Sample ID: MW-204

Date Collected: 02/28/19 13:55
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-3

Matrix: Water

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0010	U	0.0025	0.0010	mg/L		03/13/19 08:16	03/13/19 20:14	5
Arsenic	**0.0015**		0.0013	0.00046	mg/L		03/13/19 08:16	03/13/19 20:14	5
Barium	**0.024**		0.0025	0.00049	mg/L		03/13/19 08:16	03/13/19 20:14	5
Beryllium	**0.00038**	**I**	0.0025	0.00034	mg/L		03/13/19 08:16	03/13/19 20:14	5
Cadmium	0.00034	U	0.0025	0.00034	mg/L		03/13/19 08:16	03/13/19 20:14	5
Calcium	**62**		0.25	0.13	mg/L		03/13/19 08:16	03/13/19 20:14	5
Chromium	0.0011	U	0.0025	0.0011	mg/L		03/13/19 08:16	03/13/19 20:14	5
Cobalt	**0.013**		0.0025	0.00040	mg/L		03/13/19 08:16	03/13/19 20:14	5
Lead	**0.0019**		0.0013	0.00035	mg/L		03/13/19 08:16	03/13/19 20:14	5
Lithium	**0.0016**	**I**	0.0050	0.0011	mg/L		03/13/19 08:16	03/13/19 20:14	5
Molybdenum	0.0020	U	0.015	0.0020	mg/L		03/13/19 08:16	03/13/19 20:14	5
Selenium	**0.0028**		0.0013	0.00071	mg/L		03/13/19 08:16	03/13/19 20:14	5
Thallium	**0.00027**	**I**	0.00050	0.000085	mg/L		03/13/19 08:16	03/13/19 20:14	5

Method: 6020 - Metals (ICP/MS) - Total Recoverable - DL

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**4.9**		0.50	0.21	mg/L		03/13/19 08:16	03/14/19 18:31	50

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000070	U	0.00020	0.000070	mg/L		03/12/19 09:30	03/18/19 14:52	1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**660**		10	6.8	mg/L			03/05/19 13:58	1
Chloride	**72**		4.0	2.8	mg/L			03/18/19 10:46	2
Fluoride	**0.27**		0.10	0.032	mg/L			03/15/19 17:21	1
Sulfate	**310**		100	28	mg/L			03/13/19 15:47	20

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field pH	**4.31**				SU			02/28/19 13:55	1

Client Sample Results

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-1
SDG: Gypsum Storage Area

Client Sample ID: MW-205

Date Collected: 02/28/19 09:05
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-4

Matrix: Water

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0010	U	0.0025	0.0010	mg/L		03/13/19 08:16	03/13/19 20:18	5
Arsenic	0.00046	U	0.0013	0.00046	mg/L		03/13/19 08:16	03/13/19 20:18	5
Barium	**0.057**		0.0025	0.00049	mg/L		03/13/19 08:16	03/13/19 20:18	5
Beryllium	0.00034	U	0.0025	0.00034	mg/L		03/13/19 08:16	03/13/19 20:18	5
Boron	**1.4**		0.050	0.021	mg/L		03/13/19 08:16	03/13/19 20:18	5
Cadmium	0.00034	U	0.0025	0.00034	mg/L		03/13/19 08:16	03/13/19 20:18	5
Calcium	**27**		0.25	0.13	mg/L		03/13/19 08:16	03/13/19 20:18	5
Chromium	0.0011	U	0.0025	0.0011	mg/L		03/13/19 08:16	03/13/19 20:18	5
Cobalt	**0.0022**	**I**	0.0025	0.00040	mg/L		03/13/19 08:16	03/13/19 20:18	5
Lead	**0.00047**	**I**	0.0013	0.00035	mg/L		03/13/19 08:16	03/13/19 20:18	5
Lithium	0.0011	U	0.0050	0.0011	mg/L		03/13/19 08:16	03/13/19 20:18	5
Molybdenum	0.0020	U	0.015	0.0020	mg/L		03/13/19 08:16	03/13/19 20:18	5
Selenium	0.00071	U	0.0013	0.00071	mg/L		03/13/19 08:16	03/13/19 20:18	5
Thallium	0.000085	U	0.00050	0.000085	mg/L		03/13/19 08:16	03/13/19 20:18	5

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.00019**	**I**	0.00020	0.000070	mg/L		03/12/19 09:30	03/18/19 14:54	1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**200**		5.0	3.4	mg/L			03/05/19 12:46	1
Chloride	**19**		2.0	1.4	mg/L			03/18/19 10:10	1
Fluoride	**0.070**	**I**	0.10	0.032	mg/L			03/15/19 17:31	1
Sulfate	**110**		25	7.0	mg/L			03/13/19 15:47	5

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field pH	**5.02**				SU			02/28/19 09:05	1

Client Sample Results

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-1
SDG: Gypsum Storage Area

Client Sample ID: MW-206

Date Collected: 02/28/19 10:55
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-5

Matrix: Water

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0010	U	0.0025	0.0010	mg/L		03/13/19 08:16	03/13/19 20:21	5
Arsenic	**0.00089**	**I**	0.0013	0.00046	mg/L		03/13/19 08:16	03/13/19 20:21	5
Barium	**0.048**		0.0025	0.00049	mg/L		03/13/19 08:16	03/13/19 20:21	5
Beryllium	0.00034	U	0.0025	0.00034	mg/L		03/13/19 08:16	03/13/19 20:21	5
Cadmium	**0.00065**	**I**	0.0025	0.00034	mg/L		03/13/19 08:16	03/13/19 20:21	5
Chromium	0.0011	U	0.0025	0.0011	mg/L		03/13/19 08:16	03/13/19 20:21	5
Cobalt	**0.0022**	**I**	0.0025	0.00040	mg/L		03/13/19 08:16	03/13/19 20:21	5
Lead	**0.0019**		0.0013	0.00035	mg/L		03/13/19 08:16	03/13/19 20:21	5
Lithium	0.0011	U	0.0050	0.0011	mg/L		03/13/19 08:16	03/13/19 20:21	5
Molybdenum	0.0020	U	0.015	0.0020	mg/L		03/13/19 08:16	03/13/19 20:21	5
Selenium	**0.011**		0.0013	0.00071	mg/L		03/13/19 08:16	03/13/19 20:21	5
Thallium	**0.00024**	**I**	0.00050	0.000085	mg/L		03/13/19 08:16	03/13/19 20:21	5

Method: 6020 - Metals (ICP/MS) - Total Recoverable - DL

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**20**		1.0	0.42	mg/L		03/13/19 08:16	03/14/19 18:34	100
Calcium	**350**		5.0	2.5	mg/L		03/13/19 08:16	03/14/19 18:34	100

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.00012**	**I**	0.00020	0.000070	mg/L		03/12/19 09:30	03/18/19 14:56	1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**1700**		25	17	mg/L			03/05/19 13:58	1
Chloride	**720**		40	28	mg/L			03/18/19 10:46	20
Fluoride	**0.10**		0.10	0.032	mg/L			03/15/19 17:43	1
Sulfate	**240**		100	28	mg/L			03/13/19 15:47	20

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field pH	**4.42**				SU			02/28/19 10:55	1

Client Sample Results

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-1
SDG: Gypsum Storage Area

Client Sample ID: DUP-02

Date Collected: 02/28/19 08:05
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-6

Matrix: Water

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0010	U	0.0025	0.0010	mg/L		03/13/19 08:16	03/13/19 20:25	5
Arsenic	0.00046	U	0.0013	0.00046	mg/L		03/13/19 08:16	03/13/19 20:25	5
Barium	**0.056**		0.0025	0.00049	mg/L		03/13/19 08:16	03/13/19 20:25	5
Beryllium	0.00034	U	0.0025	0.00034	mg/L		03/13/19 08:16	03/13/19 20:25	5
Boron	**1.5**		0.050	0.021	mg/L		03/13/19 08:16	03/13/19 20:25	5
Cadmium	0.00034	U	0.0025	0.00034	mg/L		03/13/19 08:16	03/13/19 20:25	5
Calcium	**27**		0.25	0.13	mg/L		03/13/19 08:16	03/13/19 20:25	5
Chromium	0.0011	U	0.0025	0.0011	mg/L		03/13/19 08:16	03/13/19 20:25	5
Cobalt	**0.0022**	**I**	0.0025	0.00040	mg/L		03/13/19 08:16	03/13/19 20:25	5
Lead	0.00035	U	0.0013	0.00035	mg/L		03/13/19 08:16	03/13/19 20:25	5
Lithium	0.0011	U	0.0050	0.0011	mg/L		03/13/19 08:16	03/13/19 20:25	5
Molybdenum	0.0020	U	0.015	0.0020	mg/L		03/13/19 08:16	03/13/19 20:25	5
Selenium	0.00071	U	0.0013	0.00071	mg/L		03/13/19 08:16	03/13/19 20:25	5
Thallium	0.000085	U	0.00050	0.000085	mg/L		03/13/19 08:16	03/13/19 20:25	5

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.00018**	**I**	0.00020	0.000070	mg/L		03/12/19 09:30	03/18/19 14:57	1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**240**		5.0	3.4	mg/L			03/05/19 12:46	1
Chloride	**20**		2.0	1.4	mg/L			03/18/19 10:13	1
Fluoride	**0.060**	**I**	0.10	0.032	mg/L			03/15/19 17:39	1
Sulfate	**110**		25	7.0	mg/L			03/13/19 15:47	5

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field pH	**5.02**				SU			02/28/19 08:05	1

Client Sample Results

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-1
SDG: Gypsum Storage Area

Client Sample ID: FB-02

Date Collected: 03/01/19 10:37
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-7

Matrix: Water

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0010	U	0.0025	0.0010	mg/L		03/13/19 08:16	03/13/19 20:46	5
Arsenic	0.00046	U	0.0013	0.00046	mg/L		03/13/19 08:16	03/13/19 20:46	5
Barium	0.00049	U	0.0025	0.00049	mg/L		03/13/19 08:16	03/13/19 20:46	5
Beryllium	0.00034	U	0.0025	0.00034	mg/L		03/13/19 08:16	03/13/19 20:46	5
Boron	0.021	U	0.050	0.021	mg/L		03/13/19 08:16	03/13/19 20:46	5
Cadmium	0.00034	U	0.0025	0.00034	mg/L		03/13/19 08:16	03/13/19 20:46	5
Calcium	0.13	U	0.25	0.13	mg/L		03/13/19 08:16	03/13/19 20:46	5
Chromium	0.0011	U	0.0025	0.0011	mg/L		03/13/19 08:16	03/13/19 20:46	5
Cobalt	0.00040	U	0.0025	0.00040	mg/L		03/13/19 08:16	03/13/19 20:46	5
Lead	0.00035	U	0.0013	0.00035	mg/L		03/13/19 08:16	03/13/19 20:46	5
Lithium	0.0011	U	0.0050	0.0011	mg/L		03/13/19 08:16	03/13/19 20:46	5
Molybdenum	0.0020	U	0.015	0.0020	mg/L		03/13/19 08:16	03/13/19 20:46	5
Selenium	0.00071	U	0.0013	0.00071	mg/L		03/13/19 08:16	03/13/19 20:46	5
Thallium	0.000085	U	0.00050	0.000085	mg/L		03/13/19 08:16	03/13/19 20:46	5

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000070	U	0.00020	0.000070	mg/L		03/12/19 09:30	03/18/19 14:59	1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	3.4	U	5.0	3.4	mg/L			03/05/19 13:58	1
Chloride	1.4	U	2.0	1.4	mg/L			03/18/19 10:20	1
Fluoride	0.032	U	0.10	0.032	mg/L			03/19/19 10:16	1
Sulfate	1.4	U	5.0	1.4	mg/L			03/18/19 15:12	1

Client Sample Results

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-1
SDG: Gypsum Storage Area

Client Sample ID: EB-02

Date Collected: 03/01/19 11:05
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-8

Matrix: Water

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0010	U	0.0025	0.0010	mg/L		03/13/19 08:16	03/13/19 20:50	5
Arsenic	0.00046	U	0.0013	0.00046	mg/L		03/13/19 08:16	03/13/19 20:50	5
Barium	0.00049	U	0.0025	0.00049	mg/L		03/13/19 08:16	03/13/19 20:50	5
Beryllium	0.00034	U	0.0025	0.00034	mg/L		03/13/19 08:16	03/13/19 20:50	5
Boron	0.021	U	0.050	0.021	mg/L		03/13/19 08:16	03/13/19 20:50	5
Cadmium	0.00034	U	0.0025	0.00034	mg/L		03/13/19 08:16	03/13/19 20:50	5
Calcium	0.13	U	0.25	0.13	mg/L		03/13/19 08:16	03/13/19 20:50	5
Chromium	0.0011	U	0.0025	0.0011	mg/L		03/13/19 08:16	03/13/19 20:50	5
Cobalt	0.00040	U	0.0025	0.00040	mg/L		03/13/19 08:16	03/13/19 20:50	5
Lead	0.00035	U	0.0013	0.00035	mg/L		03/13/19 08:16	03/13/19 20:50	5
Lithium	0.0011	U	0.0050	0.0011	mg/L		03/13/19 08:16	03/13/19 20:50	5
Molybdenum	0.0020	U	0.015	0.0020	mg/L		03/13/19 08:16	03/13/19 20:50	5
Selenium	0.00071	U	0.0013	0.00071	mg/L		03/13/19 08:16	03/13/19 20:50	5
Thallium	0.000085	U	0.00050	0.000085	mg/L		03/13/19 08:16	03/13/19 20:50	5

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000070	U	0.00020	0.000070	mg/L		03/12/19 09:30	03/18/19 15:01	1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	3.4	U	5.0	3.4	mg/L			03/05/19 13:58	1
Chloride	1.4	U	2.0	1.4	mg/L			03/18/19 10:20	1
Fluoride	0.032	U	0.10	0.032	mg/L			03/19/19 10:19	1
Sulfate	1.4	U	5.0	1.4	mg/L			03/18/19 15:16	1

Client Sample Results

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-1
SDG: Gypsum Storage Area

Client Sample ID: DUP-05
Date Collected: 03/05/19 08:30
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166764-9
Matrix: Water

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0010	U	0.0025	0.0010	mg/L		03/13/19 08:16	03/13/19 20:54	5
Arsenic	0.00046	U	0.0013	0.00046	mg/L		03/13/19 08:16	03/13/19 20:54	5
Barium	**0.036**		0.0025	0.00049	mg/L		03/13/19 08:16	03/13/19 20:54	5
Beryllium	0.00034	U	0.0025	0.00034	mg/L		03/13/19 08:16	03/13/19 20:54	5
Cadmium	**0.0024**	**I**	0.0025	0.00034	mg/L		03/13/19 08:16	03/13/19 20:54	5
Calcium	**43**		0.25	0.13	mg/L		03/13/19 08:16	03/13/19 20:54	5
Chromium	**0.0021**	**I**	0.0025	0.0011	mg/L		03/13/19 08:16	03/13/19 20:54	5
Cobalt	**0.0018**	**I**	0.0025	0.00040	mg/L		03/13/19 08:16	03/13/19 20:54	5
Lead	**0.00041**	**I**	0.0013	0.00035	mg/L		03/13/19 08:16	03/13/19 20:54	5
Lithium	**0.0039**	**I**	0.0050	0.0011	mg/L		03/13/19 08:16	03/13/19 20:54	5
Molybdenum	0.0020	U	0.015	0.0020	mg/L		03/13/19 08:16	03/13/19 20:54	5
Selenium	**0.0012**	**I**	0.0013	0.00071	mg/L		03/13/19 08:16	03/13/19 20:54	5
Thallium	**0.00017**	**I**	0.00050	0.000085	mg/L		03/13/19 08:16	03/13/19 20:54	5

Method: 6020 - Metals (ICP/MS) - Total Recoverable - DL

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**2.1**		0.25	0.11	mg/L		03/13/19 08:16	03/14/19 18:38	25

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.0031**		0.00020	0.000070	mg/L		03/12/19 09:30	03/18/19 15:03	1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**290**		5.0	3.4	mg/L			03/08/19 09:19	1
Chloride	**73**		4.0	2.8	mg/L			03/18/19 10:46	2
Fluoride	**0.65**		0.10	0.032	mg/L			03/19/19 10:41	1
Sulfate	**86**		25	7.0	mg/L			03/18/19 16:08	5

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field pH	**4.71**				SU			03/05/19 08:30	1

Client Sample Results

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-1
SDG: Gypsum Storage Area

Client Sample ID: MW-201

Date Collected: 03/05/19 09:30
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166764-10

Matrix: Water

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0010	U	0.0025	0.0010	mg/L		03/13/19 08:16	03/13/19 20:57	5
Arsenic	0.00046	U	0.0013	0.00046	mg/L		03/13/19 08:16	03/13/19 20:57	5
Barium	**0.035**		0.0025	0.00049	mg/L		03/13/19 08:16	03/13/19 20:57	5
Beryllium	0.00034	U	0.0025	0.00034	mg/L		03/13/19 08:16	03/13/19 20:57	5
Cadmium	**0.0023**	**I**	0.0025	0.00034	mg/L		03/13/19 08:16	03/13/19 20:57	5
Calcium	**43**		0.25	0.13	mg/L		03/13/19 08:16	03/13/19 20:57	5
Chromium	0.0011	U	0.0025	0.0011	mg/L		03/13/19 08:16	03/13/19 20:57	5
Cobalt	**0.0017**	**I**	0.0025	0.00040	mg/L		03/13/19 08:16	03/13/19 20:57	5
Lead	**0.00037**	**I**	0.0013	0.00035	mg/L		03/13/19 08:16	03/13/19 20:57	5
Lithium	**0.0043**	**I**	0.0050	0.0011	mg/L		03/13/19 08:16	03/13/19 20:57	5
Molybdenum	0.0020	U	0.015	0.0020	mg/L		03/13/19 08:16	03/13/19 20:57	5
Selenium	**0.0012**	**I**	0.0013	0.00071	mg/L		03/13/19 08:16	03/13/19 20:57	5
Thallium	**0.00016**	**I**	0.00050	0.000085	mg/L		03/13/19 08:16	03/13/19 20:57	5

Method: 6020 - Metals (ICP/MS) - Total Recoverable - DL

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**2.1**		0.25	0.11	mg/L		03/13/19 08:16	03/14/19 18:42	25

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.0026**		0.00020	0.000070	mg/L		03/12/19 09:41	03/14/19 14:18	1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**300**		5.0	3.4	mg/L			03/08/19 09:19	1
Chloride	**75**		4.0	2.8	mg/L			03/18/19 10:46	2
Fluoride	**0.64**		0.10	0.032	mg/L			03/19/19 10:44	1
Sulfate	**86**		25	7.0	mg/L			03/18/19 16:08	5

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field pH	**4.71**				SU			03/05/19 09:30	1

Client Sample Results

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-1
SDG: Gypsum Storage Area

Client Sample ID: MW-202

Date Collected: 03/05/19 11:20
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166764-11

Matrix: Water

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0010	U	0.0025	0.0010	mg/L		03/13/19 08:16	03/13/19 22:02	5
Arsenic	0.00046	U	0.0013	0.00046	mg/L		03/13/19 08:16	03/13/19 22:02	5
Barium	**0.029**		0.0025	0.00049	mg/L		03/13/19 08:16	03/13/19 22:02	5
Beryllium	0.00034	U	0.0025	0.00034	mg/L		03/13/19 08:16	03/13/19 22:02	5
Boron	**0.098**		0.050	0.021	mg/L		03/13/19 08:16	03/13/19 22:02	5
Cadmium	0.00034	U	0.0025	0.00034	mg/L		03/13/19 08:16	03/13/19 22:02	5
Calcium	**5.0**		0.25	0.13	mg/L		03/13/19 08:16	03/13/19 22:02	5
Chromium	0.0011	U	0.0025	0.0011	mg/L		03/13/19 08:16	03/13/19 22:02	5
Cobalt	**0.00077**	**I**	0.0025	0.00040	mg/L		03/13/19 08:16	03/13/19 22:02	5
Lead	0.00035	U	0.0013	0.00035	mg/L		03/13/19 08:16	03/13/19 22:02	5
Lithium	0.0011	U	0.0050	0.0011	mg/L		03/13/19 08:16	03/13/19 22:02	5
Molybdenum	0.0020	U	0.015	0.0020	mg/L		03/13/19 08:16	03/13/19 22:02	5
Selenium	0.00071	U	0.0013	0.00071	mg/L		03/13/19 08:16	03/13/19 22:02	5
Thallium	0.000085	U	0.00050	0.000085	mg/L		03/13/19 08:16	03/13/19 22:02	5

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.000078**	**I**	0.00020	0.000070	mg/L		03/12/19 09:41	03/14/19 14:19	1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**68**		5.0	3.4	mg/L			03/08/19 09:19	1
Chloride	**15**		2.0	1.4	mg/L			03/18/19 10:20	1
Fluoride	0.032	U	0.10	0.032	mg/L			03/19/19 10:47	1
Sulfate	**6.1**		5.0	1.4	mg/L			03/18/19 15:17	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field pH	**4.93**				SU			03/05/19 11:20	1

Qualifiers

Metals

Qualifier	Qualifier Description
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J3	Estimated value; value may not be accurate. Spike recovery or RPD outside of criteria.
L	Off-scale high. Actual value is known to be greater than the value given.
U	Indicates that the compound was analyzed for but not detected.

General Chemistry

Qualifier	Qualifier Description
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J3	Estimated value; value may not be accurate. Spike recovery or RPD outside of criteria.
U	Indicates that the compound was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client Sample ID: MW-200
Date Collected: 02/28/19 10:05
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			433043	03/13/19 08:16	DRE	TAL PEN
Total Recoverable	Analysis	6020		5	433286	03/13/19 20:07	DRE	TAL PEN
Total Recoverable	Prep	3005A	DL		433043	03/13/19 08:16	DRE	TAL PEN
Total Recoverable	Analysis	6020	DL	50	433449	03/14/19 18:26	DRE	TAL PEN
Total/NA	Prep	7470A			432929	03/12/19 09:30	JAP	TAL PEN
Total/NA	Analysis	7470A		1	433735	03/18/19 14:48	JAP	TAL PEN
Total/NA	Analysis	SM 2540C		1	432107	03/05/19 09:01	CLB	TAL PEN
Total/NA	Analysis	SM 4500 Cl- E		20	433142	03/13/19 12:34	RRC	TAL PEN
Total/NA	Analysis	SM 4500 F C		1	433548	03/15/19 17:17	BAB	TAL PEN
Total/NA	Analysis	SM 4500 SO4 E		10	433223	03/13/19 15:43	RRC	TAL PEN
Total/NA	Analysis	Field Sampling		1	435646	02/28/19 10:05	AW	TAL PEN

Client Sample ID: MW-203
Date Collected: 03/01/19 10:35
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			433043	03/13/19 08:16	DRE	TAL PEN
Total Recoverable	Analysis	6020		5	433286	03/13/19 20:10	DRE	TAL PEN
Total/NA	Prep	7470A			432929	03/12/19 09:30	JAP	TAL PEN
Total/NA	Analysis	7470A		1	433735	03/18/19 14:50	JAP	TAL PEN
Total/NA	Analysis	SM 2540C		1	432185	03/05/19 13:58	CLB	TAL PEN
Total/NA	Analysis	SM 4500 Cl- E		1	433709	03/18/19 10:20	RRC	TAL PEN
Total/NA	Analysis	SM 4500 F C		1	433828	03/19/19 10:12	RRC	TAL PEN
Total/NA	Analysis	SM 4500 SO4 E		5	433751	03/18/19 16:04	RRC	TAL PEN
Total/NA	Analysis	Field Sampling		1	435646	03/01/19 10:35	AW	TAL PEN

Client Sample ID: MW-204
Date Collected: 02/28/19 13:55
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			433043	03/13/19 08:16	DRE	TAL PEN
Total Recoverable	Analysis	6020		5	433286	03/13/19 20:14	DRE	TAL PEN
Total Recoverable	Prep	3005A	DL		433043	03/13/19 08:16	DRE	TAL PEN
Total Recoverable	Analysis	6020	DL	50	433449	03/14/19 18:31	DRE	TAL PEN
Total/NA	Prep	7470A			432929	03/12/19 09:30	JAP	TAL PEN
Total/NA	Analysis	7470A		1	433735	03/18/19 14:52	JAP	TAL PEN
Total/NA	Analysis	SM 2540C		1	432185	03/05/19 13:58	CLB	TAL PEN
Total/NA	Analysis	SM 4500 Cl- E		2	433709	03/18/19 10:46	RRC	TAL PEN
Total/NA	Analysis	SM 4500 F C		1	433548	03/15/19 17:21	BAB	TAL PEN
Total/NA	Analysis	SM 4500 SO4 E		20	433223	03/13/19 15:47	RRC	TAL PEN
Total/NA	Analysis	Field Sampling		1	435646	02/28/19 13:55	AW	TAL PEN

Lab Chronicle

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-1
SDG: Gypsum Storage Area

Client Sample ID: MW-205
Date Collected: 02/28/19 09:05
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			433043	03/13/19 08:16	DRE	TAL PEN
Total Recoverable	Analysis	6020		5	433286	03/13/19 20:18	DRE	TAL PEN
Total/NA	Prep	7470A			432929	03/12/19 09:30	JAP	TAL PEN
Total/NA	Analysis	7470A		1	433735	03/18/19 14:54	JAP	TAL PEN
Total/NA	Analysis	SM 2540C		1	432171	03/05/19 12:46	CLB	TAL PEN
Total/NA	Analysis	SM 4500 Cl- E		1	433709	03/18/19 10:10	RRC	TAL PEN
Total/NA	Analysis	SM 4500 F C		1	433548	03/15/19 17:31	BAB	TAL PEN
Total/NA	Analysis	SM 4500 SO4 E		5	433223	03/13/19 15:47	RRC	TAL PEN
Total/NA	Analysis	Field Sampling		1	435646	02/28/19 09:05	AW	TAL PEN

Client Sample ID: MW-206
Date Collected: 02/28/19 10:55
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			433043	03/13/19 08:16	DRE	TAL PEN
Total Recoverable	Analysis	6020		5	433286	03/13/19 20:21	DRE	TAL PEN
Total Recoverable	Prep	3005A	DL		433043	03/13/19 08:16	DRE	TAL PEN
Total Recoverable	Analysis	6020	DL	100	433449	03/14/19 18:34	DRE	TAL PEN
Total/NA	Prep	7470A			432929	03/12/19 09:30	JAP	TAL PEN
Total/NA	Analysis	7470A		1	433735	03/18/19 14:56	JAP	TAL PEN
Total/NA	Analysis	SM 2540C		1	432185	03/05/19 13:58	CLB	TAL PEN
Total/NA	Analysis	SM 4500 Cl- E		20	433709	03/18/19 10:46	RRC	TAL PEN
Total/NA	Analysis	SM 4500 F C		1	433548	03/15/19 17:43	BAB	TAL PEN
Total/NA	Analysis	SM 4500 SO4 E		20	433223	03/13/19 15:47	RRC	TAL PEN
Total/NA	Analysis	Field Sampling		1	435646	02/28/19 10:55	AW	TAL PEN

Client Sample ID: DUP-02
Date Collected: 02/28/19 08:05
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			433043	03/13/19 08:16	DRE	TAL PEN
Total Recoverable	Analysis	6020		5	433286	03/13/19 20:25	DRE	TAL PEN
Total/NA	Prep	7470A			432929	03/12/19 09:30	JAP	TAL PEN
Total/NA	Analysis	7470A		1	433735	03/18/19 14:57	JAP	TAL PEN
Total/NA	Analysis	SM 2540C		1	432171	03/05/19 12:46	CLB	TAL PEN
Total/NA	Analysis	SM 4500 Cl- E		1	433709	03/18/19 10:13	RRC	TAL PEN
Total/NA	Analysis	SM 4500 F C		1	433548	03/15/19 17:39	BAB	TAL PEN
Total/NA	Analysis	SM 4500 SO4 E		5	433223	03/13/19 15:47	RRC	TAL PEN
Total/NA	Analysis	Field Sampling		1	435646	02/28/19 08:05	AW	TAL PEN

Lab Chronicle

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-1
SDG: Gypsum Storage Area

Client Sample ID: FB-02
Date Collected: 03/01/19 10:37
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			433043	03/13/19 08:16	DRE	TAL PEN
Total Recoverable	Analysis	6020		5	433286	03/13/19 20:46	DRE	TAL PEN
Total/NA	Prep	7470A			432929	03/12/19 09:30	JAP	TAL PEN
Total/NA	Analysis	7470A		1	433735	03/18/19 14:59	JAP	TAL PEN
Total/NA	Analysis	SM 2540C		1	432185	03/05/19 13:58	CLB	TAL PEN
Total/NA	Analysis	SM 4500 Cl- E		1	433709	03/18/19 10:20	RRC	TAL PEN
Total/NA	Analysis	SM 4500 F C		1	433828	03/19/19 10:16	RRC	TAL PEN
Total/NA	Analysis	SM 4500 SO4 E		1	433751	03/18/19 15:12	RRC	TAL PEN

Client Sample ID: EB-02
Date Collected: 03/01/19 11:05
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			433043	03/13/19 08:16	DRE	TAL PEN
Total Recoverable	Analysis	6020		5	433286	03/13/19 20:50	DRE	TAL PEN
Total/NA	Prep	7470A			432929	03/12/19 09:30	JAP	TAL PEN
Total/NA	Analysis	7470A		1	433735	03/18/19 15:01	JAP	TAL PEN
Total/NA	Analysis	SM 2540C		1	432185	03/05/19 13:58	CLB	TAL PEN
Total/NA	Analysis	SM 4500 Cl- E		1	433709	03/18/19 10:20	RRC	TAL PEN
Total/NA	Analysis	SM 4500 F C		1	433828	03/19/19 10:19	RRC	TAL PEN
Total/NA	Analysis	SM 4500 SO4 E		1	433751	03/18/19 15:16	RRC	TAL PEN

Client Sample ID: DUP-05
Date Collected: 03/05/19 08:30
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166764-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			433043	03/13/19 08:16	DRE	TAL PEN
Total Recoverable	Analysis	6020		5	433286	03/13/19 20:54	DRE	TAL PEN
Total Recoverable	Prep	3005A	DL		433043	03/13/19 08:16	DRE	TAL PEN
Total Recoverable	Analysis	6020	DL	25	433449	03/14/19 18:38	DRE	TAL PEN
Total/NA	Prep	7470A			432929	03/12/19 09:30	JAP	TAL PEN
Total/NA	Analysis	7470A		1	433735	03/18/19 15:03	JAP	TAL PEN
Total/NA	Analysis	SM 2540C		1	432606	03/08/19 09:19	CLB	TAL PEN
Total/NA	Analysis	SM 4500 Cl- E		2	433709	03/18/19 10:46	RRC	TAL PEN
Total/NA	Analysis	SM 4500 F C		1	433828	03/19/19 10:41	RRC	TAL PEN
Total/NA	Analysis	SM 4500 SO4 E		5	433751	03/18/19 16:08	RRC	TAL PEN
Total/NA	Analysis	Field Sampling		1	435646	03/05/19 08:30	AW	TAL PEN

Lab Chronicle

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-1
SDG: Gypsum Storage Area

Client Sample ID: MW-201

Date Collected: 03/05/19 09:30
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166764-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			433043	03/13/19 08:16	DRE	TAL PEN
Total Recoverable	Analysis	6020		5	433286	03/13/19 20:57	DRE	TAL PEN
Total Recoverable	Prep	3005A	DL		433043	03/13/19 08:16	DRE	TAL PEN
Total Recoverable	Analysis	6020	DL	25	433449	03/14/19 18:42	DRE	TAL PEN
Total/NA	Prep	7470A			432932	03/12/19 09:41	JAP	TAL PEN
Total/NA	Analysis	7470A		1	433378	03/14/19 14:18	JAP	TAL PEN
Total/NA	Analysis	SM 2540C		1	432606	03/08/19 09:19	CLB	TAL PEN
Total/NA	Analysis	SM 4500 Cl- E		2	433709	03/18/19 10:46	RRC	TAL PEN
Total/NA	Analysis	SM 4500 F C		1	433828	03/19/19 10:44	RRC	TAL PEN
Total/NA	Analysis	SM 4500 SO4 E		5	433751	03/18/19 16:08	RRC	TAL PEN
Total/NA	Analysis	Field Sampling		1	435646	03/05/19 09:30	AW	TAL PEN

Client Sample ID: MW-202

Date Collected: 03/05/19 11:20
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166764-11

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			433042	03/13/19 08:16	DRE	TAL PEN
Total Recoverable	Analysis	6020		5	433286	03/13/19 22:02	DRE	TAL PEN
Total/NA	Prep	7470A			432932	03/12/19 09:41	JAP	TAL PEN
Total/NA	Analysis	7470A		1	433378	03/14/19 14:19	JAP	TAL PEN
Total/NA	Analysis	SM 2540C		1	432606	03/08/19 09:19	CLB	TAL PEN
Total/NA	Analysis	SM 4500 Cl- E		1	433709	03/18/19 10:20	RRC	TAL PEN
Total/NA	Analysis	SM 4500 F C		1	433828	03/19/19 10:47	RRC	TAL PEN
Total/NA	Analysis	SM 4500 SO4 E		1	433751	03/18/19 15:17	RRC	TAL PEN
Total/NA	Analysis	Field Sampling		1	435646	03/05/19 11:20	AW	TAL PEN

Laboratory References:

TAL PEN = Eurofins TestAmerica, Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

Metals

Prep Batch: 432929

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166764-1	MW-200	Total/NA	Water	7470A	
400-166764-2	MW-203	Total/NA	Water	7470A	
400-166764-3	MW-204	Total/NA	Water	7470A	
400-166764-4	MW-205	Total/NA	Water	7470A	
400-166764-5	MW-206	Total/NA	Water	7470A	
400-166764-6	DUP-02	Total/NA	Water	7470A	
400-166764-7	FB-02	Total/NA	Water	7470A	
400-166764-8	EB-02	Total/NA	Water	7470A	
400-166764-9	DUP-05	Total/NA	Water	7470A	
MB 400-432929/14-A	Method Blank	Total/NA	Water	7470A	
LCS 400-432929/15-A	Lab Control Sample	Total/NA	Water	7470A	
400-166763-C-1-B MS	Matrix Spike	Total/NA	Water	7470A	
400-166763-C-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	7470A	

Prep Batch: 432932

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166764-10	MW-201	Total/NA	Water	7470A	
400-166764-11	MW-202	Total/NA	Water	7470A	
MB 400-432932/14-A	Method Blank	Total/NA	Water	7470A	
LCS 400-432932/15-A	Lab Control Sample	Total/NA	Water	7470A	
400-167030-N-9-B MS	Matrix Spike	Total/NA	Water	7470A	
400-167030-N-9-C MSD	Matrix Spike Duplicate	Total/NA	Water	7470A	

Prep Batch: 433042

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166764-11	MW-202	Total Recoverable	Water	3005A	
MB 400-433042/1-A ^5	Method Blank	Total Recoverable	Water	3005A	
LCS 400-433042/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
400-167048-G-3-B MS ^5	Matrix Spike	Total Recoverable	Water	3005A	
400-167048-G-3-C MSD ^5	Matrix Spike Duplicate	Total Recoverable	Water	3005A	

Prep Batch: 433043

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166764-1	MW-200	Total Recoverable	Water	3005A	
400-166764-1 - DL	MW-200	Total Recoverable	Water	3005A	
400-166764-2	MW-203	Total Recoverable	Water	3005A	
400-166764-3	MW-204	Total Recoverable	Water	3005A	
400-166764-3 - DL	MW-204	Total Recoverable	Water	3005A	
400-166764-4	MW-205	Total Recoverable	Water	3005A	
400-166764-5 - DL	MW-206	Total Recoverable	Water	3005A	
400-166764-5	MW-206	Total Recoverable	Water	3005A	
400-166764-6	DUP-02	Total Recoverable	Water	3005A	
400-166764-7	FB-02	Total Recoverable	Water	3005A	
400-166764-8	EB-02	Total Recoverable	Water	3005A	
400-166764-9 - DL	DUP-05	Total Recoverable	Water	3005A	
400-166764-9	DUP-05	Total Recoverable	Water	3005A	
400-166764-10	MW-201	Total Recoverable	Water	3005A	
400-166764-10 - DL	MW-201	Total Recoverable	Water	3005A	
MB 400-433043/1-A ^5	Method Blank	Total Recoverable	Water	3005A	
LCS 400-433043/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
400-166763-C-2-C MS ^5	Matrix Spike	Total Recoverable	Water	3005A	

Metals (Continued)

Prep Batch: 433043 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166763-C-2-D MSD ^5	Matrix Spike Duplicate	Total Recoverable	Water	3005A	

Analysis Batch: 433286

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166764-1	MW-200	Total Recoverable	Water	6020	433043
400-166764-2	MW-203	Total Recoverable	Water	6020	433043
400-166764-3	MW-204	Total Recoverable	Water	6020	433043
400-166764-4	MW-205	Total Recoverable	Water	6020	433043
400-166764-5	MW-206	Total Recoverable	Water	6020	433043
400-166764-6	DUP-02	Total Recoverable	Water	6020	433043
400-166764-7	FB-02	Total Recoverable	Water	6020	433043
400-166764-8	EB-02	Total Recoverable	Water	6020	433043
400-166764-9	DUP-05	Total Recoverable	Water	6020	433043
400-166764-10	MW-201	Total Recoverable	Water	6020	433043
400-166764-11	MW-202	Total Recoverable	Water	6020	433042
MB 400-433042/1-A ^5	Method Blank	Total Recoverable	Water	6020	433042
MB 400-433043/1-A ^5	Method Blank	Total Recoverable	Water	6020	433043
LCS 400-433042/2-A	Lab Control Sample	Total Recoverable	Water	6020	433042
LCS 400-433043/2-A	Lab Control Sample	Total Recoverable	Water	6020	433043
400-166763-C-2-C MS ^5	Matrix Spike	Total Recoverable	Water	6020	433043
400-166763-C-2-D MSD ^5	Matrix Spike Duplicate	Total Recoverable	Water	6020	433043
400-167048-G-3-B MS ^5	Matrix Spike	Total Recoverable	Water	6020	433042
400-167048-G-3-C MSD ^5	Matrix Spike Duplicate	Total Recoverable	Water	6020	433042

Analysis Batch: 433378

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166764-10	MW-201	Total/NA	Water	7470A	432932
400-166764-11	MW-202	Total/NA	Water	7470A	432932
MB 400-432932/14-A	Method Blank	Total/NA	Water	7470A	432932
LCS 400-432932/15-A	Lab Control Sample	Total/NA	Water	7470A	432932
400-167030-N-9-B MS	Matrix Spike	Total/NA	Water	7470A	432932
400-167030-N-9-C MSD	Matrix Spike Duplicate	Total/NA	Water	7470A	432932

Analysis Batch: 433449

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166764-1 - DL	MW-200	Total Recoverable	Water	6020	433043
400-166764-3 - DL	MW-204	Total Recoverable	Water	6020	433043
400-166764-5 - DL	MW-206	Total Recoverable	Water	6020	433043
400-166764-9 - DL	DUP-05	Total Recoverable	Water	6020	433043
400-166764-10 - DL	MW-201	Total Recoverable	Water	6020	433043

Analysis Batch: 433735

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166764-1	MW-200	Total/NA	Water	7470A	432929
400-166764-2	MW-203	Total/NA	Water	7470A	432929
400-166764-3	MW-204	Total/NA	Water	7470A	432929
400-166764-4	MW-205	Total/NA	Water	7470A	432929
400-166764-5	MW-206	Total/NA	Water	7470A	432929
400-166764-6	DUP-02	Total/NA	Water	7470A	432929
400-166764-7	FB-02	Total/NA	Water	7470A	432929
400-166764-8	EB-02	Total/NA	Water	7470A	432929

Metals (Continued)

Analysis Batch: 433735 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166764-9	DUP-05	Total/NA	Water	7470A	432929
MB 400-432929/14-A	Method Blank	Total/NA	Water	7470A	432929
LCS 400-432929/15-A	Lab Control Sample	Total/NA	Water	7470A	432929
400-166763-C-1-B MS	Matrix Spike	Total/NA	Water	7470A	432929
400-166763-C-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	7470A	432929

General Chemistry

Analysis Batch: 432107

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166764-1	MW-200	Total/NA	Water	SM 2540C	
MB 400-432107/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 400-432107/2	Lab Control Sample	Total/NA	Water	SM 2540C	
400-166713-A-2 DU	Duplicate	Total/NA	Water	SM 2540C	

Analysis Batch: 432171

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166764-4	MW-205	Total/NA	Water	SM 2540C	
400-166764-6	DUP-02	Total/NA	Water	SM 2540C	
MB 400-432171/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 400-432171/2	Lab Control Sample	Total/NA	Water	SM 2540C	
400-166763-B-4 DU	Duplicate	Total/NA	Water	SM 2540C	

Analysis Batch: 432185

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166764-2	MW-203	Total/NA	Water	SM 2540C	
400-166764-3	MW-204	Total/NA	Water	SM 2540C	
400-166764-5	MW-206	Total/NA	Water	SM 2540C	
400-166764-7	FB-02	Total/NA	Water	SM 2540C	
400-166764-8	EB-02	Total/NA	Water	SM 2540C	
MB 400-432185/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 400-432185/2	Lab Control Sample	Total/NA	Water	SM 2540C	
400-166764-2 DU	MW-203	Total/NA	Water	SM 2540C	

Analysis Batch: 432606

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166764-9	DUP-05	Total/NA	Water	SM 2540C	
400-166764-10	MW-201	Total/NA	Water	SM 2540C	
400-166764-11	MW-202	Total/NA	Water	SM 2540C	
MB 400-432606/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 400-432606/2	Lab Control Sample	Total/NA	Water	SM 2540C	
400-166764-9 DU	DUP-05	Total/NA	Water	SM 2540C	

Analysis Batch: 433142

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166764-1	MW-200	Total/NA	Water	SM 4500 Cl- E	
MB 400-433142/6	Method Blank	Total/NA	Water	SM 4500 Cl- E	
LCS 400-433142/7	Lab Control Sample	Total/NA	Water	SM 4500 Cl- E	
MRL 400-433142/3	Lab Control Sample	Total/NA	Water	SM 4500 Cl- E	
400-166648-A-5 MS	Matrix Spike	Total/NA	Water	SM 4500 Cl- E	
400-166648-A-5 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 Cl- E	

General Chemistry

Analysis Batch: 433223

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166764-1	MW-200	Total/NA	Water	SM 4500 SO4 E	
400-166764-3	MW-204	Total/NA	Water	SM 4500 SO4 E	
400-166764-4	MW-205	Total/NA	Water	SM 4500 SO4 E	
400-166764-5	MW-206	Total/NA	Water	SM 4500 SO4 E	
400-166764-6	DUP-02	Total/NA	Water	SM 4500 SO4 E	
MB 400-433223/6	Method Blank	Total/NA	Water	SM 4500 SO4 E	
LCS 400-433223/7	Lab Control Sample	Total/NA	Water	SM 4500 SO4 E	
MRL 400-433223/3	Lab Control Sample	Total/NA	Water	SM 4500 SO4 E	
400-166648-A-5 MS	Matrix Spike	Total/NA	Water	SM 4500 SO4 E	
400-166648-A-5 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 SO4 E	
400-166857-D-1 MS	Matrix Spike	Total/NA	Water	SM 4500 SO4 E	
400-166857-D-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 SO4 E	

Analysis Batch: 433548

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166764-1	MW-200	Total/NA	Water	SM 4500 F C	
400-166764-3	MW-204	Total/NA	Water	SM 4500 F C	
400-166764-4	MW-205	Total/NA	Water	SM 4500 F C	
400-166764-5	MW-206	Total/NA	Water	SM 4500 F C	
400-166764-6	DUP-02	Total/NA	Water	SM 4500 F C	
MB 400-433548/3	Method Blank	Total/NA	Water	SM 4500 F C	
LCS 400-433548/4	Lab Control Sample	Total/NA	Water	SM 4500 F C	
660-93065-C-1 MS	Matrix Spike	Total/NA	Water	SM 4500 F C	
660-93065-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 F C	
400-166764-4 DU	MW-205	Total/NA	Water	SM 4500 F C	

Analysis Batch: 433709

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166764-2	MW-203	Total/NA	Water	SM 4500 Cl- E	
400-166764-3	MW-204	Total/NA	Water	SM 4500 Cl- E	
400-166764-4	MW-205	Total/NA	Water	SM 4500 Cl- E	
400-166764-5	MW-206	Total/NA	Water	SM 4500 Cl- E	
400-166764-6	DUP-02	Total/NA	Water	SM 4500 Cl- E	
400-166764-7	FB-02	Total/NA	Water	SM 4500 Cl- E	
400-166764-8	EB-02	Total/NA	Water	SM 4500 Cl- E	
400-166764-9	DUP-05	Total/NA	Water	SM 4500 Cl- E	
400-166764-10	MW-201	Total/NA	Water	SM 4500 Cl- E	
400-166764-11	MW-202	Total/NA	Water	SM 4500 Cl- E	
MB 400-433709/5	Method Blank	Total/NA	Water	SM 4500 Cl- E	
LCS 400-433709/6	Lab Control Sample	Total/NA	Water	SM 4500 Cl- E	
MRL 400-433709/51	Lab Control Sample	Total/NA	Water	SM 4500 Cl- E	
400-166764-4 MS	MW-205	Total/NA	Water	SM 4500 Cl- E	
400-166764-4 MSD	MW-205	Total/NA	Water	SM 4500 Cl- E	
400-166764-10 MS	MW-201	Total/NA	Water	SM 4500 Cl- E	
400-166764-10 MSD	MW-201	Total/NA	Water	SM 4500 Cl- E	

Analysis Batch: 433751

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166764-2	MW-203	Total/NA	Water	SM 4500 SO4 E	
400-166764-7	FB-02	Total/NA	Water	SM 4500 SO4 E	
400-166764-8	EB-02	Total/NA	Water	SM 4500 SO4 E	

General Chemistry (Continued)

Analysis Batch: 433751 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166764-9	DUP-05	Total/NA	Water	SM 4500 SO4 E	
400-166764-10	MW-201	Total/NA	Water	SM 4500 SO4 E	
400-166764-11	MW-202	Total/NA	Water	SM 4500 SO4 E	
MB 400-433751/6	Method Blank	Total/NA	Water	SM 4500 SO4 E	
LCS 400-433751/7	Lab Control Sample	Total/NA	Water	SM 4500 SO4 E	
MRL 400-433751/3	Lab Control Sample	Total/NA	Water	SM 4500 SO4 E	
400-166763-B-3 MS	Matrix Spike	Total/NA	Water	SM 4500 SO4 E	
400-166763-B-3 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 SO4 E	
400-166763-B-7 MS	Matrix Spike	Total/NA	Water	SM 4500 SO4 E	
400-166763-B-7 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 SO4 E	

Analysis Batch: 433828

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166764-2	MW-203	Total/NA	Water	SM 4500 F C	
400-166764-7	FB-02	Total/NA	Water	SM 4500 F C	
400-166764-8	EB-02	Total/NA	Water	SM 4500 F C	
400-166764-9	DUP-05	Total/NA	Water	SM 4500 F C	
400-166764-10	MW-201	Total/NA	Water	SM 4500 F C	
400-166764-11	MW-202	Total/NA	Water	SM 4500 F C	
MB 400-433828/3	Method Blank	Total/NA	Water	SM 4500 F C	
LCS 400-433828/4	Lab Control Sample	Total/NA	Water	SM 4500 F C	
240-109006-C-2 MS	Matrix Spike	Total/NA	Water	SM 4500 F C	
240-109006-C-2 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 F C	
400-166763-B-1 DU	Duplicate	Total/NA	Water	SM 4500 F C	

Field Service / Mobile Lab

Analysis Batch: 435646

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166764-1	MW-200	Total/NA	Water	Field Sampling	
400-166764-2	MW-203	Total/NA	Water	Field Sampling	
400-166764-3	MW-204	Total/NA	Water	Field Sampling	
400-166764-4	MW-205	Total/NA	Water	Field Sampling	
400-166764-5	MW-206	Total/NA	Water	Field Sampling	
400-166764-6	DUP-02	Total/NA	Water	Field Sampling	
400-166764-9	DUP-05	Total/NA	Water	Field Sampling	
400-166764-10	MW-201	Total/NA	Water	Field Sampling	
400-166764-11	MW-202	Total/NA	Water	Field Sampling	

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 400-433042/1-A ^5
Matrix: Water
Analysis Batch: 433286

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 433042

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0010	U	0.0025	0.0010	mg/L		03/13/19 08:16	03/13/19 21:01	5
Arsenic	0.00046	U	0.0013	0.00046	mg/L		03/13/19 08:16	03/13/19 21:01	5
Barium	0.00049	U	0.0025	0.00049	mg/L		03/13/19 08:16	03/13/19 21:01	5
Beryllium	0.00034	U	0.0025	0.00034	mg/L		03/13/19 08:16	03/13/19 21:01	5
Boron	0.021	U	0.050	0.021	mg/L		03/13/19 08:16	03/13/19 21:01	5
Cadmium	0.00034	U	0.0025	0.00034	mg/L		03/13/19 08:16	03/13/19 21:01	5
Calcium	0.13	U	0.25	0.13	mg/L		03/13/19 08:16	03/13/19 21:01	5
Chromium	0.0011	U	0.0025	0.0011	mg/L		03/13/19 08:16	03/13/19 21:01	5
Cobalt	0.00040	U	0.0025	0.00040	mg/L		03/13/19 08:16	03/13/19 21:01	5
Lead	0.00035	U	0.0013	0.00035	mg/L		03/13/19 08:16	03/13/19 21:01	5
Lithium	0.0011	U	0.0050	0.0011	mg/L		03/13/19 08:16	03/13/19 21:01	5
Molybdenum	0.0020	U	0.015	0.0020	mg/L		03/13/19 08:16	03/13/19 21:01	5
Selenium	0.00071	U	0.0013	0.00071	mg/L		03/13/19 08:16	03/13/19 21:01	5
Thallium	0.000085	U	0.00050	0.000085	mg/L		03/13/19 08:16	03/13/19 21:01	5

Lab Sample ID: LCS 400-433042/2-A
Matrix: Water
Analysis Batch: 433286

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 433042

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.0500	0.0477		mg/L		95	80 - 120
Arsenic	0.0500	0.0502		mg/L		100	80 - 120
Barium	0.0500	0.0486		mg/L		97	80 - 120
Beryllium	0.0500	0.0493		mg/L		99	80 - 120
Boron	0.100	0.0929		mg/L		93	80 - 120
Cadmium	0.0500	0.0507		mg/L		101	80 - 120
Calcium	5.00	4.77		mg/L		95	80 - 120
Chromium	0.0500	0.0503		mg/L		101	80 - 120
Cobalt	0.0500	0.0524		mg/L		105	80 - 120
Lead	0.0500	0.0486		mg/L		97	80 - 120
Lithium	0.0500	0.0536		mg/L		107	80 - 120
Molybdenum	0.0500	0.0482		mg/L		96	80 - 120
Selenium	0.0500	0.0479		mg/L		96	80 - 120
Thallium	0.0100	0.00969		mg/L		97	80 - 120

Lab Sample ID: 400-167048-G-3-B MS ^5
Matrix: Water
Analysis Batch: 433286

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 433042

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.0010	U	0.0500	0.0471		mg/L		94	75 - 125
Arsenic	0.0080		0.0500	0.0596		mg/L		103	75 - 125
Barium	1.0		0.0500	1.09		mg/L		86	75 - 125
Beryllium	0.00034	U	0.0500	0.0494		mg/L		99	75 - 125
Boron	0.021	U	0.100	0.133	J3	mg/L		133	75 - 125
Cadmium	0.00034	U	0.0500	0.0490		mg/L		98	75 - 125
Calcium	140	L	5.00	144	L J3	mg/L		152	75 - 125
Chromium	0.0011	U	0.0500	0.0512		mg/L		102	75 - 125
Cobalt	0.0092		0.0500	0.0612		mg/L		104	75 - 125

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: 400-167048-G-3-B MS ^5
Matrix: Water
Analysis Batch: 433286

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 433042

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	0.0012	I	0.0500	0.0509		mg/L		99	75 - 125
Lithium	0.0014	I	0.0500	0.0534		mg/L		104	75 - 125
Molybdenum	0.0020	U	0.0500	0.0504		mg/L		101	75 - 125
Selenium	0.00071	U	0.0500	0.0490		mg/L		98	75 - 125
Thallium	0.000085	U	0.0100	0.00961		mg/L		96	75 - 125

Lab Sample ID: 400-167048-G-3-C MSD ^5
Matrix: Water
Analysis Batch: 433286

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 433042

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	0.0010	U	0.0500	0.0474		mg/L		95	75 - 125	1	20
Arsenic	0.0080		0.0500	0.0594		mg/L		103	75 - 125	0	20
Barium	1.0		0.0500	1.12	J3	mg/L		141	75 - 125	2	20
Beryllium	0.00034	U	0.0500	0.0499		mg/L		100	75 - 125	1	20
Boron	0.021	U	0.100	0.131	J3	mg/L		131	75 - 125	2	20
Cadmium	0.00034	U	0.0500	0.0509		mg/L		102	75 - 125	4	20
Calcium	140	L	5.00	145	L J3	mg/L		170	75 - 125	1	20
Chromium	0.0011	U	0.0500	0.0524		mg/L		105	75 - 125	2	20
Cobalt	0.0092		0.0500	0.0617		mg/L		105	75 - 125	1	20
Lead	0.0012	I	0.0500	0.0505		mg/L		99	75 - 125	1	20
Lithium	0.0014	I	0.0500	0.0542		mg/L		106	75 - 125	1	20
Molybdenum	0.0020	U	0.0500	0.0492		mg/L		98	75 - 125	2	20
Selenium	0.00071	U	0.0500	0.0477		mg/L		95	75 - 125	3	20
Thallium	0.000085	U	0.0100	0.00965		mg/L		97	75 - 125	0	20

Lab Sample ID: MB 400-433043/1-A ^5
Matrix: Water
Analysis Batch: 433286

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 433043

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0010	U	0.0025	0.0010	mg/L		03/13/19 08:16	03/13/19 18:33	5
Arsenic	0.00046	U	0.0013	0.00046	mg/L		03/13/19 08:16	03/13/19 18:33	5
Barium	0.00049	U	0.0025	0.00049	mg/L		03/13/19 08:16	03/13/19 18:33	5
Beryllium	0.00034	U	0.0025	0.00034	mg/L		03/13/19 08:16	03/13/19 18:33	5
Boron	0.021	U	0.050	0.021	mg/L		03/13/19 08:16	03/13/19 18:33	5
Cadmium	0.00034	U	0.0025	0.00034	mg/L		03/13/19 08:16	03/13/19 18:33	5
Calcium	0.13	U	0.25	0.13	mg/L		03/13/19 08:16	03/13/19 18:33	5
Chromium	0.0011	U	0.0025	0.0011	mg/L		03/13/19 08:16	03/13/19 18:33	5
Cobalt	0.00040	U	0.0025	0.00040	mg/L		03/13/19 08:16	03/13/19 18:33	5
Lead	0.00035	U	0.0013	0.00035	mg/L		03/13/19 08:16	03/13/19 18:33	5
Lithium	0.0011	U	0.0050	0.0011	mg/L		03/13/19 08:16	03/13/19 18:33	5
Molybdenum	0.0020	U	0.015	0.0020	mg/L		03/13/19 08:16	03/13/19 18:33	5
Selenium	0.00071	U	0.0013	0.00071	mg/L		03/13/19 08:16	03/13/19 18:33	5
Thallium	0.000085	U	0.00050	0.000085	mg/L		03/13/19 08:16	03/13/19 18:33	5

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 400-433043/2-A
Matrix: Water
Analysis Batch: 433286

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 433043

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.0500	0.0478		mg/L		96	80 - 120
Arsenic	0.0500	0.0506		mg/L		101	80 - 120
Barium	0.0500	0.0490		mg/L		98	80 - 120
Beryllium	0.0500	0.0501		mg/L		100	80 - 120
Boron	0.100	0.101		mg/L		101	80 - 120
Cadmium	0.0500	0.0505		mg/L		101	80 - 120
Calcium	5.00	4.80		mg/L		96	80 - 120
Chromium	0.0500	0.0503		mg/L		101	80 - 120
Cobalt	0.0500	0.0524		mg/L		105	80 - 120
Lead	0.0500	0.0495		mg/L		99	80 - 120
Lithium	0.0500	0.0538		mg/L		108	80 - 120
Molybdenum	0.0500	0.0486		mg/L		97	80 - 120
Selenium	0.0500	0.0480		mg/L		96	80 - 120
Thallium	0.0100	0.00990		mg/L		99	80 - 120

Lab Sample ID: 400-166763-C-2-C MS ^5
Matrix: Water
Analysis Batch: 433286

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 433043

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.0010	U	0.0500	0.0483		mg/L		97	75 - 125
Arsenic	0.00046	U	0.0500	0.0512		mg/L		102	75 - 125
Barium	0.010		0.0500	0.0605		mg/L		100	75 - 125
Beryllium	0.00034	U	0.0500	0.0492		mg/L		98	75 - 125
Boron	0.021	U	0.100	0.105		mg/L		105	75 - 125
Cadmium	0.00034	U	0.0500	0.0514		mg/L		103	75 - 125
Calcium	0.57		5.00	5.41		mg/L		97	75 - 125
Chromium	0.0028		0.0500	0.0518		mg/L		98	75 - 125
Cobalt	0.00040	U	0.0500	0.0531		mg/L		106	75 - 125
Lead	0.00035	U	0.0500	0.0491		mg/L		98	75 - 125
Lithium	0.0014	I	0.0500	0.0533		mg/L		104	75 - 125
Molybdenum	0.0020	U	0.0500	0.0487		mg/L		97	75 - 125
Selenium	0.00071	U	0.0500	0.0493		mg/L		99	75 - 125
Thallium	0.000085	U	0.0100	0.00992		mg/L		99	75 - 125

Lab Sample ID: 400-166763-C-2-D MSD ^5
Matrix: Water
Analysis Batch: 433286

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 433043

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	0.0010	U	0.0500	0.0476		mg/L		95	75 - 125	2	20
Arsenic	0.00046	U	0.0500	0.0509		mg/L		102	75 - 125	1	20
Barium	0.010		0.0500	0.0597		mg/L		98	75 - 125	1	20
Beryllium	0.00034	U	0.0500	0.0498		mg/L		100	75 - 125	1	20
Boron	0.021	U	0.100	0.104		mg/L		104	75 - 125	1	20
Cadmium	0.00034	U	0.0500	0.0516		mg/L		103	75 - 125	0	20
Calcium	0.57		5.00	5.30		mg/L		95	75 - 125	2	20
Chromium	0.0028		0.0500	0.0524		mg/L		99	75 - 125	1	20
Cobalt	0.00040	U	0.0500	0.0527		mg/L		105	75 - 125	1	20

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: 400-166763-C-2-D MSD ^5
Matrix: Water
Analysis Batch: 433286

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 433043

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead	0.00035	U	0.0500	0.0492		mg/L		98	75 - 125	0	20
Lithium	0.0014	I	0.0500	0.0538		mg/L		105	75 - 125	1	20
Molybdenum	0.0020	U	0.0500	0.0479		mg/L		96	75 - 125	2	20
Selenium	0.00071	U	0.0500	0.0488		mg/L		98	75 - 125	1	20
Thallium	0.000085	U	0.0100	0.00992		mg/L		99	75 - 125	0	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 400-432929/14-A
Matrix: Water
Analysis Batch: 433735

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 432929

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000070	U	0.00020	0.000070	mg/L		03/12/19 09:28	03/18/19 14:11	1

Lab Sample ID: LCS 400-432929/15-A
Matrix: Water
Analysis Batch: 433735

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 432929

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00101	0.00101		mg/L		100	80 - 120

Lab Sample ID: 400-166763-C-1-B MS
Matrix: Water
Analysis Batch: 433735

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 432929

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.000070	U	0.00201	0.00202		mg/L		100	80 - 120

Lab Sample ID: 400-166763-C-1-C MSD
Matrix: Water
Analysis Batch: 433735

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 432929

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.000070	U	0.00201	0.00203		mg/L		101	80 - 120	0	20

Lab Sample ID: MB 400-432932/14-A
Matrix: Water
Analysis Batch: 433378

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 432932

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000070	U	0.00020	0.000070	mg/L		03/12/19 09:41	03/14/19 14:04	1

Lab Sample ID: LCS 400-432932/15-A
Matrix: Water
Analysis Batch: 433378

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 432932

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00101	0.000904		mg/L		90	80 - 120

Method: 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: 400-167030-N-9-B MS
Matrix: Water
Analysis Batch: 433378

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 432932

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.000070	U	0.00201	0.00166		mg/L		83	80 - 120

Lab Sample ID: 400-167030-N-9-C MSD
Matrix: Water
Analysis Batch: 433378

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 432932

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.000070	U	0.00201	0.00157	J3	mg/L		78	80 - 120	6	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 400-432107/1
Matrix: Water
Analysis Batch: 432107

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	3.4	U	5.0	3.4	mg/L			03/05/19 09:01	1

Lab Sample ID: LCS 400-432107/2
Matrix: Water
Analysis Batch: 432107

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	293	292		mg/L		100	78 - 122

Lab Sample ID: 400-166713-A-2 DU
Matrix: Water
Analysis Batch: 432107

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	72		76.0		mg/L		5	5

Lab Sample ID: MB 400-432171/1
Matrix: Water
Analysis Batch: 432171

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	3.4	U	5.0	3.4	mg/L			03/05/19 12:46	1

Lab Sample ID: LCS 400-432171/2
Matrix: Water
Analysis Batch: 432171

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	293	232		mg/L		79	78 - 122

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: 400-166763-B-4 DU
Matrix: Water
Analysis Batch: 432171

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	440			448		mg/L				2	5

Lab Sample ID: MB 400-432185/1
Matrix: Water
Analysis Batch: 432185

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	3.4	U	5.0	3.4	mg/L			03/05/19 13:58	1

Lab Sample ID: LCS 400-432185/2
Matrix: Water
Analysis Batch: 432185

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids			293	254		mg/L		87	78 - 122		

Lab Sample ID: 400-166764-2 DU
Matrix: Water
Analysis Batch: 432185

Client Sample ID: MW-203
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	190			186		mg/L				3	5

Lab Sample ID: MB 400-432606/1
Matrix: Water
Analysis Batch: 432606

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	3.4	U	5.0	3.4	mg/L			03/08/19 09:19	1

Lab Sample ID: LCS 400-432606/2
Matrix: Water
Analysis Batch: 432606

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids			293	232		mg/L		79	78 - 122		

Lab Sample ID: 400-166764-9 DU
Matrix: Water
Analysis Batch: 432606

Client Sample ID: DUP-05
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	290			284		mg/L				2	5

Method: SM 4500 Cl- E - Chloride, Total

Lab Sample ID: MB 400-433142/6
Matrix: Water
Analysis Batch: 433142

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.4	U	2.0	1.4	mg/L			03/13/19 11:02	1

Lab Sample ID: LCS 400-433142/7
Matrix: Water
Analysis Batch: 433142

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	30.0	30.9		mg/L		103	90 - 110

Lab Sample ID: MRL 400-433142/3
Matrix: Water
Analysis Batch: 433142

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.00	1.80	I	mg/L		90	50 - 150

Lab Sample ID: 400-166648-A-5 MS
Matrix: Water
Analysis Batch: 433142

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	94		10.0	102		mg/L		82	73 - 120

Lab Sample ID: 400-166648-A-5 MSD
Matrix: Water
Analysis Batch: 433142

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	94		10.0	102		mg/L		78	73 - 120	0	8

Lab Sample ID: MB 400-433709/5
Matrix: Water
Analysis Batch: 433709

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.4	U	2.0	1.4	mg/L			03/18/19 10:10	1

Lab Sample ID: LCS 400-433709/6
Matrix: Water
Analysis Batch: 433709

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	30.0	29.5		mg/L		98	90 - 110

Lab Sample ID: MRL 400-433709/51
Matrix: Water
Analysis Batch: 433709

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.00	1.49	I	mg/L		74	50 - 150

Method: SM 4500 Cl- E - Chloride, Total

Lab Sample ID: 400-166764-4 MS
Matrix: Water
Analysis Batch: 433709

Client Sample ID: MW-205
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride	19		10.0	28.5		mg/L		94	73 - 120		

Lab Sample ID: 400-166764-4 MSD
Matrix: Water
Analysis Batch: 433709

Client Sample ID: MW-205
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	19		10.0	28.8		mg/L		97	73 - 120	1	8

Lab Sample ID: 400-166764-10 MS
Matrix: Water
Analysis Batch: 433709

Client Sample ID: MW-201
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride	75		10.0	78.7	J3	mg/L		40	73 - 120		

Lab Sample ID: 400-166764-10 MSD
Matrix: Water
Analysis Batch: 433709

Client Sample ID: MW-201
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	75		10.0	79.3	J3	mg/L		46	73 - 120	1	8

Method: SM 4500 F C - Fluoride

Lab Sample ID: MB 400-433548/3
Matrix: Water
Analysis Batch: 433548

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.032	U	0.10	0.032	mg/L			03/15/19 16:40	1

Lab Sample ID: LCS 400-433548/4
Matrix: Water
Analysis Batch: 433548

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Fluoride			4.00	3.76		mg/L		94	90 - 110		

Lab Sample ID: 660-93065-C-1 MS
Matrix: Water
Analysis Batch: 433548

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Fluoride	0.83		1.00	1.47	J3	mg/L		64	75 - 125		

Method: SM 4500 F C - Fluoride (Continued)

Lab Sample ID: 660-93065-C-1 MSD
Matrix: Water
Analysis Batch: 433548

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride	0.83		1.00	1.47	J3	mg/L		64	75 - 125	0	4

Lab Sample ID: 400-166764-4 DU
Matrix: Water
Analysis Batch: 433548

Client Sample ID: MW-205
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Fluoride	0.070	I	0.0600	I J3	mg/L		15	4

Lab Sample ID: MB 400-433828/3
Matrix: Water
Analysis Batch: 433828

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.032	U	0.10	0.032	mg/L			03/19/19 09:35	1

Lab Sample ID: LCS 400-433828/4
Matrix: Water
Analysis Batch: 433828

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	4.00	3.91		mg/L		98	90 - 110

Lab Sample ID: 240-109006-C-2 MS
Matrix: Water
Analysis Batch: 433828

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	0.22		1.00	1.29		mg/L		107	75 - 125

Lab Sample ID: 240-109006-C-2 MSD
Matrix: Water
Analysis Batch: 433828

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride	0.22		1.00	1.29		mg/L		107	75 - 125	0	4

Lab Sample ID: 400-166763-B-1 DU
Matrix: Water
Analysis Batch: 433828

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Fluoride	0.032	U	0.032	U	mg/L		NC	4

Method: SM 4500 SO4 E - Sulfate, Total

Lab Sample ID: MB 400-433223/6
Matrix: Water
Analysis Batch: 433223

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	1.4	U	5.0	1.4	mg/L			03/13/19 13:35	1

Lab Sample ID: LCS 400-433223/7
Matrix: Water
Analysis Batch: 433223

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	15.0	14.1		mg/L		94	90 - 110

Lab Sample ID: MRL 400-433223/3
Matrix: Water
Analysis Batch: 433223

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	5.00	4.40	I	mg/L		88	50 - 150

Lab Sample ID: 400-166648-A-5 MS
Matrix: Water
Analysis Batch: 433223

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	150		10.0	151	J3	mg/L		-5	77 - 128

Lab Sample ID: 400-166648-A-5 MSD
Matrix: Water
Analysis Batch: 433223

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	150		10.0	154	J3	mg/L		27	77 - 128	2	5

Lab Sample ID: 400-166857-D-1 MS
Matrix: Water
Analysis Batch: 433223

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	1.6	I	10.0	10.9		mg/L		93	77 - 128

Lab Sample ID: 400-166857-D-1 MSD
Matrix: Water
Analysis Batch: 433223

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	1.6	I	10.0	10.8		mg/L		92	77 - 128	1	5

Lab Sample ID: MB 400-433751/6
Matrix: Water
Analysis Batch: 433751

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	1.4	U	5.0	1.4	mg/L			03/18/19 15:05	1

Method: SM 4500 SO4 E - Sulfate, Total

Lab Sample ID: LCS 400-433751/7
Matrix: Water
Analysis Batch: 433751

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	15.0	14.2		mg/L		95	90 - 110

Lab Sample ID: MRL 400-433751/3
Matrix: Water
Analysis Batch: 433751

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	5.00	3.72	I	mg/L		74	50 - 150

Lab Sample ID: 400-166763-B-3 MS
Matrix: Water
Analysis Batch: 433751

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	35		10.0	43.1		mg/L		83	77 - 128

Lab Sample ID: 400-166763-B-3 MSD
Matrix: Water
Analysis Batch: 433751

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	35		10.0	43.3		mg/L		86	77 - 128	1	5

Lab Sample ID: 400-166763-B-7 MS
Matrix: Water
Analysis Batch: 433751

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	7.4		10.0	17.4		mg/L		100	77 - 128

Lab Sample ID: 400-166763-B-7 MSD
Matrix: Water
Analysis Batch: 433751

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	7.4		10.0	17.5		mg/L		101	77 - 128	1	5

TestAmerica Pensacola
3355 McLemore Drive
Pensacola, FL 32514
Phone (850) 474-1001 Fax (850) 478-2671

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Philip Evans	Lab PM: Whitmire, Cheyenne R	Carrier Tracking No(s):	COC No: 400-82559-23630.1
Client Contact: Kristi Mitchell	Phone: 850-336-0192	E-Mail: cheyenne.whitmire@testamericainc.com		Page: Page 1 of 1
Company: Gulf Power Company				Job #:
Address: BIN 731 One Energy Place	Due Date Requested:			
City: Pensacola	TAT Requested (days):			
State, Zip: FL, 32520				
Phone: 850-444-6427(Tel)	PO #: Pay by Credit Card			
Email: kristi.mitchell@nexteraenergy.com	WO #:			
Project Name: CCR Plant Crist Gypsum Storage Area	Project #: 40005424			
Site:	SSOW#:			

Analysis Requested

400-166764 COC

Preservation Codes:

A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226, 9320_Ra228, Ra226Ra228_GFPC	SM4500_Cl_E - Chloride, SM4500_SO4_E - Sulfate, 2540C - Total Dissolved Solids, 4500_F_C - Fluoride	6020 - Sb,As,Ba,B,Be,Ca,Cd,Cr,Co,Pb,Li,Mo,Se,Tl, 7470A - Mercury	FieldSampling - Field Sampling Parameters	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	N	D	N		
MW-200	2/28/19	1005	G	Water			X	X	X	X		
[redacted]				Water								
[redacted]				Water								
MW-203	3/1/19	1035		Water								
MW-204	2/28/19	1355		Water								
MW-205	2/28/19	0905		Water								
MW-206	2/28/19	1055		Water								
Dup-02	2/28/19	0805		Water								
~~Field~~ FB-02	3/1/19	1037		Water								
EB-02	3/1/19	1105	G	Water			X	X	X	X		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		3/1/19 1900	RDH	B. Hagendorfer	3-1-19 1900	RDH
2	B. Hagendorfer	3-2-19 0930	RDH			
3					3-7-19 0930	TA-PEN

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks: 0.9°C, 1.0°C IR7

Ver: 01/16/2019

TestAmerica Pensacola
3355 McLemore Drive
Pensacola, FL 32514
Phone (850) 474-1001 Fax (850) 478-2671

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Philip Evans	Lab PM: Whitmire, Cheyenne R	Carrier Tracking No(s):	COC No: 400-82559-23630.1
Client Contact: Kristi Mitchell	Phone: 850-336-0192	E-Mail: cheyenne.whitmire@testamericainc.com		Page: Page 1 of 1
Company: Gulf Power Company				Job #:

Address: BIN 731 One Energy Place	Due Date Requested:
City: Pensacola	TAT Requested (days):
State, Zip: FL, 32520	
Phone: 850-444-6427(Tel)	PO #: Pay by Credit Card
Email: kristi.mitchell@nexteraenergy.com	WO #:
Project Name: CCR Plant Crist Gypsum Storage Area	Project #: 40005424
Site:	SSOW#:

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

400-166764 COC

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226, 9320_Ra228, Ra226Ra228_GFPC	SM4500_Cl_E - Chloride, SM4500_SO4_E - Sulfate, 2540C - Total Dissolved Solids, 4500_F_C - Fluoride	6020 - Sb,As,Ba,B,Be,Ca,Cd,Cr,Co,Pb,Li,Mo,Se,Tl, 7470A - Mercury	FieldSampling - Field Sampling Parameters	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	N	D	N		
[redacted] Dup-05	3/5/19	0830	G	Water			X	X	X	X		
MW-201	3/5/19	0930	G	Water			X	X	X	X		
MW-202	3/5/19	1120	G	Water			X	X	X	X		
[redacted]				Water								
[redacted]				Water								
[redacted]				Water								
[redacted]				Water								
				Water								
				Water								
				Water								

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time: 3/6/19 1635	Company RDH	Received by: Kathy R Avery	Date/Time: 3-6-19 1635	Company TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.1, 0.7 - IR7

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Gulf Power Company

Job Number: 400-166764-1
SDG Number: Gypsum Storage Area

Login Number: 166764
List Number: 1
Creator: Conrady, Hank W

List Source: Eurofins TestAmerica, Pensacola

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.9°C, 1.0°C IR-7, 1.1°C, 0.7°C IR-7
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Accreditation/Certification Summary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-1
SDG: Gypsum Storage Area

Laboratory: Eurofins TestAmerica, Pensacola

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alabama	State Program	4	40150	06-30-19
ANAB	ISO/IEC 17025		L2471	02-22-20
Arizona	State Program	9	AZ0710	01-12-20
Arkansas DEQ	State Program	6	88-0689	09-01-19
California	State Program	9	2510	06-30-19
Florida	NELAP	4	E81010	06-30-19
Georgia	State Program	4	E81010 (FL)	06-30-19
Illinois	NELAP	5	200041	10-09-19
Iowa	State Program	7	367	08-01-20
Kansas	NELAP	7	E-10253	10-31-19
Kentucky (UST)	State Program	4	53	06-30-19
Kentucky (WW)	State Program	4	98030	12-31-19
Louisiana	NELAP	6	30976	06-30-19
Louisiana (DW)	NELAP	6	LA017	12-31-19
Maryland	State Program	3	233	09-30-19
Massachusetts	State Program	1	M-FL094	06-30-19
Michigan	State Program	5	9912	06-30-19
New Jersey	NELAP	2	FL006	06-30-19
North Carolina (WW/SW)	State Program	4	314	12-31-19
Oklahoma	State Program	6	9810	08-31-19
Pennsylvania	NELAP	3	68-00467	01-31-20
Rhode Island	State Program	1	LAO00307	12-30-19
South Carolina	State Program	4	96026	06-30-19
Tennessee	State Program	4	TN02907	06-30-19
Texas	NELAP	6	T104704286-18-15	09-30-19
US Fish & Wildlife	Federal		LE058448-0	07-31-19
USDA	Federal		P330-18-00148	05-17-21
Virginia	NELAP	3	460166	06-14-19
Washington	State Program	10	C915	05-15-19
West Virginia DEP	State Program	3	136	07-31-19

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ANALYTICAL REPORT

Eurofins TestAmerica, Pensacola
3355 McLemore Drive
Pensacola, FL 32514
Tel: (850)474-1001

Laboratory Job ID: 400-166764-2
Laboratory Sample Delivery Group: Gypsum Storage Area
Client Project/Site: CCR Plant Crist

For:
Gulf Power Company
BIN 731
One Energy Place
Pensacola, Florida 32520

Attn: Kristi Mitchell

Cheyenne R Whitmire

Authorized for release by:
4/15/2019 3:55:28 PM

Cheyenne Whitmire, Project Manager II
(850)471-6222
cheyenne.whitmire@testamericainc.com

Table of Contents

Job ID: 400-166764-2

Laboratory: Eurofins TestAmerica, Pensacola

Narrative

Job Narrative
400-166764-2

RAD

Method(s) 9315: Ra-226 Prep Batch 160-418846. Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. DUP-05 (400-166764-9), MW-201 (400-166764-10), MW-202 (400-166764-11), (LCS 160-418846/1-A), (MB 160-418846/18-A), (440-235151-B-4-A), (440-235151-A-4-A MS) and (440-235151-B-4-B MSD)

Method(s) 9315: Ra-226 Prep Batch 160-418219. Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. MW-200 (400-166764-1), MW-203 (400-166764-2), MW-204 (400-166764-3), MW-205 (400-166764-4), MW-206 (400-166764-5), DUP-02 (400-166764-6), FB-02 (400-166764-7), EB-02 (400-166764-8), (LCS 160-418219/1-A), (MB 160-418219/24-A), (440-235076-D-1-A), (440-235076-A-1-B MS) and (440-235076-A-1-C MSD)

Method(s) 9320: Ra-228 Prep Batch 160-418851. Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. DUP-05 (400-166764-9), MW-201 (400-166764-10), MW-202 (400-166764-11), (LCS 160-418851/1-A), (MB 160-418851/18-A), (440-235151-B-4-C), (440-235151-A-4-B MS) and (440-235151-B-4-D MSD)

Method(s) 9320: Ra-228 Prep Batch 160-418231. Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. MW-200 (400-166764-1), MW-203 (400-166764-2), MW-204 (400-166764-3), MW-205 (400-166764-4), MW-206 (400-166764-5), DUP-02 (400-166764-6), FB-02 (400-166764-7), EB-02 (400-166764-8), (LCS 160-418231/1-A), (MB 160-418231/24-A), (440-235076-D-1-B), (440-235076-A-1-D MS) and (440-235076-A-1-E MSD)

Method Summary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-2
SDG: Gypsum Storage Area

Method	Method Description	Protocol	Laboratory
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-2
SDG: Gypsum Storage Area

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
400-166764-1	MW-200	Water	02/28/19 10:05	03/02/19 09:30
400-166764-2	MW-203	Water	03/01/19 10:35	03/02/19 09:30
400-166764-3	MW-204	Water	02/28/19 13:55	03/02/19 09:30
400-166764-4	MW-205	Water	02/28/19 09:05	03/02/19 09:30
400-166764-5	MW-206	Water	02/28/19 10:55	03/02/19 09:30
400-166764-6	DUP-02	Water	02/28/19 08:05	03/02/19 09:30
400-166764-7	FB-02	Water	03/01/19 10:37	03/02/19 09:30
400-166764-8	EB-02	Water	03/01/19 11:05	03/02/19 09:30
400-166764-9	DUP-05	Water	03/05/19 08:30	03/06/19 16:35
400-166764-10	MW-201	Water	03/05/19 09:30	03/06/19 16:35
400-166764-11	MW-202	Water	03/05/19 11:20	03/06/19 16:35

Client Sample Results

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-2
SDG: Gypsum Storage Area

Client Sample ID: MW-200
Date Collected: 02/28/19 10:05
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-1
Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	4.47		0.361	0.540	1.00	0.111	pCi/L	03/08/19 09:27	04/02/19 21:22	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.8*		*40 - 110*	*03/08/19 09:27*	*04/02/19 21:22*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	5.24		0.519	0.708	1.00	0.381	pCi/L	03/08/19 11:06	03/27/19 08:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.8*		*40 - 110*	*03/08/19 11:06*	*03/27/19 08:59*	*1*
Y Carrier	*85.2*		*40 - 110*	*03/08/19 11:06*	*03/27/19 08:59*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	9.70		0.632	0.890	5.00	0.381	pCi/L		04/14/19 07:25	1

Client Sample Results

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-2
SDG: Gypsum Storage Area

Client Sample ID: MW-203
Date Collected: 03/01/19 10:35
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-2
Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.61		0.229	0.271	1.00	0.102	pCi/L	03/08/19 09:27	04/02/19 23:11	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*89.1*		*40 - 110*	*03/08/19 09:27*	*04/02/19 23:11*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	5.46		0.541	0.739	1.00	0.400	pCi/L	03/08/19 11:06	03/27/19 09:00	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*89.1*		*40 - 110*	*03/08/19 11:06*	*03/27/19 09:00*	*1*
Y Carrier	*87.1*		*40 - 110*	*03/08/19 11:06*	*03/27/19 09:00*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	7.07		0.587	0.787	5.00	0.400	pCi/L		04/14/19 07:25	1

Client Sample ID: MW-204

Date Collected: 02/28/19 13:55
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-3

Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.912		0.172	0.190	1.00	0.0980	pCi/L	03/08/19 09:27	04/02/19 21:22	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.1*		*40 - 110*	*03/08/19 09:27*	*04/02/19 21:22*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	10.5		0.712	1.20	1.00	0.455	pCi/L	03/08/19 11:06	03/27/19 09:00	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.1*		*40 - 110*	*03/08/19 11:06*	*03/27/19 09:00*	*1*
Y Carrier	*89.0*		*40 - 110*	*03/08/19 11:06*	*03/27/19 09:00*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	11.4		0.732	1.21	5.00	0.455	pCi/L		04/14/19 07:25	1

Client Sample ID: MW-205

Date Collected: 02/28/19 09:05
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-4

Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.31		0.208	0.239	1.00	0.0935	pCi/L	03/08/19 09:27	04/02/19 23:20	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.8*		*40 - 110*	*03/08/19 09:27*	*04/02/19 23:20*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.97		0.364	0.407	1.00	0.406	pCi/L	03/08/19 11:06	03/27/19 09:00	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.8*		*40 - 110*	*03/08/19 11:06*	*03/27/19 09:00*	*1*
Y Carrier	*89.3*		*40 - 110*	*03/08/19 11:06*	*03/27/19 09:00*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	3.28		0.419	0.472	5.00	0.406	pCi/L		04/14/19 07:25	1

Client Sample ID: MW-206

Date Collected: 02/28/19 10:55
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-5

Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	2.97		0.313	0.412	1.00	0.0962	pCi/L	03/08/19 09:27	04/02/19 21:25	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*91.2*		*40 - 110*	*03/08/19 09:27*	*04/02/19 21:25*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	5.07		0.520	0.698	1.00	0.426	pCi/L	03/08/19 11:06	03/27/19 09:00	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*91.2*		*40 - 110*	*03/08/19 11:06*	*03/27/19 09:00*	*1*
Y Carrier	*89.7*		*40 - 110*	*03/08/19 11:06*	*03/27/19 09:00*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	8.04		0.607	0.811	5.00	0.426	pCi/L		04/14/19 07:25	1

Client Sample ID: DUP-02

Date Collected: 02/28/19 08:05
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-6

Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.22		0.215	0.241	1.00	0.116	pCi/L	03/08/19 09:27	04/02/19 21:25	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*80.2*		*40 - 110*	*03/08/19 09:27*	*04/02/19 21:25*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.56		0.378	0.404	1.00	0.461	pCi/L	03/08/19 11:06	03/27/19 09:00	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*80.2*		*40 - 110*	*03/08/19 11:06*	*03/27/19 09:00*	*1*
Y Carrier	*88.2*		*40 - 110*	*03/08/19 11:06*	*03/27/19 09:00*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	2.77		0.435	0.470	5.00	0.461	pCi/L		04/14/19 07:25	1

Client Sample ID: FB-02

Date Collected: 03/01/19 10:37
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-7

Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.00228	U	0.0355	0.0355	1.00	0.0795	pCi/L	03/08/19 09:27	04/02/19 21:25	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*98.8*		*40 - 110*	*03/08/19 09:27*	*04/02/19 21:25*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.194	U	0.238	0.239	1.00	0.394	pCi/L	03/08/19 11:06	03/27/19 09:00	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*98.8*		*40 - 110*	*03/08/19 11:06*	*03/27/19 09:00*	*1*
Y Carrier	*86.7*		*40 - 110*	*03/08/19 11:06*	*03/27/19 09:00*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.196	U	0.241	0.242	5.00	0.394	pCi/L		04/14/19 07:25	1

Client Sample ID: EB-02

Date Collected: 03/01/19 11:05
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-8

Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0517	U	0.0564	0.0566	1.00	0.0883	pCi/L	03/08/19 09:27	04/02/19 21:25	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.3*		*40 - 110*	*03/08/19 09:27*	*04/02/19 21:25*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.191	U	0.225	0.225	1.00	0.371	pCi/L	03/08/19 11:06	03/27/19 09:00	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.3*		*40 - 110*	*03/08/19 11:06*	*03/27/19 09:00*	*1*
Y Carrier	*89.0*		*40 - 110*	*03/08/19 11:06*	*03/27/19 09:00*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.242	U	0.232	0.232	5.00	0.371	pCi/L		04/14/19 07:25	1

Client Sample ID: DUP-05

Date Collected: 03/05/19 08:30
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166764-9

Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	2.18		0.247	0.315	1.00	0.0812	pCi/L	03/12/19 11:02	04/03/19 13:42	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*89.4*		*40 - 110*	*03/12/19 11:02*	*04/03/19 13:42*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	5.71		0.581	0.783	1.00	0.445	pCi/L	03/12/19 11:38	03/21/19 09:01	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*89.4*		*40 - 110*	*03/12/19 11:38*	*03/21/19 09:01*	*1*
Y Carrier	*80.7*		*40 - 110*	*03/12/19 11:38*	*03/21/19 09:01*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	7.88		0.631	0.844	5.00	0.445	pCi/L		04/14/19 07:25	1

Client Sample Results

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-2
SDG: Gypsum Storage Area

Client Sample ID: MW-201
Date Collected: 03/05/19 09:30
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166764-10
Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	2.22		0.241	0.313	1.00	0.0733	pCi/L	03/12/19 11:02	04/03/19 13:43	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.3*		*40 - 110*	*03/12/19 11:02*	*04/03/19 13:43*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	5.89		0.599	0.808	1.00	0.425	pCi/L	03/12/19 11:38	03/21/19 09:02	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.3*		*40 - 110*	*03/12/19 11:38*	*03/21/19 09:02*	*1*
Y Carrier	*74.0*		*40 - 110*	*03/12/19 11:38*	*03/21/19 09:02*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	8.11		0.646	0.867	5.00	0.425	pCi/L		04/14/19 07:25	1

Client Sample Results

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-2
SDG: Gypsum Storage Area

Client Sample ID: MW-202
Date Collected: 03/05/19 11:20
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166764-11
Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.924		0.152	0.174	1.00	0.0900	pCi/L	03/12/19 11:02	04/03/19 13:43	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.8*		*40 - 110*	*03/12/19 11:02*	*04/03/19 13:43*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.25		0.311	0.331	1.00	0.362	pCi/L	03/12/19 11:38	03/21/19 09:02	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.8*		*40 - 110*	*03/12/19 11:38*	*03/21/19 09:02*	*1*
Y Carrier	*81.9*		*40 - 110*	*03/12/19 11:38*	*03/21/19 09:02*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	2.17		0.346	0.374	5.00	0.362	pCi/L		04/14/19 07:25	1

Definitions/Glossary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-2
SDG: Gypsum Storage Area

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Lab Chronicle

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-2
SDG: Gypsum Storage Area

Client Sample ID: MW-200
Date Collected: 02/28/19 10:05
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			418219	03/08/19 09:27	HET	TAL SL
Total/NA	Analysis	9315		1	422416	04/02/19 21:22	CDR	TAL SL
Total/NA	Prep	PrecSep_0			418231	03/08/19 11:06	HET	TAL SL
Total/NA	Analysis	9320		1	421367	03/27/19 08:59	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	423568	04/14/19 07:25	CDR	TAL SL

Client Sample ID: MW-203
Date Collected: 03/01/19 10:35
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			418219	03/08/19 09:27	HET	TAL SL
Total/NA	Analysis	9315		1	422416	04/02/19 23:11	CDR	TAL SL
Total/NA	Prep	PrecSep_0			418231	03/08/19 11:06	HET	TAL SL
Total/NA	Analysis	9320		1	421367	03/27/19 09:00	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	423568	04/14/19 07:25	CDR	TAL SL

Client Sample ID: MW-204
Date Collected: 02/28/19 13:55
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			418219	03/08/19 09:27	HET	TAL SL
Total/NA	Analysis	9315		1	422416	04/02/19 21:22	CDR	TAL SL
Total/NA	Prep	PrecSep_0			418231	03/08/19 11:06	HET	TAL SL
Total/NA	Analysis	9320		1	421367	03/27/19 09:00	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	423568	04/14/19 07:25	CDR	TAL SL

Client Sample ID: MW-205
Date Collected: 02/28/19 09:05
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			418219	03/08/19 09:27	HET	TAL SL
Total/NA	Analysis	9315		1	422365	04/02/19 23:20	CDR	TAL SL
Total/NA	Prep	PrecSep_0			418231	03/08/19 11:06	HET	TAL SL
Total/NA	Analysis	9320		1	421367	03/27/19 09:00	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	423568	04/14/19 07:25	CDR	TAL SL

Lab Chronicle

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-2
SDG: Gypsum Storage Area

Client Sample ID: MW-206
Date Collected: 02/28/19 10:55
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			418219	03/08/19 09:27	HET	TAL SL
Total/NA	Analysis	9315		1	422365	04/02/19 21:25	CDR	TAL SL
Total/NA	Prep	PrecSep_0			418231	03/08/19 11:06	HET	TAL SL
Total/NA	Analysis	9320		1	421367	03/27/19 09:00	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	423568	04/14/19 07:25	CDR	TAL SL

Client Sample ID: DUP-02
Date Collected: 02/28/19 08:05
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			418219	03/08/19 09:27	HET	TAL SL
Total/NA	Analysis	9315		1	422365	04/02/19 21:25	CDR	TAL SL
Total/NA	Prep	PrecSep_0			418231	03/08/19 11:06	HET	TAL SL
Total/NA	Analysis	9320		1	421367	03/27/19 09:00	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	423568	04/14/19 07:25	CDR	TAL SL

Client Sample ID: FB-02
Date Collected: 03/01/19 10:37
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			418219	03/08/19 09:27	HET	TAL SL
Total/NA	Analysis	9315		1	422365	04/02/19 21:25	CDR	TAL SL
Total/NA	Prep	PrecSep_0			418231	03/08/19 11:06	HET	TAL SL
Total/NA	Analysis	9320		1	421367	03/27/19 09:00	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	423568	04/14/19 07:25	CDR	TAL SL

Client Sample ID: EB-02
Date Collected: 03/01/19 11:05
Date Received: 03/02/19 09:30

Lab Sample ID: 400-166764-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			418219	03/08/19 09:27	HET	TAL SL
Total/NA	Analysis	9315		1	422365	04/02/19 21:25	CDR	TAL SL
Total/NA	Prep	PrecSep_0			418231	03/08/19 11:06	HET	TAL SL
Total/NA	Analysis	9320		1	421367	03/27/19 09:00	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	423568	04/14/19 07:25	CDR	TAL SL

Lab Chronicle

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-2
SDG: Gypsum Storage Area

Client Sample ID: DUP-05
Date Collected: 03/05/19 08:30
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166764-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			418846	03/12/19 11:02	LTC	TAL SL
Total/NA	Analysis	9315		1	422457	04/03/19 13:42	CDR	TAL SL
Total/NA	Prep	PrecSep_0			418851	03/12/19 11:38	LTC	TAL SL
Total/NA	Analysis	9320		1	420408	03/21/19 09:01	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	423568	04/14/19 07:25	CDR	TAL SL

Client Sample ID: MW-201
Date Collected: 03/05/19 09:30
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166764-10
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			418846	03/12/19 11:02	LTC	TAL SL
Total/NA	Analysis	9315		1	422476	04/03/19 13:43	KLS	TAL SL
Total/NA	Prep	PrecSep_0			418851	03/12/19 11:38	LTC	TAL SL
Total/NA	Analysis	9320		1	420407	03/21/19 09:02	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	423568	04/14/19 07:25	CDR	TAL SL

Client Sample ID: MW-202
Date Collected: 03/05/19 11:20
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166764-11
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			418846	03/12/19 11:02	LTC	TAL SL
Total/NA	Analysis	9315		1	422476	04/03/19 13:43	KLS	TAL SL
Total/NA	Prep	PrecSep_0			418851	03/12/19 11:38	LTC	TAL SL
Total/NA	Analysis	9320		1	420407	03/21/19 09:02	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	423568	04/14/19 07:25	CDR	TAL SL

Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Rad

Prep Batch: 418219

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166764-1	MW-200	Total/NA	Water	PrecSep-21	
400-166764-2	MW-203	Total/NA	Water	PrecSep-21	
400-166764-3	MW-204	Total/NA	Water	PrecSep-21	
400-166764-4	MW-205	Total/NA	Water	PrecSep-21	
400-166764-5	MW-206	Total/NA	Water	PrecSep-21	
400-166764-6	DUP-02	Total/NA	Water	PrecSep-21	
400-166764-7	FB-02	Total/NA	Water	PrecSep-21	
400-166764-8	EB-02	Total/NA	Water	PrecSep-21	
MB 160-418219/24-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-418219/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-235076-A-1-B MS	Matrix Spike	Total/NA	Water	PrecSep-21	
440-235076-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-21	

Prep Batch: 418231

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166764-1	MW-200	Total/NA	Water	PrecSep_0	
400-166764-2	MW-203	Total/NA	Water	PrecSep_0	
400-166764-3	MW-204	Total/NA	Water	PrecSep_0	
400-166764-4	MW-205	Total/NA	Water	PrecSep_0	
400-166764-5	MW-206	Total/NA	Water	PrecSep_0	
400-166764-6	DUP-02	Total/NA	Water	PrecSep_0	
400-166764-7	FB-02	Total/NA	Water	PrecSep_0	
400-166764-8	EB-02	Total/NA	Water	PrecSep_0	
MB 160-418231/24-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-418231/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-235076-A-1-D MS	Matrix Spike	Total/NA	Water	PrecSep_0	
440-235076-A-1-E MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep_0	

Prep Batch: 418846

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166764-9	DUP-05	Total/NA	Water	PrecSep-21	
400-166764-10	MW-201	Total/NA	Water	PrecSep-21	
400-166764-11	MW-202	Total/NA	Water	PrecSep-21	
MB 160-418846/18-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-418846/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-235151-A-4-A MS	Matrix Spike	Total/NA	Water	PrecSep-21	
440-235151-B-4-B MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-21	

Prep Batch: 418851

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166764-9	DUP-05	Total/NA	Water	PrecSep_0	
400-166764-10	MW-201	Total/NA	Water	PrecSep_0	
400-166764-11	MW-202	Total/NA	Water	PrecSep_0	
MB 160-418851/18-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-418851/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-235151-A-4-B MS	Matrix Spike	Total/NA	Water	PrecSep_0	
440-235151-B-4-D MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep_0	

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-418219/24-A
Matrix: Water
Analysis Batch: 422416

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 418219

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.05094	U	0.0618	0.0619	1.00	0.101	pCi/L	03/08/19 09:27	04/02/19 23:12	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.3*		*40 - 110*	*03/08/19 09:27*	*04/02/19 23:12*	*1*

Lab Sample ID: LCS 160-418219/1-A
Matrix: Water
Analysis Batch: 422416

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 418219

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	9.018		0.969	1.00	0.0778	pCi/L	79	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*96.8*		*40 - 110*

Lab Sample ID: 440-235076-A-1-B MS
Matrix: Water
Analysis Batch: 422365

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 418219

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226	-0.0204	U	15.1	11.93		1.30	1.00	0.127	pCi/L	79	75 - 138		

Carrier	*MS %Yield*	*MS Qualifier*	*Limits*
Ba Carrier	*83.8*		*40 - 110*

Lab Sample ID: 440-235076-A-1-C MSD
Matrix: Water
Analysis Batch: 422455

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 418219

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	-0.0204	U	15.1	12.93		1.41	1.00	0.149	pCi/L	85	75 - 138	0.37	1

Carrier	*MSD %Yield*	*MSD Qualifier*	*Limits*
Ba Carrier	*90.9*		*40 - 110*

Lab Sample ID: MB 160-418846/18-A
Matrix: Water
Analysis Batch: 422457

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 418846

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.01479	U	0.0322	0.0322	1.00	0.0824	pCi/L	03/12/19 11:02	04/03/19 15:54	1

Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: MB 160-418846/18-A
Matrix: Water
Analysis Batch: 422457

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 418846

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	92.0		40 - 110	03/12/19 11:02	04/03/19 15:54	1

Lab Sample ID: LCS 160-418846/1-A
Matrix: Water
Analysis Batch: 422457

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 418846

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	9.470		0.987	1.00	0.0865	pCi/L	83	68 - 137		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	102		40 - 110

Lab Sample ID: 440-235151-A-4-A MS
Matrix: Water
Analysis Batch: 422456

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 418846

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226	0.0651	U	11.4	8.954		0.941	1.00	0.0854	pCi/L	78	75 - 138		

Carrier	MS %Yield	MS Qualifier	Limits
Ba Carrier	92.3		40 - 110

Lab Sample ID: 440-235151-B-4-B MSD
Matrix: Water
Analysis Batch: 422456

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 418846

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.0651	U	11.4	9.407		0.992	1.00	0.0877	pCi/L	82	75 - 138	0.23	1

Carrier	MSD %Yield	MSD Qualifier	Limits
Ba Carrier	84.1		40 - 110

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-418231/24-A
Matrix: Water
Analysis Batch: 421368

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 418231

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1474	U	0.229	0.230	1.00	0.385	pCi/L	03/08/19 11:06	03/27/19 09:02	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	95.3		40 - 110	03/08/19 11:06	03/27/19 09:02	1

Method: 9320 - Radium-228 (GFPC) (Continued)

Lab Sample ID: MB 160-418231/24-A
Matrix: Water
Analysis Batch: 421368

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 418231

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Y Carrier	85.2		40 - 110	03/08/19 11:06	03/27/19 09:02	1

Lab Sample ID: LCS 160-418231/1-A
Matrix: Water
Analysis Batch: 421367

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 418231

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.36	9.011		1.04	1.00	0.333	pCi/L	96	56 - 140		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	96.8		40 - 110
Y Carrier	88.2		40 - 110

Lab Sample ID: 440-235076-A-1-D MS
Matrix: Water
Analysis Batch: 421367

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 418231

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228	0.275	U	12.5	12.65		1.50	1.00	0.568	pCi/L	99	45 - 150		

Carrier	MS %Yield	MS Qualifier	Limits
Ba Carrier	83.8		40 - 110
Y Carrier	88.2		40 - 110

Lab Sample ID: 440-235076-A-1-E MSD
Matrix: Water
Analysis Batch: 421367

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 418231

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	0.275	U	12.5	11.86		1.41	1.00	0.504	pCi/L	93	45 - 150	0.27	1

Carrier	MSD %Yield	MSD Qualifier	Limits
Ba Carrier	90.9		40 - 110
Y Carrier	84.5		40 - 110

Lab Sample ID: MB 160-418851/18-A
Matrix: Water
Analysis Batch: 420416

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 418851

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.2724	U	0.256	0.257	1.00	0.413	pCi/L	03/12/19 11:38	03/21/19 09:12	1

Method: 9320 - Radium-228 (GFPC) (Continued)

Lab Sample ID: MB 160-418851/18-A
Matrix: Water
Analysis Batch: 420416

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 418851

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	92.0		40 - 110	03/12/19 11:38	03/21/19 09:12	1
Y Carrier	82.6		40 - 110	03/12/19 11:38	03/21/19 09:12	1

Lab Sample ID: LCS 160-418851/1-A
Matrix: Water
Analysis Batch: 420408

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 418851

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.38	10.28		1.17	1.00	0.358	pCi/L	110	56 - 140		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	102		40 - 110
Y Carrier	79.3		40 - 110

Lab Sample ID: 440-235151-A-4-B MS
Matrix: Water
Analysis Batch: 420416

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 418851

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228	0.589		9.37	9.874		1.15	1.00	0.387	pCi/L	99	45 - 150		

Carrier	MS %Yield	MS Qualifier	Limits
Ba Carrier	92.3		40 - 110
Y Carrier	81.1		40 - 110

Lab Sample ID: 440-235151-B-4-D MSD
Matrix: Water
Analysis Batch: 420416

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 418851

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	0.589		9.37	11.11		1.29	1.00	0.412	pCi/L	112	45 - 150	0.51	1

Carrier	MSD %Yield	MSD Qualifier	Limits
Ba Carrier	84.1		40 - 110
Y Carrier	81.5		40 - 110

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-2
SDG: Gypsum Storage Area

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Lab Sample ID: 400-166750-A-3 DU
Matrix: Water
Analysis Batch: 423568

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Combined Radium 226 + 228	3.76			3.589		0.482	5.00	0.339	pCi/L			0.18	

TestAmerica Pensacola
3355 McLemore Drive
Pensacola, FL 32514
Phone (850) 474-1001 Fax (850) 478-2671

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Philip Evans	Lab PM: Whitmire, Cheyenne R	Carrier Tracking No(s):	COC No: 400-82559-23630.1
Client Contact: Kristi Mitchell	Phone: 850-336-0192	E-Mail: cheyenne.whitmire@testamericainc.com		Page: Page 1 of 1
Company: Gulf Power Company				Job #:
Address: BIN 731 One Energy Place	Due Date Requested:			
City: Pensacola	TAT Requested (days):			
State, Zip: FL, 32520				
Phone: 850-444-6427(Tel)	PO #: Pay by Credit Card			
Email: kristi.mitchell@nexteraenergy.com	WO #:			
Project Name: CCR Plant Crist Gypsum Storage Area	Project #: 40005424			
Site:	SSOW#:			

Analysis Requested

400-166764 COC

Preservation Codes:

A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226, 9320_Ra228, Ra226Ra228_GFPC	SM4500_Cl_E - Chloride, SM4500_SO4_E - Sulfate, 2540C - Total Dissolved Solids, 4500_F_C - Fluoride	6020 - Sb,As,Ba,B,Be,Ca,Cd,Cr,Co,Pb,Li,Mo,Se,Tl, 7470A - Mercury	FieldSampling - Field Sampling Parameters	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	N	D	N		
MW-200	2/28/19	1005	G	Water			X	X	X	X		
[redacted]				Water								
[redacted]				Water								
MW-203	3/1/19	1035		Water								
MW-204	2/28/19	1355		Water								
MW-205	2/28/19	0905		Water								
MW-206	2/28/19	1055		Water								
Dup-02	2/28/19	0805		Water								
~~Field~~ FB-02	3/1/19	1037		Water								
EB-02	3/1/19	1105	G	Water			X	X	X	X		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		3/1/19 1900	RDH	B. Hagendorfer	3-1-19 1900	RDH
2	B. Hagendorfer	3-2-19 0930	RDH			
3					3-7-19 0930	TA-PEN

Custody Seals Intact: △ Yes △ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks: 0.9°C, 1.0°C IR7

Ver: 01/16/2019

TestAmerica Pensacola
3355 McLemore Drive
Pensacola, FL 32514
Phone (850) 474-1001 Fax (850) 478-2671

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Philip Evans	Lab PM: Whitmire, Cheyenne R	Carrier Tracking No(s):	COC No: 400-82559-23630.1
Client Contact: Kristi Mitchell	Phone: 850-336-0192	E-Mail: cheyenne.whitmire@testamericainc.com		Page: Page 1 of 1
Company: Gulf Power Company				Job #:
Address: BIN 731 One Energy Place	Due Date Requested:			
City: Pensacola	TAT Requested (days):			
State, Zip: FL, 32520				
Phone: 850-444-6427(Tel)	PO #: Pay by Credit Card			
Email: kristi.mitchell@nexteraenergy.com	WO #:			
Project Name: CCR Plant Crist Gypsum Storage Area	Project #: 40005424			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

400-166764 COC

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226, 9320_Ra228, Ra226Ra228_GFPC	SM4500_Cl_E - Chloride, SM4500_SO4_E - Sulfate, 2540C - Total Dissolved Solids, 4500_F_C - Fluoride	6020 - Sb,As,Ba,B,Be,Ca,Cd,Cr,Co,Pb,Li,Mo,Se,Tl, 7470A - Mercury	FieldSampling - Field Sampling Parameters	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	N	D	N		
[redacted] Dup-05	3/5/19	0830	G	Water			X	X	X	Y		
MW-201	3/5/19	0930	G	Water			X	X	X	Y		
MW-202	3/5/19	1120	G	Water			X	X	X	Y		
[redacted]				Water								
[redacted]				Water								
[redacted]				Water								
[redacted]				Water								
				Water								
				Water								
				Water								

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	3/6/19 1635	RDH	Kathy R Avery	3-6-19 1635	TA
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: 1.1, 0.7 - IR7

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Gulf Power Company

Job Number: 400-166764-2
SDG Number: Gypsum Storage Area

Login Number: 166764
List Number: 1
Creator: Conrady, Hank W

List Source: Eurofins TestAmerica, Pensacola

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.9°C, 1.0°C IR-7, 1.1°C, 0.7°C IR-7
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Gulf Power Company

Job Number: 400-166764-2
SDG Number: Gypsum Storage Area

Login Number: 166764
List Number: 2
Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis
List Creation: 03/05/19 05:37 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	19.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Gulf Power Company

Job Number: 400-166764-2
SDG Number: Gypsum Storage Area

Login Number: 166764
List Number: 3
Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis
List Creation: 03/08/19 03:06 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	N/A	18.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Accreditation/Certification Summary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-2
SDG: Gypsum Storage Area

Laboratory: Eurofins TestAmerica, Pensacola

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alabama	State Program	4	40150	06-30-19
ANAB	ISO/IEC 17025		L2471	02-22-20
Arizona	State Program	9	AZ0710	01-12-20
Arkansas DEQ	State Program	6	88-0689	09-01-19
California	State Program	9	2510	06-30-19
Florida	NELAP	4	E81010	06-30-19
Georgia	State Program	4	E81010 (FL)	06-30-19
Illinois	NELAP	5	200041	10-09-19
Iowa	State Program	7	367	08-01-20
Kansas	NELAP	7	E-10253	10-31-19
Kentucky (UST)	State Program	4	53	06-30-19
Kentucky (WW)	State Program	4	98030	12-31-19
Louisiana	NELAP	6	30976	06-30-19
Louisiana (DW)	NELAP	6	LA017	12-31-19
Maryland	State Program	3	233	09-30-19
Massachusetts	State Program	1	M-FL094	06-30-19
Michigan	State Program	5	9912	06-30-19
New Jersey	NELAP	2	FL006	06-30-19
North Carolina (WW/SW)	State Program	4	314	12-31-19
Oklahoma	State Program	6	9810	08-31-19
Pennsylvania	NELAP	3	68-00467	01-31-20
Rhode Island	State Program	1	LAO00307	12-30-19
South Carolina	State Program	4	96026	06-30-19
Tennessee	State Program	4	TN02907	06-30-19
Texas	NELAP	6	T104704286-18-15	09-30-19
US Fish & Wildlife	Federal		LE058448-0	07-31-19
USDA	Federal		P330-18-00148	05-17-21
Virginia	NELAP	3	460166	06-14-19
Washington	State Program	10	C915	05-15-19
West Virginia DEP	State Program	3	136	07-31-19

Accreditation/Certification Summary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166764-2
SDG: Gypsum Storage Area

Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD / DOE		L2305	04-06-22
Arizona	State Program	9	AZ0813	12-08-19
California	State Program	9	2886	06-30-19
Connecticut	State Program	1	PH-0241	03-31-19 *
Florida	NELAP	4	E87689	06-30-19
Hawaii	State Program	9	NA	06-30-19
Illinois	NELAP	5	200023	11-30-19
Iowa	State Program	7	373	12-01-20
Kansas	NELAP	7	E-10236	10-31-19
Kentucky (DW)	State Program	4	KY90125	12-31-19
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA011	12-31-19
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-19
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-20
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-20
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-13	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

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ANALYTICAL REPORT

Eurofins TestAmerica, Pensacola
3355 McLemore Drive
Pensacola, FL 32514
Tel: (850)474-1001

Laboratory Job ID: 400-166941-1
Laboratory Sample Delivery Group: GSA Delineation Sampling
Client Project/Site: CCR Plant Crist

For:
Gulf Power Company
BIN 731
One Energy Place
Pensacola, Florida 32520

Attn: Kristi Mitchell

Cheyenne R Whitmire

Authorized for release by:
4/9/2019 9:17:48 AM

Cheyenne Whitmire, Project Manager II
(850)471-6222
cheyenne.whitmire@testamericainc.com

Table of Contents

Job ID: 400-166941-1

Laboratory: Eurofins TestAmerica, Pensacola

Narrative

Job Narrative
400-166941-1

Metals
Method(s) 6020: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 433805 and analytical batch 433981 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 6020: The post digestion spike % recovery for Calcium associated with batch 433981 was outside of control limits. The following sample is impacted: (400-166941-C-1-A PDS ^5).

Method(s) 6020: The following samples were diluted to bring the concentration of target analytes within the calibration range: PZ-200S (400-166941-1), GSA-2S (400-166941-2) and DUP-06 (400-166941-5). Elevated reporting limits (RLs) are provided.

General Chemistry
Method(s) SM 4500 F C: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 433876 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) SM 4500 Cl- E: Due to the concentration of chlorides in the parent sample, the MS/MSD were diluted after the spike. The spike amounts were adjusted by the dilution factor. (400-167121-A-7 MS) and (400-167121-A-7 MSD)

Method(s) SM 4500 Cl- E: The following samples were diluted to bring the concentration of target analytes within the calibration range: PZ-200S (400-166941-1), GSA-2S (400-166941-2), DUP-06 (400-166941-5), (400-167121-A-7), (400-167121-A-7 MS) and (400-167121-A-7 MSD). Elevated reporting limits (RLs) are provided.

Method(s) SM 4500 SO4 E: Due to the concentration of sulfates in the parent sample, the MS/MSD were diluted after the spike. The spike amounts were adjusted by the dilution factor. (400-167243-A-1 MS) and (400-167243-A-1 MSD)

Method(s) SM 4500 SO4 E: The following samples were diluted to bring the concentration of target analytes within the calibration range: PZ-200S (400-166941-1), GSA-2S (400-166941-2), DUP-06 (400-166941-5), (400-167243-A-1), (400-167243-A-1 MS) and (400-167243-A-1 MSD). Elevated reporting limits (RLs) are provided.

Detection Summary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166941-1
SDG: GSA Delineation Sampling

Client Sample ID: PZ-200S — Lab Sample ID: 400-166941-1

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.050		0.0025	0.00049	mg/L	5		6020	Total Recoverable
Cobalt	0.0055		0.0025	0.00040	mg/L	5		6020	Total Recoverable
Lead	0.00050	I	0.0013	0.00035	mg/L	5		6020	Total Recoverable
Lithium	0.0017	I	0.0050	0.0011	mg/L	5		6020	Total Recoverable
Selenium	0.0027		0.0013	0.00071	mg/L	5		6020	Total Recoverable
Thallium	0.00015	I	0.00050	0.000085	mg/L	5		6020	Total Recoverable
Boron - DL	10		0.50	0.21	mg/L	50		6020	Total Recoverable
Calcium - DL	220		2.5	1.3	mg/L	50		6020	Total Recoverable
Total Dissolved Solids	1300		10	6.8	mg/L	1		SM 2540C	Total/NA
Chloride	450		40	28	mg/L	20		SM 4500 Cl- E	Total/NA
Fluoride	0.040	I	0.10	0.032	mg/L	1		SM 4500 F C	Total/NA
Sulfate	160		50	14	mg/L	10		SM 4500 SO4 E	Total/NA
Field pH	5.31				SU	1		Field Sampling	Total/NA

Client Sample ID: GSA-2S — Lab Sample ID: 400-166941-2

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.031		0.0025	0.00049	mg/L	5		6020	Total Recoverable
Calcium	39		0.25	0.13	mg/L	5		6020	Total Recoverable
Cobalt	0.0010	I	0.0025	0.00040	mg/L	5		6020	Total Recoverable
Lead	0.00056	I	0.0013	0.00035	mg/L	5		6020	Total Recoverable
Selenium	0.0011	I	0.0013	0.00071	mg/L	5		6020	Total Recoverable
Boron - DL	1.6		0.25	0.11	mg/L	25		6020	Total Recoverable
Total Dissolved Solids	240		5.0	3.4	mg/L	1		SM 2540C	Total/NA
Chloride	56		4.0	2.8	mg/L	2		SM 4500 Cl- E	Total/NA
Sulfate	46		10	2.8	mg/L	2		SM 4500 SO4 E	Total/NA
Field pH	4.48				SU	1		Field Sampling	Total/NA

Client Sample ID: PZ-201D — Lab Sample ID: 400-166941-3

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.062		0.0025	0.00049	mg/L	5		6020	Total Recoverable
Calcium	5.1		0.25	0.13	mg/L	5		6020	Total Recoverable
Lead	0.00088	I	0.0013	0.00035	mg/L	5		6020	Total Recoverable
Lithium	0.0097		0.0050	0.0011	mg/L	5		6020	Total Recoverable
Boron - RA	0.028	I	0.050	0.021	mg/L	5		6020	Total Recoverable
Total Dissolved Solids	76		5.0	3.4	mg/L	1		SM 2540C	Total/NA
Chloride	2.7		2.0	1.4	mg/L	1		SM 4500 Cl- E	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Pensacola

Client Sample ID: PZ-201D (Continued) — Lab Sample ID: 400-166941-3

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	0.060	I	0.10	0.032	mg/L	1		SM 4500 F C	Total/NA
Sulfate	1.5	I	5.0	1.4	mg/L	1		SM 4500 SO4 E	Total/NA
Field pH	6.74				SU	1		Field Sampling	Total/NA

Client Sample ID: GE-1D — Lab Sample ID: 400-166941-4

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.019		0.0025	0.00049	mg/L	5		6020	Total Recoverable
Calcium	5.6		0.25	0.13	mg/L	5		6020	Total Recoverable
Cobalt	0.0019	I	0.0025	0.00040	mg/L	5		6020	Total Recoverable
Lead	0.00049	I	0.0013	0.00035	mg/L	5		6020	Total Recoverable
Lithium	0.0028	I	0.0050	0.0011	mg/L	5		6020	Total Recoverable
Total Dissolved Solids	40		5.0	3.4	mg/L	1		SM 2540C	Total/NA
Chloride	22		2.0	1.4	mg/L	1		SM 4500 Cl- E	Total/NA
Sulfate	2.5	I	5.0	1.4	mg/L	1		SM 4500 SO4 E	Total/NA
Field pH	4.87				SU	1		Field Sampling	Total/NA

Client Sample ID: DUP-06 — Lab Sample ID: 400-166941-5

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00047	I	0.0013	0.00046	mg/L	5		6020	Total Recoverable
Barium	0.051		0.0025	0.00049	mg/L	5		6020	Total Recoverable
Cobalt	0.0057		0.0025	0.00040	mg/L	5		6020	Total Recoverable
Lead	0.00053	I	0.0013	0.00035	mg/L	5		6020	Total Recoverable
Lithium	0.0016	I	0.0050	0.0011	mg/L	5		6020	Total Recoverable
Selenium	0.0026		0.0013	0.00071	mg/L	5		6020	Total Recoverable
Thallium	0.00015	I	0.00050	0.000085	mg/L	5		6020	Total Recoverable
Boron - DL	11		0.50	0.21	mg/L	50		6020	Total Recoverable
Calcium - DL	220		2.5	1.3	mg/L	50		6020	Total Recoverable
Total Dissolved Solids	1300		10	6.8	mg/L	1		SM 2540C	Total/NA
Chloride	450		40	28	mg/L	20		SM 4500 Cl- E	Total/NA
Fluoride	0.040	I	0.10	0.032	mg/L	1		SM 4500 F C	Total/NA
Sulfate	160		50	14	mg/L	10		SM 4500 SO4 E	Total/NA
Field pH	5.31				SU	1		Field Sampling	Total/NA

Client Sample ID: DUP-07 — Lab Sample ID: 400-166941-6

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.019		0.0025	0.00049	mg/L	5		6020	Total Recoverable
Calcium	5.5		0.25	0.13	mg/L	5		6020	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client Sample ID: DUP-07 (Continued)

Lab Sample ID: 400-166941-6

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	0.0018	I	0.0025	0.00040	mg/L	5		6020	Total Recoverable
Lead	0.00049	I	0.0013	0.00035	mg/L	5		6020	Total Recoverable
Lithium	0.0022	I	0.0050	0.0011	mg/L	5		6020	Total Recoverable
Boron - RA	0.026	I	0.050	0.021	mg/L	5		6020	Total Recoverable
Total Dissolved Solids	36		5.0	3.4	mg/L	1		SM 2540C	Total/NA
Chloride	22		2.0	1.4	mg/L	1		SM 4500 Cl- E	Total/NA
Sulfate	2.4	I	5.0	1.4	mg/L	1		SM 4500 SO4 E	Total/NA
Field pH	4.87				SU	1		Field Sampling	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166941-1
SDG: GSA Delineation Sampling

Method	Method Description	Protocol	Laboratory
6020	Metals (ICP/MS)	SW846	TAL PEN
7470A	Mercury (CVAA)	SW846	TAL PEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL PEN
SM 4500 Cl- E	Chloride, Total	SM	TAL PEN
SM 4500 F C	Fluoride	SM	TAL PEN
SM 4500 SO4 E	Sulfate, Total	SM	TAL PEN
Field Sampling	Field Sampling	EPA	TAL PEN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL PEN
7470A	Preparation, Mercury	SW846	TAL PEN

Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL PEN = Eurofins TestAmerica, Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

Sample Summary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166941-1
SDG: GSA Delineation Sampling

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
400-166941-1	PZ-200S	Water	03/05/19 16:10	03/06/19 16:35
400-166941-2	GSA-2S	Water	03/06/19 12:10	03/06/19 16:35
400-166941-3	PZ-201D	Water	03/05/19 13:12	03/06/19 16:35
400-166941-4	GE-1D	Water	03/06/19 14:32	03/06/19 16:35
400-166941-5	DUP-06	Water	03/05/19 17:10	03/06/19 16:35
400-166941-6	DUP-07	Water	03/06/19 13:32	03/06/19 16:35

Client Sample Results

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166941-1
SDG: GSA Delineation Sampling

Client Sample ID: PZ-200S

Date Collected: 03/05/19 16:10
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166941-1

Matrix: Water

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0010	U	0.0025	0.0010	mg/L		03/19/19 12:10	03/19/19 16:53	5
Arsenic	0.00046	U	0.0013	0.00046	mg/L		03/19/19 12:10	03/19/19 16:53	5
Barium	**0.050**		0.0025	0.00049	mg/L		03/19/19 12:10	03/19/19 16:53	5
Beryllium	0.00034	U	0.0025	0.00034	mg/L		03/19/19 12:10	03/19/19 16:53	5
Cadmium	0.00034	U	0.0025	0.00034	mg/L		03/19/19 12:10	03/19/19 16:53	5
Cobalt	**0.0055**		0.0025	0.00040	mg/L		03/19/19 12:10	03/19/19 16:53	5
Lead	**0.00050**	**I**	0.0013	0.00035	mg/L		03/19/19 12:10	03/19/19 16:53	5
Lithium	**0.0017**	**I**	0.0050	0.0011	mg/L		03/19/19 12:10	03/19/19 16:53	5
Molybdenum	0.0020	U	0.015	0.0020	mg/L		03/19/19 12:10	03/19/19 16:53	5
Selenium	**0.0027**		0.0013	0.00071	mg/L		03/19/19 12:10	03/19/19 16:53	5
Thallium	**0.00015**	**I**	0.00050	0.000085	mg/L		03/19/19 12:10	03/19/19 16:53	5

Method: 6020 - Metals (ICP/MS) - Total Recoverable - DL

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**10**		0.50	0.21	mg/L		03/19/19 12:10	03/20/19 16:26	50
Calcium	**220**		2.5	1.3	mg/L		03/19/19 12:10	03/20/19 16:26	50

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000070	U	0.00020	0.000070	mg/L		03/20/19 13:33	03/21/19 13:48	1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**1300**		10	6.8	mg/L			03/08/19 09:19	1
Chloride	**450**		40	28	mg/L			03/19/19 14:28	20
Fluoride	**0.040**	**I**	0.10	0.032	mg/L			03/19/19 13:55	1
Sulfate	**160**		50	14	mg/L			03/20/19 10:54	10

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field pH	**5.31**				SU			03/05/19 16:10	1

Client Sample Results

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166941-1
SDG: GSA Delineation Sampling

Client Sample ID: GSA-2S

Date Collected: 03/06/19 12:10
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166941-2

Matrix: Water

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0010	U	0.0025	0.0010	mg/L		03/19/19 12:10	03/19/19 17:12	5
Arsenic	0.00046	U	0.0013	0.00046	mg/L		03/19/19 12:10	03/19/19 17:12	5
Barium	**0.031**		0.0025	0.00049	mg/L		03/19/19 12:10	03/19/19 17:12	5
Beryllium	0.00034	U	0.0025	0.00034	mg/L		03/19/19 12:10	03/19/19 17:12	5
Cadmium	0.00034	U	0.0025	0.00034	mg/L		03/19/19 12:10	03/19/19 17:12	5
Calcium	**39**		0.25	0.13	mg/L		03/19/19 12:10	03/19/19 17:12	5
Cobalt	**0.0010**	**I**	0.0025	0.00040	mg/L		03/19/19 12:10	03/19/19 17:12	5
Lead	**0.00056**	**I**	0.0013	0.00035	mg/L		03/19/19 12:10	03/19/19 17:12	5
Lithium	0.0011	U	0.0050	0.0011	mg/L		03/19/19 12:10	03/19/19 17:12	5
Molybdenum	0.0020	U	0.015	0.0020	mg/L		03/19/19 12:10	03/19/19 17:12	5
Selenium	**0.0011**	**I**	0.0013	0.00071	mg/L		03/19/19 12:10	03/19/19 17:12	5
Thallium	0.000085	U	0.00050	0.000085	mg/L		03/19/19 12:10	03/19/19 17:12	5

Method: 6020 - Metals (ICP/MS) - Total Recoverable - DL

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**1.6**		0.25	0.11	mg/L		03/19/19 12:10	03/20/19 16:29	25

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000070	U	0.00020	0.000070	mg/L		03/20/19 13:33	03/21/19 13:50	1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**240**		5.0	3.4	mg/L			03/08/19 09:19	1
Chloride	**56**		4.0	2.8	mg/L			03/19/19 14:31	2
Fluoride	0.032	U	0.10	0.032	mg/L			03/19/19 13:59	1
Sulfate	**46**		10	2.8	mg/L			03/20/19 10:58	2

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field pH	**4.48**				SU			03/06/19 12:10	1

Client Sample Results

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166941-1
SDG: GSA Delineation Sampling

Client Sample ID: PZ-201D

Date Collected: 03/05/19 13:12
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166941-3

Matrix: Water

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0010	U	0.0025	0.0010	mg/L		03/19/19 12:10	03/19/19 17:16	5
Arsenic	0.00046	U	0.0013	0.00046	mg/L		03/19/19 12:10	03/19/19 17:16	5
Barium	**0.062**		0.0025	0.00049	mg/L		03/19/19 12:10	03/19/19 17:16	5
Beryllium	0.00034	U	0.0025	0.00034	mg/L		03/19/19 12:10	03/19/19 17:16	5
Cadmium	0.00034	U	0.0025	0.00034	mg/L		03/19/19 12:10	03/19/19 17:16	5
Calcium	**5.1**		0.25	0.13	mg/L		03/19/19 12:10	03/19/19 17:16	5
Cobalt	0.00040	U	0.0025	0.00040	mg/L		03/19/19 12:10	03/19/19 17:16	5
Lead	**0.00088**	**I**	0.0013	0.00035	mg/L		03/19/19 12:10	03/19/19 17:16	5
Lithium	**0.0097**		0.0050	0.0011	mg/L		03/19/19 12:10	03/19/19 17:16	5
Molybdenum	0.0020	U	0.015	0.0020	mg/L		03/19/19 12:10	03/19/19 17:16	5
Selenium	0.00071	U	0.0013	0.00071	mg/L		03/19/19 12:10	03/19/19 17:16	5
Thallium	0.000085	U	0.00050	0.000085	mg/L		03/19/19 12:10	03/19/19 17:16	5

Method: 6020 - Metals (ICP/MS) - Total Recoverable - RA

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.028**	**I**	0.050	0.021	mg/L		03/19/19 12:10	03/20/19 16:33	5

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000070	U	0.00020	0.000070	mg/L		03/20/19 13:33	03/21/19 13:52	1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**76**		5.0	3.4	mg/L			03/08/19 09:19	1
Chloride	**2.7**		2.0	1.4	mg/L			03/19/19 13:45	1
Fluoride	**0.060**	**I**	0.10	0.032	mg/L			03/19/19 14:03	1
Sulfate	**1.5**	**I**	5.0	1.4	mg/L			03/20/19 10:20	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field pH	**6.74**				SU			03/05/19 13:12	1

Client Sample Results

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166941-1
SDG: GSA Delineation Sampling

Client Sample ID: GE-1D

Date Collected: 03/06/19 14:32
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166941-4

Matrix: Water

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0010	U	0.0025	0.0010	mg/L		03/19/19 12:10	03/19/19 17:37	5
Arsenic	0.00046	U	0.0013	0.00046	mg/L		03/19/19 12:10	03/19/19 17:37	5
Barium	**0.019**		0.0025	0.00049	mg/L		03/19/19 12:10	03/19/19 17:37	5
Beryllium	0.00034	U	0.0025	0.00034	mg/L		03/19/19 12:10	03/19/19 17:37	5
Boron	0.021	U	0.050	0.021	mg/L		03/19/19 12:10	03/19/19 17:37	5
Cadmium	0.00034	U	0.0025	0.00034	mg/L		03/19/19 12:10	03/19/19 17:37	5
Calcium	**5.6**		0.25	0.13	mg/L		03/19/19 12:10	03/19/19 17:37	5
Cobalt	**0.0019**	**I**	0.0025	0.00040	mg/L		03/19/19 12:10	03/19/19 17:37	5
Lead	**0.00049**	**I**	0.0013	0.00035	mg/L		03/19/19 12:10	03/19/19 17:37	5
Lithium	**0.0028**	**I**	0.0050	0.0011	mg/L		03/19/19 12:10	03/19/19 17:37	5
Molybdenum	0.0020	U	0.015	0.0020	mg/L		03/19/19 12:10	03/19/19 17:37	5
Selenium	0.00071	U	0.0013	0.00071	mg/L		03/19/19 12:10	03/19/19 17:37	5
Thallium	0.000085	U	0.00050	0.000085	mg/L		03/19/19 12:10	03/19/19 17:37	5

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000070	U	0.00020	0.000070	mg/L		03/20/19 13:33	03/21/19 13:53	1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**40**		5.0	3.4	mg/L			03/08/19 09:19	1
Chloride	**22**		2.0	1.4	mg/L			03/19/19 13:52	1
Fluoride	0.032	U	0.10	0.032	mg/L			03/19/19 14:07	1
Sulfate	**2.5**	**I**	5.0	1.4	mg/L			03/20/19 10:20	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field pH	**4.87**				SU			03/06/19 14:32	1

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166941-1
SDG: GSA Delineation Sampling

Client Sample ID: DUP-06

Date Collected: 03/05/19 17:10
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166941-5

Matrix: Water

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0010	U	0.0025	0.0010	mg/L		03/19/19 12:10	03/19/19 17:41	5
Arsenic	**0.00047**	**I**	0.0013	0.00046	mg/L		03/19/19 12:10	03/19/19 17:41	5
Barium	**0.051**		0.0025	0.00049	mg/L		03/19/19 12:10	03/19/19 17:41	5
Beryllium	0.00034	U	0.0025	0.00034	mg/L		03/19/19 12:10	03/19/19 17:41	5
Cadmium	0.00034	U	0.0025	0.00034	mg/L		03/19/19 12:10	03/19/19 17:41	5
Cobalt	**0.0057**		0.0025	0.00040	mg/L		03/19/19 12:10	03/19/19 17:41	5
Lead	**0.00053**	**I**	0.0013	0.00035	mg/L		03/19/19 12:10	03/19/19 17:41	5
Lithium	**0.0016**	**I**	0.0050	0.0011	mg/L		03/19/19 12:10	03/19/19 17:41	5
Molybdenum	0.0020	U	0.015	0.0020	mg/L		03/19/19 12:10	03/19/19 17:41	5
Selenium	**0.0026**		0.0013	0.00071	mg/L		03/19/19 12:10	03/19/19 17:41	5
Thallium	**0.00015**	**I**	0.00050	0.000085	mg/L		03/19/19 12:10	03/19/19 17:41	5

Method: 6020 - Metals (ICP/MS) - Total Recoverable - DL

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**11**		0.50	0.21	mg/L		03/19/19 12:10	03/20/19 16:36	50
Calcium	**220**		2.5	1.3	mg/L		03/19/19 12:10	03/20/19 16:36	50

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000070	U	0.00020	0.000070	mg/L		03/20/19 13:33	03/21/19 14:21	1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**1300**		10	6.8	mg/L			03/08/19 09:19	1
Chloride	**450**		40	28	mg/L			03/19/19 14:28	20
Fluoride	**0.040**	**I**	0.10	0.032	mg/L			03/19/19 14:10	1
Sulfate	**160**		50	14	mg/L			03/20/19 10:54	10

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field pH	**5.31**				SU			03/05/19 17:10	1

Client Sample Results

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166941-1
SDG: GSA Delineation Sampling

Client Sample ID: DUP-07

Date Collected: 03/06/19 13:32
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166941-6

Matrix: Water

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0010	U	0.0025	0.0010	mg/L		03/19/19 12:10	03/19/19 17:44	5
Arsenic	0.00046	U	0.0013	0.00046	mg/L		03/19/19 12:10	03/19/19 17:44	5
Barium	**0.019**		0.0025	0.00049	mg/L		03/19/19 12:10	03/19/19 17:44	5
Beryllium	0.00034	U	0.0025	0.00034	mg/L		03/19/19 12:10	03/19/19 17:44	5
Cadmium	0.00034	U	0.0025	0.00034	mg/L		03/19/19 12:10	03/19/19 17:44	5
Calcium	**5.5**		0.25	0.13	mg/L		03/19/19 12:10	03/19/19 17:44	5
Cobalt	**0.0018**	**I**	0.0025	0.00040	mg/L		03/19/19 12:10	03/19/19 17:44	5
Lead	**0.00049**	**I**	0.0013	0.00035	mg/L		03/19/19 12:10	03/19/19 17:44	5
Lithium	**0.0022**	**I**	0.0050	0.0011	mg/L		03/19/19 12:10	03/19/19 17:44	5
Molybdenum	0.0020	U	0.015	0.0020	mg/L		03/19/19 12:10	03/19/19 17:44	5
Selenium	0.00071	U	0.0013	0.00071	mg/L		03/19/19 12:10	03/19/19 17:44	5
Thallium	0.000085	U	0.00050	0.000085	mg/L		03/19/19 12:10	03/19/19 17:44	5

Method: 6020 - Metals (ICP/MS) - Total Recoverable - RA

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.026**	**I**	0.050	0.021	mg/L		03/19/19 12:10	03/20/19 16:40	5

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000070	U	0.00020	0.000070	mg/L		03/20/19 13:33	03/21/19 14:23	1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**36**		5.0	3.4	mg/L			03/08/19 09:19	1
Chloride	**22**		2.0	1.4	mg/L			03/19/19 13:52	1
Fluoride	0.032	U	0.10	0.032	mg/L			03/19/19 14:14	1
Sulfate	**2.4**	**I**	5.0	1.4	mg/L			03/20/19 10:20	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field pH	**4.87**				SU			03/06/19 13:32	1

Qualifiers

Metals

Qualifier	Qualifier Description
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J3	Estimated value; value may not be accurate. Spike recovery or RPD outside of criteria.
L	Off-scale high. Actual value is known to be greater than the value given.
U	Indicates that the compound was analyzed for but not detected.

General Chemistry

Qualifier	Qualifier Description
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J3	Estimated value; value may not be accurate. Spike recovery or RPD outside of criteria.
U	Indicates that the compound was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Lab Chronicle

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166941-1
SDG: GSA Delineation Sampling

Client Sample ID: PZ-200S
Date Collected: 03/05/19 16:10
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166941-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			433805	03/19/19 12:10	DRE	TAL PEN
Total Recoverable	Analysis	6020		5	433981	03/19/19 16:53	DRE	TAL PEN
Total Recoverable	Prep	3005A	DL		433805	03/19/19 12:10	DRE	TAL PEN
Total Recoverable	Analysis	6020	DL	50	434112	03/20/19 16:26	DRE	TAL PEN
Total/NA	Prep	7470A			433992	03/20/19 13:33	JAP	TAL PEN
Total/NA	Analysis	7470A		1	434199	03/21/19 13:48	JAP	TAL PEN
Total/NA	Analysis	SM 2540C		1	432606	03/08/19 09:19	CLB	TAL PEN
Total/NA	Analysis	SM 4500 Cl- E		20	433871	03/19/19 14:28	RRC	TAL PEN
Total/NA	Analysis	SM 4500 F C		1	433876	03/19/19 13:55	RRC	TAL PEN
Total/NA	Analysis	SM 4500 SO4 E		10	433957	03/20/19 10:54	RRC	TAL PEN
Total/NA	Analysis	Field Sampling		1	435647	03/05/19 16:10	AW	TAL PEN

Client Sample ID: GSA-2S
Date Collected: 03/06/19 12:10
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166941-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			433805	03/19/19 12:10	DRE	TAL PEN
Total Recoverable	Analysis	6020		5	433981	03/19/19 17:12	DRE	TAL PEN
Total Recoverable	Prep	3005A	DL		433805	03/19/19 12:10	DRE	TAL PEN
Total Recoverable	Analysis	6020	DL	25	434112	03/20/19 16:29	DRE	TAL PEN
Total/NA	Prep	7470A			433992	03/20/19 13:33	JAP	TAL PEN
Total/NA	Analysis	7470A		1	434199	03/21/19 13:50	JAP	TAL PEN
Total/NA	Analysis	SM 2540C		1	432606	03/08/19 09:19	CLB	TAL PEN
Total/NA	Analysis	SM 4500 Cl- E		2	433871	03/19/19 14:31	RRC	TAL PEN
Total/NA	Analysis	SM 4500 F C		1	433876	03/19/19 13:59	RRC	TAL PEN
Total/NA	Analysis	SM 4500 SO4 E		2	433957	03/20/19 10:58	RRC	TAL PEN
Total/NA	Analysis	Field Sampling		1	435647	03/06/19 12:10	AW	TAL PEN

Client Sample ID: PZ-201D
Date Collected: 03/05/19 13:12
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166941-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			433805	03/19/19 12:10	DRE	TAL PEN
Total Recoverable	Analysis	6020		5	433981	03/19/19 17:16	DRE	TAL PEN
Total Recoverable	Prep	3005A	RA		433805	03/19/19 12:10	DRE	TAL PEN
Total Recoverable	Analysis	6020	RA	5	434112	03/20/19 16:33	DRE	TAL PEN
Total/NA	Prep	7470A			433992	03/20/19 13:33	JAP	TAL PEN
Total/NA	Analysis	7470A		1	434199	03/21/19 13:52	JAP	TAL PEN
Total/NA	Analysis	SM 2540C		1	432606	03/08/19 09:19	CLB	TAL PEN
Total/NA	Analysis	SM 4500 Cl- E		1	433871	03/19/19 13:45	RRC	TAL PEN
Total/NA	Analysis	SM 4500 F C		1	433876	03/19/19 14:03	RRC	TAL PEN

Client Sample ID: PZ-201D
Date Collected: 03/05/19 13:12
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166941-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Field Sampling		1	435647	03/05/19 13:12	AW	TAL PEN

Client Sample ID: GE-1D
Date Collected: 03/06/19 14:32
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166941-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			433805	03/19/19 12:10	DRE	TAL PEN
Total Recoverable	Analysis	6020		5	433981	03/19/19 17:37	DRE	TAL PEN
Total/NA	Prep	7470A			433992	03/20/19 13:33	JAP	TAL PEN
Total/NA	Analysis	7470A		1	434199	03/21/19 13:53	JAP	TAL PEN
Total/NA	Analysis	SM 2540C		1	432606	03/08/19 09:19	CLB	TAL PEN
Total/NA	Analysis	SM 4500 Cl- E		1	433871	03/19/19 13:52	RRC	TAL PEN
Total/NA	Analysis	SM 4500 F C		1	433876	03/19/19 14:07	RRC	TAL PEN
Total/NA	Analysis	SM 4500 SO4 E		1	433957	03/20/19 10:20	RRC	TAL PEN
Total/NA	Analysis	Field Sampling		1	435647	03/06/19 14:32	AW	TAL PEN

Client Sample ID: DUP-06
Date Collected: 03/05/19 17:10
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166941-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			433805	03/19/19 12:10	DRE	TAL PEN
Total Recoverable	Analysis	6020		5	433981	03/19/19 17:41	DRE	TAL PEN
Total Recoverable	Prep	3005A	DL		433805	03/19/19 12:10	DRE	TAL PEN
Total Recoverable	Analysis	6020	DL	50	434112	03/20/19 16:36	DRE	TAL PEN
Total/NA	Prep	7470A			433992	03/20/19 13:33	JAP	TAL PEN
Total/NA	Analysis	7470A		1	434199	03/21/19 14:21	JAP	TAL PEN
Total/NA	Analysis	SM 2540C		1	432606	03/08/19 09:19	CLB	TAL PEN
Total/NA	Analysis	SM 4500 Cl- E		20	433871	03/19/19 14:28	RRC	TAL PEN
Total/NA	Analysis	SM 4500 F C		1	433876	03/19/19 14:10	RRC	TAL PEN
Total/NA	Analysis	SM 4500 SO4 E		10	433957	03/20/19 10:54	RRC	TAL PEN
Total/NA	Analysis	Field Sampling		1	435647	03/05/19 17:10	AW	TAL PEN

Client Sample ID: DUP-07
Date Collected: 03/06/19 13:32
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166941-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			433805	03/19/19 12:10	DRE	TAL PEN
Total Recoverable	Analysis	6020		5	433981	03/19/19 17:44	DRE	TAL PEN
Total Recoverable	Prep	3005A	RA		433805	03/19/19 12:10	DRE	TAL PEN
Total Recoverable	Analysis	6020	RA	5	434112	03/20/19 16:40	DRE	TAL PEN
Total/NA	Prep	7470A			433992	03/20/19 13:33	JAP	TAL PEN
Total/NA	Analysis	7470A		1	434199	03/21/19 14:23	JAP	TAL PEN
Total/NA	Analysis	SM 2540C		1	432606	03/08/19 09:19	CLB	TAL PEN

Lab Chronicle

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166941-1
SDG: GSA Delineation Sampling

Client Sample ID: DUP-07
Date Collected: 03/06/19 13:32
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166941-6
Matrix: Water

Total/NA	Analysis	SM 4500 F C	1	433876	03/19/19 14:14	RRC	TAL PEN
Total/NA	Analysis	SM 4500 SO4 E	1	433957	03/20/19 10:20	RRC	TAL PEN
Total/NA	Analysis	Field Sampling	1	435647	03/06/19 13:32	AW	TAL PEN

Laboratory References:

TAL PEN = Eurofins TestAmerica, Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

Metals

Prep Batch: 433805

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166941-1	PZ-200S	Total Recoverable	Water	3005A	
400-166941-1 - DL	PZ-200S	Total Recoverable	Water	3005A	
400-166941-2	GSA-2S	Total Recoverable	Water	3005A	
400-166941-2 - DL	GSA-2S	Total Recoverable	Water	3005A	
400-166941-3	PZ-201D	Total Recoverable	Water	3005A	
400-166941-3 - RA	PZ-201D	Total Recoverable	Water	3005A	
400-166941-4	GE-1D	Total Recoverable	Water	3005A	
400-166941-5	DUP-06	Total Recoverable	Water	3005A	
400-166941-5 - DL	DUP-06	Total Recoverable	Water	3005A	
400-166941-6	DUP-07	Total Recoverable	Water	3005A	
400-166941-6 - RA	DUP-07	Total Recoverable	Water	3005A	
MB 400-433805/1-A ^5	Method Blank	Total Recoverable	Water	3005A	
LCS 400-433805/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
400-166941-1 MS	PZ-200S	Total Recoverable	Water	3005A	
400-166941-1 MSD	PZ-200S	Total Recoverable	Water	3005A	

Analysis Batch: 433981

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166941-1	PZ-200S	Total Recoverable	Water	6020	433805
400-166941-2	GSA-2S	Total Recoverable	Water	6020	433805
400-166941-3	PZ-201D	Total Recoverable	Water	6020	433805
400-166941-4	GE-1D	Total Recoverable	Water	6020	433805
400-166941-5	DUP-06	Total Recoverable	Water	6020	433805
400-166941-6	DUP-07	Total Recoverable	Water	6020	433805
MB 400-433805/1-A ^5	Method Blank	Total Recoverable	Water	6020	433805
LCS 400-433805/2-A	Lab Control Sample	Total Recoverable	Water	6020	433805
400-166941-1 MS	PZ-200S	Total Recoverable	Water	6020	433805
400-166941-1 MSD	PZ-200S	Total Recoverable	Water	6020	433805

Prep Batch: 433992

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166941-1	PZ-200S	Total/NA	Water	7470A	
400-166941-2	GSA-2S	Total/NA	Water	7470A	
400-166941-3	PZ-201D	Total/NA	Water	7470A	
400-166941-4	GE-1D	Total/NA	Water	7470A	
400-166941-5	DUP-06	Total/NA	Water	7470A	
400-166941-6	DUP-07	Total/NA	Water	7470A	
MB 400-433992/13-A	Method Blank	Total/NA	Water	7470A	
LCS 400-433992/14-A	Lab Control Sample	Total/NA	Water	7470A	
400-167267-K-5-E MS	Matrix Spike	Total/NA	Water	7470A	
400-167267-K-5-F MSD	Matrix Spike Duplicate	Total/NA	Water	7470A	

Analysis Batch: 434112

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166941-1 - DL	PZ-200S	Total Recoverable	Water	6020	433805
400-166941-2 - DL	GSA-2S	Total Recoverable	Water	6020	433805
400-166941-3 - RA	PZ-201D	Total Recoverable	Water	6020	433805
400-166941-5 - DL	DUP-06	Total Recoverable	Water	6020	433805
400-166941-6 - RA	DUP-07	Total Recoverable	Water	6020	433805

Metals

Analysis Batch: 434199

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166941-1	PZ-200S	Total/NA	Water	7470A	433992
400-166941-2	GSA-2S	Total/NA	Water	7470A	433992
400-166941-3	PZ-201D	Total/NA	Water	7470A	433992
400-166941-4	GE-1D	Total/NA	Water	7470A	433992
400-166941-5	DUP-06	Total/NA	Water	7470A	433992
400-166941-6	DUP-07	Total/NA	Water	7470A	433992
MB 400-433992/13-A	Method Blank	Total/NA	Water	7470A	433992
LCS 400-433992/14-A	Lab Control Sample	Total/NA	Water	7470A	433992
400-167267-K-5-E MS	Matrix Spike	Total/NA	Water	7470A	433992
400-167267-K-5-F MSD	Matrix Spike Duplicate	Total/NA	Water	7470A	433992

General Chemistry

Analysis Batch: 432606

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166941-1	PZ-200S	Total/NA	Water	SM 2540C	
400-166941-2	GSA-2S	Total/NA	Water	SM 2540C	
400-166941-3	PZ-201D	Total/NA	Water	SM 2540C	
400-166941-4	GE-1D	Total/NA	Water	SM 2540C	
400-166941-5	DUP-06	Total/NA	Water	SM 2540C	
400-166941-6	DUP-07	Total/NA	Water	SM 2540C	
MB 400-432606/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 400-432606/2	Lab Control Sample	Total/NA	Water	SM 2540C	
400-166940-A-4 DU	Duplicate	Total/NA	Water	SM 2540C	

Analysis Batch: 433871

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166941-1	PZ-200S	Total/NA	Water	SM 4500 Cl- E	
400-166941-2	GSA-2S	Total/NA	Water	SM 4500 Cl- E	
400-166941-3	PZ-201D	Total/NA	Water	SM 4500 Cl- E	
400-166941-4	GE-1D	Total/NA	Water	SM 4500 Cl- E	
400-166941-5	DUP-06	Total/NA	Water	SM 4500 Cl- E	
400-166941-6	DUP-07	Total/NA	Water	SM 4500 Cl- E	
MB 400-433871/6	Method Blank	Total/NA	Water	SM 4500 Cl- E	
LCS 400-433871/7	Lab Control Sample	Total/NA	Water	SM 4500 Cl- E	
MRL 400-433871/3	Lab Control Sample	Total/NA	Water	SM 4500 Cl- E	
400-167121-A-1 MS	Matrix Spike	Total/NA	Water	SM 4500 Cl- E	
400-167121-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 Cl- E	
400-167121-A-7 MS	Matrix Spike	Total/NA	Water	SM 4500 Cl- E	
400-167121-A-7 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 Cl- E	

Analysis Batch: 433876

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166941-1	PZ-200S	Total/NA	Water	SM 4500 F C	
400-166941-2	GSA-2S	Total/NA	Water	SM 4500 F C	
400-166941-3	PZ-201D	Total/NA	Water	SM 4500 F C	
400-166941-4	GE-1D	Total/NA	Water	SM 4500 F C	
400-166941-5	DUP-06	Total/NA	Water	SM 4500 F C	
400-166941-6	DUP-07	Total/NA	Water	SM 4500 F C	
MB 400-433876/3	Method Blank	Total/NA	Water	SM 4500 F C	
LCS 400-433876/4	Lab Control Sample	Total/NA	Water	SM 4500 F C	

General Chemistry (Continued)

Analysis Batch: 433876 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-92964-C-5 MS	Matrix Spike	Total/NA	Water	SM 4500 F C	
660-92964-C-5 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 F C	
660-92964-C-4 DU	Duplicate	Total/NA	Water	SM 4500 F C	

Analysis Batch: 433957

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166941-1	PZ-200S	Total/NA	Water	SM 4500 SO4 E	
400-166941-2	GSA-2S	Total/NA	Water	SM 4500 SO4 E	
400-166941-3	PZ-201D	Total/NA	Water	SM 4500 SO4 E	
400-166941-4	GE-1D	Total/NA	Water	SM 4500 SO4 E	
400-166941-5	DUP-06	Total/NA	Water	SM 4500 SO4 E	
400-166941-6	DUP-07	Total/NA	Water	SM 4500 SO4 E	
MB 400-433957/6	Method Blank	Total/NA	Water	SM 4500 SO4 E	
LCS 400-433957/7	Lab Control Sample	Total/NA	Water	SM 4500 SO4 E	
MRL 400-433957/3	Lab Control Sample	Total/NA	Water	SM 4500 SO4 E	
400-167243-A-1 MS	Matrix Spike	Total/NA	Water	SM 4500 SO4 E	
400-167243-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 SO4 E	
400-167399-A-1 MS	Matrix Spike	Total/NA	Water	SM 4500 SO4 E	
400-167399-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 SO4 E	

Field Service / Mobile Lab

Analysis Batch: 435647

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166941-1	PZ-200S	Total/NA	Water	Field Sampling	
400-166941-2	GSA-2S	Total/NA	Water	Field Sampling	
400-166941-3	PZ-201D	Total/NA	Water	Field Sampling	
400-166941-4	GE-1D	Total/NA	Water	Field Sampling	
400-166941-5	DUP-06	Total/NA	Water	Field Sampling	
400-166941-6	DUP-07	Total/NA	Water	Field Sampling	

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 400-433805/1-A ^5
Matrix: Water
Analysis Batch: 433981

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 433805

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0010	U	0.0025	0.0010	mg/L		03/19/19 12:10	03/19/19 16:42	5
Arsenic	0.00046	U	0.0013	0.00046	mg/L		03/19/19 12:10	03/19/19 16:42	5
Barium	0.00049	U	0.0025	0.00049	mg/L		03/19/19 12:10	03/19/19 16:42	5
Beryllium	0.00034	U	0.0025	0.00034	mg/L		03/19/19 12:10	03/19/19 16:42	5
Boron	0.021	U	0.050	0.021	mg/L		03/19/19 12:10	03/19/19 16:42	5
Cadmium	0.00034	U	0.0025	0.00034	mg/L		03/19/19 12:10	03/19/19 16:42	5
Calcium	0.13	U	0.25	0.13	mg/L		03/19/19 12:10	03/19/19 16:42	5
Cobalt	0.00040	U	0.0025	0.00040	mg/L		03/19/19 12:10	03/19/19 16:42	5
Lead	0.00035	U	0.0013	0.00035	mg/L		03/19/19 12:10	03/19/19 16:42	5
Lithium	0.0011	U	0.0050	0.0011	mg/L		03/19/19 12:10	03/19/19 16:42	5
Molybdenum	0.0020	U	0.015	0.0020	mg/L		03/19/19 12:10	03/19/19 16:42	5
Selenium	0.00071	U	0.0013	0.00071	mg/L		03/19/19 12:10	03/19/19 16:42	5
Thallium	0.000085	U	0.00050	0.000085	mg/L		03/19/19 12:10	03/19/19 16:42	5

Lab Sample ID: LCS 400-433805/2-A
Matrix: Water
Analysis Batch: 433981

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 433805

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.0500	0.0486		mg/L		97	80 - 120
Arsenic	0.0500	0.0508		mg/L		102	80 - 120
Barium	0.0500	0.0530		mg/L		106	80 - 120
Beryllium	0.0500	0.0480		mg/L		96	80 - 120
Boron	0.100	0.0990		mg/L		99	80 - 120
Cadmium	0.0500	0.0467		mg/L		93	80 - 120
Calcium	5.00	5.03		mg/L		101	80 - 120
Cobalt	0.0500	0.0496		mg/L		99	80 - 120
Lead	0.0500	0.0483		mg/L		97	80 - 120
Lithium	0.0500	0.0497		mg/L		99	80 - 120
Molybdenum	0.0500	0.0494		mg/L		99	80 - 120
Selenium	0.0500	0.0467		mg/L		93	80 - 120
Thallium	0.0100	0.00953		mg/L		95	80 - 120

Lab Sample ID: 400-166941-1 MS
Matrix: Water
Analysis Batch: 433981

Client Sample ID: PZ-200S
Prep Type: Total Recoverable
Prep Batch: 433805

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.0010	U	0.0500	0.0496		mg/L		99	75 - 125
Arsenic	0.00046	U	0.0500	0.0524		mg/L		105	75 - 125
Barium	0.050		0.0500	0.105		mg/L		110	75 - 125
Beryllium	0.00034	U	0.0500	0.0482		mg/L		96	75 - 125
Boron	11	L	0.100	11.0	L J3	mg/L		291	75 - 125
Cadmium	0.00034	U	0.0500	0.0462		mg/L		92	75 - 125
Calcium	230	L	5.00	237	L J3	mg/L		181	75 - 125
Cobalt	0.0055		0.0500	0.0544		mg/L		98	75 - 125
Lead	0.00050	I	0.0500	0.0494		mg/L		98	75 - 125
Lithium	0.0017	I	0.0500	0.0498		mg/L		96	75 - 125
Molybdenum	0.0020	U	0.0500	0.0502		mg/L		100	75 - 125

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: 400-166941-1 MS
Matrix: Water
Analysis Batch: 433981

Client Sample ID: PZ-200S
Prep Type: Total Recoverable
Prep Batch: 433805

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Selenium	0.0027		0.0500	0.0512		mg/L		97	75 - 125
Thallium	0.00015	I	0.0100	0.00956		mg/L		94	75 - 125

Lab Sample ID: 400-166941-1 MSD
Matrix: Water
Analysis Batch: 433981

Client Sample ID: PZ-200S
Prep Type: Total Recoverable
Prep Batch: 433805

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	0.0010	U	0.0500	0.0480		mg/L		96	75 - 125	3	20
Arsenic	0.00046	U	0.0500	0.0513		mg/L		103	75 - 125	2	20
Barium	0.050		0.0500	0.103		mg/L		106	75 - 125	2	20
Beryllium	0.00034	U	0.0500	0.0479		mg/L		96	75 - 125	1	20
Boron	11	L	0.100	10.9	L J3	mg/L		272	75 - 125	0	20
Cadmium	0.00034	U	0.0500	0.0458		mg/L		92	75 - 125	1	20
Calcium	230	L	5.00	230	J3 L	mg/L		42	75 - 125	3	20
Cobalt	0.0055		0.0500	0.0533		mg/L		96	75 - 125	2	20
Lead	0.00050	I	0.0500	0.0491		mg/L		97	75 - 125	1	20
Lithium	0.0017	I	0.0500	0.0495		mg/L		96	75 - 125	0	20
Molybdenum	0.0020	U	0.0500	0.0483		mg/L		97	75 - 125	4	20
Selenium	0.0027		0.0500	0.0502		mg/L		95	75 - 125	2	20
Thallium	0.00015	I	0.0100	0.00948		mg/L		93	75 - 125	1	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 400-433992/13-A
Matrix: Water
Analysis Batch: 434199

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 433992

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000070	U	0.00020	0.000070	mg/L		03/20/19 13:33	03/21/19 13:13	1

Lab Sample ID: LCS 400-433992/14-A
Matrix: Water
Analysis Batch: 434199

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 433992

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00101	0.000958		mg/L		95	80 - 120

Lab Sample ID: 400-167267-K-5-E MS
Matrix: Water
Analysis Batch: 434199

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 433992

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.000070	U	0.00201	0.00191		mg/L		95	80 - 120

Method: 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: 400-167267-K-5-F MSD
Matrix: Water
Analysis Batch: 434199

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 433992

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.000070	U	0.00201	0.00186		mg/L		92	80 - 120	3	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 400-432606/1
Matrix: Water
Analysis Batch: 432606

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	3.4	U	5.0	3.4	mg/L			03/08/19 09:19	1

Lab Sample ID: LCS 400-432606/2
Matrix: Water
Analysis Batch: 432606

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	293	232		mg/L		79	78 - 122

Lab Sample ID: 400-166940-A-4 DU
Matrix: Water
Analysis Batch: 432606

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	230		222		mg/L		3	5

Method: SM 4500 Cl- E - Chloride, Total

Lab Sample ID: MB 400-433871/6
Matrix: Water
Analysis Batch: 433871

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.4	U	2.0	1.4	mg/L			03/19/19 13:42	1

Lab Sample ID: LCS 400-433871/7
Matrix: Water
Analysis Batch: 433871

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	30.0	32.5		mg/L		108	90 - 110

Lab Sample ID: MRL 400-433871/3
Matrix: Water
Analysis Batch: 433871

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2.00	1.80	I	mg/L		90	50 - 150

Method: SM 4500 Cl- E - Chloride, Total (Continued)

Lab Sample ID: 400-167121-A-1 MS
Matrix: Water
Analysis Batch: 433871

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride	19		10.0	28.6		mg/L		99	73 - 120		

Lab Sample ID: 400-167121-A-1 MSD
Matrix: Water
Analysis Batch: 433871

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	19		10.0	28.6		mg/L		99	73 - 120	0	8

Lab Sample ID: 400-167121-A-7 MS
Matrix: Water
Analysis Batch: 433871

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride	62		10.0	70.1		mg/L		79	73 - 120		

Lab Sample ID: 400-167121-A-7 MSD
Matrix: Water
Analysis Batch: 433871

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	62		10.0	70.6		mg/L		84	73 - 120	1	8

Method: SM 4500 F C - Fluoride

Lab Sample ID: MB 400-433876/3
Matrix: Water
Analysis Batch: 433876

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.032	U	0.10	0.032	mg/L			03/19/19 13:38	1

Lab Sample ID: LCS 400-433876/4
Matrix: Water
Analysis Batch: 433876

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Fluoride			4.00	3.83		mg/L		96	90 - 110		

Lab Sample ID: 660-92964-C-5 MS
Matrix: Water
Analysis Batch: 433876

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Fluoride	0.23		1.00	0.780	J3	mg/L		55	75 - 125		

Method: SM 4500 F C - Fluoride (Continued)

Lab Sample ID: 660-92964-C-5 MSD
Matrix: Water
Analysis Batch: 433876

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride	0.23		1.00	0.780	J3	mg/L		55	75 - 125	0	4

Lab Sample ID: 660-92964-C-4 DU
Matrix: Water
Analysis Batch: 433876

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Fluoride	0.14		0.140		mg/L		0	4

Method: SM 4500 SO4 E - Sulfate, Total

Lab Sample ID: MB 400-433957/6
Matrix: Water
Analysis Batch: 433957

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	1.4	U	5.0	1.4	mg/L			03/20/19 10:13	1

Lab Sample ID: LCS 400-433957/7
Matrix: Water
Analysis Batch: 433957

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	15.0	14.8		mg/L		98	90 - 110

Lab Sample ID: MRL 400-433957/3
Matrix: Water
Analysis Batch: 433957

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	5.00	4.40	I	mg/L		88	50 - 150

Lab Sample ID: 400-167243-A-1 MS
Matrix: Water
Analysis Batch: 433957

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	44		10.0	54.1		mg/L		104	77 - 128

Lab Sample ID: 400-167243-A-1 MSD
Matrix: Water
Analysis Batch: 433957

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	44		10.0	53.8		mg/L		101	77 - 128	1	5

Method: SM 4500 SO4 E - Sulfate, Total (Continued)

Lab Sample ID: 400-167399-A-1 MS
Matrix: Water
Analysis Batch: 433957

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate	17		10.0	27.0		mg/L		101	77 - 128		

Lab Sample ID: 400-167399-A-1 MSD
Matrix: Water
Analysis Batch: 433957

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	17		10.0	27.1		mg/L		102	77 - 128	0	5

TestAmerica Pensacola
3355 McLemore Drive
Pensacola, FL 32514
Phone (850) 474-1001 Fax (850) 478-2671

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Bill Heyendorfer / Colton EVANS	Lab PM: Whitmire, Cheyenne R	Carrier Tracking No(s):	COC No: 400-82560-23631.1
Client Contact: Kristi Mitchell	Phone: 850-336-0192	E-Mail: cheyenne.whitmire@testamericainc.com		Page: Page 1 of 1
Company: Gulf Power Company				Job #:
Address: BIN 731 One Energy Place	Due Date Requested:			
City: Pensacola	TAT Requested (days):			
State, Zip: FL, 32520				
Phone: 850-444-6427(Tel)	PO #: Pay by Credit Card			
Email: kristi.mitchell@nexteraenergy.com	WO #:			
Project Name: CCR Plant Crist GSA Delineation Sampling	Project #: 40005424			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

400-166941 COC

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226, 9320_Ra228, Ra226Ra228_GFPC	SM4500_Cl_E - Chloride, SM4500_SO4_E - Sulfate, 2540C - Total Dissolved Solids, 4500_F_C - Fluoride	6020 - Sb,As,Ba,B,Be,Ca,Cd,Co,Pb,Li,Mo,Se,Tl, 7470A - Mercury	FieldSampling - Field Sampling Parameters	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	N	D	N		
PZ-200S	3-5-19	1610	G	Water			X	X	X			
PZ-200D				Water								
GSA-2S	3-6-19	1210	G	Water			X	X	X			
PZ-201D	3-5-19	1312	G	Water			X	X	X			
GE-4DR				Water								
GE-1D	3-6-19	1432	G	Water			X	X	X			
DWP-06	3-5-19	1710	G	Water			X	X	X			
DWP-07	3-6-19	1332	G	Water			X	X	X			
				Water								
				Water								

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		3/6/19 1635	RDH	Kathryn P Avery	3-6-19 1635	TA
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 0.7, 1.1 IR7

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Gulf Power Company

Job Number: 400-166941-1
SDG Number: GSA Delineation Sampling

Login Number: 166941
List Number: 1
Creator: Perez, Trina M

List Source: Eurofins TestAmerica, Pensacola

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.7°C, 1.1°C IR-7
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Accreditation/Certification Summary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166941-1
SDG: GSA Delineation Sampling

Laboratory: Eurofins TestAmerica, Pensacola

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alabama	State Program	4	40150	06-30-19
ANAB	ISO/IEC 17025		L2471	02-22-20
Arizona	State Program	9	AZ0710	01-12-20
Arkansas DEQ	State Program	6	88-0689	09-01-19
California	State Program	9	2510	06-30-19
Florida	NELAP	4	E81010	06-30-19
Georgia	State Program	4	E81010 (FL)	06-30-19
Illinois	NELAP	5	200041	10-09-19
Iowa	State Program	7	367	08-01-20
Kansas	NELAP	7	E-10253	10-31-19
Kentucky (UST)	State Program	4	53	06-30-19
Kentucky (WW)	State Program	4	98030	12-31-19
Louisiana	NELAP	6	30976	06-30-19
Louisiana (DW)	NELAP	6	LA017	12-31-19
Maryland	State Program	3	233	09-30-19
Massachusetts	State Program	1	M-FL094	06-30-19
Michigan	State Program	5	9912	06-30-19
New Jersey	NELAP	2	FL006	06-30-19
North Carolina (WW/SW)	State Program	4	314	12-31-19
Oklahoma	State Program	6	9810	08-31-19
Pennsylvania	NELAP	3	68-00467	01-31-20
Rhode Island	State Program	1	LAO00307	12-30-19
South Carolina	State Program	4	96026	06-30-19
Tennessee	State Program	4	TN02907	06-30-19
Texas	NELAP	6	T104704286-18-15	09-30-19
US Fish & Wildlife	Federal		LE058448-0	07-31-19
USDA	Federal		P330-18-00148	05-17-21
Virginia	NELAP	3	460166	06-14-19
Washington	State Program	10	C915	05-15-19
West Virginia DEP	State Program	3	136	07-31-19

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ANALYTICAL REPORT

Eurofins TestAmerica, Pensacola
3355 McLemore Drive
Pensacola, FL 32514
Tel: (850)474-1001

Laboratory Job ID: 400-166941-2
Laboratory Sample Delivery Group: GSA Delineation Sampling
Client Project/Site: CCR Plant Crist

For:
Gulf Power Company
BIN 731
One Energy Place
Pensacola, Florida 32520

Attn: Kristi Mitchell

Cheyenne R Whitmire

Authorized for release by:
4/15/2019 4:29:37 PM

Cheyenne Whitmire, Project Manager II
(850)471-6222
cheyenne.whitmire@testamericainc.com

Table of Contents

Job ID: 400-166941-2

Laboratory: Eurofins TestAmerica, Pensacola

Narrative

Job Narrative
400-166941-2

RAD

Method(s) 903.0, 9315: Ra-226 Prep Batch 160-419090. Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. DUP-06 (400-166941-5), DUP-07 (400-166941-6), (LCS 160-419090/1-A), (MB 160-419090/24-A), (160-33070-J-11-E), (160-33070-I-11-A MS) and (160-33070-B-11-B MSD)

Method(s) 903.0, 9315: Ra-226 Prep Batch 160-419103. Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. PZ-200S (400-166941-1), GSA-2S (400-166941-2), PZ-201D (400-166941-3), GE-1D (400-166941-4), (LCS 160-419103/1-A), (MB 160-419103/23-A), (490-169432-E-1-A) and (490-169432-F-1-A DU)

Method(s) 904.0, 9320: Ra-228 Prep Batch 160-419136. Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. PZ-200S (400-166941-1), GSA-2S (400-166941-2), PZ-201D (400-166941-3), GE-1D (400-166941-4), (LCS 160-419136/1-A), (MB 160-419136/23-A), (490-169432-E-1-B) and (490-169432-F-1-B DU)

Method(s) 904.0, 9320: Ra-228 Prep Batch 160-419100. Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. DUP-06 (400-166941-5), DUP-07 (400-166941-6), (LCS 160-419100/1-A), (MB 160-419100/24-A), (160-33070-J-11-F), (160-33070-I-11-B MS) and (160-33070-B-11-C MSD)

Method Summary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166941-2
SDG: GSA Delineation Sampling

Method	Method Description	Protocol	Laboratory
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166941-2
SDG: GSA Delineation Sampling

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
400-166941-1	PZ-200S	Water	03/05/19 16:10	03/06/19 16:35
400-166941-2	GSA-2S	Water	03/06/19 12:10	03/06/19 16:35
400-166941-3	PZ-201D	Water	03/05/19 13:12	03/06/19 16:35
400-166941-4	GE-1D	Water	03/06/19 14:32	03/06/19 16:35
400-166941-5	DUP-06	Water	03/05/19 17:10	03/06/19 16:35
400-166941-6	DUP-07	Water	03/06/19 13:32	03/06/19 16:35

Client Sample Results

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166941-2
SDG: GSA Delineation Sampling

Client Sample ID: PZ-200S

Date Collected: 03/05/19 16:10
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166941-1

Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	3.67		0.313	0.455	1.00	0.102	pCi/L	03/13/19 12:14	04/04/19 16:47	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.3*		*40 - 110*	*03/13/19 12:14*	*04/04/19 16:47*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	2.89		0.434	0.509	1.00	0.421	pCi/L	03/13/19 14:05	03/26/19 15:57	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.3*		*40 - 110*	*03/13/19 14:05*	*03/26/19 15:57*	*1*
Y Carrier	*84.1*		*40 - 110*	*03/13/19 14:05*	*03/26/19 15:57*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	6.56		0.535	0.683	5.00	0.421	pCi/L		04/14/19 07:25	1

Client Sample Results

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166941-2
SDG: GSA Delineation Sampling

Client Sample ID: GSA-2S

Date Collected: 03/06/19 12:10
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166941-2

Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.28		0.192	0.224	1.00	0.0898	pCi/L	03/13/19 12:14	04/04/19 16:47	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.6*		*40 - 110*	*03/13/19 12:14*	*04/04/19 16:47*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.37		0.327	0.350	1.00	0.381	pCi/L	03/13/19 14:05	03/26/19 15:57	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.6*		*40 - 110*	*03/13/19 14:05*	*03/26/19 15:57*	*1*
Y Carrier	*85.6*		*40 - 110*	*03/13/19 14:05*	*03/26/19 15:57*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	2.65		0.379	0.416	5.00	0.381	pCi/L		04/14/19 07:25	1

Client Sample Results

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166941-2
SDG: GSA Delineation Sampling

Client Sample ID: PZ-201D

Date Collected: 03/05/19 13:12
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166941-3

Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.216**		0.0892	0.0913	1.00	0.0874	pCi/L	03/13/19 12:14	04/04/19 16:48	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*90.6*		*40 - 110*	*03/13/19 12:14*	*04/04/19 16:48*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.160	U	0.247	0.247	1.00	0.415	pCi/L	03/13/19 14:05	03/26/19 15:57	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*90.6*		*40 - 110*	*03/13/19 14:05*	*03/26/19 15:57*	*1*
Y Carrier	*83.7*		*40 - 110*	*03/13/19 14:05*	*03/26/19 15:57*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.376	U	0.263	0.263	5.00	0.415	pCi/L		04/14/19 07:25	1

Client Sample Results

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166941-2
SDG: GSA Delineation Sampling

Client Sample ID: GE-1D

Date Collected: 03/06/19 14:32
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166941-4

Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.193		0.0849	0.0867	1.00	0.0921	pCi/L	03/13/19 12:14	04/04/19 16:49	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.6*		*40 - 110*	*03/13/19 12:14*	*04/04/19 16:49*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.406		0.235	0.238	1.00	0.352	pCi/L	03/13/19 14:05	03/26/19 15:57	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.6*		*40 - 110*	*03/13/19 14:05*	*03/26/19 15:57*	*1*
Y Carrier	*85.6*		*40 - 110*	*03/13/19 14:05*	*03/26/19 15:57*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.599		0.250	0.253	5.00	0.352	pCi/L		04/14/19 07:25	1

Client Sample ID: DUP-06

Date Collected: 03/05/19 17:10
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166941-5

Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	3.16		0.318	0.427	1.00	0.0798	pCi/L	03/13/19 10:50	04/04/19 06:17	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.0*		*40 - 110*	*03/13/19 10:50*	*04/04/19 06:17*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	3.63		0.458	0.567	1.00	0.410	pCi/L	03/13/19 11:44	03/29/19 08:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.0*		*40 - 110*	*03/13/19 11:44*	*03/29/19 08:59*	*1*
Y Carrier	*87.5*		*40 - 110*	*03/13/19 11:44*	*03/29/19 08:59*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	6.79		0.558	0.710	5.00	0.410	pCi/L		04/14/19 07:25	1

Client Sample Results

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166941-2
SDG: GSA Delineation Sampling

Client Sample ID: DUP-07

Date Collected: 03/06/19 13:32
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166941-6

Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.258		0.0943	0.0971	1.00	0.0842	pCi/L	03/13/19 10:50	04/04/19 06:17	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*107*		*40 - 110*	*03/13/19 10:50*	*04/04/19 06:17*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.356		0.217	0.219	1.00	0.331	pCi/L	03/13/19 11:44	03/29/19 08:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*107*		*40 - 110*	*03/13/19 11:44*	*03/29/19 08:59*	*1*
Y Carrier	*92.3*		*40 - 110*	*03/13/19 11:44*	*03/29/19 08:59*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.614		0.237	0.240	5.00	0.331	pCi/L		04/14/19 07:25	1

Definitions/Glossary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166941-2
SDG: GSA Delineation Sampling

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Lab Chronicle

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166941-2
SDG: GSA Delineation Sampling

Client Sample ID: PZ-200S
Date Collected: 03/05/19 16:10
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166941-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			419103	03/13/19 12:14	LTC	TAL SL
Total/NA	Analysis	9315		1	422642	04/04/19 16:47	CDR	TAL SL
Total/NA	Prep	PrecSep_0			419136	03/13/19 14:05	LTC	TAL SL
Total/NA	Analysis	9320		1	421229	03/26/19 15:57	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	423568	04/14/19 07:25	CDR	TAL SL

Client Sample ID: GSA-2S
Date Collected: 03/06/19 12:10
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166941-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			419103	03/13/19 12:14	LTC	TAL SL
Total/NA	Analysis	9315		1	422642	04/04/19 16:47	CDR	TAL SL
Total/NA	Prep	PrecSep_0			419136	03/13/19 14:05	LTC	TAL SL
Total/NA	Analysis	9320		1	421229	03/26/19 15:57	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	423568	04/14/19 07:25	CDR	TAL SL

Client Sample ID: PZ-201D
Date Collected: 03/05/19 13:12
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166941-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			419103	03/13/19 12:14	LTC	TAL SL
Total/NA	Analysis	9315		1	422643	04/04/19 16:48	CDR	TAL SL
Total/NA	Prep	PrecSep_0			419136	03/13/19 14:05	LTC	TAL SL
Total/NA	Analysis	9320		1	421229	03/26/19 15:57	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	423568	04/14/19 07:25	CDR	TAL SL

Client Sample ID: GE-1D
Date Collected: 03/06/19 14:32
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166941-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			419103	03/13/19 12:14	LTC	TAL SL
Total/NA	Analysis	9315		1	422643	04/04/19 16:49	CDR	TAL SL
Total/NA	Prep	PrecSep_0			419136	03/13/19 14:05	LTC	TAL SL
Total/NA	Analysis	9320		1	421229	03/26/19 15:57	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	423568	04/14/19 07:25	CDR	TAL SL

Lab Chronicle

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166941-2
SDG: GSA Delineation Sampling

Client Sample ID: DUP-06

Date Collected: 03/05/19 17:10
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166941-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			419090	03/13/19 10:50	LTC	TAL SL
Total/NA	Analysis	9315		1	422643	04/04/19 06:17	CDR	TAL SL
Total/NA	Prep	PrecSep_0			419100	03/13/19 11:44	LTC	TAL SL
Total/NA	Analysis	9320		1	421903	03/29/19 08:59	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	423568	04/14/19 07:25	CDR	TAL SL

Client Sample ID: DUP-07

Date Collected: 03/06/19 13:32
Date Received: 03/06/19 16:35

Lab Sample ID: 400-166941-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			419090	03/13/19 10:50	LTC	TAL SL
Total/NA	Analysis	9315		1	422643	04/04/19 06:17	CDR	TAL SL
Total/NA	Prep	PrecSep_0			419100	03/13/19 11:44	LTC	TAL SL
Total/NA	Analysis	9320		1	421903	03/29/19 08:59	KLS	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	423568	04/14/19 07:25	CDR	TAL SL

Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Rad

Prep Batch: 419090

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166941-5	DUP-06	Total/NA	Water	PrecSep-21	
400-166941-6	DUP-07	Total/NA	Water	PrecSep-21	
MB 160-419090/24-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-419090/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
160-33070-B-11-B MSD	Matrix Spike Duplicate	Dissolved	Water	PrecSep-21	
160-33070-I-11-A MS	Matrix Spike	Dissolved	Water	PrecSep-21	

Prep Batch: 419100

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166941-5	DUP-06	Total/NA	Water	PrecSep_0	
400-166941-6	DUP-07	Total/NA	Water	PrecSep_0	
MB 160-419100/24-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-419100/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
160-33070-B-11-C MSD	Matrix Spike Duplicate	Dissolved	Water	PrecSep_0	
160-33070-I-11-B MS	Matrix Spike	Dissolved	Water	PrecSep_0	

Prep Batch: 419103

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166941-1	PZ-200S	Total/NA	Water	PrecSep-21	
400-166941-2	GSA-2S	Total/NA	Water	PrecSep-21	
400-166941-3	PZ-201D	Total/NA	Water	PrecSep-21	
400-166941-4	GE-1D	Total/NA	Water	PrecSep-21	
MB 160-419103/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-419103/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
490-169432-F-1-A DU	Duplicate	Total/NA	Water	PrecSep-21	

Prep Batch: 419136

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-166941-1	PZ-200S	Total/NA	Water	PrecSep_0	
400-166941-2	GSA-2S	Total/NA	Water	PrecSep_0	
400-166941-3	PZ-201D	Total/NA	Water	PrecSep_0	
400-166941-4	GE-1D	Total/NA	Water	PrecSep_0	
MB 160-419136/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-419136/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
490-169432-F-1-B DU	Duplicate	Total/NA	Water	PrecSep_0	

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-419090/24-A
Matrix: Water
Analysis Batch: 422643

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 419090

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.03216	U	0.0564	0.0565	1.00	0.101	pCi/L	03/13/19 10:50	04/04/19 06:17	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.3*		*40 - 110*	*03/13/19 10:50*	*04/04/19 06:17*	*1*

Lab Sample ID: LCS 160-419090/1-A
Matrix: Water
Analysis Batch: 422644

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 419090

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	8.548		0.929	1.00	0.110	pCi/L	75	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*99.1*		*40 - 110*

Lab Sample ID: MB 160-419103/23-A
Matrix: Water
Analysis Batch: 422643

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 419103

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.03843	U	0.0428	0.0429	1.00	0.0667	pCi/L	03/13/19 12:14	04/04/19 16:49	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*100*		*40 - 110*	*03/13/19 12:14*	*04/04/19 16:49*	*1*

Lab Sample ID: LCS 160-419103/1-A
Matrix: Water
Analysis Batch: 422655

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 419103

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	10.83		1.13	1.00	0.0885	pCi/L	95	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*95.6*		*40 - 110*

Lab Sample ID: 490-169432-F-1-A DU
Matrix: Water
Analysis Batch: 422642

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 419103

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Radium-226	0.384			0.3982		0.118	1.00	0.0747	pCi/L			0.06	1

Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: 490-169432-F-1-A DU
Matrix: Water
Analysis Batch: 422642

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 419103

Carrier	DU %Yield	DU Qualifier	Limits
Ba Carrier	92.3		40 - 110

Lab Sample ID: 160-33070-B-11-B MSD
Matrix: Water
Analysis Batch: 422642

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 419090

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.465		11.3	10.08		1.07	1.00	0.0919	pCi/L	85	75 - 138	0.57	1

Carrier	MSD %Yield	MSD Qualifier	Limits
Ba Carrier	97.3		40 - 110

Lab Sample ID: 160-33070-I-11-A MS
Matrix: Water
Analysis Batch: 422642

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 419090

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	0.465		11.4	8.931		0.968	1.00	0.0832	pCi/L	75	75 - 138

Carrier	MS %Yield	MS Qualifier	Limits
Ba Carrier	95.9		40 - 110

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-419100/24-A
Matrix: Water
Analysis Batch: 421795

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 419100

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1898	U	0.223	0.223	1.00	0.367	pCi/L	03/13/19 11:44	03/29/19 09:01	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	97.3		40 - 110	03/13/19 11:44	03/29/19 09:01	1
Y Carrier	85.6		40 - 110	03/13/19 11:44	03/29/19 09:01	1

Lab Sample ID: LCS 160-419100/1-A
Matrix: Water
Analysis Batch: 421913

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 419100

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	9.35	8.771		1.01	1.00	0.297	pCi/L	94	75 - 125

Method: 9320 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-419100/1-A
Matrix: Water
Analysis Batch: 421913

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 419100

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	99.1		40 - 110
Y Carrier	90.1		40 - 110

Lab Sample ID: MB 160-419136/23-A
Matrix: Water
Analysis Batch: 421229

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 419136

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.004270	U	0.200	0.200	1.00	0.360	pCi/L	03/13/19 14:05	03/26/19 15:57	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	100		40 - 110	03/13/19 14:05	03/26/19 15:57	1
Y Carrier	84.5		40 - 110	03/13/19 14:05	03/26/19 15:57	1

Lab Sample ID: LCS 160-419136/1-A
Matrix: Water
Analysis Batch: 421229

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 419136

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.36	9.522		1.12	1.00	0.382	pCi/L	102	75 - 125		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	95.6		40 - 110
Y Carrier	80.7		40 - 110

Lab Sample ID: 490-169432-F-1-B DU
Matrix: Water
Analysis Batch: 421229

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 419136

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Radium-228	0.536			0.3165	U	0.283	1.00	0.453	pCi/L			0.36	1

Carrier	DU %Yield	DU Qualifier	Limits
Ba Carrier	92.3		40 - 110
Y Carrier	83.7		40 - 110

Lab Sample ID: 160-33070-B-11-C MSD
Matrix: Water
Analysis Batch: 421912

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 419100

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	1.46		9.35	10.37		1.17	1.00	0.304	pCi/L	95	45 - 150	0.42	1

Method: 9320 - Radium-228 (GFPC) (Continued)

Lab Sample ID: 160-33070-B-11-C MSD
Matrix: Water
Analysis Batch: 421912

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 419100

Carrier	MSD %Yield	MSD Qualifier	Limits
Ba Carrier	97.3		40 - 110
Y Carrier	87.1		40 - 110

Lab Sample ID: 160-33070-I-11-B MS
Matrix: Water
Analysis Batch: 421912

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 419100

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228	1.46		9.35	11.39		1.25	1.00	0.299	pCi/L	106	45 - 150		

Carrier	MS %Yield	MS Qualifier	Limits
Ba Carrier	95.9		40 - 110
Y Carrier	90.5		40 - 110

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Lab Sample ID: 400-166750-A-3 DU
Matrix: Water
Analysis Batch: 423568

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Combined Radium 226 + 228	3.76			3.589		0.482	5.00	0.339	pCi/L			0.18	

TestAmerica Pensacola
3355 McLemore Drive
Pensacola, FL 32514
Phone (850) 474-1001 Fax (850) 478-2671

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Bill Heyendorfer / Colton EVANS	Lab PM: Whitmire, Cheyenne R	Carrier Tracking No(s):	COC No: 400-82560-23631.1
Client Contact: Kristi Mitchell	Phone: 850-336-0192	E-Mail: cheyenne.whitmire@testamericainc.com		Page: Page 1 of 1
Company: Gulf Power Company				Job #:
Address: BIN 731 One Energy Place	Due Date Requested:			
City: Pensacola	TAT Requested (days):			
State, Zip: FL, 32520				
Phone: 850-444-6427(Tel)	PO #: Pay by Credit Card			
Email: kristi.mitchell@nexteraenergy.com	WO #:			
Project Name: CCR Plant Crist GSA Delineation Sampling	Project #: 40005424			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

400-166941 COC

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226, 9320_Ra228, Ra226Ra228_GFPC	SM4500_Cl_E - Chloride, SM4500_SO4_E - Sulfate, 2540C - Total Dissolved Solids, 4500_F_C - Fluoride	6020 - Sb,As,Ba,B,Be,Ca,Cd,Co,Pb,Li,Mo,Se,Tl, 7470A - Mercury	FieldSampling - Field Sampling Parameters	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	N	D	N		
PZ-200S	3-5-19	1610	G	Water			X	X	X			
PZ-200D				Water								
GSA-2S	3-6-19	1210	G	Water			X	X	X			
PZ-201D	3-5-19	1312	G	Water			X	X	X			
GE-4DR				Water								
GE-1D	3-6-19	1432	G	Water			X	X	X			
DWP-06	3-5-19	1710	G	Water			X	X	X			
DWP-07	3-6-19	1332	G	Water			X	X	X			
				Water								
				Water								

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		3/6/19 1635	RDH	Kathy P Avery	3-6-19 1635	TA
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 0.7, 1.1 IR7

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Gulf Power Company

Job Number: 400-166941-2
SDG Number: GSA Delineation Sampling

Login Number: 166941
List Number: 1
Creator: Perez, Trina M

List Source: Eurofins TestAmerica, Pensacola

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.7°C, 1.1°C IR-7
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Gulf Power Company

Job Number: 400-166941-2
SDG Number: GSA Delineation Sampling

Login Number: 166941
List Number: 2
Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis
List Creation: 03/08/19 03:06 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	18.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Accreditation/Certification Summary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166941-2
SDG: GSA Delineation Sampling

Laboratory: Eurofins TestAmerica, Pensacola

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alabama	State Program	4	40150	06-30-19
ANAB	ISO/IEC 17025		L2471	02-22-20
Arizona	State Program	9	AZ0710	01-12-20
Arkansas DEQ	State Program	6	88-0689	09-01-19
California	State Program	9	2510	06-30-19
Florida	NELAP	4	E81010	06-30-19
Georgia	State Program	4	E81010 (FL)	06-30-19
Illinois	NELAP	5	200041	10-09-19
Iowa	State Program	7	367	08-01-20
Kansas	NELAP	7	E-10253	10-31-19
Kentucky (UST)	State Program	4	53	06-30-19
Kentucky (WW)	State Program	4	98030	12-31-19
Louisiana	NELAP	6	30976	06-30-19
Louisiana (DW)	NELAP	6	LA017	12-31-19
Maryland	State Program	3	233	09-30-19
Massachusetts	State Program	1	M-FL094	06-30-19
Michigan	State Program	5	9912	06-30-19
New Jersey	NELAP	2	FL006	06-30-19
North Carolina (WW/SW)	State Program	4	314	12-31-19
Oklahoma	State Program	6	9810	08-31-19
Pennsylvania	NELAP	3	68-00467	01-31-20
Rhode Island	State Program	1	LAO00307	12-30-19
South Carolina	State Program	4	96026	06-30-19
Tennessee	State Program	4	TN02907	06-30-19
Texas	NELAP	6	T104704286-18-15	09-30-19
US Fish & Wildlife	Federal		LE058448-0	07-31-19
USDA	Federal		P330-18-00148	05-17-21
Virginia	NELAP	3	460166	06-14-19
Washington	State Program	10	C915	05-15-19
West Virginia DEP	State Program	3	136	07-31-19

Accreditation/Certification Summary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-166941-2
SDG: GSA Delineation Sampling

Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD / DOE		L2305	04-06-22
Arizona	State Program	9	AZ0813	12-08-19
California	State Program	9	2886	06-30-19 *
Connecticut	State Program	1	PH-0241	03-31-21
Florida	NELAP	4	E87689	06-30-19 *
Hawaii	State Program	9	NA	06-30-19
Illinois	NELAP	5	200023	11-30-19
Iowa	State Program	7	373	12-01-20
Kansas	NELAP	7	E-10236	10-31-19
Kentucky (DW)	State Program	4	KY90125	12-31-19
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA011	12-31-19
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-19
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19 *
New York	NELAP	2	11616	03-31-20
North Dakota	State Program	8	R207	06-30-19 *
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-20
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-13	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19 *
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Pensacola
3355 McLemore Drive
Pensacola, FL 32514
Tel: (850)474-1001

Laboratory Job ID: 400-168194-1
Laboratory Sample Delivery Group: GSA Delineation Sampling
Client Project/Site: CCR Plant Crist

For:
Gulf Power Company
BIN 731
One Energy Place
Pensacola, Florida 32520

Attn: Kristi Mitchell

Cheyenne R Whitmire

Authorized for release by:
4/29/2019 2:42:40 PM

Cheyenne Whitmire, Project Manager II
(850)471-6222
cheyenne.whitmire@testamericainc.com

Table of Contents

Job ID: 400-168194-1

Laboratory: Eurofins TestAmerica, Pensacola

Narrative

Job Narrative
400-168194-1

Metals
Method(s) 6020: The post digestion spike % recovery associated with batch 437615 was outside of control limits. The following sample is impacted: (400-168490-H-3-C PDS ^5).

Method(s) 6020: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 437384 and analytical batch 437615 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

General Chemistry
Method(s) SM 4500 F C: The matrix spike / matrix spike duplicate(MS/MSD) precision for analytical batch 436905 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample(LCS)was within acceptance limits.

Method(s) SM 4500 Cl- E: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for analytical batch 437484 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

Sample GE-4DR was canceled per client.

Detection Summary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-168194-1
SDG: GSA Delineation Sampling

Client Sample ID: PZ-200D — Lab Sample ID: 400-168194-1

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.055		0.0025	0.00049	mg/L	5		6020	Total Recoverable
Boron	0.022	I	0.050	0.021	mg/L	5		6020	Total Recoverable
Calcium	5.5		0.25	0.13	mg/L	5		6020	Total Recoverable
Cobalt	0.0012	I	0.0025	0.00040	mg/L	5		6020	Total Recoverable
Lead	0.0021		0.0013	0.00035	mg/L	5		6020	Total Recoverable
Lithium	0.0050		0.0050	0.0011	mg/L	5		6020	Total Recoverable
Barium, Dissolved	0.035		0.0025	0.00049	mg/L	5		6020	Dissolved
Calcium, Dissolved	4.8		0.25	0.13	mg/L	5		6020	Dissolved
Lithium, Dissolved	0.0021	I	0.0050	0.0011	mg/L	5		6020	Dissolved
Total Dissolved Solids	96		5.0	3.4	mg/L	1		SM 2540C	Total/NA
Chloride	6.9		2.0	1.4	mg/L	1		SM 4500 Cl- E	Total/NA
Fluoride	0.070	I	0.10	0.032	mg/L	1		SM 4500 F C	Total/NA
Sulfate	14		5.0	1.4	mg/L	1		SM 4500 SO4 E	Total/NA
Total Dissolved Solids Field Filtered	70		5.0	3.4	mg/L	1		SM 2540C	Dissolved
Chloride, Dissolved	3.0		2.0	1.4	mg/L	1		SM 4500 Cl- E	Dissolved
Fluoride, Dissolved	0.070	I	0.10	0.032	mg/L	1		SM 4500 F C	Dissolved
Sulfate, Dissolved	6.5		5.0	1.4	mg/L	1		SM 4500 SO4 E	Dissolved
Field pH	6.69				SU	1		Field Sampling	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-168194-1
SDG: GSA Delineation Sampling

Method	Method Description	Protocol	Laboratory
6020	Metals (ICP/MS)	SW846	TAL PEN
7470A	Mercury (CVAA)	SW846	TAL PEN
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL PEN
SM 4500 Cl- E	Chloride, Total	SM	TAL PEN
SM 4500 F C	Fluoride	SM	TAL PEN
SM 4500 SO4 E	Sulfate, Total	SM	TAL PEN
Field Sampling	Field Sampling	EPA	TAL PEN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL PEN
7470A	Preparation, Mercury	SW846	TAL PEN

Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL PEN = Eurofins TestAmerica, Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

Sample Summary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-168194-1
SDG: GSA Delineation Sampling

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
400-168194-1	PZ-200D	Water	04/02/19 16:25	04/03/19 14:50

Client Sample ID: PZ-200D

Date Collected: 04/02/19 16:25
Date Received: 04/03/19 14:50

Lab Sample ID: 400-168194-1

Matrix: Water

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0010	U	0.0025	0.0010	mg/L		04/17/19 09:15	04/17/19 23:03	5
Arsenic	0.00046	U	0.0013	0.00046	mg/L		04/17/19 09:15	04/17/19 23:03	5
Barium	**0.055**		0.0025	0.00049	mg/L		04/17/19 09:15	04/17/19 23:03	5
Beryllium	0.00034	U	0.0025	0.00034	mg/L		04/17/19 09:15	04/17/19 23:03	5
Boron	**0.022**	**I**	0.050	0.021	mg/L		04/17/19 09:15	04/17/19 23:03	5
Cadmium	0.00034	U	0.0025	0.00034	mg/L		04/17/19 09:15	04/17/19 23:03	5
Calcium	**5.5**		0.25	0.13	mg/L		04/17/19 09:15	04/17/19 23:03	5
Cobalt	**0.0012**	**I**	0.0025	0.00040	mg/L		04/17/19 09:15	04/17/19 23:03	5
Lead	**0.0021**		0.0013	0.00035	mg/L		04/17/19 09:15	04/17/19 23:03	5
Lithium	**0.0050**		0.0050	0.0011	mg/L		04/17/19 09:15	04/17/19 23:03	5
Molybdenum	0.0020	U	0.015	0.0020	mg/L		04/17/19 09:15	04/17/19 23:03	5
Selenium	0.00071	U	0.0013	0.00071	mg/L		04/17/19 09:15	04/17/19 23:03	5
Thallium	0.000085	U	0.00050	0.000085	mg/L		04/17/19 09:15	04/17/19 23:03	5

Method: 6020 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony, Dissolved	0.0010	U	0.0025	0.0010	mg/L		04/17/19 09:15	04/17/19 23:19	5
Arsenic, Dissolved	0.00046	U	0.0013	0.00046	mg/L		04/17/19 09:15	04/17/19 23:19	5
Barium, Dissolved	**0.035**		0.0025	0.00049	mg/L		04/17/19 09:15	04/17/19 23:19	5
Beryllium, Dissolved	0.00034	U	0.0025	0.00034	mg/L		04/17/19 09:15	04/17/19 23:19	5
Boron, Dissolved	0.021	U	0.050	0.021	mg/L		04/17/19 09:15	04/17/19 23:19	5
Cadmium, Dissolved	0.00034	U	0.0025	0.00034	mg/L		04/17/19 09:15	04/17/19 23:19	5
Calcium, Dissolved	**4.8**		0.25	0.13	mg/L		04/17/19 09:15	04/17/19 23:19	5
Cobalt, Dissolved	0.00040	U	0.0025	0.00040	mg/L		04/17/19 09:15	04/17/19 23:19	5
Lead, Dissolved	0.00035	U	0.0013	0.00035	mg/L		04/17/19 09:15	04/17/19 23:19	5
Lithium, Dissolved	**0.0021**	**I**	0.0050	0.0011	mg/L		04/17/19 09:15	04/17/19 23:19	5
Molybdenum, Dissolved	0.0020	U	0.015	0.0020	mg/L		04/17/19 09:15	04/17/19 23:19	5
Selenium, Dissolved	0.00071	U	0.0013	0.00071	mg/L		04/17/19 09:15	04/17/19 23:19	5
Thallium, Dissolved	0.000085	U	0.00050	0.000085	mg/L		04/17/19 09:15	04/17/19 23:19	5

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000070	U	0.00020	0.000070	mg/L		04/15/19 15:07	04/16/19 12:44	1

Method: 7470A - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury, Dissolved	0.000070	U	0.00020	0.000070	mg/L		04/15/19 15:07	04/16/19 12:48	1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**96**		5.0	3.4	mg/L			04/05/19 10:59	1
Chloride	**6.9**		2.0	1.4	mg/L			04/17/19 14:15	1
Fluoride	**0.070**	**I**	0.10	0.032	mg/L			04/12/19 11:02	1
Sulfate	**14**		5.0	1.4	mg/L			04/17/19 16:28	1

General Chemistry - Dissolved

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids Field Filtered	**70**		5.0	3.4	mg/L			04/05/19 10:59	1
Chloride, Dissolved	**3.0**		2.0	1.4	mg/L			04/17/19 14:15	1
Fluoride, Dissolved	**0.070**	**I**	0.10	0.032	mg/L			04/12/19 11:02	1

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-168194-1
SDG: GSA Delineation Sampling

Client Sample ID: PZ-200D
Date Collected: 04/02/19 16:25
Date Received: 04/03/19 14:50

Lab Sample ID: 400-168194-1
Matrix: Water

General Chemistry - Dissolved (Continued)

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate, Dissolved	6.5		5.0	1.4	mg/L			04/17/19 16:28	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field pH	6.69				SU			04/02/19 16:25	1

Definitions/Glossary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-168194-1
SDG: GSA Delineation Sampling

Qualifiers

Metals

Qualifier	Qualifier Description
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J3	Estimated value; value may not be accurate. Spike recovery or RPD outside of criteria.
L	Off-scale high. Actual value is known to be greater than the value given.
U	Indicates that the compound was analyzed for but not detected.

General Chemistry

Qualifier	Qualifier Description
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J3	Estimated value; value may not be accurate. Spike recovery or RPD outside of criteria.
U	Indicates that the compound was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Lab Chronicle

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-168194-1
SDG: GSA Delineation Sampling

Client Sample ID: PZ-200D
Date Collected: 04/02/19 16:25
Date Received: 04/03/19 14:50

Lab Sample ID: 400-168194-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			437384	04/17/19 09:15	DRE	TAL PEN
Dissolved	Analysis	6020		5	437615	04/17/19 23:19	DRE	TAL PEN
Total Recoverable	Prep	3005A			437384	04/17/19 09:15	DRE	TAL PEN
Total Recoverable	Analysis	6020		5	437615	04/17/19 23:03	DRE	TAL PEN
Dissolved	Prep	7470A			437150	04/15/19 15:07	JAP	TAL PEN
Dissolved	Analysis	7470A		1	437306	04/16/19 12:48	JAP	TAL PEN
Total/NA	Prep	7470A			437150	04/15/19 15:07	JAP	TAL PEN
Total/NA	Analysis	7470A		1	437306	04/16/19 12:44	JAP	TAL PEN
Dissolved	Analysis	SM 2540C		1	436020	04/05/19 10:59	CLB	TAL PEN
Total/NA	Analysis	SM 2540C		1	436020	04/05/19 10:59	CLB	TAL PEN
Dissolved	Analysis	SM 4500 Cl- E		1	437484	04/17/19 14:15	RRC	TAL PEN
Total/NA	Analysis	SM 4500 Cl- E		1	437484	04/17/19 14:15	RRC	TAL PEN
Dissolved	Analysis	SM 4500 F C		1	436905	04/12/19 11:02	BAB	TAL PEN
Total/NA	Analysis	SM 4500 F C		1	436905	04/12/19 11:02	BAB	TAL PEN
Dissolved	Analysis	SM 4500 SO4 E		1	437533	04/17/19 16:28	RRC	TAL PEN
Total/NA	Analysis	SM 4500 SO4 E		1	437533	04/17/19 16:28	RRC	TAL PEN
Total/NA	Analysis	Field Sampling		1	436457	04/02/19 16:25	AW	TAL PEN

Laboratory References:

TAL PEN = Eurofins TestAmerica, Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001

Metals

Prep Batch: 437150

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-168194-1	PZ-200D	Dissolved	Water	7470A	
400-168194-1	PZ-200D	Total/NA	Water	7470A	
MB 400-437150/14-A	Method Blank	Total/NA	Water	7470A	
LCS 400-437150/15-A	Lab Control Sample	Total/NA	Water	7470A	
400-168576-F-2-D MS	Matrix Spike	Total/NA	Water	7470A	
400-168576-F-2-E MSD	Matrix Spike Duplicate	Total/NA	Water	7470A	

Analysis Batch: 437306

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-168194-1	PZ-200D	Dissolved	Water	7470A	437150
400-168194-1	PZ-200D	Total/NA	Water	7470A	437150
MB 400-437150/14-A	Method Blank	Total/NA	Water	7470A	437150
LCS 400-437150/15-A	Lab Control Sample	Total/NA	Water	7470A	437150
400-168576-F-2-D MS	Matrix Spike	Total/NA	Water	7470A	437150
400-168576-F-2-E MSD	Matrix Spike Duplicate	Total/NA	Water	7470A	437150

Prep Batch: 437384

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-168194-1	PZ-200D	Dissolved	Water	3005A	
400-168194-1	PZ-200D	Total Recoverable	Water	3005A	
MB 400-437384/1-A ^5	Method Blank	Total Recoverable	Water	3005A	
LCS 400-437384/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
400-168490-H-3-D MS ^5	Matrix Spike	Total Recoverable	Water	3005A	
400-168490-H-3-E MSD ^5	Matrix Spike Duplicate	Total Recoverable	Water	3005A	

Analysis Batch: 437615

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-168194-1	PZ-200D	Dissolved	Water	6020	437384
400-168194-1	PZ-200D	Total Recoverable	Water	6020	437384
MB 400-437384/1-A ^5	Method Blank	Total Recoverable	Water	6020	437384
LCS 400-437384/2-A	Lab Control Sample	Total Recoverable	Water	6020	437384
400-168490-H-3-D MS ^5	Matrix Spike	Total Recoverable	Water	6020	437384
400-168490-H-3-E MSD ^5	Matrix Spike Duplicate	Total Recoverable	Water	6020	437384

General Chemistry

Analysis Batch: 436020

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-168194-1	PZ-200D	Dissolved	Water	SM 2540C	
400-168194-1	PZ-200D	Total/NA	Water	SM 2540C	
MB 400-436020/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 400-436020/2	Lab Control Sample	Total/NA	Water	SM 2540C	
400-168178-E-2 DU	Duplicate	Total/NA	Water	SM 2540C	

Analysis Batch: 436905

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-168194-1	PZ-200D	Dissolved	Water	SM 4500 F C	
400-168194-1	PZ-200D	Total/NA	Water	SM 4500 F C	
MB 400-436905/3	Method Blank	Total/NA	Water	SM 4500 F C	
LCS 400-436905/4	Lab Control Sample	Total/NA	Water	SM 4500 F C	
400-168497-A-1 MS	Matrix Spike	Total/NA	Water	SM 4500 F C	

General Chemistry (Continued)

Analysis Batch: 436905 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-168497-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 F C	

Analysis Batch: 437484

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-168194-1	PZ-200D	Dissolved	Water	SM 4500 Cl- E	
400-168194-1	PZ-200D	Total/NA	Water	SM 4500 Cl- E	
MB 400-437484/6	Method Blank	Total/NA	Water	SM 4500 Cl- E	
LCS 400-437484/7	Lab Control Sample	Total/NA	Water	SM 4500 Cl- E	
MRL 400-437484/3	Lab Control Sample	Total/NA	Water	SM 4500 Cl- E	
400-168709-A-1 MS	Matrix Spike	Total/NA	Water	SM 4500 Cl- E	
400-168709-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 Cl- E	
400-168862-G-3 DU	Duplicate	Total/NA	Water	SM 4500 Cl- E	

Analysis Batch: 437533

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-168194-1	PZ-200D	Dissolved	Water	SM 4500 SO4 E	
400-168194-1	PZ-200D	Total/NA	Water	SM 4500 SO4 E	
MB 400-437533/6	Method Blank	Total/NA	Water	SM 4500 SO4 E	
LCS 400-437533/7	Lab Control Sample	Total/NA	Water	SM 4500 SO4 E	
MRL 400-437533/3	Lab Control Sample	Total/NA	Water	SM 4500 SO4 E	
400-168497-A-1 MS	Matrix Spike	Total/NA	Water	SM 4500 SO4 E	
400-168497-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 SO4 E	

Field Service / Mobile Lab

Analysis Batch: 436457

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-168194-1	PZ-200D	Total/NA	Water	Field Sampling	

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 400-437384/1-A ^5
Matrix: Water
Analysis Batch: 437615

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 437384

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.0010	U	0.0025	0.0010	mg/L		04/17/19 09:15	04/17/19 20:35	5
Antimony, Dissolved	0.0010	U	0.0025	0.0010	mg/L		04/17/19 09:15	04/17/19 20:35	5
Arsenic	0.00046	U	0.0013	0.00046	mg/L		04/17/19 09:15	04/17/19 20:35	5
Arsenic, Dissolved	0.00046	U	0.0013	0.00046	mg/L		04/17/19 09:15	04/17/19 20:35	5
Barium	0.00049	U	0.0025	0.00049	mg/L		04/17/19 09:15	04/17/19 20:35	5
Barium, Dissolved	0.00049	U	0.0025	0.00049	mg/L		04/17/19 09:15	04/17/19 20:35	5
Beryllium	0.00034	U	0.0025	0.00034	mg/L		04/17/19 09:15	04/17/19 20:35	5
Beryllium, Dissolved	0.00034	U	0.0025	0.00034	mg/L		04/17/19 09:15	04/17/19 20:35	5
Boron	0.021	U	0.050	0.021	mg/L		04/17/19 09:15	04/17/19 20:35	5
Boron, Dissolved	0.021	U	0.050	0.021	mg/L		04/17/19 09:15	04/17/19 20:35	5
Cadmium	0.00034	U	0.0025	0.00034	mg/L		04/17/19 09:15	04/17/19 20:35	5
Cadmium, Dissolved	0.00034	U	0.0025	0.00034	mg/L		04/17/19 09:15	04/17/19 20:35	5
Calcium	0.13	U	0.25	0.13	mg/L		04/17/19 09:15	04/17/19 20:35	5
Calcium, Dissolved	0.13	U	0.25	0.13	mg/L		04/17/19 09:15	04/17/19 20:35	5
Cobalt	0.00040	U	0.0025	0.00040	mg/L		04/17/19 09:15	04/17/19 20:35	5
Cobalt, Dissolved	0.00040	U	0.0025	0.00040	mg/L		04/17/19 09:15	04/17/19 20:35	5
Lead	0.00035	U	0.0013	0.00035	mg/L		04/17/19 09:15	04/17/19 20:35	5
Lead, Dissolved	0.00035	U	0.0013	0.00035	mg/L		04/17/19 09:15	04/17/19 20:35	5
Lithium	0.0011	U	0.0050	0.0011	mg/L		04/17/19 09:15	04/17/19 20:35	5
Lithium, Dissolved	0.0011	U	0.0050	0.0011	mg/L		04/17/19 09:15	04/17/19 20:35	5
Molybdenum	0.0020	U	0.015	0.0020	mg/L		04/17/19 09:15	04/17/19 20:35	5
Molybdenum, Dissolved	0.0020	U	0.015	0.0020	mg/L		04/17/19 09:15	04/17/19 20:35	5
Selenium	0.00071	U	0.0013	0.00071	mg/L		04/17/19 09:15	04/17/19 20:35	5
Selenium, Dissolved	0.00071	U	0.0013	0.00071	mg/L		04/17/19 09:15	04/17/19 20:35	5
Thallium	0.000085	U	0.00050	0.000085	mg/L		04/17/19 09:15	04/17/19 20:35	5
Thallium, Dissolved	0.000085	U	0.00050	0.000085	mg/L		04/17/19 09:15	04/17/19 20:35	5

Lab Sample ID: LCS 400-437384/2-A
Matrix: Water
Analysis Batch: 437615

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 437384

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.0500	0.0465		mg/L		93	80 - 120
Antimony, Dissolved	0.0500	0.0465		mg/L		93	80 - 120
Arsenic	0.0500	0.0524		mg/L		105	80 - 120
Arsenic, Dissolved	0.0500	0.0524		mg/L		105	80 - 120
Barium	0.0500	0.0510		mg/L		102	80 - 120
Barium, Dissolved	0.0500	0.0510		mg/L		102	80 - 120
Beryllium	0.0500	0.0497		mg/L		99	80 - 120
Beryllium, Dissolved	0.0500	0.0497		mg/L		99	80 - 120
Boron	0.100	0.0997		mg/L		100	80 - 120
Boron, Dissolved	0.100	0.0997		mg/L		100	80 - 120
Cadmium	0.0500	0.0517		mg/L		103	80 - 120
Cadmium, Dissolved	0.0500	0.0517		mg/L		103	80 - 120
Calcium	5.00	5.16		mg/L		103	80 - 120
Calcium, Dissolved	5.00	5.16		mg/L		103	80 - 120
Cobalt	0.0500	0.0514		mg/L		103	80 - 120
Cobalt, Dissolved	0.0500	0.0514		mg/L		103	80 - 120
Lead	0.0500	0.0469		mg/L		94	80 - 120

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 400-437384/2-A
Matrix: Water
Analysis Batch: 437615

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 437384

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead, Dissolved	0.0500	0.0469		mg/L		94	80 - 120
Lithium	0.0500	0.0530		mg/L		106	80 - 120
Lithium, Dissolved	0.0500	0.0530		mg/L		106	80 - 120
Molybdenum	0.0500	0.0524		mg/L		105	80 - 120
Molybdenum, Dissolved	0.0500	0.0524		mg/L		105	80 - 120
Selenium	0.0500	0.0508		mg/L		102	80 - 120
Selenium, Dissolved	0.0500	0.0508		mg/L		102	80 - 120
Thallium	0.0100	0.00950		mg/L		95	80 - 120
Thallium, Dissolved	0.0100	0.00950		mg/L		95	80 - 120

Lab Sample ID: 400-168490-H-3-D MS ^5
Matrix: Water
Analysis Batch: 437615

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 437384

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.0010	U	0.0500	0.0499		mg/L		100	75 - 125
Antimony, Dissolved	0.0010	U	0.0500	0.0499		mg/L		100	75 - 125
Arsenic	0.0019		0.0500	0.0565		mg/L		109	75 - 125
Arsenic, Dissolved	0.0019		0.0500	0.0565		mg/L		109	75 - 125
Barium	0.34		0.0500	0.394		mg/L		99	75 - 125
Barium, Dissolved	0.34		0.0500	0.394		mg/L		99	75 - 125
Beryllium	0.00034	U	0.0500	0.0504		mg/L		101	75 - 125
Beryllium, Dissolved	0.00034	U	0.0500	0.0504		mg/L		101	75 - 125
Boron	0.021	U	0.100	0.119		mg/L		119	75 - 125
Boron, Dissolved	0.021	U	0.100	0.119		mg/L		119	75 - 125
Cadmium	0.00034	U	0.0500	0.0532		mg/L		106	75 - 125
Cadmium, Dissolved	0.00034	U	0.0500	0.0532		mg/L		106	75 - 125
Calcium	110		5.00	114	L	mg/L		86	75 - 125
Calcium, Dissolved	110		5.00	114	L	mg/L		86	75 - 125
Cobalt	0.00040	U	0.0500	0.0515		mg/L		103	75 - 125
Cobalt, Dissolved	0.00040	U	0.0500	0.0515		mg/L		103	75 - 125
Lead	0.00035	U	0.0500	0.0488		mg/L		98	75 - 125
Lead, Dissolved	0.00035	U	0.0500	0.0488		mg/L		98	75 - 125
Lithium	0.0035	I	0.0500	0.0553		mg/L		104	75 - 125
Lithium, Dissolved	0.0035	I	0.0500	0.0553		mg/L		104	75 - 125
Molybdenum	0.0020	U	0.0500	0.0545		mg/L		109	75 - 125
Molybdenum, Dissolved	0.0020	U	0.0500	0.0545		mg/L		109	75 - 125
Selenium	0.00071	U	0.0500	0.0535		mg/L		107	75 - 125
Selenium, Dissolved	0.00071	U	0.0500	0.0535		mg/L		107	75 - 125
Thallium	0.000085	U	0.0100	0.00968		mg/L		97	75 - 125
Thallium, Dissolved	0.000085	U	0.0100	0.00968		mg/L		97	75 - 125

Lab Sample ID: 400-168490-H-3-E MSD ^5
Matrix: Water
Analysis Batch: 437615

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 437384

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	0.0010	U	0.0500	0.0479		mg/L		96	75 - 125	4	20
Antimony, Dissolved	0.0010	U	0.0500	0.0479		mg/L		96	75 - 125	4	20

Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: 400-168490-H-3-E MSD ^5
Matrix: Water
Analysis Batch: 437615

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 437384

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	0.0019		0.0500	0.0554		mg/L		107	75 - 125	2	20
Arsenic, Dissolved	0.0019		0.0500	0.0554		mg/L		107	75 - 125	2	20
Barium	0.34		0.0500	0.401		mg/L		115	75 - 125	2	20
Barium, Dissolved	0.34		0.0500	0.401		mg/L		115	75 - 125	2	20
Beryllium	0.00034	U	0.0500	0.0500		mg/L		100	75 - 125	1	20
Beryllium, Dissolved	0.00034	U	0.0500	0.0500		mg/L		100	75 - 125	1	20
Boron	0.021	U	0.100	0.119		mg/L		119	75 - 125	0	20
Boron, Dissolved	0.021	U	0.100	0.119		mg/L		119	75 - 125	0	20
Cadmium	0.00034	U	0.0500	0.0530		mg/L		106	75 - 125	0	20
Cadmium, Dissolved	0.00034	U	0.0500	0.0530		mg/L		106	75 - 125	0	20
Calcium	110		5.00	117	L J3	mg/L		136	75 - 125	2	20
Calcium, Dissolved	110		5.00	117	L J3	mg/L		136	75 - 125	2	20
Cobalt	0.00040	U	0.0500	0.0512		mg/L		102	75 - 125	1	20
Cobalt, Dissolved	0.00040	U	0.0500	0.0512		mg/L		102	75 - 125	1	20
Lead	0.00035	U	0.0500	0.0469		mg/L		94	75 - 125	4	20
Lead, Dissolved	0.00035	U	0.0500	0.0469		mg/L		94	75 - 125	4	20
Lithium	0.0035	I	0.0500	0.0553		mg/L		104	75 - 125	0	20
Lithium, Dissolved	0.0035	I	0.0500	0.0553		mg/L		104	75 - 125	0	20
Molybdenum	0.0020	U	0.0500	0.0531		mg/L		106	75 - 125	3	20
Molybdenum, Dissolved	0.0020	U	0.0500	0.0531		mg/L		106	75 - 125	3	20
Selenium	0.00071	U	0.0500	0.0519		mg/L		104	75 - 125	3	20
Selenium, Dissolved	0.00071	U	0.0500	0.0519		mg/L		104	75 - 125	3	20
Thallium	0.000085	U	0.0100	0.00985		mg/L		99	75 - 125	2	20
Thallium, Dissolved	0.000085	U	0.0100	0.00985		mg/L		99	75 - 125	2	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 400-437150/14-A
Matrix: Water
Analysis Batch: 437306

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 437150

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.000070	U	0.00020	0.000070	mg/L		04/15/19 15:07	04/16/19 12:12	1
Mercury, Dissolved	0.000070	U	0.00020	0.000070	mg/L		04/15/19 15:07	04/16/19 12:12	1

Lab Sample ID: LCS 400-437150/15-A
Matrix: Water
Analysis Batch: 437306

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 437150

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00101	0.000911		mg/L		90	80 - 120
Mercury, Dissolved	0.00101	0.000911		mg/L		90	80 - 120

Lab Sample ID: 400-168576-F-2-D MS
Matrix: Water
Analysis Batch: 437306

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 437150

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.000070	U	0.00201	0.00188		mg/L		93	80 - 120
Mercury, Dissolved	0.000070	U	0.00201	0.00188		mg/L		93	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: 400-168576-F-2-E MSD
Matrix: Water
Analysis Batch: 437306

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 437150

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.000070	U	0.00201	0.00180		mg/L		89	80 - 120	5	20
Mercury, Dissolved	0.000070	U	0.00201	0.00180		mg/L		89	80 - 120	5	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 400-436020/1
Matrix: Water
Analysis Batch: 436020

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	3.4	U	5.0	3.4	mg/L			04/05/19 10:59	1
Total Dissolved Solids Field Filtered	3.4	U	5.0	3.4	mg/L			04/05/19 10:59	1

Lab Sample ID: LCS 400-436020/2
Matrix: Water
Analysis Batch: 436020

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	293	262		mg/L		89	78 - 122
Total Dissolved Solids Field Filtered	293	262		mg/L		89	78 - 122

Lab Sample ID: 400-168178-E-2 DU
Matrix: Water
Analysis Batch: 436020

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	86		84.0		mg/L		2	5
Total Dissolved Solids Field Filtered	86		84.0		mg/L		2	5

Method: SM 4500 Cl- E - Chloride, Total

Lab Sample ID: MB 400-437484/6
Matrix: Water
Analysis Batch: 437484

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1.4	U	2.0	1.4	mg/L			04/17/19 14:15	1
Chloride, Dissolved	1.4	U	2.0	1.4	mg/L			04/17/19 14:15	1

Lab Sample ID: LCS 400-437484/7
Matrix: Water
Analysis Batch: 437484

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	30.0	32.5		mg/L		108	90 - 110
Chloride, Dissolved	30.0	32.5		mg/L		108	90 - 110

Method: SM 4500 Cl- E - Chloride, Total (Continued)

Lab Sample ID: MRL 400-437484/3
Matrix: Water
Analysis Batch: 437484

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			2.00	1.40	I	mg/L		70	50 - 150		
Chloride, Dissolved			2.00	1.40	I	mg/L		70	50 - 150		

Lab Sample ID: 400-168709-A-1 MS
Matrix: Water
Analysis Batch: 437484

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride	4.4		10.0	19.4	J3	mg/L		149	73 - 120		
Chloride, Dissolved	4.4		10.0	19.4	J3	mg/L		149	73 - 120		

Lab Sample ID: 400-168709-A-1 MSD
Matrix: Water
Analysis Batch: 437484

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	4.4		10.0	16.8	J3	mg/L		124	73 - 120	14	8
Chloride, Dissolved	4.4		10.0	16.8	J3	mg/L		124	73 - 120	14	8

Lab Sample ID: 400-168862-G-3 DU
Matrix: Water
Analysis Batch: 437484

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Chloride	23		22.4		mg/L		1	8
Chloride, Dissolved	23		22.4		mg/L		1	8

Method: SM 4500 F C - Fluoride

Lab Sample ID: MB 400-436905/3
Matrix: Water
Analysis Batch: 436905

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride	0.032	U	0.10	0.032	mg/L			04/12/19 10:28	1
Fluoride, Dissolved	0.032	U	0.10	0.032	mg/L			04/12/19 10:28	1

Lab Sample ID: LCS 400-436905/4
Matrix: Water
Analysis Batch: 436905

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Fluoride			4.00	3.61		mg/L		90	90 - 110		
Fluoride, Dissolved			4.00	3.61		mg/L		90	90 - 110		

Method: SM 4500 F C - Fluoride (Continued)

Lab Sample ID: 400-168497-A-1 MS
Matrix: Water
Analysis Batch: 436905

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Fluoride	0.040	I	1.00	0.980		mg/L		94	75 - 125
Fluoride, Dissolved	0.040	I	1.00	0.980		mg/L		94	75 - 125

Lab Sample ID: 400-168497-A-1 MSD
Matrix: Water
Analysis Batch: 436905

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Fluoride	0.040	I	1.00	1.08	J3	mg/L		104	75 - 125	10	4
Fluoride, Dissolved	0.040	I	1.00	1.08	J3	mg/L		104	75 - 125	10	4

Method: SM 4500 SO4 E - Sulfate, Total

Lab Sample ID: MB 400-437533/6
Matrix: Water
Analysis Batch: 437533

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	1.4	U	5.0	1.4	mg/L			04/17/19 16:21	1
Sulfate, Dissolved	1.4	U	5.0	1.4	mg/L			04/17/19 16:21	1

Lab Sample ID: LCS 400-437533/7
Matrix: Water
Analysis Batch: 437533

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	15.0	14.9		mg/L		99	90 - 110
Sulfate, Dissolved	15.0	14.9		mg/L		99	90 - 110

Lab Sample ID: MRL 400-437533/3
Matrix: Water
Analysis Batch: 437533

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	5.00	4.48	I	mg/L		90	50 - 150
Sulfate, Dissolved	5.00	4.48	I	mg/L		90	50 - 150

Lab Sample ID: 400-168497-A-1 MS
Matrix: Water
Analysis Batch: 437533

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	21.2		10.0	30.2		mg/L		89	77 - 128
Sulfate, Dissolved	21.2		10.0	30.2		mg/L		89	77 - 128

Method: SM 4500 SO4 E - Sulfate, Total (Continued)

Lab Sample ID: 400-168497-A-1 MSD
Matrix: Water
Analysis Batch: 437533

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	21.2		10.0	29.9		mg/L		87	77 - 128	1	5
Sulfate, Dissolved	21.2		10.0	29.9		mg/L		87	77 - 128	1	5

TestAmerica Pensacola
3355 McLemore Drive
Pensacola, FL 32514
Phone (850) 474-1001 Fax (850) 478-2671

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Tanner Braddock	Lab PM: Whitmire, Cheyenne R	Carrier Tracking No(s):	COC No: 400-82560-23631.1
Client Contact: Kristi Mitchell	Phone:	E-Mail: cheyenne.whitmire@testamericainc.com		Page: Page 1 of 1
Company: Gulf Power Company				Job #:
Address: BIN 731 One Energy Place	Due Date Requested:			
City: Pensacola	TAT Requested (days):			
State, Zip: FL, 32520				
Phone: 850-444-6427(Tel)	PO #: Pay by Credit Card			
Email: kristi.mitchell@nexteraenergy.com	WO #:			
Project Name: CCR Plant Crist GSA Delineation Sampling	Project #: 40005424			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226, 9320_Ra228, Ra226Ra228_GFPC	SM4500_Cl_E - Chloride, SM4500_SO4_E - Sulfate, 2540C - Total Dissolved Solids, 4500_F_C - Fluoride	6020 - Sb,As,Ba,B,Be,Ca,Cd,Co,Pb,Li,Mo,Se,Tl, 7470A - Mercury	FieldSampling - Field Sampling Parameters	9315 Radium 226 - Lab Filtered	Cl, SO4, TDS - Field Filtered	6020, 7470A - Field Filtered	9315 Radium 226 - Lab Filtered	Cl, SO4, TDS - Lab Filtered	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	N	D	N							
PZ-200D	4/2/19	1625	G	Water			X	X	X		X	X	X				
GE4DR	4/3/19	1149	G	Water			X	X	X				X	X	X		

400-168194 COC

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	4/3/19 1450	RDH	Kathy R Owen	4/3/19 1450	TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 0.5°C IR

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Gulf Power Company

Job Number: 400-168194-1
SDG Number: GSA Delineation Sampling

Login Number: 168194
List Number: 1
Creator: Shannon, Jonathon W

List Source: Eurofins TestAmerica, Pensacola

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.5°C IR7
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Accreditation/Certification Summary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-168194-1
SDG: GSA Delineation Sampling

Laboratory: Eurofins TestAmerica, Pensacola

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alabama	State Program	4	40150	06-30-19
ANAB	ISO/IEC 17025		L2471	02-22-20
Arizona	State Program	9	AZ0710	01-12-20
Arkansas DEQ	State Program	6	88-0689	09-01-19
California	State Program	9	2510	06-30-19
Florida	NELAP	4	E81010	06-30-19
Georgia	State Program	4	E81010 (FL)	06-30-19
Illinois	NELAP	5	200041	10-09-19
Iowa	State Program	7	367	08-01-20
Kansas	NELAP	7	E-10253	10-31-19
Kentucky (UST)	State Program	4	53	06-30-19
Kentucky (WW)	State Program	4	98030	12-31-19
Louisiana	NELAP	6	30976	06-30-19
Louisiana (DW)	NELAP	6	LA017	12-31-19
Maryland	State Program	3	233	09-30-19
Massachusetts	State Program	1	M-FL094	06-30-19
Michigan	State Program	5	9912	06-30-19
New Jersey	NELAP	2	FL006	06-30-19
North Carolina (WW/SW)	State Program	4	314	12-31-19
Oklahoma	State Program	6	9810	08-31-19
Pennsylvania	NELAP	3	68-00467	01-31-20
Rhode Island	State Program	1	LAO00307	12-30-19
South Carolina	State Program	4	96026	06-30-19
Tennessee	State Program	4	TN02907	06-30-19
Texas	NELAP	6	T104704286-18-15	09-30-19
US Fish & Wildlife	Federal		LE058448-0	07-31-19
USDA	Federal		P330-18-00148	05-17-21
Virginia	NELAP	3	460166	06-14-19
Washington	State Program	10	C915	05-15-20
West Virginia DEP	State Program	3	136	07-31-19

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ANALYTICAL REPORT

Eurofins TestAmerica, Pensacola
3355 McLemore Drive
Pensacola, FL 32514
Tel: (850)474-1001

Laboratory Job ID: 400-168194-2
Laboratory Sample Delivery Group: GSA Delineation Sampling
Client Project/Site: CCR Plant Crist

For:
Gulf Power Company
BIN 731
One Energy Place
Pensacola, Florida 32520

Attn: Mr. Mike Markey

Cheyenne R Whitmire

Authorized for release by:
5/22/2019 11:48:27 AM

Cheyenne Whitmire, Project Manager II
(850)471-6222
cheyenne.whitmire@testamericainc.com

Table of Contents

Job ID: 400-168194-2

Laboratory: Eurofins TestAmerica, Pensacola

Narrative

Job Narrative
400-168194-2

RAD

Method(s) 9315: Ra-226 Prep Batch 160-424080. The following samples have an RER (replicate error ratio) result outside of the acceptance criteria of 1 (1.71) for Ra-226. Duplicate precision is demonstrated by acceptable relative percent difference (RPD), within the limit of 40% (36%). The data have been reported with this narrative. PZ-200D (400-168194-1), (LCS 160-424080/1-A), (MB 160-424080/23-A), (240-110089-J-4-A), (240-110089-A-4-A MS) and (240-110089-A-4-B MSD)

Method(s) 9315: Radium-226 Prep Batch: 160-424080. Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. PZ-200D (400-168194-1), (LCS 160-424080/1-A), (MB 160-424080/23-A), (240-110089-J-4-A), (240-110089-A-4-A MS) and (240-110089-A-4-B MSD)

Method(s) 9315: Radium-226 Prep Batch 160-424884. Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. PZ-200D (400-168194-1), (LCS 160-424884/1-A), (LCSD 160-424884/2-A) and (MB 160-424884/23-A)

Method(s) 9320: Ra-228 Prep Batch 160-424240. The daily background check (BKG) for the detector (Protean 2) the method blank (MB) was counted on (5/3/19) but was not saved due to an instrument communications error. The bracketing BKG on 5/2 and 5/4 were both within limits. The MB exhibited activity below the MDC, indicating the absence of detector contamination. The laboratory does not believe this excursion affects the data. PZ-200D (400-168194-1), (LCS 160-424240/1-A), (MB 160-424240/23-A), (240-110089-J-4-B), (240-110089-A-4-C MS) and (240-110089-A-4-D MSD)

Method(s) 9320: Ra-228 Prep Batch 160-424240. Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. PZ-200D (400-168194-1), (LCS 160-424240/1-A), (MB 160-424240/23-A), (240-110089-J-4-B), (240-110089-A-4-C MS) and (240-110089-A-4-D MSD)

Method(s) 9320: Ra-228 Prep Batch 160-424240. The following samples have an RER (replicate error ratio) result outside of the acceptance criteria of 1 (1.51)) for Ra-228. Duplicate precision is demonstrated by acceptable relative percent difference (RPD), within the limit of 40% (36%). The data have been reported with this narrative. PZ-200D (400-168194-1), (LCS 160-424240/1-A), (MB 160-424240/23-A), (240-110089-J-4-B), (240-110089-A-4-C MS) and (240-110089-A-4-D MSD)

Method(s) 9320: Ra-228 Prep Batch 160-424886. Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. PZ-200D (400-168194-1), (LCS 160-424886/1-A), (LCSD 160-424886/2-A) and (MB 160-424886/23-A)

Method(s) PrecSep_0: Radium-228 Prep Batch 424240. The following sample was run at a reduced aliquot: PZ-200D (400-168194-1). Samples in jobs 160-33733, 180-87353, and 240-110089 were reduced due to sediment and yellow sample matrix. Samples 400-168194-1 and 480-151258-3 were reduced due to brown sediment. Sample 400-168194-2 was reduced due to heavy brown sediment.

Method(s) PrecSep_0: Radium 228 Prep Batch 160-424886. Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: PZ-200D (400-168194-1). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method(s) PrecSep-21: Radium-226 Prep Batch 424080. The following sample was run at a reduced aliquot: PZ-200D (400-168194-1). Samples in jobs 160-33733, 180-87353, and 240-110089 were reduced due to sediment and yellow sample matrix. Samples 400-168194-1 and 480-151258-3 were reduced due to brown sediment. Sample 400-168194-2 was reduced due to heavy brown sediment.

Method(s) PrecSep-21: Radium 226 Prep Batch 160-424884. Insufficient sample volume was available to perform a sample duplicate

Job ID: 400-168194-2 (Continued)

Laboratory: Eurofins TestAmerica, Pensacola (Continued)

(DUP) for the following samples: PZ-200D (400-168194-1). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method Summary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-168194-2
SDG: GSA Delineation Sampling

Method	Method Description	Protocol	Laboratory
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-168194-2
SDG: GSA Delineation Sampling

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Assest ID
400-168194-1	PZ-200D	Water	04/02/19 16:25	04/03/19 14:50	

Client Sample ID: PZ-200D

Date Collected: 04/02/19 16:25
Date Received: 04/03/19 14:50

Lab Sample ID: 400-168194-1

Matrix: Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.402**	**F**	0.170	0.174	1.00	0.177	pCi/L	04/16/19 17:54	05/14/19 05:48	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.1*		*40 - 110*	*04/16/19 17:54*	*05/14/19 05:48*	*1*

Method: 9315 - Radium-226 (GFPC) - Dissolved

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.297**		0.116	0.119	1.00	0.115	pCi/L	04/21/19 10:58	05/17/19 10:16	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*103*		*40 - 110*	*04/21/19 10:58*	*05/17/19 10:16*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.115	U F	0.430	0.430	1.00	0.752	pCi/L	04/17/19 11:48	05/03/19 13:51	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.1*		*40 - 110*	*04/17/19 11:48*	*05/03/19 13:51*	*1*
Y Carrier	*86.0*		*40 - 110*	*04/17/19 11:48*	*05/03/19 13:51*	*1*

Method: 9320 - Radium-228 (GFPC) - Dissolved

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.572**		0.257	0.263	1.00	0.365	pCi/L	04/21/19 11:38	05/13/19 16:06	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*103*		*40 - 110*	*04/21/19 11:38*	*05/13/19 16:06*	*1*
Y Carrier	*80.4*		*40 - 110*	*04/21/19 11:38*	*05/13/19 16:06*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.518	U	0.462	0.464	5.00	0.752	pCi/L		05/15/19 10:17	1

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228 - Dissolved

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.518	U	0.462	0.464	5.00	0.752	pCi/L		05/21/19 09:43	1

Definitions/Glossary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-168194-2
SDG: GSA Delineation Sampling

Qualifiers

Rad

Qualifier	Qualifier Description
F	MS/MSD Recovery and/or RPD exceeds the control limits
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Lab Chronicle

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-168194-2
SDG: GSA Delineation Sampling

Client Sample ID: PZ-200D

Date Collected: 04/02/19 16:25
Date Received: 04/03/19 14:50

Lab Sample ID: 400-168194-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	PrecSep-21			424884	04/21/19 10:58	CLP	TAL SL
Dissolved	Analysis	9315		1	428897	05/17/19 10:16	KLS	TAL SL
Total/NA	Prep	PrecSep-21			424080	04/16/19 17:54	CMM	TAL SL
Total/NA	Analysis	9315		1	428140	05/14/19 05:48	KLS	TAL SL
Dissolved	Prep	PrecSep_0			424886	04/21/19 11:38	CLP	TAL SL
Dissolved	Analysis	9320		1	428064	05/13/19 16:06	BLH	TAL SL
Total/NA	Prep	PrecSep_0			424240	04/17/19 11:48	HET	TAL SL
Total/NA	Analysis	9320		1	426595	05/03/19 13:51	CDR	TAL SL
Dissolved	Analysis	Ra226_Ra228		1	429218	05/21/19 09:43	SMP	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	428506	05/15/19 10:17	SMP	TAL SL

Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Rad

Prep Batch: 424080

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-168194-1	PZ-200D	Total/NA	Water	PrecSep-21	
MB 160-424080/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-424080/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
240-110089-A-4-A MS	Matrix Spike	Total/NA	Water	PrecSep-21	
240-110089-A-4-B MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep-21	

Prep Batch: 424240

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-168194-1	PZ-200D	Total/NA	Water	PrecSep_0	
MB 160-424240/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-424240/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
240-110089-A-4-C MS	Matrix Spike	Total/NA	Water	PrecSep_0	
240-110089-A-4-D MSD	Matrix Spike Duplicate	Total/NA	Water	PrecSep_0	

Prep Batch: 424884

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-168194-1	PZ-200D	Dissolved	Water	PrecSep-21	
MB 160-424884/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-424884/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-424884/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 424886

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
400-168194-1	PZ-200D	Dissolved	Water	PrecSep_0	
MB 160-424886/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-424886/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-424886/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-424080/23-A
Matrix: Water
Analysis Batch: 428140

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 424080

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.03189	U	0.0518	0.0519	1.00	0.0912	pCi/L	04/16/19 17:54	05/14/19 05:48	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*105*		*40 - 110*	*04/16/19 17:54*	*05/14/19 05:48*	*1*

Lab Sample ID: LCS 160-424080/1-A
Matrix: Water
Analysis Batch: 428152

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 424080

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			15.1	12.75		1.34	1.00	0.109	pCi/L	84	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*104*		*40 - 110*

Lab Sample ID: 240-110089-A-4-A MS
Matrix: Water
Analysis Batch: 428064

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 424080

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226	0.0378	U F	15.1	13.08		1.37	1.00	0.121	pCi/L	86	75 - 138		

Carrier	*MS %Yield*	*MS Qualifier*	*Limits*
Ba Carrier	*95.5*		*40 - 110*

Lab Sample ID: 240-110089-A-4-B MSD
Matrix: Water
Analysis Batch: 428064

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 424080

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.0378	U F	22.7	18.80	F	1.97	1.00	0.178	pCi/L	83	75 - 138	1.71	1

Carrier	*MSD %Yield*	*MSD Qualifier*	*Limits*
Ba Carrier	*97.7*		*40 - 110*

Lab Sample ID: MB 160-424884/23-A
Matrix: Water
Analysis Batch: 428896

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 424884

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0008727	U	0.0449	0.0449	1.00	0.101	pCi/L	04/21/19 10:58	05/17/19 12:44	1

Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: MB 160-424884/23-A
Matrix: Water
Analysis Batch: 428896

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 424884

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	109		40 - 110	04/21/19 10:58	05/17/19 12:44	1

Lab Sample ID: LCS 160-424884/1-A
Matrix: Water
Analysis Batch: 428896

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 424884

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	9.293		1.02	1.00	0.114	pCi/L	82	75 - 125		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	110		40 - 110

Lab Sample ID: LCSD 160-424884/2-A
Matrix: Water
Analysis Batch: 428896

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 424884

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.4	10.29		1.12	1.00	0.124	pCi/L	91	75 - 125	0.47	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	99.7		40 - 110

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-424240/23-A
Matrix: Water
Analysis Batch: 426700

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 424240

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.05561	U	0.291	0.291	1.00	0.508	pCi/L	04/17/19 11:48	05/03/19 13:53	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	105		40 - 110	04/17/19 11:48	05/03/19 13:53	1
Y Carrier	86.7		40 - 110	04/17/19 11:48	05/03/19 13:53	1

Lab Sample ID: LCS 160-424240/1-A
Matrix: Water
Analysis Batch: 426594

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 424240

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			12.3	9.344		1.12	1.00	0.436	pCi/L	76	75 - 125		

Method: 9320 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-424240/1-A
Matrix: Water
Analysis Batch: 426594

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 424240

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	104		40 - 110
Y Carrier	87.1		40 - 110

Lab Sample ID: 240-110089-A-4-C MS
Matrix: Water
Analysis Batch: 426594

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 424240

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	0.125	U F	12.3	10.98		1.30	1.00	0.460	pCi/L	88	45 - 150

Carrier	MS %Yield	MS Qualifier	Limits
Ba Carrier	95.5		40 - 110
Y Carrier	87.1		40 - 110

Lab Sample ID: 240-110089-A-4-D MSD
Matrix: Water
Analysis Batch: 426594

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 424240

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	0.125	U F	18.5	15.77	F	1.87	1.00	0.716	pCi/L	85	45 - 150	1.51	1

Carrier	MSD %Yield	MSD Qualifier	Limits
Ba Carrier	97.7		40 - 110
Y Carrier	87.1		40 - 110

Lab Sample ID: MB 160-424886/23-A
Matrix: Water
Analysis Batch: 428065

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 424886

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1298	U	0.230	0.230	1.00	0.391	pCi/L	04/21/19 11:38	05/13/19 16:09	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	109		40 - 110	04/21/19 11:38	05/13/19 16:09	1
Y Carrier	75.1		40 - 110	04/21/19 11:38	05/13/19 16:09	1

Lab Sample ID: LCS 160-424886/1-A
Matrix: Water
Analysis Batch: 428064

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 424886

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-228	9.21	8.236		0.991	1.00	0.386	pCi/L	89	75 - 125

Method: 9320 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-424886/1-A
Matrix: Water
Analysis Batch: 428064

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 424886

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	110		40 - 110
Y Carrier	75.9		40 - 110

Lab Sample ID: LCSD 160-424886/2-A
Matrix: Water
Analysis Batch: 428064

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 424886

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			9.21	8.436		1.04	1.00	0.433	pCi/L	92	75 - 125	0.1	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	99.7		40 - 110
Y Carrier	75.9		40 - 110

TestAmerica Pensacola
3355 McLemore Drive
Pensacola, FL 32514
Phone (850) 474-1001 Fax (850) 478-2671

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Tanner Braddock	Lab PM: Whitmire, Cheyenne R	Carrier Tracking No(s):	COC No: 400-82560-23631.1
Client Contact: Kristi Mitchell	Phone:	E-Mail: cheyenne.whitmire@testamericainc.com		Page: Page 1 of 1
Company: Gulf Power Company				Job #:
Address: BIN 731 One Energy Place	Due Date Requested:			
City: Pensacola	TAT Requested (days):			
State, Zip: FL, 32520				
Phone: 850-444-6427(Tel)	PO #: Pay by Credit Card			
Email: kristi.mitchell@nexteraenergy.com	WO #:			
Project Name: CCR Plant Crist GSA Delineation Sampling	Project #: 40005424			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226, 9320_Ra228, Ra226Ra228_GFPC	SM4500_Cl_E - Chloride, SM4500_SO4_E - Sulfate, 2540C - Total Dissolved Solids, 4500_F_C - Fluoride	6020 - Sb,As,Ba,B,Be,Ca,Cd,Co,Pb,Li,Mo,Se,Tl, 7470A - Mercury	FieldSampling - Field Sampling Parameters	9315 Radium 9320 - Pre Field Filtered	Ca,SO4, TDS - Pre Field Filtered	6020, 7470A - Pre Field Filtered	9315 Radium 9320 Lab Filtered	Ca, SO4, TDS - Lab Filtered	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	N	D	N							
PZ-20D	4/2/19	1625	G	Water			X	X	X		X	X	X				
GE4DR	4/3/19	1149	G	Water			X	X	X				X	X	X		

400-168194 COC

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	4/3/19 1450	KDH	Kathy R Owen	4/3/19 1450	TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 0.5°C IR

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Gulf Power Company

Job Number: 400-168194-2
SDG Number: GSA Delineation Sampling

Login Number: 168194
List Number: 1
Creator: Shannon, Jonathon W

List Source: Eurofins TestAmerica, Pensacola

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.5°C IR7
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Gulf Power Company

Job Number: 400-168194-2
SDG Number: GSA Delineation Sampling

Login Number: 168194
List Number: 2
Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis
List Creation: 04/05/19 06:35 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	18.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Accreditation/Certification Summary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-168194-2
SDG: GSA Delineation Sampling

Laboratory: Eurofins TestAmerica, Pensacola

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alabama	State Program	4	40150	06-30-19
ANAB	ISO/IEC 17025		L2471	02-22-20
Arizona	State Program	9	AZ0710	01-12-20
Arkansas DEQ	State Program	6	88-0689	09-01-19
California	State Program	9	2510	06-30-19
Florida	NELAP	4	E81010	06-30-19
Georgia	State Program	4	E81010 (FL)	06-30-19
Illinois	NELAP	5	200041	10-09-19
Iowa	State Program	7	367	08-01-20
Kansas	NELAP	7	E-10253	10-31-19
Kentucky (UST)	State Program	4	53	06-30-19
Kentucky (WW)	State Program	4	98030	12-31-19
Louisiana	NELAP	6	30976	06-30-19
Louisiana (DW)	NELAP	6	LA017	12-31-19
Maryland	State Program	3	233	09-30-19
Massachusetts	State Program	1	M-FL094	06-30-19
Michigan	State Program	5	9912	06-30-19
New Jersey	NELAP	2	FL006	06-30-19
North Carolina (WW/SW)	State Program	4	314	12-31-19
Oklahoma	State Program	6	9810	08-31-19
Pennsylvania	NELAP	3	68-00467	01-31-20
Rhode Island	State Program	1	LAO00307	12-30-19
South Carolina	State Program	4	96026	06-30-19
Tennessee	State Program	4	TN02907	06-30-19
Texas	NELAP	6	T104704286-18-15	09-30-19
US Fish & Wildlife	Federal		LE058448-0	07-31-19
USDA	Federal		P330-18-00148	05-17-21
Virginia	NELAP	3	460166	06-14-19
Washington	State Program	10	C915	05-15-20
West Virginia DEP	State Program	3	136	07-31-19

Accreditation/Certification Summary

Client: Gulf Power Company
Project/Site: CCR Plant Crist

Job ID: 400-168194-2
SDG: GSA Delineation Sampling

Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD		L2305	04-06-22
Arizona	State Program	9	AZ0813	12-08-19
California	State Program	9	2886	06-30-19 *
Connecticut	State Program	1	PH-0241	03-31-21
Florida	NELAP	4	E87689	06-30-19 *
Hawaii	State Program	9	NA	06-30-19
Illinois	NELAP	5	200023	11-30-19
Iowa	State Program	7	373	12-01-20
Kansas	NELAP	7	E-10236	10-31-19
Kentucky (DW)	State Program	4	KY90125	12-31-19
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA011	12-31-19
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-19
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19 *
New York	NELAP	2	11616	03-31-20
North Dakota	State Program	8	R207	06-30-19 *
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-20
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-13	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19 *
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Geosyntec consultants

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Knoxville, TN 37922
PH 865.330.0037
www.geosyntec.com

Memorandum

Date:	April 30, 2019
To:	Lane Dorman
From:	Jennifer Pinion
CC:	J. Caprio
Subject:	**Stage 2A Data Validations - Level II Data Deliverable – Eurofins TestAmerica Job ID 400-166764-1**

SITE: Plant Crist

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of seven aqueous samples, one field blank, one equipment blank, and two field duplicates, collected 28 February - 5 March 2019, as part of the Plant Crist sampling event.

The samples were analyzed at Eurofins TestAmerica, Pensacola, Florida, for the following analytical tests:

- Metals by EPA Methods 3005A/6020
- Mercury by EPA Method 7470A
- Total Dissolved Solids (TDS) by Standard Method 2540C
- Chloride by Standard Method 4500 CL-E
- Fluoride by Standard Method 4500 F C
- Sulfate by Standard Method 4500 SO4 E

EXECUTIVE SUMMARY

Based on the Stage 2A data validation covering the quality control (QC) parameters listed below and the information provided, the data are usable for meeting project objectives.

The data were reviewed based on the pertinent methods referenced in the laboratory report, professional and technical judgment and the following documents:

- United States Environmental Protection Agency (US EPA) Region IV Data Validation Standard Operating Procedures (US EPA Region IV, September 2011);

- USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (EPA 540-R-2017-001);
- Southern Company Services, Inc., Standard Operating Procedure (hereafter referred to as the SOP) for Level 2A Verification of Coal Combustion Residuals Data, Environmental Testing Laboratory Program, Draft, November 21, 2017, Revision 0, Prepared by Environmental Standards, Inc., Valley Forge, Pennsylvania.

The following samples were analyzed and reported in the laboratory report:

Laboratory ID	Client ID
400-166764-1	MW-200
400-166764-2	MW-203
400-166764-3	MW-204
400-166764-4	MW-205
400-166764-5	MW-206
400-166764-6	DUP-02

Laboratory ID	Client ID
400-166764-7	FB-02
400-166764-8	EB-02
400-166764-9	DUP-05
400-166764-10	MW-201
400-166764-11	MW-202

Incorrect error corrections were observed on the chain of custody (COC), instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

1.0 METALS

The samples were analyzed by EPA methods 3005A/6020.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Time
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Equipment Blank
✓ Field Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The metals data reported in this data package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this dataset is 100%.

1.2 Holding Time

The holding time for the metals analysis of a water sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 433042 and batch 433043). Metals were not detected in the method blanks above the method detection limits (MDLs).

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two batch MS/MSD pair were reported. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

1.5 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory and SOP specified acceptance criteria.

1.6 Equipment Blank

One equipment blank, EB-02, was collected with the sample set. Metals were not detected in the equipment blank above the MDLs.

1.7 Field Blank

One field blank, FB-02, was collected with the sample set. Metals were not detected in the field blank above the MDLs.

1.8 Field Duplicate

Two field duplicate samples were collected with the sample set, DUP-02 and DUP-05. Acceptable precision [relative percent difference (RPD) < 20% or difference < project quantitation limit (PQL)] was demonstrated between the field duplicates and the original samples MW-205 and MW-201, respectively.

1.9 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to dilutions analyzed.

1.10 Electronic Data Deliverable (EDD) Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

2.0 MERCURY

The samples were analyzed by EPA method 7470A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverables Review

2.1 Overall Assessment

The mercury data reported in this data package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to

the total number of analytical results requested on samples submitted for this analysis, for this dataset is 100%.

2.2 Holding Time

The holding time for the mercury analysis of a water sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 432929 and 432932). Mercury was not detected in the method blanks above the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two batch MS/MSD pairs were reported. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory and SOP specified acceptance criteria.

2.6 Equipment Blank

One equipment blank, EB-02, was collected with the sample set. Mercury was not detected in the equipment blank above the MDL.

2.7 Field Blank

One field blank, FB-02, was collected with the sample set. Mercury was not detected in the field blank above the MDL.

2.8 Field Duplicate

Two field duplicate samples were collected with the sample set, DUP-02 and DUP-05. Acceptable precision (RPD < 20% or difference < PQL) was demonstrated between the field duplicates and the original samples MW-205 and MW-201.

2.9 Sensitivity

The samples were reported to the MDL. Elevated non-detect results were not reported.

2.10 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

3.0 WET CHEMISTRY

The samples were analyzed for chloride by Standard Method 4500 Cl-E, fluoride by Standard Method 4500 F C, sulfate by Standard Method 4500 SO4 E and TDS by Standard Method 2540C.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Laboratory Duplicate
- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The wet chemistry data reported in this data package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for these analyses, for this dataset is 100%.

3.2 Holding Times

The holding time for the fluoride, chloride and sulfate analysis of a water sample is 28 days from sample collection to analysis. The holding time for TDS analysis of a water sample is 7 days from sample collection to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Method blanks were reported for each analysis and batch (TDS batches 432107, 432171, 432185, and 432606, chloride batches 433142 and 433709, sulfate batches 433223 and 433751, fluoride batches 433548 and 433828). The wet chemistry parameters were not detected in the method blanks above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Sample set specific MS/MSD pairs were reported for chloride using samples MW-205 and MW-201. The recovery and RPD results were within the laboratory specified acceptance criteria with the following exception.

The recoveries of chloride in the MS/MSD pair using sample MW-201 were low and outside the laboratory specified acceptance criteria. Since the chloride concentration in sample MW-201 was greater than four times the spike concentration, no qualifications were applied to the data, based on professional and technical judgement.

A batch MS/MSD pair was also reported for fluoride. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). LCSs were reported for each analysis and batch. The recovery results were within the laboratory and SOP specified acceptance criteria.

3.6 Laboratory Duplicate

Sample set specific laboratory duplicates were reported for TDS using samples MW-203 and DUP-05 and fluoride using sample MW-205. The RPD result was within the laboratory and SOP specified acceptance criteria.

Batch laboratory duplicates were also reported for TDS and fluoride. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

3.7 Equipment Blank

One equipment blank, EB-02, was collected with the sample set. Wet chemistry parameters were not detected in the equipment blank above the MDLs.

3.8 Field Blank

One field blank, FB-02, was collected with the sample set. The wet chemistry parameters were not detected in the field blank above the MDLs.

3.9 Field Duplicate

Two field duplicate samples were collected with the sample sets, DUP-01 and DUP-02. Acceptable precision (RPD < 20% or difference < PQL) was demonstrated between the field duplicates and the original samples MW-12 and MW-09, respectively.

3.10 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were not reported.

3.11 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team per the SOP

DATA QUALIFIER DEFINITIONS

U* This analyte should be considered "not-detected" because it was detected in an associated blank at a similar level.

UJ The analyte was analyzed for, but was not detected above the level of the reported sample reporting/method detection limit. The reported method detection limit is approximate and may be inaccurate or imprecise.

J The analyte was positively identified but the result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team per the SOP

Reason Code	Explanation
BL	Laboratory blank contamination. The result should be considered "not-detected."
BE	Equipment blank contamination. The result should be considered "not-detected."
BF	Field blank contamination. The result should be considered "not-detected."
L	LCS and LCSD recoveries outside acceptance limits, indeterminate bias
L-	LCS and/or LCSD recoveries outside of acceptance limits. The result may be biased low.
L+	LCS and/or LCSD recoveries outside of acceptance limits. The result may be biased high.
M-	MS and/or MSD recoveries outside of acceptance limits. The result may be biased low.

Geosyntec consultants

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Memorandum

Date:	April 29, 2018
To:	Carl Eldred
From:	Kristoffer Henderson
CC:	H. Parthasarathy and J. Caprio
Subject:	**Stage 2A Data Validations - Level II Data Deliverable – Eurofins TestAmerica Laboratories, Inc. Job Number 440-166764-2**

SITE: Plant Crist

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of seven aqueous samples, two field duplicate samples, one equipment blank and one field blank collected February 28 - March 5, 2019, as part of the Plant Crist CCR sampling event.

The samples were analyzed at Eurofins TestAmerica St. Louis (TA St. Louis), Earth City, MO for the following analytical tests:

- Radium-226 by EPA Method 9315
- Radium-228 by EPA Method 9320
- Combine Radium 226 + 228 by Calculation

EXECUTIVE SUMMARY

Based on this Stage 2A data validation covering the quality control (QC) parameters listed below and the information provided, the data are usable for meeting project objectives.

The data were reviewed based on the pertinent methods referenced in the laboratory report, professional and technical judgment and the following documents:

- US EPA Region IV Data Validation Standard Operating Procedures (US EPA Region IV, September 2011);
- American National Standard, Verification and Validation of Radiological Data for use in Waste Management and Environmental Remediation, February 15, 2012 (ANSI/ANS-41.5-2012); and,

- Southern Company Services, Inc., Standard Operating Procedure (hereafter referred to as the SOP) for Level 2A Verification of Coal Combustion Residuals Data, Environmental Testing Laboratory Program, Draft, November 21, 2017, Revision 0, Prepared by Environmental Standards, Inc., Valley Forge, Pennsylvania.

The following samples were analyzed and reported in the laboratory report:

Laboratory ID	Client ID
400-166764-1	MW-200
400-166764-2	MW-203
400-166764-3	MW-204
400-166764-4	MW-205
400-166764-5	MW-206
400-166764-6	DUP-02

Laboratory ID	Client ID
400-166764-7	FB-02
400-166764-8	EB-02
400-166764-9	DUP-05
400-166764-10	MW-201
400-166764-11	MW-202

1.0 RADIOCHEMISTRY

The samples were analyzed for radium-226 by EPA method 9315, radium-228 by EPA method 9320 and combine radium 226+228 by calculation.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Laboratory Duplicate
✓ Tracers and Carriers
✓ Field Blank
✓ Equipment Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The radium-226 and radium-228 data reported in this data package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values

qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

1.2 Holding Times

The holding times for the radium-226 and radium-228 analyses of a water sample are 180 days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported for the radium-226 data (batches 418219 and 418846). Two method blanks were reported for the radium-228 data (batches 418231 and 418851). Radium-226 and radium-228 were not detected in the method blanks above the minimum detectable concentrations (MDCs).

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Two batch MS/MSD pairs were reported for the radium-226 data. Two batch MS/MSD pairs were reported for the radium-228 data. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

1.5 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported for radium-226 and two LCSs were reported for radium-228. The recovery results were within the laboratory and SOP specified acceptance criteria.

1.6 Laboratory Duplicate

Laboratory duplicates were not reported with the data.

1.7 Tracers and Carriers

Carriers were reported for the radium-226 and radium-228 analyses and a tracer was reported for the radium-228 analyses. The recovery results were within the laboratory and SOP specified acceptance criteria.

1.8 Field Blank

One field blank was collected with the sample set, FB-02. Radium-226 and -228 were not detected in the field blank above the MDCs.

1.9 Equipment Blank

One equipment blank was collected with the sample set, EB-02. Radium-226 and -228 were not detected in the equipment blank above the MDCs.

1.10 Field Duplicate

Two field duplicate samples were collected with the sample set, DUP-02 and DUP-05. Acceptable precision [(relative error ration (RER) (2σ) ≥ 3] was demonstrated between the field duplicates and original samples, MW-205 and MW-201, respectively.

1.11 Sensitivity

The samples were reported to the MDCs. No elevated non-detect results were reported.

1.12 Electronic Data Deliverable (EDD) Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team per the SOP

DATA QUALIFIER DEFINITIONS

U* This analyte should be considered "not-detected" because it was detected in an associated blank at a similar level.

UJ The analyte was analyzed for, but was not detected above the level of the reported sample reporting/method detection limit. The reported method detection limit is approximate and may be inaccurate or imprecise.

J The analyte was positively identified but the result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

R The data are unusable. The sample results are rejected due to serious analytical efficiencies in the ability to analyze the sample and meet quality control criteria. The analyte may or may not be present in the sample

UR The analyte was analyzed for, but was not detected above the level of the reported sample reporting or method detection; however, the data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the staple and meet quality control criteria. The analyte may or may not be present in the sample.

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team per the SOP

Reason Code	Explanation
BE	Equipment blank contamination. The result should be considered "not-detected."
BF	Field blank contamination. The result should be considered "not-detected."
BL	Laboratory blank contamination. The result should be considered "not-detected."
FD	Field duplicate imprecision.
M+	MS and/or MSD recoveries outside of acceptance limits. The result may be biased high.
M-	MS and/or MSD recoveries outside of acceptance limits. The result may be biased low.

Geosyntec consultants

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Memorandum

Date:	April 30, 2019
To:	Lane Dorman
From:	Jennifer Pinion
CC:	J. Caprio
Subject:	**Stage 2A Data Validations - Level II Data Deliverable– Eurofins TestAmerica Job IDs 400-166941-1**

SITE: Plant Crist

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of four aqueous samples and two field duplicate samples, collected 5-6 March 2019, as part of the Plant Crist sampling event.

The samples were analyzed at Eurofins TestAmerica, Pensacola, Florida, for the following analytical tests:

- Metals by EPA Methods 3005A/6020
- Mercury by EPA Methods 7470A
- Total Dissolved Solids (TDS) by Standard Method 2540C
- Chloride by Standard Method 4500 CL-E
- Fluoride by Standard Method 4500 F C
- Sulfate by Standard Method 4500 SO4 E

EXECUTIVE SUMMARY

Based on the Stage 2A data validation covering the quality control (QC) parameters listed below and the information provided, the data are usable for meeting project objectives.

The data were reviewed based on the pertinent methods referenced in the laboratory reports, professional and technical judgment and the following documents:

- United States Environmental Protection Agency (US EPA) Region IV Data Validation Standard Operating Procedures (US EPA Region IV, September 2011);
- USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (EPA 540-R-2017-001);

- Southern Company Services, Inc., Standard Operating Procedure (hereafter referred to as the SOP) for Level 2A Verification of Coal Combustion Residuals Data, Environmental Testing Laboratory Program, Draft, November 21, 2017, Revision 0, Prepared by Environmental Standards, Inc., Valley Forge, Pennsylvania.

The following samples were analyzed and reported in the laboratory report:

Laboratory ID	Client ID
400-166941-1	PZ-200S
400-166941-2	GSA-2S
400-166941-3	PZ-201D

Laboratory ID	Client ID
400-166941-4	GE-1D
400-166941-5	DUP-06
400-166941-6	DUP-07

Samples PZ-200D and GE-4DR were listed on the chain of custody (COC); however, no sample collection date and time were listed with the samples. In addition, the samples were not logged in by the laboratory. Additional information from the client indicated that the samples were collected but were not reported due to issues with analyses.

1.0 METALS

The samples were analyzed by EPA methods 3005A/6020.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Time
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Equipment Blank
✓ Field Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The metals data reported in this data package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total

number of analytical results requested on samples submitted for this analysis, for this dataset is 100%.

1.2 Holding Time

The holding time for the metals analysis of a water sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 433805). Metals were not detected in the method blank above the method detection limits (MDLs).

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample specific MS/MSD pair was reported using sample PZ-200S. The recovery and relative percent difference (RPD) results were within laboratory specified acceptance criteria with the following exceptions.

The MS/MSD recoveries of boron and MS recovery of calcium were high and outside the laboratory specified acceptance criteria and the MSD recovery of calcium was low and outside the laboratory specified acceptance criteria. Since the concentrations of boron and calcium were greater than four times the spike concentrations, no qualifications have been applied to the data, based on professional and technical judgement.

1.5 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory and SOP specified acceptance criteria.

1.6 Equipment Blank

Equipment blanks were not collected with the sample set.

1.7 Field Blank

Field blanks were not collected with the sample set.

1.8 Field Duplicate

Two field duplicate samples were collected with the sample set, DUP-06 and DUP-07. Acceptable precision [relative percent difference (RPD) < 20% or difference < practical quantitation limit (PQL)] was demonstrated between the field duplicates and the original samples, PZ-200S and GE-ID.

1.9 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to dilutions analyzed.

1.10 Electronic Data Deliverable (EDD) Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

2.0 MERCURY

The samples were analyzed by EPA method 7470A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The mercury data reported in this data package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to

the total number of analytical results requested on samples submitted for this analysis, for this dataset is 100%.

2.2 Holding Time

The holding time for the mercury analysis of a water sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 433992). Mercury was not detected in the method blank above the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One batch MS/MSD pair was reported. Since this was batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory and SOP specified acceptance criteria.

2.6 Equipment Blank

Equipment blanks were not collected with the sample set.

2.7 Field Blank

Field blanks were not collected with the sample set.

2.8 Field Duplicate

Two field duplicate samples were collected with the sample set, DUP-06 and DUP-07. Acceptable precision (RPD < 20% or difference < PQL) was demonstrated between the field duplicates and the original samples, PZ-200S and GE-ID.

2.9 Sensitivity

The samples were reported to the MDL. Elevated non-detect results were not reported.

2.10 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

3.0 WET CHEMISTRY

The samples were analyzed for chloride by Standard Method 4500 Cl-E, fluoride by Standard Method 4500 F C, sulfate by Standard Method 4500 SO4 E and TDS by Standard Method 2540C.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Laboratory Duplicate
- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The wet chemistry data reported in this data package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for these analyses, for this dataset is 100%.

3.2 Holding Times

The holding time for the fluoride, chloride and sulfate analysis of a water sample is 28 days from sample collection to analysis. The holding time for TDS analysis of a water sample is 7 days from sample collection to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Method blanks were reported for each analysis and batch (TDS batch 432606, chloride batch 433871, sulfate batch 433957 and fluoride batch 433876). The wet chemistry parameters were not detected in the method blanks above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Batch MS/MSD pair were also reported for chloride, fluoride, and sulfate. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). LCSs were reported for each analysis and batch. The recovery results were within the laboratory and SOP specified acceptance criteria.

3.6 Laboratory Duplicate

Batch laboratory duplicates were also reported for TDS and fluoride. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

3.7 Equipment Blank

Equipment blanks were not collected with the sample set.

3.8 Field Blank

Field blanks were not collected with the sample set.

3.9 Field Duplicate

Two field duplicate samples were collected with the sample set, DUP-06 and DUP-07. Acceptable precision (RPD < 20% or difference < PQL) was demonstrated between the field duplicates and the original samples, PZ-200S and GE-ID.

3.10 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were not reported.

3.11 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team per the SOP

DATA QUALIFIER DEFINITIONS

U* This analyte should be considered "not-detected" because it was detected in an associated blank at a similar level.

UJ The analyte was analyzed for, but was not detected above the level of the reported sample reporting/method detection limit. The reported method detection limit is approximate and may be inaccurate or imprecise.

J The analyte was positively identified but the result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team per the SOP

Reason Code	Explanation
BL	Laboratory blank contamination. The result should be considered "not-detected."
BE	Equipment blank contamination. The result should be considered "not-detected."
BF	Field blank contamination. The result should be considered "not-detected."
L	LCS and LCSD recoveries outside acceptance limits, indeterminate bias
L-	LCS and/or LCSD recoveries outside of acceptance limits. The result may be biased low.
L+	LCS and/or LCSD recoveries outside of acceptance limits. The result may be biased high.
M-	MS and/or MSD recoveries outside of acceptance limits. The result may be biased low.

Geosyntec consultants

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Memorandum

Date:	April 29, 2018
To:	Carl Eldred
From:	Kristoffer Henderson
CC:	H. Parthasarathy and J. Caprio
Subject:	**Stage 2A Data Validations - Level II Data Deliverable – Eurofins TestAmerica Laboratories, Inc. Job Number 440-166941-2**

SITE: Plant Crist

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of four aqueous samples and two field duplicate samples collected March 5-6, 2019, as part of the Plant Crist CCR sampling event.

The samples were analyzed at Eurofins TestAmerica St. Louis (TA St. Louis), Earth City, MO for the following analytical tests:

- Radium-226 by EPA Method 9315
- Radium-228 by EPA Method 9320
- Combine Radium 226 + 228 by Calculation

EXECUTIVE SUMMARY

Based on this Stage 2A data validation covering the quality control (QC) parameters listed below and the information provided, the data are usable for meeting project objectives.

The data were reviewed based on the pertinent methods referenced in the laboratory report, professional and technical judgment and the following documents:

- US EPA Region IV Data Validation Standard Operating Procedures (US EPA Region IV, September 2011);
- American National Standard, Verification and Validation of Radiological Data for use in Waste Management and Environmental Remediation, February 15, 2012 (ANSI/ANS-41.5-2012); and,

- Southern Company Services, Inc., Standard Operating Procedure (hereafter referred to as the SOP) for Level 2A Verification of Coal Combustion Residuals Data, Environmental Testing Laboratory Program, Draft, November 21, 2017, Revision 0, Prepared by Environmental Standards, Inc., Valley Forge, Pennsylvania.

The following samples were analyzed and reported in the laboratory report:

Laboratory ID	Client ID
400-166941-1	PZ-200S
400-166941-2	GSA-2S
400-166941-3	PZ-201D

Laboratory ID	Client ID
400-166941-4	GE-1D
400-166941-5	DUP-06
400-166941-6	DUP-07

Samples PZ-200D and GE-4DR were listed on the chain of custody (COC); however, no sample collection date and time were listed with the samples. In addition, the samples were not logged in by the laboratory. Additional information from the client indicated that the samples were collected but were not reported due to issues with the analyses.

1.0 RADIOCHEMISTRY

The samples were analyzed for radium-226 by EPA method 9315, radium-228 by EPA method 9320 and combine radium 226+228 by calculation.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Laboratory Duplicate
✓ Tracers and Carriers
✓ Field Blank
✓ Equipment Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The radium-226 and radium-228 data reported in this data package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

1.2 Holding Times

The holding times for the radium-226 and radium-228 analyses of a water sample are 180 days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported for the radium-226 data (batches 419090 and 419103). Two method blanks were reported for the radium-228 data (batches 419100 and 419136). Radium-226 and radium-228 were not detected in the method blanks above the minimum detectable concentrations (MDCs).

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

One batch MS/MSD pair was reported for the radium-226 data. Two batch MS/MSD pairs were reported for the radium-228 data. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

1.5 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported for radium-226 and two LCSs were reported for radium-228. The recovery results were within the laboratory and SOP specified acceptance criteria.

1.6 Laboratory Duplicate

One batch laboratory duplicate was reported for the radium-226 data. One batch laboratory duplicate was reported for the radium-228 data. One batch laboratory duplicate was reported for the combined radium-226+228. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

1.7 Tracers and Carriers

Carriers were reported for the radium-226 and radium-228 analyses and a tracer was reported for the radium-228 analyses. The recovery results were within the laboratory and SOP specified acceptance criteria.

1.8 Field Blank

A field blank was not collected with the sample set.

1.9 Equipment Blank

An equipment blank was not collected with the sample set.

1.10 Field Duplicate

Two field duplicate samples were collected with the sample set, DUP-06 and DUP-07. Acceptable precision [(relative error ration (RER) (2σ) ≥ 3] was demonstrated between the field duplicates and original samples, PZ-200S and GE-1D, respectively.

1.11 Sensitivity

The samples were reported to the MDCs. No elevated non-detect results were reported.

1.12 Electronic Data Deliverable (EDD) Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

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* * * * *

ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team per the SOP

DATA QUALIFIER DEFINITIONS

U* This analyte should be considered "not-detected" because it was detected in an associated blank at a similar level.

UJ The analyte was analyzed for, but was not detected above the level of the reported sample reporting/method detection limit. The reported method detection limit is approximate and may be inaccurate or imprecise.

J The analyte was positively identified but the result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

R The data are unusable. The sample results are rejected due to serious analytical efficiencies in the ability to analyze the sample and meet quality control criteria. The analyte may or may not be present in the sample

UR The analyte was analyzed for, but was not detected above the level of the reported sample reporting or method detection; however, the data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the staple and meet quality control criteria. The analyte may or may not be present in the sample.

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team per the SOP

Reason Code	Explanation
BE	Equipment blank contamination. The result should be considered "not-detected."
BF	Field blank contamination. The result should be considered "not-detected."
BL	Laboratory blank contamination. The result should be considered "not-detected."
FD	Field duplicate imprecision.
M+	MS and/or MSD recoveries outside of acceptance limits. The result may be biased high.
M-	MS and/or MSD recoveries outside of acceptance limits. The result may be biased low.

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Memorandum

Date:	May 16, 2019
To:	Lane Dorman
From:	Kristoffer Henderson
CC:	J. Caprio
Subject:	**Stage 2A Data Validations - Level II Data Deliverable – Eurofins TestAmerica Job ID 400-168194-1**

SITE: Plant Crist

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of one aqueous sample collected 2 April 2019, as part of the Plant Crist sampling event.

The sample was analyzed at Eurofins TestAmerica, Pensacola, Florida, for the following analytical tests:

- Total and Dissolved Metals by EPA Methods 3005A/6020
- Total and Dissolved Metals Mercury by EPA Method 7470A
- Total Dissolved Solids (TDS) and Field Filtered TDS by Standard Method 2540C
- Total and Dissolved Chloride by Standard Method 4500 CL-E
- Total and Dissolved Fluoride by Standard Method 4500 F C
- Total and Dissolved Sulfate by Standard Method 4500 SO4 E
- Field pH

EXECUTIVE SUMMARY

Based on the Stage 2A data validation covering the quality control (QC) parameters listed below and the information provided, the data are usable for meeting project objectives.

The data were reviewed based on the pertinent methods referenced in the laboratory reports, professional and technical judgment and the following documents:

- United States Environmental Protection Agency (US EPA) Region IV Data Validation Standard Operating Procedures (US EPA Region IV, September 2011);
- USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (EPA 540-R-2017-001);

- Southern Company Services, Inc., Standard Operating Procedure (hereafter referred to as the SOP) for Level 2A Verification of Coal Combustion Residuals Data, Environmental Testing Laboratory Program, Draft, November 21, 2017, Revision 0, Prepared by Environmental Standards, Inc., Valley Forge, Pennsylvania.

The following sample was analyzed and reported in the laboratory report:

Laboratory ID	Client ID
400-168194-1	PZ-200D

The sample was received at the laboratory within the criteria of 0-6ºC. No sample preservation or sample receipt issues were noted by the laboratory.

Sample GE4DR was listed on the chain of custody (COC); however, the sample was canceled by the client and was not reported.

1.0 TOTAL AND DISSOLVED METALS

The sample was analyzed for metals by EPA methods 3005A/6020.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Time
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Equipment Blank
✓ Field Blank
✓ Field Duplicate
✓ Total and Dissolved Assessment
✓ Sensitivity
✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The metals data reported in this data package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this dataset is 100%.

1.2 Holding Time

The holding time for the metals analysis of a water sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 437384). Metals were not detected in the method blank above the method detection limits (MDLs).

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One batch MS/MSD pair was reported. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

1.5 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory and SOP specified acceptance criteria.

1.6 Equipment Blank

Equipment blanks were not collected with the sample set.

1.7 Field Blank

Field blanks were not collected with the sample set.

1.8 Field Duplicate

Field duplicates were not collected with the sample set.

1.9 Total and Dissolved Assessment

The sample was analyzed for both total and dissolved metals. The total metals results were greater than or equal to the dissolved metals results.

1.10 Sensitivity

The sample was reported to the MDLs. Elevated non-detect results were reported due to dilutions analyzed.

1.11 Electronic Data Deliverable (EDD) Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

2.0 TOTAL AND DISSOLVED MERCURY

The sample was analyzed for mercury by EPA method 7470A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Total and Dissolved Assessment
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The mercury data reported in this data package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this dataset is 100%.

2.2 Holding Time

The holding time for the mercury analysis of a water sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 437150). Mercury was not detected in the method blank above the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One batch MS/MSD pair was reported. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory and SOP specified acceptance criteria.

2.6 Equipment Blank

Equipment blanks were not collected with the sample set.

2.7 Field Blank

Field blanks were not collected with the sample set.

2.8 Field Duplicate

Field duplicates were not collected with the sample set.

2.9 Total and Dissolved Assessment

The sample was analyzed for both total and dissolved mercury. The total mercury result was greater than or equal to the dissolved mercury result.

2.10 Sensitivity

The sample was reported to the MDL. Elevated non-detect results were not reported.

2.11 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

3.0 WET CHEMISTRY

The sample was analyzed for total and dissolved chloride by Standard Method 4500 Cl-E, total and dissolved fluoride by Standard Method 4500 F C, sulfate by Standard Method 4500 SO4 E and TDS and field filtered TDS by Standard Method 2540C.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Laboratory Duplicate
- ✓ Equipment Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Total and Dissolved Assessment
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The wet chemistry data reported in this data package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for these analyses, for this dataset is 100%.

3.2 Holding Times

The holding time for the fluoride, chloride and sulfate analysis of a water sample is 28 days from sample collection to analysis. The holding time for TDS analysis of a water sample is 7 days from sample collection to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Method blanks were reported for each analysis and batch (TDS batch 436020, chloride batch 437484, sulfate batch 437533 and fluoride batch 436905). The wet chemistry parameters were not detected in the method blanks above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Batch MS/MSD pairs were reported for fluoride, chloride and sulfate. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). LCSs were reported for each analysis and batch. The recovery results were within the laboratory and SOP specified acceptance criteria.

3.6 Laboratory Duplicate

Batch laboratory duplicates were reported for TDS and chloride. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

3.7 Equipment Blank

Equipment blanks were not collected with the sample set.

3.8 Field Blank

Field blanks were not collected with the sample set.

3.9 Field Duplicate

Field duplicates were not collected with the sample set.

3.10 Total and Dissolved Assessment

The sample was analyzed for both total and dissolved chloride, fluoride and sulfate and both TDS and field filtered TDS. The total chloride, fluoride and sulfate results were greater than or equal to the dissolved chloride, fluoride and sulfate results and the TDS result was greater than or equal to the field filtered TDS result.

3.11 Sensitivity

The sample was reported to the MDLs. Elevated non-detect results were not reported.

3.12 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II report and the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team per the SOP

DATA QUALIFIER DEFINITIONS

U* This analyte should be considered "not-detected" because it was detected in an associated blank at a similar level.

UJ The analyte was analyzed for, but was not detected above the level of the reported sample reporting/method detection limit. The reported method detection limit is approximate and may be inaccurate or imprecise.

J The analyte was positively identified but the result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team per the SOP

Reason Code	Explanation
BL	Laboratory blank contamination. The result should be considered "not-detected."
BE	Equipment blank contamination. The result should be considered "not-detected."
BF	Field blank contamination. The result should be considered "not-detected."
L	LCS and LCSD recoveries outside acceptance limits, indeterminate bias
L-	LCS and/or LCSD recoveries outside of acceptance limits. The result may be biased low.
L+	LCS and/or LCSD recoveries outside of acceptance limits. The result may be biased high.
M-	MS and/or MSD recoveries outside of acceptance limits. The result may be biased low.

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Memorandum

Date:	June 6, 2019
To:	Carl Eldred
From:	Kristoffer Henderson
CC:	H. Parthasarathy and J. Caprio
Subject:	**Stage 2A Data Validations - Level II Data Deliverable – Eurofins TestAmerica Laboratories, Inc. Job Numbers 440-168194-2 and 440-168194-4**

SITE: Plant Crist

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of one aqueous sample collected April 2, 2019, as part of the Plant Crist CCR sampling event.

The sample was analyzed at Eurofins TestAmerica St. Louis (TA St. Louis), Earth City, MO for the following analytical tests:

- Total and Dissolved Radium-226 by EPA Method 9315
- Total and Dissolved Radium-228 by EPA Method 9320
- Total and Dissolved Combine Radium 226 + 228 by Calculation

EXECUTIVE SUMMARY

Based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data are usable for meeting project objectives.

The data were reviewed based on the pertinent methods referenced in the laboratory report, professional and technical judgment and the following documents:

- US EPA Region IV Data Validation Standard Operating Procedures (US EPA Region IV, September 2011);
- American National Standard, Verification and Validation of Radiological Data for use in Waste Management and Environmental Remediation, February 15, 2012 (ANSI/ANS-41.5-2012); and,
- Southern Company Services, Inc., Standard Operating Procedure (hereafter referred to as the SOP) for Level 2A Verification of Coal Combustion Residuals Data, Environmental Testing Laboratory Program, Draft, November 21, 2017, Revision 0, Prepared by Environmental Standards, Inc., Valley Forge, Pennsylvania.

The following sample was analyzed and reported in the laboratory report:

Laboratory ID	Client ID
400-168194-1	PZ-200D

Laboratory report 400-168194-4 was generated by the laboratory to correct the dissolved combined radium 226 + 228 result. The incorrect result in laboratory report 400-168194-2 was R qualified as rejected.

1.0 RADIOCHEMISTRY

The sample was analyzed for total and dissolved radium-226 by EPA method 9315, total and dissolved radium-228 by EPA method 9320 and total and dissolved combine radium 226+228 by calculation.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Laboratory Duplicate
- ✓ Carriers
- ✓ Field Blank
- ✓ Equipment Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Total and Dissolved Assessment
- ✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The radium-226 and radium-228 data reported in these packages are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

1.2 Holding Times

The holding times for the radium-226 and radium-228 analyses of a water sample are 180 days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported for the radium-226 data (batches 424080 and 424884) and two method blanks were reported for the radium-228 data (batches 424240 and 424886). Radium-226 and radium-228 were not detected in the method blanks above the minimum detectable concentrations (MDCs).

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

One batch MS/MSD pair was reported for the radium-226 data and one batch MS/MSD pair was reported for the radium-228 data. Since these were batch QC, the results do not affect the samples in this data set and qualifications were not applied to the data.

1.5 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS and one LCS/LCS duplicate (LCSD) pair were reported for radium-226 and one LCS and one LCS/LCSD pair were reported for radium-228. The recovery and replicate error ratio (RER) results were within the laboratory and SOP specified acceptance criteria.

1.6 Laboratory Duplicate

Laboratory duplicates were not reported with the data.

1.7 Carriers

Carriers were reported for the radium-226 and radium-228 analyses. The recovery results were within the laboratory and SOP specified acceptance criteria.

1.8 Field Blank

A field blank was not collected with the sample set.

1.9 Equipment Blank

An equipment blank was not collected with the sample set.

1.10 Field Duplicate

A field duplicate was not collected with the sample set.

1.11 Sensitivity

The sample was reported to the MDCs. No elevated non-detect results were reported.

1.12 Total and Dissolved Assessment

The sample was analyzed for total and dissolved radium-226 and radium-228. The total radium-226 concentration was greater than the dissolved radium-228 concentration. However, the dissolved radium-228 concentration was greater than the total radium-228 concentration. Since the RER between the total and dissolved radium-228 concentrations was less than 3, no qualifications were applied to the data.

1.13 Electronic Data Deliverables (EDDs) Review

The results and sample IDs in the EDDs were reviewed against the information provided by the associated level II reports at a minimum of 20% as part of the data validation process. No discrepancies were identified between the level II reports and the EDDs.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team per the SOP

DATA QUALIFIER DEFINITIONS

U* This analyte should be considered "not-detected" because it was detected in an associated blank at a similar level.

UJ The analyte was analyzed for, but was not detected above the level of the reported sample reporting/method detection limit. The reported method detection limit is approximate and may be inaccurate or imprecise.

J The analyte was positively identified but the result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

R The data are unusable. The sample results are rejected due to serious analytical efficiencies in the ability to analyze the sample and meet quality control criteria. The analyte may or may not be present in the sample

UR The analyte was analyzed for, but was not detected above the level of the reported sample reporting or method detection; however, the data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the staple and meet quality control criteria. The analyte may or may not be present in the sample.

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team per the SOP

Reason Code	Explanation
BE	Equipment blank contamination. The result should be considered "not-detected."
BF	Field blank contamination. The result should be considered "not-detected."
BL	Laboratory blank contamination. The result should be considered "not-detected."
FD	Field duplicate imprecision.
M+	MS and/or MSD recoveries outside of acceptance limits. The result may be biased high.
M-	MS and/or MSD recoveries outside of acceptance limits. The result may be biased low.

Product Name: Low-Flow System

Date: 2019-02-28 09:04:22

Project Information:		Pump Information:	
Operator Name	Philip Evans	Pump Model/Type	PP
Company Name	RDH Environmental	Tubing Type	PE
Project Name	Crist plant CCR	Tubing Diameter	.17 in
Site Name	Crist Plant	Tubing Length	40 ft
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	417744		
Turbidity Make/Model	HACH 2100Q	Pump placement from TOC	27.8 ft

Well Information:		Pumping Information:	
Well ID	MW-205	Final Pumping Rate	400 mL/min
Well diameter	2 in	Total System Volume	0.2685369 L
Well Total Depth	32.8 ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	0.01 in
Depth to Water	16.42 ft	Total Volume Pumped	6 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.2	+/- 0.2	+/- 5%	+/- 10		+/- 0.2	+/- 10
Last 5	08:52:21	300.02	22.39	5.01	323.39	0.30	16.43	3.68	159.28
Last 5	08:57:21	600.02	22.44	5.02	313.24	0.25	16.43	3.68	154.49
Last 5	09:02:21	900.02	22.44	5.02	314.00	0.24	16.43	3.65	151.41
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			0.05	0.01	-10.14			0.00	-4.79
Variance 2			0.00	-0.00	0.75			-0.03	-3.08

Notes

Sample time @ 0905. Cloudy 65. Dup-02 @ 0805.

Grab Samples

Product Name: Low-Flow System

Date: 2019-03-05 11:17:11

Project Information:		Pump Information:	
Operator Name	Philip Evans	Pump Model/Type	BP
Company Name	RDH Environmental	Tubing Type	PE
Project Name	Crist plant CCR	Tubing Diameter	.17 in
Site Name	Crist Plant	Tubing Length	70 ft
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	417744		
Turbidity Make/Model	HACH 2100Q	Pump placement from TOC	54.8 ft

Well Information:		Pumping Information:	
Well ID	MW-202	Final Pumping Rate	400 mL/min
Well diameter	2 in	Total System Volume	0.5324396 L
Well Total Depth	59.8 ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	0.02 in
Depth to Water	51.33 ft	Total Volume Pumped	18 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.2	+/- 0.2	+/- 5%	+/- 10		+/- 0.2	+/- 10
Last 5	10:51:44	1500.02	23.48	4.95	80.20	2.14	51.35	2.44	211.65
Last 5	10:56:44	1800.02	23.47	4.96	78.03	1.74	51.35	2.53	219.20
Last 5	11:01:44	2100.02	23.58	4.95	78.93	1.32	51.35	2.49	232.41
Last 5	11:06:44	2400.02	23.67	4.93	77.70	0.98	51.35	2.51	240.07
Last 5	11:11:44	2700.02	23.68	4.93	79.24	0.78	51.35	2.48	239.27
Variance 0			0.11	-0.00	0.90			-0.04	13.21
Variance 1			0.09	-0.02	-1.23			0.02	7.66
Variance 2			0.01	-0.01	1.54			-0.03	-0.80

Notes

Sample time@ 1120. Sunny 48.

Grab Samples

Product Name: Low-Flow System

Date: 2019-03-05 13:15:33

Project Information:		Pump Information:	
Operator Name	Rick Hagendorfer	Pump Model/Type	QED
Company Name	RDH Env	Tubing Type	PE
Project Name	Crist CCR Delineation	Tubing Diameter	.17 in
Site Name	Crist plant	Tubing Length	195 ft
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	632615		
Turbidity Make/Model	Hach 2100Q	Pump placement from TOC	185.7 ft

Well Information:		Pumping Information:	
Well ID	PZ-201D	Final Pumping Rate	240 mL/min
Well diameter	2 in	Total System Volume	1.090367 L
Well Total Depth	188.2 ft	Calculated Sample Rate	300 sec
Screen Length	5 ft	Stabilization Drawdown	2 in
Depth to Water	44.47 ft	Total Volume Pumped	68.4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.2	+/- 0.2	+/- 5%	+/- 5		+/- 0.2	+/- 10
Last 5	12:51:52	15907.02	20.17	6.75	87.81	10.20	46.45	0.10	-15.19
Last 5	12:56:52	16207.02	19.77	6.75	87.25	9.93	46.46	0.09	-13.99
Last 5	13:01:52	16507.02	20.13	6.75	86.99	9.73	46.47	0.09	-15.27
Last 5	13:06:52	16807.02	20.03	6.74	87.30	9.69	46.47	0.10	-16.82
Last 5	13:11:52	17107.02	20.05	6.74	86.95	9.58	46.47	0.09	-18.49
Variance 0			0.36	-0.00	-0.26			0.00	-1.28
Variance 1			-0.10	-0.01	0.30			0.01	-1.54
Variance 2			0.02	-0.00	-0.35			-0.00	-1.67

Notes

Sample time 1312. Sunny 52.

Grab Samples

Product Name: Low-Flow System

Date: 2019-03-05 16:21:56

Project Information:		Pump Information:	
Operator Name	Rick Hagendorfer	Pump Model/Type	peristaltic
Company Name	RDH Env	Tubing Type	PE
Project Name	Crist CCR Delineation	Tubing Diameter	.17 in
Site Name	Crist plant	Tubing Length	37 ft
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	632615		
Turbidity Make/Model	Hach 2100Q	Pump placement from TOC	31.0 ft

Well Information:		Pumping Information:	
Well ID	PZ-200S	Final Pumping Rate	400 mL/min
Well diameter	2 in	Total System Volume	0.3851467 L
Well Total Depth	33.5 ft	Calculated Sample Rate	300 sec
Screen Length	5 ft	Stabilization Drawdown	0.02 in
Depth to Water	7.57 ft	Total Volume Pumped	12 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.2	+/- 0.2	+/- 5%	+/- 5		+/- 0.2	+/- 10
Last 5	15:46:53	600.02	19.64	5.29	1705.89	6.38	7.60	0.32	133.28
Last 5	15:51:53	900.02	19.69	5.31	1741.56	4.60	7.60	0.30	133.61
Last 5	15:56:53	1200.02	19.84	5.32	1714.79	2.91	7.60	0.29	134.45
Last 5	16:01:53	1500.02	19.83	5.32	1749.32	2.62	7.60	0.28	136.02
Last 5	16:06:53	1800.02	19.75	5.31	1751.65	1.86	7.60	0.26	137.73
Variance 0			0.15	0.02	-26.78			-0.01	0.83
Variance 1			-0.00	-0.00	34.54			-0.01	1.58
Variance 2			-0.09	-0.01	2.32			-0.02	1.70

Notes

Sample time 1610. Dup-06 fake time 1710. Sunny 54.

Grab Samples

Product Name: Low-Flow System

Date: 2019-03-06 12:07:26

Project Information:		Pump Information:	
Operator Name	Philip Evans	Pump Model/Type	PP
Company Name	RDH Environmental	Tubing Type	PE
Project Name	Crist GSA	Tubing Diameter	.17 in
Site Name	Crist Plant	Tubing Length	60 ft
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	417744		
Turbidity Make/Model	HACH 2100Q	Pump placement from TOC	49.55 ft

Well Information:		Pumping Information:	
Well ID	GSA-2s	Final Pumping Rate	400 mL/min
Well diameter	2 in	Total System Volume	0.3578054 L
Well Total Depth	54.55 ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	0.05 in
Depth to Water	22.95 ft	Total Volume Pumped	30 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.2	+/- 0.2	+/- 5%	+/- 10		+/- 0.2	+/- 10
Last 5	11:45:37	3304.03	23.59	4.48	355.55	0.38	23.00	1.31	108.62
Last 5	11:50:37	3604.03	23.53	4.64	342.59	0.35	23.00	1.56	108.81
Last 5	11:55:37	3904.03	23.74	4.49	356.36	0.40	23.00	1.38	107.62
Last 5	12:00:37	4204.03	23.61	4.49	357.48	0.45	23.00	1.32	107.00
Last 5	12:05:37	4504.03	23.61	4.48	357.78	0.42	23.00	1.29	106.70
Variance 0			0.21	-0.16	13.77			-0.18	-1.19
Variance 1			-0.13	-0.00	1.12			-0.06	-0.62
Variance 2			0.00	-0.00	0.30			-0.02	-0.31

Notes

Sample time @ 4500. Sunny 50.

Grab Samples

Product Name: Low-Flow System

Date: 2019-04-02 16:24:06

Project Information:		Pump Information:	
Operator Name	Trevor Braddock	Pump Model/Type	BO
Company Name	RDH Environmental	Tubing Type	PE
Project Name	Smith CCR	Tubing Diameter	.17 in
Site Name	Smith Plant	Tubing Length	153 ft
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	625126		
Turbidity Make/Model	2100q	Pump placement from TOC	146.5 ft

Well Information:		Pumping Information:	
Well ID	PZ200D	Final Pumping Rate	400 mL/min
Well diameter	2 in	Total System Volume	0.7729037 L
Well Total Depth	151.5 ft	Calculated Sample Rate	300 sec
Screen Length	10 ft	Stabilization Drawdown	0 in
Depth to Water	5.68 ft	Total Volume Pumped	184 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.2	+/- 0.2	+/- 5%	+/- 5		+/- 0.2	+/- 10
Last 5	16:00:41	26410.15	21.13	6.74	113.47	167.00	5.65	0.04	-90.57
Last 5	16:05:49	26718.14	21.16	6.71	113.49	165.00	5.65	0.04	-90.46
Last 5	16:10:55	27024.14	21.13	6.74	113.38	167.00	5.65	0.04	-92.82
Last 5	16:15:55	27324.14	21.14	6.73	113.55	164.00	5.65	0.04	-89.87
Last 5	16:20:55	27624.14	21.12	6.69	113.23	164.00	5.65	0.04	-90.16
Variance 0			-0.03	0.03	-0.11			-0.00	-2.35
Variance 1			0.01	-0.01	0.17			-0.00	2.95
Variance 2			-0.02	-0.04	-0.32			-0.00	-0.29

Notes

Sample time 1625. Sunny 72. Two sets taken one total and one F.F. At .45um

Grab Samples

Product Name: Low-Flow System

Date: 2019-03-06 14:34:33

Project Information:		Pump Information:	
Operator Name	Rick Hagendorfer	Pump Model/Type	QED
Company Name	RDH Env	Tubing Type	PE
Project Name	Crist CCR Delineation	Tubing Diameter	.17 in
Site Name	Crist plant	Tubing Length	107 ft
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	632615		
Turbidity Make/Model	Hach 2100Q	Pump placement from TOC	100.1 ft

Well Information:		Pumping Information:	
Well ID	GE-1D	Final Pumping Rate	400 mL/min
Well diameter	2 in	Total System Volume	0.6975863 L
Well Total Depth	102.6 ft	Calculated Sample Rate	300 sec
Screen Length	5 ft	Stabilization Drawdown	1.49 in
Depth to Water	16.90 ft	Total Volume Pumped	128 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 0.2	+/- 0.2	+/- 5%	+/- 5		+/- 0.2	+/- 10
Last 5	14:03:30	18005.02	21.30	4.83	94.14	13.50	18.39	3.72	289.65
Last 5	14:08:30	18305.02	21.33	4.91	105.85	12.30	18.39	3.65	289.39
Last 5	14:13:32	18607.02	21.33	4.87	98.63	10.50	18.39	3.69	298.57
Last 5	14:18:32	18907.02	21.20	4.84	95.52	10.10	18.39	3.69	301.94
Last 5	14:23:32	19207.02	21.22	4.87	99.54	9.75	18.39	3.71	298.09
Variance 0			0.01	-0.04	-7.21			0.04	9.18
Variance 1			-0.14	-0.03	-3.12			-0.00	3.38
Variance 2			0.03	0.03	4.02			0.02	-3.85

Notes

Sample time 1432. Dup-07 fake time 1332. Sunny 57.

Grab Samples