



# 2019 CCR & VSWMR Annual Groundwater Monitoring and Corrective Action Report

*Possum Point Power Station*

*Pond E*

*Solid Waste Permit No. 617*

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## EXECUTIVE SUMMARY

This *2019 CCR and VSWMR Annual Groundwater Monitoring and Corrective Action Report* (Report) was prepared on behalf of Virginia Electric and Power Company d/b/a Dominion Energy Virginia (Dominion Energy) for Pond E (Unit) at the Possum Point Power Station (Station). The Station is located in Prince William County at 19000 Possum Point Road, Dumfries, Virginia. Historically, the Station operated the Unit, one of five (5) unlined surface impoundments, for management of Coal Combustion Residuals (CCR) generated by the power generation operations at the Station. The Unit is considered an inactive CCR surface impoundment under Title 40 Code of Federal Regulations (CFR) Part 257.50 *et seq.* [Disposal of CCR from Electric Utilities (Final Rule; Federal Register Vol. 80, No. 74, 21302-21501 on April 17, 2015, Federal Register Vol. 81, No. 151, 51802 51808 on August 5, 2016, as amended per Federal Register Vol. 83 No. 146 36435-36456 on July 30, 2018)] as well as the Commonwealth of Virginia adoption of 40 CFR Part 257 Subpart D by reference [Title 9 Virginia Administrative Code (VAC) Agency 20, Chapter 81-800 *et seq.* (9VAC20-81-800)]. Pursuant to the CCR Rule and the Virginia Department of Environmental Quality (DEQ)-issued solid waste permit (SWP), the Station operator is required to complete an Annual Groundwater Monitoring and Corrective Action Report (Report) for the Unit by January 31st annually or within 120 days of completing the laboratory analyses for the second semi-annual event of the year, whichever occurs first.

As an inactive CCR surface impoundment in the Commonwealth of Virginia, the Unit is also subject to regulation under the Virginia Solid Waste Management Regulations (VSWMR). Consistent with this requirement, the Unit is operated by Dominion Energy under SWP No. 617 issued by the DEQ on June 13, 2019. These regulations and the Unit's solid waste permit require groundwater monitoring and reporting activities in addition to those required by the CCR Rule.

The Report was developed to meet the reporting requirements for both the CCR Rule and the VSWMR. Specifically, this Report documents the status of the groundwater monitoring program for the Unit, summarizes key actions completed, describes issues encountered and actions to resolve identified issues, and key project activities for the upcoming year. More specifically, this Report describes the performance of the Modified Assessment Monitoring Program (AMP) consistent with the Unit's SWP and the CCR Rule, activities performed to comply with CCR Rule and the Unit's SWP requirements, and the progression of future sampling activities pursuant to the CCR Rule and the Unit's SWP.

Consistent with the CCR Rule and the Unit's SWP, Dominion Energy established site-specific background values for CCR Rule Appendix IV and VSWMR constituents as presented in the *Pond E Facility Background Determination Report* submitted to the DEQ on August 15, 2019. The supporting statistical analyses for site-specific background values are presented in the August 2019 report. Consistent with the CCR Rule and the Unit's SWP, Dominion Energy also proposed Groundwater Protection Standards (GPS) for the Unit in August 2019.

In 2019, Dominion Energy conducted two semi-annual groundwater sampling events (March and August). The March 2019 samples were collected in accordance with the CCR Rule Detection Monitoring Program (DMP). Results from the initial DMP event were compared to site-specific background values and based on that comparison, statistically significant increases (SSIs) over background concentrations were identified for boron, calcium, chloride, fluoride, sulfate, and total dissolved solids in at least one monitoring well.

The August 2019 samples were collected in accordance with the SWP Modified Assessment Monitoring Program, which includes CCR Rule Assessment Monitoring Program requirements plus additional SWP requirements. Consistent with the CCR Rule, the results from the second semi-annual sampling event were compared to site-specific background concentrations and established groundwater protection standards. Concentrations of cobalt above the CCR Rule groundwater protection standard were identified. A notification of these exceedances was placed in the Unit's operating record on January 29, 2020. At the time of this report, DEQ has not yet approved background-based groundwater protection standards for the SWP.

Based on the 2019 monitoring results, Dominion Energy intends to continue with groundwater monitoring activities required under the modified AMP and initiate an Assessment of Corrective Measures for cobalt.

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## 1.0 INTRODUCTION

This 2019 CCR & VSWMR Annual Groundwater Monitoring and Corrective Action Report (Report) was prepared on behalf of Virginia Electric and Power Company d/b/a Dominion Energy Virginia (Dominion Energy) for Pond E at the Possum Point Power Station, Permit No. 617 (Unit) located in Prince William County, Virginia. The Unit is an inactive unlined CCR surface impoundment that completed closure by removal in 2019. Pond E is subject to the groundwater monitoring requirements in Title 40 Code of Federal Regulations (CFR) Part 257.50 *et seq.* [Disposal of Coal Combustion Residuals (CCR) from Electric Utilities (Final Rule; Federal Register Vol. 80, No. 74, 21302-21501 on April 17, 2015, Federal Register Vol. 81, No. 151, 51802-51808 on August 5, 2016, as amended per Federal Register Vol. 83 No. 146 36435-36456 on July 30, 2018)] as well as the Commonwealth of Virginia adoption of 40 CFR Part 257 Subpart D by reference in the Virginia Solid Waste Management Regulations (VSWMR). Pursuant to the CCR Rule, no later than January 31st annually, the owner or operator of a CCR Unit must prepare an annual groundwater monitoring and corrective action report for the CCR Unit documenting the status of groundwater monitoring and corrective action programs for the preceding year.

As an inactive CCR surface impoundment in the Commonwealth of Virginia, the Unit is also subject to regulation under the Virginia Solid Waste Management Regulations (Title 9, Virginia Administrative Code, Agency 20, Chapter 81 *et seq.*; VSWMR). Consistent with the VSWMR, the Unit is operated by Dominion Energy under Solid Waste Permit (SWP) No. 617 issued by the Virginia Department of Environmental Quality (DEQ; DEQ, 2019). These regulations and the Unit's SWP require groundwater monitoring and reporting activities that are in addition to those required by the CCR Rule. Specifically, the Unit's SWP also requires the submission of an Annual Report by January 31st of each calendar year or within 120 days of completing the laboratory analyses for the last compliance event of the year, whichever occurs first. Based on receipt of the complete laboratory certificates of analysis on October 1, 2019, the annual monitoring report submission due date is January 29, 2020. A completed copy of the DEQ's annual report checklist is presented in Appendix A.

Golder Associates Inc. (Golder) has prepared this Report for the Unit on behalf of Dominion Energy in accordance with CCR Rule Part 257.90(e) and the Unit's SWP. This Report provides the monitoring data and required data evaluations for the first and second semi-annual groundwater sampling events performed in March and August 2019.

### 1.1 Site Location

Possum Point Power Station is located in Prince William County at 19000 Possum Point Road, Dumfries, Virginia. As shown on Figure 1, the Station is located immediately west of the Potomac River and north of Quantico Creek. The Unit is located on the Station property immediately north of Possum Point Road.



## 1.2 Site History

The Station has two active power generating units: Unit 5 (heavy oil) and Unit 6 (combined cycle). Two of the former generating units (Units 3 and 4) that were converted from coal to natural gas in 2003, and two former generating units that were powered by coal (Units 1 and 2) have been retired. Historically the Station stored CCR in four unlined impoundments (Ash Ponds A, B, C, and E) and one clay-lined impoundment (Pond D) located on site. Pond E, a 35.6-acre dam structure, was used as a water treatment pond to settle and manage low-volume wastewaters including CCR beginning in 1968. Placement of CCR into Pond E ceased in 2003. In 2015, excavation of the contents of former Pond E began to be consolidated into Pond D. The DEQ confirmed closure by removal in August 2019.

## 1.3 Key Actions

Key actions for the Unit to date are as follows:

- A copy of the Unit's *Groundwater Monitoring Plan* (GWMP) documenting the design information for the monitoring wells pursuant to the CCR Rule [257.91(e)(1)] was placed in the Station's operating record on October 17, 2017, pursuant to the CCR Rule [257.105(h)(2)]. The GWMP for the Station, which includes the Unit, was updated in September 2018 (Golder, 2018);
- Initiated the collection of thirteen baseline/background samples on November 2, 2016, and completed the background monitoring activities on December 13, 2018, pursuant to the CCR Rule [257.94(b)];
- Conducted the initial DMP compliance sampling event on March 11-12, 2019, and completed the sample analyses on April 17, 2019, pursuant to the CCR Rule [257.94];
- Golder certified the Unit's groundwater monitoring system pursuant to the CCR Rule [257.91(e)(1) and Dominion Energy posted the Certification in the Unit's operating record on April 17, 2019, pursuant to the CCR Rule [257.105(h)(3)];
- Golder certified the selection of a statistical method pursuant to the CCR Rule [257.93(f)(6)] and Dominion Energy posted the Certification in the Unit's operating record on April 17, 2019, pursuant to the CCR Rule [257.105(h)(4)];
- Solid Waste Facility Permit No. 617 was issued by the DEQ on June 13, 2019 which includes closure, groundwater monitoring, and surface water monitoring requirements for Pond E;
- Dominion Energy submitted the *Pond E Closure by Removal Report* and Engineer Certification to DEQ on June 25, 2019;
- A notification of a Statistically Significant Increase (SSI) over Unit background concentrations under the DMP was placed in the Unit's operating record on July 16, 2019;
- Completed the *Initial CCR Groundwater Monitoring and Corrective Action Report* on August 1, 2019, and placed a copy of the report in the operating record on August 30, 2019 (Golder 2019a);

- Submitted an updated copy of the Unit's *Groundwater Monitoring Plan (GWMP)* documenting the design information for the monitoring wells pursuant to the CCR Rule [257.91(e)(1)] to the DEQ on August 12, 2019 (Golder, 2019b), pursuant to the CCR Rule [257.105(h)(2)] and the Unit's SWP;
- Submitted the *Pond E Facility Background Determination Report* (Golder, 2019c) to the DEQ on August 15, 2019;
- Conducted the second semi-annual 2019 Modified Assessment Monitoring Program (AMP) sampling event on August 28, 2019, and completed the sample analyses on October 1, 2019, pursuant to the CCR Rule [257.94] and the Unit's SWP;
- Received a letter from DEQ on August 30, 2019, verifying closure by removal in accordance with the unit's closure plan; and
- Notification of second semi-annual 2019 Federal GWPS exceedances was placed in the Unit's operating record on January 29, 2020, in accordance with CCR Rule [257.95(g)].

## 1.4 Monitoring Program Issues

There were no monitoring program concerns identified during the compliance monitoring events conducted in 2019.

## 1.5 Variances

The Unit currently does not have any variances related to the groundwater monitoring programs.

## 2.0 SITE INFORMATION

The Station is owned and operated by Dominion Energy and consists of approximately 650 acres on a peninsula that is bordered to the east and south by the Potomac River, and to the west by Quantico Creek. The Station property is used for industrial purposes, and the surrounding properties are generally undeveloped or consist of private residential development. Undeveloped areas primarily consist of predominantly hardwoods and deciduous wooded uplands with wetlands present in low lying areas adjacent to stream channels.

As part of the Station operations, Dominion Energy operated the Unit for CCR storage. As an inactive CCR impoundment, the Unit was subject to the groundwater monitoring provisions of the CCR Rule by April 17, 2019.

### 2.1 Monitoring Well Network

The Unit's current GWMP (Golder, 2018) details the design of the Unit's CCR Rule groundwater monitoring network. As presented in the GWMP, the monitoring network is comprised of two (2) upgradient/background wells (ED-24R and ED-26) and five (5) downgradient monitoring wells (ES-3D, ES-1609, ES-1613, T-1615D, and T-1615S) designed to monitor the uppermost aquifer beneath the Unit. In addition, the Station maintains two (2) VSWMR wells (ED-22RA and ED-23R) that are used as sentinel wells. The groundwater monitoring well locations relative to the Unit are shown on Figure 2.

#### 2.1.1 Annual Review of Monitoring Network

Wells were inspected during each sampling event and were determined to be functioning appropriately and no wells require replacement.

#### 2.1.2 Monitoring Well Installation and Decommissioning Activities

No groundwater monitoring wells associated with the Unit were installed or decommissioned in 2019.

## 2.2 Geology and Hydrogeology

A summary of the geology and hydrogeology for the Station is presented in the following sections.

### 2.2.1 Geology

The Station and surrounding area are located entirely within the Coastal Plain physiographic province of Virginia. This province is characterized by transgressive and regressive unconsolidated sediments that generally form broad terraces that slope towards the east. The terraces are transected by surface drainage channels, some of which have since been infilled.

The Station is underlain by Cretaceous marine sediments of the Potomac Formation and Tertiary to Quaternary fluvial-deltaic sediments mapped as lower Tertiary terrace deposits, and the Charles City, Shirley, and Tabb Formations. These sediments are unconsolidated and consist of clays, silts, poorly to well sorted sands, and gravel that exist as interbedded, discontinuous, horizontal layers across the site. The thickness of the sedimentary sequence ranges up to at least 600 feet as determined by well logs for the surrounding area. The Station appears to be located immediately west of a northeasterly trending monocline, which may be contributing to the easterly dip observed for the geologic strata.

Based on geological data obtained from soil borings advanced at the Station, the Potomac Confining Unit is considered to be a confining unit for the underlying Potomac Aquifer. The Potomac Confining Unit is present across the upland study area beneath the Unit. Therefore, the uppermost aquifer beneath the study area, which is present within the overlaying Quaternary/Tertiary and Cretaceous sediments, is physically and hydrologically separated from the lower confined Potomac Aquifer.

### 2.2.2 Hydrogeology

The uppermost aquifer beneath the Unit is unconfined and is present in the Quaternary/Tertiary and Cretaceous sediments that overlie the Potomac Confining Unit. Locally, the groundwater flow direction in the uppermost aquifer beneath the Unit is from the northeast to the southwest.

### 2.2.3 Potentiometric Surface Evaluation

The purpose of this evaluation is to determine the elevation of the groundwater surface for the Unit by generating a potentiometric surface contour map using groundwater elevations from compliance wells and existing piezometers. The map will be used to determine if the monitoring wells are properly located to monitor the groundwater at the Unit. The following data table summarizes the groundwater elevation recorded in compliance wells in 2019. Historical static water level data for the Unit are summarized in Appendix B.

Well ID	Top of Casing Elevation (ft/msl)	1 <sup>st</sup> Semi-Annual Event 2019 (March 11-12, 2019)		2 <sup>nd</sup> Semi-Annual Event 2019 (August 26, 2019)	
		Depth to Water (ft)	Groundwater Elevation (ft/msl)	Depth to Water (ft)	Groundwater Elevation (ft/msl)
ED-24R	74.96	24.75	50.21	26.91	48.05
ED-26	89.86	49.97	39.89	51.08	38.78
ES-1609	23.26	21.85	1.41	22.50	0.76
ES-1613	26.01	25.18	0.83	27.54	-1.53

Well ID	Top of Casing Elevation (ft/msl)	1 <sup>st</sup> Semi-Annual Event 2019 (March 11-12, 2019)		2 <sup>nd</sup> Semi-Annual Event 2019 (August 26, 2019)	
		Depth to Water (ft)	Groundwater Elevation (ft/msl)	Depth to Water (ft)	Groundwater Elevation (ft/msl)
ES-3D	22.86	21.90	0.96	22.40	0.46
T-1615D	25.81	21.50	4.31	22.35	3.46
T-1615S	25.92	21.90	4.02	22.77	3.15
ED-22RA	26.89	25.12	1.77	25.65	1.24
ED-23R	27.80	23.55	4.25	23.72	4.05

Notes: ft/msl = Feet above mean sea level  
 ft = feet  
 ED-23R is not used to evaluate potentiometric surface

The Groundwater Potentiometric Surface Map presented as Figure 2 was prepared using static water level data obtained during the first semi-annual DMP compliance event on March 11-12, 2019. The Groundwater Potentiometric Surface Map presented as Figure 3 was prepared using static water level data obtained during the second semi-annual Modified AMP compliance event on August 26, 2019. The interpreted data indicates that the groundwater gradient and flow direction remain consistent (southwest) with previous monitoring events. Consequently, Golder believes that the groundwater monitoring network continues to adequately monitor the uppermost aquifer in accordance with provisions of the CCR Rule (257.91) and the VSWMR (9VAC20-81-250.A.3).

### 2.2.4 Groundwater Flow Rate Calculation

Consistent with the requirements of the CCR Rule, the rate and direction of groundwater flow within the uppermost aquifer beneath the Unit was determined after each sampling event. Appendix C presents the equations used to calculate the approximate horizontal rate of groundwater flow in the uppermost aquifer beneath the Unit. Concurrently with the June 2019 ACM performed for Pond D, the average estimated hydraulic conductivity for the uppermost aquifer (site-wide) was recalculated. As presented in the ACM, the average estimated hydraulic conductivity decreased from 3.16E-04 centimeters per second (cm/s) to 2.01E-04 cm/s. Using this updated hydraulic conductivity estimate, the estimated average groundwater flow rate in the uppermost aquifer beneath the Unit was calculated at approximately 18.1 to 18.9 feet per year. As presented, the average calculated flow rate for March and August 2019 is approximately 40% lower than previous calculations for the Unit which is due to the decrease in the estimated hydraulic conductivity.



### **2.2.5 Network Certification**

Based on this evaluation and previous evaluations completed for the Unit, the Unit's permitted groundwater monitoring system continues to adequately monitor the uppermost aquifer beneath the Unit in accordance with requirements of 9VAC20-81-250.A.3 and 9VAC20 81 250.E.2.a.(2)(e).

### 3.0 FIELD ACTIVITIES

Groundwater sampling activities that occurred during 2019 are summarized in the following sections.

#### 3.1 First Semi-Annual 2019 Compliance Sampling Event

Pursuant to the requirements in 40 CFR 257.94(a), on behalf of Dominion Energy, Golder completed the initial DMP compliance sampling event at the Unit on March 11-12, 2019, in accordance with the GWMP. Field data sheets are presented in Appendix D.1. Following collection, the samples were submitted on ice in secured coolers under chain-of-custody control to Pace in Mechanicsville, Virginia. The samples were then shipped to the Asheville, North Carolina (#460222), and Eden, North Carolina (#460025) locations of Pace Analytical Services. A summary of the DMP sampling event is presented below.

Monitoring Event	Sample Date(s)	Final Laboratory Package Receipt Date
1 <sup>st</sup> Semi-Annual DMP Event	March 11-12, 2019	April 17, 2019

The laboratory certificates of analysis including the chain-of-custody forms, for the first semi-annual DMP sampling event are included in Appendix E.1 and the results are summarized in Table 1.

#### 3.2 Second Semi-Annual 2019 Modified Assessment Program Monitoring Sampling Event

Pursuant to the requirements in Title 40 CFR 257.95(d)(1) and the Unit's SWP, a semi-annual Modified AMP monitoring event was completed for the Unit for the constituents and parameters listed Appendices III and IV of the CCR Rule and the constituents and parameters listed the Unit's SWP. A summary of the Modified AMP sampling event is presented below.

Monitoring Event	Sample Date(s)	Final Laboratory Package Receipt Date
2 <sup>nd</sup> Semi-Annual Modified AMP Event	August 26-28, 2019	October 1 & 2, 2019

During the second semi-annual modified AMP sampling event, the compliance monitoring wells were sampled in accordance with the procedures presented in the Station's GWMP. Samples collected during the second semi-annual modified AMP event, with the exception of hexavalent chromium, were submitted on ice in secured

coolers under chain of custody control to Pace in Mechanicsville, Virginia. The samples were then shipped to the Asheville, North Carolina (#460222), Greensburg, Pennsylvania (#460198), Atlanta, Georgia (460204), and Eden, North Carolina (#460025) locations of Pace for analysis. The remaining hexavalent chromium samples were submitted on ice in secured coolers under chain of custody control to Air Water & Soil Laboratories, Inc. (AWS) in Richmond, Virginia. AWS (#460021) is also a VELAP-accredited laboratory for the analyses required in the SWP.

The field data sheets and laboratory certificates of analysis including the chain-of-custody forms, for the second semi-annual modified AMP sampling events are included in Appendices D.2 and E.2, respectively. The second semi-annual modified AMP sampling event results are summarized in Tables 2 and 3.

## **4.0 LABORATORY ANALYTICAL RESULTS**

Laboratory analytical results from the sampling events conducted in 2019 are summarized in the following sections.

### **4.1 First Semi-Annual 2019 Detection Monitoring Program Sampling Event**

The March 11-12, 2019, compliance samples from the monitoring wells were analyzed by Pace for the presence and concentrations of the constituents and parameters listed in Appendix III of the CCR Rule. The laboratory certificates of analysis and chain-of-custody forms for the sampling event are presented in Appendix E.1. A summary of the CCR Rule Appendix III sampling data for the event is presented in Table 1.

### **4.2 Second Semi-Annual 2019 Modified Assessment Monitoring Program Event**

Groundwater samples collected during the second semi-annual 2019 modified AMP event were analyzed by Pace and AWS for the presence and concentrations of the constituents and parameters listed in Appendices III and IV of the CCR Rule as well as additional SWP-required constituents. The laboratory certificates of analysis and chain-of-custody forms for the sampling event are presented in Appendix E.2. A summary of the CCR and VSWMR sampling data for the event is presented in Tables 2 and 3.

### **4.3 Review of Prior Detections**

A summary of historically detected constituents for each well is presented in Appendix F.

## 5.0 GROUNDWATER EVALUATION

This section summarizes the 2019 groundwater sampling and analysis results for the Unit.

### 5.1 Inorganic Constituents

Groundwater samples were analyzed for constituents and parameters listed in Appendices III and IV of the CCR Rule as well as additional solid waste permit-required constituents. Inorganic constituent and parameter data and the associated analytical methods are discussed in the following sections and summarized in Tables 1 through 3.

#### 5.1.1 Antimony

Antimony was not detected in the second semi-annual 2019 samples.

#### 5.1.2 Arsenic

Arsenic was not detected in the second semi-annual 2019 samples.

#### 5.1.3 Barium

For the second semi-annual 2019 samples, barium was detected at quantified concentrations above the laboratory reporting limit (RL) in each well with concentrations ranging from 16.8 micrograms per liter ( $\mu\text{g/L}$ ) in the sample collected from ED-24R to 163  $\mu\text{g/L}$  in the sample collected from ES-1613.

#### 5.1.4 Beryllium

For the second semi-annual 2019 samples, beryllium was detected at estimated concentrations above the laboratory method detection limit (MDL) in the samples collected at ED-22RA, ES-3D, and T-1615D. Beryllium was not detected above the laboratory reporting limit (RL) in 2019 samples.

#### 5.1.5 Boron

Boron was detected in one or both semi-annual samples collected from each well at concentrations ranging from estimated concentrations above the MDL to 2,100  $\mu\text{g/L}$  in the second semi-annual sample collected from well ES-1613.

#### 5.1.6 Cadmium

Cadmium was detected at an estimated concentration above the laboratory MDL in the sample collected from ES-3D during the second semi-annual 2019 sampling event. Cadmium was not detected above the RL in 2019 samples.



### 5.1.7 Calcium

Calcium was detected above the laboratory RL in each well with concentrations ranging from 1,600 µg/L in the first semi-annual sample collected from ED-24R to 36,000 µg/L in the second semi-annual sample collected from ES-1613.

### 5.1.8 Chloride

Chloride was detected above the laboratory RL in each well at concentrations ranging from 2.2 milligrams per liter (mg/L) in the second semi-annual sample collected from ED-26 to 215 mg/L in the second semi-annual sample collected from T-1615S.

### 5.1.9 Chromium

Chromium was detected at an estimated concentration above the MDL in the sample collected from ED-24R during the second semi-annual 2019 sampling event. Chromium was not detected above the RL in 2019 samples.

### 5.1.10 Hexavalent Chromium

For the second semi-annual 2019 samples, hexavalent chromium was detected at a quantified concentration at the laboratory RL of 10.0 µg/L in the sample collected from ES-1609. However, this result was qualified as unusable due to presumed matrix interference since the total chromium result was reported as non-detect (less than 1.0 µg/L).

### 5.1.11 Cobalt

For the second semi-annual 2019 samples, cobalt was detected at an estimated concentration above the laboratory MDL in the sample collected from ED-26. Cobalt was detected at quantified concentrations above the laboratory RL at seven compliance wells with concentrations ranging from 0.36 µg/L in the sample collected from well ED-24R to 41.5 µg/L in the sample collected from well ES-3D.

### 5.1.12 Copper

For the second semi-annual 2019 samples, copper was detected at estimated concentrations above the MDL in the samples collected at ED-22RA and ES-3D. Copper was not detected above the laboratory RL in 2019 samples.

### 5.1.13 Fluoride

Fluoride was detected at estimated concentrations above the MDL in one or both semi-annual samples collected from wells ED-1609 and T-1615S. Fluoride was detected at quantified concentrations above the laboratory RL in one or both semi-annual samples collected from wells ED-26, ED-3D, ES-1613, T-1615D, and ED-23R at

concentrations ranging from 0.14 mg/L in the second semi-annual sample collected from ES-1613 to 0.28 mg/L in the first semi-annual sample collected from ES-3D.

#### **5.1.14 Hardness**

Hardness is a former Virginia Pollutant Discharge Elimination System (VPDES) constituent that is currently monitored under the SWP. For the second semi-annual 2019 samples, hardness was detected at quantified concentrations above the laboratory RL in each well at concentrations ranging from 8.07 mg/L in the sample collected from ED-24R to 164 mg/L in the sample collected from ES-1613.

#### **5.1.15 Iron**

Iron is a former VPDES constituent that is currently monitored under the SWP. For the second semi-annual 2019 samples, iron was detected at an estimated concentration above the laboratory MDL in the sample collected from ED-24R. Iron was detected at quantified concentrations above the laboratory RL at eight compliance wells with concentrations ranging from 2,360 µg/L in the sample collected from ED-22RA to 36,700 µg/L in the sample collected from ES-1613.

#### **5.1.16 Lead**

For the second semi-annual 2019 samples, lead was detected at estimated concentrations above the laboratory MDL in the samples collected at ES-3D and T-1615S. Lead was detected at quantified concentrations above the laboratory RL in the samples collected from ED-24R (0.14 µg/L), ED-26 (0.19 µg/L), and ED-22RA (0.12 µg/L).

#### **5.1.17 Lithium**

For the second semi-annual 2019 samples, lithium was detected at an estimated concentration above the laboratory MDL in the sample collected from ED-24R. Lithium was detected at quantified concentrations above the laboratory RL at eight compliance wells with concentrations ranging from 2.6 µg/L in the sample collected from ED-22RA to 21.7 µg/L in the sample collected from ES-1613.

#### **5.1.18 Manganese**

Manganese is a former VPDES constituent that is currently monitored under the SWP. For the second semi-annual 2019 samples, manganese was detected at quantified concentrations above the laboratory RL in each well with concentrations ranging from 9.4 µg/L in the sample collected from ED-24R to 998 µg/L in the sample collected from ES-3D.

### 5.1.19 Mercury

Mercury was not detected in the second semi-annual 2019 samples.

### 5.1.20 Molybdenum

For the second semi-annual 2019 samples, molybdenum was detected at estimated concentrations above the laboratory MDL in the samples collected at ED-22RA, ES-1613, and ES-3D. Molybdenum was detected at quantified concentrations above the laboratory RL in the samples collected at ES-1609 (5.8 µg/L) and T-1615S (7.1 µg/L).

### 5.1.21 Nickel

For the second semi-annual 2019 samples, nickel was detected at an estimated concentration above the laboratory MDL in the sample collected from T-1615D. Nickel was detected at quantified concentrations above the laboratory RL at five compliance wells with concentrations ranging from 8.2 µg/L in the sample collected from ES-1613 to 27.6 µg/L in the sample collected from ES-3D.

### 5.1.22 pH

For the first semi-annual 2019 samples, pH measurements ranged from 4.76 Standard Units (S.U.) in the sample collected from ED-24R to 5.42 S.U. in the sample collected from ED-26.

For the second semi-annual 2019 samples, pH measurements ranged from 4.59 S.U. in the sample collected from ED-24R to 5.61 S.U. in the sample collected from ED-22RA.

### 5.1.23 Phenolics

Phenolics is a former VPDES constituent that is currently monitored under the SWP. Phenolics were not detected in the second semi-annual 2019 samples.

### 5.1.24 Potassium

Potassium is a former VPDES constituent that is currently monitored under the SWP. For the second semi-annual 2019 samples, potassium was detected at quantified concentrations above the laboratory RL in each well at concentrations ranging from 1,660 µg/L in the sample collected from ED-22RA to 11,400 µg/L in the sample collected from T-1615D.

### 5.1.25 Radium (Total)

For the second semi-annual 2019 samples, radium-226 and radium-228 (combined) was detected at concentrations above the Minimum Detectable Concentration (MDC) in samples collected at six compliance wells with

concentrations ranging from 1.45 picoCuries per liter (pCi/L) in the sample collected from T-1615D to 3.44 pCi/L in the sample collected from T-1615S.

#### **5.1.26 Selenium**

Selenium was not detected in the second semi-annual 2019 samples.

#### **5.1.27 Silver**

Silver was not detected in the second semi-annual 2019 samples.

#### **5.1.28 Sodium**

Sodium is a former VPDES constituent that is currently monitored under the SWP. For the second semi-annual 2019 samples, sodium was detected at quantified concentrations above the laboratory RL in each well at concentrations ranging from 1,820 µg/L in the sample collected from ED-26 to 136,000 µg/L in the sample collected from T-1615S.

#### **5.1.29 Sulfate**

Sulfate was detected at quantified concentrations above the laboratory RL with concentrations ranging from 1.1 mg/L in the second semi-annual sample collected from T-1615D to 130 mg/L in the first semi-annual sample collected from ES-3D.

#### **5.1.30 Thallium**

Thallium was detected at an estimated concentration above the laboratory MDL in the sample collected from T-1615S during the second semi-annual 2019 sampling event. Thallium was not detected above the laboratory RL in 2019.

#### **5.1.31 Tin**

Tin was detected at an estimated concentration above the laboratory MDL in the sample collected from ED-22RA during the second semi-annual 2019 sampling event. Tin was not detected above the laboratory RL in 2019.

#### **5.1.32 Total Dissolved Solids**

Total dissolved solids (TDS) was detected at quantified concentrations above the laboratory RL in each well at concentrations ranging from 63.0 mg/L in the second semi-annual sample collected from ED-26 to 530 mg/L in the second semi-annual sample collected from ES-1613.

### 5.1.33 Total Organic Carbon

Total Organic Carbon (TOC) is a former VPDES constituent that is currently monitored under the SWP. For the second semi-annual 2019 samples, TOC was detected at quantified concentrations above the laboratory RL in seven compliance wells with concentrations ranging from 10.8 mg/L in the sample collected from ED-23R to 30.8 mg/L in the sample collected from T-1615S.

### 5.1.34 Vanadium

Vanadium was not detected in the second semi-annual 2019 samples.

### 5.1.35 Zinc

For the second semi-annual 2019 samples, zinc was detected at estimated concentrations above the laboratory MDL in the samples collected at ED-23R, ED-24R, and ES-1613. Zinc was detected at quantified concentrations above the laboratory RL in the samples collected at five compliance wells with concentrations ranging from 16.9 µg/L in the sample collected from T-1615S to 210 µg/L in the sample collected from ES-3D.

## 6.0 DATA QUALITY VALIDATION

The Quality Assurance (QA) and quality control (QC) data provided by the laboratory for the 2019 sampling events were reviewed to ensure that the analytical results met the project's data quality objectives as outlined in the Station's GWMP. The review process was performed in general accordance with procedures outlined in the following guidance documents:

- *National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017* (EPA, 2017);
- *Evaluation of Radiochemical Data Usability. 1997. Department of Energy (Paar, G. et al., April 1997).*

### 6.1 First Semi-Annual 2019 Compliance Event Findings

The laboratory and field QA/QC data for the initial DMP compliance monitoring event samples collected March 11-12, 2019, were reviewed in accordance with United States Environmental Protection Agency (EPA) protocol. The field QA/QC sample for this event included a duplicate sample that was collected at the Unit on March 11, 2019. A field blank was also collected as part of an overall site monitoring sampling event Unit on March 12, 2019. These samples were analyzed for the same constituents as the groundwater samples. A description of the laboratory QA/QC data associated with the March 2019 groundwater monitoring event is presented in Appendix G.1.

As presented in Appendix G.1, with the exception of boron, calcium, chloride, and fluoride matrix spike and/or matrix spike duplicate recoveries that are outside of QC limits, laboratory QC results were within acceptable limits and interference free. Relative percent differences were above acceptable QC limits for total dissolved solids. A quantified detection of total dissolved solids was reported in the field blank with one sample qualified per EPA guidance. Duplicate results for total dissolved solids were outside of control limits and both the parent and duplicate samples were qualified estimated per EPA guidance. The associated sample delivery group (analytical batch) and recoveries outside QC limits are detailed in the laboratory QA/QC presented in Appendix G.1. Based on review of the laboratory-provided QC data, EPA guidance recommendations, and Golder's professional judgement, the data for the March 2019 compliance event were determined to meet the data quality objectives for the project

### 6.2 Second Semi-Annual 2019 Compliance Event Findings

The laboratory and field QA/QC data for the second semi-annual compliance monitoring event samples collected August 26-28, 2019, were reviewed in accordance with EPA and United States Department of Energy (DOE) protocol. Field QA/QC samples for this event included a field blank that was collected at the Unit on August 27, 2019. A field duplicate sample was also collected at the Unit on August 28, 2019. These QA/QC samples were

analyzed for the same constituents as the groundwater samples. Based on review of the laboratory-provided QC data and EPA/DOE guidance recommendations, the data for this sampling event were determined to meet the data quality objectives for the project. It is noted that reported sample results (boron, zinc, radium-228) were qualified as estimated per EPA/DOE protocol due to similar analyte detections in one or more sample-group associated QC samples (method blank, field blank). A copy of the data validation record is presented in Appendix G.2.

## 7.0 STATISTICAL EVALUATION OF GROUNDWATER DATA

This section presents a statistical evaluation for the semi-annual data according to the requirements of the CCR Rule and the SWP. Two types of statistical analyses have been conducted as follows:

- Data from each semi-annual monitoring event of 2019 have been evaluated with respect to background data consistent with EPA guidance (EPA 2019); this analysis is designed to identify SSIs in downgradient wells over background concentration (inter-well analysis); and
- Data from each well have been evaluated with respect to applicable groundwater protection standards.

### 7.1 Site-Specific Background Evaluation

#### 7.1.1 First Semi-Annual Detection Monitoring Program Event

Pursuant to §257.95 of the CCR Rule, Golder evaluated the DMP constituent detections against background concentrations that were established for the evaluation of DMP constituents. The calculated background concentrations for the DMP constituents and parameters are summarized in the following table and presented in Table 1. Based on a comparison of the initial DMP compliance downgradient groundwater monitoring data to the Unit's background concentrations, the following SSIs over the calculated Unit background concentrations were identified:

- Boron (ES-3D, ES-1609, ES-1613)
- Calcium (ED-26, ES-3D, ES-1609, ES-1613)
- Chloride (ES-3D, ES-1609, ES-1613)
- Fluoride (ES-3D)
- Sulfate (ES-3D, ES-1609, ES-1613)
- Total Dissolved Solids (ED-24R, ED-26, ES-3D, ES-1609, ES-1613)

#### 7.1.2 Second Semi-Annual Modified Assessment Monitoring Program Event

Pursuant to §257.95 of the CCR Rule, Golder evaluated the Appendix III constituent detections against established background concentrations and the following SSIs were identified:

- Boron (ES-3D, ES-1609, ES-1613, T-1615S)
- Calcium (ES-3D, ES-1609, ES-1613, T-1615D, T1615S)
- Chloride (ES-3D, ES-1609, ES-1613, T-1615D, T1615S)



- Sulfate (ES-3D, ES-1609, ES-1613, T-1615S)
- Total Dissolved Solids (ES-3D, ES-1609, ES-1613, T-1615D, T1615S)

For AMP Appendix IV constituents, the following SSIs were identified consistent with §257.93(h) of the CCR Rule. Golder evaluated the AMP constituent detections using background concentrations that were established for the evaluation of AMP constituents (see Table 2).

- Barium (ES-3D, ES-1609, ES-1613, T-1615D, T1615S)
- Cobalt (ES-3D, ES-1609, ES-1613, T1615S)
- Total Radium (ED-24R, ES-3D, ES-1609, ES-1613, T-1615S)

Note that proposed background concentrations submitted to the DEQ have not yet been approved and associated evaluations were not performed in 2019.

## 7.2 Groundwater Protection Standards

Consistent with the provisions of 40 CFR Subpart 257.95(d)(2) for the CCR Rule, GWPS for the Appendix IV constituents listed in 40 CFR 257 which were detected during the initial AMP Appendix IV sampling event in August 2019 were established on December 30, 2019. Because the Commonwealth of Virginia adopted by reference the October 4, 2016, version of 40 CFR Part 257 into 9VAC20 81 800 of the VSWMR, amendments to 40 CFR Part 257 Subpart D after October 4, 2016, have not been incorporated into 9VAC20-81-800 and health-based GWPS are not applicable to the Virginia CCR Rule under 9VAC20-81-800.

Consistent with the SWP Module XI.J.2.a, a Facility Background Determination Report was submitted to the DEQ on August 15, 2019 (Golder, 2019c). The report documents and presents statistically calculated background concentrations and proposed state groundwater protections standards (GPS) for required parameters and constituents pursuant to the DEQ issued SWP and 40 CFR Part 257.93(d) of the CCR Rule. The proposed GPS were based on Federal Maximum Contaminant Levels (MCLs) for constituents for which an MCL has been established, or site-specific background values for constituents for which an MCL has not been established, or for constituents for which the site-specific background value is higher than the MCL. As of the time of this report, proposed background-based Virginia GPS have not been approved by the DEQ. However, in accordance with SWP permit condition XI.G.6, MCL-based GPS are effective with the issuance of the permit.

### 7.2.1 CCR Groundwater Protection Standards Evaluation

Consistent with §257.95 *et seq.* of the CCR Rule, Golder evaluated the AMP constituents (CCR Rule Appendix IV constituents) against CCR Rule established GWPS. Based this evaluation, the following Federal GWPS

exceedances were identified during the 2019 second semi-annual groundwater monitoring event based on a value-to-standard comparison.

Constituent	Groundwater Protection Standard (µg/L)	Downgradient Monitoring Well	2SA 2019 Concentration (µg/L)
Cobalt	6.0	ES-1609	16.7
		ES-1613	7.1
		ES-3D	41.5
		T-1615S	21.4

Note: µg/L = Microgram per liter

### 7.2.2 Virginia Groundwater Protection Standards Evaluation

Consistent with XI.H.2 of the Unit's SWP, Golder evaluated the AMP constituents (CCR Rule Appendix IV constituents, VSWMR make-up metals, and boron) against MCL-based GPS. Based this evaluation, there were no state GPS exceedances identified for the second semi-annual 2019 AMP event.

## 8.0 CONCLUSIONS

The following findings are presented based on the results of the groundwater sampling activities conducted at the Unit in 2019:

### 8.1 Summary of Findings

- The overall direction of groundwater flow at the Unit generally follows topography and flows at an estimated horizontal velocity of 18.1 to 18.9 feet/year;
- Downgradient wells are located close to the waste management unit boundary and monitor groundwater quality downgradient to the Unit;
- During 2019, the monitoring well network functioned as designed and had the ability to determine the Unit's impact on the quality of the groundwater in the uppermost aquifer;
- Review of the current potentiometric map indicates the monitoring wells network fulfills the requirements of 9VAC20-81-250.A.3;
- Review of the 2019 Modified AMP monitoring data did not indicate any significant changes in the groundwater quality;
- Initial DMP sampling indicated SSIs above background and triggered the AMP;
- Modified assessment monitoring identified SSIs over background for barium, boron, calcium, chloride, cobalt, sulfate, total radium, and total dissolved solids; and
- Federal GWPS exceedances for cobalt were identified in wells ES-1609, ES-1613, ES-3D, and T-1615S.

### 8.2 Planned Activities

Based on the results from the 2019 Modified AMP activities, Dominion Energy intends to continue with the Modified AMP in 2020 consistent with the provisions in the CCR Rule [part 257.95] and the Unit's solid waste permit. Dominion Energy intends to conduct two semi-annual compliance events in 2020. Additionally, in response to the Federal GWPS exceedances for cobalt, Dominion Energy intends to initiate an Assessment of Corrective Measures for Pond E.

## 9.0 REFERENCES

- Department of Environmental Quality (DEQ). 2019. Solid Waste Facility Permit Number 617. June.
- EPA (United States Environmental Protection Agency). 2015. Federal Register. Volume 80. No. 74. Friday April 17, 2015. Part II. Environmental Protection Agency. 40 CFR Parts 257 and 261. Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule. [EPA HQ RCRA-2009-0640; FRL-9919-44-OSWER]. RIN-2050-AE81. April.
- EPA. 2016. Federal Register. Volume 81. No. 151. Friday August 5, 2016. Part II. Environmental Protection Agency. 40 CFR Parts 257 and 261. Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule. [EPA HQ OLEM-2016-0274; FRL-9949-44-OLEM]. August.
- EPA. 2017. National Functional Guidelines for Inorganic Superfund Methods Data Review. January.
- EPA. 2018. Federal Register. Volume 83. No. 146. Monday July 30, 2018. Part II. Environmental Protection Agency. 40 CFR Parts 257 and 261. Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule. [EPA HQ OLEM-2017-0286; FRL-9981-18-OLEM]. RIN-2050-AG88. July.
- Paar, J. & Porterfield, D. 1997. Evaluation of radiochemical data usability. DOE (Department of Energy) 10.2172/461261. April.
- Golder Associates Inc. (Golder). 2018. *Groundwater Monitoring Plan*, Possum Point Power Station, Dumfries, Virginia. September.
- Golder. 2019a. *Initial CCR Groundwater Monitoring and Corrective Action Report*, Ash Pond E, Possum Point Power Station, Fluvanna County, Virginia. August 1.
- Golder. 2019b. *Groundwater Monitoring Plan*, Possum Point Power Station, Dumfries, Virginia. August 8.
- Golder. 2019c. *Pond E Facility Background Determination Report*, Possum Point Power Station, Dumfries, Virginia. August 15.
- Virginia Waste Management Board (VWMB). 2019. Virginia Solid Waste Management Regulations – (9VAC20-81 *et seq.*). March.

## 10.0 CERTIFICATION SECTION

This Report has been prepared by qualified groundwater scientists and engineers on behalf of Virginia Electric and Power Company d/b/a Dominion Energy Virginia (Dominion Energy) for Pond E at the Possum Point Power Station in Dumfries, Virginia. This document was prepared by scientists and engineers who have received baccalaureate and/or post-graduate degrees in the natural sciences and/or engineering and who have sufficient training and experience in groundwater hydrology, engineering, statistical evaluations, and related fields as demonstrated by state professional registrations and completion of an accredited university program that enables sound professional judgments consistent with the industry standard of care for groundwater monitoring, contaminant fate and transport, environmental corrective actions, and cost estimate development. This Report also satisfies the reporting requirements specified in 9VAC20-81-250.E.2.a of the VSWMR (VWMB, 2019) and the DEQ SWP No. 617.

Signature

Name & Title



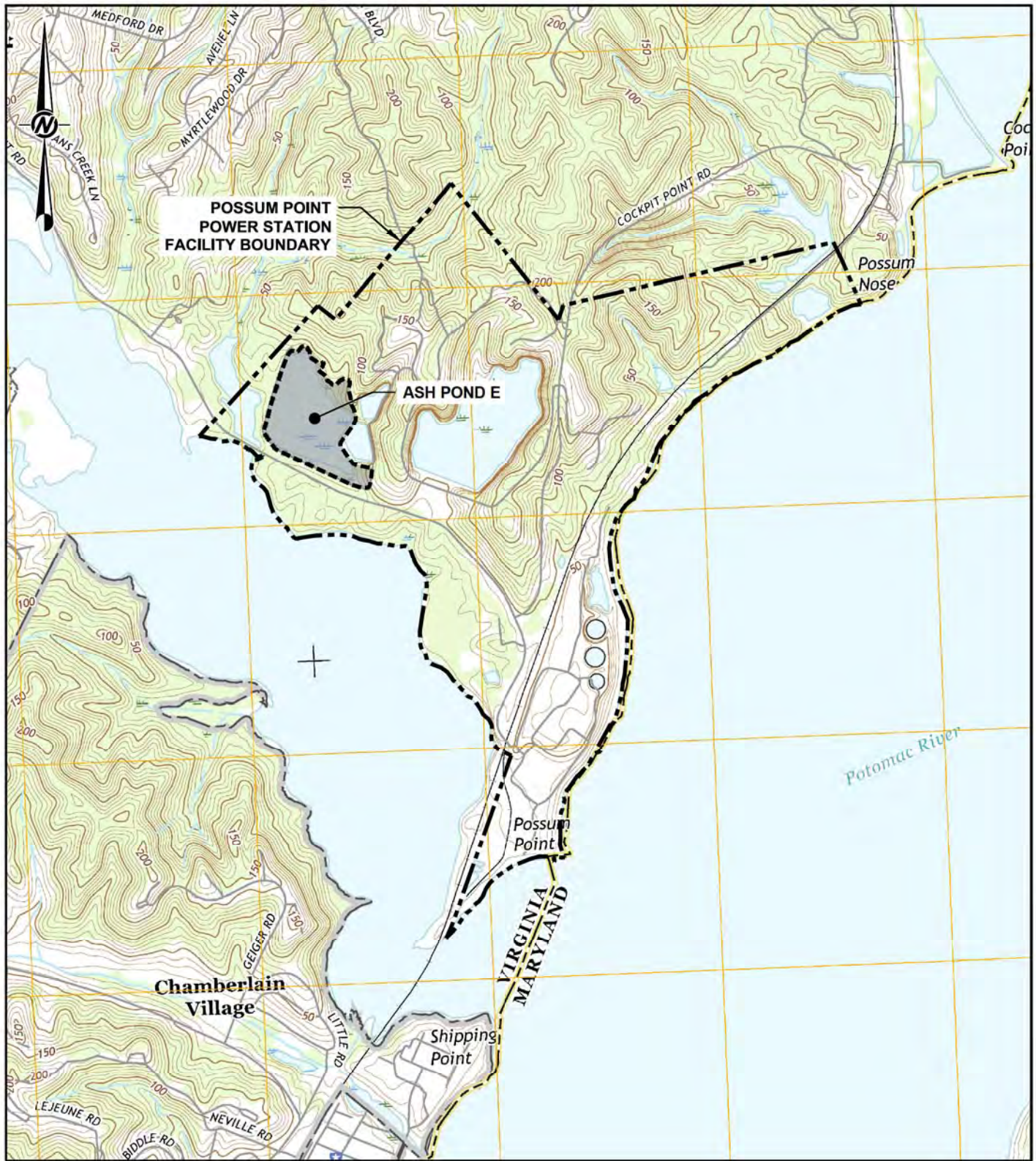
Michael G. Williams, C.P.G.  
Principal, Senior Hydrogeologist

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<https://golderassociates.sharepoint.com/sites/104138/reports/2020-01-29 ppt pond e ccr+vswmr amr/2020-01-29 possum point pond e ccr+vswmr agwmmr.docx>

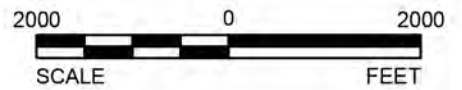
# FIGURES





**REFERENCE**

BASE MAP CONSISTS OF USGS TOPOGRAPHIC QUADRANGLE QUANTICO, VIRGINIA DATED 2016.



CLIENT  
DOMINION ENERGY

PROJECT  
POSSUM POINT POWER STATION  
ASH POND E  
PRINCE WILLIAM COUNTY, VIRGINIA

CONSULTANT	YYYY-MM-DD	2019-09-19
	DESIGNED	ALR
	PREPARED	ABR
	REVIEWED	ALR
	APPROVED	MGW

TITLE  
**SITE LOCATION MAP**

PROJECT NO.  
16-62150

REV.  
0

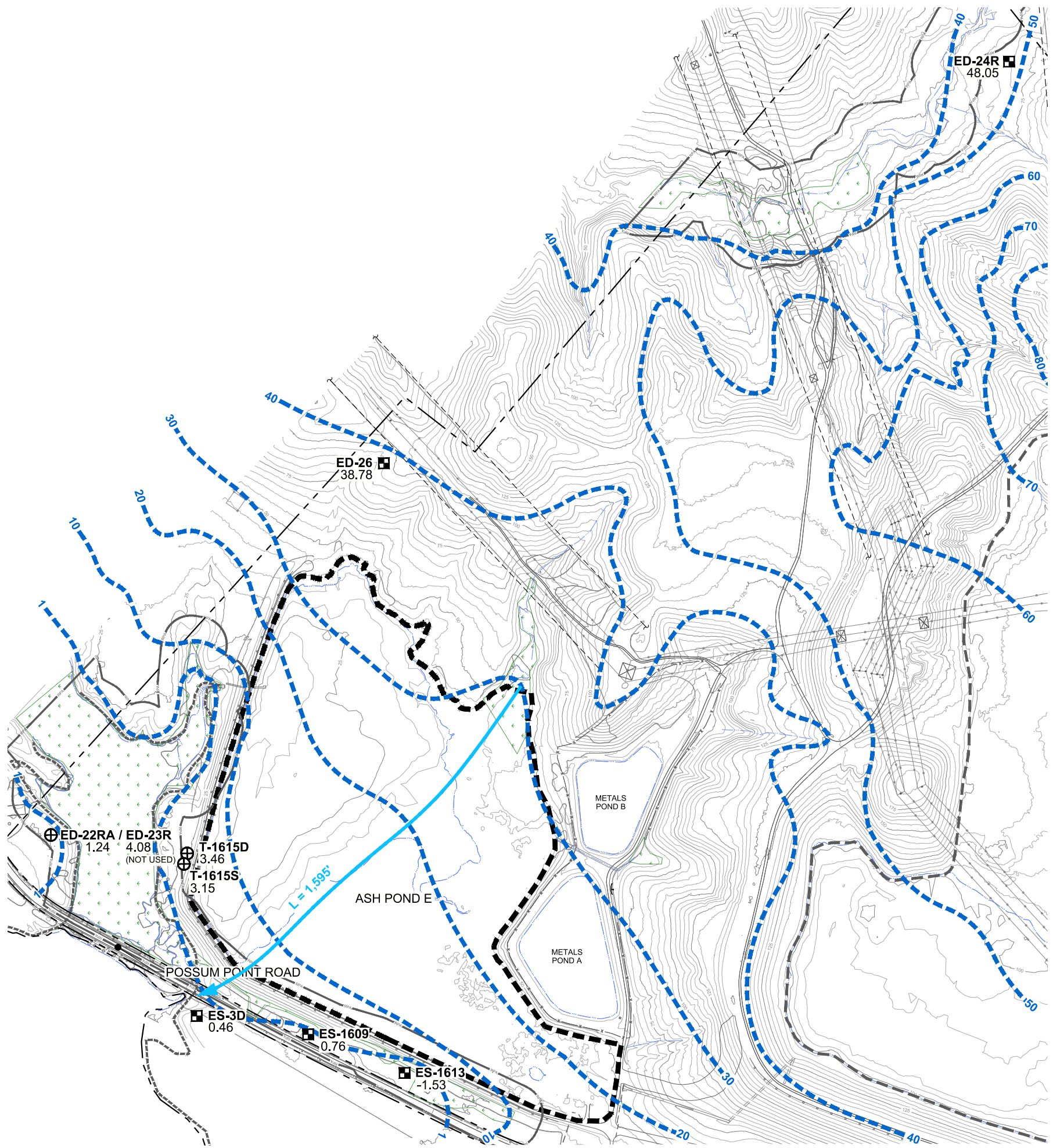
FIGURE  
1







Path: G:\Plan Production Data Files\Drawing Data Files\16-62150\XX - ASH POND E CCR AMRA\Asst Drawings\16-62150\XX13.dwg



**LEGEND**

	PROPERTY BOUNDARY
	EX. TOPOGRAPHIC CONTOURS (5' INTERVALS)
	WETLAND
	STREAM OR SURFACE WATER BOUNDARY
	RESOURCE PROTECTION AREA BOUNDARY
	100-YEAR FLOOD PLAIN
	ASH POND LIMITS
	EX. STATE COMPLIANCE WELL
	EX. CCR COMPLIANCE GROUNDWATER MONITORING WELL
48.05	STATIC GROUNDWATER LEVEL ELEVATION (FEET ABOVE MEAN SEA LEVEL (AMSL))
	GROUNDWATER SURFACE CONTOUR (FEET AMSL)
	APPROXIMATE GROUNDWATER FLOW PATHWAY USED TO CALCULATE HYDRAULIC GRADIENT

- NOTES**
- EXISTING CONDITIONS COMPILED BY KEDDAL AERIAL MAPPING USING PHOTOGRAMMETRIC METHODS, FROM AERIAL PHOTOGRAPHY DATED FEBRUARY 13, 2015.
  - STATIC WATER LEVELS MEASURED ON AUGUST 26, 2019.
  - GROUNDWATER CONTOURS BASED ON LINEAR INTERPOLATION BETWEEN AND EXTRAPOLATION FROM KNOWN DATA, TOPOGRAPHIC CONTOURS, AND KNOWN FIELD CONDITIONS. THEREFORE, GROUNDWATER CONTOURS MAY NOT REFLECT ACTUAL GROUNDWATER CONDITIONS. GROUNDWATER CONTOUR(S) SHOWN IN GREEN ARE INFERRED.
  - GROUNDWATER CONTOUR LINES SHOW THE WATER TABLE SHAPE AND ELEVATION. THESE CONTOURS ARE INFERRED LINES FOLLOWING THE GROUNDWATER SURFACE AT A CONSTANT ELEVATION ABOVE SEA LEVEL. THE GROUNDWATER FLOW DIRECTION IS GENERALLY PERPENDICULAR TO THE GROUNDWATER SURFACE CONTOURS, SIMILAR TO THE RELATIONSHIP BETWEEN SURFACE WATER FLOW AND TOPOGRAPHIC CONTOURS.
  - ED-23R IS NOT USED TO EVALUATE POTENTIOMETRIC SURFACE.

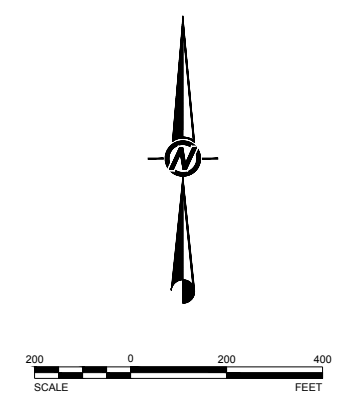
CLIENT  
**DOMINION**  
 POSSUM POINT POWER STATION  
 PRINCE WILLIAM COUNTY, VIRGINIA

PROJECT  
 GROUNDWATER MONITORING PROGRAM  
 ASH POND E

TITLE  
**GROUNDWATER POTENTIOMETRIC SURFACE MAP**  
 AUGUST 26, 2019

CONSULTANT	YYYY-MM-DD	2019-09-19
	DESIGNED	ALR
	PREPARED	ABR
	REVIEWED	ALR
	APPROVED	MGW

PROJECT NO. 16-62150      REV. 0      FIGURE 3



1 in IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM A3S-D

# TABLES

**Table 1**  
**Summary of 1st Semi-Annual Detection Monitoring Program Sampling Event Data (March 2019)**  
**Possum Point Power Station, Pond E**

Location			Upgradient Wells								Downgradient Wells								Field QC											
			ED-24R				ED-26				ES-1609				ES-1613				ES-3D				ES-1609 Duplicate				Field Blank			
Sample Date			3/12/2019				3/11/2019				3/11/2019				3/11/2019				3/11/2019				3/12/2019							
Analyte	Unit	Site-Specific Background	Result	Qual	MDL	RL	Result	Qual	MDL	RL	Result	Qual	MDL	RL	Result	Qual	MDL	RL	Result	Qual	MDL	RL	Result	Qual	MDL	RL	Result	Qual	MDL	RL
<b>CCR Appendix III</b>																														
Boron	µg/L	250	< 25.0		25.0	50.0	< 25.0		25.0	50.0	<b>930</b>	J	25.0	50.0	<b>1,700</b>		25.0	50.0	<b>650</b>		25.0	50.0	<b>1,200</b>		25.0	50.0	< 25.0		25.0	50.0
Calcium	µg/L	7.920	<b>1,600</b>		50.0	100	<b>10,200</b>		50.0	100	<b>13,200</b>	J	50.0	100	<b>28,700</b>		50.0	100	<b>13,700</b>		50.0	100	<b>17,800</b>		50.0	100	< 50.0		50.0	100
Chloride	mg/L	5.0	<b>2.7</b>		0.60	1.0	<b>2.3</b>		0.60	1.0	<b>193</b>		2.4	4.0	<b>154</b>		1.8	3.0	<b>106</b>		1.8	3.0	<b>193</b>		2.4	4.0	< 0.60		0.60	1.0
Fluoride	mg/L	0.26	< 0.050		0.050	0.10	<b>0.20</b>		0.050	0.10	<b>0.063</b>	J	0.050	0.10	<b>0.20</b>		0.050	0.10	<b>0.28</b>		0.050	0.10	<b>0.071</b>	J	0.050	0.10	< 0.050		0.050	0.10
pH	SU	4.57-6.00	4.76		0.01	0.01	5.42		0.01	0.01	4.89		0.01	0.01	5.22		0.01	0.01	5.07		0.01	0.01	--		0.01	0.01	--		0.01	0.01
Sulfate	mg/L	2.60	<b>2.4</b>		0.50	1.0	<b>2.1</b>		0.50	1.0	<b>95.9</b>		0.50	1.0	<b>88.8</b>		1.5	3.0	<b>130</b>		1.5	3.0	<b>95.4</b>		0.50	1.0	< 0.50		0.50	1.0
Total Dissolved Solids	mg/L	99	<b>139</b>	J+	25.0	25.0	<b>103</b>	J+	25.0	25.0	<b>337</b>		25.0	25.0	<b>519</b>		25.0	25.0	<b>532</b>		25.0	25.0	<b>531</b>		25.0	25.0	<b>254</b>		25.0	25.0
<b>Field Measurements</b>																														
Conductivity	µS/cm	--	35.3		0.1	0.1	80.5		0.1	0.1	820		0.1	0.1	740		0.1	0.1	655		0.1	0.1	--		0.1	0.1	--		--	--
Depth to Water*	ft btoc	--	24.75		0.01	0.01	49.97		0.01	0.01	21.85		0.01	0.01	25.18		0.01	0.01	21.90		0.01	0.01	--		0.01	0.01	--		--	--
Dissolved Oxygen	mg/L	--	3.94		0.01	0.01	1.29		0.01	0.01	0.97		0.01	0.01	2.39		0.01	0.01	1.11		0.01	0.01	--		0.01	0.01	--		--	--
Groundwater Elevation	ft msl	--	50.21		0.01	0.01	39.89		0.01	0.01	1.41		0.01	0.01	0.83		0.01	0.01	0.96		0.01	0.01	--		0.01	0.01	--		--	--
Oxidation Reduction Potential	millivolts	--	170.4		0.1	0.1	126.9		0.1	0.1	121.3		0.1	0.1	87.9		0.1	0.1	98.0		0.1	0.1	--		0.1	0.1	--		--	--
Temperature	C	--	12.9		0.1	0.1	13.5		0.1	0.1	14.8		0.1	0.1	14.4		0.1	0.1	14.5		0.1	0.1	--		0.1	0.1	--		--	--
Turbidity	ntu	--	7.9		0.1	0.1	13.8		0.1	0.1	5.4		0.1	0.1	10.0		0.1	0.1	6.82		0.1	0.1	--		0.1	0.1	--		--	--

**Notes:** mg/L = milligram per liter  
µg/L = microgram per liter  
MDL = Method Detection Limit  
RL = Reporting Limit  
ft btoc = feet below top of casing  
ft msl = feet above mean sea level  
SU = Standard Units  
ntu = nephelometric turbidity units  
µS/cm = microSiemens  
C = Celsius  
\* - Water levels gauged March 11-12, 2019, within a 24-hour period  
**Bold Font** - Detected Concentration

**Data Qualifiers:** J = Estimated Result  
J+ = Potential Bias High

**Table 2**  
**Summary 2nd Semi-Annual Assessment Monitoring Program Sampling Event Data (August 2019)**  
**Poosum Point Power Station, Pond E**  
**Permit No. 617**

Parameter Name	Units	Site-Specific Background	Federal GWPS	Virginia CCR GWPS	Upgradient Wells								Downgradient Wells											
					ED-24R				ED-26				ES-1609				ES-1613				ES-3D			
					08/27/2019				08/27/2019				08/28/2019				08/28/2019				08/27/2019			
Result	Qual	MDL	RL	Result	Qual	MDL	RL	Result	Qual	MDL	RL	Result	Qual	MDL	RL	Result	Qual	MDL	RL					
<b>CCR Appendix III Constituents</b>																								
Boron	µg/L	QL (250)	--	*	10.0	J+	6.6	50	13.0	J	6.6	50	1300		6.6	50	2100		6.6	50	840		6.6	50
Calcium	µg/L	7,920	--	--	1900		24	100	7200	J+	24	100	23400		24	100	36000		24	100	17500		24	100
Chloride	mg/L	QL (5)	--	--	2.4		0.60	1.0	2.2		0.60	1.0	194		2.4	4.0	160		1.8	3.0	117		1.2	2.0
Fluoride	mg/L	0.260	4	4	<0.050		0.050	0.10	0.17		0.050	0.10	<0.050		0.050	0.10	0.14		0.050	0.10	0.16		0.050	0.10
pH	SU	4.57-6.00	--	--	4.59		0.01	0.01	5.46		0.01	0.01	5.03		0.01	0.01	5.04		0.01	0.01	4.99		0.01	0.01
Sulfate	mg/L	2.6	--	--	1.9		0.50	1.0	1.8		0.50	1.0	85.6		0.50	1.0	93.6		0.50	1.0	109		1.0	2.0
Total Dissolved Solids	mg/L	99	--	--	<25.0		25.0	25.0	63.0		25.0	25.0	527		83.3	83.3	530		83.3	83.3	415		62.5	62.5
<b>CCR Appendix IV Constituents</b>																								
Antimony	µg/L	QL (5)	6	6	<3.0		3.0	5.0	<3.0		3.0	5.0	<3.0		3.0	5.0	<3.0		3.0	5.0	<3.0		3.0	5.0
Arsenic	µg/L	QL (10)	10	10	<4.7		4.7	10.0	<4.7		4.7	10.0	<4.7		4.7	10.0	<4.7		4.7	10.0	<4.7		4.7	10.0
Barium	µg/L	33	2,000	2,000	16.8		1.0	5.0	32.2		1.0	5.0	107		1.0	5.0	163		1.0	5.0	70.7		1.0	5.0
Beryllium	µg/L	QL (1)	4	4	<0.20		0.20	1.0	<0.20		0.20	1.0	<0.50		0.50	1.0	<0.20		0.20	1.0	0.52	J	0.20	1.0
Cadmium	µg/L	QL (1)	5	5	<0.40		0.40	1.0	<0.40		0.40	1.0	<0.40		0.40	1.0	<0.40		0.40	1.0	0.73	J	0.40	1.0
Chromium	µg/L	QL (5)	100	100	2.2	J	1.0	5.0	<1.0		1.0	5.0	<1.0		1.0	5.0	<1.0		1.0	5.0	<1.0		1.0	5.0
Cobalt	µg/L	QL (5)	6	*	0.36		0.050	0.10	0.061	J	0.050	0.10	16.7		0.075	0.15	7.1		0.10	0.20	41.5		0.10	0.20
Fluoride	mg/L	0.260	4	4	<0.050		0.050	0.10	0.17		0.050	0.10	<0.050		0.050	0.10	0.14		0.050	0.10	0.16		0.050	0.10
Lead	µg/L	QL (5)	15**	*	0.14		0.050	0.10	0.19		0.050	0.10	<0.075		0.075	0.15	<0.10		0.10	0.20	0.12	J	0.10	0.20
Lithium	µg/L	QL (25)	40	*	1.1	J	0.42	2.5	12.1		0.42	2.5	12.5		0.63	3.8	21.7		0.84	5.0	20.0		0.84	5.0
Mercury	µg/L	Q (0.2)	2	2	<0.10		0.10	0.20	<0.10		0.10	0.20	<0.10		0.10	0.20	<0.10		0.10	0.20	<0.10		0.10	0.20
Molybdenum	µg/L	QL (10)	100	*	<0.90		0.90	5.0	<0.90		0.90	5.0	5.8		0.90	5.0	2.6	J	0.90	5.0	4.0	J	0.90	5.0
Selenium	µg/L	QL (10)	50	50	<4.7		4.7	10.0	<4.7		4.7	10.0	<4.7		4.7	10.0	<4.7		4.7	10.0	<4.7		4.7	10.0
Thallium	µg/L	QL (1)	2	2	<0.060		0.060	0.10	<0.060		0.060	0.10	<0.090		0.090	0.15	<0.12		0.12	0.20	<0.12		0.12	0.20
Total Radium	pCi/L	MDC (1.63)	5	5	0.91		0.974	0.974	1.23	U	1.34	1.34	2.69		1.35	1.35	2.39		1.06	1.06	1.83		1.60	1.60
<b>Additional VSWMR Constituents</b>																								
Copper	µg/L	--	--	1,300**	<2.1		2.1	5.0	<2.1		2.1	5.0	<2.1		2.1	5.0	<2.1		2.1	5.0	3.1	J	2.1	5.0
Nickel	µg/L	--	--	*	<0.90		0.90	5.0	<0.90		0.90	5.0	11.6		0.90	5.0	8.2		0.90	5.0	27.6		0.90	5.0
Silver	µg/L	--	--	*	<2.5		2.5	5.0	<2.5		2.5	5.0	<2.5		2.5	5.0	<2.5		2.5	5.0	<2.5		2.5	5.0
Tin	µg/L	--	--	*	<0.090		0.090	0.50	<0.090		0.090	0.50	<0.14		0.14	0.75	<0.18		0.18	1.0	<0.18		0.18	1.0
Vanadium	µg/L	--	--	*	<1.3		1.3	5.0	<1.3		1.3	5.0	<1.3		1.3	5.0	<1.3		1.3	5.0	<1.3		1.3	5.0
Zinc	µg/L	--	--	*	6.9	J	3.9	10.0	<3.9		3.9	10.0	21.9		3.9	10.0	8.5	J	3.9	10.0	210		3.9	10.0
<b>Speciation of Chromium</b>																								
Hexavalent Chromium	µg/L	--	--	--	<5.0		5.0	5.0	<5.0		5.0	5.0	10.0	R	5.0	5.0	<5.0		5.0	5.0	<5.0		5.0	5.0
<b>Former VPDES Constituents</b>																								
Hardness	mg/L	--	--	--	8.07		0.131	0.662	27.6		0.131	0.662	111		0.662	0.662	164		0.131	0.662	103		0.131	0.622
Iron	µg/L	--	--	--	45.0	J	7.5	50.0	3320		7.5	50.0	26000		11.2	75.0	36700		15.0	100	8430		15.0	100
Manganese	µg/L	--	--	--	9.4		0.14	0.50	71.8		0.14	0.50	752		1.4	5.0	903		0.28	1.0	998		1.4	5.0
Phenolics	µg/L	--	--	--	<50.0		50.0	50.0	<50.0		50.0	50.0	<50.0		50.0	50.0	<50.0		50.0	50.0	<50.0		50.0	50.0
Potassium	µg/L	--	--	--	2210		6.2	50.0	5130		6.2	50.0	6580		9.3	75.0	6550		12.4	100	4370		12.4	100
Sodium	µg/L	--	--	--	1930		14.3	250	1820		14.3	250	116000		285	5000	70700		143	2500	81500		143	2500
Total Organic Carbon	mg/L	--	--	--	13.3		0.50	1.0	12.4		0.50	1.0	26.4		0.50	1.0	29.2		0.50	1.0	<0.50		0.50	1.0
<b>Field Parameters</b>																								
Conductivity	µS/cm	--	--	--	41.7		0.1	0.1	91.8		0.1	0.1	872		0.1	0.1	791		0.1	0.1	726		0.1	0.1
Depth to Water***	ft btoc	--	--	--	26.91		0.01	0.01	51.08		0.01	0.01	22.50		0.01	0.01	27.54		0.01	0.01	22.40		0.01	0.01
Dissolved Oxygen	mg/L	--	--	--	3.28		0.01	0.01	1.74		0.01	0.01	1.14		0.01	0.01	1.78		0.01	0.01	1.38		0.01	0.01
Groundwater Elevation	ft msl	--	--	--	48.05		0.01	0.01	38.78		0.01	0.01	0.76		0.01	0.01	-1.53		0.01	0.01	0.46		0.01	0.01
Oxidation Reduction Potential	millivolts	--	--	--	285.5		0.1	0.1	67.7		0.1	0.1	64.3		0.1	0.1	81.2		0.1	0.1	130.4		0.1	0.1
Temperature	C	--	--	--	13.6		0.01	0.01	13.8		0.01	0.01	15.3		0.01	0.01	15.2		0.01	0.01	15.4		0.01	0.01
Turbidity	NTU	--	--	--	5.2		0.1	0.1	9.5		0.1	0.1	1.7		0.1	0.1	5.4		0.1	0.1	2.4		0.1	0.1

**Notes:**  
MDL = Method Detection Limit  
RL = Reporting Limit  
mg/L = Milligram per liter  
µg/L = Microgram per liter  
pCi/L = picoCurie per liter  
µS/cm = MicroSiemen per centimeter  
ft btoc = below top of casing  
SU = Standard Units  
ft msl = feet above mean sea level  
C = Degrees Celsius  
NTU = Nephelometric Turbidity Unit  
ft btoc = feet below top of casing  
ft msl = feet above mean sea level  
MDC = Minimum Detection Concentration  
CCR = Coal Combustion Residuals  
QL = Laboratory quantitation limit (value shown in parentheses is a recent QL and is subject to change)  
GWPS = Groundwater Protection Standards  
VSWMR = Virginia Solid Waste Management Regulations  
VPDES = Virginia Pollutant Discharge Elimination System  
**Bold font = Detected constituent**  
\* - Background-based GPS not yet approved by DEQ  
\*\* - EPA Action Level  
\*\*\* - Water levels gauged on August 26, 2019

**Qualifiers:**  
J = Estimated Result  
J+ = Potential Bias High  
U = Not detected above the Minimum Detection Concentration  
R = Unusable

  = Concentration greater than proposed site-specific background  
  = Concentration greater than Federal GWPS, proposed Virginia GPS, and site-specific background



**Table 2**  
**Summary 2nd Semi-Annual Assessment Monitoring Program Sampling Event Data (August 2019)**  
**Possum Point Power Station, Pond E**  
**Permit No. 617**

Parameter Name	Units	Site-Specific Background	Federal GWPS	Virginia CCR GWPS	Downgradient Wells								Field QC							
					T-1615S				T-1615D				ES-1613 DUP				Field Blank			
					Result	Qual	MDL	RL	Result	Qual	MDL	RL	Result	Qual	MDL	RL	Result	Qual	MDL	RL
<b>CCR Appendix III Constituents</b>																				
Boron	µg/L	QL (250)	--	*	570		6.6	50	14.0	J	6.6	50	2000		6.6	50	7.4	J+	6.6	50
Calcium	µg/L	7.920	--	--	10800		24	100	17300	J+	24	100	34300		24	100	< 24		24	100
Chloride	mg/L	QL (5)	--	--	215		3.0	5.0	79.1		0.60	1.0	162		1.8	3.0	< 0.60		0.60	1.0
Fluoride	mg/L	0.260	4	4	0.082	J	0.050	0.10	0.16		0.050	0.10	0.093	J	0.050	0.10	< 0.050		0.050	0.10
pH	SU	4.57-6.00	--	--	5.14		0.01	0.01	5.24		0.01	0.01	--		--	--	--		--	--
Sulfate	mg/L	2.6	--	--	21.4		0.50	1.0	1.1		0.50	1.0	89.6		0.50	1.0	< 0.50		0.50	1.0
Total Dissolved Solids	mg/L	99	--	--	453		83.3	83.3	215		25.0	25.0	540		83.3	83.3	45.0		25.0	25.0
<b>CCR Appendix IV Constituents</b>																				
Antimony	µg/L	QL (5)	6	6	< 3.0		3.0	5.0	< 3.0		3.0	5.0	< 3.0		3.0	5.0	< 3.0		3.0	5.0
Arsenic	µg/L	QL (10)	10	10	< 4.7		4.7	10.0	< 4.7		4.7	10.0	< 4.7		4.7	10.0	< 4.7		4.7	10.0
Barium	µg/L	33	2,000	2,000	115		1.0	5.0	104		1.0	5.0	153		1.0	5.0	1.1	J	1.0	5.0
Beryllium	µg/L	QL (1)	4	4	< 0.20		0.20	1.0	0.21	J	0.20	1.0	0.30	J	0.20	1.0	< 0.20		0.20	1.0
Cadmium	µg/L	QL (1)	5	5	< 0.40		0.40	1.0	< 0.40		0.40	1.0	< 0.40		0.40	1.0	< 0.40		0.40	1.0
Chromium	µg/L	QL (5)	100	100	< 1.0		1.0	5.0	< 1.0		1.0	5.0	< 1.0		1.0	5.0	< 1.0		1.0	5.0
Cobalt	µg/L	QL (5)	6	*	21.4		0.050	0.10	0.72		0.050	0.10	6.8		0.10	0.20	< 0.050		0.050	0.10
Fluoride	mg/L	0.260	4	4	0.082	J	0.050	0.10	0.16		0.050	0.10	0.093	J	0.050	0.10	< 0.050		0.050	0.10
Lead	µg/L	QL (5)	15**	*	0.082	J	0.050	0.10	< 0.050		0.050	0.10	< 0.10		0.10	0.20	< 0.050		0.050	0.10
Lithium	µg/L	QL (25)	40	*	5.8		0.42	2.5	14.3		0.42	2.5	20.2		0.84	5.0	< 0.42		0.42	2.5
Mercury	µg/L	Q (0.2)	2	2	< 0.10		0.10	0.20	< 0.10		0.10	0.20	< 0.10		0.10	0.20	< 0.10		0.10	0.20
Molybdenum	µg/L	QL (10)	100	*	7.1		0.90	5.0	< 0.90		0.90	5.0	2.3	J	0.90	5.0	< 0.90		0.90	5.0
Selenium	µg/L	QL (10)	50	50	< 4.7		4.7	10.0	< 4.7		4.7	10.0	< 4.7		4.7	10.0	< 4.7		4.7	10.0
Thallium	µg/L	QL (1)	2	2	0.070	J	0.060	0.10	< 0.060		0.060	0.10	< 0.12		0.12	0.20	< 0.060		0.060	0.10
Total Radium	pCi/L	MDC (1.63)	5	5	3.44		1.32	1.32	1.45		1.35	1.35	2.15		1.31	1.31	1.33	J	1.25	1.25
<b>Additional VSWMR Constituents</b>																				
Copper	µg/L	--	--	1,300**	< 2.1		2.1	5.0	< 2.1		2.1	5.0	< 2.1		2.1	5.0	< 2.1		2.1	5.0
Nickel	µg/L	--	--	*	16.9		0.90	5.0	2.2	J	0.90	5.0	7.7		0.90	5.0	< 0.90		0.90	5.0
Silver	µg/L	--	--	*	< 2.5		2.5	5.0	< 2.5		2.5	5.0	< 2.5		2.5	5.0	< 2.5		2.5	5.0
Tin	µg/L	--	--	*	< 0.090		0.090	0.50	< 0.090		0.090	0.50	< 0.18		0.18	1.0	< 0.090		0.090	0.50
Vanadium	µg/L	--	--	*	< 1.3		1.3	5.0	< 1.3		1.3	5.0	< 1.3		1.3	5.0	< 1.3		1.3	5.0
Zinc	µg/L	--	--	*	16.9	J+	3.9	10.0	26.8	J+	3.9	10.0	9.4	J	3.9	10.0	7.4	J+	3.9	10.0
<b>Speciation of Chromium</b>																				
Hexavalent Chromium	µg/L	--	--	--	< 5.0		5.0	5.0	< 5.0		5.0	5.0	< 5.0		5.0	5.0	< 5.0		5.0	5.0
<b>Former VPDES Constituents</b>																				
Hardness	mg/L	--	--	--	60.7		0.131	0.662	80.3		0.131	0.662	156		0.131	0.662	< 0.131		0.131	0.662
Iron	µg/L	--	--	--	10500		150	1000	10100		74.8	500	34300		15.0	100	< 7.5		7.5	50.0
Manganese	µg/L	--	--	--	223		0.14	0.50	300		0.14	0.50	847		0.28	1.0	< 0.14		0.14	0.50
Phenolics	µg/L	--	--	--	< 50.0		50.0	50.0	< 50.0		50.0	50.0	< 50.0		50.0	50.0	< 50.0		50.0	50.0
Potassium	µg/L	--	--	--	4130		6.2	50.0	11400		61.9	500	6210		12.4	100	< 6.2		6.2	50.0
Sodium	µg/L	--	--	--	136000		285	5000	8610		14.3	250	64400		143	2500	< 14.3		14.3	250
Total Organic Carbon	mg/L	--	--	--	30.8		0.50	1.0	14.5		0.50	1.0	28.4		0.50	1.0	< 0.50		0.50	1.0
<b>Field Parameters</b>																				
Conductivity	µS/cm	--	--	--	927		0.1	0.1	291.1		0.1	0.1	--		--	--	--		--	--
Depth to Water***	ft btoc	--	--	--	22.77		0.01	0.01	22.35		0.01	0.01	--		--	--	--		--	--
Dissolved Oxygen	mg/L	--	--	--	0.86		0.01	0.01	1.46		0.01	0.01	--		--	--	--		--	--
Groundwater Elevation	ft msl	--	--	--	3.15		0.01	0.01	3.46		0.01	0.01	--		--	--	--		--	--
Oxidation Reduction Potential	millivolts	--	--	--	112.2		0.1	0.1	98.7		0.1	0.1	--		--	--	--		--	--
Temperature	C	--	--	--	15.5		0.01	0.01	15.6		0.01	0.01	--		--	--	--		--	--
Turbidity	NTU	--	--	--	2.2		0.1	0.1	8.5		0.1	0.1	--		--	--	--		--	--

**Notes:**

MDL = Method Detection Limit  
 RL = Reporting Limit  
 mg/L = Milligram per liter  
 µg/L = Microgram per liter  
 pCi/L = picoCurie per liter  
 µS/cm = MicroSiemen per centimeter  
 ft btoc = below top pf casing  
 SU = Standard Units  
 ft msl = feet above mean sea level  
 C = Degrees Celsius  
 NTU = Nephelometric Turbidity Unit  
 ft btoc = feet below top of casing  
 ft msl = feet above mean sea level  
 MDC = Minimum Detection Concentration  
 CCR = Coal Combustion Residuals  
 QL = Laboratory quantitation limit (value shown in parentheses is a recent QL and is subject to change)  
 GWPS = Groundwater Protection Standards  
 VSWMR = Virginia Solid Waste Management Regulations  
 VPDES = Virginia Pollutant Discharge Elimination System  
**Bold font = Detected constituent**  
 \* - Background-based GPS not yet approved by DEQ  
 \*\* - EPA Action Level  
 \*\*\* - Water levels gauged on August 26, 2019

**Qualifiers:**

J = Estimated Result  
 J+ = Potential Bias High  
 U = Not detected above the Minimum Detection Concentration  
 R = Unusable

  = Concentration greater than proposed site-specific background

  = Concentration greater than Federal GWPS, proposed Virginia GPS, and site-specific background

**Table 3**  
**Summary 2nd Semi-Annual Assessment Monitoring Program Sampling Event Data - VSWMR Sentinel Wells (August 2019)**  
**Possum Point Power Station, Ash Pond E**  
**Permit No 617**

		VSWMR Sentinel Wells								QC			
Sample ID:		ED-22RA				ED-23R				Field Blank			
Sample Date:		08/26/2019				08/26/2019				08/27/2019			
Parameter Name	Units	Result	Qualifier	MDL	RL	Result	Qualifier	MDL	RL	Result	Qualifier	MDL	RL
<b>CCR Appendix III Constituents</b>													
Boron	µg/L	180		6.6	50	13.0	J	6.6	50.0	7.4	J+	6.6	50
Calcium	µg/L	3900		24	100	3800		24	100	< 24		24	100
Chloride	mg/L	37.7		0.60	1.0	2.7		0.60	1.0	< 0.60		0.60	1.0
Fluoride	mg/L	< 0.050		0.050	0.10	0.22		0.050	0.10	< 0.050		0.050	0.10
pH	SU	5.61		0.01	0.01	5.56		0.01	0.01	--		--	--
Sulfate	mg/L	62.2		0.50	1.0	5.0		0.50	1.0	< 0.50		0.50	1.0
Total Dissolved Solids	mg/L	136		25.0	25.0	< 25.0		25.0	25.0	45.0		25.0	25.0
<b>CCR Appendix IV Constituents</b>													
Antimony	µg/L	< 3.0		3.0	5.0	< 3.0		3.0	5.0	< 3.0		3.0	5.0
Arsenic	µg/L	< 4.7		4.7	10.0	< 4.7		4.7	10.0	< 4.7		4.7	10.0
Barium	µg/L	28.8		1.0	5.0	24.2		1.0	5.0	1.1	J	1.0	5.0
Beryllium	µg/L	0.33	J	0.20	1.0	< 0.20		0.20	1.0	< 0.20		0.20	1.0
Cadmium	µg/L	< 0.40		0.40	1.0	< 0.40		0.40	1.0	< 0.40		0.40	1.0
Chromium	µg/L	< 1.0		1.0	5.0	< 1.0		1.0	5.0	< 1.0		1.0	5.0
Cobalt	µg/L	5.5		0.050	0.10	< 0.050		0.050	0.10	< 0.050		0.050	0.10
Fluoride	mg/L	< 0.050		0.050	0.10	0.22		0.050	0.10	< 0.050		0.050	0.10
Lead	µg/L	0.12		0.050	0.10	< 0.050		0.050	0.10	< 0.050		0.050	0.10
Lithium	µg/L	2.6		0.42	2.5	8.8		0.42	2.5	< 0.42		0.42	2.5
Mercury	µg/L	< 0.10		0.10	0.20	< 0.10		0.10	0.20	< 0.10		0.10	0.20
Molybdenum	µg/L	2.2	J	0.90	5.0	< 0.90		0.90	5.0	< 0.90		0.90	5.0
Selenium	µg/L	< 4.7		4.7	10.0	< 4.7		4.7	10.0	< 4.7		4.7	10.0
Thallium	µg/L	< 0.060		0.060	0.10	< 0.060		0.060	0.10	< 0.060		0.060	0.10
Total Radium	pCi/L	0.666	U	1.11	1.11	0.865	U	0.978	0.978	1.33	J	1.25	1.25
<b>Additional VSWMR Constituents</b>													
Copper	µg/L	3.2	J	2.1	5.0	< 2.1		2.1	5.0	< 2.1		2.1	5.0
Nickel	µg/L	10.7		0.90	5.0	< 0.90		0.90	5.0	< 0.90		0.90	5.0
Silver	µg/L	< 2.5		2.5	5.0	< 2.5		2.5	5.0	< 2.5		2.5	5.0
Tin	µg/L	0.096	J	0.090	0.50	< 0.090		0.090	0.50	< 0.090		0.090	0.50
Vanadium	µg/L	< 1.3		1.3	5.0	< 1.3		1.3	5.0	< 1.3		1.3	5.0
Zinc	µg/L	28.4		3.9	10.0	4.3	J	3.9	10.0	7.4	J+	3.9	10.0
<b>Speciation of Chromium</b>													
Hexavalent Chromium	µg/L	< 5.0		5.0	5.0	< 5.0		5.0	5.0	< 5.0		5.0	5.0
<b>Former VPDES Constituents</b>													
Hardness	mg/L	18.2		0.131	0.662	18.1		0.131	0.662	< 0.131		0.131	0.662
Iron	µg/L	2360		7.5	50.0	2460		7.5	50.0	< 7.5		7.5	50.0
Manganese	µg/L	87.6		0.14	0.50	56.3		0.14	0.50	< 0.14		0.14	0.50
Phenolics	µg/L	< 50.0		50.0	50.0	< 50.0		50.0	50.0	< 50.0		50.0	50.0
Potassium	µg/L	1660		6.2	50.0	5690		6.2	50.0	< 6.2		6.2	50.0
Sodium	µg/L	51200		143	2500	4610		14.3	250	< 14.3		14.3	250
Total Organic Carbon	mg/L	19.1		0.50	1.0	10.8		0.50	1.0	< 0.50		0.50	1.0
<b>Field Parameters</b>													
Conductivity	µS/cm	285.9		0.1	0.1	85.9		0.1	0.1	--		--	--
Depth to Water*	btoc	25.65		0.01	0.01	23.72		0.01	0.01	--		--	--
Dissolved Oxygen	mg/L	8.90		0.01	0.01	3.18		0.01	0.01	--		--	--
Groundwater Elevation	ft msl	1.24		0.01	0.01	4.08		0.01	0.01	--		--	--
Oxidation Reduction Potential	millivolts	174.4		0.1	0.1	69.9		0.1	0.1	--		--	--
Temperature	C	18.7		0.01	0.01	16.3		0.01	0.01	--		--	--
Turbidity	NTU	3.3		0.1	0.1	7.2		0.1	0.1	--		--	--

**Notes:**

MDL = Method Detection Limit  
 RL = Reporting Limit  
 mg/L = Milligram per liter  
 µg/L = Microgram per liter  
 pCi/L = picoCurie per liter  
 µS/cm = MicroSiemen per centimeter  
 ft btoc = below top pf casing  
 SU = Standard Units  
 ft msl = feet above meal sea level  
 C = Degrees Celsius  
 NTU = Nephelometric Turbidity Unit  
 ft btoc = feet below top of casing  
 ft msl = feet above mean sea level  
 CCR = Coal Combustion Residuals  
 VSWMR = Virginia Solid Waste Management Regulations  
 VPDES = Virginia Pollutant Elimination System  
 \* - Water levels gauged on August 26, 2019

**Qualifiers:**

J = Estimated Result  
 J+ = Potential Bias High  
 U = Not detected above the Minimum Detection Concentration

**APPENDIX A**  
**COMPLETED ARSC-01 FORM**

**Annual Report QA/QC Submission Checklist  
 (DEQ Form ARSC-01)**

INCLUDED IN FINAL REPORT?	YES	NO
Signature of a qualified groundwater professional	X	
Solid waste facility permit number & facility name	X	
Name of current owner/operator & type of facility	X	
Dates LF began operations and was deemed closed (if applicable)	X	
Date of last waste receipt (if applicable) [2.b]	X	
Identified if site is lined or unlined [2.b]	X	
Identified waste disposal method (trench fill/area fill/etc.) [2.b]	X	
Total site acreage, and acreage used for waste disposal [2.b]	X	
Adjoining land use described including any aquifer users [2.c]	X	
Topographic map included as <i>Figure 1</i> [2.a]	X	
<i>Figure 1</i> shows facility location, includes a bar scale, and north arrow	X	
Discuss the type, name & age of the geologic unit(s) on site [2.d]	X	
Description of general site topography [2.d]	X	
Name of nearest permanent water body, perennial stream, etc. [2.d]	X	
Description of the uppermost aquifer [2.d]	X	
Description of the aquifer type (confined vs unconfined) [2.d]	X	
Date facility entered detection or phase I monitoring [2.b]	X	
Date facility entered assessment or phase II monitoring [2.b]	X	
Identified if the facility monitors groundwater under a variance	X	
Identified the dates of any groundwater variance approvals	N/A	
Approval date for wetlands demonstration (if applicable)	N/A	
Identified all upgradient and downgradient monitoring wells [2.e]	X	
Identified if all monitoring wells were sampled during the year [2.e]	X	
Identified reasons for failure to sample (if applicable) [2.e]	NA	
Identified if any monitoring wells have been abandoned [2.e]	X	
Identified if any wells require replacement [2.e]	X	
Included network performance certification statement [2.e]	X	
Identified groundwater sampling dates during past year [2.f]	X	
Included site plan drawing as <i>Figure 2</i> [2.h]	X	
<i>Figure 2</i> contains current topographic contours	X	
<i>Figure 2</i> contains facility and waste management unit boundaries	X	
<i>Figure 2</i> includes all monitoring wells	X	
<i>Figure 2</i> includes potentiometric surface contours	X	
<i>Figure 2</i> includes groundwater flow direction arrows	X	
<i>Figure 2</i> includes all surface water bodies	X	



**Annual Report QA/QC Submission Checklist  
 (DEQ Form ARSC-01)**

INCLUDED IN FINAL REPORT?	YES	NO
<i>Figure 2</i> includes all structures on site, a bar scale, and north arrow	X	
Listing of groundwater elevation readings in past year [2.h]	X	
Table of historical groundwater elevation data as <i>Appendix B</i>	X	
Calculated rate of groundwater flow (distance/year) [2.h]	X	
Flow rate calculations included as <i>Appendix C</i>	X	
Identified the name of the analytical laboratory [2.h]	X	
Identified whether lab was DCLS certified	X	
Identified type of analytical methods used [2.h]	X	
Identified those constituents found above the LOD and LOQ	X	
Identified if verification sampling was used during any event	NA	
Identified statistical methods used to analyze groundwater data as Section 7.0	X <sup>(1)</sup>	
Identified any SSI's noted during prior year of monitoring	X	
Table of prior detected constituent concentrations in each well [2.g] as <i>Appendix F</i>	X	
Field data sheet copies included as <i>Appendix D</i>	X	
Laboratory results & certificates of analysis as CDROM in <i>Appendix E</i>	X	
Included historical summary of laboratory results in <i>Appendix F</i>	X	
Full list of References	X	
Copy of this QA/QC checklist	X	

**Notes:**

- (1) Statistical methods used to analyze groundwater data for the Facility are summarized in Section 7.0 and presented in the *Pond E Facility Background Determination Report* that was submitted to the DEQ on August 15, 2019.
- (2) N/A = Not Applicable

**APPENDIX B**  
**HISTORICAL GROUNDWATER**  
**ELEVATION DATA**

**Appendix B**  
**Historical Groundwater Elevation Data**  
**Possum Point Power Station, Pond E**  
**Permit No. 617**

<b>Well Identification</b>	<b>Top of Casing Elevation (feet AMSL)</b>	<b>Measurement Date</b>	<b>Depth to Water (feet below top of casing)</b>	<b>Groundwater Elevation (feet AMSL)</b>
ED-24R	75.11	11/02/2016	27.35	47.76
		12/12/2016	27.13	47.98
		01/25/2017	26.91	48.20
		03/06/2017	27.60	47.51
		04/19/2017	26.80	48.31
		05/30/2017	26.34	48.77
		07/10/2017	26.95	48.16
		08/21/2017	27.11	48.00
		06/28/2018	26.30	48.66
		09/20/2018	26.79	48.17
		12/13/2018	25.55	49.41
		03/12/2019	24.75	50.21
		08/26/2019	26.91	48.05
ED-26	91.30	11/02/2016	52.17	39.13
		12/12/2016	52.19	39.11
		01/25/2017	51.78	39.52
		03/06/2017	52.00	39.30
		04/19/2017	51.64	39.66
		05/30/2017	51.22	40.08
		07/10/2017	51.36	39.94
		08/21/2017	51.74	39.56
		06/27/2018	51.05	38.81
		09/19/2018	51.19	38.67
		12/12/2018	50.50	39.36
		03/11/2019	49.97	39.89
		08/26/2019	51.08	38.78
ES-1609	23.26	11/02/2016	22.31	0.95
		12/12/2016	22.34	0.92
		01/25/2017	21.70	1.56
		03/07/2017	22.63	0.63
		04/19/2017	21.82	1.44
		05/30/2017	21.41	1.85
		07/10/2017	22.27	0.99
		08/21/2017	21.84	1.42
		06/27/2018	21.45	1.81
		09/19/2018	22.68	0.58
		12/12/2018	22.72	0.54
		03/11/2019	21.85	1.41
		08/26/2019	22.50	0.76

**Appendix B**  
**Historical Groundwater Elevation Data**  
**Possum Point Power Station, Pond E**  
**Permit No. 617**

<b>Well Identification</b>	<b>Top of Casing Elevation (feet AMSL)</b>	<b>Measurement Date</b>	<b>Depth to Water (feet below top of casing)</b>	<b>Groundwater Elevation (feet AMSL)</b>	
ES-1613	26.01	11/02/2016	22.69	3.32	
		12/12/2016	22.69	3.32	
		01/25/2017	22.44	3.57	
		03/07/2017	22.51	3.50	
		04/19/2017	22.11	3.90	
		05/30/2017	21.88	4.13	
		07/10/2017	22.01	4.00	
		08/21/2017	22.20	3.81	
		06/27/2018	21.75	4.26	
		09/19/2018	27.17	-1.16	
		12/12/2018	26.91	-0.90	
		03/11/2019	25.18	0.83	
		08/26/2019	27.54	-1.53	
		ES-3D	22.16	11/02/2016	21.21
12/12/2016	21.34			0.82	
01/25/2017	20.68			1.48	
03/06/2017	22.66			-0.50	
04/19/2017	21.72			0.44	
05/30/2017	21.27			0.89	
07/10/2017	22.14			0.02	
08/21/2017	21.81			0.35	
22.86	06/27/2018			21.30	1.56
09/19/2018	22.58			0.28	
12/12/2018	22.45			0.41	
03/11/2019	21.90			0.96	
08/26/2019	22.40			0.46	
T-1615D	25.81		11/02/2016	21.94	3.87
		12/12/2016	22.32	3.49	
		01/25/2017	21.70	4.11	
		03/06/2017	22.18	3.63	
		04/19/2017	21.97	3.84	
		05/30/2017	21.53	4.28	
		07/10/2017	21.27	4.54	
		08/21/2017	22.47	3.34	
		06/28/2018	21.98	3.83	
		09/20/2018	23.29	2.52	
		12/13/2018	22.08	3.73	
		03/11/2019	21.50	4.31	
		08/26/2019	22.35	3.46	

**Appendix B**  
**Historical Groundwater Elevation Data**  
**Possum Point Power Station, Pond E**  
**Permit No. 617**

<b>Well Identification</b>	<b>Top of Casing Elevation (feet AMSL)</b>	<b>Measurement Date</b>	<b>Depth to Water (feet below top of casing)</b>	<b>Groundwater Elevation (feet AMSL)</b>
T-1615S	25.92	11/02/2016	21.86	4.06
		12/12/2016	22.54	3.38
		01/25/2017	21.83	4.09
		03/06/2017	22.04	3.88
		04/19/2017	22.15	3.77
		05/30/2017	21.96	3.96
		07/10/2017	22.43	3.49
		08/21/2017	23.16	2.76
		06/28/2018	22.23	3.69
		09/20/2018	23.09	2.83
		12/13/2018	22.26	3.66
		03/11/2019	21.90	4.02
		08/26/2019	22.77	3.15
ED-22RA	26.89	11/03/2016	25.84	1.05
		12/12/2016	26.43	0.46
		01/25/2017	25.68	1.21
		03/06/2017	26.54	0.35
		04/19/2017	25.87	1.02
		05/30/2017	25.21	1.68
		07/10/2017	26.09	0.80
		08/21/2017	26.10	0.79
		06/28/2018	25.49	1.40
		09/20/2018	25.55	1.34
		12/13/2018	26.08	0.81
		03/11/2019	25.12	1.77
		08/26/2019	25.65	1.24
ED-23R	27.80	11/03/2016	23.75	4.05
		12/12/2016	24.26	3.54
		01/25/2017	23.71	4.09
		03/06/2017	24.31	3.49
		04/19/2017	23.95	3.85
		05/30/2017	23.41	4.39
		07/10/2017	24.23	3.57
		08/21/2017	24.28	3.52
		06/28/2018	24.02	3.78
		09/20/2018	24.03	3.77
		12/13/2018	24.08	3.72
		03/11/2019	23.55	4.25
		08/26/2019	23.72	4.08

Notes: CCR = Coal Combustion Residuals  
VSWMR = Virginia Solid Waste Management Regulations  
AMSL = Above Mean Sea Level

**APPENDIX C**  
**GROUNDWATER FLOW RATE**  
**CALCULATIONS**

## Appendix C

### Calculation of Groundwater Velocity Possum Point Power Station, Pond E Solid Waste Permit #617

#### 1<sup>st</sup> Semi-Annual Groundwater Monitoring Event (March 2019)

The average hydraulic gradient for the Unit along the ideal flow line beneath the Unit was calculated using the following equation:

$$i = h_L / L$$

Where:  $i$  = hydraulic gradient (unitless)  
 $h_L$  = head loss (elevation difference in feet)  
 $L$  = length (horizontal distance in feet)

The groundwater flow rate was calculated using the following formula:

$$V = ki / \theta$$

Where:  $V$  = Groundwater Velocity (cm/s)  
 $k$  = hydraulic conductivity (cm/s)  
 $i$  = hydraulic gradient (unitless)  
 $\theta$  = assumed porosity (unitless)

Area	Hydraulic Conductivity (k, cm/s)	Contour lines (feet amsl)	Flow Length (feet)	Average Gradient (i)	Assumed Porosity ( $\theta$ )	Estimated Groundwater Velocity	
						(cm/s)	(feet/year)
Unit	2.01E-04	30-1	1,664	1.74E-02	0.20	1.75E-05	18.1

**Notes:**

cm/s = centimeter per second

amsl = above mean sea level

k = hydraulic conductivity

i = hydraulic gradient

$\theta$  = estimated value based on properties of lithologies comprising the uppermost aquifer

## Appendix C

### Calculation of Groundwater Velocity Possum Point Power Station, Pond E Solid Waste Permit #617

#### 2<sup>nd</sup> Semi-Annual Groundwater Monitoring Event (August 2019)

The average hydraulic gradient for the Unit along the ideal flow line beneath the Unit was calculated using the following equation:

$$i = h_L / L$$

Where:  $i$  = hydraulic gradient (unitless)  
 $h_L$  = head loss (elevation difference in feet)  
 $L$  = length (horizontal distance in feet)

The groundwater flow rate was calculated using the following formula:

$$V = ki / \theta$$

Where:  $V$  = Groundwater Velocity (cm/s)  
 $k$  = hydraulic conductivity (cm/s)  
 $i$  = hydraulic gradient (unitless)  
 $\theta$  = assumed porosity (unitless)

Area	Hydraulic Conductivity (k, cm/s)	Contour lines (feet amsl)	Flow Length (feet)	Average Gradient (i)	Assumed Porosity ( $\theta$ )	Estimated Groundwater Velocity	
						(cm/s)	(feet/year)
Unit	2.01E-04	30-1	1,595	1.82E-02	0.20	1.83E-05	18.9

**Notes:**

cm/s = centimeter per second

amsl = above mean sea level

k = hydraulic conductivity

i = hydraulic gradient

$\theta$  = estimated value based on properties of lithologies comprising the uppermost aquifer



**APPENDIX D**  
**FIELD DATA SHEETS**

**APPENDIX D.1  
FIELD DATA SHEETS  
1<sup>ST</sup> SEMI-ANNUAL  
GROUNDWATER MONITORING  
EVENT (MARCH 2019)**



Date: 3-11-2019 - 3/12/2019

**WELL GAUGING LOG**

Project Name: Possum Pond - Ash Pond E App III

Project

No./Task No.: ~~44-7220-100~~ AR 1662150-2000

Sampler(s): M. Taylor

Equipment: WL indicator

Well ID	Personnel (initials)	Time	DTW (feet)	DTB (feet)	Well Condition Summary				
					Protective Casing	Well Casing	Label	Lock	Pad Condition
ED-26	MT	1055	49.97	-	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged
T-1615D	MT	1151	21.50	-	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged
T-1615S	MT	1235	21.90	-	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged
ES-1613	MT	1323	25.18	-	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged
ES-1609	MT	1504	21.85	-	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged
ED-22RA <del>ED-16</del>	MT	1420	25.12	-	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged
ED-23R	MT	1441	23.55	-	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged
ES-3D	MA	1619	21.90	-	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged
12/19 ED-24R	MT	1113	24.75	-	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> OK <input type="checkbox"/> Damaged
					<input type="checkbox"/> OK <input type="checkbox"/> Damaged	<input type="checkbox"/> OK <input type="checkbox"/> Damaged	<input type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> OK <input type="checkbox"/> Damaged
					<input type="checkbox"/> OK <input type="checkbox"/> Damaged	<input type="checkbox"/> OK <input type="checkbox"/> Damaged	<input type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> OK <input type="checkbox"/> Damaged
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					<input type="checkbox"/> OK <input type="checkbox"/> Damaged	<input type="checkbox"/> OK <input type="checkbox"/> Damaged	<input type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> OK <input type="checkbox"/> Damaged
					<input type="checkbox"/> OK <input type="checkbox"/> Damaged	<input type="checkbox"/> OK <input type="checkbox"/> Damaged	<input type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> OK <input type="checkbox"/> Damaged
					<input type="checkbox"/> OK <input type="checkbox"/> Damaged	<input type="checkbox"/> OK <input type="checkbox"/> Damaged	<input type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> OK <input type="checkbox"/> Damaged
					<input type="checkbox"/> OK <input type="checkbox"/> Damaged	<input type="checkbox"/> OK <input type="checkbox"/> Damaged	<input type="checkbox"/> OK <input type="checkbox"/> Inadequate	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> OK <input type="checkbox"/> Damaged

Observations/Notes: \_\_\_\_\_

Signature: M. Taylor / [Signature]

Date: 3-11-19

QA/QC Signature: [Signature]

Date: 3/18/19

Page 1 of 1



GOLDER

MICROPURGE SAMPLING LOG

Date: 3-12-2019

Weather: Sun, 40s

Project Name: Possum Point Power Station Project No./Task No.: 19117220.200A  
 Event: 15A19 Pond D + E VPDES Sampler(s): M. Taylor  
 Well ID: EP-242 Field Calibration Completed: 0745 3-12-2019  
 Well Diameter: 2.0 inches Initial Depth to Water: 24.75 feet  
 Depth to Bottom: - feet Water Column Thickness: - feet  
 Equipment Used:  WL Indicator  Turbidity Meter  Air Tank  Dedicated Bladder Pump  
 YSI PRODS 17M102581  Peristaltic Pump  Compressor  Non-dedicated BP  
 In-Situ -  MP-10 Controller Box  MP-15 Controller Box  -

Time (5 minute int.)	pH (S.U.)	Sp. Cond. (uS/cm) <sup>OC</sup>	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	DTW (feet)	Flow Rate (mL/min)
Stabilization	+/- 0.1	+/- 3%	if >10, +/- 10%	+/- 10%	+/- 1°C	+/- 10 mV	<0.3 feet	<500
<sup>MT</sup> 1120	4.42	41.7	9.4	4.03	12.9	167.3	26.30	400
1123	4.79	36.0	8.4	4.03	12.7	168.9	25.92	400
1126	4.77	35.8	8.0	3.97	12.9	166.3	26.05	400
1129	4.76	35.3	7.9	3.94	12.9	170.4	26.21	400
1130	SAMPLED							
1150	4.73	34.9	7.1	4.80	12.8	174.2	26.33	400

Purge Cycle (End): 26/4 sec @ 40 psi Flow Rate (ml/min End): 400  
 Purge volume (gallons) prior to stabilization monitoring (3/8" I.D. Tube: Vol=Depth to Pump x 0.006 gal/ft): 0.5  
 Total Purge Volume (Gallons): 2.0 Purge Water Management: on site containment - polytank  
 Purge Observations (color, odor, turbidity, sheen): Clear grab sample  
purge start: 1115  
 Sample Time: 1130 Field Filtered (0.45um):  Yes  No

Sample Group(s)/Analyte(s): BKG III MT Pond D BKG App III: B, Ca, Chloride, Sulfate, fluoride, TDS  
Pond D BKG App IV: Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Ti, Radium 226/228, Pond D MT E BKG App III  
(Same as #1), ACM Group B: App III and App IV (except Hg in App IV), VPDES Pond D + E: Dissolved (As, Ba, Cd, Cu, Fe, Pb, Mn, Hg, Ni, K, Ag, Se, Na, V, Zn) Chloride, fluoride, hardness, Phenolics, sulfate, TDC  
 Other Observations / Equipment Operation Problems: \_\_\_\_\_

Sampler Signature: Morgan Taylor Date: 3-12-2019 Page 1 of 1  
 QA/QC Signature: Michael Jones Date: 3/15/19



GOLDER

MICROPURGE SAMPLING LOG

Date: 3-11-2019

Weather: overcast, 50s

Project Name: Possum Point Power Station Project No./Task No.: 1911-7220-100  
 Event: Ash Pond E 15A19 CLR Sampler(s): M. Taylor  
 Well ID: EP-26 Field Calibration Completed: 0945 3-11-19  
 Well Diameter: 2.0 inches Initial Depth to Water: 49.97 feet  
 Depth to Bottom: — feet Water Column Thickness: — feet  
 Equipment Used:  WL Indicator  Turbidity Meter  Air Tank  Dedicated Bladder Pump  
 YSI ProDSS 17M102831  Peristaltic Pump  Compressor  Non-dedicated BP  
 In-Situ  MP-10 Controller Box  MP-15 Controller Box  —

Time (5 minute int.)	pH (S.U.)	Sp. Cond. (uS/cm) <sup>OC</sup>	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	DTW (feet)	Flow Rate (mL/min)
Stabilization	+/- 0.1	+/- 3%	if >10, +/- 10%	+/- 10%	+/- 1°C	+/- 10 mV	<0.3 feet	<500
1102	5.28	84.5	113.3	1.48	13.5	163.9	53.12	400
1105	5.34	83.2	48.5	1.69	13.5	151.3	53.24	400
1108	5.34	81.4	35.7	1.53	13.5	149.3	53.40	400
1111	5.34	81.1	25.9	1.39	13.5	145.4	53.72	400
1114	5.35	81.6	18.4	1.39	13.5	142.4	54.12	400
1117	5.37	81.6	14.4	1.21	13.5	136.8	54.37	400
1120	5.41	80.8	13.9	1.36	13.5	129.8	54.30	400
1123	5.42	80.5	13.8	1.29	13.5	126.9	54.39	400
1125	SAMPLED							
1132	5.50	80.4	11.9	1.98	13.5	119.3	53.87	400

Purge Cycle (End): 10/5 sec @ 50 psi Flow Rate (ml/min End): ~400

Purge volume (gallons) prior to stabilization monitoring (3/8" I.D. Tube: Vol=Depth to Pump x 0.006 gal/ft): ~0.45

Total Purge Volume (Gallons): ~5 Purge Water Management: onsite containment - polytank

Purge Observations (color, odor, turbidity, sheen): clear grab sample

purge start: 1057

Sample Time: 1125 Field Filtered (0.45um):  Yes  No

Sample Group(s)/Analyte(s): Reporting Group 00 - Pond E UPDES (Dissolved AS / Ba / Cd / Cu / Fe / Pb / Mn / Hg / Ni / K / Ag / Se / Na / V / Zn, chloride, fluoride, hardness, phenolics, sulfate, TDC)

ACM Group B MT - BKG App. III: B, Ca, chloride, sulfate, fluoride, TDS

Other Observations / Equipment Operation Problems: \_\_\_\_\_

Sampler Signature: Moving Taylor Date: 3-11-2019 Page 1 of 1

QA/QC Signature: Michael Owen Date: 3/15/19



MICROPURGE SAMPLING LOG

Date: 3-11-19  
 Weather: overcast, 50s

Project Name: Possum Point Power Station Project No./Task No.: 1602150.2000  
 Event: ABCE 15A14 Pond E CCR Sampler(s): M. Taylor  
 Well ID: ES-1609 Field Calibration Completed: 0945 3-11-19  
 Well Diameter: 2.0 inches Initial Depth to Water: 22.02 feet  
 Depth to Bottom: — feet Water Column Thickness: — feet  
 Equipment Used:  WL Indicator  Turbidity Meter  Air Tank  Dedicated Bladder Pump  
 YSI ProDSS: 19M102881  Peristaltic Pump  Compressor  Non-dedicated BP  
 In-Situ  MP-10 Controller Box  MP-15 Controller Box  —

Time (5 minute int.)	pH (S.U.)	Sp. Cond. (uS/cm) <sup>25°C</sup>	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	DTW (feet)	Flow Rate (mL/min)
Stabilization	+/- 0.1	+/- 3%	if >10, +/- 10%	+/- 10%	+/- 1°C	+/- 10 mV	<0.3 feet	<500
1612	5.27	851	10.9	1.24	14.8	124.6	22.21	250
1615	5.21	845	7.9	1.22	14.8	122.2	22.31	250
1618	5.06	834	6.5	1.02	14.8	121.0	22.41	250
1621	4.97	820	6.4	0.98	14.8	120.7	22.38	250
1624	4.92	824	5.9	0.99	14.8	120.8	22.49	250
1627	4.89	820	5.4	0.97	14.8	121.3	22.40	250
1630	SAMPLED							
1639	4.80	818	5.2	1.32	14.8	126.7	22.32	250

Purge Cycle (End): 15/5 sec @ 25 psi Flow Rate (ml/min End): ~250  
 Purge volume (gallons) prior to stabilization monitoring (3/8" I.D. Tube: Vol=Depth to Pump x 0.006 gal/ft): ~0.25  
 Total Purge Volume (Gallons): ~2.5 Purge Water Management: onsite containment - polytank  
 Purge Observations (color, odor, turbidity, sheen): clear grab sample

purge start: 1607  
 Sample Time: 1630 Field Filtered (0.45um):  Yes  No

Sample Parameters/Analyte(s):  VSWMR Table 3.1 Column A VOCs  VSWMR Table 3.1 Column A Metals  
 Metals, chloride, fluoride, sulfate, TDS, Hg, radium 226/228, Cr(VI), cyanide, sulfide, alkalinity, hardness, TOC  
 Other: ABCE 15A14 CCR App III, Report Group <sup>mt</sup> Boron, calcium, chloride, sulfate, fluoride, T

Other Observations / Equipment Operation Problems: Duplicate for East Pond sampled here

Sampler Signature: Morgan Taylor Date: 3-11-2019 Page 1 of 1  
 QA/QC Signature: Michael Carter Date: 3/15/19











**APPENDIX D.2  
FIELD DATA SHEETS  
2<sup>ND</sup> SEMI-ANNUAL  
GROUNDWATER MONITORING  
EVENT (AUGUST 2019)**



Date: 8/26/19

**WELL GAUGING LOG**

Project Name: Possum Point P.S. 2SA19 Pond E

Project No./Task No.: 1662150.2004.002

Sampler(s): M. Antal

Equipment: Water Level Indicator

Well ID	Personnel (initials)	Time	DTW (feet)	DTB (feet)	Well Condition Summary				
					Protective Casing	Well Casing	Label	Lock	Pad Condition
ES-3D	MA	1510	22.40	43.50	✓OK Damaged	✓OK Damaged	✓OK Inadequate	✓Yes No	✓OK Damaged
ED-22PA	MA	1113	25.65	34.80	✓OK Damaged	✓OK Damaged	✓OK Inadequate	✓Yes No	✓OK Damaged
ED-23R	MA	1200	23.72	39.33	✓OK Damaged	✓OK Damaged	✓OK Inadequate	✓Yes No	✓OK Damaged
ED-24R	MA	1613	26.91	65.70	✓OK Damaged	✓OK Damaged	✓OK Inadequate	✓Yes No	✓OK Damaged
ED-26	MA	1443	51.08	82.50	✓OK Damaged	✓OK Damaged	✓OK Inadequate	✓Yes No	✓OK Damaged
ES-1609	MA	1503	22.50	42.85	✓OK Damaged	✓OK Damaged	✓OK Inadequate	✓Yes No	✓OK Damaged
ES-1613	MA	1506	27.54	45.30	✓OK Damaged	✓OK Damaged	✓OK Inadequate	✓Yes No	✓OK Damaged
T-1615D	MA	1456	22.35	64.80	✓OK Damaged	✓OK Damaged	✓OK Inadequate	✓Yes No	✓OK Damaged
T-1615S	MA	1454	22.77	33.95	✓OK Damaged	✓OK Damaged	✓OK Inadequate	✓Yes No	✓OK Damaged
					OK Damaged	OK Damaged	OK Inadequate	Yes No	OK Damaged
					OK Damaged	OK Damaged	OK Inadequate	Yes No	OK Damaged
					OK Damaged	OK Damaged	OK Inadequate	Yes No	OK Damaged
					OK Damaged	OK Damaged	OK Inadequate	Yes No	OK Damaged
					OK Damaged	OK Damaged	OK Inadequate	Yes No	OK Damaged
					OK Damaged	OK Damaged	OK Inadequate	Yes No	OK Damaged
					OK Damaged	OK Damaged	OK Inadequate	Yes No	OK Damaged
					OK Damaged	OK Damaged	OK Inadequate	Yes No	OK Damaged

Observations/Notes: # weep hole corrosion to about a nickel size on ED-26

Signature: [Signature]

Date: 8/26/19

QA/QC Signature: [Signature]

Date: 8/30/19

Page 1 of 1



MICROPURGE SAMPLING LOG

Date: 8/27/19
Weather: sun 80s

Project Name: Possum Point Power Station
Event: 2SA19 CERLUSUMR/UPDES
Well ID: ES-3D
Well Diameter: 2.0 inches
Depth to Bottom: 43.50 feet
Equipment Used: WL Indicator, YSI ProDSS17MIC2580, Turbidity Meter, Peristaltic Pump, Air Tank, Dedicated Bladder Pump, Compressor, Non-dedicated BP, MP-15 Controller Box

Table with 9 columns: Time (5 minute int.), pH (S.U.), Sp. Cond. (uS/cm)°C, Turbidity (NTU), Dissolved Oxygen (mg/L), Temp. (°C), ORP (mV), DTW (feet), Flow Rate (mL/min). Rows include stabilization and data points from 1323 to 1354.

Purge Cycle (End): 10/5 sec @ 35 psi
Purge volume (gallons) prior to stabilization monitoring (3/8" I.D. Tube): Vol=Depth to Pump x 0.006 gal/ft: ~0.22
Total Purge Volume (Gallons): ~2.0
Purge Water Management: onsite containment

Purge Observations (color, odor, turbidity, sheen): clear grab sample
Purge time: 1318

Sample Time: 1334
Field Filtered (0.45um): Yes No

Sample Parameters/Analyte(s):
Other: 6010/6020 metals, Hg, anions (Cl, F, SO4), TDS, TOC

Other Observations / Equipment Operation Problems: Phenolics, Radium 226/228, hex chrome

Sampler Signature: [Signature] Date: 8/27/19
QA/QC Signature: [Signature] Date: 8/30/19
Page 1 of 1



MICROPURGE SAMPLING LOG

Date: 8/26/19  
 Weather: cloudy 60s

Project Name: Possum Point Power Station Project No./Task No.: 1662150.2004.002  
 Event: 25A19 COE/USWMP/UPDES Sampler(s): M. Antal  
 Well ID: EP-22PA Field Calibration Completed: 0955 on 8/26/19  
 Well Diameter: 2.0 inches Initial Depth to Water: 25.65 feet  
 Depth to Bottom: 34.80 feet Water Column Thickness: 9.15 feet  
 Equipment Used:  WL Indicator  Turbidity Meter  Air Tank  Dedicated Bladder Pump  
 YSI ProDSS 17M12880  Peristaltic Pump  Compressor  Non-dedicated BP  
 In-Situ  MP-10 Controller Box  MP-15 Controller Box

Time (5 minute int.)	pH (S.U.)	Sp. Cond. (uS/cm) <sup>°C</sup>	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	DTW (feet)	Flow Rate (mL/min)
Stabilization	+/- 0.1	+/- 3%	if >10, +/- 10%	+/- 10%	+/- 1°C	+/- 10 mV	<0.3 feet	<500
<u>1114</u>	<u>7.51</u>	<u>294.5</u>	<u>4.5</u>	<u>9.12</u>	<u>19.0</u>	<u>157.8</u>	<u>26.22</u>	<u>100</u>
<u>1116</u>	<u>5.61</u>	<u>285.9</u>	<u>3.3</u>	<u>8.90</u>	<u>18.7</u>	<u>174.4</u>	<u>26.39</u>	<u>100</u>
<u>1118</u>	<u>SAMPLE</u>							
<u>1135</u>	<u>Well Dry</u>							
<u>1246</u>	<u>Resume Sampling</u>							
<u>1252</u>	<u>Well Dry</u>							
<u>1310</u>	<u>Resume Sampling</u>							
<u>1330</u>	<u>Well Dry</u>							
<u>1645</u>	<u>Resume Sampling</u>							
<u>1653</u>	<u>Well Dry</u>							
<u>1715</u>	<u>Resume Sampling</u>							
<u>1720</u>	<u>Finish sampling</u>							

Purge Cycle (End): 2515 sec @ 25 psi Flow Rate (ml/min End): 100  
 Purge volume (gallons) prior to stabilization monitoring (3/8" I.D. Tube: Vol=Depth to Pump x 0.006 gal/ft): ~0.17  
 Total Purge Volume (Gallons): <0.5 Purge Water Management: onsite containment

Purge Observations (color, odor, turbidity, sheen): clear grab sample  
 Purge time: 1115

Sample Time: 1118 Field Filtered (0.45um):  Yes  No

Sample Parameters/Analyte(s):  VSWMR Table 3.1 Column A VOCs  VSWMR Table 3.1 Column A Metals  
 Metals, chloride, fluoride, sulfate, TDS, Hg, radium 226/228, Cr(VI), cyanide, sulfide, alkalinity, hardness, TOC  
 Other: 6010/6020 metals, Hg, anions (Cl, F, SO4), TDS, TOC, Phenolics

Other Observations / Equipment Operation Problems: Radium 226/228, hex chrome

Sampler Signature: [Signature] Date: 8/26/19 Page 1 of 1  
 QA/QC Signature: [Signature] Date: 8/30/19





MICROPURGE SAMPLING LOG

Date: 8/26/19
Weather: cloudy 20s

Project Name: Possum Point Power Station
Event: 25A19002/USCOMP/UPDES
Well ID: ED-23R
Well Diameter: 2.0 inches
Depth to Bottom: 39.33 feet
Equipment Used: WL Indicator, YSI ProDSS 66102980, MP-15 Controller Box

Table with 9 columns: Time (5 minute int.), pH (S.U.), Sp. Cond. (uS/cm)°C, Turbidity (NTU), Dissolved Oxygen (mg/L), Temp. (°C), ORP (mV), DTW (feet), Flow Rate (mL/min). Rows include stabilization data and sample readings at 1147, 1150, 1155, 1200, 1202 (SAMPLE), and 1233.

Purge Cycle (End): 27/3 sec @ 35 psi Flow Rate (ml/min End): 100
Purge volume (gallons) prior to stabilization monitoring (3/8" I.D. Tube: Vol=Depth to Pump x 0.006 gal/ft): ~0.34
Total Purge Volume (Gallons): 1.0 Purge Water Management: onsite containment

Purge Observations (color, odor, turbidity, sheen): clear grab sample
Purge time: 1142

Sample Time: 1202 Field Filtered (0.45um): No

Sample Parameters/Analyte(s): VSWMR Table 3.1 Column A VOCs, VSWMR Table 3.1 Column A Metals, Metals, chloride, fluoride, sulfate, TDS, Hg, radium 226/228, Cr(VI), cyanide, sulfide, alkalinity, hardness, TOC
Other: 6010/6020 metals, Hg, anions (Cl, F, SO4), TDS, TOC, phenolics

Other Observations / Equipment Operation Problems: Radium 226/228, hex chrome

Sampler Signature: [Signature] Date: 8/26/19 Page 1 of 1
QA/QC Signature: [Signature] Date: 8/30/19



MICROPURGE SAMPLING LOG

Date: 8/27/19

Weather: rain 70s

Project Name: Possum Point Power Station Project No./Task No.: 1662150\_2004.002

Event: 2SA19 CCR/USWMR/VWDES Sampler(s): M. Antal

Well ID: ED-24R Field Calibration Completed: 0710 on 8/27/19

Well Diameter: 2.0 inches Initial Depth to Water: 26.79 feet

Depth to Bottom: 65.70 feet Water Column Thickness: 38.91 feet

- Equipment Used:
- WL Indicator
  - Turbidity Meter
  - Air Tank
  - Dedicated Bladder Pump
  - YSI RO 956 17M102980
  - Peristaltic Pump
  - Compressor
  - Non-dedicated BP
  - In-Situ
  - MP-10 Controller Box
  - MP-15 Controller Box

Time (5 minute int.)	pH (S.U.)	Sp. Cond. (uS/cm) <sup>°C</sup>	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	ORP (mV)	DTW (feet)	Flow Rate (mL/min)
Stabilization	+/- 0.1	+/- 3%	if >10, +/- 10%	+/- 10%	+/- 1°C	+/- 10 mV	<0.3 feet	<500
<u>0937</u>	<u>4.62</u>	<u>44.9</u>	<u>4.3</u>	<u>3.77</u>	<u>13.7</u>	<u>222.3</u>	<u>28.06</u>	<u>400</u>
<u>0940</u>	<u>4.62</u>	<u>42.1</u>	<u>5.9</u>	<u>3.40</u>	<u>13.6</u>	<u>260.5</u>	<u>28.21</u>	<u>400</u>
<u>0943</u>	<u>4.60</u>	<u>42.1</u>	<u>5.3</u>	<u>3.32</u>	<u>13.6</u>	<u>270.9</u>	<u>28.37</u>	<u>400</u>
<u>0946</u>	<u>4.59</u>	<u>41.7</u>	<u>5.2</u>	<u>3.28</u>	<u>13.6</u>	<u>285.5</u>	<u>28.54</u>	<u>400</u>
<u>0948</u>	<u>SAMPLE</u>							
<u>1010</u>	<u>4.66</u>	<u>41.9</u>	<u>4.1</u>	<u>3.61</u>	<u>13.8</u>	<u>285.3</u>	<u>27.69</u>	<u>400</u>

Purge Cycle (End): 26/4 sec @ 40 psi Flow Rate (ml/min End): 400

Purge volume (gallons) prior to stabilization monitoring (3/8" I.D. Tube: Vol=Depth to Pump x 0.006 gal/ft): ~0.36

Total Purge Volume (Gallons): ~3.0 Purge Water Management: onsite containment

Purge Observations (color, odor, turbidity, sheen): clear grab sample

Purge time: 0932

Sample Time: 0948 Field Filtered (0.45um):  Yes  No

- Sample Parameters/Analyte(s):
- VSWMR Table 3.1 Column A VOCs
  - VSWMR Table 3.1 Column A Metals
  - Metals, chloride, fluoride, sulfate, TDS, Hg, radium 226/228, Cr(VI), cyanide, sulfide, alkalinity, hardness, TOC
  - Other: 6010/6020 metals, Hg, anions (Cl, F, SO4), TDS, TOC,

Other Observations / Equipment Operation Problems: Phenolics, Radium 226/228, hex chrome

Sampler Signature: M. Antal Date: 8/27/19 Page 1 of 1

QA/QC Signature: [Signature] Date: 8/30/19













MICROPURGE SAMPLING LOG

Date: 8/27/19
Weather: cloudy 80s

Project Name: Possum Point Power Station Project No./Task No.: 1662150, 2007.002
Event: 2SA19 CCR/USUMR/PPDS Sampler(s): M. Antal
Well ID: T-1615D Field Calibration Completed: 0710 on 8/27/19
Well Diameter: 2.0 inches Initial Depth to Water: 22.43 feet
Depth to Bottom: 64.80 feet Water Column Thickness: 42.37 feet
Equipment Used: [checked] WL Indicator [ ] Turbidity Meter [ ] Air Tank [checked] Dedicated Bladder Pump
[checked] YSI Pro DSS 1710 DSS80 [ ] Peristaltic Pump [ ] Compressor [ ] Non-dedicated BP
[ ] In-Situ [ ] MP-10 Controller Box [checked] MP-15 Controller Box [ ]

Table with 9 columns: Time (5 minute int.), pH (S.U.), Sp. Cond. (uS/cm)°C, Turbidity (NTU), Dissolved Oxygen (mg/L), Temp. (°C), ORP (mV), DTW (feet), Flow Rate (mL/min). Rows include stabilization and samples 1110 through 1144.

Purge Cycle (End): 10/5 sec @ 40 psi Flow Rate (ml/min End): 400
Purge volume (gallons) prior to stabilization monitoring (3/8" I.D. Tube: Vol=Depth to Pump x 0.006 gal/ft): ~0.35
Total Purge Volume (Gallons): ~2.5 Purge Water Management: onsite containment

Purge Observations (color, odor, turbidity, sheen): clear grab sample
Purge time: 1105

Sample Time: 1127 Field Filtered (0.45um): [ ] Yes [checked] No

Sample Parameters/Analyte(s): [ ] VSWMR Table 3.1 Column A VOCs [ ] VSWMR Table 3.1 Column A Metals
[ ] Metals, chloride, fluoride, sulfate, TDS, Hg, radium 226/228, Cr(VI), cyanide, sulfide, alkalinity, hardness, TOC
[checked] Other: 6010/6020 metals, Hg, anions (Cl, F, SO4), TDS, TOC,

Other Observations / Equipment Operation Problems: Phenolics, Radium 226/228, hex chrome

Sampler Signature: [Signature] Date: 8/27/19 Page 1 of 1
QA/QC Signature: [Signature] Date: 8/30/19



MICROPURGE SAMPLING LOG

Date: 8/27/19
Weather: cloudy 805

Project Name: Possum Point Power Station Project No./Task No.: 1662150.2004.002
Event: 2SA19 CCR/VSWMR/UPDES Sampler(s): M. Antal
Well ID: T-16155 Field Calibration Completed: 0710 on 8/27/19
Well Diameter: 2.0 inches Initial Depth to Water: 22.87 feet
Depth to Bottom: 33.95 feet Water Column Thickness: 11.08 feet
Equipment Used: [checked] WL Indicator [ ] Turbidity Meter [ ] Air Tank [checked] Dedicated Bladder Pump
[checked] YSI Pro DSS17M102880 [ ] Peristaltic Pump [ ] Compressor [ ] Non-dedicated BP
[ ] In-Situ [ ] MP-10 Controller Box [checked] MP-15 Controller Box [ ]

Table with 9 columns: Time (5 minute int.), pH (S.U.), Sp. Cond. (uS/cm)°C, Turbidity (NTU), Dissolved Oxygen (mg/L), Temp. (°C), ORP (mV), DTW (feet), Flow Rate (mL/min). Rows include stabilization data and multiple sampling points from 1202 to 1232.

Purge Cycle (End): 10/5 sec @ 25 psi Flow Rate (ml/min End): 400
Purge volume (gallons) prior to stabilization monitoring (3/8" I.D. Tube: Vol=Depth to Pump x 0.006 gal/ft): ~0.12
Total Purge Volume (Gallons): ~2.5 Purge Water Management: onsite containment

Purge Observations (color, odor, turbidity, sheen): clear grab sample

Purge time: 1157
Sample Time: 1213 Field Filtered (0.45um): [ ] Yes [checked] No

Sample Parameters/Analyte(s): [ ] VSWMR Table 3.1 Column A VOCs [ ] VSWMR Table 3.1 Column A Metals
[ ] Metals, chloride, fluoride, sulfate, TDS, Hg, radium 226/228, Cr(VI), cyanide, sulfide, alkalinity, hardness, TOC
[checked] Other: 6010/6020 metals, Hg, anions (Cl, F, SO4), TDS, TOC

Other Observations / Equipment Operation Problems: phendics, radium 226/228, hex chrome

Sampler Signature: [Signature] Date: 8/27/19 Page 1 of 1
QA/QC Signature: [Signature] Date: 8/30/19



MICROPURGE SAMPLING LOG

Date: 8/28/19
Weather: cloudy 70s

Project Name: Possum Point Power Station Project No./Task No.: 1662150.2004.002
Event: 2SA19 SCR/VSWMR/VDES Sampler(s): M. Antal
Well ID: Pond E Duplicate Field Calibration Completed:
Well Diameter: inches Initial Depth to Water: feet
Depth to Bottom: feet Water Column Thickness: feet
Equipment Used: [ ] WL Indicator [ ] Turbidity Meter [ ] Air Tank [ ] Dedicated Bladder Pump
[ ] YSI [ ] Peristaltic Pump [ ] Compressor [ ] Non-dedicated BP
[ ] In-Situ [ ] MP-10 Controller Box [ ] MP-15 Controller Box [ ]

Table with 9 columns: Time (5 minute-int.), pH (S.U.), Sp. Cond. (uS/cm)°C, Turbidity (NTU), Dissolved Oxygen (mg/L), Temp. (°C), ORP (mV), DTW (feet), Flow Rate (mL/min). Includes handwritten '1001' and 'SAMPLE'.

Purge Cycle (End): @ psi Flow Rate (ml/min End):
Purge volume (gallons) prior to stabilization monitoring (3/8" I.D. Tube: Vol=Depth to Pump x 0.006 gal/ft):
Total Purge Volume (Gallons): Purge Water Management: onsite containment

Purge Observations (color, odor, turbidity, sheen): clear grab sample taken at ES-1613
See ES-1613 log for sampling details

Sample Time: 1001 Field Filtered (0.45um): [ ] Yes [x] No

Sample Parameters/Analyte(s): [ ] VSWMR Table 3.1 Column A VOCs [ ] VSWMR Table 3.1 Column A Metals
[ ] Metals, chloride, fluoride, sulfate, TDS, Hg, radium 226/228, Cr(VI), cyanide, sulfide, alkalinity, hardness, TOC
[x] Other: 600/6020 metals, Hg, anions (Cl, F, SO4), TDS, TOC

Other Observations / Equipment Operation Problems: Phenolics, Radium 226/228, hex chrome

Sampler Signature: [Signature] Date: 8/28/19 Page 1 of 1
QA/QC Signature: [Signature] Date: 8/30/19





**APPENDIX E**  
**LABORATORY ANALYTICAL**  
**RESULTS**



**APPENDIX E.1**  
**LABORATORY ANALYTICAL**  
**RESULTS**  
**1<sup>ST</sup> SEMI-ANNUAL**  
**GROUNDWATER MONITORING**  
**EVENT (MARCH 2019)**

April 17, 2019

Mike Williams  
Golder Associates  
2108 W Laburnum Ave  
Suite 200  
Richmond, VA 23227

RE: Project: PP P E BKG BKApp III 1SA19 (R)  
Pace Project No.: 92421510

Dear Mike Williams:

Enclosed are the analytical results for sample(s) received by the laboratory on March 13, 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,



Nicole Gasiorowski  
nicole.gasiorowski@pacelabs.com  
(704)875-9092  
Project Manager

Enclosures

cc: Craig LaCosse, Golder Associates Inc.  
Rachel Powell, Golder Associates  
Amanda Reynolds, Golder Associates  
Martha Smith, Golder Associates Inc.



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: PP P E BKG BKApp III 1SA19 (R)

Pace Project No.: 92421510

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### Asheville Certification IDs

2225 Riverside Drive, Asheville, NC 28804

Florida/NELAP Certification #: E87648

Massachusetts Certification #: M-NC030

North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40

South Carolina Certification #: 99030001

Virginia/VELAP Certification #: 460222

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### Eden Certification IDs

205 East Meadow Road Suite A, Eden, NC 27288

North Carolina Drinking Water Certification #: 37738

North Carolina Wastewater Certification #: 633

Virginia/VELAP Certification #: 460025

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: PP P E BKG BKApp III 1SA19 (R)

Pace Project No.: 92421510

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92421510001	ED-26	Water	03/11/19 11:25	03/13/19 14:00
92421510002	ED-24R	Water	03/12/19 11:30	03/13/19 14:00

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### SAMPLE ANALYTE COUNT

Project: PP P E BKG BKApp III 1SA19 (R)

Pace Project No.: 92421510

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92421510001	ED-26	SM 2540C-2011	SOB	1	PASI-E
		EPA 6010D	SH1	2	PASI-A
		EPA 300.0 Rev 2.1 1993	BRJ	3	PASI-A
92421510002	ED-24R	SM 2540C-2011	SOB	1	PASI-E
		EPA 6010D	SH1	2	PASI-A
		EPA 300.0 Rev 2.1 1993	BRJ	3	PASI-A

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### SUMMARY OF DETECTION

Project: PP P E BKG BKApp III 1SA19 (R)

Pace Project No.: 92421510

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
<b>92421510001</b>	<b>ED-26</b>					
SM 2540C-2011	Total Dissolved Solids	103	mg/L	25.0	03/14/19 17:50	
EPA 6010D	Calcium	10.2	mg/L	0.10	03/21/19 22:19	
EPA 300.0 Rev 2.1 1993	Chloride	2.3	mg/L	1.0	03/16/19 18:27	
EPA 300.0 Rev 2.1 1993	Fluoride	0.20	mg/L	0.10	03/16/19 18:27	
EPA 300.0 Rev 2.1 1993	Sulfate	2.1	mg/L	1.0	03/16/19 18:27	
<b>92421510002</b>	<b>ED-24R</b>					
SM 2540C-2011	Total Dissolved Solids	139	mg/L	25.0	03/18/19 16:25	
EPA 6010D	Calcium	1.6	mg/L	0.10	03/21/19 22:13	
EPA 300.0 Rev 2.1 1993	Chloride	2.7	mg/L	1.0	03/16/19 17:23	
EPA 300.0 Rev 2.1 1993	Sulfate	2.4	mg/L	1.0	03/16/19 17:23	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: PP P E BKG BKApp III 1SA19 (R)  
Pace Project No.: 92421510

Sample: ED-26      Lab ID: 92421510001      Collected: 03/11/19 11:25      Received: 03/13/19 14:00      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>2540C Total Dissolved Solids</b> Analytical Method: SM 2540C-2011									
Total Dissolved Solids	<b>103</b>	mg/L	25.0	25.0	1		03/14/19 17:50		
<b>6010 MET ICP</b> Analytical Method: EPA 6010D      Preparation Method: EPA 3010A									
Boron	ND	mg/L	0.050	0.025	1	03/20/19 17:00	03/21/19 22:19	7440-42-8	
Calcium	<b>10.2</b>	mg/L	0.10	0.050	1	03/20/19 17:00	03/21/19 22:19	7440-70-2	
<b>300.0 IC Anions 28 Days</b> Analytical Method: EPA 300.0 Rev 2.1 1993									
Chloride	<b>2.3</b>	mg/L	1.0	0.60	1		03/16/19 18:27	16887-00-6	
Fluoride	<b>0.20</b>	mg/L	0.10	0.050	1		03/16/19 18:27	16984-48-8	
Sulfate	<b>2.1</b>	mg/L	1.0	0.50	1		03/16/19 18:27	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: PP P E BKG BKApp III 1SA19 (R)

Pace Project No.: 92421510

Sample: ED-24R		Lab ID: 92421510002		Collected: 03/12/19 11:30	Received: 03/13/19 14:00	Matrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C-2011								
Total Dissolved Solids	<b>139</b>	mg/L	25.0	25.0	1		03/18/19 16:25			
<b>6010 MET ICP</b>		Analytical Method: EPA 6010D Preparation Method: EPA 3010A								
Boron	ND	mg/L	0.050	0.025	1	03/20/19 17:00	03/21/19 22:13	7440-42-8		
Calcium	<b>1.6</b>	mg/L	0.10	0.050	1	03/20/19 17:00	03/21/19 22:13	7440-70-2		
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0 Rev 2.1 1993								
Chloride	<b>2.7</b>	mg/L	1.0	0.60	1		03/16/19 17:23	16887-00-6		
Fluoride	ND	mg/L	0.10	0.050	1		03/16/19 17:23	16984-48-8		
Sulfate	<b>2.4</b>	mg/L	1.0	0.50	1		03/16/19 17:23	14808-79-8		

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: PP P E BKG BKApp III 1SA19 (R)

Pace Project No.: 92421510

QC Batch: 463574	Analysis Method: SM 2540C-2011
QC Batch Method: SM 2540C-2011	Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 92421510001	

METHOD BLANK: 2522019 Matrix: Water

Associated Lab Samples: 92421510001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	25.0	25.0	03/14/19 17:50	

LABORATORY CONTROL SAMPLE: 2522020

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	250	260	104	90-110	

SAMPLE DUPLICATE: 2523099

Parameter	Units	92421445002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	111	103	7	5	D6

SAMPLE DUPLICATE: 2523100

Parameter	Units	92421443002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	260	275	6	5	D6

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### QUALITY CONTROL DATA

Project: PP P E BKG BKApp III 1SA19 (R)

Pace Project No.: 92421510

QC Batch: 463576

Analysis Method: SM 2540C-2011

QC Batch Method: SM 2540C-2011

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 92421510002

METHOD BLANK: 2522021

Matrix: Water

Associated Lab Samples: 92421510002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	25.0	25.0	03/18/19 16:08	

LABORATORY CONTROL SAMPLE: 2522022

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	250	262	105	90-110	

SAMPLE DUPLICATE: 2523124

Parameter	Units	92421440004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	337	519	43	5	D6

SAMPLE DUPLICATE: 2523128

Parameter	Units	92421450001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	132	144	9	5	D6

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### QUALITY CONTROL DATA

Project: PP P E BKG BKApp III 1SA19 (R)

Pace Project No.: 92421510

QC Batch: 464195 Analysis Method: EPA 6010D  
QC Batch Method: EPA 3010A Analysis Description: 6010 MET  
Associated Lab Samples: 92421510001, 92421510002

METHOD BLANK: 2524554 Matrix: Water

Associated Lab Samples: 92421510001, 92421510002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	mg/L	ND	0.050	0.025	03/21/19 20:31	
Calcium	mg/L	ND	0.10	0.050	03/21/19 20:31	

LABORATORY CONTROL SAMPLE: 2524555

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	mg/L	0.5	0.47	94	80-120	
Calcium	mg/L	5	4.6	93	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2524556 2524557

Parameter	Units	92421443002		2524557		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Boron	mg/L	0.18	0.5	0.5	0.58	81	87	75-125	6	20	
Calcium	mg/L	22.3	5	5	26.6	86	116	75-125	5	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2524558 2524559

Parameter	Units	92421445002		2524559		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Boron	mg/L	ND	0.5	0.5	0.38	74	83	75-125	11	20	M1
Calcium	mg/L	3.2	5	5	6.6	68	87	75-125	13	20	M1

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: PP P E BKG BKApp III 1SA19 (R)

Pace Project No.: 92421510

QC Batch: 463694 Analysis Method: EPA 300.0 Rev 2.1 1993  
 QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions  
 Associated Lab Samples: 92421510002

METHOD BLANK: 2522484 Matrix: Water  
 Associated Lab Samples: 92421510002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	03/16/19 09:23	
Fluoride	mg/L	ND	0.10	0.050	03/16/19 09:23	
Sulfate	mg/L	ND	1.0	0.50	03/16/19 09:23	

LABORATORY CONTROL SAMPLE: 2522485

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	52.0	104	90-110	
Fluoride	mg/L	2.5	2.6	104	90-110	
Sulfate	mg/L	50	54.3	109	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2522486 2522487

Parameter	Units	92421443002		MS	MSD	MS	MSD	MS	MSD	% Rec	Max	Qual
		Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	
Chloride	mg/L	16.2	50	50	68.8	69.6	105	107	90-110	1	10	
Fluoride	mg/L	0.12	2.5	2.5	3.0	3.1	115	118	90-110	2	10	M1
Sulfate	mg/L	44.4	50	50	97.9	98.9	107	109	90-110	1	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2522488 2522489

Parameter	Units	92421445002		MS	MSD	MS	MSD	MS	MSD	% Rec	Max	Qual
		Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	
Chloride	mg/L	2.9	50	50	55.7	56.7	106	108	90-110	2	10	
Fluoride	mg/L	0.30	2.5	2.5	3.1	3.1	111	111	90-110	0	10	M1
Sulfate	mg/L	5.5	50	50	59.9	60.8	109	110	90-110	1	10	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: PP P E BKG BKApp III 1SA19 (R)

Pace Project No.: 92421510

QC Batch: 463696 Analysis Method: EPA 300.0 Rev 2.1 1993  
 QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions  
 Associated Lab Samples: 92421510001

METHOD BLANK: 2522492 Matrix: Water  
 Associated Lab Samples: 92421510001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	03/16/19 17:55	
Fluoride	mg/L	ND	0.10	0.050	03/16/19 17:55	
Sulfate	mg/L	ND	1.0	0.50	03/16/19 17:55	

LABORATORY CONTROL SAMPLE: 2522493

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	52.0	104	90-110	
Fluoride	mg/L	2.5	2.5	101	90-110	
Sulfate	mg/L	50	54.3	109	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2522494 2522495

Parameter	Units	92421515001		MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result	% Rec	% Rec						
Chloride	mg/L	63.6	50	50	104	105	81	82	90-110	0	10	M1			
Fluoride	mg/L	0.18	2.5	2.5	3.2	3.1	122	119	90-110	3	10	M1			
Sulfate	mg/L	46.3	50	50	99.2	99.3	106	106	90-110	0	10				

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2522496 2522497

Parameter	Units	92421369002		MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result	% Rec	% Rec						
Chloride	mg/L	19.9	50	50	77.3	77.8	115	116	90-110	1	10	M1			
Fluoride	mg/L	0.28	2.5	2.5	2.6	2.7	94	95	90-110	1	10				
Sulfate	mg/L	3.9	50	50	58.6	59.0	109	110	90-110	1	10				

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## QUALIFIERS

Project: PP P E BKG BKApp III 1SA19 (R)

Pace Project No.: 92421510

---

### 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

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

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.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

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

TNI - The NELAC Institute.

### LABORATORIES

PASI-A Pace Analytical Services - Asheville

PASI-E Pace Analytical Services - Eden

### ANALYTE QUALIFIERS

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PP P E BKG BKApp III 1SA19 (R)

Pace Project No.: 92421510

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92421510001	ED-26	SM 2540C-2011	463574		
92421510002	ED-24R	SM 2540C-2011	463576		
92421510001	ED-26	EPA 3010A	464195	EPA 6010D	464603
92421510002	ED-24R	EPA 3010A	464195	EPA 6010D	464603
92421510001	ED-26	EPA 300.0 Rev 2.1 1993	463696		
92421510002	ED-24R	EPA 300.0 Rev 2.1 1993	463694		

### REPORT OF LABORATORY ANALYSIS

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April 17, 2019

Mike Williams  
Golder Associates  
2108 W Laburnum Ave  
Suite 200  
Richmond, VA 23227

RE: Project: PP Pond E App III 1SA19 (F)  
Pace Project No.: 92421440

Dear Mike Williams:

Enclosed are the analytical results for sample(s) received by the laboratory on March 13, 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,



Nicole Gasiorowski  
nicole.gasiorowski@pacelabs.com  
(704)875-9092  
Project Manager

Enclosures

cc: Craig LaCosse, Golder Associates Inc.  
Rachel Powell, Golder Associates  
Amanda Reynolds, Golder Associates  
Martha Smith, Golder Associates Inc.



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: PP Pond E App III 1SA19 (F)

Pace Project No.: 92421440

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### Asheville Certification IDs

2225 Riverside Drive, Asheville, NC 28804

Florida/NELAP Certification #: E87648

Massachusetts Certification #: M-NC030

North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40

South Carolina Certification #: 99030001

Virginia/VELAP Certification #: 460222

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### Eden Certification IDs

205 East Meadow Road Suite A, Eden, NC 27288

North Carolina Drinking Water Certification #: 37738

North Carolina Wastewater Certification #: 633

Virginia/VELAP Certification #: 460025

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: PP Pond E App III 1SA19 (F)

Pace Project No.: 92421440

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92421440003	ES-1613	Water	03/11/19 13:50	03/13/19 14:00
92421440004	ES-1609	Water	03/11/19 16:30	03/13/19 14:00
92421440005	ES-3D	Water	03/11/19 16:43	03/13/19 14:00
92421440006	Pond E Dup	Water	03/11/19 16:35	03/13/19 14:00

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: PP Pond E App III 1SA19 (F)

Pace Project No.: 92421440

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92421440003	ES-1613	SM 2540C-2011	SOB	1	PASI-E
		EPA 6010D	DS	2	PASI-A
		EPA 300.0 Rev 2.1 1993	BRJ	3	PASI-A
92421440004	ES-1609	SM 2540C-2011	SOB	1	PASI-E
		EPA 6010D	DS	2	PASI-A
		EPA 300.0 Rev 2.1 1993	BRJ	3	PASI-A
92421440005	ES-3D	SM 2540C-2011	SOB	1	PASI-E
		EPA 6010D	DS	2	PASI-A
		EPA 300.0 Rev 2.1 1993	BRJ	3	PASI-A
92421440006	Pond E Dup	SM 2540C-2011	SOB	1	PASI-E
		EPA 6010D	DS	2	PASI-A
		EPA 300.0 Rev 2.1 1993	BRJ	3	PASI-A

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### SUMMARY OF DETECTION

Project: PP Pond E App III 1SA19 (F)

Pace Project No.: 92421440

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
<b>92421440003</b>	<b>ES-1613</b>					
SM 2540C-2011	Total Dissolved Solids	519	mg/L	25.0	03/18/19 16:18	
EPA 6010D	Boron	1.7	mg/L	0.050	03/21/19 20:55	
EPA 6010D	Calcium	28.7	mg/L	0.10	03/21/19 20:55	
EPA 300.0 Rev 2.1 1993	Chloride	154	mg/L	3.0	03/17/19 03:46	
EPA 300.0 Rev 2.1 1993	Fluoride	0.20	mg/L	0.10	03/16/19 10:59	
EPA 300.0 Rev 2.1 1993	Sulfate	88.8	mg/L	3.0	03/17/19 03:46	
<b>92421440004</b>	<b>ES-1609</b>					
SM 2540C-2011	Total Dissolved Solids	337	mg/L	25.0	03/18/19 16:14	D6
EPA 6010D	Boron	0.93	mg/L	0.050	03/21/19 20:59	
EPA 6010D	Calcium	13.2	mg/L	0.10	03/21/19 20:59	
EPA 300.0 Rev 2.1 1993	Chloride	193	mg/L	4.0	03/17/19 04:02	
EPA 300.0 Rev 2.1 1993	Fluoride	0.063J	mg/L	0.10	03/16/19 11:15	
EPA 300.0 Rev 2.1 1993	Sulfate	95.9	mg/L	1.0	03/16/19 11:15	
<b>92421440005</b>	<b>ES-3D</b>					
SM 2540C-2011	Total Dissolved Solids	532	mg/L	25.0	03/14/19 17:50	
EPA 6010D	Boron	0.65	mg/L	0.050	03/21/19 21:02	
EPA 6010D	Calcium	13.7	mg/L	0.10	03/21/19 21:02	
EPA 300.0 Rev 2.1 1993	Chloride	106	mg/L	3.0	03/17/19 04:18	
EPA 300.0 Rev 2.1 1993	Fluoride	0.28	mg/L	0.10	03/16/19 11:31	
EPA 300.0 Rev 2.1 1993	Sulfate	130	mg/L	3.0	03/17/19 04:18	
<b>92421440006</b>	<b>Pond E Dup</b>					
SM 2540C-2011	Total Dissolved Solids	531	mg/L	25.0	03/14/19 17:50	
EPA 6010D	Boron	1.2	mg/L	0.050	03/21/19 21:05	
EPA 6010D	Calcium	17.8	mg/L	0.10	03/21/19 21:05	
EPA 300.0 Rev 2.1 1993	Chloride	193	mg/L	4.0	03/17/19 04:34	
EPA 300.0 Rev 2.1 1993	Fluoride	0.071J	mg/L	0.10	03/16/19 11:46	
EPA 300.0 Rev 2.1 1993	Sulfate	95.4	mg/L	1.0	03/16/19 11:46	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: PP Pond E App III 1SA19 (F)  
Pace Project No.: 92421440

Sample: ES-1613		Lab ID: 92421440003		Collected: 03/11/19 13:50	Received: 03/13/19 14:00	Matrix: Water			
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C-2011							
Total Dissolved Solids	<b>519</b>	mg/L	25.0	25.0	1		03/18/19 16:18		
<b>6010 MET ICP</b>		Analytical Method: EPA 6010D Preparation Method: EPA 3010A							
Boron	<b>1.7</b>	mg/L	0.050	0.025	1	03/20/19 17:00	03/21/19 20:55	7440-42-8	
Calcium	<b>28.7</b>	mg/L	0.10	0.050	1	03/20/19 17:00	03/21/19 20:55	7440-70-2	
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0 Rev 2.1 1993							
Chloride	<b>154</b>	mg/L	3.0	1.8	3		03/17/19 03:46	16887-00-6	
Fluoride	<b>0.20</b>	mg/L	0.10	0.050	1		03/16/19 10:59	16984-48-8	
Sulfate	<b>88.8</b>	mg/L	3.0	1.5	3		03/17/19 03:46	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: PP Pond E App III 1SA19 (F)  
Pace Project No.: 92421440

Sample: ES-1609      Lab ID: 92421440004      Collected: 03/11/19 16:30      Received: 03/13/19 14:00      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>2540C Total Dissolved Solids</b> Analytical Method: SM 2540C-2011									
Total Dissolved Solids	<b>337</b>	mg/L	25.0	25.0	1		03/18/19 16:14		D6
<b>6010 MET ICP</b> Analytical Method: EPA 6010D      Preparation Method: EPA 3010A									
Boron	<b>0.93</b>	mg/L	0.050	0.025	1	03/20/19 17:00	03/21/19 20:59	7440-42-8	
Calcium	<b>13.2</b>	mg/L	0.10	0.050	1	03/20/19 17:00	03/21/19 20:59	7440-70-2	
<b>300.0 IC Anions 28 Days</b> Analytical Method: EPA 300.0 Rev 2.1 1993									
Chloride	<b>193</b>	mg/L	4.0	2.4	4		03/17/19 04:02	16887-00-6	
Fluoride	<b>0.063J</b>	mg/L	0.10	0.050	1		03/16/19 11:15	16984-48-8	
Sulfate	<b>95.9</b>	mg/L	1.0	0.50	1		03/16/19 11:15	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: PP Pond E App III 1SA19 (F)

Pace Project No.: 92421440

Sample: ES-3D		Lab ID: 92421440005		Collected: 03/11/19 16:43		Received: 03/13/19 14:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C-2011							
Total Dissolved Solids	<b>532</b>	mg/L	25.0	25.0	1		03/14/19 17:50		
<b>6010 MET ICP</b>		Analytical Method: EPA 6010D Preparation Method: EPA 3010A							
Boron	<b>0.65</b>	mg/L	0.050	0.025	1	03/20/19 17:00	03/21/19 21:02	7440-42-8	
Calcium	<b>13.7</b>	mg/L	0.10	0.050	1	03/20/19 17:00	03/21/19 21:02	7440-70-2	
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0 Rev 2.1 1993							
Chloride	<b>106</b>	mg/L	3.0	1.8	3		03/17/19 04:18	16887-00-6	
Fluoride	<b>0.28</b>	mg/L	0.10	0.050	1		03/16/19 11:31	16984-48-8	
Sulfate	<b>130</b>	mg/L	3.0	1.5	3		03/17/19 04:18	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: PP Pond E App III 1SA19 (F)

Pace Project No.: 92421440

Sample: Pond E Dup		Lab ID: 92421440006		Collected: 03/11/19 16:35		Received: 03/13/19 14:00		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C-2011							
Total Dissolved Solids	<b>531</b>	mg/L	25.0	25.0	1		03/14/19 17:50		
<b>6010 MET ICP</b>		Analytical Method: EPA 6010D Preparation Method: EPA 3010A							
Boron	<b>1.2</b>	mg/L	0.050	0.025	1	03/20/19 17:00	03/21/19 21:05	7440-42-8	
Calcium	<b>17.8</b>	mg/L	0.10	0.050	1	03/20/19 17:00	03/21/19 21:05	7440-70-2	
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0 Rev 2.1 1993							
Chloride	<b>193</b>	mg/L	4.0	2.4	4		03/17/19 04:34	16887-00-6	
Fluoride	<b>0.071J</b>	mg/L	0.10	0.050	1		03/16/19 11:46	16984-48-8	
Sulfate	<b>95.4</b>	mg/L	1.0	0.50	1		03/16/19 11:46	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: PP Pond E App III 1SA19 (F)  
Pace Project No.: 92421440

QC Batch: 463574 Analysis Method: SM 2540C-2011  
QC Batch Method: SM 2540C-2011 Analysis Description: 2540C Total Dissolved Solids  
Associated Lab Samples: 92421440005, 92421440006

METHOD BLANK: 2522019 Matrix: Water  
Associated Lab Samples: 92421440005, 92421440006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	25.0	25.0	03/14/19 17:50	

LABORATORY CONTROL SAMPLE: 2522020

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	250	260	104	90-110	

SAMPLE DUPLICATE: 2523099

Parameter	Units	92421445002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	111	103	7	5	D6

SAMPLE DUPLICATE: 2523100

Parameter	Units	92421443002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	260	275	6	5	D6

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: PP Pond E App III 1SA19 (F)

Pace Project No.: 92421440

QC Batch: 463576 Analysis Method: SM 2540C-2011  
 QC Batch Method: SM 2540C-2011 Analysis Description: 2540C Total Dissolved Solids  
 Associated Lab Samples: 92421440003, 92421440004

METHOD BLANK: 2522021 Matrix: Water

Associated Lab Samples: 92421440003, 92421440004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	25.0	25.0	03/18/19 16:08	

LABORATORY CONTROL SAMPLE: 2522022

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	250	262	105	90-110	

SAMPLE DUPLICATE: 2523124

Parameter	Units	92421440004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	337	519	43	5	D6

SAMPLE DUPLICATE: 2523128

Parameter	Units	92421450001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	132	144	9	5	D6

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: PP Pond E App III 1SA19 (F)

Pace Project No.: 92421440

QC Batch: 464195 Analysis Method: EPA 6010D  
QC Batch Method: EPA 3010A Analysis Description: 6010 MET  
Associated Lab Samples: 92421440003, 92421440004, 92421440005, 92421440006

METHOD BLANK: 2524554 Matrix: Water  
Associated Lab Samples: 92421440003, 92421440004, 92421440005, 92421440006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	mg/L	ND	0.050	0.025	03/21/19 20:31	
Calcium	mg/L	ND	0.10	0.050	03/21/19 20:31	

LABORATORY CONTROL SAMPLE: 2524555

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	mg/L	0.5	0.47	94	80-120	
Calcium	mg/L	5	4.6	93	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2524556 2524557

Parameter	Units	92421443002		2524557		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Boron	mg/L	0.18	0.5	0.5	0.58	81	87	75-125	6	20	
Calcium	mg/L	22.3	5	5	26.6	86	116	75-125	5	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2524558 2524559

Parameter	Units	92421445002		2524559		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Boron	mg/L	ND	0.5	0.5	0.38	74	83	75-125	11	20	M1
Calcium	mg/L	3.2	5	5	6.6	68	87	75-125	13	20	M1

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: PP Pond E App III 1SA19 (F)  
Pace Project No.: 92421440

QC Batch: 463694 Analysis Method: EPA 300.0 Rev 2.1 1993  
QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 92421440003, 92421440004, 92421440005, 92421440006

METHOD BLANK: 2522484 Matrix: Water  
Associated Lab Samples: 92421440003, 92421440004, 92421440005, 92421440006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	03/16/19 09:23	
Fluoride	mg/L	ND	0.10	0.050	03/16/19 09:23	
Sulfate	mg/L	ND	1.0	0.50	03/16/19 09:23	

LABORATORY CONTROL SAMPLE: 2522485

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	52.0	104	90-110	
Fluoride	mg/L	2.5	2.6	104	90-110	
Sulfate	mg/L	50	54.3	109	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2522486 2522487

Parameter	Units	92421443002		MSD		MS		MSD		% Rec Limits	Max		Qual
		Result	MS Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	RPD		RPD		
Chloride	mg/L	16.2	50	50	68.8	69.6	105	107	90-110	1	10		
Fluoride	mg/L	0.12	2.5	2.5	3.0	3.1	115	118	90-110	2	10	M1	
Sulfate	mg/L	44.4	50	50	97.9	98.9	107	109	90-110	1	10		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2522488 2522489

Parameter	Units	92421445002		MSD		MS		MSD		% Rec Limits	Max		Qual
		Result	MS Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	RPD		RPD		
Chloride	mg/L	2.9	50	50	55.7	56.7	106	108	90-110	2	10		
Fluoride	mg/L	0.30	2.5	2.5	3.1	3.1	111	111	90-110	0	10	M1	
Sulfate	mg/L	5.5	50	50	59.9	60.8	109	110	90-110	1	10		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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## QUALIFIERS

Project: PP Pond E App III 1SA19 (F)

Pace Project No.: 92421440

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### 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

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

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.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

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

TNI - The NELAC Institute.

### LABORATORIES

PASI-A Pace Analytical Services - Asheville

PASI-E Pace Analytical Services - Eden

### ANALYTE QUALIFIERS

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PP Pond E App III 1SA19 (F)

Pace Project No.: 92421440

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92421440003	ES-1613	SM 2540C-2011	463576		
92421440004	ES-1609	SM 2540C-2011	463576		
92421440005	ES-3D	SM 2540C-2011	463574		
92421440006	Pond E Dup	SM 2540C-2011	463574		
92421440003	ES-1613	EPA 3010A	464195	EPA 6010D	464603
92421440004	ES-1609	EPA 3010A	464195	EPA 6010D	464603
92421440005	ES-3D	EPA 3010A	464195	EPA 6010D	464603
92421440006	Pond E Dup	EPA 3010A	464195	EPA 6010D	464603
92421440003	ES-1613	EPA 300.0 Rev 2.1 1993	463694		
92421440004	ES-1609	EPA 300.0 Rev 2.1 1993	463694		
92421440005	ES-3D	EPA 300.0 Rev 2.1 1993	463694		
92421440006	Pond E Dup	EPA 300.0 Rev 2.1 1993	463694		

### REPORT OF LABORATORY ANALYSIS

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April 17, 2019

Mike Williams  
Golder Associates  
2108 W Laburnum Ave  
Suite 200  
Richmond, VA 23227

RE: Project: PP Pond D FB App III (H)  
Pace Project No.: 92421482

Dear Mike Williams:

Enclosed are the analytical results for sample(s) received by the laboratory on March 13, 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,



Nicole Gasiorowski  
nicole.gasiorowski@pacelabs.com  
(704)875-9092  
Project Manager

Enclosures

cc: Craig LaCosse, Golder Associates Inc.  
Rachel Powell, Golder Associates  
Amanda Reynolds, Golder Associates  
Martha Smith, Golder Associates Inc.



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: PP Pond D FB App III (H)

Pace Project No.: 92421482

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### Asheville Certification IDs

2225 Riverside Drive, Asheville, NC 28804

Florida/NELAP Certification #: E87648

Massachusetts Certification #: M-NC030

North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40

South Carolina Certification #: 99030001

Virginia/VELAP Certification #: 460222

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### Eden Certification IDs

205 East Meadow Road Suite A, Eden, NC 27288

North Carolina Drinking Water Certification #: 37738

North Carolina Wastewater Certification #: 633

Virginia/VELAP Certification #: 460025

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: PP Pond D FB App III (H)

Pace Project No.: 92421482

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Lab ID	Sample ID	Matrix	Date Collected	Date Received
92421482001	Field Blank	Water	03/12/19 10:45	03/13/19 14:00

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: PP Pond D FB App III (H)  
Pace Project No.: 92421482

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92421482001	Field Blank	SM 2540C-2011	SOB	1	PASI-E
		EPA 6010D	SH1	2	PASI-A
		EPA 300.0 Rev 2.1 1993	BRJ	3	PASI-A

### REPORT OF LABORATORY ANALYSIS

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### SUMMARY OF DETECTION

Project: PP Pond D FB App III (H)  
Pace Project No.: 92421482

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
<b>92421482001</b>	<b>Field Blank</b>					
SM 2540C-2011	Total Dissolved Solids	254	mg/L	25.0	03/18/19 16:33	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: PP Pond D FB App III (H)

Pace Project No.: 92421482

Sample: Field Blank		Lab ID: 92421482001		Collected: 03/12/19 10:45	Received: 03/13/19 14:00	Matrix: Water			
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C-2011							
Total Dissolved Solids	<b>254</b>	mg/L	25.0	25.0	1		03/18/19 16:33		
<b>6010 MET ICP</b>		Analytical Method: EPA 6010D Preparation Method: EPA 3010A							
Boron	ND	mg/L	0.050	0.025	1	03/20/19 17:00	03/21/19 22:01	7440-42-8	
Calcium	ND	mg/L	0.10	0.050	1	03/20/19 17:00	03/21/19 22:01	7440-70-2	
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0 Rev 2.1 1993							
Chloride	ND	mg/L	1.0	0.60	1		03/16/19 16:51	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		03/16/19 16:51	16984-48-8	
Sulfate	ND	mg/L	1.0	0.50	1		03/16/19 16:51	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: PP Pond D FB App III (H)

Pace Project No.: 92421482

QC Batch: 463576	Analysis Method: SM 2540C-2011
QC Batch Method: SM 2540C-2011	Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 92421482001	

METHOD BLANK: 2522021 Matrix: Water

Associated Lab Samples: 92421482001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	25.0	25.0	03/18/19 16:08	

LABORATORY CONTROL SAMPLE: 2522022

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	250	262	105	90-110	

SAMPLE DUPLICATE: 2523124

Parameter	Units	92421440004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	337	519	43	5	D6

SAMPLE DUPLICATE: 2523128

Parameter	Units	92421450001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	132	144	9	5	D6

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### QUALITY CONTROL DATA

Project: PP Pond D FB App III (H)

Pace Project No.: 92421482

QC Batch: 464195	Analysis Method: EPA 6010D
QC Batch Method: EPA 3010A	Analysis Description: 6010 MET
Associated Lab Samples: 92421482001	

METHOD BLANK: 2524554 Matrix: Water

Associated Lab Samples: 92421482001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	mg/L	ND	0.050	0.025	03/21/19 20:31	
Calcium	mg/L	ND	0.10	0.050	03/21/19 20:31	

LABORATORY CONTROL SAMPLE: 2524555

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	mg/L	0.5	0.47	94	80-120	
Calcium	mg/L	5	4.6	93	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2524556 2524557

Parameter	Units	92421443002		2524557		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Boron	mg/L	0.18	0.5	0.5	0.58	81	87	75-125	6	20	
Calcium	mg/L	22.3	5	5	26.6	86	116	75-125	5	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2524558 2524559

Parameter	Units	92421445002		2524559		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Boron	mg/L	ND	0.5	0.5	0.38	74	83	75-125	11	20	M1
Calcium	mg/L	3.2	5	5	6.6	68	87	75-125	13	20	M1

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: PP Pond D FB App III (H)  
Pace Project No.: 92421482

QC Batch: 463694 Analysis Method: EPA 300.0 Rev 2.1 1993  
QC Batch Method: EPA 300.0 Rev 2.1 1993 Analysis Description: 300.0 IC Anions  
Associated Lab Samples: 92421482001

METHOD BLANK: 2522484 Matrix: Water  
Associated Lab Samples: 92421482001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	03/16/19 09:23	
Fluoride	mg/L	ND	0.10	0.050	03/16/19 09:23	
Sulfate	mg/L	ND	1.0	0.50	03/16/19 09:23	

LABORATORY CONTROL SAMPLE: 2522485

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	52.0	104	90-110	
Fluoride	mg/L	2.5	2.6	104	90-110	
Sulfate	mg/L	50	54.3	109	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2522486 2522487

Parameter	Units	92421443002		MS		MSD		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result							
Chloride	mg/L	16.2	50	50	50	68.8	69.6	105	107	90-110	1	10		
Fluoride	mg/L	0.12	2.5	2.5	2.5	3.0	3.1	115	118	90-110	2	10	M1	
Sulfate	mg/L	44.4	50	50	50	97.9	98.9	107	109	90-110	1	10		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2522488 2522489

Parameter	Units	92421445002		MS		MSD		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result							
Chloride	mg/L	2.9	50	50	50	55.7	56.7	106	108	90-110	2	10		
Fluoride	mg/L	0.30	2.5	2.5	2.5	3.1	3.1	111	111	90-110	0	10	M1	
Sulfate	mg/L	5.5	50	50	50	59.9	60.8	109	110	90-110	1	10		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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## QUALIFIERS

Project: PP Pond D FB App III (H)

Pace Project No.: 92421482

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### 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

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

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.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

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

TNI - The NELAC Institute.

### LABORATORIES

PASI-A Pace Analytical Services - Asheville

PASI-E Pace Analytical Services - Eden

### ANALYTE QUALIFIERS

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PP Pond D FB App III (H)  
Pace Project No.: 92421482

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92421482001	Field Blank	SM 2540C-2011	463576		
92421482001	Field Blank	EPA 3010A	464195	EPA 6010D	464603
92421482001	Field Blank	EPA 300.0 Rev 2.1 1993	463694		

### REPORT OF LABORATORY ANALYSIS

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**APPENDIX E.2  
LABORATORY ANALYTICAL  
RESULTS  
2<sup>ND</sup> SEMI-ANNUAL  
GROUNDWATER MONITORING  
EVENT (AUGUST 2019)**



October 01, 2019

Mike Williams  
Golder Associates  
2108 W Laburnum Ave  
Suite 200  
Richmond, VA 23227

RE: Project: PP - Pond E (D)  
Pace Project No.: 92443188

Dear Mike Williams:

Enclosed are the analytical results for sample(s) received by the laboratory between August 27, 2019 and August 29, 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,



Nicole Gasiorowski  
nicole.gasiorowski@pacelabs.com  
(704)875-9092  
Project Manager

Enclosures

cc: Craig LaCosse, Golder Associates Inc.  
Rachel Powell, Golder Associates  
Amanda Reynolds, Golder Associates  
Martha Smith, Golder Associates Inc.



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: PP - Pond E (D)

Pace Project No.: 92443188

### Atlanta Certification IDs

110 Technology Parkway Peachtree Corners, GA 30092  
Florida DOH Certification #: E87315  
Georgia DW Inorganics Certification #: 812  
Georgia DW Microbiology Certification #: 812

North Carolina Certification #: 381  
South Carolina Certification #: 98011001  
Virginia Certification #: 460204

### 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  
Florida: Cert E871149 SEKS WET  
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

### Asheville Certification IDs

2225 Riverside Drive, Asheville, NC 28804  
Florida/NELAP Certification #: E87648  
Massachusetts Certification #: M-NC030  
North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40  
South Carolina Certification #: 99030001  
Virginia/VELAP Certification #: 460222

### Eden Certification IDs

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North Carolina Drinking Water Certification #: 37738

North Carolina Wastewater Certification #: 633  
Virginia/VELAP Certification #: 460025

## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: PP - Pond E (D)

Pace Project No.: 92443188

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92443188001	ED-26	Water	08/27/19 08:21	08/27/19 14:24
92443188002	T-1615D	Water	08/27/19 11:27	08/27/19 14:24
92443188003	T-1615S	Water	08/27/19 12:13	08/27/19 14:24
92443188004	ES-3D	Water	08/27/19 13:34	08/27/19 14:24
92443188005	ES-1609	Water	08/28/19 08:18	08/29/19 13:40
92443188006	ES-1613	Water	08/28/19 09:34	08/29/19 13:40
92443188007	POND E-Duplicate	Water	08/28/19 10:01	08/29/19 13:40
92443193002	ED-24R	Water	08/27/19 09:48	08/27/19 14:24

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: PP - Pond E (D)

Pace Project No.: 92443188

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92443188001	ED-26	SM 2540C-2011	SAM1	1	PASI-E
		EPA 6010D	DS	16	PASI-A
		EPA 6020B	SER	9	PASI-A
		EPA 7470A	SOO	1	PASI-A
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 9065	MWB	1	PASI-GA
		EPA 9056A	CDC	3	PASI-A
		EPA 9060A	ECH	5	PASI-A
92443188002	T-1615D	SM 2540C-2011	SAM1	1	PASI-E
		EPA 6010D	DS	16	PASI-A
		EPA 6020B	JOR, SER	9	PASI-A
		EPA 7470A	SOO	1	PASI-A
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 9065	MWB	1	PASI-GA
		EPA 9056A	CDC	3	PASI-A
		EPA 9060A	ECH	5	PASI-A
92443188003	T-1615S	SM 2540C-2011	SAM1	1	PASI-E
		EPA 6010D	DS	16	PASI-A
		EPA 6020B	JOR, SER	9	PASI-A
		EPA 7470A	SOO	1	PASI-A
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 9065	MWB	1	PASI-GA
		EPA 9056A	CDC	3	PASI-A
		EPA 9060A	ECH	5	PASI-A
92443188004	ES-3D	SM 2540C-2011	SAM1	1	PASI-E
		EPA 6010D	DS	16	PASI-A
		EPA 6020B	JOR, SER	9	PASI-A
		EPA 7470A	SOO	1	PASI-A
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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### SAMPLE ANALYTE COUNT

Project: PP - Pond E (D)

Pace Project No.: 92443188

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92443188005	ES-1609	EPA 9065	MWB	1	PASI-GA
		EPA 9056A	CDC	3	PASI-A
		EPA 9060A	ECH	5	PASI-A
		SM 2540C-2011	SAM1	1	PASI-E
		EPA 6010D	SH1	16	PASI-A
		EPA 6020B	JOR, SER	9	PASI-A
		EPA 7470A	SOO	1	PASI-A
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92443188006	ES-1613	EPA 9065	MWB	1	PASI-GA
		EPA 9056A	CDC	3	PASI-A
		EPA 9060A	ECH	5	PASI-A
		SM 2540C-2011	SAM1	1	PASI-E
		EPA 6010D	DS	16	PASI-A
		EPA 6020B	JOR	9	PASI-A
		EPA 7470A	SOO	1	PASI-A
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92443188007	POND E-Duplicate	EPA 9065	MWB	1	PASI-GA
		EPA 9056A	CDC	3	PASI-A
		EPA 9060A	ECH	5	PASI-A
		SM 2540C-2011	SAM1	1	PASI-E
		EPA 6010D	DS	16	PASI-A
		EPA 6020B	JOR	9	PASI-A
		EPA 7470A	SOO	1	PASI-A
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
92443193002	ED-24R	EPA 9065	MWB	1	PASI-GA
		EPA 9056A	CDC	3	PASI-A
		EPA 9060A	ECH	5	PASI-A
		SM 2540C-2011	SAM1	1	PASI-E
		EPA 6010D	DS	16	PASI-A
EPA 6020B	SER	9	PASI-A		
EPA 7470A	SOO	1	PASI-A		

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### SAMPLE ANALYTE COUNT

Project: PP - Pond E (D)  
Pace Project No.: 92443188

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 9065	MWB	1	PASI-GA
		EPA 9056A	CDC	3	PASI-A
		EPA 9060A	ECH	5	PASI-A

### REPORT OF LABORATORY ANALYSIS

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### SUMMARY OF DETECTION

Project: PP - Pond E (D)

Pace Project No.: 92443188

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
<b>92443188001</b>	<b>ED-26</b>					
SM 2540C-2011	Total Dissolved Solids	63.0	mg/L	25.0	08/29/19 10:59	
EPA 6010D	Barium	32.2	ug/L	5.0	09/08/19 18:42	
EPA 6010D	Boron	0.013J	mg/L	0.050	09/08/19 18:42	B
EPA 6010D	Calcium	7.2	mg/L	0.10	09/08/19 18:42	
EPA 6010D	Hardness, Total(SM 2340B)	27600	ug/L	662	09/08/19 18:42	
EPA 6020B	Cobalt	0.061J	ug/L	0.10	09/06/19 14:03	
EPA 6020B	Iron	3320	ug/L	50.0	09/06/19 14:03	
EPA 6020B	Lead	0.19	ug/L	0.10	09/06/19 14:03	
EPA 6020B	Lithium	12.1	ug/L	2.5	09/06/19 14:03	
EPA 6020B	Manganese	71.8	ug/L	0.50	09/06/19 14:03	
EPA 6020B	Potassium	5130	ug/L	50.0	09/06/19 14:03	
EPA 6020B	Sodium	1820	ug/L	250	09/06/19 14:03	
EPA 9315	Radium-226	0.348 ± 0.292 (0.547)	pCi/L		09/20/19 07:11	
EPA 9320	Radium-228	C:93% T:NA 0.878 ± 0.451 (0.796) C:77% T:81%	pCi/L		09/20/19 14:59	
Total Radium Calculation	Total Radium	1.23 ± 0.743 (1.34)	pCi/L		09/23/19 12:59	
EPA 9056A	Chloride	2.2	mg/L	1.0	08/30/19 22:39	
EPA 9056A	Fluoride	0.17	mg/L	0.10	08/30/19 22:39	
EPA 9056A	Sulfate	1.8	mg/L	1.0	08/30/19 22:39	
EPA 9060A	Total Organic Carbon	12.5	mg/L	1.0	09/06/19 01:17	
EPA 9060A	Total Organic Carbon	12.2	mg/L	1.0	09/06/19 01:17	
EPA 9060A	Total Organic Carbon	12.4	mg/L	1.0	09/06/19 01:17	
EPA 9060A	Total Organic Carbon	12.6	mg/L	1.0	09/06/19 01:17	
EPA 9060A	Mean Total Organic Carbon	12.4	mg/L	1.0	09/06/19 01:17	
<b>92443188002</b>	<b>T-1615D</b>					
SM 2540C-2011	Total Dissolved Solids	215	mg/L	25.0	08/29/19 11:00	
EPA 6010D	Barium	104	ug/L	5.0	09/08/19 18:45	
EPA 6010D	Beryllium	0.21J	ug/L	1.0	09/08/19 18:45	
EPA 6010D	Boron	0.014J	mg/L	0.050	09/08/19 18:45	B
EPA 6010D	Calcium	17.3	mg/L	0.10	09/08/19 18:45	
EPA 6010D	Nickel	2.2J	ug/L	5.0	09/08/19 18:45	
EPA 6010D	Hardness, Total(SM 2340B)	80300	ug/L	662	09/08/19 18:45	
EPA 6010D	Zinc	26.8	ug/L	10.0	09/08/19 18:45	BC
EPA 6020B	Cobalt	0.72	ug/L	0.10	09/06/19 14:07	
EPA 6020B	Iron	10100	ug/L	500	09/07/19 05:46	
EPA 6020B	Lithium	14.3	ug/L	2.5	09/06/19 14:07	
EPA 6020B	Manganese	300	ug/L	0.50	09/06/19 14:07	
EPA 6020B	Potassium	11400	ug/L	500	09/07/19 05:46	
EPA 6020B	Sodium	8610	ug/L	250	09/06/19 14:07	

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### SUMMARY OF DETECTION

Project: PP - Pond E (D)

Pace Project No.: 92443188

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
<b>92443188002</b>	<b>T-1615D</b>					
EPA 9315	Radium-226	0.634 ± 0.347 (0.515) C:87% T:NA	pCi/L		09/20/19 07:11	
EPA 9320	Radium-228	0.818 ± 0.453 (0.831) C:76% T:90%	pCi/L		09/20/19 15:00	
Total Radium Calculation	Total Radium	1.45 ± 0.800 (1.35)	pCi/L		09/23/19 12:59	
EPA 9056A	Chloride	79.1	mg/L	1.0	08/30/19 22:54	
EPA 9056A	Fluoride	0.16	mg/L	0.10	08/30/19 22:54	
EPA 9056A	Sulfate	1.1	mg/L	1.0	08/30/19 22:54	
EPA 9060A	Total Organic Carbon	14.6	mg/L	1.0	09/06/19 01:29	
EPA 9060A	Total Organic Carbon	14.5	mg/L	1.0	09/06/19 01:29	
EPA 9060A	Total Organic Carbon	14.5	mg/L	1.0	09/06/19 01:29	
EPA 9060A	Total Organic Carbon	14.4	mg/L	1.0	09/06/19 01:29	
EPA 9060A	Mean Total Organic Carbon	14.5	mg/L	1.0	09/06/19 01:29	
<b>92443188003</b>	<b>T-1615S</b>					
SM 2540C-2011	Total Dissolved Solids	453	mg/L	83.3	08/29/19 11:00	
EPA 6010D	Barium	115	ug/L	5.0	09/08/19 18:48	
EPA 6010D	Boron	0.57	mg/L	0.050	09/08/19 18:48	
EPA 6010D	Calcium	10.8	mg/L	0.10	09/08/19 18:48	
EPA 6010D	Molybdenum	7.1	ug/L	5.0	09/08/19 18:48	
EPA 6010D	Nickel	16.9	ug/L	5.0	09/08/19 18:48	
EPA 6010D	Hardness, Total(SM 2340B)	60700	ug/L	662	09/08/19 18:48	
EPA 6010D	Zinc	16.9	ug/L	10.0	09/08/19 18:48	BC
EPA 6020B	Cobalt	21.4	ug/L	0.10	09/06/19 14:11	
EPA 6020B	Iron	10500	ug/L	1000	09/07/19 05:50	
EPA 6020B	Lead	0.082J	ug/L	0.10	09/06/19 14:11	
EPA 6020B	Lithium	5.8	ug/L	2.5	09/06/19 14:11	
EPA 6020B	Manganese	223	ug/L	0.50	09/06/19 14:11	
EPA 6020B	Potassium	4130	ug/L	50.0	09/06/19 14:11	
EPA 6020B	Sodium	136000	ug/L	5000	09/07/19 05:50	
EPA 6020B	Thallium	0.070J	ug/L	0.10	09/06/19 14:11	
EPA 9315	Radium-226	1.33 ± 0.466 (0.402) C:89% T:NA	pCi/L		09/20/19 07:12	
EPA 9320	Radium-228	2.11 ± 0.681 (0.917) C:65% T:86%	pCi/L		09/20/19 15:00	
Total Radium Calculation	Total Radium	3.44 ± 1.15 (1.32)	pCi/L		09/23/19 12:59	
EPA 9056A	Chloride	215	mg/L	5.0	08/31/19 08:50	
EPA 9056A	Fluoride	0.082J	mg/L	0.10	08/30/19 23:08	

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### SUMMARY OF DETECTION

Project: PP - Pond E (D)

Pace Project No.: 92443188

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
<b>92443188003</b>	<b>T-1615S</b>					
EPA 9056A	Sulfate	21.4	mg/L	1.0	08/30/19 23:08	
EPA 9060A	Total Organic Carbon	31.3	mg/L	1.0	09/06/19 02:24	
EPA 9060A	Total Organic Carbon	30.4	mg/L	1.0	09/06/19 02:24	
EPA 9060A	Total Organic Carbon	30.5	mg/L	1.0	09/06/19 02:24	
EPA 9060A	Total Organic Carbon	30.8	mg/L	1.0	09/06/19 02:24	
EPA 9060A	Mean Total Organic Carbon	30.8	mg/L	1.0	09/06/19 02:24	
<b>92443188004</b>	<b>ES-3D</b>					
SM 2540C-2011	Total Dissolved Solids	415	mg/L	62.5	08/29/19 11:01	
EPA 6010D	Barium	70.7	ug/L	5.0	09/08/19 18:51	
EPA 6010D	Beryllium	0.52J	ug/L	1.0	09/08/19 18:51	
EPA 6010D	Boron	0.84	mg/L	0.050	09/08/19 18:51	
EPA 6010D	Cadmium	0.73J	ug/L	1.0	09/08/19 18:51	
EPA 6010D	Calcium	17.5	mg/L	0.10	09/08/19 18:51	
EPA 6010D	Copper	3.1J	ug/L	5.0	09/08/19 18:51	
EPA 6010D	Molybdenum	4.0J	ug/L	5.0	09/08/19 18:51	
EPA 6010D	Nickel	27.6	ug/L	5.0	09/08/19 18:51	
EPA 6010D	Hardness, Total(SM 2340B)	103000	ug/L	662	09/08/19 18:51	
EPA 6010D	Zinc	210	ug/L	10.0	09/08/19 18:51	BC
EPA 6020B	Cobalt	41.5	ug/L	0.20	09/06/19 14:19	
EPA 6020B	Iron	8430	ug/L	100	09/06/19 14:19	
EPA 6020B	Lead	0.12J	ug/L	0.20	09/06/19 14:19	
EPA 6020B	Lithium	20.0	ug/L	5.0	09/06/19 14:19	
EPA 6020B	Manganese	998	ug/L	5.0	09/07/19 05:54	
EPA 6020B	Potassium	4370	ug/L	100	09/06/19 14:19	
EPA 6020B	Sodium	81500	ug/L	2500	09/07/19 05:54	
EPA 9315	Radium-226	0.629 ± 0.341 (0.495) C:94% T:NA	pCi/L		09/20/19 07:12	
EPA 9320	Radium-228	1.20 ± 0.612 (1.10) C:71% T:79%	pCi/L		09/20/19 15:46	
Total Radium Calculation	Total Radium	1.83 ± 0.953 (1.60)	pCi/L		09/23/19 12:59	
EPA 9056A	Chloride	117	mg/L	2.0	08/31/19 09:05	
EPA 9056A	Fluoride	0.16	mg/L	0.10	08/30/19 23:23	
EPA 9056A	Sulfate	109	mg/L	2.0	08/31/19 09:05	
EPA 9060A	Total Organic Carbon	0.52J	mg/L	1.0	09/06/19 03:28	
<b>92443188005</b>	<b>ES-1609</b>					
SM 2540C-2011	Total Dissolved Solids	527	mg/L	83.3	08/30/19 14:05	
EPA 6010D	Barium	107	ug/L	5.0	09/06/19 23:08	
EPA 6010D	Boron	1.3	mg/L	0.050	09/06/19 23:08	
EPA 6010D	Calcium	23.4	mg/L	0.10	09/06/19 23:08	
EPA 6010D	Molybdenum	5.8	ug/L	5.0	09/06/19 23:08	
EPA 6010D	Nickel	11.6	ug/L	5.0	09/06/19 23:08	

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### SUMMARY OF DETECTION

Project: PP - Pond E (D)

Pace Project No.: 92443188

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
<b>92443188005</b>	<b>ES-1609</b>					
EPA 6010D	Hardness, Total(SM 2340B)	111000	ug/L	662	09/07/19 12:54	
EPA 6010D	Zinc	21.9	ug/L	10.0	09/06/19 23:08	
EPA 6020B	Cobalt	16.7	ug/L	0.15	09/07/19 07:48	D3
EPA 6020B	Iron	26000	ug/L	75.0	09/07/19 07:48	D3,M1
EPA 6020B	Lithium	12.5	ug/L	3.8	09/07/19 07:48	D3
EPA 6020B	Manganese	752	ug/L	5.0	09/09/19 22:42	D3,M6
EPA 6020B	Potassium	6580	ug/L	75.0	09/07/19 07:48	D3
EPA 6020B	Sodium	116000	ug/L	5000	09/09/19 23:02	D3,M6
EPA 9315	Radium-226	1.25 ± 0.559 (0.591) C:97% T:NA	pCi/L		09/20/19 07:12	
EPA 9320	Radium-228	1.44 ± 0.532 (0.758) C:72% T:76%	pCi/L		09/20/19 15:00	
Total Radium Calculation	Total Radium	2.69 ± 1.09 (1.35)	pCi/L		09/23/19 12:59	
EPA 9056A	Chloride	194	mg/L	4.0	09/05/19 01:52	M1
EPA 9056A	Sulfate	85.6	mg/L	1.0	09/03/19 19:56	M1
EPA 9060A	Total Organic Carbon	27.0	mg/L	1.0	09/06/19 01:42	M1
EPA 9060A	Total Organic Carbon	25.9	mg/L	1.0	09/06/19 01:42	M1
EPA 9060A	Total Organic Carbon	26.0	mg/L	1.0	09/06/19 01:42	M1
EPA 9060A	Total Organic Carbon	26.5	mg/L	1.0	09/06/19 01:42	M1
EPA 9060A	Mean Total Organic Carbon	26.4	mg/L	1.0	09/06/19 01:42	M1
<b>92443188006</b>	<b>ES-1613</b>					
SM 2540C-2011	Total Dissolved Solids	530	mg/L	83.3	08/30/19 14:05	
EPA 6010D	Barium	163	ug/L	5.0	09/08/19 19:22	
EPA 6010D	Boron	2.1	mg/L	0.050	09/08/19 19:22	
EPA 6010D	Calcium	36.0	mg/L	0.10	09/08/19 19:22	
EPA 6010D	Molybdenum	2.6J	ug/L	5.0	09/08/19 19:22	
EPA 6010D	Nickel	8.2	ug/L	5.0	09/08/19 19:22	
EPA 6010D	Hardness, Total(SM 2340B)	164000	ug/L	662	09/08/19 19:22	
EPA 6010D	Zinc	8.5J	ug/L	10.0	09/08/19 19:22	BC
EPA 6020B	Cobalt	7.1	ug/L	0.20	09/07/19 08:48	D3
EPA 6020B	Iron	36700	ug/L	100	09/07/19 08:48	D3
EPA 6020B	Lithium	21.7	ug/L	5.0	09/07/19 08:48	D3
EPA 6020B	Manganese	903	ug/L	1.0	09/07/19 08:48	D3
EPA 6020B	Potassium	6550	ug/L	100	09/07/19 08:48	D3
EPA 6020B	Sodium	70700	ug/L	2500	09/09/19 23:26	D3
EPA 9315	Radium-226	1.13 ± 0.407 (0.374) C:94% T:NA	pCi/L		09/20/19 08:53	
EPA 9320	Radium-228	1.26 ± 0.463 (0.686) C:83% T:81%	pCi/L		09/20/19 11:52	

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**SUMMARY OF DETECTION**

Project: PP - Pond E (D)

Pace Project No.: 92443188

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
<b>92443188006</b>	<b>ES-1613</b>					
Total Radium Calculation	Total Radium	2.39 ± 0.870 (1.06)	pCi/L		09/23/19 12:59	
EPA 9056A	Chloride	160	mg/L	3.0	09/05/19 05:25	
EPA 9056A	Fluoride	0.14	mg/L	0.10	09/03/19 21:23	
EPA 9056A	Sulfate	93.6	mg/L	1.0	09/03/19 21:23	
EPA 9060A	Total Organic Carbon	29.6	mg/L	1.0	09/06/19 07:47	
EPA 9060A	Total Organic Carbon	29.0	mg/L	1.0	09/06/19 07:47	
EPA 9060A	Total Organic Carbon	28.9	mg/L	1.0	09/06/19 07:47	
EPA 9060A	Total Organic Carbon	29.4	mg/L	1.0	09/06/19 07:47	
EPA 9060A	Mean Total Organic Carbon	29.2	mg/L	1.0	09/06/19 07:47	
<b>92443188007</b>	<b>POND E-Duplicate</b>					
SM 2540C-2011	Total Dissolved Solids	540	mg/L	83.3	08/30/19 14:05	
EPA 6010D	Barium	153	ug/L	5.0	09/08/19 19:25	
EPA 6010D	Beryllium	0.30J	ug/L	1.0	09/08/19 19:25	
EPA 6010D	Boron	2.0	mg/L	0.050	09/08/19 19:25	
EPA 6010D	Calcium	34.3	mg/L	0.10	09/08/19 19:25	
EPA 6010D	Molybdenum	2.3J	ug/L	5.0	09/08/19 19:25	
EPA 6010D	Nickel	7.7	ug/L	5.0	09/08/19 19:25	
EPA 6010D	Hardness, Total(SM 2340B)	156000	ug/L	662	09/08/19 19:25	
EPA 6010D	Zinc	9.4J	ug/L	10.0	09/08/19 19:25	BC
EPA 6020B	Cobalt	6.8	ug/L	0.20	09/07/19 08:55	D3
EPA 6020B	Iron	34300	ug/L	100	09/07/19 08:55	D3
EPA 6020B	Lithium	20.2	ug/L	5.0	09/07/19 08:55	D3
EPA 6020B	Manganese	847	ug/L	1.0	09/07/19 08:55	D3
EPA 6020B	Potassium	6210	ug/L	100	09/07/19 08:55	D3
EPA 6020B	Sodium	64400	ug/L	2500	09/09/19 23:34	D3
EPA 9315	Radium-226	0.796 ± 0.395 (0.572) C:89% T:NA	pCi/L		09/20/19 08:53	
EPA 9320	Radium-228	1.35 ± 0.496 (0.739) C:74% T:87%	pCi/L		09/20/19 11:52	
Total Radium Calculation	Total Radium	2.15 ± 0.891 (1.31)	pCi/L		09/23/19 12:59	
EPA 9056A	Chloride	162	mg/L	3.0	09/05/19 05:41	
EPA 9056A	Fluoride	0.093J	mg/L	0.10	09/03/19 21:38	
EPA 9056A	Sulfate	89.6	mg/L	1.0	09/03/19 21:38	
EPA 9060A	Total Organic Carbon	28.9	mg/L	1.0	09/06/19 08:00	
EPA 9060A	Total Organic Carbon	27.8	mg/L	1.0	09/06/19 08:00	
EPA 9060A	Total Organic Carbon	28.5	mg/L	1.0	09/06/19 08:00	
EPA 9060A	Total Organic Carbon	28.6	mg/L	1.0	09/06/19 08:00	
EPA 9060A	Mean Total Organic Carbon	28.4	mg/L	1.0	09/06/19 08:00	

**REPORT OF LABORATORY ANALYSIS**

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### SUMMARY OF DETECTION

Project: PP - Pond E (D)

Pace Project No.: 92443188

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
<b>92443193002</b>	<b>ED-24R</b>					
EPA 6010D	Barium	16.8	ug/L	5.0	09/08/19 19:00	
EPA 6010D	Boron	0.010J	mg/L	0.050	09/08/19 19:00	B
EPA 6010D	Calcium	1.9	mg/L	0.10	09/08/19 19:00	
EPA 6010D	Chromium	2.2J	ug/L	5.0	09/08/19 19:00	
EPA 6010D	Hardness, Total(SM 2340B)	8070	ug/L	662	09/08/19 19:00	
EPA 6010D	Zinc	6.9J	ug/L	10.0	09/08/19 19:00	BC
EPA 6020B	Cobalt	0.36	ug/L	0.10	09/06/19 14:47	
EPA 6020B	Iron	45.0J	ug/L	50.0	09/06/19 14:47	
EPA 6020B	Lead	0.14	ug/L	0.10	09/06/19 14:47	
EPA 6020B	Lithium	1.1J	ug/L	2.5	09/06/19 14:47	
EPA 6020B	Manganese	9.4	ug/L	0.50	09/06/19 14:47	
EPA 6020B	Potassium	2210	ug/L	50.0	09/06/19 14:47	
EPA 6020B	Sodium	1930	ug/L	250	09/06/19 14:47	
EPA 9315	Radium-226	0.750 ± 0.255 (0.251) C:83% T:NA	pCi/L		09/20/19 11:45	
EPA 9320	Radium-228	1.16 ± 0.461 (0.723) C:82% T:89%	pCi/L		09/20/19 13:42	
Total Radium Calculation	Total Radium	1.91 ± 0.716 (0.974)	pCi/L		09/23/19 11:58	
EPA 9056A	Chloride	2.4	mg/L	1.0	08/31/19 00:21	
EPA 9056A	Sulfate	1.9	mg/L	1.0	08/31/19 00:21	
EPA 9060A	Total Organic Carbon	13.5	mg/L	1.0	09/06/19 03:40	
EPA 9060A	Total Organic Carbon	13.0	mg/L	1.0	09/06/19 03:40	
EPA 9060A	Total Organic Carbon	13.4	mg/L	1.0	09/06/19 03:40	
EPA 9060A	Total Organic Carbon	13.3	mg/L	1.0	09/06/19 03:40	
EPA 9060A	Mean Total Organic Carbon	13.3	mg/L	1.0	09/06/19 03:40	

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### ANALYTICAL RESULTS

Project: PP - Pond E (D)

Pace Project No.: 92443188

Sample: ED-26      Lab ID: 92443188001      Collected: 08/27/19 08:21      Received: 08/27/19 14:24      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>2540C Total Dissolved Solids</b> Analytical Method: SM 2540C-2011									
Total Dissolved Solids	63.0	mg/L	25.0	25.0	1		08/29/19 10:59		
<b>6010 MET ICP</b> Analytical Method: EPA 6010D      Preparation Method: EPA 3010A									
Antimony	ND	ug/L	5.0	3.0	1	09/05/19 16:10	09/08/19 18:42	7440-36-0	
Arsenic	ND	ug/L	10.0	4.7	1	09/05/19 16:10	09/08/19 18:42	7440-38-2	
Barium	32.2	ug/L	5.0	1.0	1	09/05/19 16:10	09/08/19 18:42	7440-39-3	
Beryllium	ND	ug/L	1.0	0.20	1	09/05/19 16:10	09/08/19 18:42	7440-41-7	
Boron	0.013J	mg/L	0.050	0.0066	1	09/05/19 16:10	09/08/19 18:42	7440-42-8	B
Cadmium	ND	ug/L	1.0	0.40	1	09/05/19 16:10	09/08/19 18:42	7440-43-9	
Calcium	7.2	mg/L	0.10	0.024	1	09/05/19 16:10	09/08/19 18:42	7440-70-2	
Chromium	ND	ug/L	5.0	1.0	1	09/05/19 16:10	09/08/19 18:42	7440-47-3	
Copper	ND	ug/L	5.0	2.1	1	09/05/19 16:10	09/08/19 18:42	7440-50-8	
Molybdenum	ND	ug/L	5.0	0.90	1	09/05/19 16:10	09/08/19 18:42	7439-98-7	
Nickel	ND	ug/L	5.0	0.90	1	09/05/19 16:10	09/08/19 18:42	7440-02-0	
Selenium	ND	ug/L	10.0	4.7	1	09/05/19 16:10	09/08/19 18:42	7782-49-2	
Silver	ND	ug/L	5.0	2.5	1	09/05/19 16:10	09/08/19 18:42	7440-22-4	
Hardness, Total(SM 2340B)	27600	ug/L	662	131	1	09/05/19 16:10	09/08/19 18:42		
Vanadium	ND	ug/L	5.0	1.3	1	09/05/19 16:10	09/08/19 18:42	7440-62-2	
Zinc	ND	ug/L	10.0	3.9	1	09/05/19 16:10	09/08/19 18:42	7440-66-6	BC
<b>6020 MET ICPMS</b> Analytical Method: EPA 6020B      Preparation Method: EPA 3010A									
Cobalt	0.061J	ug/L	0.10	0.050	1	09/05/19 12:25	09/06/19 14:03	7440-48-4	
Iron	3320	ug/L	50.0	7.5	1	09/05/19 12:25	09/06/19 14:03	7439-89-6	
Lead	0.19	ug/L	0.10	0.050	1	09/05/19 12:25	09/06/19 14:03	7439-92-1	
Lithium	12.1	ug/L	2.5	0.42	1	09/05/19 12:25	09/06/19 14:03	7439-93-2	
Manganese	71.8	ug/L	0.50	0.14	1	09/05/19 12:25	09/06/19 14:03	7439-96-5	
Potassium	5130	ug/L	50.0	6.2	1	09/05/19 12:25	09/06/19 14:03	7440-09-7	
Sodium	1820	ug/L	250	14.3	1	09/05/19 12:25	09/06/19 14:03	7440-23-5	
Thallium	ND	ug/L	0.10	0.060	1	09/05/19 12:25	09/06/19 14:03	7440-28-0	
Tin	ND	ug/L	0.50	0.090	1	09/05/19 12:25	09/06/19 14:03	7440-31-5	
<b>7470 Mercury</b> Analytical Method: EPA 7470A      Preparation Method: EPA 7470A									
Mercury	ND	ug/L	0.20	0.10	1	09/03/19 14:35	09/04/19 17:34	7439-97-6	
<b>9065 Phenolics, Total</b> Analytical Method: EPA 9065      Preparation Method: EPA 9065									
Phenolics, Total Recoverable	ND	mg/L	0.050	0.050	1	09/06/19 15:50	09/06/19 19:54	64743-03-9	
<b>9056 IC anions 28 Days</b> Analytical Method: EPA 9056A									
Chloride	2.2	mg/L	1.0	0.60	1		08/30/19 22:39	16887-00-6	
Fluoride	0.17	mg/L	0.10	0.050	1		08/30/19 22:39	16984-48-8	
Sulfate	1.8	mg/L	1.0	0.50	1		08/30/19 22:39	14808-79-8	
<b>Total Organic Carbon,Asheville</b> Analytical Method: EPA 9060A									
Total Organic Carbon	12.5	mg/L	1.0	0.50	1		09/06/19 01:17	7440-44-0	
Total Organic Carbon	12.2	mg/L	1.0	0.50	1		09/06/19 01:17	7440-44-0	

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## ANALYTICAL RESULTS

Project: PP - Pond E (D)

Pace Project No.: 92443188

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**Sample: ED-26**      **Lab ID: 92443188001**      Collected: 08/27/19 08:21      Received: 08/27/19 14:24      Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>Total Organic Carbon, Asheville</b>									
Analytical Method: EPA 9060A									
Total Organic Carbon	<b>12.4</b>	mg/L	1.0	0.50	1		09/06/19 01:17	7440-44-0	
Total Organic Carbon	<b>12.6</b>	mg/L	1.0	0.50	1		09/06/19 01:17	7440-44-0	
Mean Total Organic Carbon	<b>12.4</b>	mg/L	1.0	0.50	1		09/06/19 01:17	7440-44-0	

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### ANALYTICAL RESULTS

Project: PP - Pond E (D)

Pace Project No.: 92443188

Sample: T-1615D      Lab ID: 92443188002      Collected: 08/27/19 11:27      Received: 08/27/19 14:24      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>2540C Total Dissolved Solids</b> Analytical Method: SM 2540C-2011									
Total Dissolved Solids	<b>215</b>	mg/L	25.0	25.0	1		08/29/19 11:00		
<b>6010 MET ICP</b> Analytical Method: EPA 6010D      Preparation Method: EPA 3010A									
Antimony	ND	ug/L	5.0	3.0	1	09/05/19 16:10	09/08/19 18:45	7440-36-0	
Arsenic	ND	ug/L	10.0	4.7	1	09/05/19 16:10	09/08/19 18:45	7440-38-2	
Barium	<b>104</b>	ug/L	5.0	1.0	1	09/05/19 16:10	09/08/19 18:45	7440-39-3	
Beryllium	<b>0.21J</b>	ug/L	1.0	0.20	1	09/05/19 16:10	09/08/19 18:45	7440-41-7	
Boron	<b>0.014J</b>	mg/L	0.050	0.0066	1	09/05/19 16:10	09/08/19 18:45	7440-42-8	B
Cadmium	ND	ug/L	1.0	0.40	1	09/05/19 16:10	09/08/19 18:45	7440-43-9	
Calcium	<b>17.3</b>	mg/L	0.10	0.024	1	09/05/19 16:10	09/08/19 18:45	7440-70-2	
Chromium	ND	ug/L	5.0	1.0	1	09/05/19 16:10	09/08/19 18:45	7440-47-3	
Copper	ND	ug/L	5.0	2.1	1	09/05/19 16:10	09/08/19 18:45	7440-50-8	
Molybdenum	ND	ug/L	5.0	0.90	1	09/05/19 16:10	09/08/19 18:45	7439-98-7	
Nickel	<b>2.2J</b>	ug/L	5.0	0.90	1	09/05/19 16:10	09/08/19 18:45	7440-02-0	
Selenium	ND	ug/L	10.0	4.7	1	09/05/19 16:10	09/08/19 18:45	7782-49-2	
Silver	ND	ug/L	5.0	2.5	1	09/05/19 16:10	09/08/19 18:45	7440-22-4	
Hardness, Total(SM 2340B)	<b>80300</b>	ug/L	662	131	1	09/05/19 16:10	09/08/19 18:45		
Vanadium	ND	ug/L	5.0	1.3	1	09/05/19 16:10	09/08/19 18:45	7440-62-2	
Zinc	<b>26.8</b>	ug/L	10.0	3.9	1	09/05/19 16:10	09/08/19 18:45	7440-66-6	BC
<b>6020 MET ICPMS</b> Analytical Method: EPA 6020B      Preparation Method: EPA 3010A									
Cobalt	<b>0.72</b>	ug/L	0.10	0.050	1	09/05/19 12:25	09/06/19 14:07	7440-48-4	
Iron	<b>10100</b>	ug/L	500	74.8	10	09/05/19 12:25	09/07/19 05:46	7439-89-6	
Lead	ND	ug/L	0.10	0.050	1	09/05/19 12:25	09/06/19 14:07	7439-92-1	
Lithium	<b>14.3</b>	ug/L	2.5	0.42	1	09/05/19 12:25	09/06/19 14:07	7439-93-2	
Manganese	<b>300</b>	ug/L	0.50	0.14	1	09/05/19 12:25	09/06/19 14:07	7439-96-5	
Potassium	<b>11400</b>	ug/L	500	61.9	10	09/05/19 12:25	09/07/19 05:46	7440-09-7	
Sodium	<b>8610</b>	ug/L	250	14.3	1	09/05/19 12:25	09/06/19 14:07	7440-23-5	
Thallium	ND	ug/L	0.10	0.060	1	09/05/19 12:25	09/06/19 14:07	7440-28-0	
Tin	ND	ug/L	0.50	0.090	1	09/05/19 12:25	09/06/19 14:07	7440-31-5	
<b>7470 Mercury</b> Analytical Method: EPA 7470A      Preparation Method: EPA 7470A									
Mercury	ND	ug/L	0.20	0.10	1	09/03/19 14:35	09/04/19 17:36	7439-97-6	
<b>9065 Phenolics, Total</b> Analytical Method: EPA 9065      Preparation Method: EPA 9065									
Phenolics, Total Recoverable	ND	mg/L	0.050	0.050	1	09/06/19 15:50	09/06/19 19:54	64743-03-9	
<b>9056 IC anions 28 Days</b> Analytical Method: EPA 9056A									
Chloride	<b>79.1</b>	mg/L	1.0	0.60	1		08/30/19 22:54	16887-00-6	
Fluoride	<b>0.16</b>	mg/L	0.10	0.050	1		08/30/19 22:54	16984-48-8	
Sulfate	<b>1.1</b>	mg/L	1.0	0.50	1		08/30/19 22:54	14808-79-8	
<b>Total Organic Carbon,Asheville</b> Analytical Method: EPA 9060A									
Total Organic Carbon	<b>14.6</b>	mg/L	1.0	0.50	1		09/06/19 01:29	7440-44-0	
Total Organic Carbon	<b>14.5</b>	mg/L	1.0	0.50	1		09/06/19 01:29	7440-44-0	

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## ANALYTICAL RESULTS

Project: PP - Pond E (D)

Pace Project No.: 92443188

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**Sample: T-1615D**      **Lab ID: 92443188002**      Collected: 08/27/19 11:27      Received: 08/27/19 14:24      Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>Total Organic Carbon,Asheville</b>									
Analytical Method: EPA 9060A									
Total Organic Carbon	<b>14.5</b>	mg/L	1.0	0.50	1		09/06/19 01:29	7440-44-0	
Total Organic Carbon	<b>14.4</b>	mg/L	1.0	0.50	1		09/06/19 01:29	7440-44-0	
Mean Total Organic Carbon	<b>14.5</b>	mg/L	1.0	0.50	1		09/06/19 01:29	7440-44-0	

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### ANALYTICAL RESULTS

Project: PP - Pond E (D)

Pace Project No.: 92443188

Sample: T-1615S      Lab ID: 92443188003      Collected: 08/27/19 12:13      Received: 08/27/19 14:24      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>2540C Total Dissolved Solids</b> Analytical Method: SM 2540C-2011									
Total Dissolved Solids	453	mg/L	83.3	83.3	1		08/29/19 11:00		
<b>6010 MET ICP</b> Analytical Method: EPA 6010D      Preparation Method: EPA 3010A									
Antimony	ND	ug/L	5.0	3.0	1	09/05/19 16:10	09/08/19 18:48	7440-36-0	
Arsenic	ND	ug/L	10.0	4.7	1	09/05/19 16:10	09/08/19 18:48	7440-38-2	
Barium	115	ug/L	5.0	1.0	1	09/05/19 16:10	09/08/19 18:48	7440-39-3	
Beryllium	ND	ug/L	1.0	0.20	1	09/05/19 16:10	09/08/19 18:48	7440-41-7	
Boron	0.57	mg/L	0.050	0.0066	1	09/05/19 16:10	09/08/19 18:48	7440-42-8	
Cadmium	ND	ug/L	1.0	0.40	1	09/05/19 16:10	09/08/19 18:48	7440-43-9	
Calcium	10.8	mg/L	0.10	0.024	1	09/05/19 16:10	09/08/19 18:48	7440-70-2	
Chromium	ND	ug/L	5.0	1.0	1	09/05/19 16:10	09/08/19 18:48	7440-47-3	
Copper	ND	ug/L	5.0	2.1	1	09/05/19 16:10	09/08/19 18:48	7440-50-8	
Molybdenum	7.1	ug/L	5.0	0.90	1	09/05/19 16:10	09/08/19 18:48	7439-98-7	
Nickel	16.9	ug/L	5.0	0.90	1	09/05/19 16:10	09/08/19 18:48	7440-02-0	
Selenium	ND	ug/L	10.0	4.7	1	09/05/19 16:10	09/08/19 18:48	7782-49-2	
Silver	ND	ug/L	5.0	2.5	1	09/05/19 16:10	09/08/19 18:48	7440-22-4	
Hardness, Total(SM 2340B)	60700	ug/L	662	131	1	09/05/19 16:10	09/08/19 18:48		
Vanadium	ND	ug/L	5.0	1.3	1	09/05/19 16:10	09/08/19 18:48	7440-62-2	
Zinc	16.9	ug/L	10.0	3.9	1	09/05/19 16:10	09/08/19 18:48	7440-66-6	BC
<b>6020 MET ICPMS</b> Analytical Method: EPA 6020B      Preparation Method: EPA 3010A									
Cobalt	21.4	ug/L	0.10	0.050	1	09/05/19 12:25	09/06/19 14:11	7440-48-4	
Iron	10500	ug/L	1000	150	20	09/05/19 12:25	09/07/19 05:50	7439-89-6	
Lead	0.082J	ug/L	0.10	0.050	1	09/05/19 12:25	09/06/19 14:11	7439-92-1	
Lithium	5.8	ug/L	2.5	0.42	1	09/05/19 12:25	09/06/19 14:11	7439-93-2	
Manganese	223	ug/L	0.50	0.14	1	09/05/19 12:25	09/06/19 14:11	7439-96-5	
Potassium	4130	ug/L	50.0	6.2	1	09/05/19 12:25	09/06/19 14:11	7440-09-7	
Sodium	136000	ug/L	5000	285	20	09/05/19 12:25	09/07/19 05:50	7440-23-5	
Thallium	0.070J	ug/L	0.10	0.060	1	09/05/19 12:25	09/06/19 14:11	7440-28-0	
Tin	ND	ug/L	0.50	0.090	1	09/05/19 12:25	09/06/19 14:11	7440-31-5	
<b>7470 Mercury</b> Analytical Method: EPA 7470A      Preparation Method: EPA 7470A									
Mercury	ND	ug/L	0.20	0.10	1	09/03/19 14:35	09/04/19 17:39	7439-97-6	
<b>9065 Phenolics, Total</b> Analytical Method: EPA 9065      Preparation Method: EPA 9065									
Phenolics, Total Recoverable	ND	mg/L	0.050	0.050	1	09/06/19 15:50	09/06/19 19:55	64743-03-9	
<b>9056 IC anions 28 Days</b> Analytical Method: EPA 9056A									
Chloride	215	mg/L	5.0	3.0	5		08/31/19 08:50	16887-00-6	
Fluoride	0.082J	mg/L	0.10	0.050	1		08/30/19 23:08	16984-48-8	
Sulfate	21.4	mg/L	1.0	0.50	1		08/30/19 23:08	14808-79-8	
<b>Total Organic Carbon,Asheville</b> Analytical Method: EPA 9060A									
Total Organic Carbon	31.3	mg/L	1.0	0.50	1		09/06/19 02:24	7440-44-0	
Total Organic Carbon	30.4	mg/L	1.0	0.50	1		09/06/19 02:24	7440-44-0	

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### ANALYTICAL RESULTS

Project: PP - Pond E (D)

Pace Project No.: 92443188

**Sample: T-1615S**      **Lab ID: 92443188003**      Collected: 08/27/19 12:13      Received: 08/27/19 14:24      Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>Total Organic Carbon, Asheville</b> Analytical Method: EPA 9060A									
Total Organic Carbon	<b>30.5</b>	mg/L	1.0	0.50	1		09/06/19 02:24	7440-44-0	
Total Organic Carbon	<b>30.8</b>	mg/L	1.0	0.50	1		09/06/19 02:24	7440-44-0	
Mean Total Organic Carbon	<b>30.8</b>	mg/L	1.0	0.50	1		09/06/19 02:24	7440-44-0	

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## ANALYTICAL RESULTS

Project: PP - Pond E (D)

Pace Project No.: 92443188

Sample: ES-3D		Lab ID: 92443188004		Collected: 08/27/19 13:34		Received: 08/27/19 14:24		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C-2011							
Total Dissolved Solids	<b>415</b>	mg/L	62.5	62.5	1		08/29/19 11:01		
<b>6010 MET ICP</b>		Analytical Method: EPA 6010D Preparation Method: EPA 3010A							
Antimony	ND	ug/L	5.0	3.0	1	09/05/19 16:10	09/08/19 18:51	7440-36-0	
Arsenic	ND	ug/L	10.0	4.7	1	09/05/19 16:10	09/08/19 18:51	7440-38-2	
Barium	<b>70.7</b>	ug/L	5.0	1.0	1	09/05/19 16:10	09/08/19 18:51	7440-39-3	
Beryllium	<b>0.52J</b>	ug/L	1.0	0.20	1	09/05/19 16:10	09/08/19 18:51	7440-41-7	
Boron	<b>0.84</b>	mg/L	0.050	0.0066	1	09/05/19 16:10	09/08/19 18:51	7440-42-8	
Cadmium	<b>0.73J</b>	ug/L	1.0	0.40	1	09/05/19 16:10	09/08/19 18:51	7440-43-9	
Calcium	<b>17.5</b>	mg/L	0.10	0.024	1	09/05/19 16:10	09/08/19 18:51	7440-70-2	
Chromium	ND	ug/L	5.0	1.0	1	09/05/19 16:10	09/08/19 18:51	7440-47-3	
Copper	<b>3.1J</b>	ug/L	5.0	2.1	1	09/05/19 16:10	09/08/19 18:51	7440-50-8	
Molybdenum	<b>4.0J</b>	ug/L	5.0	0.90	1	09/05/19 16:10	09/08/19 18:51	7439-98-7	
Nickel	<b>27.6</b>	ug/L	5.0	0.90	1	09/05/19 16:10	09/08/19 18:51	7440-02-0	
Selenium	ND	ug/L	10.0	4.7	1	09/05/19 16:10	09/08/19 18:51	7782-49-2	
Silver	ND	ug/L	5.0	2.5	1	09/05/19 16:10	09/08/19 18:51	7440-22-4	
Hardness, Total(SM 2340B)	<b>103000</b>	ug/L	662	131	1	09/05/19 16:10	09/08/19 18:51		
Vanadium	ND	ug/L	5.0	1.3	1	09/05/19 16:10	09/08/19 18:51	7440-62-2	
Zinc	<b>210</b>	ug/L	10.0	3.9	1	09/05/19 16:10	09/08/19 18:51	7440-66-6	BC
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020B Preparation Method: EPA 3010A							
Cobalt	<b>41.5</b>	ug/L	0.20	0.10	2	09/05/19 12:25	09/06/19 14:19	7440-48-4	
Iron	<b>8430</b>	ug/L	100	15.0	2	09/05/19 12:25	09/06/19 14:19	7439-89-6	
Lead	<b>0.12J</b>	ug/L	0.20	0.10	2	09/05/19 12:25	09/06/19 14:19	7439-92-1	
Lithium	<b>20.0</b>	ug/L	5.0	0.84	2	09/05/19 12:25	09/06/19 14:19	7439-93-2	
Manganese	<b>998</b>	ug/L	5.0	1.4	10	09/05/19 12:25	09/07/19 05:54	7439-96-5	
Potassium	<b>4370</b>	ug/L	100	12.4	2	09/05/19 12:25	09/06/19 14:19	7440-09-7	
Sodium	<b>81500</b>	ug/L	2500	143	10	09/05/19 12:25	09/07/19 05:54	7440-23-5	
Thallium	ND	ug/L	0.20	0.12	2	09/05/19 12:25	09/06/19 14:19	7440-28-0	D3
Tin	ND	ug/L	1.0	0.18	2	09/05/19 12:25	09/06/19 14:19	7440-31-5	D3
<b>7470 Mercury</b>		Analytical Method: EPA 7470A Preparation Method: EPA 7470A							
Mercury	ND	ug/L	0.20	0.10	1	09/03/19 14:35	09/04/19 17:41	7439-97-6	
<b>9065 Phenolics, Total</b>		Analytical Method: EPA 9065 Preparation Method: EPA 9065							
Phenolics, Total Recoverable	ND	mg/L	0.050	0.050	1	09/06/19 15:50	09/06/19 19:55	64743-03-9	
<b>9056 IC anions 28 Days</b>		Analytical Method: EPA 9056A							
Chloride	<b>117</b>	mg/L	2.0	1.2	2		08/31/19 09:05	16887-00-6	
Fluoride	<b>0.16</b>	mg/L	0.10	0.050	1		08/30/19 23:23	16984-48-8	
Sulfate	<b>109</b>	mg/L	2.0	1.0	2		08/31/19 09:05	14808-79-8	
<b>Total Organic Carbon,Asheville</b>		Analytical Method: EPA 9060A							
Total Organic Carbon	ND	mg/L	1.0	0.50	1		09/06/19 03:28	7440-44-0	
Total Organic Carbon	<b>0.52J</b>	mg/L	1.0	0.50	1		09/06/19 03:28	7440-44-0	

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### ANALYTICAL RESULTS

Project: PP - Pond E (D)

Pace Project No.: 92443188

**Sample: ES-3D**      **Lab ID: 92443188004**      Collected: 08/27/19 13:34      Received: 08/27/19 14:24      Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>Total Organic Carbon, Asheville</b> Analytical Method: EPA 9060A									
Total Organic Carbon	ND	mg/L	1.0	0.50	1		09/06/19 03:28	7440-44-0	
Total Organic Carbon	ND	mg/L	1.0	0.50	1		09/06/19 03:28	7440-44-0	
Mean Total Organic Carbon	ND	mg/L	1.0	0.50	1		09/06/19 03:28	7440-44-0	

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### ANALYTICAL RESULTS

Project: PP - Pond E (D)

Pace Project No.: 92443188

**Sample: ES-1609**      **Lab ID: 92443188005**      Collected: 08/28/19 08:18      Received: 08/29/19 13:40      Matrix: Water

Comments: • 1 container received opened and only had 200 ml remaining.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C-2011							
Total Dissolved Solids	<b>527</b>	mg/L	83.3	83.3	1		08/30/19 14:05		
<b>6010 MET ICP</b>		Analytical Method: EPA 6010D    Preparation Method: EPA 3010A							
Antimony	ND	ug/L	5.0	3.0	1	09/05/19 18:53	09/06/19 23:08	7440-36-0	
Arsenic	ND	ug/L	10.0	4.7	1	09/05/19 18:53	09/06/19 23:08	7440-38-2	
Barium	<b>107</b>	ug/L	5.0	1.0	1	09/05/19 18:53	09/06/19 23:08	7440-39-3	
Beryllium	ND	ug/L	1.0	0.50	1	09/05/19 18:53	09/07/19 12:54	7440-41-7	
Boron	<b>1.3</b>	mg/L	0.050	0.0066	1	09/05/19 18:53	09/06/19 23:08	7440-42-8	
Cadmium	ND	ug/L	1.0	0.40	1	09/05/19 18:53	09/06/19 23:08	7440-43-9	
Calcium	<b>23.4</b>	mg/L	0.10	0.024	1	09/05/19 18:53	09/06/19 23:08	7440-70-2	
Chromium	ND	ug/L	5.0	1.0	1	09/05/19 18:53	09/06/19 23:08	7440-47-3	
Copper	ND	ug/L	5.0	2.1	1	09/05/19 18:53	09/06/19 23:08	7440-50-8	
Molybdenum	<b>5.8</b>	ug/L	5.0	0.90	1	09/05/19 18:53	09/06/19 23:08	7439-98-7	
Nickel	<b>11.6</b>	ug/L	5.0	0.90	1	09/05/19 18:53	09/06/19 23:08	7440-02-0	
Selenium	ND	ug/L	10.0	4.7	1	09/05/19 18:53	09/06/19 23:08	7782-49-2	
Silver	ND	ug/L	5.0	2.5	1	09/05/19 18:53	09/06/19 23:08	7440-22-4	
Hardness, Total(SM 2340B)	<b>111000</b>	ug/L	662	662	1	09/05/19 18:53	09/07/19 12:54		
Vanadium	ND	ug/L	5.0	1.3	1	09/05/19 18:53	09/06/19 23:08	7440-62-2	
Zinc	<b>21.9</b>	ug/L	10.0	3.9	1	09/05/19 18:53	09/06/19 23:08	7440-66-6	
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020B    Preparation Method: EPA 3010A							
Cobalt	<b>16.7</b>	ug/L	0.15	0.075	1.5	09/05/19 18:53	09/07/19 07:48	7440-48-4	D3
Iron	<b>26000</b>	ug/L	75.0	11.2	1.5	09/05/19 18:53	09/07/19 07:48	7439-89-6	D3,M1
Lead	ND	ug/L	0.15	0.075	1.5	09/05/19 18:53	09/07/19 07:48	7439-92-1	D3
Lithium	<b>12.5</b>	ug/L	3.8	0.63	1.5	09/05/19 18:53	09/07/19 07:48	7439-93-2	D3
Manganese	<b>752</b>	ug/L	5.0	1.4	10	09/05/19 18:53	09/09/19 22:42	7439-96-5	D3,M6
Potassium	<b>6580</b>	ug/L	75.0	9.3	1.5	09/05/19 18:53	09/07/19 07:48	7440-09-7	D3
Sodium	<b>116000</b>	ug/L	5000	285	20	09/05/19 18:53	09/09/19 23:02	7440-23-5	D3,M6
Thallium	ND	ug/L	0.15	0.090	1.5	09/05/19 18:53	09/07/19 07:48	7440-28-0	D3
Tin	ND	ug/L	0.75	0.14	1.5	09/05/19 18:53	09/07/19 07:48	7440-31-5	D3
<b>7470 Mercury</b>		Analytical Method: EPA 7470A    Preparation Method: EPA 7470A							
Mercury	ND	ug/L	0.20	0.10	1	09/03/19 14:35	09/04/19 18:50	7439-97-6	
<b>9065 Phenolics, Total</b>		Analytical Method: EPA 9065    Preparation Method: EPA 9065							
Phenolics, Total Recoverable	ND	mg/L	0.050	0.050	1	09/06/19 17:20	09/06/19 20:05	64743-03-9	
<b>9056 IC anions 28 Days</b>		Analytical Method: EPA 9056A							
Chloride	<b>194</b>	mg/L	4.0	2.4	4		09/05/19 01:52	16887-00-6	M1
Fluoride	ND	mg/L	0.10	0.050	1		09/03/19 19:56	16984-48-8	M1,R1
Sulfate	<b>85.6</b>	mg/L	1.0	0.50	1		09/03/19 19:56	14808-79-8	M1
<b>Total Organic Carbon,Asheville</b>		Analytical Method: EPA 9060A							
Total Organic Carbon	<b>27.0</b>	mg/L	1.0	0.50	1		09/06/19 01:42	7440-44-0	M1

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: PP - Pond E (D)

Pace Project No.: 92443188

**Sample: ES-1609**      **Lab ID: 92443188005**      Collected: 08/28/19 08:18      Received: 08/29/19 13:40      Matrix: Water

Comments: • 1 container received opened and only had 200 ml remaining.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>Total Organic Carbon,Asheville</b>		Analytical Method: EPA 9060A							
Total Organic Carbon	<b>25.9</b>	mg/L	1.0	0.50	1		09/06/19 01:42	7440-44-0	M1
Total Organic Carbon	<b>26.0</b>	mg/L	1.0	0.50	1		09/06/19 01:42	7440-44-0	M1
Total Organic Carbon	<b>26.5</b>	mg/L	1.0	0.50	1		09/06/19 01:42	7440-44-0	M1
Mean Total Organic Carbon	<b>26.4</b>	mg/L	1.0	0.50	1		09/06/19 01:42	7440-44-0	M1

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## ANALYTICAL RESULTS

Project: PP - Pond E (D)

Pace Project No.: 92443188

Sample: ES-1613      Lab ID: 92443188006      Collected: 08/28/19 09:34      Received: 08/29/19 13:40      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>2540C Total Dissolved Solids</b> Analytical Method: SM 2540C-2011									
Total Dissolved Solids	530	mg/L	83.3	83.3	1		08/30/19 14:05		
<b>6010 MET ICP</b> Analytical Method: EPA 6010D      Preparation Method: EPA 3010A									
Antimony	ND	ug/L	5.0	3.0	1	09/05/19 16:10	09/08/19 19:22	7440-36-0	
Arsenic	ND	ug/L	10.0	4.7	1	09/05/19 16:10	09/08/19 19:22	7440-38-2	
Barium	163	ug/L	5.0	1.0	1	09/05/19 16:10	09/08/19 19:22	7440-39-3	
Beryllium	ND	ug/L	1.0	0.20	1	09/05/19 16:10	09/08/19 19:22	7440-41-7	
Boron	2.1	mg/L	0.050	0.0066	1	09/05/19 16:10	09/08/19 19:22	7440-42-8	
Cadmium	ND	ug/L	1.0	0.40	1	09/05/19 16:10	09/08/19 19:22	7440-43-9	
Calcium	36.0	mg/L	0.10	0.024	1	09/05/19 16:10	09/08/19 19:22	7440-70-2	
Chromium	ND	ug/L	5.0	1.0	1	09/05/19 16:10	09/08/19 19:22	7440-47-3	
Copper	ND	ug/L	5.0	2.1	1	09/05/19 16:10	09/08/19 19:22	7440-50-8	
Molybdenum	2.6J	ug/L	5.0	0.90	1	09/05/19 16:10	09/08/19 19:22	7439-98-7	
Nickel	8.2	ug/L	5.0	0.90	1	09/05/19 16:10	09/08/19 19:22	7440-02-0	
Selenium	ND	ug/L	10.0	4.7	1	09/05/19 16:10	09/08/19 19:22	7782-49-2	
Silver	ND	ug/L	5.0	2.5	1	09/05/19 16:10	09/08/19 19:22	7440-22-4	
Hardness, Total(SM 2340B)	164000	ug/L	662	131	1	09/05/19 16:10	09/08/19 19:22		
Vanadium	ND	ug/L	5.0	1.3	1	09/05/19 16:10	09/08/19 19:22	7440-62-2	
Zinc	8.5J	ug/L	10.0	3.9	1	09/05/19 16:10	09/08/19 19:22	7440-66-6	BC
<b>6020 MET ICPMS</b> Analytical Method: EPA 6020B      Preparation Method: EPA 3010A									
Cobalt	7.1	ug/L	0.20	0.10	2	09/05/19 18:53	09/07/19 08:48	7440-48-4	D3
Iron	36700	ug/L	100	15.0	2	09/05/19 18:53	09/07/19 08:48	7439-89-6	D3
Lead	ND	ug/L	0.20	0.10	2	09/05/19 18:53	09/07/19 08:48	7439-92-1	D3
Lithium	21.7	ug/L	5.0	0.84	2	09/05/19 18:53	09/07/19 08:48	7439-93-2	D3
Manganese	903	ug/L	1.0	0.28	2	09/05/19 18:53	09/07/19 08:48	7439-96-5	D3
Potassium	6550	ug/L	100	12.4	2	09/05/19 18:53	09/07/19 08:48	7440-09-7	D3
Sodium	70700	ug/L	2500	143	10	09/05/19 18:53	09/09/19 23:26	7440-23-5	D3
Thallium	ND	ug/L	0.20	0.12	2	09/05/19 18:53	09/07/19 08:48	7440-28-0	D3
Tin	ND	ug/L	1.0	0.18	2	09/05/19 18:53	09/07/19 08:48	7440-31-5	D3
<b>7470 Mercury</b> Analytical Method: EPA 7470A      Preparation Method: EPA 7470A									
Mercury	ND	ug/L	0.20	0.10	1	09/03/19 14:35	09/04/19 19:02	7439-97-6	
<b>9065 Phenolics, Total</b> Analytical Method: EPA 9065      Preparation Method: EPA 9065									
Phenolics, Total Recoverable	ND	mg/L	0.050	0.050	1	09/06/19 17:20	09/06/19 20:06	64743-03-9	
<b>9056 IC anions 28 Days</b> Analytical Method: EPA 9056A									
Chloride	160	mg/L	3.0	1.8	3		09/05/19 05:25	16887-00-6	
Fluoride	0.14	mg/L	0.10	0.050	1		09/03/19 21:23	16984-48-8	
Sulfate	93.6	mg/L	1.0	0.50	1		09/03/19 21:23	14808-79-8	
<b>Total Organic Carbon,Asheville</b> Analytical Method: EPA 9060A									
Total Organic Carbon	29.6	mg/L	1.0	0.50	1		09/06/19 07:47	7440-44-0	
Total Organic Carbon	29.0	mg/L	1.0	0.50	1		09/06/19 07:47	7440-44-0	

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## ANALYTICAL RESULTS

Project: PP - Pond E (D)

Pace Project No.: 92443188

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**Sample: ES-1613**      **Lab ID: 92443188006**      Collected: 08/28/19 09:34      Received: 08/29/19 13:40      Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>Total Organic Carbon, Asheville</b>									
Analytical Method: EPA 9060A									
Total Organic Carbon	<b>28.9</b>	mg/L	1.0	0.50	1		09/06/19 07:47	7440-44-0	
Total Organic Carbon	<b>29.4</b>	mg/L	1.0	0.50	1		09/06/19 07:47	7440-44-0	
Mean Total Organic Carbon	<b>29.2</b>	mg/L	1.0	0.50	1		09/06/19 07:47	7440-44-0	

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## ANALYTICAL RESULTS

Project: PP - Pond E (D)

Pace Project No.: 92443188

Sample: POND E-Duplicate      Lab ID: 92443188007      Collected: 08/28/19 10:01      Received: 08/29/19 13:40      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>2540C Total Dissolved Solids</b> Analytical Method: SM 2540C-2011									
Total Dissolved Solids	<b>540</b>	mg/L	83.3	83.3	1		08/30/19 14:05		
<b>6010 MET ICP</b> Analytical Method: EPA 6010D      Preparation Method: EPA 3010A									
Antimony	ND	ug/L	5.0	3.0	1	09/05/19 16:10	09/08/19 19:25	7440-36-0	
Arsenic	ND	ug/L	10.0	4.7	1	09/05/19 16:10	09/08/19 19:25	7440-38-2	
Barium	<b>153</b>	ug/L	5.0	1.0	1	09/05/19 16:10	09/08/19 19:25	7440-39-3	
Beryllium	<b>0.30J</b>	ug/L	1.0	0.20	1	09/05/19 16:10	09/08/19 19:25	7440-41-7	
Boron	<b>2.0</b>	mg/L	0.050	0.0066	1	09/05/19 16:10	09/08/19 19:25	7440-42-8	
Cadmium	ND	ug/L	1.0	0.40	1	09/05/19 16:10	09/08/19 19:25	7440-43-9	
Calcium	<b>34.3</b>	mg/L	0.10	0.024	1	09/05/19 16:10	09/08/19 19:25	7440-70-2	
Chromium	ND	ug/L	5.0	1.0	1	09/05/19 16:10	09/08/19 19:25	7440-47-3	
Copper	ND	ug/L	5.0	2.1	1	09/05/19 16:10	09/08/19 19:25	7440-50-8	
Molybdenum	<b>2.3J</b>	ug/L	5.0	0.90	1	09/05/19 16:10	09/08/19 19:25	7439-98-7	
Nickel	<b>7.7</b>	ug/L	5.0	0.90	1	09/05/19 16:10	09/08/19 19:25	7440-02-0	
Selenium	ND	ug/L	10.0	4.7	1	09/05/19 16:10	09/08/19 19:25	7782-49-2	
Silver	ND	ug/L	5.0	2.5	1	09/05/19 16:10	09/08/19 19:25	7440-22-4	
Hardness, Total(SM 2340B)	<b>156000</b>	ug/L	662	131	1	09/05/19 16:10	09/08/19 19:25		
Vanadium	ND	ug/L	5.0	1.3	1	09/05/19 16:10	09/08/19 19:25	7440-62-2	
Zinc	<b>9.4J</b>	ug/L	10.0	3.9	1	09/05/19 16:10	09/08/19 19:25	7440-66-6	BC
<b>6020 MET ICPMS</b> Analytical Method: EPA 6020B      Preparation Method: EPA 3010A									
Cobalt	<b>6.8</b>	ug/L	0.20	0.10	2	09/05/19 18:53	09/07/19 08:55	7440-48-4	D3
Iron	<b>34300</b>	ug/L	100	15.0	2	09/05/19 18:53	09/07/19 08:55	7439-89-6	D3
Lead	ND	ug/L	0.20	0.10	2	09/05/19 18:53	09/07/19 08:55	7439-92-1	D3
Lithium	<b>20.2</b>	ug/L	5.0	0.84	2	09/05/19 18:53	09/07/19 08:55	7439-93-2	D3
Manganese	<b>847</b>	ug/L	1.0	0.28	2	09/05/19 18:53	09/07/19 08:55	7439-96-5	D3
Potassium	<b>6210</b>	ug/L	100	12.4	2	09/05/19 18:53	09/07/19 08:55	7440-09-7	D3
Sodium	<b>64400</b>	ug/L	2500	143	10	09/05/19 18:53	09/09/19 23:34	7440-23-5	D3
Thallium	ND	ug/L	0.20	0.12	2	09/05/19 18:53	09/07/19 08:55	7440-28-0	D3
Tin	ND	ug/L	1.0	0.18	2	09/05/19 18:53	09/07/19 08:55	7440-31-5	D3
<b>7470 Mercury</b> Analytical Method: EPA 7470A      Preparation Method: EPA 7470A									
Mercury	ND	ug/L	0.20	0.10	1	09/03/19 14:35	09/04/19 19:04	7439-97-6	
<b>9065 Phenolics, Total</b> Analytical Method: EPA 9065      Preparation Method: EPA 9065									
Phenolics, Total Recoverable	ND	mg/L	0.050	0.050	1	09/06/19 17:20	09/06/19 20:06	64743-03-9	
<b>9056 IC anions 28 Days</b> Analytical Method: EPA 9056A									
Chloride	<b>162</b>	mg/L	3.0	1.8	3		09/05/19 05:41	16887-00-6	
Fluoride	<b>0.093J</b>	mg/L	0.10	0.050	1		09/03/19 21:38	16984-48-8	
Sulfate	<b>89.6</b>	mg/L	1.0	0.50	1		09/03/19 21:38	14808-79-8	
<b>Total Organic Carbon,Asheville</b> Analytical Method: EPA 9060A									
Total Organic Carbon	<b>28.9</b>	mg/L	1.0	0.50	1		09/06/19 08:00	7440-44-0	
Total Organic Carbon	<b>27.8</b>	mg/L	1.0	0.50	1		09/06/19 08:00	7440-44-0	

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### ANALYTICAL RESULTS

Project: PP - Pond E (D)

Pace Project No.: 92443188

<b>Sample: POND E-Duplicate</b>									
<b>Lab ID: 92443188007</b>									
Collected: 08/28/19 10:01 Received: 08/29/19 13:40 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>Total Organic Carbon, Asheville</b>									
Analytical Method: EPA 9060A									
Total Organic Carbon	<b>28.5</b>	mg/L	1.0	0.50	1		09/06/19 08:00	7440-44-0	
Total Organic Carbon	<b>28.6</b>	mg/L	1.0	0.50	1		09/06/19 08:00	7440-44-0	
Mean Total Organic Carbon	<b>28.4</b>	mg/L	1.0	0.50	1		09/06/19 08:00	7440-44-0	

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## ANALYTICAL RESULTS

Project: PP - Pond E (D)

Pace Project No.: 92443188

Sample: ED-24R      Lab ID: 92443193002      Collected: 08/27/19 09:48      Received: 08/27/19 14:24      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>2540C Total Dissolved Solids</b> Analytical Method: SM 2540C-2011									
Total Dissolved Solids	ND	mg/L	25.0	25.0	1		08/29/19 11:02		
<b>6010 MET ICP</b> Analytical Method: EPA 6010D      Preparation Method: EPA 3010A									
Antimony	ND	ug/L	5.0	3.0	1	09/05/19 16:10	09/08/19 19:00	7440-36-0	
Arsenic	ND	ug/L	10.0	4.7	1	09/05/19 16:10	09/08/19 19:00	7440-38-2	
Barium	16.8	ug/L	5.0	1.0	1	09/05/19 16:10	09/08/19 19:00	7440-39-3	
Beryllium	ND	ug/L	1.0	0.20	1	09/05/19 16:10	09/08/19 19:00	7440-41-7	
Boron	0.010J	mg/L	0.050	0.0066	1	09/05/19 16:10	09/08/19 19:00	7440-42-8	B
Cadmium	ND	ug/L	1.0	0.40	1	09/05/19 16:10	09/08/19 19:00	7440-43-9	
Calcium	1.9	mg/L	0.10	0.024	1	09/05/19 16:10	09/08/19 19:00	7440-70-2	
Chromium	2.2J	ug/L	5.0	1.0	1	09/05/19 16:10	09/08/19 19:00	7440-47-3	
Copper	ND	ug/L	5.0	2.1	1	09/05/19 16:10	09/08/19 19:00	7440-50-8	
Molybdenum	ND	ug/L	5.0	0.90	1	09/05/19 16:10	09/08/19 19:00	7439-98-7	
Nickel	ND	ug/L	5.0	0.90	1	09/05/19 16:10	09/08/19 19:00	7440-02-0	
Selenium	ND	ug/L	10.0	4.7	1	09/05/19 16:10	09/08/19 19:00	7782-49-2	
Silver	ND	ug/L	5.0	2.5	1	09/05/19 16:10	09/08/19 19:00	7440-22-4	
Hardness, Total(SM 2340B)	8070	ug/L	662	131	1	09/05/19 16:10	09/08/19 19:00		
Vanadium	ND	ug/L	5.0	1.3	1	09/05/19 16:10	09/08/19 19:00	7440-62-2	
Zinc	6.9J	ug/L	10.0	3.9	1	09/05/19 16:10	09/08/19 19:00	7440-66-6	BC
<b>6020 MET ICPMS</b> Analytical Method: EPA 6020B      Preparation Method: EPA 3010A									
Cobalt	0.36	ug/L	0.10	0.050	1	09/05/19 12:25	09/06/19 14:47	7440-48-4	
Iron	45.0J	ug/L	50.0	7.5	1	09/05/19 12:25	09/06/19 14:47	7439-89-6	
Lead	0.14	ug/L	0.10	0.050	1	09/05/19 12:25	09/06/19 14:47	7439-92-1	
Lithium	1.1J	ug/L	2.5	0.42	1	09/05/19 12:25	09/06/19 14:47	7439-93-2	
Manganese	9.4	ug/L	0.50	0.14	1	09/05/19 12:25	09/06/19 14:47	7439-96-5	
Potassium	2210	ug/L	50.0	6.2	1	09/05/19 12:25	09/06/19 14:47	7440-09-7	
Sodium	1930	ug/L	250	14.3	1	09/05/19 12:25	09/06/19 14:47	7440-23-5	
Thallium	ND	ug/L	0.10	0.060	1	09/05/19 12:25	09/06/19 14:47	7440-28-0	
Tin	ND	ug/L	0.50	0.090	1	09/05/19 12:25	09/06/19 14:47	7440-31-5	
<b>7470 Mercury</b> Analytical Method: EPA 7470A      Preparation Method: EPA 7470A									
Mercury	ND	ug/L	0.20	0.10	1	09/03/19 14:35	09/04/19 17:50	7439-97-6	
<b>9065 Phenolics, Total</b> Analytical Method: EPA 9065      Preparation Method: EPA 9065									
Phenolics, Total Recoverable	ND	mg/L	0.050	0.050	1	09/06/19 17:20	09/06/19 20:08	64743-03-9	
<b>9056 IC anions 28 Days</b> Analytical Method: EPA 9056A									
Chloride	2.4	mg/L	1.0	0.60	1		08/31/19 00:21	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		08/31/19 00:21	16984-48-8	
Sulfate	1.9	mg/L	1.0	0.50	1		08/31/19 00:21	14808-79-8	
<b>Total Organic Carbon,Asheville</b> Analytical Method: EPA 9060A									
Total Organic Carbon	13.5	mg/L	1.0	0.50	1		09/06/19 03:40	7440-44-0	
Total Organic Carbon	13.0	mg/L	1.0	0.50	1		09/06/19 03:40	7440-44-0	

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## ANALYTICAL RESULTS

Project: PP - Pond E (D)

Pace Project No.: 92443188

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**Sample: ED-24R**      **Lab ID: 92443193002**      Collected: 08/27/19 09:48      Received: 08/27/19 14:24      Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>Total Organic Carbon, Asheville</b>									
Analytical Method: EPA 9060A									
Total Organic Carbon	<b>13.4</b>	mg/L	1.0	0.50	1		09/06/19 03:40	7440-44-0	
Total Organic Carbon	<b>13.3</b>	mg/L	1.0	0.50	1		09/06/19 03:40	7440-44-0	
Mean Total Organic Carbon	<b>13.3</b>	mg/L	1.0	0.50	1		09/06/19 03:40	7440-44-0	

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### QUALITY CONTROL DATA

Project: PP - Pond E (D)

Pace Project No.: 92443188

QC Batch: 495138

Analysis Method: SM 2540C-2011

QC Batch Method: SM 2540C-2011

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 92443188001, 92443188002, 92443188003, 92443188004, 92443193002

METHOD BLANK: 2667835

Matrix: Water

Associated Lab Samples: 92443188001, 92443188002, 92443188003, 92443188004, 92443193002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	25.0	25.0	08/29/19 10:54	

LABORATORY CONTROL SAMPLE: 2667836

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	250	236	94	90-110	

SAMPLE DUPLICATE: 2667837

Parameter	Units	92443178001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	136	118	14	5	D6

SAMPLE DUPLICATE: 2667838

Parameter	Units	92443193001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	108	116	7	5	D6

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### QUALITY CONTROL DATA

Project: PP - Pond E (D)

Pace Project No.: 92443188

QC Batch: 495629

Analysis Method: EPA 7470A

QC Batch Method: EPA 7470A

Analysis Description: 7470 Mercury

Associated Lab Samples: 92443188001, 92443188002, 92443188003, 92443188004, 92443193002

METHOD BLANK: 2670079

Matrix: Water

Associated Lab Samples: 92443188001, 92443188002, 92443188003, 92443188004, 92443193002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.10	09/04/19 16:27	

LABORATORY CONTROL SAMPLE: 2670080

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	2.5	2.6	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2670081 2670082

Parameter	Units	2670081		2670082		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92443193001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Mercury	ug/L	ND	2.5	2.5	2.3	2.5	90	97	75-125	7	25

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### QUALITY CONTROL DATA

Project: PP - Pond E (D)  
Pace Project No.: 92443188

QC Batch: 495630 Analysis Method: EPA 7470A  
QC Batch Method: EPA 7470A Analysis Description: 7470 Mercury  
Associated Lab Samples: 92443188005, 92443188006, 92443188007

METHOD BLANK: 2670083 Matrix: Water  
Associated Lab Samples: 92443188005, 92443188006, 92443188007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.10	09/04/19 18:00	

LABORATORY CONTROL SAMPLE: 2670084

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	2.5	2.5	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2670085 2670086

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92443188005 Result	Spike Conc.	Spike Conc.	Conc.								
Mercury	ug/L	ND	2.5	2.5	2.4	2.3	96	93	75-125	4	25		

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### QUALITY CONTROL DATA

Project: PP - Pond E (D)

Pace Project No.: 92443188

Parameter	Units	2672613		2672614		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result								
Antimony	ug/L	ND	500	500	483	484	97	97	75-125	0	20		
Arsenic	ug/L	ND	500	500	479	478	96	95	75-125	0	20		
Barium	ug/L	30.7	500	500	548	548	103	103	75-125	0	20		
Beryllium	ug/L	0.25J	500	500	499	500	100	100	75-125	0	20		
Boron	mg/L	0.034J	0.5	0.5	0.53	0.53	100	100	75-125	0	20		
Cadmium	ug/L	ND	500	500	498	498	100	100	75-125	0	20		
Calcium	mg/L	9.8	5	5	14.3	14.4	91	93	75-125	1	20		
Chromium	ug/L	ND	500	500	520	518	104	103	75-125	0	20		
Copper	ug/L	2.2J	500	500	516	516	103	103	75-125	0	20		
Hardness, Total(SM 2340B)	ug/L	38000	33100	33100	68500	68900	92	93	75-125	0			
Molybdenum	ug/L	5.8	500	500	462	463	91	91	75-125	0	20		
Nickel	ug/L	ND	500	500	486	486	97	97	75-125	0	20		
Selenium	ug/L	ND	500	500	505	502	101	100	75-125	0	20		
Silver	ug/L	ND	250	250	249	246	100	99	75-125	1	20		
Vanadium	ug/L	ND	500	500	479	482	96	96	75-125	1	20		
Zinc	ug/L	5.6J	500	500	481	480	95	95	75-125	0	20		

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### QUALITY CONTROL DATA

Project: PP - Pond E (D)  
Pace Project No.: 92443188

QC Batch: 496271 Analysis Method: EPA 6010D  
QC Batch Method: EPA 3010A Analysis Description: 6010 MET  
Associated Lab Samples: 92443188005

METHOD BLANK: 2673007 Matrix: Water  
Associated Lab Samples: 92443188005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	ND	5.0	3.0	09/06/19 23:02	
Arsenic	ug/L	ND	10.0	4.7	09/06/19 23:02	
Barium	ug/L	ND	5.0	1.0	09/06/19 23:02	
Beryllium	ug/L	ND	1.0	0.50	09/07/19 12:48	
Boron	mg/L	ND	0.050	0.0066	09/06/19 23:02	
Cadmium	ug/L	0.47J	1.0	0.40	09/06/19 23:02	
Calcium	mg/L	ND	0.10	0.024	09/06/19 23:02	
Chromium	ug/L	ND	5.0	1.0	09/06/19 23:02	
Copper	ug/L	ND	5.0	2.1	09/06/19 23:02	
Hardness, Total(SM 2340B)	ug/L	ND	662	662	09/07/19 12:48	
Molybdenum	ug/L	ND	5.0	0.90	09/06/19 23:02	
Nickel	ug/L	ND	5.0	0.90	09/06/19 23:02	
Selenium	ug/L	ND	10.0	4.7	09/06/19 23:02	
Silver	ug/L	ND	5.0	2.5	09/06/19 23:02	
Vanadium	ug/L	ND	5.0	1.3	09/06/19 23:02	
Zinc	ug/L	ND	10.0	3.9	09/06/19 23:02	

LABORATORY CONTROL SAMPLE: 2673008

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	500	450	90	80-120	
Arsenic	ug/L	500	418	84	80-120	
Barium	ug/L	500	505	101	80-120	
Beryllium	ug/L	500	491	98	80-120	
Boron	mg/L	0.5	0.48	97	80-120	
Cadmium	ug/L	500	460	92	80-120	
Calcium	mg/L	5	5.0	100	80-120	
Chromium	ug/L	500	479	96	80-120	
Copper	ug/L	500	475	95	80-120	
Hardness, Total(SM 2340B)	ug/L	33100	32400	98	80-120	
Molybdenum	ug/L	500	434	87	80-120	
Nickel	ug/L	500	461	92	80-120	
Selenium	ug/L	500	440	88	80-120	
Silver	ug/L	250	234	94	80-120	
Vanadium	ug/L	500	477	95	80-120	
Zinc	ug/L	500	440	88	80-120	

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**QUALITY CONTROL DATA**

Project: PP - Pond E (D)

Pace Project No.: 92443188

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2673009												2673010	
Parameter	Units	92443188005 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
			Spike Conc.	Spike Conc.									
Antimony	ug/L	ND	500	500	470	470	94	94	75-125	0	20		
Arsenic	ug/L	ND	500	500	446	445	89	89	75-125	0	20		
Barium	ug/L	107	500	500	630	626	105	104	75-125	1	20		
Beryllium	ug/L	ND	500	500	509	509	102	102	75-125	0	20		
Boron	mg/L	1.3	0.5	0.5	1.8	1.9	109	110	75-125	0	20		
Cadmium	ug/L	ND	500	500	481	480	96	96	75-125	0	20		
Calcium	mg/L	23.4	5	5	29.0	28.9	112	111	75-125	0	20		
Chromium	ug/L	ND	500	500	494	491	99	98	75-125	0	20		
Copper	ug/L	ND	500	500	493	493	99	99	75-125	0	20		
Hardness, Total(SM 2340B)	ug/L	111000	33100	33100	148000	148000	112	111	75-125	0			
Molybdenum	ug/L	5.8	500	500	450	450	89	89	75-125	0	20		
Nickel	ug/L	11.6	500	500	479	480	93	94	75-125	0	20		
Selenium	ug/L	ND	500	500	473	474	95	95	75-125	0	20		
Silver	ug/L	ND	250	250	241	240	96	96	75-125	0	20		
Vanadium	ug/L	ND	500	500	501	502	100	100	75-125	0	20		
Zinc	ug/L	21.9	500	500	474	473	90	90	75-125	0	20		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2673011												2673012	
Parameter	Units	92443549001 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
			Spike Conc.	Spike Conc.									
Antimony	ug/L	ND	500	500	468	459	94	92	75-125	2	20		
Arsenic	ug/L	ND	500	500	438	433	87	86	75-125	1	20		
Barium	ug/L	62.1	500	500	586	576	105	103	75-125	2	20		
Beryllium	ug/L	0.60J	500	500	513	505	103	101	75-125	2	20		
Boron	mg/L	0.0088J	0.5	0.5	0.52	0.51	102	100	75-125	2	20		
Cadmium	ug/L	ND	500	500	487	478	97	96	75-125	2	20		
Calcium	mg/L	5.9	5	5	11.1	11.1	104	104	75-125	0	20		
Chromium	ug/L	ND	500	500	503	492	100	98	75-125	2	20		
Copper	ug/L	4.9J	500	500	501	491	99	97	75-125	2	20		
Hardness, Total(SM 2340B)	ug/L	29700	33100	33100	64200	64000	105	104	75-125	0			
Molybdenum	ug/L	ND	500	500	441	432	88	86	75-125	2	20		
Nickel	ug/L	6.2	500	500	482	474	95	94	75-125	2	20		
Selenium	ug/L	ND	500	500	483	469	97	94	75-125	3	20		
Silver	ug/L	ND	250	250	242	238	97	95	75-125	2	20		
Vanadium	ug/L	ND	500	500	497	488	99	97	75-125	2	20		
Zinc	ug/L	ND	500	500	463	452	92	90	75-125	2	20		

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**QUALITY CONTROL DATA**

Project: PP - Pond E (D)

Pace Project No.: 92443188

QC Batch: 496148 Analysis Method: EPA 6020B  
 QC Batch Method: EPA 3010A Analysis Description: 6020 MET  
 Associated Lab Samples: 92443188001, 92443188002, 92443188003, 92443188004, 92443193002

METHOD BLANK: 2672412 Matrix: Water  
 Associated Lab Samples: 92443188001, 92443188002, 92443188003, 92443188004, 92443193002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Cobalt	ug/L	ND	0.10	0.050	09/06/19 13:00	
Iron	ug/L	ND	50.0	7.5	09/06/19 13:00	
Lead	ug/L	ND	0.10	0.050	09/06/19 13:00	
Lithium	ug/L	ND	2.5	0.42	09/06/19 13:00	
Manganese	ug/L	ND	0.50	0.14	09/06/19 13:00	
Potassium	ug/L	ND	50.0	6.2	09/06/19 13:00	
Sodium	ug/L	ND	250	14.3	09/06/19 13:00	
Thallium	ug/L	ND	0.10	0.060	09/06/19 13:00	
Tin	ug/L	ND	0.50	0.090	09/06/19 13:00	

LABORATORY CONTROL SAMPLE: 2672413

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cobalt	ug/L	10	9.0	90	80-120	
Iron	ug/L	625	564	90	80-120	
Lead	ug/L	50	45.6	91	80-120	
Lithium	ug/L	50	45.6	91	80-120	
Manganese	ug/L	50	44.4	89	80-120	
Potassium	ug/L	625	558	89	80-120	
Sodium	ug/L	625	555	89	80-120	
Thallium	ug/L	10	9.1	91	80-120	
Tin	ug/L	50	44.8	90	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2672414 2672415

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		92443193001 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
Cobalt	ug/L	0.31	10	10	8.9	9.0	85	87	75-125	1	20	
Iron	ug/L	1660	625	625	2160	2200	81	87	75-125	2	20	
Lead	ug/L	ND	50	50	44.3	44.7	88	89	75-125	1	20	
Lithium	ug/L	9.9	50	50	52.9	53.8	86	88	75-125	2	20	
Manganese	ug/L	183	50	50	224	227	82	89	75-125	2	20	
Potassium	ug/L	5790	625	625	6240	6430	73	103	75-125	3	20	M1
Sodium	ug/L	15400	625	625	15700	16200	44	128	75-125	3	20	M6
Thallium	ug/L	ND	10	10	8.8	9.0	88	90	75-125	2	20	
Tin	ug/L	ND	50	50	43.4	44.3	87	89	75-125	2	20	

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### QUALITY CONTROL DATA

Project: PP - Pond E (D)

Pace Project No.: 92443188

QC Batch: 496281 Analysis Method: EPA 6020B  
QC Batch Method: EPA 3010A Analysis Description: 6020 MET  
Associated Lab Samples: 92443188005, 92443188006, 92443188007

METHOD BLANK: 2673055 Matrix: Water

Associated Lab Samples: 92443188005, 92443188006, 92443188007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Cobalt	ug/L	ND	0.10	0.050	09/07/19 07:40	
Iron	ug/L	ND	50.0	7.5	09/07/19 07:40	
Lead	ug/L	ND	0.10	0.050	09/07/19 07:40	
Lithium	ug/L	ND	2.5	0.42	09/07/19 07:40	
Manganese	ug/L	ND	0.50	0.14	09/07/19 07:40	
Potassium	ug/L	ND	50.0	6.2	09/07/19 07:40	
Sodium	ug/L	ND	250	14.3	09/07/19 07:40	
Thallium	ug/L	ND	0.10	0.060	09/07/19 07:40	
Tin	ug/L	ND	0.50	0.090	09/07/19 07:40	

LABORATORY CONTROL SAMPLE: 2673056

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cobalt	ug/L	10	10.3	103	80-120	
Iron	ug/L	625	649	104	80-120	
Lead	ug/L	50	52.5	105	80-120	
Lithium	ug/L	50	53.0	106	80-120	
Manganese	ug/L	50	51.7	103	80-120	
Potassium	ug/L	625	640	102	80-120	
Sodium	ug/L	625	651	104	80-120	
Thallium	ug/L	10	10.5	105	80-120	
Tin	ug/L	50	50.8	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2673057 2673058

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		92443188005 Result	Spike Conc.	Spike Conc.	Result							Result
Cobalt	ug/L	16.7	10	10	26.6	26.3	99	96	75-125	1	20	
Iron	ug/L	26000	625	625	26400	25900	74	-5	75-125	2	20	M1
Lead	ug/L	ND	50	50	52.2	53.4	104	107	75-125	2	20	
Lithium	ug/L	12.5	50	50	63.4	58.5	102	92	75-125	8	20	
Manganese	ug/L	752	50	50	733	763	-37	22	75-125	4	20	M6
Potassium	ug/L	6580	625	625	7240	7130	105	87	75-125	2	20	
Sodium	ug/L	116000	625	625	96300	98500	-3160	-2810	75-125	2	20	M6
Thallium	ug/L	ND	10	10	10.7	10.7	106	106	75-125	0	20	
Tin	ug/L	ND	50	50	51.4	50.8	103	102	75-125	1	20	

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### QUALITY CONTROL DATA

Project: PP - Pond E (D)

Pace Project No.: 92443188

Parameter	Units	2673059		2673060		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92443549001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Cobalt	ug/L	11.1	10	10	21.6	21.5	105	104	75-125	1	20		
Iron	ug/L	280	625	625	1000	1020	115	118	75-125	2	20		
Lead	ug/L	0.19	50	50	53.1	51.6	106	103	75-125	3	20		
Lithium	ug/L	9.4	50	50	62.3	62.2	106	106	75-125	0	20		
Manganese	ug/L	166	50	50	218	220	104	109	75-125	1	20		
Potassium	ug/L	5470	625	625	6250	6090	126	100	75-125	3	20	M1	
Sodium	ug/L	7410	625	625	8230	8010	132	96	75-125	3	20	M1	
Thallium	ug/L	ND	10	10	10.7	10.4	106	103	75-125	3	20		
Tin	ug/L	ND	50	50	50.5	50.1	101	100	75-125	1	20		

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### QUALITY CONTROL DATA

Project: PP - Pond E (D)

Pace Project No.: 92443188

QC Batch: 34869

Analysis Method: EPA 9065

QC Batch Method: EPA 9065

Analysis Description: 9065 Phenolics

Associated Lab Samples: 92443188001, 92443188002, 92443188003, 92443188004

METHOD BLANK: 156873

Matrix: Water

Associated Lab Samples: 92443188001, 92443188002, 92443188003, 92443188004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Phenolics, Total Recoverable	mg/L	ND	0.050	0.050	09/06/19 19:49	

LABORATORY CONTROL SAMPLE: 156874

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenolics, Total Recoverable	mg/L	0.5	0.42	84	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 156875 156876

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92443178001 Result	Spike Conc.	Spike Conc.	Conc.								
Phenolics, Total Recoverable	mg/L	ND	0.5	0.5	0.39	0.36	74	69	80-120	6	20	M1	

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### QUALITY CONTROL DATA

Project: PP - Pond E (D)  
Pace Project No.: 92443188

QC Batch: 34882 Analysis Method: EPA 9065  
QC Batch Method: EPA 9065 Analysis Description: 9065 Phenolics  
Associated Lab Samples: 92443188005, 92443188006, 92443188007, 92443193002

METHOD BLANK: 156985 Matrix: Water  
Associated Lab Samples: 92443188005, 92443188006, 92443188007, 92443193002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Phenolics, Total Recoverable	mg/L	ND	0.050	0.050	09/06/19 20:03	

LABORATORY CONTROL SAMPLE: 156986

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenolics, Total Recoverable	mg/L	0.5	0.44	87	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 156989 156990

Parameter	Units	92443193001		156989		156990		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec				
Phenolics, Total Recoverable	mg/L	ND	0.5	0.5	0.38	0.38	74	74	80-120	0	20 M1

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### QUALITY CONTROL DATA

Project: PP - Pond E (D)

Pace Project No.: 92443188

QC Batch: 495319 Analysis Method: EPA 9056A  
 QC Batch Method: EPA 9056A Analysis Description: 9056 IC anions 28 Days  
 Associated Lab Samples: 92443188001, 92443188002, 92443188003, 92443188004, 92443193002

METHOD BLANK: 2668844 Matrix: Water  
 Associated Lab Samples: 92443188001, 92443188002, 92443188003, 92443188004, 92443193002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	08/30/19 20:14	
Fluoride	mg/L	ND	0.10	0.050	08/30/19 20:14	
Sulfate	mg/L	ND	1.0	0.50	08/30/19 20:14	

LABORATORY CONTROL SAMPLE: 2668845

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	52.1	104	90-110	
Fluoride	mg/L	2.5	2.6	105	90-110	
Sulfate	mg/L	50	52.2	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2668846 2668847

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92443178001 Result	Spike Conc.	Spike Conc.	Conc.								
Chloride	mg/L	37.7	50	50	50	93.0	94.3	111	113	90-110	1	10	M1
Fluoride	mg/L	ND	2.5	2.5	2.5	3.1	3.0	123	118	90-110	4	10	M1
Sulfate	mg/L	62.2	50	50	50	108	110	92	95	90-110	1	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2668848 2668849

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92443193001 Result	Spike Conc.	Spike Conc.	Conc.								
Chloride	mg/L	2.8	50	50	50	60.2	60.3	115	115	90-110	0	10	M1
Fluoride	mg/L	0.36	2.5	2.5	2.5	3.1	3.1	110	110	90-110	0	10	
Sulfate	mg/L	13.2	50	50	50	70.3	70.5	114	115	90-110	0	10	M1

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### QUALITY CONTROL DATA

Project: PP - Pond E (D)  
Pace Project No.: 92443188

QC Batch: 495640 Analysis Method: EPA 9056A  
QC Batch Method: EPA 9056A Analysis Description: 9056 IC anions 28 Days  
Associated Lab Samples: 92443188005, 92443188006, 92443188007

METHOD BLANK: 2670138 Matrix: Water  
Associated Lab Samples: 92443188005, 92443188006, 92443188007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	09/03/19 19:27	
Fluoride	mg/L	ND	0.10	0.050	09/03/19 19:27	
Sulfate	mg/L	ND	1.0	0.50	09/03/19 19:27	

LABORATORY CONTROL SAMPLE: 2670139

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	51.7	103	90-110	
Fluoride	mg/L	2.5	2.6	104	90-110	
Sulfate	mg/L	50	50.3	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2670140 2670141

Parameter	Units	92443188005		2670140		2670141		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec				
Chloride	mg/L	194	50	50	248	237	108	86	5	10	M1
Fluoride	mg/L	ND	2.5	2.5	3.3	2.9	132	116	13	10	M1,R1
Sulfate	mg/L	85.6	50	50	118	113	66	55	5	10	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2670174 2670175

Parameter	Units	92443549001		2670174		2670175		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec				
Chloride	mg/L	2.8	50	50	45.6	55.0	86	105	19	10	M1,R1
Fluoride	mg/L	ND	2.5	2.5	1.3	2.1	50	84	50	10	M1,R1
Sulfate	mg/L	41.4	50	50	72.1	91.6	62	100	24	10	M1,R1

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### QUALITY CONTROL DATA

Project: PP - Pond E (D)

Pace Project No.: 92443188

QC Batch:	496159	Analysis Method:	EPA 9060A
QC Batch Method:	EPA 9060A	Analysis Description:	9060 TOC, AVL
Associated Lab Samples:	92443188001, 92443188002, 92443188003, 92443188004, 92443188005, 92443193002		

METHOD BLANK:	2672474	Matrix:	Water
Associated Lab Samples:	92443188001, 92443188002, 92443188003, 92443188004, 92443188005, 92443193002		

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mean Total Organic Carbon	mg/L	ND	1.0	0.50	09/05/19 20:48	
Total Organic Carbon	mg/L	ND	1.0	0.50	09/05/19 20:48	
Total Organic Carbon	mg/L	ND	1.0	0.50	09/05/19 20:48	
Total Organic Carbon	mg/L	ND	1.0	0.50	09/05/19 20:48	
Total Organic Carbon	mg/L	ND	1.0	0.50	09/05/19 20:48	

LABORATORY CONTROL SAMPLE: 2672475

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mean Total Organic Carbon	mg/L	25	24.4	97	75-125	
Total Organic Carbon	mg/L	25	24.2	97	75-125	
Total Organic Carbon	mg/L	25	24.4	97	75-125	
Total Organic Carbon	mg/L	25	24.4	97	75-125	
Total Organic Carbon	mg/L	25	24.5	98	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2672476 2672477

Parameter	Units	92443193001		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Mean Total Organic Carbon	mg/L	0.57J	25	25	43.1	43.7	170	172	75-125	1	25	M1	
Total Organic Carbon	mg/L	0.57J	25	25	43.0	43.2	170	171	75-125	1	25	M1	
Total Organic Carbon	mg/L	0.55J	25	25	43.0	44.1	170	174	75-125	3	25	M1	
Total Organic Carbon	mg/L	0.58J	25	25	43.8	43.9	173	173	75-125	0	25	M1	
Total Organic Carbon	mg/L	0.56J	25	25	42.7	43.4	168	171	75-125	2	25	M1	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2672478 2672479

Parameter	Units	92443188005		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Mean Total Organic Carbon	mg/L	26.4	25	25	44.1	44.0	71	71	75-125	0	25	M1	
Total Organic Carbon	mg/L	25.9	25	25	43.8	44.4	72	74	75-125	1	25	M1	
Total Organic Carbon	mg/L	26.5	25	25	44.4	43.9	72	70	75-125	1	25	M1	
Total Organic Carbon	mg/L	27.0	25	25	44.1	44.1	68	68	75-125	0	25	M1	
Total Organic Carbon	mg/L	26.0	25	25	44.2	43.8	73	71	75-125	1	25	M1	

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### QUALITY CONTROL DATA

Project: PP - Pond E (D)  
Pace Project No.: 92443188

QC Batch: 496160 Analysis Method: EPA 9060A  
QC Batch Method: EPA 9060A Analysis Description: 9060 TOC, AVL  
Associated Lab Samples: 92443188006, 92443188007

METHOD BLANK: 2672480 Matrix: Water  
Associated Lab Samples: 92443188006, 92443188007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mean Total Organic Carbon	mg/L	ND	1.0	0.50	09/06/19 06:12	
Total Organic Carbon	mg/L	ND	1.0	0.50	09/06/19 06:12	
Total Organic Carbon	mg/L	ND	1.0	0.50	09/06/19 06:12	
Total Organic Carbon	mg/L	ND	1.0	0.50	09/06/19 06:12	
Total Organic Carbon	mg/L	ND	1.0	0.50	09/06/19 06:12	

LABORATORY CONTROL SAMPLE: 2672481

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mean Total Organic Carbon	mg/L	25	24.3	97	75-125	
Total Organic Carbon	mg/L	25	24.2	97	75-125	
Total Organic Carbon	mg/L	25	24.4	97	75-125	
Total Organic Carbon	mg/L	25	24.0	96	75-125	
Total Organic Carbon	mg/L	25	24.5	98	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2672482 2672483

Parameter	Units	92443549001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mean Total Organic Carbon	mg/L	ND	25	25	30.8	29.4	123	117	75-125	5	25	
Total Organic Carbon	mg/L	ND	25	25	30.4	29.5	122	118	75-125	3	25	
Total Organic Carbon	mg/L	ND	25	25	31.0	29.3	124	117	75-125	5	25	
Total Organic Carbon	mg/L	ND	25	25	30.7	29.4	123	118	75-125	4	25	
Total Organic Carbon	mg/L	ND	25	25	31.0	29.2	124	117	75-125	6	25	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2672484 2672485

Parameter	Units	92443549002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mean Total Organic Carbon	mg/L	19.9	25	25	29.9	35.2	40	61	75-125	16	25	M1
Total Organic Carbon	mg/L	19.5	25	25	30.1	35.2	43	63	75-125	16	25	M1
Total Organic Carbon	mg/L	19.9	25	25	30.0	35.2	41	61	75-125	16	25	M1
Total Organic Carbon	mg/L	20.3	25	25	29.7	35.2	37	60	75-125	17	25	M1
Total Organic Carbon	mg/L	19.8	25	25	29.9	35.1	40	61	75-125	16	25	M1

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PP - Pond E (D)

Pace Project No.: 92443188

**Sample: ED-26**      **Lab ID: 92443188001**      Collected: 08/27/19 08:21      Received: 08/27/19 14:24      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.348 ± 0.292 (0.547)</b> C:93% T:NA	pCi/L	09/20/19 07:11	13982-63-3	
Radium-228	EPA 9320	<b>0.878 ± 0.451 (0.796)</b> C:77% T:81%	pCi/L	09/20/19 14:59	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.23 ± 0.743 (1.34)</b>	pCi/L	09/23/19 12:59	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PP - Pond E (D)

Pace Project No.: 92443188

**Sample: T-1615D**      **Lab ID: 92443188002**      Collected: 08/27/19 11:27      Received: 08/27/19 14:24      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.634 ± 0.347 (0.515)</b> <b>C:87% T:NA</b>	pCi/L	09/20/19 07:11	13982-63-3	
Radium-228	EPA 9320	<b>0.818 ± 0.453 (0.831)</b> <b>C:76% T:90%</b>	pCi/L	09/20/19 15:00	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.45 ± 0.800 (1.35)</b>	pCi/L	09/23/19 12:59	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PP - Pond E (D)

Pace Project No.: 92443188

**Sample: T-1615S**      **Lab ID: 92443188003**      Collected: 08/27/19 12:13      Received: 08/27/19 14:24      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>1.33 ± 0.466 (0.402)</b> <b>C:89% T:NA</b>	pCi/L	09/20/19 07:12	13982-63-3	
Radium-228	EPA 9320	<b>2.11 ± 0.681 (0.917)</b> <b>C:65% T:86%</b>	pCi/L	09/20/19 15:00	15262-20-1	
Total Radium	Total Radium Calculation	<b>3.44 ± 1.15 (1.32)</b>	pCi/L	09/23/19 12:59	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PP - Pond E (D)

Pace Project No.: 92443188

**Sample: ES-3D**      **Lab ID: 92443188004**      Collected: 08/27/19 13:34      Received: 08/27/19 14:24      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.629 ± 0.341 (0.495)</b> C:94% T:NA	pCi/L	09/20/19 07:12	13982-63-3	
Radium-228	EPA 9320	<b>1.20 ± 0.612 (1.10)</b> C:71% T:79%	pCi/L	09/20/19 15:46	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.83 ± 0.953 (1.60)</b>	pCi/L	09/23/19 12:59	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PP - Pond E (D)

Pace Project No.: 92443188

**Sample: ES-1609**      **Lab ID: 92443188005**      Collected: 08/28/19 08:18      Received: 08/29/19 13:40      Matrix: Water

PWS:      Site ID:      Sample Type:

Comments: • 1 container received opened and only had 200 ml remaining.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>1.25 ± 0.559 (0.591)</b> <b>C:97% T:NA</b>	pCi/L	09/20/19 07:12	13982-63-3	
Radium-228	EPA 9320	<b>1.44 ± 0.532 (0.758)</b> <b>C:72% T:76%</b>	pCi/L	09/20/19 15:00	15262-20-1	
Total Radium	Total Radium Calculation	<b>2.69 ± 1.09 (1.35)</b>	pCi/L	09/23/19 12:59	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PP - Pond E (D)

Pace Project No.: 92443188

**Sample: ES-1613**      **Lab ID: 92443188006**      Collected: 08/28/19 09:34      Received: 08/29/19 13:40      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>1.13 ± 0.407 (0.374)</b> C:94% T:NA	pCi/L	09/20/19 08:53	13982-63-3	
Radium-228	EPA 9320	<b>1.26 ± 0.463 (0.686)</b> C:83% T:81%	pCi/L	09/20/19 11:52	15262-20-1	
Total Radium	Total Radium Calculation	<b>2.39 ± 0.870 (1.06)</b>	pCi/L	09/23/19 12:59	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PP - Pond E (D)

Pace Project No.: 92443188

**Sample: POND E-Duplicate**      **Lab ID: 92443188007**      Collected: 08/28/19 10:01      Received: 08/29/19 13:40      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.796 ± 0.395 (0.572)</b> C:89% T:NA	pCi/L	09/20/19 08:53	13982-63-3	
Radium-228	EPA 9320	<b>1.35 ± 0.496 (0.739)</b> C:74% T:87%	pCi/L	09/20/19 11:52	15262-20-1	
Total Radium	Total Radium Calculation	<b>2.15 ± 0.891 (1.31)</b>	pCi/L	09/23/19 12:59	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PP - Pond E (D)

Pace Project No.: 92443188

**Sample: ED-24R**      **Lab ID: 92443193002**      Collected: 08/27/19 09:48      Received: 08/27/19 14:24      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.750 ± 0.255 (0.251)</b> C:83% T:NA	pCi/L	09/20/19 11:45	13982-63-3	
Radium-228	EPA 9320	<b>1.16 ± 0.461 (0.723)</b> C:82% T:89%	pCi/L	09/20/19 13:42	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.91 ± 0.716 (0.974)</b>	pCi/L	09/23/19 11:58	7440-14-4	

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: PP - Pond E (D)

Pace Project No.: 92443188

QC Batch: 360247

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Associated Lab Samples: 92443188001, 92443188002, 92443188003, 92443188004, 92443188005, 92443193002

METHOD BLANK: 1748643

Matrix: Water

Associated Lab Samples: 92443188001, 92443188002, 92443188003, 92443188004, 92443188005, 92443193002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.372 ± 0.173 (0.236) C:90% T:NA	pCi/L	09/20/19 15:10	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: PP - Pond E (D)

Pace Project No.: 92443188

QC Batch: 361438

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Associated Lab Samples: 92443188006, 92443188007

METHOD BLANK: 1754425

Matrix: Water

Associated Lab Samples: 92443188006, 92443188007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.337 ± 0.242 (0.380) C:91% T:NA	pCi/L	09/20/19 07:12	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: PP - Pond E (D)

Pace Project No.: 92443188

QC Batch: 360248

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 92443188001, 92443188002, 92443188003, 92443188004, 92443188005, 92443193002

METHOD BLANK: 1748645

Matrix: Water

Associated Lab Samples: 92443188001, 92443188002, 92443188003, 92443188004, 92443188005, 92443193002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.904 ± 0.385 (0.612) C:83% T:83%	pCi/L	09/20/19 10:28	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: PP - Pond E (D)

Pace Project No.: 92443188

QC Batch: 361439

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 92443188006, 92443188007

METHOD BLANK: 1754427

Matrix: Water

Associated Lab Samples: 92443188006, 92443188007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.462 ± 0.419 (0.854) C:67% T:85%	pCi/L	09/20/19 11:52	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: PP - Pond E (D)

Pace Project No.: 92443188

---

### 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

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

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.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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-A Pace Analytical Services - Asheville

PASI-E Pace Analytical Services - Eden

PASI-GA Pace Analytical Services - Atlanta, GA

PASI-PA Pace Analytical Services - Greensburg

### ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

BC The same analyte was detected in an associated blank at a concentration above 1/2 the reporting limit but below the laboratory reporting limit.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

## REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: PP - Pond E (D)  
Pace Project No.: 92443188

---

### ANALYTE QUALIFIERS

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.  
R1 RPD value was outside control limits.

## REPORT OF LABORATORY ANALYSIS

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**QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project: PP - Pond E (D)  
Pace Project No.: 92443188

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92443188001	ED-26	SM 2540C-2011	495138		
92443188002	T-1615D	SM 2540C-2011	495138		
92443188003	T-1615S	SM 2540C-2011	495138		
92443188004	ES-3D	SM 2540C-2011	495138		
92443193002	ED-24R	SM 2540C-2011	495138		
92443188005	ES-1609	SM 2540C-2011	495427		
92443188006	ES-1613	SM 2540C-2011	495427		
92443188007	POND E-Duplicate	SM 2540C-2011	495427		
92443188001	ED-26	EPA 3010A	496199	EPA 6010D	496267
92443188002	T-1615D	EPA 3010A	496199	EPA 6010D	496267
92443188003	T-1615S	EPA 3010A	496199	EPA 6010D	496267
92443188004	ES-3D	EPA 3010A	496199	EPA 6010D	496267
92443193002	ED-24R	EPA 3010A	496199	EPA 6010D	496267
92443188005	ES-1609	EPA 3010A	496271	EPA 6010D	496310
92443188006	ES-1613	EPA 3010A	496199	EPA 6010D	496267
92443188007	POND E-Duplicate	EPA 3010A	496199	EPA 6010D	496267
92443188001	ED-26	EPA 3010A	496148	EPA 6020B	496197
92443188002	T-1615D	EPA 3010A	496148	EPA 6020B	496197
92443188003	T-1615S	EPA 3010A	496148	EPA 6020B	496197
92443188004	ES-3D	EPA 3010A	496148	EPA 6020B	496197
92443193002	ED-24R	EPA 3010A	496148	EPA 6020B	496197
92443188005	ES-1609	EPA 3010A	496281	EPA 6020B	496309
92443188006	ES-1613	EPA 3010A	496281	EPA 6020B	496309
92443188007	POND E-Duplicate	EPA 3010A	496281	EPA 6020B	496309
92443188001	ED-26	EPA 7470A	495629	EPA 7470A	495735
92443188002	T-1615D	EPA 7470A	495629	EPA 7470A	495735
92443188003	T-1615S	EPA 7470A	495629	EPA 7470A	495735
92443188004	ES-3D	EPA 7470A	495629	EPA 7470A	495735
92443193002	ED-24R	EPA 7470A	495629	EPA 7470A	495735
92443188005	ES-1609	EPA 7470A	495630	EPA 7470A	495736
92443188006	ES-1613	EPA 7470A	495630	EPA 7470A	495736
92443188007	POND E-Duplicate	EPA 7470A	495630	EPA 7470A	495736
92443188001	ED-26	EPA 9315	360247		
92443188002	T-1615D	EPA 9315	360247		
92443188003	T-1615S	EPA 9315	360247		
92443188004	ES-3D	EPA 9315	360247		
92443193002	ED-24R	EPA 9315	360247		
92443188005	ES-1609	EPA 9315	360247		
92443188006	ES-1613	EPA 9315	361438		
92443188007	POND E-Duplicate	EPA 9315	361438		
92443188001	ED-26	EPA 9320	360248		
92443188002	T-1615D	EPA 9320	360248		
92443188003	T-1615S	EPA 9320	360248		

**REPORT OF LABORATORY ANALYSIS**

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE


Project: PP - Pond E (D)

Pace Project No.: 92443188

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92443188004	ES-3D	EPA 9320	360248		
92443193002	ED-24R	EPA 9320	360248		
92443188005	ES-1609	EPA 9320	360248		
92443188006	ES-1613	EPA 9320	361439		
92443188007	POND E-Duplicate	EPA 9320	361439		
92443188001	ED-26	Total Radium Calculation	362637		
92443188002	T-1615D	Total Radium Calculation	362637		
92443188003	T-1615S	Total Radium Calculation	362637		
92443188004	ES-3D	Total Radium Calculation	362637		
92443193002	ED-24R	Total Radium Calculation	362615		
92443188005	ES-1609	Total Radium Calculation	362637		
92443188006	ES-1613	Total Radium Calculation	362637		
92443188007	POND E-Duplicate	Total Radium Calculation	362637		
92443188001	ED-26	EPA 9065	34869	EPA 9065	34892
92443188002	T-1615D	EPA 9065	34869	EPA 9065	34892
92443188003	T-1615S	EPA 9065	34869	EPA 9065	34892
92443188004	ES-3D	EPA 9065	34869	EPA 9065	34892
92443193002	ED-24R	EPA 9065	34882	EPA 9065	34893
92443188005	ES-1609	EPA 9065	34882	EPA 9065	34893
92443188006	ES-1613	EPA 9065	34882	EPA 9065	34893
92443188007	POND E-Duplicate	EPA 9065	34882	EPA 9065	34893
92443188001	ED-26	EPA 9056A	495319		
92443188002	T-1615D	EPA 9056A	495319		
92443188003	T-1615S	EPA 9056A	495319		
92443188004	ES-3D	EPA 9056A	495319		
92443193002	ED-24R	EPA 9056A	495319		
92443188005	ES-1609	EPA 9056A	495640		
92443188006	ES-1613	EPA 9056A	495640		
92443188007	POND E-Duplicate	EPA 9056A	495640		
92443188001	ED-26	EPA 9060A	496159		
92443188002	T-1615D	EPA 9060A	496159		
92443188003	T-1615S	EPA 9060A	496159		
92443188004	ES-3D	EPA 9060A	496159		
92443193002	ED-24R	EPA 9060A	496159		
92443188005	ES-1609	EPA 9060A	496159		
92443188006	ES-1613	EPA 9060A	496160		
92443188007	POND E-Duplicate	EPA 9060A	496160		

### REPORT OF LABORATORY ANALYSIS

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	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: February 7, 2018 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

Laboratory receiving samples:

Asheville  Eden  Greenwood  Huntersville  Raleigh  Mechanicsville

Sample Condition Upon Receipt

Client Name: Goldner

Project #: **WO# : 92443188**

Courier:  Fed Ex  UPS  USPS  Client  
 Commercial  Pace  Other:



Custody Seal Present?  Yes  No Seals Intact?  Yes  No

Date/Initials Person Examining Contents: 8-27-19 RSB

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Biological Tissue Frozen?  Yes  No  N/A

Thermometer: T-3 Type of Ice:  Wet  Blue  None

Cooler Temp (°C): 3.8 Correction Factor: Add/Subtract (°C) 0.1

Temp should be above freezing to 6°C  
 Samples out of temp criteria. Samples on ice, cooling process has begun

Cooler Temp Corrected (°C): 3.7

USDA Regulated Soil ( N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?  
 Yes  No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)?  Yes  No

		Comments/Discrepancy:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Short Hold Time Analysis (<72 hr.)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Dissolved analysis: Samples Field Filtered?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	8.
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Includes Date/Time/ID/Analysis Matrix:	<u>WW</u>	
Headspace in VOA Vials (>5-6mm)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10.
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

COMMENTS/SAMPLE DISCREPANCY

Field Data Required?  Yes  No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Project Manager SCURF Review: AMG

Date: 9/13/19

Project Manager SRF Review: AMB

Date: 9-18-19



Document Name:  
**Sample Condition Upon Receipt(SCUR)**  
 Document No.:  
**F-CAR-CS-033-Rev.06**

Document Revised: February 7, 2018  
 Page 1 of 2  
 Issuing Authority:  
 Pace Carolinas Quality Office

\*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

\*\*Bottom half of box is to list number of bottle

Project #

**WO# : 92443188**

PM: NMG

Due Date: 09/18/19

CLIENT: 92-Golder

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic Zn Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass Jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A - lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)	
1	/	1	1	/	2 ✓	/	/	/	/	/	/	/	/	/	/	/	/	/	/	3	/	/	/	2 ✓	/	/	/	/
2	/	1	1	/	2 ✓	/	/	/	/	/	/	/	/	/	/	/	/	/	/	3	/	/	/	2 ✓	/	/	/	/
3	/	1	1	/	2 ✓	/	/	/	/	/	/	/	/	/	/	/	/	/	/	3	/	/	/	2 ✓	/	/	/	/
4	/	1	1	/	2 ✓	/	/	/	/	/	/	/	/	/	/	/	/	/	/	3	/	/	/	2 ✓	/	/	/	/
5	/	1	1	/	2 ✓	/	/	/	/	/	/	/	/	/	/	/	/	/	/	3	/	/	/	2 ✓	/	/	/	/
6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
7	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
9	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
10	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
11	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
12	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/

**pH Adjustment Log for Preserved Samples**

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers.





Document Name:  
Sample Condition Upon Receipt(SCUR)  
Document No.:  
F-CAR-CS-033-Rev.06

Document Revised: February 7, 2018  
Page 1 of 2  
Issuing Authority:  
Pace Carolinas Quality Office

Laboratory receiving samples:

Asheville  Eden  Greenwood  Huntersville  Raleigh  Mechanicsville

Sample Condition Upon Receipt

Client Name:

Golder

Project #:

**WO# : 92443188**

PM: NMG

Due Date: 09/18/19

CLIENT: 92-Golder

Courier:  Fed Ex  UPS  USPS  Client  
 Commercial  Pace  Other:

Custody Seal Present?  Yes  No Seals Intact?  Yes  No

Date/Initials Person Examining Contents: 8-29-19  
RSB

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Biological Tissue Frozen?  Yes  No  N/A

Thermometer: T-3 Type of Ice:  Wet  Blue  None

IR Gun ID: T-3

Cooler Temp (°C): 3.0 Correction Factor: Add/Subtract (°C) 0.1

Temp should be above freezing to 6°C  
 Samples out of temp criteria. Samples on ice, cooling process has begun

Cooler Temp Corrected (°C): 2.9

USDA Regulated Soil ( N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?  Yes  No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)?  Yes  No

	Comments/Discrepancy:
Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Short Hold Time Analysis (<72 hr.)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Dissolved analysis: Samples Field Filtered? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	8.
Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>	
Headspace in VOA Vials (>5-6mm)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	10.
Trip Blank Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

COMMENTS/SAMPLE DISCREPANCY

Field Data Required?  Yes  No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Project Manager SCURF Review: NMG

Date: 9/13/19

Project Manager SRF Review: AMB

Date: 9-18-19





Document Name:  
**Sample Condition Upon Receipt(SCUR)**  
 Document No.:  
**F-CAR-CS-033-Rev.06**

Document Revised: February 7, 2018  
 Page 1 of 2  
 Issuing Authority:  
 Pace Carolinas Quality Office

\*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

\*\*Bottom half of box is to list number of bottle

Project #

**WO# : 92443188**

PM: NMG

Due Date: 09/18/19

CLIENT: 92-Golder

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic Zn Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass Jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A - lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)
1	/	1	1	/	2	✓	/	/	/	/	/	/	/	/	/	/	/	/	3	/	/	/	2	✓	/	/	/
2	/	1	1	/	2	✓	/	/	/	/	/	/	/	/	/	/	/	/	3	/	/	/	2	✓	/	/	/
3	/	1	1	/	2	✓	/	/	/	/	/	/	/	/	/	/	/	/	3	/	/	/	2	✓	/	/	/
4	/	1	1	/	2	✓	/	/	/	/	/	/	/	/	/	/	/	/	3	/	/	/	2	✓	/	/	/
5	/	1	1	/	2	✓	/	/	/	/	/	/	/	/	/	/	/	/	3	/	/	/	2	✓	/	/	/
6	/	1	1	/	2	✓	/	/	/	/	/	/	/	/	/	/	/	/	3	/	/	/	2	✓	/	/	/
7	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
9	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
10	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
11	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
12	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers.







Air Water & Soil Laboratories, Inc.  
1941 Reymet Road  
Richmond, VA 23237  
(804)-358-8295 - Telephone  
(804)-358-8297 - Fax

**Analysis Detects Report**

Client Name: Golder Associates, Inc.  
Client Site ID: Possum Point PS  
Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:18:06AM

Laboratory Sample ID: 19H1135-01      Client Sample ID: ES-1609

Parameter	Samp ID	Reference Method	Sample Results	Qual	DL	LOQ	Dil. Factor	Units
Chromium, Hexavalent	01RE1	SW7196A	0.010	M3	0.005	0.005	1	mg/L

Note that this report is not the "Certificate of Analysis". This report only lists the target analytes that displayed concentrations that exceeded the detection limit specified for that analyte. For a complete listing of all analytes requested and the results of the analysis see the "Certificate of Analysis".



1941 Reymet Road • Richmond, Virginia 23237 • Tel: (804)-358-8295 Fax: (804)-358-8297

## Certificate of Analysis

*Final Report*

### Sample Delivery Group ID Possum Point 1662150

Client Name: Golder Associates, Inc.  
2108 W. Laburnum Ave. Suite 200  
Richmond, VA 23227

Date Issued: 9/16/2019 9:18:06AM

Submitted To: Amanda Reynolds

Client Site I.D.: Possum Point PS

Purchase Order:

Enclosed are the results of analyses for samples received by the laboratory in sample delivery group Possum Point 1662150 . Work orders included in the sample delivery group:

<u>Work Order</u>	<u>Receive Date</u>	<u>Project Number</u>
19H1088	8/27/2019 3:55:00PM	1662150
19H1135	8/28/2019 3:55:00PM	1662150

Ted Soyars

Ted Soyars

Technical Director

**End Notes:**

The test results listed in this report relate only to the samples submitted to the laboratory and as received by the Laboratory.

Unless otherwise noted, the test results for solid materials are calculated on a wet weight basis. Analyses for pH, dissolved oxygen, temperature, residual chlorine and sulfite that are performed in the laboratory do not meet NELAC requirements due to extremely short holding times. These analyses should be performed in the field. The results of field analyses performed by the Sampler included in the Certificate of Analysis are done so at the client's request and are not included in the laboratory's fields of certification nor have they been audited for adherence to a reference method or procedure.

The signature on the final report certifies that these results conform to all applicable NELAC standards unless otherwise specified. For a complete list of the Laboratory's NELAC certified parameters please contact customer service.

This report shall not be reproduced except in full without the expressed and written approval of an authorized representative of Air Water & Soil Laboratories, Inc.





**Certificate of Analysis**

Client Name: Golder Associates, Inc.  
Client Site I.D.: Possum Point PS  
Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:18:06AM

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
ED-26	19H1088-01	Ground Water	08/27/2019 08:29	08/27/2019 15:55
T-1615D	19H1088-02	Ground Water	08/27/2019 11:27	08/27/2019 15:55
T-1615S	19H1088-03	Ground Water	08/27/2019 12:13	08/27/2019 15:55
ES-3D	19H1088-04	Ground Water	08/27/2019 13:34	08/27/2019 15:55
ED-24R	19H1088-05	Ground Water	08/27/2019 09:48	08/27/2019 15:55
ES-1609	19H1135-01	Ground Water	08/28/2019 08:18	08/28/2019 15:55
ES-1613	19H1135-02	Ground Water	08/28/2019 09:34	08/28/2019 15:55
Duplicate	19H1135-03	Ground Water	08/28/2019 10:01	08/28/2019 15:55

**Certificate of Analysis**

Client Name: Golder Associates, Inc.  
 Client Site I.D.: Possum Point PS  
 Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:18:06AM

Client Sample ID: ED-26

Laboratory Sample ID: 19H1088-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	DL	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Chromium, Hexavalent	01	18540-29-9	SW7196A	08/28/2019 07:35	08/28/2019 13:30	BLOD		0.005	0.005	1	mg/L	MWL



**Certificate of Analysis**

Client Name: Golder Associates, Inc.  
 Client Site I.D.: Possum Point PS  
 Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:18:06AM

Client Sample ID: T-1615D

Laboratory Sample ID: 19H1088-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	DL	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Chromium, Hexavalent	02	18540-29-9	SW7196A	08/28/2019 07:35	08/28/2019 13:30	BLOD		0.005	0.005	1	mg/L	MWL

**Certificate of Analysis**

Client Name: Golder Associates, Inc.  
 Client Site I.D.: Possum Point PS  
 Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:18:06AM

Client Sample ID: T-1615S

Laboratory Sample ID: 19H1088-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	DL	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Chromium, Hexavalent	03	18540-29-9	SW7196A	08/28/2019 07:35	08/28/2019 13:30	BLOD		0.005	0.005	1	mg/L	MWL

**Certificate of Analysis**

Client Name: Golder Associates, Inc.  
 Client Site I.D.: Possum Point PS  
 Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:18:06AM

Client Sample ID: ES-3D

Laboratory Sample ID: 19H1088-04

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	DL	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Chromium, Hexavalent	04RE1	18540-29-9	SW7196A	08/28/2019 07:35	08/28/2019 13:30	BLOD	M3	0.005	0.005	1	mg/L	MWL

**Certificate of Analysis**

Client Name: Golder Associates, Inc.  
 Client Site I.D.: Possum Point PS  
 Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:18:06AM

Client Sample ID: ED-24R

Laboratory Sample ID: 19H1088-05

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	DL	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Chromium, Hexavalent	05	18540-29-9	SW7196A	08/28/2019 07:35	08/28/2019 13:30	BLOD		0.005	0.005	1	mg/L	MWL

**Certificate of Analysis**

Client Name: Golder Associates, Inc.  
 Client Site I.D.: Possum Point PS  
 Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:18:06AM

Client Sample ID: ES-1609

Laboratory Sample ID: 19H1135-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	DL	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Chromium, Hexavalent	01RE1	18540-29-9	SW7196A	08/29/2019 07:30	08/29/2019 12:00	0.010	M3	0.005	0.005	1	mg/L	MWL

**Certificate of Analysis**

Client Name: Golder Associates, Inc.  
 Client Site I.D.: Possum Point PS  
 Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:18:06AM

Client Sample ID: ES-1613

Laboratory Sample ID: 19H1135-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	DL	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Chromium, Hexavalent	02	18540-29-9	SW7196A	08/29/2019 07:30	08/29/2019 12:00	BLOD		0.005	0.005	1	mg/L	MWL

**Certificate of Analysis**

Client Name: Golder Associates, Inc.  
Client Site I.D.: Possum Point PS  
Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:18:06AM

Client Sample ID: Duplicate

Laboratory Sample ID: 19H1135-03

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	DL	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Chromium, Hexavalent	03	18540-29-9	SW7196A	08/29/2019 07:30	08/29/2019 12:00	BLOD		0.005	0.005	1	mg/L	MWL

## Certificate of Analysis

Client Name: Golder Associates, Inc.  
 Client Site I.D.: Possum Point PS  
 Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:18:06AM

Wet Chemistry Analysis - Quality Control

Air Water & Soil Laboratories, Inc.

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BCH0936 - No Prep Wet Chem</b>										
<b>Blank (BCH0936-BLK1)</b>				Prepared & Analyzed: 08/28/2019						
Chromium, Hexavalent	BLOD	0.005	mg/L							
<b>LCS (BCH0936-BS1)</b>				Prepared & Analyzed: 08/28/2019						
Chromium, Hexavalent	0.102	0.005	mg/L	0.100		102	80-120			
<b>Matrix Spike (BCH0936-MS1)</b>				Source: 19H1087-01 Prepared & Analyzed: 08/28/2019						
Chromium, Hexavalent	BLOD	0.005	mg/L	0.100	BLOD		80-120			M
<b>Matrix Spike (BCH0936-MS2)</b>				Source: 19H1088-04 Prepared & Analyzed: 08/28/2019						
Chromium, Hexavalent	0.005	0.005	mg/L	0.100	BLOD	5.00	80-120			M
<b>Matrix Spike Dup (BCH0936-MSD1)</b>				Source: 19H1087-01 Prepared & Analyzed: 08/28/2019						
Chromium, Hexavalent	BLOD	0.005	mg/L	0.100	BLOD		80-120		20	M
<b>Matrix Spike Dup (BCH0936-MSD2)</b>				Source: 19H1088-04 Prepared & Analyzed: 08/28/2019						
Chromium, Hexavalent	0.005	0.005	mg/L	0.100	BLOD	5.00	80-120	0.00	20	M
<b>Batch BCH0937 - No Prep Wet Chem</b>										
<b>Blank (BCH0937-BLK1)</b>				Prepared & Analyzed: 08/29/2019						
Chromium, Hexavalent	BLOD	0.005	mg/L							
<b>LCS (BCH0937-BS1)</b>				Prepared & Analyzed: 08/29/2019						
Chromium, Hexavalent	0.102	0.005	mg/L	0.100		102	80-120			
<b>Matrix Spike (BCH0937-MS1)</b>				Source: 19H1135-01 Prepared & Analyzed: 08/29/2019						
Chromium, Hexavalent	0.026	0.005	mg/L	0.100	BLOD	26.0	80-120			M1



## Certificate of Analysis

Client Name: Golder Associates, Inc.  
 Client Site I.D.: Possum Point PS  
 Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:18:06AM

Wet Chemistry Analysis - Quality Control

Air Water & Soil Laboratories, Inc.

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BCH0937 - No Prep Wet Chem</b>										
<b>Matrix Spike (BCH0937-MS2)</b>		<b>Source: 19H1156-03</b>			<b>Prepared &amp; Analyzed: 08/29/2019</b>					
Chromium, Hexavalent	0.005	0.005	mg/L	0.100	0.006	-1.00	80-120			M1
<b>Matrix Spike Dup (BCH0937-MSD1)</b>		<b>Source: 19H1135-01</b>			<b>Prepared &amp; Analyzed: 08/29/2019</b>					
Chromium, Hexavalent	0.026	0.005	mg/L	0.100	BLOD	26.0	80-120	0.00	20	M1
<b>Matrix Spike Dup (BCH0937-MSD2)</b>		<b>Source: 19H1156-03</b>			<b>Prepared &amp; Analyzed: 08/29/2019</b>					
Chromium, Hexavalent	0.006	0.005	mg/L	0.100	0.006	0.00	80-120	18.2	20	M1

### Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method: No Prep Wet Chem</b>		
19H1088-01	100 mL / 100 mL	SW7196A	BCH0936	SCH0861	AH90141
19H1088-02	100 mL / 100 mL	SW7196A	BCH0936	SCH0861	AH90141
19H1088-03	100 mL / 100 mL	SW7196A	BCH0936	SCH0861	AH90141
19H1088-04	100 mL / 100 mL	SW7196A	BCH0936	SCH0861	AH90141
19H1088-04RE1	100 mL / 100 mL	SW7196A	BCH0936	SCH0861	AH90141
19H1088-05	100 mL / 100 mL	SW7196A	BCH0936	SCH0861	AH90141
19H1135-01	100 mL / 100 mL	SW7196A	BCH0937	SCH0864	AH90142
19H1135-01RE1	100 mL / 100 mL	SW7196A	BCH0937	SCH0864	AH90142
19H1135-02	100 mL / 100 mL	SW7196A	BCH0937	SCH0864	AH90142
19H1135-03	100 mL / 100 mL	SW7196A	BCH0937	SCH0864	AH90142

**Certificate of Analysis**

Client Name: Golder Associates, Inc.  
Client Site I.D.: Possum Point PS  
Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:18:06AM

**Certified Analyses included in this Report**

Analyte	Certifications
<i>SW7196A in Non-Potable Water</i>	
Chromium, Hexavalent	VELAP

Code	Description	Cert Number	Expires
MdDOE	Maryland DE Drinking Water	341	12/31/2019
NC	North Carolina DENR	495	12/31/2019
VELAP Certificate #4337	NELAC-Virginia Certificate #10503	460021	06/14/2020
WVDEP	West Virginia DEP	350	11/30/2019

## Certificate of Analysis

Client Name: Golder Associates, Inc.  
Client Site I.D.: Possum Point PS  
Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:18:06AM

### Qualifiers and Definitions

M Matrix spike recovery is outside established acceptance limits

M1 Post digestion spike performed due to matrix interference.

M3 Method of Standard Additions (MSA) performed due to matrix interference.

RPD Relative Percent Difference

Qual Qualifiers

-RE Denotes sample was re-analyzed

LOD Limit of Detection

BLOD Below Limit of Detection

LOQ Limit of Quantitation

DF Dilution Factor

TIC Tentatively Identified Compounds are compounds that are identified by comparing the analyte mass spectral pattern with the NIST spectral library. A TIC spectral match is reported when the pattern is at least 75% consistent with the published pattern. Compound concentrations are estimated and are calculated using an internal standard response factor of 1.

PCBs, Total Total PCBs are defined as the sum of detected Aroclors 1016, 1221, 1232, 1248, 1254, 1260, 1262, and 1268.





## CHAIN OF CUSTODY

PAGE 1 OF 1

COMPANY NAME: <u>Golder Associates</u>	INVOICE TO: <u>Accounts Payable</u>	PROJECT NAME/Quote #: <u>2SAP Pond E</u>
CONTACT: <u>Amanda Reynolds</u>	INVOICE CONTACT: <u>A. Reynolds</u>	SITE NAME: <u>Possum Point Power Station</u>
ADDRESS: <u>2108 W. Laburnum Ave, Richmond, VA 23227</u>	INVOICE ADDRESS:	PROJECT NUMBER: <u>1662150</u>
PHONE #: <u>(804)358-7900</u>	INVOICE PHONE #: <u>(804)358-7900</u>	P.O. #:
FAX #: <u>(804)358-2906</u>	EMAIL: <u>areynolds@golder.com</u>	Pretreatment Program:
Is sample for compliance reporting? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Regulatory State: <u>VA</u>	Is sample from a chlorinated supply? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>
		PWS I.D. #:

SAMPLER NAME (PRINT): Michael Antal      SAMPLER SIGNATURE: [Signature]      Turn Around Time: Circle: 10 5 Days or \_\_\_ Day(s)

Matrix Codes: WW=Waste Water/Storm Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)						COMMENTS	
											Hexavalent Chromium (by 7196)							
1) <u>ES-1609</u>	<input checked="" type="checkbox"/>					<u>8/28/19</u>	<u>0818</u>	<u>0818</u>	<u>GW</u>	<u>1</u>	<input checked="" type="checkbox"/>							<u>All samples preserved on ice +</u>
2) <u>ES-1613</u>	<input checked="" type="checkbox"/>					<u>8/28/19</u>	<u>0934</u>	<u>0934</u>	<u>GW</u>	<u>1</u>	<input checked="" type="checkbox"/>							
3) <u>Duplicate</u>	<input checked="" type="checkbox"/>					<u>8/28/19</u>	<u>1001</u>	<u>1001</u>	<u>GW</u>	<u>1</u>	<input checked="" type="checkbox"/>							
4)																		
5)																		
6)																		
7)																		
8)																		
9)																		
10)																		

RELINQUISHED: <u>[Signature]</u> DATE / TIME: <u>8/28/19 1405</u>	RECEIVED: <u>[Signature]</u> DATE / TIME: <u>082819 1405</u>	QC Data Package	LAB USE ONLY      Therm ID: <u>233</u> COOLER TEMP: <u>2.6</u> °C
RELINQUISHED: <u>[Signature]</u> DATE / TIME: <u>082819 1555</u>	RECEIVED: <u>[Signature]</u> DATE / TIME: <u>8/28/19 1555</u>	Level III <input type="checkbox"/>	Custody Seals used and intact? (Y/N) <input checked="" type="checkbox"/>
RELINQUISHED:	RECEIVED:	Level IV <input type="checkbox"/>	Received on ice? (Y/N) <input checked="" type="checkbox"/>
		<u>Level II</u>	

**GA**      **19H1135**  
**Possum Point PS- Bill to Golder**  
**Recd: 08/28/2019    Due: 09/12/2019**

## Certificate of Analysis

Client Name: Golder Associates, Inc.  
 Client Site I.D.: Possum Point PS  
 Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:18:06AM

### Sample Conditions Checklist

Samples Received at:	16.90°C
How were samples received?	Courier
Were Custody Seals used? If so, were they received intact?	Yes
Are the custody papers filled out completely and correctly?	Yes
Do all bottle labels agree with custody papers?	Yes
Is the temperature blank or representative sample within acceptable limits or received on ice, and recently taken?	Yes
Are all samples within holding time for requested laboratory tests?	Yes
Is a sufficient amount of sample provided to perform the tests included?	Yes
Are all samples in appropriate containers for the analyses requested?	Yes
Were volatile organic containers received?	No
Are all volatile organic and TOX containers free of headspace?	NA
Is a trip blank provided for each VOC sample set? VOC sample sets include EPA8011, EPA504, EPA8260, EPA624, EPA8015 GRO, EPA8021, EPA524, and RSK-175.	NA
Are all samples received appropriately preserved? Note that metals containers do not require field preservation but lab preservation may delay analysis.	Yes

### Work Order Comments

## Certificate of Analysis

Client Name: Golder Associates, Inc.  
 Client Site I.D.: Possum Point PS  
 Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:18:06AM

### Sample Conditions Checklist

Samples Received at:	2.60°C
How were samples received?	Courier
Were Custody Seals used? If so, were they received intact?	Yes
Are the custody papers filled out completely and correctly?	Yes
Do all bottle labels agree with custody papers?	Yes
Is the temperature blank or representative sample within acceptable limits or received on ice, and recently taken?	Yes
Are all samples within holding time for requested laboratory tests?	Yes
Is a sufficient amount of sample provided to perform the tests included?	Yes
Are all samples in appropriate containers for the analyses requested?	Yes
Were volatile organic containers received?	No
Are all volatile organic and TOX containers free of headspace?	NA
Is a trip blank provided for each VOC sample set? VOC sample sets include EPA8011, EPA504, EPA8260, EPA624, EPA8015 GRO, EPA8021, EPA524, and RSK-175.	NA
Are all samples received appropriately preserved? Note that metals containers do not require field preservation but lab preservation may delay analysis.	Yes

### Work Order Comments

October 02, 2019

Mike Williams  
Golder Associates  
2108 W Laburnum Ave  
Suite 200  
Richmond, VA 23227

RE: Project: PP Pond E Sentinel (E)  
Pace Project No.: 92443178

Dear Mike Williams:

Enclosed are the analytical results for sample(s) received by the laboratory on August 27, 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,



Nicole Gasiorowski  
nicole.gasiorowski@pacelabs.com  
(704)875-9092  
Project Manager

Enclosures

cc: Craig LaCosse, Golder Associates Inc.  
Rachel Powell, Golder Associates  
Amanda Reynolds, Golder Associates  
Martha Smith, Golder Associates Inc.



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: PP Pond E Sentinel (E)  
Pace Project No.: 92443178

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### Atlanta Certification IDs

110 Technology Parkway Peachtree Corners, GA 30092  
Florida DOH Certification #: E87315  
Georgia DW Inorganics Certification #: 812  
Georgia DW Microbiology Certification #: 812

North Carolina Certification #: 381  
South Carolina Certification #: 98011001  
Virginia Certification #: 460204

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### 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  
Florida: Cert E871149 SEKS WET  
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

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### Asheville Certification IDs

2225 Riverside Drive, Asheville, NC 28804  
Florida/NELAP Certification #: E87648  
Massachusetts Certification #: M-NC030  
North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40  
South Carolina Certification #: 99030001  
Virginia/VELAP Certification #: 460222

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### Eden Certification IDs

205 East Meadow Road Suite A, Eden, NC 27288  
North Carolina Drinking Water Certification #: 37738

North Carolina Wastewater Certification #: 633  
Virginia/VELAP Certification #: 460025

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: PP Pond E Sentinel (E)  
Pace Project No.: 92443178

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Lab ID	Sample ID	Matrix	Date Collected	Date Received
92443178001	ED-22RA	Water	08/26/19 11:18	08/27/19 14:24
92443178002	ED-23R	Water	08/26/19 12:02	08/27/19 14:24

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: PP Pond E Sentinel (E)

Pace Project No.: 92443178

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory		
92443178001	ED-22RA	SM 2540C-2011	SAM1	1	PASI-E		
		EPA 6010D	DS	16	PASI-A		
		EPA 6020B	JOR	9	PASI-A		
		EPA 7470A	SOO	1	PASI-A		
		EPA 9315	LAL	1	PASI-PA		
		EPA 9320	VAL	1	PASI-PA		
		Total Radium Calculation	CMC	1	PASI-PA		
		EPA 9065	MWB	1	PASI-GA		
		EPA 9056A	CDC	3	PASI-A		
		EPA 9060A	ECH	5	PASI-A		
		92443178002	ED-23R	SM 2540C-2011	SAM1	1	PASI-E
				EPA 6010D	DS	16	PASI-A
				EPA 6020B	SER	9	PASI-A
EPA 7470A	SOO			1	PASI-A		
EPA 9315	LAL			1	PASI-PA		
EPA 9320	VAL			1	PASI-PA		
Total Radium Calculation	CMC			1	PASI-PA		
EPA 9065	MWB			1	PASI-GA		
EPA 9056A	CDC			3	PASI-A		
EPA 9060A	ECH			5	PASI-A		

### REPORT OF LABORATORY ANALYSIS

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### SUMMARY OF DETECTION

Project: PP Pond E Sentinel (E)

Pace Project No.: 92443178

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
<b>92443178001</b>	<b>ED-22RA</b>					
SM 2540C-2011	Total Dissolved Solids	136	mg/L	25.0	08/29/19 10:56	D6
EPA 6010D	Barium	28.8	ug/L	5.0	09/08/19 18:07	
EPA 6010D	Beryllium	0.33J	ug/L	1.0	09/08/19 18:07	
EPA 6010D	Boron	0.18	mg/L	0.050	09/08/19 18:07	
EPA 6010D	Calcium	3.9	mg/L	0.10	09/08/19 18:07	
EPA 6010D	Copper	3.2J	ug/L	5.0	09/08/19 18:07	
EPA 6010D	Molybdenum	2.2J	ug/L	5.0	09/08/19 18:07	
EPA 6010D	Nickel	10.7	ug/L	5.0	09/08/19 18:07	
EPA 6010D	Hardness, Total(SM 2340B)	18200	ug/L	662	09/08/19 18:07	
EPA 6010D	Zinc	28.4	ug/L	10.0	09/08/19 18:07	BC
EPA 6020B	Cobalt	5.5	ug/L	0.10	09/06/19 13:08	
EPA 6020B	Iron	2360	ug/L	50.0	09/06/19 13:08	
EPA 6020B	Lead	0.12	ug/L	0.10	09/06/19 13:08	
EPA 6020B	Lithium	2.6	ug/L	2.5	09/06/19 13:08	
EPA 6020B	Manganese	87.6	ug/L	0.50	09/06/19 13:08	
EPA 6020B	Potassium	1660	ug/L	50.0	09/06/19 13:08	
EPA 6020B	Sodium	51200	ug/L	2500	09/07/19 05:10	
EPA 6020B	Tin	0.096J	ug/L	0.50	09/06/19 13:08	
EPA 9315	Radium-226	0.452 ± 0.145 (0.160) C:84% T:NA	pCi/L		09/27/19 18:42	
EPA 9320	Radium-228	0.214 ± 0.430 (0.945) C:82% T:81%	pCi/L		09/20/19 13:39	
Total Radium Calculation	Total Radium	0.666 ± 0.575 (1.11)	pCi/L		09/30/19 10:48	
EPA 9056A	Chloride	37.7	mg/L	1.0	08/30/19 20:43	M1
EPA 9056A	Sulfate	62.2	mg/L	1.0	08/30/19 20:43	
EPA 9060A	Total Organic Carbon	19.6	mg/L	1.0	09/06/19 00:39	
EPA 9060A	Total Organic Carbon	18.9	mg/L	1.0	09/06/19 00:39	
EPA 9060A	Total Organic Carbon	19.0	mg/L	1.0	09/06/19 00:39	
EPA 9060A	Total Organic Carbon	19.1	mg/L	1.0	09/06/19 00:39	
EPA 9060A	Mean Total Organic Carbon	19.1	mg/L	1.0	09/06/19 00:39	
<b>92443178002</b>	<b>ED-23R</b>					
EPA 6010D	Barium	24.2	ug/L	5.0	09/08/19 18:35	
EPA 6010D	Boron	0.013J	mg/L	0.050	09/08/19 18:35	B
EPA 6010D	Calcium	3.8	mg/L	0.10	09/08/19 18:35	
EPA 6010D	Hardness, Total(SM 2340B)	18100	ug/L	662	09/08/19 18:35	
EPA 6010D	Zinc	4.3J	ug/L	10.0	09/08/19 18:35	BC
EPA 6020B	Iron	2460	ug/L	50.0	09/06/19 13:56	
EPA 6020B	Lithium	8.8	ug/L	2.5	09/06/19 13:56	
EPA 6020B	Manganese	56.3	ug/L	0.50	09/06/19 13:56	
EPA 6020B	Potassium	5690	ug/L	50.0	09/06/19 13:56	
EPA 6020B	Sodium	4610	ug/L	250	09/06/19 13:56	

### REPORT OF LABORATORY ANALYSIS

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### SUMMARY OF DETECTION

Project: PP Pond E Sentinel (E)

Pace Project No.: 92443178

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
<b>92443178002</b>	<b>ED-23R</b>					
EPA 9315	Radium-226	0.592 ± 0.168 (0.171) C:88% T:NA	pCi/L		09/27/19 18:42	
EPA 9320	Radium-228	0.273 ± 0.376 (0.807) C:85% T:81%	pCi/L		09/20/19 13:39	
Total Radium Calculation	Total Radium	0.865 ± 0.544 (0.978)	pCi/L		09/30/19 10:48	
EPA 9056A	Chloride	2.7	mg/L	1.0	08/30/19 22:10	
EPA 9056A	Fluoride	0.22	mg/L	0.10	08/30/19 22:10	
EPA 9056A	Sulfate	5.0	mg/L	1.0	08/30/19 22:10	
EPA 9060A	Total Organic Carbon	11.0	mg/L	1.0	09/06/19 00:52	
EPA 9060A	Total Organic Carbon	10.8	mg/L	1.0	09/06/19 00:52	
EPA 9060A	Total Organic Carbon	10.8	mg/L	1.0	09/06/19 00:52	
EPA 9060A	Total Organic Carbon	10.6	mg/L	1.0	09/06/19 00:52	
EPA 9060A	Mean Total Organic Carbon	10.8	mg/L	1.0	09/06/19 00:52	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: PP Pond E Sentinel (E)

Pace Project No.: 92443178

Sample: ED-22RA      Lab ID: 92443178001      Collected: 08/26/19 11:18      Received: 08/27/19 14:24      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>2540C Total Dissolved Solids</b> Analytical Method: SM 2540C-2011									
Total Dissolved Solids	<b>136</b>	mg/L	25.0	25.0	1		08/29/19 10:56		D6
<b>6010 MET ICP</b> Analytical Method: EPA 6010D      Preparation Method: EPA 3010A									
Antimony	ND	ug/L	5.0	3.0	1	09/05/19 16:10	09/08/19 18:07	7440-36-0	
Arsenic	ND	ug/L	10.0	4.7	1	09/05/19 16:10	09/08/19 18:07	7440-38-2	
Barium	<b>28.8</b>	ug/L	5.0	1.0	1	09/05/19 16:10	09/08/19 18:07	7440-39-3	
Beryllium	<b>0.33J</b>	ug/L	1.0	0.20	1	09/05/19 16:10	09/08/19 18:07	7440-41-7	
Boron	<b>0.18</b>	mg/L	0.050	0.0066	1	09/05/19 16:10	09/08/19 18:07	7440-42-8	
Cadmium	ND	ug/L	1.0	0.40	1	09/05/19 16:10	09/08/19 18:07	7440-43-9	
Calcium	<b>3.9</b>	mg/L	0.10	0.024	1	09/05/19 16:10	09/08/19 18:07	7440-70-2	
Chromium	ND	ug/L	5.0	1.0	1	09/05/19 16:10	09/08/19 18:07	7440-47-3	
Copper	<b>3.2J</b>	ug/L	5.0	2.1	1	09/05/19 16:10	09/08/19 18:07	7440-50-8	
Molybdenum	<b>2.2J</b>	ug/L	5.0	0.90	1	09/05/19 16:10	09/08/19 18:07	7439-98-7	
Nickel	<b>10.7</b>	ug/L	5.0	0.90	1	09/05/19 16:10	09/08/19 18:07	7440-02-0	
Selenium	ND	ug/L	10.0	4.7	1	09/05/19 16:10	09/08/19 18:07	7782-49-2	
Silver	ND	ug/L	5.0	2.5	1	09/05/19 16:10	09/08/19 18:07	7440-22-4	
Hardness, Total(SM 2340B)	<b>18200</b>	ug/L	662	131	1	09/05/19 16:10	09/08/19 18:07		
Vanadium	ND	ug/L	5.0	1.3	1	09/05/19 16:10	09/08/19 18:07	7440-62-2	
Zinc	<b>28.4</b>	ug/L	10.0	3.9	1	09/05/19 16:10	09/08/19 18:07	7440-66-6	BC
<b>6020 MET ICPMS</b> Analytical Method: EPA 6020B      Preparation Method: EPA 3010A									
Cobalt	<b>5.5</b>	ug/L	0.10	0.050	1	09/05/19 12:25	09/06/19 13:08	7440-48-4	
Iron	<b>2360</b>	ug/L	50.0	7.5	1	09/05/19 12:25	09/06/19 13:08	7439-89-6	
Lead	<b>0.12</b>	ug/L	0.10	0.050	1	09/05/19 12:25	09/06/19 13:08	7439-92-1	
Lithium	<b>2.6</b>	ug/L	2.5	0.42	1	09/05/19 12:25	09/06/19 13:08	7439-93-2	
Manganese	<b>87.6</b>	ug/L	0.50	0.14	1	09/05/19 12:25	09/06/19 13:08	7439-96-5	
Potassium	<b>1660</b>	ug/L	50.0	6.2	1	09/05/19 12:25	09/06/19 13:08	7440-09-7	
Sodium	<b>51200</b>	ug/L	2500	143	10	09/05/19 12:25	09/07/19 05:10	7440-23-5	
Thallium	ND	ug/L	0.10	0.060	1	09/05/19 12:25	09/06/19 13:08	7440-28-0	
Tin	<b>0.096J</b>	ug/L	0.50	0.090	1	09/05/19 12:25	09/06/19 13:08	7440-31-5	
<b>7470 Mercury</b> Analytical Method: EPA 7470A      Preparation Method: EPA 7470A									
Mercury	ND	ug/L	0.20	0.10	1	09/03/19 14:35	09/04/19 17:22	7439-97-6	
<b>9065 Phenolics, Total</b> Analytical Method: EPA 9065      Preparation Method: EPA 9065									
Phenolics, Total Recoverable	ND	mg/L	0.050	0.050	1	09/06/19 15:50	09/06/19 19:52	64743-03-9	M1
<b>9056 IC anions 28 Days</b> Analytical Method: EPA 9056A									
Chloride	<b>37.7</b>	mg/L	1.0	0.60	1		08/30/19 20:43	16887-00-6	M1
Fluoride	ND	mg/L	0.10	0.050	1		08/30/19 20:43	16984-48-8	M1
Sulfate	<b>62.2</b>	mg/L	1.0	0.50	1		08/30/19 20:43	14808-79-8	
<b>Total Organic Carbon,Asheville</b> Analytical Method: EPA 9060A									
Total Organic Carbon	<b>19.6</b>	mg/L	1.0	0.50	1		09/06/19 00:39	7440-44-0	
Total Organic Carbon	<b>18.9</b>	mg/L	1.0	0.50	1		09/06/19 00:39	7440-44-0	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: PP Pond E Sentinel (E)

Pace Project No.: 92443178

**Sample: ED-22RA**      **Lab ID: 92443178001**      Collected: 08/26/19 11:18      Received: 08/27/19 14:24      Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>Total Organic Carbon,Asheville</b> Analytical Method: EPA 9060A									
Total Organic Carbon	<b>19.0</b>	mg/L	1.0	0.50	1		09/06/19 00:39	7440-44-0	
Total Organic Carbon	<b>19.1</b>	mg/L	1.0	0.50	1		09/06/19 00:39	7440-44-0	
Mean Total Organic Carbon	<b>19.1</b>	mg/L	1.0	0.50	1		09/06/19 00:39	7440-44-0	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: PP Pond E Sentinel (E)  
Pace Project No.: 92443178

Sample: ED-23R      Lab ID: 92443178002      Collected: 08/26/19 12:02      Received: 08/27/19 14:24      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>2540C Total Dissolved Solids</b> Analytical Method: SM 2540C-2011									
Total Dissolved Solids	ND	mg/L	25.0	25.0	1		08/29/19 10:57		
<b>6010 MET ICP</b> Analytical Method: EPA 6010D      Preparation Method: EPA 3010A									
Antimony	ND	ug/L	5.0	3.0	1	09/05/19 16:10	09/08/19 18:35	7440-36-0	
Arsenic	ND	ug/L	10.0	4.7	1	09/05/19 16:10	09/08/19 18:35	7440-38-2	
Barium	24.2	ug/L	5.0	1.0	1	09/05/19 16:10	09/08/19 18:35	7440-39-3	
Beryllium	ND	ug/L	1.0	0.20	1	09/05/19 16:10	09/08/19 18:35	7440-41-7	
Boron	0.013J	mg/L	0.050	0.0066	1	09/05/19 16:10	09/08/19 18:35	7440-42-8	B
Cadmium	ND	ug/L	1.0	0.40	1	09/05/19 16:10	09/08/19 18:35	7440-43-9	
Calcium	3.8	mg/L	0.10	0.024	1	09/05/19 16:10	09/08/19 18:35	7440-70-2	
Chromium	ND	ug/L	5.0	1.0	1	09/05/19 16:10	09/08/19 18:35	7440-47-3	
Copper	ND	ug/L	5.0	2.1	1	09/05/19 16:10	09/08/19 18:35	7440-50-8	
Molybdenum	ND	ug/L	5.0	0.90	1	09/05/19 16:10	09/08/19 18:35	7439-98-7	
Nickel	ND	ug/L	5.0	0.90	1	09/05/19 16:10	09/08/19 18:35	7440-02-0	
Selenium	ND	ug/L	10.0	4.7	1	09/05/19 16:10	09/08/19 18:35	7782-49-2	
Silver	ND	ug/L	5.0	2.5	1	09/05/19 16:10	09/08/19 18:35	7440-22-4	
Hardness, Total(SM 2340B)	18100	ug/L	662	131	1	09/05/19 16:10	09/08/19 18:35		
Vanadium	ND	ug/L	5.0	1.3	1	09/05/19 16:10	09/08/19 18:35	7440-62-2	
Zinc	4.3J	ug/L	10.0	3.9	1	09/05/19 16:10	09/08/19 18:35	7440-66-6	BC
<b>6020 MET ICPMS</b> Analytical Method: EPA 6020B      Preparation Method: EPA 3010A									
Cobalt	ND	ug/L	0.10	0.050	1	09/05/19 12:25	09/06/19 13:56	7440-48-4	
Iron	2460	ug/L	50.0	7.5	1	09/05/19 12:25	09/06/19 13:56	7439-89-6	
Lead	ND	ug/L	0.10	0.050	1	09/05/19 12:25	09/06/19 13:56	7439-92-1	
Lithium	8.8	ug/L	2.5	0.42	1	09/05/19 12:25	09/06/19 13:56	7439-93-2	
Manganese	56.3	ug/L	0.50	0.14	1	09/05/19 12:25	09/06/19 13:56	7439-96-5	
Potassium	5690	ug/L	50.0	6.2	1	09/05/19 12:25	09/06/19 13:56	7440-09-7	
Sodium	4610	ug/L	250	14.3	1	09/05/19 12:25	09/06/19 13:56	7440-23-5	
Thallium	ND	ug/L	0.10	0.060	1	09/05/19 12:25	09/06/19 13:56	7440-28-0	
Tin	ND	ug/L	0.50	0.090	1	09/05/19 12:25	09/06/19 13:56	7440-31-5	
<b>7470 Mercury</b> Analytical Method: EPA 7470A      Preparation Method: EPA 7470A									
Mercury	ND	ug/L	0.20	0.10	1	09/03/19 14:35	09/04/19 17:24	7439-97-6	
<b>9065 Phenolics, Total</b> Analytical Method: EPA 9065      Preparation Method: EPA 9065									
Phenolics, Total Recoverable	ND	mg/L	0.050	0.050	1	09/06/19 15:50	09/06/19 19:53	64743-03-9	
<b>9056 IC anions 28 Days</b> Analytical Method: EPA 9056A									
Chloride	2.7	mg/L	1.0	0.60	1		08/30/19 22:10	16887-00-6	
Fluoride	0.22	mg/L	0.10	0.050	1		08/30/19 22:10	16984-48-8	
Sulfate	5.0	mg/L	1.0	0.50	1		08/30/19 22:10	14808-79-8	
<b>Total Organic Carbon,Asheville</b> Analytical Method: EPA 9060A									
Total Organic Carbon	11.0	mg/L	1.0	0.50	1		09/06/19 00:52	7440-44-0	
Total Organic Carbon	10.8	mg/L	1.0	0.50	1		09/06/19 00:52	7440-44-0	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: PP Pond E Sentinel (E)

Pace Project No.: 92443178

**Sample: ED-23R**      **Lab ID: 92443178002**      Collected: 08/26/19 12:02      Received: 08/27/19 14:24      Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>Total Organic Carbon, Asheville</b> Analytical Method: EPA 9060A									
Total Organic Carbon	<b>10.8</b>	mg/L	1.0	0.50	1		09/06/19 00:52	7440-44-0	
Total Organic Carbon	<b>10.6</b>	mg/L	1.0	0.50	1		09/06/19 00:52	7440-44-0	
Mean Total Organic Carbon	<b>10.8</b>	mg/L	1.0	0.50	1		09/06/19 00:52	7440-44-0	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: PP Pond E Sentinel (E)

Pace Project No.: 92443178

QC Batch: 495138

Analysis Method: SM 2540C-2011

QC Batch Method: SM 2540C-2011

Analysis Description: 2540C Total Dissolved Solids

Associated Lab Samples: 92443178001, 92443178002

METHOD BLANK: 2667835

Matrix: Water

Associated Lab Samples: 92443178001, 92443178002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	25.0	25.0	08/29/19 10:54	

LABORATORY CONTROL SAMPLE: 2667836

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	250	236	94	90-110	

SAMPLE DUPLICATE: 2667837

Parameter	Units	92443178001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	136	118	14	5	D6

SAMPLE DUPLICATE: 2667838

Parameter	Units	92443193001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	108	116	7	5	D6

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### QUALITY CONTROL DATA

Project: PP Pond E Sentinel (E)

Pace Project No.: 92443178

QC Batch: 495629

Analysis Method: EPA 7470A

QC Batch Method: EPA 7470A

Analysis Description: 7470 Mercury

Associated Lab Samples: 92443178001, 92443178002

METHOD BLANK: 2670079

Matrix: Water

Associated Lab Samples: 92443178001, 92443178002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.10	09/04/19 16:27	

LABORATORY CONTROL SAMPLE: 2670080

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	2.5	2.6	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2670081 2670082

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		92443193001 Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Mercury	ug/L	ND	2.5	2.5	2.3	2.5	90	97	75-125	7	25		

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### QUALITY CONTROL DATA

Project: PP Pond E Sentinel (E)

Pace Project No.: 92443178

QC Batch: 496199 Analysis Method: EPA 6010D  
QC Batch Method: EPA 3010A Analysis Description: 6010 MET  
Associated Lab Samples: 92443178001, 92443178002

METHOD BLANK: 2672611 Matrix: Water

Associated Lab Samples: 92443178001, 92443178002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	ND	5.0	3.0	09/08/19 18:01	
Arsenic	ug/L	ND	10.0	4.7	09/08/19 18:01	
Barium	ug/L	ND	5.0	1.0	09/08/19 18:01	
Beryllium	ug/L	ND	1.0	0.20	09/08/19 18:01	
Boron	mg/L	0.012J	0.050	0.0066	09/08/19 18:01	
Cadmium	ug/L	ND	1.0	0.40	09/08/19 18:01	
Calcium	mg/L	ND	0.10	0.024	09/08/19 18:01	
Chromium	ug/L	ND	5.0	1.0	09/08/19 18:01	
Copper	ug/L	ND	5.0	2.1	09/08/19 18:01	
Hardness, Total(SM 2340B)	ug/L	ND	662	131	09/08/19 18:01	
Molybdenum	ug/L	ND	5.0	0.90	09/08/19 18:01	
Nickel	ug/L	ND	5.0	0.90	09/08/19 18:01	
Selenium	ug/L	ND	10.0	4.7	09/08/19 18:01	
Silver	ug/L	ND	5.0	2.5	09/08/19 18:01	
Vanadium	ug/L	ND	5.0	1.3	09/08/19 18:01	
Zinc	ug/L	5.0J	10.0	3.9	09/08/19 18:01	BC

LABORATORY CONTROL SAMPLE: 2672612

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	500	459	92	80-120	
Arsenic	ug/L	500	449	90	80-120	
Barium	ug/L	500	498	100	80-120	
Beryllium	ug/L	500	478	96	80-120	
Boron	mg/L	0.5	0.48	95	80-120	
Cadmium	ug/L	500	467	93	80-120	
Calcium	mg/L	5	4.8	95	80-120	
Chromium	ug/L	500	495	99	80-120	
Copper	ug/L	500	492	98	80-120	
Hardness, Total(SM 2340B)	ug/L	33100	30700	93	80-120	
Molybdenum	ug/L	500	444	89	80-120	
Nickel	ug/L	500	467	93	80-120	
Selenium	ug/L	500	448	90	80-120	
Silver	ug/L	250	236	95	80-120	
Vanadium	ug/L	500	460	92	80-120	
Zinc	ug/L	500	483	97	80-120	BC

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**QUALITY CONTROL DATA**

Project: PP Pond E Sentinel (E)

Pace Project No.: 92443178

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2672613 2672614												
Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		92443193001 Result	Spike Conc.	Spike Conc.	MS Result							
Antimony	ug/L	ND	500	500	483	484	97	97	75-125	0	20	
Arsenic	ug/L	ND	500	500	479	478	96	95	75-125	0	20	
Barium	ug/L	30.7	500	500	548	548	103	103	75-125	0	20	
Beryllium	ug/L	0.25J	500	500	499	500	100	100	75-125	0	20	
Boron	mg/L	0.034J	0.5	0.5	0.53	0.53	100	100	75-125	0	20	
Cadmium	ug/L	ND	500	500	498	498	100	100	75-125	0	20	
Calcium	mg/L	9.8	5	5	14.3	14.4	91	93	75-125	1	20	
Chromium	ug/L	ND	500	500	520	518	104	103	75-125	0	20	
Copper	ug/L	2.2J	500	500	516	516	103	103	75-125	0	20	
Hardness, Total(SM 2340B)	ug/L	38000	33100	33100	68500	68900	92	93	75-125	0		
Molybdenum	ug/L	5.8	500	500	462	463	91	91	75-125	0	20	
Nickel	ug/L	ND	500	500	486	486	97	97	75-125	0	20	
Selenium	ug/L	ND	500	500	505	502	101	100	75-125	0	20	
Silver	ug/L	ND	250	250	249	246	100	99	75-125	1	20	
Vanadium	ug/L	ND	500	500	479	482	96	96	75-125	1	20	
Zinc	ug/L	5.6J	500	500	481	480	95	95	75-125	0	20	

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**REPORT OF LABORATORY ANALYSIS**

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### QUALITY CONTROL DATA

Project: PP Pond E Sentinel (E)

Pace Project No.: 92443178

QC Batch: 496148 Analysis Method: EPA 6020B  
QC Batch Method: EPA 3010A Analysis Description: 6020 MET  
Associated Lab Samples: 92443178001, 92443178002

METHOD BLANK: 2672412 Matrix: Water

Associated Lab Samples: 92443178001, 92443178002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Cobalt	ug/L	ND	0.10	0.050	09/06/19 13:00	
Iron	ug/L	ND	50.0	7.5	09/06/19 13:00	
Lead	ug/L	ND	0.10	0.050	09/06/19 13:00	
Lithium	ug/L	ND	2.5	0.42	09/06/19 13:00	
Manganese	ug/L	ND	0.50	0.14	09/06/19 13:00	
Potassium	ug/L	ND	50.0	6.2	09/06/19 13:00	
Sodium	ug/L	ND	250	14.3	09/06/19 13:00	
Thallium	ug/L	ND	0.10	0.060	09/06/19 13:00	
Tin	ug/L	ND	0.50	0.090	09/06/19 13:00	

LABORATORY CONTROL SAMPLE: 2672413

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cobalt	ug/L	10	9.0	90	80-120	
Iron	ug/L	625	564	90	80-120	
Lead	ug/L	50	45.6	91	80-120	
Lithium	ug/L	50	45.6	91	80-120	
Manganese	ug/L	50	44.4	89	80-120	
Potassium	ug/L	625	558	89	80-120	
Sodium	ug/L	625	555	89	80-120	
Thallium	ug/L	10	9.1	91	80-120	
Tin	ug/L	50	44.8	90	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2672414 2672415

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92443193001 Result	Spike Conc.	Spike Conc.	MS Result								
Cobalt	ug/L	0.31	10	10	8.9	9.0	85	87	75-125	1	20		
Iron	ug/L	1660	625	625	2160	2200	81	87	75-125	2	20		
Lead	ug/L	ND	50	50	44.3	44.7	88	89	75-125	1	20		
Lithium	ug/L	9.9	50	50	52.9	53.8	86	88	75-125	2	20		
Manganese	ug/L	183	50	50	224	227	82	89	75-125	2	20		
Potassium	ug/L	5790	625	625	6240	6430	73	103	75-125	3	20	M1	
Sodium	ug/L	15400	625	625	15700	16200	44	128	75-125	3	20	M6	
Thallium	ug/L	ND	10	10	8.8	9.0	88	90	75-125	2	20		
Tin	ug/L	ND	50	50	43.4	44.3	87	89	75-125	2	20		

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### QUALITY CONTROL DATA

Project: PP Pond E Sentinel (E)

Pace Project No.: 92443178

QC Batch: 34869

Analysis Method: EPA 9065

QC Batch Method: EPA 9065

Analysis Description: 9065 Phenolics

Associated Lab Samples: 92443178001, 92443178002

METHOD BLANK: 156873

Matrix: Water

Associated Lab Samples: 92443178001, 92443178002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Phenolics, Total Recoverable	mg/L	ND	0.050	0.050	09/06/19 19:49	

LABORATORY CONTROL SAMPLE: 156874

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenolics, Total Recoverable	mg/L	0.5	0.42	84	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 156875 156876

Parameter	Units	156875		156876		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92443178001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Phenolics, Total Recoverable	mg/L	ND	0.5	0.5	0.39	0.36	74	69	80-120	6	20	M1	

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### QUALITY CONTROL DATA

Project: PP Pond E Sentinel (E)

Pace Project No.: 92443178

QC Batch: 495319

Analysis Method: EPA 9056A

QC Batch Method: EPA 9056A

Analysis Description: 9056 IC anions 28 Days

Associated Lab Samples: 92443178001, 92443178002

METHOD BLANK: 2668844

Matrix: Water

Associated Lab Samples: 92443178001, 92443178002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	08/30/19 20:14	
Fluoride	mg/L	ND	0.10	0.050	08/30/19 20:14	
Sulfate	mg/L	ND	1.0	0.50	08/30/19 20:14	

LABORATORY CONTROL SAMPLE: 2668845

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	52.1	104	90-110	
Fluoride	mg/L	2.5	2.6	105	90-110	
Sulfate	mg/L	50	52.2	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2668846 2668847

Parameter	Units	92443178001		MS		MSD		% Rec		Max		Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	
Chloride	mg/L	37.7	50	50	50	93.0	94.3	111	113	90-110	1	10 M1
Fluoride	mg/L	ND	2.5	2.5	2.5	3.1	3.0	123	118	90-110	4	10 M1
Sulfate	mg/L	62.2	50	50	50	108	110	92	95	90-110	1	10

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2668848 2668849

Parameter	Units	92443193001		MS		MSD		% Rec		Max		Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	
Chloride	mg/L	2.8	50	50	50	60.2	60.3	115	115	90-110	0	10 M1
Fluoride	mg/L	0.36	2.5	2.5	2.5	3.1	3.1	110	110	90-110	0	10
Sulfate	mg/L	13.2	50	50	50	70.3	70.5	114	115	90-110	0	10 M1

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### QUALITY CONTROL DATA

Project: PP Pond E Sentinel (E)

Pace Project No.: 92443178

QC Batch: 496159 Analysis Method: EPA 9060A  
QC Batch Method: EPA 9060A Analysis Description: 9060 TOC, AVL  
Associated Lab Samples: 92443178001, 92443178002

METHOD BLANK: 2672474 Matrix: Water

Associated Lab Samples: 92443178001, 92443178002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mean Total Organic Carbon	mg/L	ND	1.0	0.50	09/05/19 20:48	
Total Organic Carbon	mg/L	ND	1.0	0.50	09/05/19 20:48	
Total Organic Carbon	mg/L	ND	1.0	0.50	09/05/19 20:48	
Total Organic Carbon	mg/L	ND	1.0	0.50	09/05/19 20:48	
Total Organic Carbon	mg/L	ND	1.0	0.50	09/05/19 20:48	

LABORATORY CONTROL SAMPLE: 2672475

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mean Total Organic Carbon	mg/L	25	24.4	97	75-125	
Total Organic Carbon	mg/L	25	24.2	97	75-125	
Total Organic Carbon	mg/L	25	24.4	97	75-125	
Total Organic Carbon	mg/L	25	24.4	97	75-125	
Total Organic Carbon	mg/L	25	24.5	98	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2672476 2672477

Parameter	Units	92443193001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mean Total Organic Carbon	mg/L	0.57J	25	25	43.1	43.7	170	172	75-125	1	25	M1
Total Organic Carbon	mg/L	0.57J	25	25	43.0	43.2	170	171	75-125	1	25	M1
Total Organic Carbon	mg/L	0.55J	25	25	43.0	44.1	170	174	75-125	3	25	M1
Total Organic Carbon	mg/L	0.58J	25	25	43.8	43.9	173	173	75-125	0	25	M1
Total Organic Carbon	mg/L	0.56J	25	25	42.7	43.4	168	171	75-125	2	25	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2672478 2672479

Parameter	Units	92443188005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mean Total Organic Carbon	mg/L	26.4	25	25	44.1	44.0	71	71	75-125	0	25	M1
Total Organic Carbon	mg/L	25.9	25	25	43.8	44.4	72	74	75-125	1	25	M1
Total Organic Carbon	mg/L	26.5	25	25	44.4	43.9	72	70	75-125	1	25	M1
Total Organic Carbon	mg/L	27.0	25	25	44.1	44.1	68	68	75-125	0	25	M1
Total Organic Carbon	mg/L	26.0	25	25	44.2	43.8	73	71	75-125	1	25	M1

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PP Pond E Sentinel (E)

Pace Project No.: 92443178

**Sample: ED-22RA**      **Lab ID: 92443178001**      Collected: 08/26/19 11:18      Received: 08/27/19 14:24      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.452 ± 0.145 (0.160)</b> <b>C:84% T:NA</b>	pCi/L	09/27/19 18:42	13982-63-3	
Radium-228	EPA 9320	<b>0.214 ± 0.430 (0.945)</b> <b>C:82% T:81%</b>	pCi/L	09/20/19 13:39	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.666 ± 0.575 (1.11)</b>	pCi/L	09/30/19 10:48	7440-14-4	

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PP Pond E Sentinel (E)

Pace Project No.: 92443178

**Sample: ED-23R**      **Lab ID: 92443178002**      Collected: 08/26/19 12:02      Received: 08/27/19 14:24      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.592 ± 0.168 (0.171)</b> <b>C:88% T:NA</b>	pCi/L	09/27/19 18:42	13982-63-3	
Radium-228	EPA 9320	<b>0.273 ± 0.376 (0.807)</b> <b>C:85% T:81%</b>	pCi/L	09/20/19 13:39	15262-20-1	
Total Radium	Total Radium Calculation	<b>0.865 ± 0.544 (0.978)</b>	pCi/L	09/30/19 10:48	7440-14-4	

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: PP Pond E Sentinel (E)

Pace Project No.: 92443178

QC Batch: 363296

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 92443178001, 92443178002

METHOD BLANK: 1762597

Matrix: Water

Associated Lab Samples: 92443178001, 92443178002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.401 ± 0.346 (0.697) C:81% T:88%	pCi/L	09/20/19 13:37	

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: PP Pond E Sentinel (E)

Pace Project No.: 92443178

QC Batch: 363264

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Associated Lab Samples: 92443178001, 92443178002

METHOD BLANK: 1762518

Matrix: Water

Associated Lab Samples: 92443178001, 92443178002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.316 ± 0.117 (0.146) C:96% T:NA	pCi/L	09/27/19 18:42	

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## QUALIFIERS

Project: PP Pond E Sentinel (E)

Pace Project No.: 92443178

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### 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

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

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.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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-A Pace Analytical Services - Asheville

PASI-E Pace Analytical Services - Eden

PASI-GA Pace Analytical Services - Atlanta, GA

PASI-PA Pace Analytical Services - Greensburg

### ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

BC The same analyte was detected in an associated blank at a concentration above 1/2 the reporting limit but below the laboratory reporting limit.

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PP Pond E Sentinel (E)

Pace Project No.: 92443178

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92443178001	ED-22RA	SM 2540C-2011	495138		
92443178002	ED-23R	SM 2540C-2011	495138		
92443178001	ED-22RA	EPA 3010A	496199	EPA 6010D	496267
92443178002	ED-23R	EPA 3010A	496199	EPA 6010D	496267
92443178001	ED-22RA	EPA 3010A	496148	EPA 6020B	496197
92443178002	ED-23R	EPA 3010A	496148	EPA 6020B	496197
92443178001	ED-22RA	EPA 7470A	495629	EPA 7470A	495735
92443178002	ED-23R	EPA 7470A	495629	EPA 7470A	495735
92443178001	ED-22RA	EPA 9315	363264		
92443178002	ED-23R	EPA 9315	363264		
92443178001	ED-22RA	EPA 9320	363296		
92443178002	ED-23R	EPA 9320	363296		
92443178001	ED-22RA	Total Radium Calculation	363735		
92443178002	ED-23R	Total Radium Calculation	363735		
92443178001	ED-22RA	EPA 9065	34869	EPA 9065	34892
92443178002	ED-23R	EPA 9065	34869	EPA 9065	34892
92443178001	ED-22RA	EPA 9056A	495319		
92443178002	ED-23R	EPA 9056A	495319		
92443178001	ED-22RA	EPA 9060A	496159		
92443178002	ED-23R	EPA 9060A	496159		

### REPORT OF LABORATORY ANALYSIS

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Laboratory receiving samples:

Asheville  Eden  Greenwood  Huntersville  Raleigh  Mechanicsville

**Sample Condition Upon Receipt**

Client Name: Goldner

Project #: **WO#: 92443178**



Courier:  Fed Ex  UPS  USPS  Client  
 Commercial  Pace  Other: \_\_\_\_\_

Date/Initials Person Examining Contents: 8-27-19

Custody Seal Present?  Yes  No Seals Intact?  Yes  No

Biological Tissue Frozen?  Yes  No  N/A RSB

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer:  IR Gun ID: T-3 Type of Ice:  Wet  Blue  None

Cooler Temp (°C): 3.8 Correction Factor: Add/Subtract (°C) Del

Temp should be above freezing to 6°C  
 Samples out of temp criteria. Samples on ice, cooling process has begun

Cooler Temp Corrected (°C): 3.1

USDA Regulated Soil ( N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?  
 Yes  No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)?  Yes  No

		Comments/Discrepancy:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Short Hold Time Analysis (<72 hr.)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Dissolved analysis: Samples Field Filtered?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	8.
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>		
Headspace in VOA Vials (>5-6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10.
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

COMMENTS/SAMPLE DISCREPANCY

Field Data Required?  Yes  No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Project Manager SCURF Review: AMG Date: 9/10/19

Project Manager SRF Review: ATP Date: 09/10/19





Document Name: <b>Sample Condition Upon Receipt(SCUR)</b>	Document Revised: February 7, 2018 Page 1 of 2
Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

\*Check  mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Project # **WO# : 92443178**

PM: NMG Due Date: 09/10/19

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

CLIENT: 92-Golder

\*\*Bottom half of box is to list number of bottle

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGfU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/CBS kit (N/A)	SP5T-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A - lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	V5GU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)		
1		1	1		2															3									
2		1	1		2															3									
3																													
4																													
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers.





Air Water & Soil Laboratories, Inc.  
1941 Reymet Road  
Richmond, VA 23237  
(804)-358-8295 - Telephone  
(804)-358-8297 - Fax

---

**Analysis Detects Report**

Client Name:  
Client Site ID:  
Submitted To:

Date Issued:

---

**Laboratory Sample ID:**

**Client Sample ID:**

Parameter	Samp ID	Reference Method	Sample Results	Qual	DL	LOQ	Dil. Factor	Units
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There are no reportable results for target analytes in this report.

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Note that this report is not the "Certificate of Analysis". This report only lists the target analytes that displayed concentrations that exceeded the detection limit specified for that analyte. For a complete listing of all analytes requested and the results of the analysis see the " Certificate of Analysis".



1941 Reymet Road • Richmond, Virginia 23237 • Tel: (804)-358-8295 Fax: (804)-358-8297

# Certificate of Analysis

Final Report

## Sample Delivery Group ID Possum Point 1662150

Client Name: Golder Associates, Inc.  
2108 W. Laburnum Ave. Suite 200  
Richmond, VA 23227

Date Issued: 9/16/2019 9:06:45AM

Submitted To: Amanda Reynolds

Client Site I.D.: Possum Point PS

Purchase Order:

Enclosed are the results of analyses for samples received by the laboratory in sample delivery group Possum Point 1662150 . Work orders included in the sample delivery group:

Work Order  
19H1041

Receive Date  
8/26/2019 3:45:00PM

Project Number  
1662150

Ted Soyars  
Technical Director

**End Notes:**

The test results listed in this report relate only to the samples submitted to the laboratory and as received by the Laboratory.

Unless otherwise noted, the test results for solid materials are calculated on a wet weight basis. Analyses for pH, dissolved oxygen, temperature, residual chlorine and sulfite that are performed in the laboratory do not meet NELAC requirements due to extremely short holding times. These analyses should be performed in the field. The results of field analyses performed by the Sampler included in the Certificate of Analysis are done so at the client's request and are not included in the laboratory's fields of certification nor have they been audited for adherence to a reference method or procedure.

The signature on the final report certifies that these results conform to all applicable NELAC standards unless otherwise specified. For a complete list of the Laboratory's NELAC certified parameters please contact customer service.

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**Certificate of Analysis**

Client Name: Golder Associates, Inc.  
Client Site I.D.: Possum Point PS  
Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:06:45AM

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
ED-22RA	19H1041-01	Ground Water	08/26/2019 11:15	08/26/2019 15:45
ED-23R	19H1041-02	Ground Water	08/26/2019 12:02	08/26/2019 15:45

**Certificate of Analysis**

Client Name: Golder Associates, Inc.  
 Client Site I.D.: Possum Point PS  
 Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:06:45AM

Client Sample ID: ED-22RA

Laboratory Sample ID: 19H1041-01

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	DL	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Chromium, Hexavalent	01	18540-29-9	SW7196A	08/27/2019 08:00	08/27/2019 12:15	BLOD		0.005	0.005	1	mg/L	MWL

**Certificate of Analysis**

Client Name: Golder Associates, Inc.  
 Client Site I.D.: Possum Point PS  
 Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:06:45AM

Client Sample ID: ED-23R

Laboratory Sample ID: 19H1041-02

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	DL	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Chromium, Hexavalent	02	18540-29-9	SW7196A	08/27/2019 08:00	08/27/2019 12:15	BLOD		0.005	0.005	1	mg/L	MWL

## Certificate of Analysis

Client Name: Golder Associates, Inc.  
Client Site I.D.: Possum Point PS  
Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:06:45AM

Wet Chemistry Analysis - Quality Control

Air Water & Soil Laboratories, Inc.

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	------

### Batch BCH0852 - No Prep Wet Chem

**Blank (BCH0852-BLK1)**

Prepared & Analyzed: 08/27/2019

Chromium, Hexavalent      BLOD      0.005      mg/L

**LCS (BCH0852-BS1)**

Prepared & Analyzed: 08/27/2019

Chromium, Hexavalent      0.101      0.005      mg/L      0.100      101      80-120

**Matrix Spike (BCH0852-MS1)**

**Source: 19H1040-01**

Prepared & Analyzed: 08/27/2019

Chromium, Hexavalent      0.092      0.005      mg/L      0.100      BLOD      92.0      80-120

**Matrix Spike Dup (BCH0852-MSD1)**

**Source: 19H1040-01**

Prepared & Analyzed: 08/27/2019

Chromium, Hexavalent      0.092      0.005      mg/L      0.100      BLOD      92.0      80-120      0.00      20

### Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>			<b>Preparation Method:</b>	<b>No Prep Wet Chem</b>	
19H1041-01	100 mL / 100 mL	SW7196A	BCH0852	SCH0790	AH90119
19H1041-02	100 mL / 100 mL	SW7196A	BCH0852	SCH0790	AH90119



**Certificate of Analysis**

Client Name: Golder Associates, Inc.  
Client Site I.D.: Possum Point PS  
Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:06:45AM

**Certified Analyses included in this Report**

Analyte	Certifications
<i>SW7196A in Non-Potable Water</i>	
Chromium, Hexavalent	VELAP

Code	Description	Cert Number	Expires
MdDOE	Maryland DE Drinking Water	341	12/31/2019
NC	North Carolina DENR	495	12/31/2019
VELAP Certificate #4337	NELAC-Virginia Certificate #10503	460021	06/14/2020
WVDEP	West Virginia DEP	350	11/30/2019

## Certificate of Analysis

Client Name: Golder Associates, Inc.  
Client Site I.D.: Possum Point PS  
Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:06:45AM

### Qualifiers and Definitions

RPD Relative Percent Difference

Qual Qualifiers

-RE Denotes sample was re-analyzed

LOD Limit of Detection

BLOD Below Limit of Detection

LOQ Limit of Quantitation

DF Dilution Factor

TIC Tentatively Identified Compounds are compounds that are identified by comparing the analyte mass spectral pattern with the NIST spectral library. A TIC spectral match is reported when the pattern is at least 75% consistent with the published pattern. Compound concentrations are estimated and are calculated using an internal standard response factor of 1.

PCBs, Total Total PCBs are defined as the sum of detected Aroclors 1016, 1221, 1232, 1248, 1254, 1260, 1262, and 1268.

## CHAIN OF CUSTODY

PAGE 1 OF 1

COMPANY NAME: <u>Golder Associates Inc.</u>	INVOICE TO: <u>Accounts Payable</u>	PROJECT NAME/Quote #: <u>SA19 E Pond E Sentinel</u>
CONTACT: <u>A. Reynolds</u>	INVOICE CONTACT: <u>A. Reynolds</u>	SITE NAME: <u>Possum Point Power Station</u>
ADDRESS: <u>2106 W. Laburnum Ave #200 Richmond, VA 23227</u>	INVOICE ADDRESS:	PROJECT NUMBER: <u>1662150</u>
PHONE #: <u>(804) 358-7900</u>	INVOICE PHONE #: <u>(804) 358-7900</u>	P.O. #:
FAX #: <u>(804) 358-2900</u>	EMAIL: <u>areynolds@golder.com</u>	Pretreatment Program:
Is sample for compliance reporting? <u>(YES) NO</u>	Regulatory State: <u>VA</u>	Is sample from a chlorinated supply? YES <u>(NO)</u>
		PWS I.D. #:

SAMPLER NAME (PRINT): M. Anta      SAMPLER SIGNATURE: [Signature]      Turn Around Time: Circle: 10 5 Days or \_\_\_ Day(s)

Matrix Codes: WW=Waste Water/Storm Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other \_\_\_\_\_

CLIENT SAMPLE I.D.	Grab Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)						COMMENTS
										Hexavalent Chromium (by 7196)						
1) ED-22RA	✓	N	X		8/26/19	12:02		GW	1	X						Preservative Codes: N=Nitric Acid C=Hydrochloric Acid S=Sulfuric Acid H=Sodium Hydroxide A=Ascorbic Acid Z=Zinc Acetate T=Sodium Thiosulfate M=Methanol  PLEASE NOTE PRESERVATIVE(S), INTERFERENCE CHECKS or PUMP RATE (L/min)
2) ED-23R	✓	N		8/26/19	12:02		GW	1	X							
3)																
4)																
5)																
6)																
7)																
8)																
9)																
10)																

RELINQUISHED: <u>[Signature]</u>	DATE / TIME: <u>8/26/19/1400</u>	RECEIVED: <u>[Signature]</u>	DATE / TIME: <u>8/26/19 14:05</u>	QC Data Package	LAB USE ONLY Therm ID: <u>777</u>	COOLER TEMP: <u>13.1 °C</u>
RELINQUISHED: <u>Courner</u>	DATE / TIME:	RECEIVED: <u>[Signature]</u>	DATE / TIME: <u>8/26/19</u>	Level III <input type="checkbox"/>	Custody Seals used and intact? <u>(YES)</u>	Received on ice? <u>(N)</u>
RELINQUISHED:	DATE / TIME:	RECEIVED: <u>[Signature]</u>	DATE / TIME: <u>8/26/19</u>	Level IV <input type="checkbox"/>	<b>GA 19H1041</b> <b>Possum Point PS- Bill to Golder</b> <b>Recd: 08/26/2019 Due: 09/10/2019</b>	
		RECEIVED:	DATE / TIME:	<b>Level II</b>		

## Certificate of Analysis

Client Name: Golder Associates, Inc.  
Client Site I.D.: Possum Point PS  
Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:06:45AM

### Sample Conditions Checklist

Samples Received at:	13.10°C
How were samples received?	Courier
Were Custody Seals used? If so, were they received intact?	Yes
Are the custody papers filled out completely and correctly?	Yes
Do all bottle labels agree with custody papers?	Yes
Is the temperature blank or representative sample within acceptable limits or received on ice, and recently taken?	Yes
Are all samples within holding time for requested laboratory tests?	Yes
Is a sufficient amount of sample provided to perform the tests included?	Yes
Are all samples in appropriate containers for the analyses requested?	Yes
Were volatile organic containers received?	No
Are all volatile organic and TOX containers free of headspace?	NA
Is a trip blank provided for each VOC sample set? VOC sample sets include EPA8011, EPA504, EPA8260, EPA624, EPA8015 GRO, EPA8021, EPA524, and RSK-175.	NA
Are all samples received appropriately preserved? Note that metals containers do not require field preservation but lab preservation may delay analysis.	Yes

### Work Order Comments

September 24, 2019

Mike Williams  
Golder Associates  
2108 W Laburnum Ave  
Suite 200  
Richmond, VA 23227

RE: Project: PP Field Blank (F)  
Pace Project No.: 92443179

Dear Mike Williams:

Enclosed are the analytical results for sample(s) received by the laboratory on August 27, 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,



Nicole Gasiorowski  
nicole.gasiorowski@pacelabs.com  
(704)875-9092  
Project Manager

Enclosures

cc: Craig LaCosse, Golder Associates Inc.  
Rachel Powell, Golder Associates  
Amanda Reynolds, Golder Associates  
Martha Smith, Golder Associates Inc.



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: PP Field Blank (F)

Pace Project No.: 92443179

---

### Atlanta Certification IDs

110 Technology Parkway Peachtree Corners, GA 30092

Florida DOH Certification #: E87315

Georgia DW Inorganics Certification #: 812

Georgia DW Microbiology Certification #: 812

North Carolina Certification #: 381

South Carolina Certification #: 98011001

Virginia Certification #: 460204

---

### 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

Florida: Cert E871149 SEKS WET

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

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### Asheville Certification IDs

2225 Riverside Drive, Asheville, NC 28804

Florida/NELAP Certification #: E87648

Massachusetts Certification #: M-NC030

North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40

South Carolina Certification #: 99030001

Virginia/VELAP Certification #: 460222

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### Eden Certification IDs

205 East Meadow Road Suite A, Eden, NC 27288

North Carolina Drinking Water Certification #: 37738

North Carolina Wastewater Certification #: 633

Virginia/VELAP Certification #: 460025

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: PP Field Blank (F)

Pace Project No.: 92443179

---

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92443179001	FIELD BLANK	Water	08/27/19 10:30	08/27/19 14:24

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: PP Field Blank (F)

Pace Project No.: 92443179

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92443179001	FIELD BLANK	SM 2540C-2011	SAM1	1	PASI-E
		EPA 6010D	DS	16	PASI-A
		EPA 6020B	SER	9	PASI-A
		EPA 7470A	SOO	1	PASI-A
		EPA 9315	LAL	1	PASI-PA
		EPA 9320	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		EPA 9065	MWB	1	PASI-GA
		EPA 9056A	CDC	3	PASI-A
		EPA 9060A	ECH	5	PASI-A

### REPORT OF LABORATORY ANALYSIS

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### SUMMARY OF DETECTION

Project: PP Field Blank (F)

Pace Project No.: 92443179

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
<b>92443179001</b>	<b>FIELD BLANK</b>					
SM 2540C-2011	Total Dissolved Solids	45.0	mg/L	25.0	08/29/19 10:59	
EPA 6010D	Barium	1.1J	ug/L	5.0	09/08/19 18:38	
EPA 6010D	Boron	0.0074J	mg/L	0.050	09/08/19 18:38	B
EPA 6010D	Zinc	7.4J	ug/L	10.0	09/08/19 18:38	BC
EPA 9315	Radium-226	0.371 ± 0.268 (0.451) C:96% T:NA	pCi/L		09/20/19 07:11	
EPA 9320	Radium-228	0.957 ± 0.462 (0.802) C:74% T:87%	pCi/L		09/20/19 14:59	
Total Radium Calculation	Total Radium	1.33 ± 0.730 (1.25)	pCi/L		09/23/19 11:58	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: PP Field Blank (F)

Pace Project No.: 92443179

Sample: FIELD BLANK      Lab ID: 92443179001      Collected: 08/27/19 10:30      Received: 08/27/19 14:24      Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>2540C Total Dissolved Solids</b> Analytical Method: SM 2540C-2011									
Total Dissolved Solids	45.0	mg/L	25.0	25.0	1		08/29/19 10:59		
<b>6010 MET ICP</b> Analytical Method: EPA 6010D      Preparation Method: EPA 3010A									
Antimony	ND	ug/L	5.0	3.0	1	09/05/19 16:10	09/08/19 18:38	7440-36-0	
Arsenic	ND	ug/L	10.0	4.7	1	09/05/19 16:10	09/08/19 18:38	7440-38-2	
Barium	1.1J	ug/L	5.0	1.0	1	09/05/19 16:10	09/08/19 18:38	7440-39-3	
Beryllium	ND	ug/L	1.0	0.20	1	09/05/19 16:10	09/08/19 18:38	7440-41-7	
Boron	0.0074J	mg/L	0.050	0.0066	1	09/05/19 16:10	09/08/19 18:38	7440-42-8	B
Cadmium	ND	ug/L	1.0	0.40	1	09/05/19 16:10	09/08/19 18:38	7440-43-9	
Calcium	ND	mg/L	0.10	0.024	1	09/05/19 16:10	09/08/19 18:38	7440-70-2	
Chromium	ND	ug/L	5.0	1.0	1	09/05/19 16:10	09/08/19 18:38	7440-47-3	
Copper	ND	ug/L	5.0	2.1	1	09/05/19 16:10	09/08/19 18:38	7440-50-8	
Molybdenum	ND	ug/L	5.0	0.90	1	09/05/19 16:10	09/08/19 18:38	7439-98-7	
Nickel	ND	ug/L	5.0	0.90	1	09/05/19 16:10	09/08/19 18:38	7440-02-0	
Selenium	ND	ug/L	10.0	4.7	1	09/05/19 16:10	09/08/19 18:38	7782-49-2	
Silver	ND	ug/L	5.0	2.5	1	09/05/19 16:10	09/08/19 18:38	7440-22-4	
Hardness, Total(SM 2340B)	ND	ug/L	662	131	1	09/05/19 16:10	09/08/19 18:38		
Vanadium	ND	ug/L	5.0	1.3	1	09/05/19 16:10	09/08/19 18:38	7440-62-2	
Zinc	7.4J	ug/L	10.0	3.9	1	09/05/19 16:10	09/08/19 18:38	7440-66-6	BC
<b>6020 MET ICPMS</b> Analytical Method: EPA 6020B      Preparation Method: EPA 3010A									
Cobalt	ND	ug/L	0.10	0.050	1	09/05/19 12:25	09/06/19 14:00	7440-48-4	
Iron	ND	ug/L	50.0	7.5	1	09/05/19 12:25	09/06/19 14:00	7439-89-6	
Lead	ND	ug/L	0.10	0.050	1	09/05/19 12:25	09/06/19 14:00	7439-92-1	
Lithium	ND	ug/L	2.5	0.42	1	09/05/19 12:25	09/06/19 14:00	7439-93-2	
Manganese	ND	ug/L	0.50	0.14	1	09/05/19 12:25	09/06/19 14:00	7439-96-5	
Potassium	ND	ug/L	50.0	6.2	1	09/05/19 12:25	09/06/19 14:00	7440-09-7	
Sodium	ND	ug/L	250	14.3	1	09/05/19 12:25	09/06/19 14:00	7440-23-5	
Thallium	ND	ug/L	0.10	0.060	1	09/05/19 12:25	09/06/19 14:00	7440-28-0	
Tin	ND	ug/L	0.50	0.090	1	09/05/19 12:25	09/06/19 14:00	7440-31-5	
<b>7470 Mercury</b> Analytical Method: EPA 7470A      Preparation Method: EPA 7470A									
Mercury	ND	ug/L	0.20	0.10	1	09/03/19 14:35	09/04/19 17:32	7439-97-6	
<b>9065 Phenolics, Total</b> Analytical Method: EPA 9065      Preparation Method: EPA 9065									
Phenolics, Total Recoverable	ND	mg/L	0.050	0.050	1	09/06/19 15:50	09/06/19 19:54	64743-03-9	
<b>9056 IC anions 28 Days</b> Analytical Method: EPA 9056A									
Chloride	ND	mg/L	1.0	0.60	1		08/30/19 22:25	16887-00-6	
Fluoride	ND	mg/L	0.10	0.050	1		08/30/19 22:25	16984-48-8	
Sulfate	ND	mg/L	1.0	0.50	1		08/30/19 22:25	14808-79-8	
<b>Total Organic Carbon,Asheville</b> Analytical Method: EPA 9060A									
Total Organic Carbon	ND	mg/L	1.0	0.50	1		09/06/19 01:04	7440-44-0	
Total Organic Carbon	ND	mg/L	1.0	0.50	1		09/06/19 01:04	7440-44-0	

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## ANALYTICAL RESULTS

Project: PP Field Blank (F)

Pace Project No.: 92443179

Sample: FIELD BLANK									
Lab ID: 92443179001									
Collected: 08/27/19 10:30									
Received: 08/27/19 14:24									
Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
<b>Total Organic Carbon,Asheville</b>									
Analytical Method: EPA 9060A									
Total Organic Carbon	ND	mg/L	1.0	0.50	1		09/06/19 01:04	7440-44-0	
Total Organic Carbon	ND	mg/L	1.0	0.50	1		09/06/19 01:04	7440-44-0	
Mean Total Organic Carbon	ND	mg/L	1.0	0.50	1		09/06/19 01:04	7440-44-0	

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### QUALITY CONTROL DATA

Project: PP Field Blank (F)  
Pace Project No.: 92443179

QC Batch: 495138 Analysis Method: SM 2540C-2011  
QC Batch Method: SM 2540C-2011 Analysis Description: 2540C Total Dissolved Solids  
Associated Lab Samples: 92443179001

METHOD BLANK: 2667835 Matrix: Water  
Associated Lab Samples: 92443179001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	25.0	25.0	08/29/19 10:54	

LABORATORY CONTROL SAMPLE: 2667836

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	250	236	94	90-110	

SAMPLE DUPLICATE: 2667837

Parameter	Units	92443178001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	136	118	14	5	D6

SAMPLE DUPLICATE: 2667838

Parameter	Units	92443193001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	108	116	7	5	D6

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### QUALITY CONTROL DATA

Project: PP Field Blank (F)

Pace Project No.: 92443179

QC Batch: 495629	Analysis Method: EPA 7470A
QC Batch Method: EPA 7470A	Analysis Description: 7470 Mercury
Associated Lab Samples: 92443179001	

METHOD BLANK: 2670079 Matrix: Water  
Associated Lab Samples: 92443179001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.10	09/04/19 16:27	

LABORATORY CONTROL SAMPLE: 2670080

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	2.5	2.6	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2670081 2670082

Parameter	Units	2670081		2670082		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Mercury	ug/L	2.5	2.5	2.3	2.5	90	97	75-125	7	25	

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### QUALITY CONTROL DATA

Project: PP Field Blank (F)

Pace Project No.: 92443179

QC Batch: 496199	Analysis Method: EPA 6010D
QC Batch Method: EPA 3010A	Analysis Description: 6010 MET
Associated Lab Samples: 92443179001	

METHOD BLANK: 2672611 Matrix: Water

Associated Lab Samples: 92443179001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	ND	5.0	3.0	09/08/19 18:01	
Arsenic	ug/L	ND	10.0	4.7	09/08/19 18:01	
Barium	ug/L	ND	5.0	1.0	09/08/19 18:01	
Beryllium	ug/L	ND	1.0	0.20	09/08/19 18:01	
Boron	mg/L	0.012J	0.050	0.0066	09/08/19 18:01	
Cadmium	ug/L	ND	1.0	0.40	09/08/19 18:01	
Calcium	mg/L	ND	0.10	0.024	09/08/19 18:01	
Chromium	ug/L	ND	5.0	1.0	09/08/19 18:01	
Copper	ug/L	ND	5.0	2.1	09/08/19 18:01	
Hardness, Total(SM 2340B)	ug/L	ND	662	131	09/08/19 18:01	
Molybdenum	ug/L	ND	5.0	0.90	09/08/19 18:01	
Nickel	ug/L	ND	5.0	0.90	09/08/19 18:01	
Selenium	ug/L	ND	10.0	4.7	09/08/19 18:01	
Silver	ug/L	ND	5.0	2.5	09/08/19 18:01	
Vanadium	ug/L	ND	5.0	1.3	09/08/19 18:01	
Zinc	ug/L	5.0J	10.0	3.9	09/08/19 18:01	BC

LABORATORY CONTROL SAMPLE: 2672612

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	500	459	92	80-120	
Arsenic	ug/L	500	449	90	80-120	
Barium	ug/L	500	498	100	80-120	
Beryllium	ug/L	500	478	96	80-120	
Boron	mg/L	0.5	0.48	95	80-120	
Cadmium	ug/L	500	467	93	80-120	
Calcium	mg/L	5	4.8	95	80-120	
Chromium	ug/L	500	495	99	80-120	
Copper	ug/L	500	492	98	80-120	
Hardness, Total(SM 2340B)	ug/L	33100	30700	93	80-120	
Molybdenum	ug/L	500	444	89	80-120	
Nickel	ug/L	500	467	93	80-120	
Selenium	ug/L	500	448	90	80-120	
Silver	ug/L	250	236	95	80-120	
Vanadium	ug/L	500	460	92	80-120	
Zinc	ug/L	500	483	97	80-120	BC

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### QUALITY CONTROL DATA

Project: PP Field Blank (F)

Pace Project No.: 92443179

Parameter	Units	2672613		2672614		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result								
Antimony	ug/L	ND	500	500	483	484	97	97	75-125	0	20		
Arsenic	ug/L	ND	500	500	479	478	96	95	75-125	0	20		
Barium	ug/L	30.7	500	500	548	548	103	103	75-125	0	20		
Beryllium	ug/L	0.25J	500	500	499	500	100	100	75-125	0	20		
Boron	mg/L	0.034J	0.5	0.5	0.53	0.53	100	100	75-125	0	20		
Cadmium	ug/L	ND	500	500	498	498	100	100	75-125	0	20		
Calcium	mg/L	9.8	5	5	14.3	14.4	91	93	75-125	1	20		
Chromium	ug/L	ND	500	500	520	518	104	103	75-125	0	20		
Copper	ug/L	2.2J	500	500	516	516	103	103	75-125	0	20		
Hardness, Total(SM 2340B)	ug/L	38000	33100	33100	68500	68900	92	93	75-125	0			
Molybdenum	ug/L	5.8	500	500	462	463	91	91	75-125	0	20		
Nickel	ug/L	ND	500	500	486	486	97	97	75-125	0	20		
Selenium	ug/L	ND	500	500	505	502	101	100	75-125	0	20		
Silver	ug/L	ND	250	250	249	246	100	99	75-125	1	20		
Vanadium	ug/L	ND	500	500	479	482	96	96	75-125	1	20		
Zinc	ug/L	5.6J	500	500	481	480	95	95	75-125	0	20		

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### QUALITY CONTROL DATA

Project: PP Field Blank (F)  
Pace Project No.: 92443179

QC Batch: 496148 Analysis Method: EPA 6020B  
QC Batch Method: EPA 3010A Analysis Description: 6020 MET  
Associated Lab Samples: 92443179001

METHOD BLANK: 2672412 Matrix: Water  
Associated Lab Samples: 92443179001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Cobalt	ug/L	ND	0.10	0.050	09/06/19 13:00	
Iron	ug/L	ND	50.0	7.5	09/06/19 13:00	
Lead	ug/L	ND	0.10	0.050	09/06/19 13:00	
Lithium	ug/L	ND	2.5	0.42	09/06/19 13:00	
Manganese	ug/L	ND	0.50	0.14	09/06/19 13:00	
Potassium	ug/L	ND	50.0	6.2	09/06/19 13:00	
Sodium	ug/L	ND	250	14.3	09/06/19 13:00	
Thallium	ug/L	ND	0.10	0.060	09/06/19 13:00	
Tin	ug/L	ND	0.50	0.090	09/06/19 13:00	

LABORATORY CONTROL SAMPLE: 2672413

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cobalt	ug/L	10	9.0	90	80-120	
Iron	ug/L	625	564	90	80-120	
Lead	ug/L	50	45.6	91	80-120	
Lithium	ug/L	50	45.6	91	80-120	
Manganese	ug/L	50	44.4	89	80-120	
Potassium	ug/L	625	558	89	80-120	
Sodium	ug/L	625	555	89	80-120	
Thallium	ug/L	10	9.1	91	80-120	
Tin	ug/L	50	44.8	90	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2672414 2672415

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92443193001 Result	Spike Conc.	Spike Conc.	MS Result								
Cobalt	ug/L	0.31	10	10	8.9	9.0	85	87	75-125	1	20		
Iron	ug/L	1660	625	625	2160	2200	81	87	75-125	2	20		
Lead	ug/L	ND	50	50	44.3	44.7	88	89	75-125	1	20		
Lithium	ug/L	9.9	50	50	52.9	53.8	86	88	75-125	2	20		
Manganese	ug/L	183	50	50	224	227	82	89	75-125	2	20		
Potassium	ug/L	5790	625	625	6240	6430	73	103	75-125	3	20	M1	
Sodium	ug/L	15400	625	625	15700	16200	44	128	75-125	3	20	M6	
Thallium	ug/L	ND	10	10	8.8	9.0	88	90	75-125	2	20		
Tin	ug/L	ND	50	50	43.4	44.3	87	89	75-125	2	20		

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### QUALITY CONTROL DATA

Project: PP Field Blank (F)

Pace Project No.: 92443179

QC Batch: 34869	Analysis Method: EPA 9065
QC Batch Method: EPA 9065	Analysis Description: 9065 Phenolics
Associated Lab Samples: 92443179001	

METHOD BLANK: 156873 Matrix: Water  
Associated Lab Samples: 92443179001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Phenolics, Total Recoverable	mg/L	ND	0.050	0.050	09/06/19 19:49	

LABORATORY CONTROL SAMPLE: 156874

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenolics, Total Recoverable	mg/L	0.5	0.42	84	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 156875 156876

Parameter	Units	92443178001		156875		156876		% Rec Limits	RPD	Max RPD	Qual
		MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.	MS Result	MSD Spike Conc.				
Phenolics, Total Recoverable	mg/L	ND	0.5	0.5	0.39	0.36	74	69	80-120	6	20 M1

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### QUALITY CONTROL DATA

Project: PP Field Blank (F)  
Pace Project No.: 92443179

QC Batch: 495319 Analysis Method: EPA 9056A  
QC Batch Method: EPA 9056A Analysis Description: 9056 IC anions 28 Days  
Associated Lab Samples: 92443179001

METHOD BLANK: 2668844 Matrix: Water  
Associated Lab Samples: 92443179001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.60	08/30/19 20:14	
Fluoride	mg/L	ND	0.10	0.050	08/30/19 20:14	
Sulfate	mg/L	ND	1.0	0.50	08/30/19 20:14	

LABORATORY CONTROL SAMPLE: 2668845

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	52.1	104	90-110	
Fluoride	mg/L	2.5	2.6	105	90-110	
Sulfate	mg/L	50	52.2	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2668846 2668847

Parameter	Units	92443178001		MS		MSD		% Rec		Max		Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	
Chloride	mg/L	37.7	50	50	50	93.0	94.3	111	113	90-110	1	10 M1
Fluoride	mg/L	ND	2.5	2.5	2.5	3.1	3.0	123	118	90-110	4	10 M1
Sulfate	mg/L	62.2	50	50	50	108	110	92	95	90-110	1	10

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2668848 2668849

Parameter	Units	92443193001		MS		MSD		% Rec		Max		Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	
Chloride	mg/L	2.8	50	50	50	60.2	60.3	115	115	90-110	0	10 M1
Fluoride	mg/L	0.36	2.5	2.5	2.5	3.1	3.1	110	110	90-110	0	10
Sulfate	mg/L	13.2	50	50	50	70.3	70.5	114	115	90-110	0	10 M1

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### QUALITY CONTROL DATA

Project: PP Field Blank (F)  
Pace Project No.: 92443179

QC Batch: 496159 Analysis Method: EPA 9060A  
QC Batch Method: EPA 9060A Analysis Description: 9060 TOC, AVL  
Associated Lab Samples: 92443179001

METHOD BLANK: 2672474 Matrix: Water  
Associated Lab Samples: 92443179001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mean Total Organic Carbon	mg/L	ND	1.0	0.50	09/05/19 20:48	
Total Organic Carbon	mg/L	ND	1.0	0.50	09/05/19 20:48	
Total Organic Carbon	mg/L	ND	1.0	0.50	09/05/19 20:48	
Total Organic Carbon	mg/L	ND	1.0	0.50	09/05/19 20:48	
Total Organic Carbon	mg/L	ND	1.0	0.50	09/05/19 20:48	

LABORATORY CONTROL SAMPLE: 2672475

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mean Total Organic Carbon	mg/L	25	24.4	97	75-125	
Total Organic Carbon	mg/L	25	24.2	97	75-125	
Total Organic Carbon	mg/L	25	24.4	97	75-125	
Total Organic Carbon	mg/L	25	24.4	97	75-125	
Total Organic Carbon	mg/L	25	24.5	98	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2672476 2672477

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92443193001 Result	Spike Conc.	Spike Conc.	MS Result						
Mean Total Organic Carbon	mg/L	0.57J	25	25	43.1	43.7	170	172	75-125	1	25 M1
Total Organic Carbon	mg/L	0.57J	25	25	43.0	43.2	170	171	75-125	1	25 M1
Total Organic Carbon	mg/L	0.55J	25	25	43.0	44.1	170	174	75-125	3	25 M1
Total Organic Carbon	mg/L	0.58J	25	25	43.8	43.9	173	173	75-125	0	25 M1
Total Organic Carbon	mg/L	0.56J	25	25	42.7	43.4	168	171	75-125	2	25 M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2672478 2672479

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92443188005 Result	Spike Conc.	Spike Conc.	MS Result						
Mean Total Organic Carbon	mg/L	26.4	25	25	44.1	44.0	71	71	75-125	0	25 M1
Total Organic Carbon	mg/L	25.9	25	25	43.8	44.4	72	74	75-125	1	25 M1
Total Organic Carbon	mg/L	26.5	25	25	44.4	43.9	72	70	75-125	1	25 M1
Total Organic Carbon	mg/L	27.0	25	25	44.1	44.1	68	68	75-125	0	25 M1
Total Organic Carbon	mg/L	26.0	25	25	44.2	43.8	73	71	75-125	1	25 M1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: PP Field Blank (F)

Pace Project No.: 92443179

**Sample: FIELD BLANK**      **Lab ID: 92443179001**      Collected: 08/27/19 10:30      Received: 08/27/19 14:24      Matrix: Water  
PWS:      Site ID:      Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 9315	<b>0.371 ± 0.268 (0.451)</b> C:96% T:NA	pCi/L	09/20/19 07:11	13982-63-3	
Radium-228	EPA 9320	<b>0.957 ± 0.462 (0.802)</b> C:74% T:87%	pCi/L	09/20/19 14:59	15262-20-1	
Total Radium	Total Radium Calculation	<b>1.33 ± 0.730 (1.25)</b>	pCi/L	09/23/19 11:58	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: PP Field Blank (F)

Pace Project No.: 92443179

QC Batch: 360247

Analysis Method: EPA 9315

QC Batch Method: EPA 9315

Analysis Description: 9315 Total Radium

Associated Lab Samples: 92443179001

METHOD BLANK: 1748643

Matrix: Water

Associated Lab Samples: 92443179001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.372 ± 0.173 (0.236) C:90% T:NA	pCi/L	09/20/19 15:10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: PP Field Blank (F)

Pace Project No.: 92443179

QC Batch: 360248

Analysis Method: EPA 9320

QC Batch Method: EPA 9320

Analysis Description: 9320 Radium 228

Associated Lab Samples: 92443179001

METHOD BLANK: 1748645

Matrix: Water

Associated Lab Samples: 92443179001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.904 ± 0.385 (0.612) C:83% T:83%	pCi/L	09/20/19 10:28	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: PP Field Blank (F)

Pace Project No.: 92443179

---

### 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

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

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.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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-A Pace Analytical Services - Asheville

PASI-E Pace Analytical Services - Eden

PASI-GA Pace Analytical Services - Atlanta, GA

PASI-PA Pace Analytical Services - Greensburg

### ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

BC The same analyte was detected in an associated blank at a concentration above 1/2 the reporting limit but below the laboratory reporting limit.

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PP Field Blank (F)  
Pace Project No.: 92443179

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92443179001	FIELD BLANK	SM 2540C-2011	495138		
92443179001	FIELD BLANK	EPA 3010A	496199	EPA 6010D	496267
92443179001	FIELD BLANK	EPA 3010A	496148	EPA 6020B	496197
92443179001	FIELD BLANK	EPA 7470A	495629	EPA 7470A	495735
92443179001	FIELD BLANK	EPA 9315	360247		
92443179001	FIELD BLANK	EPA 9320	360248		
92443179001	FIELD BLANK	Total Radium Calculation	362615		
92443179001	FIELD BLANK	EPA 9065	34869	EPA 9065	34892
92443179001	FIELD BLANK	EPA 9056A	495319		
92443179001	FIELD BLANK	EPA 9060A	496159		

### REPORT OF LABORATORY ANALYSIS

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Document Name:  
**Sample Condition Upon Receipt (SCUR)**  
 Document No.:  
**F-CAR-CS-033-Rev.06**

Document Revised: February 7, 2018  
 Page 1 of 2  
 Issuing Authority:  
 Pace Carolinas Quality Office

**Laboratory receiving samples:**

Asheville  Eden  Greenwood  Huntersville  Raleigh  Mechanicsville

**Sample Condition Upon Receipt**

Client Name:  
Golder

Project #: **WO# : 92443179**



Courier:  Fed Ex  UPS  USPS  Client  
 Commercial  Pace  Other: \_\_\_\_\_

Custody Seal Present?  Yes  No Seals Intact?  Yes  No

Date/Initials Person Examining Contents: 8-27-19

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Biological Tissue Frozen?  Yes  No  N/A RSB

Thermometer:  IR Gun ID: T-3 Type of Ice:  Wet  Blue  None

Cooler Temp (°C): 3.8 Correction Factor: Add/Subtract (°C) Del

Temp should be above freezing to 6°C  
 Samples out of temp criteria. Samples on ice, cooling process has begun

Cooler Temp Corrected (°C): 3.7

USDA Regulated Soil ( N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?  
 Yes  No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)?  Yes  No

			Comments/Discrepancy:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.	
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.	
Short Hold Time Analysis (<72 hr.)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.	
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.	
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.	
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.	
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.	
Dissolved analysis: Samples Field Filtered?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	8.	
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.	
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>			
Headspace in VOA Vials (>5-6mm)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10.	
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.	
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A		

**COMMENTS/SAMPLE DISCREPANCY**

Field Data Required?  Yes  No

\_\_\_\_\_

Lot ID of split containers: \_\_\_\_\_

**CLIENT NOTIFICATION/RESOLUTION**

\_\_\_\_\_

Person contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Project Manager SCURF Review: MMG

Date: 9/10/19

Project Manager SRF Review: WCP

Date: 9/10/19



Document Name: <b>Sample Condition Upon Receipt(SCUR)</b>	Document Revised: February 7, 2018 Page 1 of 2
Document No.: <b>F-CAR-CS-033-Rev.06</b>	Issuing Authority: Pace Carolinas Quality Office

\*Check  mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Project #

**WO#: 92443179**

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

PM: NMG

Due Date: 09/11/19

\*\*Bottom half of box is to list number of bottle

CLIENT: 92-Golder

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A - lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)		
1		1	1		2								1						3						2				
2																													
3																													
4																													
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

**pH Adjustment Log for Preserved Samples**

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers.





Air Water & Soil Laboratories, Inc.  
1941 Reymet Road  
Richmond, VA 23237  
(804)-358-8295 - Telephone  
(804)-358-8297 - Fax

---

**Analysis Detects Report**

Client Name:  
Client Site ID:  
Submitted To:

Date Issued:

---

**Laboratory Sample ID:**

**Client Sample ID:**

Parameter	Samp ID	Reference Method	Sample Results	Qual	DL	LOQ	Dil. Factor	Units
-----------	---------	------------------	----------------	------	----	-----	-------------	-------

There are no reportable results for target analytes in this report.

---

Note that this report is not the "Certificate of Analysis". This report only lists the target analytes that displayed concentrations that exceeded the detection limit specified for that analyte. For a complete listing of all analytes requested and the results of the analysis see the "Certificate of Analysis".



1941 Reymet Road • Richmond, Virginia 23237 • Tel: (804)-358-8295 Fax: (804)-358-8297

# Certificate of Analysis

Final Report

## Sample Delivery Group ID Possum Point 1662150

Client Name: Golder Associates, Inc.  
2108 W. Laburnum Ave. Suite 200  
Richmond, VA 23227

Date Issued: 9/16/2019 9:09:37AM

Submitted To: Amanda Reynolds

Client Site I.D.: Possum Point PS

Purchase Order:

Enclosed are the results of analyses for samples received by the laboratory in sample delivery group Possum Point 1662150 . Work orders included in the sample delivery group:

<u>Work Order</u>	<u>Receive Date</u>	<u>Project Number</u>
19H1087	8/27/2019 3:55:00PM	1662150

Ted Soyars  
Technical Director

**End Notes:**

The test results listed in this report relate only to the samples submitted to the laboratory and as received by the Laboratory.

Unless otherwise noted, the test results for solid materials are calculated on a wet weight basis. Analyses for pH, dissolved oxygen, temperature, residual chlorine and sulfite that are performed in the laboratory do not meet NELAC requirements due to extremely short holding times. These analyses should be performed in the field. The results of field analyses performed by the Sampler included in the Certificate of Analysis are done so at the client's request and are not included in the laboratory's fields of certification nor have they been audited for adherence to a reference method or procedure.

The signature on the final report certifies that these results conform to all applicable NELAC standards unless otherwise specified. For a complete list of the Laboratory's NELAC certified parameters please contact customer service.

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## Certificate of Analysis

Client Name: Golder Associates, Inc.  
Client Site I.D.: Possum Point PS  
Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:09:37AM

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Field Blank	19H1087-06	Ground Water	08/27/2019 10:30	08/27/2019 15:55

**Certificate of Analysis**

Client Name: Golder Associates, Inc.  
 Client Site I.D.: Possum Point PS  
 Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:09:37AM

Client Sample ID: Field Blank

Laboratory Sample ID: 19H1087-06

Parameter	Samp ID	CAS	Reference Method	Sample Prep Date/Time	Analyzed Date/Time	Sample Results	Qual	DL	LOQ	DF	Units	Analyst
<b>Wet Chemistry Analysis</b>												
Chromium, Hexavalent	06	18540-29-9	SW7196A	08/28/2019 07:35	08/28/2019 13:30	BLOD		0.005	0.005	1	mg/L	MWL



## Certificate of Analysis

Client Name: Golder Associates, Inc.  
Client Site I.D.: Possum Point PS  
Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:09:37AM

Wet Chemistry Analysis - Quality Control

Air Water & Soil Laboratories, Inc.

Analyte	Result	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
<b>Batch BCH0936 - No Prep Wet Chem</b>										
<b>Blank (BCH0936-BLK1)</b>				Prepared & Analyzed: 08/28/2019						
Chromium, Hexavalent	BLOD	0.005	mg/L							
<b>LCS (BCH0936-BS1)</b>				Prepared & Analyzed: 08/28/2019						
Chromium, Hexavalent	0.102	0.005	mg/L	0.100		102	80-120			
<b>Matrix Spike (BCH0936-MS1)</b>				Source: 19H1087-01 Prepared & Analyzed: 08/28/2019						
Chromium, Hexavalent	BLOD	0.005	mg/L	0.100	BLOD		80-120			M
<b>Matrix Spike (BCH0936-MS2)</b>				Source: 19H1088-04 Prepared & Analyzed: 08/28/2019						
Chromium, Hexavalent	0.005	0.005	mg/L	0.100	BLOD	5.00	80-120			M
<b>Matrix Spike Dup (BCH0936-MSD1)</b>				Source: 19H1087-01 Prepared & Analyzed: 08/28/2019						
Chromium, Hexavalent	BLOD	0.005	mg/L	0.100	BLOD		80-120		20	M
<b>Matrix Spike Dup (BCH0936-MSD2)</b>				Source: 19H1088-04 Prepared & Analyzed: 08/28/2019						
Chromium, Hexavalent	0.005	0.005	mg/L	0.100	BLOD	5.00	80-120	0.00	20	M

### Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
<b>Wet Chemistry Analysis</b>					
19H1087-06	100 mL / 100 mL	SW7196A	BCH0936	SCH0861	AH90141
<b>Preparation Method:</b>				<b>No Prep Wet Chem</b>	



**Certificate of Analysis**

Client Name: Golder Associates, Inc.  
Client Site I.D.: Possum Point PS  
Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:09:37AM

**Certified Analyses included in this Report**

Analyte	Certifications
<i>SW7196A in Non-Potable Water</i>	
Chromium, Hexavalent	VELAP

Code	Description	Cert Number	Expires
MdDOE	Maryland DE Drinking Water	341	12/31/2019
NC	North Carolina DENR	495	12/31/2019
VELAP Certificate #4337	NELAC-Virginia Certificate #10503	460021	06/14/2020
WVDEP	West Virginia DEP	350	11/30/2019

## Certificate of Analysis

Client Name: Golder Associates, Inc.  
Client Site I.D.: Possum Point PS  
Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:09:37AM

### Qualifiers and Definitions

M Matrix spike recovery is outside established acceptance limits

RPD Relative Percent Difference

Qual Qualifiers

-RE Denotes sample was re-analyzed

LOD Limit of Detection

BLOD Below Limit of Detection

LOQ Limit of Quantitation

DF Dilution Factor

TIC Tentatively Identified Compounds are compounds that are identified by comparing the analyte mass spectral pattern with the NIST spectral library. A TIC spectral match is reported when the pattern is at least 75% consistent with the published pattern. Compound concentrations are estimated and are calculated using an internal standard response factor of 1.

PCBs, Total Total PCBs are defined as the sum of detected Aroclors 1016, 1221, 1232, 1248, 1254, 1260, 1262, and 1268.

## CHAIN OF CUSTODY

PAGE 1 OF 1

COMPANY NAME: <u>Golder Associates</u>	INVOICE TO: <u>Accounts Payable</u>	PROJECT NAME/Quote #: <u>B-Pond D</u>
CONTACT: <u>Amanda Reynolds</u>	INVOICE CONTACT: <u>A. Reynolds</u>	SITE NAME: <u>Possum Point Power Station-Dominion</u>
ADDRESS: <u>2109 W. Laburnum Ave, Suite 200, Richmond, VA 23227</u>	INVOICE ADDRESS:	PROJECT NUMBER: <u>1662150</u>
PHONE #: <u>804-358-7900</u>	INVOICE PHONE #:	P.O. #:
FAX #: <u>804-358-2900</u>	EMAIL: <u>Amanda-Reynolds@golder.com</u>	Pretreatment Program:
Is sample for compliance reporting? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Regulatory State: <u>VA</u>	Is sample from a chlorinated supply? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>
SAMPLER NAME (PRINT): <u>Nathaniel Chien</u>		SAMPLER SIGNATURE: <u>Nathaniel Chien</u>
		Turn Around Time: Circle: <u>10</u> 5 Days or ___ Day(s)

Matrix Codes: WW=Waste Water/Storm Water GW=Ground Water DW=Drinking Water S=Soil/Solids OR=Organic A=Air WP=Wipe OT=Other \_\_\_\_\_

CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	ANALYSIS / (PRESERVATIVE)						COMMENTS
1) <u>SD-1603</u>	X					<u>8/27/19</u>	<u>0913</u>	<u>0913</u>	<u>GW</u>	<u>1</u>	X						Preservative Codes: N=Nitric Acid C=Hydrochloric Acid S=Sulfuric Acid H=Sodium Hydroxide A=Ascorbic Acid Z=Zinc Acetate T=Sodium Thiosulfate M=Methanol  PLEASE NOTE PRESERVATIVE(S), INTERFERENCE CHECKS or PUMP RATE (L/min)
2) <u>SD-1604</u>	X					<u>8/27/19</u>	<u>0945</u>	<u>0945</u>	<u>GW</u>	<u>1</u>	X						
3) <u>ED-1605</u>	X					<u>8/27/19</u>	<u>1113</u>	<u>1113</u>	<u>GW</u>	<u>1</u>	X						
4) <u>Duplicate</u>	X					<u>8/27/19</u>	<u>1132</u>	<u>1132</u>	<u>GW</u>	<u>1</u>	X						
5) <u>ED-1612</u>	X					<u>8/27/19</u>	<u>1253</u>	<u>1253</u>	<u>GW</u>	<u>1</u>	X						
6) <u>Field Blank</u>	X					<u>8/27/19</u>	<u>1030</u>	<u>1030</u>	<u>GW</u>	<u>1</u>	X						
7) <u>ED-24R</u>	X					<u>8/27/19</u>	<u>0948</u>	<u>0948</u>	<u>GW</u>	<u>1</u>	X						
8)																	
9)																	
10)																	

RELINQUISHED: <u>Nathaniel Chien</u> DATE / TIME: <u>8/27/19 1400</u>	RECEIVED: <u>Harry Walker</u> DATE / TIME: <u>8-27-19 1417</u>	QC Data Package	LAB USE ONLY Therm ID: <u>277</u> COOLER TEMP <u>16.9 °C</u>
RELINQUISHED: <u>COURSER</u> DATE / TIME: _____	RECEIVED: <u>[Signature]</u> DATE / TIME: <u>1555</u>	Level III <input type="checkbox"/>	Custody Seals used and intact? (Y/N) _____
RELINQUISHED: _____ DATE / TIME: _____	RECEIVED: _____ DATE / TIME: _____	Level IV <input type="checkbox"/>	Received on ice? (Y/N) <input checked="" type="checkbox"/>
		Level II <input checked="" type="checkbox"/>	

**GA 19H1087**  
**Possum Point PS- Bill to Golder**  
**Recd: 08/27/2019 Due: 09/11/2019**



## Certificate of Analysis

Client Name: Golder Associates, Inc.  
Client Site I.D.: Possum Point PS  
Submitted To: Amanda Reynolds

Date Issued: 9/16/2019 9:09:37AM

### Sample Conditions Checklist

Samples Received at:	16.90°C
How were samples received?	Courier
Were Custody Seals used? If so, were they received intact?	Yes
Are the custody papers filled out completely and correctly?	Yes
Do all bottle labels agree with custody papers?	Yes
Is the temperature blank or representative sample within acceptable limits or received on ice, and recently taken?	Yes
Are all samples within holding time for requested laboratory tests?	Yes
Is a sufficient amount of sample provided to perform the tests included?	Yes
Are all samples in appropriate containers for the analyses requested?	Yes
Were volatile organic containers received?	No
Are all volatile organic and TOX containers free of headspace?	NA
Is a trip blank provided for each VOC sample set? VOC sample sets include EPA8011, EPA504, EPA8260, EPA624, EPA8015 GRO, EPA8021, EPA524, and RSK-175.	NA
Are all samples received appropriately preserved? Note that metals containers do not require field preservation but lab preservation may delay analysis.	Yes

### Work Order Comments

**APPENDIX F**  
**HISTORICAL LABORATORY**  
**DETECTIONS**

Appendix F  
Historical Laboratory Detections  
Possum Point Power Station, Pond E  
Permit No. 617

Location		ED-24R	ED-26	ED-22RA	ED-23R	ES-1609	ES-1613	ES-3D	T-1615S	T-1615D	Field Blank
Sample Date	Method	Unit									
<b>Antimony</b>											
11/02-04/2016	SW6020A	µg/L	--	< 0.27	--	--	--	--	--	--	--
11/02-04/2016	SW6020B	µg/L	< 1	--	--	< 1	< 1	< 1	--	--	< 1
12/12-13/2016	SW6020A	µg/L	--	< 0.27	--	--	--	--	--	--	--
12/12-13/2016	SW6020B	µg/L	< 1	--	--	< 1	< 1	< 1	--	--	< 0.1
01/25-26/2017	SW6020A	µg/L	--	< 0.27	--	--	--	--	--	--	--
01/25-26/2017	SW6020B	µg/L	< 1	--	--	< 1	< 1	< 1	--	--	< 0.1
03/06-07/2017	SW6020A	µg/L	--	0.28 J	--	--	--	--	--	--	--
03/06-07/2017	SW6020B	µg/L	< 1	--	--	< 1	< 1	< 1	--	--	< 0.1
04/19-21/2017	SW6020B	µg/L	< 1	< 1.0	--	< 1	< 1	< 1	--	--	< 0.1
05/30-06/01/2017	SW6020B	µg/L	< 1	< 1.0	--	< 1	< 1	< 1	--	--	< 0.1
07/10-12/2017	SW6020B	µg/L	< 1	< 1.0	--	< 1	< 1	< 1	--	--	< 0.1
08/21-23/2017	SW6020B	µg/L	< 1	< 1.0	--	< 1	< 1	< 1	--	--	< 1
03/19-23/2018	SW6020A	µg/L	< 0.12	--	--	--	--	--	--	--	< 0.12
06/18/2018	SW6010D	µg/L	--	--	--	--	--	--	--	--	< 3.9
06/27/2018	SW6010D	µg/L	--	< 3.9	--	< 3.9	< 3.9	< 3.9	--	--	< 3.9
09/19/2018	SW6010D	µg/L	--	< 3.9	--	< 3.9	< 3.9	< 3.9	--	--	< 3.9
09/24-25/2018	SW6010D	µg/L	--	--	--	--	--	--	--	--	< 3.9
12/12-13/2018	SW6010D	µg/L	--	< 3.9	--	< 3.9	< 3.9	< 3.9	--	--	< 3.9
03/11-15/2019	SW6010D	µg/L	< 3.9	--	--	--	--	--	--	--	< 3.9
08/26-29/2019	SW6010D	µg/L	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
<b>Arsenic</b>											
11/02-04/2016	SW6020A	µg/L	--	< 0.35	--	--	--	--	--	--	--
11/02-04/2016	SW6020B	µg/L	< 0.5	--	--	< 0.5	< 0.5	0.83 J	--	--	< 0.5
12/12-13/2016	SW6020A	µg/L	--	< 0.35	--	--	--	--	--	--	--
12/12-13/2016	SW6020B	µg/L	< 0.5	--	--	0.51 J	< 0.5	0.93 J	--	--	< 0.05
01/25-26/2017	SW6020A	µg/L	--	< 0.35	--	--	--	--	--	--	--
01/25-26/2017	SW6020B	µg/L	< 0.5	--	--	0.84 J	0.57 J	1.9	--	--	< 0.05
03/06-07/2017	SW6020A	µg/L	--	< 0.35	--	--	--	--	--	--	--
03/06-07/2017	SW6020B	µg/L	< 0.5	--	--	0.84 J	0.81 J	3.3	--	--	< 0.05
04/19-21/2017	SW6020B	µg/L	< 0.5	0.53 J	--	< 0.5	0.59 J+	2.4	--	--	0.4
05/30-06/01/2017	SW6020B	µg/L	< 0.5	< 0.50	--	< 0.5	< 0.5	1.8	--	--	0.071 J
07/10-12/2017	SW6020B	µg/L	< 0.5	< 0.50	--	< 0.5	< 0.5	2	--	--	< 0.05
08/21-23/2017	SW6020B	µg/L	< 0.5	< 0.50	--	< 0.5	< 0.5	2	--	--	< 0.5
03/19-23/2018	SW6020A	µg/L	< 0.21	--	--	--	--	--	--	--	< 0.21
06/18/2018	SW6010D	µg/L	--	--	--	--	--	--	--	--	< 5.0
06/27/2018	SW6010D	µg/L	--	< 5.0	--	< 5.0	< 5.0	< 5.0	--	--	< 5.0
09/19/2018	SW6010D	µg/L	--	< 5.0	--	5.7 J+	< 5.0	5.9 J+	--	--	< 5.0
09/24-25/2018	SW6010D	µg/L	--	--	--	--	--	--	--	--	< 5.0
12/12-13/2018	SW6010D	µg/L	--	< 5.0	--	< 5.0	< 5.0	< 5.0	--	--	< 5.0
03/11-15/2019	SW6010D	µg/L	< 5.0	--	--	--	--	--	--	--	< 5.0
08/26-29/2019	SW6010D	µg/L	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7

Appendix F  
 Historical Laboratory Detections  
 Possum Point Power Station, Pond E  
 Permit No. 617

Location		ED-24R	ED-26	ED-22RA	ED-23R	ES-1609	ES-1613	ES-3D	T-1615S	T-1615D	Field Blank	
Sample Date	Method	Unit										
<b>Barium</b>												
11/02-04/2016	SW6020A	µg/L	--	33	--	--	--	--	--	--	--	
11/02-04/2016	SW6020B	µg/L	14	--	--	103	124	96.9	--	--	< 1.1	
12/12-13/2016	SW6020A	µg/L	--	29	--	--	--	--	--	--	--	
12/12-13/2016	SW6020B	µg/L	12.6 B	--	--	90	85.4	77.3 B	--	--	15.8	
01/25-26/2017	SW6020A	µg/L	--	27	--	--	--	--	--	--	--	
01/25-26/2017	SW6020B	µg/L	14.8	--	--	107	77.3	88.8	--	--	< 0.11	
03/06-07/2017	SW6020A	µg/L	--	26	--	--	--	--	--	--	--	
03/06-07/2017	SW6020B	µg/L	14.5	--	--	99	65.6	129	--	--	< 0.11	
04/19-21/2017	SW6020B	µg/L	14.1	25.6	--	80.6	62.8	86.6	--	--	< 0.11	
05/30-06/01/2017	SW6020B	µg/L	16.6	28.6	--	105	53.1	85.8	--	--	< 0.11	
07/10-12/2017	SW6020B	µg/L	14.6	24.3	--	86.5	62.4	73.3	--	--	< 0.11	
08/21-23/2017	SW6020B	µg/L	17.7	27.4	--	88.6	64.4	79.1	--	--	< 1.1	
03/19-23/2018	SW6020A	µg/L	15.2	--	--	--	--	--	--	--	< 0.14	
06/18/2018	SW6010D	µg/L	--	--	--	--	--	--	--	--	< 2.5	
06/27/2018	SW6010D	µg/L	--	28.1	--	114	49.3	80.0	--	--	< 2.5	
09/19/2018	SW6010D	µg/L	--	31.3	--	89.6	92.5	97.9	--	--	< 2.5	
09/24-25/2018	SW6010D	µg/L	--	--	--	--	--	--	--	--	< 2.5	
12/12-13/2018	SW6010D	µg/L	--	28.1	--	82.7	107	93.9	--	--	< 2.5	
03/11-15/2019	SW6010D	µg/L	13.0	--	--	--	--	--	--	--	< 2.5	
08/26-29/2019	SW6010D	µg/L	16.8	32.2	28.8	24.2	107	163	70.7	115	104	1.1 J
<b>Beryllium</b>												
11/02-04/2016	SW6020A	µg/L	--	< 0.40	--	--	--	--	--	--	--	
11/02-04/2016	SW6020B	µg/L	< 0.2	--	--	--	0.53 J	0.46 J	< 0.2	--	< 0.2	
12/12-13/2016	SW6020A	µg/L	--	< 0.40	--	--	--	--	--	--	--	
12/12-13/2016	SW6020B	µg/L	< 0.2	--	--	--	0.36 B	0.78 B	< 0.2	--	0.16	
01/25-26/2017	SW6020A	µg/L	--	< 0.40	--	--	--	--	--	--	--	
01/25-26/2017	SW6020B	µg/L	< 0.2	--	--	--	< 0.2	0.69 J	< 0.2	--	< 0.02	
03/06-07/2017	SW6020A	µg/L	--	< 0.40	--	--	--	--	--	--	--	
03/06-07/2017	SW6020B	µg/L	< 0.2	--	--	--	0.57 J	0.88 J	< 0.2	--	< 0.02	
04/19-21/2017	SW6020B	µg/L	< 0.2	< 0.20	--	--	1.1	0.88 J	< 0.2	--	< 0.02	
05/30-06/01/2017	SW6020B	µg/L	< 0.2	< 0.20	--	--	0.52 J	0.83 J	< 0.2	--	< 0.02	
07/10-12/2017	SW6020B	µg/L	< 0.2	< 0.20	--	--	1	0.93 J	< 0.2	--	< 0.02	
08/21-23/2017	SW6020B	µg/L	< 0.2	< 0.20	--	--	1.1	0.9 J	0.43 J	--	< 0.2	
03/19-23/2018	SW6020A	µg/L	0.16 J	--	--	--	--	--	--	--	< 0.064	
06/18/2018	SW6010D	µg/L	--	--	--	--	--	--	--	--	< 0.50	
06/27/2018	SW6010D	µg/L	--	< 0.50	--	--	< 0.50	1.1	< 0.50	--	< 0.50	
09/19/2018	SW6010D	µg/L	--	< 0.50	--	--	0.69 J	< 0.50	< 0.50	--	< 0.50	
09/24-25/2018	SW6010D	µg/L	--	--	--	--	--	--	--	--	< 0.50	
12/12-13/2018	SW6010D	µg/L	--	< 0.50	--	--	0.67 J	< 0.50	< 0.50	--	< 0.50	
03/11-15/2019	SW6010D	µg/L	< 0.50	--	--	--	--	--	--	--	< 0.50	
08/26-29/2019	SW6010D	µg/L	< 0.20	< 0.20	0.33 J	< 0.20	< 0.50	< 0.20	0.52 J	< 0.20	0.21 J	< 0.20

Appendix F  
Historical Laboratory Detections  
Possum Point Power Station, Pond E  
Permit No. 617

Location			ED-24R	ED-26	ED-22RA	ED-23R	ES-1609	ES-1613	ES-3D	T-1615S	T-1615D	Field Blank
Sample Date	Method	Unit										
<b>Boron</b>												
11/02-04/2016	SW6010C	µg/L	--	10 J	--	--	--	--	--	--	--	--
11/02-04/2016	SW6020B	µg/L	59.6 J	--	--	--	1100	2310	1070	--	--	< 5.7
12/12-13/2016	SW6010C	µg/L	--	15 J	--	--	--	--	--	--	--	--
12/12-13/2016	SW6020B	µg/L	< 5.7	--	--	--	1150	2230	930	--	--	< 0.57
01/25-26/2017	SW6010C	µg/L	--	< 8.1	--	--	--	--	--	--	--	--
01/25-26/2017	SW6020B	µg/L	46.1 J	--	--	--	1370	2320	605	--	--	2.8 J
03/06-07/2017	SW6010C	µg/L	--	< 8.1	--	--	--	--	--	--	--	--
03/06-07/2017	SW6020B	µg/L	154 J	--	--	--	1310	2020	1110	--	--	16.3 J
04/19-21/2017	SW6020B	µg/L	6.5 J	14.9 J	--	--	1470 J+	2020	909	--	--	94.9
05/30-06/01/2017	SW6010	µg/L	--	--	--	--	--	--	--	--	--	65.2
05/30-06/01/2017	SW6020B	µg/L	12.4 J	10.5 J	--	--	1560 J+	1860	1120 J+	--	--	--
07/10-12/2017	SW6010	µg/L	< 25	< 25.0	--	--	1570	2130	652	--	--	< 25
08/21-23/2017	SW6010	µg/L	< 25	< 25.0	--	--	1380	1910	577	--	--	< 25
09/19-20/2017	SW6010	µg/L	< 25	--	--	--	--	--	--	--	--	< 25
06/18/2018	SW6010D	µg/L	--	--	--	--	--	--	--	--	--	< 25
06/27/2018	SW6010D	µg/L	--	< 25	--	--	1600	1700	870	--	--	< 25
09/19/2018	SW6010D	µg/L	--	< 25	--	--	1600	1600	780	--	--	< 25
09/24-25/2018	SW6010D	µg/L	--	--	--	--	--	--	--	--	--	< 25
12/12-13/2018	SW6010D	µg/L	--	< 25	--	--	1500	1700	770	--	--	60
03/11-15/2019	SW6010D	µg/L	< 25	< 25	170	< 25	930 J	1700	650	--	--	< 25
08/26-29/2019	SW6010D	µg/L	10 J+	13 J+	180	13 J	1300	2100	840	570	14 J+	7.4 J+
<b>Cadmium</b>												
11/02-04/2016	SW6020A	µg/L	--	< 0.31	--	--	--	--	--	--	--	--
11/02-04/2016	SW6020B	µg/L	< 0.6	--	--	--	< 0.6	< 0.6	< 0.6	--	--	< 0.6
12/12-13/2016	SW6020A	µg/L	--	< 0.31	--	--	--	--	--	--	--	--
12/12-13/2016	SW6020B	µg/L	< 0.6	--	--	--	< 0.6	< 0.6	< 0.6	--	--	< 0.06
01/25-26/2017	SW6020A	µg/L	--	< 0.31	--	--	--	--	--	--	--	--
01/25-26/2017	SW6020B	µg/L	< 0.6	--	--	--	< 0.6	< 0.6	< 0.6	--	--	< 0.06
03/06-07/2017	SW6020A	µg/L	--	< 0.31	--	--	--	--	--	--	--	--
03/06-07/2017	SW6020B	µg/L	< 0.6	--	--	--	< 0.6	< 0.6	< 0.6	--	--	< 0.06
04/19-21/2017	SW6020B	µg/L	< 0.6	< 0.60	--	--	< 0.6	< 0.6	< 0.6	--	--	< 0.06
05/30-06/01/2017	SW6020B	µg/L	< 0.6	< 0.60	--	--	< 0.6	< 0.6	< 0.6	--	--	< 0.06
07/10-12/2017	SW6020B	µg/L	< 0.6	< 0.60	--	--	< 0.6	< 0.6	< 0.6	--	--	< 0.06
08/21-23/2017	SW6020B	µg/L	< 0.6	< 0.60	--	--	< 0.6	< 0.6	< 0.6	--	--	< 0.6
03/19-23/2018	SW6020A	µg/L	< 0.028	--	--	--	--	--	--	--	--	< 0.028
06/18/2018	SW6010D	µg/L	--	--	--	--	--	--	--	--	--	< 0.50
06/27/2018	SW6010D	µg/L	--	< 0.50	--	--	< 0.50	< 0.50	< 0.50	--	--	< 0.50
09/19/2018	SW6010D	µg/L	--	< 0.50	--	--	< 0.50	< 0.50	< 0.50	--	--	< 0.50
09/24-25/2018	SW6010D	µg/L	--	--	--	--	--	--	--	--	--	< 0.50
12/12-13/2018	SW6010D	µg/L	--	< 0.50	--	--	< 0.50	< 0.50	< 0.50	--	--	< 0.50
03/11-15/2019	SW6010D	µg/L	< 0.50	--	--	--	--	--	--	--	--	< 0.50
08/26-29/2019	SW6010D	µg/L	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	0.73 J	< 0.40	< 0.40	< 0.40



Appendix F  
Historical Laboratory Detections  
Possum Point Power Station, Pond E  
Permit No. 617

Location		ED-24R	ED-26	ED-22RA	ED-23R	ES-1609	ES-1613	ES-3D	T-1615S	T-1615D	Field Blank	
Sample Date	Method	Unit										
<b>Calcium</b>												
11/02-04/2016	SW6020A	µg/L	--	6700	--	--	--	--	--	--	--	
11/02-04/2016	SW6020B	µg/L	1880 J	--	--	23800	35600	29100	--	--	< 1030	
12/12-13/2016	SW6020A	µg/L	--	7000	--	--	--	--	--	--	--	
12/12-13/2016	SW6020B	µg/L	1530 B	--	--	22700	37200	29200	--	--	1910	
01/25-26/2017	SW6020A	µg/L	--	7400	--	--	--	--	--	--	--	
01/25-26/2017	SW6020B	µg/L	1810 J	--	--	23700	37000	18000	--	--	< 103	
03/06-07/2017	SW6020A	µg/L	--	7100	--	--	--	--	--	--	--	
03/06-07/2017	SW6020B	µg/L	1790 J	--	--	22700	31200	29300	--	--	< 103	
04/19-21/2017	SW6020B	µg/L	1850 J	6320	--	--	23400	33300	23500	--	< 103	
05/30-06/01/2017	SW6020B	µg/L	1830 J	7920	--	--	23700	29900	25600	--	< 103	
07/10-12/2017	SW6020B	µg/L	1820 J	7220	--	--	22000	30900	19000	--	< 103	
08/21-23/2017	SW6020B	µg/L	1780	7750	--	--	22700	31100	17400	--	< 1030	
09/19-20/2017	SW6020B	µg/L	1960	--	--	--	--	--	--	--	< 103	
06/18/2018	SW6010D	µg/L	--	--	--	--	--	--	--	--	< 50	
06/27/2018	SW6010D	µg/L	--	7300	--	--	22300	27000	18000	--	< 50	
09/19/2018	SW6010D	µg/L	--	7100	--	--	22100	28900	18000	--	< 50	
09/24-25/2018	SW6010D	µg/L	--	--	--	--	--	--	--	--	< 50	
12/12-13/2018	SW6010D	µg/L	--	6800	--	--	20700	28000	18300	--	74 J	
03/11-15/2019	SW6010D	µg/L	1600	10200	3600	3200	13200 J	28700	13700	--	< 50	
08/26-29/2019	SW6010D	µg/L	1900	7200	3900	3800	23400	36000	17500	10800	17300	< 24
<b>Chloride</b>												
11/02-04/2016	SW9056A	mg/L	2.5	2.2	--	--	201	228	212	--	< 0.10	
12/12-13/2016	SW9056	mg/L	< 2.5	--	--	--	184	192	188	--	< 2.5	
12/12-13/2016	SW9056A	mg/L	--	2.6	--	--	--	--	--	--	--	
01/25-26/2017	SW9056A	mg/L	2.8	2.5	--	--	219	194	120	--	< 0.10	
03/06-07/2017	SW9056A	mg/L	2.7	2.3	--	--	214	180	174	--	< 0.10	
04/19-21/2017	SW9056A	mg/L	2.9	2.3	--	--	219	179	205	--	< 0.50	
05/30-06/01/2017	SW9056A	mg/L	2.8	2.3	--	--	204	159	194	--	< 0.50	
07/10-12/2017	SW9056A	mg/L	2.8	2.2	--	--	213	163	137	--	< 0.50	
08/21-23/2017	SW9056A	mg/L	2.9	2.2	--	--	206	161	133	--	< 0.50	
09/19-20/2017	SW9056A	mg/L	2.7	--	--	--	--	--	--	--	< 0.50	
06/18/2018	E300	mg/L	--	--	--	--	--	--	--	--	< 0.50	
06/27/2018	E300	mg/L	--	2.2	--	--	199	144	156	--	< 0.50	
09/19/2018	E300	mg/L	--	2.2	--	--	198	138	138	--	< 0.50	
09/24-25/2018	E300	mg/L	--	--	--	--	--	--	--	--	< 0.50	
12/12-13/2018	E300	mg/L	--	2.3	--	--	202	143	139	--	< 0.60	
03/11-15/2019	E300	mg/L	2.7	2.3	44.4	2.9	193	154	106	--	< 0.60	
08/26-29/2019	SW9056A	mg/L	2.4	2.2	37.7	2.7	194	160	117	215	79.1	< 0.60

Appendix F  
 Historical Laboratory Detections  
 Possum Point Power Station, Pond E  
 Permit No. 617

Location		ED-24R	ED-26	ED-22RA	ED-23R	ES-1609	ES-1613	ES-3D	T-1615S	T-1615D	Field Blank
Sample Date	Method	Unit									
<b>Chromium</b>											
11/02-04/2016	SW6020A	µg/L	--	< 0.26	--	--	--	--	--	--	--
11/02-04/2016	SW6020B	µg/L	2.2 J	--	--	1.1 J	3 J	< 1	--	--	< 1
12/12-13/2016	SW6020A	µg/L	--	< 0.26	--	--	--	--	--	--	--
12/12-13/2016	SW6020B	µg/L	1.9 B	--	--	< 1	< 1	< 1	--	--	2.3
01/25-26/2017	SW6020A	µg/L	--	< 0.26	--	--	--	--	--	--	--
01/25-26/2017	SW6020B	µg/L	2.3 B	--	--	< 1	< 1	< 1	--	--	1.8
03/06-07/2017	SW6020A	µg/L	--	< 0.26	--	--	--	--	--	--	--
03/06-07/2017	SW6020B	µg/L	1.7 B	--	--	1.9 B	1 B	< 1	--	--	0.61
04/19-21/2017	SW6020B	µg/L	1.7 J+	< 1.0	--	1.3 J+	< 1	< 1	--	--	0.12 J
05/30-06/01/2017	SW6020B	µg/L	3.6 J+	1.6 J	--	< 1	< 1	< 1	--	--	< 0.1
07/10-12/2017	SW6020B	µg/L	2 J+	< 1.0	--	< 1	< 1	1.2 J+	--	--	0.12 J
08/21-23/2017	SW6020B	µg/L	2.3 J	< 1.0	--	< 1	< 1	1.3 J	--	--	< 1
03/19-23/2018	SW6020A	µg/L	2.1	--	--	--	--	--	--	--	< 0.13
06/18/2018	SW6010D	µg/L	--	--	--	--	--	--	--	--	< 2.5
06/27/2018	SW6010D	µg/L	--	< 2.5	--	< 2.5	< 2.5	< 2.5	--	--	< 2.5
09/19/2018	SW6010D	µg/L	--	< 2.5	--	< 2.5	< 2.5	< 2.5	--	--	< 2.5
09/24-25/2018	SW6010D	µg/L	--	--	--	--	--	--	--	--	< 2.5
12/12-13/2018	SW6010D	µg/L	--	< 2.5	--	< 2.5	< 2.5	< 2.5	--	--	< 2.5
03/11-15/2019	SW6010D	µg/L	< 2.5	--	--	--	--	--	--	--	< 2.5
08/26-29/2019	SW6010D	µg/L	2.2 J	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
<b>Chromium VI</b>											
11/02-04/2016	SW7196	µg/L	< 10	--	--	< 10	< 10	< 10	--	--	< 10
11/2-4/2016	SW7196	µg/L	--	< 10	--	--	--	--	--	--	--
12/12-13/2016	SW7196	µg/L	< 10	< 10	--	10 ^	< 10	< 10	--	--	< 10
01/25-26/2017	SW7196A	µg/L	< 5	< 5	--	< 5	< 5	< 5	--	--	< 5
03/06-07/2017	SW7196A	µg/L	< 5	< 5	--	< 5	< 5	< 5	--	--	< 5
04/19-21/2017	SW7196A	µg/L	< 5	< 5	--	< 5	< 5	< 5	--	--	< 5
05/30-06/01/2017	SW7196A	µg/L	< 5	< 5	--	< 5	< 5	< 5	--	--	< 5
07/10-12/2017	SW7196A	µg/L	< 5	< 5	--	< 5	< 5	< 5	--	--	< 5
08/21-23/2017	SW7196A	µg/L	< 5	< 5	--	< 5	< 5	< 5	--	--	< 5
06/27/2018	SW7196A	µg/L	--	< 5	--	< 5	< 5	< 5	--	--	< 5
09/19/2018	SW7196A	µg/L	--	< 5	--	< 5	< 5	< 5	--	--	< 5
12/12-13/2018	SW7196A	µg/L	--	< 5	--	< 5	< 5	< 5	--	--	< 5
08/26-29/2019	SW7196A	µg/L	< 5	< 5	< 5	< 5	10 R (ND)	< 5	< 5	< 5	< 5

Appendix F  
Historical Laboratory Detections  
Possum Point Power Station, Pond E  
Permit No. 617

Location		ED-24R	ED-26	ED-22RA	ED-23R	ES-1609	ES-1613	ES-3D	T-1615S	T-1615D	Field Blank	
Sample Date	Method	Unit										
<b>Cobalt</b>												
11/02-04/2016	SW6020A	µg/L	--	< 0.13	--	--	--	--	--	--	--	
11/02-04/2016	SW6020B	µg/L	0.32 J	--	--	14.2	18.2	57.3	--	--	< 0.1	
12/12-13/2016	SW6020A	µg/L	--	< 0.13	--	--	--	--	--	--	--	
12/12-13/2016	SW6020B	µg/L	0.43 B	--	--	13.9	25.3	49.2	--	--	0.46	
01/25-26/2017	SW6020A	µg/L	--	< 0.13	--	--	--	--	--	--	--	
01/25-26/2017	SW6020B	µg/L	0.23 J	--	--	13	25.8	22.5	--	--	0.018 J	
03/06-07/2017	SW6020A	µg/L	--	< 0.13	--	--	--	--	--	--	--	
03/06-07/2017	SW6020B	µg/L	0.28 J	--	--	15.7	23.6	41.1	--	--	< 0.01	
04/19-21/2017	SW6020B	µg/L	0.29 J	0.16 J	--	--	20.4	23.2	36	--	< 0.01	
05/30-06/01/2017	SW6020B	µg/L	0.44 J+	< 0.10	--	--	15.8	22.3	30.3	--	< 0.01	
07/10-12/2017	SW6020B	µg/L	0.35 J	< 0.10	--	--	19.8	22.9	14.7	--	< 0.01	
08/21-23/2017	SW6020B	µg/L	0.51 J+	< 0.10	--	--	21.7 J+	21.9	15.7	--	0.1 J	
03/19-23/2018	SW6020A	µg/L	0.36 J	--	--	--	--	--	--	--	< 0.15	
06/18/2018	SW6010D	µg/L	--	--	--	--	--	--	--	--	< 2.5	
06/27/2018	SW6010D	µg/L	--	< 2.5	--	12.8	21.7	25.9	--	--	< 2.5	
09/19/2018	SW6020A	µg/L	--	< 0.085	--	19.3	12.2	20.7	--	--	< 0.085	
09/24-25/2018	SW6020A	µg/L	--	--	--	--	--	--	--	--	< 0.085	
12/12-13/2018	SW6020B	µg/L	--	0.065 J	--	18.5	9.2	24.9	--	--	< 0.050	
03/11-15/2019	SW6020B	µg/L	0.32	--	--	--	--	--	--	--	< 0.050	
08/26-29/2019	SW6020B	µg/L	0.36	0.061 J	5.5	< 0.050	16.7	7.1	41.5	21.4	0.72	< 0.050
<b>Copper</b>												
11/02-04/2016	SW6020A	µg/L	--	< 0.36	--	--	--	--	--	--	--	
11/02-04/2016	SW6020B	µg/L	< 1.2	--	--	1.2 J	1.6 J	< 1.2	--	--	< 1.2	
12/12-13/2016	SW6020A	µg/L	--	< 0.36	--	--	--	--	--	--	--	
12/12-13/2016	SW6020B	µg/L	< 1.2	--	--	< 1.2	< 1.2	< 1.2	--	--	0.85	
01/25-26/2017	SW6020A	µg/L	--	< 0.36	--	--	--	--	--	--	--	
01/25-26/2017	SW6020B	µg/L	< 1.2	--	--	< 1.2	< 1.2	< 1.2	--	--	0.59	
03/06-07/2017	SW6020A	µg/L	--	< 0.36	--	--	--	--	--	--	--	
03/06-07/2017	SW6020B	µg/L	< 1.2	--	--	< 1.2	< 1.2	< 1.2	--	--	< 0.12	
04/19-21/2017	SW6020B	µg/L	< 1.2	1.9 J	--	< 1.2	< 1.2	1.4 J+	--	--	0.17 J	
05/30-06/01/2017	SW6020B	µg/L	1.2 J+	< 1.2	--	< 1.2	< 1.2	< 1.2	--	--	0.13 J	
07/10-12/2017	SW6020B	µg/L	< 1.2	< 1.2	--	< 1.2	< 1.2	< 1.2	--	--	< 0.12	
08/21-23/2017	SW6020B	µg/L	< 1.2	< 1.2	--	< 1.2	< 1.2	1.5 J	--	--	< 1.2	
06/27/2018	SW6020B	µg/L	--	< 0.22	--	0.24 J	0.35 J	0.72 J	--	--	0.56 J	
09/19/2018	SW6020A	µg/L	--	< 0.22	--	< 0.22	0.33 J	1.4	--	--	1.2	
12/12-13/2018	SW6020B	µg/L	--	< 0.23	--	0.26 J	0.28 J	0.35 J	--	--	1.4	
08/26-29/2019	SW6010D	µg/L	< 2.1	< 2.1	3.2 J	< 2.1	< 2.1	3.1 J	< 2.1	< 2.1	< 2.1	

Appendix F  
 Historical Laboratory Detections  
 Possum Point Power Station, Pond E  
 Permit No. 617

Location		ED-24R	ED-26	ED-22RA	ED-23R	ES-1609	ES-1613	ES-3D	T-1615S	T-1615D	Field Blank	
Sample Date	Method	Unit										
<b>Fluoride</b>												
11/02-04/2016	SW9056A	mg/L	< 0.020	0.19 J	--	--	0.055 J	0.078 J	0.050 J	--	--	< 0.020
12/12-13/2016	SW9056	mg/L	< 0.025	--	--	--	0.069	0.15	0.12	--	--	< 0.025
12/12-13/2016	SW9056A	mg/L	--	0.24	--	--	--	--	--	--	--	--
01/25-26/2017	SW9056A	mg/L	< 0.020	0.26	--	--	0.057 J	0.083 J	0.28	--	--	< 0.020
03/06-07/2017	SW9056A	mg/L	< 0.020	0.16	--	--	0.037 J	0.065 J	0.17	--	--	< 0.020
04/19-21/2017	SW9056A	mg/L	< 0.050	0.20	--	--	< 0.050	0.097 J	0.15	--	--	< 0.050
05/30-06/01/2017	SW9056A	mg/L	< 0.050	0.20	--	--	0.066 J	0.096 J	0.16	--	--	< 0.050
07/10-12/2017	SW9056A	mg/L	< 0.050	0.20	--	--	0.050 J	0.099 J	0.24	--	--	< 0.050
08/21-23/2017	SW9056A	mg/L	< 0.050	0.18	--	--	< 0.050	0.076 J	0.30	--	--	< 0.050
09/19-20/2017	SW9056A	mg/L	< 0.050	--	--	--	--	--	--	--	--	< 0.050
03/19-23/2018	SW9056A	mg/L	< 0.050	--	--	--	--	--	--	--	--	< 0.050
06/18/2018	E300	mg/L	--	--	--	--	--	--	--	--	--	< 0.050
06/27/2018	E300	mg/L	--	0.15	--	--	0.087 J	0.056 J	0.16	--	--	< 0.050
09/19/2018	E300	mg/L	--	0.22	--	--	0.055 J	0.16	0.34	--	--	< 0.050
09/24-25/2018	E300	mg/L	--	--	--	--	--	--	--	--	--	< 0.050
12/12-13/2018	E300	mg/L	--	0.18	--	--	0.086 J	0.16	0.32	--	--	< 0.050
03/11-15/2019	E300	mg/L	< 0.050	0.20	< 0.050	0.30	0.063 J	0.20	0.28	--	--	< 0.050
08/26-29/2019	SW9056A	mg/L	< 0.050	0.17	< 0.050	0.22	< 0.050	0.14	0.16	0.082 J	0.16	< 0.050
<b>Hardness</b>												
11/02-04/2016	SM2340C	mg/L	--	30	--	--	--	--	--	--	--	--
11/02-04/2016	SW6020B	mg/L	< 5.41	--	--	--	114	178	161	--	--	< 5.41
12/12-13/2016	SM2340C	mg/L	--	30	--	--	--	--	--	--	--	--
12/12-13/2016	SW6020B	mg/L	< 5.41	--	--	--	109	188	160	--	--	8.33
01/25-26/2017	SM2340C	mg/L	--	38	--	--	--	--	--	--	--	--
01/25-26/2017	SW6020B	mg/L	< 5.41	--	--	--	116	187	93.4	--	--	< 0.541
03/06-07/2017	SM2340C	mg/L	--	34	--	--	--	--	--	--	--	--
03/06-07/2017	SW6020B	mg/L	< 5.41	--	--	--	111	161	161	--	--	< 0.541
04/19-21/2017	SW6020B	mg/L	< 5.41	25.4	--	--	109	165	134	--	--	< 0.541
05/30-06/01/2017	SW6020B	mg/L	< 5.41	31	--	--	111	155	142	--	--	< 0.541
07/10-12/2017	SW6020B	mg/L	< 5.41	29.2	--	--	106	157	103	--	--	< 0.541
08/21-23/2017	SW6020B	mg/L	11.2	30.4	--	--	108	156	91.8	--	--	< 5.41
06/27/2018	E200.7	mg/L	--	29.8	--	--	104	143	106	--	--	< 0.662
09/19/2018	E200.7	mg/L	--	28.5	--	--	108 J	100	94.7	--	--	< 0.662
12/12-13/2018	E200.7	mg/L	--	27	--	--	94	132	102	--	--	< 0.662
08/26-29/2019	SW6010D	mg/L	8.07	27.6	18.2	18.1	111	164	103	60.7	80.3	< 0.131

Appendix F  
Historical Laboratory Detections  
Possum Point Power Station, Pond E  
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Location		ED-24R	ED-26	ED-22RA	ED-23R	ES-1609	ES-1613	ES-3D	T-1615S	T-1615D	Field Blank	
Sample Date	Method	Unit										
<b>Iron</b>												
11/02-04/2016	SW6020A	µg/L	--	3100	--	--	--	--	--	--	--	
11/02-04/2016	SW6020B	µg/L	< 118	--	--	31800	22600	21100	--	--	< 118	
12/12-13/2016	SW6020A	µg/L	--	2600	--	--	--	--	--	--	--	
12/12-13/2016	SW6020B	µg/L	< 118	--	--	32900	18100	26400	--	--	202	
01/25-26/2017	SW6020A	µg/L	--	2700	--	--	--	--	--	--	--	
01/25-26/2017	SW6020B	µg/L	< 118	--	--	40800	17200	19100	--	--	< 11.8	
03/06-07/2017	SW6020A	µg/L	--	2300	--	--	--	--	--	--	--	
03/06-07/2017	SW6020B	µg/L	132 J	--	--	31100	14300	39700	--	--	< 11.8	
04/19-21/2017	SW6020B	µg/L	< 118	2700	--	22800	14900	32400	--	--	< 11.8	
05/30-06/01/2017	SW6020B	µg/L	< 118	3000	--	30700	13600	37100	--	--	< 11.8	
07/10-12/2017	SW6020B	µg/L	< 118	2700	--	22600	14200	29800	--	--	< 11.8	
08/21-23/2017	SW6020B	µg/L	< 118	2840	--	20400	14400	25600	--	--	< 118	
06/27/2018	E200.7	µg/L	--	2890	--	25100	10300	20600	--	--	< 25.0	
09/19/2018	E200.7	µg/L	--	3760	--	24300	18700	20200	--	--	< 25	
12/12-13/2018	E200.7	µg/L	--	2540	--	20100	23300	16600	--	--	< 25	
08/26-29/2019	SW6020B	µg/L	45.0 J	3320	2360	2460	26000	36700	8430	10500	10100	< 7.5
<b>Lead</b>												
11/02-04/2016	SW6020A	µg/L	--	< 0.16	--	--	--	--	--	--	--	
11/02-04/2016	SW6020B	µg/L	< 0.8	--	--	--	< 0.8	< 0.8	< 0.8	--	< 0.8	
12/12-13/2016	SW6020A	µg/L	--	< 0.16	--	--	--	--	--	--	--	
12/12-13/2016	SW6020B	µg/L	< 0.8	--	--	--	< 0.8	< 0.8	< 0.8	--	0.13	
01/25-26/2017	SW6020A	µg/L	--	0.21 B	--	--	--	--	--	--	--	
01/25-26/2017	SW6020B	µg/L	< 0.8	--	--	--	< 0.8	< 0.8	< 0.8	--	< 0.08	
03/06-07/2017	SW6020A	µg/L	--	< 0.16	--	--	--	--	--	--	--	
03/06-07/2017	SW6020B	µg/L	< 0.8	--	--	--	< 0.8	< 0.8	< 0.8	--	< 0.08	
04/19-21/2017	SW6020B	µg/L	< 0.8	< 0.80	--	--	< 0.8	< 0.8	< 0.8	--	< 0.08	
05/30-06/01/2017	SW6020B	µg/L	< 0.8	< 0.80	--	--	< 0.8	< 0.8	< 0.8	--	< 0.08	
07/10-12/2017	SW6020B	µg/L	< 0.8	< 0.80	--	--	< 0.8	< 0.08	< 0.08	--	< 0.08	
08/21-23/2017	SW6020B	µg/L	< 0.8	< 0.80	--	--	< 0.8	< 0.8	< 0.8	--	< 0.8	
03/19-23/2018	SW6020A	µg/L	0.11	--	--	--	--	--	--	--	< 0.028	
06/18/2018	SW6010D	µg/L	--	--	--	--	--	--	--	--	< 2.5	
06/27/2018	SW6010D	µg/L	--	< 2.5	--	--	< 2.5	< 2.5	< 2.5	--	< 2.5	
09/19/2018	SW6010D	µg/L	--	< 2.5	--	--	< 2.5	< 2.5	< 2.5	--	< 2.5	
09/24-25/2018	SW6010D	µg/L	--	--	--	--	--	--	--	--	< 2.5	
12/12-13/2018	SW6010D	µg/L	--	< 2.5	--	--	< 2.5	< 2.5	< 2.5	--	< 2.5	
03/11-15/2019	SW6010D	µg/L	< 2.5	--	--	--	--	--	--	--	< 2.5	
08/26-29/2019	SW6020B	µg/L	0.14	0.19	0.12	< 0.050	< 0.075	< 0.10	0.12 J	0.082 J	< 0.050	< 0.050

Appendix F  
Historical Laboratory Detections  
Possum Point Power Station, Pond E  
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Location			ED-24R	ED-26	ED-22RA	ED-23R	ES-1609	ES-1613	ES-3D	T-1615S	T-1615D	Field Blank
Sample Date	Method	Unit										
<b>Lithium</b>												
11/02-04/2016	SW6020A	µg/L	--	9.0	--	--	--	--	--	--	--	--
11/02-04/2016	SW6020B	µg/L	1.9 B	--	--	--	13.8 J	24.3 J	14.3 J	--	--	2.2 B
12/12-13/2016	SW6020A	µg/L	--	12	--	--	--	--	--	--	--	--
12/12-13/2016	SW6020B	µg/L	< 0.7	--	--	--	9 J	24.1 J	8.2 J	--	--	1.2 J
01/25-26/2017	SW6020A	µg/L	--	10	--	--	--	--	--	--	--	--
01/25-26/2017	SW6020B	µg/L	2.1 J	--	--	--	11.3 J	24.5 J	9.5 J	--	--	0.22 J
03/06-07/2017	SW6020A	µg/L	--	12	--	--	--	--	--	--	--	--
03/06-07/2017	SW6020B	µg/L	1.9 J	--	--	--	10.2 J	22 J	12.6 J	--	--	< 0.07
04/19-21/2017	SW6020B	µg/L	1.6 J+	10.5 J	--	--	10.3 J	24.3 J	10.2 J	--	--	< 0.07
05/30-06/01/2017	SW6020B	µg/L	1.4 J+	13.3 J	--	--	10.3 J	21.8 J	12.6 J	--	--	0.078 J
07/10-12/2017	SW6020B	µg/L	1.5 J	13.3 J	--	--	8.8 J	21.9 J+	9.8 J	--	--	0.18 J
08/21-23/2017	SW6020B	µg/L	1.5 J	11.0 J	--	--	9.2 J	19.4 J	9.7 J	--	--	< 0.7
03/19-23/2018	SW6020A	µg/L	1.3	--	--	--	--	--	--	--	--	< 0.17
06/18/2018	SW6010C	µg/L	--	--	--	--	--	--	--	--	--	4.0 J
06/27/2018	SW6010C	µg/L	--	11.3	--	--	8.6	17.6	9.8	--	--	< 2.8
09/19/2018	SW6010C	µg/L	--	12.0	--	--	9.5	20.3	17.3	--	--	< 4.6
09/24-25/2018	SW6010C	µg/L	--	--	--	--	--	--	--	--	--	< 4.6
12/12-13/2018	SW6020B	µg/L	--	11.1	--	--	8.6	16.3	15.4	--	--	< 0.42
03/11-15/2019	SW6020B	µg/L	1.1 J	--	--	--	--	--	--	--	--	< 0.42
08/26-29/2019	SW6020B	µg/L	1.1 J	12.1	2.6	8.8	12.5	21.7	20.0	5.8	14.3	< 0.42
<b>Manganese</b>												
11/02-04/2016	SW6020A	µg/L	--	94	--	--	--	--	--	--	--	--
11/02-04/2016	SW6020B	µg/L	9.4	--	--	--	820	1070	1410	--	--	< 1.9
12/12-13/2016	SW6020A	µg/L	--	77	--	--	--	--	--	--	--	--
12/12-13/2016	SW6020B	µg/L	9.1 B	--	--	--	753	1040	1360	--	--	10.1
01/25-26/2017	SW6020A	µg/L	--	77	--	--	--	--	--	--	--	--
01/25-26/2017	SW6020B	µg/L	9	--	--	--	841	1020	686	--	--	0.6
03/06-07/2017	SW6020A	µg/L	--	78	--	--	--	--	--	--	--	--
03/06-07/2017	SW6020B	µg/L	8.9	--	--	--	789	968	1340	--	--	< 0.19
04/19-21/2017	SW6020B	µg/L	8	71.1	--	--	699	915	1150	--	--	< 0.19
05/30-06/01/2017	SW6020B	µg/L	10.2 J+	83.2	--	--	751	858	1270	--	--	< 0.19
07/10-12/2017	SW6020B	µg/L	10.2	80.3	--	--	673	883	820	--	--	< 0.19
08/21-23/2017	SW6020B	µg/L	11.1	95.0	--	--	673	866	748	--	--	< 1.9
06/27/2018	E200.7	µg/L	--	74.8	--	--	674	771	949	--	--	< 2.5
09/19/2018	E200.7	µg/L	--	84.7	--	--	726	675	869	--	--	< 2.5
12/12-13/2018	E200.7	µg/L	--	68.8	--	--	653	718	907	--	--	< 2.5
08/26-29/2019	SW6020B	µg/L	9.4	71.8	87.6	56.3	752	903	998	223	300	< 0.14

Appendix F  
Historical Laboratory Detections  
Possum Point Power Station, Pond E  
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Location		ED-24R	ED-26	ED-22RA	ED-23R	ES-1609	ES-1613	ES-3D	T-1615S	T-1615D	Field Blank	
Sample Date	Method	Unit										
<b>Mercury</b>												
11/02-04/2016	SW7470	µg/L	< 0.1	--	--	--	< 0.1	< 0.1	0.4	--	--	< 0.1
11/02-04/2016	SW7470A	µg/L	--	< 0.090	--	--	--	--	--	--	--	--
12/12-13/2016	SW7470	µg/L	< 0.1	--	--	--	< 0.1	< 0.1	< 0.1	--	--	< 0.1
12/12-13/2016	SW7470A	µg/L	--	< 0.090	--	--	--	--	--	--	--	--
01/25-26/2017	SW7470	µg/L	< 0.1	--	--	--	< 0.1	< 0.1	< 0.1	--	--	< 0.1
01/25-26/2017	SW7470A	µg/L	--	< 0.090	--	--	--	--	--	--	--	--
03/06-07/2017	SW7470	µg/L	< 0.1	--	--	--	< 0.1	< 0.1	< 0.1	--	--	< 0.1
03/06-07/2017	SW7470A	µg/L	--	< 0.13	--	--	--	--	--	--	--	--
04/19-21/2017	SW7470	µg/L	< 0.1	< 0.10	--	--	< 0.1	< 0.1	< 0.1	--	--	< 0.1
05/30-06/01/2017	SW7470	µg/L	< 0.1	< 0.10	--	--	< 0.1	< 0.1	< 0.1	--	--	< 0.1
07/10-12/2017	SW7470	µg/L	< 0.1	< 0.10	--	--	< 0.1	< 0.1	< 0.1	--	--	< 0.1
08/21-23/2017	SW7470	µg/L	< 0.1	< 0.10	--	--	< 0.1	< 0.1	< 0.1	--	--	< 0.1
03/19-23/2018	SW7470	µg/L	< 0.10	--	--	--	--	--	--	--	--	< 0.10
06/27/2018	SW7470A	µg/L	--	< 0.10	--	--	< 0.10	< 0.10	< 0.10	--	--	< 0.10
09/19/2018	SW7470A	µg/L	--	< 0.10	--	--	< 0.10	< 0.10	< 0.10	--	--	< 0.10
12/12-13/2018	SW7470A	µg/L	--	< 0.10	--	--	< 0.10	< 0.10	< 0.10	--	--	< 0.10
03/11-15/2019	SW7470A	µg/L	< 0.10	--	--	--	--	--	--	--	--	< 0.10
08/26-29/2019	SW7470A	µg/L	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
<b>Molybdenum</b>												
11/02-04/2016	SW6020A	µg/L	--	< 0.51	--	--	--	--	--	--	--	--
11/02-04/2016	SW6020B	µg/L	< 1.1	--	--	--	< 1.1	< 1.1	< 1.1	--	--	< 1.1
12/12-13/2016	SW6020A	µg/L	--	< 0.51	--	--	--	--	--	--	--	--
12/12-13/2016	SW6020B	µg/L	< 1.1	--	--	--	< 1.1	< 1.1	< 1.1	--	--	< 0.11
01/25-26/2017	SW6020A	µg/L	--	< 0.51	--	--	--	--	--	--	--	--
01/25-26/2017	SW6020B	µg/L	< 1.1	--	--	--	< 1.1	< 1.1	< 1.1	--	--	< 0.11
03/06-07/2017	SW6020A	µg/L	--	< 0.51	--	--	--	--	--	--	--	--
03/06-07/2017	SW6020B	µg/L	< 1.1	--	--	--	< 1.1	< 1.1	< 1.1	--	--	0.26 J
04/19-21/2017	SW6020B	µg/L	< 1.1	< 1.1	--	--	< 1.1	< 1.1	< 1.1	--	--	< 0.11
05/30-06/01/2017	SW6020B	µg/L	< 1.1	< 1.1	--	--	< 1.1	< 1.1	< 1.1	--	--	< 0.11
07/10-12/2017	SW6020B	µg/L	< 1.1	< 1.1	--	--	< 1.1	< 1.1	1.1 J	--	--	< 0.11
08/21-23/2017	SW6020B	µg/L	< 1.1	< 1.1	--	--	< 1.1	< 1.1	< 1.1	--	--	< 1.1
03/19-23/2018	SW6020A	µg/L	< 0.080	--	--	--	--	--	--	--	--	< 0.080
06/18/2018	SW6010D	µg/L	--	--	--	--	--	--	--	--	--	< 2.5
06/27/2018	SW6010D	µg/L	--	< 2.5	--	--	< 2.5	< 2.5	< 2.5	--	--	< 2.5
09/19/2018	SW6010D	µg/L	--	< 2.5	--	--	< 2.5	< 2.5	< 2.5	--	--	< 2.5
09/24-25/2018	SW6010D	µg/L	--	--	--	--	--	--	--	--	--	< 2.5
12/12-13/2018	SW6010D	µg/L	--	< 2.5	--	--	< 2.5	< 2.5	< 2.5	--	--	< 2.5
03/11-15/2019	SW6010D	µg/L	< 2.5	--	--	--	--	--	--	--	--	< 2.5
08/26-29/2019	SW6010D	µg/L	< 0.90	< 0.90	2.2 J	< 0.90	5.8	2.6 J	4.0 J	7.1	< 0.90	< 0.90

Appendix F  
 Historical Laboratory Detections  
 Possum Point Power Station, Pond E  
 Permit No. 617

Location		ED-24R	ED-26	ED-22RA	ED-23R	ES-1609	ES-1613	ES-3D	T-1615S	T-1615D	Field Blank
Sample Date	Method	Unit									
<b>Nickel</b>											
11/02-04/2016	SW6020A	µg/L	--	< 0.28	--	--	--	--	--	--	--
11/02-04/2016	SW6020B	µg/L	< 4.5	--	--	13.5	20.8	49.3	--	--	< 4.5
12/12-13/2016	SW6020A	µg/L	--	< 0.28	--	--	--	--	--	--	--
12/12-13/2016	SW6020B	µg/L	< 4.5	--	--	10.5	28.7	44.2	--	--	1.1
01/25-26/2017	SW6020A	µg/L	--	< 0.28	--	--	--	--	--	--	--
01/25-26/2017	SW6020B	µg/L	< 4.5	--	--	9.8	30.8	20.3	--	--	1.2
03/06-07/2017	SW6020A	µg/L	--	< 0.28	--	--	--	--	--	--	--
03/06-07/2017	SW6020B	µg/L	< 4.5	--	--	12.9	29.9	35.8	--	--	1
04/19-21/2017	SW6020B	µg/L	< 4.5	< 4.5	--	--	14.3	28	30.5	--	< 0.45
05/30-06/01/2017	SW6020B	µg/L	< 4.5	< 4.5	--	--	12.5	27	23.7	--	< 0.45
07/10-12/2017	SW6020B	µg/L	< 4.5	< 4.5	--	--	14.8	26.5	13.8	--	< 0.45
08/21-23/2017	SW6020B	µg/L	< 4.5	< 4.5	--	--	14.9	25.4	13.2	--	< 4.5
06/27/2018	SW6020B	µg/L	--	0.19 J	--	--	10.1	23.7	21.6	--	< 0.11
09/19/2018	SW6020A	µg/L	--	0.39 J	--	--	13.6	15.7	18.1	--	< 0.11
12/12-13/2018	SW6020B	µg/L	--	0.12 J	--	--	11.8	11.5	17.4	--	< 0.11
08/26-29/2019	SW6010D	µg/L	< 0.90	< 0.90	10.7	< 0.90	11.6	8.2	27.6	16.9	2.2 J
<b>pH</b>											
11/02-04/2016	FIELD	SU	4.90	5.70	--	--	5.89	5.27	5.00	--	--
12/12-13/2016	FIELD	SU	4.57	5.69	--	--	5.97	4.93	5.37	--	--
01/25-26/2017	FIELD	SU	4.62	5.58	--	--	5.58	4.44	4.99	--	--
03/06-07/2017	FIELD	SU	4.69	5.06	--	--	5.53	4.41	5.18	--	--
04/19-21/2017	FIELD	SU	4.98	5.82	--	--	5.20	4.96	5.62	--	--
05/30-06/01/2017	FIELD	SU	4.74	5.99	--	--	5.76	5.04	5.79	--	--
07/10-12/2017	FIELD	SU	5.12	5.86	--	--	4.98	4.89	5.32	--	--
08/21-23/2017	FIELD	SU	5.2	6.0	--	--	5.12	4.90	5.57	--	--
09/19-20/2017	FIELD	SU	4.87	--	--	--	--	--	--	--	--
03/19-23/2018	FIELD	SU	4.88	--	--	--	--	--	--	--	--
06/27/2018	FIELD	SU	--	5.37	--	--	5.42	4.92	5.48	--	--
09/19/2018	FIELD	SU	--	5.89	--	--	5.39	5.24	5.31	--	--
12/12-13/2018	FIELD	SU	--	5.86	--	--	4.86	5.05	5.31	--	--
03/11-15/2019	FIELD	SU	4.76	5.42	4.46	5.70	4.89	5.22	5.07	--	--
08/26-29/2019	FIELD	SU	4.59	5.46	5.61	5.56	5.03	5.04	4.99	5.14	5.24



Appendix F  
Historical Laboratory Detections  
Possum Point Power Station, Pond E  
Permit No. 617

Location		ED-24R	ED-26	ED-22RA	ED-23R	ES-1609	ES-1613	ES-3D	T-1615S	T-1615D	Field Blank	
Sample Date	Method	Unit										
<b>Phenolics</b>												
08/26-29/2019	SW9065	µg/L	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	
<b>Potassium</b>												
08/26-29/2019	SW6020B	µg/L	2210	5130	1660	5690	6580	6550	4370	4130	11400	< 6.2
<b>Selenium</b>												
11/02-04/2016	SW6020A	µg/L	--	0.48 J	--	--	--	--	--	--	--	--
11/02-04/2016	SW6020B	µg/L	< 3.2	--	--	--	< 3.2	< 3.2	< 3.2	--	--	< 3.2
12/12-13/2016	SW6020A	µg/L	--	< 0.48	--	--	--	--	--	--	--	--
12/12-13/2016	SW6020B	µg/L	3.6 J	--	--	--	< 3.2	< 3.2	< 3.2	--	--	0.43 J
01/25-26/2017	SW6020A	µg/L	--	< 0.48	--	--	--	--	--	--	--	--
01/25-26/2017	SW6020B	µg/L	< 3.2	--	--	--	< 3.2	< 3.2	< 3.2	--	--	< 0.32
03/06-07/2017	SW6020A	µg/L	--	< 0.48	--	--	--	--	--	--	--	--
03/06-07/2017	SW6020B	µg/L	< 3.2	--	--	--	< 3.2	< 3.2	< 3.2	--	--	< 0.32
04/19-21/2017	SW6020B	µg/L	< 3.2	< 3.2	--	--	< 3.2	< 3.2	< 3.2	--	--	< 0.32
05/30-06/01/2017	SW6020B	µg/L	< 3.2	< 3.2	--	--	< 3.2	< 3.2	< 3.2	--	--	< 0.32
07/10-12/2017	SW6020B	µg/L	< 3.2	< 3.2	--	--	< 3.2	< 3.2	< 3.2	--	--	< 0.32
08/21-23/2017	SW6020B	µg/L	< 3.2	< 3.2	--	--	< 3.2	< 3.2	< 3.2	--	--	< 3.2
03/19-23/2018	SW6020A	µg/L	0.20 J	--	--	--	--	--	--	--	--	< 0.17
06/18/2018	SW6010D	µg/L	--	--	--	--	--	--	--	--	--	< 5.0
06/27/2018	SW6010D	µg/L	--	< 5.0	--	--	< 5.0	< 5.0	< 5.0	--	--	< 5.0
09/19/2018	SW6010D	µg/L	--	< 5.0	--	--	< 5.0	< 5.0	< 5.0	--	--	< 5.0
09/24-25/2018	SW6010D	µg/L	--	--	--	--	--	--	--	--	--	< 5.0
12/12-13/2018	SW6010D	µg/L	--	< 5.0	--	--	< 5.0	< 5.0	< 5.0	--	--	< 5.0
03/11-15/2019	SW6010D	µg/L	< 5.0	--	--	--	--	--	--	--	--	< 5.0
08/26-29/2019	SW6010D	µg/L	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7	< 4.7
<b>Silver</b>												
11/02-04/2016	SW6020A	µg/L	--	< 0.030	--	--	--	--	--	--	--	--
11/02-04/2016	SW6020B	µg/L	< 0.8	--	--	--	< 0.8	< 0.8	< 0.8	--	--	< 0.8
12/12-13/2016	SW6020A	µg/L	--	< 0.030	--	--	--	--	--	--	--	--
12/12-13/2016	SW6020B	µg/L	< 0.8	--	--	--	< 0.8	< 0.8	< 0.8	--	--	< 0.08
01/25-26/2017	SW6020A	µg/L	--	< 0.030	--	--	--	--	--	--	--	--
01/25-26/2017	SW6020B	µg/L	< 0.8	--	--	--	0.81 J	< 0.8	< 0.8	--	--	< 0.08
03/06-07/2017	SW6020A	µg/L	--	< 0.030	--	--	--	--	--	--	--	--
03/06-07/2017	SW6020B	µg/L	< 0.8	--	--	--	< 0.8	< 0.8	< 0.8	--	--	< 0.08
04/19-21/2017	SW6020B	µg/L	< 0.8	< 0.80	--	--	< 0.8	< 0.8	< 0.8	--	--	< 0.08
05/30-06/01/2017	SW6020B	µg/L	< 0.8	< 0.80	--	--	< 0.8	< 0.8	< 0.8	--	--	< 0.08
07/10-12/2017	SW6020B	µg/L	< 0.8	< 0.80	--	--	< 0.8	< 0.8	< 0.8	--	--	< 0.08
08/21-23/2017	SW6020B	µg/L	< 0.8	< 0.80	--	--	< 0.8	< 0.8	< 0.8	--	--	< 0.8
06/27/2018	SW6020B	µg/L	--	< 0.15	--	--	< 0.15	< 0.15	< 0.15	--	--	< 0.15
09/19/2018	SW6020A	µg/L	--	< 0.15	--	--	< 0.15	< 0.15	< 0.15	--	--	< 0.15
12/12-13/2018	SW6020B	µg/L	--	< 0.050	--	--	0.80	0.88	0.45	--	--	< 0.050
08/26-29/2019	SW6010D	µg/L	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5

Appendix F  
 Historical Laboratory Detections  
 Possum Point Power Station, Pond E  
 Permit No. 617

Location		ED-24R	ED-26	ED-22RA	ED-23R	ES-1609	ES-1613	ES-3D	T-1615S	T-1615D	Field Blank	
Sample Date	Method	Unit										
<b>Sodium</b>												
11/02-04/2016	SW6020A	µg/L	--	1700	--	--	--	--	--	--	--	
11/02-04/2016	SW6020B	µg/L	2250 J	--	--	99500	79400	101000	--	--	302 J	
12/12-13/2016	SW6020A	µg/L	--	1700	--	--	--	--	--	--	--	
12/12-13/2016	SW6020B	µg/L	1940 B	--	--	106000	86900	98300	--	--	2240	
01/25-26/2017	SW6020A	µg/L	--	2100	--	--	--	--	--	--	--	
01/25-26/2017	SW6020B	µg/L	2220 J	--	--	109000	86400	60800	--	--	146 J	
03/06-07/2017	SW6020A	µg/L	--	1700	--	--	--	--	--	--	--	
03/06-07/2017	SW6020B	µg/L	1820 J	--	--	104000	78500	109000	--	--	46 J	
04/19-21/2017	SW6020B	µg/L	2150 J	1680 J	--	--	116000 J+	77700	98400	--	66.1 J	
05/30-06/01/2017	SW6020B	µg/L	2190 J	1950 J	--	--	108000	73000	98500	--	52 J	
07/10-12/2017	SW6020B	µg/L	2290 J+	2020 J	--	--	117000 J+	75200	78400	--	155 J	
08/21-23/2017	SW6020B	µg/L	2140 J	1790 J	--	--	118000	76300	70400	--	< 129	
06/27/2018	E200.8	µg/L	--	2100	--	--	111000	76700	14900	--	< 18.4	
09/19/2018	E200.8	µg/L	--	1590	--	--	107000 J	114000	84500	--	< 18.4	
12/12-13/2018	E200.8	µg/L	--	1780	--	--	105000	62700	78400	--	24.3 J	
08/26-29/2019	SW6020B	µg/L	1930	1820	51200	4610	116000	70700	81500	136000	8610	< 14.3
<b>Sulfate</b>												
11/02-04/2016	SW9056A	mg/L	1.6	1.9	--	--	71.9	124	91.8	--	--	< 0.40
12/12-13/2016	SW9056	mg/L	< 2.5	--	--	--	64.3	100	87.7	--	--	< 2.5
12/12-13/2016	SW9056A	mg/L	--	2.4	--	--	--	--	--	--	--	--
01/25-26/2017	SW9056A	mg/L	1.6	2.5	--	--	65.8	97.0	51.6	--	--	< 0.40
03/06-07/2017	SW9056A	mg/L	1.7	2.2	--	--	67.0	94.6	71.4	--	--	< 0.40
04/19-21/2017	SW9056A	mg/L	2.3 J+	2.1	--	--	70.6	91.6	79.8	--	--	0.52 J
05/30-06/01/2017	SW9056A	mg/L	2.2	2.1	--	--	74.0	92.3	79.3	--	--	< 0.50
07/10-12/2017	SW9056A	mg/L	2.0	1.9	--	--	72.1	88.4	53.1	--	--	< 0.50
08/21-23/2017	SW9056A	mg/L	2.1	1.7	--	--	73.2	85.0	56.6	--	--	< 0.50
09/19-20/2017	SW9056A	mg/L	1.9	--	--	--	--	--	--	--	--	< 0.50
06/18/2018	E300	mg/L	--	--	--	--	--	--	--	--	--	< 0.50
06/27/2018	E300	mg/L	--	1.8	--	--	82.0	103	64.5	--	--	< 0.50
09/19/2018	E300	mg/L	--	1.9	--	--	87.9	98.7	91.6	--	--	< 0.50
09/24-25/2018	E300	mg/L	--	--	--	--	--	--	--	--	--	< 0.50
12/12-13/2018	E300	mg/L	--	2.0	--	--	79.3	83.0	117	--	--	< 0.50
03/11-15/2019	E300	mg/L	2.4	2.1	56.8	5.5	95.9	88.8	130	--	--	< 0.50
08/26-29/2019	SW9056A	mg/L	1.9	1.8	62.2	5.0	85.6	93.6	109	21.4	1.1	< 0.50

Appendix F  
Historical Laboratory Detections  
Possum Point Power Station, Pond E  
Permit No. 617

Location		ED-24R	ED-26	ED-22RA	ED-23R	ES-1609	ES-1613	ES-3D	T-1615S	T-1615D	Field Blank
Sample Date	Method	Unit									
<b>Thallium</b>											
11/02-04/2016	SW6020A	µg/L	--	< 0.28	--	--	--	--	--	--	--
11/02-04/2016	SW6020B	µg/L	< 0.2	--	--	< 0.2	< 0.2	< 0.2	--	--	< 0.2
12/12-13/2016	SW6020A	µg/L	--	< 0.28	--	--	--	--	--	--	--
12/12-13/2016	SW6020B	µg/L	< 0.2	--	--	< 0.2	< 0.2	< 0.2	--	--	< 0.02
01/25-26/2017	SW6020A	µg/L	--	< 0.28	--	--	--	--	--	--	--
01/25-26/2017	SW6020B	µg/L	< 0.2	--	--	< 0.2	< 0.2	< 0.2	--	--	< 0.02
03/06-07/2017	SW6020A	µg/L	--	< 0.28	--	--	--	--	--	--	--
03/06-07/2017	SW6020B	µg/L	< 0.2	--	--	< 0.2	< 0.2	< 0.2	--	--	< 0.02
04/19-21/2017	SW6020B	µg/L	< 0.2	< 0.20	--	< 0.2	< 0.2	< 0.2	--	--	< 0.02
05/30-06/01/2017	SW6020B	µg/L	< 0.2	< 0.20	--	< 0.2	< 0.2	< 0.2	--	--	< 0.02
07/10-12/2017	SW6020B	µg/L	< 0.2	< 0.20	--	< 0.2	< 0.2	< 0.2	--	--	< 0.02
08/21-23/2017	SW6020B	µg/L	< 0.2	< 0.20	--	< 0.2	< 0.2	0.47 J	--	--	< 0.2
03/19-23/2018	SW6020A	µg/L	< 0.028	--	--	--	--	--	--	--	< 0.028
06/18/2018	SW6020A	µg/L	--	--	--	--	--	--	--	--	< 0.026
06/27/2018	SW6020A	µg/L	--	< 0.026	--	0.042 J	0.051 J	< 0.026	--	--	< 0.026
09/19/2018	SW6020A	µg/L	--	< 0.026	--	0.051 J	< 0.026	< 0.026	--	--	< 0.026
09/24-25/2018	SW6020A	µg/L	--	--	--	--	--	--	--	--	< 0.026
12/12-13/2018	SW6020B	µg/L	--	< 0.060	--	< 0.060	< 0.060	< 0.060	--	--	< 0.060
03/11-15/2019	SW6020B	µg/L	< 0.060	--	--	--	--	--	--	--	< 0.060
08/26-29/2019	SW6020B	µg/L	< 0.060	< 0.060	< 0.060	< 0.060	< 0.090	< 0.12	< 0.12	0.070 J	< 0.060
<b>Tin</b>											
11/02-04/2016	SW6020A	µg/L	--	< 2.4	--	--	--	--	--	--	--
11/02-04/2016	SW6020B	µg/L	< 0.7	--	--	< 0.7	< 0.7	< 0.7	--	--	3.7 J
12/12-13/2016	SW6020A	µg/L	--	< 2.4	--	--	--	--	--	--	--
12/12-13/2016	SW6020B	µg/L	< 0.7	--	--	< 0.7	< 0.7	< 0.7	--	--	< 0.07
01/25-26/2017	SW6020A	µg/L	--	5.9 B	--	--	--	--	--	--	--
01/25-26/2017	SW6020B	µg/L	< 0.7	--	--	< 0.7	< 0.7	< 0.7	--	--	1.9
03/06-07/2017	SW6020A	µg/L	--	3.0 B	--	--	--	--	--	--	--
03/06-07/2017	SW6020B	µg/L	1.5 J	--	--	4.8 J	5.6	< 0.7	--	--	0.27 J
04/19-21/2017	SW6020B	µg/L	10.1	7.7 J+	--	1.5 J+	1.4 J	11.9	--	--	< 0.07
05/30-06/01/2017	SW6020B	µg/L	< 0.7	< 0.70	--	< 0.7	< 0.7	< 0.7	--	--	< 0.07
07/10-12/2017	SW6020B	µg/L	< 0.7	< 0.70	--	< 0.7	< 0.7	< 0.7	--	--	1.9
08/21-23/2017	SW6020B	µg/L	< 0.7	< 0.70	--	< 0.7	< 0.7	< 0.7	--	--	< 0.7
06/27/2018	SW6020B	µg/L	--	< 0.16	--	< 0.16	< 0.16	< 0.16	--	--	< 0.16
09/19/2018	SW6020A	µg/L	--	< 0.16	--	< 0.16	< 0.16	< 0.16	--	--	< 0.16
12/12-13/2018	SW6020B	µg/L	--	< 0.090	--	< 0.090	< 0.090	< 0.090	--	--	< 0.090
08/26-29/2019	SW6020B	µg/L	< 0.090	< 0.090	0.096 J	< 0.090	< 0.14	< 0.18	< 0.18	< 0.090	< 0.090

Appendix F  
Historical Laboratory Detections  
Possum Point Power Station, Pond E  
Permit No. 617

Location		ED-24R	ED-26	ED-22RA	ED-23R	ES-1609	ES-1613	ES-3D	T-1615S	T-1615D	Field Blank	
Sample Date	Method	Unit										
<b>Total Dissolved Solids</b>												
11/02-04/2016	SM2540C	mg/L	45.0	99	--	--	478	565	512	--	--	< 25.0
12/12-13/2016	SM2540C	mg/L	39.0	89	--	--	492	546	537	--	--	< 25.0
01/25-26/2017	SM2540C	mg/L	55.0	97	--	--	540	520	347	--	--	< 25.0
03/06-07/2017	SM2540C	mg/L	26.0	94	--	--	479	496	501	--	--	< 25.0
04/19-21/2017	SM2540C	mg/L	45.0	82.0	--	--	456	528	548 J+	--	--	107
05/30-06/01/2017	SM2540C	mg/L	43.0	88.0	--	--	499	523	534	--	--	36.0
07/10-12/2017	SM2540C	mg/L	39.0	83.0	--	--	494	434	391	--	--	< 25.0
08/21-23/2017	SM2540C	mg/L	35.0	75.0	--	--	498	449	383	--	--	< 25.0
09/19-20/2017	SM2540C	mg/L	37.0	--	--	--	--	--	--	--	--	< 25.0
06/18/2018	SM2540C	mg/L	--	--	--	--	--	--	--	--	--	< 25.0
06/27/2018	SM2540C	mg/L	--	88.0	--	--	488	456	450	--	--	< 25.0
09/19/2018	SM2540C	mg/L	--	89.0	--	--	497	450	461	--	--	< 25.0
09/24-25/2018	SM2540C	mg/L	--	--	--	--	--	--	--	--	--	< 25.0
12/12-13/2018	SM2540C	mg/L	--	91.0	--	--	493	437	466	--	--	< 25.0
03/11-15/2019	SM2540C	mg/L	139 J+	103 J+	175	111	337 J	519	532	--	--	254
08/26-29/2019	SM2540C	mg/L	< 25.0	63.0	136	< 25.0	527	530	415	453	215	45.0
<b>Total Organic Carbon</b>												
11/02-04/2016	SM5310B	mg/L	< 0.50	--	--	--	< 0.50	< 0.50	0.63 J	--	--	< 0.50
11/02-04/2016	SM5310C	mg/L	--	0.24 J	--	--	--	--	--	--	--	--
12/12-13/2016	SM5310B	mg/L	< 0.50	--	--	--	< 0.50	< 0.50	1.1	--	--	< 0.50
12/12-13/2016	SM5310C	mg/L	--	0.42 B	--	--	--	--	--	--	--	--
01/25-26/2017	SM5310B	mg/L	< 0.50	--	--	--	< 0.50	0.61 J	0.93 J	--	--	< 0.50
01/25-26/2017	SM5310C	mg/L	--	0.15 J	--	--	--	--	--	--	--	--
03/06-07/2017	SM5310B	mg/L	< 0.50	--	--	--	< 0.50	0.52 J	1.4	--	--	< 0.50
03/06-07/2017	SM5310C	mg/L	--	0.19 B	--	--	--	--	--	--	--	--
04/19-21/2017	SM5310B	mg/L	< 0.50	0.57 J	--	--	< 0.50	4.7	1.4	--	--	< 0.50
05/30-06/01/2017	SM5310B	mg/L	< 0.50	< 0.50	--	--	< 0.50	0.55 J	1.0	--	--	0.67 J
07/10-12/2017	SM5310B	mg/L	< 0.50	< 0.50	--	--	< 0.50	0.64 J	0.98 J	--	--	< 0.50
08/21-23/2017	SM5310B	mg/L	< 0.50	< 0.50	--	--	< 0.50	< 0.50	2.0	--	--	< 0.50
06/27/2018	SM5310B	mg/L	--	< 0.50	--	--	< 0.50	< 0.50	< 0.50	--	--	< 0.50
09/19/2018	SM5310B	mg/L	--	< 0.50	--	--	< 0.50	0.70 J	0.84 J	--	--	< 0.50
12/12-13/2018	SM5310B	mg/L	--	< 0.50	--	--	< 0.50	0.85 J	1.0 J	--	--	< 0.50
08/26-29/2019	SW9060A	mg/L	13.3	12.4	19.1	10.8	26.4	29.2	< 0.50	30.8	14.5	< 0.50

Appendix F  
Historical Laboratory Detections  
Possum Point Power Station, Pond E  
Permit No. 617

Location		ED-24R	ED-26	ED-22RA	ED-23R	ES-1609	ES-1613	ES-3D	T-1615S	T-1615D	Field Blank	
Sample Date	Method	Unit										
<b>Total Radium</b>												
11/02-04/2016	CALC	pci/l	1.58 U	--	--	--	1.92 J	1.69 U	3.39 J	--	--	0.102 U
11/02-04/2016	RA226RA228	pci/l	--	0.363 U	--	--	--	--	--	--	--	--
12/12-13/2016	CALC	pci/l	0.643 U	--	--	--	0.496 U	0.821 U	1.12 U	--	--	0.843 U
12/12-13/2016	RA226RA228	pci/l	--	0.703	--	--	--	--	--	--	--	--
01/25-26/2017	CALC	pci/l	0.125 U	--	--	--	1.48 U	1.19 U	0.950 U	--	--	0.655 U
01/25-26/2017	RA226RA228	pci/l	--	0.820	--	--	--	--	--	--	--	--
03/06-07/2017	CALC	pci/l	0.872 U	--	--	--	0.936 U	1.29	0.669 U	--	--	0 U
03/06-07/2017	RA226RA228	pci/l	--	0.368 U	--	--	--	--	--	--	--	--
04/19-21/2017	CALC	pci/l	1.39 U	1.04 U	--	--	1.54 U	1.57 U	0.946 U	--	--	0.397 U
05/30-06/01/2017	CALC	pci/l	0.407 U	0.837 U	--	--	1.80	2.48	1.42	--	--	0.334 U
07/10-12/2017	CALC	pci/l	0.802 U	1.63	--	--	2.81	1.57	0.847 U	--	--	0.530 U
08/21-23/2017	CALC	pci/l	0.778 U	0.545 U	--	--	2.27	1.85	0.766 U	--	--	0.379 U
03/19-23/2018	CALC	pci/l	0.660 U	--	--	--	--	--	--	--	--	0.643 U
06/18/2018	CALC	pci/l	--	--	--	--	--	--	--	--	--	1.07 U
06/27/2018	CALC	pci/l	--	0.990 U	--	--	1.25 U	1.20 U	1.75 U	--	--	0 U
09/19/2018	RA226RA228	pci/l	--	0.881 U	--	--	1.84	1.61	1.05 U	--	--	0.357 U
09/24-25/2018	RA226RA228	pci/l	--	--	--	--	--	--	--	--	--	1.79
12/12-13/2018	RA226RA228	pci/l	--	0.917	--	--	2.01	2.22	1.18 U	--	--	0.162 U
03/11-15/2019	RA226RA228	pci/l	1.49 U	--	--	--	--	--	--	--	--	1.30 U
08/26-29/2019	RA226RA228	pci/l	1.91	1.23 U	0.666 U	0.865 U	2.69	2.39	1.83	3.44	1.45	1.33 J
<b>Vanadium</b>												
11/02-04/2016	SW6020A	µg/L	--	< 0.54	--	--	--	--	--	--	--	--
11/02-04/2016	SW6020B	µg/L	0.78 J	--	--	--	< 0.7	< 0.7	< 0.7	--	--	< 0.7
12/12-13/2016	SW6020A	µg/L	--	< 0.54	--	--	--	--	--	--	--	--
12/12-13/2016	SW6020B	µg/L	< 0.7	--	--	--	< 0.7	< 0.7	< 0.7	--	--	0.41 J
01/25-26/2017	SW6020A	µg/L	--	< 0.54	--	--	--	--	--	--	--	--
01/25-26/2017	SW6020B	µg/L	< 0.7	--	--	--	< 0.7	< 0.7	< 0.7	--	--	< 0.07
03/06-07/2017	SW6020A	µg/L	--	< 0.54	--	--	--	--	--	--	--	--
03/06-07/2017	SW6020B	µg/L	0.98 J	--	--	--	1.2 J	1.1 J	1.2 J	--	--	0.086 J
04/19-21/2017	SW6020B	µg/L	1.2 J+	0.99 J+	--	--	< 0.7	0.71 J+	1.2 J+	--	--	0.13 J
05/30-06/01/2017	SW6020B	µg/L	0.74 J	< 0.70	--	--	0.89 J	< 0.7	0.97 J	--	--	< 0.07
07/10-12/2017	SW6020B	µg/L	< 0.7	< 0.70	--	--	< 0.7	< 0.7	0.7 J	--	--	< 0.07
08/21-23/2017	SW6020B	µg/L	< 0.7	< 0.70	--	--	< 0.7	< 0.7	1.5 J	--	--	< 0.7
06/27/2018	SW6020B	µg/L	--	< 0.27	--	--	< 0.27	< 0.27	0.93 J	--	--	< 0.27
09/19/2018	SW6020A	µg/L	--	< 0.27	--	--	< 0.27	< 0.27	2.0	--	--	< 0.27
12/12-13/2018	SW6020B	µg/L	--	< 0.12	--	--	< 0.12	< 0.12	0.29 J	--	--	< 0.12
08/26-29/2019	SW6010D	µg/L	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3

Appendix F  
 Historical Laboratory Detections  
 Possum Point Power Station, Pond E  
 Permit No. 617

Location		ED-24R	ED-26	ED-22RA	ED-23R	ES-1609	ES-1613	ES-3D	T-1615S	T-1615D	Field Blank
Sample Date	Method	Unit									
<b>Zinc</b>											
11/02-04/2016	SW6020A	µg/L	--	< 6.2	--	--	--	--	--	--	--
11/02-04/2016	SW6020B	µg/L	< 24	--	--	--	< 24	< 24	168	--	< 24
12/12-13/2016	SW6020A	µg/L	--	< 6.2	--	--	--	--	--	--	--
12/12-13/2016	SW6020B	µg/L	< 24	--	--	--	< 24	< 24	119	--	3.6 J
01/25-26/2017	SW6020A	µg/L	--	< 6.2	--	--	--	--	--	--	--
01/25-26/2017	SW6020B	µg/L	< 24	--	--	--	< 24	< 24	57.2	--	< 2.4
03/06-07/2017	SW6020A	µg/L	--	< 6.2	--	--	--	--	--	--	--
03/06-07/2017	SW6020B	µg/L	< 24	--	--	--	< 24	< 24	135	--	< 2.4
04/19-21/2017	SW6020B	µg/L	< 24	< 24.0	--	--	25.4 J	< 24	125	--	< 2.4
05/30-06/01/2017	SW6020B	µg/L	< 24	< 24.0	--	--	< 24	< 24	122	--	< 2.4
07/10-12/2017	SW6020B	µg/L	< 24	< 24.0	--	--	< 24	< 24	86.3	--	< 2.4
08/21-23/2017	SW6020B	µg/L	35.9 J	< 24.0	--	--	35.1 J	< 24	106	--	< 24
06/27/2018	SW6020B	µg/L	--	< 1.9	--	--	22.7	16.5	69.6	--	2.4 J
09/19/2018	SW6020A	µg/L	--	2.6 J+	--	--	30.1	14.4	93.0	--	3.6 J+
12/12-13/2018	SW6020B	µg/L	--	1.2 J	--	--	25.1	9.4	94.3	--	1.6 J
08/26-29/2019	SW6010D	µg/L	6.9 J	< 3.9	28.4	4.3 J	21.9	8.5 J	210	16.9 J+	26.8 J+

Notes: µg/L = Microgram per liter  
 mg/L = Milligram per liter  
 µS/cm = MicroSiemen per centimeter  
 SU = Standard Units  
 C= Degrees Celsius  
 pci/L = picoCurie per liter  
 ntu = nephelometric turbidity unit  
 J = Estimated concentration  
 J+ = Potential bias high  
 U = Not detected at the indicated Minimum Detectable Concentration  
 R = Unusable  
 -- = Not Sampled

# **APPENDIX G**

## **DATA VALIDATION FORMS**

**APPENDIX G.1  
1<sup>ST</sup> SEMI-ANNUAL  
GROUNDWATER MONITORING  
EVENT DATA VALIDATION FORM  
(MARCH 2019)**





Project Name: Possum Point Power Station - Ash Pond E - CCR Compliance

Project Reference Number: 1662150.2004.002

Sampling Event Date: March 11-12, 2019

Review Date: 04/18/2019

Initials: ALR

Review Date: 06/21/2019

Initials: RIP

**Person(s) performing the review are to initial each item on this form as acknowledgement of data acceptance, or as acknowledgement of a review issue. In the case of the latter, a brief explanation should follow the applicable item.**

Golder Associates Inc. has reviewed the laboratory certificates of analysis, chain-of-custody form, and laboratory provided sample group quality assurance and quality control data for the above referenced sample group to identify potential bias or inaccuracy, in general accordance with the following United States Environmental Protection Agency (EPA) and Department of Energy (DOE) documents:

- National Functional Guidelines for Organic Superfund Methods Data Review, January 2017;
- National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017;
- US Department of Energy Evaluation of Radiochemical Data Usability, April 1997; and
- Sampling and Analysis Plan for US Department of Energy Office of Legacy Management Sites.

#### COMMON ACRONYMS:

- MS = matrix spike
- MSD = matrix spike duplicate
- LCS = laboratory control spike
- RPD = relative percent difference
- MB = method blank
- DUP = duplicate
- FB = field blank
- VSWMR = Virginia Solid Waste Management Regulations
- J = estimated
- ND and/or U= not detected
- COC = chain of custody
- QC = quality control
- µg/L = micrograms per liter
- mg/L = milligrams per liter
- EPA = United States Environmental Protection Agency
- pCi/L = picocuries per liter

#### COMPLIANCE ANALYTE LIST

- Historical VPDES Parameters: \_\_\_\_\_
- CCR Appendix III to Part 257
- CCR Appendix IV to Part 257
- VSWMR Phase II Parameters: \_\_\_\_\_
- Other: \_\_\_\_\_

Note: Pace Package No.: 92421440, 92421482, 92421510

## 1.0 CHAIN OF CUSTODY (COC) REVIEW

- Yes COC was properly signed by all parties.
- Yes Correct project name and number are on the form.
- Yes Sample receipt condition at laboratory was acceptable.
- Yes Each sample and blank submitted for analysis appears in the data report.

Notes: \_\_\_\_\_

## 2.0 SAMPLE HOLDING TIMES

- Yes Holding times for extraction *and/or* analysis were met for each analytical method.

Review Criteria		
Method	Analytes	Holding Time
EPA 300	Chloride, Fluoride, Sulfate	28 days
EPA 6000 series	Metals, except mercury	6 months
SM 2540C	TDS	7 days

Notes: \_\_\_\_\_

## 3.0 LABORATORY QUALITY CONTROL REVIEW

- Yes Laboratory analyzed at least one internal blank for each method, where applicable.
- Yes Laboratory blanks were interference free.

Notes: \_\_\_\_\_

NA Surrogate recoveries are provided for each analytical method, where applicable.

NA Surrogate recoveries for each method are within the acceptable limits.

Notes: \_\_\_\_\_

NA Tracer and carrier yields are provided for each analytical method, where applicable (Radiochemical Data Only).

NA Tracer and carrier yields for each method are within the acceptable limits (Radiochemical Data Only).

Notes: \_\_\_\_\_

Yes MS/MSD/LCS/RPD data results are provided for each analytical method.

See Note MS/MSD/LCS/RPD recoveries for each method are within the acceptable limits.

Notes: The following table presents recoveries and relative percent differences (RPDs) that were outside of QC limits for the associated sample delivery group (analytical batch). In accordance with EPA guidance for evaluation of spike recoveries, the associated samples may be qualified estimated high (J+), estimated low (J-), non-detect estimated (UJ), or unusable (R) using professional judgement

to evaluate the spike recovery. Post-digestion spike recovery will be evaluated for MS/MSD qualification purposes where provided. As presented, no data qualification is recommended. No MS/MSD results were provided for radium-226 or radium-228.

In accordance with EPA guidance for evaluation of RPDs, the associated samples may be qualified estimated (J or UJ) using professional judgement to evaluate the RPD. As presented, no data qualification is recommended.

Parameter	Recovery Outside QC Limits	Batch	Associated Qualified Sample(s)	Validator Qualifier
Total Dissolved Solids	RPD	463574	--	--
Total Dissolved Solids	RPD	463576	--	--
Boron	MS	464195	--	--
Calcium	MS	464195	--	--
Fluoride	MS, MSD	463694	--	--
Chloride	MS, MSD	463696	--	--
Fluoride	MS, MSD	463696	--	--

NA Minimum Detectable Concentrations (MDCs) are provided for radiological samples.

NA Radiological samples reported below their respective MDC have been qualified with a "U."

Notes: \_\_\_\_\_

#### 4.0 ANALYTE LISTS/METHODS

Yes The proper number of constituents are present for each analyte list as identified above (including detects where applicable).

Yes Proper EPA SW-846 analytical methods were used for analysis.

Notes: \_\_\_\_\_

## 5.0 OUTLIER EVALUATION

Yes Analytical results have been evaluated for variances +/- 25% compared to the average of the most recent 8 data points.

Yes Analytical results with variances >25% have been evaluated for trends.

Yes If no trends were identified for analytical results with variances >25%, a data quality review (DQR) was conducted for suspect analytical results identified as possible outliers. DQR results summarized below.

Analyte	Location	DQR identified issues?	Re-analysis requested?	Outlier Identification
Total Dissolved Solids	Field Blank	High blank detection. RPD is outside of acceptable laboratory QC limits.	Laboratory DQR requested; no QC or data entry issues found - out of hold analysis performed	Original result reported per client request. Associated samples qualified J+ per EPA guidance.

## 6.0 DATA REPORTING

See Note Trip; field and/or equipment; and laboratory blank results have all been reported and the detected constituents in these blanks, if any, have been qualified using professional judgement where detected in other samples.

Notes: The following table presents field blank detections and associated samples that have been qualified. In accordance with EPA guidance, associated samples have been evaluated using professional judgement. Inorganic data less than 10X the blank concentration may be qualified if the detection is not considered part of a visual data trend and is not consistent with recent historical data (i.e. the highest concentration reported over the last 8 sampling events). Organic data corresponding to blank contamination may be qualified if the detection is not considered part of a visual data trend and is not consistent with recent historical data. Additionally, associated samples for organic common lab contaminants (acetone, MC, and MEK) may be qualified if the results are 2X greater than the detected blank concentration. Associated samples may be qualified estimated high (J+), estimated low (J-), non-detect estimated (UJ) or unusable (R). As presented below, data qualification is recommended.

Sample ID	Parameter	Blank Detection (mg/L)	Associated Qualified Sample(s)	Validator Qualifier
Field Blank	Total Dissolved Solids	254	ED-26, ED-24R	J+

Yes It is clear from the laboratory report that samples have or have not been diluted during analysis, and if the samples have been diluted, the result is reported as a multiple of the dilution (e.g., a sample diluted 10x resulting in an analytical detection of 1.0 should be reported as 10).

Yes The report provides the reporting limit for each constituent.

Yes The proper reporting limits have been used (e.g. NC Solid Waste Section approved PQLs, or VA DEQ Permit approved detection limits, as appropriate).

Notes: \_\_\_\_\_

## 7.0 FIELD DUPLICATE PRECISION

Yes Field duplicate sample results were within control limits of 20% relative percent difference for sample results greater than 5 times the quantitation limit. When one or both results were less than 5 times the quantitation limit, the difference between the two results was less than twice the reporting limit.

Notes: The following table presents field duplicates and their associated parent samples that were not within control limits. In accordance with EPA guidance, sample results with field duplicate imprecision may be qualified estimated (J) or non-detect estimated (UJ). As presented below, data qualification is recommended.

Parameter	Associated Samples	Parent Sample Result (mg/L)	Duplicate Sample Result (mg/L)	Re-analysis Requested?	Outlier Identification
Boron	ES-1609/ ES-1609 DUP	0.93	1.2	No	Both parents and duplicate samples qualified estimated (J)
Calcium	ES-1609/ ES-1609 DUP	13.2	17.8	No	Both parents and duplicate samples qualified estimated (J)

Parameter	Associated Samples	Parent Sample Result (mg/L)	Duplicate Sample Result (mg/L)	Re-analysis Requested?	Outlier Identification
TDS	ES-1609/ ES-1609 DUP	337	531	Laboratory DQR requested; no QC or data entry issues found – no re-analysis performed	Both parent and duplicate sample qualified estimated (J)

<https://golderassociates.sharepoint.com/sites/104138/reports/2019-08-01 ppt pond e ccr amr/data reviews/2019-04-18 pond e ccr app iii data review.docx>

**APPENDIX G.2  
2<sup>ND</sup> SEMI-ANNUAL  
GROUNDWATER MONITORING  
EVENT DATA VALIDATION FORM  
(AUGUST 2019)**



Project Name: Possum Point Power Station - Ash Pond E

Project Reference Number: 1662150.2004.002

Sampling Event Date: August 26-28, 2019

Review Date: 11/8/2019

Initials: ALR

Review Date: 11/25/2019

Initials: RIP

**Person(s) performing the review are to initial each item on this form as acknowledgement of data acceptance, or as acknowledgement of a review issue. In the case of the latter, a brief explanation should follow the applicable item.**

Golder Associates Inc. has reviewed the laboratory certificates of analysis, chain-of-custody form, and laboratory provided sample group quality assurance and quality control data for the above referenced sample group to identify potential bias or inaccuracy, in general accordance with the following United States Environmental Protection Agency (EPA) and Department of Energy (DOE) documents:

- National Functional Guidelines for Organic Superfund Methods Data Review, January 2017;
- National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017;
- US Department of Energy Evaluation of Radiochemical Data Usability, April 1997; and
- Sampling and Analysis Plan for US Department of Energy Office of Legacy Management Sites.

#### COMMON ACRONYMS:

- |   |   |
|---|---|
| • MS = matrix spike                                   | • J = estimated                                       |
| • MSD = matrix spike duplicate                        | • ND and/or U= not detected                           |
| • LCS = laboratory control spike                      | • COC = chain of custody                              |
| • RPD = relative percent difference                   | • QC = quality control                                |
| • MB = method blank                                   | • µg/L = micrograms per liter                         |
| • DUP = duplicate                                     | • mg/L = milligrams per liter                         |
| • FB = field blank                                    | • EPA = United States Environmental Protection Agency |
| • VSWMR = Virginia Solid Waste Management Regulations | • pCi/L = picocuries per liter                        |

#### COMPLIANCE ANALYTE LIST

- Historical VPDES Parameters: Hardness, Iron, Manganese, Potassium, Sodium, Phenolics, Total Organic Carbon
- CCR Appendix III to Part 257
- CCR Appendix IV to Part 257
- VSWMR Phase II Parameters: Copper, Nickel, Silver, Tin, Vanadium, Zinc
- Other: Hexavalent Chromium

Note: Pace Package Nos.: 92443188, 92443178, 92443179; AWS Work Orders: 19H1088, 19H1041, 19H1087, 19H1135



## 1.0 CHAIN OF CUSTODY (COC) REVIEW

- Yes COC was properly signed by all parties.
- Yes Correct project name and number are on the form.
- Yes Sample receipt condition at laboratory was acceptable.
- Yes Each sample and blank submitted for analysis appears in the data report.

Note: \_\_\_\_\_

## 2.0 SAMPLE HOLDING TIMES

- Yes Holding times for extraction *and/or* analysis were met for each analytical method.

Review Criteria		
Method	Analytes	Holding Time
EPA 9056A	Chloride, Fluoride, Sulfate, Nitrate	28 days
EPA 6000 series	Metals, except Mercury	6 months
EPA 7470	Mercury	28 days
EPA 350.1	Ammonia	28 days
EPA 9000 series	Radium-226 & Radium-228	6 months
SM2340B	Hardness	6 months
SM 2540C	TDS	7 days
EPA 9060	Total Organic Carbon	7 days
EPA 9065	Phenolics	28 days
EPA 7196	Hexavalent Chromium	24 hours (unpreserved)

Notes: \_\_\_\_\_

## 3.0 LABORATORY QUALITY CONTROL REVIEW

- Yes Laboratory analyzed at least one internal blank for each method, where applicable.

See Note Laboratory blanks were interference free.

Notes: The following table presents method blank detections and their associated sample delivery groups (SDG; batch). In accordance with EPA guidance, associated samples within the same batch have been evaluated using professional judgement. Inorganic data less than 10X the blank concentration may be qualified if the detection is not considered part of a visual data trend and is not consistent with recent historical data (i.e. the highest concentration reported over the last 8 sampling events). Organic data corresponding to blank contamination may be qualified if the detection is not considered part of a visual data trend and is not consistent with recent historical data. Additionally, associated samples for organic common lab contaminants (acetone, MC, and MEK) may be qualified if the results are 2X greater than the detected blank

concentration. Associated samples may be qualified estimated high (J+), estimated low (J-), non-detect estimated (UJ) or unusable (R). As presented below, data qualification is recommended.

Parameter	Method Blank Detection (µg/L)	Batch	Associated Qualified Sample(s)	Validator Qualifier
Boron	12.0 J	496199	Field Blank	J+
Zinc	5.0 J	496199	Field Blank	J+
Cadmium	0.47 J	496271	--	
Radium-226	0.372 pCi/L	360247	--	--
Radium-228	0.904 pCi/L	360248	Field Blank	J
Radium-226	0.316 pCi/L	363264	--	--

NA Surrogate recoveries are provided for each analytical method, where applicable.

NA Surrogate recoveries for each method are within the acceptable limits.

Notes: \_\_\_\_\_

Yes Tracer and carrier yields are provided for each analytical method, where applicable (Radiochemical Data Only).

Yes Tracer and carrier yields for each method are within the acceptable limits (Radiochemical Data Only).

Notes: \_\_\_\_\_

Yes MS/MSD/LCS/RPD data results are provided for each analytical method.

See Note MS/MSD/LCS/RPD recoveries for each method are within the acceptable limits.

Notes: The following table presents recoveries and relative percent differences (RPDs) that were outside of QC limits for the associated sample delivery group (analytical batch). In accordance with EPA guidance for evaluation of spike recoveries, the associated samples may be qualified estimated high (J+), estimated low (J-), non-detect estimated (UJ), or unusable (R) using professional judgement to evaluate the spike recovery. Post-digestion spike recovery will be evaluated for MS/MSD qualification purposes where provided. As presented, no data qualification is recommended.

In accordance with EPA guidance for evaluation of RPDs, the associated samples may be qualified estimated (J or UJ) using professional judgement to evaluate the RPD. As presented, no data qualification is recommended.

Parameter	Recovery Outside QC Limits	Batch	Associated Qualified Sample(s)	Validator Qualifier
Total Dissolved Solids	RPD	495138	--	--
Potassium	MS	496148	--	--
Sodium	MS, MSD	496148	--	--
Iron	MS, MSD	496281	--	--
Manganese	MS, MSD	496281	--	--
Sodium	MS, MSD	496281	--	--
Potassium	MS	496281	--	--
Phenolics	MS, MSD	34869	--	--
Phenolics	MS, MSD	34882	--	--
Chloride	MS, MSD	495319	--	--
Fluoride	MS, MSD	495319	--	--
Sulfate	MS, MSD	495319	--	--
Chloride	MS, MSD, RPD	495640	--	--
Fluoride	MS, MSD, RPD	495640	--	--
Sulfate	MS, MSD, RPD	495640	--	--
Total Organic Carbon	MS, MSD	496159	--	--
Total Organic Carbon	MS, MSD	496160	--	--
Hexavalent Chromium	MS, MSD	BCH0936	--	--
Hexavalent Chromium	MS, MSD	BCH0937	--	--

Yes Minimum Detectable Concentrations (MDCs) are provided for radiological samples.

Yes Radiological samples reported below their respective MDC have been qualified with a "U."

Notes: \_\_\_\_\_

Parameter	Associated Samples Below MDC
Radium-226	ED-26
Radium-228	T-1615D, ED-22RA, ED-23R
Total Radium	ED-26, ED-22RA, ED-23R

#### 4.0 ANALYTE LISTS/METHODS

Yes The proper number of constituents are present for each analyte list as identified above (including detects where applicable).

Yes Proper EPA SW-846 analytical methods were used for analysis.

Notes: \_\_\_\_\_

#### 5.0 OUTLIER EVALUATION

Yes Analytical results have been evaluated for variances +/- 25% compared to the average of the most recent 8 data points.

Yes Analytical results with variances >25% have been evaluated for trends.

Yes If no trends were identified for analytical results with variances >25%, a data quality review (DQR) was conducted for suspect analytical results identified as possible outliers. DQR results summarized below.

Analyte	Location	DQR identified issues?	Re-analysis requested?	Outlier Identification
Hexavalent Chromium	ES-1609	Hexavalent Chromium detected above the laboratory RL; However, Total Chromium results reported below the laboratory MDL (< 1.0)	No	Hexavalent Chromium result qualified as unusable (R) due to potential matrix interference.

#### 6.0 DATA REPORTING

See Note Trip; field and/or equipment; and laboratory blank results have all been reported and the detected constituents in these blanks, if any, have been qualified using professional judgement where detected in other samples.

Notes: The following table presents field blank detections and associated samples that have been qualified. In accordance with EPA guidance, associated samples have been evaluated using professional judgement. Inorganic data less than 10X the blank concentration may be qualified if the detection is not considered part of a visual data trend and is not consistent with recent historical data (i.e. the highest concentration reported over the last 8 sampling events). Organic data corresponding to blank contamination may be qualified if the detection is not considered part of a visual data trend and is not consistent with recent historical data. Additionally, associated samples for organic common lab contaminants (acetone, MC, and MEK) may be qualified if the results are 2X greater than the detected blank concentration. Associated samples may be qualified estimated high (J+), estimated low (J-), non-detect estimated (UJ) or unusable (R). As presented below, data qualification is recommended.

Sample ID	Parameter	Blank Detection (µg/L)	Associated Qualified Sample(s)	Validator Qualifier
Field Blank	Barium	1.1 J	--	--
	Boron	7.4 J	ED-24R, ED-26, T-1615D	J+
	Total Dissolved Solids	45,000	--	--
	Zinc	7.4 J	T-1615D, T-1615S	J+
	Radium-228	0.957 (pCi/L)	--	--
	Total Radium	1.33 (pCi/L)	--	--

Yes It is clear from the laboratory report that samples have or have not been diluted during analysis, and if the samples have been diluted, the result is reported as a multiple of the dilution (e.g., a sample diluted 10x resulting in an analytical detection of 1.0 should be reported as 10).

Yes The report provides the reporting limit for each constituent.

Yes The proper reporting limits have been used (e.g. NC Solid Waste Section approved PQLs, or VA DEQ Permit approved detection limits, as appropriate).

Notes: \_\_\_\_\_

## 7.0 FIELD DUPLICATE PRECISION

Yes Field duplicate sample results were within control limits of 20% relative percent difference for sample results greater than 5 times the quantitation limit. When one or both results were less than 5 times the quantitation limit, the difference between the two results was less than twice the reporting limit.

Notes:

<https://golderassociates.sharepoint.com/sites/104138/reports/2020-01-30 ppt pond e ccr+vswmr amr/data reviews/2019-11-08 ppt pond e ccr+vswmr data review.docx>