ASSESSMENT OF CORRECTIVE MEASURES
BYPRODUCT STORAGE AREA
C.D. MCINTOSH POWER PLANT

LAKELAND, POLK COUNTY, FLORIDA

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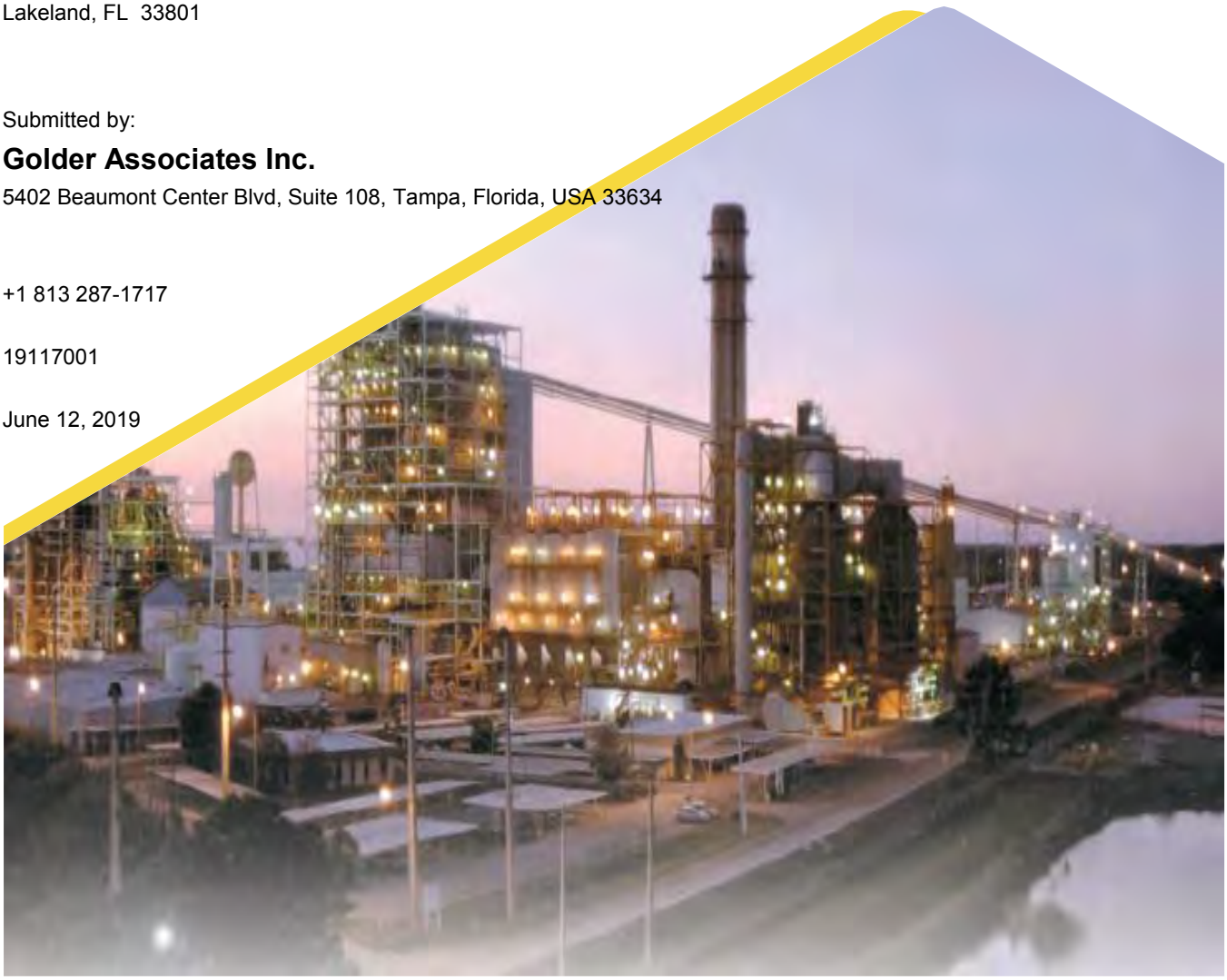

Distribution List

Sean P. McGinnis, CHMM, Lakeland Electric

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1.0 INTRODUCTION

Golder Associates Inc. (Golder), on behalf of Lakeland Electric, prepared this assessment of corrective measures (ACM) report in accordance with §257.96 of the Coal Combustion Residual (CCR) Rule[1], for the Byproduct Storage Area (BSA) at the C.D. McIntosh Power Plant (MPP or site) in Lakeland, Florida. This ACM Report is included in the facility's operating records in accordance with §257.105(h)(10).

This report also provides the result of a site characterization conducted in February / March 2019, which includes an initial nature and extent assessment of groundwater impacts detected near the BSA, based on assessment monitoring results that identified certain Appendix IV constituents in the uppermost aquifer at statistically significant levels (SSLs) above the groundwater protection standards (GWPS) established for the constituents for the site. An objective of site characterization is to evaluate background contributions from natural sources or anthropogenic sources. The assessment included evaluation of soil to gain a better understanding of the underlying geological conditions of the area surrounding the BSA and allow for an understanding of naturally-occurring metal and radionuclide contributions to groundwater or the potential for sequestration of constituents from groundwater.

The MPP facility is located at 3030 East Lake Parker Drive in Lakeland, Florida; a site location map is provided as Figure 1. The MPP facility has a combined generation capacity of 874 megawatts consisting of multiple units including: two diesel peaking units, a natural gas and oil-fired generator (Unit 2), a coal fired generator (Unit 3), and a combined cycle natural gas unit (Unit 5). The BSA, constructed in the 1980s, is an above-grade, unlined earthen containment unit that encompasses approximately 44 acres, surrounded by a perimeter ditch system and is located east of Unit 3 and adjacent to Fish Lake, Lakes B, C, and D, the south sedimentation pond, and the stack-out pad (Figures 2 and 3). The BSA historically received CCR generated by Unit 3 at the MPP, including fly ash, bottom ash, synthetic gypsum and stabilized flue gas desulfurization (FGD) material.

[1] 40 Code of Federal Regulations (CRF) Part 257, Subtitle D.

2.0 REGIONAL AND SITE SETTING

2.1 Regional Geology

Stratigraphic units present in the region of the MPP consist of (in descending order; youngest to oldest):

- Up to 25 feet (ft) of Holocene to Pliocene-age sands and clays occur in the Lakeland area (FGS 1991). The Holocene-age sands consist of laterally restricted deposits such as stream flood plains, beaches, swamps, marshes, and lakes. The Pleistocene to upper Pliocene-age sands and clays are locally phosphatic and generally occur as laterally consistent terrace deposits;
- The Miocene to Oligocene-age Hawthorn Group has an approximate thickness between 50 and 100 ft in the Lakeland area and is comprised of the Peace River and Arcadia Formations. In Polk County, the upper portion of the Peace River Formation includes the Bone Valley Member, which is characterized by phosphate-rich, pebbly- and clayey-sand soils overlain by weathered residuum (Scott 1988). The estimated thickness of the Hawthorn Group in the vicinity of the MPP is approximately 40 to 60 ft (Cathcart 1964).
- Older units underlying the Hawthorn group in the region include the Suwannee Limestone, Ocala Limestone, Avon Park Formation and Oldsmar Formation. These units are Oligocene to Eocene age and are primarily comprised of limestone and/or dolostone.

2.2 Regional Hydrogeology

The regional hydrogeology is comprised of three major hydrostratigraphic units: the unconfined surficial aquifer, the intermediate aquifer/confining unit, and the Floridan aquifer. The following discusses each system in its regional context:

- The unconfined surficial aquifer underlies all of Polk County and varies from less than 25 to 50 ft thick in northern Polk County (FGS 1991). This water-table aquifer consists primarily of Holocene- to Pliocene-age sand, clay, shell, and phosphate deposits that are contiguous with the ground surface.
- The base of the surficial aquifer system is formed by the clayey, less permeable beds of the Peace River Formation – Bone Valley Member (Scott 1988). The surficial aquifer system is used primarily for residential low-volume irrigation applications (e.g. lawn watering) where high discharge rates are not required (Scott 1988). Transmissivity within the surficial aquifer ranges from approximately 2 to 20 square ft per day (ft^2/day), where fine clayey sand predominates, to greater than 5,000 ft^2/day in shell beds (Golder 2005). Regional groundwater flow in the surficial aquifer typically mimics ground surface topography. The surficial aquifer is discharged by natural gravity flow, evapotranspiration, discharge to lakes, downward loss into underlying aquifers, and pumping from wells. The surficial aquifer is recharged by rainfall, infiltration and discharge from lakes, and stormwater.
- The hydrostratigraphic unit that underlies the surficial aquifer is referred to as the intermediate aquifer/intermediate confining unit. The intermediate confining unit is largely comprised of clayey sand, sandy clay and clays and underlying clayey dolomite and limestone of the Hawthorn Group.
- The confined, artesian Floridan aquifer is the principal aquifer in Polk County and is the source of major municipal, industrial, and irrigation water supplies. This aquifer occurs primarily within the Ocala Limestone and is locally hydraulically connected with the overlying intermediate aquifer/confining unit, where present, in areas where the confining unit is absent or breached.

There is limited recharge to the Floridan aquifer near the MPP due to the presence of the confining unit. Transmissivity of the upper Floridan aquifer is highly variable, and ranges from less than 50,000 ft^2/day to greater than 9,000,000 ft^2/day. The potentiometric surface of the aquifer occurs at an elevation of approximately 75 ft above National Geodetic Vertical Datum or approximately 70 ft below ground surface (bgs) in the area of the MPP with regional groundwater flow generally to the south-southwest (FGS 1991). Due to the relatively thick and continuous intermediate confining unit separating the Floridan aquifer from the surficial aquifer, exchange of groundwater between the two aquifers is limited beneath the MPP (Golder 2005).

2.3 Site Hydrogeology and BSA Monitoring Well Network

The BSA is underlain by two regional aquifers, the surficial aquifer and Floridan aquifer which are separated by an intermediate confining unit. The surficial aquifer represents the uppermost aquifer and is approximately 25 ft to 30 ft thick beneath the BSA (Golder 2005). The surficial aquifer consists primarily of Holocene- to Pliocene-age sand, clay, shell, and phosphate deposits. Groundwater in the surficial aquifer generally flows from topographic highs to topographic lows. Groundwater in the surficial aquifer discharges to numerous lakes at the facility (Figure 3); Fish Lake receives a majority of recharge from the surficial aquifer at the facility. Flow direction in the surficial aquifer near surface water bodies may be temporarily reversed during peak rainfall events when water levels in the lakes are higher in elevation than adjacent groundwater levels, whereby the lakes recharge the surficial aquifer. This condition reverses as water level in the lakes recedes and groundwater flow returns as the surficial aquifer again recharges the lakes. Based on in-situ hydraulic head test results, the surficial aquifer has a maximum estimated horizontal hydraulic conductivity value of 52 feet per day (ft/day) (Golder 2005). The shallow portion of the surficial aquifer has a higher hydraulic conductivity value compared to the deeper portion of the surficial aquifer due to the presence of a greater amount of clay at depth. Lateral groundwater flow velocity is estimated to range from 0.29 ft/day to 1.87 ft/day in the surficial aquifer (Golder 2005). The base of the surficial aquifer is bound by the top of the intermediate confining unit.

Underlying the surficial aquifer below the BSA is the intermediate confining unit, which ranges in thickness from approximately 40 ft to 50 ft and consists of interbedded clay with silty to sandy clay, silt to clayey sand, sand to clayey silt, and limestone. There is a small component of groundwater flow in the surficial aquifer that is vertically downward toward the intermediate confining unit, and Floridan aquifer. However, this vertical flow component is retarded by the clayey materials of the underlying intermediate confining unit (Golder 2005).

The CCR monitoring network at the BSA includes two background monitoring wells, CCR-1 and CCR-2, and twelve downgradient monitoring wells, CCR-3 through CCR-14[2], installed at the waste boundary and screened in the uppermost aquifer. Screened intervals in each of the monitoring wells, range from approximately 15 to 25 ft bgs. CCR groundwater monitoring well locations (CCR-1 through CCR-14) are shown on Figure 4 and monitoring well construction data are provided in Table 1 (Golder 2016a).

Groundwater in the surficial aquifer beneath the BSA has been documented to flow radially away from the BSA, with flow to the north toward Lake B, to the west toward Fish Lake, and to the east toward Lakes C and D. An area to the southwest of the BSA is hydraulically upgradient or side-gradient to the BSA, depending on site conditions that affect groundwater flow (e.g., surface water elevations, amount of precipitation, etc.), while the areas to the west, north and east are hydraulically downgradient of the BSA. Figure 5 presents groundwater contours of the surficial aquifer from groundwater monitoring data measured during a July 2018 monitoring event (Table 2).

[2] Monitoring well CCR-10 was abandoned and replaced with CCR-10R on March 13, 2018 (Golder 2018b).

3.0 NATURE AND EXTENT EVALUATION

3.1 Groundwater Monitoring Summary

Background monitoring (the collection of a minimum of eight independent samples prior to October 2017) began in August 2016 and was completed in August 2017. During the background monitoring period, samples were collected on a monthly basis and analyzed for Appendix III and Appendix IV constituents pursuant to §257.94(b). Background monitoring was performed to established background concentrations for these constituents.

Detection monitoring for Appendix III constituents was initiated in October 2017. The purpose of the detection monitoring program is to determine if there is a statistically significant increase (SSI) relative to background concentrations of any Appendix III parameter for any downgradient monitoring well. A statistical analysis of the October 2017 sampling data and the subsequent verification sampling in December 2017 identified SSIs for boron, calcium, chloride, fluoride, pH, sulfate and total dissolved solids (Golder 2018a).

Based on the SSI determination in January 2018, the assessment monitoring program was established in April 2018 pursuant to §257.94(e)(1). The initial annual assessment monitoring event was conducted in April 2018 for all Appendix IV constituents in accordance with §257.95(a). During the subsequent semi-annual assessment monitoring events in July 2018 and January 2019, samples were analyzed for all Appendix III constituents and detected Appendix IV constituents from the annual monitoring event. Assessment monitoring will continue in accordance with §257.96(b).

3.2 Constituents of Concern

A statistical analysis of the Appendix IV results from groundwater sampling/analysis of downgradient CCR monitoring wells (CCR-3 through CCR-14) was performed to evaluate if constituent concentrations detected in the samples are at SSLs relative to the GWPS established for the site. The statistical analysis was performed in accordance with the Statistical Analysis Plan for CCR Groundwater Monitoring (Golder 2018c). The following SSLs above the GWPS have been identified:

Appendix IV Parameter	GWPS	CCR Monitoring Well at SSL
Arsenic	0.010 mg/L	CCR-11 and CCR-12
Lithium	0.040 mg/L	CCR-5, CCR-6, CCR-9, and CCR-13
Radium-226 and Radium-228	7.94 pCi/L	CCR-4, CCR-5, CCR-7, CCR-13 and CCR-14

pCi/L - Picocuries per liter

mg/L - milligrams per liter

Historical groundwater sampling results for arsenic, lithium, and combined radium-226 and radium-228 from CCR monitoring wells, from August 2016 through January 2019, are presented Tables 3, 4, and 5, respectively. Based on the statistical analysis, and in accordance with the CCR Rule (§257.95(g)(1)), Golder performed an evaluation to determine the nature and extent of the arsenic, lithium, and radium-226+228 impacts in groundwater and surface water. In addition, based on site conditions (i.e. naturally occurring radionuclides in soil) and results obtained from the site characterization, Golder prepared an alternative source demonstration (ASD) for radium-226 and radium-228 present in groundwater (Golder 2019b).

3.3 Field Investigation

3.3.1 General

Site characterization field investigation activities at the BSA, in February and March 2019, included collection of soil samples for a mineralogical assessment and chemical analysis; monitoring well installation and development; staff gauge installations; water-level measurements; and surface and groundwater sampling and analysis. Figure 4 presents locations of soil borings and monitoring wells installed and sampled as part of the site characterization.

3.3.2 Soil Sample Collection

Six boreholes were drilled using direct push technology (DPT) at locations adjacent to the CCR monitoring wells with radium-226+228 SSLs (CCR monitoring wells CCR-4, CCR-5, CCR-7, CCR-13, and CCR-14) and background CCR monitoring well CCR-2. These soil borings, designated CCR-2A, CCR-4A, CCR-5A, CCR-7A, CCR-13A, and CCR14A, were drilled to 30 ft bgs, and the soil boring logs are presented in Appendix A. Soil from these soil borings was used to conduct a detailed mineralogical assessment in support of the ASD for radium-226 and radium-228 present in groundwater (Golder 2019b).

Nine soil borings were also advanced using DPT at proposed nature and extent monitoring well locations CCR-15 through CCR-23 to a depth of approximately 25 ft bgs. Soil samples were collected from these borings, as well as from soil boring CCR-4A, from approximately 24 ft bgs to 25 ft bgs. The soil samples were submitted under chain-of-custody, for laboratory analysis of the following parameters:

- **Total metals (including total uranium and phosphorus):** Analysis of total metals was conducted to quantify the chemical composition of soil materials. The total mass of metals, in combination with the results of sequential extraction testing, can be used to determine the provenance of metals and verify sequential extraction results.
- **Radionuclides:** Radium isotopes radium-226 and radium-228 were analyzed in soils to determine their concentration and provenance.
- **Sequential extraction (SEP):** This test consists of a seven-step metals extraction from solids as per Tessier et al. (1979) to identify the provenance of constituents of interest (i.e. the operationally-defined fraction that contains the metal)[3] and determine their potential environmental mobility. For instance, metals bound in the carbonate fraction, or that are exchangeable, are much more likely to become mobile due to changes in groundwater conditions than metals bound within a sulfide or silicate fraction. The total

[3] Sequential extraction of metals from soil samples consisted of seven discrete steps for this investigation:

Step 1 - Exchangeable Fraction: This extraction includes trace elements that are reversibly adsorbed to soil minerals, amorphous solids, and/or organic material by electrostatic forces.

Step 2 - Carbonate Fraction: This extraction targets trace elements that are adsorbed or otherwise bound to carbonate minerals.

Step 3 - Non-Crystalline Materials Fraction: This extraction targets trace elements that are complexed by amorphous minerals (e.g., iron).

Step 4 - Metal Hydroxide Fraction: Trace elements bound to hydroxides of iron, manganese, and/or aluminum.

Step 5 - Organic Fraction: This extraction targets trace elements strongly bound via chemisorption to organic material.

Step 6 - Acid/Sulfide Fraction: The extraction is used to identify trace elements precipitated as sulfide minerals.

Step 7 - Residual Fraction: Trace elements remaining in soil after the previous extractions will be distributed between silicates, phosphates, and refractory oxides.

concentration of a metal measured from all seven steps can be compared to the concentration determined from the total metal analysis for compositional accountability.

One shallow soil sample and one shallow sediment sample were also obtained from ground surface to 0.5 ft bgs. The soil sample, designated GSB-1, was collected east of the BSA and the sediment sample, designed Fish Lake-Sed, was collected from the bank of Fish Lake. Both samples were submitted under chain-of-custody for laboratory analysis. Soil sample GSB-1 was analyzed for total uranium, iron, aluminum, arsenic, lithium, and phosphorus via EPA Method 6020B and sediment sample Fish Lake-Sed was analyzed for total organic carbon via EPA Method Walkley-Black.

3.3.3 Monitoring Well Installations

A larger-diameter borehole was drilled, using hollow-stem auger drilling techniques, at locations where soil borings where previously drilled using DPT, to facilitate the installation of nature and extent monitoring wells CCR-15 through CCR-23. The monitoring wells were constructed of 2-inch diameter, flush threaded schedule 40 polyvinyl chloride (PVC), bottom cap, 0.006-inch slotted, 10-foot screen, and riser section.

The borehole annulus was filled with 30-45 graded silica sand to approximately 2 feet above the top of the screen interval, with approximately 2 feet of 3/8-inch bentonite chips placed atop. The remaining annulus was filled from bottom to top via tremie method with a neat Portland cement grout to just below ground surface. Monitoring wells CCR-15 through CCR-22 were completed above-grade with locking well caps and aluminum protective casings set into 2-foot by 2-foot by 4-inch concrete pads. Bollards were installed around each monitoring well for visibility and damage protection. Monitoring well CCR-23 was installed below grade, in a flush-mounted well casing set into a rebar reinforced 2-foot by 2-foot by 4-inch concrete pad without bollards (the well is installed in an access road). The newly-installed nature and extent monitoring wells were surveyed for elevation (top of well casing) and location and staff gauges were installed in Fish Lake and Lakes B, C, and D for measurement of surface water elevation. Table 1 presents a summary of monitoring well construction details. The monitoring well installation logs for nature and extent monitoring wells CCR-15 through CCR-23 are presented in Appendix A.

Nature and extent monitoring wells CCR-15 through CCR-23 were developed by surging the groundwater in the wells several times and purging the wells using an electric submersible pump to remove fine-sized particles from the wells and to establish a hydraulic connection between the well and the formation. Development at each well ceased when relatively sediment free discharge was obtained. Well development details are provided on monitoring well installation logs presented in Appendix A.

3.3.4 Groundwater Monitoring

On March 12, 2019 groundwater measurements were obtained from CCR monitoring wells CCR-1 through CCR-14 and nature and extent monitoring wells CCR-15 through CCR-23. Surface water elevations were also measured from staff gauges at Fish Lake and Lakes B, C, and D. Table 2 presents a summary of the groundwater and surface water elevation data and Figure 6 present a groundwater contour map for the March 2019 monitoring event. Consistent with the groundwater flow observed beneath the BSA in the past, a radial groundwater flow was observed based on the March 2019 monitoring event.

A groundwater/surface water monitoring event was also conducted in March 2019. Groundwater samples were obtained from nature and extent monitoring wells CCR-15 through CCR-23; monitoring wells MW-24S, MW-25S, and MW-26S; and surface water samples were obtained from Fish Lake, and Lakes B, C, and D.

Chemical/geochemical analysis of groundwater and surface water samples included field parameters and radionuclides, nutrients, and major cations and anions. The rationale and methods used are as follows:

- **Field Parameters:** Parameters measured in the field included pH, dissolved oxygen, oxidation reduction potential (ORP), conductivity, and temperature. These parameters were used to evaluate general geochemical conditions in the groundwater and support geochemical modeling.
- **Metals: Analysis of Appendix III and IV metals and uranium** to better understand the geochemical composition of groundwater and lake water. Metals analysis allows for the delineation of a potential plume, evaluation of mineral saturation indices, and evaluation of background contributions from natural sources or anthropogenic sources.
- **Radionuclides:** Analysis of radium-226 and radium-228 to better understand the nature and extent of radium in groundwater and lake water and evaluation of background contributions from natural or anthropogenic sources.
- **Major Cations,** Anions, and Nutrients: Geochemical modeling of mineral solubility, metals attenuation and background contributions requires analysis of major cations and anions because they affect and participate in sorption and mineral dissolution or precipitation reactions.

3.4 Evaluation of Groundwater and Surface Water

3.4.1 Geochemical Modeling Approach

Geochemical modeling was conducted to evaluate general groundwater and lake water quality, determine the potential for precipitation of sorbent media, evaluate the potential for mineral precipitation or adsorption in the aquifer, and determine the speciation of metals of interest. The geochemical computer code developed by the United States Geological Survey (USGS), PHREEQC, was used for these simulations (Parkhurst and Appelo 2013). PHREEQC version 3.4 is a general-purpose geochemical modeling code used to simulate reactions in water and between water and solid mineral phases (e.g., rocks and sediments). Reactions include aqueous equilibria, mineral dissolution and precipitation, ion exchange, surface complexation, solid solutions, gas-water equilibrium, and kinetic biogeochemical reactions. The widely-accepted thermodynamic database Minteq.v4, 2017 edition, was used as a basis for the thermodynamic constants required for modeling.

The Geochemist's Workbench version 12 (Bethke 2015) was used to generate graphical representations of geochemical modeling outputs in the form of predominance, or Pourbaix diagrams (also known as Eh-pH diagrams) for the species of interest (i.e. arsenic, lithium, and radium) and trilinear plots (also known as Piper plots) displaying the relative abundance of major ions. The Minteq.v4 database was used as the basis for the Pourbaix diagrams.

3.4.2 Summary of Groundwater / Surface Water Results

Groundwater / surface water quality data from nature and extent monitoring wells CCR-15 through CCR-23, MW-24S, MW-25S, MW-26S, and Fish Lake, and Lakes B, C, and D used for this evaluation were collected in March 2019 as part of the nature and extent evaluation under the CCR rule. The groundwater and surface water quality data are shown in Figures 7 through 9 and Table 6, and the analytical laboratory reports are provided in Appendix B. Water quality monitoring data are summarized as follows:

- **pH:** The pH of groundwater collected from nature and extent wells and lake samples ranged from 4.2 to 7.8 across the site. The average pH of groundwater was 5.4 and the average pH of lake water was 6.7.

Groundwater from nature and extent well CCR-15 had the lowest pH, and the highest pH was measured in the lake water sample from Lake B.

- **ORP (Redox):** Field-measured redox values, corrected to Eh (+200mV), ranged from -77 to +480 mV in the groundwater and lake water samples. On average, groundwater from monitoring wells MW-24S, MW-25S, and MW-26S reported the highest redox measurements across the site. Groundwater from the nature and extent wells (CCR-15 to CCR-23) was moderately oxidizing with some slightly reduced groundwater in wells CCR-19 and CCR-20. Lake water samples had a positive ORP, although Lake D had a redox measurement of just +11.8 mV.
- **Total Dissolved Solids (TDS):** Groundwater TDS concentrations were variable in March 2019 in both groundwater and lake water samples. Low TDS concentrations (214 mg/L to 256 mg/L) occurred in groundwater at three nature and extent wells (MW-24S, CCR-18, and, MW-26S) while the highest TDS value (4,420 mg/L) was measured in nature and extent well CCR-16. Lake water TDS ranged from 183 mg/L to 1240 mg/L, with Lake D having the highest TDS.
- **Major ion chemistry:** A Piper plot was generated for nature and extent groundwater well samples and lake water samples to facilitate the identification of water types and source contributions (Figure 10). Except for CCR-18 and MW-24S, all samples were calcium-sulfate or calcium-chloride dominated. Groundwater in wells CCR-18 and MW-24S was calcium bicarbonate dominated. Lake C likely influences major ion abundance in wells CCR-18 and MW-24S based on the ternary diagram presenting Ca, Cl, and SO_4 (Figure 10). Nature and extent wells CCR-15 and CCR-16 appear to be influenced by Lake D and nature and extent well CCR-19 appears to be influenced by Lake B. Potassium, which is not commonly associated with CCR materials, was also greater than 3 times higher in CCR-16, CCR-19, and CCR-20 than the lake water samples. Increased potassium in these samples is also associated with increased chloride (330 to 1700 mg/L).
- **Arsenic**: Arsenic concentrations in groundwater samples collected from the nature and extent monitoring wells and lake samples ranged from non-detect (<5 µg/L) to 28.2 µg/L in March 2019 (Figure 7 and Table 6). The highest arsenic concentration detected was in a groundwater sampled collected from nature and extent monitoring well CCR-20. Based on the concentrations of arsenic in groundwater measured in groundwater from nature and extent monitoring wells, arsenic in groundwater appears to be localized to the immediate footprint of the BSA, except in CCR-20. The groundwater obtained from well CCR-20 was the only nature and extent well sampled for arsenic that was reducing in nature, with a redox value of -76 mV. The reducing conditions in groundwater at CCR-20 results in the likely predominance of arsenite [As(III)] (Figure 11 a), which has a lower affinity for sorption (attenuation) on metal (hydr)oxide surfaces than arsenate [As(V)] and is generally regarded to be more mobile in natural environments (Nordstrom et al. 2014). Fish Lake (the only lake sample analyzed for arsenic) did not have detectable levels of arsenic. Historical arsenic concentrations detected in groundwater samples from CCR monitoring wells exceeding the GWPS (CCR-11 and CCR-12) show a stable or decreasing concentrations for arsenic (Golder 2019a). Thus, if a plume originates from the BSA, arsenic levels in this plume appear to be stable or decreasing and the plume appears to be localized.

  Lithium: Lithium concentrations in groundwater samples collected from the nature and monitoring extent wells and lake samples ranged from non-detect (9.1 µg/L) to 129 µg/L in March 2019 (Figure 8 and Table 6). Well CCR-22 was the only nature and extent well to exceed the GWPS of 40 µg/L, although, lithium concentrations were below the State of Florida risk-based groundwater cleanup target value of 140 µg/L

(Rule 62-777, Florida Administrative Code). However, the concentration of lithium detected the groundwater sample from nature and extent monitoring well CCR-22 is substantially lower compared to the concentration detected in groundwater from CCR monitoring well CCR-13 (320 µg/L), which suggests that lithium attenuation is occurring as groundwater migrates downgradient of the BSA (Figure 8). The concentration of lithium detected in the samples from the four lakes ranged from non-detect to 23.5 µg/L. Lithium predominately occurs as the monovalent cationic species Li^{+} based on field pH and redox conditions (Figure 11b). Of the CCR monitoring wells that exceed the GWPS for lithium (CCR-5, CCR-6, CCR-9, and CCR-13), all show a stable or decreasing concentrations over time, except for CCR-5 (Golder 2019a). Lithium was detected at a concentration ranging from 2,300 µg/L to 5,240 µg/L in groundwater samples from CCR monitoring well CCR-5 (August 2016 through January 2019, Table 4). However immediately downgradient of CCR-5, lithium was detected at a concentration of 38.4 µg/L in groundwater from nature and extent monitoring well CCR-16, which is below the GWPS and two orders of magnitude lower than the concentration detected in groundwater from CCR-5. Furthermore, the concentration detected in the groundwater sample from monitoring well MW-25S, located hydraulically side-gradient to CCR-5, and the concentration detected in the surface water sample from Lake B, located hydraulically downgradient from CCR-5, was less than the GWPS. Thus, the extent of lithium in groundwater that exceeds the GWPS appears to be localized and attenuation is occurring with groundwater flow or lithium in groundwater is not effectively migrating.

- **Radium (radium-226 and radium-228):** Radium-226+228 concentrations in groundwater sampled in March 2019 ranged from 1.1 pCi/L to 42.7 pCi/L (Figure 9 and Table 6). The concentration of total radium was above the site-specific GWPS of 7.94 pCi/L (Golder 2018c) in groundwater samples collected from nature and extent monitoring wells CCR-15, CCR-16, and CCR-22. The concentration of radium detected in the groundwater sample collected from nature and extent well CCR-16 was higher compared to the corresponding hydraulically upgradient CCR monitoring well CCR-5 (Figure 9). Radium-226+228 concentration in groundwater varies in the vicinity of the BSA, likely due to natural variability of radium in soils as well as in the phosphatic mine tailings used to backfill the mined area where the BSA was constructed. Radium-226+228 in lake samples (Fish Lake and Lakes B, C, and D) ranged from 1.4 pCi/L in Fish Lake to 5.3 pCi/L[4] in Lake D. Given the radial pattern of groundwater flow away from the BSA (Figure 5 and 6), Fish Lake, and Lakes B, C, and D are downgradient receptors of groundwater flowing from the BSA, and the concentration of radium-226+228 detected in these water bodies does not exceed the Florida surface water quality criteria of 5 pCi/L. Furthermore, based on historical groundwater data (August 2016 to January 2019) from samples collected from the CCR monitoring well network, radium shows a stable or decreasing concentrations at each CCR monitoring well (Golder 2019a). Radium is predominately present in the form of a divalent cationic species (Ra^{+2}) based on field-measured pH and redox conditions (Figure 11c).
- **Iron:** Total (un-filtered) iron concentrations were variable, ranging from 0.3 mg/L to 20.8 mg/L in March 2019. The highest concentration of 20.9 mg/L was observed in the sample collected from nature and extent monitoring well CCR-23. The high iron content in the groundwater from well CCR-23 corresponded to the highest measured manganese in groundwater (0.175 mg/L), even though the pH was not the most acidic measured (5.1) and the redox measurement indicated the groundwater was oxidizing (+194mV).

[4] Reported value meets State of Florida surface water quality criteria (Chapter 62-302.530, Florida Administrative Code) for radium-226+228, in accordance with the rounding procedures described in the FDEP memorandum "Rounding Analytical Data for Site Rehabilitation Completion", dated November 17, 2011.

- **Nutrients:** Nitrate (nitrate as N) was present in groundwater from nature and extent wells at variable levels, ranging from non-detect (< 0.03 mg/L as N) to 7.3 mg/L as N in March 2019. Ammonia ranged from 0.25 mg/L as N to 16.4 mg/L as N in the same wells. Phosphate concentrations in groundwater ranged from non-detect (0.055 mg/L) to 2.7 mg/L in nature and extent wells.

  Phosphate and ammonia were also present in the four lake samples (0.2 mg/L to 2.0 mg/L and 0.16 mg/L to 0.67 mg/L, respectively), while nitrate was not detected. No spatial trend was apparent in the nitrate, ammonia, or phosphate distribution in groundwater.

Groundwater data at the site indicate the highest detections of metals, metalloids, and radionuclides of interest in groundwater are, for the most part, restricted to the area immediately surrounding the BSA. Although, where arsenic and/or lithium is present in CCR monitoring wells, the concentration of arsenic and/or lithium present in nature and extent monitoring wells, located hydraulically downgradient of the CCR wells, is substantially lower, which suggests attenuation of these constituents is occurring. Historical groundwater data from CCR monitoring wells from August 2016 through January 2019 indicate that arsenic, lithium, and radium-226+228 concentrations in groundwater (Tables 3, 4, and 5, respectively) are stable or decreasing when the concentration exceeds the GWPS, except for CCR monitoring well CCR-5, where an increasing trend is observed for lithium (Golder 2019a). Groundwater from nature and extent monitoring wells do not exceeded the GWPS for lithium, except for well CCR-22, located hydraulically downgradient from CCR-13; however, the concentration of lithium in groundwater from CCR-22 does not exceed the State of Florida risk-based groundwater cleanup target level (Figure 8).

3.5 Evaluation of Soil

Chemical analysis and sequential extractions were used to determine the chemical composition of the soil and the distribution of constituents of interest over various operationally-defined fractions comprising the soil. Testing was completed as described in Section 3.3.2 on soil samples obtained from 11 borehole locations (Figure 4) and the results are summarized in Tables 7 and 8. The analytical reports for the soil analyses are provided in Appendix B. Soil sample locations were chosen to gain a better understanding of the underlying geological conditions of the area surrounding the BSA, mostly adjacent to or downgradient of a CCR monitoring well. In addition, this information allows for a better understanding of naturally-occurring metal or radionuclide contribution to groundwater or the potential for sequestration of constituents from groundwater.

A description of the individual fractions determined by sequential extraction is presented in Section 3.3.2. Metals extracted in steps 1 through 5 are considered environmentally available, whereas metals extracted in steps 6 and 7 are present in refractory fractions and are not expected to be released under conditions typically encountered in aquifers (Tessier et al. 1979). Total metal quantities from the sequential extraction are expressed as “SEP Total” in Table 5. The sum of the sequential extraction steps is also presented for comparison but does not represent an analytically-determined value.

The results from the chemical analysis and sequential extraction is summarized as follows:

- **Aluminum:** Aluminum is not a constituent of interest (COI) at the site but been well studied as a sorbing medium in soils (e.g., Karamalidis and Dzombak 2011). Total aluminum in soils ranged from 14,000 mg/kg to 39,000 mg/kg, and the environmentally-available fraction ranged from 4,600 mg/kg (CCR-4A) to 7,300 mg/kg (CCR-20). Aluminum in the soil at the site is, therefore, largely (~63% to 85%) present in the residual, or silicate-bound fraction (Figure 12). This fraction is likely at least partially represented by hydrous aluminum phyllosilicates minerals or clays intermixed in the silica sand matrix. Clays represent an important sorptive reservoir for numerous trace metals and metalloids (Uddin 2017).

- **Iron:** While not a COI, iron and its minerals commonly represent one of most abundant reservoirs for metal/metalloid attenuation in soils (Dzombak and Morel 1990; Smith 1999). Iron was present in all three core samples analyzed, varying from 1,400 mg/kg (CCR-16) to 2,500 mg/kg (CCR-4A). In all samples, the sulfide and residual fractions accounted for the largest proportion of total iron and, as such, most of the iron is not environmentally available (Figure 13). The labile fraction in steps 1 through 5 can generally be considered representative of the amount of iron in soil that may be available as a sorbing medium and can, therefore, be used as a proxy for determining the total number of adsorption sites available for attenuation of arsenic, lithium, and radium.
- **Arsenic:** Total arsenic in soil ranged from 0.15 mg/kg to 4.7 mg/kg while the environmentally-available fraction ranged from 1.06 mg/kg in CCR-4A to 1.35 mg/kg in CCR-20, representing from 12% to 41% of total arsenic (Figure 14). The majority (> 59%) of arsenic was present in the residual fraction, predominantly associated with sulfide minerals. The sample from CCR-4A, while having the highest total arsenic, also had the lowest environmentally-available fraction, with all arsenic present in the amorphous metal, metal hydroxide, and carbonate fractions and none in the exchangeable or organically-bound fractions. The highest levels of environmentally-available arsenic occurred in the sample from CCR-16, although groundwater sampling from adjacent wells reported low (<20 µg/L) arsenic concentrations. Based on these results, it is apparent that naturally-occurring arsenic is present in soil to varying degrees, hosted mostly in both sulfide and silicate minerals. In addition, the presence of arsenic in the environmentally-available fraction demonstrates that attenuation of arsenic from groundwater by soil in occurring.
- **Lithium:** Total lithium in soil ranged from 0.18 mg/kg to 7.0 mg/kg while the environmentally-available fraction (metal hydroxide) ranged from 0.25 mg/kg in CCR-20 to 0.92 mg/kg in CCR-4A, representing ~10% to ~43% of total lithium (Figure 15). The majority (>50%) of lithium was present in the residual and sulfide fractions in the samples. The presence of lithium in the sulfide and residual fractions indicates a naturally-occurring source of lithium in soil. The presence of lithium associated with metal hydroxides indicates a potential for attenuation of lithium in groundwater.
- **Radium (226/228):** Radium-226+228 detected in soil samples from soil borings advanced in the surficial aquifer around the BSA was measured in six samples (soil sample CCR-4A, CCR-15, CCR-16, CCR-18, CCR-22, and CCR-23) as were total uranium and total phosphorus (Table 7). Radium-226+228 ranged from approximately 0.6 pCi/g (CCR-18) to 76.6 pCi/g (CCR-4A). The presence of radium correlated to the presence of uranium in soil samples of the surficial aquifer (Figure 16a), while total uranium also correlated to total phosphorus in soil samples of the surficial aquifer (Figure 16b). Based on these correlations, it is considered highly likely that the presence of radium is due to the decay of naturally-occurring uranium in soils.

Based on the results from the soil analysis, arsenic and lithium attenuation in groundwater is possible and is likely occurring around the BSA. The results further suggest that radium-226+228 in soil is strongly correlated to uranium and is naturally occurring.

3.6 Summary of Site Characterization

Based on the above site characterization and nature and extent investigation, the following conclusions are made with respect to arsenic, lithium, and radium:

- **Arsenic:** CCR monitoring wells where arsenic exceeded the GWPS based on historical data show stable or decreasing concentrations. Arsenic concentrations in groundwater from only one nature and extent monitoring well (CCR-20) exceeded the GWPS for arsenic. Therefore, arsenic in groundwater is likely limited to the immediate perimeter of the BSA and likely attenuates before reaching downgradient wells. The presence of metal hydroxides in soils supports a strong potential for arsenic attenuation (Nordstrom et al. 2014). Arsenic should, therefore, be considered for further evaluation as part of an ACM and is a viable candidate for natural attenuation based on the results of this initial assessment (USEPA 2007a, b). Additional site characterization will be required before a corrective measure is implemented.
- **Lithium:** The concentration of lithium exceeded the GWPS in groundwater from only one nature and extent monitoring well; although, the reported lithium concentration is below the State of Florida risk-based groundwater cleanup target level. Historical monitoring data indicate that lithium concentrations are stable or decreasing in groundwater from CCR monitoring wells except CCR-5. However, immediately downgradient and side-gradient of CCR-5, lithium in groundwater at nature and extent well CCR-16 and MW-25S was below the GWPS for lithium, as was a surface water sample from Lake B, also downgradient of CCR-5. Thus, the plume appears to be limited in extent, potentially indicating attenuation on metal hydroxides (Prodromou 2016), and the overall plume condition may be considered stable. Based on these results, lithium should be considered as part of an ACM and is a viable candidate for natural attenuation. Special focus should be given to CCR-5 where enhanced attenuation may need to be employed due to historically elevated concentrations of lithium detected in groundwater. Additional site characterization will be required before a corrective measure is implemented.
- **Radium:** As stated previously, an ASD for radium-226+228 present in groundwater has been completed (Golder 2019b) and is included in the facility's operating records in accordance with §257.105(h)(10). The summary of the ASD is provided below:
  - Radionuclides including radium-226 and radium-228 are naturally occurring at the site and the area surrounding the site and are associated with minerals in the phosphate matrix that was mined by the phosphate mining industry during the 1970s at the BSA prior to its construction. Radionuclides, including uranium, were detected in samples collected from approximately 26 to 30 ft bgs at the BSA during the 1950s.

    The upper portion of the phosphate matrix was mined in the north and west region of the BSA and phosphate matrix, tailings, and/or remnants, including the associated radionuclides, were left behind as backfill within the BSA, underneath the current BSA.
  - Uranium concentrations in phosphate-bearing rocks exhibit typical uranium concentrations of up to 300 ppm, which is approximately 1 to 2 orders of magnitude higher than U.S. coals and fly ash, respectively (USGS 1997). The naturally occurring radionuclides in phosphate ore and mine tailings left behind underneath the BSA are conceivably at higher concentrations than CCR.

- Findings of geochemical assessments conducted for soil and groundwater at the site indicate that the BSA and surrounding area are underlain by fine-grained phosphatic mine tailings and/or unmined phosphate deposits. The concentration of radium-226+228 in groundwater in the vicinity of the BSA is shown to be variable, likely due to natural variations in soils as well as due to variations of radium present in the phosphatic mine tailings used to backfill the mined area where the BSA was constructed. Furthermore, a detailed mineralogical assessment of the underlying soils revealed significant uranium and other accessory constituents associated with the phosphate ore mined at and near the BSA.

4.0 ASSESSMENT OF CORRECTIVE MEASURES

An ACM was conducted for the site, in accordance with §257.96 and §257.97, due to the identification of arsenic detected in groundwater from CCR monitoring wells CCR-11 and CCR-12 and lithium detected in groundwater from CCR monitoring wells CCR-5, CCR-6, CCR-9, and CCR-13 at SSLs above the respective GWPS beyond the waste boundary of the BSA.

4.1 Objectives and Screening Criteria

The purpose of corrective measures is to "prevent further releases, to remediate any releases and to restore affected area to original conditions" (§257.96(a)). Potential corrective measures must meet the requirements and objectives specified in §257.97(b), including:

1. *Be protective of human health and the environment;*
2. *Attain the groundwater protection standard as specified pursuant to § 257.95(h);*
3. *Control the source(s) of releases to reduce or eliminate, to the maximum extent feasible, further releases of constituents in appendix IV to this part into the environment;*
4. *Remove from the environment as much of the contaminated material that was released from the CCR unit as is feasible, considering factors such as avoiding inappropriate disturbance of sensitive ecosystems;*
5. *Comply with standards for management of wastes as specified in § 257.98(d).*

The screening of the corrective measure pursuant to §257.96(c), must include an evaluation of the following:

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*
3. *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).*

4.2 Potential Source Control Measure

The preamble to the CCR Rule states that source control measures should be evaluated to limit migration of groundwater impacts and ensure remedy effectiveness. The Closure Plan (Golder 2016b) for the BSA describes the final cover system for the BSA which includes an 18-inch thick infiltration layer. The low permeability infiltration layer is designed to minimize infiltration of precipitation through the BSA and the closure design incorporates stormwater management features to effectively manage stormwater runoff and minimize erosion of the final cover system. Lakeland Electric reports that CCRs within the BSA are actively being reclaimed for off-site beneficial reuse in the cement industry; reclamation of CCRs is an effective source control measure and is considered a significant remedial action. Potential source control measures for further evaluation could include, but not limited to, the following:

- Consolidation of CCRs within the BSA;
- Partial closure of the BSA;
- Temporary covers to minimize infiltration; and
- Accelerated reclamation of CCRs within the BSA for off-site beneficial reuse.

Source control options should be considered as part of the remedy selection process and incorporated into planned future operations of the BSA.

4.3 Potential Corrective Measures

The focus of the corrective measure evaluation will be arsenic (CCR-11 and CCR-12) and lithium (CCR-5, CCR-6, CCR-9, and CCR-13). This ACM describes potential remedial technologies and provides a "high-level" evaluation of potential corrective measures pursuant to §257.96(c). The results of this evaluation are summarized in Table 9.

4.3.1 Monitored Natural Attenuation and Enhanced Monitored Natural Attenuation

Monitored natural attenuation (MNA) is a remedial measure that relies on a range of natural processes, including physical and chemical, to reduce groundwater contamination concentrations. These natural processes include dispersion, dilution, sorption, (co)precipitation, radioactive decay, and abiotic degradation/transformation. MNA is often used in combination with other groundwater remedial technologies or source control measures. Routine groundwater monitoring for select parameters is required to verify attenuation is occurring at the site.

Enhanced MNA is the use of low-energy, in-situ techniques to stimulate or increase the attenuation of contaminants or reduce contaminate loading. Enhancements options include increasing the attenuation capacity of aquifer, decreasing the mobility of contaminants, and/or increasing the stability of immobilized contaminants (ITRC 2010). These options involve increasing the ability of aquifer solids to remove contaminants from groundwater and/or manipulating the geochemistry to reduce remobilization of contaminants by desorption or dissolution of precipitates.

4.3.1.1 Performance and Reliability

MNA can be used at the BSA to verify reductions of groundwater impacts over time through the natural physical or chemical processes. MNA can perform better for constituents that are subject to chemical attenuation than for constituents that primarily attenuate via physical means (e.g. dilution). Supplemental groundwater monitoring would be required to evaluate attenuation effectiveness. Lithium has limited potential for MNA due to its low reactivity and high solubility. The primary attenuation process for lithium is by physical means. Arsenic attenuation processes include precipitation, co-precipitation, and adsorption (USEPA 2007a, b).

Enhanced MNA can improve the ability of the natural physical or chemical processes to reduce groundwater impacts. Enhancement options including substrate amendments or geochemical manipulation would need to be further evaluated. The reliability of enhanced MNA would need to be further evaluated to determine if/how often enhancements need to be maintained to prevent rebound.

Based on the soil and groundwater sampling results from the initial site characterization evaluation, it appears that the site is a good candidate for MNA for arsenic and lithium; especially if the site will have effective source control measures implemented. Both arsenic and lithium in groundwater show decreasing or stable concentrations across the site (except at CCR-5 for lithium). Lithium concentrations are not stable or decreasing at CCR-5; however, the concentration of lithium present at nature and extent well CCR-16, immediately downgradient of CCR-5, is well below the GWPS. Thus, the plume is limited in extent and the overall plume may be considered stable. Soils analysis identified both arsenic and lithium in the metal hydroxide fraction of soils, indicating attenuation. These initial findings indicate the BSA site is a candidate for MNA.

4.3.1.2 Implementation

MNA may be the simplest of the corrective measures to implement; however, a detailed site characterization may be required for MNA implementation. A four-tiered strategy has been developed to demonstrate MNA viability (USEPA 2007a, b):

- Demonstrate the groundwater plume is not expanding.
- Determine the mechanism and rate of attenuation process.
- Determine the capacity of the aquifer to sufficiently attenuate the constituent mass and resist re-mobilization.
- Design performance monitoring system based on attenuation mechanisms and establish remedial action contingency plan if MNA is ineffective.

A detailed site characterization including site chemistry and geochemistry would be needed to evaluate and implement enhanced MNA. Implementing enhanced MNA would also involve the identification and evaluation of potential technologies and associated additional monitoring requirements. Implementation of enhanced MNA may also include installation of injection wells and associated permitting for underground injections.

4.3.1.3 Potential Impacts

Potential safety impacts associated with MNA and enhanced MNA would be primarily associated with well installation and therefore are expected to be minimal.

Cross-media impacts associated with MNA and enhanced MNA is likely minimal and primarily associated with natural processes (e.g. sorption onto soil particles). Potential impacts to surface water exist if attenuation is ineffective and impacted groundwater migration accelerates. If this was the case, additional remedial action would be required.

The exposure potential to residual contamination associated with MNA and enhanced MNA are expected to be minimal. The potential for impacted groundwater to discharge into surface water could exist, however, as stated above if attenuation is ineffective, additional remedial actions could be implemented.

4.3.1.4 Timeframe

MNA could be implemented at the site relatively quickly, however, the time required to achieve the remedial goals using MNA may take the longest for remedial options considered in this report. MNA may take several years for remedial goals to be met. To more accurately determine the remedy timeframe a groundwater model (e.g. reactive transport model) would be needed to evaluate the remedial timeframes.

Enhanced MNA could be implemented fairly quickly, following the identification of an appropriate enhancement option. Groundwater modeling (e.g. reactive transport model) would be needed to evaluate the remedial timeframes. Enhanced MNA is expected to have a quicker timeframe for remedy completion compared to standard MNA.

4.3.1.5 Institutional Requirements

The primary institutional requirement associated with MNA or enhanced MNA is FDEP approval. Enhanced MNA may also require a State underground injection control permit. The implementation process for MNA or enhanced MNA would likely take 6 to 12 months.

4.3.2 Groundwater Pump and Treat

Groundwater extraction and treatment (pump and treat) is one of the most widely used groundwater remediation technologies. Pump and treat systems are primarily used to provide 1) hydraulic containment and 2) treatment (USEPA 1996). Impacted groundwater is extracted from the subsurface for treatment and/or discharge above grade.

Hydraulic containment is necessary to control the movement of groundwater. A properly designed pump and treat system achieves hydraulic control over the groundwater flow; containing and inhibiting the migration of impacted groundwater. Hydraulic containment can be achieved by extraction wells and/or subsurface drains. After impacted groundwater is extracted, the water may be treated, discharged, or beneficially reused. Potential treatment methods for lithium include reverse osmosis, precipitation/co-precipitation, and ion exchange. Possible treatment methods for arsenic include precipitation/co-precipitation, adsorption, ion exchange, biological treatment, and membrane filtration (USEPA 2002b). Extracted groundwater may also be sent to the on-site wastewater treatment plant. Installation of groundwater pump and treat systems can be expensive and require long-term operation and maintenance, which could be relatively expensive. Groundwater pump and treat is a viable option; however, because of the expense and the uncertain timeframe required to achieve remedial goals, groundwater modeling and/or a pilot study is recommended to better predict the effectiveness of pump and treat for the site.

4.3.2.1 Performance and Reliability

A conventional groundwater pump and treat system is relatively simple to design and operate and have been used to effectively and reliably treat a variety of contamination at many sites. A pump and treat system can be designed to capture water from high concentration areas around the downgradient perimeter of BSA and limit the spread of the arsenic and/or lithium impacted groundwater. A pump and treat system would be expected to decrease the migration of contaminants – depending on the degree of hydraulic control achieved. To achieve this hydraulic control, the pump and treat system design would include proper well spacing and pump rates. Treatment methods for lithium and/or arsenic would need to be bench-scale tested to evaluate effectiveness at the site. Additional site investigation and pilot testing would be required to support full system design.

Although there can be occasional operation and maintenance issues, pump and treat systems typically operate effectively and can be adjusted to improve performance. The effectiveness of a pump and treat system would be assessed by hydraulic monitoring (e.g. drawdown in extraction wells and surrounding wells) and groundwater quality monitoring of extraction wells and monitoring wells downgradient of the pump and treat system.

4.3.2.2 Implementation

Groundwater modeling can be used to optimize the system design, including the number and placement of extraction wells, pumping rates, and monitoring well locations. A pump and treat system design includes the following: number and location of extraction wells and monitoring wells, pumping rate(s), below and/or above grade piping, secondary containment, system mechanical and electronical controls, and management of extracted groundwater. A groundwater extraction system may require significant permitting, design, and pilot testing for implementation. Depending on the level of groundwater treatment required, a temporary or permanent treatment facility could be needed. Laboratory and bench scale testing of treatment technologies would be necessary to design the treatment system and verify its effectiveness.

4.3.2.3 Potential Impacts

Potential safety impacts associated with a groundwater pump and treat system are primarily associated with construction activities, likely including installation of extraction and monitoring wells, associated pumps, piping, and wiring, and treatment system controls. Routine operations and maintenance activities could also present potential safety impacts.

Cross-media impacts for a pump and treat system are primarily associated with the treatment system. If untreated groundwater were discharged, potential cross-media impacts to surface water and/or shallow groundwater could occur. Waste materials associated with the treatment system may require off-site disposal at a permitted disposal facility (e.g. landfill or treatment facility).

The exposure potential to impacted groundwater from a properly designed pump and treat system is considered limited; the system could be designed with various safety features to limit the exposure potential.

4.3.2.4 Timeframe

The timeframe to implement a groundwater pump and treat system would be dependent on FDEP permitting and regulatory approval. It is anticipated that a pump and treat system could be implemented within one to two years.

The timeframe to achieve remedial goals for a pump and treat system will depend on the final system design. A pump and treat system may have to operate for a significant amount of time based on the impacts identified beyond the waste boundary, as well as the required pore volume pass-through to achieve treatment goals.

4.3.2.5 Institutional Requirements

It is anticipated that FDEP approval will be required for the proposed remedy. Depending on the FDEP approval process for implementing a pump and treat system, system startup could occur within one to two years. The effluent from the treatment system may require additional permitting (i.e. National Pollutant Discharge Elimination System (NPDES) permit modification).

4.3.3 Hydraulic Barrier

Hydraulic barriers involve installing a physical barrier to groundwater flow to either divert uncontaminated groundwater away from impacted areas or contain the migration of contaminated groundwater from unimpacted areas. Four common types of hydraulic barriers that have been demonstrated to be effective at controlling groundwater flow includes: bentonite slurry walls, soil-mixed walls, grout curtain walls, and sheet pile walls. For hydraulic barriers to be truly effective the bottom of the wall should be “keyed” into a low-permeability confining layer. A detailed engineering analysis and design, potentially including a bench-scale and/or pilot-test, would be required for the construction of a hydraulic barrier wall.

Slurry walls typically consist of a narrow, excavated trench that is commonly filled with a soil-bentonite slurry mixture. The slurry shores and supports the trench walls and forms a low-permeability filter cake on the trench walls. Key design considerations include wall depth, key depth, and material compatibility. Slurry trenches can be excavated to depth of 50-feet using standard excavators for to over 80-feet using long-reach excavators or crane mounted drag line or clamshell bucket (USEPA 1998). A slurry commonly contains 1 to 5 percent bentonite in water. The trench is excavated to the design depth and the slurry is placed in the open trench to maintain trench stability. Then the permanent backfill material (e.g. soil excavated from the trench mixed with optional amendments, such as bentonite and/or cement) is then mixed with the bentonite slurry and placed into the trench forming a permanent barrier. Geosynthetic materials can be placed in the trench in conjunction with conventional

barrier technology (i.e. slurry walls) to improve the hydraulic performance (decrease permeability) and chemical resistance.

Soil-mixed walls form a hydraulic barrier by the mechanical, in-situ mixing of soil with amendments, such as bentonite and/or cement. Soil-mixed barrier walls can be installed to depths of over 100 feet, and the quality controls of these barrier walls is typically superior compared to slurry wall construction. The walls are installed by sections or panels (e.g. 3 feet wide by 10 feet long) that overlap to achieve a continuous barrier.

Grout curtain barriers are constructed by injecting grout into the subsurface in an overlapping injection pattern to form a continuous barrier. Grouted barriers can be installed using permeation grouting, jet grouting, or vibrating beam technologies (USEPA 1998). Grouted barriers must be carefully designed and constructed to ensure hydrofracturing does not occur and the completed wall is effective at restricting groundwater flow.

Sheet-pile walls are common in civil engineering applications; however, their use in environmental applications has been more limited (USEPA 1998). Sheet-piles walls can consist of steel, vinyl, or other materials. Improvements in interlock designs have been made to improve joint sealing. Sheet piles are commonly driven into the subsurface using a hydraulic percussion hammer or vibratory hammer.

4.3.3.1 Performance and Reliability

The hydraulic barrier options are generally considered proven technologies; however, site conditions may impact performance. Hydraulic barriers are typically “keyed” into a confining unit to inhibit groundwater flow beneath the barrier. The depth to the intermediate confining unit at the site is approximately 30 feet (Golder 2005), making installation of a hydraulic barrier a viable option. Once properly installed, a hydraulic barrier would be expected to be a reliable technology. The effectiveness and reliability of a hydraulic barrier may improve if coupled with groundwater control, such as a pump and treat system for hydraulic gradient control.

4.3.3.2 Implementation

The construction of a hydraulic barrier is expected to be significant in terms of time, effort, cost, and site work. The intermediate confining unit would need to be further evaluated to determine if it is a suitable confining layer for a hydraulic barrier wall key. Once properly installed, a hydraulic barrier would operate passively and immediately. The proper design of a slurry wall would require the following general considerations (USEPA 1998):

- Site conditions – thorough evaluation of site geology, hydrogeology, geotechnical properties, and the nature and extent of contamination.
- Site access – adequate space is required for mixing, hydrating and storing slurry; space for mixing and placing backfill; adequate separation from underground and/or above ground utilities.
- Trench stability – proper design to ensure adequate stability of the trench
- Slurry and backfill properties – determine the proper properties for slurry (weight, viscosity, filtrate loss.) and backfill soil mix amendments (bentonite, cement), soil mix properties (slump, weight, gradation, permeability, strength). Laboratory studies may be required.
- Compatibility – determine the compatibility of hydration water with bentonite and other soil mix amendments, and groundwater compatibility with the slurry wall backfill material.

4.3.3.3 Potential Impacts

Potential safety impacts associated with hydraulic barriers are primarily associated with construction. Barrier construction would require significant effort and equipment. Barriers are a passive technology and therefore have limited potential safety impacts following construction.

Minimal cross-media impacts are associated with hydraulic barrier technologies. There is a potential risk of increased soil impacts if groundwater impacts migrate downward due to changes in groundwater flow or groundwater flow through a barrier wall due to improper construction (e.g. non-continuous wall, referred to as a "window" in the wall). Furthermore, the compatibility of wall materials to the contaminant(s) of concern is paramount to reduce the potential of groundwater contaminant break-through.

There is minimal risk of exposure to residual contamination from hydraulic barriers.

4.3.3.4 Timeframe

Prior to implementation of a hydraulic barrier wall, pre-design field work, including site investigations, groundwater modeling, and bench-scale soil mix testing would be required, followed by full-scale design and permitting. Construction or installation of a hydraulic barrier is expected to require significant effort, potentially including a pilot-test before full-scale construction. The timeframe for the pre-design, design, and construction of a hydraulic barrier wall is estimated to be one to two years. The timeframe to achieve the remedial objectives is expected to take a significant amount of time (e.g. 1 to 10 years).

4.3.3.5 Institutional Requirements

It is anticipated that FDEP approval will be required for the proposed remedy. Depending on the FDEP approval process for implementing a hydraulic barrier system at the BSA, a hydraulic barrier could be in place within approximately three years.

4.3.4 Permeable Reactive Barrier

A permeable reactive barrier (PRB) is the in-situ, permeable treatment zone with reactive media designed to intercept impacted groundwater so that contaminants are either immobilized or transformed to a more desirable state. A PRB is a passive treatment system that acts as a barrier to groundwater contamination but not groundwater flow. PRBs can be used to remediate groundwater impacted with inorganic contaminants including arsenic. The PRB must intercept the flow of impacted groundwater and to be effective it must be designed and constructed such that impacted groundwater cannot bypass the reactive media by flowing over, under, or around the PRB. A PRB must be include the appropriate reactive media and the residence time within the PRB needs to sufficient to allow for effective treatment. Multiple reactive media options exist for arsenic including zero-valent iron (ZVI), zeolite, basic oxygen furnace slag, ion exchange resin or ZVI-carbon combinations (UESPA 2002a, ITRC 2011). Reactive media options for lithium have not been identified at this time.

The two primary PRB configurations are continuous and gate-and-funnel systems. A continuous PRB features reactive media across the entire length of the barrier. The permeability of the reactive media must be greater than the surficial aquifer to ensure flow is not diverted around the PRB media. A gate-and-funnel PRB use hydraulic barrier technology to direct groundwater flow to reactive media sections that act as a gate allowing groundwater to pass through while treating contaminants.

4.3.4.1 Performance and Reliability

PRB technologies generally considered proven technologies, however, site conditions and contaminants of interest may impact performance. The depth to the intermediate confining unit at the site is approximately 30 feet (Golder 2005), making installation of a PRB a viable option. The intermediate confining unit would need to be further evaluated to determine if it is a suitable confining layer for a PRB wall key. The longevity of media including reactivity and permeability is an area of potential concern as replacement of reactive media would require substantial effort and cost. Bench-scale testing would be required to validate reactive media effectiveness at the site. Groundwater monitoring would necessary to evaluate performance and effectiveness of the PRB.

4.3.4.2 Implementation

As with hydraulic barriers, the construction of a PRB is expected to be significant in terms of time, effort, and cost. Although PRB operate passively, periodic maintenance of reactive media may be necessary. The proper design of a PRB would require the following general considerations (ITRC 1999):

- Site characterization – thorough evaluation of site geology, hydrogeology, geotechnical properties, and the nature and extent of contamination.
- Reactive media – determine media reaction rate, residence time, performance and compatibility.
- Hydrogeologic performance evaluation – evaluate contaminant capture, longevity of system, and groundwater modeling to optimize design.
- Constructability assessment – evaluate installation methodology to ensure proper placement of reactive media.

4.3.4.3 Potential Impacts

Similar to hydraulic barriers, the construction of a PRB would require significant effort and equipment which carry risks of potential safety impacts. PRBs are a passive technology and therefore have limited potential safety impacts following construction other than reactive media maintenance/replacement.

Minimal cross-media impacts are associated with PRBs as contaminant mass is removed from groundwater and concentration in the wall. Groundwater flow alterations due to a PRB could increase soil impacts if groundwater impacts migrate around, beneath, or through the PRB in a “window”.

There is a risk of exposure to residual contamination if reactive media were to be replaced. Proper characterization of the waste media would be necessary prior to replacement and disposal.

4.3.4.4 Timeframe

Prior to implementation of a PRB, pre-design field work, including site investigations, groundwater modeling, and bench-scale testing would be required, followed by full-scale design and permitting. Construction or installation of a PRB is expected to require significant effort, potentially including a pilot-test before full-scale construction. The timeframe for the pre-design, design, and construction of a PRB is estimated to be one to two years. A PRB would be expected to take less time than a hydraulic barrier to achieve remedial objectives (e.g. less than 10 years).

4.3.4.5 Institutional Requirements

It is anticipated that FDEP approval will be required for the proposed remedy. Depending on the FDEP approval process for implementing a PRB at the BSA, a PRB could be in place within three years.

4.3.5 Phytoremediation

Phytoremediation is the use plants to remediate contaminated soils, surface water or groundwater. Phytoremediation encompasses a number of natural processes that can lead to contaminate degradation, removal or immobilization. Processes of interest at the BSA include phytoextraction, rhizofiltration, and phytostabilization. Phytoextraction is uptake and accumulation of contaminates within above ground portions of a plant and applies to inorganic constituents including radionuclides (USEPA 2001). Rhizofiltration is the removal of contaminants by plant roots through absorption, adsorption or precipitation (USEPA 2001). Phytostabilization is the use of plants to contain contaminants through absorption and accumulation into roots; adsorption onto root surfaces; precipitation, complexation or reduction within the root zone; or binding to humic matter (USEPA 2001). Hydraulic control through plant uptake or consumption of large volumes of water by plants (USEPA 2001). Phytoremediation is typically most effective with contaminates at relatively shallow depths (i.e. within plant root zones) and that are present at low to moderate concentrations. Plant types that may be used in phytoremediation for arsenic include poplar, cottonwood, sunflower, Indian mustard, and corn (USEPA 2002a). Specific plant species for lithium have not been identified.

4.3.5.1 Performance and Reliability

Phytoremediation would be expected to have limited effectiveness at BSA. There are technologies that are said to increase the effectiveness of phytoremediation treatment at greater depths (i.e. TreeWell®). The performance of plant uptake process is time consuming and its effectiveness in regard to lithium is not well tested.

4.3.5.2 Implementation

Phytoremediation at the BSA may require the planting of a large number of trees or specialized plants along select areas of the downgradient perimeter of the BSA to achieve remedial goals of attaining the GWPS at the waste boundary. A thorough screening study would be required to select the most useful plants for arsenic and/or lithium remediation. Implementation of phytoremediation is expected to take a signification planting effort using deep-rooting technology and could require significant near-term operation and maintenance effort to establish the system.

4.3.5.3 Potential Impacts

Potential safety impacts associated with phytoremediation are highest during implementation. Following planting, the potential safety impacts associated with routine maintenance are expected to be minimal.

Phytoextraction involves the uptake of contaminates within plant biomass resulting in potential cross-media impacts.

The risk of exposure to residual contamination for phytoremediation is minimal similar to other in-situ technologies. However, bioconcentration of arsenic and lithium could present concerns if disposal of plant material were required.

4.3.5.4 Timeframe

Approximately 6 to 12 months would be needed for pre-design field work, plant screening studies, determining planting scheme, and permitting prior to implementation. Phytoremediation is expected to a relatively long period of time to achieve remedial objectives (e.g., more than 10 years).

4.3.5.5 Institutional Requirements

It is anticipated that FDEP approval will be required for the proposed remedy. Depending on the FDEP approval process for implementing a phytoremediation system at the BSA, a phytoremediation system could be in place within one years following remedy selection.

5.0 REMEDY SELECTION PROCESS

Based on the results of this Assessment of Corrective Measures, Lakeland Electric must “as soon as feasible” select a remedy that meets the objectives listed in §257.97(b) (outlined in Section 4.1 above) “as soon as feasible”. At least 30 days prior to remedy selection, Lakeland Electric must hold a public meeting pursuant to §257.96(e) to discuss the results of this assessment.

In order to select an effective remedy, additional data and site characterization is necessary to further evaluate feasible remedies and design appropriate corrective measures, including:

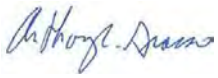
- Identification and evaluation of appropriate source control measures relative to planned future operations of the BSA
- Additional site characterization to evaluate feasibility of corrective measures including MNA and/or Enhanced MNA
- Groundwater modeling to evaluate and design specific corrective measures
- Bench-scale or on-site pilot-testing may be necessary to further evaluate the effectiveness of certain corrective measures
- Constructability evaluation (site limitations as such as working space, above or below grade utilities / railroad tracks, implementation challenges due to site conditions to achieve design objectives, safety of workers, and cost of construction)

The remedy selection and design process must be documented in semi-annual reports in accordance with §257.97. The evaluation factors in selecting a remedy are detailed in §257.97(c). A remedy selection report will describe the selected remedy and details of how it can satisfy the remedial objections in accordance with §257.97. Assessment monitoring will continue throughout the remedy selection process.

Signature Page

Golder Associates Inc.

Samuel F. Stafford, PE
Senior Project Engineer



Anthony L. Grasso, PG
Principal

SFS/ALG/sjh

https://golderassociates.sharepoint.com/sites/103931/technical work/acm report/final acm/lakeland electric bsa acm 06.12.2019.docx

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TABLES

Table 1: Summary of CCR Monitoring Well and Nature and Extent Monitoring Well Construction Details
Byproduct Storage Area
Lakeland Electric - C.D. McIntosh Power Plant

Well ID	Date Installed	Northing (ft NAD83)	Easting (ft NAD83)	Ground Surface Elevation (ft NAVD88)	TOC Elevation (ft NAVD88)	Stick-up Height (ft ags)	Well Depth (ft bgs)	Screen Interval Depth (ft bgs)
CCR-1	6/24/2016	1362405.2	681287.1	138.3	141.30	3.0	25.7	15.7 - 25.2
CCR-2	6/23/2016	1362203.9	681787.6	137.6	140.57	3.0	25.8	15.7 - 25.2
CCR-3	6/23/2016	1362334.6	682451.3	137.5	137.04	-0.5	25.8	15.9 - 25.3
CCR-4	6/24/2016	1362450.0	683042.7	140.3	143.13	2.9	25.7	15.6 - 25.1
CCR-5	6/22/2016	1362716.0	683376.9	138.6	141.07	2.5	26.2	16.2 - 25.7
CCR-6	6/22/2016	1363168.4	683578.6	138.5	141.34	2.9	25.7	15.7 - 25.2
CCR-7	6/22/2016	1363631.9	683772.2	139.1	142.10	3.0	25.8	15.7 - 25.2
CCR-8	6/22/2016	1363917.6	683411.6	139.4	142.12	2.7	26.0	15.9 - 25.4
CCR-9	6/21/2016	1364085.2	683045.3	138.6	141.67	3.1	25.6	15.5 - 25.0
CCR-10 *	6/20/2016	1364309.4	682722.2	135.9	138.54	2.6	24.5	14.4 - 23.9
CCR-10R	3/13/2018	1364262.1	682706.3	133.8	133.56	-0.2	24.7	14.6 - 24.1
CCR-11	6/20/2016	1363835.4	682577.2	134.3	137.12	2.8	25.6	15.6 - 25.1
CCR-12	6/20/2016	1363353.1	682430.5	134.1	136.99	2.9	25.8	15.7 - 25.2
CCR-13	6/21/2016	1362936.6	682164.1	135.0	137.95	3.0	25.7	15.6 - 25.1
CCR-14	6/21/2016	1362771.1	681761.2	135.8	138.70	2.9	25.5	15.4 - 24.9
CCR-15	2/18/2019	1362341.3	683123.5	141.8	144.65	2.9	25.7	15.4 - 25.0
CCR-16	2/18/2019	1362533.2	683385.6	141.2	144.10	2.9	25.6	15.3 - 24.9
CCR-17	2/19/2019	1363019.9	683712.7	142.9	145.80	2.9	25.7	15.4 - 25.0
CCR-18	2/18/2019	1363631.1	683869.7	138.2	140.81	2.6	25.9	15.6 - 25.2
CCR-19	2/15/2019	1364205.4	683064.5	133.8	136.47	2.7	25.8	15.5 - 25.1
CCR-20	2/14/2019	1363855.5	682474.9	133.1	136.05	2.9	25.2	14.9 - 24.5
CCR-21	2/13/2019	1363454.0	682331.4	134.5	137.12	2.6	25.9	15.6 - 25.2
CCR-22	2/13/2019	1363017.4	682078.7	134.0	137.51	3.5	25.1	14.8 - 24.4
CCR-23	2/12/2019	1362812.1	681744.7	136.2	135.78	-0.5	25.4	15.1 - 24.7

Notes:
CCR Monitroing Wells are CCR-1 through CCR-14 and CCR-10R.
Nature and Extent Monitoring Wells are CCR-15 through CCR-23.
ft = feet
NAD83 = North American Datum of 1983
NAVD = North American Vertical Datum of 1988
ft bgs = feet below ground surface
ft ags = feet above ground surface
* Monitoring well CCR-10 was abandonend and replaced with CCR-10R on 3/13/2018.

Checked by: MSI 6/11/2019
Reviewed by: ALG 6/11/2019

GOLDER

Table 2: Summary of Groundwater and Surface Water Elevation Measurements
Byproduct Storage Area
Lakeland Electric - C.D. McIntosh Power Plant

Well / Staff Gauge ID	Top of Casing Elevation (ft NAVD88)	7/16/2018		3/12/2019	
		Depth to Water (ft btoc)	Groundwater/ Surface Water Elevation (ft NAVD88)	Depth to Water (ft btoc)	Groundwater/ Surface Water Elevation (ft NAVD88)
CCR-1	141.30	8.12	133.18	8.95	132.35
CCR-2	140.57	8.28	132.29	8.87	131.70
CCR-3	137.04	4.09	132.95	5.30	131.74
CCR-4	143.13	13.21	129.92	13.88	129.25
CCR-5	141.07	9.08	131.99	9.76	131.31
CCR-6	141.34	7.38	133.96	8.02	133.32
CCR-7	142.10	7.8	134.30	8.43	133.67
CCR-8	142.12	7.43	134.69	7.62	134.50
CCR-9	141.67	8.66	133.01	8.80	132.87
CCR-10R	133.56	1.28	132.28	1.00	132.56
CCR-11	137.12	4.46	132.66	4.24	132.88
CCR-12	136.99	5.26	131.73	4.17	132.82
CCR-13	137.95	5.36	132.59	5.34	132.61
CCR-14	138.70	6.33	132.37	6.66	132.04
CCR-15	144.65	NI	NI	16.54	128.11
CCR-16	144.10	NI	NI	14.89	129.21
CCR-17	145.80	NI	NI	13.33	132.47
CCR-18	140.81	NI	NI	7.56	133.25
CCR-19	136.47	NI	NI	4.11	132.36
CCR-20	136.05	NI	NI	3.31	132.74
CCR-21	137.12	NI	NI	4.53	132.59
CCR-22	137.51	NI	NI	5.01	132.50
CCR-23	135.78	NI	NI	3.75	132.03
Fish Lake (SG)	NA	NM	NM	NA	132.75
Lake B (SG)	NA	NM	NM	NA	132.06
Lake C (SG)	NA	NM	NM	NA	132.31
Lake D (SG)	NA	NM	NM	NA	124.17
Lake Parker (SG)	NA	NM	NM	NA	129.60

Notes:

CCR Monitroing Wells are CCR-1 through CCR-4 and CCR-10R

Nature and Extent Monitoring Wells are CCR-15 through CCR-23

SG - Staff Guage

NAVD88 - North American Vertical Datum of 1988

ft btoc - feet below top of casing

NI - Not Installed

NA - Not Applicable

NM - Not Measured

Checked by: MSI 6/11/2019

Reviewed by: ALG 6/11/2019

Table 3: Summary of Arsenic in Groundwater (CCR Monitoring Wells)
Byproduct Storage Area
Lakeland Electric - C.D. McIntosh Power Plant

Event	Date Sampled	CCR Monitoring Well Designation													
		CCR-1	CCR-2	CCR-3	CCR-4	CCR-5	CCR-6	CCR-7	CCR-8	CCR-9	CCR-10 / CCR-10R*	CCR-11	CCR-12	CCR-13	CCR-14
Background	8/4/2016	0.00098 I	0.00054 I	0.00066 I	0.0017	0.00078 I	0.00073 I	0.00066 I	0.0015	0.0068	0.0015	0.079	0.074	0.0013	0.0027
Background	9/14/2016	0.0011 I	0.00046 U	0.00055 I	0.0015	0.00087 I	0.00061 I	0.00051 I	0.0026	0.0056	0.0016	0.11	0.058	0.00052 I	0.0019
Background	10/12/2016	0.0011 I	0.00046 U	0.00054 I	0.0017	0.0011 I	0.00047 I	0.00046 U	0.002	0.0061	0.0018	0.061	0.00089 I	0.043	0.0027
Background	11/2/2016	0.0011 I	0.00046 U	0.00061 I	0.0016	0.0014	0.00092 I	0.00067 I	0.0016	0.0054	0.0021	0.06	0.041	0.00046 U	0.0025
Background	12/14/2016	0.0028	0.00087	0.00071	0.0013	0.00086	0.00055 I	0.00046 U	0.002	0.003	0.0018	0.094	0.027	0.00046 U	0.0026
Background	1/11/2017	0.0014	0.00046 U	0.00046 U	0.0012 I	0.00079 I	0.00051 I	0.00046 U	0.0023	0.0034	0.0014	0.11	0.028	0.00046 U	0.003
Background	2/1/2017	0.0016	0.00046 U	0.00046 U	0.0011 I	0.00046 U	0.00046 U	0.00046 U	0.002	0.0036	0.0018	0.14	0.031	0.00046 U	0.0027
Background	3/15/2017	0.0014	0.00057 I	0.00055 I	0.0012 I	0.00085 I	0.00073 I	0.00064 I	0.0035	0.0041	0.0023	0.13	0.033	0.00067 I	0.0023
Background	4/12/2017	0.0013	0.00046 U	0.00046 U	0.0011 I	0.00087 I	0.00054 I	0.00054 I	0.0057	0.0035	0.0015	0.12	0.02	0.0011 I	0.0021
Background	5/17/2017	0.0017	0.00046 U	0.00046 U	0.001 I	0.00078 I	0.00055 I	0.00056 I	0.0022	0.0035	0.0017	0.14	0.026	0.0008 I	0.0023
Background	6/13/2017	0.0017	0.00046 U	0.00051 I	0.0011 I	0.00099 I	0.00088 I	0.00068 I	0.0021	0.0033	0.002	0.12	0.035	0.0012 I	0.0049
Background	7/11/2017	0.0013	0.00046 U	0.00086 I	0.0017	0.0015	0.00083 I	0.00054 I	0.0024	0.0037	0.0018	0.094	0.036	0.0012 I	0.0031
Background	8/15/2017	0.0015	0.00047 I	NA	0.0012 I	0.0011 I	0.00046 U	0.00046 U	0.0017	0.0049	0.0016	0.12	0.08	0.00069 I	0.0022
Detection	10/13/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Detection	11/30/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Detection	12/7/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Assessment	4/12/2018	0.00586 U	0.00586 U	0.00586 U	0.0136	0.00875 I	0.00586 U	0.00586 U	0.00586 U	0.00792 I	0.00586 U	0.0668	0.0375	0.00646 I	0.00586 U
Assessment	7/18/2018	0.0041	0.0025 U	0.0025 U	0.013 U	0.013 U	0.0033	0.0025 U	0.0038	0.0075 U	0.0026 I	0.112	0.0498	0.0025 U	0.013 U
Assessment	1/8/2019	0.00586 U	0.00586 U	0.0101	0.00586 U	0.0190	0.00730 I	0.00586 U	0.00586 U	0.0173	0.00586 U	0.140	0.0411	0.0105	0.00586 U

Notes:
Dates shown are represntative of sampling events that took place over multiple days
Concentrations reported in milligrams per liter (mg/L)
NA = Not analyzed
U = Result less than the method detection limit
I = Reported value between method detection limit and practical quantification limit
* Monitoring well CCR-10 was abandonend and replaced with CCR-10R on 3/13/2018

Checked by: MSI 6/11/2019
Reviewed by: ALG 6/11/2019

GOLDER

Table 4: Summary of Lithium in Groundwater (CCR Monitoring Wells)
Byproduct Storage Area
Lakeland Electric - C.D. McIntosh Power Plant

Event	Date Sampled	CCR Monitoring Well Designation													
		CCR-1	CCR-2	CCR-3	CCR-4	CCR-5	CCR-6	CCR-7	CCR-8	CCR-9	CCR-10 / CCR-10R*	CCR-11	CCR-12	CCR-13	CCR-14
Background	8/4/2016	0.0032 U	0.0032 U	0.0032 U	0.021	2.4	0.41	0.035	0.011	0.073	0.0032 U	0.0032 U	0.0032 U	0.097	0.0032 U
Background	9/14/2016	0.0032 U	0.0032 U	0.0032 U	0.0095	2.5	0.16	0.0032	0.0057	0.061	0.0032 U	0.0032 U	0.0032 U	0.2	0.0033
Background	10/12/2016	0.0032 U	0.0032 U	0.0032 U	0.0079	2.5	0.045	0.0032 U	0.0043	0.056	0.0032 U	0.0032 U	0.26	0.0032 U	0.0032 U
Background	11/2/2016	0.0032 U	0.0032 U	0.0032 U	0.0085	2.4	0.069	0.0032 U	0.0064	0.095	0.0032 U	0.0032 U	0.0032 U	0.31	0.0041
Background	12/14/2016	0.0032 U	0.0032 U	0.0032 U	0.011	2.4	0.13	0.022	0.018	0.094	0.0032 U	0.0032 U	0.0032 U	0.3	0.0032 U
Background	1/11/2017	0.0032 U	0.0032 U	0.0032 U	0.012	2.3	0.18	0.026	0.025	0.11	0.0032 U	0.0032 U	0.0032 U	0.32	0.0032 U
Background	2/1/2017	0.0032 U	0.0032 U	0.0032 U	0.015	2.4	0.21	0.021	0.025	0.12	0.0032 U	0.0032 U	0.0032 U	0.31	0.0032 U
Background	3/15/2017	0.0032 U	0.0032 U	0.0032 U	0.2	2.4	0.3	0.021	0.032	0.16	0.0032 U	0.0054	0.0032 U	0.32	0.0032 U
Background	4/12/2017	0.0032 U	0.0032 U	0.0032 U	0.13	2.3	0.34	0.022	0.019	0.19	0.0032 U	0.004	0.0032 U	0.25	0.0032 U
Background	5/17/2017	0.0032 U	0.0032 U	0.0032 U	0.034	2.3	0.36	0.037	0.023	0.19	0.0032 U	0.0055	0.0032 U	0.19	0.0032 U
Background	6/13/2017	0.0032 U	0.0032 U	0.0032 U	0.34	2.5	0.42	0.018	0.0053	0.14	0.0032 U	0.0061	0.0032 U	0.017	0.0032 U
Background	7/11/2017	0.0032 U	0.0032 U	0.0032 U	0.12	2.9	0.13	0.0081	0.0073	0.11	0.0032 U	0.0041	0.0032 U	0.011	0.0032 U
Background	8/15/2017	0.0032 U	0.0032 U	NA	0.027	3.4	0.13	0.0032 U	0.0071	0.12	0.0032 U	0.0083	0.0032 U	0.13	0.0032 U
Detection	10/13/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Detection	11/30/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Detection	12/7/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Assessment	4/12/2018	0.011 U	0.011 U	0.011 U	0.022 U	4.21	0.227	0.34	0.011 U	0.16	0.011 U	0.011 U	0.011 U	0.258	0.011 U
Assessment	7/18/2018	0.0091 U	0.0091 U	0.0091 U	0.0367 I	5.24	0.0837	0.0385 I	0.0091 U	0.156	0.0091 U	0.0338 I	0.0091 U	0.266	0.0091 U
Assessment	1/8/2019	0.018 U	0.0091 U	0.0091 U	0.0091 U	4.57	0.058	0.0665	0.0091 U	0.0845	0.0091 U	0.0319 I	0.0172 I	0.249	0.0167 I

Notes:
Dates shown are represntative of sampling events that took place over multiple days
Concentrations reported in milligrams per liter (mg/L)
NA = Not analyzed
U = Result less than the method detection limit
I = Reported value between method detection limit and practical quantification limit
* Monitoring well CCR-10 was abandonend and replaced with CCR-10R on 3/13/2018

Checked by: MSI 6/11/2019
Reviewed by: ALG 6/11/2019

Table 5: Summary of Radium 228 & 228 in Groundwater (CCR Monitoring Wells)
Byproduct Storage Area
Lakeland Electric - C.D. McIntosh Power Plant

Event	Date Sampled	CCR Monitoring Well Designation													
		CCR-1	CCR-2	CCR-3	CCR-4	CCR-5	CCR-6	CCR-7	CCR-8	CCR-9	CCR-10 / CCR-10R*	CCR-11	CCR-12	CCR-13	CCR-14
Background	8/4/2016	3.23	8.84	24.7	39.7	18.7	9.71	7.24	22	3.77	2.79	9.21	3	29.7	25.7
Background	9/14/2016	3.97	4.96	6.91	41	18	7.63	12.8	3.99	20.6	3.02	10.4	2.75	0.629	30.7
Background	10/12/2016	4.07	6.55	6.11	47.8	18.6	4.9	6.83	4.32	20.1	1.93	11.4	2.84	70.2	28.4
Background	11/2/2016	4.71	6.52	6.7	48.2	17	3.7	5.9	3.71	21.4	1.28	8.05	3.06	74.6	27
Background	12/14/2016	5.42	4.56	7.05	77.3	19.3	5.77	14.1	5.84	22.2	1.64	10.6	2.87	85.7	42.1
Background	1/11/2017	5.02	5.83	6.19	82.2	19.5	5.81	17.9	5.56	21.7	2.01	10.6	2.37	81.4	36.4
Background	2/1/2017	4.31	5.73	5.61	71.7	16.2	6.07	16.3	7.37	18.4	1.18	9.13	2.48	70.9	35.8
Background	3/15/2017	4.39	6.07	4.43	59	16.2	6.53	15.1	8.77	14.4	1.58	5.89	2.68	60.9	29.4
Background	4/12/2017	4.62	5.54	4.62	66.8	16	7.3	19.4	9.28	15.3	1.5	7.78	2.11	52.6	32.4
Background	5/17/2017	3.58	5.07	3.81	71.1	13.8	8.53	20.6	7.32	13.5	1.38	8.93	2.01	30.3	24.8
Background	6/13/2017	4.87	5.24	3.87	56.4	16.4	6.58	17.3	4.27	18.2	1.15	10.2	3.19	8.98	42.2
Background	7/11/2017	4.59	4.54	5.02	71.9	15.9	6.86	12.3	4.41	14.4	1.02	7.11	2.46	5.06	35.1
Background	8/15/2017	5.65	2.41	4.17	61.7	17.2	4.05	4.93	5.27	15.5	0.864	7.99	2.55	36.2	28.2
Detection	10/13/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Detection	11/30/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Detection	12/7/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Assessment	4/12/2018	6.6	5.8	3.9	45.8	18.8	4.8	11.7	6.4	0.86	3.6	1.3	3	57.4	23.3
Assessment	7/18/2018	6.8	3.2	4.1	51	21.1	2.9	2.9	5.5	9.1	2.7	6.1	3.6	40.6	17.5
Assessment	1/8/2019	6.8	2.8	4.6	38.2	13.3	2.3	7.2	4.8	11.1	3.4	4.8	4.8	69.3	23.0

Notes:
Dates shown are represntative of sampling events that took place over multiple days
All concentrations reported in picocuries per liter (pCi/L)
NA = Not analyzed
* Monitoring well CCR-10 was abandonend and replaced with CCR-10R on 3/13/2018

Checked by: MSI 6/11/2019
Reviewed by: ALG 6/11/2019

Table 6: Summary of Arsenic, Lithium, and Radium 226 & 228 in Groundwater and Surface Water (Nature and Extent Monitoring Wells and Lakes)
Byproduct Storage Area
Lakeland Electric - C.D. McIntosh Power Plant

Monitoring Well / Surface Water	Date Sampled	Analyte			
		Arsenic (mg/L)	Lithium (mg/L)	Radium 226 (pCi/L)	Radium 228 (pCi/L)
CCR-15	3/7/19	0.00586 U	NA	19.2	5.9
CCR-16	3/6/19	NA	0.0384 I	23.3	19.4
CCR-17	3/6/19	NA	0.0162 I	NA	NA
CCR-18	3/6/19	NA	NA	0.5	0.7 U
CCR-19	3/6/19	NA	0.0300 I	NA	NA
CCR-20	3/7/19	0.0282	NA	NA	NA
CCR-21	3/7/19	0.00586 U	NA	NA	NA
CCR-22	3/7/19	NA	0.129	26.3	1.4
CCR-23	3/7/19	NA	NA	6.5	0.8
MW-24S	3/5/19	NA	0.0163 I	NA	NA
MW-25S	3/6/19	NA	0.0118 I	0.5	0.7 U
MW-26S	3/5/19	0.00586 U	NA	0.5	0.6 U
Fish Lake	3/11/19	0.00586 U	0.0222	0.7	0.7 U
Lake B	3/11/19	NA	0.0139 I	1.6	0.8 U
Lake C	3/13/19	NA	0.0091 U	1.5	0.7 U
Lake D	3/13/19	NA	0.0235 I	4.0	1.3

Notes:

Compliance monitoring wells MW-24S to MW-26S were used to evaluate the nature and extent of groundwater impacts

Arsenic and Lithium concentrations reported in milligrams per liter (mg/L)

Radium concentrations reported in picocuries per liter (pCi/L)

U - Compound was analyzed for but not detected

I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit

NA - Not Analyzed

Checked by: MSI 6/11/2019
Reviewed by ALG 6/11/2019

Table 7: Summary of Soil / Sediment Analytical Results
Byproduct Storage Area
Lakeland Electric - C.D. McIntosh Power Plant

Sample ID	Depth (ft bgs)	Date Sampled	Analyte									
			Aluminum (mg/Kg)	Arsenic (mg/Kg)	Iron (mg/Kg)	Lithium (mg/Kg)	Uranium (mg/Kg)	Phosphorus (mg/Kg)	Radium-226 (pCi/g)	Radium-228 (pCi/g)	Total Organic Carbon (%)	Fractional Organic Carbon (g/g)
CCR-4A	24-25	2/11/19	28,000 B	ND	2,800	ND	280 F1	130,000	75.9	0.726	NA	NA
CCR-15	24-25	2/18/19	8,000 B	ND	98	0.79 J	4.5	2,800	0.702	0.328	NA	NA
CCR-16	24-25	2/18/19	19,000 B	ND	450	2.9	4.3	3,000	1.14	1.07	NA	NA
CCR-17	24-25	2/19/19	5,900 B	ND	97	ND	0.92	1,000	NA	NA	NA	NA
CCR-18	24-25	2/15/19	2,600 B	ND	79	0.45 J	1.2	800	0.443	0.196 U	NA	NA
CCR-19	24-25	2/15/19	2,000 B	ND	62	ND	0.50	310	NA	NA	NA	NA
CCR-20	24-25	2/14/19	21,000 B	1.4 J	460	ND	40	11,000	NA	NA	NA	NA
CCR-21	24-25	2/13/19	1,800 B	ND	110	ND	0.51	210	NA	NA	NA	NA
CCR-22	24-25	2/12/19	96,000 B	ND	8,400	15	280	90,000	65.2	1.49	NA	NA
CCR-23	24-25	2/12/19	20,000 B	3.9 J	4,400	4.8 J	58	78,000	14.7	0.359	NA	NA
GSB-1	0-0.5	2/21/19	4,000 B	1.4 J	1,200	ND	21	21,000	NA	NA	NA	NA
Fish Lake - Sed	0-0.5	2/20/19	N/A	NA	NA	NA	NA	NA	NA	NA	1.300	0.013

Notes:

ft bgs = feet below ground surface

mg/Kg = milligrams per kilogram

pCi/g = picocuries per gram

g/g = gram per gram

B - Compound was found in the blank and sample.

F1 - Matrix Spike/Matrix Spike duplicate (MS/MSD) Recovery is outside acceptance limits, and the concentration is an approximate value. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample recovery was within acceptable limits.

J - Result is less than the reporting limit (RL) but greater than or equal to the method detection limit (MDL) and the concentration is an approximate value.

U - Result is less than the sample detection limit.

ND - Not detected

NA - Not analyzed

Checked by: MSI 6/11/2019
Reviewed by: ALG 6/11/2019

Table 8: Sequential Extraction of Metals from Soils
Byproduct Storage Area
Lakeland Electric - C.D. McIntosh Power Plant

Sample Location		CCR-4A	CCR-16	CCR-20
Sample Depth (feet bgs)		24 - 25	24 - 25	24 - 25
Analyte	SEP Step	mg/Kg	mg/Kg	mg/Kg
Aluminum	1	25 J	120	ND
	2	41 J	190	10 J
	3	2100	4700	110
	4	2600	2000	3300
	5	500	250	1200
	6	23000	4100	11000
	7	2200	8300	16000
	SUM	30000	20000	32000
	TOTAL	14000	16000	39000
Arsenic	1	ND	ND	ND
	2	ND	0.55 J	0.51 J
	3	0.28 J	0.26 J	ND
	4	0.78 B	0.54 J B	0.74 B
	5	ND	ND	ND
	6	7.0 J	1.0	2.0 J
	7	0.83 B	0.91 J	0.59 B
	SUM	8.9	3.3	3.8
	TOTAL	4.7	1.1 J	1.1 B
Iron	1	ND	ND	ND
	2	ND	ND	ND
	3	190	4.7 J	ND
	4	230	34	26
	5	ND	ND	ND
	6	1800	240	270
	7	660	920	1200
	SUM	2900	1200	1500
	TOTAL	2500	1400	1900
Lithium	1	ND	ND	ND
	2	ND	ND	ND
	3	ND	ND	ND
	4	0.92 J	0.78 J	0.25 J
	5	ND	ND	ND
	6	ND	2.1 J	1.0 J
	7	1.2 J	4.8	1.5 J
	SUM	2.1 J	7.7	2.7
	TOTAL	4.4 J	7.0	2.3 J

Notes:
SEP - Sequential Extraction Procedure
J - The result is less than the reporting limit but greater than or equal to the mean detection limit and the cocentration is an approximate value.
ND - Not detected
I - Reported value between method detection limit and practical quantification limit
B - Compound was found in the blank and the sample
bgs - Below Ground Surface
mg/Kg - milligrams per kilogram

Checked by: MSI 6/11/2019
Reviewed by: ALG 6/11/2019

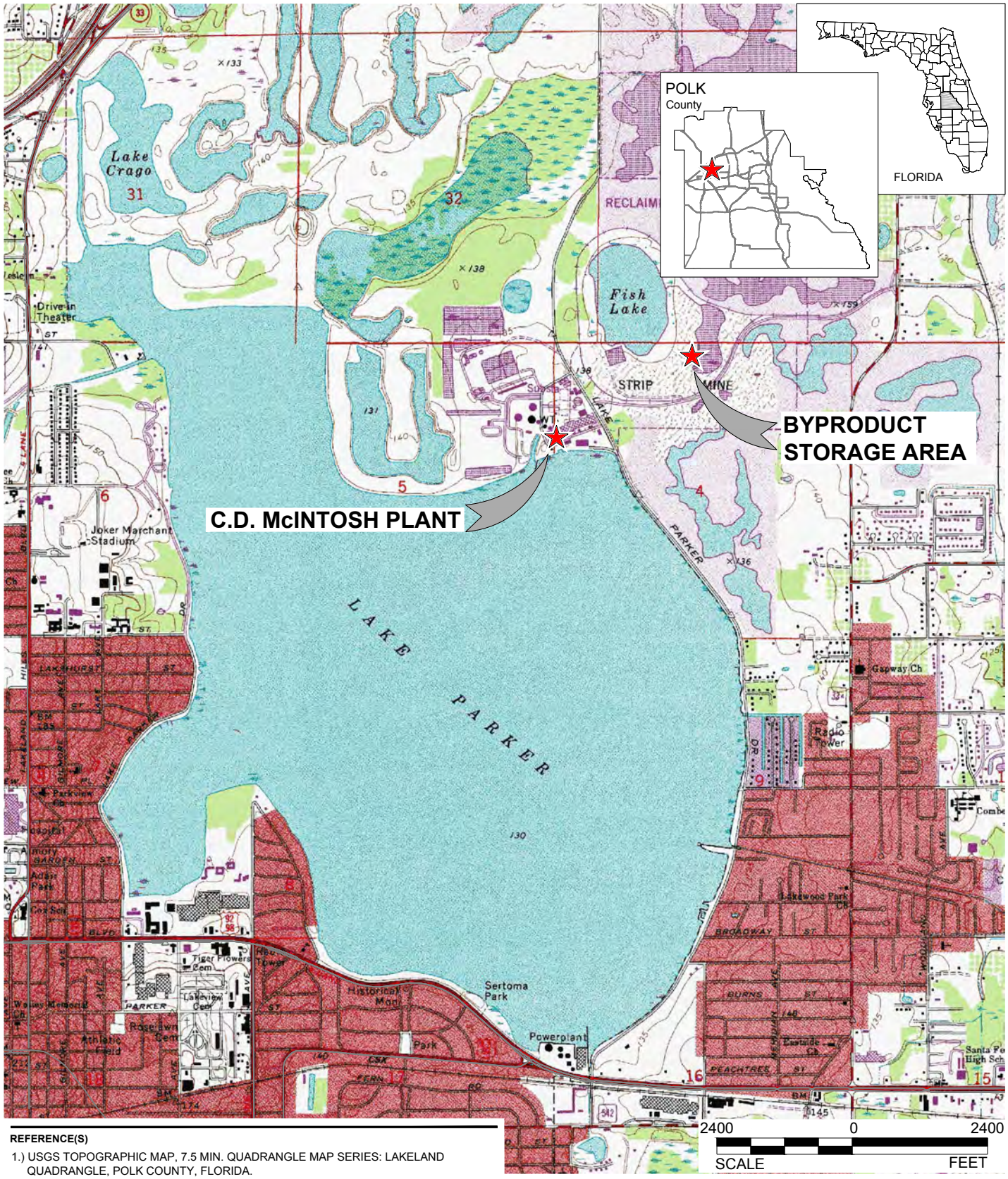
Table 9: Corrective Measures Screening Evaluation
Byproduct Storage Area
Lakeland Electric - C.D. McIntosh Power Plant

Potential Corrective Measure	Screening Criteria						
	Performance	Reliability	Implementation Ease	Potential Impacts	Timeframe	Institutional Requirements	Comments
Monitored Natural Attenuation (MNA)	Medium	High (Natural Processes, Little O&M Needs)	Easy (following site characterization, minimal infrastructure)	Minimal	Begin: 3 to 12 Months Complete: Varies (10+ years)	FDEP Approval	MNA is typically combined with other corrective measure
Enhanced Monitored Natural Attenuation	Medium to High	Medium (Enhancements May Need to be Periodically Maintained)	Easy to Moderate (identify enhancement option, injection well, etc.)	Minimal to Low	Begin: 6 to 12 Months Complete: Varies (5+ years)	FDEP Approval	State underground injection control permit may be required
Groundwater Pump-and-Treat	High (Contaminant Mass Removed and Migration Controlled)	Medium to High (Routine O&M Required)	Moderate (design & install system)	Low (Associated with Construction and O&M)	Begin: 12 to 24 Months Complete: Varies (1-10 years)	FDEP Approval	
Hydraulic Barrier	Medium to High (More Effective if Coupled with Groundwater Extraction or Other Remedies)	High	Moderate to Difficult (Depth)	Low (Associated with Construction)	Begin: 12 to 24 Months Complete: Varies (1-10 years)	FDEP Approval	Presence of underground utilities and active railroad tracks could be a challenge to work around and/or relocate
Permeable Reactive Barrier	Medium to High	Medium (Reactive Media Replacement)	Moderate to Difficult (Depth)	Low (Associated with Construction and Media Maintenance)	Begin: 12 to 24 Months Complete: Varies (1-10 years)	FDEP Approval	Presence of underground utilities and active railroad tracks could be a challenge to work around and/or relocate
Phytoremediation	Low to Medium	Low to Medium	Moderate	Minimal (Associated with Initial Planting)	Begin: 6 to 12 months Complete: Varies (10+ years)	FDEP Approval	

Notes:
O & M - Operations and Maintenance

Checked by: SFS 6/11/2019
Reviewed by: ALG 6/11/2019

FIGURES



REFERENCE(S)

1.) USGS TOPOGRAPHIC MAP, 7.5 MIN. QUADRANGLE MAP SERIES: LAKELAND QUADRANGLE, POLK COUNTY, FLORIDA.

CLIENT
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PREPARED	BCL
REVIEWED	ALG
APPROVED	SFS

PROJECT
BSA CCR GROUNDWATER
C.D. McINTOSH POWER PLANT
LAKELAND, POLK COUNTY, FLORIDA

TITLE
SITE LOCATION MAP

PROJECT NO.	Control No.	REV.	FIGURE
19-117001	1895370-B001		1

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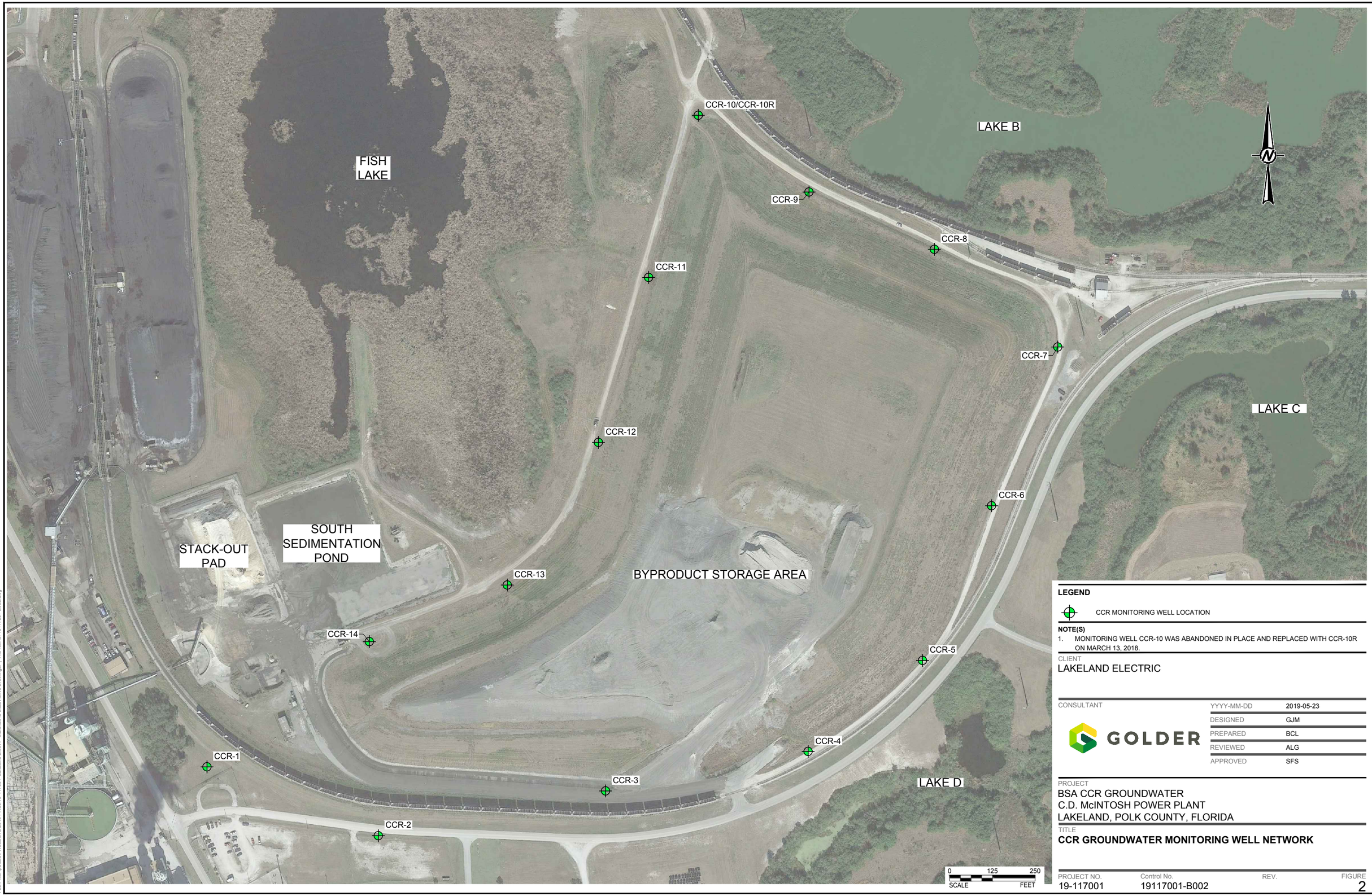

LEGEND

CCR MONITORING WELL LOCATION

NOTE(S)

1. MONITORING WELL CCR-10 WAS ABANDONED IN PLACE AND REPLACED WITH CCR-10R ON MARCH 13, 2018.

CLIENT
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REVIEWED	ALG
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PROJECT
BSA CCR GROUNDWATER
C.D. McINTOSH POWER PLANT
LAKELAND, POLK COUNTY, FLORIDA

TITLE
CCR GROUNDWATER MONITORING WELL NETWORK

PROJECT NO.	Control No.	REV.	FIGURE
19-117001	19117001-B002		2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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LEGEND

- SURFACE WATER SURROUNDING BYPRODUCT STORAGE AREA
- APPROXIMATE EXTENT OF BYPRODUCT STORAGE AREA
- STAFF GAUGE

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

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REVIEWED	ALG
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PROJECT
BSA CCR GROUNDWATER
C.D. McINTOSH POWER PLANT
LAKELAND, POLK COUNTY, FLORIDA

TITLE
SURFACE WATER BODIES SURROUNDING BYPRODUCT STORAGE AREA

0 350 700
SCALE FEET

PROJECT NO.	Control No.	REV.	FIGURE
19117001	19117001-A001		3

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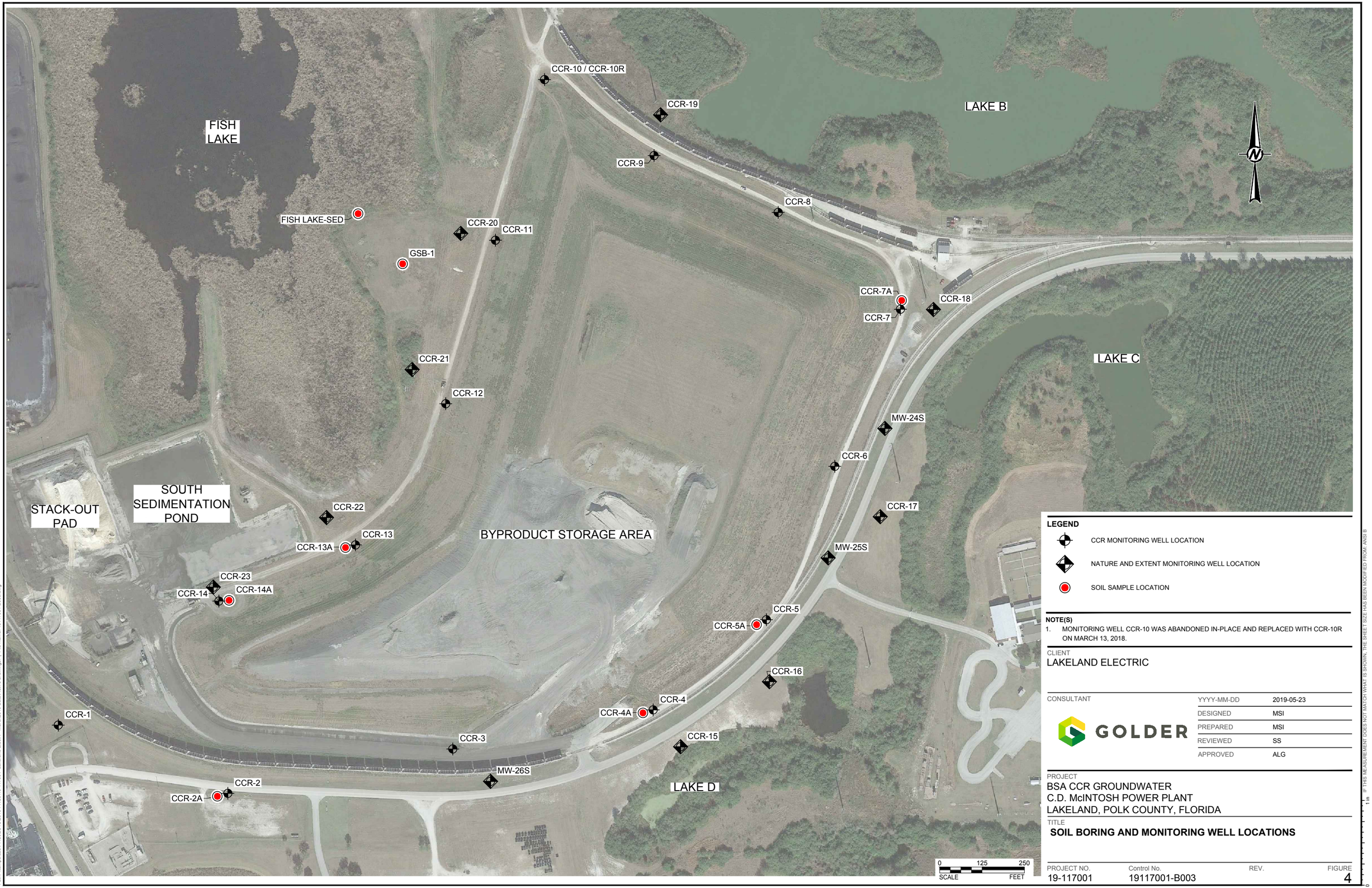

LEGEND

- CCR MONITORING WELL LOCATION
- NATURE AND EXTENT MONITORING WELL LOCATION
- SOIL SAMPLE LOCATION

NOTE(S)

1. MONITORING WELL CCR-10 WAS ABANDONED IN-PLACE AND REPLACED WITH CCR-10R ON MARCH 13, 2018.

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PROJECT
BSA CCR GROUNDWATER
C.D. McINTOSH POWER PLANT
LAKELAND, POLK COUNTY, FLORIDA

TITLE
SOIL BORING AND MONITORING WELL LOCATIONS

PROJECT NO.	Control No.	REV.	FIGURE
19-117001	19117001-B003		4

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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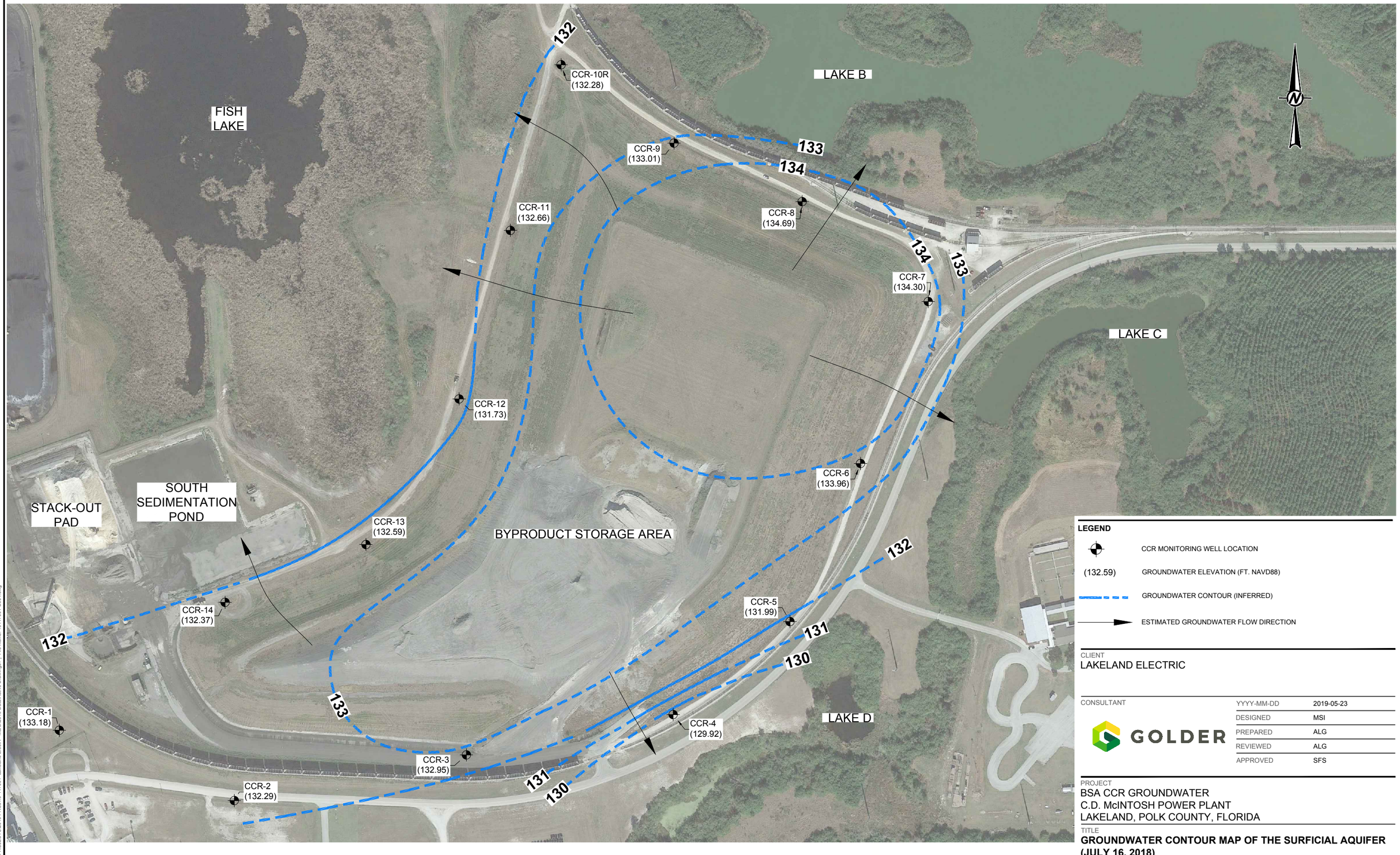

LEGEND

- CCR MONITORING WELL LOCATION
- (132.59) GROUNDWATER ELEVATION (FT. NAVD88)
- GROUNDWATER CONTOUR (INFERRED)
- ESTIMATED GROUNDWATER FLOW DIRECTION

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PROJECT
BSA CCR GROUNDWATER
C.D. McINTOSH POWER PLANT
LAKELAND, POLK COUNTY, FLORIDA

TITLE
GROUNDWATER CONTOUR MAP OF THE SURFICIAL AQUIFER (JULY 16, 2018)

PROJECT NO.	Control No.	REV.	FIGURE
19-115694	19117001-B004		5

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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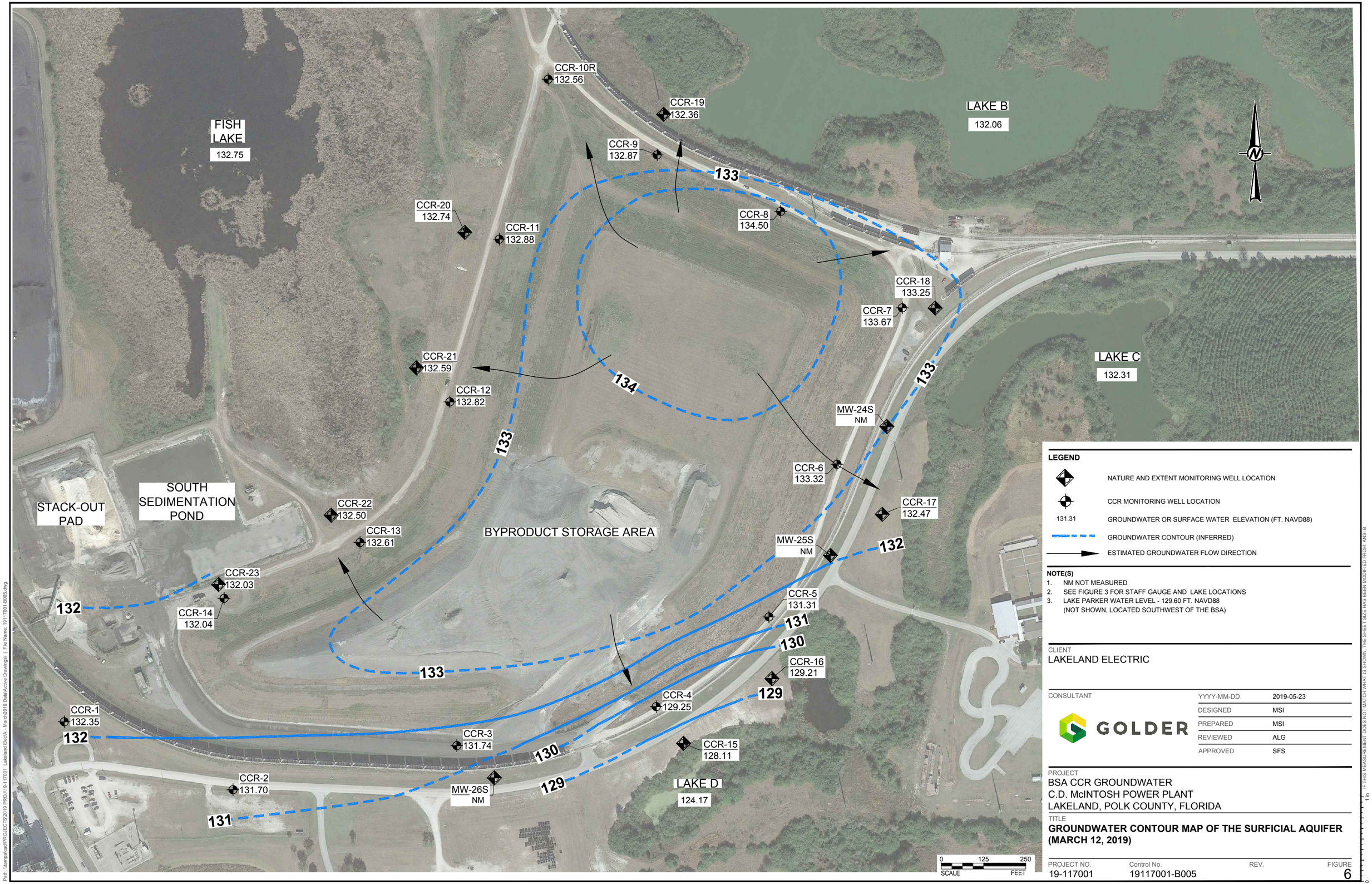

LEGEND

- NATURE AND EXTENT MONITORING WELL LOCATION
- CCR MONITORING WELL LOCATION
- 131.31 — GROUNDWATER OR SURFACE WATER ELEVATION (FT. NAVD88)
- GROUNDWATER CONTOUR (INFERRED)
- ESTIMATED GROUNDWATER FLOW DIRECTION

NOTE(S)

1. NM NOT MEASURED
2. SEE FIGURE 3 FOR STAFF GAUGE AND LAKE LOCATIONS
3. LAKE PARKER WATER LEVEL - 129.60 FT. NAVD88 (NOT SHOWN, LOCATED SOUTHWEST OF THE BSA)

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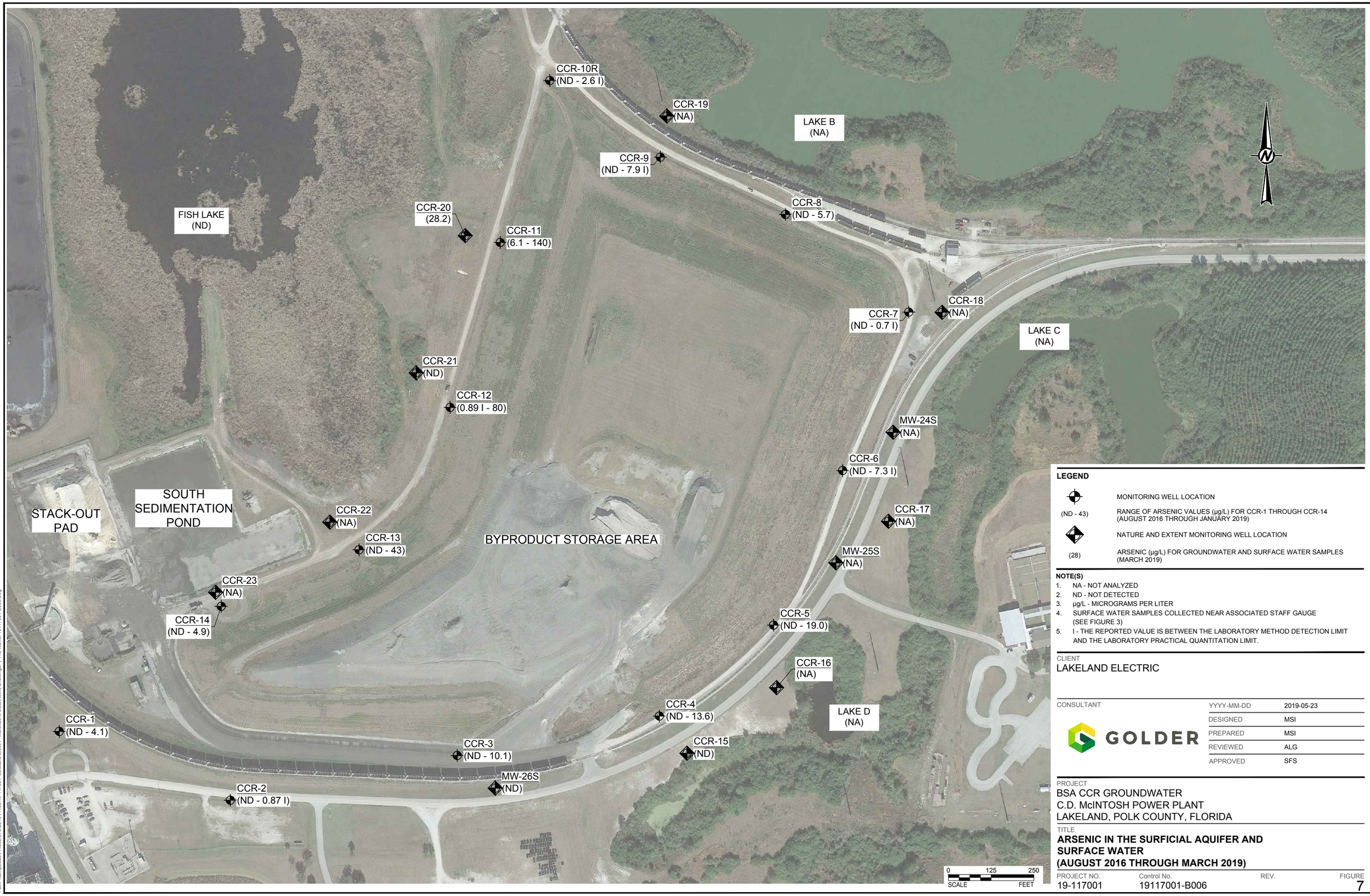
PROJECT
BSA CCR GROUNDWATER
C.D. McINTOSH POWER PLANT
LAKELAND, POLK COUNTY, FLORIDA

TITLE
GROUNDWATER CONTOUR MAP OF THE SURFICIAL AQUIFER (MARCH 12, 2019)

PROJECT NO.	Control No.	REV.	FIGURE
19-117001	19117001-B005		6



LEGEND

	MONITORING WELL LOCATION
(ND - 43)	RANGE OF ARSENIC VALUES (µg/L) FOR CCR-1 THROUGH CCR-14 (AUGUST 2016 THROUGH JANUARY 2019)
	NATURE AND EXTENT MONITORING WELL LOCATION
(28)	ARSENIC (µg/L) FOR GROUNDWATER AND SURFACE WATER SAMPLES (MARCH 2019)

NOTE(S)

1. NA - NOT ANALYZED
2. ND - NOT DETECTED
3. µg/L - MICROGRAMS PER LITER
4. SURFACE WATER SAMPLES COLLECTED NEAR ASSOCIATED STAFF GAUGE (SEE FIGURE 3)
5. I - THE REPORTED VALUE IS BETWEEN THE LABORATORY METHOD DETECTION LIMIT AND THE LABORATORY PRACTICAL QUANTITATION LIMIT.

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PROJECT
BSA CCR GROUNDWATER
C.D. McINTOSH POWER PLANT
LAKELAND, POLK COUNTY, FLORIDA

TITLE
ARSENIC IN THE SURFICIAL AQUIFER AND SURFACE WATER (AUGUST 2016 THROUGH MARCH 2019)

PROJECT NO.	Control No.	REV.	FIGURE
19-117001	19117001-B006		7

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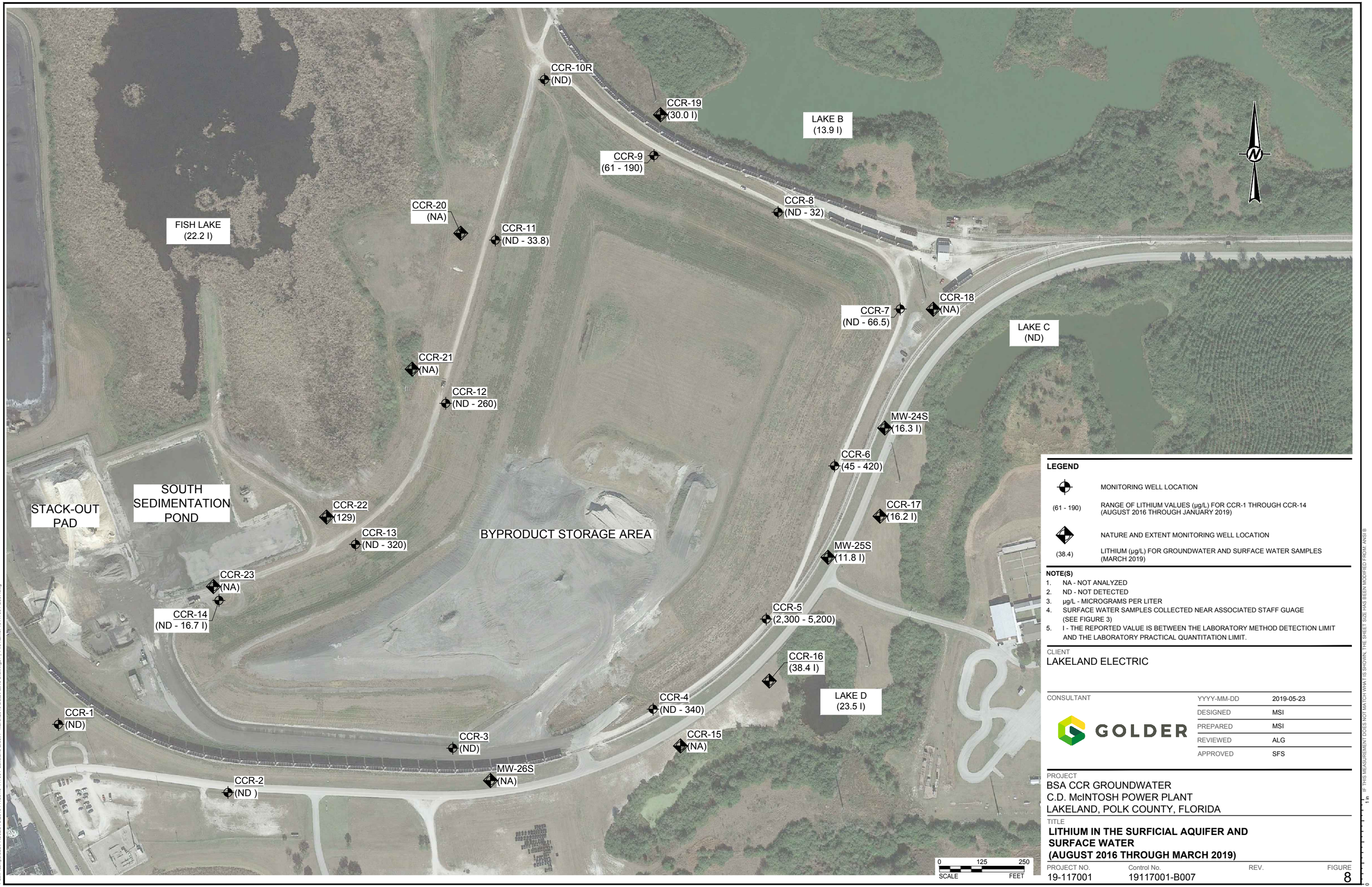

LEGEND

	MONITORING WELL LOCATION
(61 - 190)	RANGE OF LITHIUM VALUES (µg/L) FOR CCR-1 THROUGH CCR-14 (AUGUST 2016 THROUGH JANUARY 2019)
	NATURE AND EXTENT MONITORING WELL LOCATION
(38.4)	LITHIUM (µg/L) FOR GROUNDWATER AND SURFACE WATER SAMPLES (MARCH 2019)

NOTE(S)

1. NA - NOT ANALYZED
2. ND - NOT DETECTED
3. µg/L - MICROGRAMS PER LITER
4. SURFACE WATER SAMPLES COLLECTED NEAR ASSOCIATED STAFF GUAGE (SEE FIGURE 3)
5. I - THE REPORTED VALUE IS BETWEEN THE LABORATORY METHOD DETECTION LIMIT AND THE LABORATORY PRACTICAL QUANTITATION LIMIT.

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DESIGNED	MSI
PREPARED	MSI
REVIEWED	ALG
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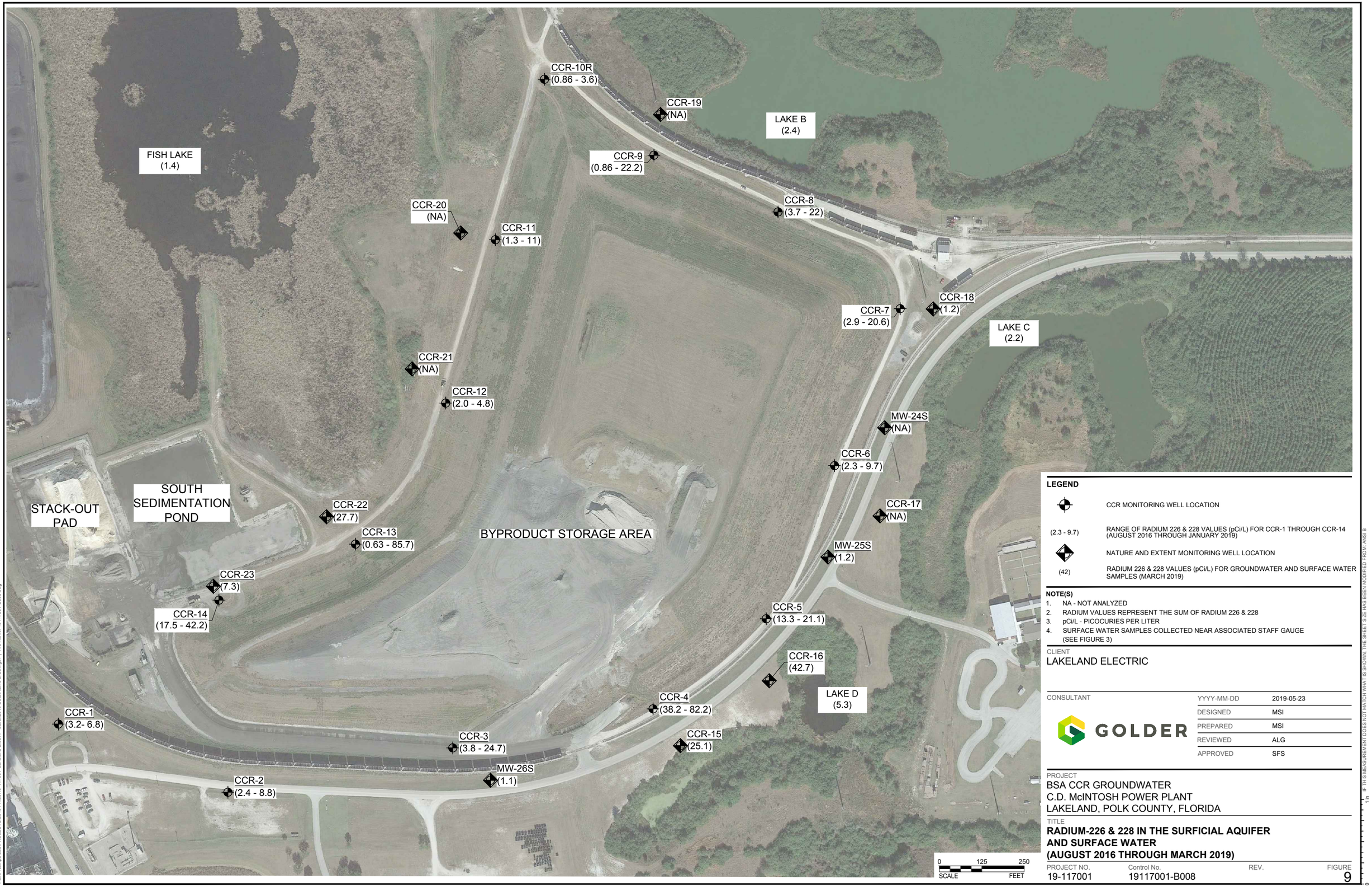
PROJECT
BSA CCR GROUNDWATER
C.D. McINTOSH POWER PLANT
LAKELAND, POLK COUNTY, FLORIDA

TITLE
LITHIUM IN THE SURFICIAL AQUIFER AND SURFACE WATER (AUGUST 2016 THROUGH MARCH 2019)

PROJECT NO.	Control No.	REV.	FIGURE
19-117001	19117001-B007		8



LEGEND

⊕	CCR MONITORING WELL LOCATION
(2.3 - 9.7)	RANGE OF RADIUM 226 & 228 VALUES (pCi/L) FOR CCR-1 THROUGH CCR-14 (AUGUST 2016 THROUGH JANUARY 2019)
◆	NATURE AND EXTENT MONITORING WELL LOCATION
(42)	RADIUM 226 & 228 VALUES (pCi/L) FOR GROUNDWATER AND SURFACE WATER SAMPLES (MARCH 2019)

NOTE(S)

1. NA - NOT ANALYZED
2. RADIUM VALUES REPRESENT THE SUM OF RADIUM 226 & 228
3. pCi/L - PICOCURIES PER LITER
4. SURFACE WATER SAMPLES COLLECTED NEAR ASSOCIATED STAFF GAUGE (SEE FIGURE 3)

CLIENT
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REVIEWED	ALG
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PROJECT
BSA CCR GROUNDWATER
C.D. McINTOSH POWER PLANT
LAKELAND, POLK COUNTY, FLORIDA

TITLE
RADIUM-226 & 228 IN THE SURFICIAL AQUIFER AND SURFACE WATER (AUGUST 2016 THROUGH MARCH 2019)

PROJECT NO.	Control No.	REV.	FIGURE
19-117001	19117001-B008		9

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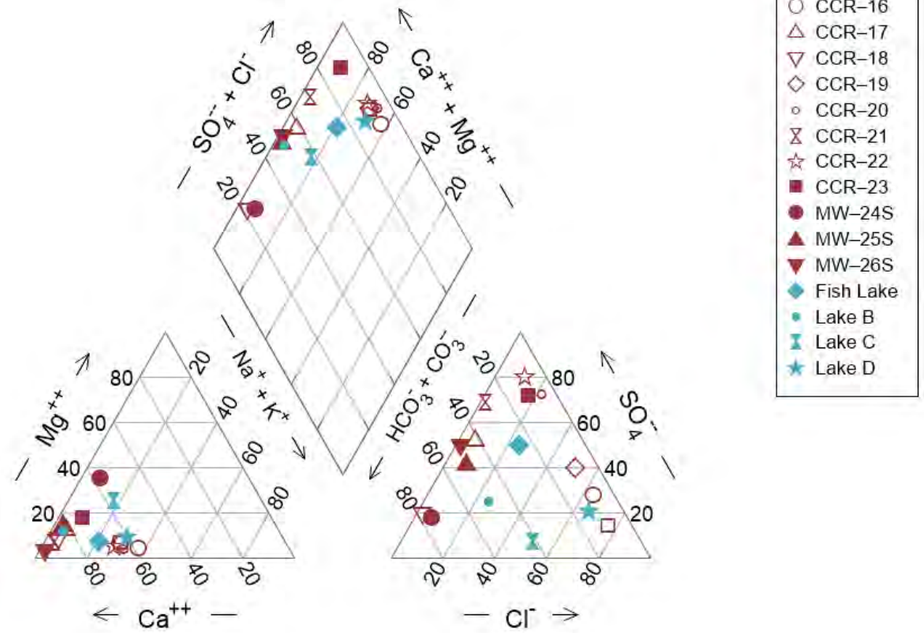
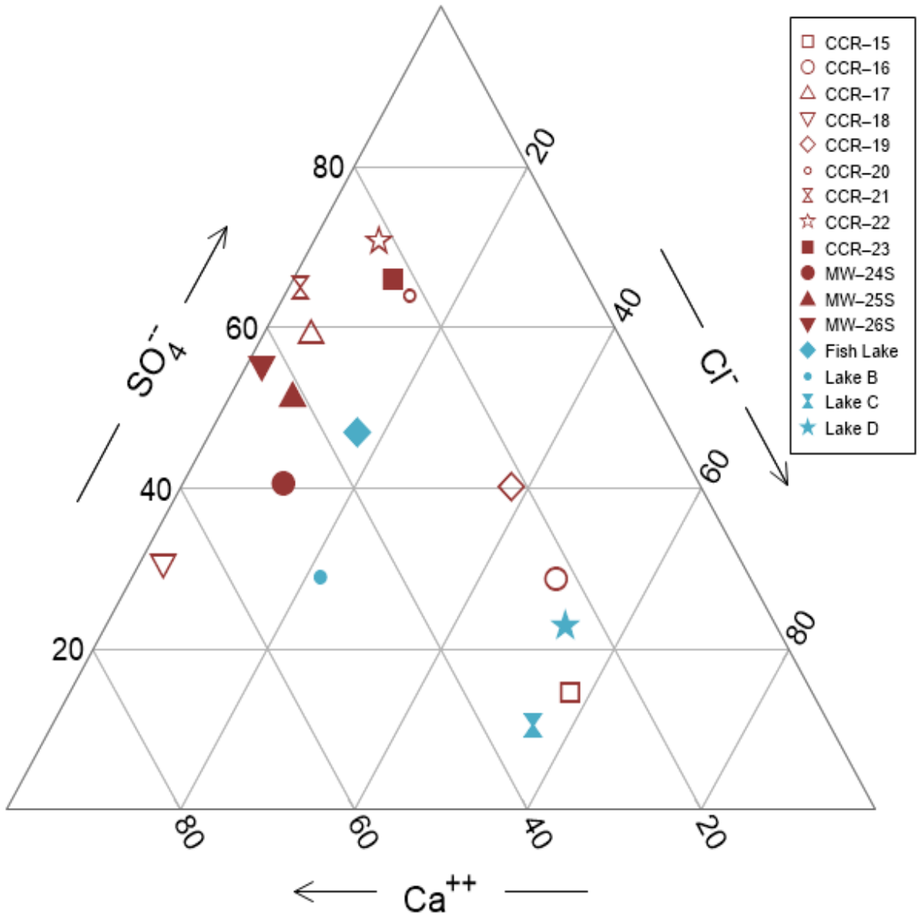


% meq/kg



% wt%

CLIENT
LAKELAND ELECTRIC

CONSULTANT
GOLDER

PROJECT
BSA CCR GROUNDWATER
C.D. McINTOSH POWER PLANT
LAKELAND, POLK COUNTY, FLORIDA

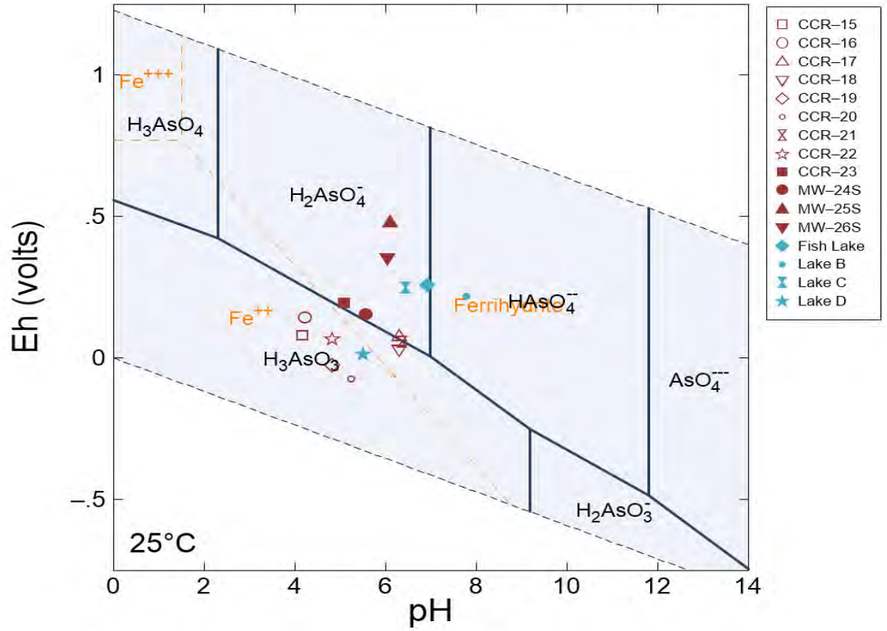
TITLE
GEOCHEMICAL CHARACTERIZATION OF GROUNDWATER AND SURFACE WATER (MARCH 2019)

PROJECT NO.	PHASE	REV.	FIGURE
19117001	01	A	10

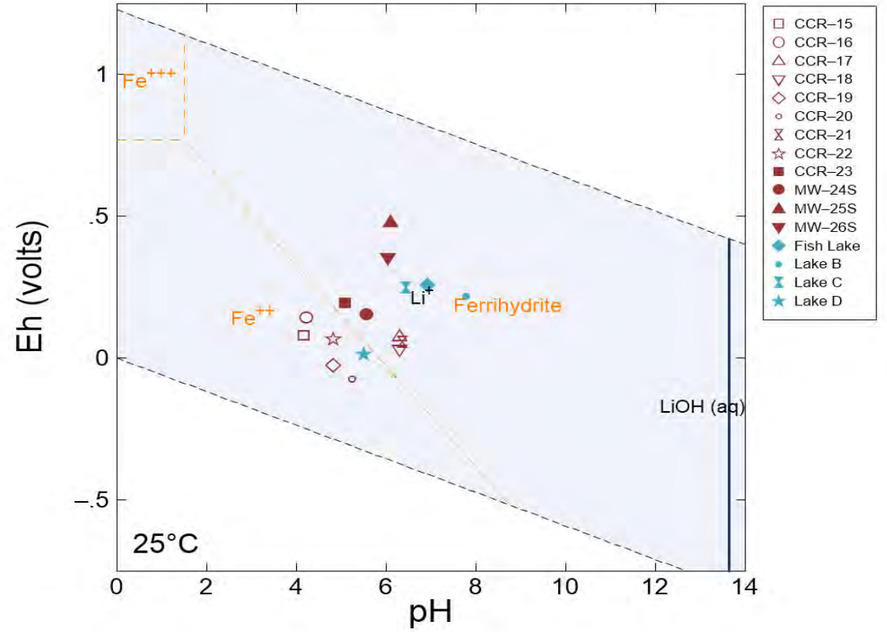
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

1 in
0

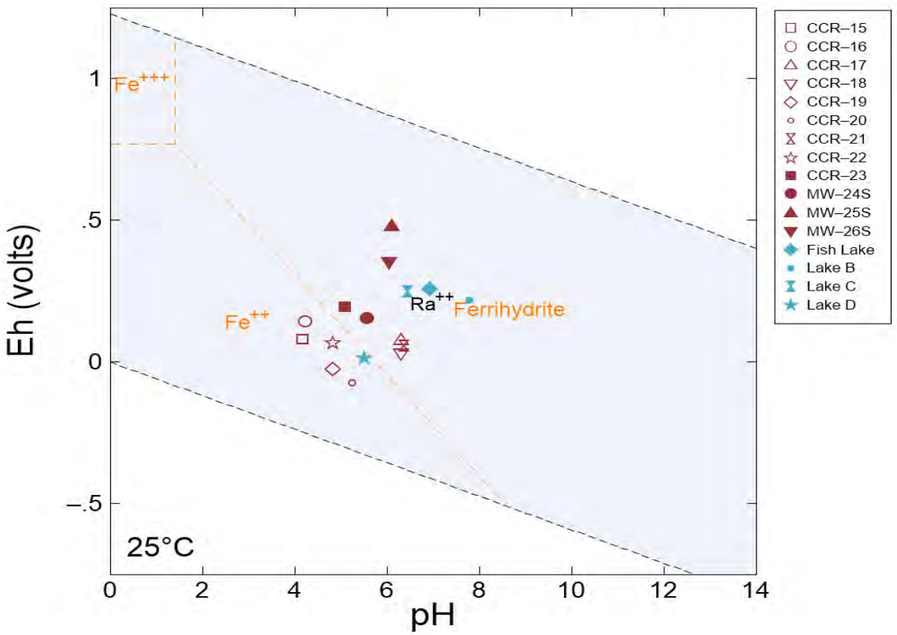
(a)



(b)



(c)



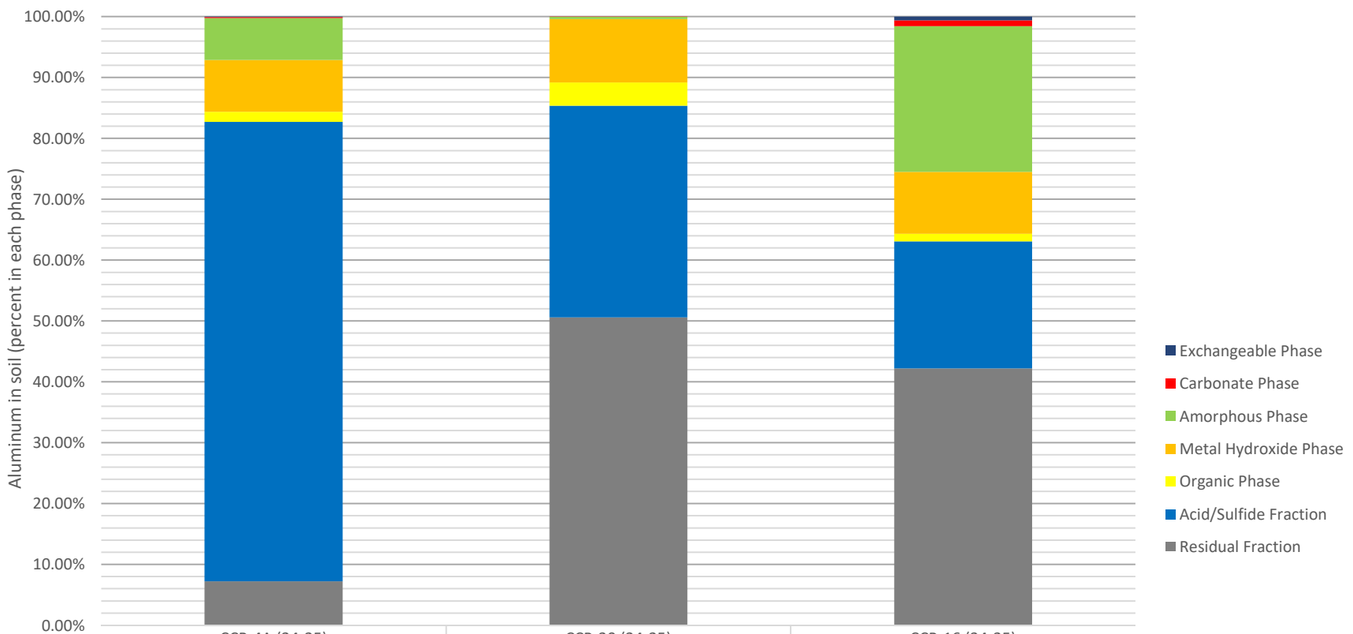
CLIENT
LAKELAND ELECTRIC

CONSULTANT
GOLDER

PROJECT
BSA CCR GROUNDWATER
C.D. McINTOSH POWER PLANT
LAKELAND, POLK COUNTY, FLORIDA

TITLE
SPECIATION OF ARSENIC (a), LITHIUM (b), AND RADIUM (c) IN GROUNDWATER AND SURFACE WATER (MARCH 2019)

PROJECT NO.	PHASE	REV.	FIGURE
19117001	01	A	11 a-c



	CCR-4A (24-25)	CCR-20 (24-25)	CCR-16 (24-25)
Exchangeable Phase	0.08%	0.00%	0.61%
Carbonate Phase	0.13%	0.03%	0.97%
Amorphous Phase	6.89%	0.35%	23.91%
Metal Hydroxide Phase	8.53%	10.44%	10.17%
Organic Phase	1.64%	3.80%	1.27%
Acid/Sulfide Fraction	75.49%	34.79%	20.85%
Residual Fraction	7.22%	50.60%	42.22%

Borehole and depth below ground surface (Aluminum in perecent of total)

CLIENT
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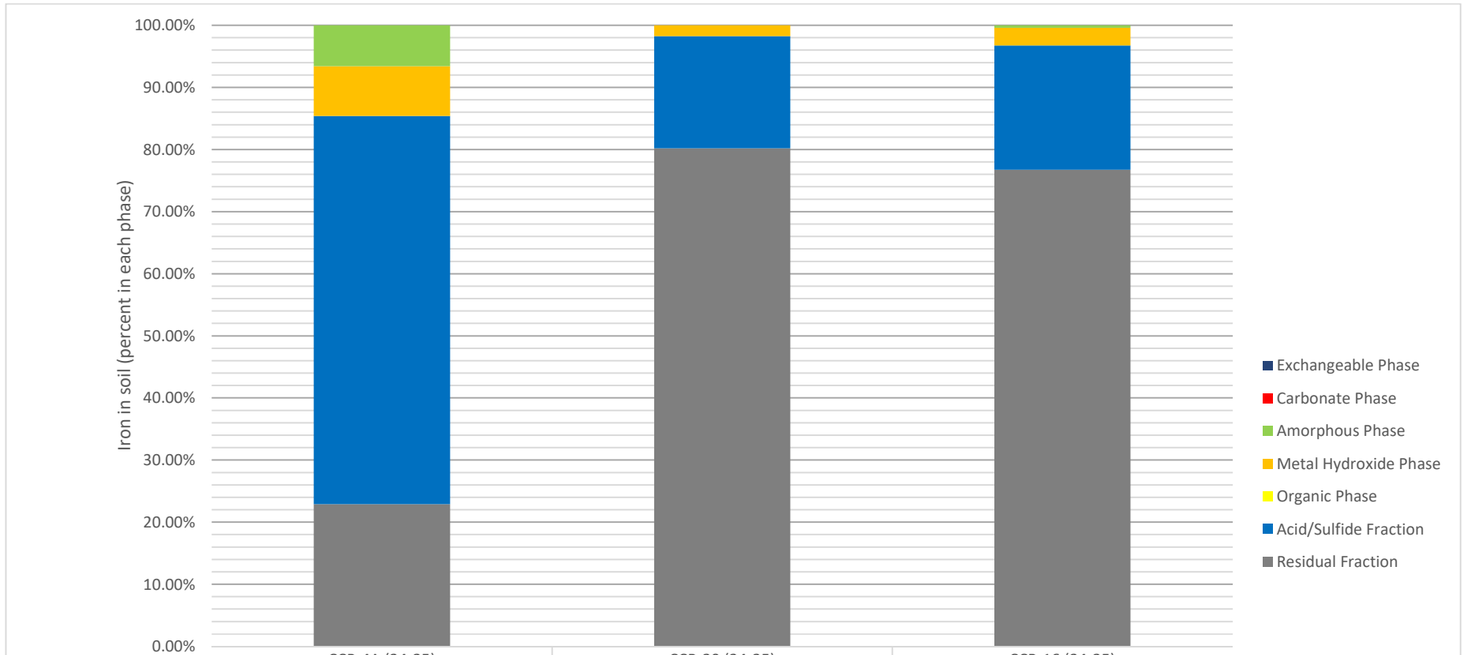
GOLDER

PROJECT
BSA CCR GROUNDWATER
C.D. McINTOSH POWER PLANT
LAKELAND, POLK COUNTY, FLORIDA

TITLE
SEQUENTIAL EXTRACTION RESULTS OF ALUMINUM IN SOILS

PROJECT NO.	PHASE	REV.	FIGURE
19117001	01	A	12



	CCR-4A (24-25)	CCR-20 (24-25)	CCR-16 (24-25)
Exchangeable Phase	0.00%	0.00%	0.00%
Carbonate Phase	0.00%	0.00%	0.00%
Amorphous Phase	6.60%	0.00%	0.39%
Metal Hydroxide Phase	7.99%	1.74%	2.84%
Organic Phase	0.00%	0.00%	0.00%
Acid/Sulfide Fraction	62.50%	18.05%	20.02%
Residual Fraction	22.92%	80.21%	76.75%

Borehole and depth below ground surface (Iron in perecent of total)

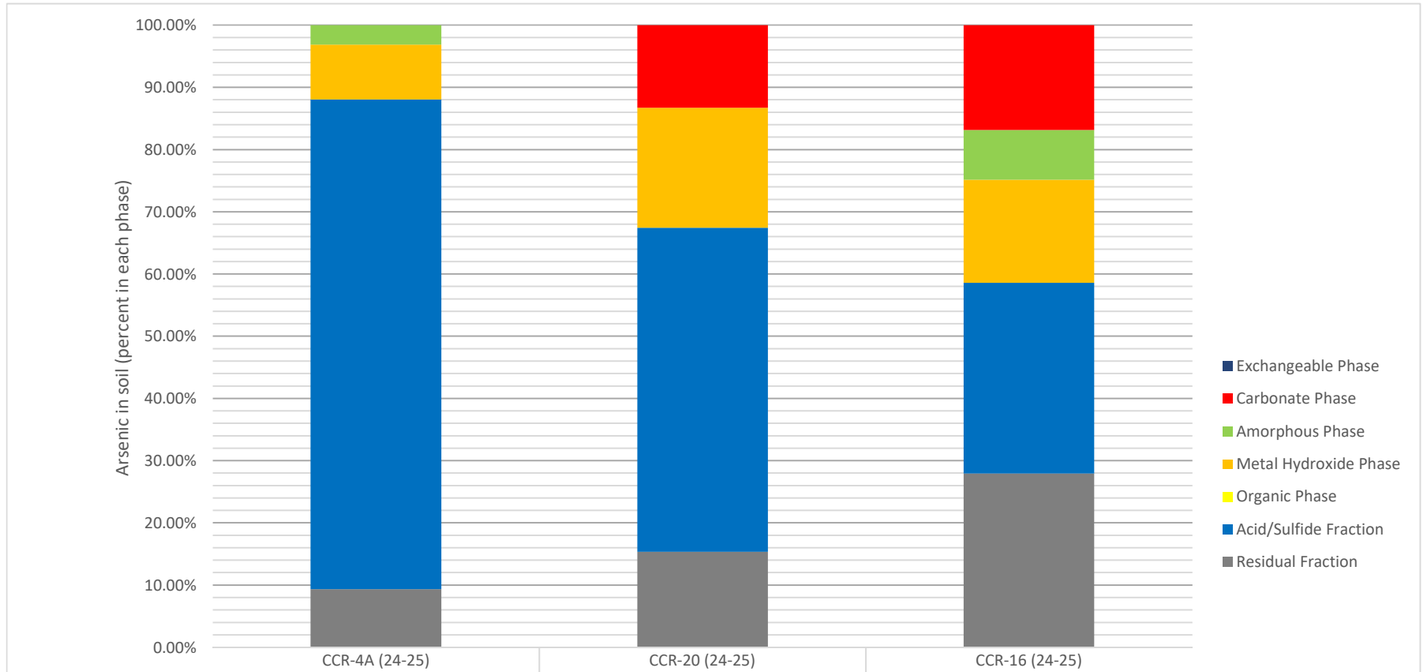
CLIENT
LAKELAND ELECTRIC

CONSULTANT
GOLDER

PROJECT
BSA CCR GROUNDWATER
C.D. McINTOSH POWER PLANT
LAKELAND, POLK COUNTY, FLORIDA

TITLE
SEQUENTIAL EXTRACTION RESULTS OF IRON IN SOILS

PROJECT NO.	PHASE	REV.	FIGURE
19117001	01	A	13



	CCR-4A (24-25)	CCR-20 (24-25)	CCR-16 (24-25)
Exchangeable Phase	0.00%	0.00%	0.00%
Carbonate Phase	0.00%	13.28%	16.87%
Amorphous Phase	3.15%	0.00%	7.98%
Metal Hydroxide Phase	8.77%	19.27%	16.56%
Organic Phase	0.00%	0.00%	0.00%
Acid/Sulfide Fraction	78.74%	52.08%	30.67%
Residual Fraction	9.34%	15.36%	27.91%

Borehole and depth below ground surface (Arsenic in perecent of total)

CLIENT
LAKELAND ELECTRIC

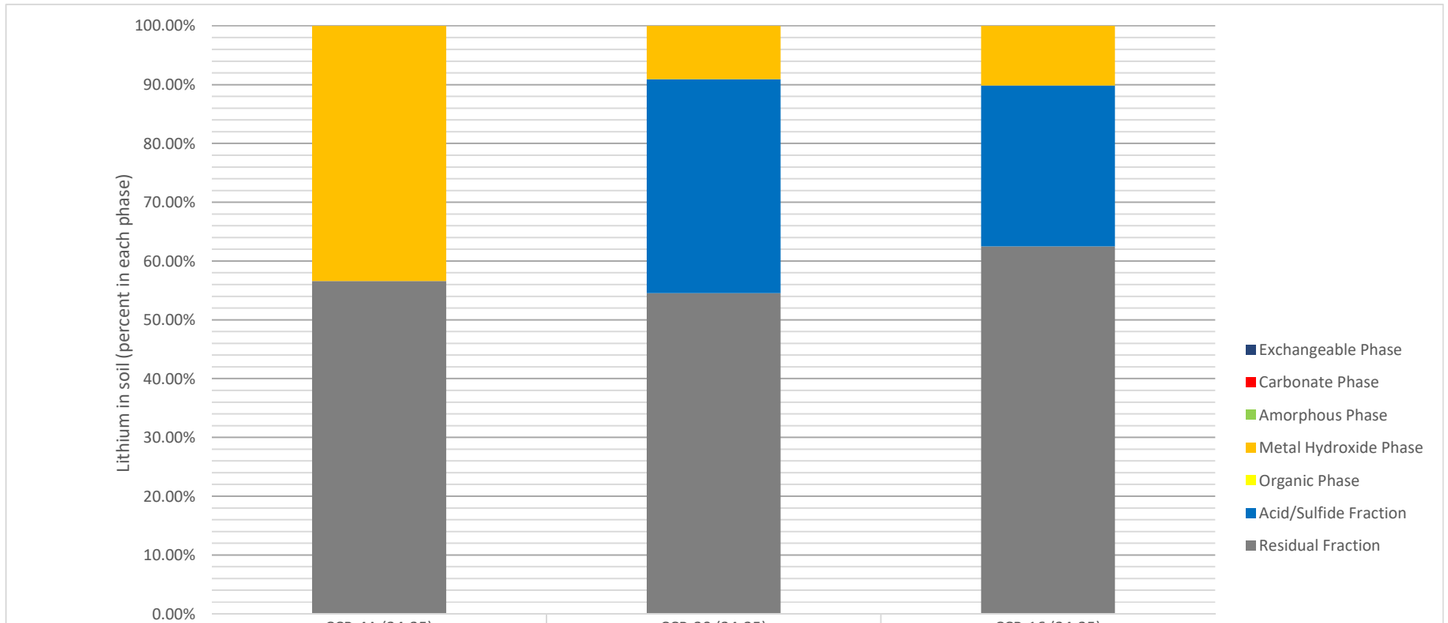
CONSULTANT
GOLDER

PROJECT
BSA CCR GROUNDWATER
C.D. McINTOSH POWER PLANT
LAKELAND, POLK COUNTY, FLORIDA

TITLE
SEQUENTIAL EXTRACTION RESULTS OF ARSENIC IN SOILS

PROJECT NO.	PHASE	REV.	FIGURE
19117001	01	A	14

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A



	CCR-4A (24-25)	CCR-20 (24-25)	CCR-16 (24-25)
Exchangeable Phase	0.00%	0.00%	0.00%
Carbonate Phase	0.00%	0.00%	0.00%
Amorphous Phase	0.00%	0.00%	0.00%
Metal Hydroxide Phase	43.40%	9.09%	10.16%
Organic Phase	0.00%	0.00%	0.00%
Acid/Sulfide Fraction	0.00%	36.36%	27.34%
Residual Fraction	56.60%	54.55%	62.50%

Borehole and depth below ground surface (Lithium in perecent of total)

CLIENT
LAKELAND ELECTRIC

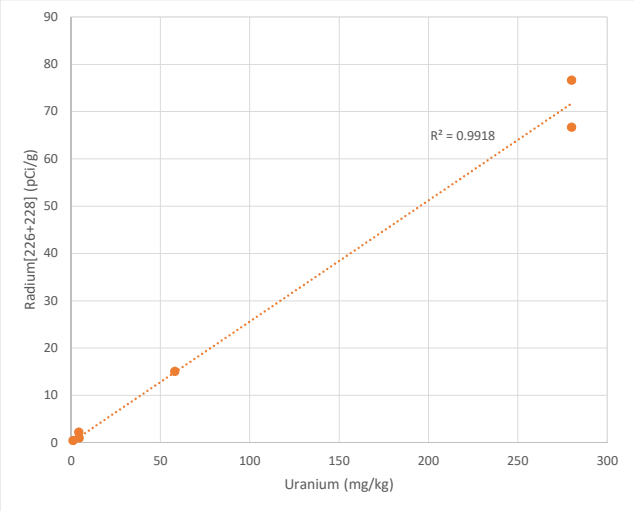
CONSULTANT
GOLDER

PROJECT
BSA CCR GROUNDWATER
C.D. McINTOSH POWER PLANT
LAKELAND, POLK COUNTY, FLORIDA

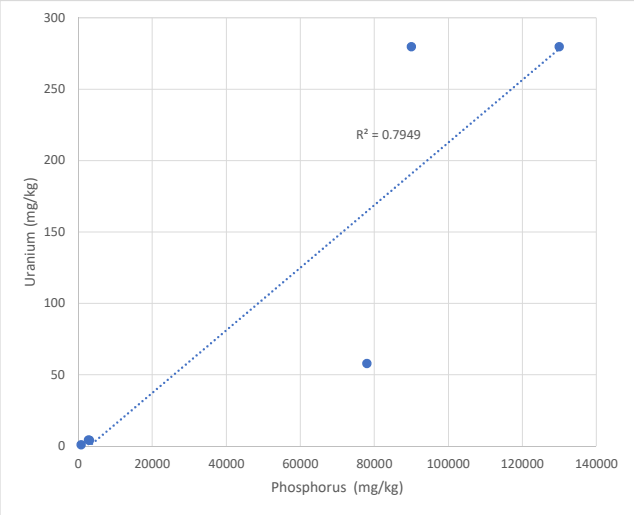
TITLE
SEQUENTIAL EXTRACTION RESULTS OF LITHIUM IN SOILS

PROJECT NO.	PHASE	REV.	FIGURE
19117001	01	A	15

(a)



(b)



Results of chemical analysis of soils from boreholes for radionuclides and phosphorus

Soil Boring ID	Depth of samples (ft. bgs.)	Total Uranium (mg/kg)	Phosphorus (mg/kg)	Radium 226 (pCi/g)	Radium 228 (pCi/g)	Total Radium (pCi/g)
CCR-4A	24 - 25	280	130,000	75.9	0.726	76.6
CCR-15	24 - 25	4.5	2,800	0.702	0.328	1.03
CCR-16	24 - 25	4.3	3,000	1.14	1.07	2.21
CCR-18	24 - 25	1.2	800	0.443	ND	0.443
CCR-22	24 - 25	280	90,000	65.2	1.49	66.7
CCR-23	24 - 25	58	78,000	14.7	0.359	15.1

Notes:
mg/kg- milligrams per kilogram
pCi/g- picocuries per gram
ft. bgs.- feet below ground surface

CLIENT
LAKELAND ELECTRIC

CONSULTANT
GOLDER

PROJECT
BSA CCR GROUNDWATER
C.D. McINTOSH POWER PLANT
LAKELAND, POLK COUNTY, FLORIDA

TITLE
GEOCHEMICAL EVALUATION OF RADIUM IN SOILS

PROJECT NO.	PHASE	REV.	FIGURE
19117001	01	A	16 a & b

APPENDIX A

Record of Borehole Logs and Monitoring Well Installation Logs

RECORD OF BOREHOLE CCR-2A

SHEET 1 of 1

PROJECT: Lakeland Electric CCR
PROJECT NUMBER: 19117001
DRILLED DEPTH: 30.0 ft
AZIMUTH: N/A
LOCATION: Lakeland, FL

DRILL METHOD: Direct Push
DRILL RIG: Geoprobe 3230 DT
DATE STARTED: 2/11/2019
DATE COMPLETED: 2/11/2019
WEATHER: Partly cloudy

DATUM: NAD83 / NAVD88
COORDS: N: 1,362,203.9 E: 681,787.6
GS ELEVATION: 137.6 ft
TRC ELEVATION: N/A ft
TEMPERATURE: 74° F

INCLINATION: -90
DEPTH W.L.: 5.9 ft
ELEVATION W.L.: 131.70 ft
DATE W.L.: 3/12/2019
TIME W.L.: 10:45

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)
0		0.0 - 1.0 SAND, fine; brown, dry	SP		136.6
		1.0 - 2.0 SAND, fine; grayish brown, dry	SP		1.0 135.6
	135	2.0 - 4.0 SAND, fine; light gray, dry	SP		2.0 133.6
5		4.0 - 7.5 SAND, trace organics, fine to medium, subrounded to subangular, poorly graded; dark brown to black	SP		4.0 130.1
	130	7.5 - 10.8 SAND, fine to medium, subround to subangular, uniform grading; light tan to white, moist	SP		7.5 126.9
10		10.8 - 13.5 SAND, fine, subrounded, uniform; dark brown to black, compact, wet	SP		10.8 124.1
	125	13.5 - 15.8 No Recovery			13.5 121.9
15		15.8 - 18.4 SAND, fine, subrounded; light brown to light grey (white with small round black heavy mineral), wet	SP		15.8 119.2
	120	18.4 - 19.5 SAND, fine; dark brown to black (grains are brown), compact to dense, wet	SP		18.4 118.1
		19.5 - 20.0 No Recovery			117.6
20		20.0 - 23.0 SAND, very fine, subrounded; light brown to tan with a dark brown to black coating with small black opaque grains, compact to very dense, wet	SP		20.0 114.6
	115	23.0 - 23.5 CLAYEY SAND; tan to light brown, wet	SC		114.1
		23.5 - 25.0 SAND, very fine, subrounded; light brown to tan with a dark brown to black coating with small black heavy mineral, compact to very dense, wet	SP		23.5 112.6
25		25.0 - 27.5 SAND, fine subrounded, uniform grading; brown, loose to compact, wet	SP		25.0 110.1
	110	27.5 - 30.0 SAND, fine, subrounded; tan to white with small black heavy minerals, compact to dense, wet	SP		27.5 107.6
30		Boring completed at 30.0 ft			

COMMENTS

1.) Borehole location is adjacent to monitoring well CCR-2; survey coordinates shown are from CCR-2.

2.) Ground surface elevation is estimated based on ground surface elevation of monitoring well CCR-2.

3.) Boreholes were backfilled with 20/30 graded silica sand to 5 ft bgs and the remaining borehole was filled with bentonite chips to land surface.

4.) Water-level elevations are estimated based on depth-to-water measurements from adjacent monitoring well CCR-2.

5.) Density descriptions are based on field observations and not form SPT blow counts.

6.) Soil cores were collected and transported to Golder's Tampa office. The soil cores were later logged by M. Boatman for mineralogic description of lithology.

7.) Based on lithologic descriptions, mine tailings and/or fill was encountered from approximately ground surface to 20 ft bgs and in-situ residual soil and/or weathered rock from 20 ft bgs to terminal depth.

LOG SCALE: 1 in = 4 ft
DRILLING COMPANY: Action Environmental
DRILLER: Omar Velazquez

INSPECTOR: M. Boatman
CHECKED BY: G. Morelli
DATE: 5/30/19

GOLDER

GLDR_GEOTECH NO SPT 1545454.2_REV1 (1).GPJ 5/30/19

RECORD OF BOREHOLE CCR-4A

SHEET 1 of 1

PROJECT: Lakeland Electric CCR
PROJECT NUMBER: 19117001
DRILLED DEPTH: 30.0 ft
AZIMUTH: N/A
LOCATION: Lakeland, FL

DRILL METHOD: Direct Push
DRILL RIG: Geoprobe 3230 DT
DATE STARTED: 2/11/2019
DATE COMPLETED: 2/11/2019
WEATHER: Partly cloudy

DATUM: NAD83 / NAVD88
COORDS: N: 1,362,450.0 E: 683,042.7
GS ELEVATION: 140.3 ft
TRC ELEVATION: N/A ft
TEMPERATURE: 86° F

INCLINATION: -90
DEPTH W.L.: 11.05 ft
ELEVATION W.L.: 129.25 ft
DATE W.L.: 3/12/2019
TIME W.L.: 10:57

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)
0	140	0.0 - 1.0 SAND, fine; brown, dry	SP		139.3
		1.0 - 2.0 SAND, fine, some gravel and silt; brown, dry	SP		1.0 138.3
		2.0 - 5.0 SAND, fine, some silt; brown, dry	SP-SM		2.0 135.3
5	135	5.0 - 10.4 SILTY SAND, fine, subrounded to subangular, uniform grading; dark brown to black, dry to moist	SM		5.0 129.9
10	130	10.4 - 13.6 SAND, fine to medium, subrounded, uniform grading; dark brown with small black heavy minerals, loose to very loose, wet 12.0 - 13.6 contact water is black	SP		10.4 126.7
		13.6 - 15.0 SAND, very fine, subrounded, uniform grading; dark brown with small black heavy minerals, compact, wet	SP		13.6 125.3
15	125	15.0 - 15.8 SAND, fine to medium, subrounded, uniform grading; dark brown with small black heavy minerals, loose to very loose, wet, water is black	SP		15.0 124.5
		15.8 - 19.5 SAND, fine, subrounded, uniform grading; light to dark brown, compact to dense, wet	SP		15.8 120.8
20	120	19.5 - 21.1 SAND little to some clay; fine, angular to subrounded, uniform grading; white to tan with small black heavy minerals, wet	SP-SC		19.5 119.2
		21.1 - 22.8 SAND some clay, fine, subrounded; white to pale green, moist	SP-SC		21.1 117.5
		22.8 - 23.4 CLAY some sand and trace gravel; soft; fine, limestone gravel, brownish gray; pale green to greenish gray, moist	CL		116.9
25	115	23.4 - 28.2 Sandy CLAY, trace to some silt; pale green to white, loose to compact, wet, fossiliferous (weathered limestone)	CL		23.4 112.1
		28.2 - 30.0 CLAY trace sand and gravel; soft; fine angular sand, fine rounded gravel; green, moist (weathered limestone)	CL		28.2 110.3
30	110	Boring completed at 30.0 ft			

COMMENTS

1.) Borehole location is adjacent to monitoring well CCR-4; survey coordinates shown are from CCR-4.

2.) Ground surface elevation is estimated based on ground surface elevation of monitoring well CCR-4.

3.) Boreholes were backfilled with 20/30 graded silica sand to 5 ft bgs and the remaining borehole was filled with bentonite chips to land surface.

4.) Water-level elevations are estimated based on depth-to-water measurements from adjacent monitoring well CCR-4.

5.) Density descriptions are based on field observations and not form SPT blow counts.

6.) Soil cores were collected and transported to Golder's Tampa office. The soil cores were later logged by M. Boatman for mineralogic description of lithology.

7.) Based on lithologic descriptions, mine tailings and/or fill was encountered from approximately ground surface to 19.5 ft bgs and in-situ residual soil and/or weathered rock from 19.5 ft bgs to terminal depth.

LOG SCALE: 1 in = 4 ft
DRILLING COMPANY: Action Environmental
DRILLER: Omar Velazquez

INSPECTOR: M. Boatman
CHECKED BY: G. Morelli
DATE: 5/30/19

GOLDER

RECORD OF BOREHOLE CCR-5A

SHEET 1 of 1

PROJECT: Lakeland Electric CCR
PROJECT NUMBER: 19117001
DRILLED DEPTH: 30.0 ft
AZIMUTH: N/A
LOCATION: Lakeland, FL

DRILL METHOD: Direct Push
DRILL RIG: Geoprobe 3230 DT
DATE STARTED: 2/11/2019
DATE COMPLETED: 2/11/2019
WEATHER: Partly cloudy

DATUM: NAD83 / NAVD88
COORDS: N: 1,362,716.0 E: 683,376.9
GS ELEVATION: 138.6 ft
TRC ELEVATION: N/A ft
TEMPERATURE: 88° F

INCLINATION: -90
DEPTH W.L.: 7.29 ft
ELEVATION W.L.: 131.31 ft
DATE W.L.: 3/12/2019
TIME W.L.: 11:00

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)
0		0.0 - 5.0 SAND, fine; brown, dry	SP		133.6
	135				
5		5.0 - 8.4 SAND, fine to medium, subrounded, uniform grading; white with small rounded black heavy minerals	SP		5.0 130.2
	130	8.4 - 8.9 CLAY some sand and gravel; fine white gravel and fine to medium sand; white, moist	CL		129.7
		8.9 - 10.0 SAND, fine to medium, subrounded; white with small black heavy minerals, moist	SP		8.9 128.6
10		10.0 - 12.3 No Recovery			10.0 126.3
		12.3 - 13.0 SAND, fine to medium, subrounded; dark brown, loose, moist	SP		12.3 125.6
	125	13.0 - 15.0 SAND and CLAY; fine, subrounded; soft to firm; white to pale green with orange spots	SC		13.0 123.6
15		15.0 - 16.9 No Recovery			15.0 121.7
		16.9 - 18.2 SAND trace to some silt; fine to medium, subrounded to subangular; dark brown to black, loose to compact, moist to wet	SP-SM		16.9 120.4
	120	18.2 - 19.3 SAND, fine; dark brown with small black heavy minerals, loose to compact, wet	SP		18.2 119.3
		19.3 - 20.0 SAND, very fine to fine; dark brown to black, loose to compact, wet, contact water separates to tan and black	SP		19.3 118.6
20		20.0 - 22.3 No Recovery			20.0 116.3
		22.3 - 23.1 SAND some clay; fine, subrounded; soft; dark brown, wet	SP-SC		22.3 115.5
	115	23.1 - 24.2 SAND, fine to medium, subrounded; dark brown with smal black heavy minerals, loose, wet	SP		23.1 114.4
		24.2 - 25.0 SAND trace gravel; fine, subrounded, sand; fine to coarse, rounded, gravel; tan to white, wet	SP		24.2 113.6
25		25.0 - 27.4 No Recovery			25.0 111.2
		27.4 - 28.5 SAND, fine, rounded, dark brown with black heavy minerals, loose, wet	SP		27.4 110.1
	110	28.5 - 30.0 SAND trace organics; fine to medium; twigs and roots; light brown to light gray with black heavy minerals, loose, wet	SP		28.5 108.6
30		Boring completed at 30.0 ft			

COMMENTS

1.) Borehole location is adjacent to monitoring well CCR-5; survey coordinates shown are from CCR-5.

2.) Ground surface elevation is estimated based on ground surface elevation of monitoring well CCR-5.

3.) Boreholes were backfilled with 20/30 graded silica sand to 5 ft bgs and the remaining borehole was filled with bentonite chips to land surface.

4.) Water-level elevations are estimated based on depth-to-water measurements from adjacent monitoring well CCR-5.

5.) Density descriptions are based on field observations and not form SPT blow counts.

6.) Soil cores were collected and transported to Golder's Tampa office. The soil cores were later logged by M. Boatman for mineralogic description of lithology.

7.) Based on lithologic descriptions, mine tailings and/or fill was encountered from approximately ground surface to terminal depth.

LOG SCALE: 1 in = 4 ft
DRILLING COMPANY: Action Environmental
DRILLER: Omar Velazquez

INSPECTOR: M. Boatman
CHECKED BY: G. Morelli
DATE: 5/30/19

GOLDER

GLDR_GEOTECH NO SPT 1545454.2_REV1 (1).GPJ 5/30/19

RECORD OF BOREHOLE CCR-7A

SHEET 1 of 1

PROJECT: Lakeland Electric CCR
PROJECT NUMBER: 19117001
DRILLED DEPTH: 30.0 ft
AZIMUTH: N/A
LOCATION: Lakeland, FL

DRILL METHOD: Direct Push
DRILL RIG: Geoprobe 3230 DT
DATE STARTED: 2/11/2019
DATE COMPLETED: 2/11/2019
WEATHER: Partly cloudy

DATUM: NAD83 / NAVD88
COORDS: N: 1,363,631.9 E: 683,772.2
GS ELEVATION: 139.1 ft
TRC ELEVATION: N/A ft
TEMPERATURE: 86° F

INCLINATION: -90
DEPTH W.L.: 5.43 ft
ELEVATION W.L.: 133.67 ft
DATE W.L.: 3/12/2019
TIME W.L.: 11:05

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)
0		0.0 - 5.0 SAND, fine; light brownish gray, dry to wet	SP		
	135	4.0: ~ moist at 4 ft bgs			134.1
5		5.0 - 6.0 No Recovery			5.0 133.1
		6.0 - 7.0 SAND with pockets of sand/clay; fine, subrounded, uniform grading; fine sand/clay matrix, firm; tan to dark brown, loose to compact, wet	SP		6.0 132.1
		7.0 - 7.4 SAND, fine, subrounded, uniform grading; black, loose to compact, wet	SP		131.7 7.4
	130	7.4 - 10.0 SAND with pockets of sand/clay; fine, subrounded, uniform grading; fine sand/clay matrix, firm; tan to dark brown, loose to compact, wet	SP		129.1
10		10.0 - 11.0 No Recovery			10.0 128.1
		11.0 - 15.0 SILTY SAND, fine, subrounded, uniform grading, dark brown with black heavy minerals, loose, wet	SM		11.0
	125	13.4: 13.4-13.8 pockets of white sand/clay matrix			124.1
15		15.0 - 17.0 No Recovery			15.0 122.1
		17.0 - 17.8 SAND trace to some silt; fine, uniform grading; dark brown to black, wet	SP-SM		17.0 121.3
		17.8 - 18.5 CLAY; white, soft to firm, moist	CL		17.8 120.6
	120	18.5 - 20.0 SAND trace to some silt and sady clay; fine, uniform grading; dark brown, wet	SP-SM		18.5 119.1
20		20.0 - 25.0 SAND with pockets of sandy clay; fine, uniform grading; white clay; brown with black heavy minerals, wet	SP/CL		20.0
	115				114.1
25		25.0 - 26.1 No Recovery			25.0 113.0
		26.1 - 26.6 SAND, fine, subrounded, uniform grading; dark brown, loose, wet	SP		112.5
		26.6 - 27.2 SAND and CLAY; fine to coarse; soft; white to pale green, wet	SC/CL		111.9
		27.2 - 28.6 SAND, fine, subrounded, uniform grading; light brown, loose, wet	SP		27.2 110.5
	110	28.6 - 29.3 Sandy CLAY; fine to coarse, subrounded; compact, pale green, moist	CL		28.6 109.8
		29.3 - 30.0 Sandy CLAY, fine, subrounded, uniform grading; light to dark brown, loose, wet	CL		29.3 109.1
30		Boring completed at 30.0 ft			

COMMENTS

1.) Borehole location is adjacent to monitoring well CCR-7; survey coordinates shown are from CCR-7.

2.) Ground surface elevation is estimated based on ground surface elevation of monitoring well CCR-7.

3.) Boreholes were backfilled with 20/30 graded silica sand to 5 ft bgs and the remaining borehole was filled with bentonite chips to land surface.

4.) Water-level elevations are estimated based on depth-to-water measurements from adjacent monitoring well CCR-7.

5.) Density descriptions are based on field observations and not form SPT blow counts.

6.) Soil cores were collected and transported to Golder's Tampa office. The soil cores were later logged by M. Boatman for mineralogic description of lithology.

7.) Based on lithologic descriptions, mine tailings and/or fill was encountered from approximately ground surface to 17 ft bgs and in-situ residual soil and/or weathered rock from 17 ft bgs to terminal depth.

LOG SCALE: 1 in = 4 ft
DRILLING COMPANY: Action Environmental
DRILLER: Omar Velazquez

INSPECTOR: M. Boatman
CHECKED BY: G. Morelli
DATE: 5/30/19

GOLDER

GLDR_GEOTECH NO SPT 1545454.2_REV1 (1).GPJ 5/30/19

RECORD OF BOREHOLE CCR-13A

SHEET 1 of 1

PROJECT: Lakeland Electric CCR
PROJECT NUMBER: 19117001
DRILLED DEPTH: 30.0 ft
AZIMUTH: N/A
LOCATION: Lakeland, FL

DRILL METHOD: Direct Push
DRILL RIG: Geoprobe 3230 DT
DATE STARTED: 2/12/2019
DATE COMPLETED: 2/12/2019
WEATHER: Partly cloudy

DATUM: NAD83 / NAVD88
COORDS: N: 1,362,936.6 E: 682,164.1
GS ELEVATION: 135.0 ft
TRC ELEVATION: N/A ft
TEMPERATURE: 72° F

INCLINATION: -90
DEPTH W.L.: 2.39 ft
ELEVATION W.L.: 132.61 ft
DATE W.L.: 3/12/2019
TIME W.L.: 11.58

SOIL PROFILE

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)
0	135	0.0 - 2.0 SAND, fine; light brown, dry	SP		133.0
		2.0 - 4.0 SAND, fine; dark grayish brown, dry	SP		2.0 131.0
		4.0 - 5.0 SAND, fine; brown, dry	SP		4.0 130.0
5	130	5.0 - 7.1 SAND, fine, subrounded, uniform grading; black to dark gray, loose, moist to wet	SP		5.0 127.9
		7.1 - 9.4 SILTY SAND, fine, uniform grading; tan to white, compact to dense, wet	SM		7.1 125.6
10	125	9.4 - 10.0 SAND, fine, uniform grading; black with heavy minerals, loose, wet	SP		125.0
		10.0 - 12.0 No Recovery			10.0 123.0
		12.0 - 15.0 SAND, fine to medium, subrounded; dark brown, loose to compact, wet 14.2: root encountered	SP		12.0 120.0
15	120	15.0 - 17.0 No Recovery			15.0 118.0
		17.0 - 19.0 SAND trace to some clay, fine, uniform grading; grayish brown/tan with black heavy minerals, loose, wet. - two black bands at 17.3 and 17.6 ft bgs	SP-SC		17.0 116.0
		19.0 - 20.0 SAND, fine, uniform grading; grayish brown with black heavy minerals, compact, moist	SP		19.0 115.0
20	115	20.0 - 25.0 SAND, fine to medium, uniform grading; tan to white wih heavy minerals grains, wet	SP		20.0 110.0
25	110	25.0 - 30.0 CLAY trace sand; fine, sand; white to pale green, firm to stiff, slight mottling, moist	CL		25.0 105.0
30	105	Boring completed at 30.0 ft			

COMMENTS

1.) Borehole location is adjacent to monitoring well CCR-13; survey coordinates shown are from CCR-13.

2.) Ground surface elevation is estimated based on ground surface elevation of monitoring well CCR-13.

3.) Boreholes were backfilled with 20/30 graded silica sand to 5 ft bgs and the remaining borehole was filled with bentonite chips to land surface.

4.) Water-level elevations are estimated based on depth-to-water measurements from adjacent monitoring well CCR-13.

5.) Density descriptions are based on field observations and not form SPT blow counts.

6.) Soil cores were collected and transported to Golder's Tampa office. The soil cores were later logged by M. Boatman for mineralogic description of lithology.

7.) Based on lithologic descriptions, mine tailings and/or fill was encountered from approximately ground surface to 25 ft bgs and in-situ residual soil and/or weathered rock from 25 ft bgs to terminal depth.

LOG SCALE: 1 in = 4 ft
DRILLING COMPANY: Action Environmental
DRILLER: Omar Velazquez

INSPECTOR: M. Boatman
CHECKED BY: G. Morelli
DATE: 5/30/19

GOLDER

GLDR_GEOTECH NO SPT 1545454.2_REV1 (1).GPJ 5/30/19

RECORD OF BOREHOLE CCR-14A

SHEET 1 of 1

PROJECT: Lakeland Electric CCR
PROJECT NUMBER: 19117001
DRILLED DEPTH: 30.0 ft
AZIMUTH: N/A
LOCATION: Lakeland, FL

DRILL METHOD: Direct Push
DRILL RIG: Geoprobe 3230 DT
DATE STARTED: 2/12/2019
DATE COMPLETED: 2/12/2019
WEATHER: Partly cloudy

DATUM: NAD83 / NAVD88
COORDS: N: 1,362,771.1 E: 681,761.2
GS ELEVATION: 135.8 ft
TRC ELEVATION: N/A ft
TEMPERATURE: 75° F

INCLINATION: -90
DEPTH W.L.: 3.76 ft
ELEVATION W.L.: 132.04 ft
DATE W.L.: 3/12/2019
TIME W.L.: 12:06

DEPTH (ft)	ELEVATION (ft)	SOIL PROFILE DESCRIPTION	USCS	GRAPHIC LOG	ELEV. / DEPTH (ft)
0	135	0.0 - 5.0 SAND, fine; brown, dry to moist	SP		130.8
5	130	5.0 - 7.4 SAND some silt; fine, subrounded, uniform grading; grayish brown, wet, loose 6.3: 6.3-6.7 ft bgs, CLAY pocket; soft; white, moist	SP-SM		5.0 128.4
		7.4 - 10.0 SAND, fine, subrounded, uniform grading; light to medium grayish brown, moist 8.6: 8.6-8.8 ft bgs, (CL) CLAY; soft; white, moist	SP		7.4 125.8
10	125	10.0 - 11.2 No Recovery			10.0 124.6
		11.2 - 12.3 SILTY SAND, fine, subrounded, uniform graded; white to light gray, wet, loose	SM		11.2 123.5
		12.3 - 15.0 CLAYEY SAND to Sandy CLAY, fine, subrounded; white to tan, moist, compact	SC/CL		12.3 120.8
15	120	15.0 - 16.4 No Recovery			15.0 119.4
		16.4 - 18.3 CLAYEY SAND to Sandy CLAY, fine to coarse, subangular, fossil fragments; white to pale green, wet, loose to compact	SC/CL		16.4 117.5
		18.3 - 20.0 SAND, fine to medium, subrounded to subangular, uniform grading; moist, compact to dense	SP		18.3 115.8
20	115	20.0 - 22.8 Sandy CLAY; fine to coarse, subangular coarse (fossil fragments); pale green to green, compact to dense (weathered limestone)	CL		20.0 113.0
		22.8 - 25.0 Sandy CLAY, fine to medium; white to pale green, moist, loose to compact	CL		22.8 110.8
25	110	25.0 - 27.0 Sandy CLAY; fine to coarse, subangular coarse (fossil fragments); pale green to green, compact to dense (weathered limestone)	CL		25.0 108.8
		27.0 - 30.0 CLAY trace sand; coarse sand; green and olive brown mottled, phosphatic grains, moist, stiff to hard (weathered limestone)	CL		27.0 105.8
30	105	Boring completed at 30.0 ft			

COMMENTS

1.) Borehole location is adjacent to monitoring well CCR-14; survey coordinates shown are from CCR-14.

2.) Ground surface elevation is estimated based on ground surface elevation of monitoring well CCR-14.

3.) Boreholes were backfilled with 20/30 graded silica sand to 5 ft bgs and the remaining borehole was filled with bentonite chips to land surface.

4.) Water-level elevations are estimated based on depth-to-water measurements from adjacent monitoring well CCR-14.

5.) Density descriptions are based on field observations and not form SPT blow counts.

6.) Soil cores were collected and transported to Golder's Tampa office. The soil cores were later logged by M. Boatman for mineralogic description of lithology.

7.) Based on lithologic descriptions, in-situ residual soil and/or weathered rock was encountered from approximately ground surface to terminal depth.

LOG SCALE: 1 in = 4 ft
DRILLING COMPANY: Action Environmental
DRILLER: Omar Velazquez

INSPECTOR: M. Boatman
CHECKED BY: G. Morelli
DATE: 5/30/19

GOLDER

MONITORING WELL CCR-15 INSTALLATION LOG

PROJECT: Lakeland Electric CCR
PROJECT NUMBER: 19117001
DRILLED DEPTH: 25.7 ft
AZIMUTH: N/A
LOCATION: Lakeland, FL

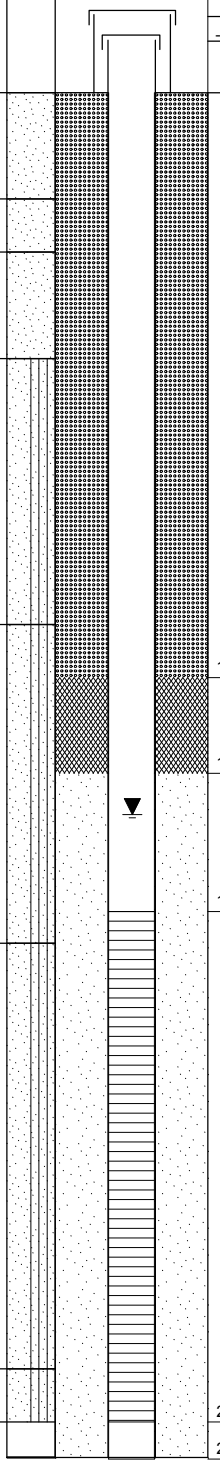
DRILL METHOD: Hollow-stem Auger
DRILL RIG: Geoprobe 3230 DT
DATE STARTED: 2/18/2019
DATE COMPLETED: 2/18/2019
WEATHER: Partly cloudy

DATUM: NAD83 / NGVD88
COORDS: N: 1,362,341.3 E: 683,123.5
GS ELEVATION: 141.8 ft
TRC ELEVATION: 144.65 ft
TEMPERATURE: 84° F

SHEET 1 of 1
INCLINATION: -90
DEPTH W.L.: 16.37 ft
ELEVATION W.L.: 128.28 ft
DATE W.L.: 2/19/2019
TIME W.L.: 17:25

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION
0	140	0.0 - 2.0 SAND, fine; brown to light brown; dry
		2.0 - 3.0 SAND, fine; brown; dry
5	135	3.0 - 5.0 SAND, fine; light grey brown; dry
		5.0 - 10.0 SAND some silt, fine; dark brown; dry to wet
10	130	10.0 - 16.0 SAND some silt, fine; dark brown; wet
		~ wet at 13 ft bgs
15	125	16.0 - 24.0 SAND some silt, fine; brown; wet
20	120	
25		24.0 - 25.0 SAND some silt, fine; light brown; wet
		Boring completed at 25.7 ft

GRAPHIC LOG / WELL DETAILS



DEPTH (ft.)	CODE	ELEVATION (ft.)
N/A	TPC	N/A
-2.85	TRC	144.65
0.0	GS	141.80
11.0	FPS	130.80
12.8	FP	129.00
15.4	TSC	126.40
25.0	BSC	116.80
25.7	TD	116.10

WELL CONSTRUCTION DETAILS

PROTECTIVE CASING
Type: Aluminum
Height [ft]: Not measured

WELL CASING
Interval [ft]: -2.9 - 15.4
Material: Sch. 40 PVC
Diameter [in]: 2-inch
Joint Type: Flush Thread w/o-ring

WELL SCREEN
Interval [ft]: 15.4 - 25
Material: Sch. 40 PVC
Diameter [in]: 2-inch
Slot Size [in]: 0.006 inch
End Cap: Threaded

FILTER PACK
Interval [ft]: 12.8 - 28.6
Type: 30/45 Silica Sand
Quantity: 5 - 50 lb bags

FILTER PACK SEAL
Interval [ft]: 11 - 12.8
Type: Bentonite Chips
Quantity: 1/2 - 50 lb bag

ANNULUS SEAL
Interval [ft]: 0 - 11
Type: Portland Cement
Quantity: 21 gallons

WELL DEVELOPMENT DATA
Date: 2/19/2019
Method: Surge and purge
Duration: 50 minutes
Rate: 1.5 gpm
Final Turbidity Measurement: 8.37 NTU

WELL DETAILS LEGEND
Grout
Bentonite
Sand 30/45
Water Level (At time of measurement)

CODES

TPC	Top of Protective Casing
TRC	Top of Riser Casing
GS	Ground Surface
BS	Bentonite Seal
FP	Filter Pack
TSC	Top of Screen
BSC	Bottom of Screen
TD	Total Depth

NOTES
1) Monitoring well aluminum protective casing set into 2 ft by 2 ft by 4-inch concrete pad.
2) 4, 4-inch concrete filled steel bollards were installed for protection and painted yellow for high visibility.

LOG SCALE: 1 in = 3.61 ft
DRILLING COMPANY: Action Environmental
DRILLER: Omar Velazquez

INSPECTOR: G. Morelli
CHECKED BY: S. Hopkins
DATE: 4/8/19

GOLDER

1302765_01_B 1545454.2_REV1.GPJ 4/8/19

MONITORING WELL CCR-16 INSTALLATION LOG

PROJECT: Lakeland Electric CCR
PROJECT NUMBER: 19117001
DRILLED DEPTH: 25.6 ft
AZIMUTH: N/A
LOCATION: Lakeland, FL

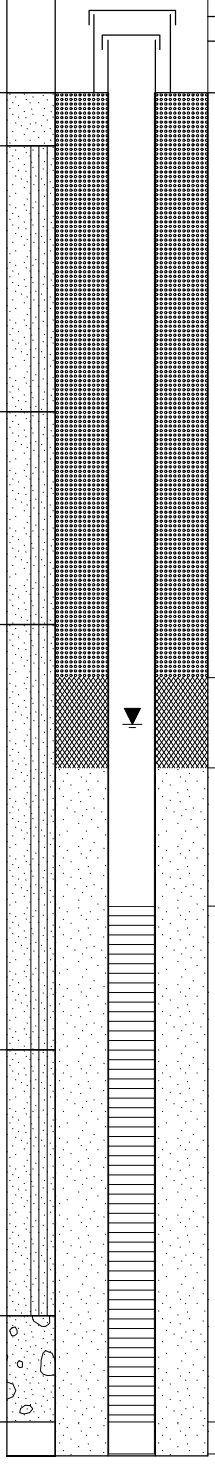
DRILL METHOD: Hollow-stem Auger
DRILL RIG: Geoprobe 3230 DT
DATE STARTED: 2/18/2019
DATE COMPLETED: 2/18/2019
WEATHER: Mostly cloudy

DATUM: NAD83 / NGVD88
COORDS: N: 1,362,533.2 E: 683,385.6
GS ELEVATION: 141.2 ft
TRC ELEVATION: 144.10 ft
TEMPERATURE: 82° F

INCLINATION: -90
DEPTH W.L.: 14.66 ft
ELEVATION W.L.: 129.44 ft
DATE W.L.: 2/20/19
TIME W.L.: 10:10

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION
0	140	0.0 - 1.0 SAND, fine; light grey; dry
		1.0 - 6.0 SAND some silt, fine; dark brown; dry
5	135	6.0 - 10.0 SAND some silt, fine; grey brown; dry
10	130	10.0 - 18.0 SAND some silt, fine; brown; dry to wet *~ wet at 12 ft bgs*
15	125	18.0 - 23.0 SAND some silt, fine; dark brown; wet, loose
20	120	23.0 - 25.0 SAND some silt and gravel, fine; brown; wet, compact
25		Boring completed at 25.6 ft

GRAPHIC LOG / WELL DETAILS



DEPTH (ft.)	CODE	ELEVATION (ft.)
N/A	TPC	N/A
-2.90	TRC	144.10
0.0	GS	141.20
11.0	FPS	130.20
12.7	FP	128.50
15.3	TSC	125.90
25.0	BSC	116.20
25.6	TD	115.60

WELL CONSTRUCTION DETAILS

PROTECTIVE CASING
Type: Aluminum
Height [ft]: Not measured

WELL CASING
Interval [ft]: -2.9 - 15.3
Material: Sch. 40 PVC
Diameter [in]: 2-inch
Joint Type: Flush Thread w/o-ring

WELL SCREEN
Interval [ft]: 15.3 - 25
Material: Sch. 40 PVC
Diameter [in]: 2-inch
Slot Size [in]: 0.006-inch
End Cap: Threaded

FILTER PACK
Interval [ft]: 12.7 - 25.6
Type: 30/45 Silica Sand
Quantity: 5 1/2 - 50 lb bags

FILTER PACK SEAL
Interval [ft]: 11 - 12.7
Type: Bentonite Chips
Quantity: 1/2 50 lb bag

ANNULUS SEAL
Interval [ft]: 0 - 11
Type: Portland Cement
Quantity: 20 gallons

WELL DEVELOPMENT DATA
Date: 2/19/2019
Method: Surge and purge
Duration: 58 minutes
Rate: 1.8 gpm
Final Turbidity Measurement: 9.65 NTU

WELL DETAILS LEGEND
Grout
Bentonite
Sand 30/45
Water Level (At time of measurement)

CODES

TPC	Top of Protective Casing
TRC	Top of Riser Casing
GS	Ground Surface
BS	Bentonite Seal
FP	Filter Pack
TSC	Top of Screen
BSC	Bottom of Screen
TD	Total Depth

NOTES
1) Monitoring well aluminum protective casing set into 2 ft by 2 ft by 4-inch concrete pad.
2) 4, 4-inch concrete filled steel bollards were installed for protection and painted yellow for high visibility.

LOG SCALE: 1 in = 3.61 ft
DRILLING COMPANY: Action Environmental
DRILLER: Omar Velazquez

INSPECTOR: G. Morelli
CHECKED BY: S. Hopkins
DATE: 4/8/19

GOLDER

MONITORING WELL CCR-17 INSTALLATION LOG

PROJECT: Lakeland Electric CCR
PROJECT NUMBER: 19117001
DRILLED DEPTH: 25.7 ft
AZIMUTH: N/A
LOCATION: Lakeland, FL

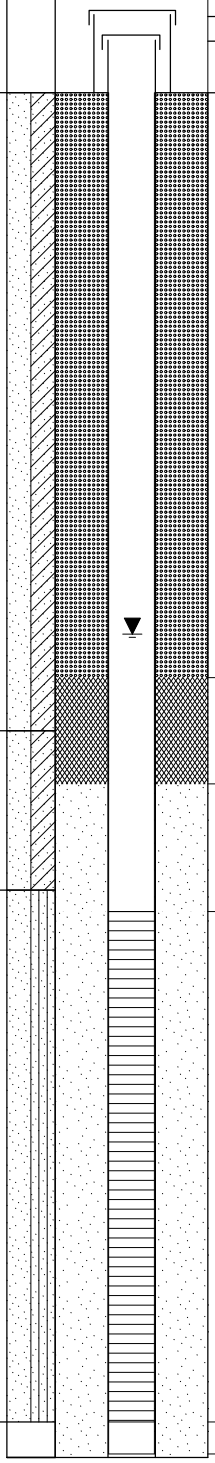
DRILL METHOD: Hollow-stem Auger
DRILL RIG: Geoprobe 3230 DT
DATE STARTED: 2/19/2019
DATE COMPLETED: 2/19/2019
WEATHER: Cloudy

DATUM: NAD83 / NGVD88
COORDS: N: 1,363,019.9 E: 683,712.7
GS ELEVATION: 142.9 ft
TRC ELEVATION: 145.80 ft
TEMPERATURE: 70° F

INCLINATION: -90
DEPTH W.L.: 12.94 ft
ELEVATION W.L.: 132.86 ft
DATE W.L.: 2/19/2019
TIME W.L.: 14:11

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION
0	140	0.0 - 12.0 SAND some silt, fine, with pockets of clay; brown; dry to moist
5	135	
10	130	12.0 - 15.0 SAND some silt, fine, with pockets of clay; dark brown; wet
15	125	15.0 - 25.0 SAND some silt, fine; dark brown, wet
20	120	
25		Boring completed at 25.7 ft

GRAPHIC LOG / WELL DETAILS



DEPTH (ft.)	CODE	ELEVATION (ft.)
N/A	TPC	N/A
-2.90	TRC	145.80
0.0	GS	142.90
11.0	FPS	131.90
13.0	FP	129.90
15.4	TSC	127.50
25.0	BSC	117.90
25.6	TD	117.30

WELL CONSTRUCTION DETAILS

PROTECTIVE CASING
Type: Aluminum
Height [ft]: Not measured

WELL CASING
Interval [ft]: -2.9 - 15.4
Material: Sch. 40 PVC
Diameter [in]: 2-inch
Joint Type: Flush Thread w/o-ring

WELL SCREEN
Interval [ft]: 15.4 - 25
Material: Sch. 40 PVC
Diameter [in]: 2-inch
Slot Size [in]: 0.006-inch
End Cap: Threaded

FILTER PACK
Interval [ft]: 13 - 25.7
Type: 30/45 Silica Sand
Quantity: 5 3/4 - 50 lb bags

FILTER PACK SEAL
Interval [ft]: 11 - 13
Type: Bentonite Chips
Quantity: 1/2 - 50lb bag

ANNULUS SEAL
Interval [ft]: 0 - 11
Type: Portland Cement
Quantity: 21 gallons

WELL DEVELOPMENT DATA
Date: 2/19/2019
Method: Surge and purge
Duration: 129 minutes
Rate: 1.5 gpm
Final Turbidity Measurement: 16.7 NTU

WELL DETAILS LEGEND
Grout
Bentonite
Sand 30/45
Water Level (At time of measurement)

CODES

TPC	Top of Protective Casing
TRC	Top of Riser Casing
GS	Ground Surface
BS	Bentonite Seal
FP	Filter Pack
TSC	Top of Screen
BSC	Bottom of Screen
TD	Total Depth

NOTES
1) Monitoring well aluminum protective casing set into 2 ft by 2 ft by 4-inch concrete pad.
2) 4, 4-inch concrete filled steel bollards were installed for protection and painted yellow for high visibility.

LOG SCALE: 1 in = 3.61 ft
DRILLING COMPANY: Action Environmental
DRILLER: Omar Velazquez

INSPECTOR: G. Morelli
CHECKED BY: S. Hopkins
DATE: 4/8/19

GOLDER

MONITORING WELL CCR-18 INSTALLATION LOG

PROJECT: Lakeland Electric CCR
PROJECT NUMBER: 19117001
DRILLED DEPTH: 25.9 ft
AZIMUTH: N/A
LOCATION: Lakeland, FL

DRILL METHOD: Hollow-stem Auger
DRILL RIG: Geoprobe 3230 DT
DATE STARTED: 2/15/2019
DATE COMPLETED: 2/18/2019
WEATHER: Mostly cloudy

DATUM: NAD83 / NGVD88
COORDS: N: 1,363,631.1 E: 683,869.7
GS ELEVATION: 138.2 ft
TRC ELEVATION: 140.81 ft
TEMPERATURE: 80° F

INCLINATION: -90
DEPTH W.L.: 7.11 ft
ELEVATION W.L.: 133.70 ft
DATE W.L.: 2/20/2019
TIME W.L.: 10:46

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION
0		
	135	0.0 - 1.0 SAND and GRAVEL
		1.0 - 3.0 SAND, fine; light brown; dry
5		3.0 - 5.0 SAND, fine; brown; dry
	130	5.0 - 10.0 SAND, fine, with pockets of sandy clay; light brown to brown; moist
10		10.0 - 12.0 SAND, fine; light brown; wet
	125	12.0 - 12.2 SANDY CLAY
		12.2 - 16.0 SAND, fine; brown; wet
15		16.0 - 17.0 SANDY CLAY; grey; <PL
	120	17.0 - 25.0 SAND, fine; brown; wet
20		
	115	
25		Boring completed at 25.9 ft

DEPTH (ft.)	CODE	ELEVATION (ft.)
N/A	TPC	N/A
-2.61	TRC	140.81
0.0	GS	138.20
12.0	FPS	126.20
13.0	FP	125.20
15.6	TSC	122.60
25.2	BSC	113.00
25.9	TD	112.30

PROTECTIVE CASING
Type: Aluminum
Height [ft]: Not measured

WELL CASING
Interval [ft]: -2.6 - 15.6
Material: Sch. 40 PVC
Diameter [in]: 2-inch
Joint Type: Flush Thread w/o-ring

WELL SCREEN
Interval [ft]: 15.6 - 25.2
Material: Sch. 40 PVC
Diameter [in]: 2-inch
Slot Size [in]: 0.006-inch
End Cap: Threaded

FILTER PACK
Interval [ft]: 13 - 25.9
Type: 30/45 Silica Sand
Quantity: 5 1/2 - 50lb bags

FILTER PACK SEAL
Interval [ft]: 12 - 13
Type: Bentonite Chips
Quantity: 1/4 - 50lb bag

ANNULUS SEAL
Interval [ft]: 0 - 12
Type: Portland Cement
Quantity: 14 gallons

WELL DEVELOPMENT DATA
Date: 2/19/2019
Method: Surge and purge
Duration: 129 minutes
Rate: 2.2 gpm
Final Turbidity Measurement: 15.8 NTU

WELL DETAILS LEGEND
Grout
Bentonite
Sand 30/45
Water Level (At time of measurement)

CODES
TPC	Top of Protective Casing
TRC	Top of Riser Casing
GS	Ground Surface
BS	Bentonite Seal
FP	Filter Pack
TSC	Top of Screen
BSC	Bottom of Screen
TD	Total Depth

NOTES
1) Monitoring well aluminum protective casing set into 2 ft by 2 ft by 4-inch concrete pad.
2) 4, 4-inch concrete filled steel bollards were installed for protection and painted yellow for high visibility.

LOG SCALE: 1 in = 3.68 ft
DRILLING COMPANY: Action Environmental
DRILLER: Omar Velazquez

INSPECTOR: G. Morelli
CHECKED BY: S. Hopkins
DATE: 4/8/19

GOLDER

MONITORING WELL CCR-19 INSTALLATION LOG

PROJECT: Lakeland Electric CCR
PROJECT NUMBER: 19117001
DRILLED DEPTH: 25.8 ft
AZIMUTH: N/A
LOCATION: Lakeland, FL

DRILL METHOD: Hollow-stem Auger
DRILL RIG: Geoprobe 3230 DT
DATE STARTED: 2/14/2019
DATE COMPLETED: 2/15/2019
WEATHER: Partly cloudy

DATUM: NAD83 / NGVD88
COORDS: N: 1,364,205.4 E: 683,064.5
GS ELEVATION: 133.8 ft
TRC ELEVATION: 136.47 ft
TEMPERATURE: 76° F

INCLINATION: -90
DEPTH W.L.: 3.95 ft
ELEVATION W.L.: 132.52 ft
DATE W.L.: 2/19/2019
TIME W.L.: 12:12

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION	GRAPHIC LOG	WELL DETAILS	DEPTH (ft.)	CODE	ELEVATION (ft.)
					N/A	TPC	N/A
					-2.67	TRC	136.47
					0.0	GS	133.80
0		0.0 - 5.0 SAND some silt, fine; brown; moist to wet					
		~ wet at 2 ft bgs					
	130						
5		5.0 - 25.0 SAND trace to some silt, fine; brown; wet					
	125				10.5	FPS	123.30
10							
					12.5	FP	121.30
	120						
15					15.5	TSC	118.30
	115						
20							
	110						
25					25.1	BSC	108.70
		Boring completed at 25.8 ft			25.8	TD	108.00

WELL CONSTRUCTION DETAILS

PROTECTIVE CASING
Type: Aluminum
Height [ft]: Not measured

WELL CASING
Interval [ft]: -2.7 - 15.5
Material: Sch. 40 PVC
Diameter [in]: 2-inch
Joint Type: Flush Thread w/o-ring

WELL SCREEN
Interval [ft]: 15.5 - 25.1
Material: Sch. 40 PVC
Diameter [in]: 2-inch
Slot Size [in]: 0.006-inch
End Cap: Threaded

FILTER PACK
Interval [ft]: 12.5 - 25.8
Type: 30/45 Silica Sand
Quantity: 5 - 50lb bags

FILTER PACK SEAL
Interval [ft]: 10.5 - 12.5
Type: Bentonite Chips
Quantity: 1/2 50lb bag

ANNULUS SEAL
Interval [ft]: 0 - 10.5
Type: Portland Cement
Quantity: 16 gallons

WELL DEVELOPMENT DATA
Date: 2/19/2019
Method: Surge and purge
Duration: 83 minutes
Rate: 1.8 gpm
Final Turbidity Measurement: 15.1 NTU

WELL DETAILS LEGEND
Grout
Bentonite
Sand 30/45
Water Level (At time of measurement)

CODES

TPC	Top of Protective Casing
TRC	Top of Riser Casing
GS	Ground Surface
BS	Bentonite Seal
FP	Filter Pack
TSC	Top of Screen
BSC	Bottom of Screen
TD	Total Depth

NOTES
1) Monitoring well aluminum protective casing set into 2 ft by 2 ft by 4-inch concrete pad.
2) 4, 4-inch concrete filled steel bollards were installed for protection and painted yellow for high visibility.

LOG SCALE: 1 in = 3.68 ft
DRILLING COMPANY: Action Environmental
DRILLER: Omar Velazquez

INSPECTOR: G. Morelli
CHECKED BY: S. Hopkins
DATE: 4/8/19

GOLDER

MONITORING WELL CCR-20 INSTALLATION LOG

PROJECT: Lakeland Electric CCR
PROJECT NUMBER: 19117001
DRILLED DEPTH: 25.2 ft
AZIMUTH: N/A
LOCATION: Lakeland, FL

DRILL METHOD: Hollow-stem Auger
DRILL RIG: Geoprobe 3230 DT
DATE STARTED: 2/14/2019
DATE COMPLETED: 2/14/2019
WEATHER: Sunny

DATUM: NAD83 / NGVD88
COORDS: N: 1,363,855.5 E: 682,474.9
GS ELEVATION: 133.1 ft
TRC ELEVATION: 136.05 ft
TEMPERATURE: 52° F

INCLINATION: -90
DEPTH W.L.: 3.09 ft
ELEVATION W.L.: 132.96 ft
DATE W.L.: 2/20/2019
TIME W.L.: 11:28

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION
0	130	0.0 - 3.0 SAND, some silt, fine; brown; wet
5	125	3.0 - 5.0 SAND, fine; light brown; wet
		5.0 - 10.0 SAND, some silt, fine; brown; wet
10	120	10.0 - 15.0 SAND, some silt, trace clay, fine; light brown; wet
15	115	15.0 - 17.0 SAND, fine; light grey; wet
		17.0 - 20.0 SAND, some silt, fine; light grey; wet
20	110	20.0 - 23.0 SAND, fine; light grey; wet
25		23.0 - 25.0 SAND, some clay, fine; light grey; wet
		Boring completed at 25.2 ft

DEPTH (ft.)	CODE	ELEVATION (ft.)
N/A	TPC	N/A
-2.95	TRC	136.05
0.0	GS	133.10
11.0	FPS	122.10
13.0	FP	120.10
14.9	TSC	118.20
24.5	BSC	108.60
25.2	TD	107.90

PROTECTIVE CASING
Type: Aluminum
Height [ft]: Not measured

WELL CASING
Interval [ft]: -2.9 - 14.9
Material: Sch. 40 PVC
Diameter [in]: 2-inch
Joint Type: Flush Thread w/o-ring

WELL SCREEN
Interval [ft]: 14.9 - 24.5
Material: Sch. 40 PVC
Diameter [in]: 2-inch
Slot Size [in]: 0.006-inch
End Cap: Threaded

FILTER PACK
Interval [ft]: 13 - 25.2
Type: 30/45 Silica Sand
Quantity: 6 - 50lb bags

FILTER PACK SEAL
Interval [ft]: 11 - 13
Type: Bentonite Chips
Quantity: 1/2 - 50lb bag

ANNULUS SEAL
Interval [ft]: 0 - 11
Type: Portland Cement
Quantity: 16 gallons

WELL DEVELOPMENT DATA
Date: 2/19/2019
Method: Surge and purge
Duration: 44 minutes
Rate: 2.2 gpm
Final Turbidity Measurement: 4.55 NTU

WELL DETAILS LEGEND
Grout
Bentonite
Sand 30/45
Water Level (At time of measurement)

CODES
TPC	Top of Protective Casing
TRC	Top of Riser Casing
GS	Ground Surface
BS	Bentonite Seal
FP	Filter Pack
TSC	Top of Screen
BSC	Bottom of Screen
TD	Total Depth

NOTES
1) Monitoring well aluminum protective casing set into 2 ft by 2 ft by 4-inch concrete pad.
2) 4, 4-inch concrete filled steel bollards were installed for protection and painted yellow for high visibility.

LOG SCALE: 1 in = 3.61 ft
DRILLING COMPANY: Action Environmental
DRILLER: Omar Velazquez

INSPECTOR: G. Morelli
CHECKED BY: S. Hopkins
DATE: 4/8/19

GOLDER

MONITORING WELL CCR-21 INSTALLATION LOG

PROJECT: Lakeland Electric CCR
PROJECT NUMBER: 19117001
DRILLED DEPTH: 25.9 ft
AZIMUTH: N/A
LOCATION: Lakeland, FL

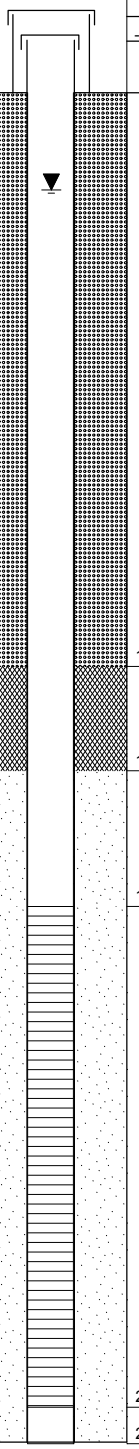
DRILL METHOD: Hollow-stem Auger
DRILL RIG: Geoprobe 3230 DT
DATE STARTED: 2/13/2019
DATE COMPLETED: 2/13/2019
WEATHER: Cloudy

DATUM: NAD83 / NGVD88
COORDS: N: 1,363,454.0 E: 682,331.4
GS ELEVATION: 134.5 ft
TRC ELEVATION: 137.12 ft
TEMPERATURE: 58° F

INCLINATION: -90
DEPTH W.L.: 4.36 ft
ELEVATION W.L.: 132.76 ft
DATE W.L.: 2/19/2019
TIME W.L.: 10:41

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION
0		
	130	0.0 - 1.5 SAND some silt, fine; brown; moist
		1.5 - 3.0 SAND some silt, fine; dark grey to black; wet
		3.0 - 4.5 SAND some silt, fine; brown; wet
5		4.5 - 18.5 SAND, fine; light brownish grey; wet
10	125	
	120	
15		
	115	18.5 - 20.0 PEAT; black
20		20.0 - 24.5 SAND some silt, fine; dark brown; wet
	110	
25		24.5 - 25.0 SILT; light brown; wet
		Boring completed at 25.9 ft

GRAPHIC LOG / WELL DETAILS



DEPTH (ft.)	CODE	ELEVATION (ft.)
N/A	TPC	N/A
-2.62	TRC	137.12
0.0	GS	134.50
11.0	FPS	123.50
13.0	FP	121.50
15.6	TSC	118.90
25.2	BSC	109.30
25.9	TD	108.60

WELL CONSTRUCTION DETAILS

PROTECTIVE CASING
Type: Aluminum
Height [ft]: Not measured

WELL CASING
Interval [ft]: -2.6 - 15.6
Material: Sch. 40 PVC
Diameter [in]: 2-inch
Joint Type: Flush Thread w/o-ring

WELL SCREEN
Interval [ft]: 15.6 - 25.2
Material: Sch. 40 PVC
Diameter [in]: 2-inch
Slot Size [in]: 0.006-inch
End Cap: Threaded

FILTER PACK
Interval [ft]: 13 - 25.2
Type: 30/45 Silica Sand
Quantity: 6 - 50lb bags

FILTER PACK SEAL
Interval [ft]: 11 - 13
Type: Bentonite Chips
Quantity: 1/2 - 50lb bag

ANNULUS SEAL
Interval [ft]: 0 - 11
Type: Portland Cement
Quantity: 16 gallons

WELL DEVELOPMENT DATA
Date: 2/19/2019
Method: Surge and purge
Duration: 30 minutes
Rate: 1.7 gpm
Final Turbidity Measurement: 7.79 NTU

WELL DETAILS LEGEND
Grout
Bentonite
Sand 30/45
Water Level (At time of measurement)

CODES

TPC	Top of Protective Casing
TRC	Top of Riser Casing
GS	Ground Surface
BS	Bentonite Seal
FP	Filter Pack
TSC	Top of Screen
BSC	Bottom of Screen
TD	Total Depth

NOTES
1) Monitoring well aluminum protective casing set into 2 ft by 2 ft by 4-inch concrete pad.
2) 4, 4-inch concrete filled steel bollards were installed for protection and painted yellow for high visibility.

LOG SCALE: 1 in = 3.68 ft
DRILLING COMPANY: Action Environmental
DRILLER: Omar Velazquez

INSPECTOR: G. Morelli
CHECKED BY: S. Hopkins
DATE: 4/8/19

GOLDER

MONITORING WELL CCR-22 INSTALLATION LOG

PROJECT: Lakeland Electric CCR
PROJECT NUMBER: 19117001
DRILLED DEPTH: 25.1 ft
AZIMUTH: N/A
LOCATION: Lakeland, FL

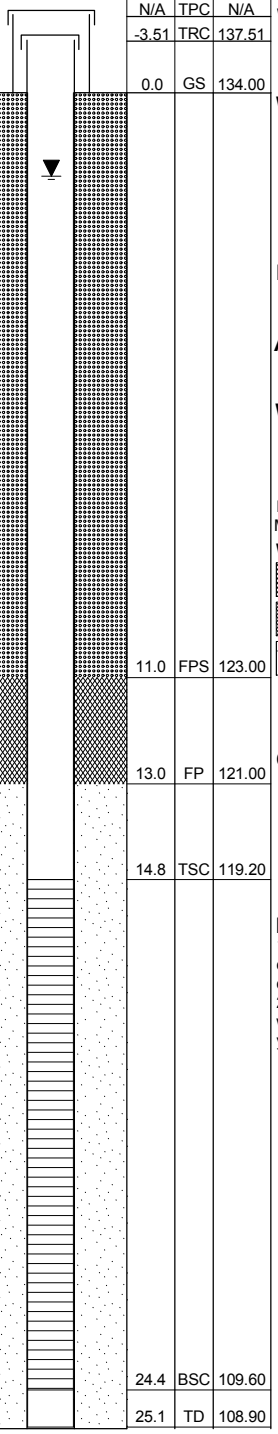
DRILL METHOD: Hollow-stem Auger
DRILL RIG: Geoprobe 3230 DT
DATE STARTED: 2/12/2019
DATE COMPLETED: 2/13/2019
WEATHER: Mostly cloudy

DATUM: NAD83 / NGVD88
COORDS: N: 1,363,017.4 E: 682,078.7
GS ELEVATION: 134.0 ft
TRC ELEVATION: 137.51 ft
TEMPERATURE: 72° F

INCLINATION: -90
DEPTH W.L.: 4.95 ft
ELEVATION W.L.: 132.56 ft
DATE W.L.: 2/20/2019
TIME W.L.: 13:00

DEPTH (ft)	ELEVATION (ft)	DESCRIPTION
0		
	130	0.0 - 5.0 SAND some silt; grey brown; moist to wet *~ wet at 2 ft bgs*
5		
	125	5.0 - 10.0 SAND, fine; light brownish grey; wet
10		
	120	10.0 - 14.0 SAND trace silt, fine; brown; wet
15		
	115	14.0 - 19.0 SAND some clay, fine; light brown; wet
20		
	110	19.0 - 21.0 SANDY CLAY; blue green; <PL, stiff 21.0 - 23.0 SAND some clay, fine; light brown; wet 23.0 - 25.0 SANDY CLAY some gravel; light grey
25		Boring completed at 25.1 ft

GRAPHIC LOG / WELL DETAILS



DEPTH (ft.)	CODE	ELEVATION (ft.)
N/A	TPC	N/A
-3.51	TRC	137.51
0.0	GS	134.00
11.0	FPS	123.00
13.0	FP	121.00
14.8	TSC	119.20
24.4	BSC	109.60
25.1	TD	108.90

WELL CONSTRUCTION DETAILS

PROTECTIVE CASING
Type: Aluminum
Height [ft]: Not measured

WELL CASING
Interval [ft]: -3.5 - 14.8
Material: Sch. 40 PVC
Diameter [in]: 2-inch
Joint Type: Flush Thread w/o-ring

WELL SCREEN
Interval [ft]: 14.8 - 24.4
Material: Sch. 40 PVC
Diameter [in]: 2-inch
Slot Size [in]: 0.006-inch
End Cap: Threaded

FILTER PACK
Interval [ft]: 13 - 25.1
Type: 30/45 Silica Sand
Quantity: 6 - 50lb bags

FILTER PACK SEAL
Interval [ft]: 11 - 13
Type: Bentonite Chips
Quantity: 1/2 - 50lb bag

ANNULUS SEAL
Interval [ft]: 0 - 11
Type: Portland Cement
Quantity: 16 gallons

WELL DEVELOPMENT DATA
Date: 2/18/2019
Method: Surge and purge
Duration: 38 minutes
Rate: 1.8 gpm
Final Turbidity Measurement: 8.22 NTU

WELL DETAILS LEGEND
Grout
Bentonite
Sand 30/45
Water Level (At time of measurement)

CODES

TPC	Top of Protective Casing
TRC	Top of Riser Casing
GS	Ground Surface
BS	Bentonite Seal
FP	Filter Pack
TSC	Top of Screen
BSC	Bottom of Screen
TD	Total Depth

NOTES
1) Monitoring well aluminum protective casing set into 2 ft by 2 ft by 4-inch concrete pad.
2) 4, 4-inch concrete filled steel bollards were installed for protection and painted yellow for high visibility.

LOG SCALE: 1 in = 3.61 ft
DRILLING COMPANY: Action Environmental
DRILLER: Omar Velazquez

INSPECTOR: G. Morelli
CHECKED BY: S. Hopkins
DATE: 4/8/19

GOLDER

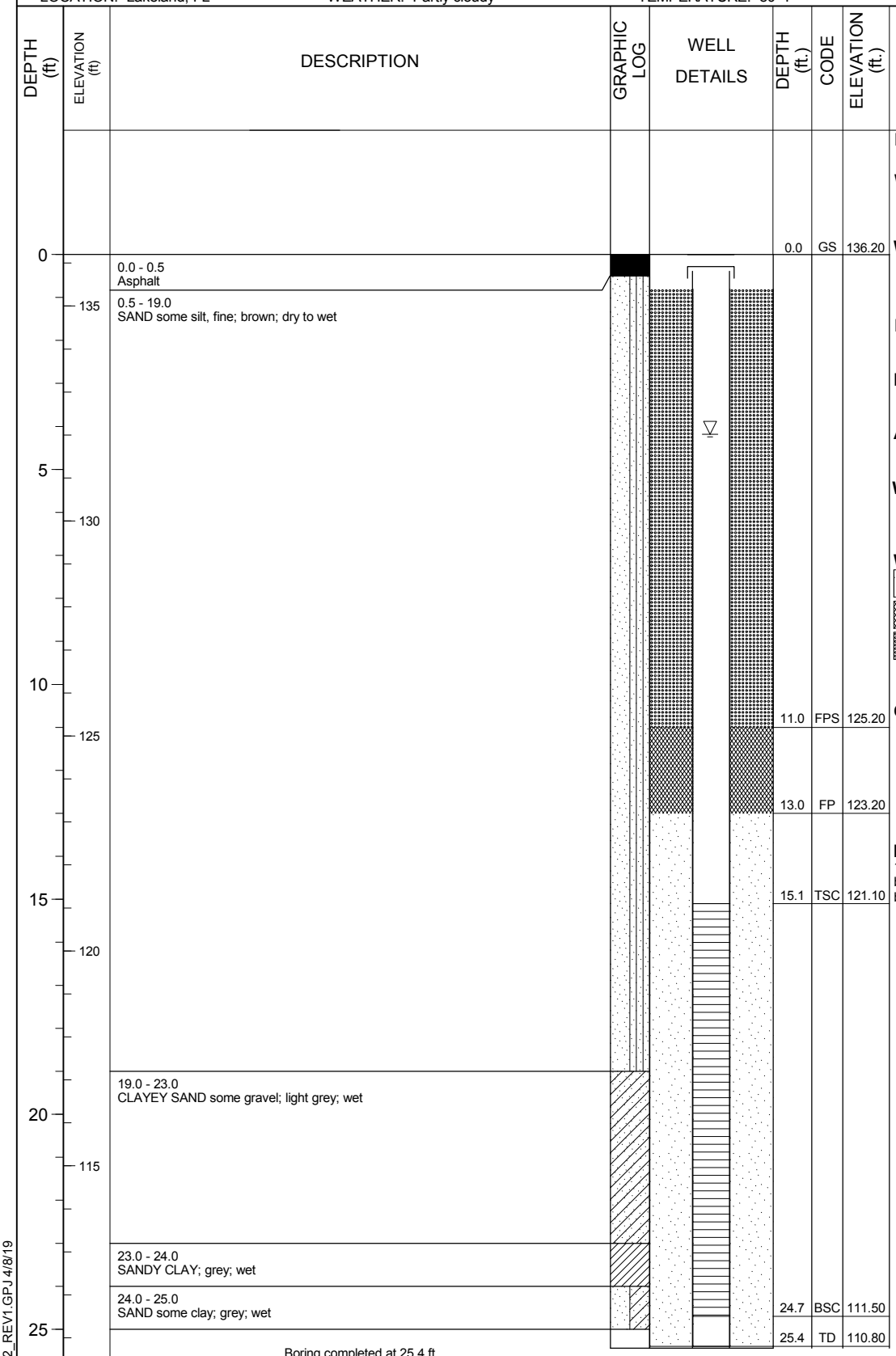
MONITORING WELL CCR-23 INSTALLATION LOG

PROJECT: Lakeland Electric CCR
PROJECT NUMBER: 19117001
DRILLED DEPTH: 25.4 ft
AZIMUTH: N/A
LOCATION: Lakeland, FL

DRILL METHOD: Hollow-stem Auger
DRILL RIG: Geoprobe 3230 DT
DATE STARTED: 2/12/2019
DATE COMPLETED: 2/12/2019
WEATHER: Partly cloudy

DATUM: NAD83 / NGVD88
COORDS: N: 1,362,812.1 E: 681,744.7
GS ELEVATION: 136.2 ft
TRC ELEVATION: 135.78 ft
TEMPERATURE: 80° F

INCLINATION: -90
DEPTH W.L.: 3.64 ft
ELEVATION W.L.: 132.14 ft
DATE W.L.: 2/20/2019
TIME W.L.: 13:26



DEPTH (ft.)	CODE	ELEVATION (ft.)
0.0	GS	136.20
11.0	FPS	125.20
13.0	FP	123.20
15.1	TSC	121.10
24.7	BSC	111.50
25.4	TD	110.80

WELL CONSTRUCTION DETAILS

PROTECTIVE CASING
Type: 8" Steel manhole
Height [ft]: N/A

WELL CASING
Interval [ft]: 0.5 - 15.1
Material: Sch. 40 PVC
Diameter [in]: 2-inch
Joint Type: Flush Thread w/o-ring

WELL SCREEN
Interval [ft]: 15.1 - 24.7
Material: Sch. 40 PVC
Diameter [in]: 2-inch
Slot Size [in]: 0.006-inch
End Cap: Threaded

FILTER PACK
Interval [ft]: 13 - 25.4
Type: 30/45 Silica Sand
Quantity: 6 - 50lb bags

FILTER PACK SEAL
Interval [ft]: 11 - 13
Type: Bentonite Chips
Quantity: 1/2 - 50lb bag

ANNULUS SEAL
Interval [ft]: 0.8 - 11
Type: Portland Cement
Quantity: 18 gallons

WELL DEVELOPMENT DATA
Date: 2/18/2019
Method: Surge and purge
Duration: 56 minutes
Rate: 1.75 gpm

WELL DETAILS LEGEND
- Sand 30/45
- Bentonite
- Portland Cement
- Water Level (At time of measurement)

CODES

TPC	Top of Protective Casing
TRC	Top of Riser Casing
GS	Ground Surface
BS	Bentonite Seal
FP	Filter Pack
FPS	Filter Pack Seal
TSC	Top of Screen
BSC	Bottom of Screen
TD	Total Depth

NOTES
1) Monitoring well installed inside an 8-inch bolt down steel manhole set into 2 ft by 2 ft by 4-inch rebar reinforced concrete pad.

LOG SCALE: 1 in = 3.61 ft
DRILLING COMPANY: Action Environmental
DRILLER: Omar Velazquez

INSPECTOR: G. Morelli
CHECKED BY: S. Hopkins
DATE: 4/8/19

GOLDER

APPENDIX B

Laboratory Reports for Groundwater, Surface Water, Soil, and Sediment Samples

Florida Radiochemistry Services, Inc.

Contact: Michael J. Naumann
5456 Hoffner Ave., Suite 201 Orlando, FL 32812
Phone: (407) 382-7733 Fax: (407)382-7744
Certification I. D. # E83033

Work Order #: 1903060
Report Date: 03/22/19

Report to:

Lakeland Laboratories, LLC
1910 Harden Blvd., Suite 101
Lakeland, FL 33803
Attention: Jim Crawford

I do hereby affirm that this record contains no willful misrepresentations and that this information given by me is true to the best of my knowledge and belief. I further certify that the methods and quality control measures used to produce these laboratory results were implemented in accordance with the requirements of this laboratory's certification and NELAC Standards. The test results in this report relate only to the samples received.

Signed Michael J. Naumann Date 3-22-19
Michael J. Naumann - President
Shawn M. Naumann - Laboratory Director

Florida Radiochemistry Services, Inc.

Sample Login

Client:	**Lakeland Laboratories, LLC**	**Date / Time Received**	**Work order #**
		03/13/19 09:35	**1903060**
Client Contact:	**Jim Crawford**		
Client P.O.	**277548**		
Project I.D.	**Wells 5071301**		

Lab Sample I.D.	Client Sample I.D.	Sample Date/Time	Analysis Requested
1903060-01	1903011-01	03/07/19 14:17	Ra226, Ra228
1903060-02	1903011-02	03/06/19 11:20	Ra226, Ra228
1903060-03	1903011-03	03/06/19 14:07	Ra226, Ra228
1903060-04	1903011-04	03/07/19 11:23	Ra226, Ra228
1903060-05	1903011-05	03/07/19 13:26	Ra226, Ra228
1903060-06	1903011-06	03/06/19 10:27	Ra226, Ra228
1903060-07	1903011-07	03/05/19 14:43	Ra226, Ra228
1903060-08	1903011-08	03/11/19 13:20	Ra226, Ra228
1903060-09	1903011-09	03/11/19 13:00	Ra226, Ra228
1903060-10	1903011-10	03/07/19 15:00	Ra226, Ra228

Florida Radiochemistry Services, Inc.

Analysis Report

	mw 15	mw 16	mw 18	mw 22	mw 23
Lab Sample I.D.	1903060-01	1903060-02	1903060-03	1903060-04	1903060-05
Client I.D.	1903011-01	1903011-02	1903011-03	1903011-04	1903011-05
Radium 226	19.2	23.3	0.5	26.3	6.5
Error +/-	1.3	1.4	0.2	1.5	0.7
MDL	0.2	0.2	0.1	0.1	0.1
EPA Method	903.1	903.1	903.1	903.1	903.1
Prep Date	03/15/19	03/15/19	03/15/19	03/15/19	03/15/19
Prep Time	08:00	08:00	08:00	08:00	08:00
Analysis Time	03/21/19	03/21/19	03/21/19	03/21/19	03/21/19
Analysis Time	13:06	13:06	13:06	13:06	13:06
Analyst	MJN	MJN	MJN	MJN	MJN
Radium 228	5.9	19.4	0.7U	1.4	0.8
Error +/-	0.9	1.3	0.5	0.6	0.5
MDL	0.8	0.7	0.7	0.7	0.7
EPA Method	Ra-05	Ra-05	Ra-05	Ra-05	Ra-05
Prep Date	03/15/19	03/15/19	03/15/19	03/15/19	03/15/19
Prep Time	08:00	08:00	08:00	08:00	08:00
Analysis Date	03/20/19	03/20/19	03/20/19	03/20/19	03/20/19
Analysis Time	08:04	08:04	08:04	08:04	08:04
Analyst	SN	SN	SN	SN	SN
Units	pCi/l	pCi/l	pCi/l	pCi/l	pCi/l

A U next to a result indicates analyte not detected at the MDL level

Florida Radiochemistry Services, Inc.

Analysis Report

	MW-25S	MW-26?	FISH LAKE	LAKE "B"	EQ BLK.
Lab Sample I.D.	1903060-06	1903060-07	1903060-08	1903060-09	1903060-10
Client I.D.	1903011-06	1903011-07	1903011-08	1903011-09	1903011-10
Radium 226	0.5	0.5	0.7	1.6	0.3
Error +/-	0.2	0.2	0.2	0.4	0.2
MDL	0.2	0.2	0.1	0.1	0.1
EPA Method	903.1	903.1	903.1	903.1	903.1
Prep Date	03/15/19	03/15/19	03/15/19	03/15/19	03/15/19
Prep Time	08:00	08:00	08:00	08:00	08:00
Analysis Date	03/21/19	03/21/19	03/21/19	03/21/19	03/21/19
Analysis Time	14:09	14:09	14:09	14:09	14:09
Analyst	MJN	MJN	MJN	MJN	MJN
Radium 228	0.7U	0.6U	0.7U	0.8U	0.7U
Error +/-	0.4	0.4	0.5	0.5	0.4
MDL	0.7	0.6	0.7	0.8	0.7
EPA Method	Ra-05	Ra-05	Ra-05	Ra-05	Ra-05
Prep Date	03/15/19	03/15/19	03/15/19	03/15/19	03/15/19
Prep Time	08:00	08:00	08:00	08:00	08:00
Analysis Date	03/20/19	03/20/19	03/20/19	03/20/19	03/20/19
Analysis Time	08:04	08:04	08:04	09:06	09:06
Analyst	SN	SN	SN	SN	SN
Units	pCi/l	pCi/l	pCi/l	pCi/l	pCi/l

A U next to a result indicates analyte not detected at the MDL level

Florida Radiochemistry Services, Inc.

QA Page

Analyte	Sample #	Date Analyzed	Sample Result	Amount Spiked	Spike Result	Spike /Dup Result	Spike % Rec.	Spike Dup % Rpd
Radium 226	1903060-05	03/21/19	6.5	22.1	27.5	26.5	95	3.7
Radium 228	1903060-05	03/20/19	0.8	4.78	4.4	4.5	75	2.2

	Quality Control Limits	
	% RPD	% Rec.
Radium 226	23.4	78-125
Radium 228	23.9	67-125

SUBCONTRACT ORDER

Lakeland Laboratories, LLC

1903011

SENDING LABORATORY:

Lakeland Laboratories, LLC
1910 Harden Boulevard, Suite 101
Lakeland, FL 33803
Phone: 863-686-4271
Fax: 863-686-4389
Project Manager: Jim Crawford

RECEIVING LABORATORY:

Florida Radiochemistry Services, Inc.
5456 Hoffner Ave. Suite 201
Orlando, FL 32812
Phone :(407) 382-7733
Fax: (407) 382-7744

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: 1903011-01	**Waste Wat**	**Sampled: 07-Mar-19 14:17**		
Sub - RADIUM 228	18-Mar-19 00:00	03-Sep-19 14:17		
Sub - RADIUM 226	18-Mar-19 00:00	03-Sep-19 14:17		
Containers Supplied:				
Sample ID: 1903011-02	**Waste Wat**	**Sampled: 06-Mar-19 11:20**		
Sub - RADIUM 226	18-Mar-19 00:00	02-Sep-19 11:20		
Sub - RADIUM 228	18-Mar-19 00:00	02-Sep-19 11:20		
Containers Supplied:				
Sample ID: 1903011-03	**Waste Wat**	**Sampled: 06-Mar-19 14:07**		
Sub - RADIUM 226	18-Mar-19 00:00	02-Sep-19 14:07		
Sub - RADIUM 228	18-Mar-19 00:00	02-Sep-19 14:07		
Containers Supplied:				
Sample ID: 1903011-04	**Waste Wat**	**Sampled: 07-Mar-19 11:23**		
Sub - RADIUM 226	18-Mar-19 00:00	03-Sep-19 11:23		
Sub - RADIUM 228	18-Mar-19 00:00	03-Sep-19 11:23		
Containers Supplied:				
Sample ID: 1903011-05	**Waste Wat**	**Sampled: 07-Mar-19 13:26**		
Sub - RADIUM 228	18-Mar-19 00:00	03-Sep-19 13:26		
Sub - RADIUM 226	18-Mar-19 00:00	03-Sep-19 13:26		
Containers Supplied:				

Released By	Date	Received By	Date
	3/13/19		3/13/19 9:35
Released By	Date	Received By	Date

SUBCONTRACT ORDER

Lakeland Laboratories, LLC

1903011

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: 1903011-06	**Waste Wat**	**Sampled: 06-Mar-19 10:27**		
Sub - RADIUM 228	18-Mar-19 00:00	02-Sep-19 10:27		
Sub - RADIUM 226	18-Mar-19 00:00	02-Sep-19 10:27		
Containers Supplied:				
Sample ID: 1903011-07	**Waste Wat**	**Sampled: 05-Mar-19 14:43**		
Sub - RADIUM 226	18-Mar-19 00:00	01-Sep-19 14:43		
Sub - RADIUM 228	18-Mar-19 00:00	01-Sep-19 14:43		
Containers Supplied:				
Sample ID: 1903011-08	**Waste Wat**	**Sampled: 11-Mar-19 13:20**		
Sub - RADIUM 226	18-Mar-19 00:00	07-Sep-19 13:20		
Sub - RADIUM 228	18-Mar-19 00:00	07-Sep-19 13:20		
Containers Supplied:				
Sample ID: 1903011-09	**Waste Wat**	**Sampled: 11-Mar-19 13:00**		
Sub - RADIUM 226	18-Mar-19 00:00	07-Sep-19 13:00		
Sub - RADIUM 228	18-Mar-19 00:00	07-Sep-19 13:00		
Containers Supplied:				
Sample ID: 1903011-10	**Waste Wat**	**Sampled: 07-Mar-19 15:00**		
Sub - RADIUM 228	18-Mar-19 00:00	03-Sep-19 15:00		
Sub - RADIUM 226	18-Mar-19 00:00	03-Sep-19 15:00		
Containers Supplied:				

Released By	Date	Received By	Date
MAC	3/13/19		3/13/19 9:35
Released By	Date	Received By	Date

CHAIN OF CUSTODY

.akeland Laboratories, LLC
.910 Harden Boulevard, Suite 101
.akeland, FL 33803-1829
Phone: (863) 686-4271 Fax: (863) 686-4389

Lab Work Order Number:

Client Name Lakeland Electric	***Project Name*** Wells
Project Manager Andrew Barron	***Project Number*** 5071301
Client Address 3030 E. Lake Parker DR.	***Project Location*** Mcintosh
City Lakeland	***PO Number*** 277548
State/Zip FL 33805	***Shipped By*** Main Lab
Phone 863-834-5605 ***Fax***	***Tracking Number***
Sampler Don Biggs	***Sampler Signature***

Requested Analyses: Radium 226 & 228

Requested Turn Around
FDEP Facility No.:
Rush requests subject to additional charge.
Rush requests subject to lab approval.
Standard (days)
Expedited (days)
Requested Due Date

Sample Name or Field ID	Sampled Date	Sampled Time	Sample Type (Grab / Composite)	Matrix Code	Container Count	Preservation Code HNO3 TO<2	Sample Comments	Lab ID
9030504-01E	3/7/2019	14:17	Grab	WW	1	X	CCR-15	1
9030504-02E	3/6/2019	11:20	Grab	WW	1	X	CCR-16	2
9030504-04E	3/6/2019	14:07	Grab	WW	1	X	CCR-18	3
9030504-08E	3/7/2019	11:23	Grab	WW	1	X	CCR-22	4
9030504-09E	3/7/2019	13:26	Grab	WW	1	X	CCR-23	5
9030504-11E	3/6/2019	10:27	Grab	WW	1	X	MW-25S	6
9030504-12E	3/5/2019	14:43	Grab	WW	1	X	MW-26S	7
9030504-13E	3/11/2019	13:20	Grab	WW	1	X	Fish Lake	8
9030504-14E	3/11/2019	13:00	Grab	WW	1	X	Lake B	9
9030504-17E	3/7/2019	15:00	Grab	WW	1	X	Equipment Blank	10

Item Numbers 1-10	Relinquished By Fiona Duggan	Received By Fiona Duggan Fed Ex	Date/Time 3/11/19 @ 1455
Item Numbers	Relinquished By Fed Ex	Received By Summitt	Date/Time
Item Numbers	Relinquished By	Received By	Date/Time
Item Numbers	Relinquished By	Received By	Date/Time
Cooler Numbers and Temperatures 25.0°C		Total # of Containers: 10	

Sample Kit Prepared By | Date/Time

Comments: Please rush

Matrix Codes: A=Air, D=Drywall, GW=Ground Water, SW=Surface Water, W=Water, SO=Soil, SOL=Solid Material, Wi=Wipe, Oi=Oil, P=Paint Chips, SE=Sediment, SL=Sludge, OL=Organic Liquid, WW=Waste Water

Preserv. Codes: ICE=Store at 4°C, *ICE+=Store at 4°C+No Headspace,* ICE&=Store at 4°C&In Dark, *HNO3=pH<2 w/ HNO3+ICE,* HCl=pH<2 w/ HCl+ICE, *H2SO4=pH<2 w/ H2SO4+ICE,* MeOH=Frozen -10°C+MeOH, *N/A=No preservative required,* Sub=Subcontracted(see bottle for preservative)

Lake C&D
Ra 226/228

Florida Radiochemistry Services, Inc.

Contact: Michael J. Naumann
5456 Hoffner Ave., Suite 201 Orlando, FL 32812
Phone: (407) 382-7733 Fax: (407)382-7744
Certification I. D. # E83033

Work Order #: 1903107
Report Date: 03/29/19

Report to:

Lakeland Laboratories, LLC
1910 Harden Blvd., Suite 101
Lakeland, FL 33803
Attention: Jim Crawford

I do hereby affirm that this record contains no willful misrepresentations and that this information given by me is true to the best of my knowledge and belief. I further certify that the methods and quality control measures used to produce these laboratory results were implemented in accordance with the requirements of this laboratory's certification and NELAC Standards. The test results in this report relate only to the samples received.

Signed _____ Date 3-29-19
Michael J. Naumann - President
Shawn M. Naumann - Laboratory Director

Florida Radiochemistry Services, Inc.

Sample Login

Client:	**Lakeland Laboratories, LLC**	**Date / Time Received**	**Work order #**
		03/15/19 16:10	**1903107**
Client Contact:	**Jim Crawford**		
Client P.O.	**277548**		
Project I.D.	**1903015 / 5071301 Wells**		
Lab Sample I.D.	**Client Sample I.D.**	**Sample Date/Time**	**Analysis Requested**
1903107-01	**9030504-15E**	**03/13/19 13:45**	**Ra226, Ra228**
1811015-02	**9030504-16E**	**03/13/19 13:35**	**Ra226, Ra228**

Florida Radiochemistry Services, Inc.

Analysis Report

Lab Sample I.D.	1903107-01	1811015-02
Client I.D.	9030504-15E	9030504-16E
Radium 226	1.5	4.0
Error +/-	0.3	0.5
MDL	0.1	0.2
EPA Method	903.1	903.1
Prep Date	03/21/19	03/21/19
Prep Time	08:00	08:00
Analysis Date	03/29/19	03/29/19
Analysis Time	09:51	09:51
Analyst	MJN	MJN
Radium 228	0.7U	1.3
Error +/-	0.4	0.5
MDL	0.7	0.7
EPA Method	Ra-05	Ra-05
Prep Date	03/21/19	03/21/19
Prep Time	08:00	08:00
Analysis Date	03/27/19	03/27/19
Analysis Time	10:26	10:26
Analyst	SN	SN
Units	pCi/l	pCi/l

A U next to a result indicates analyte not detected at the MDL level

Florida Radiochemistry Services, Inc.

QA Page

Analyte	Sample #	Date Analyzed	Sample Result	Amount Spiked	Spike Result	Spike /Dup Result	Spike % Rec.	Spike Dup % Rpd
Radium 226	1903113-04	03/29/19	2.1	22.1	23.1	23.6	95	2.1
Radium 228	1903113-04	03/27/19	<0.7	4.7	4.6	4.9	98	6.3

	Quality Control Limits
	% RPD
Radium 226	23.4
Radium 228	23.9

Limits
% Rec.
78-125
67-125

CHAIN OF CUSTODY

Lakeland Laboratories, LLC
3910 Harden Boulevard, Suite 101
Lakeland, FL 33803-1829
Phone: (863) 686-4271 Fax: (863) 686-4389

Lab Work Order Number: 1903015

Client Name: Lakeland Electric	Project Name: Wells
Project Manager: Andrew Barron	Project Number: 5071301
Client Address: 3030 E. Lake Parker DR.	Project Location: McIntosh
City: Lakeland	PO Number: 277548
State/Zip: FL 33805	Shipped By: Main Lab
Phone: 863-834-5605 Fax:	Tracking Number:
Sampler: Don Biggs	Sampler Signature:

Requested Analyses: Radium 226 & 228

Requested Turn Around
FDEP Facility No.:
Rush requests subject to additional charge
Rush requests subject to lab approval
Standard (days)
Expedited (days)
Requested Due Date

Sample Name or Field ID	Sampled Date	Sampled Time	Sample Type (Grab / Composite)	Matrix Code	Container Count	Preservation Code: HNO3 TO<2	Sample Comments	Lab ID
9030504-15E	3/13/2019	13:45	Grab	WW	1	X	Lake C	
9030504-16E	3/13/2019	13:35	Grab	WW	1	X	Lake D	

Item Numbers	Relinquished By	Received By	Date/Time	Sample Kit Prepared By	Date/Time
		Fed Ex	3/13/19 1522		
	Fed Ex	FDS Summit	3/15/19 16:10	Comments:	
				Please rush	

Cooler Numbers and Temperatures: 25 °C

Total # of Containers: 2

Matrix Codes: A=Air, B=Drywall, GW=Ground Water, SW=Surface Water, W=Water, SO=Soil, SOL=Solid Material, WI=Wipe, OI=Oil, P=Paint Chips, SE=Sediment, SL=Sludge, OL=Organic Liquid, WW=Waste Water

Preserv. Codes: ICE=Store at 4°C, NCF=Store at 4°C+No Headspace, ICEA=Store at 4°C+Amb Dark, HNO3=pH<2 w/ HNO3+ICE, HCl=pH<2 w/ HCl+ICE, H2SO4=pH<2 w/ H2SO4+ICE, MeOH=Frozen -10°C+MeOH, N/A=No preservative required, Sub=Subcontracted(see bottle for preservative)

Lake C&D

Li, Potassium
P 405, Amon
Nitrate- Nitrite

Analytical Report For:

City of Lakeland - Lakeland Electric

Lab Work Order Number

DC13013

Project Name

CCR Wells

Project Number

03/13/19

PhoslabEnvironmental
SERVICES

EPA ID: FL00121 FDOH ID: E84925

NELAP ACCREDITED LABORATORY

Minority Operated Business
Small Operated Business

March 25, 2019

PhoslabEnvironmental
SERVICES

806 W Beacon Rd
Lakeland, FL 33803
Phone: 863-682-5897
Web: www.phoslab.com

March 25, 2019

Andrew Barron
City of Lakeland - Lakeland Electric
3030 East Lake Parker Dr.
Lakeland, FL 33805

RE: CCR Wells

The analytical results for the samples identified in this report were submitted for analysis as outlined by the attached Chain of Custody. The results for the quality control samples were reviewed and found to meet the acceptance criteria for precision and accuracy or properly flagged. Unless noted in this report or a case narrative, all data in this analytical report is in compliance with NELAP standards. This report may not be reproduced in part without the permission of Phoslab.

This report and all supporting data will be maintained for a period of 5 years, after which time may be destroyed without further notice unless agreed upon with the customer. All samples shall be retained for a 30 day period from date received and may be properly disposed of without further notice, unless agreed upon with the customer. Phoslab has the right to return any samples to the customer if deemed necessary. The responsibility for the disposal of hazardous samples fall upon the customer unless agreed upon arrangements are made. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

Emily Barnett

Emily Barnett For Jini Curry
Lab Director

PhoslabEnvironmental SERVICES Phone: 863-682-5897

City of Lakeland - Lakeland Electric	Project: CCR Wells	DC13013
3030 East Lake Parker Dr.	Project Number: 03/13/19	**Reported:**
Lakeland, FL 33805	Project Manager: Andrew Barron	03/25/2019 11:18

Samples in this Report

Lab ID	Sample	Matrix	Date Sampled	Date Received
DC13013-01	9030504-15	Liquid	13-Mar-2019 13:45	03/13/2019
DC13013-02	9030504-16	Liquid	13-Mar-2019 13:35	03/13/2019

PhoslabEnvironmental SERVICES Phone: 863-682-5897

City of Lakeland - Lakeland Electric	Project: CCR Wells	DC13013
3030 East Lake Parker Dr.	Project Number: 03/13/19	**Reported:**
Lakeland, FL 33805	Project Manager: Andrew Barron	03/25/2019 11:18

Case Narrative

Total Phosphorus failed both the MS/MSD high due to matrix interference. All other QC checks passed. Results for the source sample was qualified as such.

Sample Results

Sample: 9030504-15 [DC13013-01 (Liquid)]

Ammonia Colorimetry by Method EPA 350.1 Prepared: 03/15/19 08:14 Analyzed: 03/18/19 12:40

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Ammonia as N	**0.166**		1	0.00400	0.0222	mg/L	B9C1505	LAS	EPA 350.1

Nitrate/Nitrite Colorimetry by method EPA 353.2 Prepared: 03/13/19 13:45 Analyzed: 03/14/19 09:36

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Nitrate-nitrite	0.0300	U	1	0.0300	0.250	mg/L	B9C1314	LAS	EPA 353.2

Phosphorus Colorimetry by Method EPA 365.1 Prepared: 03/20/19 09:07 Analyzed: 03/20/19 13:25

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Phosphorus, Total	**1.22**	J5	5	0.0150	0.0665	mg/L	B9C2001	LAS	EPA 365.1

Total Metals - ICP Spectroscopy by EPA Method 200.7 Prepared: 03/15/19 13:50 Analyzed: 03/18/19 13:18

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Potassium	**4.16**		1	0.0150	0.0500	mg/L	B9C1807	CB	EPA 200.7

City of Lakeland - Lakeland Electric	Project: CCR Wells	DC13013
3030 East Lake Parker Dr.	Project Number: 03/13/19	**Reported:**
Lakeland, FL 33805	Project Manager: Andrew Barron	03/25/2019 11:18

Sample Results

(Continued)

Sample: 9030504-16 [DC13013-02 (Liquid)]

Ammonia Colorimetry by Method EPA 350.1

Prepared: 03/15/19 08:14 Analyzed: 03/18/19 12:42

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Ammonia as N	**0.670**		1	0.00400	0.0222	mg/L	B9C1505	LAS	EPA 350.1

Nitrate/Nitrite Colorimetry by method EPA 353.2

Prepared: 03/13/19 13:45 Analyzed: 03/14/19 09:37

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Nitrate-nitrite	0.0300	U	1	0.0300	0.250	mg/L	B9C1314	LAS	EPA 353.2

Phosphorus Colorimetry by Method EPA 365.1

Prepared: 03/20/19 09:07 Analyzed: 03/20/19 13:26

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Phosphorus, Total	**0.585**		5	0.0150	0.0665	mg/L	B9C2001	LAS	EPA 365.1

Total Metals - ICP Spectroscopy by EPA Method 200.7

Prepared: 03/15/19 13:50 Analyzed: 03/18/19 13:39

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Potassium	**74.1**		25	0.375	1.25	mg/L	B9C1807	CB	EPA 200.7

City of Lakeland - Lakeland Electric	Project: CCR Wells	DC13013
3030 East Lake Parker Dr.	Project Number: 03/13/19	**Reported:**
Lakeland, FL 33805	Project Manager: Andrew Barron	03/25/2019 11:18

Quality Control

Ammonia Colorimetry by Method EPA 350.1

Batch: B9C1505 - Seal

Blank (B9C1505-BLK1) Prepared: 03/15/19 08:14 Analyzed: 03/18/19 12:06

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Ammonia as N	0.00400	U	0.00400	0.0222	mg/L						

LCS (B9C1505-BS1) Prepared: 03/15/19 08:14 Analyzed: 03/18/19 11:59

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Ammonia as N	0.980				mg/L	1.00		98.0	90-110		

Matrix Spike (B9C1505-MS1) **Source: DC12011-01** Prepared: 03/15/19 08:14 Analyzed: 03/18/19 12:03

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Ammonia as N	1.30		0.00400	0.0222	mg/L	1.00	0.262	103	90-110		

Matrix Spike Dup (B9C1505-MSD1) **Source: DC12011-01** Prepared: 03/15/19 08:14 Analyzed: 03/18/19 12:04

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Ammonia as N	1.25		0.00400	0.0222	mg/L	1.00	0.262	99.0	90-110	3.50	10

Quality Control
(Continued)

Nitrate/Nitrite Colorimetry by method EPA 353.2

Batch: B9C1314 - Seal

Blank (B9C1314-BLK1) Prepared: 03/13/19 13:45 Analyzed: 03/14/19 09:25

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Nitrate-nitrite	0.0300	U	0.0300	0.250	mg/L						

LCS (B9C1314-BS1) Prepared: 03/13/19 13:45 Analyzed: 03/14/19 09:18

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Nitrate-nitrite	7.37		0.0300	0.250	mg/L				90-110		

Matrix Spike (B9C1314-MS1) **Source: DC12011-01** Prepared: 03/13/19 13:45 Analyzed: 03/14/19 09:22

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Nitrate-nitrite	9.33		0.0300	0.250	mg/L	7.50	1.60	103	90-110		

Matrix Spike Dup (B9C1314-MSD1) **Source: DC12011-01** Prepared: 03/13/19 13:45 Analyzed: 03/14/19 09:24

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Nitrate-nitrite	9.29		0.0300	0.250	mg/L	7.50	1.60	103	90-110	0.516	10

Quality Control
(Continued)

Phosphorus Colorimetry by Method EPA 365.1

Batch: B9C2001 - Seal

Blank (B9C2001-BLK1) Prepared: 03/20/19 09:07 Analyzed: 03/20/19 13:23

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Phosphorus, Total	0.00300	U	0.00300	0.0133	mg/L						

LCS (B9C2001-BS1) Prepared: 03/20/19 09:07 Analyzed: 03/20/19 14:05

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Phosphorus, Total	0.474				mg/L	0.500		94.8	90-110		

Matrix Spike (B9C2001-MS1) **Source: DC20001-01** Prepared: 03/20/19 09:07 Analyzed: 03/20/19 13:21

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Phosphorus, Total	1.72	J5	0.0150	0.0665	mg/L	0.500	1.15	114	90-110		

Matrix Spike Dup (B9C2001-MSD1) **Source: DC20001-01** Prepared: 03/20/19 09:07 Analyzed: 03/20/19 13:22

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Phosphorus, Total	1.72	J5	0.0150	0.0665	mg/L	0.500	1.15	113	90-110	0.407	10

Quality Control

(Continued)

Total Metals - ICP Spectroscopy by EPA Method 200.7

Batch: B9C1807 - Metals - 200.7

Blank (B9C1807-BLK1) Prepared: 03/15/19 13:50 Analyzed: 03/18/19 12:47

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Potassium	0.0290	I	0.0150	0.0500	mg/L						

LCS (B9C1807-BS1) Prepared: 03/15/19 13:50 Analyzed: 03/18/19 12:49

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Potassium	2.05		0.0150	0.0500	mg/L	2.00		103	85-115		

Matrix Spike (B9C1807-MS1) **Source: DC11011-12** Prepared: 03/15/19 13:50 Analyzed: 03/18/19 12:51

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Potassium	12.7		0.0150	0.0500	mg/L	10.0	2.11	106	80-120		

Matrix Spike Dup (B9C1807-MSD1) **Source: DC11011-12** Prepared: 03/15/19 13:50 Analyzed: 03/18/19 12:53

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Potassium	12.6		0.0150	0.0500	mg/L	10.0	2.11	105	80-120	0.715	20

PhoslabEnvironmental SERVICES Phone: 863-682-5897

City of Lakeland - Lakeland Electric	Project: CCR Wells	DC13013
3030 East Lake Parker Dr.	Project Number: 03/13/19	**Reported:**
Lakeland, FL 33805	Project Manager: Andrew Barron	03/25/2019 11:18

Notes and Definitions

Item	Definition
I	The value is between the MDL and the PQL
J5	The reported value failed to meet the established quality control criteria for either precision or accuracy. The data usability is not effected.
Dry	Sample results reported on a dry weight basis.
ND	Analyte NOT DETECTED at or above the reporting limit.
U	Analyte NOT DETECTED at or above the reporting limit.
%REC	Percent Recovery
Dil.	Dilution
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.

City of Lakeland - Lakeland Electric	Project: CCR Wells	DC13013
3030 East Lake Parker Dr.	Project Number: 03/13/19	**Reported:**
Lakeland, FL 33805	Project Manager: Andrew Barron	03/25/2019 11:18

PhoslabEnvironmental SERVICES

806 West Beacon Road
Lakeland, Florida 33803-2847
Phone: 863-682-5897
Fax: 863-683-3279
FDEP CompQAP No: 870308G
FDOH ID#: E84925

DC13013

CHAIN OF CUSTODY RECORD

Company: CITY OF LAKELAND	Project Name: CCR Wells	PO: 277354	Page 1 of 1
Address: 3030 E. LK PARKER DR.	Project #:		DEP Form #: 62-770.900(2)
LAKELAND, FL ZIP: 33805	Project Manager: Andrew Barron		Form Title: Chain of Custory Record
Phone 863-834-5605 Fax:	Project Location: MPP		Effective Date: 8/2004
Sampled by [Print Name(s)] / Affiliation: Don Biggs	Evidence Sample (s): Yes No X		FDEP Facility No.:
Sampler(s) Signature(s):			Project Name:
			Sampling CompQAP No.:
			Approval Date:
			REQUESTED DUE DATE

Item No.	Field ID No.	Date	Time	Grab or Composite	Matrix (see codes)	Number of Containers	Arsenic	Lithium	Potassium	Phosphate	Ammonia	Nitrate-nitrite	Remarks	Lab. No.
1	9030504-15	3/13/19	1345	Grab	GW	2		N	N	S	S	S	Lake C	-01
2	9030504-16	3/13/19	1335	Grab	GW	2		N	N	S	S	S	Lake D	-02

Analyses Requested

ent Method: 2

Out: / /			Item No.	Relinquished by / Affiliation	Date	Time	Accepted by / Affiliation	Date
Returned: / /	Via:			PhosLab, Inc. / Containers				
Additional Comments: CCR Well Water					3/13/19	1527		03/13/19 Time 1527

Cooler No.(s) / Temperature(s) (C): 6C C 2.0+

Sampling Kit No.:

Equipment ID No.:

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) O = Other (specify)

PRESERVATIVE CODES: H = Hydrochloric acid + ice I = Ice only N = Nitric acid + ice S = Sulfuric acid + ice O = Other (specify)

= Preservative

SGS

Orlando, FL

03/22/19

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Phoslab Environmental Services

CCR Wells; FL

DC13013

SGS Job Number: FA62426

Sampling Date: 03/13/19

Report to:

georgeaf@phoslab.com
charo@phoslab.com
jcurry@phoslab.com
emilyb@phoslab.com

ATTN: Distribution5

Total number of pages in report: 12

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Caitlin Brice, M.S.
General Manager

Client Service contact: Brian Reyes 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), IL(200063), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AK, AR, IA, KY, MA, MS, ND, NH, NV, OK, OR, UT, WA, WV

Test results relate only to samples analyzed.

Sections: 1 2 3 4

Table of Contents

-1-

Sample Summary

Phoslab Environmental Services

Job No: FA62426

CCR Wells; FL
Project No: DC13013

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
FA62426-1	03/13/19	13:45	PL	03/16/19	AQ	Water	DC13013-01/9030504-15
FA62426-2	03/13/19	13:35	PL	03/16/19	AQ	Water	DC13013-02/9030504-16

2

Summary of Hits

Job Number: FA62426
Account: Phoslab Environmental Services
Project: CCR Wells; FL
Collected: 03/13/19

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FA62426-1	DC13013-01/9030504-15					
No hits reported in this sample.						
FA62426-2	DC13013-02/9030504-16					
Lithium [a]		23.5 I	50	9.1	ug/l	EPA 200.7

(a) Analysis performed at SGS Dayton, NJ.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	DC13013-01/9030504-15		
Lab Sample ID:	FA62426-1	Date Sampled:	03/13/19
Matrix:	AQ - Water	Date Received:	03/16/19
		Percent Solids:	n/a
Project:	CCR Wells; FL		

Total Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lithium [a]	9.1 U	50	9.1	ug/l	1	03/20/19	03/22/19	ANJ	EPA 200.7 [1]	EPA 200.7 [2]

(1) Instrument QC Batch: N:MA46343
(2) Prep QC Batch: N:MP13255

(a) Analysis performed at SGS Dayton, NJ.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result >= MDL but < PQL

Report of Analysis

Client Sample ID:	DC13013-02/9030504-16		
Lab Sample ID:	FA62426-2	Date Sampled:	03/13/19
Matrix:	AQ - Water	Date Received:	03/16/19
		Percent Solids:	n/a
Project:	CCR Wells; FL		

Total Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lithium [a]	23.5 I	50	9.1	ug/l	1	03/20/19	03/22/19	ANJ	EPA 200.7 [1]	EPA 200.7 [2]

(1) Instrument QC Batch: N:MA46343
(2) Prep QC Batch: N:MP13255

(a) Analysis performed at SGS Dayton, NJ.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result >= MDL but < PQL

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- **Chain of Custody**
- **Chain of Custody (SGS Dayton, NJ)**

SUBCONTRACT ORDER

PhoslabEnvironmental SERVICES

Phone: 863-682-5897
Project Manager: Jini Curry

RECEIVING LABORATORY:

SGS Accutest
4405 Vineland Road
Orlando, FL 32811
Phone :(407) 425-6700
Fax:

FA62426

Project Name: CCR Wells
Project Number: DC13013

1 **Sample ID: DC13013-01** **Matrix: Liquid** **Sampled: 03/13/19 13:45**
Sample Name: 9030504-15

Analysis:	Comments:
200.7-Li	Standard TAT

2 **Sample ID: DC13013-02** **Matrix: Liquid** **Sampled: 03/13/19 13:35**
Sample Name: 9030504-16

Analysis:	Comments:
200.7-Li	Standard TAT

Released By	Received By	Date / Time
		03/15/19 1036
		03/15/19 1716
	Result	3/16/19 800

4.1 4

FA62426: Chain of Custody
Page 1 of 2

1.8

Page 1 of 1

SGS Sample Receipt Summary

Job Number: FA62426 **Client:** PHOSLAB **Project:** CCR WELLS

Date / Time Received: 3/16/2019 8:00:00 AM **Delivery Method:** ALSE **Airbill #'s:**

Therm ID: IR 1; **Therm CF:** -0.2; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (2.0);

Cooler Temps (Corrected) °C: Cooler 1: (1.8);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑
	W	**or**	**S**	**N/A**
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☐		☑	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments BOTH SAMPLES RECEIVED LOW VOLUME

SM001
Rev. Date 05/24/17

Technician: PETERH Date: 3/16/2019 8:00:00 AM Reviewer: _____ Date: _____

4.1
4

FA62426: Chain of Custody
Page 2 of 2

CHAIN OF CUSTODY

SGS North America Inc. - Orlando
4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 FAX: 407-425-0707
www.sgs.com/ehsusa

Page 1 of 1

FED-EX Tracking # 4780 6757 9610 | Bottle Order Control #
SGS Quote # | SGS Job # FA62426

Client / Reporting Information

Company Name: SGS North America Inc.
Street Address: 4405 Vineland Rd, Suite C-15
City: Orlando State: FL Zip: 32811
Project Contact: Brian.ReyesVillalobos@sgs.com E-mail:
Phone #: 407-425-6700 Fax #:
Sampler(s) Name(s): PL Phone:

Project Information

Project Name: CCR Wells; FL
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	LI , 200.7	LAB USE ONLY
1	DC13013-01/9030504-15		3/13/19	1:45:00 PM	PL	AQ	1			1						X	
2	DC13013-02/9030504-16		3/13/19	1:35:00 PM	PL	AQ	1			1						X	

FL

Turnaround Time (Business days)

Approved By (SGS PM); / Date:

- [ ] Standard 10 Day (business)
- [ ] 5 Business Days RUSH
- [ ] 3 Business Days RUSH
- [ ] 2 Business Days RUSH
- [ ] 1 Business Day EMERGENCY
- [x] other 7

Emergency & Rush T/A data available via LabLink. Approval needed for RUSH/Emergency TAT.

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] RED T1 (Level 3)
- [ ] FULT1 (Level 4)
- [ ] Commercial "C"
- [ ] State Forms
- [ ] EDD Format
- [ ] Other
- [x] GL

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

SGS-NJ
INITIAL ASESSMENT 30
LABEL VERIFICATION

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 03/18/19	1200	1 Fed Ex	2 Fed Ex	3/19 0950	2
Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
3		3	4		4
Relinquished By:	Date Time:	Received By:	Custody Seal #	Preserved where applicable	On Ice / Cooler Temp
5		5	[x] Intact [ ] Not Intact	[ ] Therm. ID:	[ ] 2.8 2.5 °C

FA62426: Chain of Custody
Page 1 of 2
SGS Dayton, NJ

SGS Sample Receipt Summary

Job Number: FA62426 **Client:** _____ **Project:** _____

Date / Time Received: 3/19/2019 9:50:00 AM **Delivery Method:** _____ **Airbill #'s:** _____

Cooler Temps (Raw Measured) °C: Cooler 1: (2.8);

Cooler Temps (Corrected) °C: Cooler 1: (1.8);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☑	☐
2. Trip Blank listed on COC:	☐		☑	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Test Strip Lot #s: pH 1-12: 206717 pH 12+: 208717 Other: (Specify) _____ _____

Comments

SM089-03
Rev. Date 12/7/17

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FA62426: Chain of Custody
Page 2 of 2

Analytical Report For:

City of Lakeland - Lakeland Electric

Lab Work Order Number

DC11011

Project Name

CCR Wells

Project Number

CCR Wells

PhoslabEnvironmental SERVICES

EPA ID: FL00121 FDOH ID: E84925

Minority Operated Business

Small Operated Business

March 20, 2019

PhoslabEnvironmental
SERVICES

806 W Beacon Rd
Lakeland, FL 33803
Phone: 863-682-5897
Web: www.phoslab.com

March 20, 2019

Andrew Barron
City of Lakeland - Lakeland Electric
3030 East Lake Parker Dr.
Lakeland, FL 33805

RE: CCR Wells

The analytical results for the samples identified in this report were submitted for analysis as outlined by the attached Chain of Custody. The results for the quality control samples were reviewed and found to meet the acceptance criteria for precision and accuracy or properly flagged. Unless noted in this report or a case narrative, all data in this analytical report is in compliance with NELAP standards. This report may not be reproduced in part without the permission of Phoslab.

This report and all supporting data will be maintained for a period of 5 years, after which time may be destroyed without further notice unless agreed upon with the customer. All samples shall be retained for a 30 day period from date received and may be properly disposed of without further notice, unless agreed upon with the customer. Phoslab has the right to return any samples to the customer if deemed necessary. The responsibility for the disposal of hazardous samples fall upon the customer unless agreed upon arrangements are made. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

Emily Barnett

Emily Barnett For Jini Curry
Lab Director

PhoslabEnvironmental SERVICES Phone: 863-682-5897

City of Lakeland - Lakeland Electric	Project: CCR Wells	DC11011
3030 East Lake Parker Dr.	Project Number: CCR Wells	**Reported:**
Lakeland, FL 33805	Project Manager: Andrew Barron	03/20/2019 14:28

Samples in this Report

Lab ID	Sample	Matrix	Date Sampled	Date Received
DC11011-01	9030504-01 - CCR15	Liquid	07-Mar-2019 14:17	03/11/2019
DC11011-02	9030504-02 - CCR16	Liquid	06-Mar-2019 11:20	03/11/2019
DC11011-03	9030504-03 - CCR17	Liquid	06-Mar-2019 13:26	03/11/2019
DC11011-04	9030504-04 - CCR18	Liquid	06-Mar-2019 14:07	03/11/2019
DC11011-05	9030504-05 - CCR19	Liquid	06-Mar-2019 14:55	03/11/2019
DC11011-06	9030504-06 - CCR20	Liquid	07-Mar-2019 10:13	03/11/2019
DC11011-07	9030504-07 - CCR21	Liquid	07-Mar-2019 10:42	03/11/2019
DC11011-08	9030504-08 - CCR22	Liquid	07-Mar-2019 11:23	03/11/2019
DC11011-09	9030504-09 - CCR23	Liquid	07-Mar-2019 13:26	03/11/2019
DC11011-10	9030504-10 - MW-24S	Liquid	05-Mar-2019 13:29	03/11/2019
DC11011-11	9030504-11 - MW-25S	Liquid	06-Mar-2019 10:27	03/11/2019
DC11011-12	9030504-12 - MW-26S	Liquid	06-Mar-2019 14:43	03/11/2019
DC11011-13	9030504-13 - Fish Lake	Liquid	11-Mar-2019 13:20	03/11/2019
DC11011-14	9030504-14 - Lake B	Liquid	11-Mar-2019 13:00	03/11/2019
DC11011-15	9030504-17 - Equipment Blank	Liquid	07-Mar-2019 15:00	03/11/2019

City of Lakeland - Lakeland Electric	Project: CCR Wells	DC11011
3030 East Lake Parker Dr.	Project Number: CCR Wells	**Reported:**
Lakeland, FL 33805	Project Manager: Andrew Barron	03/20/2019 14:28

Case Narrative

Metals Analysis (Batch# B9C1806): Due to matrix interference the following analytes failed Matrix Spike and/or Matrix Spike Duplicate QC criteria but passed 1st source QC checks. Results were qualified as such:

Potassium (K)

Sample Results

Sample: 9030504-01 - CCR15 [DC11011-01 (Liquid)]

Ammonia Colorimetry by Method EPA 350.1 Prepared: 03/15/19 08:14 Analyzed: 03/18/19 12:09

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Ammonia as N	**1.48**		1	0.00400	0.0222	mg/L	B9C1505	LAS	EPA 350.1

Nitrate/Nitrite Colorimetry by method EPA 353.2 Prepared: 03/11/19 09:53 Analyzed: 03/12/19 17:57

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Nitrate-nitrite	**0.0720**	I	1	0.0300	0.250	mg/L	B9C1104	LAS	EPA 353.2

Phosphorus Colorimetry by Method EPA 365.1 Prepared: 03/15/19 08:05 Analyzed: 03/18/19 09:39

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Phosphorus, Total	**0.139**		1	0.00300	0.0133	mg/L	B9C1503	LAS	EPA 365.1

Total Metals - ICP Spectroscopy by EPA Method 200.7 Prepared: 03/18/19 09:28 Analyzed: 03/18/19 13:27

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Potassium	**108**	J5	25	0.375	1.25	mg/L	B9C1806	CB	EPA 200.7

City of Lakeland - Lakeland Electric	Project: CCR Wells	DC11011
3030 East Lake Parker Dr.	Project Number: CCR Wells	**Reported:**
Lakeland, FL 33805	Project Manager: Andrew Barron	03/20/2019 14:28

Sample Results

(Continued)

Sample: 9030504-02 - CCR16 [DC11011-02 (Liquid)]

Ammonia Colorimetry by Method EPA 350.1

Prepared: 03/15/19 08:14 Analyzed: 03/18/19 12:11

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Ammonia as N	**1.65**		1	0.00400	0.0222	mg/L	B9C1505	LAS	EPA 350.1

Nitrate/Nitrite Colorimetry by method EPA 353.2

Prepared: 03/11/19 09:53 Analyzed: 03/12/19 17:58

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Nitrate-nitrite	0.0300	U	1	0.0300	0.250	mg/L	B9C1104	LAS	EPA 353.2

Phosphorus Colorimetry by Method EPA 365.1

Prepared: 03/15/19 08:05 Analyzed: 03/18/19 09:40

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Phosphorus, Total	**0.0550**		1	0.00300	0.0133	mg/L	B9C1503	LAS	EPA 365.1

Total Metals - ICP Spectroscopy by EPA Method 200.7

Prepared: 03/18/19 09:28 Analyzed: 03/18/19 13:30

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Potassium	**385**		25	0.375	1.25	mg/L	B9C1806	CB	EPA 200.7

City of Lakeland - Lakeland Electric	Project: CCR Wells	DC11011
3030 East Lake Parker Dr.	Project Number: CCR Wells	**Reported:**
Lakeland, FL 33805	Project Manager: Andrew Barron	03/20/2019 14:28

Sample Results

(Continued)

Sample: 9030504-03 - CCR17 [DC11011-03 (Liquid)]

Ammonia Colorimetry by Method EPA 350.1

Prepared: 03/15/19 08:14 Analyzed: 03/18/19 12:12

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Ammonia as N	**0.292**		1	0.00400	0.0222	mg/L	B9C1505	LAS	EPA 350.1

Nitrate/Nitrite Colorimetry by method EPA 353.2

Prepared: 03/11/19 09:53 Analyzed: 03/12/19 17:59

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Nitrate-nitrite	0.0300	U	1	0.0300	0.250	mg/L	B9C1104	LAS	EPA 353.2

Phosphorus Colorimetry by Method EPA 365.1

Prepared: 03/15/19 08:05 Analyzed: 03/18/19 09:41

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Phosphorus, Total	**0.0760**		1	0.00300	0.0133	mg/L	B9C1503	LAS	EPA 365.1

Total Metals - ICP Spectroscopy by EPA Method 200.7

Prepared: 03/18/19 09:28 Analyzed: 03/18/19 12:19

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Potassium	**11.0**		1	0.0150	0.0500	mg/L	B9C1806	CB	EPA 200.7

City of Lakeland - Lakeland Electric	Project: CCR Wells	DC11011
3030 East Lake Parker Dr.	Project Number: CCR Wells	**Reported:**
Lakeland, FL 33805	Project Manager: Andrew Barron	03/20/2019 14:28

Sample Results

(Continued)

Sample: 9030504-04 - CCR18 [DC11011-04 (Liquid)]

Ammonia Colorimetry by Method EPA 350.1

Prepared: 03/15/19 08:14 Analyzed: 03/18/19 12:14

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Ammonia as N	**0.464**		1	0.00400	0.0222	mg/L	B9C1505	LAS	EPA 350.1

Nitrate/Nitrite Colorimetry by method EPA 353.2

Prepared: 03/11/19 09:53 Analyzed: 03/12/19 18:00

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Nitrate-nitrite	0.0300	U	1	0.0300	0.250	mg/L	B9C1104	LAS	EPA 353.2

Phosphorus Colorimetry by Method EPA 365.1

Prepared: 03/15/19 08:05 Analyzed: 03/18/19 09:42

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Phosphorus, Total	**0.397**		1	0.00300	0.0133	mg/L	B9C1503	LAS	EPA 365.1

Total Metals - ICP Spectroscopy by EPA Method 200.7

Prepared: 03/18/19 09:28 Analyzed: 03/18/19 12:21

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Potassium	**4.32**		1	0.0150	0.0500	mg/L	B9C1806	CB	EPA 200.7

City of Lakeland - Lakeland Electric	Project: CCR Wells	DC11011
3030 East Lake Parker Dr.	Project Number: CCR Wells	**Reported:**
Lakeland, FL 33805	Project Manager: Andrew Barron	03/20/2019 14:28

Sample Results

(Continued)

Sample: 9030504-05 - CCR19 [DC11011-05 (Liquid)]

Ammonia Colorimetry by Method EPA 350.1

Prepared: 03/15/19 08:14 Analyzed: 03/18/19 13:39

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Ammonia as N	**14.1**		20	0.0800	0.444	mg/L	B9C1505	LAS	EPA 350.1

Nitrate/Nitrite Colorimetry by method EPA 353.2

Prepared: 03/12/19 09:09 Analyzed: 03/12/19 14:20

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Nitrate-nitrite	0.0300	U	1	0.0300	0.250	mg/L	B9C1203	LAS	EPA 353.2

Phosphorus Colorimetry by Method EPA 365.1

Prepared: 03/15/19 08:05 Analyzed: 03/18/19 10:24

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Phosphorus, Total	**0.168**		1	0.00300	0.0133	mg/L	B9C1503	LAS	EPA 365.1

Total Metals - ICP Spectroscopy by EPA Method 200.7

Prepared: 03/18/19 09:28 Analyzed: 03/18/19 13:32

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Potassium	**252**		25	0.375	1.25	mg/L	B9C1806	CB	EPA 200.7

City of Lakeland - Lakeland Electric	Project: CCR Wells	DC11011
3030 East Lake Parker Dr.	Project Number: CCR Wells	**Reported:**
Lakeland, FL 33805	Project Manager: Andrew Barron	03/20/2019 14:28

Sample Results

(Continued)

Sample: 9030504-06 - CCR20 [DC11011-06 (Liquid)]

Ammonia Colorimetry by Method EPA 350.1

Prepared: 03/15/19 08:14 Analyzed: 03/18/19 13:40

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Ammonia as N	**16.4**		20	0.0800	0.444	mg/L	B9C1505	LAS	EPA 350.1

Nitrate/Nitrite Colorimetry by method EPA 353.2

Prepared: 03/12/19 09:09 Analyzed: 03/12/19 14:22

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Nitrate-nitrite	0.0300	U	1	0.0300	0.250	mg/L	B9C1203	LAS	EPA 353.2

Phosphorus Colorimetry by Method EPA 365.1

Prepared: 03/15/19 08:05 Analyzed: 03/18/19 10:25

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Phosphorus, Total	**0.108**		1	0.00300	0.0133	mg/L	B9C1503	LAS	EPA 365.1

Total Metals - ICP Spectroscopy by EPA Method 200.7

Prepared: 03/18/19 09:28 Analyzed: 03/18/19 12:26

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Arsenic	**0.0282**		1	0.00586	0.0100	mg/L	B9C1806	CB	EPA 200.7
Potassium	**240**		25	0.375	1.25	mg/L	B9C1806	CB	EPA 200.7

City of Lakeland - Lakeland Electric	Project: CCR Wells	DC11011
3030 East Lake Parker Dr.	Project Number: CCR Wells	**Reported:**
Lakeland, FL 33805	Project Manager: Andrew Barron	03/20/2019 14:28

Sample Results

(Continued)

Sample: 9030504-07 - CCR21 [DC11011-07 (Liquid)]

Ammonia Colorimetry by Method EPA 350.1

Prepared: 03/12/19 11:13 Analyzed: 03/13/19 08:53

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Ammonia as N	**0.583**		1	0.00400	0.0222	mg/L	B9C1208	LAS	EPA 350.1

Nitrate/Nitrite Colorimetry by method EPA 353.2

Prepared: 03/12/19 09:09 Analyzed: 03/12/19 14:24

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Nitrate-nitrite	0.0300	U	1	0.0300	0.250	mg/L	B9C1203	LAS	EPA 353.2

Phosphorus Colorimetry by Method EPA 365.1

Prepared: 03/15/19 08:05 Analyzed: 03/18/19 10:26

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Phosphorus, Total	**0.0540**		1	0.00300	0.0133	mg/L	B9C1503	LAS	EPA 365.1

Total Metals - ICP Spectroscopy by EPA Method 200.7

Prepared: 03/18/19 09:28 Analyzed: 03/18/19 12:33

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Arsenic	0.00586	U	1	0.00586	0.0100	mg/L	B9C1806	CB	EPA 200.7
Potassium	**19.7**		1	0.0150	0.0500	mg/L	B9C1806	CB	EPA 200.7

City of Lakeland - Lakeland Electric	Project: CCR Wells	DC11011
3030 East Lake Parker Dr.	Project Number: CCR Wells	**Reported:**
Lakeland, FL 33805	Project Manager: Andrew Barron	03/20/2019 14:28

Sample Results

(Continued)

Sample: 9030504-08 - CCR22 [DC11011-08 (Liquid)]

Ammonia Colorimetry by Method EPA 350.1

Prepared: 03/12/19 11:13 Analyzed: 03/13/19 08:55

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Ammonia as N	**1.10**		1	0.00400	0.0222	mg/L	B9C1208	LAS	EPA 350.1

Nitrate/Nitrite Colorimetry by method EPA 353.2

Prepared: 03/12/19 09:09 Analyzed: 03/12/19 14:25

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Nitrate-nitrite	0.0300	U	1	0.0300	0.250	mg/L	B9C1203	LAS	EPA 353.2

Phosphorus Colorimetry by Method EPA 365.1

Prepared: 03/15/19 08:05 Analyzed: 03/18/19 10:27

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Phosphorus, Total	**0.921**		1	0.00300	0.0133	mg/L	B9C1503	LAS	EPA 365.1

Total Metals - ICP Spectroscopy by EPA Method 200.7

Prepared: 03/18/19 09:28 Analyzed: 03/18/19 13:36

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Potassium	**188**		25	0.375	1.25	mg/L	B9C1806	CB	EPA 200.7

City of Lakeland - Lakeland Electric	Project: CCR Wells	DC11011
3030 East Lake Parker Dr.	Project Number: CCR Wells	**Reported:**
Lakeland, FL 33805	Project Manager: Andrew Barron	03/20/2019 14:28

Sample Results

(Continued)

Sample: 9030504-09 - CCR23 [DC11011-09 (Liquid)]

Ammonia Colorimetry by Method EPA 350.1

Prepared: 03/12/19 11:13 Analyzed: 03/13/19 08:56

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Ammonia as N	**1.02**		1	0.00400	0.0222	mg/L	B9C1208	LAS	EPA 350.1

Nitrate/Nitrite Colorimetry by method EPA 353.2

Prepared: 03/12/19 09:09 Analyzed: 03/12/19 14:27

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Nitrate-nitrite	**0.0400**	I	1	0.0300	0.250	mg/L	B9C1203	LAS	EPA 353.2

Phosphorus Colorimetry by Method EPA 365.1

Prepared: 03/15/19 08:05 Analyzed: 03/18/19 10:59

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Phosphorus, Total	**2.70**		5	0.0150	0.0665	mg/L	B9C1503	LAS	EPA 365.1

Total Metals - ICP Spectroscopy by EPA Method 200.7

Prepared: 03/18/19 09:28 Analyzed: 03/18/19 12:37

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Potassium	**4.59**		1	0.0150	0.0500	mg/L	B9C1806	CB	EPA 200.7

City of Lakeland - Lakeland Electric	Project: CCR Wells	DC11011
3030 East Lake Parker Dr.	Project Number: CCR Wells	**Reported:**
Lakeland, FL 33805	Project Manager: Andrew Barron	03/20/2019 14:28

Sample Results

(Continued)

Sample: 9030504-10 - MW-24S [DC11011-10 (Liquid)]

Ammonia Colorimetry by Method EPA 350.1 Prepared: 03/12/19 11:13 Analyzed: 03/13/19 08:58

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Ammonia as N	**0.620**		1	0.00400	0.0222	mg/L	B9C1208	LAS	EPA 350.1

Nitrate/Nitrite Colorimetry by method EPA 353.2 Prepared: 03/12/19 09:09 Analyzed: 03/12/19 14:29

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Nitrate-nitrite	**0.0970**	I	1	0.0300	0.250	mg/L	B9C1203	LAS	EPA 353.2

Phosphorus Colorimetry by Method EPA 365.1 Prepared: 03/15/19 08:05 Analyzed: 03/18/19 10:29

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Phosphorus, Total	**0.152**		1	0.00300	0.0133	mg/L	B9C1503	LAS	EPA 365.1

Total Metals - ICP Spectroscopy by EPA Method 200.7 Prepared: 03/18/19 09:28 Analyzed: 03/18/19 12:40

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Potassium	**1.95**		1	0.0150	0.0500	mg/L	B9C1806	CB	EPA 200.7

City of Lakeland - Lakeland Electric	Project: CCR Wells	DC11011
3030 East Lake Parker Dr.	Project Number: CCR Wells	**Reported:**
Lakeland, FL 33805	Project Manager: Andrew Barron	03/20/2019 14:28

Sample Results

(Continued)

Sample: 9030504-11 - MW-25S [DC11011-11 (Liquid)]

Ammonia Colorimetry by Method EPA 350.1

Prepared: 03/12/19 11:13 Analyzed: 03/13/19 09:03

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Ammonia as N	**0.670**		1	0.00400	0.0222	mg/L	B9C1208	LAS	EPA 350.1

Nitrate/Nitrite Colorimetry by method EPA 353.2

Prepared: 03/12/19 09:09 Analyzed: 03/12/19 14:31

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Nitrate-nitrite	**4.94**		1	0.0300	0.250	mg/L	B9C1203	LAS	EPA 353.2

Phosphorus Colorimetry by Method EPA 365.1

Prepared: 03/15/19 08:05 Analyzed: 03/18/19 10:59

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Phosphorus, Total	**0.0600**		1	0.00300	0.0133	mg/L	B9C1503	LAS	EPA 365.1

Total Metals - ICP Spectroscopy by EPA Method 200.7

Prepared: 03/15/19 13:50 Analyzed: 03/18/19 12:56

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Potassium	**2.96**		1	0.0150	0.0500	mg/L	B9C1807	CB	EPA 200.7

City of Lakeland - Lakeland Electric	Project: CCR Wells	DC11011
3030 East Lake Parker Dr.	Project Number: CCR Wells	**Reported:**
Lakeland, FL 33805	Project Manager: Andrew Barron	03/20/2019 14:28

Sample Results

(Continued)

Sample: 9030504-12 - MW-26S [DC11011-12 (Liquid)]

Ammonia Colorimetry by Method EPA 350.1 Prepared: 03/12/19 11:13 Analyzed: 03/13/19 09:05

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Ammonia as N	**0.992**		1	0.00400	0.0222	mg/L	B9C1208	LAS	EPA 350.1

Nitrate/Nitrite Colorimetry by method EPA 353.2 Prepared: 03/12/19 09:09 Analyzed: 03/12/19 14:32

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Nitrate-nitrite	**7.26**		1	0.0300	0.250	mg/L	B9C1203	LAS	EPA 353.2

Phosphorus Colorimetry by Method EPA 365.1 Prepared: 03/15/19 08:05 Analyzed: 03/18/19 11:00

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Phosphorus, Total	**0.144**		1	0.00300	0.0133	mg/L	B9C1503	LAS	EPA 365.1

Total Metals - ICP Spectroscopy by EPA Method 200.7 Prepared: 03/15/19 13:50 Analyzed: 03/18/19 12:58

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Potassium	**2.11**		1	0.0150	0.0500	mg/L	B9C1807	CB	EPA 200.7

City of Lakeland - Lakeland Electric	Project: CCR Wells	DC11011
3030 East Lake Parker Dr.	Project Number: CCR Wells	**Reported:**
Lakeland, FL 33805	Project Manager: Andrew Barron	03/20/2019 14:28

Sample Results

(Continued)

Sample: 9030504-13 - Fish Lake [DC11011-13 (Liquid)]

Ammonia Colorimetry by Method EPA 350.1

Prepared: 03/12/19 11:13 Analyzed: 03/13/19 09:06

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Ammonia as N	**0.246**		1	0.00400	0.0222	mg/L	B9C1208	LAS	EPA 350.1

Nitrate/Nitrite Colorimetry by method EPA 353.2

Prepared: 03/12/19 09:09 Analyzed: 03/12/19 14:34

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Nitrate-nitrite	0.0300	U	1	0.0300	0.250	mg/L	B9C1203	LAS	EPA 353.2

Phosphorus Colorimetry by Method EPA 365.1

Prepared: 03/15/19 08:05 Analyzed: 03/18/19 10:32

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Phosphorus, Total	**0.153**		1	0.00300	0.0133	mg/L	B9C1503	LAS	EPA 365.1

Total Metals - ICP Spectroscopy by EPA Method 200.7

Prepared: 03/15/19 13:50 Analyzed: 03/18/19 13:00

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Arsenic	0.00586	U	1	0.00586	0.0100	mg/L	B9C1807	CB	EPA 200.7
Potassium	**21.4**		1	0.0150	0.0500	mg/L	B9C1807	CB	EPA 200.7

City of Lakeland - Lakeland Electric	Project: CCR Wells	DC11011
3030 East Lake Parker Dr.	Project Number: CCR Wells	**Reported:**
Lakeland, FL 33805	Project Manager: Andrew Barron	03/20/2019 14:28

Sample Results

(Continued)

Sample: 9030504-14 - Lake B [DC11011-14 (Liquid)]

Ammonia Colorimetry by Method EPA 350.1

Prepared: 03/12/19 11:13 Analyzed: 03/13/19 09:08

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Ammonia as N	**0.164**		1	0.00400	0.0222	mg/L	B9C1208	LAS	EPA 350.1

Nitrate/Nitrite Colorimetry by method EPA 353.2

Prepared: 03/12/19 09:09 Analyzed: 03/12/19 14:39

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Nitrate-nitrite	0.0300	U	1	0.0300	0.250	mg/L	B9C1203	LAS	EPA 353.2

Phosphorus Colorimetry by Method EPA 365.1

Prepared: 03/15/19 08:05 Analyzed: 03/18/19 11:01

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Phosphorus, Total	**2.02**		5	0.0150	0.0665	mg/L	B9C1503	LAS	EPA 365.1

Total Metals - ICP Spectroscopy by EPA Method 200.7

Prepared: 03/15/19 13:50 Analyzed: 03/18/19 13:02

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Potassium	**1.33**		1	0.0150	0.0500	mg/L	B9C1807	CB	EPA 200.7

City of Lakeland - Lakeland Electric	Project: CCR Wells	DC11011
3030 East Lake Parker Dr.	Project Number: CCR Wells	**Reported:**
Lakeland, FL 33805	Project Manager: Andrew Barron	03/20/2019 14:28

Sample Results

(Continued)

Sample: 9030504-17 - Equipment Blank [DC11011-15 (Liquid)]

Ammonia Colorimetry by Method EPA 350.1

Prepared: 03/12/19 11:13 Analyzed: 03/13/19 09:10

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Ammonia as N	**0.479**		1	0.00400	0.0222	mg/L	B9C1208	LAS	EPA 350.1

Nitrate/Nitrite Colorimetry by method EPA 353.2

Prepared: 03/12/19 09:09 Analyzed: 03/12/19 14:41

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Nitrate-nitrite	0.0300	U	1	0.0300	0.250	mg/L	B9C1203	LAS	EPA 353.2

Phosphorus Colorimetry by Method EPA 365.1

Prepared: 03/15/19 08:05 Analyzed: 03/18/19 09:39

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Phosphorus, Total	0.00300	U	1	0.00300	0.0133	mg/L	B9C1503	LAS	EPA 365.1

Total Metals - ICP Spectroscopy by EPA Method 200.7

Prepared: 03/15/19 13:50 Analyzed: 03/18/19 13:05

Analyte	Result	Qual	Dil.	MDL	PQL	Units	Batch	Analyst	Method
Arsenic	0.00586	U	1	0.00586	0.0100	mg/L	B9C1807	CB	EPA 200.7
Potassium	**0.0992**		1	0.0150	0.0500	mg/L	B9C1807	CB	EPA 200.7

Quality Control

Ammonia Colorimetry by Method EPA 350.1

Batch: B9C1208 - Seal

Blank (B9C1208-BLK1) Prepared: 03/12/19 11:13 Analyzed: 03/13/19 08:29

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Ammonia as N	0.00400	U	0.00400	0.0222	mg/L						

LCS (B9C1208-BS1) Prepared: 03/12/19 11:13 Analyzed: 03/13/19 08:22

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Ammonia as N	1.01				mg/L	1.00		101	90-110		

Matrix Spike (B9C1208-MS1) **Source: DC06009-03** Prepared: 03/12/19 11:13 Analyzed: 03/13/19 08:25

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Ammonia as N	1.31		0.00400	0.0222	mg/L	1.00	0.326	98.2	90-110		

Matrix Spike Dup (B9C1208-MSD1) **Source: DC06009-03** Prepared: 03/12/19 11:13 Analyzed: 03/13/19 08:27

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Ammonia as N	1.31		0.00400	0.0222	mg/L	1.00	0.326	98.6	90-110	0.344	10

City of Lakeland - Lakeland Electric	Project: CCR Wells	DC11011
3030 East Lake Parker Dr.	Project Number: CCR Wells	**Reported:**
Lakeland, FL 33805	Project Manager: Andrew Barron	03/20/2019 14:28

Quality Control
(Continued)

Ammonia Colorimetry by Method EPA 350.1 (Continued)

Batch: B9C1505 - Seal

Blank (B9C1505-BLK1) Prepared: 03/15/19 08:14 Analyzed: 03/18/19 12:06

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Ammonia as N	0.00400	U	0.00400	0.0222	mg/L						

LCS (B9C1505-BS1) Prepared: 03/15/19 08:14 Analyzed: 03/18/19 11:59

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Ammonia as N	0.980				mg/L	1.00		98.0	90-110		

Matrix Spike (B9C1505-MS1) **Source: DC12011-01** Prepared: 03/15/19 08:14 Analyzed: 03/18/19 12:03

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Ammonia as N	1.30		0.00400	0.0222	mg/L	1.00	0.262	103	90-110		

Matrix Spike Dup (B9C1505-MSD1) **Source: DC12011-01** Prepared: 03/15/19 08:14 Analyzed: 03/18/19 12:04

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Ammonia as N	1.25		0.00400	0.0222	mg/L	1.00	0.262	99.0	90-110	3.50	10

City of Lakeland - Lakeland Electric	Project: CCR Wells	DC11011
3030 East Lake Parker Dr.	Project Number: CCR Wells	**Reported:**
Lakeland, FL 33805	Project Manager: Andrew Barron	03/20/2019 14:28

Quality Control
(Continued)

Nitrate/Nitrite Colorimetry by method EPA 353.2

Batch: B9C1104 - Seal

Blank (B9C1104-BLK2) Prepared: 03/11/19 09:53 Analyzed: 03/12/19 17:35

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Nitrate-nitrite	0.0300	U	0.0300	0.250	mg/L						

LCS (B9C1104-BS1) Prepared: 03/11/19 09:53 Analyzed: 03/12/19 17:16

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Nitrate-nitrite	7.27				mg/L	7.50		97.0	90-110		

Matrix Spike (B9C1104-MS1) **Source: DC06009-01** Prepared: 03/11/19 09:53 Analyzed: 03/12/19 17:19

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Nitrate-nitrite	7.65		0.0300	0.250	mg/L	7.50	0.163	99.9	90-110		

Matrix Spike Dup (B9C1104-MSD1) **Source: DC06009-01** Prepared: 03/11/19 09:53 Analyzed: 03/12/19 17:21

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Nitrate-nitrite	7.63		0.0300	0.250	mg/L	7.50	0.163	99.5	90-110	0.353	10

Quality Control
(Continued)

Nitrate/Nitrite Colorimetry by method EPA 353.2 (Continued)

Batch: B9C1203 - Seal

Blank (B9C1203-BLK1) Prepared: 03/12/19 09:09 Analyzed: 03/12/19 11:51

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Nitrate-nitrite	0.0300	U	0.0300	0.250	mg/L						

LCS (B9C1203-BS1) Prepared: 03/12/19 09:09 Analyzed: 03/12/19 11:43

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Nitrate-nitrite	7.28				mg/L	7.50		97.1	90-110		

Matrix Spike (B9C1203-MS1) **Source: DC11007-06** Prepared: 03/12/19 09:09 Analyzed: 03/12/19 11:47

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Nitrate-nitrite	7.52		0.0300	0.250	mg/L	7.50	0.0300 U	100	90-110		

Matrix Spike Dup (B9C1203-MSD1) **Source: DC11007-06** Prepared: 03/12/19 09:09 Analyzed: 03/12/19 11:49

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Nitrate-nitrite	7.65		0.0300	0.250	mg/L	7.50	0.0300 U	102	90-110	1.81	10

Quality Control
(Continued)

Phosphorus Colorimetry by Method EPA 365.1

Batch: B9C1503 - Seal

Blank (B9C1503-BLK1) Prepared: 03/15/19 08:05 Analyzed: 03/18/19 09:38

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Phosphorus, Total	0.00300	U	0.00300	0.0133	mg/L						

LCS (B9C1503-BS1) Prepared: 03/15/19 08:05 Analyzed: 03/18/19 09:34

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Phosphorus, Total	0.492				mg/L	0.500		98.4	90-110		

Matrix Spike (B9C1503-MS1) **Source: DC11011-15** Prepared: 03/15/19 08:05 Analyzed: 03/18/19 09:36

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Phosphorus, Total	0.499		0.00300	0.0133	mg/L	0.500	0.00300 U	99.8	90-110		

Matrix Spike Dup (B9C1503-MSD1) **Source: DC11011-15** Prepared: 03/15/19 08:05 Analyzed: 03/18/19 09:37

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Phosphorus, Total	0.467		0.00300	0.0133	mg/L	0.500	0.00300 U	93.4	90-110	6.63	10

Quality Control

(Continued)

Total Metals - ICP Spectroscopy by EPA Method 200.7

Batch: B9C1806 - Metals - 200.7

Blank (B9C1806-BLK1) Prepared: 03/18/19 09:28 Analyzed: 03/18/19 12:06

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Arsenic	0.00586	U	0.00586	0.0100	mg/L						
Potassium	0.0150	U	0.0150	0.0500	mg/L						

LCS (B9C1806-BS1) Prepared: 03/18/19 09:28 Analyzed: 03/18/19 12:08

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Arsenic	0.201		0.00586	0.0100	mg/L	0.200		100	85-115		
Potassium	1.97		0.0150	0.0500	mg/L	2.00		98.3	85-115		

Matrix Spike (B9C1806-MS1) **Source: DC11011-01** Prepared: 03/18/19 09:28 Analyzed: 03/18/19 12:10

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Arsenic	0.958		0.00586	0.0100	mg/L	1.00	0.00586 U	95.8	80-120		
Potassium	132	J5	0.0150	0.0500	mg/L	10.0	108	231	80-120		

Matrix Spike Dup (B9C1806-MSD1) **Source: DC11011-01** Prepared: 03/18/19 09:28 Analyzed: 03/18/19 12:12

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Potassium	132	J5	0.0150	0.0500	mg/L	10.0	108	232	80-120	0.0552	20
Arsenic	0.925		0.00586	0.0100	mg/L	1.00	0.00586 U	92.5	80-120	3.47	20

Quality Control

(Continued)

Total Metals - ICP Spectroscopy by EPA Method 200.7 (Continued)

Batch: B9C1807 - Metals - 200.7

Blank (B9C1807-BLK1) Prepared: 03/15/19 13:50 Analyzed: 03/18/19 12:47

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Potassium	0.0290	I	0.0150	0.0500	mg/L						
Arsenic	0.00586	U	0.00586	0.0100	mg/L						

LCS (B9C1807-BS1) Prepared: 03/15/19 13:50 Analyzed: 03/18/19 12:49

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Potassium	2.05		0.0150	0.0500	mg/L	2.00		103	85-115		
Arsenic	0.201		0.00586	0.0100	mg/L	0.200		100	85-115		

Matrix Spike (B9C1807-MS1) **Source: DC11011-12** Prepared: 03/15/19 13:50 Analyzed: 03/18/19 12:51

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Potassium	12.7		0.0150	0.0500	mg/L	10.0	2.11	106	80-120		
Arsenic	0.988		0.00586	0.0100	mg/L	1.00	0.00586 U	98.8	80-120		

Matrix Spike Dup (B9C1807-MSD1) **Source: DC11011-12** Prepared: 03/15/19 13:50 Analyzed: 03/18/19 12:53

Analyte	Result	Qual	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Arsenic	0.966		0.00586	0.0100	mg/L	1.00	0.00586 U	96.6	80-120	2.23	20
Potassium	12.6		0.0150	0.0500	mg/L	10.0	2.11	105	80-120	0.715	20

City of Lakeland - Lakeland Electric	Project: CCR Wells	DC11011
3030 East Lake Parker Dr.	Project Number: CCR Wells	**Reported:**
Lakeland, FL 33805	Project Manager: Andrew Barron	03/20/2019 14:28

Notes and Definitions

Item	Definition
I	The value is between the MDL and the PQL
J5	The reported value failed to meet the established quality control criteria for either precision or accuracy. The data usability is not effected.
Dry	Sample results reported on a dry weight basis.
ND	Analyte NOT DETECTED at or above the reporting limit.
U	Analyte NOT DETECTED at or above the reporting limit.
%REC	Percent Recovery
Dil.	Dilution
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.

City of Lakeland - Lakeland Electric	Project: CCR Wells	DC11011
3030 East Lake Parker Dr.	Project Number: CCR Wells	**Reported:**
Lakeland, FL 33805	Project Manager: Andrew Barron	03/20/2019 14:28

PhoslabEnvironmental SERVICES

806 West Beacon Road
Lakeland, Florida 33803-2847
Phone: 863-682-5897
Fax: 863-683-3279
FDEP CompQAP No: 870308G
FDOH ID#: E84925

DC11011

CHAIN OF CUSTODY RECORD

Company: CITY OF LAKELAND	Project Name: CCR Wells	PO: 277354	Page 1 of 1
Address: 3030 E. LK PARKER DR.	Project #:		DEP Form #: 62-770.900(2)
LAKELAND, FL ZIP: 33805	Project Manager: Andrew Barron		Form Title: Chain of Custory Record
Phone 863-834-5605 Fax:	Project Location: MPP		Effective Date: 8/2004
Sampled by [Print Name(s)] / Affiliation: Don Biggs	Evidence Sample (s): Yes No X		FDEP Facility No.:
Sampler(s) Signature(s):			Project Name:
			Sampling CompQAP No.:
			Approval Date:
			REQUESTED DUE DATE

Item No.	Field ID No.	Date	Time	Grab or Composite	Matrix (see codes)	Number of Containers	Arsenic	Lithium	Potassium	Phosphate-TP	Ammonia	Nitrate-nitrite	Remarks	Lab. No.
1	9030504-01	3/7/19	1417	Grab	GW	1			N	S	S	S	CCR-15	DC11011-01
2	9030504-02	3/6/19	1120	Grab	GW	1		N	N	S	S	S	CCR-16	02
3	9030504-03	3/6/19	1326	Grab	GW	1		N	N	S	S	S	CCR-17	03
4	9030504-04	3/6/19	1407	Grab	GW	1			N	S	S	S	CCR-18	04
5	9030504-05	3/6/19	1455	Grab	GW	1		N	N	S	S	S	CCR-19	05
6	9030504-06	3/7/19	1013	Grab	GW	1	N		N	S	S	S	CCR-20	06
7	9030504-07	3/7/19	1042	Grab	GW	1	N		N	S	S	S	CCR-21	07
8	9030504-08	3/7/19	1123	Grab	GW	1		N	N	S	S	S	CCR-22	08
9	9030504-09	3/7/19	1326	Grab	GW	1			N	S	S	S	CCR-23	09
10	9030504-10	3/5/19	1329	Grab	GW	1		N	N	S	S	S	MW-24S	10
11	9030504-11	3/6/19	1027	Grab	GW	1		N	N	S	S	S	MW-25S	11
12	9030504-12	3/6/19	1443	Grab	GW	1			N	S	S	S	MW-26S	12
13	9030504-13	3/11/19	1320	Grab	GW	1	N	N	N	S	S	S	Fish Lake	13
14	9030504-14	3/11/19	1300	Grab	GW	1		N	N	S	S	S	Lake B	14
15	9030504-17	3/7/19	1500	Grab	GW	1	N	N	N	S	S	S	Equipment Blank	15
ent Method						15								

Out: / /		Item No.	Relinquished by / Affiliation	Date	Time	Accepted by / Affiliation	Date	
Returned: / /	Via:		PhosLab, Inc./ Containers					Time
Additional Comments: CCR Well Water			Anna Duggar	3/11/19	1447		03/11/19	1447
			Cooler No.(s) / Temperature(s) (C) C 2.4 (3.9)			Sampling Kit No.	Equipment ID No.	

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) O = Other (specify)

PRESERVATIVE CODES: H = Hydrochloric acid + ice I = Ice only N = Nitric acid + ice S = Sulfuric acid + ice O = Other (specify)

= Preservative

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Phoslab Environmental Services

CCR Wells; FL

DC11011

SGS Job Number: FA62271

Sampling Dates: 03/05/19 - 03/11/19

Report to:

Phoslab Environmental Services
806 W Beacon Rd
Lakeland, FL 33803
georgeaf@phoslab.com; charo@phoslab.com;
jcurry@phoslab.com
ATTN: Jini Curry

Total number of pages in report: 32

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Caitlin Brice, M.S.
General Manager

Client Service contact: Brian Reyes 407-425-6700

Certifications: FL(E83510), LA(03051), KS(E-10327), IL(200063), NC(573), NJ(FL002), NY(12022), SC(96038001) DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177), AK, AR, IA, KY, MA, MS, ND, NH, NV, OK, OR, UT, WA, WV

Test results relate only to samples analyzed.

Sections: 1 2 3 4 5 6

Table of Contents

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Sample Summary

Phoslab Environmental Services

Job No: FA62271

CCR Wells; FL
Project No: DC11011

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
FA62271-1	03/06/19	11:20	PL	03/13/19	AQ	Water	DC11011-02/9030504-02-CCR16
FA62271-2	03/06/19	13:25	PL	03/13/19	AQ	Water	DC11011-03/9030504-03-CCR17
FA62271-3	03/06/19	14:55	PL	03/13/19	AQ	Water	DC11011-05/9030504-05-CCR19
FA62271-4	03/07/19	11:23	PL	03/13/19	AQ	Water	DC11011-08/9030504-08-CCR22
FA62271-5	03/05/19	13:29	PL	03/13/19	AQ	Water	DC11011-10/9030504-10-CCR24S
FA62271-6	03/06/19	10:27	PL	03/13/19	AQ	Water	DC11011-11/9030504-11-CCR25S
FA62271-7	03/11/19	13:20	PL	03/13/19	AQ	Water	DC11011-13/9030504-13-FISH LAKE
FA62271-8	03/11/19	13:00	PL	03/13/19	AQ	Water	DC11011-14/9030504-14-LAKE B
FA62271-9	03/07/19	15:00	PL	03/13/19	AQ	Equipment Blank	DC11011-15/9030504-17-EQUIPMENT BLANK

Summary of Hits

Job Number: FA62271
Account: Phoslab Environmental Services
Project: CCR Wells; FL
Collected: 03/05/19 thru 03/11/19

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	PQL	MDL	Units	Method
FA62271-1	DC11011-02/9030504-02-CCR16					
Lithium [a]		38.4 I	50	9.1	ug/l	EPA 200.7
FA62271-2	DC11011-03/9030504-03-CCR17					
Lithium [a]		16.2 I	50	9.1	ug/l	EPA 200.7
FA62271-3	DC11011-05/9030504-05-CCR19					
Lithium [a]		30.0 I	50	9.1	ug/l	EPA 200.7
FA62271-4	DC11011-08/9030504-08-CCR22					
Lithium [a]		129	50	9.1	ug/l	EPA 200.7
FA62271-5	DC11011-10/9030504-10-CCR24S					
Lithium [a]		16.3 I	50	9.1	ug/l	EPA 200.7
FA62271-6	DC11011-11/9030504-11-CCR25S					
Lithium [a]		11.8 I	50	9.1	ug/l	EPA 200.7
FA62271-7	DC11011-13/9030504-13-FISH LAKE					
Lithium [a]		22.2 I	50	9.1	ug/l	EPA 200.7
FA62271-8	DC11011-14/9030504-14-LAKE B					
Lithium [a]		13.9 I	50	9.1	ug/l	EPA 200.7
FA62271-9	DC11011-15/9030504-17-EQUIPMENT BLANK					
Lithium [a]		10.8 I	50	9.1	ug/l	EPA 200.7

(a) Analysis performed at SGS Dayton, NJ.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	DC11011-02/9030504-02-CCR16		
Lab Sample ID:	FA62271-1	Date Sampled:	03/06/19
Matrix:	AQ - Water	Date Received:	03/13/19
		Percent Solids:	n/a
Project:	CCR Wells; FL		

Total Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lithium [a]	38.4 I	50	9.1	ug/l	1	03/18/19	03/19/19	ANJ	EPA 200.7 [1]	EPA 200.7 [2]

(1) Instrument QC Batch: N:MA46328
(2) Prep QC Batch: N:MP13179

(a) Analysis performed at SGS Dayton, NJ.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result >= MDL but < PQL

Report of Analysis

Client Sample ID:	DC11011-03/9030504-03-CCR17		
Lab Sample ID:	FA62271-2	Date Sampled:	03/06/19
Matrix:	AQ - Water	Date Received:	03/13/19
		Percent Solids:	n/a
Project:	CCR Wells; FL		

Total Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lithium [a]	16.2 I	50	9.1	ug/l	1	03/18/19	03/19/19	ANJ	EPA 200.7 [1]	EPA 200.7 [2]

(1) Instrument QC Batch: N:MA46328
(2) Prep QC Batch: N:MP13179

(a) Analysis performed at SGS Dayton, NJ.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result >= MDL but < PQL

SGS North America Inc.

Report of Analysis

Client Sample ID:	DC11011-05/9030504-05-CCR19		
Lab Sample ID:	FA62271-3	Date Sampled:	03/06/19
Matrix:	AQ - Water	Date Received:	03/13/19
		Percent Solids:	n/a
Project:	CCR Wells; FL		

Total Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lithium [a]	30.0 I	50	9.1	ug/l	1	03/18/19	03/19/19	ANJ	EPA 200.7 [1]	EPA 200.7 [2]

(1) Instrument QC Batch: N:MA46328
(2) Prep QC Batch: N:MP13179

(a) Analysis performed at SGS Dayton, NJ.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result >= MDL but < PQL

Report of Analysis

Client Sample ID:	DC11011-08/9030504-08-CCR22		
Lab Sample ID:	FA62271-4	Date Sampled:	03/07/19
Matrix:	AQ - Water	Date Received:	03/13/19
		Percent Solids:	n/a
Project:	CCR Wells; FL		

Total Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lithium [a]	129	50	9.1	ug/l	1	03/18/19	03/19/19	ANJ	EPA 200.7 [1]	EPA 200.7 [2]

(1) Instrument QC Batch: N:MA46328
(2) Prep QC Batch: N:MP13179

(a) Analysis performed at SGS Dayton, NJ.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result >= MDL but < PQL

Report of Analysis

Client Sample ID:	DC11011-10/9030504-10-CCR24S		
Lab Sample ID:	FA62271-5	Date Sampled:	03/05/19
Matrix:	AQ - Water	Date Received:	03/13/19
		Percent Solids:	n/a
Project:	CCR Wells; FL		

Total Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lithium [a]	16.3 I	50	9.1	ug/l	1	03/18/19	03/19/19	ANJ	EPA 200.7 [1]	EPA 200.7 [2]

(1) Instrument QC Batch: N:MA46328
(2) Prep QC Batch: N:MP13179

(a) Analysis performed at SGS Dayton, NJ.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result >= MDL but < PQL

Report of Analysis

Client Sample ID:	DC11011-11/9030504-11-CCR25S		
Lab Sample ID:	FA62271-6	Date Sampled:	03/06/19
Matrix:	AQ - Water	Date Received:	03/13/19
		Percent Solids:	n/a
Project:	CCR Wells; FL		

Total Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lithium [a]	11.8 I	50	9.1	ug/l	1	03/18/19	03/19/19	ANJ	EPA 200.7 [1]	EPA 200.7 [2]

(1) Instrument QC Batch: N:MA46328
(2) Prep QC Batch: N:MP13179

(a) Analysis performed at SGS Dayton, NJ.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result >= MDL but < PQL

Report of Analysis

Client Sample ID:	DC11011-13/9030504-13-FISH LAKE		
Lab Sample ID:	FA62271-7	Date Sampled:	03/11/19
Matrix:	AQ - Water	Date Received:	03/13/19
		Percent Solids:	n/a
Project:	CCR Wells; FL		

Total Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lithium [a]	22.2 I	50	9.1	ug/l	1	03/18/19	03/19/19	ANJ	EPA 200.7 [1]	EPA 200.7 [2]

(1) Instrument QC Batch: N:MA46328
(2) Prep QC Batch: N:MP13179

(a) Analysis performed at SGS Dayton, NJ.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result >= MDL but < PQL

SGS North America Inc.

Report of Analysis

Client Sample ID:	DC11011-14/9030504-14-LAKE B		
Lab Sample ID:	FA62271-8	Date Sampled:	03/11/19
Matrix:	AQ - Water	Date Received:	03/13/19
		Percent Solids:	n/a
Project:	CCR Wells; FL		

Total Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lithium [a]	13.9 I	50	9.1	ug/l	1	03/18/19	03/19/19	ANJ	EPA 200.7 [1]	EPA 200.7 [2]

(1) Instrument QC Batch: N:MA46328
(2) Prep QC Batch: N:MP13179

(a) Analysis performed at SGS Dayton, NJ.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result >= MDL but < PQL

Report of Analysis

Client Sample ID:	DC11011-15/9030504-17-EQUIPMENT BLANK		
Lab Sample ID:	FA62271-9	Date Sampled:	03/07/19
Matrix:	AQ - Equipment Blank	Date Received:	03/13/19
		Percent Solids:	n/a
Project:	CCR Wells; FL		

Total Metals Analysis

Analyte	Result	PQL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Lithium [a]	10.8 I	50	9.1	ug/l	1	03/18/19	03/19/19	ANJ	EPA 200.7 [1]	EPA 200.7 [2]

(1) Instrument QC Batch: N:MA46328
(2) Prep QC Batch: N:MP13179

(a) Analysis performed at SGS Dayton, NJ.

PQL = Practical Quantitation Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
I = Indicates a result >= MDL but < PQL

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- **Chain of Custody**

SUBCONTRACT ORDER FA62271

PhoslabEnvironmental SERVICES

Phone: 863-682-5897
Project Manager: Jini Curry

RECEIVING LABORATORY:
SGS Accutest
4405 Vineland Road
Orlando, FL 32811
Phone :(407) 425-6700
Fax:

Project Name: CCR Wells
Project Number: DC11011

Sample ID: DC11011-02 (I) **Matrix: Liquid** **Sampled: 03/06/19 11:20**
Sample Name: 9030504-02 - CCR16

Analysis:	Comments:
200.7-Li	6 day TAT

Sample ID: DC11011-03 (2) **Matrix: Liquid** **Sampled: 03/06/19 13:26**
Sample Name: 9030504-03 - CCR17

Analysis:	Comments:
200.7-Li	6 day TAT

Sample ID: DC11011-05 (3) **Matrix: Liquid** **Sampled: 03/06/19 14:55**
Sample Name: 9030504-05 - CCR19

Analysis:	Comments:
200.7-Li	6 day TAT

Sample ID: DC11011-08 (H) **Matrix: Liquid** **Sampled: 03/07/19 11:23**
Sample Name: 9030504-08 - CCR22

Analysis:	Comments:
200.7-Li	6 day TAT

Sample ID: DC11011-10 (5) **Matrix: Liquid** **Sampled: 03/05/19 13:29**
Sample Name: 9030504-10 - MW-24S

Analysis:	Comments:
200.7-Li	6 day TAT

Sample ID: DC11011-11 (6) **Matrix: Liquid** **Sampled: 03/06/19 10:27**
Sample Name: 9030504-11 - MW-25S

Analysis:	Comments:
200.7-Li	6 day TAT

Sample ID: DC11011-13 (4) **Matrix: Liquid** **Sampled: 03/11/19 13:20**
Sample Name: 9030504-13 - Fish Lake

Analysis:	Comments:
200.7-Li	6 day TAT

(2.6)

4.1 4

FA62271: Chain of Custody
Page 1 of 3

SUBCONTRACT ORDER FA62271

Project Name: CCR Wells
Project Number: DC11011

Sample ID: DC11011-14 (8) **Matrix: Liquid** **Sampled: 03/11/19 13:00**
Sample Name: 9030504-14 - Lake B

Analysis:	Comments:
200.7-Li	6 day TAT

Sample ID: DC11011-15 (9) **Matrix: Liquid** **Sampled: 03/07/19 15:00**
Sample Name: 9030504-17 - Equipment Blank

Analysis:	Comments:
200.7-Li	6 day TAT

Released By	Received By	Date / Time
		03/12/19 1204
		03/12/19 1656
		03/13/19 800

4.1
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FA62271: Chain of Custody
Page 2 of 3

Page 2 of 2

SGS Sample Receipt Summary

Job Number: FA62271 **Client:** PHOSLAB ENV. **Project:** CCR WELLS

Date / Time Received: 3/13/2019 8:00:00 AM **Delivery Method:** SGS **Airbill #'s:** N/A

Therm ID: IR 1; **Therm CF:** -0.2; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (2.8);

Cooler Temps (Corrected) °C: Cooler 1: (2.6);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑
	W	**or**	**S**	**N/A**
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SHAYLAP Date: 3/13/2019 8:00:00 AM Reviewer: SP Date: 3/13/2019

FA62271: Chain of Custody
Page 3 of 3

Misc. Forms

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Custody Documents and Other Forms

(SGS Dayton, NJ)

Includes the following where applicable:

- **Chain of Custody**

CHAIN OF CUSTODY

SGS North America Inc. - Orlando
4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL 407-425-6700 FAX: 407-425-0707
www.sgs.com/ehsusa

FED-EX Tracking #: 9400 6351 8731
Bottle Order Control #:
SGS Quote #:
SGS Job #: FA62271

Client / Reporting Information

Company Name: SGS North America Inc.
Street Address: 4405 Vineland Rd, Suite C-15
City: Orlando State: FL Zip: 32811
Project Contact: Brian.ReyesVillalobos@sgs.com E-mail:
Phone #: 407-425-6700 Fax #:
Sampler(s) Name(s): PL Phone:

Project Information

Project Name: CCR Wells; FL
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	LI_200.7	LAB USE ONLY
1	DC11011-02/9030504-02-CCR16		3/6/19	11:20:00 AM	PL	AQ	1			1						X	
2	DC11011-03/9030504-03-CCR17		3/6/19	1:25:00 PM	PL	AQ	1			1						X	
3	DC11011-05/9030504-05-CCR19		3/6/19	2:55:00 PM	PL	AQ	1			1						X	FL
4	DC11011-08/9030504-08-CCR22		3/7/19	11:23:00 AM	PL	AQ	1			1						X	
5	DC11011-10/9030504-10-CCR24S		3/5/19	1:29:00 PM	PL	AQ	1			1						X	
6	DC11011-11/9030504-11-CCR25S		3/6/19	10:27:00 AM	PL	AQ	1			1						X	
7	DC11011-13/9030504-13-FISH LAKE		3/11/19	1:20:00 PM	PL	AQ	1			1						X	
8	DC11011-14/9030504-14-LAKE B		3/11/19	1:00:00 PM	PL	AQ	1			1						X	
9	DC11011-15/9030504-17-EQUIPMENT		3/7/19	3:00:00 PM	PL	AQ	1			1						X	

Turnaround Time (Business days)

Approved By (SGS PM): / Date:

- [ ] Standard 10 Day (business)
- [ ] 5 Business Days RUSH
- [ ] 3 Business Days RUSH
- [ ] 2 Business Days RUSH
- [ ] 1 Business Day EMERGENCY
- [x] other 7

Emergency & Rush TAT data available via Lablink. Approval needed for RUSH/Emergency TAT

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] REDT1 (Level 3)
- [ ] FULT1 (Level 4)
- [ ] Commercial "C"
- [ ] State Forms
- [ ] EDD Format
- [ ] Other
- [x] CT

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

SGS-NJ
INITIAL ASESSMENT 3B/2B
LABEL VERIFICATION

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		03/14/19 16:00	Fed Ex	2 Fed Ex	3/15/19 9:30	2
3	Relinquished by Sampler:	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
5	Relinquished By:	Date Time:	Received By: 5	Custody Seal #	[ ] Intact [ ] Not Intact	Preserved where applicable [ ] Therm. ID: [ ] On Ice Cooler Temp. 2.4°C

5.1.5

SGS Sample Receipt Summary

Job Number: FA62271 **Client:** _____ **Project:** _____

Date / Time Received: 3/15/2019 9:50:00 AM **Delivery Method:** _____ **Airbill #'s:** _____

Cooler Temps (Raw Measured) °C: Cooler 1: (2.4);

Cooler Temps (Corrected) °C: Cooler 1: (1.4);

Cooler Security	Y	N		Y	N
1. Custody Seals Present:	☑	☐	3. COC Present:	☑	☐
2. Custody Seals Intact:	☑	☐	4. Smpl Dates/Time OK	☑	☐

Cooler Temperature	Y	N
1. Temp criteria achieved:	☑	☐
2. Cooler temp verification:	IR Gun	
3. Cooler media:	Ice (Bag)	
4. No. Coolers:	1	

Quality Control Preservation	Y	N	N/A
1. Trip Blank present / cooler:	☐	☑	☐
2. Trip Blank listed on COC:	☐	☑	☐
3. Samples preserved properly:	☑	☐	
4. VOCs headspace free:	☐	☐	☑

Sample Integrity - Documentation	Y	N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

Sample Integrity - Condition	Y	N
1. Sample recvd within HT:	☑	☐
2. All containers accounted for:	☑	☐
3. Condition of sample:	Intact	

Sample Integrity - Instructions	Y	N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Test Strip Lot #s: pH 1-12: 206717 pH 12+: 208717 Other: (Specify) _____ _____

Comments

SM089-03
Rev. Date 12/7/17

5.1 5

FA62271: Chain of Custody
Page 2 of 2

Metals Analysis

QC Data Summaries

(SGS Dayton, NJ)

Includes the following where applicable:

- **Method Blank Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Blank Spike and Lab Control Sample Summaries**
- **Serial Dilution Summaries**

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA62271
Account: ALSE - SGS Orlando, FL
Project: PLESFLL: CCR Wells; FL

QC Batch ID: MP13179
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date:

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	8.4	77		
Antimony	6.0	1.2	4.1		
Arsenic	3.0	1.6	2.5		
Barium	200	.3	17		
Beryllium	1.0	.1	.5		
Bismuth	20	2	4.8		
Boron	100	2	85		
Cadmium	3.0	.3	1.2		
Calcium	5000	4.1	130		
Chromium	10	.4	1.5		
Cobalt	50	.4	2.5		
Copper	10	.3	4.1		
Iron	100	2.3	30		
Lead	3.0	2.3	2.4		
Lithium	50	1.1	9.1	8.0	<50
Magnesium	5000	33	200		
Manganese	15	.1	2		
Molybdenum	20	.9	4.5		
Nickel	10	.7	1.8		
Phosphorus	50	1.1	14		
Potassium	10000	26	200		
Selenium	10	2.2	5.5		
Silicon	200	8.7	130		
Silver	10	.3	2.4		
Sodium	10000	6	900		
Strontium	10	.1	1.6		
Sulfur	50	2.1	18		
Thallium	10	4.8	1.9		
Tin	50	1.6	4.7		
Titanium	10	.5	1.9		
Tungsten	50	1.4	19		
Vanadium	50	.3	2.3		
Zinc	20	.3	8.5		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: FA62271
Account: ALSE - SGS Orlando, FL
Project: PLESFLL: CCR Wells; FL

QC Batch ID: MP13179
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date:

Metal	RL	IDL	MDL	MB raw	final
Zirconium	10	.3	4.9		

Associated samples MP13179: FA62271-1, FA62271-2, FA62271-3, FA62271-4, FA62271-5, FA62271-6, FA62271-7, FA62271-8, FA62271-9

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

6.1.1

6

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA62271
Account: ALSE - SGS Orlando, FL
Project: PLESFLL: CCR Wells; FL

QC Batch ID: MP13179
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date:

Metal	FA62271-6 Original	MS	Spikelot MPSPK2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Bismuth					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium	11.8	2060	2000	102.4	-
Magnesium					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium					
Strontium					
Sulfur					
Thallium					
Tin					
Titanium					
Tungsten					
Vanadium					
Zinc					
Zirconium					

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA62271
Account: ALSE - SGS Orlando, FL
Project: PLESFLL: CCR Wells; FL

QC Batch ID: MP13179
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date:

Metal	FA62271-6 Original MS	Spikelot MPSPK2	% Rec	QC Limits

Associated samples MP13179: FA62271-1, FA62271-2, FA62271-3, FA62271-4, FA62271-5, FA62271-6, FA62271-7, FA62271-8, FA62271-9

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA62271
Account: ALSE - SGS Orlando, FL
Project: PLESFLL: CCR Wells; FL

QC Batch ID: MP13179
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date:

Metal	FA62271-6 Original	MSD	Spikelot MPSPK2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Bismuth						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium	11.8	2090	2000	103.9	1.4	
Magnesium						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium						
Strontium						
Sulfur						
Thallium						
Tin						
Titanium						
Tungsten						
Vanadium						
Zinc						
Zirconium						

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: FA62271
Account: ALSE - SGS Orlando, FL
Project: PLESFLL: CCR Wells; FL

QC Batch ID: MP13179
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date:

Metal	FA62271-6 Original MSD	Spikelot MPSPK2	% Rec	MSD RPD	QC Limit

Associated samples MP13179: FA62271-1, FA62271-2, FA62271-3, FA62271-4, FA62271-5, FA62271-6, FA62271-7, FA62271-8, FA62271-9

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA62271
Account: ALSE - SGS Orlando, FL
Project: PLESFLL: CCR Wells; FL

QC Batch ID: MP13179
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date:

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium	2050	2000	102.5	-
Magnesium				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Strontium				
Sulfur				
Thallium				
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc				
Zirconium				

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: FA62271
Account: ALSE - SGS Orlando, FL
Project: PLESFLL: CCR Wells; FL

QC Batch ID: MP13179
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date:

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits

Associated samples MP13179: FA62271-1, FA62271-2, FA62271-3, FA62271-4, FA62271-5, FA62271-6, FA62271-7, FA62271-8, FA62271-9

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

6.1.3

6

SERIAL DILUTION RESULTS SUMMARY

Login Number: FA62271
Account: ALSE - SGS Orlando, FL
Project: PLESFLL: CCR Wells; FL

QC Batch ID: MP13179
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date:

Metal	FA62271-6 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium	11.8	68.9	483.9(a)	0-
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Strontium				
Sulfur				
Thallium				
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc				

SERIAL DILUTION RESULTS SUMMARY

Login Number: FA62271
Account: ALSE - SGS Orlando, FL
Project: PLESFLL: CCR Wells; FL

QC Batch ID: MP13179
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date:

Metal	FA62271-6 Original SDL 1:5	%DIF	QC Limits
Zirconium			

Associated samples MP13179: FA62271-1, FA62271-2, FA62271-3, FA62271-4, FA62271-5, FA62271-6, FA62271-7, FA62271-8, FA62271-9

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

3030 E Lake Parker Dr
Lakeland, FL 33805
CCR SAMPLING
Month / Year: March 2019
LAB ANALYSIS REPORT

SampleName	Sample ID	Date/Time Sampled	Date/Time Analyzed	Method	Analyte	Result	Error	Units	Qualifiers	Detection Limit	Reporting Limit	Analyst
CCR-15	9030504-01	3/7/2019 14:17	3/18/2019 12:09	EPA 350.1	Ammonia- Un-ionized (NH3)	1.48		mg/L		0.00400	0.0222	PES
CCR-15	9030504-01	3/7/2019 14:17	3/18/2019 12:15	EPA 200.7	Arsenic	5.86		ug/L	U	5.86	10.0	PES
CCR-15	9030504-01	3/7/2019 14:17	3/11/2019 15:25	EPA 300.0 (Chloride)	Chloride	950		mg/L		0.760	2.00	CF
CCR-15	9030504-01	3/7/2019 14:17	3/7/2019 14:17	By Observation	Color	Clear		[blank]	U	---	---	ND
CCR-15	9030504-01	3/7/2019 14:17	3/7/2019 14:17	EPA 360.2	Dissolved Oxygen	0.20		mg/L		0.10	0.20	ND
CCR-15	9030504-01	3/7/2019 14:17	3/19/2019 9:20	EPA 200.7	Iron	2440		ug/L		30.7	100	CF
CCR-15	9030504-01	3/7/2019 14:17	3/19/2019 9:20	EPA 200.7	Manganese	77.9		ug/L		2.30	10.0	CF
CCR-15	9030504-01	3/7/2019 14:17	3/12/2019 17:57	EPA 353.2 (Nitrate-Nitrite (N))	Nitrate-Nitrite (N)	0.0720		mg/L	I	0.0300	0.250	PES
CCR-15	9030504-01	3/7/2019 14:17	3/7/2019 14:17	SM18 2580 B	ORP	-120		mV	U	1	1	ND
CCR-15	9030504-01	3/7/2019 14:17	3/7/2019 14:17	SM18 4500-B B	pH	4.17		SU		0.05	0.05	ND
CCR-15	9030504-01	3/7/2019 14:17	3/18/2019 9:39	EPA 365.1 (Phosphorus -Total)	Phosphorus- Elemental	0.139		mg/L		0.00300	0.0133	PES
CCR-15	9030504-01	3/7/2019 14:17	3/18/2019 13:27	EPA 200.7	Potassium	108		mg/L		0.375	1.25	PES
CCR-15	9030504-01	3/7/2019 14:17	3/21/2019 13:06	EPA 903.1	Radium 226	19.2	1.3	pCi/L		0.2	---	FRS
CCR-15	9030504-01	3/7/2019 14:17	3/20/2019 8:04	Ra-05	Radium 228	5.9	0.9	pCi/L		0.8	---	FRS
CCR-15	9030504-01	3/7/2019 14:17	3/12/2019 10:30	SM18 2540 C	Residues- Filterable (TDS)	2100		mg/L		40.0	80.0	CF
CCR-15	9030504-01	3/7/2019 14:17	3/7/2019 14:17	By Observation	Sheen	No Sheen		N/A	U	---	---	ND
CCR-15	9030504-01	3/7/2019 14:17	3/7/2019 14:17	EPA 120.1	Specific Conductance	3200		umhos/cm		1	5	ND
CCR-15	9030504-01	3/7/2019 14:17	3/11/2019 15:25	EPA 300.0 (Sulfate)	Sulfate	236		mg/L		0.500	2.00	CF
CCR-15	9030504-01	3/7/2019 14:17	3/7/2019 14:17	EPA 170.1	Temperature	24.6		deg C		0.1	0.1	ND
CCR-15	9030504-01	3/7/2019 14:17	3/7/2019 14:17	EPA 180.1	Turbidity	21.2		NTU		0.1	0.5	ND
CCR-15	9030504-01	3/7/2019 14:17	3/7/2019 14:17	FDEP DEP-SOP	Water Level	---		FT		0.1	0.5	ND
CCR-15	9030504-01	3/7/2019 14:17	3/29/2019 9:44	EPA 200.7	Magnesium	28.0		mg/L		0.911	2.00	CF
CCR-15	9030504-01	3/7/2019 14:17	3/29/2019 9:44	EPA 200.7	Sodium	181		mg/L		4.72	10.0	CF
CCR-15	9030504-01	3/7/2019 14:17	3/29/2019 11:04	EPA 200.7	Calcium	457		mg/L		29.8	100	CF
CCR-16	9030504-02	3/6/2019 11:20	3/18/2019 12:11	EPA 350.1	Ammonia- Un-ionized (NH3)	1.65		mg/L		0.00400	0.0222	PES
CCR-16	9030504-02	3/6/2019 11:20	3/6/2019 17:52	EPA 300.0 (Chloride)	Chloride	1670		mg/L		0.0380	0.100	CF
CCR-16	9030504-02	3/6/2019 11:20	3/8/2019 11:20	By Observation	Color	Clear		[blank]	U	---	---	DB
CCR-16	9030504-02	3/6/2019 11:20	3/8/2019 11:20	EPA 360.2	Dissolved Oxygen	0.41		mg/L		0.10	0.20	DB
CCR-16	9030504-02	3/6/2019 11:20	3/19/2019 9:24	EPA 200.7	Iron	331		ug/L		30.7	100	CF
CCR-16	9030504-02	3/6/2019 11:20	3/19/2019 0:00	EPA 200.7	Lithium	38.4		ug/L	I	9.1	50	SGS
CCR-16	9030504-02	3/6/2019 11:20	3/19/2019 9:24	EPA 200.7	Manganese	136		ug/L		2.30	10.0	CF
CCR-16	9030504-02	3/6/2019 11:20	3/12/2019 17:58	EPA 353.2 (Nitrate-Nitrite (N))	Nitrate-Nitrite (N)	0.0300		mg/L	U	0.0300	0.250	PES
CCR-16	9030504-02	3/6/2019 11:20	3/8/2019 11:20	SM18 2580 B	ORP	-58		mV	U	1	1	DB
CCR-16	9030504-02	3/6/2019 11:20	3/8/2019 11:20	SM18 4500-B B	pH	4.22		SU		0.05	0.05	DB
CCR-16	9030504-02	3/6/2019 11:20	3/18/2019 9:40	EPA 365.1 (Phosphorus -Total)	Phosphorus- Elemental	0.055		mg/L		0.00300	0.0133	PES
CCR-16	9030504-02	3/6/2019 11:20	3/18/2019 13:30	EPA 200.7	Potassium	385		mg/L		0.375	1.25	PES
CCR-16	9030504-02	3/6/2019 11:20	3/21/2019 13:06	EPA 903.1	Radium 226	23.3	1.4	pCi/L		0.2	---	FRS
CCR-16	9030504-02	3/6/2019 11:20	3/20/2019 8:04	Ra-05	Radium 228	19.4	1.3	pCi/L		0.7	---	FRS

3030 E Lake Parker Dr
Lakeland, FL 33805
CCR SAMPLING
Month / Year: March 2019
LAB ANALYSIS REPORT

SampleName	Sample ID	Date/Time Sampled	Date/Time Analyzed	Method	Analyte	Result	Error	Units	Qualifiers	Detection Limit	Reporting Limit	Analyst
CCR-16	9030504-02	3/6/2019 11:20	3/7/2019 13:00	SM18 2540 C	Residues- Filterable (TDS)	4420		mg/L		40.0	80.0	CF
CCR-16	9030504-02	3/6/2019 11:20	3/8/2019 11:20	By Observation	Sheen	No Sheen		N/A	U	---	---	DB
CCR-16	9030504-02	3/6/2019 11:20	3/8/2019 11:20	EPA 120.1	Specific Conductance	66.7		umhos/cm		1	5	DB
CCR-16	9030504-02	3/6/2019 11:20	3/8/2019 11:20	EPA 170.1	Temperature	23.0		deg C		0.1	0.1	DB
CCR-16	9030504-02	3/6/2019 11:20	3/8/2019 11:20	EPA 180.1	Turbidity	8.13		NTU		0.1	0.5	DB
CCR-16	9030504-02	3/6/2019 11:20	3/8/2019 11:20	FDEP DEP-SOP	Water Level	---		FT		0.1	0.5	DB
CCR-16	9030504-02	3/6/2019 11:20	3/7/2019 12:21	EPA 300.0 (Chloride)	Chloride	1720		mg/L		0.760	2.00	CF
CCR-16	9030504-02	3/6/2019 11:20	3/29/2019 9:49	EPA 200.7	Magnesium	33.3		mg/L		0.911	2.00	CF
CCR-16	9030504-02	3/6/2019 11:20	3/7/2019 12:21	EPA 300.0 (Sulfate)	Sulfate	976		mg/L		0.500	2.00	CF
CCR-16	9030504-02	3/6/2019 11:20	3/29/2019 11:09	EPA 200.7	Calcium	762		mg/L		29.8	100	CF
CCR-16	9030504-02	3/6/2019 11:20	3/29/2019 11:09	EPA 200.7	Sodium	344		mg/L		9.44	20.0	CF
CCR-17	9030504-03	3/6/2019 13:26	3/18/2019 12:12	EPA 350.1	Ammonia- Un-ionized (NH3)	0.292		mg/L		0.00400	0.0222	PES
CCR-17	9030504-03	3/6/2019 13:26	3/6/2019 13:26	By Observation	Color	Clear		[blank]	U	---	---	DB
CCR-17	9030504-03	3/6/2019 13:26	3/6/2019 13:26	EPA 360.2	Dissolved Oxygen	0.32		mg/L		0.10	0.20	DB
CCR-17	9030504-03	3/6/2019 13:26	3/19/2019 9:29	EPA 200.7	Iron	807		ug/L		30.7	100	CF
CCR-17	9030504-03	3/6/2019 13:26	3/19/2019 0:00	EPA 200.7	Lithium	16.2		ug/L	I	9.1	50	SGS
CCR-17	9030504-03	3/6/2019 13:26	3/19/2019 9:29	EPA 200.7	Manganese	71.0		ug/L		2.30	10.0	CF
CCR-17	9030504-03	3/6/2019 13:26	3/12/2019 17:59	EPA 353.2 (Nitrate-Nitrite (N))	Nitrate-Nitrite (N)	0.0300		mg/L	U	0.0300	0.250	PES
CCR-17	9030504-03	3/6/2019 13:26	3/6/2019 13:26	SM18 2580 B	ORP	-123		mV	U	1	1	DB
CCR-17	9030504-03	3/6/2019 13:26	3/6/2019 13:26	SM18 4500-B B	pH	6.30		SU		0.05	0.05	DB
CCR-17	9030504-03	3/6/2019 13:26	3/18/2019 9:41	EPA 365.1 (Phosphorus -Total)	Phosphorus- Elemental	0.076		mg/L		0.00300	0.0133	PES
CCR-17	9030504-03	3/6/2019 13:26	3/18/2019 12:19	EPA 200.7	Potassium	11		mg/L		0.0150	0.0500	PES
CCR-17	9030504-03	3/6/2019 13:26	3/7/2019 13:02	SM18 2540 C	Residues- Filterable (TDS)	632		mg/L		10.0	20.0	CF
CCR-17	9030504-03	3/6/2019 13:26	3/6/2019 13:26	By Observation	Sheen	No Sheen		N/A	U	---	---	DB
CCR-17	9030504-03	3/6/2019 13:26	3/6/2019 13:26	EPA 120.1	Specific Conductance	8.71		umhos/cm		1	5	DB
CCR-17	9030504-03	3/6/2019 13:26	3/7/2019 12:47	EPA 300.0 (Sulfate)	Sulfate	236		mg/L		0.500	2.00	CF
CCR-17	9030504-03	3/6/2019 13:26	3/6/2019 13:26	EPA 170.1	Temperature	24.1		deg C		0.1	0.1	DB
CCR-17	9030504-03	3/6/2019 13:26	3/6/2019 13:26	EPA 180.1	Turbidity	20.7		NTU		0.1	0.5	DB
CCR-17	9030504-03	3/6/2019 13:26	3/6/2019 13:26	FDEP DEP-SOP	Water Level	---		FT		0.1	0.5	DB
CCR-17	9030504-03	3/6/2019 13:26	3/29/2019 9:53	EPA 200.7	Calcium	141		mg/L		7.45	25.0	CF
CCR-17	9030504-03	3/6/2019 13:26	3/11/2019 15:51	EPA 300.0 (Chloride)	Chloride	22.0		mg/L		0.152	0.400	CF
CCR-17	9030504-03	3/6/2019 13:26	3/29/2019 9:53	EPA 200.7	Magnesium	13.3		mg/L		0.456	1.00	CF
CCR-17	9030504-03	3/6/2019 13:26	3/29/2019 9:53	EPA 200.7	Sodium	4.97		mg/L	I	2.36	5.00	CF
CCR-18	9030504-04	3/6/2019 14:07	3/18/2019 12:14	EPA 350.1	Ammonia- Un-ionized (NH3)	0.464		mg/L		0.00400	0.0222	PES
CCR-18	9030504-04	3/6/2019 14:07	3/6/2019 14:07	By Observation	Color	Clear		[blank]	U	---	---	DB
CCR-18	9030504-04	3/6/2019 14:07	3/6/2019 14:07	EPA 360.2	Dissolved Oxygen	1.53		mg/L		0.10	0.20	DB
CCR-18	9030504-04	3/6/2019 14:07	3/19/2019 9:33	EPA 200.7	Iron	227		ug/L		30.7	100	CF
CCR-18	9030504-04	3/6/2019 14:07	3/19/2019 9:33	EPA 200.7	Manganese	11.3		ug/L		2.30	10.0	CF

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SampleName	Sample ID	Date/Time Sampled	Date/Time Analyzed	Method	Analyte	Result	Error	Units	Qualifiers	Detection Limit	Reporting Limit	Analyst
CCR-18	9030504-04	3/6/2019 14:07	3/12/2019 18:00	EPA 353.2 (Nitrate-Nitrite (N))	Nitrate-Nitrite (N)	0.0300		mg/L	U	0.0300	0.250	PES
CCR-18	9030504-04	3/6/2019 14:07	3/6/2019 14:07	SM18 2580 B	ORP	-169		mV	U	1	1	DB
CCR-18	9030504-04	3/6/2019 14:07	3/6/2019 14:07	SM18 4500-B B	pH	6.31		SU		0.05	0.05	DB
CCR-18	9030504-04	3/6/2019 14:07	3/18/2019 9:42	EPA 365.1 (Phosphorus -Total)	Phosphorus- Elemental	0.397		mg/L		0.00300	0.0133	PES
CCR-18	9030504-04	3/6/2019 14:07	3/18/2019 12:21	EPA 200.7	Potassium	4.32		mg/L		0.0150	0.0500	PES
CCR-18	9030504-04	3/6/2019 14:07	3/21/2019 13:06	EPA 903.1	Radium 226	0.5	0.2	pCi/L		0.1	---	FRS
CCR-18	9030504-04	3/6/2019 14:07	3/20/2019 8:04	Ra-05	Radium 228	0.7	0.5	pCi/L	U	0.7	---	FRS
CCR-18	9030504-04	3/6/2019 14:07	3/7/2019 13:04	SM18 2540 C	Residues- Filterable (TDS)	233		mg/L		10.0	20.0	CF
CCR-18	9030504-04	3/6/2019 14:07	3/6/2019 14:07	By Observation	Sheen	No Sheen		N/A	U	---	---	DB
CCR-18	9030504-04	3/6/2019 14:07	3/19/2019 9:33	EPA 200.7	Sodium	1.66		mg/L		0.0472	0.100	CF
CCR-18	9030504-04	3/6/2019 14:07	3/6/2019 14:07	EPA 120.1	Specific Conductance	355		umhos/cm		1	5	DB
CCR-18	9030504-04	3/6/2019 14:07	3/6/2019 14:07	EPA 170.1	Temperature	23.7		deg C		0.1	0.1	DB
CCR-18	9030504-04	3/6/2019 14:07	3/6/2019 14:07	EPA 180.1	Turbidity	15.5		NTU		0.1	0.5	DB
CCR-18	9030504-04	3/6/2019 14:07	3/6/2019 14:07	FDEP DEP-SOP	Water Level	---		FT		0.1	0.5	DB
CCR-18	9030504-04	3/6/2019 14:07	3/29/2019 9:58	EPA 200.7	Calcium	63.7		mg/L		7.45	25.0	CF
CCR-18	9030504-04	3/6/2019 14:07	3/29/2019 9:58	EPA 200.7	Magnesium	3.79		mg/L		0.456	1.00	CF
CCR-18	9030504-04	3/6/2019 14:07	3/11/2019 16:43	EPA 300.0 (Chloride)	Chloride	2.70		mg/L		0.0380	0.100	CF
CCR-18	9030504-04	3/6/2019 14:07	3/11/2019 16:43	EPA 300.0 (Sulfate)	Sulfate	29.3		mg/L		0.0250	0.100	CF
CCR-19	9030504-05	3/6/2019 14:55	3/18/2019 13:39	EPA 350.1	Ammonia- Un-ionized (NH3)	14.1		mg/L		0.0800	0.444	PES
CCR-19	9030504-05	3/6/2019 14:55	3/7/2019 13:39	EPA 300.0 (Chloride)	Chloride	1330		mg/L		0.760	2.00	CF
CCR-19	9030504-05	3/6/2019 14:55	3/6/2019 14:55	By Observation	Color	Clear		[blank]	U	---	---	DB
CCR-19	9030504-05	3/6/2019 14:55	3/6/2019 14:55	EPA 360.2	Dissolved Oxygen	0.22		mg/L		0.10	0.20	DB
CCR-19	9030504-05	3/6/2019 14:55	3/19/2019 9:38	EPA 200.7	Iron	853		ug/L		30.7	100	CF
CCR-19	9030504-05	3/6/2019 14:55	3/19/2019 0:00	EPA 200.7	Lithium	30.0		ug/L	I	9.1	50	SGS
CCR-19	9030504-05	3/6/2019 14:55	3/19/2019 9:38	EPA 200.7	Manganese	69.7		ug/L		2.30	10.0	CF
CCR-19	9030504-05	3/6/2019 14:55	3/12/2019 14:20	EPA 353.2 (Nitrate-Nitrite (N))	Nitrate-Nitrite (N)	0.0300		mg/L	U	0.0300	0.250	PES
CCR-19	9030504-05	3/6/2019 14:55	3/6/2019 14:55	SM18 2580 B	ORP	-228		mV	U	1	1	DB
CCR-19	9030504-05	3/6/2019 14:55	3/6/2019 14:55	SM18 4500-B B	pH	4.83		SU		0.05	0.05	DB
CCR-19	9030504-05	3/6/2019 14:55	3/18/2019 10:24	EPA 365.1 (Phosphorus -Total)	Phosphorus- Elemental	0.168		mg/L		0.00300	0.0133	PES
CCR-19	9030504-05	3/6/2019 14:55	3/18/2019 13:32	EPA 200.7	Potassium	252		mg/L		0.375	1.25	PES
CCR-19	9030504-05	3/6/2019 14:55	3/7/2019 13:06	SM18 2540 C	Residues- Filterable (TDS)	4330		mg/L		20.0	40.0	CF
CCR-19	9030504-05	3/6/2019 14:55	3/6/2019 14:55	By Observation	Sheen	No Sheen		N/A	U	---	---	DB
CCR-19	9030504-05	3/6/2019 14:55	3/6/2019 14:55	EPA 120.1	Specific Conductance	6060		umhos/cm		1	5	DB
CCR-19	9030504-05	3/6/2019 14:55	3/7/2019 13:39	EPA 300.0 (Sulfate)	Sulfate	1400		mg/L		0.500	2.00	CF
CCR-19	9030504-05	3/6/2019 14:55	3/6/2019 14:55	EPA 170.1	Temperature	22.2		deg C		0.1	0.1	DB
CCR-19	9030504-05	3/6/2019 14:55	3/6/2019 14:55	EPA 180.1	Turbidity	23.1		NTU		0.1	0.5	DB
CCR-19	9030504-05	3/6/2019 14:55	3/6/2019 14:55	FDEP DEP-SOP	Water Level	---		FT		0.1	0.5	DB
CCR-19	9030504-05	3/6/2019 14:55	3/29/2019 10:03	EPA 200.7	Magnesium	45.2		mg/L		0.911	2.00	CF

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CCR-19	9030504-05	3/6/2019 14:55	3/29/2019 10:03	EPA 200.7	Sodium	253		mg/L		4.72	10.0	CF
CCR-19	9030504-05	3/6/2019 14:55	3/29/2019 11:14	EPA 200.7	Calcium	759		mg/L		29.8	100	CF
CCR-20	9030504-06	3/7/2019 10:13	3/18/2019 13:40	EPA 350.1	Ammonia- Un-ionized (NH3)	16.4		mg/L		0.0800	0.444	PES
CCR-20	9030504-06	3/7/2019 10:13	3/18/2019 12:26	EPA 200.7	Arsenic	28.2		ug/L	J-7	5.86	10.0	PES
CCR-20	9030504-06	3/7/2019 10:13	3/7/2019 14:05	EPA 300.0 (Chloride)	Chloride	336		mg/L		0.760	2.00	CF
CCR-20	9030504-06	3/7/2019 10:13	3/7/2019 10:13	By Observation	Color	Clear		[blank]	U	---	---	DB
CCR-20	9030504-06	3/7/2019 10:13	3/7/2019 10:13	EPA 360.2	Dissolved Oxygen	0.53		mg/L		0.10	0.20	DB
CCR-20	9030504-06	3/7/2019 10:13	3/19/2019 9:42	EPA 200.7	Iron	804		ug/L		30.7	100	CF
CCR-20	9030504-06	3/7/2019 10:13	3/19/2019 9:42	EPA 200.7	Manganese	69.0		ug/L		2.30	10.0	CF
CCR-20	9030504-06	3/7/2019 10:13	3/12/2019 14:22	EPA 353.2 (Nitrate-Nitrite (N))	Nitrate-Nitrite (N)	0.0300		mg/L	U	0.0300	0.250	PES
CCR-20	9030504-06	3/7/2019 10:13	3/7/2019 10:13	SM18 2580 B	ORP	-276		mV	U	1	1	DB
CCR-20	9030504-06	3/7/2019 10:13	3/7/2019 10:13	SM18 4500-B B	pH	5.24		SU		0.05	0.05	DB
CCR-20	9030504-06	3/7/2019 10:13	3/18/2019 10:25	EPA 365.1 (Phosphorus -Total)	Phosphorus- Elemental	0.108		mg/L		0.00300	0.0133	PES
CCR-20	9030504-06	3/7/2019 10:13	3/18/2019 13:34	EPA 200.7	Potassium	240		mg/L		0.375	1.25	PES
CCR-20	9030504-06	3/7/2019 10:13	3/12/2019 10:34	SM18 2540 C	Residues- Filterable (TDS)	2810		mg/L		20.0	40.0	CF
CCR-20	9030504-06	3/7/2019 10:13	3/7/2019 10:13	By Observation	Sheen	No Sheen		N/A	U	---	---	DB
CCR-20	9030504-06	3/7/2019 10:13	3/7/2019 10:13	EPA 120.1	Specific Conductance	3820		umhos/cm		1	5	DB
CCR-20	9030504-06	3/7/2019 10:13	3/7/2019 14:05	EPA 300.0 (Sulfate)	Sulfate	1470		mg/L		0.500	2.00	CF
CCR-20	9030504-06	3/7/2019 10:13	3/7/2019 10:13	EPA 170.1	Temperature	22.1		deg C		0.1	0.1	DB
CCR-20	9030504-06	3/7/2019 10:13	3/7/2019 10:13	EPA 180.1	Turbidity	14.1		NTU		0.1	0.5	DB
CCR-20	9030504-06	3/7/2019 10:13	3/7/2019 10:13	FDEP DEP-SOP	Water Level	---		FT		0.1	0.5	DB
CCR-20	9030504-06	3/7/2019 10:13	3/29/2019 10:07	EPA 200.7	Magnesium	17.0		mg/L		0.911	2.00	CF
CCR-20	9030504-06	3/7/2019 10:13	3/29/2019 10:07	EPA 200.7	Sodium	148		mg/L		4.72	10.0	CF
CCR-20	9030504-06	3/7/2019 10:13	3/29/2019 11:18	EPA 200.7	Calcium	496		mg/L		29.8	100	CF
CCR-21	9030504-07	3/7/2019 10:42	3/13/2019 8:53	EPA 350.1	Ammonia- Un-ionized (NH3)	0.583		mg/L		0.00400	0.0222	PES
CCR-21	9030504-07	3/7/2019 10:42	3/18/2019 12:33	EPA 200.7	Arsenic	5.86		ug/L	U	5.86	10.0	PES
CCR-21	9030504-07	3/7/2019 10:42	3/7/2019 14:31	EPA 300.0 (Chloride)	Chloride	14.2		mg/L		0.760	2.00	CF
CCR-21	9030504-07	3/7/2019 10:42	3/7/2019 10:42	By Observation	Color	Clear		[blank]	U	---	---	DB
CCR-21	9030504-07	3/7/2019 10:42	3/7/2019 10:42	EPA 360.2	Dissolved Oxygen	0.18		mg/L	I	0.10	0.20	DB
CCR-21	9030504-07	3/7/2019 10:42	3/19/2019 9:46	EPA 200.7	Manganese	79.2		ug/L		2.30	10.0	CF
CCR-21	9030504-07	3/7/2019 10:42	3/12/2019 14:24	EPA 353.2 (Nitrate-Nitrite (N))	Nitrate-Nitrite (N)	0.0300		mg/L	U	0.0300	0.250	PES
CCR-21	9030504-07	3/7/2019 10:42	3/7/2019 10:42	SM18 2580 B	ORP	-144		mV	U	1	1	DB
CCR-21	9030504-07	3/7/2019 10:42	3/7/2019 10:42	SM18 4500-B B	pH	6.37		SU		0.05	0.05	DB
CCR-21	9030504-07	3/7/2019 10:42	3/18/2019 10:26	EPA 365.1 (Phosphorus -Total)	Phosphorus- Elemental	0.054		mg/L		0.00300	0.0133	PES
CCR-21	9030504-07	3/7/2019 10:42	3/18/2019 12:33	EPA 200.7	Potassium	19.7		mg/L		0.0150	0.0500	PES
CCR-21	9030504-07	3/7/2019 10:42	3/12/2019 10:36	SM18 2540 C	Residues- Filterable (TDS)	1310		mg/L		20.0	40.0	CF
CCR-21	9030504-07	3/7/2019 10:42	3/7/2019 10:42	By Observation	Sheen	No Sheen		N/A	U	---	---	DB
CCR-21	9030504-07	3/7/2019 10:42	3/7/2019 10:42	EPA 120.1	Specific Conductance	1646		umhos/cm		1	5	DB

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CCR-21	9030504-07	3/7/2019 10:42	3/7/2019 14:31	EPA 300.0 (Sulfate)	Sulfate	629		mg/L		0.500	2.00	CF
CCR-21	9030504-07	3/7/2019 10:42	3/7/2019 10:42	EPA 170.1	Temperature	22.4		deg C		0.1	0.1	DB
CCR-21	9030504-07	3/7/2019 10:42	3/7/2019 10:42	EPA 180.1	Turbidity	6.26		NTU		0.1	0.5	DB
CCR-21	9030504-07	3/7/2019 10:42	3/7/2019 10:42	FDEP DEP-SOP	Water Level	---		FT		0.1	0.5	DB
CCR-21	9030504-07	3/7/2019 10:42	3/29/2019 10:12	EPA 200.7	Iron	3510		ug/L	I	3070	10000	CF
CCR-21	9030504-07	3/7/2019 10:42	3/29/2019 10:12	EPA 200.7	Magnesium	14.4		mg/L		0.911	2.00	CF
CCR-21	9030504-07	3/7/2019 10:42	3/29/2019 10:12	EPA 200.7	Sodium	5.06		mg/L	I	4.72	10.0	CF
CCR-21	9030504-07	3/7/2019 10:42	3/29/2019 10:12	EPA 200.7	Calcium	328		mg/L	J-8	14.9	50.0	CF
CCR-22	9030504-08	3/7/2019 11:23	3/13/2019 8:55	EPA 350.1	Ammonia- Un-ionized (NH3)	1.1		mg/L		0.00400	0.0222	PES
CCR-22	9030504-08	3/7/2019 11:23	3/7/2019 14:57	EPA 300.0 (Chloride)	Chloride	107		mg/L		0.760	2.00	CF
CCR-22	9030504-08	3/7/2019 11:23	3/7/2019 11:23	By Observation	Color	Clear		[blank]	U	---	---	DB
CCR-22	9030504-08	3/7/2019 11:23	3/7/2019 11:23	EPA 360.2	Dissolved Oxygen	0.22		mg/L		0.10	0.20	DB
CCR-22	9030504-08	3/7/2019 11:23	3/19/2019 0:00	EPA 200.7	Lithium	129		ug/L		9.1	50	SGS
CCR-22	9030504-08	3/7/2019 11:23	3/19/2019 9:51	EPA 200.7	Manganese	45.9		ug/L		2.30	10.0	CF
CCR-22	9030504-08	3/7/2019 11:23	3/12/2019 14:25	EPA 353.2 (Nitrate-Nitrite (N))	Nitrate-Nitrite (N)	0.0300		mg/L	U	0.0300	0.250	PES
CCR-22	9030504-08	3/7/2019 11:23	3/7/2019 11:23	SM18 2580 B	ORP	-131		mV	U	1	1	DB
CCR-22	9030504-08	3/7/2019 11:23	3/7/2019 11:23	SM18 4500-B B	pH	4.82		SU		0.05	0.05	DB
CCR-22	9030504-08	3/7/2019 11:23	3/18/2019 10:27	EPA 365.1 (Phosphorus -Total)	Phosphorus- Elemental	0.921		mg/L		0.00300	0.0133	PES
CCR-22	9030504-08	3/7/2019 11:23	3/18/2019 13:36	EPA 200.7	Potassium	188		mg/L		0.375	1.25	PES
CCR-22	9030504-08	3/7/2019 11:23	3/21/2019 13:06	EPA 903.1	Radium 226	26.3	1.5	pCi/L		0.1	---	FRS
CCR-22	9030504-08	3/7/2019 11:23	3/20/2019 8:04	Ra-05	Radium 228	1.4	0.6	pCi/L		0.7	---	FRS
CCR-22	9030504-08	3/7/2019 11:23	3/12/2019 10:38	SM18 2540 C	Residues- Filterable (TDS)	1730		mg/L		20.0	40.0	CF
CCR-22	9030504-08	3/7/2019 11:23	3/7/2019 11:23	By Observation	Sheen	No Sheen		N/A	U	---	---	DB
CCR-22	9030504-08	3/7/2019 11:23	3/7/2019 11:23	EPA 120.1	Specific Conductance	2300		umhos/cm		1	5	DB
CCR-22	9030504-08	3/7/2019 11:23	3/7/2019 14:57	EPA 300.0 (Sulfate)	Sulfate	989		mg/L		0.500	2.00	CF
CCR-22	9030504-08	3/7/2019 11:23	3/7/2019 11:23	EPA 170.1	Temperature	23.5		deg C		0.1	0.1	DB
CCR-22	9030504-08	3/7/2019 11:23	3/7/2019 11:23	EPA 180.1	Turbidity	18.4		NTU		0.1	0.5	DB
CCR-22	9030504-08	3/7/2019 11:23	3/7/2019 11:23	FDEP DEP-SOP	Water Level	---		FT		0.1	0.5	DB
CCR-22	9030504-08	3/7/2019 11:23	3/29/2019 10:17	EPA 200.7	Calcium	303		mg/L		14.9	50.0	CF
CCR-22	9030504-08	3/7/2019 11:23	3/29/2019 10:17	EPA 200.7	Iron	4030		ug/L	I	3070	10000	CF
CCR-22	9030504-08	3/7/2019 11:23	3/29/2019 10:17	EPA 200.7	Magnesium	13.6		mg/L		0.911	2.00	CF
CCR-22	9030504-08	3/7/2019 11:23	3/29/2019 10:17	EPA 200.7	Sodium	33.4		mg/L		4.72	10.0	CF
CCR-23	9030504-09	3/7/2019 13:26	3/13/2019 8:56	EPA 350.1	Ammonia- Un-ionized (NH3)	1.02		mg/L		0.00400	0.0222	PES
CCR-23	9030504-09	3/7/2019 13:26	3/11/2019 16:17	EPA 300.0 (Chloride)	Chloride	133		mg/L		0.760	2.00	CF
CCR-23	9030504-09	3/7/2019 13:26	3/7/2019 13:26	By Observation	Color	Clear		[blank]	U	---	---	ND
CCR-23	9030504-09	3/7/2019 13:26	3/7/2019 13:26	EPA 360.2	Dissolved Oxygen	0.23		mg/L		0.10	0.20	ND
CCR-23	9030504-09	3/7/2019 13:26	3/19/2019 9:55	EPA 200.7	Manganese	175		ug/L		2.30	10.0	CF
CCR-23	9030504-09	3/7/2019 13:26	3/12/2019 14:27	EPA 353.2 (Nitrate-Nitrite (N))	Nitrate-Nitrite (N)	0.0400		mg/L	I	0.0300	0.250	PES

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CCR-23	9030504-09	3/7/2019 13:26	3/7/2019 13:26	SM18 2580 B	ORP	-6.20		mV	U	1	1	ND
CCR-23	9030504-09	3/7/2019 13:26	3/7/2019 13:26	SM18 4500-B B	pH	5.09		SU		0.05	0.05	ND
CCR-23	9030504-09	3/7/2019 13:26	3/18/2019 10:59	EPA 365.1 (Phosphorus -Total)	Phosphorus- Elemental	2.7		mg/L		0.0150	0.0665	PES
CCR-23	9030504-09	3/7/2019 13:26	3/18/2019 12:37	EPA 200.7	Potassium	4.59		mg/L		0.0150	0.0500	PES
CCR-23	9030504-09	3/7/2019 13:26	3/21/2019 13:06	EPA 903.1	Radium 226	6.5	0.7	pCi/L		0.1	---	FRS
CCR-23	9030504-09	3/7/2019 13:26	3/20/2019 8:04	Ra-05	Radium 228	0.8	0.5	pCi/L		0.7	---	FRS
CCR-23	9030504-09	3/7/2019 13:26	3/12/2019 10:40	SM18 2540 C	Residues- Filterable (TDS)	1320		mg/L		20.0	40.0	CF
CCR-23	9030504-09	3/7/2019 13:26	3/7/2019 13:26	By Observation	Sheen	No Sheen		N/A	U	---	---	ND
CCR-23	9030504-09	3/7/2019 13:26	3/7/2019 13:26	EPA 120.1	Specific Conductance	1727		umhos/cm		1	5	ND
CCR-23	9030504-09	3/7/2019 13:26	3/11/2019 16:17	EPA 300.0 (Sulfate)	Sulfate	748		mg/L		0.500	2.00	CF
CCR-23	9030504-09	3/7/2019 13:26	3/7/2019 13:26	EPA 170.1	Temperature	25.3		deg C		0.1	0.1	ND
CCR-23	9030504-09	3/7/2019 13:26	3/7/2019 13:26	EPA 180.1	Turbidity	25.0		NTU		0.1	0.5	ND
CCR-23	9030504-09	3/7/2019 13:26	3/7/2019 13:26	FDEP DEP-SOP	Water Level	---		FT		0.1	0.5	ND
CCR-23	9030504-09	3/7/2019 13:26	3/29/2019 10:22	EPA 200.7	Calcium	255		mg/L		14.9	50.0	CF
CCR-23	9030504-09	3/7/2019 13:26	3/29/2019 10:22	EPA 200.7	Iron	20800		ug/L		3070	10000	CF
CCR-23	9030504-09	3/7/2019 13:26	3/29/2019 10:22	EPA 200.7	Magnesium	37.1		mg/L		0.911	2.00	CF
CCR-23	9030504-09	3/7/2019 13:26	3/29/2019 10:22	EPA 200.7	Sodium	35.2		mg/L		4.72	10.0	CF
MW-24S	9030504-10	3/5/2019 13:29	3/13/2019 8:58	EPA 350.1	Ammonia- Un-ionized (NH3)	0.62		mg/L		0.00400	0.0222	PES
MW-24S	9030504-10	3/5/2019 13:29	3/6/2019 18:18	EPA 300.0 (Chloride)	Chloride	8.56		mg/L		0.0380	0.100	CF
MW-24S	9030504-10	3/5/2019 13:29	3/5/2019 13:29	By Observation	Color	Clear		[blank]	U	---	---	DB
MW-24S	9030504-10	3/5/2019 13:29	3/5/2019 13:29	EPA 360.2	Dissolved Oxygen	0.67		mg/L		0.10	0.20	DB
MW-24S	9030504-10	3/5/2019 13:29	3/19/2019 9:59	EPA 200.7	Iron	682		ug/L		30.7	100	CF
MW-24S	9030504-10	3/5/2019 13:29	3/19/2019 0:00	EPA 200.7	Lithium	16.3		ug/L	I	9.1	50	SGS
MW-24S	9030504-10	3/5/2019 13:29	3/19/2019 9:59	EPA 200.7	Manganese	14.9		ug/L		2.30	10.0	CF
MW-24S	9030504-10	3/5/2019 13:29	3/12/2019 14:29	EPA 353.2 (Nitrate-Nitrite (N))	Nitrate-Nitrite (N)	0.0970		mg/L	I	0.0300	0.250	PES
MW-24S	9030504-10	3/5/2019 13:29	3/5/2019 13:29	SM18 2580 B	ORP	-46		mV	U	1	1	DB
MW-24S	9030504-10	3/5/2019 13:29	3/5/2019 13:29	SM18 4500-B B	pH	5.57		SU		0.05	0.05	DB
MW-24S	9030504-10	3/5/2019 13:29	3/18/2019 10:29	EPA 365.1 (Phosphorus -Total)	Phosphorus- Elemental	0.152		mg/L		0.00300	0.0133	PES
MW-24S	9030504-10	3/5/2019 13:29	3/18/2019 12:40	EPA 200.7	Potassium	1.95		mg/L		0.0150	0.0500	PES
MW-24S	9030504-10	3/5/2019 13:29	3/7/2019 13:08	SM18 2540 C	Residues- Filterable (TDS)	214		mg/L		10.0	20.0	CF
MW-24S	9030504-10	3/5/2019 13:29	3/5/2019 13:29	By Observation	Sheen	No Sheen		N/A	U	---	---	DB
MW-24S	9030504-10	3/5/2019 13:29	3/5/2019 13:29	EPA 120.1	Specific Conductance	291		umhos/cm		1	5	DB
MW-24S	9030504-10	3/5/2019 13:29	3/6/2019 18:18	EPA 300.0 (Sulfate)	Sulfate	29.7		mg/L		0.0250	0.100	CF
MW-24S	9030504-10	3/5/2019 13:29	3/5/2019 13:29	EPA 170.1	Temperature	22.1		deg C		0.1	0.1	DB
MW-24S	9030504-10	3/5/2019 13:29	3/5/2019 13:29	EPA 180.1	Turbidity	6.25		NTU		0.1	0.5	DB
MW-24S	9030504-10	3/5/2019 13:29	3/5/2019 13:29	FDEP DEP-SOP	Water Level	133.89		FT		0.1	0.5	DB
MW-24S	9030504-10	3/5/2019 13:29	3/29/2019 10:26	EPA 200.7	Calcium	35.0		mg/L		2.98	10.0	CF
MW-24S	9030504-10	3/5/2019 13:29	3/29/2019 10:26	EPA 200.7	Magnesium	12.9		mg/L		0.182	0.400	CF

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SampleName	Sample ID	Date/Time Sampled	Date/Time Analyzed	Method	Analyte	Result	Error	Units	Qualifiers	Detection Limit	Reporting Limit	Analyst
MW-24S	9030504-10	3/5/2019 13:29	3/29/2019 10:26	EPA 200.7	Sodium	4.15		mg/L		0.944	2.00	CF
MW-25S	9030504-11	3/6/2019 10:27	3/13/2019 9:03	EPA 350.1	Ammonia- Un-ionized (NH3)	0.67		mg/L		0.00400	0.0222	PES
MW-25S	9030504-11	3/6/2019 10:27	3/6/2019 18:44	EPA 300.0 (Chloride)	Chloride	16.2		mg/L		0.0380	0.100	CF
MW-25S	9030504-11	3/6/2019 10:27	3/6/2019 10:27	By Observation	Color	Clear		[blank]	U	---	---	DB
MW-25S	9030504-11	3/6/2019 10:27	3/6/2019 10:27	EPA 360.2	Dissolved Oxygen	1.57		mg/L		0.10	0.20	DB
MW-25S	9030504-11	3/6/2019 10:27	3/19/2019 10:58	EPA 200.7	Iron	30.7		ug/L	U	30.7	100	CF
MW-25S	9030504-11	3/6/2019 10:27	3/19/2019 0:00	EPA 200.7	Lithium	11.8		ug/L	I	9.1	50	SGS
MW-25S	9030504-11	3/6/2019 10:27	3/19/2019 10:58	EPA 200.7	Manganese	2.30		ug/L	U	2.30	10.0	CF
MW-25S	9030504-11	3/6/2019 10:27	3/12/2019 14:31	EPA 353.2 (Nitrate-Nitrite (N))	Nitrate-Nitrite (N)	4.94		mg/L		0.0300	0.250	PES
MW-25S	9030504-11	3/6/2019 10:27	3/6/2019 10:27	SM18 2580 B	ORP	278		mV		1	1	DB
MW-25S	9030504-11	3/6/2019 10:27	3/6/2019 10:27	SM18 4500-B B	pH	6.10		SU		0.05	0.05	DB
MW-25S	9030504-11	3/6/2019 10:27	3/18/2019 10:59	EPA 365.1 (Phosphorus -Total)	Phosphorus- Elemental	0.06		mg/L		0.00300	0.0133	PES
MW-25S	9030504-11	3/6/2019 10:27	3/18/2019 12:56	EPA 200.7	Potassium	2.96		mg/L	V	0.0150	0.0500	PES
MW-25S	9030504-11	3/6/2019 10:27	3/21/2019 14:09	EPA 903.1	Radium 226	0.5	0.2	pCi/L		0.2	---	FRS
MW-25S	9030504-11	3/6/2019 10:27	3/20/2019 8:04	Ra-05	Radium 228	0.7	0.4	pCi/L	U	0.7	---	FRS
MW-25S	9030504-11	3/6/2019 10:27	3/7/2019 13:10	SM18 2540 C	Residues- Filterable (TDS)	377		mg/L		10.0	20.0	CF
MW-25S	9030504-11	3/6/2019 10:27	3/6/2019 10:27	By Observation	Sheen	No Sheen		N/A	U	---	---	DB
MW-25S	9030504-11	3/6/2019 10:27	3/6/2019 10:27	EPA 120.1	Specific Conductance	560		umhos/cm		1	5	DB
MW-25S	9030504-11	3/6/2019 10:27	3/6/2019 18:44	EPA 300.0 (Sulfate)	Sulfate	112		mg/L		0.0250	0.100	CF
MW-25S	9030504-11	3/6/2019 10:27	3/6/2019 10:27	EPA 170.1	Temperature	22.4		deg C		0.1	0.1	DB
MW-25S	9030504-11	3/6/2019 10:27	3/6/2019 10:27	EPA 180.1	Turbidity	0.98		NTU		0.1	0.5	DB
MW-25S	9030504-11	3/6/2019 10:27	3/6/2019 10:27	FDEP DEP-SOP	Water Level	130.32		FT		0.1	0.5	DB
MW-25S	9030504-11	3/6/2019 10:27	3/29/2019 11:23	EPA 200.7	Calcium	89.9		mg/L		7.45	25.0	CF
MW-25S	9030504-11	3/6/2019 10:27	3/29/2019 11:23	EPA 200.7	Magnesium	9.82		mg/L		0.456	1.00	CF
MW-25S	9030504-11	3/6/2019 10:27	3/29/2019 11:23	EPA 200.7	Sodium	2.39		mg/L	I	2.36	5.00	CF
MW-26S	9030504-12	3/5/2019 14:43	3/13/2019 9:05	EPA 350.1	Ammonia- Un-ionized (NH3)	0.992		mg/L		0.00400	0.0222	PES
MW-26S	9030504-12	3/5/2019 14:43	3/18/2019 12:58	EPA 200.7	Arsenic	5.86		ug/L	U	5.86	10.0	PES
MW-26S	9030504-12	3/5/2019 14:43	3/6/2019 19:10	EPA 300.0 (Chloride)	Chloride	3.05		mg/L		0.0380	0.100	CF
MW-26S	9030504-12	3/5/2019 14:43	3/5/2019 14:43	By Observation	Color	Clear		[blank]	U	---	---	DB
MW-26S	9030504-12	3/5/2019 14:43	3/5/2019 14:43	EPA 360.2	Dissolved Oxygen	3.49		mg/L		0.10	0.20	DB
MW-26S	9030504-12	3/5/2019 14:43	3/19/2019 11:02	EPA 200.7	Iron	254		ug/L	V	30.7	100	CF
MW-26S	9030504-12	3/5/2019 14:43	3/19/2019 11:02	EPA 200.7	Magnesium	1.40		mg/L		0.00911	0.0200	CF
MW-26S	9030504-12	3/5/2019 14:43	3/19/2019 11:02	EPA 200.7	Manganese	2.30		ug/L	U	2.30	10.0	CF
MW-26S	9030504-12	3/5/2019 14:43	3/12/2019 14:32	EPA 353.2 (Nitrate-Nitrite (N))	Nitrate-Nitrite (N)	7.26		mg/L		0.0300	0.250	PES
MW-26S	9030504-12	3/5/2019 14:43	3/5/2019 14:43	SM18 2580 B	ORP	154		mV		1	1	DB
MW-26S	9030504-12	3/5/2019 14:43	3/5/2019 14:43	SM18 4500-B B	pH	6.04		SU		0.05	0.05	DB
MW-26S	9030504-12	3/5/2019 14:43	3/18/2019 11:00	EPA 365.1 (Phosphorus -Total)	Phosphorus- Elemental	0.144		mg/L		0.00300	0.0133	PES
MW-26S	9030504-12	3/5/2019 14:43	3/18/2019 12:58	EPA 200.7	Potassium	2.11		mg/L	V	0.0150	0.0500	PES

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SampleName	Sample ID	Date/Time Sampled	Date/Time Analyzed	Method	Analyte	Result	Error	Units	Qualifiers	Detection Limit	Reporting Limit	Analyst
MW-26S	9030504-12	3/5/2019 14:43	3/21/2019 14:09	EPA 903.1	Radium 226	0.5	0.2	pCi/L		0.2	---	FRS
MW-26S	9030504-12	3/5/2019 14:43	3/20/2019 8:04	Ra-05	Radium 228	0.6	0.4	pCi/L	U	0.6	---	FRS
MW-26S	9030504-12	3/5/2019 14:43	3/7/2019 13:12	SM18 2540 C	Residues- Filterable (TDS)	256		mg/L		10.0	20.0	CF
MW-26S	9030504-12	3/5/2019 14:43	3/5/2019 14:43	By Observation	Sheen	No Sheen		N/A	U	---	---	DB
MW-26S	9030504-12	3/5/2019 14:43	3/19/2019 11:02	EPA 200.7	Sodium	0.899		mg/L		0.0472	0.100	CF
MW-26S	9030504-12	3/5/2019 14:43	3/5/2019 14:43	EPA 120.1	Specific Conductance	384		umhos/cm		1	5	DB
MW-26S	9030504-12	3/5/2019 14:43	3/6/2019 19:10	EPA 300.0 (Sulfate)	Sulfate	90.4		mg/L		0.0250	0.100	CF
MW-26S	9030504-12	3/5/2019 14:43	3/5/2019 14:43	EPA 170.1	Temperature	22.3		deg C		0.1	0.1	DB
MW-26S	9030504-12	3/5/2019 14:43	3/5/2019 14:43	EPA 180.1	Turbidity	5.10		NTU		0.1	0.5	DB
MW-26S	9030504-12	3/5/2019 14:43	3/5/2019 14:43	FDEP DEP-SOP	Water Level	132.00		FT		0.1	0.5	DB
MW-26S	9030504-12	3/5/2019 14:43	3/29/2019 11:28	EPA 200.7	Calcium	70.2		mg/L		7.45	25.0	CF
MW-26S	9030504-12	3/5/2019 14:43	3/29/2019 11:28	EPA 200.7	Magnesium	1.53		mg/L		0.456	1.00	CF
Fish Lake	9030504-13	3/11/2019 13:20	3/13/2019 9:06	EPA 350.1	Ammonia- Un-ionized (NH3)	0.246		mg/L		0.00400	0.0222	PES
Fish Lake	9030504-13	3/11/2019 13:20	3/18/2019 13:00	EPA 200.7	Arsenic	5.86		ug/L	U	5.86	10.0	PES
Fish Lake	9030504-13	3/11/2019 13:20	3/11/2019 17:09	EPA 300.0 (Chloride)	Chloride	36.6		mg/L		0.0380	0.100	CF
Fish Lake	9030504-13	3/11/2019 13:20	3/11/2019 13:20	EPA 360.2	Dissolved Oxygen	3.78		mg/L		0.10	0.20	AB
Fish Lake	9030504-13	3/11/2019 13:20	3/19/2019 11:07	EPA 200.7	Iron	329		ug/L	V	30.7	100	CF
Fish Lake	9030504-13	3/11/2019 13:20	3/19/2019 0:00	EPA 200.7	Lithium	22.2		ug/L	I	9.1	50	SGS
Fish Lake	9030504-13	3/11/2019 13:20	3/19/2019 11:07	EPA 200.7	Manganese	90.3		ug/L		2.30	10.0	CF
Fish Lake	9030504-13	3/11/2019 13:20	3/12/2019 14:34	EPA 353.2 (Nitrate-Nitrite (N))	Nitrate-Nitrite (N)	0.0300		mg/L	U	0.0300	0.250	PES
Fish Lake	9030504-13	3/11/2019 13:20	3/11/2019 13:20	SM18 2580 B	ORP	56		mV		1	1	AB
Fish Lake	9030504-13	3/11/2019 13:20	3/11/2019 13:20	SM18 4500-B B	pH	6.92		SU		0.05	0.05	AB
Fish Lake	9030504-13	3/11/2019 13:20	3/18/2019 10:32	EPA 365.1 (Phosphorus -Total)	Phosphorus- Elemental	0.153		mg/L		0.00300	0.0133	PES
Fish Lake	9030504-13	3/11/2019 13:20	3/18/2019 13:00	EPA 200.7	Potassium	21.4		mg/L	V	0.0150	0.0500	PES
Fish Lake	9030504-13	3/11/2019 13:20	3/21/2019 14:09	EPA 903.1	Radium 226	0.7	0.2	pCi/L		0.1	---	FRS
Fish Lake	9030504-13	3/11/2019 13:20	3/20/2019 8:04	Ra-05	Radium 228	0.7	0.5	pCi/L	U	0.7	---	FRS
Fish Lake	9030504-13	3/11/2019 13:20	3/12/2019 10:42	SM18 2540 C	Residues- Filterable (TDS)	315		mg/L		10.0	20.0	CF
Fish Lake	9030504-13	3/11/2019 13:20	3/11/2019 13:20	EPA 120.1	Specific Conductance	517		umhos/cm		1	5	AB
Fish Lake	9030504-13	3/11/2019 13:20	3/11/2019 17:09	EPA 300.0 (Sulfate)	Sulfate	100		mg/L		0.0250	0.100	CF
Fish Lake	9030504-13	3/11/2019 13:20	3/11/2019 13:20	EPA 170.1	Temperature	27.6		deg C		0.1	0.1	AB
Fish Lake	9030504-13	3/11/2019 13:20	3/29/2019 11:32	EPA 200.7	Calcium	77.3		mg/L		7.45	25.0	CF
Fish Lake	9030504-13	3/11/2019 13:20	3/29/2019 11:32	EPA 200.7	Magnesium	4.53		mg/L		0.456	1.00	CF
Fish Lake	9030504-13	3/11/2019 13:20	3/29/2019 11:32	EPA 200.7	Sodium	13.9		mg/L		2.36	5.00	CF
Lake B	9030504-14	3/11/2019 13:00	3/13/2019 9:08	EPA 350.1	Ammonia- Un-ionized (NH3)	0.164		mg/L		0.00400	0.0222	PES
Lake B	9030504-14	3/11/2019 13:00	3/11/2019 17:34	EPA 300.0 (Chloride)	Chloride	65.0		mg/L		0.0380	0.100	CF
Lake B	9030504-14	3/11/2019 13:00	3/11/2019 13:00	EPA 360.2	Dissolved Oxygen	7.85		mg/L		0.10	0.20	AB
Lake B	9030504-14	3/11/2019 13:00	3/19/2019 11:11	EPA 200.7	Iron	463		ug/L	V	30.7	100	CF
Lake B	9030504-14	3/11/2019 13:00	3/19/2019 0:00	EPA 200.7	Lithium	13.9		ug/L	I	9.1	50	SGS

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SampleName	Sample ID	Date/Time Sampled	Date/Time Analyzed	Method	Analyte	Result	Error	Units	Qualifiers	Detection Limit	Reporting Limit	Analyst
Lake B	9030504-14	3/11/2019 13:00	3/19/2019 11:11	EPA 200.7	Manganese	27.8		ug/L		2.30	10.0	CF
Lake B	9030504-14	3/11/2019 13:00	3/12/2019 14:39	EPA 353.2 (Nitrate-Nitrite (N))	Nitrate-Nitrite (N)	0.0300		mg/L	U	0.0300	0.250	PES
Lake B	9030504-14	3/11/2019 13:00	3/11/2019 13:00	SM18 2580 B	ORP	16		mV		1	1	AB
Lake B	9030504-14	3/11/2019 13:00	3/11/2019 13:00	SM18 4500-B B	pH	7.79		SU		0.05	0.05	AB
Lake B	9030504-14	3/11/2019 13:00	3/18/2019 11:01	EPA 365.1 (Phosphorus -Total)	Phosphorus- Elemental	2.02		mg/L		0.0150	0.0665	PES
Lake B	9030504-14	3/11/2019 13:00	3/18/2019 13:02	EPA 200.7	Potassium	1.33		mg/L	V	0.0150	0.0500	PES
Lake B	9030504-14	3/11/2019 13:00	3/21/2019 14:09	EPA 903.1	Radium 226	1.6	0.4	pCi/L		0.1	---	FRS
Lake B	9030504-14	3/11/2019 13:00	3/20/2019 9:06	Ra-05	Radium 228	0.8	0.5	pCi/L	U	0.8	---	FRS
Lake B	9030504-14	3/11/2019 13:00	3/12/2019 10:44	SM18 2540 C	Residues- Filterable (TDS)	540		mg/L		10.0	20.0	CF
Lake B	9030504-14	3/11/2019 13:00	3/11/2019 13:00	EPA 120.1	Specific Conductance	2480		umhos/cm		1	5	AB
Lake B	9030504-14	3/11/2019 13:00	3/11/2019 17:34	EPA 300.0 (Sulfate)	Sulfate	85.9		mg/L		0.0250	0.100	CF
Lake B	9030504-14	3/11/2019 13:00	3/11/2019 13:00	EPA 170.1	Temperature	31.6		deg C		0.1	0.1	AB
Lake B	9030504-14	3/11/2019 13:00	3/29/2019 11:37	EPA 200.7	Calcium	147		mg/L		14.9	50.0	CF
Lake B	9030504-14	3/11/2019 13:00	3/29/2019 11:37	EPA 200.7	Magnesium	12.7		mg/L		0.911	2.00	CF
Lake B	9030504-14	3/11/2019 13:00	3/29/2019 11:37	EPA 200.7	Sodium	9.23		mg/L	I	4.72	10.0	CF
Lake C	9030504-15	3/13/2019 13:45	3/18/2019 12:40	EPA 350.1	Ammonia- Un-ionized (NH3)	0.166		mg/L		0.00400	0.0222	PES
Lake C	9030504-15	3/13/2019 13:45	3/20/2019 18:04	EPA 300.0 (Chloride)	Chloride	53.2		mg/L		0.0380	0.100	CF
Lake C	9030504-15	3/13/2019 13:45	3/13/2019 13:45	EPA 360.2	Dissolved Oxygen	5.56		mg/L		0.10	0.20	AB
Lake C	9030504-15	3/13/2019 13:45	3/19/2019 11:15	EPA 200.7	Iron	520		ug/L	V	30.7	100	CF
Lake C	9030504-15	3/13/2019 13:45	3/22/2019 0:00	EPA 200.7	Lithium	9.1		ug/L	U	9.1	50	SGS
Lake C	9030504-15	3/13/2019 13:45	3/19/2019 11:15	EPA 200.7	Manganese	12.7		ug/L		2.30	10.0	CF
Lake C	9030504-15	3/13/2019 13:45	3/14/2019 9:36	EPA 353.2 (Nitrate-Nitrite (N))	Nitrate-Nitrite (N)	0.0300		mg/L	U	0.0300	0.250	PES
Lake C	9030504-15	3/13/2019 13:45	3/13/2019 13:45	SM18 2580 B	ORP	49		mV		1	1	AB
Lake C	9030504-15	3/13/2019 13:45	3/13/2019 13:45	SM18 4500-B B	pH	6.45		SU		0.05	0.05	AB
Lake C	9030504-15	3/13/2019 13:45	3/20/2019 13:25	EPA 365.1 (Phosphorus -Total)	Phosphorus- Elemental	1.22		mg/L		0.0150	0.0665	PES
Lake C	9030504-15	3/13/2019 13:45	3/18/2019 13:18	EPA 200.7	Potassium	4.16		mg/L	V	0.0150	0.0500	PES
Lake C	9030504-15	3/13/2019 13:45	3/29/2019 9:51	EPA 903.1	Radium 226	1.5	0.3	pCi/L		0.1	---	FRS
Lake C	9030504-15	3/13/2019 13:45	3/27/2019 10:26	Ra-05	Radium 228	0.7	0.4	pCi/L	U	0.7	---	FRS
Lake C	9030504-15	3/13/2019 13:45	3/19/2019 12:25	SM18 2540 C	Residues- Filterable (TDS)	183		mg/L		10.0	20.0	CF
Lake C	9030504-15	3/13/2019 13:45	3/13/2019 13:45	EPA 120.1	Specific Conductance	303		umhos/cm		1	5	AB
Lake C	9030504-15	3/13/2019 13:45	3/20/2019 18:04	EPA 300.0 (Sulfate)	Sulfate	9.84		mg/L		0.0250	0.100	CF
Lake C	9030504-15	3/13/2019 13:45	3/13/2019 13:45	EPA 170.1	Temperature	24.5		deg C		0.1	0.1	AB
Lake C	9030504-15	3/13/2019 13:45	3/29/2019 11:46	EPA 200.7	Calcium	32.7		mg/L		2.98	10.0	CF
Lake C	9030504-15	3/13/2019 13:45	3/29/2019 11:46	EPA 200.7	Magnesium	8.65		mg/L		0.182	0.400	CF
Lake C	9030504-15	3/13/2019 13:45	3/29/2019 11:46	EPA 200.7	Sodium	9.23		mg/L		0.944	2.00	CF
Lake D	9030504-16	3/13/2019 13:30	3/18/2019 12:42	EPA 350.1	Ammonia- Un-ionized (NH3)	0.67		mg/L		0.00400	0.0222	PES
Lake D	9030504-16	3/13/2019 13:30	3/20/2019 17:38	EPA 300.0 (Chloride)	Chloride	492		mg/L		0.190	0.500	CF
Lake D	9030504-16	3/13/2019 13:30	3/13/2019 13:30	EPA 360.2	Dissolved Oxygen	25.9		mg/L		0.10	0.20	AB

3030 E Lake Parker Dr
Lakeland, FL 33805
CCR SAMPLING
Month / Year: March 2019
LAB ANALYSIS REPORT

SampleName	Sample ID	Date/Time Sampled	Date/Time Analyzed	Method	Analyte	Result	Error	Units	Qualifiers	Detection Limit	Reporting Limit	Analyst
Lake D	9030504-16	3/13/2019 13:30	3/19/2019 11:20	EPA 200.7	Iron	198		ug/L	V	30.7	100	CF
Lake D	9030504-16	3/13/2019 13:30	3/22/2019 0:00	EPA 200.7	Lithium	23.5		ug/L	I	9.1	50	SGS
Lake D	9030504-16	3/13/2019 13:30	3/19/2019 11:20	EPA 200.7	Manganese	44.9		ug/L		2.30	10.0	CF
Lake D	9030504-16	3/13/2019 13:30	3/14/2019 9:37	EPA 353.2 (Nitrate-Nitrite (N))	Nitrate-Nitrite (N)	0.0300		mg/L	U	0.0300	0.250	PES
Lake D	9030504-16	3/13/2019 13:30	3/13/2019 13:30	SM18 2580 B	ORP	-187		mV	U	1	1	AB
Lake D	9030504-16	3/13/2019 13:30	3/13/2019 13:30	SM18 4500-B B	pH	5.50		SU		0.05	0.05	AB
Lake D	9030504-16	3/13/2019 13:30	3/20/2019 13:26	EPA 365.1 (Phosphorus -Total)	Phosphorus- Elemental	0.585		mg/L		0.0150	0.0665	PES
Lake D	9030504-16	3/13/2019 13:30	3/18/2019 13:39	EPA 200.7	Potassium	74.1		mg/L	V	0.375	1.25	PES
Lake D	9030504-16	3/13/2019 13:30	3/29/2019 9:51	EPA 903.1	Radium 226	4.0	0.5	pCi/L		0.2	---	FRS
Lake D	9030504-16	3/13/2019 13:30	3/27/2019 10:26	Ra-05	Radium 228	1.3	0.5	pCi/L		0.7	---	FRS
Lake D	9030504-16	3/13/2019 13:30	3/19/2019 12:27	SM18 2540 C	Residues- Filterable (TDS)	1240		mg/L		10.0	20.0	CF
Lake D	9030504-16	3/13/2019 13:30	3/13/2019 13:30	EPA 120.1	Specific Conductance	190		umhos/cm		1	5	AB
Lake D	9030504-16	3/13/2019 13:30	3/20/2019 17:38	EPA 300.0 (Sulfate)	Sulfate	211		mg/L		0.125	0.500	CF
Lake D	9030504-16	3/13/2019 13:30	3/13/2019 13:30	EPA 170.1	Temperature	23.0		deg C		0.1	0.1	AB
Lake D	9030504-16	3/13/2019 13:30	3/29/2019 11:41	EPA 200.7	Calcium	224		mg/L		14.9	50.0	CF
Lake D	9030504-16	3/13/2019 13:30	3/29/2019 11:41	EPA 200.7	Magnesium	20.9		mg/L		0.911	2.00	CF
Lake D	9030504-16	3/13/2019 13:30	3/29/2019 11:41	EPA 200.7	Sodium	88.8		mg/L		4.72	10.0	CF
Equipment Blank	9030504-17	3/7/2019 15:00	3/13/2019 9:10	EPA 350.1	Ammonia- Un-ionized (NH3)	0.479		mg/L		0.00400	0.0222	PES
Equipment Blank	9030504-17	3/7/2019 15:00	3/18/2019 13:05	EPA 200.7	Arsenic	5.86		ug/L	U	5.86	10.0	PES
Equipment Blank	9030504-17	3/7/2019 15:00	3/19/2019 10:53	EPA 200.7	Calcium	0.149		mg/L	U	0.149	0.500	CF
Equipment Blank	9030504-17	3/7/2019 15:00	3/11/2019 14:59	EPA 300.0 (Chloride)	Chloride	0.0380		mg/L	U	0.0380	0.100	CF
Equipment Blank	9030504-17	3/7/2019 15:00	3/7/2019 15:00	By Observation	Color	Clear		[blank]	U	---	---	DB
Equipment Blank	9030504-17	3/7/2019 15:00	3/7/2019 15:00	EPA 360.2	Dissolved Oxygen	1.64		mg/L		0.10	0.20	DB
Equipment Blank	9030504-17	3/7/2019 15:00	3/19/2019 10:53	EPA 200.7	Iron	36.2		ug/L	IV	30.7	100	CF
Equipment Blank	9030504-17	3/7/2019 15:00	3/19/2019 0:00	EPA 200.7	Lithium	10.8		ug/L	I	9.1	50	SGS
Equipment Blank	9030504-17	3/7/2019 15:00	3/19/2019 10:53	EPA 200.7	Magnesium	0.0114		mg/L	I	0.00911	0.0200	CF
Equipment Blank	9030504-17	3/7/2019 15:00	3/19/2019 10:53	EPA 200.7	Manganese	2.30		ug/L	U	2.30	10.0	CF
Equipment Blank	9030504-17	3/7/2019 15:00	3/12/2019 14:41	EPA 353.2 (Nitrate-Nitrite (N))	Nitrate-Nitrite (N)	0.0300		mg/L	U	0.0300	0.250	PES
Equipment Blank	9030504-17	3/7/2019 15:00	3/7/2019 15:00	SM18 2580 B	ORP	176		mV		1	1	DB
Equipment Blank	9030504-17	3/7/2019 15:00	3/7/2019 15:00	SM18 4500-B B	pH	5.07		SU		0.05	0.05	DB
Equipment Blank	9030504-17	3/7/2019 15:00	3/18/2019 9:39	EPA 365.1 (Phosphorus -Total)	Phosphorus- Elemental	0.003		mg/L	U	0.00300	0.0133	PES
Equipment Blank	9030504-17	3/7/2019 15:00	3/18/2019 13:05	EPA 200.7	Potassium	0.0992		mg/L	V	0.0150	0.0500	PES
Equipment Blank	9030504-17	3/7/2019 15:00	3/21/2019 14:09	EPA 903.1	Radium 226	0.3	0.2	pCi/L		0.1	---	FRS
Equipment Blank	9030504-17	3/7/2019 15:00	3/20/2019 9:06	Ra-05	Radium 228	0.7	0.4	pCi/L	U	0.7	---	FRS
Equipment Blank	9030504-17	3/7/2019 15:00	3/12/2019 10:46	SM18 2540 C	Residues- Filterable (TDS)	10.0		mg/L	U	10.0	20.0	CF
Equipment Blank	9030504-17	3/7/2019 15:00	3/7/2019 15:00	By Observation	Sheen	No Sheen		N/A	U	---	---	DB
Equipment Blank	9030504-17	3/7/2019 15:00	3/19/2019 10:53	EPA 200.7	Sodium	0.0472		mg/L	U	0.0472	0.100	CF
Equipment Blank	9030504-17	3/7/2019 15:00	3/7/2019 15:00	EPA 120.1	Specific Conductance	1.68		umhos/cm	I	1	5	DB

3030 E Lake Parker Dr
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CCR SAMPLING
Month / Year: March 2019
LAB ANALYSIS REPORT

SampleName	Sample ID	Date/Time Sampled	Date/Time Analyzed	Method	Analyte	Result	Error	Units	Qualifiers	Detection Limit	Reporting Limit	Analyst
Equipment Blank	9030504-17	3/7/2019 15:00	3/11/2019 14:59	EPA 300.0 (Sulfate)	Sulfate	0.0496		mg/L	I	0.0250	0.100	CF
Equipment Blank	9030504-17	3/7/2019 15:00	3/7/2019 15:00	EPA 170.1	Temperature	21.4		deg C		0.1	0.1	DB
Equipment Blank	9030504-17	3/7/2019 15:00	3/7/2019 15:00	EPA 180.1	Turbidity	0.9		NTU		0.1	0.5	DB

J = Estimated value. Quality control does not meet criteria.
I = The reported value is between the laboratory MDL and the laboratory PQL.
J-6 = Estimated value. Result does not meet the quality control criteria for duplicates.
J-7 = Result exceeds the regulatory MCL.
J-8 = Estimated value. Reported concentration is outside the standard calibration/calibration verification range.
U = Compound was analyzed for but not detected.
V = The analyte was detected at or above the method detection limit in both the sample and the associated method blank.
PES = Subcontracted analysis conducted Phoslab Environmental Services, Inc. (TNI Certificate No. E84925).
SGS = Subcontracted analysis conducted SGS Dayton NJ (TNI Certificate No. E87482).
FRS = Subcontracted analysis conducted Florida Radiochemistry Services, Inc. (TNI Certificate No. E83033).

The results detailed within this report apply only to those samples submitted for analysis and for which results are reported here.
Unless otherwise indicated, these test results meet all requirements of the TNI standards.

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ANALYTICAL REPORT

Eurofins TestAmerica, Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Tel: (865)291-3000

Laboratory Job ID: 140-14370-2
Client Project/Site: CD McIntosh Jr Plant

For:
Golder Associates Inc.
5402 Beaumont Center Boulevard
Suite 108
Tampa, Florida 33634

Attn: Mr. Gene Morelli

Terry Walker Wasmund

Authorized for release by:
4/9/2019 12:04:28 PM

Terry Walker Wasmund, Project Manager II
(865)291-3000
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Table of Contents

Definitions/Glossary

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

Job ID: 140-14370-2

Qualifiers

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
B	Compound was found in the blank and sample.
F1	MS and/or MSD Recovery is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

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)

Job ID: 140-14370-2

Laboratory: Eurofins TestAmerica, Knoxville

Narrative

Job Narrative
140-14370-2

Receipt
The samples were received on 2/22/2019 at 10:00 AM. The samples arrived in good condition, properly preserved, and on ice. The temperature of the cooler at receipt was 0.4º C.

RAD
Method 9315: Ra-226 Prep Batch 160-418789
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.
CCR-4A (24-25) (140-14370-1), CCR-23 (24-25) (140-14370-2), CCR-22 (24-25) (140-14370-3), CCR-18 (24-25) (140-14370-7), CCR-15 (24-25) (140-14370-8), CCR-16 (24-25) (140-14370-9), (LCS 160-418789/1-A), (MB 160-418789/9-A) and (140-14370-A-1-T DU)

Method 9320: Radium-228 Prep Batch 160-418792
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.
CCR-4A (24-25) (140-14370-1), CCR-23 (24-25) (140-14370-2), CCR-22 (24-25) (140-14370-3), CCR-18 (24-25) (140-14370-7), CCR-15 (24-25) (140-14370-8), CCR-16 (24-25) (140-14370-9), (LCS 160-418792/1-A), (MB 160-418792/9-A) and (140-14370-A-1-V DU)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals - Method 6020B
Preparation batch 160-417316 and analytical batch 160-420025
The following samples were diluted to bring the concentration of target and non-target analytes within the calibration range: CCR-4A (24-25) (140-14370-1), CCR-23 (24-25) (140-14370-2), CCR-22 (24-25) (140-14370-3), CCR-20 (24-25) (140-14370-5), CCR-16 (24-25) (140-14370-9), GSB-1 (0.0.5) (140-14370-11), (140-14370-A-1-E MS), (140-14370-A-1-F MSD), (140-14370-A-1-D PDS) and (140-14370-A-1-D SD). Elevated reporting limits (RLs) are provided.

The method blank associated with preparation batch 160-417316 and analytical batch 160-420025 contained aluminum greater than one-half the reporting limit (RL). The samples were not re-analyzed because the concentrations of this analyte in the samples were greater than ten times the concentration of the blank. The sample results have been qualified and reported. (MB 160-417316/1-A)

Due to the high concentration of aluminum, the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 160-417316 and analytical batch 160-420025 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria. (140-14370-A-1-E MS) and (140-14370-A-1-F MSD)

The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 160-417316 and analytical batch 160-420025 were outside control limits for uranium. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits. (140-14370-A-1-E MS) and (140-14370-A-1-F MSD)

The post digestion spike % recovery for aluminum, phosphorus, and uranium associated with batch 160-420025 was not calculated due to high concentrations of these analytes in the original sample. The following sample is impacted: (140-14370-A-1-D PDS).

Due to the high concentration of phosphorus, the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 160-417316 and analytical batch 160-420025 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria. (140-14370-A-1-E MS) and (140-14370-A-1-F MSD)

Preparation batch 160-417833 and 160-418080 and analytical batch 160-419076
The following samples were diluted due to the abundance of non-target analytes. Samples are high in salts which can cause instrument and QC failures when ran at a lesser dilution: CCR-4A (24-25) (140-14370-1), CCR-23 (24-25) (140-14370-2) and CCR-22 (24-25)

Job ID: 140-14370-2 (Continued)

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

(140-14370-3). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

Job ID: 140-14370-2

Client Sample ID: CCR-4A (24-25) — Lab Sample ID: 140-14370-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	28000	B	69	28	mg/Kg	20	☼	6020B	Total/NA
Iron	2800		170	83	mg/Kg	20	☼	6020B	Total/NA
Uranium	280	F1	1.4	0.56	mg/Kg	20	☼	6020B	Total/NA
Phosphorus	130000		690	280	mg/Kg	20	☼	6020B	Total/NA

Client Sample ID: CCR-23 (24-25) — Lab Sample ID: 140-14370-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	20000	B	30	12	mg/Kg	10	☼	6020B	Total/NA
Arsenic	3.9	J	6.0	2.4	mg/Kg	10	☼	6020B	Total/NA
Iron	4400		72	36	mg/Kg	10	☼	6020B	Total/NA
Lithium	4.8	J	6.0	2.4	mg/Kg	10	☼	6020B	Total/NA
Uranium	58		0.60	0.24	mg/Kg	10	☼	6020B	Total/NA
Phosphorus	78000		300	120	mg/Kg	10	☼	6020B	Total/NA

Client Sample ID: CCR-22 (24-25) — Lab Sample ID: 140-14370-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	96000	B	64	26	mg/Kg	20	☼	6020B	Total/NA
Iron	8400		150	77	mg/Kg	20	☼	6020B	Total/NA
Lithium	15		13	5.1	mg/Kg	20	☼	6020B	Total/NA
Uranium	280		1.3	0.51	mg/Kg	20	☼	6020B	Total/NA
Phosphorus	90000		640	260	mg/Kg	20	☼	6020B	Total/NA

Client Sample ID: CCR-21 (24-25) — Lab Sample ID: 140-14370-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	1800	B	5.6	2.2	mg/Kg	2	☼	6020B	Total/NA
Iron	110		13	6.7	mg/Kg	2	☼	6020B	Total/NA
Uranium	0.51		0.11	0.045	mg/Kg	2	☼	6020B	Total/NA
Phosphorus	210		56	22	mg/Kg	2	☼	6020B	Total/NA

Client Sample ID: CCR-20 (24-25) — Lab Sample ID: 140-14370-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	21000	B	14	5.5	mg/Kg	5	☼	6020B	Total/NA
Arsenic	1.4	J	2.8	1.1	mg/Kg	5	☼	6020B	Total/NA
Iron	460		33	17	mg/Kg	5	☼	6020B	Total/NA
Uranium	40		0.28	0.11	mg/Kg	5	☼	6020B	Total/NA
Phosphorus	11000		140	55	mg/Kg	5	☼	6020B	Total/NA

Client Sample ID: CCR-19 (24-25) — Lab Sample ID: 140-14370-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	2000	B	5.8	2.3	mg/Kg	2	☼	6020B	Total/NA
Iron	62		14	6.9	mg/Kg	2	☼	6020B	Total/NA
Uranium	0.50		0.12	0.046	mg/Kg	2	☼	6020B	Total/NA
Phosphorus	310		58	23	mg/Kg	2	☼	6020B	Total/NA

Client Sample ID: CCR-18 (24-25) — Lab Sample ID: 140-14370-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	2600	B	5.4	2.2	mg/Kg	2	☼	6020B	Total/NA
Iron	79		13	6.5	mg/Kg	2	☼	6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Knoxville

Detection Summary

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

Job ID: 140-14370-2

Client Sample ID: CCR-18 (24-25) (Continued) — Lab Sample ID: 140-14370-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lithium	0.45	J	1.1	0.43	mg/Kg	2	☼	6020B	Total/NA
Uranium	1.2		0.11	0.043	mg/Kg	2	☼	6020B	Total/NA
Phosphorus	800		54	22	mg/Kg	2	☼	6020B	Total/NA

Client Sample ID: CCR-15 (24-25) — Lab Sample ID: 140-14370-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	8000	B	5.5	2.2	mg/Kg	2	☼	6020B	Total/NA
Iron	98		13	6.6	mg/Kg	2	☼	6020B	Total/NA
Lithium	0.79	J	1.1	0.44	mg/Kg	2	☼	6020B	Total/NA
Uranium	4.5		0.11	0.044	mg/Kg	2	☼	6020B	Total/NA
Phosphorus	2800		55	22	mg/Kg	2	☼	6020B	Total/NA

Client Sample ID: CCR-16 (24-25) — Lab Sample ID: 140-14370-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	19000	B	14	5.5	mg/Kg	5	☼	6020B	Total/NA
Iron	450		33	16	mg/Kg	5	☼	6020B	Total/NA
Lithium	2.9		2.7	1.1	mg/Kg	5	☼	6020B	Total/NA
Uranium	4.3		0.27	0.11	mg/Kg	5	☼	6020B	Total/NA
Phosphorus	3000		140	55	mg/Kg	5	☼	6020B	Total/NA

Client Sample ID: CCR-17 (24-25) — Lab Sample ID: 140-14370-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	5900	B	5.9	2.3	mg/Kg	2	☼	6020B	Total/NA
Iron	97		14	7.0	mg/Kg	2	☼	6020B	Total/NA
Uranium	0.92		0.12	0.047	mg/Kg	2	☼	6020B	Total/NA
Phosphorus	1000		59	23	mg/Kg	2	☼	6020B	Total/NA

Client Sample ID: GSB-1 (0.0.5) — Lab Sample ID: 140-14370-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	4000	B	14	5.7	mg/Kg	5	☼	6020B	Total/NA
Arsenic	1.4	J	2.8	1.1	mg/Kg	5	☼	6020B	Total/NA
Iron	1200		34	17	mg/Kg	5	☼	6020B	Total/NA
Uranium	21		0.28	0.11	mg/Kg	5	☼	6020B	Total/NA
Phosphorus	21000		140	57	mg/Kg	5	☼	6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: CCR-4A (24-25)

Date Collected: 02/11/19 15:00
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-1

Matrix: Solid
Percent Solids: 64.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**28000**	**B**	69	28	mg/Kg	☼	02/28/19 13:08	03/18/19 18:09	20
Arsenic	ND		14	5.6	mg/Kg	☼	02/28/19 13:08	03/18/19 18:09	20
Iron	**2800**		170	83	mg/Kg	☼	02/28/19 13:08	03/18/19 18:09	20
Lithium	ND		14	5.6	mg/Kg	☼	02/28/19 13:08	03/18/19 18:09	20
Uranium	**280**	**F1**	1.4	0.56	mg/Kg	☼	02/28/19 13:08	03/18/19 18:09	20
Phosphorus	**130000**		690	280	mg/Kg	☼	02/28/19 13:08	03/18/19 18:09	20

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**75.9**		1.26	6.95	1.00	0.0815	pCi/g	03/11/19 14:21	04/04/19 14:32	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*106*		*40 - 110*	*03/11/19 14:21*	*04/04/19 14:32*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.726**		0.257	0.266	1.00	0.342	pCi/g	03/11/19 14:53	03/19/19 15:57	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*106*		*40 - 110*	*03/11/19 14:53*	*03/19/19 15:57*	*1*
Y Carrier	*82.2*		*40 - 110*	*03/11/19 14:53*	*03/19/19 15:57*	*1*

Client Sample ID: CCR-23 (24-25)

Date Collected: 02/12/19 12:25
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-2

Matrix: Solid
Percent Solids: 79.0

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	20000	B	30	12	mg/Kg	☼	02/28/19 13:08	03/18/19 18:43	10
Arsenic	3.9	J	6.0	2.4	mg/Kg	☼	02/28/19 13:08	03/18/19 18:43	10
Iron	4400		72	36	mg/Kg	☼	02/28/19 13:08	03/18/19 18:43	10
Lithium	4.8	J	6.0	2.4	mg/Kg	☼	02/28/19 13:08	03/18/19 18:43	10
Uranium	58		0.60	0.24	mg/Kg	☼	02/28/19 13:08	03/18/19 18:43	10
Phosphorus	78000		300	120	mg/Kg	☼	02/28/19 13:08	03/18/19 18:43	10

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	14.7		0.589	1.45	1.00	0.0696	pCi/g	03/11/19 14:21	04/04/19 14:33	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*104*		*40 - 110*	*03/11/19 14:21*	*04/04/19 14:33*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.359		0.234	0.236	1.00	0.358	pCi/g	03/11/19 14:53	03/19/19 15:57	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*104*		*40 - 110*	*03/11/19 14:53*	*03/19/19 15:57*	*1*
Y Carrier	*83.0*		*40 - 110*	*03/11/19 14:53*	*03/19/19 15:57*	*1*

Client Sample ID: CCR-22 (24-25)

Date Collected: 02/12/19 17:05
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-3

Matrix: Solid
Percent Solids: 71.2

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	96000	B	64	26	mg/Kg	☼	02/28/19 13:08	03/18/19 18:50	20
Arsenic	ND		13	5.1	mg/Kg	☼	02/28/19 13:08	03/18/19 18:50	20
Iron	8400		150	77	mg/Kg	☼	02/28/19 13:08	03/18/19 18:50	20
Lithium	15		13	5.1	mg/Kg	☼	02/28/19 13:08	03/18/19 18:50	20
Uranium	280		1.3	0.51	mg/Kg	☼	02/28/19 13:08	03/18/19 18:50	20
Phosphorus	90000		640	260	mg/Kg	☼	02/28/19 13:08	03/18/19 18:50	20

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	65.2		1.20	5.99	1.00	0.0770	pCi/g	03/11/19 14:21	04/04/19 15:36	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*103*		*40 - 110*	*03/11/19 14:21*	*04/04/19 15:36*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.49		0.299	0.329	1.00	0.325	pCi/g	03/11/19 14:53	03/19/19 15:58	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*103*		*40 - 110*	*03/11/19 14:53*	*03/19/19 15:58*	*1*
Y Carrier	*92.7*		*40 - 110*	*03/11/19 14:53*	*03/19/19 15:58*	*1*

Client Sample Results

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

Job ID: 140-14370-2

Client Sample ID: CCR-21 (24-25)
Date Collected: 02/13/19 14:55
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-4
Matrix: Solid
Percent Solids: 78.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1800**	**B**	5.6	2.2	mg/Kg	☼	02/28/19 13:08	03/18/19 18:57	2
Arsenic	ND		1.1	0.45	mg/Kg	☼	02/28/19 13:08	03/18/19 18:57	2
Iron	**110**		13	6.7	mg/Kg	☼	02/28/19 13:08	03/18/19 18:57	2
Lithium	ND		1.1	0.45	mg/Kg	☼	02/28/19 13:08	03/18/19 18:57	2
Uranium	**0.51**		0.11	0.045	mg/Kg	☼	02/28/19 13:08	03/18/19 18:57	2
Phosphorus	**210**		56	22	mg/Kg	☼	02/28/19 13:08	03/18/19 18:57	2

Client Sample Results

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

Job ID: 140-14370-2

Client Sample ID: CCR-20 (24-25)
Date Collected: 02/14/19 09:15
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-5
Matrix: Solid
Percent Solids: 84.5

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**21000**	**B**	14	5.5	mg/Kg	☼	02/28/19 13:08	03/18/19 19:24	5
Arsenic	**1.4**	**J**	2.8	1.1	mg/Kg	☼	02/28/19 13:08	03/18/19 19:24	5
Iron	**460**		33	17	mg/Kg	☼	02/28/19 13:08	03/18/19 19:24	5
Lithium	ND		2.8	1.1	mg/Kg	☼	02/28/19 13:08	03/18/19 19:24	5
Uranium	**40**		0.28	0.11	mg/Kg	☼	02/28/19 13:08	03/18/19 19:24	5
Phosphorus	**11000**		140	55	mg/Kg	☼	02/28/19 13:08	03/18/19 19:24	5

Client Sample Results

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

Job ID: 140-14370-2

Client Sample ID: CCR-19 (24-25)
Date Collected: 02/15/19 13:15
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-6
Matrix: Solid
Percent Solids: 79.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2000**	**B**	5.8	2.3	mg/Kg	☼	02/28/19 13:08	03/18/19 19:30	2
Arsenic	ND		1.2	0.46	mg/Kg	☼	02/28/19 13:08	03/18/19 19:30	2
Iron	**62**		14	6.9	mg/Kg	☼	02/28/19 13:08	03/18/19 19:30	2
Lithium	ND		1.2	0.46	mg/Kg	☼	02/28/19 13:08	03/18/19 19:30	2
Uranium	**0.50**		0.12	0.046	mg/Kg	☼	02/28/19 13:08	03/18/19 19:30	2
Phosphorus	**310**		58	23	mg/Kg	☼	02/28/19 13:08	03/18/19 19:30	2

Client Sample ID: CCR-18 (24-25)

Date Collected: 02/15/19 16:35
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-7

Matrix: Solid
Percent Solids: 85.1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2600**	**B**	5.4	2.2	mg/Kg	☼	02/28/19 13:08	03/18/19 19:37	2
Arsenic	ND		1.1	0.43	mg/Kg	☼	02/28/19 13:08	03/18/19 19:37	2
Iron	**79**		13	6.5	mg/Kg	☼	02/28/19 13:08	03/18/19 19:37	2
Lithium	**0.45**	**J**	1.1	0.43	mg/Kg	☼	02/28/19 13:08	03/18/19 19:37	2
Uranium	**1.2**		0.11	0.043	mg/Kg	☼	02/28/19 13:08	03/18/19 19:37	2
Phosphorus	**800**		54	22	mg/Kg	☼	02/28/19 13:08	03/18/19 19:37	2

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.443**		0.108	0.115	1.00	0.0712	pCi/g	03/11/19 14:21	04/07/19 21:57	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*100*		*40 - 110*	*03/11/19 14:21*	*04/07/19 21:57*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.196	U	0.224	0.224	1.00	0.368	pCi/g	03/11/19 14:53	03/19/19 15:58	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*100*		*40 - 110*	*03/11/19 14:53*	*03/19/19 15:58*	*1*
Y Carrier	*83.4*		*40 - 110*	*03/11/19 14:53*	*03/19/19 15:58*	*1*

Client Sample ID: CCR-15 (24-25)

Date Collected: 02/18/19 13:55
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-8

Matrix: Solid
Percent Solids: 84.6

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	8000	B	5.5	2.2	mg/Kg	☼	02/28/19 13:08	03/18/19 19:44	2
Arsenic	ND		1.1	0.44	mg/Kg	☼	02/28/19 13:08	03/18/19 19:44	2
Iron	98		13	6.6	mg/Kg	☼	02/28/19 13:08	03/18/19 19:44	2
Lithium	0.79	J	1.1	0.44	mg/Kg	☼	02/28/19 13:08	03/18/19 19:44	2
Uranium	4.5		0.11	0.044	mg/Kg	☼	02/28/19 13:08	03/18/19 19:44	2
Phosphorus	2800		55	22	mg/Kg	☼	02/28/19 13:08	03/18/19 19:44	2

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.702		0.131	0.145	1.00	0.0677	pCi/g	03/11/19 14:21	04/04/19 15:37	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*104*		*40 - 110*	*03/11/19 14:21*	*04/04/19 15:37*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.328		0.209	0.212	1.00	0.317	pCi/g	03/11/19 14:53	03/19/19 15:58	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*104*		*40 - 110*	*03/11/19 14:53*	*03/19/19 15:58*	*1*
Y Carrier	*84.9*		*40 - 110*	*03/11/19 14:53*	*03/19/19 15:58*	*1*

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

Job ID: 140-14370-2

Client Sample ID: CCR-16 (24-25)

Date Collected: 02/18/19 16:00
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-9

Matrix: Solid
Percent Solids: 83.4

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	19000	B	14	5.5	mg/Kg	☼	02/28/19 13:08	03/18/19 19:51	5
Arsenic	ND		2.7	1.1	mg/Kg	☼	02/28/19 13:08	03/18/19 19:51	5
Iron	450		33	16	mg/Kg	☼	02/28/19 13:08	03/18/19 19:51	5
Lithium	2.9		2.7	1.1	mg/Kg	☼	02/28/19 13:08	03/18/19 19:51	5
Uranium	4.3		0.27	0.11	mg/Kg	☼	02/28/19 13:08	03/18/19 19:51	5
Phosphorus	3000		140	55	mg/Kg	☼	02/28/19 13:08	03/18/19 19:51	5

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.14		0.167	0.196	1.00	0.0733	pCi/g	03/11/19 14:21	04/04/19 15:37	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*102*		*40 - 110*	*03/11/19 14:21*	*04/04/19 15:37*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.07		0.284	0.300	1.00	0.342	pCi/g	03/11/19 14:53	03/19/19 15:58	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*102*		*40 - 110*	*03/11/19 14:53*	*03/19/19 15:58*	*1*
Y Carrier	*84.9*		*40 - 110*	*03/11/19 14:53*	*03/19/19 15:58*	*1*

Client Sample Results

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

Job ID: 140-14370-2

Client Sample ID: CCR-17 (24-25)
Date Collected: 02/19/19 08:25
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-10
Matrix: Solid
Percent Solids: 77.4

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**5900**	**B**	5.9	2.3	mg/Kg	☼	02/28/19 13:08	03/18/19 19:57	2
Arsenic	ND		1.2	0.47	mg/Kg	☼	02/28/19 13:08	03/18/19 19:57	2
Iron	**97**		14	7.0	mg/Kg	☼	02/28/19 13:08	03/18/19 19:57	2
Lithium	ND		1.2	0.47	mg/Kg	☼	02/28/19 13:08	03/18/19 19:57	2
Uranium	**0.92**		0.12	0.047	mg/Kg	☼	02/28/19 13:08	03/18/19 19:57	2
Phosphorus	**1000**		59	23	mg/Kg	☼	02/28/19 13:08	03/18/19 19:57	2

Client Sample Results

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

Job ID: 140-14370-2

Client Sample ID: GSB-1 (0.0.5)
Date Collected: 02/20/19 12:25
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-11
Matrix: Solid
Percent Solids: 80.8

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**4000**	**B**	14	5.7	mg/Kg	☼	02/28/19 13:08	03/18/19 20:04	5
Arsenic	**1.4**	**J**	2.8	1.1	mg/Kg	☼	02/28/19 13:08	03/18/19 20:04	5
Iron	**1200**		34	17	mg/Kg	☼	02/28/19 13:08	03/18/19 20:04	5
Lithium	ND		2.8	1.1	mg/Kg	☼	02/28/19 13:08	03/18/19 20:04	5
Uranium	**21**		0.28	0.11	mg/Kg	☼	02/28/19 13:08	03/18/19 20:04	5
Phosphorus	**21000**		140	57	mg/Kg	☼	02/28/19 13:08	03/18/19 20:04	5

Default Detection Limits

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

Job ID: 140-14370-2

Method: 6020B - Metals (ICP/MS)

Prep: 3050B

Analyte	RL	MDL	Units
Aluminum	5.0	2.0	mg/Kg
Arsenic	1.0	0.40	mg/Kg
Iron	12	6.0	mg/Kg
Lithium	1.0	0.40	mg/Kg
Phosphorus	50	20	mg/Kg
Uranium	0.10	0.040	mg/Kg

Tracer/Carrier Summary

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

Job ID: 140-14370-2

Method: 9315 - Radium-226 (GFPC)

Matrix: Solid

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
140-14370-1	CCR-4A (24-25)	106
140-14370-1 DU	CCR-4A (24-25)	89.0
140-14370-2	CCR-23 (24-25)	104
140-14370-3	CCR-22 (24-25)	103
140-14370-7	CCR-18 (24-25)	100
140-14370-8	CCR-15 (24-25)	104
140-14370-9	CCR-16 (24-25)	102
LCS 160-418789/1-A	Lab Control Sample	81.1
MB 160-418789/9-A	Method Blank	92.0

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Solid

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
140-14370-1	CCR-4A (24-25)	106	82.2
140-14370-1 DU	CCR-4A (24-25)	89.0	83.4
140-14370-2	CCR-23 (24-25)	104	83.0
140-14370-3	CCR-22 (24-25)	103	92.7
140-14370-7	CCR-18 (24-25)	100	83.4
140-14370-8	CCR-15 (24-25)	104	84.9
140-14370-9	CCR-16 (24-25)	102	84.9
LCS 160-418792/1-A	Lab Control Sample	81.1	84.9
MB 160-418792/9-A	Method Blank	92.0	82.6

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 160-417316/1-A
Matrix: Solid
Analysis Batch: 420025

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 417316

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	3.32	J	4.7	1.9	mg/Kg		02/28/19 13:08	03/18/19 17:29	2
Arsenic	ND		0.95	0.38	mg/Kg		02/28/19 13:08	03/18/19 17:29	2
Iron	ND		11	5.7	mg/Kg		02/28/19 13:08	03/18/19 17:29	2
Lithium	ND		0.95	0.38	mg/Kg		02/28/19 13:08	03/18/19 17:29	2
Uranium	ND		0.095	0.038	mg/Kg		02/28/19 13:08	03/18/19 17:29	2
Phosphorus	ND		47	19	mg/Kg		02/28/19 13:08	03/18/19 17:29	2

Lab Sample ID: LCS 160-417316/2-A
Matrix: Solid
Analysis Batch: 420025

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 417316

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lithium	9.49	10.1		mg/Kg		106	80 - 120
Uranium	94.9	100		mg/Kg		106	80 - 120
Phosphorus	94.9	95.2		mg/Kg		100	80 - 120

Lab Sample ID: LCSSRM 160-417316/3-A
Matrix: Solid
Analysis Batch: 420025

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 417316

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	8360	8380		mg/Kg		100.3	50.2 - 149.5
Arsenic	161	193		mg/Kg		119.7	70.2 - 129.8
Iron	14100	14600		mg/Kg		103.3	35.0 - 164.5

Lab Sample ID: 140-14370-1 MS
Matrix: Solid
Analysis Batch: 420025

Client Sample ID: CCR-4A (24-25)
Prep Type: Total/NA
Prep Batch: 417316

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	28000	B	1520	24000	4	mg/Kg	☼	-286	75 - 125
Arsenic	ND		152	158		mg/Kg	☼	104	75 - 125
Iron	2800		1520	4100		mg/Kg	☼	85	75 - 125
Lithium	ND		15.2	16.3		mg/Kg	☼	108	75 - 125
Uranium	280	F1	152	371	F1	mg/Kg	☼	60	75 - 125
Phosphorus	130000		152	116000	4	mg/Kg	☼	-10171	75 - 125

Lab Sample ID: 140-14370-1 MSD
Matrix: Solid
Analysis Batch: 420025

Client Sample ID: CCR-4A (24-25)
Prep Type: Total/NA
Prep Batch: 417316

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	28000	B	1450	30300	4	mg/Kg	☼	141	75 - 125	24	30
Arsenic	ND		145	151		mg/Kg	☼	104	75 - 125	4	30
Iron	2800		1450	4250		mg/Kg	☼	99	75 - 125	4	30
Lithium	ND		14.5	15.4		mg/Kg	☼	106	75 - 125	5	30

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

Lab Sample ID: 140-14370-1 MSD
Matrix: Solid
Analysis Batch: 420025

Client Sample ID: CCR-4A (24-25)
Prep Type: Total/NA
Prep Batch: 417316

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Uranium	280	F1	145	403		mg/Kg	☼	84	75 - 125	8	30
Phosphorus	130000		145	121000	4	mg/Kg	☼	-7137	75 - 125	4	30

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-418789/9-A
Matrix: Solid
Analysis Batch: 422642

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 418789

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.01167	U	0.0328	0.0329	1.00	0.0653	pCi/g	03/11/19 14:21	04/04/19 15:37	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.0*		*40 - 110*	*03/11/19 14:21*	*04/04/19 15:37*	*1*

Lab Sample ID: LCS 160-418789/1-A
Matrix: Solid
Analysis Batch: 422642

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 418789

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.4	9.995		1.04	1.00	0.0870	pCi/g	88	65 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*81.1*		*40 - 110*

Lab Sample ID: 140-14370-1 DU
Matrix: Solid
Analysis Batch: 422642

Client Sample ID: CCR-4A (24-25)
Prep Type: Total/NA
Prep Batch: 418789

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Radium-226	75.9			81.35		7.46	1.00	0.0823	pCi/g			0.38	1

Carrier	*DU %Yield*	*DU Qualifier*	*Limits*
Ba Carrier	*89.0*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-418792/9-A
Matrix: Solid
Analysis Batch: 420061

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 418792

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.04183	U	0.195	0.195	1.00	0.367	pCi/g	03/11/19 14:53	03/19/19 15:58	1

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

Lab Sample ID: MB 160-418792/9-A
Matrix: Solid
Analysis Batch: 420061

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 418792

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	92.0		40 - 110	03/11/19 14:53	03/19/19 15:58	1
Y Carrier	82.6		40 - 110	03/11/19 14:53	03/19/19 15:58	1

Lab Sample ID: LCS 160-418792/1-A
Matrix: Solid
Analysis Batch: 420061

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 418792

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.38	9.730		1.18	1.00	0.450	pCi/g	104	61 - 139		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	81.1		40 - 110
Y Carrier	84.9		40 - 110

Lab Sample ID: 140-14370-1 DU
Matrix: Solid
Analysis Batch: 420061

Client Sample ID: CCR-4A (24-25)
Prep Type: Total/NA
Prep Batch: 418792

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Radium-228	0.726			0.3601	U	0.267	1.00	0.413	pCi/g			0.69	1

Carrier	DU %Yield	DU Qualifier	Limits
Ba Carrier	89.0		40 - 110
Y Carrier	83.4		40 - 110

QC Association Summary

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

Job ID: 140-14370-2

Metals

Prep Batch: 417316

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-14370-1	CCR-4A (24-25)	Total/NA	Solid	3050B	
140-14370-2	CCR-23 (24-25)	Total/NA	Solid	3050B	
140-14370-3	CCR-22 (24-25)	Total/NA	Solid	3050B	
140-14370-4	CCR-21 (24-25)	Total/NA	Solid	3050B	
140-14370-5	CCR-20 (24-25)	Total/NA	Solid	3050B	
140-14370-6	CCR-19 (24-25)	Total/NA	Solid	3050B	
140-14370-7	CCR-18 (24-25)	Total/NA	Solid	3050B	
140-14370-8	CCR-15 (24-25)	Total/NA	Solid	3050B	
140-14370-9	CCR-16 (24-25)	Total/NA	Solid	3050B	
140-14370-10	CCR-17 (24-25)	Total/NA	Solid	3050B	
140-14370-11	GSB-1 (0.0.5)	Total/NA	Solid	3050B	
MB 160-417316/1-A	Method Blank	Total/NA	Solid	3050B	
LCS 160-417316/2-A	Lab Control Sample	Total/NA	Solid	3050B	
LCSSRM 160-417316/3-A	Lab Control Sample	Total/NA	Solid	3050B	
140-14370-1 MS	CCR-4A (24-25)	Total/NA	Solid	3050B	
140-14370-1 MSD	CCR-4A (24-25)	Total/NA	Solid	3050B	

Analysis Batch: 420025

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-14370-1	CCR-4A (24-25)	Total/NA	Solid	6020B	417316
140-14370-2	CCR-23 (24-25)	Total/NA	Solid	6020B	417316
140-14370-3	CCR-22 (24-25)	Total/NA	Solid	6020B	417316
140-14370-4	CCR-21 (24-25)	Total/NA	Solid	6020B	417316
140-14370-5	CCR-20 (24-25)	Total/NA	Solid	6020B	417316
140-14370-6	CCR-19 (24-25)	Total/NA	Solid	6020B	417316
140-14370-7	CCR-18 (24-25)	Total/NA	Solid	6020B	417316
140-14370-8	CCR-15 (24-25)	Total/NA	Solid	6020B	417316
140-14370-9	CCR-16 (24-25)	Total/NA	Solid	6020B	417316
140-14370-10	CCR-17 (24-25)	Total/NA	Solid	6020B	417316
140-14370-11	GSB-1 (0.0.5)	Total/NA	Solid	6020B	417316
MB 160-417316/1-A	Method Blank	Total/NA	Solid	6020B	417316
LCS 160-417316/2-A	Lab Control Sample	Total/NA	Solid	6020B	417316
LCSSRM 160-417316/3-A	Lab Control Sample	Total/NA	Solid	6020B	417316
140-14370-1 MS	CCR-4A (24-25)	Total/NA	Solid	6020B	417316
140-14370-1 MSD	CCR-4A (24-25)	Total/NA	Solid	6020B	417316

General Chemistry

Analysis Batch: 416280

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-14370-1	CCR-4A (24-25)	Total/NA	Solid	Moisture	
140-14370-2	CCR-23 (24-25)	Total/NA	Solid	Moisture	
140-14370-3	CCR-22 (24-25)	Total/NA	Solid	Moisture	
140-14370-4	CCR-21 (24-25)	Total/NA	Solid	Moisture	
140-14370-5	CCR-20 (24-25)	Total/NA	Solid	Moisture	
140-14370-6	CCR-19 (24-25)	Total/NA	Solid	Moisture	
140-14370-7	CCR-18 (24-25)	Total/NA	Solid	Moisture	
140-14370-8	CCR-15 (24-25)	Total/NA	Solid	Moisture	
140-14370-9	CCR-16 (24-25)	Total/NA	Solid	Moisture	
140-14370-10	CCR-17 (24-25)	Total/NA	Solid	Moisture	
140-14370-11	GSB-1 (0.0.5)	Total/NA	Solid	Moisture	

General Chemistry (Continued)

Analysis Batch: 416280 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-14370-1 DU	CCR-4A (24-25)	Total/NA	Solid	Moisture	

Rad

Leach Batch: 417833

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-14370-1	CCR-4A (24-25)	Total/NA	Solid	Dry and Grind	
140-14370-2	CCR-23 (24-25)	Total/NA	Solid	Dry and Grind	
140-14370-3	CCR-22 (24-25)	Total/NA	Solid	Dry and Grind	
140-14370-7	CCR-18 (24-25)	Total/NA	Solid	Dry and Grind	
140-14370-8	CCR-15 (24-25)	Total/NA	Solid	Dry and Grind	
140-14370-9	CCR-16 (24-25)	Total/NA	Solid	Dry and Grind	
140-14370-1 DU	CCR-4A (24-25)	Total/NA	Solid	Dry and Grind	

Prep Batch: 418789

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-14370-1	CCR-4A (24-25)	Total/NA	Solid	DPS-21	417833
140-14370-2	CCR-23 (24-25)	Total/NA	Solid	DPS-21	417833
140-14370-3	CCR-22 (24-25)	Total/NA	Solid	DPS-21	417833
140-14370-7	CCR-18 (24-25)	Total/NA	Solid	DPS-21	417833
140-14370-8	CCR-15 (24-25)	Total/NA	Solid	DPS-21	417833
140-14370-9	CCR-16 (24-25)	Total/NA	Solid	DPS-21	417833
MB 160-418789/9-A	Method Blank	Total/NA	Solid	DPS-21	
LCS 160-418789/1-A	Lab Control Sample	Total/NA	Solid	DPS-21	
140-14370-1 DU	CCR-4A (24-25)	Total/NA	Solid	DPS-21	417833

Prep Batch: 418792

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-14370-1	CCR-4A (24-25)	Total/NA	Solid	DPS-0	417833
140-14370-2	CCR-23 (24-25)	Total/NA	Solid	DPS-0	417833
140-14370-3	CCR-22 (24-25)	Total/NA	Solid	DPS-0	417833
140-14370-7	CCR-18 (24-25)	Total/NA	Solid	DPS-0	417833
140-14370-8	CCR-15 (24-25)	Total/NA	Solid	DPS-0	417833
140-14370-9	CCR-16 (24-25)	Total/NA	Solid	DPS-0	417833
MB 160-418792/9-A	Method Blank	Total/NA	Solid	DPS-0	
LCS 160-418792/1-A	Lab Control Sample	Total/NA	Solid	DPS-0	
140-14370-1 DU	CCR-4A (24-25)	Total/NA	Solid	DPS-0	417833

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

Job ID: 140-14370-2

Client Sample ID: CCR-4A (24-25)

Lab Sample ID: 140-14370-1

Date Collected: 02/11/19 15:00
Matrix: Solid
Date Received: 02/22/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			416280	02/25/19 01:18	CMA	TAL SL
	Instrument ID: NOEQUIP									
Total/NA	Leach	Dry and Grind			1.0 g	1.0 g	417833	03/05/19 18:22	CMA	TAL SL
Total/NA	Prep	DPS-21			0.9998 g	1.0 g	418789	03/11/19 14:21	LTC	TAL SL
Total/NA	Analysis	9315		1			422642	04/04/19 14:32	CDR	TAL SL
	Instrument ID: GFPCPURPLE									
Total/NA	Leach	Dry and Grind			1.0 g	1.0 g	417833	03/05/19 18:22	CMA	TAL SL
Total/NA	Prep	DPS-0			0.9998 g	1.0 g	418792	03/11/19 14:53	LTC	TAL SL
Total/NA	Analysis	9320		1			420061	03/19/19 15:57	CDR	TAL SL
	Instrument ID: GFPCBLUE									

Client Sample ID: CCR-4A (24-25)

Lab Sample ID: 140-14370-1

Date Collected: 02/11/19 15:00
Matrix: Solid
Date Received: 02/22/19 10:00
Percent Solids: 64.6

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.5572 g	50 mL	417316	02/28/19 13:08	LAM	TAL SL
Total/NA	Analysis	6020B		20			420025	03/18/19 18:09	CB	TAL SL
	Instrument ID: ICPMS7700									

Client Sample ID: CCR-23 (24-25)

Lab Sample ID: 140-14370-2

Date Collected: 02/12/19 12:25
Matrix: Solid
Date Received: 02/22/19 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			416280	02/25/19 01:18	CMA	TAL SL
	Instrument ID: NOEQUIP									
Total/NA	Leach	Dry and Grind			1.0 g	1.0 g	417833	03/05/19 18:22	CMA	TAL SL
Total/NA	Prep	DPS-21			1.0012 g	1.0 g	418789	03/11/19 14:21	LTC	TAL SL
Total/NA	Analysis	9315		1			422643	04/04/19 14:33	CDR	TAL SL
	Instrument ID: GFPCBLUE									
Total/NA	Leach	Dry and Grind			1.0 g	1.0 g	417833	03/05/19 18:22	CMA	TAL SL
Total/NA	Prep	DPS-0			1.0012 g	1.0 g	418792	03/11/19 14:53	LTC	TAL SL
Total/NA	Analysis	9320		1			420061	03/19/19 15:57	CDR	TAL SL
	Instrument ID: GFPCBLUE									

Client Sample ID: CCR-23 (24-25)

Lab Sample ID: 140-14370-2

Date Collected: 02/12/19 12:25
Matrix: Solid
Date Received: 02/22/19 10:00
Percent Solids: 79.0

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.5310 g	50 mL	417316	02/28/19 13:08	LAM	TAL SL
Total/NA	Analysis	6020B		10			420025	03/18/19 18:43	CB	TAL SL
	Instrument ID: ICPMS7700									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

Job ID: 140-14370-2

Client Sample ID: CCR-22 (24-25)
Date Collected: 02/12/19 17:05
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-3
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			416280	02/25/19 01:18	CMA	TAL SL
	Instrument ID: NOEQUIP									
Total/NA	Leach	Dry and Grind			1.0 g	1.0 g	417833	03/05/19 18:22	CMA	TAL SL
Total/NA	Prep	DPS-21			0.9971 g	1.0 g	418789	03/11/19 14:21	LTC	TAL SL
Total/NA	Analysis	9315		1			422642	04/04/19 15:36	CDR	TAL SL
	Instrument ID: GFPCPURPLE									
Total/NA	Leach	Dry and Grind			1.0 g	1.0 g	417833	03/05/19 18:22	CMA	TAL SL
Total/NA	Prep	DPS-0			0.9971 g	1.0 g	418792	03/11/19 14:53	LTC	TAL SL
Total/NA	Analysis	9320		1			420061	03/19/19 15:58	CDR	TAL SL
	Instrument ID: GFPCBLUE									

Client Sample ID: CCR-22 (24-25)
Date Collected: 02/12/19 17:05
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-3
Matrix: Solid
Percent Solids: 71.2

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.5509 g	50 mL	417316	02/28/19 13:08	LAM	TAL SL
Total/NA	Analysis	6020B		20			420025	03/18/19 18:50	CB	TAL SL
	Instrument ID: ICPMS7700									

Client Sample ID: CCR-21 (24-25)
Date Collected: 02/13/19 14:55
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			416280	02/25/19 01:18	CMA	TAL SL
	Instrument ID: NOEQUIP									

Client Sample ID: CCR-21 (24-25)
Date Collected: 02/13/19 14:55
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-4
Matrix: Solid
Percent Solids: 78.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.5665 g	50 mL	417316	02/28/19 13:08	LAM	TAL SL
Total/NA	Analysis	6020B		2			420025	03/18/19 18:57	CB	TAL SL
	Instrument ID: ICPMS7700									

Client Sample ID: CCR-20 (24-25)
Date Collected: 02/14/19 09:15
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-5
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			416280	02/25/19 01:18	CMA	TAL SL
	Instrument ID: NOEQUIP									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

Job ID: 140-14370-2

Client Sample ID: CCR-20 (24-25)
Date Collected: 02/14/19 09:15
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-5
Matrix: Solid
Percent Solids: 84.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.5361 g	50 mL	417316	02/28/19 13:08	LAM	TAL SL
Total/NA	Analysis	6020B		5			420025	03/18/19 19:24	CB	TAL SL
	Instrument ID: ICPMS7700									

Client Sample ID: CCR-19 (24-25)
Date Collected: 02/15/19 13:15
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-6
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			416280	02/25/19 01:18	CMA	TAL SL
	Instrument ID: NOEQUIP									

Client Sample ID: CCR-19 (24-25)
Date Collected: 02/15/19 13:15
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-6
Matrix: Solid
Percent Solids: 79.6

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.5435 g	50 mL	417316	02/28/19 13:08	LAM	TAL SL
Total/NA	Analysis	6020B		2			420025	03/18/19 19:30	CB	TAL SL
	Instrument ID: ICPMS7700									

Client Sample ID: CCR-18 (24-25)
Date Collected: 02/15/19 16:35
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-7
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			416280	02/25/19 01:18	CMA	TAL SL
	Instrument ID: NOEQUIP									
Total/NA	Leach	Dry and Grind			1.0 g	1.0 g	417833	03/05/19 18:22	CMA	TAL SL
Total/NA	Prep	DPS-21			0.9907 g	1.0 g	418789	03/11/19 14:21	LTC	TAL SL
Total/NA	Analysis	9315		1			422981	04/07/19 21:57	CDR	TAL SL
	Instrument ID: GFPCBLUE									
Total/NA	Leach	Dry and Grind			1.0 g	1.0 g	417833	03/05/19 18:22	CMA	TAL SL
Total/NA	Prep	DPS-0			0.9907 g	1.0 g	418792	03/11/19 14:53	LTC	TAL SL
Total/NA	Analysis	9320		1			420061	03/19/19 15:58	CDR	TAL SL
	Instrument ID: GFPCBLUE									

Client Sample ID: CCR-18 (24-25)
Date Collected: 02/15/19 16:35
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-7
Matrix: Solid
Percent Solids: 85.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.5464 g	50 mL	417316	02/28/19 13:08	LAM	TAL SL
Total/NA	Analysis	6020B		2			420025	03/18/19 19:37	CB	TAL SL
	Instrument ID: ICPMS7700									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

Job ID: 140-14370-2

Client Sample ID: CCR-15 (24-25)
Date Collected: 02/18/19 13:55
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-8
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			416280	02/25/19 01:18	CMA	TAL SL
	Instrument ID: NOEQUIP									
Total/NA	Leach	Dry and Grind			1.0 g	1.0 g	417833	03/05/19 18:22	CMA	TAL SL
Total/NA	Prep	DPS-21			0.9908 g	1.0 g	418789	03/11/19 14:21	LTC	TAL SL
Total/NA	Analysis	9315		1			422642	04/04/19 15:37	CDR	TAL SL
	Instrument ID: GFPCPURPLE									
Total/NA	Leach	Dry and Grind			1.0 g	1.0 g	417833	03/05/19 18:22	CMA	TAL SL
Total/NA	Prep	DPS-0			0.9908 g	1.0 g	418792	03/11/19 14:53	LTC	TAL SL
Total/NA	Analysis	9320		1			420061	03/19/19 15:58	CDR	TAL SL
	Instrument ID: GFPCBLUE									

Client Sample ID: CCR-15 (24-25)
Date Collected: 02/18/19 13:55
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-8
Matrix: Solid
Percent Solids: 84.6

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.5338 g	50 mL	417316	02/28/19 13:08	LAM	TAL SL
Total/NA	Analysis	6020B		2			420025	03/18/19 19:44	CB	TAL SL
	Instrument ID: ICPMS7700									

Client Sample ID: CCR-16 (24-25)
Date Collected: 02/18/19 16:00
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-9
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			416280	02/25/19 01:18	CMA	TAL SL
	Instrument ID: NOEQUIP									
Total/NA	Leach	Dry and Grind			1.0 g	1.0 g	417833	03/05/19 18:22	CMA	TAL SL
Total/NA	Prep	DPS-21			0.9966 g	1.0 g	418789	03/11/19 14:21	LTC	TAL SL
Total/NA	Analysis	9315		1			422642	04/04/19 15:37	CDR	TAL SL
	Instrument ID: GFPCPURPLE									
Total/NA	Leach	Dry and Grind			1.0 g	1.0 g	417833	03/05/19 18:22	CMA	TAL SL
Total/NA	Prep	DPS-0			0.9966 g	1.0 g	418792	03/11/19 14:53	LTC	TAL SL
Total/NA	Analysis	9320		1			420061	03/19/19 15:58	CDR	TAL SL
	Instrument ID: GFPCBLUE									

Client Sample ID: CCR-16 (24-25)
Date Collected: 02/18/19 16:00
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-9
Matrix: Solid
Percent Solids: 83.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.5488 g	50 mL	417316	02/28/19 13:08	LAM	TAL SL
Total/NA	Analysis	6020B		5			420025	03/18/19 19:51	CB	TAL SL
	Instrument ID: ICPMS7700									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

Job ID: 140-14370-2

Client Sample ID: CCR-17 (24-25)
Date Collected: 02/19/19 08:25
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-10
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			416280	02/25/19 01:18	CMA	TAL SL
	Instrument ID: NOEQUIP									

Client Sample ID: CCR-17 (24-25)
Date Collected: 02/19/19 08:25
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-10
Matrix: Solid
Percent Solids: 77.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.5507 g	50 mL	417316	02/28/19 13:08	LAM	TAL SL
Total/NA	Analysis	6020B		2			420025	03/18/19 19:57	CB	TAL SL
	Instrument ID: ICPMS7700									

Client Sample ID: GSB-1 (0.0.5)
Date Collected: 02/20/19 12:25
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-11
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			416280	02/25/19 01:18	CMA	TAL SL
	Instrument ID: NOEQUIP									

Client Sample ID: GSB-1 (0.0.5)
Date Collected: 02/20/19 12:25
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-11
Matrix: Solid
Percent Solids: 80.8

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.5439 g	50 mL	417316	02/28/19 13:08	LAM	TAL SL
Total/NA	Analysis	6020B		5			420025	03/18/19 20:04	CB	TAL SL
	Instrument ID: ICPMS7700									

Client Sample ID: Method Blank
Date Collected: N/A
Date Received: N/A

Lab Sample ID: MB 160-417316/1-A
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.5279 g	50 mL	417316	02/28/19 13:08	LAM	TAL SL
Total/NA	Analysis	6020B		2			420025	03/18/19 17:29	CB	TAL SL
	Instrument ID: ICPMS7700									

Client Sample ID: Method Blank
Date Collected: N/A
Date Received: N/A

Lab Sample ID: MB 160-418789/9-A
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	DPS-21			1 g	1.0 g	418789	03/11/19 14:21	LTC	TAL SL
Total/NA	Analysis	9315		1			422642	04/04/19 15:37	CDR	TAL SL
	Instrument ID: GFPCPURPLE									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

Job ID: 140-14370-2

Client Sample ID: Method Blank
Lab Sample ID: MB 160-418792/9-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	DPS-0			1 g	1.0 g	418792	03/11/19 14:53	LTC	TAL SL
Total/NA	Analysis	9320		1			420061	03/19/19 15:58	CDR	TAL SL
	Instrument ID: GFPCBLUE									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 160-417316/2-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.5268 g	50 mL	417316	02/28/19 13:08	LAM	TAL SL
Total/NA	Analysis	6020B		2			420025	03/18/19 17:56	CB	TAL SL
	Instrument ID: ICPMS7700									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 160-418789/1-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	DPS-21			1 g	1.0 g	418789	03/11/19 14:21	LTC	TAL SL
Total/NA	Analysis	9315		1			422642	04/04/19 14:31	CDR	TAL SL
	Instrument ID: GFPCPURPLE									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 160-418792/1-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	DPS-0			1 g	1.0 g	418792	03/11/19 14:53	LTC	TAL SL
Total/NA	Analysis	9320		1			420061	03/19/19 15:57	CDR	TAL SL
	Instrument ID: GFPCBLUE									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCSSRM 160-417316/3-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.5538 g	50 mL	417316	02/28/19 13:08	LAM	TAL SL
Total/NA	Analysis	6020B		10			420025	03/18/19 18:03	CB	TAL SL
	Instrument ID: ICPMS7700									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

Job ID: 140-14370-2

Client Sample ID: CCR-4A (24-25)
Date Collected: 02/11/19 15:00
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-1 MS
Matrix: Solid
Percent Solids: 64.6

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.5108 g	50 mL	417316	02/28/19 13:08	LAM	TAL SL
Total/NA	Analysis	6020B		20			420025	03/18/19 18:23	CB	TAL SL
	Instrument ID: ICPMS7700									

Client Sample ID: CCR-4A (24-25)
Date Collected: 02/11/19 15:00
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-1 MSD
Matrix: Solid
Percent Solids: 64.6

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			0.5334 g	50 mL	417316	02/28/19 13:08	LAM	TAL SL
Total/NA	Analysis	6020B		20			420025	03/18/19 18:30	CB	TAL SL
	Instrument ID: ICPMS7700									

Client Sample ID: CCR-4A (24-25)
Date Collected: 02/11/19 15:00
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-1 DU
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1			416280	02/25/19 01:18	CMA	TAL SL
	Instrument ID: NOEQUIP									
Total/NA	Leach	Dry and Grind			1.0 g	1.0 g	417833	03/05/19 18:22	CMA	TAL SL
Total/NA	Prep	DPS-21			1.0054 g	1.0 g	418789	03/11/19 14:21	LTC	TAL SL
Total/NA	Analysis	9315		1			422642	04/04/19 14:32	CDR	TAL SL
	Instrument ID: GFPCPURPLE									
Total/NA	Leach	Dry and Grind			1.0 g	1.0 g	417833	03/05/19 18:22	CMA	TAL SL
Total/NA	Prep	DPS-0			1.0054 g	1.0 g	418792	03/11/19 14:53	LTC	TAL SL
Total/NA	Analysis	9320		1			420061	03/19/19 15:57	CDR	TAL SL
	Instrument ID: GFPCBLUE									

Laboratory References:

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

Method Summary

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

Job ID: 140-14370-2

Method	Method Description	Protocol	Laboratory
6020B	Metals (ICP/MS)	SW846	TAL SL
Moisture	Percent Moisture	EPA	TAL SL
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
3050B	Preparation, Metals	SW846	TAL SL
DPS-0	Preparation, Digestion/ Precipitate	None	TAL SL
DPS-21	Preparation, Digestion/Precipitate Separation (21-Day In-Growth)	None	TAL SL
Dry and Grind	Preparation, Dry and Grind	None	TAL SL

Protocol References:

EPA = US Environmental Protection Agency

None = None

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

Laboratory References:

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

Sample Summary

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

Job ID: 140-14370-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
140-14370-1	CCR-4A (24-25)	Solid	02/11/19 15:00	02/22/19 10:00
140-14370-2	CCR-23 (24-25)	Solid	02/12/19 12:25	02/22/19 10:00
140-14370-3	CCR-22 (24-25)	Solid	02/12/19 17:05	02/22/19 10:00
140-14370-4	CCR-21 (24-25)	Solid	02/13/19 14:55	02/22/19 10:00
140-14370-5	CCR-20 (24-25)	Solid	02/14/19 09:15	02/22/19 10:00
140-14370-6	CCR-19 (24-25)	Solid	02/15/19 13:15	02/22/19 10:00
140-14370-7	CCR-18 (24-25)	Solid	02/15/19 16:35	02/22/19 10:00
140-14370-8	CCR-15 (24-25)	Solid	02/18/19 13:55	02/22/19 10:00
140-14370-9	CCR-16 (24-25)	Solid	02/18/19 16:00	02/22/19 10:00
140-14370-10	CCR-17 (24-25)	Solid	02/19/19 08:25	02/22/19 10:00
140-14370-11	GSB-1 (0.0.5)	Solid	02/20/19 12:25	02/22/19 10:00

TestAmerica Knoxville
5815 Middlebrook Pike

Knoxville, TN 37921-5947
phone 865.291.3000 fax 865.584.4315

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Anthony Grasso	Site Contact:	Date:	COC No:
Golder Associates Inc.	Tel/Fax: (813) 908-4224	Lab Contact:	Carrier:	1 of 1 COCs
5402 Beaumont Center Blvd, Suite 108	Analysis Turnaround Time			Sampler:
Tampa, FL 33634	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(813) 287-1717 Phone	TAT if different from Below _____			Walk-in Client:
(813) 287-1716 FAX	☐ 2 weeks			Lab Sampling:
Project Name: COL Site Characterization ASE	☐ 1 week			
Site: CD McIntosh Jr Plant	☐ 2 days			Job / SDG No.:
P O # 19117001.100	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Fe, Al, As, Li (6010B SEP)	Sample Specific Notes:
CCR-4A (24-25)	2/11/19	15:00	G	Soil	1	N	N	X	
CCR-16 (24-25)	2/18/19	16:00	G	Soil	1	N	N	X	
CCR-20 (24-25)	2/14/19	09:15	G	Soil	1	N	N	X	
CUSTODY SEALS INTACT									
RECEIVED AT RT 0.4/CT 0.4 C									
BKD 2-22-19									
1 COOLER FEDEX # 785632094520 PD									

140-14370 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☑ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd:_____ Corr'd:_____ | Therm ID No.:_____

Relinquished by:	Company: Golder Associates Inc.	Date/Time: 2/21/19 1825	Received by:	Company: TA KNX	Date/Time: 2-22-19 10:00
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.18, dated 9/5/2018

4/9/2019

TestAmerica St. Louis
13715 Rider Trail North

Earth City, MO 63045-1205
phone 314.298.8566 fax 314.298.8757

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Anthony Grasso	Site Contact:	Date:	COC No:
Golder Associates Inc.	Tel/Fax: (813) 908-4224	Lab Contact:	Carrier:	1 of 1 COCs
5402 Beaumont Center Blvd, Suite 108	Analysis Turnaround Time			Sampler:
Tampa, FL 33634	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(813) 287-1717 Phone	TAT if different from Below _____			Walk-in Client:
(813) 287-1716 FAX	☐ 2 weeks			Lab Sampling:
Project Name: COL Site Characterization ASE	☐ 1 week			
Site: CD McIntosh Jr Plant	☐ 2 days			Job / SDG No.:
P O # 19117001.100	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Total U, Fe, Al, As, Li (6020B)	Radium 226 & 228 (9315, 9320)	Sample Specific Notes:
CCR-4A (24-25)	2/11/19	15:00	G	Soil	1	N	N	X	X	
CCR-23 (24-25)	2/12/19	12:25	G	Soil	1	N	N	X	X	
CCR-22 (24-25)	2/12/19	17:05	G	Soil	1	N	N	X	X	
CCR-21 (24-25)	2/13/19	14:55	G	Soil	1	N	N	X		
CCR-20 (24-25)	2/14/19	09:15	G	Soil	2	N	N	X		
CCR-19 (24-25)	2/15/19	13:15	G	Soil	1	N	N	X		
CCR-18 (24-25)	2/15/19	16:35	G	Soil	1	N	N	X	X	
CCR-15 (24-25)	2/18/19	13:55	G	Soil	1	N	N	X	X	
CCR-16 (24-25)	2/18/19	16:00	G	Soil	2	N	N	X	X	
CCR-17 (24-25)	2/19/19	08:25	G	Soil	1	N	N	X		
GSB-1 (0-0.5)	2/20/19	12:25	G	Soil	2	N	N	X		

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____ Corr'd: _____		Therm ID No.: _____
Relinquished by:	Company: Golder Associates Inc.	Date/Time: 2/21/19 1825	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.18, dated 9/5/2018

4/9/2019

Loc: 140
14370

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST **Log In Number:**

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	✓		✓	☐ **Containers, Broken**
2. Were ambient air containers received intact?			✓	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?	✓			☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : SC08 Correction factor: 0.0	✓			☐ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**
5. Were all of the sample containers received intact?	✓			☐ **Containers, Broken**
6. Were samples received in appropriate containers?	✓			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**
7. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**
8. Were all of the samples listed on the COC received?	✓			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**
9. Is the date/time of sample collection noted?	✓			☐ **COC; No Date/Time; Client Contacted**
10. Was the sampler identified on the COC?		✓		☑ **Sampler Not Listed on COC**
11. Is the client and project name/# identified?	✓			☐ **COC Incorrect/Incomplete**
12. Are tests/parameters listed for each sample?	✓			☐ **COC No tests on COC**
13. Is the matrix of the samples noted?	✓			☐ **COC Incorrect/Incomplete**
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ **COC Incorrect/Incomplete**
15. Were samples received within holding time?	✓			☐ **Holding Time - Receipt**
16. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**
17. Were VOA samples received without headspace?			✓	☐ **Headspace (VOA only)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			✓	☐ **Residual Chlorine**
19. For 1613B water samples is pH<9?			✓	☐ If no, notify lab to adjust
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info

Comments/Actions Taken

10

Labeling Verified by: **Date:**

pH test strip lot number:

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: 140D5136 PM Instructions:

Sample Receiving Associate: Date: 2-22-19

QA026R31.doc, 112618

Login Sample Receipt Checklist

Client: Golder Associates Inc.

Job Number: 140-14370-2

Login Number: 14370
List Number: 2
Creator: Press, Nicholas B

List Source: Eurofins TestAmerica, St. Louis
List Creation: 02/22/19 03:36 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.	True	
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	0.2
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	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Tel: (865)291-3000

TestAmerica Job ID: 140-14370-1
Client Project/Site: CD McIntosh Jr Plant

For:
Golder Associates Inc.
5402 Beaumont Center Boulevard
Suite 108
Tampa, Florida 33634

Attn: Mr. Gene Morelli

Terry Walker Wasmund

Authorized for release by:
3/21/2019 4:38:23 PM

Terry Walker Wasmund, Project Manager II
(865)291-3000
terry.wasmund@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

TestAmerica Job ID: 140-14370-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
*	LCS or LCSD is outside acceptance limits.
*	RPD of the LCS and LCSD exceeds the control limits
B	Compound was found in the blank and sample.
F5	Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL. The data are considered valid because the absolute difference is less than the RL.

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)

Job ID: 140-14370-1

Laboratory: TestAmerica Knoxville

Narrative

Job Narrative
140-14370-1

Receipt
The samples were received on 2/22/2019 at 10:00 AM. The samples arrived in good condition, properly preserved, and on ice. The temperature of the cooler at receipt was 0.4º C.

Metals - 7-Step Sequential Extraction Procedure
These soil samples were prepared and analyzed using TestAmerica Knoxville standard operating procedure KNOX-MT-0008, "7 Step Sequential Extraction Procedure". SW-846 Method 6010B as incorporated in TestAmerica Knoxville standard operating procedure KNOX-MT-0007 was used to perform the final instrument analyses.

An aliquot of each sample was sequentially extracted using the steps listed below:

- ***Step 1 - Exchangeable Fraction***: A 5 gram aliquot of sample was extracted with 25 mL of 1M magnesium sulfate (MgSO4), centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 2 - Carbonate Fraction***: The sample residue from step 1 was extracted with 25 mL of 1M sodium acetate/acetic acid (NaOAc/HOAc) at pH 5, centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 3 - Non-crystalline Materials Fraction***: The sample residue from step 2 was extracted with 25 mL of 0.2M ammonium oxalate (pH 3), centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 4 - Metal Hydroxide Fraction***: The sample residue from step 3 was extracted with 25 mL of 1M hydroxylamine hydrochloride solution in 25% v/v acetic acid, centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 5 - Organic-bound Fraction***: The sample residue from step 4 was extracted three times with 25 mL of 5% sodium hypochlorite (NaClO) at pH 9.5, centrifuged and filtered. The resulting leachates were combined and 5 mL were digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 6 - Acid/Sulfide Fraction***: The sample residue from step 5 was extracted with 25 mL of a 3:1:2 v/v solution of HCl-HNO3-H2O, centrifuged and filtered. 5 mL of the resulting leachate was diluted to 50 mL with reagent water and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- ***Step 7 - Residual Fraction***: A 1.0 g aliquot of the sample residue from step 6 was digested using HF, HNO3, HCl and H3BO3. The digestate was analyzed by ICP using method 6010B. Results are reported in mg/kg on a dry weight basis.

In addition, a 1.0 g aliquot of the original sample was digested using HF, HNO3, HCl and H3BO3. The digestate was analyzed by ICP using method 6010B. Total metal results are reported in mg/kg on a dry weight basis.

Results were calculated using the following equation:

Result, µg/g or mg/Kg, dry weight = (C × V × V1 × D) / (W × S × V2)

Where:
C = Concentration from instrument readout, µg/mL
V = Final volume of digestate, mL
D = Instrument dilution factor
V1 = Total volume of leachate, mL
V2 = Volume of leachate digested, mL
W = Wet weight of sample, g
S = Percent solids/100

A method blank, laboratory control sample and laboratory control sample duplicate were prepared and analyzed with each SEP step in order to provide information about both the presence of elements of interest in the extraction solutions, and the recovery of elements of interest from the extraction solutions. Results outside of laboratory QC limits do not reflect out of control performance, but rather the effect of the extraction solution upon the analyte.

Job ID: 140-14370-1 (Continued)

Laboratory: TestAmerica Knoxville (Continued)

A laboratory sample duplicate was prepared and analyzed with each batch of samples in order to provide information regarding the reproducibility of the procedure.

SEP Report Notes:
The final report lists the results for each step, the result for the total digestion of the sample, and a sum of the results of steps 1 through 7 by element.

The digestates for steps 1, 2 and 5 were analyzed at a dilution due to instrument problems caused by the high solids content of the digestates. The reporting limits were adjusted accordingly.

Method 6010B SEP: Samples CCR-4A (24-25) (140-14370-1) and CCR-20 (24-25) (140-14370-5) were diluted due to the nature of the sample matrix causing high internal standard readings. Elevated reporting limits (RLs) are provided.

Method 6010B, 6010B SEP: Samples CCR-16 (24-25) (140-14370-9), (140-14370-A-9-AE DU) and (140-14370-A-9-C DU) were diluted due to the presence of Silicon which interferes with Arsenic. Elevated reporting limits (RLs) are provided.

Method 6010B: Due to sample matrix effect on the internal standard (ISTD), a 1:5 dilution was required for sample CCR-4A (24-25) (140-14370-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Comments
No additional comments.

Detection Summary

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

TestAmerica Job ID: 140-14370-1

Client Sample ID: CCR-4A (24-25) — Lab Sample ID: 140-14370-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	25	J	62	9.9	mg/Kg	4	☼	6010B SEP	Step 1
Aluminum	41	J *	46	7.4	mg/Kg	3	☼	6010B SEP	Step 2
Aluminum	2100		15	3.3	mg/Kg	1	☼	6010B SEP	Step 3
Arsenic	0.28	J	0.77	0.20	mg/Kg	1	☼	6010B SEP	Step 3
Iron	190		7.7	4.5	mg/Kg	1	☼	6010B SEP	Step 3
Aluminum	2600		15	2.5	mg/Kg	1	☼	6010B SEP	Step 4
Arsenic	0.78	B	0.77	0.34	mg/Kg	1	☼	6010B SEP	Step 4
Iron	230		7.7	4.5	mg/Kg	1	☼	6010B SEP	Step 4
Lithium	0.92	J	3.9	0.23	mg/Kg	1	☼	6010B SEP	Step 4
Aluminum	500	*	230	36	mg/Kg	5	☼	6010B SEP	Step 5
Aluminum	23000		310	50	mg/Kg	20	☼	6010B SEP	Step 6
Arsenic	7.0	J	15	4.6	mg/Kg	20	☼	6010B SEP	Step 6
Iron	1800		150	90	mg/Kg	20	☼	6010B SEP	Step 6
Aluminum	2200		150	25	mg/Kg	10	☼	6010B SEP	Step 7
Arsenic	0.83	B	0.77	0.20	mg/Kg	1	☼	6010B SEP	Step 7
Iron	660		7.7	6.3	mg/Kg	1	☼	6010B SEP	Step 7
Lithium	1.2	J	3.9	0.23	mg/Kg	1	☼	6010B SEP	Step 7
Aluminum	30000		10	1.6	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Arsenic	8.9		0.50	0.13	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Iron	2900		5.0	4.1	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Lithium	2.1	J	2.5	0.15	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Aluminum	14000		150	25	mg/Kg	10	☼	6010B	Total/NA
Arsenic	4.7		3.9	1.0	mg/Kg	5	☼	6010B	Total/NA
Iron	2500		39	32	mg/Kg	5	☼	6010B	Total/NA
Lithium	4.4	J	19	1.2	mg/Kg	5	☼	6010B	Total/NA

Client Sample ID: CCR-20 (24-25) — Lab Sample ID: 140-14370-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	10	J *	35	5.7	mg/Kg	3	☼	6010B SEP	Step 2
Arsenic	0.51	J	1.8	0.46	mg/Kg	3	☼	6010B SEP	Step 2
Aluminum	110		12	2.5	mg/Kg	1	☼	6010B SEP	Step 3
Aluminum	3300		12	1.9	mg/Kg	1	☼	6010B SEP	Step 4
Arsenic	0.74	B	0.59	0.26	mg/Kg	1	☼	6010B SEP	Step 4
Iron	26		5.9	3.4	mg/Kg	1	☼	6010B SEP	Step 4
Lithium	0.25	J	3.0	0.18	mg/Kg	1	☼	6010B SEP	Step 4
Aluminum	1200	*	180	28	mg/Kg	5	☼	6010B SEP	Step 5
Aluminum	11000		59	9.5	mg/Kg	5	☼	6010B SEP	Step 6
Arsenic	2.0	J	3.0	0.89	mg/Kg	5	☼	6010B SEP	Step 6
Iron	270		30	17	mg/Kg	5	☼	6010B SEP	Step 6
Lithium	1.0	J	15	0.89	mg/Kg	5	☼	6010B SEP	Step 6
Aluminum	16000		120	19	mg/Kg	10	☼	6010B SEP	Step 7
Arsenic	0.59	B	0.59	0.15	mg/Kg	1	☼	6010B SEP	Step 7
Iron	1200		5.9	4.9	mg/Kg	1	☼	6010B SEP	Step 7
Lithium	1.5	J	3.0	0.18	mg/Kg	1	☼	6010B SEP	Step 7
Aluminum	32000		10	1.6	mg/Kg	1		6010B SEP	Sum of Steps 1-7

This Detection Summary does not include radiochemical test results.

Client Sample ID: CCR-20 (24-25) (Continued) — Lab Sample ID: 140-14370-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	3.8		0.50	0.13	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Iron	1500		5.0	4.1	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Lithium	2.7		2.5	0.15	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Aluminum	39000		120	19	mg/Kg	10	☼	6010B	Total/NA
Arsenic	1.1	B	0.59	0.15	mg/Kg	1	☼	6010B	Total/NA
Iron	1900		5.9	4.9	mg/Kg	1	☼	6010B	Total/NA
Lithium	2.3	J	3.0	0.18	mg/Kg	1	☼	6010B	Total/NA

Client Sample ID: CCR-16 (24-25) — Lab Sample ID: 140-14370-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	120		48	7.7	mg/Kg	4	☼	6010B SEP	Step 1
Aluminum	190	*	36	5.8	mg/Kg	3	☼	6010B SEP	Step 2
Arsenic	0.55	J	1.8	0.47	mg/Kg	3	☼	6010B SEP	Step 2
Aluminum	4700		12	2.5	mg/Kg	1	☼	6010B SEP	Step 3
Arsenic	0.26	J	0.60	0.16	mg/Kg	1	☼	6010B SEP	Step 3
Iron	4.7	J	6.0	3.5	mg/Kg	1	☼	6010B SEP	Step 3
Aluminum	2000		12	1.9	mg/Kg	1	☼	6010B SEP	Step 4
Arsenic	0.54	J B	0.60	0.26	mg/Kg	1	☼	6010B SEP	Step 4
Iron	34		6.0	3.5	mg/Kg	1	☼	6010B SEP	Step 4
Lithium	0.78	J	3.0	0.18	mg/Kg	1	☼	6010B SEP	Step 4
Aluminum	250	*	180	28	mg/Kg	5	☼	6010B SEP	Step 5
Aluminum	4100		12	1.9	mg/Kg	1	☼	6010B SEP	Step 6
Arsenic	1.0		0.60	0.18	mg/Kg	1	☼	6010B SEP	Step 6
Iron	240		6.0	3.5	mg/Kg	1	☼	6010B SEP	Step 6
Lithium	2.1	J	3.0	0.18	mg/Kg	1	☼	6010B SEP	Step 6
Aluminum	8300		120	19	mg/Kg	10	☼	6010B SEP	Step 7
Arsenic	0.91	J	1.2	0.31	mg/Kg	2	☼	6010B SEP	Step 7
Iron	920		6.0	4.9	mg/Kg	1	☼	6010B SEP	Step 7
Lithium	4.8		3.0	0.18	mg/Kg	1	☼	6010B SEP	Step 7
Aluminum	20000		10	1.6	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Arsenic	3.3		0.50	0.13	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Iron	1200		5.0	4.1	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Lithium	7.7		2.5	0.15	mg/Kg	1		6010B SEP	Sum of Steps 1-7
Aluminum	16000		120	19	mg/Kg	10	☼	6010B	Total/NA
Arsenic	1.1	J	1.2	0.31	mg/Kg	2	☼	6010B	Total/NA
Iron	1400		6.0	4.9	mg/Kg	1	☼	6010B	Total/NA
Lithium	7.0		3.0	0.18	mg/Kg	1	☼	6010B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: CCR-4A (24-25)

Date Collected: 02/11/19 15:00
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-1

Matrix: Solid
Percent Solids: 64.6

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**25**	**J**	62	9.9	mg/Kg	☼	03/07/19 08:00	03/12/19 12:57	4
Arsenic	ND		3.1	0.81	mg/Kg	☼	03/07/19 08:00	03/12/19 12:57	4
Iron	ND		31	18	mg/Kg	☼	03/07/19 08:00	03/12/19 12:57	4
Lithium	ND		15	0.93	mg/Kg	☼	03/07/19 08:00	03/12/19 12:57	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**41**	**J ***	46	7.4	mg/Kg	☼	03/08/19 08:00	03/12/19 13:49	3
Arsenic	ND		2.3	0.60	mg/Kg	☼	03/08/19 08:00	03/12/19 13:49	3
Iron	ND	*	23	13	mg/Kg	☼	03/08/19 08:00	03/12/19 13:49	3
Lithium	ND		12	0.70	mg/Kg	☼	03/08/19 08:00	03/12/19 13:49	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2100**		15	3.3	mg/Kg	☼	03/11/19 08:00	03/12/19 14:41	1
Arsenic	**0.28**	**J**	0.77	0.20	mg/Kg	☼	03/11/19 08:00	03/12/19 14:41	1
Iron	**190**		7.7	4.5	mg/Kg	☼	03/11/19 08:00	03/12/19 14:41	1
Lithium	ND		3.9	0.23	mg/Kg	☼	03/11/19 08:00	03/12/19 14:41	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2600**		15	2.5	mg/Kg	☼	03/12/19 08:00	03/14/19 10:51	1
Arsenic	**0.78**	**B**	0.77	0.34	mg/Kg	☼	03/12/19 08:00	03/14/19 10:51	1
Iron	**230**		7.7	4.5	mg/Kg	☼	03/12/19 08:00	03/14/19 10:51	1
Lithium	**0.92**	**J**	3.9	0.23	mg/Kg	☼	03/12/19 08:00	03/14/19 10:51	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**500**	****	230	36	mg/Kg	☼	03/13/19 08:00	03/14/19 11:42	5
Arsenic	ND		12	2.9	mg/Kg	☼	03/13/19 08:00	03/14/19 11:42	5
Iron	ND	*	120	68	mg/Kg	☼	03/13/19 08:00	03/14/19 11:42	5
Lithium	ND	*	58	3.4	mg/Kg	☼	03/13/19 08:00	03/14/19 11:42	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**23000**		310	50	mg/Kg	☼	03/13/19 08:00	03/14/19 13:42	20
Arsenic	**7.0**	**J**	15	4.6	mg/Kg	☼	03/13/19 08:00	03/14/19 13:42	20
Iron	**1800**		150	90	mg/Kg	☼	03/13/19 08:00	03/14/19 13:42	20
Lithium	ND		77	4.6	mg/Kg	☼	03/13/19 08:00	03/14/19 13:42	20

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2200**		150	25	mg/Kg	☼	03/14/19 08:00	03/15/19 12:22	10
Arsenic	**0.83**	**B**	0.77	0.20	mg/Kg	☼	03/14/19 08:00	03/15/19 11:01	1
Iron	**660**		7.7	6.3	mg/Kg	☼	03/14/19 08:00	03/15/19 11:01	1
Lithium	**1.2**	**J**	3.9	0.23	mg/Kg	☼	03/14/19 08:00	03/15/19 11:01	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**30000**		10	1.6	mg/Kg			03/19/19 10:17	1
Arsenic	**8.9**		0.50	0.13	mg/Kg			03/19/19 10:17	1

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

TestAmerica Job ID: 140-14370-1

Client Sample ID: CCR-4A (24-25)
Date Collected: 02/11/19 15:00
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-1
Matrix: Solid
Percent Solids: 64.6

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	2900		5.0	4.1	mg/Kg			03/19/19 10:17	1
Lithium	2.1	J	2.5	0.15	mg/Kg			03/19/19 10:17	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	14000		150	25	mg/Kg	☼	03/06/19 08:00	03/15/19 13:23	10
Arsenic	4.7		3.9	1.0	mg/Kg	☼	03/06/19 08:00	03/15/19 13:18	5
Iron	2500		39	32	mg/Kg	☼	03/06/19 08:00	03/15/19 13:18	5
Lithium	4.4	J	19	1.2	mg/Kg	☼	03/06/19 08:00	03/15/19 13:18	5

Client Sample ID: CCR-20 (24-25)

Date Collected: 02/14/19 09:15
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-5

Matrix: Solid
Percent Solids: 84.5

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		47	7.6	mg/Kg	☼	03/07/19 08:00	03/12/19 13:02	4
Arsenic	ND		2.4	0.62	mg/Kg	☼	03/07/19 08:00	03/12/19 13:02	4
Iron	ND		24	14	mg/Kg	☼	03/07/19 08:00	03/12/19 13:02	4
Lithium	ND		12	0.71	mg/Kg	☼	03/07/19 08:00	03/12/19 13:02	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**10**	**J ***	35	5.7	mg/Kg	☼	03/08/19 08:00	03/12/19 13:54	3
Arsenic	**0.51**	**J**	1.8	0.46	mg/Kg	☼	03/08/19 08:00	03/12/19 13:54	3
Iron	ND	*	18	10	mg/Kg	☼	03/08/19 08:00	03/12/19 13:54	3
Lithium	ND		8.9	0.53	mg/Kg	☼	03/08/19 08:00	03/12/19 13:54	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**110**		12	2.5	mg/Kg	☼	03/11/19 08:00	03/12/19 14:46	1
Arsenic	ND		0.59	0.15	mg/Kg	☼	03/11/19 08:00	03/12/19 14:46	1
Iron	ND		5.9	3.4	mg/Kg	☼	03/11/19 08:00	03/12/19 14:46	1
Lithium	ND		3.0	0.18	mg/Kg	☼	03/11/19 08:00	03/12/19 14:46	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**3300**		12	1.9	mg/Kg	☼	03/12/19 08:00	03/14/19 10:56	1
Arsenic	**0.74**	**B**	0.59	0.26	mg/Kg	☼	03/12/19 08:00	03/14/19 10:56	1
Iron	**26**		5.9	3.4	mg/Kg	☼	03/12/19 08:00	03/14/19 10:56	1
Lithium	**0.25**	**J**	3.0	0.18	mg/Kg	☼	03/12/19 08:00	03/14/19 10:56	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**1200**	****	180	28	mg/Kg	☼	03/13/19 08:00	03/14/19 11:48	5
Arsenic	ND		8.9	2.2	mg/Kg	☼	03/13/19 08:00	03/14/19 11:48	5
Iron	ND	*	89	52	mg/Kg	☼	03/13/19 08:00	03/14/19 11:48	5
Lithium	ND	*	44	2.6	mg/Kg	☼	03/13/19 08:00	03/14/19 11:48	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**11000**		59	9.5	mg/Kg	☼	03/13/19 08:00	03/14/19 13:29	5
Arsenic	**2.0**	**J**	3.0	0.89	mg/Kg	☼	03/13/19 08:00	03/14/19 13:29	5
Iron	**270**		30	17	mg/Kg	☼	03/13/19 08:00	03/14/19 13:29	5
Lithium	**1.0**	**J**	15	0.89	mg/Kg	☼	03/13/19 08:00	03/14/19 13:29	5

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**16000**		120	19	mg/Kg	☼	03/14/19 08:00	03/15/19 12:27	10
Arsenic	**0.59**	**B**	0.59	0.15	mg/Kg	☼	03/14/19 08:00	03/15/19 11:06	1
Iron	**1200**		5.9	4.9	mg/Kg	☼	03/14/19 08:00	03/15/19 11:06	1
Lithium	**1.5**	**J**	3.0	0.18	mg/Kg	☼	03/14/19 08:00	03/15/19 11:06	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**32000**		10	1.6	mg/Kg			03/19/19 10:17	1
Arsenic	**3.8**		0.50	0.13	mg/Kg			03/19/19 10:17	1

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

TestAmerica Job ID: 140-14370-1

Client Sample ID: CCR-20 (24-25)
Date Collected: 02/14/19 09:15
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-5
Matrix: Solid
Percent Solids: 84.5

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	1500		5.0	4.1	mg/Kg			03/19/19 10:17	1
Lithium	2.7		2.5	0.15	mg/Kg			03/19/19 10:17	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	39000		120	19	mg/Kg	☼	03/06/19 08:00	03/15/19 13:29	10
Arsenic	1.1	B	0.59	0.15	mg/Kg	☼	03/06/19 08:00	03/15/19 11:43	1
Iron	1900		5.9	4.9	mg/Kg	☼	03/06/19 08:00	03/15/19 11:43	1
Lithium	2.3	J	3.0	0.18	mg/Kg	☼	03/06/19 08:00	03/15/19 11:43	1

Client Sample ID: CCR-16 (24-25)
Date Collected: 02/18/19 16:00
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-9
Matrix: Solid
Percent Solids: 83.4

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**120**		48	7.7	mg/Kg	☼	03/07/19 08:00	03/12/19 13:07	4
Arsenic	ND		2.4	0.62	mg/Kg	☼	03/07/19 08:00	03/12/19 13:07	4
Iron	ND		24	14	mg/Kg	☼	03/07/19 08:00	03/12/19 13:07	4
Lithium	ND		12	0.72	mg/Kg	☼	03/07/19 08:00	03/12/19 13:07	4

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**190**	*	36	5.8	mg/Kg	☼	03/08/19 08:00	03/12/19 14:00	3
Arsenic	**0.55**	J	1.8	0.47	mg/Kg	☼	03/08/19 08:00	03/12/19 14:00	3
Iron	ND	*	18	10	mg/Kg	☼	03/08/19 08:00	03/12/19 14:00	3
Lithium	ND		9.0	0.54	mg/Kg	☼	03/08/19 08:00	03/12/19 14:00	3

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**4700**		12	2.5	mg/Kg	☼	03/11/19 08:00	03/12/19 14:52	1
Arsenic	**0.26**	J	0.60	0.16	mg/Kg	☼	03/11/19 08:00	03/12/19 14:52	1
Iron	**4.7**	J	6.0	3.5	mg/Kg	☼	03/11/19 08:00	03/12/19 14:52	1
Lithium	ND		3.0	0.18	mg/Kg	☼	03/11/19 08:00	03/12/19 14:52	1

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**2000**		12	1.9	mg/Kg	☼	03/12/19 08:00	03/14/19 11:01	1
Arsenic	**0.54**	J B	0.60	0.26	mg/Kg	☼	03/12/19 08:00	03/14/19 11:01	1
Iron	**34**		6.0	3.5	mg/Kg	☼	03/12/19 08:00	03/14/19 11:01	1
Lithium	**0.78**	J	3.0	0.18	mg/Kg	☼	03/12/19 08:00	03/14/19 11:01	1

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**250**	*	180	28	mg/Kg	☼	03/13/19 08:00	03/14/19 11:53	5
Arsenic	ND		9.0	2.3	mg/Kg	☼	03/13/19 08:00	03/14/19 11:53	5
Iron	ND	*	90	53	mg/Kg	☼	03/13/19 08:00	03/14/19 11:53	5
Lithium	ND	*	45	2.6	mg/Kg	☼	03/13/19 08:00	03/14/19 11:53	5

Method: 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**4100**		12	1.9	mg/Kg	☼	03/13/19 08:00	03/14/19 12:46	1
Arsenic	**1.0**		0.60	0.18	mg/Kg	☼	03/13/19 08:00	03/14/19 12:46	1
Iron	**240**		6.0	3.5	mg/Kg	☼	03/13/19 08:00	03/14/19 12:46	1
Lithium	**2.1**	J	3.0	0.18	mg/Kg	☼	03/13/19 08:00	03/14/19 12:46	1

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**8300**		120	19	mg/Kg	☼	03/14/19 08:00	03/15/19 12:32	10
Arsenic	**0.91**	J	1.2	0.31	mg/Kg	☼	03/14/19 08:00	03/15/19 12:47	2
Iron	**920**		6.0	4.9	mg/Kg	☼	03/14/19 08:00	03/15/19 11:12	1
Lithium	**4.8**		3.0	0.18	mg/Kg	☼	03/14/19 08:00	03/15/19 11:12	1

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**20000**		10	1.6	mg/Kg			03/19/19 10:17	1
Arsenic	**3.3**		0.50	0.13	mg/Kg			03/19/19 10:17	1

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

TestAmerica Job ID: 140-14370-1

Client Sample ID: CCR-16 (24-25)
Date Collected: 02/18/19 16:00
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-9
Matrix: Solid
Percent Solids: 83.4

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	1200		5.0	4.1	mg/Kg			03/19/19 10:17	1
Lithium	7.7		2.5	0.15	mg/Kg			03/19/19 10:17	1

Method: 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	16000		120	19	mg/Kg	☼	03/06/19 08:00	03/15/19 13:34	10
Arsenic	1.1	J	1.2	0.31	mg/Kg	☼	03/06/19 08:00	03/15/19 13:49	2
Iron	1400		6.0	4.9	mg/Kg	☼	03/06/19 08:00	03/15/19 11:48	1
Lithium	7.0		3.0	0.18	mg/Kg	☼	03/06/19 08:00	03/15/19 11:48	1

Default Detection Limits

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

TestAmerica Job ID: 140-14370-1

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Prep: 3010A
SEP: Exchangeable

Analyte	RL	MDL	Units	Method
Aluminum	10	1.6	mg/Kg	6010B SEP
Arsenic	0.50	0.13	mg/Kg	6010B SEP
Iron	5.0	2.9	mg/Kg	6010B SEP
Lithium	2.5	0.15	mg/Kg	6010B SEP

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Prep: 3010A
SEP: Carbonate

Analyte	RL	MDL	Units	Method
Aluminum	10	1.6	mg/Kg	6010B SEP
Arsenic	0.50	0.13	mg/Kg	6010B SEP
Iron	5.0	2.9	mg/Kg	6010B SEP
Lithium	2.5	0.15	mg/Kg	6010B SEP

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Prep: 3010A
SEP: Non-Crystalline

Analyte	RL	MDL	Units	Method
Aluminum	10	2.1	mg/Kg	6010B SEP
Arsenic	0.50	0.13	mg/Kg	6010B SEP
Iron	5.0	2.9	mg/Kg	6010B SEP
Lithium	2.5	0.15	mg/Kg	6010B SEP

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Prep: 3010A
SEP: Metal Hydroxide

Analyte	RL	MDL	Units	Method
Aluminum	10	1.6	mg/Kg	6010B SEP
Arsenic	0.50	0.22	mg/Kg	6010B SEP
Iron	5.0	2.9	mg/Kg	6010B SEP
Lithium	2.5	0.15	mg/Kg	6010B SEP

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Prep: 3010A
SEP: Organic-Bound

Analyte	RL	MDL	Units	Method
Aluminum	30	4.7	mg/Kg	6010B SEP
Arsenic	1.5	0.38	mg/Kg	6010B SEP
Iron	15	8.8	mg/Kg	6010B SEP
Lithium	7.5	0.44	mg/Kg	6010B SEP

Method: 6010B SEP - SEP Metals (ICP) - Step 6

SEP: Acid/Sulfide

Analyte	RL	MDL	Units	Method
Aluminum	10	1.6	mg/Kg	6010B SEP
Arsenic	0.50	0.15	mg/Kg	6010B SEP

Default Detection Limits

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

TestAmerica Job ID: 140-14370-1

Method: 6010B SEP - SEP Metals (ICP) - Step 6 (Continued)

SEP: Acid/Sulfide

Analyte	RL	MDL	Units	Method
Iron	5.0	2.9	mg/Kg	6010B SEP
Lithium	2.5	0.15	mg/Kg	6010B SEP

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Prep: Residual

Analyte	RL	MDL	Units	Method
Aluminum	10	1.6	mg/Kg	6010B SEP
Arsenic	0.50	0.13	mg/Kg	6010B SEP
Iron	5.0	4.1	mg/Kg	6010B SEP
Lithium	2.5	0.15	mg/Kg	6010B SEP

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	RL	MDL	Units	Method
Aluminum	10	1.6	mg/Kg	6010B SEP
Arsenic	0.50	0.13	mg/Kg	6010B SEP
Iron	5.0	4.1	mg/Kg	6010B SEP
Lithium	2.5	0.15	mg/Kg	6010B SEP

Method: 6010B - SEP Metals (ICP) - Total

Prep: Total

Analyte	RL	MDL	Units	Method
Aluminum	10	1.6	mg/Kg	6010B
Arsenic	0.50	0.13	mg/Kg	6010B
Iron	5.0	4.1	mg/Kg	6010B
Lithium	2.5	0.15	mg/Kg	6010B

Method: 6010B - SEP Metals (ICP) - Total

Lab Sample ID: MB 140-28148/5-A
Matrix: Solid
Analysis Batch: 28466

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 28148

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		03/06/19 08:00	03/15/19 10:46	1
Arsenic	0.170	J	0.50	0.13	mg/Kg		03/06/19 08:00	03/15/19 10:46	1
Iron	ND		5.0	4.1	mg/Kg		03/06/19 08:00	03/15/19 10:46	1
Lithium	ND		2.5	0.15	mg/Kg		03/06/19 08:00	03/15/19 10:46	1

Lab Sample ID: LCS 140-28148/6-A
Matrix: Solid
Analysis Batch: 28466

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 28148

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	99.2		mg/Kg		99	75 - 125
Arsenic	5.00	5.29		mg/Kg		106	75 - 125
Iron	50.0	53.2		mg/Kg		106	75 - 125
Lithium	5.00	5.20		mg/Kg		104	75 - 125

Lab Sample ID: LCSD 140-28148/7-A
Matrix: Solid
Analysis Batch: 28466

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 28148

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	98.3		mg/Kg		98	75 - 125	1	30
Arsenic	5.00	5.28		mg/Kg		106	75 - 125	0	30
Iron	50.0	52.3		mg/Kg		105	75 - 125	2	30
Lithium	5.00	5.18		mg/Kg		104	75 - 125	0	30

Lab Sample ID: 140-14370-9 DU
Matrix: Solid
Analysis Batch: 28466

Client Sample ID: CCR-16 (24-25)
Prep Type: Total/NA
Prep Batch: 28148

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Iron	1400		1180		mg/Kg	☼	14	30
Lithium	7.0		6.74		mg/Kg	☼	3	30

Lab Sample ID: 140-14370-9 DU
Matrix: Solid
Analysis Batch: 28466

Client Sample ID: CCR-16 (24-25)
Prep Type: Total/NA
Prep Batch: 28148

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	16000		19500		mg/Kg	☼	21	30

Lab Sample ID: 140-14370-9 DU
Matrix: Solid
Analysis Batch: 28466

Client Sample ID: CCR-16 (24-25)
Prep Type: Total/NA
Prep Batch: 28148

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	1.1	J	1.96	F5	mg/Kg	☼	56	30

Method: 6010B SEP - SEP Metals (ICP)

Lab Sample ID: MB 140-28149/5-B ^4
Matrix: Solid
Analysis Batch: 28359

Client Sample ID: Method Blank
Prep Type: Step 1
Prep Batch: 28196

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		40	6.4	mg/Kg		03/07/19 08:00	03/12/19 12:42	4
Arsenic	ND		2.0	0.52	mg/Kg		03/07/19 08:00	03/12/19 12:42	4
Iron	ND		20	12	mg/Kg		03/07/19 08:00	03/12/19 12:42	4
Lithium	ND		10	0.60	mg/Kg		03/07/19 08:00	03/12/19 12:42	4

Lab Sample ID: LCS 140-28149/6-B ^5
Matrix: Solid
Analysis Batch: 28359

Client Sample ID: Lab Control Sample
Prep Type: Step 1
Prep Batch: 28196

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	99.3		mg/Kg		99	75 - 125
Arsenic	5.00	5.10		mg/Kg		102	75 - 125
Iron	50.0	53.7		mg/Kg		107	75 - 125
Lithium	5.00	4.69	J	mg/Kg		94	75 - 125

Lab Sample ID: LCSD 140-28149/7-B ^5
Matrix: Solid
Analysis Batch: 28359

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 1
Prep Batch: 28196

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	98.7		mg/Kg		99	75 - 125	1	30
Arsenic	5.00	5.22		mg/Kg		104	75 - 125	2	30
Iron	50.0	59.1		mg/Kg		118	75 - 125	10	30
Lithium	5.00	4.77	J	mg/Kg		95	75 - 125	2	30

Lab Sample ID: 140-14370-9 DU
Matrix: Solid
Analysis Batch: 28359

Client Sample ID: CCR-16 (24-25)
Prep Type: Step 1
Prep Batch: 28196

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	120		112		mg/Kg	☼	4	30
Arsenic	ND		ND		mg/Kg	☼	NC	30
Iron	ND		ND		mg/Kg	☼	NC	30
Lithium	ND		ND		mg/Kg	☼	NC	30

Lab Sample ID: MB 140-28197/5-B ^3
Matrix: Solid
Analysis Batch: 28359

Client Sample ID: Method Blank
Prep Type: Step 2
Prep Batch: 28225

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		30	4.8	mg/Kg		03/08/19 08:00	03/12/19 13:33	3
Arsenic	ND		1.5	0.39	mg/Kg		03/08/19 08:00	03/12/19 13:33	3
Iron	ND		15	8.7	mg/Kg		03/08/19 08:00	03/12/19 13:33	3
Lithium	ND		7.5	0.45	mg/Kg		03/08/19 08:00	03/12/19 13:33	3

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-28197/6-B ^5
Matrix: Solid
Analysis Batch: 28359

Client Sample ID: Lab Control Sample
Prep Type: Step 2
Prep Batch: 28225

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	ND	*	mg/Kg		3	75 - 125
Arsenic	5.00	4.24		mg/Kg		85	75 - 125
Iron	50.0	ND	*	mg/Kg		6	75 - 125
Lithium	5.00	4.50	J	mg/Kg		90	75 - 125

Lab Sample ID: LCSD 140-28197/7-B ^5
Matrix: Solid
Analysis Batch: 28359

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 2
Prep Batch: 28225

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	ND	*	mg/Kg		0.7	75 - 125	133	30
Arsenic	5.00	3.97		mg/Kg		79	75 - 125	7	30
Iron	50.0	ND	*	mg/Kg		4	75 - 125	37	30
Lithium	5.00	4.63	J	mg/Kg		93	75 - 125	3	30

Lab Sample ID: 140-14370-9 DU
Matrix: Solid
Analysis Batch: 28359

Client Sample ID: CCR-16 (24-25)
Prep Type: Step 2
Prep Batch: 28225

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	190	*	190	*	mg/Kg	☼	2	30
Arsenic	0.55	J	ND		mg/Kg	☼	NC	30
Iron	ND	*	ND	*	mg/Kg	☼	NC	30
Lithium	ND		ND		mg/Kg	☼	NC	30

Lab Sample ID: MB 140-28237/5-B
Matrix: Solid
Analysis Batch: 28359

Client Sample ID: Method Blank
Prep Type: Step 3
Prep Batch: 28258

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	2.1	mg/Kg		03/11/19 08:00	03/12/19 14:26	1
Arsenic	ND		0.50	0.13	mg/Kg		03/11/19 08:00	03/12/19 14:26	1
Iron	ND		5.0	2.9	mg/Kg		03/11/19 08:00	03/12/19 14:26	1
Lithium	ND		2.5	0.15	mg/Kg		03/11/19 08:00	03/12/19 14:26	1

Lab Sample ID: LCS 140-28237/6-B
Matrix: Solid
Analysis Batch: 28359

Client Sample ID: Lab Control Sample
Prep Type: Step 3
Prep Batch: 28258

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	93.0		mg/Kg		93	75 - 125
Arsenic	5.00	4.91		mg/Kg		98	75 - 125
Iron	50.0	49.0		mg/Kg		98	75 - 125
Lithium	5.00	4.92		mg/Kg		98	75 - 125

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCSD 140-28237/7-B
Matrix: Solid
Analysis Batch: 28359

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 3
Prep Batch: 28258

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum			100	95.0		mg/Kg		95	75 - 125	2	30
Arsenic			5.00	4.95		mg/Kg		99	75 - 125	1	30
Iron			50.0	49.4		mg/Kg		99	75 - 125	1	30
Lithium			5.00	4.95		mg/Kg		99	75 - 125	1	30

Lab Sample ID: 140-14370-9 DU
Matrix: Solid
Analysis Batch: 28359

Client Sample ID: CCR-16 (24-25)
Prep Type: Step 3
Prep Batch: 28258

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	4700			4570		mg/Kg	☼			2	30
Arsenic	0.26	J		0.203	J	mg/Kg	☼			25	30
Iron	4.7	J		4.91	J	mg/Kg	☼			5	30
Lithium	ND			ND		mg/Kg	☼			NC	30

Lab Sample ID: MB 140-28259/5-B
Matrix: Solid
Analysis Batch: 28437

Client Sample ID: Method Blank
Prep Type: Step 4
Prep Batch: 28299

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		03/12/19 08:00	03/14/19 10:36	1
Arsenic	0.589		0.50	0.22	mg/Kg		03/12/19 08:00	03/14/19 10:36	1
Iron	ND		5.0	2.9	mg/Kg		03/12/19 08:00	03/14/19 10:36	1
Lithium	ND		2.5	0.15	mg/Kg		03/12/19 08:00	03/14/19 10:36	1

Lab Sample ID: LCS 140-28259/6-B
Matrix: Solid
Analysis Batch: 28437

Client Sample ID: Lab Control Sample
Prep Type: Step 4
Prep Batch: 28299

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum			100	96.5		mg/Kg		97	75 - 125
Arsenic			5.00	5.40		mg/Kg		108	75 - 125
Iron			50.0	49.5		mg/Kg		99	75 - 125
Lithium			5.00	5.15		mg/Kg		103	75 - 125

Lab Sample ID: LCSD 140-28259/7-B
Matrix: Solid
Analysis Batch: 28437

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 4
Prep Batch: 28299

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum			100	97.5		mg/Kg		98	75 - 125	1	30
Arsenic			5.00	5.56		mg/Kg		111	75 - 125	3	30
Iron			50.0	49.7		mg/Kg		99	75 - 125	0	30
Lithium			5.00	5.16		mg/Kg		103	75 - 125	0	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: 140-14370-9 DU
Matrix: Solid
Analysis Batch: 28437

Client Sample ID: CCR-16 (24-25)
Prep Type: Step 4
Prep Batch: 28299

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	2000			1990		mg/Kg	☼			0.6	30
Arsenic	0.54	J B		0.679		mg/Kg	☼			24	30
Iron	34			30.3		mg/Kg	☼			10	30
Lithium	0.78	J		0.734	J	mg/Kg	☼			6	30

Lab Sample ID: MB 140-28300/5-B ^5
Matrix: Solid
Analysis Batch: 28437

Client Sample ID: Method Blank
Prep Type: Step 5
Prep Batch: 28360

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		150	24	mg/Kg		03/13/19 08:00	03/14/19 11:27	5
Arsenic	ND		7.5	1.9	mg/Kg		03/13/19 08:00	03/14/19 11:27	5
Iron	ND		75	44	mg/Kg		03/13/19 08:00	03/14/19 11:27	5
Lithium	ND		38	2.2	mg/Kg		03/13/19 08:00	03/14/19 11:27	5

Lab Sample ID: LCS 140-28300/6-B ^5
Matrix: Solid
Analysis Batch: 28437

Client Sample ID: Lab Control Sample
Prep Type: Step 5
Prep Batch: 28360

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Aluminum			300	ND	*	mg/Kg		5	75 - 125		
Arsenic			15.0	13.0		mg/Kg		87	75 - 125		
Iron			150	ND	*	mg/Kg		0.8	75 - 125		
Lithium			15.0	19.2	J *	mg/Kg		128	75 - 125		

Lab Sample ID: LCSD 140-28300/7-B ^5
Matrix: Solid
Analysis Batch: 28437

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 5
Prep Batch: 28360

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum			300	ND	*	mg/Kg		7	75 - 125	22	30
Arsenic			15.0	12.8		mg/Kg		85	75 - 125	2	30
Iron			150	ND	*	mg/Kg		1	75 - 125	54	30
Lithium			15.0	19.8	J *	mg/Kg		132	75 - 125	3	30

Lab Sample ID: 140-14370-9 DU
Matrix: Solid
Analysis Batch: 28437

Client Sample ID: CCR-16 (24-25)
Prep Type: Step 5
Prep Batch: 28360

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Aluminum	250	*		251	*	mg/Kg	☼			1	30
Arsenic	ND			ND		mg/Kg	☼			NC	30
Iron	ND	*		ND	*	mg/Kg	☼			NC	30
Lithium	ND	*		ND	*	mg/Kg	☼			NC	30

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: MB 140-28361/5-A
Matrix: Solid
Analysis Batch: 28437

Client Sample ID: Method Blank
Prep Type: Step 6
Prep Batch: 28361

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		03/13/19 08:00	03/14/19 12:19	1
Arsenic	ND		0.50	0.15	mg/Kg		03/13/19 08:00	03/14/19 12:19	1
Iron	ND		5.0	2.9	mg/Kg		03/13/19 08:00	03/14/19 12:19	1
Lithium	ND		2.5	0.15	mg/Kg		03/13/19 08:00	03/14/19 12:19	1

Lab Sample ID: LCS 140-28361/6-A
Matrix: Solid
Analysis Batch: 28437

Client Sample ID: Lab Control Sample
Prep Type: Step 6
Prep Batch: 28361

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	93.0		mg/Kg		93	75 - 125
Arsenic	5.00	4.96		mg/Kg		99	75 - 125
Iron	50.0	47.4		mg/Kg		95	75 - 125
Lithium	5.00	4.84		mg/Kg		97	75 - 125

Lab Sample ID: LCSD 140-28361/7-A
Matrix: Solid
Analysis Batch: 28437

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 6
Prep Batch: 28361

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	96.3		mg/Kg		96	75 - 125	3	30
Arsenic	5.00	5.13		mg/Kg		103	75 - 125	3	30
Iron	50.0	48.5		mg/Kg		97	75 - 125	2	30
Lithium	5.00	5.01		mg/Kg		100	75 - 125	4	30

Lab Sample ID: 140-14370-9 DU
Matrix: Solid
Analysis Batch: 28437

Client Sample ID: CCR-16 (24-25)
Prep Type: Step 6
Prep Batch: 28361

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	4100		4360		mg/Kg	☼	6	30
Arsenic	1.0		1.04		mg/Kg	☼	3	30
Iron	240		251		mg/Kg	☼	3	30
Lithium	2.1	J	2.17	J	mg/Kg	☼	0.9	30

Lab Sample ID: MB 140-28398/5-A
Matrix: Solid
Analysis Batch: 28466

Client Sample ID: Method Blank
Prep Type: Step 7
Prep Batch: 28398

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		10	1.6	mg/Kg		03/14/19 08:00	03/15/19 10:30	1
Arsenic	0.167	J	0.50	0.13	mg/Kg		03/14/19 08:00	03/15/19 10:30	1
Iron	ND		5.0	4.1	mg/Kg		03/14/19 08:00	03/15/19 10:30	1
Lithium	ND		2.5	0.15	mg/Kg		03/14/19 08:00	03/15/19 10:30	1

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-28398/6-A
Matrix: Solid
Analysis Batch: 28466

Client Sample ID: Lab Control Sample
Prep Type: Step 7
Prep Batch: 28398

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	100	99.9		mg/Kg		100	75 - 125
Arsenic	5.00	5.33		mg/Kg		107	75 - 125
Iron	50.0	53.3		mg/Kg		107	75 - 125
Lithium	5.00	5.29		mg/Kg		106	75 - 125

Lab Sample ID: LCSD 140-28398/7-A
Matrix: Solid
Analysis Batch: 28466

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 7
Prep Batch: 28398

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	100	97.0		mg/Kg		97	75 - 125	3	30
Arsenic	5.00	5.21		mg/Kg		104	75 - 125	2	30
Iron	50.0	51.3		mg/Kg		103	75 - 125	4	30
Lithium	5.00	5.17		mg/Kg		103	75 - 125	2	30

Lab Sample ID: 140-14370-9 DU
Matrix: Solid
Analysis Batch: 28466

Client Sample ID: CCR-16 (24-25)
Prep Type: Step 7
Prep Batch: 28398

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Iron	920		1160		mg/Kg	☼	23	30
Lithium	4.8		6.48		mg/Kg	☼	30	30

Lab Sample ID: 140-14370-9 DU
Matrix: Solid
Analysis Batch: 28466

Client Sample ID: CCR-16 (24-25)
Prep Type: Step 7
Prep Batch: 28398

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	8300		10900		mg/Kg	☼	26	30

Lab Sample ID: 140-14370-9 DU
Matrix: Solid
Analysis Batch: 28466

Client Sample ID: CCR-16 (24-25)
Prep Type: Step 7
Prep Batch: 28398

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	0.91	J	0.843	J	mg/Kg	☼	7	30

Metals

Prep Batch: 28148

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-14370-1	CCR-4A (24-25)	Total/NA	Solid	Total	
140-14370-5	CCR-20 (24-25)	Total/NA	Solid	Total	
140-14370-9	CCR-16 (24-25)	Total/NA	Solid	Total	
MB 140-28148/5-A	Method Blank	Total/NA	Solid	Total	
LCS 140-28148/6-A	Lab Control Sample	Total/NA	Solid	Total	
LCSD 140-28148/7-A	Lab Control Sample Dup	Total/NA	Solid	Total	
140-14370-9 DU	CCR-16 (24-25)	Total/NA	Solid	Total	

SEP Batch: 28149

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-14370-1	CCR-4A (24-25)	Step 1	Solid	Exchangeable	
140-14370-5	CCR-20 (24-25)	Step 1	Solid	Exchangeable	
140-14370-9	CCR-16 (24-25)	Step 1	Solid	Exchangeable	
MB 140-28149/5-B ^4	Method Blank	Step 1	Solid	Exchangeable	
LCS 140-28149/6-B ^5	Lab Control Sample	Step 1	Solid	Exchangeable	
LCSD 140-28149/7-B ^5	Lab Control Sample Dup	Step 1	Solid	Exchangeable	
140-14370-9 DU	CCR-16 (24-25)	Step 1	Solid	Exchangeable	

Prep Batch: 28196

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-14370-1	CCR-4A (24-25)	Step 1	Solid	3010A	28149
140-14370-5	CCR-20 (24-25)	Step 1	Solid	3010A	28149
140-14370-9	CCR-16 (24-25)	Step 1	Solid	3010A	28149
MB 140-28149/5-B ^4	Method Blank	Step 1	Solid	3010A	28149
LCS 140-28149/6-B ^5	Lab Control Sample	Step 1	Solid	3010A	28149
LCSD 140-28149/7-B ^5	Lab Control Sample Dup	Step 1	Solid	3010A	28149
140-14370-9 DU	CCR-16 (24-25)	Step 1	Solid	3010A	28149

SEP Batch: 28197

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-14370-1	CCR-4A (24-25)	Step 2	Solid	Carbonate	
140-14370-5	CCR-20 (24-25)	Step 2	Solid	Carbonate	
140-14370-9	CCR-16 (24-25)	Step 2	Solid	Carbonate	
MB 140-28197/5-B ^3	Method Blank	Step 2	Solid	Carbonate	
LCS 140-28197/6-B ^5	Lab Control Sample	Step 2	Solid	Carbonate	
LCSD 140-28197/7-B ^5	Lab Control Sample Dup	Step 2	Solid	Carbonate	
140-14370-9 DU	CCR-16 (24-25)	Step 2	Solid	Carbonate	

Prep Batch: 28225

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-14370-1	CCR-4A (24-25)	Step 2	Solid	3010A	28197
140-14370-5	CCR-20 (24-25)	Step 2	Solid	3010A	28197
140-14370-9	CCR-16 (24-25)	Step 2	Solid	3010A	28197
MB 140-28197/5-B ^3	Method Blank	Step 2	Solid	3010A	28197
LCS 140-28197/6-B ^5	Lab Control Sample	Step 2	Solid	3010A	28197
LCSD 140-28197/7-B ^5	Lab Control Sample Dup	Step 2	Solid	3010A	28197
140-14370-9 DU	CCR-16 (24-25)	Step 2	Solid	3010A	28197

SEP Batch: 28237

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-14370-1	CCR-4A (24-25)	Step 3	Solid	Non-Crystalline	

Metals (Continued)

SEP Batch: 28237 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-14370-5	CCR-20 (24-25)	Step 3	Solid	Non-Crystalline	
140-14370-9	CCR-16 (24-25)	Step 3	Solid	Non-Crystalline	
MB 140-28237/5-B	Method Blank	Step 3	Solid	Non-Crystalline	
LCS 140-28237/6-B	Lab Control Sample	Step 3	Solid	Non-Crystalline	
LCSD 140-28237/7-B	Lab Control Sample Dup	Step 3	Solid	Non-Crystalline	
140-14370-9 DU	CCR-16 (24-25)	Step 3	Solid	Non-Crystalline	

Prep Batch: 28258

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-14370-1	CCR-4A (24-25)	Step 3	Solid	3010A	28237
140-14370-5	CCR-20 (24-25)	Step 3	Solid	3010A	28237
140-14370-9	CCR-16 (24-25)	Step 3	Solid	3010A	28237
MB 140-28237/5-B	Method Blank	Step 3	Solid	3010A	28237
LCS 140-28237/6-B	Lab Control Sample	Step 3	Solid	3010A	28237
LCSD 140-28237/7-B	Lab Control Sample Dup	Step 3	Solid	3010A	28237
140-14370-9 DU	CCR-16 (24-25)	Step 3	Solid	3010A	28237

SEP Batch: 28259

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-14370-1	CCR-4A (24-25)	Step 4	Solid	Metal Hydroxide	
140-14370-5	CCR-20 (24-25)	Step 4	Solid	Metal Hydroxide	
140-14370-9	CCR-16 (24-25)	Step 4	Solid	Metal Hydroxide	
MB 140-28259/5-B	Method Blank	Step 4	Solid	Metal Hydroxide	
LCS 140-28259/6-B	Lab Control Sample	Step 4	Solid	Metal Hydroxide	
LCSD 140-28259/7-B	Lab Control Sample Dup	Step 4	Solid	Metal Hydroxide	
140-14370-9 DU	CCR-16 (24-25)	Step 4	Solid	Metal Hydroxide	

Prep Batch: 28299

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-14370-1	CCR-4A (24-25)	Step 4	Solid	3010A	28259
140-14370-5	CCR-20 (24-25)	Step 4	Solid	3010A	28259
140-14370-9	CCR-16 (24-25)	Step 4	Solid	3010A	28259
MB 140-28259/5-B	Method Blank	Step 4	Solid	3010A	28259
LCS 140-28259/6-B	Lab Control Sample	Step 4	Solid	3010A	28259
LCSD 140-28259/7-B	Lab Control Sample Dup	Step 4	Solid	3010A	28259
140-14370-9 DU	CCR-16 (24-25)	Step 4	Solid	3010A	28259

SEP Batch: 28300

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-14370-1	CCR-4A (24-25)	Step 5	Solid	Organic-Bound	
140-14370-5	CCR-20 (24-25)	Step 5	Solid	Organic-Bound	
140-14370-9	CCR-16 (24-25)	Step 5	Solid	Organic-Bound	
MB 140-28300/5-B ^5	Method Blank	Step 5	Solid	Organic-Bound	
LCS 140-28300/6-B ^5	Lab Control Sample	Step 5	Solid	Organic-Bound	
LCSD 140-28300/7-B ^5	Lab Control Sample Dup	Step 5	Solid	Organic-Bound	
140-14370-9 DU	CCR-16 (24-25)	Step 5	Solid	Organic-Bound	

Analysis Batch: 28359

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-14370-1	CCR-4A (24-25)	Step 1	Solid	6010B SEP	28196
140-14370-1	CCR-4A (24-25)	Step 2	Solid	6010B SEP	28225

Metals (Continued)

Analysis Batch: 28359 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-14370-1	CCR-4A (24-25)	Step 3	Solid	6010B SEP	28258
140-14370-5	CCR-20 (24-25)	Step 1	Solid	6010B SEP	28196
140-14370-5	CCR-20 (24-25)	Step 2	Solid	6010B SEP	28225
140-14370-5	CCR-20 (24-25)	Step 3	Solid	6010B SEP	28258
140-14370-9	CCR-16 (24-25)	Step 1	Solid	6010B SEP	28196
140-14370-9	CCR-16 (24-25)	Step 2	Solid	6010B SEP	28225
140-14370-9	CCR-16 (24-25)	Step 3	Solid	6010B SEP	28258
MB 140-28149/5-B ^4	Method Blank	Step 1	Solid	6010B SEP	28196
MB 140-28197/5-B ^3	Method Blank	Step 2	Solid	6010B SEP	28225
MB 140-28237/5-B	Method Blank	Step 3	Solid	6010B SEP	28258
LCS 140-28149/6-B ^5	Lab Control Sample	Step 1	Solid	6010B SEP	28196
LCS 140-28197/6-B ^5	Lab Control Sample	Step 2	Solid	6010B SEP	28225
LCS 140-28237/6-B	Lab Control Sample	Step 3	Solid	6010B SEP	28258
LCSD 140-28149/7-B ^5	Lab Control Sample Dup	Step 1	Solid	6010B SEP	28196
LCSD 140-28197/7-B ^5	Lab Control Sample Dup	Step 2	Solid	6010B SEP	28225
LCSD 140-28237/7-B	Lab Control Sample Dup	Step 3	Solid	6010B SEP	28258
140-14370-9 DU	CCR-16 (24-25)	Step 1	Solid	6010B SEP	28196
140-14370-9 DU	CCR-16 (24-25)	Step 2	Solid	6010B SEP	28225
140-14370-9 DU	CCR-16 (24-25)	Step 3	Solid	6010B SEP	28258

Prep Batch: 28360

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-14370-1	CCR-4A (24-25)	Step 5	Solid	3010A	28300
140-14370-5	CCR-20 (24-25)	Step 5	Solid	3010A	28300
140-14370-9	CCR-16 (24-25)	Step 5	Solid	3010A	28300
MB 140-28300/5-B ^5	Method Blank	Step 5	Solid	3010A	28300
LCS 140-28300/6-B ^5	Lab Control Sample	Step 5	Solid	3010A	28300
LCSD 140-28300/7-B ^5	Lab Control Sample Dup	Step 5	Solid	3010A	28300
140-14370-9 DU	CCR-16 (24-25)	Step 5	Solid	3010A	28300

SEP Batch: 28361

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-14370-1	CCR-4A (24-25)	Step 6	Solid	Acid/Sulfide	
140-14370-5	CCR-20 (24-25)	Step 6	Solid	Acid/Sulfide	
140-14370-9	CCR-16 (24-25)	Step 6	Solid	Acid/Sulfide	
MB 140-28361/5-A	Method Blank	Step 6	Solid	Acid/Sulfide	
LCS 140-28361/6-A	Lab Control Sample	Step 6	Solid	Acid/Sulfide	
LCSD 140-28361/7-A	Lab Control Sample Dup	Step 6	Solid	Acid/Sulfide	
140-14370-9 DU	CCR-16 (24-25)	Step 6	Solid	Acid/Sulfide	

Prep Batch: 28398

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-14370-1	CCR-4A (24-25)	Step 7	Solid	Residual	
140-14370-5	CCR-20 (24-25)	Step 7	Solid	Residual	
140-14370-9	CCR-16 (24-25)	Step 7	Solid	Residual	
MB 140-28398/5-A	Method Blank	Step 7	Solid	Residual	
LCS 140-28398/6-A	Lab Control Sample	Step 7	Solid	Residual	
LCSD 140-28398/7-A	Lab Control Sample Dup	Step 7	Solid	Residual	
140-14370-9 DU	CCR-16 (24-25)	Step 7	Solid	Residual	

Metals (Continued)

Analysis Batch: 28437

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-14370-1	CCR-4A (24-25)	Step 4	Solid	6010B SEP	28299
140-14370-1	CCR-4A (24-25)	Step 5	Solid	6010B SEP	28360
140-14370-1	CCR-4A (24-25)	Step 6	Solid	6010B SEP	28361
140-14370-5	CCR-20 (24-25)	Step 4	Solid	6010B SEP	28299
140-14370-5	CCR-20 (24-25)	Step 5	Solid	6010B SEP	28360
140-14370-5	CCR-20 (24-25)	Step 6	Solid	6010B SEP	28361
140-14370-9	CCR-16 (24-25)	Step 4	Solid	6010B SEP	28299
140-14370-9	CCR-16 (24-25)	Step 5	Solid	6010B SEP	28360
140-14370-9	CCR-16 (24-25)	Step 6	Solid	6010B SEP	28361
MB 140-28259/5-B	Method Blank	Step 4	Solid	6010B SEP	28299
MB 140-28300/5-B ^5	Method Blank	Step 5	Solid	6010B SEP	28360
MB 140-28361/5-A	Method Blank	Step 6	Solid	6010B SEP	28361
LCS 140-28259/6-B	Lab Control Sample	Step 4	Solid	6010B SEP	28299
LCS 140-28300/6-B ^5	Lab Control Sample	Step 5	Solid	6010B SEP	28360
LCS 140-28361/6-A	Lab Control Sample	Step 6	Solid	6010B SEP	28361
LCSD 140-28259/7-B	Lab Control Sample Dup	Step 4	Solid	6010B SEP	28299
LCSD 140-28300/7-B ^5	Lab Control Sample Dup	Step 5	Solid	6010B SEP	28360
LCSD 140-28361/7-A	Lab Control Sample Dup	Step 6	Solid	6010B SEP	28361
140-14370-9 DU	CCR-16 (24-25)	Step 4	Solid	6010B SEP	28299
140-14370-9 DU	CCR-16 (24-25)	Step 5	Solid	6010B SEP	28360
140-14370-9 DU	CCR-16 (24-25)	Step 6	Solid	6010B SEP	28361

Analysis Batch: 28466

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-14370-1	CCR-4A (24-25)	Step 7	Solid	6010B SEP	28398
140-14370-1	CCR-4A (24-25)	Step 7	Solid	6010B SEP	28398
140-14370-1	CCR-4A (24-25)	Total/NA	Solid	6010B	28148
140-14370-1	CCR-4A (24-25)	Total/NA	Solid	6010B	28148
140-14370-5	CCR-20 (24-25)	Step 7	Solid	6010B SEP	28398
140-14370-5	CCR-20 (24-25)	Step 7	Solid	6010B SEP	28398
140-14370-5	CCR-20 (24-25)	Total/NA	Solid	6010B	28148
140-14370-5	CCR-20 (24-25)	Total/NA	Solid	6010B	28148
140-14370-9	CCR-16 (24-25)	Step 7	Solid	6010B SEP	28398
140-14370-9	CCR-16 (24-25)	Step 7	Solid	6010B SEP	28398
140-14370-9	CCR-16 (24-25)	Step 7	Solid	6010B SEP	28398
140-14370-9	CCR-16 (24-25)	Total/NA	Solid	6010B	28148
140-14370-9	CCR-16 (24-25)	Total/NA	Solid	6010B	28148
140-14370-9	CCR-16 (24-25)	Total/NA	Solid	6010B	28148
MB 140-28148/5-A	Method Blank	Total/NA	Solid	6010B	28148
MB 140-28398/5-A	Method Blank	Step 7	Solid	6010B SEP	28398
LCS 140-28148/6-A	Lab Control Sample	Total/NA	Solid	6010B	28148
LCS 140-28398/6-A	Lab Control Sample	Step 7	Solid	6010B SEP	28398
LCSD 140-28148/7-A	Lab Control Sample Dup	Total/NA	Solid	6010B	28148
LCSD 140-28398/7-A	Lab Control Sample Dup	Step 7	Solid	6010B SEP	28398
140-14370-9 DU	CCR-16 (24-25)	Step 7	Solid	6010B SEP	28398
140-14370-9 DU	CCR-16 (24-25)	Step 7	Solid	6010B SEP	28398
140-14370-9 DU	CCR-16 (24-25)	Step 7	Solid	6010B SEP	28398
140-14370-9 DU	CCR-16 (24-25)	Total/NA	Solid	6010B	28148
140-14370-9 DU	CCR-16 (24-25)	Total/NA	Solid	6010B	28148
140-14370-9 DU	CCR-16 (24-25)	Total/NA	Solid	6010B	28148

Metals (Continued)

Analysis Batch: 28544

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-14370-1	CCR-4A (24-25)	Sum of Steps 1-7	Solid	6010B SEP	
140-14370-5	CCR-20 (24-25)	Sum of Steps 1-7	Solid	6010B SEP	
140-14370-9	CCR-16 (24-25)	Sum of Steps 1-7	Solid	6010B SEP	

Client Sample ID: CCR-4A (24-25)

Date Collected: 02/11/19 15:00
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			28544	03/19/19 10:17	KNC	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: CCR-4A (24-25)

Date Collected: 02/11/19 15:00
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-1
Matrix: Solid
Percent Solids: 64.6

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	28148	03/06/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		5			28466	03/15/19 13:18	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	28148	03/06/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			28466	03/15/19 13:23	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	28149	03/06/19 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	28196	03/07/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			28359	03/12/19 12:57	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	28197	03/07/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	28225	03/08/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			28359	03/12/19 13:49	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	28237	03/08/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	28258	03/11/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			28359	03/12/19 14:41	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	28259	03/11/19 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	28299	03/12/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			28437	03/14/19 10:51	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	28300	03/12/19 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	28360	03/13/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			28437	03/14/19 11:42	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	28361	03/13/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		20			28437	03/14/19 13:42	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	28398	03/14/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			28466	03/15/19 11:01	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	28398	03/14/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			28466	03/15/19 12:22	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: CCR-20 (24-25)

Date Collected: 02/14/19 09:15
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-5
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			28544	03/19/19 10:17	KNC	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: CCR-20 (24-25)

Date Collected: 02/14/19 09:15
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-5
Matrix: Solid
Percent Solids: 84.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	28148	03/06/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			28466	03/15/19 11:43	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	28148	03/06/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			28466	03/15/19 13:29	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	28149	03/06/19 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	28196	03/07/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			28359	03/12/19 13:02	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	28197	03/07/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	28225	03/08/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			28359	03/12/19 13:54	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	28237	03/08/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	28258	03/11/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			28359	03/12/19 14:46	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	28259	03/11/19 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	28299	03/12/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			28437	03/14/19 10:56	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	28300	03/12/19 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	28360	03/13/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			28437	03/14/19 11:48	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	28361	03/13/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		5			28437	03/14/19 13:29	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	28398	03/14/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			28466	03/15/19 11:06	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	28398	03/14/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			28466	03/15/19 12:27	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

TestAmerica Job ID: 140-14370-1

Client Sample ID: CCR-16 (24-25)

Date Collected: 02/18/19 16:00
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-9
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			28544	03/19/19 10:17	KNC	TAL KNX
	Instrument ID: NOEQUIP									

Client Sample ID: CCR-16 (24-25)

Date Collected: 02/18/19 16:00
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-9
Matrix: Solid
Percent Solids: 83.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	28148	03/06/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			28466	03/15/19 11:48	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	28148	03/06/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			28466	03/15/19 13:34	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	28148	03/06/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			28466	03/15/19 13:49	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	28149	03/06/19 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	28196	03/07/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			28359	03/12/19 13:07	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	28197	03/07/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	28225	03/08/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			28359	03/12/19 14:00	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	28237	03/08/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	28258	03/11/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			28359	03/12/19 14:52	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	28259	03/11/19 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	28299	03/12/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			28437	03/14/19 11:01	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	28300	03/12/19 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	28360	03/13/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			28437	03/14/19 11:53	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	28361	03/13/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			28437	03/14/19 12:46	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	28398	03/14/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			28466	03/15/19 11:12	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	28398	03/14/19 08:00	KNC	TAL KNX

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

TestAmerica Job ID: 140-14370-1

Client Sample ID: CCR-16 (24-25)

Date Collected: 02/18/19 16:00
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-9
Matrix: Solid
Percent Solids: 83.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Analysis	6010B SEP		10			28466	03/15/19 12:32	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	28398	03/14/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			28466	03/15/19 12:47	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank

Date Collected: N/A
Date Received: N/A

Lab Sample ID: MB 140-28148/5-A
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	28148	03/06/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			28466	03/15/19 10:46	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank

Date Collected: N/A
Date Received: N/A

Lab Sample ID: MB 140-28149/5-B ^4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	28149	03/06/19 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	28196	03/07/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			28359	03/12/19 12:42	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank

Date Collected: N/A
Date Received: N/A

Lab Sample ID: MB 140-28197/5-B ^3
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	28197	03/07/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	28225	03/08/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			28359	03/12/19 13:33	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank

Date Collected: N/A
Date Received: N/A

Lab Sample ID: MB 140-28237/5-B
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	28237	03/08/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	28258	03/11/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			28359	03/12/19 14:26	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

TestAmerica Job ID: 140-14370-1

Client Sample ID: Method Blank
Lab Sample ID: MB 140-28259/5-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	28259	03/11/19 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	28299	03/12/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			28437	03/14/19 10:36	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-28300/5-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	28300	03/12/19 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	28360	03/13/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			28437	03/14/19 11:27	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-28361/5-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	28361	03/13/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			28437	03/14/19 12:19	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Method Blank
Lab Sample ID: MB 140-28398/5-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	28398	03/14/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			28466	03/15/19 10:30	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-28148/6-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	28148	03/06/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			28466	03/15/19 10:51	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

TestAmerica Job ID: 140-14370-1

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-28149/6-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	28149	03/06/19 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	28196	03/07/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		5			28359	03/12/19 12:47	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-28197/6-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	28197	03/07/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	28225	03/08/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		5			28359	03/12/19 13:39	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-28237/6-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	28237	03/08/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	28258	03/11/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			28359	03/12/19 14:31	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-28259/6-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	28259	03/11/19 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	28299	03/12/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			28437	03/14/19 10:41	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-28300/6-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	28300	03/12/19 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	28360	03/13/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			28437	03/14/19 11:32	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

TestAmerica Job ID: 140-14370-1

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-28361/6-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	28361	03/13/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			28437	03/14/19 12:25	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample
Lab Sample ID: LCS 140-28398/6-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	28398	03/14/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			28466	03/15/19 10:36	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-28148/7-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	28148	03/06/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			28466	03/15/19 10:56	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-28149/7-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	28149	03/06/19 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	28196	03/07/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		5			28359	03/12/19 12:52	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-28197/7-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5.000 g	25 mL	28197	03/07/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	28225	03/08/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		5			28359	03/12/19 13:44	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

TestAmerica Job ID: 140-14370-1

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-28237/7-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	28237	03/08/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	28258	03/11/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			28359	03/12/19 14:36	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-28259/7-B
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	28259	03/11/19 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	28299	03/12/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			28437	03/14/19 10:46	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-28300/7-B ^5
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	28300	03/12/19 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	28360	03/13/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			28437	03/14/19 11:37	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-28361/7-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	28361	03/13/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			28437	03/14/19 12:29	KNC	TAL KNX
	Instrument ID: DUO									

Client Sample ID: Lab Control Sample Dup
Lab Sample ID: LCSD 140-28398/7-A
Date Collected: N/A
Matrix: Solid
Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1.000 g	50 mL	28398	03/14/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			28466	03/15/19 10:41	KNC	TAL KNX
	Instrument ID: DUO									

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

TestAmerica Job ID: 140-14370-1

Client Sample ID: CCR-16 (24-25)
Date Collected: 02/18/19 16:00
Date Received: 02/22/19 10:00

Lab Sample ID: 140-14370-9 DU
Matrix: Solid
Percent Solids: 83.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	28148	03/06/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		1			28466	03/15/19 11:54	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	28148	03/06/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		10			28466	03/15/19 13:39	KNC	TAL KNX
	Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	28148	03/06/19 08:00	KNC	TAL KNX
Total/NA	Analysis	6010B		2			28466	03/15/19 13:54	KNC	TAL KNX
	Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	28149	03/06/19 08:00	KNC	TAL KNX
Step 1	Prep	3010A			5 mL	50 mL	28196	03/07/19 08:00	KNC	TAL KNX
Step 1	Analysis	6010B SEP		4			28359	03/12/19 13:13	KNC	TAL KNX
	Instrument ID: DUO									
Step 2	SEP	Carbonate			5.000 g	25 mL	28197	03/07/19 08:00	KNC	TAL KNX
Step 2	Prep	3010A			5 mL	50 mL	28225	03/08/19 08:00	KNC	TAL KNX
Step 2	Analysis	6010B SEP		3			28359	03/12/19 14:05	KNC	TAL KNX
	Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5.000 g	25 mL	28237	03/08/19 08:00	KNC	TAL KNX
Step 3	Prep	3010A			5 mL	50 mL	28258	03/11/19 08:00	KNC	TAL KNX
Step 3	Analysis	6010B SEP		1			28359	03/12/19 14:57	KNC	TAL KNX
	Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	28259	03/11/19 08:00	KNC	TAL KNX
Step 4	Prep	3010A			5 mL	50 mL	28299	03/12/19 08:00	KNC	TAL KNX
Step 4	Analysis	6010B SEP		1			28437	03/14/19 11:06	KNC	TAL KNX
	Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	28300	03/12/19 08:00	KNC	TAL KNX
Step 5	Prep	3010A			5 mL	50 mL	28360	03/13/19 08:00	KNC	TAL KNX
Step 5	Analysis	6010B SEP		5			28437	03/14/19 11:58	KNC	TAL KNX
	Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5.000 g	250 mL	28361	03/13/19 08:00	KNC	TAL KNX
Step 6	Analysis	6010B SEP		1			28437	03/14/19 12:51	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	28398	03/14/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		1			28466	03/15/19 11:32	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	28398	03/14/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		10			28466	03/15/19 12:37	KNC	TAL KNX
	Instrument ID: DUO									
Step 7	Prep	Residual			1.000 g	50 mL	28398	03/14/19 08:00	KNC	TAL KNX
Step 7	Analysis	6010B SEP		2			28466	03/15/19 12:53	KNC	TAL KNX
	Instrument ID: DUO									

Laboratory References:
TAL KNX = TestAmerica Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Method Summary

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

TestAmerica Job ID: 140-14370-1

Method	Method Description	Protocol	Laboratory
6010B	SEP Metals (ICP) - Total	SW846	TAL KNX
6010B SEP	SEP Metals (ICP)	SW846	TAL KNX
3010A	Preparation, Total Metals	SW846	TAL KNX
Acid/Sulfide	Sequential Extraction Procedure, Acid/Sulfide Fraction	TAL-KNOX	TAL KNX
Carbonate	Sequential Extraction Procedure, Carbonate Fraction	TAL-KNOX	TAL KNX
Exchangeable	Sequential Extraction Procedure, Exchangeable Fraction	TAL-KNOX	TAL KNX
Metal Hydroxide	Sequential Extraction Procedure, Metal Hydroxide Fraction	TAL-KNOX	TAL KNX
Non-Crystalline	Sequential Extraction Procedure, Non-crystalline Materials	TAL-KNOX	TAL KNX
Organic-Bound	Sequential Extraction Procedure, Organic Bound Fraction	TAL-KNOX	TAL KNX
Residual	Sequential Extraction Procedure, Residual Fraction	TAL-KNOX	TAL KNX
Total	Preparation, Total Material	TAL-KNOX	TAL KNX

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
TAL-KNOX = TestAmerica Laboratories, Knoxville, Facility Standard Operating Procedure.

Laboratory References:

TAL KNX = TestAmerica Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Sample Summary

Client: Golder Associates Inc.
Project/Site: CD McIntosh Jr Plant

TestAmerica Job ID: 140-14370-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
140-14370-1	CCR-4A (24-25)	Solid	02/11/19 15:00	02/22/19 10:00
140-14370-5	CCR-20 (24-25)	Solid	02/14/19 09:15	02/22/19 10:00
140-14370-9	CCR-16 (24-25)	Solid	02/18/19 16:00	02/22/19 10:00

TestAmerica Knoxville
5815 Middlebrook Pike

Knoxville, TN 37921-5947
phone 865.291.3000 fax 865.584.4315

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Anthony Grasso	Site Contact:	Date:	COC No:
Golder Associates Inc.	Tel/Fax: (813) 908-4224	Lab Contact:	Carrier:	1 of 1 COCs
5402 Beaumont Center Blvd, Suite 108	Analysis Turnaround Time			Sampler:
Tampa, FL 33634	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(813) 287-1717 Phone	TAT if different from Below _____			Walk-in Client:
(813) 287-1716 FAX	☐ 2 weeks			Lab Sampling:
Project Name: COL Site Characterization ASE	☐ 1 week			
Site: CD McIntosh Jr Plant	☐ 2 days			Job / SDG No.:
P O # 19117001.100	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Fe, Al, As, Li (6010B SEP)	Sample Specific Notes:
CCR-4A (24-25)	2/11/19	15:00	G	Soil	1	N	N	X	
CCR-16 (24-25)	2/18/19	16:00	G	Soil	1	N	N	X	
CCR-20 (24-25)	2/14/19	09:15	G	Soil	1	N	N	X	

CUSTODY SEALS INTACT
RECEIVED AT RT 0.4/CT 0.4 C
BKD 2-22-19
1 COOLER FEDEX # 785632094520 PD

140-14370 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☑ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd:_____ Corr'd:_____ | Therm ID No.:_____

Relinquished by:	Company: Golder Associates Inc.	Date/Time: 2/21/19 1825	Received by:	Company: TA KNX	Date/Time: 2-22-19 10:00
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.18, dated 9/5/2018

3/21/2019

TestAmerica St. Louis
13715 Rider Trail North

Earth City, MO 63045-1205
phone 314.298.8566 fax 314.298.8757

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Anthony Grasso	Site Contact:	Date:	COC No:
Golder Associates Inc.	Tel/Fax: (813) 908-4224	Lab Contact:	Carrier:	1 of 1 COCs
5402 Beaumont Center Blvd, Suite 108	Analysis Turnaround Time			Sampler:
Tampa, FL 33634	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(813) 287-1717 Phone	TAT if different from Below _____			Walk-in Client:
(813) 287-1716 FAX	☐ 2 weeks			Lab Sampling:
Project Name: COL Site Characterization ASE	☐ 1 week			
Site: CD McIntosh Jr Plant	☐ 2 days			Job / SDG No.:
P O # 19117001.100	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	Total U, Fe, Al, As, Li (6020B)	Radium 226 & 228 (9315, 9320)	Sample Specific Notes:
CCR-4A (24-25)	2/11/19	15:00	G	Soil	1	N	N	X	X	
CCR-23 (24-25)	2/12/19	12:25	G	Soil	1	N	N	X	X	
CCR-22 (24-25)	2/12/19	17:05	G	Soil	1	N	N	X	X	
CCR-21 (24-25)	2/13/19	14:55	G	Soil	1	N	N	X		
CCR-20 (24-25)	2/14/19	09:15	G	Soil	2	N	N	X		
CCR-19 (24-25)	2/15/19	13:15	G	Soil	1	N	N	X		
CCR-18 (24-25)	2/15/19	16:35	G	Soil	1	N	N	X	X	
CCR-15 (24-25)	2/18/19	13:55	G	Soil	1	N	N	X	X	
CCR-16 (24-25)	2/18/19	16:00	G	Soil	2	N	N	X	X	
CCR-17 (24-25)	2/19/19	08:25	G	Soil	1	N	N	X		
GSB-1 (0-0.5)	2/20/19	12:25	G	Soil	2	N	N	X		

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____ Corr'd: _____		Therm ID No.: _____
Relinquished by:	Company: Golder Associates Inc.	Date/Time: 2/21/19 1825	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.18, dated 9/5/2018

3/21/2019

Loc: 140
14370

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST **Log In Number:**

Review Items	Yes	No	NA	If No, what was the problem?
1. Are the shipping containers intact?	✓		✓	☐ **Containers, Broken**
2. Were ambient air containers received intact?			✓	☐ Checked in lab
3. The coolers/containers custody seal if present, is it intact?	✓			☐ Yes ☐ NA
4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : SC08 Correction factor: 0.0	✓			☐ **Cooler Out of Temp, Client Contacted, Proceed/Cancel** ☐ **Cooler Out of Temp, Same Day Receipt**
5. Were all of the sample containers received intact?	✓			☐ **Containers, Broken**
6. Were samples received in appropriate containers?	✓			☐ **Containers, Improper; Client Contacted; Proceed/Cancel**
7. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ **COC & Samples Do Not Match** ☐ **COC Incorrect/Incomplete** ☐ **COC Not Received**
8. Were all of the samples listed on the COC received?	✓			☐ **Sample Received, Not on COC** ☐ **Sample on COC, Not Received**
9. Is the date/time of sample collection noted?	✓			☐ **COC; No Date/Time; Client Contacted**
10. Was the sampler identified on the COC?		✓		☑ **Sampler Not Listed on COC**
11. Is the client and project name/# identified?	✓			☐ **COC Incorrect/Incomplete**
12. Are tests/parameters listed for each sample?	✓			☐ **COC No tests on COC**
13. Is the matrix of the samples noted?	✓			☐ **COC Incorrect/Incomplete**
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ **COC Incorrect/Incomplete**
15. Were samples received within holding time?	✓			☐ **Holding Time - Receipt**
16. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ **pH Adjusted, pH Included (See box 16A)** ☐ **Incorrect Preservative**
17. Were VOA samples received without headspace?			✓	☐ **Headspace (VOA only)**
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			✓	☐ **Residual Chlorine**
19. For 1613B water samples is pH<9?			✓	☐ If no, notify lab to adjust
20. For rad samples was sample activity info. Provided?			✓	☐ Project missing info

Comments/Actions Taken

10

Labeling Verified by: **Date:**

pH test strip lot number:

	Box 16A: pH Preservation	Box 18A: Residual Chlorine
Preservative:		
Lot Number:		
Exp Date:		
Analyst:		
Date:		
Time:		

Project #: 140D5136 PM Instructions:

Sample Receiving Associate: Date: 2-22-19

QA026R31.doc, 112618

TestAmerica St. Louis
13715 Rider Trail North

Earth City, MO 63045-1205
phone 314.298.8566 fax 314.298.8757

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Anthony Grasso	Site Contact:	Date:	COC No:
Golder Associates Inc.	Tel/Fax: (813) 908-4224	Lab Contact:	Carrier:	1 of 1 COCs
5402 Beaumont Center Blvd, Suite 108	Analysis Turnaround Time			Sampler:
Tampa, FL 33634	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(813) 287-1717 Phone	TAT if different from Below _____			Walk-in Client:
(813) 287-1716 FAX	☐ 2 weeks			Lab Sampling:
Project Name: COL Site Characterization ASE	☐ 1 week			
Site: CD McIntosh Jr Plant	☐ 2 days			Job / SDG No.:
P O # 19117001.100	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Total U, Fe, Al, As, Li (6020B)	Radium 226 & 228 (9315, 9320)	Sample Specific Notes:
CCR-4A (24-25)	2/11/19	15:00	G	Soil	1	N	N	X	X	
CCR-23 (24-25)	2/12/19	12:25	G	Soil	1	N	N	X	X	
CCR-22 (24-25)	2/12/19	17:05	G	Soil	1	N	N	X	X	
CCR-21 (24-25)	2/13/19	14:55	G	Soil	1	N	N	X		
CCR-20 (24-25)	2/14/19	09:15	G	Soil	2	N	N	X		
CCR-19 (24-25)	2/15/19	13:15	G	Soil	1	N	N	X		
CCR-18 (24-25)	2/15/19	16:35	G	Soil	1	N	N	X	X	
CCR-15 (24-25)	2/18/19	13:55	G	Soil	1	N	N	X	X	
CCR-16 (24-25)	2/18/19	16:00	G	Soil	2	N	N	X	X	
CCR-17 (24-25)	2/19/19	08:25	G	Soil	1	N	N	X		
GSB-1 (0-0.5)	2/20/19	12:25	G	Soil	2	N	N	X		

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____ Corr'd: _____		Therm ID No.: _____
Relinquished by:	Company: Golder Associates Inc.	Date/Time: 2/21/19 1825	Received by:	Company: TTAStL	Date/Time: 2-22-19/0915
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.18, dated 9/5/2018

3/21/2019

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Tampa
6712 Benjamin Road
Suite 100
Tampa, FL 33634
Tel: (813)885-7427

TestAmerica Job ID: 660-93148-1

Client Project/Site: Lakeland Electric/Site Characterization

For:

Golder Associates Inc.
5402 Beaumont Center Boulevard
Suite 108
Tampa, Florida 33634

Attn: Mr. Anthony Grasso

Authorized for release by:
3/21/2019 6:35:50 PM

Haukur Gudnason, Project Manager II
(813)280-8342
haukur.gudnason@testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Sample Summary

Client: Golder Associates Inc.
Project/Site: Lakeland Electric/Site Characterization

TestAmerica Job ID: 660-93148-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
660-93148-1	Fish Lake-Sed	Solid	03/12/19 16:25	03/13/19 07:58

Case Narrative

Client: Golder Associates Inc.
Project/Site: Lakeland Electric/Site Characterization

TestAmerica Job ID: 660-93148-1

Job ID: 660-93148-1

Laboratory: TestAmerica Tampa

Narrative

Receipt
The sample was received on 3/13/2019 7:58 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.4º C.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Definitions/Glossary

Client: Golder Associates Inc.
Project/Site: Lakeland Electric/Site Characterization

TestAmerica Job ID: 660-93148-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
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)

Detection Summary

Client: Golder Associates Inc.
Project/Site: Lakeland Electric/Site Characterization

TestAmerica Job ID: 660-93148-1

Client Sample ID: Fish Lake-Sed

Lab Sample ID: 660-93148-1

Analyte	Result	Qualifier	PQL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Organic Carbon	1.3		0.14	0.058	Percent	1	☼	WALKLEY BLACK	Total/NA
Fractional Organic Carbon	0.013		0.0014	0.00058	g/g	1	☼	WALKLEY BLACK	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Golder Associates Inc.
Project/Site: Lakeland Electric/Site Characterization

TestAmerica Job ID: 660-93148-1

Client Sample ID: Fish Lake-Sed
Date Collected: 03/12/19 16:25
Date Received: 03/13/19 07:58

Lab Sample ID: 660-93148-1
Matrix: Solid
Percent Solids: 72.1

General Chemistry

Analyte	Result	Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	1.3		0.14	0.058	Percent	☼		03/20/19 17:30	1
Fractional Organic Carbon	0.013		0.0014	0.00058	g/g	☼		03/20/19 17:30	1

Method: WALKLEY BLACK - Organic Carbon, Total (TOC)

Lab Sample ID: MB 400-433914/1
Matrix: Solid
Analysis Batch: 433914

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

Analyte	MB Result	MB Qualifier	PQL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	0.042	U	0.10	0.042	Percent			03/20/19 17:30	1
Fractional Organic Carbon	0.00042	U	0.0010	0.00042	g/g			03/20/19 17:30	1

Lab Sample ID: LCS 400-433914/2
Matrix: Solid
Analysis Batch: 433914

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	0.200	0.216		Percent		108	65 - 126
Fractional Organic Carbon	0.00200	0.00216		g/g		108	65 - 126

General Chemistry

Analysis Batch: 433488

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-93148-1	Fish Lake-Sed	Total/NA	Solid	Moisture	

Analysis Batch: 433914

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
660-93148-1	Fish Lake-Sed	Total/NA	Solid	WALKLEY BLACK	
MB 400-433914/1	Method Blank	Total/NA	Solid	WALKLEY BLACK	
LCS 400-433914/2	Lab Control Sample	Total/NA	Solid	WALKLEY BLACK	

Lab Chronicle

Client: Golder Associates Inc.
Project/Site: Lakeland Electric/Site Characterization

TestAmerica Job ID: 660-93148-1

Client Sample ID: Fish Lake-Sed — **Lab Sample ID: 660-93148-1**
Date Collected: 03/12/19 16:25 — **Matrix: Solid**
Date Received: 03/13/19 07:58

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	433488	03/15/19 14:08	KRA	TAL PEN

Client Sample ID: Fish Lake-Sed — **Lab Sample ID: 660-93148-1**
Date Collected: 03/12/19 16:25 — **Matrix: Solid**
Date Received: 03/13/19 07:58 — **Percent Solids: 72.1**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	WALKLEY BLACK		1	433914	03/20/19 17:30	DEK	TAL PEN

Laboratory References:

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

Method Summary

Client: Golder Associates Inc.
Project/Site: Lakeland Electric/Site Characterization

TestAmerica Job ID: 660-93148-1

Method	Method Description	Protocol	Laboratory
Moisture	Percent Moisture	EPA	TAL PEN
WALKLEY BLACK	Organic Carbon, Total (TOC)	MSA	TAL PEN

Protocol References:

EPA = US Environmental Protection Agency

MSA = "Methods Of Soil Analysis, Chemical And Microbiological Properties", Part 2, 2nd Ed., 1982 And Subsequent Revisions.

Laboratory References:

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

Accreditation/Certification Summary

Client: Golder Associates Inc. TestAmerica Job ID: 660-93148-1
Project/Site: Lakeland Electric/Site Characterization

Laboratory: TestAmerica Tampa

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Florida	NELAP	4	E84282	06-30-19

Laboratory: 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

TestAmerica Tampa
6712 Benjamin Road
Suite 100
Tampa, FL 33634
Phone: 813.885.7427 Fax:

Chain of Custody Record

234412

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Tony Grasso	Site Contact:	Date:	COC No:
Company Name: Golder Associates	Tel/Fax:	Lab Contact:	Carrier:	____ of ____ COCs
Address: 5402 Bouquet Center Blvd	Analysis Turnaround Time			Sampler:
City/State/Zip: Ft Tampa FL 33634	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 813 287 1717	TAT if different from Below ____			Walk-in Client:
Fax: 813 287 1716	☐ 2 weeks			
Project Name: COL ASE	☐ 1 week			
Site:	☐ 2 days			
PO # 19117001/100	☐ 1 day			

660-93148 Chain of Custody

Loc: 660
93148

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	TOC	Sample Specific Notes:
Fish Lake - Sed	3/12/19	1625	G	SO	1	N	N	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☑ No | Custody Seal No.: N/A | Cooler Temp. (°C): Obs'd: 2.2 Corr'd: 2.4 | Therm ID No.: CU09

	Company	Date/Time		Company	Date/Time
Relinquished by:	Golder	3/13/19 0758	Received by:	TA TA	3/13/19 7:58
Relinquished by:			Received by:		
Relinquished by:			Received in Laboratory by:		

Login Sample Receipt Checklist

Client: Golder Associates Inc.

Job Number: 660-93148-1

Login Number: 93148
List Number: 1
Creator: Edwards, Erricka

List Source: TestAmerica Tampa

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.	True	
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	
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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Golder Associates Inc.

Job Number: 660-93148-1

Login Number: 93148
List Number: 2
Creator: Brown, Nathan

List Source: TestAmerica Pensacola
List Creation: 03/14/19 06:54 PM

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	1.4°C IR8
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	

golder.com