**REPORT**

# ASSESSMENT OF CORRECTIVE MEASURES

*Byproduct Storage Area B*

*St. Johns River Power Park*

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# 1.0 INTRODUCTION

This Assessment of Corrective Measures (ACM) Report was prepared for the Byproduct Storage Area B (BSA-B or Area B) at the St. Johns River Power Park (SJRPP) in Jacksonville, Florida in accordance with §257.96 of the Coal Combustion Residual (CCR) Rule[1]. This ACM Report is included in the facility's operating records in accordance with §257.105(h)(10).

## 1.1 Site Description

The SJRPP facility is located at 11201 New Berlin Road, Jacksonville, Florida. The facility consisted of two coal fired steam-electric generation units and is in the process of being decommissioned. The primary CCRs generated at SJRPP include fly ash, bottom ash, and synthetic gypsum, a flue gas desulfurization product.

The Phase I development of BSA-B consists of an approximate 35-acre storage/disposal facility footprint located approximately 1.5 miles northeast of the SJRPP main entrance, north of Island Drive, and southwest of Clapboard Creek. A Site Location Map is included on **Figure 1**.

BSA-B was designed as an above-grade, unlined byproduct storage area. BSA-B received residual CCR materials that were not sold for off-site beneficial use (primarily fly ash, flue gas desulfurization materials, and bottom ash). Base grades for BSA-B were designed to provide separation between the base of the BSA and the seasonal high groundwater table, including the settlement of foundation soils. The construction of Phase I commenced in June 2008 and was completed in January 2009. SJRPP began operations of BSA-B (originally designated as Area III/IV in the Site Certification Application) in January 2009 in accordance with the Conditions of Certification (COC) of SJRPP Units 1 and 2.

## 1.2 Environmental Setting

A hydrogeological and geotechnical investigation was performed by Golder for the development of the SJRPP BSA-B site (Golder 2007). The investigation included a comprehensive review of available literature concerning the geology and hydrogeology in the area of the site and field investigations, which included:

- Drilling of soil borings with standard penetration test (SPT) split spoons to determine subsurface stratigraphy and obtain samples for geotechnical laboratory testing;
- Performance of cone penetrometer testing (CPT) to supplement strength characteristics from SPT borings;
- Installation of piezometers to determine groundwater flow characteristics;
- Sampling of piezometers to determine pre-development groundwater quality conditions;
- Surface water sampling to determine surface water quality conditions; and
- Performance of in-situ hydraulic conductivity tests of various units screened by the piezometers.

More detailed descriptions of the site investigation procedures and results are presented in the Hydrogeological and Geotechnical Site Evaluation (Golder 2007).

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

### 1.2.1 Geology

Three stratigraphic units were encountered in the hydrogeological and geotechnical site investigation, including: undifferentiated Pleistocene to recent deposits, upper Miocene and Pliocene unit, and the Hawthorn Group. The undifferentiated Pleistocene to recent deposits consist of loose to dense, gray/brown/white, fine sand commonly with trace to some clayey silt from ground surface to depths ranging to approximately 42 to 52 feet below ground surface (bgs). The upper Miocene and Pliocene unit was described as dense, coarse to fine sand with abundant shell fragments commonly with silty clay. Where fully penetrated, the thickness of this unit ranges from 25 to 40 feet across the site. The Hawthorn Group was encountered in the six deep borings and consisted of gray/dark green sand and silty clay commonly with black, sand-sized particles of phosphate. The top of Hawthorn Group was encountered at depths ranging from 98 to 106 feet bgs at the site. The Hawthorn Group is a relatively low permeability geologic unit extending throughout portions of southwest and northeast Florida. The estimated thickness of the Hawthorn Group in the site vicinity is 500 feet and is considered a regional confining unit and barrier to the Floridan Aquifer. Underlying the Hawthorn Group is Ocala Group limestone (late-Eocene). The Ocala limestone in combination with the underlying carbonate units comprise the Floridan Aquifer system. The top of the Ocala limestone in the vicinity of the site is at an elevation of approximately 550 feet below sea level.

### 1.2.2 Hydrogeology

The main hydrogeologic units at Area B are an unconfined surficial aquifer system and the Floridan aquifer system (Golder 2007). The surficial aquifer system, which is the uppermost water-bearing unit at Area B, is subdivided into three zones: 1) upper, 2) intermediate, and 3) deep zones. The underlying Hawthorn Group consists of low-permeability sediments (i.e., silty clays, clayey silts, and sandy clays) that are confining units for the relatively deeper Floridan aquifer. The primary source of water in Duval County is the upper Floridan aquifer. This aquifer in Duval County is composed of the Ocala limestone, in combination with the underlying carbonate units.

The upper zone of the surficial aquifer is the most transmissive zone of the surficial aquifer (Golder 2007). The prevailing directions of groundwater flow in the upper zone of the surficial aquifer are generally easterly with southeastern components of flow. The groundwater flow velocity is approximately 17 feet/year. The average hydraulic conductivity, of the upper zone of the surficial aquifer, determined from slug tests of monitoring wells, is approximately 5 feet/day. The surficial aquifer is primarily recharged directly from local rainfall and discharge is primary through evapotranspiration, withdrawals from shallow wells and seepage into surface water bodies (SJRWMD 2008).

### 1.2.3 CCR Groundwater Monitoring Well Network

The CCR groundwater monitoring network for BSA-B at SJRPP consists of three background monitoring wells (CCR-1, CCR-2 and CCR-3) and four downgradient monitoring wells (CCR-4, CCR-5, CCR-6 and CCR-7). Background and downgradient monitoring wells have been installed with screen intervals in the upper zone of the surficial aquifer (total depth of approximately 20 feet bgs). The background wells (CCR-1, CCR-2 and CCR-3) are located such that they represent background groundwater quality that has not been affected by a CCR unit and represent groundwater quality in the same zone as the downgradient monitoring wells. Downgradient monitoring wells (CCR-4 through CCR-7) have been installed as close as practical to the waste boundary to accurately represent the quality of groundwater passing the waste boundary. The monitoring wells have been encased in a manner that maintains the integrity of the monitoring well borehole. CCR groundwater monitoring well locations (CCR-1 through CCR-7) are shown on **Figure 2** and monitoring well construction data are provided in **Table 1**.

# 2.0 NATURE AND EXTENT EVALUATION

## 2.1 Groundwater Monitoring Summary

Background monitoring (the collection of a minimum of eight independent samples prior to October 2017) began in November 2016 and was completed in June 2017. During the background monitoring period, samples were collected on a bimonthly basis and analyzed for Appendix III and Appendix IV constituents pursuant to §257.94(b). Background monitoring was performed to establish background concentrations of 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 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, sulfate and total dissolved solids (Golder 2018a).

Based on the SSI determination on January 15, 2018, the assessment monitoring program was established in March 2018 pursuant to §257.94(e)(1). The initial annual assessment monitoring event was conducted in March 2019 for all Appendix IV constituents in accordance with §257.95(a). During the subsequent semi-annual assessment monitoring events in June and December 2018, 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).

### 2.1.1 Constituent of Concern

The statistical analysis of the Appendix IV results from the downgradient wells (CCR-4, CCR-5, CCR-6 and CCR-7) indicated that radium 226+228 was at a statistically significant level (SSL) above the groundwater protection standard (GWPS) of 5 picocuries per liter (pCi/L) at downgradient well CCR-6 (Golder 2018b).

Based on the SSL identification and in accordance with the CCR Rule (§257.95(g)(1)), Golder performed an evaluation to determine the nature and extent of the combined radium impacts.

## 2.2 Field Investigation

The nature and extent evaluation was performed in a phased approach. The first phase consisted of installing and sampling three piezometers downgradient from CCR-6 between the access road and stormwater Pond A. Two of the piezometers were installed adjacent to deeper COC monitoring wells (MW-8 and MW-9) to evaluate the vertical extent of the radium 226+228 impacts. The second phase of the nature and extent evaluation was based on the results from the initial three piezometers. Four additional piezometers were installed and sampled, three of which were located downgradient of stormwater Pond A. One piezometer was installed between CCR-6 and CCR-7 upgradient of AW-3/MW-9. Additionally, a surface water sample was collected from Pond A, and soil samples were collected from piezometer locations during the second phase.

### 2.2.1 Piezometer Installation

On November 29 and 30, 2018, Golder installed three piezometers (AW-1, AW-2, and AW-3) downgradient of CCR-6. Two piezometers (AW-1, and AW-3) were installed adjacent to the deeper COC monitoring wells (MW-8 and MW-9). Golder installed additional nature and extent piezometers (AW-4, AW-5, AW-6 and AW-7) on February 7 and 8, 2019. AW-4 is located between CCR-6 and CCR-7 and upgradient of AW-3, and piezometers AW-5, AW-6 and AW-7 are located further downgradient from BSA-B. Piezometer construction details are provided in **Table 1,** and locations are presented on **Figure 2**.

The piezometers were constructed using standard monitoring well procedures under the direction of a Golder engineer. The piezometers are screened from approximately 10 to 20 feet bgs. Piezometers were installed using the hollow stem auger drilling method. In order to characterize the general geologic conditions and to determine or confirm the most suitable screen intervals for each well, soils samples were collected using standard penetration test (SPT) procedures in general accordance with ASTM Method D-1586. SPT samples were collected in the well screen depths. Piezometers were constructed inside a 4.25-inch inside diameter hollow stem auger. The piezometers were constructed using 2-inch diameter, Schedule 40 PVC with flush-threaded joints and a 10-foot length of 0.010-inch machine slotted screen. The sand filter pack was constructed using 20/30 graded silica sand to a depth of approximately 2 feet above the top of screen, followed by a 2-foot thick 30/65 graded fine sand seal. A Portland cement grout mixture was placed in the remaining annular space. The piezometers were then completed above-grade with locking well caps and aluminum protective casings boxes set into concrete anti-percolation pads. Following installation, piezometers were developed using the drill rig's piston displacement pump and tremie pipe extended to the bottom of the well screen. Well development was performed to remove relic effects of the drilling and installation process and to establish good hydraulic connection between the well and the formation.

### 2.2.2 Groundwater Sampling and Results

Golder sampled AW-1, AW-2, AW-3, CCR-6, MW-8, and MW-9 on December 3 and 4, 2018. Groundwater samples were collected and analyzed for gross alpha and radium 226+228. A follow-up sampling event for AW-1, AW-2 and AW-3 was performed on December 27, 2018 to verify the initial sampling results due to the immediacy of the first sampling event to the well installation activities. In the follow-up sampling event, groundwater samples were collected and analyzed for radium 226+228. Radium results from these December sampling events are summarized in the table below. Laboratory analytical results are provided in **Appendix A**.

These initial results indicated that radium was detected above the GWPS at AW-1, AW-2, and AW-3. Radium 226+228 was not detected above the GWPS in the MW-8 and MW-9 (deeper, intermediate zone wells). Combined radium results are presented in the table below.

Based on these initial results additional piezometers were installed in February 2019 to further delineate the radium 226+228 extents. Golder sampled CCR-6, CCR-7, AW-1, AW-2, AW-3, AW-4, AW-5, AW-6, AW-7 and the surface water from Pond A on February 20, 2019. Samples were collected and analyzed for Appendix III constituents (boron, calcium, chloride, fluoride, sulfate and total dissolved solids), detected Appendix IV constituents (antimony, arsenic, barium, beryllium, chromium, cobalt, lead, lithium, molybdenum, radium 226+228, selenium, thallium), aluminum, iron, magnesium, potassium, sodium, nitrate, phosphorus, alkalinity, and hardness. Laboratory analytical results are provided in **Appendix A**.

Radium 226+228 was not detected above the GWPS in samples from AW-2, AW-6, AW-7, and Pond A in the February 2019 sampling event. Radium 226+228 was detected above the GWPS in samples from CCR-6, CCR-7, AW-1, AW-3, AW-4, and AW-5. AW-5 appears to represent the furthest downgradient well with radium 226+228 above the GWPS. Radium 226+228 results from the nature and extent sampling events (December 2018 and February 2019) are shown on **Figure 3**. The radium 226+228 results from the February sampling event are summarized in the table below.

**Radium 226+228 Sampling Results Table**

| Location | 12/3-4/2018 | 12/27/2018 | 2/20/2019 |
|---|---|---|---|
| CCR-6 | 4.17 | NA | 6.43 |
| CCR-7 | NA | NA | 6.45 |
| MW-8 | 1.68 | NA | NA |
| MW-9 | 1.39 U | NA | NA |
| AW-1 | 8.1 | 5.16 | 5.09 |
| AW-2 | 6.87 | 4.16 | 4.45 |
| AW-3 | 15.5 | 11.1 | 18.3 |
| AW-4 | NA | NA | 11.1 |
| AW-5 | NA | NA | 5.42 |
| AW-6 | NA | NA | 2.60 |
| AW-7 | NA | NA | 3.13 |
| Pond A | NA | NA | 1.45 U |

Radium results in pCi/L.
NA - Not Analyzed

### 2.2.3 Soil Sampling and Results

Soil samples were collected during the installation of wells AW-4, AW-5, AW-6, and AW-7. Soil samples were analyzed for the following: aluminum, iron, phosphorus, radium 226+228, uranium-234, uranium-235, uranium-238 and semi-quantitative x-ray diffraction (XRD) mineral identification including clay speciation. The XRD analysis was performed on samples from AW-4 and AW-5. Laboratory analytical results are presented in **Appendix A**.

The chemical analyses of soil samples indicate the following:

**Aluminum:** Total aluminum in overburden ranged from 1,700 milligrams per kilogram (mg/kg) (AW-5, 16 to 18 feet bgs) to 3,850 mg/kg (AW-5, 8 feet bgs).

**Iron:** Iron was present in all five soil samples analyzed, varying from 189 mg/kg (AW-5, both depths) to 689 mg/kg (AW-7, 13 feet bgs).

**Radium (226+228):** Total radium in soil samples was measured in five samples as was total uranium and total phosphorus in the overburden. Total radium ranged from 0.529 mg/kg (AW-4, 14 to 16 feet bgs) to 0.999 mg/kg (AW-7, 13 feet bgs). These boring locations also correlated to the highest and lowest concentrations of uranium and phosphorus in soil samples, ranging from 0.206 mg/kg to 0.677 mg/kg and 42.3 mg/kg to 156 mg/kg, respectively. Based on these data, it is likely, to some extent, there is naturally occurring radium 226 and radium 228 in soils, decay products of uranium and thorium that also commonly co-occur with phosphorus in minerals.

**Mineralogy:** The two samples submitted for XRD analysis, AW-4 (14 to 16 feet bgs) and AW-5 (16 to 18 feet bgs), both contained >99% (by weight) quartz for mineral abundance in samples. The remainder of the samples consisted of trace amounts of plagioclase. The clay fraction in both samples consisted predominately of kaolinite or kaolinite and illite. Notably, gibbsite was also detected in minor and trace amounts in the clay fraction of samples from borings AW-4 and AW-5, respectively.

Overall, the results of soil and mineralogical analysis indicated the following:

- Based on the association with uranium and phosphorus in soils, it is highly likely that naturally occurring radium 226 and radium 228 exist in soils underlying and surround the BSA-B site.
- The presence of aluminum and iron in samples indicates the potential for attenuation of radium 226 and radium 228 from the BSA-B.

Clays minerals such as kaolinite, and gibbsite in the clay fraction, present an additional well studied mechanism for the attenuation of radium 226 and radium 228.

## 2.3 Groundwater Flow

Groundwater elevation measurements were recorded for the CCR groundwater monitoring network during each sampling event at Area B. Groundwater elevation data was used to develop a potentiometric surface map for the nature and extent sampling event conducted March 25, 2019 **(Figure 4**). The hydraulic gradient (direction and magnitude) was calculated using the least-squares method of fitting the data to a plane. The average hydraulic gradient was 0.002 feet per feet with an eastward direction.

## 2.4 Nature and Extents Evaluation Summary

Sampling results from the nature and extents evaluation indicate the following:

- The lateral extent of radium 226+228 impacts downgradient from the BSA-B is between 100 and 200 feet to the east. Piezometer AW-6 will be sampled during upcoming semi-annual events to monitor radium 226+228 extents.
- The vertical extent of radium 226+228 impacts are limited to the upper zone of the shallow surficial aquifer based on sampling results from MW-8 and MW-9.
- Pond A surface water has not been impacted by the radium 226+228.
- Preliminary soil sampling results indicate the potential for attenuation of radium 226+228 from groundwater onto soil surfaces by multiple well studied mechanisms.
- Future groundwater sampling from the AW-6 piezometer will parallel the regularly scheduled semi-annual assessment monitoring events to monitor radium 226+228.
- Additional site characterization may be conducted in a phased approach as part of the remedy selection process.

# 3.0 ASSESSMENT OF CORRECTIVE MEASURES

Based on identification of radium 226+228 at SSLs above the GWPS beyond the waste boundary, JEA has performed this assessment of corrective measures consistent with §257.96 and §257.97.

## 3.1 Objectives and Screening Criteria

Potential corrective measures must meet the requirements and objectives specified in §257.97(b), including:

- Be protective of human health and the environment;
- Attain the GWPS;
- Control the source of the release to reduce or eliminate further releases;
- Remove from the environment as much contaminated material as feasible; and
- Comply with relevant standards (i.e. RCRA) for management of waste materials generated by the remedy.

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

- Effectiveness of the potential remedy;
- Performance and reliability of the potential remedy;
- Ease or difficulty of implementation;
- Potential impacts of remedy including safety, cross-media impacts, and control of exposure to residual contamination;
- Timeframe to begin and complete the remedy; and
- Institutional requirements including state or local permit requirements or public health requirements.

## 3.2 Source Control Measures

Source control measures are necessary to reduce or eliminate further releases from BSA-B. Due to the decommissioning of SJRPP, BSA-B will be closed in place with a final cover system. A revised Closure Design Plan (Golder 2019) was submitted to the Florida Department of Environmental Protection (FDEP) on May 10, 2019 which details the revised closure and final cover system. The revised closure for BSA-B will consist of the following:

- Consolidation of CCRs within the eastern portion of the Phase I footprint;
- Grading of existing materials for stormwater drainage;
- Installation of geomembrane;
- Placement of protective cover;
- Installation of stormwater management features; and
- Establishment of vegetative cover.

The revised final cover design incorporates a geomembrane for the top deck and side-slopes to minimize infiltration of precipitation into BSA-B and stormwater management features to effectively manage stormwater and prevent erosion of the cover system. The basegrades for BSA-B were designed to account for seasonal fluctuations in the groundwater table and for settlement of foundation soils from loads imposed by approximately 100 feet of byproduct material.

The closure of BSA-B and the installation of the revised final cover system would be considered a significant remedial action. This source control measure will substantially reduce the infiltration of precipitation through the CCR waste materials and into the underlying surficial aquifer, thereby reducing the mass flux of potential contaminants into the groundwater.

## 3.3 Potential Corrective Measures

The following subsections describe and evaluate potential remedial technologies pursuant to §257.96(c). This ACM provides a "high-level" evaluation of potential corrective measures. The results of this evaluation are summarized in **Table 2**.

### 3.3.1 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. Enhancement options include increasing the attenuation capacity of the 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.

#### *3.3.1.1 Performance and Reliability*

MNA can be used at BSA-B 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. The primary attenuation processes for radium 226+228 are coprecipitation with sulfate minerals and adsorption or ion exchange onto aquifer minerals (USEPA 2010).

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 nature and extent evaluation, it appears that the site is a good candidate for MNA; especially since effective source control measures will also be implemented.

#### *3.3.1.2 Implementation*

MNA would be the simplest of the corrective measures to implement; however, a detailed site characterization may be required for MNA implementation. USEPA has developed the following four-tiered strategy to demonstrate MNA viability (USEPA 2007, 2010):

- 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 (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. Enhanced MNA implementation may also include installation of injection wells and associated permitting for underground injections.

#### *3.3.1.3 Potential Impacts*

Potential safety impacts associated with MNA and enhanced MNA would be limited to well installation activities and would therefore be 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 groundwater flow conditions change and impacted groundwater migration accelerates. If this was the case, additional remedial action may be required.

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

#### *3.3.1.4 Timeframe*

MNA could be implemented at the site relatively quickly but may take several years for remedial goals to be met. A groundwater model would be developed to more accurately determine the anticipated timeframe for remedy completion.

Enhanced MNA also 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 to remedy completion compared to MNA.

#### *3.3.1.5 Institutional Requirements*

The primary institutional requirement associated with MNA or enhanced MNA is FDEP approval of proposed remedy. If regulatory acceptance is achieved, MNA may require the least amount of permitting and regulatory approvals. Enhanced MNA may also require a state underground injection control permit. The regulatory approval process for MNA or enhanced MNA would likely take 6 to 12 months.

### 3.3.2 Groundwater Pump and Treat

One of the most widely used groundwater remediation technologies is pump and treat. A conventional groundwater pump and treat system pumps impacted groundwater for treatment at the surface. Pump and treat systems are primarily used to provide 1) hydraulic containment and 2) treatment (USEPA, 1996).

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 expansion of contaminated 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. Treatment methods for radium include sodium cation exchange, lime softening, reverse osmosis, green sand filtration, manganese sorption, and barium coprecipitation (IAEA 2014). Extracted groundwater may also be sent off site for treatment at an existing wastewater treatment plant. Installation of groundwater pump and treat systems can be expensive and require long-term operation and maintenance, which is also relatively expensive. 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.

#### 3.3.2.1 Performance and Reliability

Pump and treat systems are relatively simple to design and operate and have been used to effectively and reliably treat a variety of contamination in the past. A pump and treat system can be designed to capture water from high concentration areas around the downgradient perimeter of BSA-B and limit the spread of the radium 226+228 plume. 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 radium would need to be bench-scale tested to evaluate effectiveness at the site. Additional site investigation and pilot testing may be required to support full system design. Pump and treat systems are typically most effective on contaminants with low partitioning coefficients and high solubility. Although there can be occasional operation and maintenance issues, pump and treat systems typically operate effectively and can be adjusted to improve performance, if designed properly. 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 water collected from extraction wells and monitoring wells downgradient of the pump and treat system.

#### 3.3.2.2 Implementation

Standard groundwater flow modeling can be used to optimize the system design, including the number and placement of extraction wells, pumping rates, and monitoring well locations. The standard system design includes the following: number and location of extraction wells and monitoring wells, pumping rate(s), below and 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, which would require additional permitting. Laboratory and bench scale testing of treatment technologies would be necessary to design the treatment system and verify its effectiveness.

#### 3.3.2.3 Potential Impacts

The construction of a groundwater pump and treat system would likely include drilling, installation of extraction and monitoring wells, associated pumps, piping, and wiring, and treatment system controls. There are potential safety concerns associated with these construction activities.

Cross-media impacts associated with 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 for a properly designed pump and treat system is considered limited; the system could be designed with various safety features to limit the exposure potential.

#### 3.3.2.4 Timeframe

The timeframe to implement a groundwater pump and treat system would be dependent on pilot testing, 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.

#### 3.3.2.5 Institutional Requirements

The primary institutional requirement associated with groundwater pump and treat is FDEP approval of the proposed remedy. Depending on the FDEP approval process, system startup could occur within one to two years. The effluent from the treatment system may require additional permitting (i.e. NPDES permit modification) that could be performed in parallel with the remedy approval process.

### 3.3.3 Hydraulic Barrier

Hydraulic barriers; including slurry walls, soil-mixed walls, grout curtains, sheet pilings, and synthetic membranes, involve installing a physical barrier to groundwater flow. These barriers can be used to either divert uncontaminated groundwater away from impacted areas or contain contaminated groundwater from non-impacted “clean” areas. Four common types of hydraulic barriers that have been demonstrated to be effective at restricting groundwater flow include: bentonite slurry walls, soil-mixed walls, sheet pile walls, and synthetic membranes.

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 filter cake on the trench walls that restricts groundwater flow. Design considerations include wall depth, key depth, and material compatibility. Slurry trenches can be excavated to a depth of 50 feet using standard excavators, or up to 80 feet using long-reach excavators, a crane mounted drag line, or clamshell bucket (USEPA 1998). A slurry commonly contains potable water and 1 to 5 percent bentonite. The trench is excavated to the design depth, and the slurry is placed in the open trench to maintain trench stability. 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 also 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 mechanically mixing soil, in-situ, with optional amendments, such as bentonite and/or cement, added as the soil-mixing/soil cutter heads advanced downward to the targeted depth. 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 in sections or panels (e.g. 1 meter wide by 3 meters in length) 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-pile 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.

A detailed engineering analysis and design, including potential bench-scale and pilot-tests, would be required for the construction of any hydraulic barrier wall described above.

#### 3.3.3.1 Performance and Reliability

The hydraulic barrier options listed above 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 a suitable confining unit at the site is approximately 100 feet, making installation of a hydraulic barrier challenging. 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.

#### 3.3.3.2 Implementation

The construction of a hydraulic barrier is expected to be significant in terms of time, effort, cost, and site work. The depth to the confining unit at the site increases the construction difficulty. 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 and space for mixing and placing backfill.
- 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), and 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.

#### 3.3.3.3 Potential Impacts

Construction of a hydraulic barrier would require significant construction and use of equipment which would pose risk of potential safety impacts. Once operational, 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.

#### 3.3.3.4 Timeframe

Time would be needed for pre-design field work, potentially including a bench-test, groundwater modeling, full-scale design, and permitting prior to implementation. Construction and installation of a hydraulic barrier is expected to require significant effort, potentially including a pilot-test before full-scale construction. The timeframe to achieve the remedial objectives is also expected to be significant given groundwater impacts have been observed beyond the waste boundary of BSA-B.

#### 3.3.3.5 Institutional Requirements

The primary institutional requirement is FDEP approval of the proposed remedy. Depending on the FDEP approval process for implementing a hydraulic barrier system at BSA-B, a hydraulic barrier could be in place within three years.

### 3.3.4 Permeable Reactive Barrier

A permeable reactive barrier (PRB) is an 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 is a barrier to contamination and not to groundwater flow. PRBs can be used to remediate groundwater impacted with inorganic and radionuclide contaminants (ITRC 1999). 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 include the appropriate reactive media, and the residence time within the PRB must be sufficient to allow for effective treatment. Sand mixed with barium chloride would be an effective reactive media for radium 226 + 228 because it would immobilize the radium via barium-radium-sulphate coprecipitation (IAEA 2014). Zeolites are another reactive media option for radionuclides based on their high ion-exchange capacity (ITRC 2005).

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. A gate-and-funnel PRB uses hydraulic barrier technology to direct the groundwater flow to reactive media that functions as a gate allowing groundwater to pass through while treating contaminants. The permeability of the reactive media must be greater than the surficial aquifer to ensure flow is not diverted around the PRB media.

#### 3.3.4.1 Performance and Reliability

PRB technologies are generally considered proven technologies; however, site conditions and contaminants of interest may impact performance. The depth to a suitable confining unit at the site is approximately 100 feet, making installation of a PRB challenging. The longevity of media is an area of potential concern as replacement of reactive media would incur substantial costs. Bench-scale testing would be required to validate reactive media effectiveness and longevity at the site. Groundwater monitoring would be necessary to evaluate performance and effectiveness of the PRB.

#### 3.3.4.2 Implementation

As with hydraulic barriers, the construction of a PRB is expected to be significant in terms of time, effort, cost, and site work. Although PRBs 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.

#### 3.3.4.3 Potential Impacts

Similar to hydraulic barriers, the construction of a PRB would require significant construction and use of equipment that would pose risk of potential safety impacts. PRBs are a passive technology, and therefore have limited potential safety impacts following construction other than reactive media maintenance/replacement once operational.

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 a “window” in the PRB.

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.

#### 3.3.4.4 Timeframe

Time would be needed for pre-design field work, including a bench-test, groundwater modeling, full-scale design, and permitting prior to implementation. Construction and installation of a PRB is expected to require significant effort, potentially including a pilot-test before full-scale construction. A PRB would be expected to take less time than a hydraulic barrier to achieve remedial objectives.

#### 3.3.4.5 Institutional Requirements

The primary institutional requirement associated with a PRB is FDEP approval of proposed remedy. Depending on the FDEP approval process for implementing a PRB at BSA-B, a PRB could be in place within three years.

### 3.3.5 Phytoremediation

Phytoremediation is the use of plants to remediate contaminated soils, surface water or groundwater and encompasses natural processes, such as phytoextraction and phytostabilization, that can lead to contaminant degradation, removal or immobilization. Phytoextraction is uptake and accumulation of contaminates within above ground portions of a plant (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). Vegetation can be used for hydraulic control to influence groundwater flow through plant uptake or consumption of large volumes of water by plants (USEPA 2001). Phytoremediation is typically most effective with contaminants at relatively shallow depths (i.e. within plant root zones) and that are present at low to moderate concentrations.

#### *3.3.5.1 Performance and Reliability*

Phytoremediation would have limited effectiveness at BSA-B. There are technologies that are said to increase the effectiveness of phytoremediation treatment at greater depths (i.e. TreeWell®). However, the performance of the plant uptake process is time consuming and its effectiveness in regard to radium 226+228 is not well tested.

#### *3.3.5.2 Implementation*

Phytoremediation at BSA-B would require the planting of a large number of trees or specialized plants along the downgradient perimeter of BSA-B 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 radium 226+228 remediation. Implementation of phytoremediation would take a significant planting effort using deep-rooting technology and would also require significant near-term operation and maintenance effort to establish the system.

#### *3.3.5.3 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 contaminants within plant biomass resulting in potential cross-media impacts.

Similar to other in-situ technologies, the risk of exposure to residual contamination for phytoremediation is minimal. However, bioconcentration of radium 226+228 could present concerns if disposal of plant material were required.

#### *3.3.5.4 Timeframe*

Time would be needed for pre-design field work, plant screening studies, determining planting scheme, and permitting prior to implementation. Phytoremediation is expected to take a relatively long period of time to achieve remedial objectives.

#### *3.3.5.5 Institutional Requirements*

It is anticipated that a RAP would be submitted to FDEP upon remedy selection. Depending on the FDEP approval process for implementing a phytoremediation system at BSA-B, a PRB could be in place within one years following remedy selection.

# 4.0 REMEDY SELECTION PROCESS

Based on the results of this Assessment of Corrective Measures, JEA must select a remedy that meets the objectives listed in §257.97(b) (outlined in Section 3.1 above). At least 30 days prior to remedy selection, JEA must hold a public meeting pursuant to §257.96(e) to discuss the results of this assessment.

In order to select a remedy, additional data and site characterization may be necessary to further evaluate feasible remedies and design appropriate corrective measures, including:

- Groundwater trends following closure of BSA-B.
- Site characterization to evaluate feasibility of corrective measures including MNA and/or Enhanced MNA.
- Groundwater modeling to evaluate and later design specific corrective measures.
- Bench-scale or on-site pilot-testing may be necessary to further evaluate the effectiveness of certain corrective measures.
- Constructability concerns (site limitations as such as working space, 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 that describes the selected remedy and details how it can satisfy the remedial objectives will be prepared following remedy selection 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*

Donald J. Miller, PEng
*Practice Leader*

SFS/DJM/ams

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## 5.0 REFERENCES


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# TABLES

# TABLE 1
# SUMMARY OF MONITORING WELL AND PIEZOMETER CONSTRUCTION DETAILS

## St. Johns River Power Park
## Byproduct Storage Area B - SJRPP

| Well ID | Date Installed | Northing (ft NAD83) | Easting (ft NAD83) | Ground Surface Elevation (ft NAVD88) | TOC Elevation (ft NAVD88) | Stick-up Height (feet) | Well Depth (ft bgs) | Screen Interval Depth (ft bgs) |
|---|---|---|---|---|---|---|---|---|
| CCR-1 | 10/20/2015 | 2221016.34 | 485450.08 | 13.37 | 16.58 | 3.21 | 19.79 | 9.79-19.79 |
| CCR-2 | 10/20/2015 | 2222219.71 | 485292.98 | 14.45 | 18.06 | 3.61 | 19.49 | 9.49-19.49 |
| CCR-3 | 10/20/2015 | 2222897.83 | 485087.81 | 14.22 | 17.74 | 3.52 | 19.78 | 9.78-19.78 |
| CCR-4 | 10/21/2015 | 2221065.31 | 486365.39 | 17.87 | 20.73 | 2.86 | 20.84 | 10.84-20.84 |
| CCR-5 | 10/21/2015 | 2221064.27 | 486865.44 | 15.44 | 18.29 | 2.85 | 20.35 | 10.35-20.35 |
| CCR-6 | 10/21/2015 | 2221455.96 | 487055.81 | 13.07 | 16.07 | 3.00 | 20.10 | 10.1-20.1 |
| CCR-7 | 10/22/2015 | 2221887.42 | 487053.83 | 12.44 | 15.72 | 3.28 | 20.12 | 10.12-20.12 |
| AW-1 | 11/29/2018 | 2221266.24 | 487136.19 | 14.4 | 17.16 | 2.76 | 20.24 | 10.24-20.24 |
| AW-2 | 11/29/2018 | 2221416.04 | 487138.12 | 13.3 | 16.14 | 2.84 | 20.16 | 10.16-20.16 |
| AW-3 | 11/30/2018 | 2221699.22 | 487139.98 | 11.8 | 14.46 | 2.66 | 20.34 | 10.34-20.34 |
| AW-4 | 2/8/2019 | 2221703.97 | 487052.84 | 10.5 | 13.49 | 2.99 | 20.01 | 10.01-20.01 |
| AW-5 | 2/7/2019 | 2221677.18 | 487248.41 | 10.6 | 13.46 | 2.86 | 20.14 | 10.14-20.14 |
| AW-6 | 2/7/2019 | 2221371.74 | 487620.88 | 10.8 | 13.76 | 2.96 | 20.04 | 10.04-20.04 |
| AW-7 | 2/7/2019 | 2221217.37 | 488105.81 | 10.2 | 13.17 | 2.97 | 20.03 | 10.03-20.03 |

Notes:

TOC - Top of Casing

ft bgs - feet below ground surface

ft TOC - feet below top of casing

NAD83 - Horizontal Control: North American Datum, State Plan Coordinate System Florida, East Zone

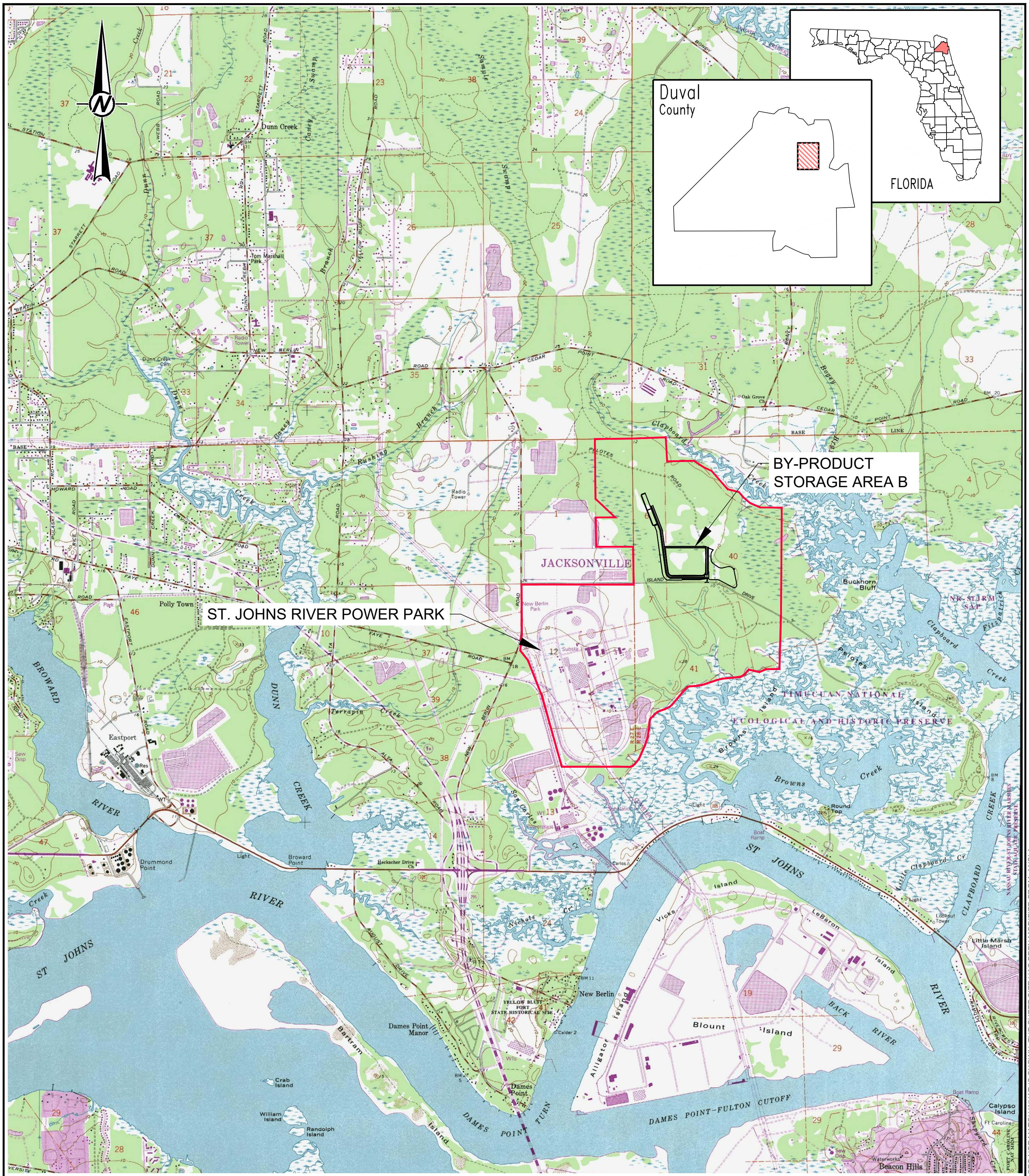
NAVD88 - Vertical Control: North American Vertical Datum of 1988

# TABLE 2
# CORRECTIVE MEASURES SCREENING EVALUATION

## St. Johns River Power Park
## Byproduct Storage Area B - SJRPP

| Potential Corrective Measure | Screening Criteria | | | | | |
|---|---|---|---|---|---|---|
| | Performance | Reliability | Implementation Ease | Potential Impacts | Timeframe | Institutional Requirements |
| Monitored Natural Attenuation | Medium | High<br>(Natural Processes, Little O&M Needs) | Easy<br>(following site characterization, minimal infrastructure) | Minimal | Begin: 3 to 12 Months<br>Complete: Varies (5+ years) | FDEP Approval |
| Enhanced Monitored Natural Attenuation | Medium to High | Medium<br>(Enhancements May Need to be Periodically Maintained) | Easy to Moderate<br>(identify enhancement option, injection well, etc.) | Minimal to Low | Begin: 6 to 12 Months<br>Complete: Varies (5+ years) | FDEP Approval |
| Groundwater Pump-and-Treat | High<br>(Contaminant Mass Removed and Migration Controlled) | Medium to High<br>(Routine O&M Required) | Moderate<br>(design & install system) | Low<br>(Associated with Construction and O&M) | Begin: 12 to 24 Months<br>Complete: Varies (1-10 years) | FDEP Approval |
| Hydraulic Barrier | Medium to High<br>(More Effective if Coupled with Groundwater Extraction or Other Remedies) | High | Moderate to Difficult<br>(Depth) | Low<br>(Associated with Construction) | Begin: 12 to 18 Months<br>Complete: Varies (1-10 years) | FDEP Approval |
| Permeable Reactive Barrier | Medium to High | Medium<br>(Reactive Media Replacement) | Moderate to Difficult<br>(Depth) | Low<br>(Associated with Construction and Media Maintenance) | Begin: 12 to 24 Months<br>Complete: Varies (1-10 years) | FDEP Approval |
| Phytoremediation | Low to Medium | Low to Medium | Moderate | Minimal<br>(Associated with Initial Planting) | Begin: 6 to 12 months<br>Complete: Varies (10+ years) | FDEP Approval |

# FIGURES




REFERENCE(S)

1.) USGS TOPOGRAPHIC MAP, 7.5 MIN. QUADRANGLE MAP SERIES: EASTPORT QUADRANGLE, DUVAL COUNTY, FLORIDA.

CLIENT
JEA

PROJECT
ST. JOHNS RIVER POWER PARK - CCR SUPPORT
JACKSONVILLE, DUVAL COUNTY, FLORIDA

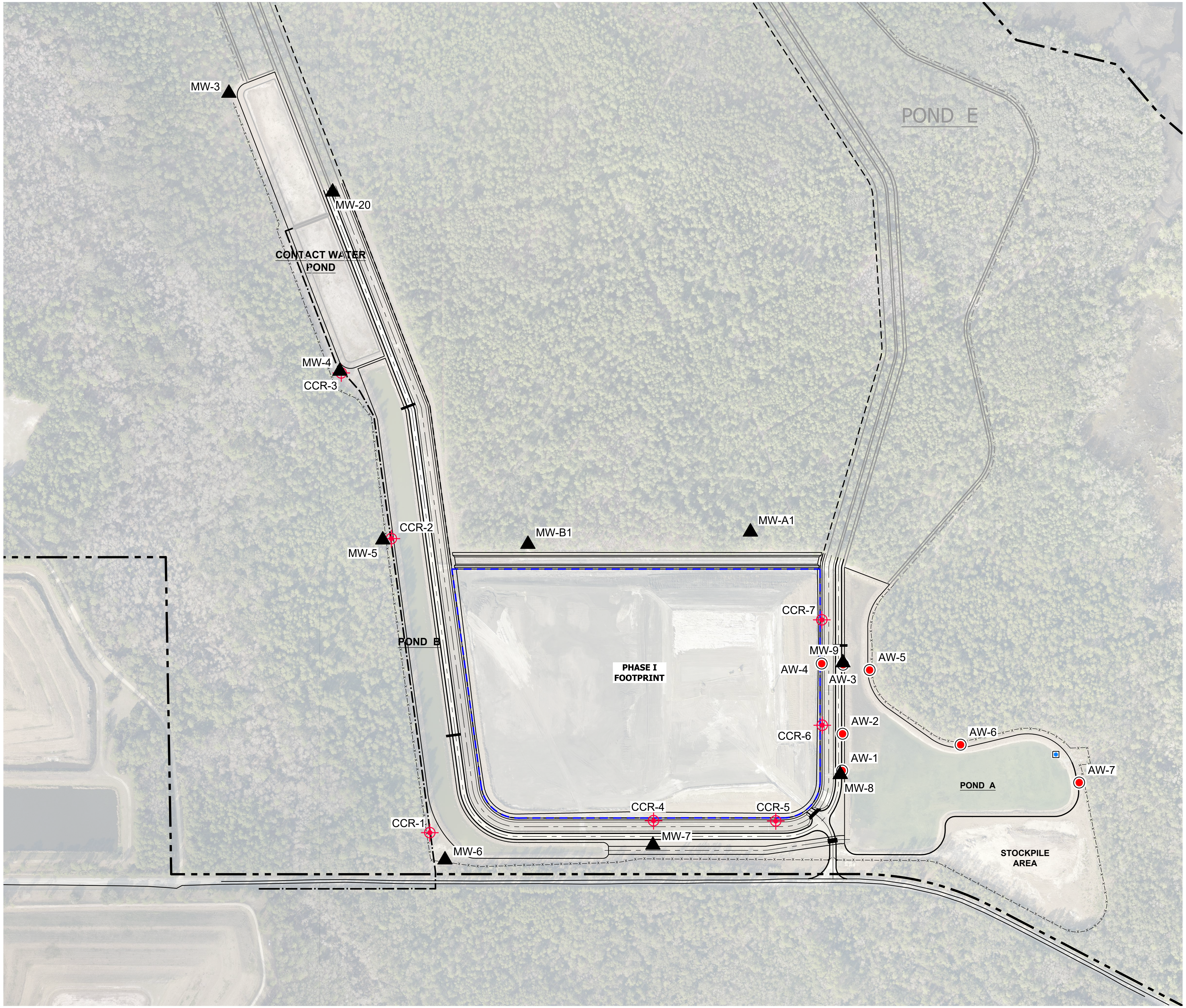
CONSULTANT

GOLDER

| | |
|---|---|
| YYYY-MM-DD | 2019-05-29 |
| DESIGNED | SFS |
| PREPARED | BCL |
| REVIEWED | SFS |
| APPROVED | DJM |

TITLE
**SITE LOCATION MAP**

| PROJECT NO. | Phase | REV. | FIGURE |
|---|---|---|---|
| 15-26356.2 | 1526356-V001 | | 1 |




**LEGEND**

| | |
|---|---|
| — · — · — | PROPERTY BOUNDARY |
| — X — X — X — X — | CHAIN LINK FENCELINE |
| - - - - - | PHASE I LIMIT OF WASTE |
| CCR-1 | CCR GROUNDWATER MONITORING WELL LOCATIONS |
| AW-1 | PIEZOMETER LOCATION |
| MW-B1 | EXISTING MONITORING WELL |

**REFERENCE(S)**

1.) CCR-SERIES MONITORING WELL AS-BUILT SURVEY PERFORMED BY B.V. & ASSOCIATES, INC. ON NOVEMBER 17, 2015.

2.) AERIAL IMAGE TAKEN FROM FDEP BUREAU OF SURVEY AND MAPPING (LAND BOUNDARY INFORMATION SYSTEM), YEAR 2013.

3.) AW-SERIES PIEZOMETERS FROM SURVEY PERFORMED BY R.E. HOLLAND & ASSOCIATES, INC. IN MARCH 2019.

0 100 200
SCALE FEET

CLIENT
JEA

CONSULTANT

GOLDER

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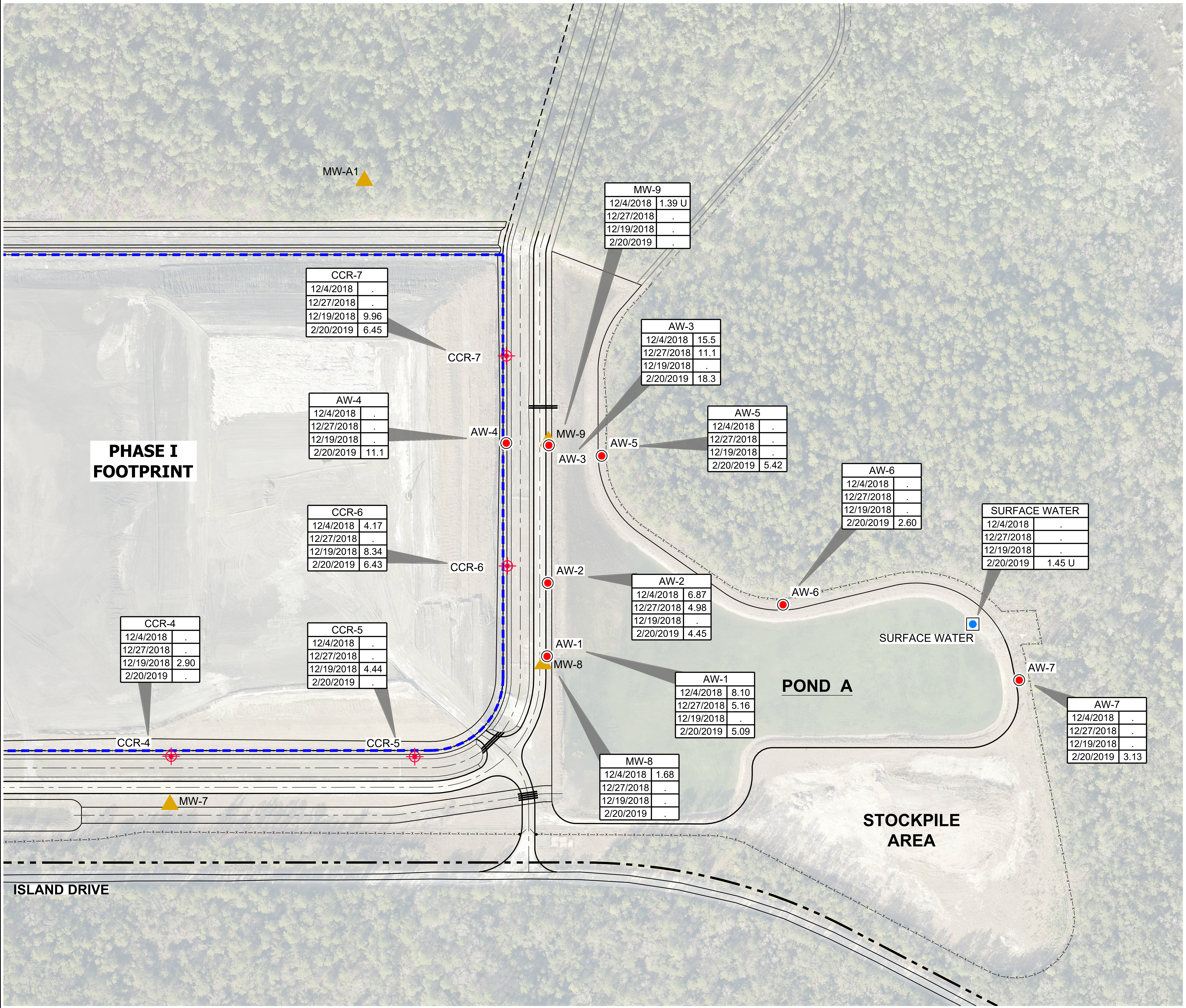
|---|---|
| YYYY-MM-DD | 2019-05-29 |
| DESIGNED | SFS |
| PREPARED | BCL |
| REVIEWED | SFS |
| APPROVED | DJM |

PROJECT
ST. JOHNS RIVER POWER PARK - CCR SUPPORT
JACKSONVILLE, DUVAL COUNTY, FLORIDA

TITLE
**WELL LOCATION MAP**

| PROJECT NO. | Phase | REV. | FIGURE |
|---|---|---|---|
| 15-26356.2 | 1526356-V002 | | 2 |




**LEGEND**

- PROPERTY BOUNDARY
- X — X — X — X CHAIN LINK FENCELINE
- PHASE I LIMIT OF WASTE
- CCR-1 CCR GROUNDWATER MONITORING WELL LOCATIONS
- MW-8 COC MONITORING WELL
- AW-1 CHARACTERIZATION WELL LOCATION (NOV. 2018)
- PROPOSED SURFACE WATER SAMPLING LOCATION

| AW-1 | |
|---|---|
| 12/4/2018 | X.XX |
| 12/27/2018 | X.XX |
| 12/19/2018 | X.XX |
| 2/20/2019 | X.XX |

Sample ID

RADIUM 226&228 GROUNDWATER RESULTS (pCi/L)

DATE SAMPLED

**NOTE(S)**

1. ALL RESULTS ARE REPORTED IN PICOCURIES PER LITER (pCi/L).
2. U - INDICATES ANALYTE WAS NOT DETECTED ABOVE THE METHOD DETECTION LIMIT.

**REFERENCE(S)**

1.) CCR-SERIES MONITORING WELL AS-BUILT SURVEY PERFORMED BY B.V. & ASSOCIATES, INC. ON NOVEMBER 17, 2015.

2.) AERIAL IMAGE TAKEN FROM FDEP BUREAU OF SURVEY AND MAPPING (LAND BOUNDARY INFORMATION SYSTEM), YEAR 2013.

3.) AW-SERIES WELLS FROM SURVEY PERFORMED BY R.E. HOLLAND & ASSOCIATES, INC. IN MARCH 2019.

0 100 200
SCALE FEET

CLIENT
JEA

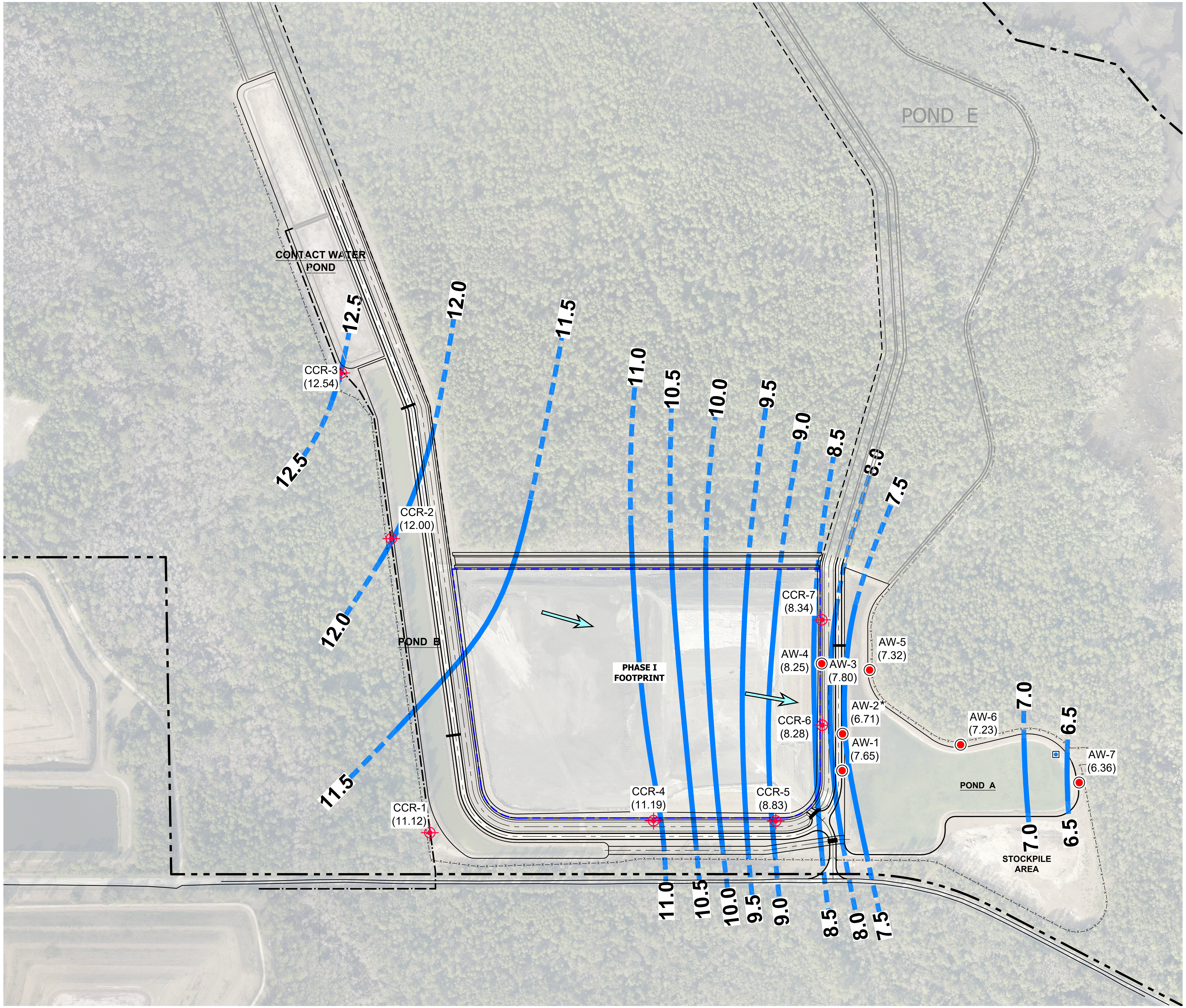
CONSULTANT
GOLDER

| | |
|---|---|
| YYYY-MM-DD | 2019-05-29 |
| DESIGNED | SFS |
| PREPARED | BCL |
| REVIEWED | SFS |
| APPROVED | DJM |

PROJECT
ST. JOHNS RIVER POWER PARK - CCR SUPPORT
JACKSONVILLE, DUVAL COUNTY, FLORIDA

TITLE
**NATURE AND EXTENT SAMPLING - RADIUM 226 & 228 GROUNDWATER RESULTS**

| PROJECT NO. | Phase | REV. | FIGURE |
|---|---|---|---|
| 15-26356.2 | 1526356-V003 | | 3 |




N

**LEGEND**

| | |
|---|---|
| | PROPERTY BOUNDARY |
| — X — X — X — X — | CHAIN LINK FENCELINE |
| | PHASE I LIMIT OF WASTE |
| CCR-1 | CCR GROUNDWATER MONITORING WELL LOCATIONS |
| AW-1 | PIEZOMETER LOCATION |
| (6.36) | GROUNDWATER ELEVATION (FT-NAVD88) |
| 11.0 | GROUNDWATER CONTOUR INTERVAL (DASHED WHERE INFERRED) (FT-NAVD88) |
| | ESTIMATED GROUNDWATER FLOW DIRECTION |

**NOTE(S)**

1.) * = ANOMALOUS WATER LEVEL VALUE - NOT INCLUDED TO DEVELOP POTENTIONETRIC SURFACE MAP.

**REFERENCE(S)**

1.) CCR-SERIES MONITORING WELL AS-BUILT SURVEY PERFORMED BY B.V. & ASSOCIATES, INC. ON NOVEMBER 17, 2015.

2.) AERIAL IMAGE TAKEN FROM FDEP BUREAU OF SURVEY AND MAPPING (LAND BOUNDARY INFORMATION SYSTEM), YEAR 2013.

3.) AW-SERIES PIEZOMETERS FROM SURVEY PERFORMED BY R.E. HOLLAND & ASSOCIATES, INC. IN MARCH 2019.

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SCALE FEET

CLIENT
JEA

CONSULTANT
GOLDER

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|---|---|
| YYYY-MM-DD | 2019-05-29 |
| DESIGNED | SFS |
| PREPARED | BCL |
| REVIEWED | SFS |
| APPROVED | DJM |

PROJECT
ST. JOHNS RIVER POWER PARK - CCR SUPPORT
JACKSONVILLE, DUVAL COUNTY, FLORIDA

TITLE
**POTENTIOMETRIC SURFACE MAP**
(MARCH 25, 2019)

| PROJECT NO. | Phase | REV. | FIGURE |
|---|---|---|---|
| 15-26356.2 | 1526356-V004 | | 4 |

**APPENDIX A**

# Laboratory Analytical Results

| LAB_SAMPLE_ID | CUST_SAMPLE_ID | COLLECT_DATE | METHOD | CMP_DESC | RESULT | UNITS | QUALIFIERS | MDL | PQL | DIL_FACT | ANAL_DATE_TIME | ANALYST |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S181204PPCCR6XX01 | CCR-6 | 04-Dec-18 | EPA 903.1 | Radium-226 | 1.10 | pCi/L | | 0.654 | 0.654 | 1 | 18-Dec-18 | Pace |
| S181204PPCCR6XX01 | CCR-6 | 04-Dec-18 | EPA 904.0 | Radium-228 | 3.07 | pCi/L | | 0.830 | 0.830 | 1 | 17-Dec-18 | Pace |
| S181204PPCCR6XX01 | CCR-6 | 04-Dec-18 | Field | DO (Field) Concentration | 0.9 | mg/L | | | | 1 | 06-Dec-18 | Field |
| S181204PPCCR6XX01 | CCR-6 | 04-Dec-18 | Field | Field Turb | 19.7 | NTU | | | | 1 | 06-Dec-18 | Field |
| S181204PPCCR6XX01 | CCR-6 | 04-Dec-18 | Field | Redox Potential (Field) | -122.2 | mV | | | | 1 | 06-Dec-18 | Field |
| S181204PPCCR6XX01 | CCR-6 | 04-Dec-18 | Field | Specific Conductance (Field) | 3314 | umhos/cm | | | | 1 | 06-Dec-18 | Field |
| S181204PPCCR6XX01 | CCR-6 | 04-Dec-18 | Field | Temp (Field) | 20.8 | Deg.C | | | | 1 | 06-Dec-18 | Field |
| S181204PPCCR6XX01 | CCR-6 | 04-Dec-18 | Field | pH (Field) | 5.92 | S.U. | | | | 1 | 06-Dec-18 | Field |
| S181204PPCCR6XX01 | CCR-6 | 04-Dec-18 | SM7110C-11 | Gross Alpha | 12.5 | pCi/L | | 1.60 | 1.60 | 1 | 12-Dec-18 | Pace |
| S181204PPCCR6XX01 | CCR-6 | 04-Dec-18 | Total Radium Calcula | Total Radium | 4.17 | pCi/L | | 1.48 | 1.48 | 1 | 18-Dec-18 | Pace |
| S181204PPMW9XX01 | MW-9 | 04-Dec-18 | EPA 903.1 | Radium-226 | 1.07 | pCi/L | | 0.639 | 0.639 | 1 | 18-Dec-18 | Pace |
| S181204PPMW9XX01 | MW-9 | 04-Dec-18 | EPA 904.0 | Radium-228 | 0.752U | pCi/L | U | 0.752 | 0.752 | 1 | 17-Dec-18 | Pace |
| S181204PPMW9XX01 | MW-9 | 04-Dec-18 | Field | DO (Field) Concentration | 1.2 | mg/L | | | | 1 | 06-Dec-18 | Field |
| S181204PPMW9XX01 | MW-9 | 04-Dec-18 | Field | Field Turb | 1.88 | NTU | | | | 1 | 06-Dec-18 | Field |
| S181204PPMW9XX01 | MW-9 | 04-Dec-18 | Field | Redox Potential (Field) | 13.0 | mV | | | | 1 | 06-Dec-18 | Field |
| S181204PPMW9XX01 | MW-9 | 04-Dec-18 | Field | Specific Conductance (Field) | 160.7 | umhos/cm | | | | 1 | 06-Dec-18 | Field |
| S181204PPMW9XX01 | MW-9 | 04-Dec-18 | Field | Temp (Field) | 21.8 | Deg.C | | | | 1 | 06-Dec-18 | Field |
| S181204PPMW9XX01 | MW-9 | 04-Dec-18 | Field | pH (Field) | 5.45 | S.U. | | | | 1 | 06-Dec-18 | Field |
| S181204PPMW9XX01 | MW-9 | 04-Dec-18 | SM7110C-11 | Gross Alpha | 2.91 | pCi/L | | 2.01 | 2.01 | 1 | 12-Dec-18 | Pace |
| S181204PPMW9XX01 | MW-9 | 04-Dec-18 | Total Radium Calcula | Total Radium | 1.39U | pCi/L | U | 1.39 | 1.39 | 1 | 18-Dec-18 | Pace |
| S181204PPMW8XX01 | MW-8 | 04-Dec-18 | EPA 903.1 | Radium-226 | 0.671U | pCi/L | U | 0.671 | 0.671 | 1 | 18-Dec-18 | Pace |
| S181204PPMW8XX01 | MW-8 | 04-Dec-18 | EPA 904.0 | Radium-228 | 1.24 | pCi/L | | 0.764 | 0.764 | 1 | 17-Dec-18 | Pace |
| S181204PPMW8XX01 | MW-8 | 04-Dec-18 | Field | DO (Field) Concentration | 1.6 | mg/L | | | | 1 | 06-Dec-18 | Field |
| S181204PPMW8XX01 | MW-8 | 04-Dec-18 | Field | Field Turb | 1.54 | NTU | | | | 1 | 06-Dec-18 | Field |
| S181204PPMW8XX01 | MW-8 | 04-Dec-18 | Field | Redox Potential (Field) | 121.7 | mV | | | | 1 | 06-Dec-18 | Field |
| S181204PPMW8XX01 | MW-8 | 04-Dec-18 | Field | Specific Conductance (Field) | 78.6 | umhos/cm | | | | 1 | 06-Dec-18 | Field |
| S181204PPMW8XX01 | MW-8 | 04-Dec-18 | Field | Temp (Field) | 21.7 | Deg.C | | | | 1 | 06-Dec-18 | Field |
| S181204PPMW8XX01 | MW-8 | 04-Dec-18 | Field | pH (Field) | 5.24 | S.U. | | | | 1 | 06-Dec-18 | Field |
| S181204PPMW8XX01 | MW-8 | 04-Dec-18 | SM7110C-11 | Gross Alpha | 2.21U | pCi/L | U | 2.21 | 2.21 | 1 | 12-Dec-18 | Pace |
| S181204PPMW8XX01 | MW-8 | 04-Dec-18 | Total Radium Calcula | Total Radium | 1.68 | pCi/L | | 1.44 | 1.44 | 1 | 18-Dec-18 | Pace |
| S181203PPAW1XX01 | AW-1 | 03-Dec-18 | EPA 903.1 | Radium-226 | 3.80 | pCi/L | | 1.10 | 1.10 | 1 | 11-Dec-18 | Pace |
| S181203PPAW1XX01 | AW-1 | 03-Dec-18 | EPA 904.0 | Radium-228 | 4.30 | pCi/L | | 0.887 | 0.887 | 1 | 10-Dec-18 | Pace |
| S181203PPAW1XX01 | AW-1 | 03-Dec-18 | Field | DO (Field) Concentration | 0.4 | mg/L | | | | 1 | 06-Dec-18 | Field |
| S181203PPAW1XX01 | AW-1 | 03-Dec-18 | Field | Field Turb | 11.8 | NTU | | | | 1 | 06-Dec-18 | Field |
| S181203PPAW1XX01 | AW-1 | 03-Dec-18 | Field | Redox Potential (Field) | 0.1 | mV | | | | 1 | 06-Dec-18 | Field |
| S181203PPAW1XX01 | AW-1 | 03-Dec-18 | Field | Specific Conductance (Field) | 3847 | umhos/cm | | | | 1 | 06-Dec-18 | Field |
| S181203PPAW1XX01 | AW-1 | 03-Dec-18 | Field | Temp (Field) | 23.7 | Deg.C | | | | 1 | 06-Dec-18 | Field |
| S181203PPAW1XX01 | AW-1 | 03-Dec-18 | Field | pH (Field) | 4.28 | S.U. | | | | 1 | 06-Dec-18 | Field |
| S181203PPAW1XX01 | AW-1 | 03-Dec-18 | SM7110C-11 | Gross Alpha | 15.1 | pCi/L | | 2.40 | 2.40 | 1 | 10-Dec-18 | Pace |
| S181203PPAW1XX01 | AW-1 | 03-Dec-18 | Total Radium Calcula | Total Radium | 8.10 | pCi/L | | 1.99 | 1.99 | 1 | 12-Dec-18 | Pace |
| S181203PPAW3XX01 | AW-3 | 03-Dec-18 | EPA 903.1 | Radium-226 | 7.43 | pCi/L | | 0.875 | 0.875 | 1 | 11-Dec-18 | Pace |
| S181203PPAW3XX01 | AW-3 | 03-Dec-18 | EPA 904.0 | Radium-228 | 8.06 | pCi/L | | 0.762 | 0.762 | 1 | 10-Dec-18 | Pace |
| S181203PPAW3XX01 | AW-3 | 03-Dec-18 | Field | DO (Field) Concentration | 0.4 | mg/L | | | | 1 | 06-Dec-18 | Field |
| S181203PPAW3XX01 | AW-3 | 03-Dec-18 | Field | Field Turb | 3.09 | NTU | | | | 1 | 06-Dec-18 | Field |
| S181203PPAW3XX01 | AW-3 | 03-Dec-18 | Field | Redox Potential (Field) | 20.9 | mV | | | | 1 | 06-Dec-18 | Field |
| S181203PPAW3XX01 | AW-3 | 03-Dec-18 | Field | Specific Conductance (Field) | 4172 | umhos/cm | | | | 1 | 06-Dec-18 | Field |
| S181203PPAW3XX01 | AW-3 | 03-Dec-18 | Field | Temp (Field) | 23.3 | Deg.C | | | | 1 | 06-Dec-18 | Field |
| S181203PPAW3XX01 | AW-3 | 03-Dec-18 | Field | pH (Field) | 4.73 | S.U. | | | | 1 | 06-Dec-18 | Field |
| S181203PPAW3XX01 | AW-3 | 03-Dec-18 | SM7110C-11 | Gross Alpha | 31.5 | pCi/L | | 1.78 | 1.78 | 1 | 10-Dec-18 | Pace |
| S181203PPAW3XX01 | AW-3 | 03-Dec-18 | Total Radium Calcula | Total Radium | 15.5 | pCi/L | | 1.64 | 1.64 | 1 | 12-Dec-18 | Pace |
| S181203PPAW2XX01 | AW-2 | 03-Dec-18 | EPA 903.1 | Radium-226 | 2.64 | pCi/L | | 0.720 | 0.720 | 1 | 11-Dec-18 | Pace |
| S181203PPAW2XX01 | AW-2 | 03-Dec-18 | EPA 904.0 | Radium-228 | 4.24 | pCi/L | | 1.04 | 1.04 | 1 | 10-Dec-18 | Pace |
| S181203PPAW2XX01 | AW-2 | 03-Dec-18 | Field | DO (Field) Concentration | 0.9 | mg/L | | | | 1 | 06-Dec-18 | Field |
| S181203PPAW2XX01 | AW-2 | 03-Dec-18 | Field | Field Turb | 18.8 | NTU | | | | 1 | 06-Dec-18 | Field |
| S181203PPAW2XX01 | AW-2 | 03-Dec-18 | Field | Redox Potential (Field) | 57.7 | mV | | | | 1 | 06-Dec-18 | Field |
| S181203PPAW2XX01 | AW-2 | 03-Dec-18 | Field | Specific Conductance (Field) | 4210 | umhos/cm | | | | 1 | 06-Dec-18 | Field |
| S181203PPAW2XX01 | AW-2 | 03-Dec-18 | Field | Temp (Field) | 23.5 | Deg.C | | | | 1 | 06-Dec-18 | Field |
| S181203PPAW2XX01 | AW-2 | 03-Dec-18 | Field | pH (Field) | 4.63 | S.U. | | | | 1 | 06-Dec-18 | Field |
| S181203PPAW2XX01 | AW-2 | 03-Dec-18 | SM7110C-11 | Gross Alpha | 11.8 | pCi/L | | 2.23 | 2.23 | 1 | 10-Dec-18 | Pace |
| S181203PPAW2XX01 | AW-2 | 03-Dec-18 | Total Radium Calcula | Total Radium | 6.87 | pCi/L | | 1.76 | 1.76 | 1 | 12-Dec-18 | Pace |

| LAB_SAMPLE_ID | CUST_SAMPLE_ID | COLLECT_DATE | METHOD | CMP_DESC | RESULT | UNITS | QUALIFIERS | MDL | PQL | DIL_FACT | ANAL_DATE_TIME | ANALYST |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S181227PPAW1XX01 | AW-1 | 27-Dec-18 | EPA 903.1 | Radium-226 | 2.92 | pCi/L | | 0.634 | 0.634 | 1 | 11-Jan-19 | Pace |
| S181227PPAW1XX01 | AW-1 | 27-Dec-18 | EPA 904.0 | Radium-228 | 2.25 | pCi/L | | 0.792 | 0.792 | 1 | 10-Jan-19 | Pace |
| S181227PPAW1XX01 | AW-1 | 27-Dec-18 | Field | DO (Field) Concentration | 0.46 | mg/L | | | | 1 | 28-Dec-18 | Field |
| S181227PPAW1XX01 | AW-1 | 27-Dec-18 | Field | Field Turb | 3.03 | NTU | | | | 1 | 28-Dec-18 | Field |
| S181227PPAW1XX01 | AW-1 | 27-Dec-18 | Field | Redox Potential (Field) | -49.0 | mV | | | | 1 | 28-Dec-18 | Field |
| S181227PPAW1XX01 | AW-1 | 27-Dec-18 | Field | Specific Conductance (Field) | 3927 | umhos/cm | | | | 1 | 28-Dec-18 | Field |
| S181227PPAW1XX01 | AW-1 | 27-Dec-18 | Field | Temp (Field) | 22.5 | Deg.C | | | | 1 | 28-Dec-18 | Field |
| S181227PPAW1XX01 | AW-1 | 27-Dec-18 | Field | pH (Field) | 4.45 | S.U. | | | | 1 | 28-Dec-18 | Field |
| S181227PPAW1XX01 | AW-1 | 27-Dec-18 | Total Radium Calcula | Total Radium | 5.16 | pCi/L | | 1.43 | 1.43 | 1 | 11-Jan-19 | Pace |
| S181227PPAW2XX01 | AW-2 | 27-Dec-18 | EPA 903.1 | Radium-226 | 3.13 | pCi/L | | 0.508 | 0.508 | 1 | 11-Jan-19 | Pace |
| S181227PPAW2XX01 | AW-2 | 27-Dec-18 | EPA 904.0 | Radium-228 | 1.85 | pCi/L | | 0.782 | 0.782 | 1 | 10-Jan-19 | Pace |
| S181227PPAW2XX01 | AW-2 | 27-Dec-18 | Field | DO (Field) Concentration | 0.76 | mg/L | | | | 1 | 28-Dec-18 | Field |
| S181227PPAW2XX01 | AW-2 | 27-Dec-18 | Field | Field Turb | 5.57 | NTU | | | | 1 | 28-Dec-18 | Field |
| S181227PPAW2XX01 | AW-2 | 27-Dec-18 | Field | Redox Potential (Field) | -59.6 | mV | | | | 1 | 28-Dec-18 | Field |
| S181227PPAW2XX01 | AW-2 | 27-Dec-18 | Field | Specific Conductance (Field) | 4071 | umhos/cm | | | | 1 | 28-Dec-18 | Field |
| S181227PPAW2XX01 | AW-2 | 27-Dec-18 | Field | Temp (Field) | 22.4 | Deg.C | | | | 1 | 28-Dec-18 | Field |
| S181227PPAW2XX01 | AW-2 | 27-Dec-18 | Field | pH (Field) | 4.76 | S.U. | | | | 1 | 28-Dec-18 | Field |
| S181227PPAW2XX01 | AW-2 | 27-Dec-18 | Total Radium Calcula | Total Radium | 4.98 | pCi/L | | 1.29 | 1.29 | 1 | 11-Jan-19 | Pace |
| S181227PPAW3XX01 | AW-3 | 27-Dec-18 | EPA 903.1 | Radium-226 | 5.11 | pCi/L | | 0.698 | 0.698 | 1 | 11-Jan-19 | Pace |
| S181227PPAW3XX01 | AW-3 | 27-Dec-18 | EPA 904.0 | Radium-228 | 5.95 | pCi/L | | 0.753 | 0.753 | 1 | 10-Jan-19 | Pace |
| S181227PPAW3XX01 | AW-3 | 27-Dec-18 | Field | DO (Field) Concentration | 0.49 | mg/L | | | | 1 | 28-Dec-18 | Field |
| S181227PPAW3XX01 | AW-3 | 27-Dec-18 | Field | Field Turb | 4.10 | NTU | | | | 1 | 28-Dec-18 | Field |
| S181227PPAW3XX01 | AW-3 | 27-Dec-18 | Field | Redox Potential (Field) | -61.4 | mV | | | | 1 | 28-Dec-18 | Field |
| S181227PPAW3XX01 | AW-3 | 27-Dec-18 | Field | Specific Conductance (Field) | 4035 | umhos/cm | | | | 1 | 28-Dec-18 | Field |
| S181227PPAW3XX01 | AW-3 | 27-Dec-18 | Field | Temp (Field) | 22.1 | Deg.C | | | | 1 | 28-Dec-18 | Field |
| S181227PPAW3XX01 | AW-3 | 27-Dec-18 | Field | pH (Field) | 4.92 | S.U. | | | | 1 | 28-Dec-18 | Field |
| S181227PPAW3XX01 | AW-3 | 27-Dec-18 | Total Radium Calcula | Total Radium | 11.1 | pCi/L | | 1.45 | 1.45 | 1 | 11-Jan-19 | Pace |

| LAB_SAMPLE_ID | CUST_SAMPLE_ID | COLLECT_DATE | METHOD | CMP_DESC | RESULT | UNITS | QUALIFIERS | MDL | PQL | DIL_FACT | ANAL_DATE_TIME | ANALYST |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | EPA 200.7 TOTAL | Aluminum | 19711 | ug/L | | 3.91 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | EPA 200.7 TOTAL | Barium | 25.8 | ug/L | | 0.140 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | EPA 200.7 TOTAL | Beryllium | 2.29 | ug/L | I | 0.0627 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | EPA 200.7 TOTAL | Boron | 19405 | ug/L | J1 | 154 | 200 | 10 | 12-Mar-19 | AC |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | EPA 200.7 TOTAL | Calcium | 236230 | ug/L | | 91.3 | 100 | 5 | 13-Mar-19 | AC |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | EPA 200.7 TOTAL | Chromium | 2.26 | ug/L | I | 0.342 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | EPA 200.7 TOTAL | Cobalt | 1.10 U | ug/L | | 1.10 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | EPA 200.7 TOTAL | Iron | 38126 | ug/L | J1 | 6.00 | 100 | 5 | 13-Mar-19 | AC |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | EPA 200.7 TOTAL | Magnesium | 49667 | ug/L | | 3.28 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | EPA 200.7 TOTAL | Molybdenum | 1.27 U | ug/L | | 1.27 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | EPA 200.7 TOTAL | Potassium | 34958 | ug/L | | 36.0 | 500 | 5 | 13-Mar-19 | AC |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | EPA 200.7 TOTAL | Sodium | 542160 | ug/L | J1 | 44.6 | 100 | 5 | 13-Mar-19 | AC |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | EPA 200.8 | Lithium | 0.56 | ug/L | I | 0.19 | 1.0 | 1 | 01-Mar-19 | Pace |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | EPA 200.8 TOTAL | Antimony | 0.0946 U | ug/L | | 0.0946 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | EPA 200.8 TOTAL | Arsenic | 2.40 | ug/L | | 0.0499 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | EPA 200.8 TOTAL | Lead | 0.460 U | ug/L | | 0.460 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | EPA 200.8 TOTAL | Selenium | 5.67 | ug/L | I | 1.35 | 12.5 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | EPA 200.8 TOTAL | Thallium | 0.428 U | ug/L | | 0.428 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | EPA 300.0 | Chloride | 312 | mg/L | | 12.5 | 25.0 | 5 | 27-Feb-19 | Pace |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | EPA 300.0 | Fluoride | 0.26 | mg/L | | 0.17 | 0.25 | 5 | 27-Feb-19 | Pace |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | EPA 300.0 | Sulfate | 1910 | mg/L | | 50.0 | 100 | 20 | 26-Feb-19 | Pace |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | EPA 353.2 | Nitrate/Nitrite | 0.05 U | mg/L | | 0.05 | 0.10 | 1 | 01-Mar-19 | AB |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | EPA 365.4 | Total Phosphorous | 0.04 | mg/L | I, V | 0.02 | 0.10 | 1 | 27-Feb-19 | CD |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | EPA 903.1 | Radium-226 | 1.80 | pCi/L | | 0.697 | 0.697 | 1 | 05-Mar-19 | Pace |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | EPA 904.0 | Radium-228 | 3.29 | pCi/L | | 0.814 | 0.814 | 1 | 04-Mar-19 | Pace |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | Field | DO (Field) Concentration | 0.30 | mg/L | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | Field | Field Turb | 19.2 | NTU | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | Field | Redox Potential (Field) | -115.8 | mV | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | Field | Specific Conductance (Field) | 3828 | umhos/cm | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | Field | Temp (Field) | 21.7 | Deg.C | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | Field | pH (Field) | 4.31 | S.U. | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | SM2320B | Alkalinity (Bicarbonate) | 20.0 U | mg/L | | 20.0 | 20.0 | 1 | 26-Feb-19 | KC |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | SM2320B | Alkalinity (Carbonate) | 0.00 | mg/L | | | | 1 | 26-Feb-19 | KC |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | SM2320B | Alkalinity (Total) | 20.0 U | mg/L | | 20.0 | 20.0 | 1 | 26-Feb-19 | KC |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | SM2340B | T Hardness (as CaCO3) | 794 | mg/L | | 0.0200 | | 1 | 14-Mar-19 | DP |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | SM2510B | Specific Conductance | 4160 | umhos/cm | | 1.00 | 10.0 | | 25-Feb-19 | DS |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | SM2540C | Residue, Filterable (TDS) | 2982 | mg/L | | 3 | 5 | 1 | 22-Feb-19 | DS |
| S190220PPAW1XX01 | AW-1 | 20-Feb-19 | Total Radium Calcula | Total Radium | 5.09 | pCi/L | | 1.51 | 1.51 | 1 | 06-Mar-19 | Pace |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | EPA 200.7 TOTAL | Aluminum | 8267.1 | ug/L | | 3.91 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | EPA 200.7 TOTAL | Barium | 48.5 | ug/L | | 0.140 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | EPA 200.7 TOTAL | Beryllium | 0.722 | ug/L | I | 0.0627 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | EPA 200.7 TOTAL | Boron | 19984 | ug/L | | 154 | 200 | 10 | 12-Mar-19 | AC |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | EPA 200.7 TOTAL | Calcium | 246080 | ug/L | | 18.3 | 20.0 | 1 | 13-Mar-19 | AC |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | EPA 200.7 TOTAL | Chromium | 0.661 | ug/L | I | 0.342 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | EPA 200.7 TOTAL | Cobalt | 1.10 U | ug/L | | 1.10 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | EPA 200.7 TOTAL | Iron | 9379.1 | ug/L | | 1.20 | 20.0 | 1 | 13-Mar-19 | AC |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | EPA 200.7 TOTAL | Magnesium | 39832 | ug/L | | 3.28 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | EPA 200.7 TOTAL | Molybdenum | 26.2 | ug/L | | 1.27 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | EPA 200.7 TOTAL | Potassium | 99864 | ug/L | | 7.20 | 100 | 1 | 13-Mar-19 | AC |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | EPA 200.7 TOTAL | Sodium | 578470 | ug/L | | 8.91 | 20.0 | 1 | 13-Mar-19 | AC |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | EPA 200.8 | Lithium | 0.29 | ug/L | I | 0.19 | 1.0 | 1 | 01-Mar-19 | Pace |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | EPA 200.8 TOTAL | Antimony | 0.0946 U | ug/L | | 0.0946 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | EPA 200.8 TOTAL | Arsenic | 1.23 | ug/L | | 0.0499 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | EPA 200.8 TOTAL | Lead | 0.460 U | ug/L | | 0.460 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | EPA 200.8 TOTAL | Selenium | 3.03 | ug/L | I | 1.35 | 12.5 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | EPA 200.8 TOTAL | Thallium | 0.428 U | ug/L | | 0.428 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | EPA 300.0 | Chloride | 197 | mg/L | | 12.5 | 25.0 | 5 | 27-Feb-19 | Pace |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | EPA 300.0 | Fluoride | 0.17 U | mg/L | U,D3 | 0.17 | 0.25 | 5 | 27-Feb-19 | Pace |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | EPA 300.0 | Sulfate | 1880 | mg/L | | 125 | 250 | 50 | 27-Feb-19 | Pace |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | EPA 353.2 | Nitrate/Nitrite | 0.05 U | mg/L | | 0.05 | 0.10 | 1 | 01-Mar-19 | AB |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | EPA 365.4 | Total Phosphorous | 0.03 | mg/L | I, V | 0.02 | 0.10 | 1 | 27-Feb-19 | CD |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | EPA 903.1 | Radium-226 | 1.82 | pCi/L | | 0.735 | 0.735 | 1 | 05-Mar-19 | Pace |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | EPA 904.0 | Radium-228 | 2.63 | pCi/L | | 0.756 | 0.756 | 1 | 04-Mar-19 | Pace |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | Field | DO (Field) Concentration | 0.31 | mg/L | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | Field | Field Turb | 14.1 | NTU | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | Field | Redox Potential (Field) | -73.3 | mV | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | Field | Specific Conductance (Field) | 4146 | umhos/cm | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | Field | Temp (Field) | 21.1 | Deg.C | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | Field | pH (Field) | 4.54 | S.U. | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | SM2320B | Alkalinity (Bicarbonate) | 20.0 U | mg/L | | 20.0 | 20.0 | 1 | 26-Feb-19 | KC |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | SM2320B | Alkalinity (Carbonate) | 0.00 | mg/L | | | | 1 | 26-Feb-19 | KC |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | SM2320B | Alkalinity (Total) | 20.0 U | mg/L | | 20.0 | 20.0 | 1 | 26-Feb-19 | KC |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | SM2340B | T Hardness (as CaCO3) | 778 | mg/L | | 0.0200 | | 1 | 14-Mar-19 | DP |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | SM2510B | Specific Conductance | 4430 | umhos/cm | | 1.00 | 10.0 | | 25-Feb-19 | DS |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | SM2540C | Residue, Filterable (TDS) | 3050 | mg/L | | 3 | 5 | 1 | 22-Feb-19 | DS |
| S190220PPAW2XX01 | AW-2 | 20-Feb-19 | Total Radium Calcula | Total Radium | 4.45 | pCi/L | | 1.49 | 1.49 | 1 | 06-Mar-19 | Pace |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | EPA 200.7 TOTAL | Aluminum | 4527.4 | ug/L | | 3.91 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | EPA 200.7 TOTAL | Barium | 52.6 | ug/L | | 0.140 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | EPA 200.7 TOTAL | Beryllium | 0.0627 U | ug/L | | 0.0627 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | EPA 200.7 TOTAL | Boron | 27495 | ug/L | | 154 | 200 | 10 | 12-Mar-19 | AC |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | EPA 200.7 TOTAL | Calcium | 354530 | ug/L | | 18.3 | 20.0 | 1 | 13-Mar-19 | AC |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | EPA 200.7 TOTAL | Chromium | 2.85 | ug/L | I | 0.342 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | EPA 200.7 TOTAL | Cobalt | 1.10 U | ug/L | | 1.10 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | EPA 200.7 TOTAL | Iron | 10261 | ug/L | | 1.20 | 20.0 | 1 | 13-Mar-19 | AC |

| LAB_SAMPLE_ID | CUST_SAMPLE_ID | COLLECT_DATE | METHOD | CMP_DESC | RESULT | UNITS | QUALIFIERS | MDL | PQL | DIL_FACT | ANAL_DATE_TIME | ANALYST |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | EPA 200.7 TOTAL | Magnesium | 12186 | ug/L | | 3.28 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | EPA 200.7 TOTAL | Molybdenum | 1.27 U | ug/L | | 1.27 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | EPA 200.7 TOTAL | Potassium | 152400 | ug/L | | 7.20 | 100 | 1 | 13-Mar-19 | AC |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | EPA 200.7 TOTAL | Sodium | 528450 | ug/L | | 8.91 | 20.0 | 1 | 13-Mar-19 | AC |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | EPA 200.8 | Lithium | 0.19 U | ug/L | U | 0.19 | 1.0 | 1 | 01-Mar-19 | Pace |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | EPA 200.8 TOTAL | Antimony | 0.0946 U | ug/L | | 0.0946 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | EPA 200.8 TOTAL | Arsenic | 0.531 | ug/L | I | 0.0499 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | EPA 200.8 TOTAL | Lead | 0.460 U | ug/L | | 0.460 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | EPA 200.8 TOTAL | Selenium | 4.24 | ug/L | I | 1.35 | 12.5 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | EPA 200.8 TOTAL | Thallium | 0.428 U | ug/L | | 0.428 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | EPA 300.0 | Chloride | 270 | mg/L | | 12.5 | 25.0 | 5 | 27-Feb-19 | Pace |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | EPA 300.0 | Fluoride | 0.17 U | mg/L | U,D3 | 0.17 | 0.25 | 5 | 27-Feb-19 | Pace |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | EPA 300.0 | Sulfate | 1980 | mg/L | | 50.0 | 100 | 20 | 26-Feb-19 | Pace |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | EPA 353.2 | Nitrate/Nitrite | 0.05 U | mg/L | | 0.05 | 0.10 | 1 | 01-Mar-19 | AB |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | EPA 365.4 | Total Phosphorous | 0.04 | mg/L | I, V | 0.02 | 0.10 | 1 | 27-Feb-19 | CD |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | EPA 903.1 | Radium-226 | 7.54 | pCi/L | | 0.206 | 0.206 | 1 | 05-Mar-19 | Pace |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | EPA 904.0 | Radium-228 | 10.8 | pCi/L | | 0.733 | 0.733 | 1 | 04-Mar-19 | Pace |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | Field | DO (Field) Concentration | 0.31 | mg/L | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | Field | Field Turb | 11.5 | NTU | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | Field | Redox Potential (Field) | -80.5 | mV | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | Field | Specific Conductance (Field) | 4134 | umhos/cm | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | Field | Temp (Field) | 20.7 | Deg.C | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | Field | pH (Field) | 4.69 | S.U. | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | SM2320B | Alkalinity (Bicarbonate) | 20.0 U | mg/L | | 20.0 | 20.0 | 1 | 26-Feb-19 | KC |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | SM2320B | Alkalinity (Carbonate) | 0.00 | mg/L | | | | 1 | 26-Feb-19 | KC |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | SM2320B | Alkalinity (Total) | 20.0 U | mg/L | | 20.0 | 20.0 | 1 | 26-Feb-19 | KC |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | SM2340B | T Hardness (as CaCO3) | 935 | mg/L | | 0.0200 | | 1 | 14-Mar-19 | DP |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | SM2510B | Specific Conductance | 4420 | umhos/cm | | 1.00 | 10.0 | | 25-Feb-19 | DS |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | SM2540C | Residue, Filterable (TDS) | 3158 | mg/L | | 3 | 5 | 1 | 22-Feb-19 | DS |
| S190220PPAW3XX01 | AW-3 | 20-Feb-19 | Total Radium Calcula | Total Radium | 18.3 | pCi/L | | 0.939 | 0.939 | 1 | 06-Mar-19 | Pace |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | EPA 200.7 TOTAL | Aluminum | 3492.0 | ug/L | | 3.91 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | EPA 200.7 TOTAL | Barium | 52.3 | ug/L | | 0.140 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | EPA 200.7 TOTAL | Beryllium | 0.0627 U | ug/L | | 0.0627 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | EPA 200.7 TOTAL | Boron | 26893 | ug/L | | 154 | 200 | 10 | 12-Mar-19 | AC |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | EPA 200.7 TOTAL | Calcium | 392560 | ug/L | | 18.3 | 20.0 | 1 | 13-Mar-19 | AC |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | EPA 200.7 TOTAL | Chromium | 3.34 | ug/L | I | 0.342 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | EPA 200.7 TOTAL | Cobalt | 1.10 U | ug/L | | 1.10 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | EPA 200.7 TOTAL | Iron | 10246 | ug/L | | 1.20 | 20.0 | 1 | 13-Mar-19 | AC |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | EPA 200.7 TOTAL | Magnesium | 10329 | ug/L | | 3.28 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | EPA 200.7 TOTAL | Molybdenum | 2.82 | ug/L | I | 1.27 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | EPA 200.7 TOTAL | Potassium | 151040 | ug/L | | 7.20 | 100 | 1 | 13-Mar-19 | AC |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | EPA 200.7 TOTAL | Sodium | 481560 | ug/L | | 8.91 | 20.0 | 1 | 13-Mar-19 | AC |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | EPA 200.8 | Lithium | 0.30 | ug/L | I | 0.19 | 1.0 | 1 | 01-Mar-19 | Pace |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | EPA 200.8 TOTAL | Antimony | 0.0946 U | ug/L | | 0.0946 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | EPA 200.8 TOTAL | Arsenic | 2.66 | ug/L | | 0.0499 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | EPA 200.8 TOTAL | Lead | 0.460 U | ug/L | | 0.460 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | EPA 200.8 TOTAL | Selenium | 3.62 | ug/L | I | 1.35 | 12.5 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | EPA 200.8 TOTAL | Thallium | 0.428 U | ug/L | | 0.428 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | EPA 300.0 | Chloride | 229 | mg/L | | 12.5 | 25.0 | 5 | 27-Feb-19 | Pace |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | EPA 300.0 | Fluoride | 0.17 U | mg/L | U,D3 | 0.17 | 0.25 | 5 | 27-Feb-19 | Pace |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | EPA 300.0 | Sulfate | 1950 | mg/L | | 50.0 | 100 | 20 | 26-Feb-19 | Pace |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | EPA 353.2 | Nitrate/Nitrite | 0.05 U | mg/L | | 0.05 | 0.10 | 1 | 01-Mar-19 | AB |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | EPA 365.4 | Total Phosphorous | 0.04 | mg/L | I, V | 0.02 | 0.10 | 1 | 27-Feb-19 | CD |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | EPA 903.1 | Radium-226 | 4.44 | pCi/L | | 0.854 | 0.854 | 1 | 05-Mar-19 | Pace |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | EPA 904.0 | Radium-228 | 6.64 | pCi/L | | 0.591 | 0.591 | 1 | 04-Mar-19 | Pace |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | Field | DO (Field) Concentration | 0.22 | mg/L | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | Field | Field Turb | 6.71 | NTU | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | Field | Redox Potential (Field) | -97.6 | mV | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | Field | Specific Conductance (Field) | 4014 | umhos/cm | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | Field | Temp (Field) | 21.0 | Deg.C | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | Field | pH (Field) | 4.90 | S.U. | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | SM2320B | Alkalinity (Bicarbonate) | 20.0 U | mg/L | | 20.0 | 20.0 | 1 | 26-Feb-19 | KC |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | SM2320B | Alkalinity (Carbonate) | 0.00 | mg/L | | | | 1 | 26-Feb-19 | KC |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | SM2320B | Alkalinity (Total) | 20.0 U | mg/L | | 20.0 | 20.0 | 1 | 26-Feb-19 | KC |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | SM2340B | T Hardness (as CaCO3) | 1020 | mg/L | | 0.0200 | | 1 | 14-Mar-19 | DP |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | SM2510B | Specific Conductance | 4320 | umhos/cm | | 1.00 | 10.0 | | 25-Feb-19 | DS |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | SM2540C | Residue, Filterable (TDS) | 3106 | mg/L | | 3 | 5 | 1 | 22-Feb-19 | DS |
| S190220PPAW4XX01 | AW-4 | 20-Feb-19 | Total Radium Calcula | Total Radium | 11.1 | pCi/L | | 1.45 | 1.45 | 1 | 06-Mar-19 | Pace |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | EPA 200.7 TOTAL | Aluminum | 2146.7 | ug/L | | 3.91 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | EPA 200.7 TOTAL | Barium | 96.2 | ug/L | | 0.140 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | EPA 200.7 TOTAL | Beryllium | 0.0627 U | ug/L | | 0.0627 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | EPA 200.7 TOTAL | Boron | 12767 | ug/L | | 154 | 200 | 10 | 12-Mar-19 | AC |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | EPA 200.7 TOTAL | Calcium | 176770 | ug/L | | 18.3 | 20.0 | 1 | 13-Mar-19 | AC |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | EPA 200.7 TOTAL | Chromium | 1.92 | ug/L | I | 0.342 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | EPA 200.7 TOTAL | Cobalt | 1.10 U | ug/L | | 1.10 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | EPA 200.7 TOTAL | Iron | 13941 | ug/L | | 1.20 | 20.0 | 1 | 13-Mar-19 | AC |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | EPA 200.7 TOTAL | Magnesium | 19625 | ug/L | | 3.28 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | EPA 200.7 TOTAL | Molybdenum | 1.33 | ug/L | I | 1.27 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | EPA 200.7 TOTAL | Potassium | 73111 | ug/L | | 7.20 | 100 | 1 | 13-Mar-19 | AC |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | EPA 200.7 TOTAL | Sodium | 452960 | ug/L | | 8.91 | 20.0 | 1 | 13-Mar-19 | AC |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | EPA 200.8 | Lithium | 0.52 | ug/L | I | 0.19 | 1.0 | 1 | 01-Mar-19 | Pace |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | EPA 200.8 TOTAL | Antimony | 0.0946 U | ug/L | | 0.0946 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | EPA 200.8 TOTAL | Arsenic | 6.33 | ug/L | | 0.0499 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | EPA 200.8 TOTAL | Lead | 0.460 U | ug/L | | 0.460 | 0.625 | 1.25 | 07-Mar-19 | AB |

| LAB_SAMPLE_ID | CUST_SAMPLE_ID | COLLECT_DATE | METHOD | CMP_DESC | RESULT | UNITS | QUALIFIERS | MDL | PQL | DIL_FACT | ANAL_DATE_TIME | ANALYST |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | EPA 200.8 TOTAL | Selenium | 2.76 | ug/L | I | 1.35 | 12.5 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | EPA 200.8 TOTAL | Thallium | 0.428 U | ug/L | | 0.428 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | EPA 300.0 | Chloride | 147 | mg/L | | 12.5 | 25.0 | 5 | 27-Feb-19 | Pace |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | EPA 300.0 | Fluoride | 0.17 U | mg/L | U,D3 | 0.17 | 0.25 | 5 | 27-Feb-19 | Pace |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | EPA 300.0 | Sulfate | 1360 | mg/L | | 50.0 | 100 | 20 | 26-Feb-19 | Pace |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | EPA 353.2 | Nitrate/Nitrite | 0.05 U | mg/L | | 0.05 | 0.10 | 1 | 01-Mar-19 | AB |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | EPA 365.4 | Total Phosphorous | 0.04 | mg/L | I, V | 0.02 | 0.10 | 1 | 27-Feb-19 | CD |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | EPA 903.1 | Radium-226 | 2.82 | pCi/L | | 0.212 | 0.212 | 1 | 05-Mar-19 | Pace |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | EPA 904.0 | Radium-228 | 2.60 | pCi/L | | 0.536 | 0.536 | 1 | 04-Mar-19 | Pace |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | Field | DO (Field) Concentration | 0.28 | mg/L | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | Field | Field Turb | 15.3 | NTU | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | Field | Redox Potential (Field) | -76.8 | mV | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | Field | Specific Conductance (Field) | 3108 | umhos/cm | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | Field | Temp (Field) | 21.7 | Deg.C | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | Field | pH (Field) | 5.11 | S.U. | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | SM2320B | Alkalinity (Bicarbonate) | 20.0 U | mg/L | | 20.0 | 20.0 | 1 | 26-Feb-19 | KC |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | SM2320B | Alkalinity (Carbonate) | 0.00 | mg/L | | | | 1 | 26-Feb-19 | KC |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | SM2320B | Alkalinity (Total) | 20.0 U | mg/L | | 20.0 | 20.0 | 1 | 26-Feb-19 | KC |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | SM2340B | T Hardness (as CaCO3) | 522 | mg/L | | 0.0200 | | 1 | 14-Mar-19 | DP |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | SM2510B | Specific Conductance | 3230 | umhos/cm | | 1.00 | 10.0 | | 25-Feb-19 | DS |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | SM2540C | Residue, Filterable (TDS) | 2258 | mg/L | | 3 | 5 | 1 | 22-Feb-19 | DS |
| S190220PPAW5XX01 | AW-5 | 20-Feb-19 | Total Radium Calcula | Total Radium | 5.42 | pCi/L | | 0.748 | 0.748 | 1 | 06-Mar-19 | Pace |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | EPA 200.7 TOTAL | Aluminum | 889.11 | ug/L | | 3.91 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | EPA 200.7 TOTAL | Barium | 52.6 | ug/L | | 0.140 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | EPA 200.7 TOTAL | Beryllium | 0.0627 U | ug/L | | 0.0627 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | EPA 200.7 TOTAL | Boron | 3251.9 | ug/L | | 154 | 200 | 10 | 12-Mar-19 | AC |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | EPA 200.7 TOTAL | Calcium | 278200 | ug/L | | 18.3 | 20.0 | 1 | 13-Mar-19 | AC |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | EPA 200.7 TOTAL | Chromium | 0.917 | ug/L | I | 0.342 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | EPA 200.7 TOTAL | Cobalt | 1.10 U | ug/L | | 1.10 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | EPA 200.7 TOTAL | Iron | 5556.9 | ug/L | | 1.20 | 20.0 | 1 | 13-Mar-19 | AC |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | EPA 200.7 TOTAL | Magnesium | 12809 | ug/L | | 3.28 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | EPA 200.7 TOTAL | Molybdenum | 1.27 U | ug/L | | 1.27 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | EPA 200.7 TOTAL | Potassium | 8727.2 | ug/L | | 7.20 | 100 | 1 | 13-Mar-19 | AC |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | EPA 200.7 TOTAL | Sodium | 94348 | ug/L | | 8.91 | 20.0 | 1 | 13-Mar-19 | AC |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | EPA 200.8 | Lithium | 0.30 | ug/L | I | 0.19 | 1.0 | 1 | 01-Mar-19 | Pace |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | EPA 200.8 TOTAL | Antimony | 0.0946 U | ug/L | | 0.0946 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | EPA 200.8 TOTAL | Arsenic | 4.79 | ug/L | | 0.0499 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | EPA 200.8 TOTAL | Lead | 0.460 U | ug/L | | 0.460 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | EPA 200.8 TOTAL | Selenium | 1.35 U | ug/L | | 1.35 | 12.5 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | EPA 200.8 TOTAL | Thallium | 0.428 U | ug/L | | 0.428 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | EPA 300.0 | Chloride | 46.5 | mg/L | | 5.0 | 10.0 | 2 | 27-Feb-19 | Pace |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | EPA 300.0 | Fluoride | 0.068 U | mg/L | U,D3 | 0.068 | 0.10 | 2 | 27-Feb-19 | Pace |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | EPA 300.0 | Sulfate | 814 | mg/L | | 50.0 | 100 | 20 | 27-Feb-19 | Pace |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | EPA 353.2 | Nitrate/Nitrite | 0.05 U | mg/L | | 0.05 | 0.10 | 1 | 01-Mar-19 | AB |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | EPA 365.4 | Total Phosphorous | 0.02 U | mg/L | | 0.02 | 0.10 | 1 | 04-Mar-19 | CD |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | EPA 903.1 | Radium-226 | 1.21 | pCi/L | | 0.755 | 0.755 | 1 | 07-Mar-19 | Pace |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | EPA 904.0 | Radium-228 | 1.39 | pCi/L | | 0.779 | 0.779 | 1 | 04-Mar-19 | Pace |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | Field | DO (Field) Concentration | 0.35 | mg/L | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | Field | Field Turb | 7.47 | NTU | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | Field | Redox Potential (Field) | -96.4 | mV | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | Field | Specific Conductance (Field) | 1642 | umhos/cm | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | Field | Temp (Field) | 22.4 | Deg.C | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | Field | pH (Field) | 5.22 | S.U. | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | SM2320B | Alkalinity (Bicarbonate) | 20.0 U | mg/L | | 20.0 | 20.0 | 1 | 28-Feb-19 | KC |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | SM2320B | Alkalinity (Carbonate) | 0.00 | mg/L | | | | 1 | 28-Feb-19 | KC |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | SM2320B | Alkalinity (Total) | 20.0 U | mg/L | | 20.0 | 20.0 | 1 | 28-Feb-19 | KC |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | SM2340B | T Hardness (as CaCO3) | 747 | mg/L | | 0.0200 | | 1 | 14-Mar-19 | DP |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | SM2510B | Specific Conductance | 1720 | umhos/cm | | 1.00 | 10.0 | | 25-Feb-19 | DS |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | SM2540C | Residue, Filterable (TDS) | 1322 | mg/L | | 3 | 5 | 1 | 25-Feb-19 | GP |
| S190220PPAW6XX01 | AW-6 | 20-Feb-19 | Total Radium Calcula | Total Radium | 2.60 | pCi/L | | 1.53 | 1.53 | 1 | 11-Mar-19 | Pace |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | EPA 200.7 TOTAL | Aluminum | 120.64 | ug/L | | 3.91 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | EPA 200.7 TOTAL | Barium | 36.2 | ug/L | | 0.140 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | EPA 200.7 TOTAL | Beryllium | 0.0627 U | ug/L | | 0.0627 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | EPA 200.7 TOTAL | Boron | 3924.4 | ug/L | | 154 | 200 | 10 | 12-Mar-19 | AC |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | EPA 200.7 TOTAL | Calcium | 352570 | ug/L | | 18.3 | 20.0 | 1 | 13-Mar-19 | AC |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | EPA 200.7 TOTAL | Chromium | 0.343 | ug/L | I | 0.342 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | EPA 200.7 TOTAL | Cobalt | 1.10 U | ug/L | | 1.10 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | EPA 200.7 TOTAL | Iron | 2917.9 | ug/L | | 1.20 | 20.0 | 1 | 13-Mar-19 | AC |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | EPA 200.7 TOTAL | Magnesium | 17143 | ug/L | | 3.28 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | EPA 200.7 TOTAL | Molybdenum | 6.82 | ug/L | I | 1.27 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | EPA 200.7 TOTAL | Potassium | 14661 | ug/L | | 7.20 | 100 | 1 | 13-Mar-19 | AC |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | EPA 200.7 TOTAL | Sodium | 104700 | ug/L | | 8.91 | 20.0 | 1 | 13-Mar-19 | AC |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | EPA 200.8 | Lithium | 0.19 U | ug/L | U | 0.19 | 1.0 | 1 | 01-Mar-19 | Pace |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | EPA 200.8 TOTAL | Antimony | 0.300 | ug/L | I | 0.0946 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | EPA 200.8 TOTAL | Arsenic | 8.98 | ug/L | | 0.0499 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | EPA 200.8 TOTAL | Lead | 0.460 U | ug/L | | 0.460 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | EPA 200.8 TOTAL | Selenium | 1.48 | ug/L | I | 1.35 | 12.5 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | EPA 200.8 TOTAL | Thallium | 0.428 U | ug/L | | 0.428 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | EPA 300.0 | Chloride | 46.7 | mg/L | | 12.5 | 25.0 | 5 | 27-Feb-19 | Pace |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | EPA 300.0 | Fluoride | 0.17 U | mg/L | U | 0.17 | 0.25 | 5 | 27-Feb-19 | Pace |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | EPA 300.0 | Sulfate | 927 | mg/L | | 125 | 250 | 50 | 27-Feb-19 | Pace |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | EPA 353.2 | Nitrate/Nitrite | 0.05 U | mg/L | | 0.05 | 0.10 | 1 | 01-Mar-19 | AB |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | EPA 365.4 | Total Phosphorous | 0.05 | mg/L | I | 0.02 | 0.10 | 1 | 27-Feb-19 | CD |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | EPA 903.1 | Radium-226 | 1.78 | pCi/L | | 0.863 | 0.863 | 1 | 07-Mar-19 | Pace |

| LAB_SAMPLE_ID | CUST_SAMPLE_ID | COLLECT_DATE | METHOD | CMP_DESC | RESULT | UNITS | QUALIFIERS | MDL | PQL | DIL_FACT | ANAL_DATE_TIME | ANALYST |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | EPA 904.0 | Radium-228 | 1.36 | pCi/L | | 0.685 | 0.685 | 1 | 06-Mar-19 | Pace |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | Field | DO (Field) Concentration | 0.28 | mg/L | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | Field | Field Turb | 6.66 | NTU | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | Field | Redox Potential (Field) | -213.2 | mV | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | Field | Specific Conductance (Field) | 1981 | umhos/cm | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | Field | Temp (Field) | 22.6 | Deg.C | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | Field | pH (Field) | 6.27 | S.U. | | | | 1 | 26-Feb-19 | Field |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | SM2320B | Alkalinity (Bicarbonate) | 65.6 | mg/L | | 20.0 | 20.0 | 1 | 26-Feb-19 | KC |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | SM2320B | Alkalinity (Carbonate) | 0.00 | mg/L | | | | 1 | 26-Feb-19 | KC |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | SM2320B | Alkalinity (Total) | 65.6 | mg/L | | 20.0 | 20.0 | 1 | 26-Feb-19 | KC |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | SM2340B | T Hardness (as CaCO3) | 951 | mg/L | | 0.0200 | | 1 | 14-Mar-19 | DP |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | SM2510B | Specific Conductance | 2040 | umhos/cm | | 1.00 | 10.0 | | 25-Feb-19 | DS |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | SM2540C | Residue, Filterable (TDS) | 1558 | mg/L | | 3 | 5 | 1 | 22-Feb-19 | DS |
| S190220PPAW7XX01 | AW-7 | 20-Feb-19 | Total Radium Calcula | Total Radium | 3.13 | pCi/L | | 1.55 | 1.55 | 1 | 11-Mar-19 | Pace |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | EPA 200.7 TOTAL | Aluminum | 253.96 | ug/L | | 3.91 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | EPA 200.7 TOTAL | Barium | 37.7 | ug/L | | 0.140 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | EPA 200.7 TOTAL | Beryllium | 0.0627 U | ug/L | | 0.0627 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | EPA 200.7 TOTAL | Boron | 30652 | ug/L | | 154 | 200 | 10 | 12-Mar-19 | AC |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | EPA 200.7 TOTAL | Calcium | 381890 | ug/L | | 18.3 | 20.0 | 1 | 13-Mar-19 | AC |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | EPA 200.7 TOTAL | Chromium | 0.516 | ug/L | I | 0.342 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | EPA 200.7 TOTAL | Cobalt | 1.10 U | ug/L | | 1.10 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | EPA 200.7 TOTAL | Iron | 1500.4 | ug/L | | 1.20 | 20.0 | 1 | 13-Mar-19 | AC |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | EPA 200.7 TOTAL | Magnesium | 104350 | ug/L | | 3.28 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | EPA 200.7 TOTAL | Molybdenum | 25.5 | ug/L | | 1.27 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | EPA 200.7 TOTAL | Potassium | 104110 | ug/L | | 7.20 | 100 | 1 | 13-Mar-19 | AC |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | EPA 200.7 TOTAL | Sodium | 239310 | ug/L | | 8.91 | 20.0 | 1 | 13-Mar-19 | AC |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | EPA 200.8 | Lithium | 0.19 U | ug/L | U | 0.19 | 1.0 | 1 | 01-Mar-19 | Pace |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | EPA 200.8 TOTAL | Antimony | 0.0946 U | ug/L | | 0.0946 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | EPA 200.8 TOTAL | Arsenic | 0.683 | ug/L | | 0.0499 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | EPA 200.8 TOTAL | Lead | 0.460 U | ug/L | | 0.460 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | EPA 200.8 TOTAL | Selenium | 1.95 | ug/L | I | 1.35 | 12.5 | 1.25 | 07-Mar-19 | AB |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | EPA 200.8 TOTAL | Thallium | 0.428 U | ug/L | | 0.428 | 0.625 | 1.25 | 07-Mar-19 | AB |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | EPA 300.0 | Chloride | 88.3 | mg/L | | 12.5 | 25.0 | 5 | 27-Feb-19 | Pace |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | EPA 300.0 | Fluoride | 0.17 U | mg/L | U,D3 | 0.17 | 0.25 | 5 | 27-Feb-19 | Pace |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | EPA 300.0 | Sulfate | 1730 | mg/L | | 50.0 | 100 | 20 | 27-Feb-19 | Pace |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | EPA 353.2 | Nitrate/Nitrite | 0.05 U | mg/L | | 0.05 | 0.10 | 1 | 01-Mar-19 | AB |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | EPA 365.4 | Total Phosphorous | 0.03 | mg/L | I, V | 0.02 | 0.10 | 1 | 27-Feb-19 | CD |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | EPA 903.1 | Radium-226 | 3.08 | pCi/L | | 0.651 | 0.651 | 1 | 07-Mar-19 | Pace |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | EPA 904.0 | Radium-228 | 3.35 | pCi/L | | 0.738 | 0.738 | 1 | 06-Mar-19 | Pace |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | Field | DO (Field) Concentration | 0.24 | mg/L | | | | 1 | 26-Feb-19 | Field |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | Field | Field Turb | 18.1 | NTU | | | | 1 | 26-Feb-19 | Field |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | Field | Redox Potential (Field) | -231.9 | mV | | | | 1 | 26-Feb-19 | Field |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | Field | Specific Conductance (Field) | 3289 | umhos/cm | | | | 1 | 26-Feb-19 | Field |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | Field | Temp (Field) | 20.8 | Deg.C | | | | 1 | 26-Feb-19 | Field |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | Field | pH (Field) | 6.09 | S.U. | | | | 1 | 26-Feb-19 | Field |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | SM2320B | Alkalinity (Bicarbonate) | 196 | mg/L | | 20.0 | 20.0 | 1 | 26-Feb-19 | KC |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | SM2320B | Alkalinity (Carbonate) | 0.00 | mg/L | | | | 1 | 26-Feb-19 | KC |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | SM2320B | Alkalinity (Total) | 196 | mg/L | | 20.0 | 20.0 | 1 | 26-Feb-19 | KC |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | SM2340B | T Hardness (as CaCO3) | 1380 | mg/L | | 0.0200 | | 1 | 14-Mar-19 | DP |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | SM2510B | Specific Conductance | 3470 | umhos/cm | | 1.00 | 10.0 | | 25-Feb-19 | DS |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | SM2540C | Residue, Filterable (TDS) | 2654 | mg/L | | 3 | 5 | 1 | 22-Feb-19 | DS |
| S190220PPCCR6XX01 | CCR-6 | 20-Feb-19 | Total Radium Calcula | Total Radium | 6.43 | pCi/L | | 1.39 | 1.39 | 1 | 11-Mar-19 | Pace |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | EPA 200.7 TOTAL | Aluminum | 6044.4 | ug/L | | 3.91 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | EPA 200.7 TOTAL | Barium | 61.1 | ug/L | | 0.140 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | EPA 200.7 TOTAL | Beryllium | 0.0627 U | ug/L | | 0.0627 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | EPA 200.7 TOTAL | Boron | 30806 | ug/L | | 154 | 200 | 10 | 12-Mar-19 | AC |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | EPA 200.7 TOTAL | Calcium | 211750 | ug/L | | 18.3 | 20.0 | 1 | 13-Mar-19 | AC |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | EPA 200.7 TOTAL | Chromium | 3.63 | ug/L | I | 0.342 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | EPA 200.7 TOTAL | Cobalt | 1.72 | ug/L | I | 1.10 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | EPA 200.7 TOTAL | Iron | 9261.7 | ug/L | | 1.20 | 20.0 | 1 | 13-Mar-19 | AC |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | EPA 200.7 TOTAL | Magnesium | 23258 | ug/L | | 3.28 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | EPA 200.7 TOTAL | Molybdenum | 1.27 U | ug/L | | 1.27 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | EPA 200.7 TOTAL | Potassium | 113280 | ug/L | | 7.20 | 100 | 1 | 13-Mar-19 | AC |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | EPA 200.7 TOTAL | Sodium | 566270 | ug/L | | 8.91 | 20.0 | 1 | 13-Mar-19 | AC |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | EPA 200.8 | Lithium | 0.68 | ug/L | I | 0.19 | 1.0 | 1 | 01-Mar-19 | Pace |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | EPA 200.8 TOTAL | Antimony | 0.0946 U | ug/L | | 0.0946 | 0.625 | 1.25 | 08-Mar-19 | AB |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | EPA 200.8 TOTAL | Arsenic | 1.11 | ug/L | | 0.0499 | 0.625 | 1.25 | 08-Mar-19 | AB |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | EPA 200.8 TOTAL | Lead | 0.460 U | ug/L | | 0.460 | 0.625 | 1.25 | 08-Mar-19 | AB |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | EPA 200.8 TOTAL | Selenium | 4.84 | ug/L | I, J2 | 1.35 | 12.5 | 1.25 | 08-Mar-19 | AB |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | EPA 200.8 TOTAL | Thallium | 0.428 U | ug/L | | 0.428 | 0.625 | 1.25 | 08-Mar-19 | AB |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | EPA 300.0 | Chloride | 254 | mg/L | | 12.5 | 25.0 | 5 | 27-Feb-19 | Pace |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | EPA 300.0 | Fluoride | 0.17 U | mg/L | U,D3 | 0.17 | 0.25 | 5 | 27-Feb-19 | Pace |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | EPA 300.0 | Sulfate | 1720 | mg/L | | 50.0 | 100 | 20 | 27-Feb-19 | Pace |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | EPA 353.2 | Nitrate/Nitrite | 0.05 U | mg/L | | 0.05 | 0.10 | 1 | 01-Mar-19 | AB |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | EPA 365.4 | Total Phosphorous | 0.03 | mg/L | I, V | 0.02 | 0.10 | 1 | 27-Feb-19 | CD |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | EPA 903.1 | Radium-226 | 1.93 | pCi/L | | 0.694 | 0.694 | 1 | 07-Mar-19 | Pace |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | EPA 904.0 | Radium-228 | 4.51 | pCi/L | | 0.814 | 0.814 | 1 | 06-Mar-19 | Pace |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | Field | DO (Field) Concentration | 0.29 | mg/L | | | | 1 | 26-Feb-19 | Field |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | Field | Field Turb | 19.7 | NTU | | | | 1 | 26-Feb-19 | Field |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | Field | Redox Potential (Field) | -148.4 | mV | | | | 1 | 26-Feb-19 | Field |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | Field | Specific Conductance (Field) | 3847 | umhos/cm | | | | 1 | 26-Feb-19 | Field |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | Field | Temp (Field) | 20.3 | Deg.C | | | | 1 | 26-Feb-19 | Field |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | Field | pH (Field) | 4.62 | S.U. | | | | 1 | 26-Feb-19 | Field |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | SM2320B | Alkalinity (Bicarbonate) | 20.0 U | mg/L | | 20.0 | 20.0 | 1 | 26-Feb-19 | KC |

| LAB_SAMPLE_ID | CUST_SAMPLE_ID | COLLECT_DATE | METHOD | CMP_DESC | RESULT | UNITS | QUALIFIERS | MDL | PQL | DIL_FACT | ANAL_DATE_TIME | ANALYST |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | SM2320B | Alkalinity (Carbonate) | 0.00 | mg/L | | | | 1 | 26-Feb-19 | KC |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | SM2320B | Alkalinity (Total) | 20.0 U | mg/L | | 20.0 | 20.0 | 1 | 26-Feb-19 | KC |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | SM2340B | T Hardness (as CaCO3) | 625 | mg/L | | 0.0200 | | 1 | 14-Mar-19 | DP |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | SM2510B | Specific Conductance | 4050 | umhos/cm | | 1.00 | 10.0 | | 25-Feb-19 | DS |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | SM2540C | Residue, Filterable (TDS) | 2816 | mg/L | | 3 | 5 | 1 | 22-Feb-19 | DS |
| S190220PPCCR7XX01 | CCR-7 | 20-Feb-19 | Total Radium Calcula | Total Radium | 6.45 | pCi/L | | 1.51 | 1.51 | 1 | 11-Mar-19 | Pace |
| S190220PPSWXX01 | SW | 20-Feb-19 | EPA 200.7 TOTAL | Aluminum | 58.3 | ug/L | | 3.91 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPSWXX01 | SW | 20-Feb-19 | EPA 200.7 TOTAL | Barium | 50.1 | ug/L | | 0.140 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPSWXX01 | SW | 20-Feb-19 | EPA 200.7 TOTAL | Beryllium | 0.0627 U | ug/L | | 0.0627 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPSWXX01 | SW | 20-Feb-19 | EPA 200.7 TOTAL | Boron | 6246.7 | ug/L | | 154 | 200 | 10 | 12-Mar-19 | AC |
| S190220PPSWXX01 | SW | 20-Feb-19 | EPA 200.7 TOTAL | Calcium | 341380 | ug/L | | 18.3 | 20.0 | 1 | 13-Mar-19 | AC |
| S190220PPSWXX01 | SW | 20-Feb-19 | EPA 200.7 TOTAL | Chromium | 0.342 U | ug/L | | 0.342 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPSWXX01 | SW | 20-Feb-19 | EPA 200.7 TOTAL | Cobalt | 1.10 U | ug/L | | 1.10 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPSWXX01 | SW | 20-Feb-19 | EPA 200.7 TOTAL | Iron | 257.94 | ug/L | | 1.20 | 20.0 | 1 | 13-Mar-19 | AC |
| S190220PPSWXX01 | SW | 20-Feb-19 | EPA 200.7 TOTAL | Magnesium | 21473 | ug/L | | 3.28 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPSWXX01 | SW | 20-Feb-19 | EPA 200.7 TOTAL | Molybdenum | 34.3 | ug/L | | 1.27 | 20.0 | 1 | 12-Mar-19 | AC |
| S190220PPSWXX01 | SW | 20-Feb-19 | EPA 200.7 TOTAL | Potassium | 26750 | ug/L | | 7.20 | 100 | 1 | 13-Mar-19 | AC |
| S190220PPSWXX01 | SW | 20-Feb-19 | EPA 200.7 TOTAL | Sodium | 120810 | ug/L | | 8.91 | 20.0 | 1 | 13-Mar-19 | AC |
| S190220PPSWXX01 | SW | 20-Feb-19 | EPA 200.8 | Lithium | 3.5 | ug/L | | 0.19 | 1.0 | 1 | 02-Mar-19 | Pace |
| S190220PPSWXX01 | SW | 20-Feb-19 | EPA 200.8 TOTAL | Antimony | 1.12 | ug/L | | 0.0946 | 0.625 | 1.25 | 08-Mar-19 | AB |
| S190220PPSWXX01 | SW | 20-Feb-19 | EPA 200.8 TOTAL | Arsenic | 7.59 | ug/L | | 0.0499 | 0.625 | 1.25 | 08-Mar-19 | AB |
| S190220PPSWXX01 | SW | 20-Feb-19 | EPA 200.8 TOTAL | Lead | 0.460 U | ug/L | | 0.460 | 0.625 | 1.25 | 08-Mar-19 | AB |
| S190220PPSWXX01 | SW | 20-Feb-19 | EPA 200.8 TOTAL | Selenium | 2.80 | ug/L | I | 1.35 | 12.5 | 1.25 | 08-Mar-19 | AB |
| S190220PPSWXX01 | SW | 20-Feb-19 | EPA 200.8 TOTAL | Thallium | 0.428 U | ug/L | | 0.428 | 0.625 | 1.25 | 08-Mar-19 | AB |
| S190220PPSWXX01 | SW | 20-Feb-19 | EPA 300.0 | Chloride | 52.9 | mg/L | | 25.0 | 50.0 | 10 | 27-Feb-19 | Pace |
| S190220PPSWXX01 | SW | 20-Feb-19 | EPA 300.0 | Fluoride | 1.0 | mg/L | | 0.34 | 0.50 | 10 | 27-Feb-19 | Pace |
| S190220PPSWXX01 | SW | 20-Feb-19 | EPA 300.0 | Sulfate | 991 | mg/L | | 50.0 | 100 | 20 | 27-Feb-19 | Pace |
| S190220PPSWXX01 | SW | 20-Feb-19 | EPA 353.2 | Nitrate/Nitrite | 0.05 U | mg/L | | 0.05 | 0.10 | 1 | 01-Mar-19 | AB |
| S190220PPSWXX01 | SW | 20-Feb-19 | EPA 365.4 | Total Phosphorous | 0.09 | mg/L | I, V | 0.02 | 0.10 | 1 | 27-Feb-19 | CD |
| S190220PPSWXX01 | SW | 20-Feb-19 | EPA 903.1 | Radium-226 | 0.740 | pCi/L | | 0.495 | 0.495 | 1 | 07-Mar-19 | Pace |
| S190220PPSWXX01 | SW | 20-Feb-19 | EPA 904.0 | Radium-228 | 0.950U | pCi/L | U | 0.950 | 0.950 | 1 | 06-Mar-19 | Pace |
| S190220PPSWXX01 | SW | 20-Feb-19 | Field | DO (Field) Concentration | 8.61 | mg/L | | | | 1 | 26-Feb-19 | Field |
| S190220PPSWXX01 | SW | 20-Feb-19 | Field | Field Turb | 14.7 | NTU | | | | 1 | 26-Feb-19 | Field |
| S190220PPSWXX01 | SW | 20-Feb-19 | Field | Redox Potential (Field) | 41.2 | mV | | | | 1 | 26-Feb-19 | Field |
| S190220PPSWXX01 | SW | 20-Feb-19 | Field | Specific Conductance (Field) | 2039 | umhos/cm | | | | 1 | 26-Feb-19 | Field |
| S190220PPSWXX01 | SW | 20-Feb-19 | Field | Temp (Field) | 22.8 | Deg.C | | | | 1 | 26-Feb-19 | Field |
| S190220PPSWXX01 | SW | 20-Feb-19 | Field | pH (Field) | 6.82 | S.U. | | | | 1 | 26-Feb-19 | Field |
| S190220PPSWXX01 | SW | 20-Feb-19 | SM2320B | Alkalinity (Bicarbonate) | 59.1 | mg/L | | 20.0 | 20.0 | 1 | 26-Feb-19 | KC |
| S190220PPSWXX01 | SW | 20-Feb-19 | SM2320B | Alkalinity (Carbonate) | 0.00 | mg/L | | | | 1 | 26-Feb-19 | KC |
| S190220PPSWXX01 | SW | 20-Feb-19 | SM2320B | Alkalinity (Total) | 59.1 | mg/L | | 20.0 | 20.0 | 1 | 26-Feb-19 | KC |
| S190220PPSWXX01 | SW | 20-Feb-19 | SM2340B | T Hardness (as CaCO3) | 941 | mg/L | | 0.0200 | | 1 | 14-Mar-19 | DP |
| S190220PPSWXX01 | SW | 20-Feb-19 | SM2510B | Specific Conductance | 2100 | umhos/cm | | 1.00 | 10.0 | | 25-Feb-19 | DS |
| S190220PPSWXX01 | SW | 20-Feb-19 | SM2540C | Residue, Filterable (TDS) | 1584 | mg/L | | 3 | 5 | 1 | 22-Feb-19 | DS |
| S190220PPSWXX01 | SW | 20-Feb-19 | Total Radium Calcula | Total Radium | 1.45U | pCi/L | U | 1.45 | 1.45 | 1 | 11-Mar-19 | Pace |

Pace Analytical Services, LLC
8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

March 07, 2019

Sam Stafford, PE
Golder Associates, Inc
9428 Baymeadows Rd
Suite 400
Jacksonville, FL 32256

RE: Project: SJRPP
Pace Project No.: 35447215

Dear Sam Stafford, PE:

Enclosed are the analytical results for sample(s) received by the laboratory on February 08, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Thomas A. Carr

Tommy Carr
tommy.carr@pacelabs.com
(386) 672-5668
Project Manager

Enclosures

cc: Jax_Labdata, Golder Associates, Inc.

Pace Analytical Services, LLC
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# CERTIFICATIONS

Project: SJRPP
Pace Project No.: 35447215

### Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #:  02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

### Ormond Beach Certification IDs

8 East Tower Circle, Ormond Beach, FL  32174
Alabama Certification #: 41320
Colorado Certification: FL NELAC Reciprocity
Connecticut Certification #: PH-0216
Florida Certification #: E83079
Georgia Certification #: 955
Guam Certification: FL NELAC Reciprocity
Hawaii Certification: FL NELAC Reciprocity
Illinois Certification #: 200068
Indiana Certification: FL NELAC Reciprocity
Kansas Certification #: E-10383
Kentucky Certification #: 90050
Louisiana Certification #: FL NELAC Reciprocity
Louisiana Environmental Certificate #: 05007
Maryland Certification: #346
Michigan Certification #: 9911
Mississippi Certification: FL NELAC Reciprocity
Missouri Certification #: 236
Montana Certification #: Cert 0074
Nebraska Certification: NE-OS-28-14
New Hampshire Certification #: 2958
New Jersey Certification #: FL022
New York Certification #: 11608
North Carolina Environmental Certificate #: 667
North Carolina Certification #: 12710
North Dakota Certification #: R-216
Oklahoma Certification #: D9947
Pennsylvania Certification #: 68-00547
Puerto Rico Certification #: FL01264
South Carolina Certification: #96042001
Tennessee Certification #: TN02974
Texas Certification: FL NELAC Reciprocity
US Virgin Islands Certification: FL NELAC Reciprocity
Virginia Environmental Certification #: 460165
West Virginia Certification #: 9962C
Wisconsin Certification #: 399079670
Wyoming (EPA Region 8): FL NELAC Reciprocity

**Pace Analytical Services, LLC**
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## SAMPLE SUMMARY

Project: SJRPP
Pace Project No.: 35447215

| Lab ID | Sample ID | Matrix | Date Collected | Date Received |
|---|---|---|---|---|
| **35447215001** | **AW-7 (13)** | Solid | 02/07/19 09:55 | 02/08/19 13:15 |
| **35447215002** | **AW-6 (10-12)** | Solid | 02/07/19 13:00 | 02/08/19 13:15 |
| **35447215003** | **AW-5 (8)** | Solid | 02/07/19 16:08 | 02/08/19 13:15 |
| **35447215004** | **AW-5 (16-18)** | Solid | 02/07/19 16:13 | 02/08/19 13:15 |
| **35447215005** | **AW-4 (14-16)** | Solid | 02/08/19 09:10 | 02/08/19 13:15 |

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## SAMPLE ANALYTE COUNT

Project: SJRPP
Pace Project No.: 35447215

| Lab ID | Sample ID | Method | Analysts | Analytes Reported | Laboratory |
|---|---|---|---|---|---|
| **35447215001** | **AW-7 (13)** | EPA 6010 | JWP | 2 | PASI-O |
| | | ASTM D2974-87 | CLT | 1 | PASI-O |
| | | EPA 901.1 | MAH | 2 | PASI-PA |
| | | HSL-300 | LAL | 3 | PASI-PA |
| | | EPA 365.4 | JMD | 1 | PASI-O |
| **35447215002** | **AW-6 (10-12)** | EPA 6010 | JWP | 2 | PASI-O |
| | | ASTM D2974-87 | CLT | 1 | PASI-O |
| | | EPA 901.1 | MAH | 2 | PASI-PA |
| | | HSL-300 | LAL | 3 | PASI-PA |
| | | EPA 365.4 | JMD | 1 | PASI-O |
| **35447215003** | **AW-5 (8)** | EPA 6010 | JWP | 2 | PASI-O |
| | | ASTM D2974-87 | CLT | 1 | PASI-O |
| | | EPA 901.1 | MAH | 2 | PASI-PA |
| | | HSL-300 | LAL | 3 | PASI-PA |
| | | EPA 365.4 | JMD | 1 | PASI-O |
| **35447215004** | **AW-5 (16-18)** | EPA 6010 | JWP | 2 | PASI-O |
| | | ASTM D2974-87 | CLT | 1 | PASI-O |
| | | EPA 901.1 | MAH | 2 | PASI-PA |
| | | HSL-300 | LAL | 3 | PASI-PA |
| | | EPA 365.4 | JMD | 1 | PASI-O |
| **35447215005** | **AW-4 (14-16)** | EPA 6010 | JWP | 2 | PASI-O |
| | | ASTM D2974-87 | CLT | 1 | PASI-O |
| | | EPA 901.1 | MAH | 2 | PASI-PA |
| | | HSL-300 | LAL | 3 | PASI-PA |
| | | EPA 365.4 | JMD | 1 | PASI-O |

Pace Analytical
www.pacelabs.com

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## SUMMARY OF DETECTION

Project: SJRPP
Pace Project No.: 35447215

| Lab Sample ID / Method | Client Sample ID / Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **35447215001** | **AW-7 (13)** | | | | | |
| EPA 6010 | Aluminum | 3140 | mg/kg | 7.7 | 03/06/19 14:25 | |
| EPA 6010 | Iron | 689 | mg/kg | 3.1 | 03/06/19 14:25 | |
| ASTM D2974-87 | Percent Moisture | 24.1 | % | 0.10 | 02/11/19 13:37 | |
| EPA 901.1 | Radium-226 | 0.531 ± 0.183 (0.139) C:NA T:NA | pCi/g | | 03/07/19 10:29 | Ra |
| EPA 901.1 | Radium-228 | 0.468 ± 0.303 (0.379) C:NA T:NA | pCi/g | | 03/07/19 10:29 | |
| HSL-300 | Uranium-234 | 0.309 ± 0.136 (0.101) C:NA T:112% | pCi/g | | 03/07/19 08:44 | N2 |
| HSL-300 | Uranium-235 | -0.004 ± 0.061 (0.085) C:NA T:112% | pCi/g | | 03/07/19 08:44 | N2 |
| HSL-300 | Uranium-238 | 0.368 ± 0.148 (0.087) C:NA T:112% | pCi/g | | 03/07/19 08:44 | N2 |
| EPA 365.4 | Phosphorus, Total (as P) | 156 | mg/kg | 9.5 | 03/01/19 15:43 | |
| **35447215002** | **AW-6 (10-12)** | | | | | |
| EPA 6010 | Aluminum | 2310 | mg/kg | 5.6 | 03/06/19 14:28 | |
| EPA 6010 | Iron | 599 | mg/kg | 2.2 | 03/06/19 14:28 | |
| ASTM D2974-87 | Percent Moisture | 19.1 | % | 0.10 | 02/11/19 13:37 | |
| EPA 901.1 | Radium-226 | 0.377 ± 0.131 (0.189) C:NA T:NA | pCi/g | | 03/07/19 10:46 | Ra |
| EPA 901.1 | Radium-228 | 0.170 ± 0.216 (0.249) C:NA T:NA | pCi/g | | 03/07/19 10:46 | |
| HSL-300 | Uranium-234 | 0.132 ± 0.091 (0.102) C:NA T:101% | pCi/g | | 03/07/19 08:44 | N2 |
| HSL-300 | Uranium-235 | 0.000 ± 0.065 (0.049) C:NA T:101% | pCi/g | | 03/07/19 08:44 | N2 |
| HSL-300 | Uranium-238 | 0.132 ± 0.089 (0.082) C:NA T:101% | pCi/g | | 03/07/19 08:44 | N2 |

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## SUMMARY OF DETECTION

Project: SJRPP
Pace Project No.: 35447215

| Lab Sample ID / Method | Client Sample ID / Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **35447215002** | **AW-6 (10-12)** | | | | | |
| EPA 365.4 | Phosphorus, Total (as P) | 80.2 | mg/kg | 9.7 | 03/01/19 15:44 | |
| **35447215003** | **AW-5 (8)** | | | | | |
| EPA 6010 | Aluminum | 3850 | mg/kg | 7.4 | 03/06/19 14:31 | |
| EPA 6010 | Iron | 189 | mg/kg | 3.0 | 03/06/19 14:31 | |
| ASTM D2974-87 | Percent Moisture | 26.2 | % | 0.10 | 02/11/19 13:37 | |
| EPA 901.1 | Radium-226 | 0.188 ± 0.088 (0.255) C:NA T:NA | pCi/g | | 03/07/19 10:47 | Ra |
| EPA 901.1 | Radium-228 | 0.411 ± 0.245 (0.210) C:NA T:NA | pCi/g | | 03/07/19 10:47 | |
| HSL-300 | Uranium-234 | 0.328 ± 0.148 (0.112) C:NA T:103% | pCi/g | | 03/07/19 08:44 | N2 |
| HSL-300 | Uranium-235 | 0.014 ± 0.067 (0.094) C:NA T:103% | pCi/g | | 03/07/19 08:44 | N2 |
| HSL-300 | Uranium-238 | 0.170 ± 0.102 (0.081) C:NA T:103% | pCi/g | | 03/07/19 08:44 | N2 |
| EPA 365.4 | Phosphorus, Total (as P) | 48.8 | mg/kg | 8.6 | 03/01/19 15:46 | |
| **35447215004** | **AW-5 (16-18)** | | | | | |
| EPA 6010 | Aluminum | 1700 | mg/kg | 6.4 | 03/06/19 14:39 | |
| EPA 6010 | Iron | 189 | mg/kg | 2.6 | 03/06/19 14:39 | |
| ASTM D2974-87 | Percent Moisture | 20.1 | % | 0.10 | 02/11/19 13:37 | |
| EPA 901.1 | Radium-226 | 0.403 ± 0.138 (0.137) C:NA T:NA | pCi/g | | 03/07/19 11:07 | Ra |
| EPA 901.1 | Radium-228 | 0.264 ± 0.156 (0.177) C:NA T:NA | pCi/g | | 03/07/19 11:07 | |
| HSL-300 | Uranium-234 | 0.235 ± 0.121 (0.100) C:NA T:106% | pCi/g | | 03/07/19 08:44 | N2 |
| HSL-300 | Uranium-235 | 0.032 ± 0.065 (0.090) C:NA T:106% | pCi/g | | 03/07/19 08:44 | N2 |

## REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

# SUMMARY OF DETECTION

Project: SJRPP
Pace Project No.: 35447215

| Lab Sample ID / Method | Client Sample ID / Parameters | Result | Units | Report Limit | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| **35447215004** | **AW-5 (16-18)** | | | | | |
| HSL-300 | Uranium-238 | 0.342 ± 0.145 (0.069) C:NA T:106% | pCi/g | | 03/07/19 08:44 | N2 |
| EPA 365.4 | Phosphorus, Total (as P) | 56.1 | mg/kg | 15.7 | 03/01/19 15:47 | |
| **35447215005** | **AW-4 (14-16)** | | | | | |
| EPA 6010 | Aluminum | 2150 | mg/kg | 7.1 | 03/06/19 14:42 | |
| EPA 6010 | Iron | 445 | mg/kg | 2.8 | 03/06/19 14:42 | |
| ASTM D2974-87 | Percent Moisture | 18.4 | % | 0.10 | 02/11/19 13:38 | |
| EPA 901.1 | Radium-226 | 0.300 ± 0.134 (0.239) C:NA T:NA | pCi/g | | 03/07/19 11:08 | Ra |
| EPA 901.1 | Radium-228 | 0.259 ± 0.187 (0.198) C:NA T:NA | pCi/g | | 03/07/19 11:08 | |
| HSL-300 | Uranium-234 | 0.122 ± 0.082 (0.076) C:NA T:102% | pCi/g | | 03/07/19 08:44 | N2 |
| HSL-300 | Uranium-235 | 0.017 ± 0.060 (0.045) C:NA T:102% | pCi/g | | 03/07/19 08:44 | N2 |
| HSL-300 | Uranium-238 | 0.067 ± 0.063 (0.085) C:NA T:102% | pCi/g | | 03/07/19 08:44 | N2 |
| EPA 365.4 | Phosphorus, Total (as P) | 42.3 | mg/kg | 16.2 | 03/01/19 15:48 | |

**Pace Analytical Services, LLC**
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## ANALYTICAL RESULTS

Project: SJRPP
Pace Project No.: 35447215

**Sample: AW-7 (13)** **Lab ID: 35447215001** Collected: 02/07/19 09:55 Received: 02/08/19 13:15 Matrix: Solid

***Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.***

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3050 | | | | | | | | |
| Aluminum | **3140** | mg/kg | 7.7 | 3.9 | 1 | 03/06/19 00:51 | 03/06/19 14:25 | 7429-90-5 | |
| Iron | **689** | mg/kg | 3.1 | 1.5 | 1 | 03/06/19 00:51 | 03/06/19 14:25 | 7439-89-6 | |
| **Percent Moisture** | Analytical Method: ASTM D2974-87 | | | | | | | | |
| Percent Moisture | **24.1** | % | 0.10 | 0.10 | 1 | | 02/11/19 13:37 | | |
| **365.4 Phosphorus, Total** | Analytical Method: EPA 365.4 Preparation Method: EPA 365.4 | | | | | | | | |
| Phosphorus, Total (as P) | **156** | mg/kg | 9.5 | 4.8 | 1 | 02/28/19 10:05 | 03/01/19 15:43 | 7723-14-0 | |

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# ANALYTICAL RESULTS

Project: SJRPP
Pace Project No.: 35447215

**Sample: AW-6 (10-12)** **Lab ID: 35447215002** Collected: 02/07/19 13:00 Received: 02/08/19 13:15 Matrix: Solid

***Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.***

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3050 | | | | | | | | |
| Aluminum | **2310** | mg/kg | 5.6 | 2.8 | 1 | 03/06/19 00:51 | 03/06/19 14:28 | 7429-90-5 | |
| Iron | **599** | mg/kg | 2.2 | 1.1 | 1 | 03/06/19 00:51 | 03/06/19 14:28 | 7439-89-6 | |
| **Percent Moisture** | Analytical Method: ASTM D2974-87 | | | | | | | | |
| Percent Moisture | **19.1** | % | 0.10 | 0.10 | 1 | | 02/11/19 13:37 | | |
| **365.4 Phosphorus, Total** | Analytical Method: EPA 365.4 Preparation Method: EPA 365.4 | | | | | | | | |
| Phosphorus, Total (as P) | **80.2** | mg/kg | 9.7 | 4.9 | 1 | 02/28/19 10:05 | 03/01/19 15:44 | 7723-14-0 | |

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# ANALYTICAL RESULTS

Project: SJRPP
Pace Project No.: 35447215

**Sample: AW-5 (8)** **Lab ID: 35447215003** Collected: 02/07/19 16:08 Received: 02/08/19 13:15 Matrix: Solid

***Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.***

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3050 | | | | | | | | |
| Aluminum | **3850** | mg/kg | 7.4 | 3.7 | 1 | 03/06/19 00:51 | 03/06/19 14:31 | 7429-90-5 | |
| Iron | **189** | mg/kg | 3.0 | 1.5 | 1 | 03/06/19 00:51 | 03/06/19 14:31 | 7439-89-6 | |
| **Percent Moisture** | Analytical Method: ASTM D2974-87 | | | | | | | | |
| Percent Moisture | **26.2** | % | 0.10 | 0.10 | 1 | | 02/11/19 13:37 | | |
| **365.4 Phosphorus, Total** | Analytical Method: EPA 365.4 Preparation Method: EPA 365.4 | | | | | | | | |
| Phosphorus, Total (as P) | **48.8** | mg/kg | 8.6 | 4.3 | 1 | 02/28/19 10:05 | 03/01/19 15:46 | 7723-14-0 | |

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## ANALYTICAL RESULTS

Project: SJRPP
Pace Project No.: 35447215

**Sample: AW-5 (16-18)** **Lab ID: 35447215004** Collected: 02/07/19 16:13 Received: 02/08/19 13:15 Matrix: Solid

***Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.***

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3050 | | | | | | | | |
| Aluminum | **1700** | mg/kg | 6.4 | 3.2 | 1 | 03/06/19 00:51 | 03/06/19 14:39 | 7429-90-5 | |
| Iron | **189** | mg/kg | 2.6 | 1.3 | 1 | 03/06/19 00:51 | 03/06/19 14:39 | 7439-89-6 | |
| **Percent Moisture** | Analytical Method: ASTM D2974-87 | | | | | | | | |
| Percent Moisture | **20.1** | % | 0.10 | 0.10 | 1 | | 02/11/19 13:37 | | |
| **365.4 Phosphorus, Total** | Analytical Method: EPA 365.4 Preparation Method: EPA 365.4 | | | | | | | | |
| Phosphorus, Total (as P) | **56.1** | mg/kg | 15.7 | 7.8 | 1 | 02/28/19 10:05 | 03/01/19 15:47 | 7723-14-0 | |

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# ANALYTICAL RESULTS

Project: SJRPP
Pace Project No.: 35447215

**Sample: AW-4 (14-16)** **Lab ID: 35447215005** Collected: 02/08/19 09:10 Received: 02/08/19 13:15 Matrix: Solid

***Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.***

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3050 | | | | | | | | |
| Aluminum | **2150** | mg/kg | 7.1 | 3.5 | 1 | 03/06/19 00:51 | 03/06/19 14:42 | 7429-90-5 | |
| Iron | **445** | mg/kg | 2.8 | 1.4 | 1 | 03/06/19 00:51 | 03/06/19 14:42 | 7439-89-6 | |
| **Percent Moisture** | Analytical Method: ASTM D2974-87 | | | | | | | | |
| Percent Moisture | **18.4** | % | 0.10 | 0.10 | 1 | | 02/11/19 13:38 | | |
| **365.4 Phosphorus, Total** | Analytical Method: EPA 365.4 Preparation Method: EPA 365.4 | | | | | | | | |
| Phosphorus, Total (as P) | **42.3** | mg/kg | 16.2 | 8.1 | 1 | 02/28/19 10:05 | 03/01/19 15:48 | 7723-14-0 | |

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## QUALITY CONTROL DATA

Project: SJRPP
Pace Project No.: 35447215

QC Batch: 520547 — Analysis Method: EPA 6010
QC Batch Method: EPA 3050 — Analysis Description: 6010 MET Solid
Associated Lab Samples: 35447215001, 35447215002, 35447215003, 35447215004, 35447215005

METHOD BLANK: 2810805 — Matrix: Solid
Associated Lab Samples: 35447215001, 35447215002, 35447215003, 35447215004, 35447215005

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| Aluminum | mg/kg | 3.0 U | 6.1 | 3.0 | 03/06/19 13:54 | |
| Iron | mg/kg | 1.2 U | 2.4 | 1.2 | 03/06/19 13:54 | |

LABORATORY CONTROL SAMPLE: 2810806

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Aluminum | mg/kg | 145 | 154 | 106 | 80-120 | |
| Iron | mg/kg | 145 | 164 | 113 | 80-120 | |

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2810807 2810808

| Parameter | Units | 35448741001 Result | MS Spike Conc. | MSD Spike Conc. | MS Result | MSD Result | MS % Rec | MSD % Rec | % Rec Limits | RPD | Max RPD | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | mg/kg | 3440 | 171 | 144 | 3880 | 4140 | 258 | 485 | 75-125 | 6 | 20 | J(M1) |
| Iron | mg/kg | 70000 | 171 | 144 | 90700 | 45900 | 12200 | -16800 | 75-125 | 66 | 20 | J(M1), J(R1), L |

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## QUALITY CONTROL DATA

Project: SJRPP
Pace Project No.: 35447215

QC Batch: 514754 | Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 | Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 35447215001, 35447215002, 35447215003, 35447215004, 35447215005

SAMPLE DUPLICATE: 2779514

| Parameter | Units | 35444524006 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Percent Moisture | % | 5.3 | 5.4 | 2 | 10 | |

SAMPLE DUPLICATE: 2779515

| Parameter | Units | 35446933013 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Percent Moisture | % | 24.7 | 26.2 | 6 | 10 | |

SAMPLE DUPLICATE: 2779516

| Parameter | Units | 35447215004 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Percent Moisture | % | 20.1 | 19.1 | 5 | 10 | |

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## QUALITY CONTROL DATA

Project: SJRPP
Pace Project No.: 35447215

QC Batch: 518974 Analysis Method: EPA 365.4
QC Batch Method: EPA 365.4 Analysis Description: 365.4 Total Phosphorus
Associated Lab Samples: 35447215001, 35447215002, 35447215003, 35447215004, 35447215005

METHOD BLANK: 2802603 Matrix: Solid
Associated Lab Samples: 35447215001, 35447215002, 35447215003, 35447215004, 35447215005

| Parameter | Units | Blank Result | Reporting Limit | MDL | Analyzed | Qualifiers |
|---|---|---|---|---|---|---|
| Phosphorus, Total (as P) | mg/kg | 2.2 U | 4.3 | 2.2 | 03/01/19 14:28 | |

LABORATORY CONTROL SAMPLE: 2802604

| Parameter | Units | Spike Conc. | LCS Result | LCS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|
| Phosphorus, Total (as P) | mg/kg | 174 | 162 | 93 | 90-110 | |

MATRIX SPIKE SAMPLE: 2802606

| Parameter | Units | 35449576001 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Phosphorus, Total (as P) | mg/kg | 1.3 % (w/w) | 11900 | 23400 | 91 | 80-120 | |

MATRIX SPIKE SAMPLE: 2802608

| Parameter | Units | 35449786029 Result | Spike Conc. | MS Result | MS % Rec | % Rec Limits | Qualifiers |
|---|---|---|---|---|---|---|---|
| Phosphorus, Total (as P) | mg/kg | 2.1 % (w/w) | 4840 | 26400 | 111 | 80-120 | |

SAMPLE DUPLICATE: 2802605

| Parameter | Units | 35449576001 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Phosphorus, Total (as P) | mg/kg | 1.3 % (w/w) | 12500 | 1 | 20 | |

SAMPLE DUPLICATE: 2802607

| Parameter | Units | 35449786029 Result | Dup Result | RPD | Max RPD | Qualifiers |
|---|---|---|---|---|---|---|
| Phosphorus, Total (as P) | mg/kg | 2.1 % (w/w) | 22100 | 5 | 20 | |

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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SJRPP
Pace Project No.: 35447215

**Sample: AW-7 (13)** **Lab ID: 35447215001** Collected: 02/07/19 09:55 Received: 02/08/19 13:15 Matrix: Solid
PWS: Site ID: Sample Type:

***Results reported on a "dry-weight" basis***

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 901.1 | **0.531 ± 0.183 (0.139) C:NA T:NA** | pCi/g | 03/07/19 10:29 | 13982-63-3 | Ra |
| Radium-228 | EPA 901.1 | **0.468 ± 0.303 (0.379) C:NA T:NA** | pCi/g | 03/07/19 10:29 | 15262-20-1 | |
| Uranium-234 | HSL-300 | **0.309 ± 0.136 (0.101) C:NA T:112%** | pCi/g | 03/07/19 08:44 | 13966-29-5 | N2 |
| Uranium-235 | HSL-300 | **-0.004 ± 0.061 (0.085) C:NA T:112%** | pCi/g | 03/07/19 08:44 | 15117-96-1 | N2 |
| Uranium-238 | HSL-300 | **0.368 ± 0.148 (0.087) C:NA T:112%** | pCi/g | 03/07/19 08:44 | | N2 |

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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SJRPP
Pace Project No.: 35447215

**Sample: AW-6 (10-12)** **Lab ID: 35447215002** Collected: 02/07/19 13:00 Received: 02/08/19 13:15 Matrix: Solid
PWS: Site ID: Sample Type:

***Results reported on a "dry-weight" basis***

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 901.1 | **0.377 ± 0.131 (0.189) C:NA T:NA** | pCi/g | 03/07/19 10:46 | 13982-63-3 | Ra |
| Radium-228 | EPA 901.1 | **0.170 ± 0.216 (0.249) C:NA T:NA** | pCi/g | 03/07/19 10:46 | 15262-20-1 | |
| Uranium-234 | HSL-300 | **0.132 ± 0.091 (0.102) C:NA T:101%** | pCi/g | 03/07/19 08:44 | 13966-29-5 | N2 |
| Uranium-235 | HSL-300 | **0.000 ± 0.065 (0.049) C:NA T:101%** | pCi/g | 03/07/19 08:44 | 15117-96-1 | N2 |
| Uranium-238 | HSL-300 | **0.132 ± 0.089 (0.082) C:NA T:101%** | pCi/g | 03/07/19 08:44 | | N2 |

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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SJRPP
Pace Project No.: 35447215

**Sample: AW-5 (8)** **Lab ID: 35447215003** Collected: 02/07/19 16:08 Received: 02/08/19 13:15 Matrix: Solid
PWS: Site ID: Sample Type:

***Results reported on a "dry-weight" basis***

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 901.1 | **0.188 ± 0.088 (0.255) C:NA T:NA** | pCi/g | 03/07/19 10:47 | 13982-63-3 | Ra |
| Radium-228 | EPA 901.1 | **0.411 ± 0.245 (0.210) C:NA T:NA** | pCi/g | 03/07/19 10:47 | 15262-20-1 | |
| Uranium-234 | HSL-300 | **0.328 ± 0.148 (0.112) C:NA T:103%** | pCi/g | 03/07/19 08:44 | 13966-29-5 | N2 |
| Uranium-235 | HSL-300 | **0.014 ± 0.067 (0.094) C:NA T:103%** | pCi/g | 03/07/19 08:44 | 15117-96-1 | N2 |
| Uranium-238 | HSL-300 | **0.170 ± 0.102 (0.081) C:NA T:103%** | pCi/g | 03/07/19 08:44 | | N2 |

**REPORT OF LABORATORY ANALYSIS**

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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SJRPP
Pace Project No.: 35447215

**Sample: AW-5 (16-18)** **Lab ID: 35447215004** Collected: 02/07/19 16:13 Received: 02/08/19 13:15 Matrix: Solid
PWS: Site ID: Sample Type:

***Results reported on a "dry-weight" basis***

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 901.1 | **0.403 ± 0.138 (0.137) C:NA T:NA** | pCi/g | 03/07/19 11:07 | 13982-63-3 | Ra |
| Radium-228 | EPA 901.1 | **0.264 ± 0.156 (0.177) C:NA T:NA** | pCi/g | 03/07/19 11:07 | 15262-20-1 | |
| Uranium-234 | HSL-300 | **0.235 ± 0.121 (0.100) C:NA T:106%** | pCi/g | 03/07/19 08:44 | 13966-29-5 | N2 |
| Uranium-235 | HSL-300 | **0.032 ± 0.065 (0.090) C:NA T:106%** | pCi/g | 03/07/19 08:44 | 15117-96-1 | N2 |
| Uranium-238 | HSL-300 | **0.342 ± 0.145 (0.069) C:NA T:106%** | pCi/g | 03/07/19 08:44 | | N2 |

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## ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SJRPP
Pace Project No.: 35447215

**Sample: AW-4 (14-16)** **Lab ID: 35447215005** Collected: 02/08/19 09:10 Received: 02/08/19 13:15 Matrix: Solid
PWS: Site ID: Sample Type:

***Results reported on a "dry-weight" basis***

| Parameters | Method | Act ± Unc (MDC) Carr Trac | Units | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|
| Radium-226 | EPA 901.1 | **0.300 ± 0.134 (0.239) C:NA T:NA** | pCi/g | 03/07/19 11:08 | 13982-63-3 | Ra |
| Radium-228 | EPA 901.1 | **0.259 ± 0.187 (0.198) C:NA T:NA** | pCi/g | 03/07/19 11:08 | 15262-20-1 | |
| Uranium-234 | HSL-300 | **0.122 ± 0.082 (0.076) C:NA T:102%** | pCi/g | 03/07/19 08:44 | 13966-29-5 | N2 |
| Uranium-235 | HSL-300 | **0.017 ± 0.060 (0.045) C:NA T:102%** | pCi/g | 03/07/19 08:44 | 15117-96-1 | N2 |
| Uranium-238 | HSL-300 | **0.067 ± 0.063 (0.085) C:NA T:102%** | pCi/g | 03/07/19 08:44 | | N2 |

# QUALITY CONTROL - RADIOCHEMISTRY

Project: SJRPP
Pace Project No.: 35447215

QC Batch: 331387 | Analysis Method: EPA 901.1
QC Batch Method: EPA 901.1 | Analysis Description: 901.1 Gamma Spec Ingrowth
Associated Lab Samples: 35447215001, 35447215002, 35447215003, 35447215004, 35447215005

METHOD BLANK: 1612840 | Matrix: Solid
Associated Lab Samples: 35447215001, 35447215002, 35447215003, 35447215004, 35447215005

| Parameter | Act ± Unc (MDC) Carr Trac | Units | Analyzed | Qualifiers |
|---|---|---|---|---|
| Radium-226 | 0.037 ± 0.048 (0.220) C:NA T:NA | pCi/g | 03/07/19 09:54 | Ra |
| Radium-228 | 0.079 ± 0.126 (0.205) C:NA T:NA | pCi/g | 03/07/19 09:54 | |

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# QUALITY CONTROL - RADIOCHEMISTRY

Project: SJRPP
Pace Project No.: 35447215

QC Batch: 331650 — Analysis Method: HSL-300
QC Batch Method: HSL-300 — Analysis Description: HSL300(AS) Actinides
Associated Lab Samples: 35447215001, 35447215002, 35447215003, 35447215004, 35447215005

METHOD BLANK: 1613957 — Matrix: Solid
Associated Lab Samples: 35447215001, 35447215002, 35447215003, 35447215004, 35447215005

| Parameter | Act ± Unc (MDC) Carr Trac | Units | Analyzed | Qualifiers |
|---|---|---|---|---|
| Uranium-234 | 0.053 ± 0.055 (0.081) C:NA T:105% | pCi/g | 03/07/19 08:44 | N2 |
| Uranium-235 | 0.012 ± 0.058 (0.080) C:NA T:105% | pCi/g | 03/07/19 08:44 | N2 |
| Uranium-238 | 0.034 ± 0.044 (0.061) C:NA T:105% | pCi/g | 03/07/19 08:44 | N2 |

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# QUALIFIERS

Project: SJRPP
Pace Project No.: 35447215

## DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

## LABORATORIES

| | |
|---|---|
| PASI-O | Pace Analytical Services - Ormond Beach |
| PASI-PA | Pace Analytical Services - Greensburg |

## ANALYTE QUALIFIERS

| | |
|---|---|
| U | Compound was analyzed for but not detected. |
| J(M1) | Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery. |
| J(R1) | Estimated Value. RPD value was outside control limits. |
| L | Off-scale high. Actual value is known to be greater than value given. |
| N2 | The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request. |
| Ra | The reported Ra-226 results were determined by hermetically sealing the dried, processed sample in an appropriate-sized can. Each sample was stored for a minimum of 21 days to ensure that equilibrium between Ra-226 and daughters Bi-214 and Pb-214 was achieved. Reported Ra-226 results were inferred from gamma peaks attributable to Bi-214 and Pb-214. |

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## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: SJRPP
Pace Project No.: 35447215

| Lab ID | Sample ID | QC Batch Method | QC Batch | Analytical Method | Analytical Batch |
|---|---|---|---|---|---|
| **35447215001** | **AW-7 (13)** | EPA 3050 | 520547 | EPA 6010 | 520722 |
| **35447215002** | **AW-6 (10-12)** | EPA 3050 | 520547 | EPA 6010 | 520722 |
| **35447215003** | **AW-5 (8)** | EPA 3050 | 520547 | EPA 6010 | 520722 |
| **35447215004** | **AW-5 (16-18)** | EPA 3050 | 520547 | EPA 6010 | 520722 |
| **35447215005** | **AW-4 (14-16)** | EPA 3050 | 520547 | EPA 6010 | 520722 |
| **35447215001** | **AW-7 (13)** | ASTM D2974-87 | 514754 | | |
| **35447215002** | **AW-6 (10-12)** | ASTM D2974-87 | 514754 | | |
| **35447215003** | **AW-5 (8)** | ASTM D2974-87 | 514754 | | |
| **35447215004** | **AW-5 (16-18)** | ASTM D2974-87 | 514754 | | |
| **35447215005** | **AW-4 (14-16)** | ASTM D2974-87 | 514754 | | |
| **35447215001** | **AW-7 (13)** | EPA 901.1 | 331387 | | |
| **35447215002** | **AW-6 (10-12)** | EPA 901.1 | 331387 | | |
| **35447215003** | **AW-5 (8)** | EPA 901.1 | 331387 | | |
| **35447215004** | **AW-5 (16-18)** | EPA 901.1 | 331387 | | |
| **35447215005** | **AW-4 (14-16)** | EPA 901.1 | 331387 | | |
| **35447215001** | **AW-7 (13)** | HSL-300 | 331650 | | |
| **35447215002** | **AW-6 (10-12)** | HSL-300 | 331650 | | |
| **35447215003** | **AW-5 (8)** | HSL-300 | 331650 | | |
| **35447215004** | **AW-5 (16-18)** | HSL-300 | 331650 | | |
| **35447215005** | **AW-4 (14-16)** | HSL-300 | 331650 | | |
| **35447215001** | **AW-7 (13)** | EPA 365.4 | 518974 | EPA 365.4 | 519684 |
| **35447215002** | **AW-6 (10-12)** | EPA 365.4 | 518974 | EPA 365.4 | 519684 |
| **35447215003** | **AW-5 (8)** | EPA 365.4 | 518974 | EPA 365.4 | 519684 |
| **35447215004** | **AW-5 (16-18)** | EPA 365.4 | 518974 | EPA 365.4 | 519684 |
| **35447215005** | **AW-4 (14-16)** | EPA 365.4 | 518974 | EPA 365.4 | 519684 |

WO# : 35447215

35447215

Pace Analytical

# CHAIN-OF-CUSTODY / Analytical Reque

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fie

| Section A Required Client Information: | | Section B Required Project Information: | | Section C Invoice Information: | |
|---|---|---|---|---|---|
| Company: | Golder Associates | Report To: | Sam Stafford | Attention: | |
| Address: | 9428 Baymeadows Rd. | Copy To: | | Company Name: | |
| Suite 400, Jacksonville, FL 32256 | | | | Address: | |
| Email: | | Purchase Order #: | | Pace Quote: | |
| Phone: | Fax: | Project Name: | SJRPP | Pace Project Manager: | tommy.carr@pacelabs.com, |
| Requested Due Date: | | Project #: | | Pace Profile #: | 11462-1 |

| Regulatory Agency | |
|---|---|
| State / Location | FL |

SAMPLE ID — One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique

| MATRIX | CODE |
|---|---|
| Drinking Water | DW |
| Water | WT |
| Waste Water | WW |
| Product | P |
| Soil/Solid | SL |
| Oil | OL |
| Wipe | WP |
| Air | AR |
| Other | OT |
| Tissue | TS |

| ITEM # | SAMPLE ID | MATRIX CODE (see valid codes to left) | SAMPLE TYPE (G=GRAB C=COMP) | COLLECTED START DATE | START TIME | END DATE | END TIME | SAMPLE TEMP AT COLLECTION | # OF CONTAINERS | Unpreserved | H2SO4 | HNO3 | HCl | NaOH | Na2S2O3 | Methanol | Other | Analyses Test Y/N | Al, Fe, Phosphorus | Radium 226/228, Uranium | Residual Chlorine (Y/N) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | AW-7 (13) | SL | G | — | — | 2/7/19 | 0955 | | 2 | 2 | | | | | | | | | ✓ | ✓ | |
| 2 | AW-6 (10-12) | SL | G | — | — | 2/7/19 | 1300 | | 2 | 2 | | | | | | | | | ✓ | ✓ | |
| 3 | AW-5 (8) | SL | G | — | — | 2/7/19 | 1608 | | 2 | 2 | | | | | | | | | ✓ | ✓ | |
| 4 | AW-5 (16-18) | SL | G | — | — | 2/7/19 | 1613 | | 2 | 2 | | | | | | | | | ✓ | ✓ | |
| 5 | AW-4 (14-16) | SL | G | — | — | 2/8/19 | 0910 | | 2 | 2 | | | | | | | | | ✓ | ✓ | |
| 6 | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | | |

Requested Analysis Filtered (Y/N)

| ADDITIONAL COMMENTS | RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME | SAMPLE CONDITIONS | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Empty containers | [signature] / Pace | 2/6/19 | 1500 | [signature] / Golder | 2/6/19 | 1500 | | | | |
| | [signature] / Golder | 2/8/19 | 1315 | [signature] / Pace | 2/8/19 | 1315 | | | | |
| | [signature] / Pace | 2/8/19 | 1700 | FLX | 2/8/19 | 1700 | | | | |
| | FLX | | | ~~[signature] / Pace~~ [signature] / Pace | ~~2/8/19~~ 2.9.19 | ~~10:54~~ 0032 | 2.0 | Y | N | Y |
| | | | | | | | TEMP in C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N) |

T335

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: J Spengler Golder

SIGNATURE of SAMPLER: [signature] DATE Signed: 2/8/19

| Pace Analytical Florida Laboratory | Document Name: Sample Condition Upon Receipt Form | Document Revised: May 30, 2018 |
|---|---|---|
| | Document No.: F-FL-C-007 rev. 13 | Issuing Authority: Pace Florida Quality Office |

# Sample Condition Upon Receipt Form (SCUR)

**Project #** WO#: 35447215
**Project Manager:** PM: TAC Due Date: 03/20/19
**Client:** CLIENT: GOLJAX

**Date and Initials of person:**
**Examining contents:** RRB
**Label:**
**Deliver:**
**pH:**

Thermometer Used: T338 Date: 2-8-19 Time: 1059 Initials: TCM

State of Origin: ______ ☐ For WV projects, all containers verified to ≤6 °C

**Cooler #1 Temp.°C** 1.8 **(Visual)** +.2 **(Correction Factor)** 2.0 **(Actual)** ☐ Samples on ice, cooling process has begun
**Cooler #2 Temp.°C** ____ **(Visual)** ____ **(Correction Factor)** ____ **(Actual)** ☐ Samples on ice, cooling process has begun
**Cooler #3 Temp.°C** ____ **(Visual)** ____ **(Correction Factor)** ____ **(Actual)** ☐ Samples on ice, cooling process has begun
**Cooler #4 Temp.°C** ____ **(Visual)** ____ **(Correction Factor)** ____ **(Actual)** ☐ Samples on ice, cooling process has begun
**Cooler #5 Temp.°C** ____ **(Visual)** ____ **(Correction Factor)** ____ **(Actual)** ☐ Samples on ice, cooling process has begun
**Cooler #6 Temp.°C** ____ **(Visual)** ____ **(Correction Factor)** ____ **(Actual)** ☐ Samples on ice, cooling process has begun

**Courier:** ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☑ Commercial ☐ Pace ☐ Other______
**Shipping Method:** ☐ First Overnight ☐ Priority Overnight ☐ Standard Overnight ☐ Ground ☐ International Priority ☐ Other______

**Billing:** ☐ Recipient ☐ Sender ☐ Third Party ☐ Credit Card ☐ Unknown

**Tracking #** ______

**Custody Seal on Cooler/Box Present:** ~~☑ Yes~~ RB 2-11-19 ☑ No **Seals intact:** ☐ Yes ☑ No **Ice:** Wet Blue Dry None
**Packing Material:** ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other______
**Samples shorted to lab (If Yes, complete)** Shorted Date: ______ Shorted Time: ______ Qty: ______

| | | Comments: |
|---|---|---|
| Chain of Custody Present | ☑ Yes ☐ No ☐ N/A | |
| Chain of Custody Filled Out | ☑ Yes ☐ No ☐ N/A | |
| Relinquished Signature & Sampler Name COC | ☑ Yes ☐ No ☐ N/A | |
| Samples Arrived within Hold Time | ☑ Yes ☐ No ☐ N/A | |
| Rush TAT requested on COC | ☐ Yes ☑ No ☐ N/A | |
| Sufficient Volume | ☑ Yes ☐ No ☐ N/A | |
| Correct Containers Used | ☑ Yes ☐ No ☐ N/A | |
| Containers Intact | ☑ Yes ☐ No ☐ N/A | |
| Sample Labels match COC (sample IDs & date/time of collection) | ☑ Yes ☐ No ☐ N/A | |
| All containers needing acid/base preservation have been checked. | ☐ Yes ☐ No ☑ N/A | Preservation Information:<br>Preservative: ______<br>Lot #/Trace #: ______<br>Date: ______ Time: ______<br>Initials: ______ |
| All Containers needing preservation are found to be in compliance with EPA recommendation:<br>Exceptions: VOA, Coliform, TOC, O&G, Carbamates | ☐ Yes ☐ No ☑ N/A | |
| Headspace in VOA Vials? ( >6mm): | ☐ Yes ☐ No ☑ N/A | |
| Trip Blank Present: | ☐ Yes ☑ No ☐ N/A | |

**Client Notification/ Resolution:**
Person Contacted: ______ Date/Time: ______

**Comments/ Resolution (use back for additional comments):** ______

Project Manager Review: ______ Date: ______